CITY OF ROSEVILLE
CALIFORNIA

AGENDA
April 16, 2025

CITY COUNCIL
6:00 p.m.
Council Chambers
311 Vernon Street
Roseville, CA
www.roseville.ca.us

THE CITY OF ROSEVILLE WELCOMES YOUR PARTICIPATION

If an agenda item is open to public comment, such public comment shall be addressed to the chair of the meeting.

Public Comment - Speakers have three minutes under Public Comment to speak on issues that are not listed on the agenda and are within the City's jurisdiction. The Brown Act does not permit any action or discussion on items not listed on the agenda.

Consent Calendar - If applicable, the Consent Calendar consists of routine items that may be approved by one motion. Any person can remove an item from the Consent Calendar to be discussed separately.

Agenda Items - Speakers have five minutes to address items that are listed on the agenda.

Levine Act Provisions - The Levine Act requires a Party (or its agent (s)) to a Proceeding before the City of Roseville that involves any action or consideration to their contract, license, permit, or other entitlement for use, to disclose any campaign contribution made to City elected or appointed officers (including Councilmembers, Planning Commissioners, and members of other City boards and commissions) totaling more than $250 within the 12 months before the City decision.

Americans with Disabilities Act - Notify the City Clerk or Secretary at least 72 hours in advance if special assistance is required to participate in a meeting including the need of auxiliary aids or services.

Audio/Visual Presentations - If making a presentation regarding an agenda item, audio/visual materials must be submitted to the City Clerk or Secretary at least 72 hours in advance.

Security procedures are in place to attend Roseville City Council meetings. All attendees must successfully pass through a security metal detector. Any person with a prohibited item will not be allowed entry. Prohibited items include, but are not limited to: firearms (even with valid CCW), knives, pepper spray/mace, explosives of any kind/ any weapons and/or dangerous devices of any kind, illegal drugs and alcohol.

1. CALL TO ORDER

2. ROLL CALL

3. PLEDGE OF ALLEGIANCE

4. MEETING PROCEDURES

5. PRESENTATIONS

5.1. Placer County Law Enforcement Chaplaincy Program Presentation

CONTACT: Carmen Avalos 916-774-5269 cavalos@roseville.ca.us

5.2. Proclamation - National Donate Life Month April 2025

Proclaim April 2025 as National Donate Life Month and encourage all residents to register their decision to be an organ, eye and tissue donor in the National Donate Life Registry at DonateLifeCalifornia.org or at your local California DMV.

CONTACT: Blair Hutchison 916-774-5266 bmhutchison@roseville.ca.us

6. PUBLIC COMMENTS

7. CONSENT CALENDAR

BEGINNING OF CONSENT CALENDAR

Bids / Purchases / Services

7.1. Roseville Electric Utility - Generation Maintenance Support Services - Contract Purchase Agreement

Memo from Power Generation Superintendent Nathan Ribordy and Electric Utility Director Dan Beans recommending the City Council adopt RESOLUTION NO. 25-095 APPROVING A CONTRACT PURCHASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND PERFORMANCE MECHANICAL, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE (3004426). Staff requests Council approve a contract purchase agreement with Performance Mechanical, Inc., to provide maintenance support services to Roseville Electric Utility's generation facilities. Staff also requests authorization to exercise the four (4) optional one-year extensions to the contract without further City Council approval. The first-year contract will not exceed $2,000,000. The total cost of the purchase agreement is not to exceed $10,000,000 over five years. Funding is included in the Electric Department's FY2024-25 budget in the Electric Fund. Future year funding will be contingent on City Council's approval of the respective budget.

CC #: 3839

File #: 0800-03

CONTACT: Nathan Ribordy 916-746-1673 nribordy@roseville.ca.us

7.2. East Radio Site Relocation Project - Contract Purchase Agreement

Memo from Information Technology Program Manager Karl Grover and Chief Information Officer Hong Sae recommending the City Council adopt RESOLUTION NO. 25-102 APPROVING A CONTRACT PURCHASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND E.F. JOHNSON COMPANY, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE (3004429). Staff requests Council approve a contract purchase agreement with E.F. Johnson Company in the amount of $483,210.79 for the City's East Radio Site Relocation project to enhance system performance, reliability, scalability and coverage. The City's east radio site will be relocated to a new location in order to enhance performance, reliability, scalability and coverage for the City's radio systems. Site construction is in progress and there is a significant effort required post-construction to prepare the site for service. This includes equipment and related services for antenna systems, radio equipment, system optimization and decommissioning of the old radio site. The total cost of the agreement is $483,211 plus a 10% contingency of $48,321 to ensure successful completion. The project is funded by multiple sources including the Strategic Improvement Fund, Public Facilities Fund and Information Technology Replacement Fund.

CC #: 3846

File #: 0203-05

CONTACT: Karl Grover 916-774-5145 kgrover@roseville.ca.us

7.3. Microtransit Vans - Purchase Order Amendment

Memo from Assistant Transportation Planner Zachary Presley and Public Works Director Jason Shykowski recommending the City Council approve an amendment to an existing purchase order with A-Z Bus Sales for the purchase of twelve (12) Ford E-Transit Vans. When this item was initially brought to Council for approval, there were options for the vans that were being finalized and could not be included in the total cost at that time. Some of the optional items included an on-board camera system and an exterior finish. As the vans have made their way through production, staff worked with A-Z bus to prepare an updated quote. The finalized quote that includes the above optional items reflects an increase of $10,005.74 per vehicle for a total increase of $120,068.93. The increased cost of these updates fit within the existing project budgets for the replacement vehicles and the purchase of new vehicles. This $120,068.93 increase would raise the total not-to-exceed amount for the purchase from $2,429,666.64 to $2,549,735.57. Funding for the increase will come from the approved grant funding sources for the projects, with a small match from the state-provided Transportation Development Act funds. No General Fund resources are being used for this purchase.

CC #: 3830

File #: 0721

CONTACT: Zach Presley 916-774-5365 zpresley@roseville.ca.us

7.4. Vernon Street/Atlantic Street Multimodal Safety Improvement Project - Approval of Plans and Specifications and Authorization to Call for Bids

Memo from Assistant Engineer Karen Vences and Public Works Director Jason

Shykowski recommending the City Council approve the plans and specifications for the Vernon Street/Atlantic Street Multimodal Safety Improvement Project and authorize staff to call for bids. The project scope includes enhanced pedestrian crosswalks, green bike lanes, pavement rehabilitation, lane reductions, and raised landscaped medians. The project is estimated to cost $1.9 million and will be funded with Highway Safety Improvement Program grant funds, Highway Users Tax funds, and Local Transportation Funds. New landscaping improvements along the corridor will require maintenance by the City's Parks, Recreation and Libraries Department (PRL), and the estimated annual cost increase as a result of the improvements is approximately $2,000 annually in future PRL operating budgets in the General Fund. No General Fund resources will be used for construction of the project.

CC #: 3851

File #: 0800-04

CONTACT: Karen Vences 916-774-5412 kavences@roseville.ca.us

7.5. Aquifer Storage and Recovery Wells 13 (Campus Oaks) and 19 (Misty Wood) – Approve Plans and Specifications, Design-Assist Construction Agreement, and Budget Adjustment

Memo from Senior Engineer Keith Schmidt and Environmental Utilities Director Sean Bigley recommending the City Council adopt RESOLUTION NO. 25-099 APPROVING A DESIGN-ASSIST CONSTRUCTION AGREEMENT, BY AND BETWEEN AUBURN CONSTRUCTORS, LLC, AND THE CITY OF ROSEVILLE, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE; and adopt ORDINANCE NO. 6929 AUTHORIZING CERTAIN AMENDMENTS TO THE FISCAL YEAR 2024-25 BUDGET AND DECLARING THIS ORDINANCE TO BE IMMEDIATELY EFFECTIVE AS AN APPROPRIATION MEASURE. Staff requests Council approval of plans and specifications, a budget adjustment, and approval of a design-assist construction contract for construction of Aquifer Storage and Recovery Wells 13 and 19. The source of funding for this agreement is the Water Construction Fund, as well as a state grant approved by Council on September 20, 2023. The ARTESIAN grant provides this project with $8,010,000 in funding to be utilized by December 31, 2025. A budget adjustment in the amount of $2,950,000 is requested to fully fund the project, including $2,704,000 for capital outlay and $246,000 for internal secondary labor. This budget adjustment will bring the current project budget of $16,625,865 to a new total project cost of $19,575,865, using available funds in the Water Construction Fund.

CC #: 3843

File #: 0800-02 & 0201-01

CONTACT: Keith Schmidt 916-746-1194 kjschmidt@roseville.ca.us

7.6. Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project - Approval of Construction Plans and Specifications and Authorize Staff to Call for Bids

Memo from Senior Engineer Inderpreet Chaggar and Environmental Utilities Director Sean Bigley recommending the City Council approve the construction plans and specifications and authorization to advertise the Dry Creek

Wastewater Treatment Plant Operations and Laboratory Building (Project) for contractor bidding. The estimated construction cost of this project is $16,884,014. The Project will be funded from available resources in the Wastewater Regional Rehabilitation Fund for the rehabilitation portion of the project and from the capital improvement project budget approved by the South Placer Wastewater Agency for the building expansion.
CC #: 3836

File #: 0800-02

CONTACT: Inderpreet Chaggar 916-938-1595 ikchaggar@roseville.ca.us

7.7. Maintenance of the Gas Conditioning Systems at the Dry Creek and Pleasant Grove Wastewater Treatment Plants – Sole Source Contract Purchase Agreements

Memo from Administrative Technician Audrey Ficker and Environmental Utilities Director Sean Bigley recommending the City Council adopt RESOLUTION NO. 25-088 APPROVING A CONTRACT PURCHASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND UNISON SOLUTIONS, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE (3004434); and adopt RESOLUTION NO. 25-089 APPROVING A CONTRACT PURCHASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND UNISON SOLUTIONS, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE (3004433). Staff requests Council approval of two (2) sole source contract purchase agreements including four (4) additional one-year renewals with Unison Solutions, Inc. to provide filtering media replacement and parts, gas testing, and media change out and support services for the maintenance of the gas conditioning systems at the Dry Creek and Pleasant Grove Wastewater Treatment Plants. Sourcing the replacement filtering media, replacement parts, and the media change out, gas testing, and support services from the equipment manufacturer guarantees the certified performance of the system as designed. The estimated total cost of the two contract purchase agreements for the first year is $930,000, and the total not-to-exceed cost including the renewals for both agreements is $5,710,000. Funding will be provided from the Environmental Utilities Department's annual approved budgets for the Wastewater Operations Fund.

CC #: 3829

File #: 0800-03

CONTACT: Audrey Ficker 916-746-1865 agficker@roseville.ca.us

7.8. Distribution Transformers (RFQ 10-3385) - Purchase Orders

Memo from Buyer Sue Jessup and Finance Director Scott Pettingell recommending the City Council adopt RESOLUTION NO. 25-090 APPROVING PURCHASE ORDERS FOR DISTRIBUTION TRANSFORMERS. Staff requests Council authorize open purchase orders with Anixter, Inc., First Philec, Inc., Hyundai Corporation USA, Mader Supply LLC, and Next Gen Power, Inc. as the lowest responsive and responsible bidders for the purchase of distribution transformers in response to Request for

Quotations No. 10-3385. Funding is included in the Electric Fund budget. The total spend for the initial contract period and optional renewal years through FY2028-29 is a not-to-exceed amount of $9,500,000. The bid allowed for four optional renewal years at one-year intervals. Staff requests authorization to continue utilizing the remaining optional renewal years without further Council approvals until the contract expires, or until City staff determines that continuing with the same vendors is not in the City's best interest.

CC #: 3832

File #: 0203-07

CONTACT: Sue Jessup 916-746-1107 sjessup@roseville.ca.us

Resolutions

7.9. 2025/2026 Landscaping and Lighting Districts Assessments - Initiate Proceedings, Intent to Levy, Approval of Engineer's Reports

Memo from Management Analyst Jeannine Thrash and Finance Director Scott Pettingell recommending the City Council adopt RESOLUTION NO. 25-106 INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, FOR FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE; and adopt RESOLUTION NO. 25-107 DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-108 FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-109 INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, FOR FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE; and adopt RESOLUTION NO. 25-110 DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-111 FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-112 INITIATING PROCEEDINGS FOR THE LEVY OF ASSESSMENTS FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE; and adopt RESOLUTION NO. 25-113 DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-114 FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026;

and adopt RESOLUTION NO. 25-115 INITIATING PROCEEDINGS FOR THE LEVY OF ASSESSMENTS FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE; and adopt RESOLUTION NO. 25-116 DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-117 FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-118 INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE; and adopt RESOLUTION NO. 25-119 DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-120 FOR PRELIMINARY APPROVAL OF THE ENGINEER'S LEVY REPORT FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-121 INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE; and adopt RESOLUTION NO. 25-122 DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-123 FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-124 INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, FOR FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE; and adopt RESOLUTION NO. 25-125 DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-126 FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-127 INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, FOR FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF

PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE; and adopt RESOLUTION NO. 25-128 DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026; and adopt RESOLUTION NO. 25-129 FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026. Staff requests Council adopt resolutions relating to annual landscaping and lighting district assessments. These landscaping and lighting Districts were formed within the City to levy and collect assessments for maintenance of public improvements pursuant to the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code Sections 22500, et seq., and Article XIII D of the California Constitution. All charges are needed to fully fund landscape services in each Landscaping and Lighting District. There is no fiscal impact to the General Fund.

CC #: 3853

File #: 0203-08-01

CONTACT: Jeannine Thrash 916-774-5473 jthrash@roseville.ca.us

7.10. Sales Tax Revenue Consulting Services - Professional Services Agreement Amendment

Memo from Budget Manager Nancy Rothlisberger and Finance Director Scott Pettingell recommending the City Council adopt RESOLUTION NO. 25-096 APPROVING A FOURTH AMENDMENT TO PROFESSIONAL SERVICES AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND MUNISERVICES, LLC, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE. Staff requests Council approve a fourth amendment to the professional services agreement with MuniServices, LLC to provide sales tax and transactions and use tax auditing, projection, recovery, and consultant services. The agreement is structured to only compensate MuniServices, LLC based on the amount of additional revenues received by the City due to their audit and recovery services. This additional (and final) one-year extension will increase the total not-to-exceed amount from $1 million to $1.25 million. The additional sales and use tax revenues that the City receives for the General Fund from these services more than offsets the cost.

CC #: 3840

File #: 0210

CONTACT: N. Rothlisberger 916-774-5314 nrothlisberger@roseville.ca.us

7.11. Municipal Advisor Services - Professional Services Agreements

Memo from Management Analyst Jeannine Thrash and Finance Director Scott Pettingell recommending the City Council adopt RESOLUTION NO. 25-091 APPROVING A PROFESSIONAL SERVICES AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND FIELDMAN, ROLAPP & ASSOCIATES, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE; and adopt RESOLUTION NO. 25-092 APPROVING A PROFESSIONAL SERVICES

AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND PFM FINANCIAL ADVISORS LLC, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE. Staff recommends Council approval of professional services agreements with Fieldman, Rolapp & Associates, Inc. and PFM Financial Advisors LLC for Municipal Advisor Services. Staff issued a Request for Proposals for Municipal Advisor Services in December 2024, receiving several proposals. After reviewing submissions and interviewing top-ranked proposers, City staff selected the two consultants to support the City's financial needs. The agreements have a not-to-exceed amount of $500,000 and $350,000, respectively, and both contracts expire June 30, 2028, with two options to extend in one (1) year increments for up to an additional two (2) years. This fee covers financial advisory services related to bond issuances and is structured based on the amount and type of bonds issued. These expenses are categorized as bond issuance costs, with the total amount dependent on the number of bond issuances each year.

CC #: 3834

File #: 0200

CONTACT: Jeannine Thrash 916-774-5473 jthrash@roseville.ca.us

7.12. Five Star Intertie Improvement Project – Agreements

Memo from Assistant Engineer William Montz and Environmental Utilities Director Sean Bigley recommending the City Council adopt RESOLUTION NO. 25-103 APPROVING AN AGREEMENT, BY AND BETWEEN PLACER COUNTY WATER AGENCY AND THE CITY OF ROSEVILLE, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE; and adopt RESOLUTION NO. 25-104 APPROVING AN AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND SIERRA NATIONAL CONSTRUCTION, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE. Staff requests Council approval of an agreement with Placer County Water Agency for construction, operation and maintenance of the Five Star Intertie Improvements Project. Staff also requests approval of an award of a construction agreement with Sierra National Construction, Inc. in the amount of $698,640 and authorization for the City Manager or his designee to approve and pay for contract change orders for the project that could increase the contract amount by no more than 10% ($69,864), for a not-to-exceed total contract amount of $768,504. This project will be funded from available resources in the Water Construction Fund. The Water Construction Fund is funded by water connection fees paid for by developers.

CC #: 3848

File #: 0800-02

CONTACT: William Montz 916-774-5545 wlmontz@roseville.ca.us

7.13. Sewer System Management Plan Recertification

Memo from Wastewater Utility Manager Tracie Mueller and Environmental Utilities Director Sean Bigley recommending the City Council adopt RESOLUTION NO. 25-097 RECERTIFICATION OF THE CITY OF

ROSEVILLE SEWER SYSTEM MANAGEMENT PLAN. Staff requests Council approve the recertification of the City's Sewer System Management Plan (SSMP), which is required by the California State Water Resources Control Board's Statewide General Waste Discharge Requirements. The costs for compliance for all elements of the SSMP are funded annually through the Wastewater Operations Fund budget.

CC #: 3841

File #: 0800-02

CONTACT: Tracie Mueller 916-746-1812 trmueller@roseville.ca.us

7.14. Solid Waste Recycling Site Lot 15 - Grant Deed

Memo from Senior Engineer David Samuelson and Environmental Utilities Director Sean Bigley recommending the City Council adopt RESOLUTION NO. 25-098 ACCEPTING A GRANT DEED AND AUTHORIZING THE CITY MANAGER TO EXECUTE THE DEED AND ANY OTHER DOCUMENTS REQUIRED TO EFFECTUATE THE RECORDATION AND ENFORCEMENT OF THIS ACCEPTANCE. Staff requests Council acceptance of a grant deed of land offered on the Large Lot Final Map of Sierra Vista in order to facilitate the construction of the Sierra Vista Solid Waste Recycling Site. The action requested has no fiscal impact to the City.

CC #: 3842

File #: 1002-04

CONTACT: David Samuelson 916-746-1708 dsamuelson@roseville.ca.us

7.15. On-Call Qualified Stormwater Pollution Prevention Plan Developer and Qualified Stormwater Pollution Prevention Plan Practitioner Services – Professional Services Agreement Amendment

Memo from Senior Park Development Project Manager Heather Buck and Parks, Recreation & Libraries Director Jill Geller recommending the City Council adopt RESOLUTION NO. 25-093 APPROVING A SECOND AMENDMENT TO ON-CALL PROFESSIONAL SERVICES AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND HYDROCOMPLIANCE, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE. Staff requests Council approve the second amendment to the contract increasing the annual authorization for the current term from $75,000 to $150,000. Additionally, staff requests authorization to increase the annual authorization for the final renewal from $75,000 to $150,000. Funding for services shall be provided through capital improvement projects as approved during the fiscal year budgets, an approved professional services budget, or developer reimbursements. Project specific quotes will be obtained prior to the start of any work. The base year contract was not to exceed $75,000. With the increase in authorization for the first optional year extension and the final optional year extension of $150,000 per year, the updated total contract will be not to exceed $375,000.

CC #: 3835

File #: 0704-01

CONTACT: Heather Buck 916-774-5254 hcbuck@roseville.ca.us

7.16. Pleasant Grove Wastewater Treatment Plant Influent Pump Station Rehabilitation Project – Notice of Completion

Memo from Preventative Maintenance Supervisor Jeremy Snyder and Environmental Utilities Director Sean Bigley recommending the City Council adopt RESOLUTION NO. 25-094 ACCEPTING THE PUBLIC WORK KNOWN AS THE PLEASANT GROVE WASTEWATER TREATMENT PLANT INFLUENT PUMP STATION REHABILITATION PROJECT, APPROVING THE "NOTICE OF COMPLETION", AND AUTHORIZING THE ENVIRONMENTAL UTILITIES DIRECTOR TO EXECUTE SAID NOTICE ON BEHALF OF THE CITY OF ROSEVILLE. Staff requests Council approval of the Notice of Completion for the Pleasant Grove Wastewater Treatment Plant Influent Pump Station Rehabilitation Project. The total cost of the construction contract with Syblon Reid is $4,204,030.17. Funding for this agreement is provided by the Wastewater Rehabilitation Fund.

CC #: 3837

File #: 0800-02

CONTACT: Jeremy Snyder 916-413-9236 jsnyder@roseville.ca.us

7.17. Assembly Bill 2227 Energy Efficiency Targets

Memo from Associate Electric Analyst Rachel Marmorstein and Electric Utility Director Dan Beans recommending the City Council adopt RESOLUTION NO. 25-101 APPROVING ROSEVILLE ELECTRIC UTILITY'S ENERGY EFFICIENCY TARGETS. Staff requests Council approve the Roseville Electric Utility's energy efficiency targets for the next 10-year period as required by California Assembly Bill 2227. There is no financial impact from the approval of the 10-year energy efficiency targets.

CC #: 3845

File #: 0800-03

CONTACT: Rachel Marmorstein 916-774-5613 rmarmorstein@roseville.ca.us

7.18. 201 Pacific Street, Second Floor - Lease Agreement

Memo from Economic Development Project Manager Robert Cline and Economic Development Director Melissa Anguiano recommending the City Council adopt RESOLUTION NO. 25-100 APPROVING A LEASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND TEN TWENTY-THREE LLC DBA TEN TWENTY 3D, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE. Staff requests Council approve a three (3) year lease agreement with Ten Twenty 3D for the second floor of 201 Pacific Street. The Roseville Train Station, owned by the City, is located at 201 Pacific Street and within the Downtown Roseville Specific Plan. Ten Twenty 3D has occupied the second floor of the train station since the lease assignment, and approval of the proposed lease agreement will formalize the agreement and the terms of understanding set forth in the lease assignment. Execution of the lease agreement would result in a positive fiscal impact of $7,224 in rent revenue for the General Fund in the first year, $7,704 in year two, and $8,196 in year three. In addition to annual rent, the tenant will pay

property tax on the leased space.

CC #: 3844

File #: 1006-01

CONTACT: Robert Cline 916-746-1172 racline@roseville.ca.us

7.19. Pleasant Grove Boulevard Widening Project – Pacific Gas & Electric Agreement

Memo from Associate Engineer Nicolas Bumb and Public Works Director Jason Shykowski recommending the City Council adopt RESOLUTION NO. 25-105 APPROVING A PACIFIC GAS & ELECTRIC AGREEMENT TO PERFORM TARIFF SCHEDULE RELATED WORK, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT AND ALL RELATED FORMS ON BEHALF OF THE CITY OF ROSVILLE. Staff requests Council approval of an agreement with Pacific Gas & Electric to relocate a gas main in conflict with a City project for a total cost of $84,440.76. The scope of this relocation is the lowering of approximately 100 linear feet of gas line in conflict with the structural section of new roadway on Pleasant Grove Boulevard. The project is funded with Traffic Mitigation Fee funds. No General Fund resources will be used for this project.

CC #: 3849

File #: 0800-04

CONTACT: Nicolas Bumb 916-746-1313 nfbumb@roseville.ca.us

Ordinances (for introduction and adoption - appropriation/urgency measures)

7.20. International Brotherhood of Electrical Workers, Local 1245 - 2025 Labor Market Wage Adjustments and Staffing Update

Memo from Human Resources Manager Macy Dippert and Human Resources Director Stacey Peterson recommending the City Council adopt ORDINANCE NO. 6932 AMENDING ORDINANCE 6872, THE SALARY ORDINANCE FOR PERSONNEL REPRESENTED BY THE INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, LOCAL 1245, AS AMENDED BY APPENDIX “J” TO BE EFFECTIVE MAY 3, 2025, AS AN URGENCY MEASURE; and adopt RESOLUTION NO. 25-130 APPROVING A SIDE LETTER TO THE MEMORANDUM OF UNDERSTANDING FOR EMPLOYEES REPRESENTED BY THE INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, LOCAL 1245, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE. Staff recommend Council adopt an ordinance to approve the updated International Brotherhood of Electrical Workers, Local 1245 (IBEW) A & B (Appendix J) salary schedules to reflect labor market adjustments effective May 3, 2025, and adopt a resolution authorizing the City Manager to execute the side letter agreement with IBEW Local 1245 pertaining to the Labor Market Adjustments, and approve the attached citywide allocation schedule, effective May 3, 2025. The City engaged a consulting firm to conduct a compensation study of benchmark International Brotherhood of Electrical Workers, Local 1245 (IBEW) classes in the Electric, Environmental Utilities and Public Works

departments in accordance with the provisions in the current IBEW Memorandum of Understanding, to determine labor market driven adjustments to remain competitive in the labor market. The average percentage wage increases for the IBEW bargaining group is 4.55%. Further, the Public Works Department's Fleet Services Division has requested an additional Fleet Services Supervisor position be added to the allocation schedule. The estimated total cost to the Electric, Fleet Services, Water Operations and Wastewater Operations enterprise funds for the recommended labor market adjustments and staff change is $248,852 for the remainder of FY2024-25 and $1,548,062 annually ongoing.

CC #: 3854

File #: 0600-01

CONTACT: Macy Dippert 916-774-5215 mdippert@roseville.ca.us

7.21. West Zone Reclaimed Water Tanks Rehabilitation Project – Budget Adjustment

Memo from Senior Engineer Inderpreet Chaggar and Environmental Utilities Director Sean Bigley recommending the City Council adopt ORDINANCE NO. 6931 AUTHORIZING CERTAIN AMENDMENTS TO THE FISCAL YEAR 2024-25 BUDGET AND DECLARING THIS ORDINANCE TO BE IMMEDIATELY EFFECTIVE AS AN APPROPRIATION MEASURE. Staff requests Council approval of a budget adjustment to increase the West Zone Reclaimed Water Tanks Rehabilitation Project budget by $75,609 from available resources in the Wastewater Rehabilitation Fund.

CC #: 3852

File #: 0800-02 & 0201-01

CONTACT: Inderpreet Chaggar 916-774-5553 ikchaggar@roseville.ca.us

7.22. Community Facilities Districts and Lighting and Landscape District - Budget Adjustment

Memo from Parks & Open Space Superintendent Eric Dexter and Parks, Recreation & Libraries Director Jill Geller recommending the City Council adopt ORDINANCE NO. 6928 AUTHORIZING CERTAIN AMENDMENTS TO THE FISCAL YEAR 2024-25 BUDGET AND DECLARING THIS ORDINANCE TO BE IMMEDIATELY EFFECTIVE AS AN APPROPRIATION MEASURE. Staff requests Council approval of a budget adjustment in three special district areas totaling $47,000. The recommended budget adjustment will provide resources to increase the repairs and maintenance budgets to repair soundwall damage due to accidents in the Infill Lighting and Landscape District (LLD), Zone C, and the Creekview Community Facilities District (CFD) No. 2 (Public Services), and to increase the budget for a landscape project in Longmeadow CFD No. 2 (Services District). Funding is available in the Infill LLD, Zone C; Creekview CFD No. 2 (Public Services); and Longmeadow CFD No. 2 (Services District). There is no impact on the General Fund.

CC #: 3829

File #: 0210 & 0201-01

CONTACT: Eric Dexter 916-746-1769 edexter@roseville.ca.us

7.23. Vehicle Purchase – Budget Adjustment

Memo from Parks, Recreation & Libraries Superintendent Rob Nakamura and Parks, Recreation & Libraries Director Jill Geller recommending the City Council adopt ORDINANCE NO. 6930 AUTHORIZING CERTAIN AMENDMENTS TO THE FISCAL YEAR 2024-25 BUDGET AND DECLARING THIS ORDINANCE TO BE IMMEDIATELY EFFECTIVE AS AN APPROPRIATION MEASURE. Staff requests Council approve a budget adjustment in the amount of $158,000 for the purchase of two (2) motorized utility carts, one (1) trailer-mounted pressure washer, one (1) electric golf cart and one (1) electric utility cart to support the maintenance and the operations of the soccer complex. The vehicles will support the maintenance and operations of the soccer complex which is scheduled to open in late 2025. Funding is available from the Soccer Complex project budget using the Citywide Park - West Roseville Specific Plan Fund.

CC #: 3850

File #: 0704-01 & 0201-01

CONTACT: Rob Nakamura 916-774-5135 rnakamura@roseville.ca.us

Ceremonial Documents

7.24. Proclamation - Municipal Clerk Week May 4-10, 2025

Proclaim the week of May 4-10, 2025, as Professional Municipal Clerks Week, and further extend appreciation to our Professional Municipal Clerk, Carmen Avalos and to all Professional Municipal Clerks for the vital services they perform and their exemplary dedication to the communities they represent.

CC #: 3856

File #: 0102-06

CONTACT: Blair Hutchison 916-774-5266 bmhutchison@roseville.ca.us

7.25. Proclamation - Public Service Recognition Week May 4-10, 2025

Proclaim May 4-10, 2025, as Public Service Recognition Week and encourage all citizens to recognize the accomplishments and contributions of government employees at all levels.

CC #: 3857

File #:0102-06

CONTACT: Blair Hutchison 916-774-5266 bmhutchison@roseville.ca.us

END OF CONSENT CALENDAR

8. SPECIAL REQUESTS/REPORTS/PRESENTATION

8.1. Local Sales Tax Citizens' Oversight Committee - Report to the City Council

Memo from Finance Director Scott Pettingell recommending the City Council receive an informational report and presentation from the Local Sales Tax Citizens' Oversight Committee on the FY2023-24 revenue and expenditures of the Measure B sales and use tax.

CC #: 3833

File #: 0103-22

CONTACT: Scott Pettingell 916-746-1306 spettingell@roseville.ca.us

8.2. Roseville Electric Department - Budget Update

Memo from Electric Utility Director Dan Beans and Assistant Electric Utility Director Joanna Cucchi with an update on Roseville Electric Utility's budget.

CC #: 3838

File #: 0800-03 & 0201-01

CONTACT: Joanna Cucchi 916-746 1609 jcucchi@roseville.ca.us

8.3. Environmental Utilities Department - Budget Update

Memo from Assistant Environmental Utilities Director Devin Whittington and Environmental Utilities Director Sean Bigley recommending the City Council receive a budget update from the Environmental Utilities Department.

CC #: 3847

File #: 0800-02

CONTACT: Devin Whittington 916-774-5543 dwhittington@roseville.ca.us

9. PUBLIC HEARING

NOTICE TO THE PUBLIC

City Council, when considering the matter scheduled for hearing, will take the following actions:

1. Open the Public Hearing
2. Presentation by Staff
3. Presentation by applicant or Appellant
4. Accept Public Testimony
5. Appellant or Applicant Rebuttal Period
6. Close the Public Hearing
7. City Council Comments and Questions
8. City Council Action

In the future, if you wish to challenge in court any of the matters on this agenda for which a public hearing is to be conducted, you may be limited to raising only those issues, which you, or someone else raised orally at the Public Hearing or in written correspondence received by the City on or before the hearing.

Public Hearings listed for continuance will be continued as noted and posting of this agenda serves as notice of continuation.

9.1. Adoption of a Schedule of Maintenance Costs and Charges for Community Facilities Districts

Memo from Management Analyst Jeannine Thrash and Finance Director Scott Pettingell recommending the City Council adopt RESOLUTION NO. 25-087 ADOPTING A SCHEDULE OF MAINTENANCE COSTS AND

CHARGES FOR COMMUNITY FACILITIES DISTRICTS. Staff requests Council approve and adopt the Schedule of Maintenance Costs and Charges for Maintenance Community Facilities Districts effective July 1, 2025, through June 30, 2026. The Schedule of Maintenance Costs and Charges for Maintenance Community Facilities Districts (CFDs) identifies costs for services provided by the City at the request of, or on behalf of, individual districts, as opposed to the public at large, and is reviewed annually. The Schedule of Maintenance Costs and Charges for Maintenance CFDs is intended to target full cost recovery in a fair and reasonable manner for all future maintenance CFDs, and annexations into existing maintenance CFDs, once implemented. The proposed schedule of costs and charges, effective July 1, 2025, through June 30, 2026, is based on the results of a study completed in FY2024-25. The fees currently in place are sufficient to recover approximately 90-98% of the City's service district maintenance costs. The adjusted fees are intended to recover 100% of the maintenance costs. Fiscal impact will be dependent on the number of future districts formed and the array of maintenance activities required for each district. For illustrative purposes, for every ten (10) acres of parks/streetscape to be maintained for a new service district, adjusted fees would recover an additional $1,369 per acre, per year.

CC #: 3828

File #: 0215

CONTACT: Jeannine Thrash 916-774-5473 jthrash@roseville.ca.us

9.2. Compliance with Assembly Bill 2561/Government Code Section 3502.3 regarding Vacancies and Recruitment and Retention Efforts

Memo from Human Resources Manager Macy Dippert and Human Resources Director Stacey Peterson recommending City Council receive a presentation on AB 2561 which requires public agencies to hold at least one (1) public hearing per fiscal year to discuss vacancies, recruitment, and retention efforts. The presentation discusses the City's legal obligations under the new law, which took effect January 1, 2025. This presentation is for informational purposes only regarding the status of the City's vacancies and recruitment and retention efforts.

CC #: 3831

File #: 0600-01

CONTACT: Macy Dippert 916-774-5215 mdippert@roseville.ca.us

9.3. 2025 Weed Abatement - Public Hearing

Memo from Fire Division Chief Michael Bradley and Fire Chief Ryan Harrigan recommending the City Council adopt RESOLUTION NO. 25-086 ORDERING THE DESTRUCTION OR REMOVAL OF ALL WEEDS, DIRT, RUBBISH, AND/OR RANK GROWTHS WITHIN THE CITY OF ROSEVILLE AND OVERRULING ANY AND ALL OBJECTIONS THERETO. Staff requests Council approve the second and final step necessary to initiate the 2025 Weed Abatement Program. Owners of private parcels that are abated by the City are responsible for the costs associated with providing abatement services. A bill is sent to each property owner detailing the abatement costs, as well as an administrative fee. If the property owner fails to pay the bill, the City places a

lien on the subject property and the monies owed are reimbursed through the property tax collection process.

CC #: 3827

File #: 0324-01

CONTACT: Michael Bradley 916-774-5806 mbradley@roseville.ca.us

10. COUNCIL REPORTS / PUBLIC COMMENTS

11. ADJOURNMENT

COUNCIL COMMUNICATION

CC #: 3855
File #: 0102-06

Title: Proclamation - National Donate Life Month April 2025
Contact: Blair Hutchison 916-774-5266 bmhutchison@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 5.2.

RECOMMENDATION TO COUNCIL

Proclaim April 2025 as National Donate Life Month and encourage all residents to register their decision to be an organ, eye and tissue donor in the National Donate Life Registry at DonateLifeCalifornia.org or at your local California DMV.

BACKGROUND

Not applicable.

FISCAL IMPACT

Not applicable.

ENVIRONMENTAL REVIEW

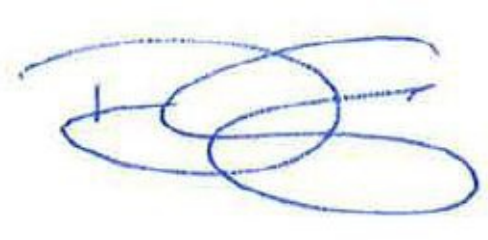
The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Ceremonial documents meet the above criteria and are not subject to CEQA. No additional environmental review is required.

CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Respectfully Submitted,

Blair Hutchison, City Clerk Technician

Carmen Avalos, City Clerk



Dominick Casey, City Manager

ATTACHMENTS:

Description

National Donate Life Month April 2025

Proclamation

NATIONAL DONATE LIFE MONTH
APRIL 2025

WHEREAS, more than 100,000 Americans and nearly 20,000 Californians are currently on the national transplant waiting list; and

WHEREAS, another person is added to the waiting list every eight minutes, and, on average, 17 people die each day while waiting for a lifesaving organ transplant; and

WHEREAS, Sierra Donor Services serves at the center of a dynamic, interconnected system that involves donor families, local hospitals, and transplant centers across Northern California, including the greater Sacramento region, in the delicate and time-sensitive mission of saving lives through transplant; and

WHEREAS, in 2024, Sierra Donor Services had its second-highest record year after almost four decades, making 912 organ transplants possible thanks to the selfless generosity of 170 Northern California organ donor heroes. A total of 426 tissue donors, including musculoskeletal and heart valve donors, contributed to saving and improving lives. Sierra Eye Bank provided 384 corneas from these donor heroes, restoring sight to many people.

WHEREAS, organ transplants have directly impacted the lives of Roseville residents, as several transplant recipients live in Roseville and continue to spread the importance of registering to become an organ, eye, and tissue donor.

NOW, THEREFORE, I, KRISTA BERNASCONI, MAYOR OF THE CITY OF ROSEVILLE, CALIFORNIA, do here by proclaim **April 2025** as **NATIONAL DONATE LIFE MONTH** and encourage all residents to register their decision to be an organ, eye and tissue donor in the National Donate Life Registry at DonateLifeCalifornia.org or at your local California DMV.

SIGNED AND APPROVED this 16th day of April 2025.

CITY OF ROSEVILLE
INCORPORATED APRIL 10, 1909

KRISTA BERNASCONI, MAYOR

COUNCIL COMMUNICATION

CC #: 3839
File #: 0800-03

Title:	Roseville Electric Utility - Generation Maintenance Support Services - Contract Purchase Agreement
Contact:	Nathan Ribordy 916-746-1673 nribordy@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.1.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution authorizing the City Manager to execute a contract purchase agreement (3004426) with Performance Mechanical, Inc., to provide maintenance support services to Roseville Electric Utility's generation facilities. Staff also requests authorization to exercise the four (4) optional one-year extensions to the contract without further City Council approval, provided that the applicable budget is approved by the City Council, or until staff determines that continuing with this vendor is not in the best interest of the City.

BACKGROUND

Roseville Electric Utility owns and operates approximately 260 MW of generating facilities which includes the Roseville Energy Park, Roseville Peakers, and Roseville Power Plant #2. In addition to our own staff expertise to maintain these facilities, the electric utility often relies on the support of contractors to provide supplemental and specific maintenance support. This can include a comprehensive range of services, including but not limited to unique maintenance, repairs, specialized welding, testing of power plant equipment and systems, as well as additional engineering support to meet the overall maintenance needs of the generating facilities.

In order to continue the important maintenance support services needed for our generating facilities, Roseville Electric Utility solicited proposals through a Request for Proposals (RFP) 07-108 for generation maintenance support services. Two (2) vendors responded to the RFP. After determining the vendors were responsive and responsible, the evaluation team reviewed and scored the proposals, finding Performance Mechanical, Inc., to be the most suitable vendor to provide the requested scope of services based on their safety, quality, demonstrated experience, completeness of proposal, and price.

FISCAL IMPACT

This contract purchase agreement is for work on an as-needed basis for a period of one year, with four (4) optional one-year extensions. The initial contract cost will not exceed $2,000,000, with $2,000,000 per year for the optional renewal years. The total not-to-exceed costs for the full term

is $10,000,000. Funding is included in the Electric Department's FY2024-25 budget in the Electric Fund. Future year funding is contingent on City Council's approval of the respective budget each year.

ENVIRONMENTAL REVIEW

The proposed project involves the repair, maintenance, and minor alteration of existing facilities. This activity is categorically exempt from CEQA as a Class 1 Exemption (State CEQA Guidelines Section 15301). The Exemption has been prepared and no further CEQA action is required.

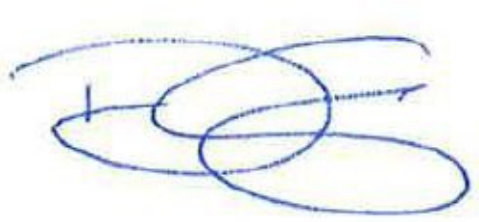
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal E - Deliver exceptional city services
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Nathan Ribordy, Power Generation Superintendent

Dan Beans, Electric Utility Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-095

Contract Purchase Agreement 3004426

Class 1 Exemption

RESOLUTION NO. 25-095

APPROVING A CONTRACT PURCHASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND PERFORMANCE MECHANICAL, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a contract purchase agreement (3004426) to provide maintenance support services to Roseville Electric Utility's generation facilities, by and between the City of Roseville and Performance Mechanical, Inc., has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said agreement is hereby approved and the City Manager is authorized to execute it on behalf of the City of Roseville.

BE IT FURTHER RESOLVED, that the City Manager or his or her designee is authorized to execute four (4) additional one (1) year renewals without further City Council approval, provided that the applicable budget is approved by the City Council, or until staff determines that continuing with this consultant is not in the best interest of the City.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 20__, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

Contract Purchase Agreement 3004426

Supplier Details:

Company	Performance Mechanical Inc
Contact	Rick Carpenter
Address	6001 Midway St
	Sacramento, CA 95828

Submit your response to:

Company	City of Roseville
Contact	Tiffany Valdez
Address	Purchasing Division
	311 Vernon St
	Roseville, CA 95678
Phone	(916) 746-1109
Fax	(916) 746-1115
E-mail	TValdez@roseville.ca.us

This Contract Purchase Agreement is sent for your review and acceptance. Notify the Buyer via email of any needed changes to the company name, address, and contact information. The Buyer will update the agreement prior to you signing the document.

Return signed copies of the agreement to the Buyer noted on the agreement. Alterations or modifications to the agreement are not allowed. Upon receipt of all necessary documents, the City will sign the agreement and return a fully executed copy to you. Receipt of the signed copy will be your notice to proceed with the work in accordance with the terms and conditions of the agreement. Work must not begin until the contract has been fully executed.

The following guidelines must be followed for the signature block on the agreement:

Sole proprietorship - **By owner**

Partnership - **Any general partner**

Corporation - **Two options:**
(1) A signature from the President and the corporate seal; **OR**
(2) One signature from the Chairman of the Board, President, or any Vice President **AND** one signature from the Secretary, any Assistant Secretary, Chief Financial Officer, or any Treasurer or Assistant Treasurer of the corporation

*General Manager, Office Manager and/or Sales Manager are **not** corporate officer titles. The agreement will be rejected if not signed in accordance with these guidelines.

Insurance requirements:
The City's insurance requirements are referenced on Attachment A of the agreement. By signing the agreement, you are confirming that your company has the minimum insurance limits required.

CITY OF ROSEVILLE CALIFORNIA

Contract Purchase Agreement 3004426

Agreement	**3004426**
Agreement Date	**24-FEB-2025**
Revision	**0**
Agreement Amount	**2,000,000.00 USD**

Invoice To	**City of Roseville** **Accounts Payable** **311 Vernon St** **ROSEVILLE CA 95678**	Supplier	**Performance Mechanical Inc** 6001 Midway St Sacramento, CA 95828
Phone:	(916) 774-5488	**Phone:**	()
Fax:	(916) 784-3796	**Fax:**	()
Email:	accountspayable@roseville.ca.us	**Email:**	rmcarpenter@perfmech.com

Description of Labor, equipment and/or materials

THE SERVICES CALLED FOR UNDER CITY OF ROSEVILLE REQUEST FOR PROPOSAL #07-108 AND CONTRACTOR'S PROPOSAL THERETO TITLED ROSEVILLE ELECTRIC UTILITY – GENERATION MAINTENANCE SUPPORT PMI PROPOSAL NO.: 24-1241 DATED 1/10/25 (HEREINAFTER "PROPOSAL"). THE TERMS AND SCOPE OF WORK OF CITY OF ROSEVILLE REQUEST FOR PROPOSAL #07-108 AND CONTRACTOR'S PROPOSAL ARE HEREIN MADE PART OF THIS CONTRACT PURCHASE AGREEMENT AND FULLY INCORPORATED BY REFERENCE.

PLEASE CONTACT NATHAN RIBORDY IN THE ELECTRIC DEPARTMENT AT (916) 746-1673 OR NRIBORDY@ROSEVILLE.CA.US FOR QUESTIONS REGARDING THIS AGREEMENT.

*The total agreement amount is an approximation only. The City does not guarantee whatsoever the actual value of this contract.

Customer #	Supplier #	Payment Terms	Freight Terms	FOB	Shipping Method
	11585	**Net 30**	**Freight on Board at the destination**	**Destination**	**Best Method**

Start Date	End Date	Confirm To
03-Apr-2025	**02-Apr-2026**	**Tiffany Valdez** Phone **1-916-746-1109**

Attention: Total Cost not to exceed the agreement amount without prior approval of the Purchasing office.

Contract Terms and Conditions

1. To the fullest extent allowed by law, Contractor shall defend, indemnify, and save and hold harmless City, its officers, agents, employees and volunteers from any claims, suits or actions of every name, kind and description brought forth, or on account of, injuries to or death of any person (including but not limited to workers and the public), or damage to property, to the extent caused by Contractor's willful misconduct or negligent act or omission while engaged in the performance of obligations or exercise of rights created by this Agreement, Contractor's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Agreement for the full period of time allowed by law. The defense and indemnity obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Agreement.

Notwithstanding anything herein or in any related document, in no event shall: (a) either party be liable to the other for any indirect, incidental, special, punitive, exemplary, or consequential damages or lost profits, income, gross revenue, or net revenue regardless of each party's alleged fault or allocation of fault between each other; and (b) contractor's cumulative liability and amount of damages under this agreement, inclusive of the proceeds of any applicable insurance including but not limited to either party's status as an additional insured, exceed ten million U.S. dollars ($10.000.000.00).

2. Contractor is an independent contractor, and shall not be considered an officer, agent or employee of the City.

3. Without the written consent of the City, this Agreement is not assignable by Contractor either in whole or in part.

4. Time is of the essence of this Agreement.

5. At any time during the term of this Agreement, the City has the right to terminate this Agreement, provided Contractor is given thirty (30) days written notice. City's termination shall be without further liability to City; however, Contractor shall be entitled to all costs reasonably incurred prior to the date of termination. Contractor acknowledges that City may terminate this Agreement should funds not be appropriated by its governing body to continue services under this Agreement.

6. This Agreement may only be amended or modified in a writing signed by both parties. It is integrated and contains the complete understanding of the parties.

7. All equipment, supplies and services sold to the City of Roseville shall conform to the general safety orders of the State of California.

8. Unless notified to the contrary, in writing, the City assumes that the Contractor has accepted the work in accordance with the plans and specifications (if any) and agrees to do the work in compliance with this Agreement.

9. All fair employment practices must be adhered to. In addition, if the project referenced on this service agreement is a Public Works project, all prevailing wage laws must be complied with. For prevailing wage contracts over $25,000, copies of certified payroll must be submitted with invoices. Prevailing wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm. In compliance with Labor Code Section 1773.2, as may be amended from time to time, Contractor shall cause a copy of this website to be posted at each jobsite, as applicable.

10. Contractor agrees to the below insurance requirements:

a. Unless otherwise specified, the Contractor shall maintain the policies of insurance outlined in Attachment A, incorporated herein by this reference, in force and effect during the term of this Agreement. The City of Roseville retains sole discretion in determining the types and proper levels of insurance coverage.

b. Form. Contractor shall submit a certificate evidencing such coverage for the period covered by this Agreement in a form satisfactory to Risk Management and the City Attorney, prior to undertaking any work hereunder. Any insurance written on a claims made basis is subject to the approval of Risk Management and the City Attorney.

c. Additional Insureds. Contractor shall also provide a separate endorsement or section of the policy showing City, its officers, agents, employees, and volunteers as additional insureds for each type of coverage, except for Workers' Compensation/Employer's Liability. Such insurance shall specifically cover the contractual liability of Contractor. The additional insured coverage under the Contractor's policy shall be primary and noncontributory, as evidenced by a separate endorsement or section of the policy, and shall not seek contribution from City's insurance or self-insurance. In addition, the additional insured coverage shall be at least as broad as the Insurance Services Office (ISO) CG 20 01 Endorsement. Furthermore, the requirements for coverage and limits shall be:

(1) the coverage and limits specified in this Agreement; or

d. Cancellation/Modification. Contractor shall provide thirty (30) days written notice to City prior to cancellation or modification of any insurance required by this Agreement.

e. Umbrella/Excess Insurance. The limits of insurance required in this Agreement may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of City (if agreed to in a written contract) before City's own insurance shall be called upon to protect it as a named insured.

f. Subcontractors. Contractor agrees to include in its contracts with all subcontractors the same requirements and provisions of this Agreement, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, Contractor shall require its subcontractors to agree to be bound to Contractor and City in the same manner and to the same extent as Contractor is bound to City under this Agreement. Additionally, Contractor shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of City's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request.

g. Self-Insured Retentions. All self-insured retentions (SIR) must be disclosed to Risk Management for approval and shall not reduce the limits of liability.

h. Waiver of Subrogation. Contractor hereby agrees to waive subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss under a Workers Compensation, Commercial General Liability or Automobile Liability policy. All Workers Compensation, Commercial General Liability and Automobile Liability policies shall be endorsed with a waiver of subrogation in favor of City, its officers, agents, employees and volunteers for all work performed by Contractor, its employees, agents and subcontractors.

i. Liability/Remedies. Insurance coverage in the amounts set forth herein shall not be construed to relieve Contractor of liability in excess of such coverage, nor shall it preclude City from taking such other actions as are available to it under any other provisions of this Agreement or law.

11. Contractor shall comply with all federal, state, and local laws and ordinances, including but not limited to the City's storm water regulations, as may be applicable to the performance of services under this Agreement. Failure to comply with local ordinances may result in monetary fines and cancellation of this Agreement. Refer to www.roseville.ca.us/stormwater for links to more information on the City's storm water regulations.

12. In the event that the terms of any attachment or exhibit conflict with any terms of this Agreement, the terms of this Agreement shall control.

13. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original hereof.

14. If either party commences any legal action against the other party arising out of this Agreement or the performance thereof, the prevailing party in such action shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorneys' fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

15. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

16. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

17. For purposes of this Agreement, the terms "Contractor," "Consultant," and "Supplier" are used interchangeably.

18. If the project referenced on this agreement is a Public Works project, then the following shall apply: No contractor or subcontractor may work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. During the performance of this agreement, Contractor and its subcontractors shall have a continuing legal obligation to maintain current registration with the Department of Industrial Relations. Contractor is hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

19. Vehicles with a gross vehicle weight rating (GVWR) greater than 8,500 lbs. and light-duty package delivery vehicles operated in California may be subject to the California Air Resources Board (CARB) Advanced Clean Fleets regulations. Such vehicles may therefore be subject to requirements to reduce emissions and air pollutants. For more information, visit the CARB Advanced Clean Fleet webpage at https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets.

20. Contractor/consultant's duties and services under this agreement shall not include preparing or assisting the public entity with any portion of the public entity's preparation of a request for proposals, request for qualifications, or any other solicitation regarding a

subsequent or additional contract with the public entity. The public entity entering this agreement shall at all times retain responsibility for public contracting, including with respect to any subsequent phase of this project. Contractor/consultant's participation in the planning, discussions, or drawing of project plans or specifications, if any, shall be limited to conceptual, preliminary, or initial plans or specifications. Contractor/consultant shall cooperate with the public entity to ensure that all bidders for a subsequent contract on any subsequent phase of this project have access to the same information, including all conceptual, preliminary, or initial plans or specifications prepared by contractor pursuant to this agreement.

21. If the project referenced on this agreement is a Public Works project, then the following shall apply: Contractor must submit all claims as defined in and in accordance with the claim resolution process set forth in Section 9204 of the Public Contract Code. Each such claim must be sent to the City by registered mail or certified mail with return receipt requested and must contain reasonable documentation to support the claim. All claims must be received prior to acceptance of the work.

22. Contractor certifies that Contractor, its employees, directors, officers, agents, subcontractors, vendors, and volunteers are not presently debarred, excluded, suspended, declared ineligible, voluntarily excluded, or proposed for debarment, exclusion, suspension, or ineligibility by any federal, state, or local department or agency.

23. The Levine Act (Govt. Code, Section 84308) requires a Party (and its agent(s), if any) to a Proceeding before the City of Roseville that involves any action or consideration related to their contract, license, permit, or other entitlement for use, to disclose any campaign contributions made to City elected or appointed officers totaling more than $250 within the twelve (12) months prior to the City decision and while a proceeding is pending, and includes certain prohibitions on contribution activity thereafter. If applicable campaign contributions have been made by Contractor and/or its agent(s), Contractor is responsible for compliance, including for its disclosure obligations, if any, as further described at: https://www.roseville.ca.us/government/departments/city_clerk/transparency/levine_act.

24. This Agreement may be amended via change order, but only if such change order is made in writing, approved by the City, and signed by both parties.

25. CONTRACTOR agrees to defend and indemnify CITY if, despite the parties intent and practice, any venue, agency, or court with competent jurisdiction determines that CONTRACTOR and/or any of its agents, officers, employees, volunteers, independent contractors, or subcontractors, are characterized as employee(s) of CITY.

    CONTRACTOR and CITY agree that: (a) CONTRACTOR is free from the control and direction of CITY in connection with the performance of the work; (b) CONTRACTOR is providing services directly to CITY; (c) CONTRACTOR has and will maintain at all relevant times a business license; (d) CONTRACTOR maintains a business location that is separate from CITY; (e) CONTRACTOR is customarily engaged in an independently established business of the same nature as that involved in the work performed hereunder; (f) CONTRACTOR actually contracts with other businesses to provide the same or similar services and maintains a clientele without restrictions from CITY; (g) CONTRACTOR advertises and holds itself out to the public as available to provide the same or similar services; (h) CONTRACTOR provides its own tools, vehicles, and equipment to perform the services; (i) CONTRACTOR has negotiated its own rates; (j) CONTRACTOR set its own hours and location of work in accomplishing CITY's on-call needs; and (k) CONTRACTOR has the right to control the manner and means of accomplishing the result desired and exercises its own expert independent judgement.

The supplier named hereon by the acceptance of this order agrees to the provisions of this document titled "Contract Purchase Agreement" and all accompanying terms, conditions, and attachments.

Roseville Business License No. 00812121

Contractor License No. 475516

DIR Registration No. 1000004637

Check mark the applicable company type below:

✓ C **Corporation**

_____ **Limited Liability Company**

_____ **Partnership**

_____ **Sole Proprietor**

City Reserves the right to withhold any payments to contractor in the event of noncompliance with insurance requirements or if required by law.
General T&C
REV 3/21/24 JS
**Negotiated Terms and Conditions between City of Roseville and Performance Mechanical Inc. revised 2/24/25*

ATTACHMENT A
HUMAN RESOURCES/RISK MANAGEMENT DIVISION
INSURANCE REQUIREMENTS
AGREEMENT OVER FORMAL BID LIMIT OR INVOLVING HIGH RISK ACTIVITIES

General - Required Coverage/Documentation

- General Liability: $1 Million per occurrence /$2 Million aggregate
- Automobile Liability: $1 Million combined single limit
- Workers' Compensation: Statutory *Must provide a Waiver of subrogation
- Additional Insured Endorsement (AIE) - General Liability policy: CG 20 10 04 13 and CG 20 37 04 13 or an equivalent, blanket endorsement or section of the policy. Endorsement shall cover the City of Roseville, its officers, agents, employees and volunteers as additional insured.
- Policies must be primary and non-contributory
- A 30 day notice of cancellation must be provided
- List certificate holder as: The City of Roseville - Insurance Compliance, PO Box 100085-R1, Duluth, GA 30096

Additional Liability/Insurance Requirements if required by Agreement (and marked below):

Construction:__X__
General Liability:
$2 Million/occurrence
$4 Million aggregate

Design Professional:____
General Liability:
$2 Million/occurrence
$4 Million aggregate
Professional Liability:
$2 Million/occurrence

Professional Consultant:____
Professional Liability:
$1 Million/occurrence

IT Services:____
Professional Liability:
$1 Million/occurrence
No auto required
Cyber Liability:
$1 Million/occurrence

Hazardous Materials:____
Pollution Liability:
$1 Million/occurrence

Special Events/Caterers-Vendors:____
No auto required
No workers' comp required

Professional Counseling/ Psychological:____
Professional Liability:
$1 Million/occurrence
No auto required

Pyrotechnics:____
General Liability:
$5 Million/occurrence
$10 Million aggregate
Auto - $2 Million/occurrence

Chemical/Environmental:____
General Liability:
$3 Million/occurrence
$6 Million aggregate
Pollution – $2 Million/Occurrence
Auto - $2 Million/Occurrence

Insurance Submission Process

The City of Roseville Human Resources/Risk Management Department uses a service called EBIX to manage our insurance certificate tracking.

How It Works

- The vendor's contact information is entered into EBIX. EBIX will contact the vendor to request proof of insurance.
- The Vendor can forward the request to their Insurance Agent(s) if necessary.
- Vendor/Insurance Agent submits insurance to EBIX by email to roseville@ebix.com or by fax to (770) 325-5727. After faxing or emailing the certificate, please DO NOT send the certificate by mail to EBIX. Please do not mail, email or fax any certificates to the City of Roseville.
- Once submitted, EBIX reviews the insurance documentation. If there are deficiencies, EBIX will send a follow up letter or email requesting additional information.

Questions Regarding Insurance Submission: Contact EBIX at (951) 652-4239
Questions Regarding Insurance Requirements Contact Risk Management at (916) 774-5202

Asbestos-Containing Materials in City-Owned Buildings

California Health and Safety Code Section 25915 requires that all City of Roseville employees, contractors and lessees be notified annually of the presence of asbestos in City-owned buildings constructed prior to 1979. Please post this notice in an area(s) accessible to all employees, contractors and lessees. Contact Facility Maintenance & Operations at (916) 774-5740 for more information about Asbestos Containing Materials (ACMs) in specific City-owned buildings. For more information about asbestos refer to the OSHA website.

The City of Roseville is committed to maintaining a safe and healthy work environment. The City's Facility Maintenance & Operations staff conducts ongoing inspections to identify and safely manage previously installed asbestos-containing products. Renovation of City-owned buildings **MUST** be reviewed in advance by Facility Maintenance & Operations to ensure the City is in compliance with building codes, Americans with Disabilities Act and that no ACMs are disturbed without proper safeguards. Work that requires removal or repair of ACMs is restricted to trained and qualified persons only. **Facility Maintenance & Operations will need to approve the qualified contractors**.

Use the following measures to protect you and others from exposure to airborne asbestos:

- Presume all building materials contain asbestos until determined otherwise by Facility Maintenance & Operations.
- Do not install walls, closets, cabinets, ceilings.
- Do not remove, cut, drill, sand, grind or otherwise disturb any material in the buildings, including carpet and tile.
- Do not paint (this includes any walls, ceilings, floors and electrostatic painting of office furniture).
- Do not remove any items nailed or screwed to the walls (this includes pictures, cabinets, electrical, etc.).
- Do not go above ceilings, behind walls or into building spaces such as attics and crawlspaces unless these areas have been inspected and cleared by Facility Maintenance & Operations.
- Do not pull cable or wiring through above-ceiling spaces with asbestos.
- Do not install screws, pins, nails or hangers into asbestos ceiling or wall plaster.
- Be careful not to damage walls, ceilings or floors when moving furniture or equipment. It is recommended that Facility Maintenance & Operations be contacted prior to moving furniture or equipment.
- Do not brush, sweep or vacuum textured asbestos ceiling plaster or plaster debris.
- Immediately report any damage or deterioration of suspect building materials to Facility Maintenance & Operations or Risk Management.

It is important to note that the presence of asbestos does not mean you have been exposed. Exposure results when friable asbestos particles are inhaled or ingested. Asbestos becomes friable when material containing asbestos is drilled, sanded or disturbed by remodeling or demolition work or when the ACM has deteriorated. Intact, bonded, sealed or undisturbed asbestos does not pose a hazard.

Employees may review the asbestos survey reports, results of bulk sampling or air monitoring conducted in City-owned buildings. All asbestos data will be available by appointment with Facility Maintenance & Operations.

Facilities Built Pre 1979 That May Contain Asbestos	Year Built
Downtown Library - 225 Taylor Street 95678	1974
Carnegie Museum - 557 Lincoln Street 95678	1912
Tower Theatre - 415 Vernon Street 95678	1940
Fire Station #3 - 1300 Cirby Way 95661	1963
Old Corp Yard - 100 Old Corp Yard Road 95678	1940
Water Treatment Plant Operations Bldg.- 9595 Barton Road 95746	1965
Waste Water Treatment Plant Operations Bldg. - 1800 Booth Road 95747	1962
Royer Recreation Bldg. - 190 Park Drive 95678	1950
Fire Museum - 400 Lincoln Street 95678	1930
Diamond Oaks Golf - 349 Diamond Oaks Road 95678	1965
Johnson Pool, 4th & D Street	1950
330 Vernon Street	1940
107 Sutter Avenue	1962

Sign to acknowledge receipt of asbestos notification:

SIGNATURE	David Sindicic
COMPANY NAME	Safety Director for Performance Mechanical, Inc.
DATE	2-27-2025

Asbestos
Rev 01/16/19

Supplier

Signature: _____

Print Name: Andrew Hosler

Title: President /CEO

Date: 2/27/25

Supplier

Signature: _____

Print Name: _____

Title: _____

Date: _____

City of Roseville, A Municipal Corporation

Signature: _____

Print Name: **Dominick Casey**

Title: **City Manager**

Date: _____

Notice of Exemption

To: Placer County Clerk
Recorder's Office
2954 Richardson Drive
Auburn, CA 95603

From: City of Roseville
Development Services Dept.
311 Vernon Street
Roseville, CA 95678

Project Title: Maintenance Support Services

Project Location(s): 5120 Phillip Road, Roseville, CA 95747 (APNs 017-101-020-000 and 017-101-021-000) and 2155 Nichols Drive, Rocklin, California 95677 (APN 017-063-005-000).

Project Description: Roseville Electric staff seeks approval for a maintenance contract to support maintenance activities at Roseville Electric's generation facilities. Work may be performed at the Roseville Energy Park (REP) or Roseville Power Plant 2 (RPP2). The REP operates two combustion turbines and one steam turbine with associated auxiliaries and is co-located next to two simple cycle gas turbines. RPP2 operates two simple cycle gas turbines. Both facilities undergo planned preventative maintenance activities as well as corrective maintenance activities. Activities may include but are not limited to pump and motor alignments, welding services, millwright services, off site shop fabrication, and other ancillary support activities as needed for the generation fleet. Work completed will not result in an expansion of use.

Public Agency Approving Project: Roseville City Council

Agency/Individual Carrying Out Project: Roseville Electric Utility

Reason why this Project is Exempt: The project qualifies for a Class 1 Categorical Exemption as described in Section 15301 of the California Environmental Quality Act (CEQA) guidelines which states:

> "Class 1 consists of the…repair, maintenance,...or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use… Examples include, but are not limited to: (a) Interior or exterior alterations involving such things as interior partitions, plumbing, and electrical conveyances; [and] (b) Existing facilities of both investor and publicly owned utilities used to provide electrical power, natural gas, sewerage, or other public utility services…"

The project consists of performing routine preventative and corrective maintenance activities at the REP and RPP2. The project would not result in expansion of use. The project would not result in expansion of use. Consequently, the Class 1 Categorical Exemption applies.

Lead Agency Contact Person: Nathan Ribordy, Roseville Electric (916-746-1673).

Signature: Jessica Lynch Date: 3/24/2025

Jessica Lynch, Environmental Coordinator
City of Roseville

COUNCIL COMMUNICATION

CC #: 3846
File #: 0203-05

Title:	East Radio Site Relocation Project - Contract Purchase Agreement
Contact:	Karl Grover 916-774-5145 kgrover@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.2.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution authorizing the City Manager to execute a Contract Purchase Agreement with E.F. Johnson Company in the amount of $483,210.79 for the City's East Radio Site Relocation project to enhance system performance, reliability, scalability and coverage. Additionally, staff requests authorization for the City Manager or designee to approve change orders up to an additional 10%, or $48,321, of the purchase agreement to cover costs of unexpected changes to ensure successful completion of the project.

BACKGROUND

Radio transmission is the primary communication method for the City's emergency services and many of the daily operations providers (i.e., Police, Fire, Electric, Roseville Transit, and Environmental Utilities), as well as outside agencies during mutual aid incidents. The City's radio system handles approximately 1.5 million transmissions per year and providing coverage throughout the City is crucial.

Roseville currently operates two other 180-foot radio communications towers. One is in west Roseville near the Roseville Energy Park and the second is in central Roseville at the Police Department building on Junction Boulevard. The east side of Roseville is currently served by radio equipment located on the third floor of a commercial building in a leased electrical closet. As previously established with Council at the September 7, 2022, meeting, the current east radio site has many limitations and needs to be relocated to a new site that will improve its reliability, availability, capacity and coverage.

Consultants were engaged to develop plans for the 2001 Strauch Drive site and complete the required environmental clearance. On September 7, 2022, Council adopted the Initial Study/Mitigated Negative Declaration (IS/MND), IS/MND Mitigation Monitoring and Reporting Plan (MMRP), and approved agreements for acquisition of permanent and temporary easements allowing access to the site. Subsequent to Council's action, the easements have been acquired and the plans submitted for building and civil improvement permits. On December 6, 2023, Council provided approval to accept the project's plans and specifications as well as proceed with

a call for construction bids.

On July 31, 2024, Council authorized awarding the construction bid to SLC, Inc. Site construction is currently in progress with an estimated completion date in August 2025.

Subsequent to completion of site construction, equipment and services are needed in the radio shelter and on the tower including repeaters, antenna systems and simulcast alignment to properly integrate with the existing radio sites for reliable citywide communications. The equipment and corresponding services will be provided by E.F. Johnson, including decommissioning the old radio site to restore the private property owner's site to its original state.

FISCAL IMPACT

The total cost for EFJohnson's equipment and services to install antenna systems, provision a microwave link between sites, relocate radio equipment to the new site, perform system optimization, update as-built documentation and decommission the old site is $483,210.79. The contingency amount of $48,321.00 will cover unexpected costs during the course of this project implementation.

This project is funded with multiples sources including the Strategic Improvement Fund, Public Facilities Fund and Information Technology Replacement Fund.

ENVIRONMENTAL REVIEW

Council approval of construction is an action that is subject to CEQA. Project level CEQA compliance for the (Citywide) East Site Radio Communications Relocation Project was accomplished with preparation of the Initial Study/Mitigated Negative Declaration (IS/MND), adopted by City Council on September 7, 2022 (SCH No. 2022070353).

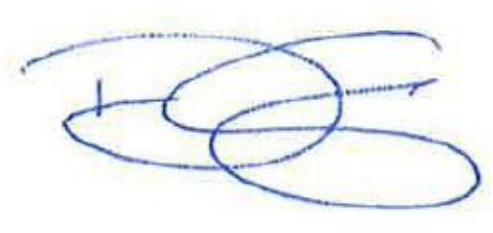
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal C - Maintain a safe and healthy community
Goal E - Deliver exceptional city services
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Karl Grover, IT Program Manager

Hong Sae, Chief Information Officer



Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-102

CPA #3004429 Signed

RESOLUTION NO. 25-102

APPROVING A CONTRACT PURCHASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND E.F. JOHNSON COMPANY, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a contract purchase agreement (3004429) for equipment and services for the East Radio Site Relocation project, by and between the City of Roseville and E.F. Johnson Company, has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said agreement is hereby approved and the City Manager is authorized to execute it on behalf of the City of Roseville, upon receipt and approval of bonds by the City Attorney's office.

BE IT FURTHER RESOLVED that the City Manager or his designee is authorized to approve change orders for the project, consistent with the contract terms, provided that the net cost of all change orders shall not exceed ten percent (10%) of the contract price.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

Contract Purchase Agreement 3004429

Supplier Details:

Company	E F Johnson Company
Contact	Lisa Wheelock
Address	1440 Corporate Dr
	Irving, TX 75038

Submit your response to:

Company	City of Roseville
Contact	Tiffany Valdez
Address	Purchasing Division
	311 Vernon St
	Roseville, CA 95678
Phone	(916) 746-1109
Fax	(916) 746-1115
E-mail	TValdez@roseville.ca.us

This Contract Purchase Agreement is sent for your review and acceptance. Notify the Buyer via email of any needed changes to the company name, address, and contact information. The Buyer will update the agreement prior to you signing the document.

Return signed copies of the agreement to the Buyer noted on the agreement. Alterations or modifications to the agreement are not allowed. Upon receipt of all necessary documents, the City will sign the agreement and return a fully executed copy to you. Receipt of the signed copy will be your notice to proceed with the work in accordance with the terms and conditions of the agreement. Work must not begin until the contract has been fully executed.

The following guidelines must be followed for the signature block on the agreement:

Sole proprietorship - **By owner**

Partnership - **Any general partner**

Corporation - **Two options:**
(1) A signature from the President and the corporate seal; **OR**
(2) One signature from the Chairman of the Board, President, or any Vice President **AND** one signature from the Secretary, any Assistant Secretary, Chief Financial Officer, or any Treasurer or Assistant Treasurer of the corporation

*General Manager, Office Manager and/or Sales Manager are **not** corporate officer titles. The agreement will be rejected if not signed in accordance with these guidelines.

Insurance requirements:
The City's insurance requirements are referenced on Attachment A of the agreement. By signing the agreement, you are confirming that your company has the minimum insurance limits required.

CITY OF ROSEVILLE CALIFORNIA

Contract Purchase Agreement 3004429

Agreement	**3004429**
Agreement Date	**26-FEB-2025**
Revision	**0**
Agreement Amount	**483,210.74 USD**

Invoice To **City of Roseville**
Accounts Payable
311 Vernon St
ROSEVILLE CA 95678
Phone: (916) 774-5488
Fax: (916) 784-3796
Email: accountspayable@roseville.ca.us

Supplier **E F Johnson Company**
1440 Corporate Dr

Irving, TX 75038
Phone: ()
Fax: ()
Email: lisa.wheelock@efji.com

Description of Labor, equipment and/or materials

VENDOR SHALL PROVIDE THE EQUIPMENT AND SERVICES FOR THE ATLAS SYSTEM EAST SITE RADIO RELOCATION FOR THE CITY OF ROSEVILLE'S INFORMATION TECHNOLOGY DEPARTMENT IN ACCORDANCE WITH THE ATTACHED E.F. JOHNSON COMPANY QUOTE NO. 5099557 DATED 1/29/25.

START DATE: EXECUTED AGREEMENT
END DATE: FINAL PAYMENT

BONDS SHALL BE RELEASED UPON SATISFACTORY COMPLETION OF THE PROJECT AND FINAL APPROVAL BY THE CITY OF ROSEVILLE INFORMATION TECHNOLOGY DEPARTMENT.

PLEASE CONTACT KARL GROVER IN THE INFORMATION TECHNOLOGY DEPARTMENT AT (916) 774-5145 OR BY EMAIL AT KGROVER@ROSEVILLE.CA.US FOR QUESTIONS REGARDING THIS AGREEMENT.

Customer #	Supplier #	Payment Terms	Freight Terms	FOB	Shipping Method
	11335	**Net 30**	**Freight on Board at the destination**	**Destination**	**Best Method**

Start Date	End Date	Confirm To
		Tiffany Valdez Phone **1-916-746-1109**

Attention: Total Cost not to exceed the agreement amount without prior approval of the Purchasing office.

Contract Terms and Conditions

1. To the fullest extent allowed by law, Consultant agrees to indemnify, including the cost to defend City, and its officers, agents, employees and volunteers from any and all claims, demands, costs or liability that arise out of, or pertain to, or relate to the negligence, recklessness, or willful misconduct of Consultant and its agents in the performance of services under this contract, but this indemnity does not apply to liability for damages for death or bodily injury to persons, injury to property, or other loss, arising from the sole negligence, willful misconduct or defects in design by City or the agents, servants, or independent contractors who are directly responsible to City, or arising from the active negligence of City. Consultant's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Agreement for the full period of time allowed by law. The defense and indemnity obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Agreement.

2. Consultant is an independent contractor, and shall not be considered an officer, agent, or employee of the City.

3. Without the written consent of the City, this Agreement is not assignable by Consultant either in whole or in part.

4. Time is of the essence of this Agreement.

5. At any time during the term of this Agreement, the City has the right to terminate this Agreement, provided Consultant is given thirty (30) days written notice. City's termination shall be without further liability to City; however, Consultant shall be entitled to all costs reasonably incurred prior to the date of termination. Consultant acknowledges that City may terminate this Agreement should funds not be appropriated by its governing body to continue services under this Agreement.

6. This Agreement may only be amended or modified in writing. It is integrated and contains the complete understanding of the parties.

7. All equipment, supplies and services sold to the City of Roseville shall conform to the general safety orders of the State of California.

8. Unless notified to the contrary, in writing, the City assumes that the Consultant has accepted the work in accordance with the plans and specifications (if any) and agrees to do the work in compliance with this Agreement. Any work product created for City pursuant to this Agreement is deemed owned by City.

9. All prevailing wages and fair employment practices must be adhered to. For prevailing wage contracts over $25,000, copies of certified payroll must be submitted with invoices. Prevailing wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm. In compliance with Labor Code Section 1773.2, as may be amended from time to time, Contractor shall cause a copy of this website to be posted at each jobsite, as applicable.
10. Consultant agrees to the below insurance requirements:

    a. Unless otherwise specified, the Consultant shall maintain the policies of insurance outlined in Attachment A, incorporated herein by this reference, in full force and effect during the term of this Agreement. The City of Roseville retains sole discretion in determining the types and proper levels of insurance coverage.

b. Form. Consultant shall submit a certificate evidencing such coverage for the period covered by this Agreement in a form satisfactory to Risk Management and the City Attorney, prior to undertaking any work hereunder. Any insurance written on a claims made basis is subject to the approval of Risk Management and the City Attorney.

c. Additional Insureds. Consultant shall also provide a separate endorsement or section of the policy showing City, its officers, agents, employees, and volunteers as additional insureds for each type of coverage, except for Workers' Compensation and Professional Liability. Such insurance shall specifically cover the contractual liability of Consultant. The additional insured coverage under the Consultant's policy shall be primary and noncontributory, as evidenced by a separate endorsement or section of the policy and shall not seek contribution from City's insurance or self-insurance. In addition, the additional insured coverage shall be at least as broad as the Insurance Services Office (ISO) CG 20 01 Endorsement. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be:

(1) the minimum coverage and limits specified in this Agreement; or

(2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

d. Cancellation/Modification. Consultant shall provide thirty (30) days written notice to City prior to cancellation or modification of any insurance required by this Agreement.

e. Umbrella/Excess Insurance. The limits of insurance required in this Agreement may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of City (if agreed to in a written contract) before City's own insurance shall be called upon to protect it as a named insured.

f. Subconsultants. Consultant agrees to include in its contracts with all subconsultants the same requirements and provisions of this Agreement, including the indemnity and insurance requirements, to the extent they apply to the scope of the subconsultants work. Furthermore, Consultant shall require its subconsultants to agree to be bound to Consultant and City in the same manner and to the same extent as Consultant is bound to City under this Agreement. Additionally, Consultant shall obligate its subconsultants to comply with these same provisions with respect to any tertiary subconsultant, regardless of tier. A copy of City's indemnity and insurance provisions will be furnished to the subconsultant or tertiary subconsultant upon request.

g. Self-Insured Retentions. All self-insured retentions (SIR) must be disclosed to Risk Management for approval and shall not reduce the limits of liability. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City. City reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

h. Waiver of Subrogation. Consultant hereby agrees to waive subrogation which any insurer of Consultant may acquire from Consultant by virtue of the payment of any loss under a Workers Compensation, Commercial General Liability or Automobile Liability policy. All Workers Compensation, Commercial General Liability and Automobile Liability policies shall be endorsed with a waiver of subrogation in favor of City, its officers, agents, employees, and volunteers for all worked performed by Consultant, its employees, agents, and sub consultants.

i. Liability/Remedies. Insurance coverage in the minimum amounts set forth herein shall

not be construed to relieve Consultant of liability in excess of such coverage, nor shall it preclude City from taking such other actions as are available to it under any other provisions of this Agreement or law.

11. Consultant shall comply with all federal, state, local laws, ordinances, and policies as may be applicable to the performance of services under this Agreement. Failure to comply with local ordinances may result in monetary fines and cancellation of this Agreement.

12. In the event that the terms of any attachment or exhibit conflict with any terms of this Agreement, the terms of this Agreement shall control.

13. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ". pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

14. If either party commences any legal action against the other party arising out of this Agreement or the performance thereof, the prevailing party in such action shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorneys' fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

15. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

16. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

17. For purposes of this Agreement, the terms "Contractor," "Consultant," and "Supplier" are used interchangeably.

18. Consultant agrees that any and all information furnished by City shall be deemed proprietary and confidential. All such information, to the extent previously, presently, or subsequently disclosed to Consultant and/or processed and derived by Consultant services is the property of City and such property shall be deemed and treated as "Confidential Information" of City. Consultant acknowledges that such Confidential Information may contain information provided and/or generated by third-parties. Consultant agrees that such Confidential Information shall not be disclosed to any third party without written permission from City, except as required by law. Consultant shall not use the Confidential Information except to perform Consultant's services as directed by City.

19. All facilities, devices, networks, and services used to store, deliver, process, backup or purge Confidential Information will employ administrative, physical, technical, and procedural safeguards and best practices at a level sufficient to secure Confidential Information from unauthorized access, destruction, use, modification, or disclosure. Such measures will be no less protective than those used to secure Consultant's own information of a similar type, and in no event less than reasonable in view of the type and nature of the information involved. It is the City's expectation that Consultant, at its own expense, shall perform annual audits for any data centers that house Confidential Information, using an independent third-party audit that meets industry standards applicable to the services under this Agreement, and provide the audit report or certification upon request to City.

20. Consultant will retain Confidential Information until deleted by City or City-authorized third

party, or for a time period mutually agreed upon by the parties to this Agreement.

21. Upon termination or expiration of this Agreement, Consultant will ensure that all Confidential Information is securely transferred to City within thirty (30) calendar days. Consultant will ensure that any transfer of Confidential Information is accomplished by methods that are compatible with the relevant City systems, and that City will have access to all Confidential Information during any such transfer. Consultant shall securely dispose of all Confidential Information when requested by City and Consultant will provide written notification to City once all Confidential Information has been securely disposed of.

22. Consultant shall report to City any data compromise or unauthorized access to Confidential Information within twenty-four (24) hours after Consultant discovers such data compromise or unauthorized access. Consultant will take commercially reasonable measures to address any such data compromise or unauthorized access in a timely manner. Except as otherwise required by law, Consultant will not provide notice to end users or other entities of any such data compromise or unauthorized access without written permission from City. Consultant will promptly reimburse City in full for all fees and costs incurred by City in any investigation, remediation or litigation resulting from any such data compromise or unauthorized access, including identity protection and restoration services for each person, who in the City's sole discretion, could be impacted by identity theft.

23. Consultant may not advertise that City is a client, list City as a reference or otherwise use City's name, logos, trademarks, or service marks without prior written permission from City.

24. Consultant acknowledges that services rendered under this agreement (including but not limited to service levels and operational levels) shall be performed in accordance with industry standards.

25. If the project referenced on this agreement is a Public Works project, then the following shall apply: No contractor or subcontractor may work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. During the performance of this agreement, Contractor and its subcontractors shall have a continuing legal obligation to maintain current registration with the Department of Industrial Relations. Contractor is hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

26. If the project referenced on this agreement is a Public Works project, then the following shall apply: Contractor must submit all claims as defined in and in accordance with the claim resolution process set forth in Section 9204 of the Public Contract Code. Each such claim must be sent to the City by registered mail or certified mail with return receipt requested and must contain reasonable documentation to support the claim. All claims must be received prior to acceptance of the work.

27. Contractor/consultant's duties and services under this agreement shall not include preparing or assisting the public entity with any portion of the public entity's preparation of a request for proposals, request for qualifications, or any other solicitation regarding a subsequent or additional contract with the public entity. The public entity entering this agreement shall at all times retain responsibility for public contracting, including with respect to any subsequent phase of this project. Contractor/consultant's participation in the planning, discussions, or drawing of project plans or specifications, if any, shall be limited to conceptual, preliminary, or initial plans or specifications. Contractor/consultant shall cooperate with the public entity to ensure that all bidders for a subsequent contract on any subsequent phase of this project have access to the same information, including all conceptual, preliminary, or initial plans or specifications prepared by contractor pursuant to this agreement.

28. Consultant certifies that Consultant, its employees, directors, officers, agents, subcontractors, vendors, and volunteers are not presently debarred, excluded, suspended, declared ineligible, voluntarily excluded, or proposed for debarment, exclusion, suspension, or ineligibility by

any federal, state, or local department or agency.

29. The Levine Act (Govt. Code, Section 84308) requires a Party (and its agent(s), if any) to a Proceeding before the City of Roseville that involves any action or consideration related to their contract, license, permit, or other entitlement for use, to disclose any campaign contributions made to City elected or appointed officers totaling more than $250 within the twelve (12) months prior to the City decision and while a proceeding is pending, and includes certain prohibitions on contribution activity thereafter. If applicable campaign contributions have been made by Contractor and/or its agent(s), Contractor is responsible for compliance, including for its disclosure obligations, if any, as further described at: https://www.roseville.ca.us/government/departments/city_clerk/transparency/levine_act.

30. This Agreement may be amended via change order, but only if such change order is made in writing, approved by the City, and signed by both parties.

31. CONSULTANT agrees to defend and indemnify CITY if, despite the parties intent and practice, any venue, agency, or court with competent jurisdiction determines that CONSULTANT and/or any of its agents, officers, employees, volunteers, independent contractors, or subcontractors, are characterized as employee(s) of CITY.

    CONSULTANT and CITY agree that: (a) CONSULTANT is free from the control and direction of CITY in connection with the performance of the work; (b) CONSULTANT is providing services directly to CITY; (c) CONSULTANT has and will maintain at all relevant times a business license; (d) CONSULTANT maintains a business location that is separate from CITY; (e) CONSULTANT is customarily engaged in an independently established business of the same nature as that involved in the work performed hereunder; (f) CONSULTANT actually contracts with other businesses to provide the same or similar services and maintains a clientele without restrictions from CITY; (g) CONSULTANT advertises and holds itself out to the public as available to provide the same or similar services; (h) CONSULTANT provides its own tools, vehicles, and equipment to perform the services; (i) CONSULTANT has negotiated its own rates; (j) CONSULTANT set its own hours and location of work in accomplishing CITY's on-call needs; and (k) CONSULTANT has the right to control the manner and means of accomplishing the result desired and exercises its own expert independent judgement.

The supplier named hereon by the acceptance of this order agrees to the provisions of this document titled "Contract Purchase Agreement" and all accompanying terms, conditions, and attachments.

Roseville Business License No. 00854657

Contractor License No. 1057507 (Silke Communications Solutions Inc)

DIR Registration No. 1000042261

Check mark the applicable company type below:

X Corporation

_____ Limited Liability Company

_____ Partnership

_____ Sole Proprietor

City reserves the right to withhold any payments to Consultant in the event of noncompliance with insurance requirements or if required by law.
Information Technology T&C
REV 3/21/24 JS

ATTACHMENT A
HUMAN RESOURCES/RISK MANAGEMENT DIVISION
INSURANCE REQUIREMENTS
AGREEMENT OVER FORMAL BID LIMIT OR INVOLVING HIGH RISK ACTIVITIES

General - Required Coverage/Documentation

- General Liability: $1 Million per occurrence /$2 Million aggregate
- Automobile Liability: $1 Million combined single limit
- Workers' Compensation: Statutory *Must provide a Waiver of subrogation
- Additional Insured Endorsement (AIE) - General Liability policy: CG 20 38 04 13 or an equivalent, blanket endorsement or section of the policy. Endorsement shall cover the City of Roseville, its officers, agents, employees and volunteers as additional insured.
- Policies must be primary and non-contributory
- A 30 day notice of cancellation must be provided
- List certificate holder as: The City of Roseville - Insurance Compliance, PO Box 100085-R1, Duluth, GA 30096

Additional Liability/Insurance Requirements if required by Agreement (and marked below):

Construction:____
General Liability:
$2 Million/occurrence
$4 Million aggregate

Design Professional:____
General Liability:
$2 Million/occurrence
$4 Million aggregate
Professional Liability:
$2 Million/occurrence

Professional Consultant:____
Professional Liability:
$1 Million/occurrence

IT Services:___X_
Professional Liability:
$1 Million/occurrence
No auto required
Cyber Liability:
$1 Million/occurrence

Hazardous Materials:____
Pollution Liability:
$1 Million/occurrence

Special Events/Caterers-Vendors:____
No auto required
No workers' comp required

Professional Counseling/ Psychological:____
Professional Liability:
$1 Million/occurrence
No auto required

Pyrotechnics:____
General Liability:
$5 Million/occurrence
$10 Million aggregate
Auto - $2 Million/occurrence

Chemical/Environmental:____
General Liability:
$3 Million/occurrence
$6 Million aggregate
Pollution – $2 Million/Occurrence
Auto - $2 Million/Occurrence

Insurance Submission Process

The City of Roseville Human Resources/Risk Management Department uses a service called EBIX to manage our insurance certificate tracking.

How It Works

- The vendor's contact information is entered into EBIX. EBIX will contact the vendor to request proof of insurance.
- The Vendor can forward the request to their Insurance Agent(s) if necessary.
- Vendor/Insurance Agent submits insurance to EBIX by email to roseville@ebix.com or by fax to (770) 325-5727. After faxing or emailing the certificate, please DO NOT send the certificate by mail to EBIX. Please do not mail, email or fax any certificates to the City of Roseville.
- Once submitted, EBIX reviews the insurance documentation. If there are deficiencies, EBIX will send a follow up letter or email requesting additional information.

Questions Regarding Insurance Submission: Contact EBIX at (951) 652-4239
Questions Regarding Insurance Requirements Contact Risk Management at (916) 774-5202

Supplier

Signature: _____

Print Name: Duane Anderson

Title: President and CEO

Date: March 4, 2025



Supplier

Signature: _____

Print Name: _____

Title: _____

Date: _____

City of Roseville, A Municipal Corporation

Signature: _____

Print Name: **Dominick Casey**

Title: **City Manager**

Date: _____

E.F. JOHNSON COMPANY

Proposal to the City of Roseville, California

ATLAS® System East Site Relocation Microwave Quote Refresh

January 29, 2025

Quote No. 5099557

CRM No. 20979 v.2024.0531.4

EFJohnson a **JVCKENWOOD Company**
1440 Corporate Drive, Irving, TX 75038
800.328.3911 | www.efjohnson.com

JVCKENWOOD

PROPRIETARY & CONFIDENTIAL

Subject to the California Public Records Act & Brown Act

The data contained in this proposal is considered proprietary and confidential and is not to be disclosed to any unauthorized agencies without the written permission of EFJohnson. No duplication of the whole or any part is permissible except for the purpose of evaluating this proposal.

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1. Proposal Summary

E.F. Johnson Company, a JVCKENWOOD Company, ("EFJohnson") appreciates the opportunity to present this quote to the City of Roseville ("Customer"), California, to relocate their East Site from 2999 Douglas Boulevard to the new East Site at 2001 Strauch Drive.

Based on the information provided to EFJohnson by the City of Roseville, EFJohnson proposes the following:

- Two (2) SecureSync frequency reference and timing kits
- Antennas, feedline, combiners and multicouplers needed for the project as defined.
- RF antenna installation
- Microwave installation

EFJohnson's understanding is that existing equipment, including but not limited to racks, rack grounding, and rack power, is to remain in service or to be provided by others. If, upon inspection, the equipment is found to require remediation it is expected of the City of Roseville to provide the aforementioned equipment. If the City chooses not to provide the aforementioned equipment, a separate quote may be requested.

2. Pricing Summary

Pricing includes equipment and services identified as needed for the project as defined. A detailed list of the equipment may be found in the Equipment Summary. Services, in addition to those specifically detailed in the Statement of Work, include equipment installation as well as limited services associated with the first year of equipment warranty.

All pricing is valid for 60 days from the date of this quote: January 29, 2025.

Please note: Coverage testing and/or coverage analysis is not included in the services' pricing. Coverage can be evaluated in a separate request.

CA Roseville East Site Build / Move					Quote 5099557 CRM 20979
Summary					
Description	List Price	Discount	Price	City Tax (7.75%)	Your Price
SecureSync Equipment	$2,320.00	20%	$1,856.00	$143.84	$1,999.84
3rd Party System Equipment	$19,969.19		$19,969.19	$1,547.60	$21,516.79
Antenna & Feedline Equipment	$42,020.72		$42,020.72	$3,256.63	$45,277.35
EFJohnson Program Services	$19,820.00		$19,820.00		$19,820.00
Silke Antenna & Microwave Equipment	$20,232.08		$20,232.00	$1,568.00	$21,800.00
Silke Services	$262,804.00		$262,804.00		$262,804.00
Ceragon Microwave Equipment	$70,977.49		$70,977.00	$5,500.76	$76,477.76
Ceragon Services	$32,014.51		$32,015.00		$32,015.00
Subtotal	**$470,157.99**		**$469,693.91**	**$12,016.83**	**$481,710.74**
Shipping Cost					$1,500.00
				TOTAL	**$483,210.74**

3. Terms and Conditions

This proposal and any future sale shall be governed by The City of Roseville Terms and Conditions.

4. Freight, Title, and Risk of Loss

Freight charges are not included in the price. Title to the equipment provided herein will pass to Customer, or End User, upon final payment, except that title to software will not pass to Customer, or End User, at any time. Risk of loss for the equipment will pass to Customer upon shipment from EFJohnson. EFJohnson will pack and ship all equipment in accordance with standard commercial practices.

5. Assumptions

Revisions to the estimated price or other details in this proposal may be required if the following assumptions are incorrect or incomplete.

Network

- Bandwidth on existing network is sufficient for both existing applications and proposed additional new equipment.
- Customer- and/or End User- supplied backhaul network links, where applicable, support multicast traffic, support an MTU size of up to 1526 bytes, and provide a dedicated interface in the form of Ethernet (RJ-45) connector or T-1 suitable for connection to EFJohnson's Cisco routers.
- IP addresses are available for use in blocks of sufficient quantity on any existing network to accommodate routing between the sites and equipment specified. If only analog circuits are available, routers have been considered with DSU/CSU capability.
- Networks conform to the performance and design criteria specified in the Carrier Transport Requirements document, available on request.

Sites

- Customer will ensure/supply adequate physical space at existing sites for the installation, use, and maintenance of the system. New site development is not required.

- Customer will ensure/provide adequate temperature/environmental control, grounding and lightning protection at existing sites.

- Uninterruptible power supplies (UPS) or power conditioning equipment if required/desired is the responsibility of the Customer.
- Power adequate for the installation, use, and maintenance of the system will be provided at all sites, to include adequate outlets, distribution, and source power. Necessary upgrades are the responsibility of the Customer.
- Transmit and receive antennas will be mounted on existing towers at all locations using standard mechanical fasteners.
- Customer is responsible for tower analysis and changes related to wind and/or ice loading.
- Ready access to all facilities will be available as necessary during the scheduled visit. To reduce the number of days in the field, access is frequently necessary for 10 working hours per day (e.g., 7 am to 6 pm).

RF Equipment

- Customer is responsible for site surveys.
- Coverage analysis and testing are not included. Customer is responsible for Coverage analysis, and testing. Any issues related to lack of coverage are the responsibility of the Customer.

Services

- Post installation testing and test plan creation not specifically identified in this proposal is not included.
- Training not identified in this proposal is not included.

Products

- Software and equipment specified in the proposal are generally released EFJohnson solutions. No tailoring of existing features or new feature development will be performed unless otherwise stated in this proposal.

Warranty and Maintenance

- All proper preventative maintenance procedures shall be followed. Retention of maintenance records will be the responsibility of the Customer and/or End User and may be requested before Warranty services are provided.
- For EFJohnson to service software maintenance/warranty, a customer, or end user, supplied Virtual Private Network (VPN) will be available to access the system for remote trouble shooting/corrective action. If no VPN access is

available and travel is required for initial trouble shooting, travel costs will be quoted and billed on a by-incident basis.

- Software is licensed in accordance with the Software License Agreement. A Software Maintenance Agreement may be purchased to ensure updated software.

6. Scope of Work

This Statement of Work (SOW) describes EFJohnson's proposed effort, as well the expected effort of the City of Roseville, based on our understanding of the system requirements.

Please note that any services needed by EFJohnson personnel outside the proposed scope will be billed to the Customer on a time & materials basis.

General and Budgetary Scope of Work:

- EFJohnson will provide limited onsite technical support during testing, installation, and commissioning of the equipment identified in this proposal.
- EFJohnson will ship new equipment and deliver both new and old components to system installation site(s).
- EFJohnson will provide updated As-Built drawings for East Site.
- No additional services by EFJohnson have been provided in this proposal. If additional remote or on-site support is desired, it will be billed at the then published rate (currently $248/hour) plus any travel expenses marked up 15%. Overtime, weekends and holidays will incur additional charges.

Ceragon Microwave

- New microwave link installation at 2001 Strauch terminating at the PD tower at 1051 Junction Blvd. Complete installation including antenna on tower, transmission line, shelter equipment, path survey, configuration, testing and turn up/
- New microwave will have capacity to allow for the City's contractor to move and setup the VHF equipment.
- Ceragon shall identify new frequencies, establish power needed, microwave dish height AGL, and submit application to license new frequencies with the FCC for the East-PD link.

Silke Communications

Silke Communications will provide Project Management, logistics and an EFJohnson Trained and Certified team to support the City of Roseville and EFJohnson partners during the relocation of the East Site from 2999 Douglas to 2001 Strauch.

Site work ***includes:***

- Kick off meetings, attending status meetings and conference calls, inspection and planning of the new 2001 Strauch location.
- Antenna sweeps of the new antenna for verification and documentation.
- A coordinated move and cut over of the existing 800MHz and VHF systems located at the East Site from 2999 Douglas to 2001 Strauch.
- Un-racking Transport Re-racking Labeling
- Patching (Network and RF) Cable dressing
- Bonding and grounding Test and turn-up
- At 2001 Strauch Silke Com will provide new GPS coax, connectors & protectors, reusing the GPS antenna from the existing site.
- After the completion of the move at 2999 Douglas, Silke Com will remove original racks, original antenna, original TTA, entry boots, and coax. These will be delivered to the City of Roseville IT for spares or recycling.

FCC License Compliance and Optimal P25 System Operation:

- Measure ERP in Watts, make adjustments as necessary, and perform calculations to ensure compliance with the City's 800MHz FCC License parameters.
- Perform simulcast alignment accounting for new location, new 800MHz TX antenna types and new heights AGL.

Information Technology & Microwave bandwidth/transport:

Silke Com has included budgetary hours for IT and System Architecture Support. EFJohnson will provide the NMS configuration and programming.

Ceragon link provisioning, configuration and testing will be performed by Ceragon.

Assumptions:

At 2001 Strauch Silke Communications will install the:

- Tower, shelter, site grounding, cable supports, entry ports, ice bridge and associated site material.

EFJohnson will provide:

- Five (5) 800 MHz antenna
- Two (2) VHF antennas
- One (1) Tower Top Amplifier (TTA)
- Coaxial cable for eight (8) antenna runs
- Lightning protection at the new shelter

Silke Communications will provide:

- All coaxial connectors, jumpers, coaxial support hardware, ground kits and miscellaneous passive parts and hardware for the installation, bonding, and grounding
- Two 7-foot racks and associated cable tray.
- Shelter bonding and grounding.
- AC power

Exclusions:

- Site FCC licensing, microwave path studies, simulcast overlap studies.
- Post move coverage study.
- Additional hours for scope not listed.
- Additional training or certifications required by any manufacturer.

7. Equipment List

7.1. EFJohnson Equipment Summary

Item	Qty
Infrastructure	
System Equipment	
SecureSync Equipment	
Timing & Frequency Reference	
GPS ANTENNA SECURE SYNC KIT	2
GPS ANTENNA SURGE SUPPRESSOR	2
3rd Party System Equipment	
Site Equipment Rack(s)	
Lightning Protectors	
PROTECTOR DC BLK 100-512 MHZ DMDF POLY VHF50HD-MA	2
PROTECTOR DC BLK 350-1.2 GHZ DMDF POLY TUSX-DFM	3
PROTECTOR PASS 400-1.2 GHZ DMDF POLY DGXE+24DMDF-A	3
Rack & Cabinet	
SEISMIC RACK 19" X 8'-0" NEWTON 0049820631	2
SEISMIC RACK FLOOR MOUNT KIT NEWTON 0046150110	2
SEISMIC RACK BRACE 48" W/ROD NEWTON 2228490010	2
Multicouplers & TTA	
VHF MULTICOUPLER 118-175 MHZ DBSMC1-08A	1
700/800 TTA 793-824 MHZ DFDF DB DS7TMD31	1
793-824MHZ 16CH RXMC W/PDU VAC-DSX7PDU16-AC	1
Control Station Integration	
CS Antenna & FL	
GROUNDING KIT 1/2" RFS GKFORM60-12	2
FEEDLINE 1/2" RFS LCF12-50JFN UNIT 1 FT (FR)	205
FEEDLINE EFJ INST KIT 1/2" LCF12 FIRST 100-FT	1
WALL JUMPER TX 10-FT	3
WALL JUMPER RX 10-FT	4
MULTICOUPLER JUMPER--RG142	14
Antenna & Feedline Equipment	
Dipole Antennas	
PD620/136-174 5.25 ANT **	2
Collinear Omni Antennas	

Item	Qty
746MHZ - 869MHZ 9DB SINCL SC469-HF1LDF(D00-NUFP)	2
SINCLAIR 6DB SC466-HF1LDF(D08-NUFP) 800MHZ	3
Feedline	
GROUNDING KIT 7/8" RFS GKFORM60-78	17
FEEDLINE 7/8" RFS LCF78-50JA UNIT 1 FT (std)	###
FEEDLINE EFJ INST KIT 7/8" LCF78 FIRST 100-FT	7
1/2" HANGER 10/BAG	10
7/8" HANGER 10/BAG	69
Antenna Jumpers	
ANTENNA JUMPER 6-FT	8
Antenna Standoffs & Mounts	
SINCLAIR CLAMP147 ANTENNA CLAMP	10
SINCLAIR ANTENNA MOUNTING KIT - SMK-335-A3	5

7.2. Ceragon Equipment Summary

#	Description	Sum QTY
1. FibeAir IP-20N		
	IP-20A 1RU/5-slot base package w/ 2x48v	3
	IP-20 TCC-U	3
	IP-20 Dual Interface Radio Interface Card	5
2. IP-20 Activation keys		
	SL - Capacity 100M, per carrier	4
	SL - ACM, per carrier	4
	SL - Edge-CET-Node mode	2
	SL - Network Resiliency	2
3. RFU-D		
	RFU-D, Split Mount, ETSI, 18Gz, Unspecified, TH	3
	RFU-D, Split Mount, ETSI, 18Gz, Unspecified, TL	3
4. RF Accessories		
	IP-20C DUAL COUPLER KIT 18GHz	2
	IP-20C OMT kit 18GHz	2
	SFP OPTICAL 1000Base-LX,EXT TEMP	3
	Power cable Open-end/Open-end, 16A, 5m	4
	CAT5E_SFUTP_Outdoor_100m_drum	2
	GBE_Connector_kit	2
5. Antennas		
	ANT,2FT,17.700-19.700GHz,DP,RFU-C TYPE/CIRCULAR	2
6. Accessories & Cables		
	Universal Grounding Kit up to 1/2" cable	8
	GROUND CABLE FOR IDU and ODU	4
	OUTDOOR TIES 50pcs	2

Prime VIP Support (SR-1064-0) - 5 years

The Prime VIP Support includes the:

- Remote technical product support 24h X 7 days (SR-0442-0)
- Hardware repairs (SR-0499-0)
- Dedicated Support Account management
- Software Repairs for NMS and product embedded SW
- Software Upgrades for NMS and product embedded SW
- Website access to the Ceragon CRM

APPENDIX A Warranty Statement and Software License Agreement

EFJohnson warrants to the original purchaser for use ("Customer") that the new system equipment provided by EFJohnson ("System") with products manufactured by EFJohnson ("Products") are free from defects in material and workmanship and will conform to EFJohnson's published technical specifications as of the date of purchase during the warranty period. The warranty program start date is the date of system acceptance from EFJohnson or beneficial use which means use for operational purposes and shall expire one (1) year thereafter (the "Warranty Period"). EFJohnson makes no warranty with respect to the equipment not manufactured by EFJohnson, and any such equipment shall carry the original equipment manufacturer's warranty only. EFJohnson further makes no warranty as to, and specifically disclaims liability for, availability, range, coverage, grade of service or operation of the repeater system provided by the carrier or repeater operator.

If any Product fails to meet the Warranty set forth above during the applicable Warranty Period and is returned to a location designated by EFJohnson, EFJohnson, at its option, shall either repair or replace such defective Product, directly or through an authorized service agent, by expedited and priority service within thirty (30) days of receipt of same. Any repaired or replaced Products shall be warranted for the remainder of the original Warranty Period. EFJohnson shall arrange for the return of all defective Products to EFJohnson or EFJohnson's authorized service agent at no charge to Customer if returned from within the continental United States and if returned under warranty. EFJohnson will pay the returned shipping charges if the Product is repaired or replaced under warranty. If no problem is found with the Product, the Customer shall be responsible for the reimbursement of two-way shipping to EFJohnson. Repair or replacement of defective Products as set forth in this paragraph fulfills any and all warranty obligations on the part of EFJohnson.

SOFTWARE WARRANTY AND MAINTENANCE

EFJohnson warrants to the original purchaser for use ("Customer") that the software provided in response to Customer requirements and/or contractual agreement are free from defects in material and workmanship and will conform to EFJohnson's published technical specifications as of the date of purchase during the Warranty Period. The warranty program start date is the completion of system acceptance provided by EFJohnson or beneficial use which means use for operational purposes and shall expire one (1) year thereafter. EFJohnson makes no warranty as to, and specifically disclaims liability for, availability, range, coverage,

grade of service or operation of the repeater system provided by the carrier or repeater operator.

Software Warranty: If any Software fails to meet the warranty set forth above during the applicable Warranty Period, the Customer must notify EFJohnson in writing before the expiration of the Warranty Period. Whether Software defects occur will be determined solely upon reference to EFJohnson's published operational and technical specifications effective as of the date of purchase, and to any additional technical documentation incorporated into the mutually agreed-upon contractual agreement. EFJohnson does not warrant that the use of the Software will be uninterrupted or error-free or that the Software will meet particular (other than contractually agreed-upon) requirements, if applicable.

Upon receipt of such notice, EFJohnson will investigate the warranty claim. If this investigation confirms a valid warranty claim, EFJohnson will, at its option and at no additional charge to the Customer, repair the defect, replace the defective Software with the same or equivalent Software, or refund the price of the defective Software or individual Product in which the Software is embedded or for which it is provided. Such action will be the full extent of EFJohnson's liability and the Customer's sole remedy for a breach of this Warranty. If the investigation indicates that the Warranty claim is not valid, then EFJohnson may invoice the Customer for responding to a claim on a time and materials basis using EFJohnson's then current labor rates. Any repaired or replaced Software or Software Products shall be warranted for the remainder of the original Warranty Period or for thirty (30) days from the Customer's receipt of the repaired or replaced Software, whichever is longer.

Software Maintenance: EFJohnson will provide: (i) feature releases for System Software packages licensed pursuant to the contractual agreement between EFJohnson and Customer; (ii) enhancements to existing System Software features;

(iii) new features implemented via existing System components and Software for product migration (may require purchase of new Products). The support will cover System Software updates and System upgrades to address Software issues during the Warranty but expressly excludes any priced options provided in the proposal, if applicable.

7 day/24 hour (7/24) Customer Support: During the Warranty Period, EFJohnson shall provide the Customer a 7/24 toll free (in the United States) support line to reach an EFJohnson-employed customer support representative who will record

the Customer's issue, open a trouble ticket, issue an RMA and/or provide further details as applicable.

8:00 am – 5:00 CST Technical Support: During the Warranty Period, EFJohnson shall provide a technical support line available from 8:00 am – 5:00 CST, Monday-Friday, excluding national US holidays, staffed by an EFJohnson-employed factory technologist trained to answer the Customer's technical questions and to troubleshoot System performance issues. In order to maximize the ability for the technologist to resolve such issues, the Customer must sign a system access agreement to authorize EFJohnson remote secure access to the Customer's System, including access to the Customer's System logs.

EQUIPMENT AND SOFTWARE WARRANTY/MAINTENANCE EXCLUSIONS

This warranty is void and EFJohnson shall not be obligated to replace or repair any Products and/or Software if: (i) the Product and/or Software has been used in other than its normal and customary manner; (ii) the Product and/or Software has been subject to misuse, accident, neglect or damage or has been used with other than EFJohnson approved accessories and equipment or has been improperly installed;

(iii) the Products and/or Software have been repaired, installed and/or maintained by individuals who have not followed EFJohnson's then current installation or maintenance procedures and/or who are not trained and certified by EFJohnson on the Products and/or Software; (iv) unauthorized alterations or repairs have been made or unapproved parts have been used with the Product and/or Software; or

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an unauthorized use has occurred. In addition to the system key and encryption keys (and any programming materials or documents foregoing, Licensee acknowledges and agrees that, in order to protect the privacy of its radio system, it shall treat its encryption key and/or Multi-Net containing such keys) as highly confidential information and not disclose such keys to any third party unless such third party is subject to obligations of confidentiality in favor of Licensee.

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COUNCIL COMMUNICATION

CC #: 3830
File #: 0721

Title:	Microtransit Vans - Purchase Order Amendment
Contact:	Zach Presley 916-774-5365 zpresley@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.3.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council approve an amendment to an existing purchase order with A-Z Bus Sales for the purchase of twelve (12) Ford E-Transit Vans.

BACKGROUND

On June 5, 2024, the City Council approved the procurement of twelve (12) electric Ford E-Transit vans for Roseville Transit. Eight of these vans will replace existing diesel-powered cut-away vehicles that have surpassed their useful lives and need to be replaced. The additional four new vehicles are necessary to address the limited range in the vans and will allow for more reliable service for Roseville Transit customers.

When the item was initially brought to Council for approval, there were options for the vans that were being finalized and not included in the total cost. Some of the optional items included an on-board camera system and an exterior finish. As the vans have made their way through production, staff worked with A-Z bus to prepare an updated quote. The finalized quote that includes the optional items reflects an increase of $10,005.74 per vehicle for a total increase of $120,068.93. These updates include the items mentioned above and fit within the existing project budgets for the replacement vehicles and the purchase of new vehicles.

FISCAL IMPACT

The price increases in this procurement for twelve Ford E-Transit Vans remain funded through Federal Transit Administration (FTA) grant funding. Roseville will be utilizing a FTA Low/No Emissions grant for the eight replacement vehicles and FTA 5339 funds for the purchase of the four new vehicles. Local Transportation Funds (LTF) will be used for matching purposes on both projects. This procurement will have no impact to the General Fund.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Approval of a purchase order amendment meets the above criteria and is not subject to CEQA. No additional environmental review is required.

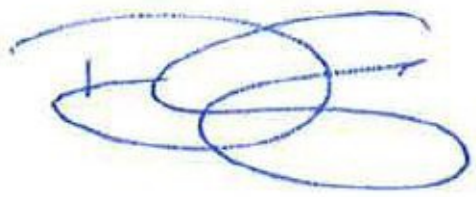
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal E - Deliver exceptional city services
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Zachary Presley, Assistant Transportation Planner

Jason Shykowski, Public Works Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

500261 Revised Van Quote

500112 Revised Van Quote

BUSSALES AN EMPLOYEE OWNED COMPANY

SBS Secondary Battery System

MBTA CalACT Cooperative
RFP #20-01

DRIVERGE VEHICLE INNOVATIONS



Customer:	City of Roseville			Quote Date	4/6/2024
Address:	316 Vernon Street	County:	Placer	Expires	2024 chassis
City	Roseville	Zip Code:	95678	Roof design	Mid-Roof Height
Contact:	Zach Presley	Office Phone:	916-774-5365		
Email Address:	zpresley@roseville.ca.us	Cell Phone:		FORD FIN Code	required
Sales Representative	Clay Hartman	Type	E- Transit, Nor Cal Vans/Driverge	Revision Date	2/4/2025

QTY	Option Description			Contract Price
NOR CAL VAN/DRIVERGE , TYPE Z1-E (ER), Ford Transit 350MR W9C, Fenton 16kWh Battery with A/C and Heat Package				
1	**Ford E-Transit 350 MR**	**Driverge**	**Chassis, Ford E-Transit 148' W/B"**	
			Sub-Total Base Unit	**$ 176,858.00**
PUBLISHED OPTIONS				
2	Go-ES Single Seat		$ 1,153.00	2,306.00
1	Delivery Zone 4		$ 800.00	800.00
1	DMV Processing		$ 80.00	80.00
1	State Tire Tax		$ 8.75	8.75
			Sub-Total Published Options	**3,194.75**
NON PUBLISHED OPTIONS				
1	Bike Rack, Sportworks Stainless, 2 Bike positions, 2 Fat tire positions (Fat tire trays require Apex model rack)		4,216.00	4,216.00
1	Electronics Storage Box, Fenton, 2 shelves and latching door, option deletes Co-Pilot Seat		975.00	975.00
1	Cut-off switch for accessories located in Electronics Storage Box		95.00	95.00
1	89.9 kWh Ford OEM battery pack (included in base price)			-
1	Hanover Front and Side Destination LED Signs		4,675.00	4,675.00
1	Drivers Side Aluminum grate style running board		375.00	375.00
1	GFI Mounting prep. Includes additional floor support for future mounting of GFI Fare Box		675.00	675.00
1	Privacy Tint on side windows		775.00	775.00
1	Prewire for DriveCam and CalAmp. Provides for (2) constant, ignition, and ground wire harness routed per Roseville		620.00	620.00
1	REI 7-Camera HD system. 5 Interior + 2 Exterior. 2TB Hard Drive, Event Marker + GPS (Includes Training)		5,450.00	5,450.00
1	Wrap, Full exterior (except roof and glass) Roseville to provide AI file for actual image		5,160.00	5,160.00
1	Spare REI Hard Drive. This line item represents (4) spare 2TB Hard Drives with the cost spread over a 12 van order		225.00	225.00
			Sub-Total Non-Published Options	**23,241.00**

SUMMARY

SPECIFICATION SUMMARY

Model Year	2024 (with 89.9kWh Battery Pack	Make:	Nor Cal Van/Driverge	Wheelchair Lift Model:	Braun
Type:	Ford E-Transit 350 MR	Chassis:	Ford E-Transit 350 MR	Wheelchair Lift Location	Shift N Step
Passenger Capacity:	5 seated + 1 w/c	Wheelbase:	148	Number of Tie Downs:	1
Seat Fabric:	Ford OEM Charcoal Vinyl	Engine:	Electric	Battery Capacity	89.9kWh + 16kWh
Air Conditioning System:	FORD OEM	GVWR:	9,500	Tie Down Type	QStraint 8100 DLX
Exterior Color/Graphics:	White	Body Length:	19.5 ft	Estimated Delivery:	

BUSSALES AN EMPLOYEE OWNED COMPANY

SBS Secondary Battery System

MBTA CalACT Cooperative
RFP #20-01

DRIVERGE VEHICLE INNOVATIONS



Customer:	**City of Roseville**			Quote Date	4/6/2024
Address:	316 Vernon Street	County:	Placer	Expires	2024 chassis
City	Roseville	Zip Code:	95678	Roof design	**Mid-Roof Height**
Contact:	Zach Presley	Office Phone:	916-774-5365		
Email Address:	zpresley@roseville.ca.us	Cell Phone:		FORD FIN Code	required
Sales Representative	Clay Hartman	Type	E- Transit, Nor Cal Vans/Driverge	Revision Date	2/4/2025

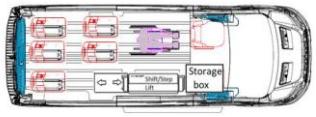
QTY **Option Description** **Contract Price**

SUMMARY STANDARD BID FEATURES & EQUIPMENT

Ford E-Transit Body Code W9C Mid Roof	235/65R16
Ford E-Transit XL Cargo with Driverge Interior	E-Transit Electric Motor
Rear w/c Lift, Braun Century 800 lb rating	89.9kWh OEM Ford Battery Pack (new for 2024)
Smart floor interior tracking for seats and w/c's	1-Speed Motor w/ Electric rear Axle
Headroom Height Interior, 67"	9,500 lb GVWR
Exterior Height 99"	Rear Axle: Single Tires.
Overall Length 235.5"	OEM Ford A/C & Heat + Fenton High Capacity A/C & Pass Heat Package
Laminated Side windows in Passenger area (92A)	AM FM Stereo
Altro Flooring	Reverse Backing camera

CONTRACT PRICING SUMMARY





SBS Secondary Battery System

Base Unit as Specified		176,858.00		
Published Options		3,194.75		
Non-Published Options		23,241.00		
Sub-total per Unit		**203,293.75**		
Mobility Aid Rebate shown for tax purposes		**1,000.00**	reversed below	
ADA Portion		43,380.75		
Taxable amount on which tax is collected		160,913.00		
Sales Tax on taxable amount		**6,134.81**	3.813%	Roseville
CalACT MBTA Fee of 1.5% on the subtotal		**3,049.41**		(sell below re: Tax)
Mobility Aid reduction		**(1,000.00)**	reversal from above	
Total, Each		**212,477.96**		
Less HVIP rebate	$	**(8,625.00)**	Application required	HVIP REBATE
Sub Total		**203,852.96**		
Qty		3		
Grand Total		**611,558.89**	*Sales tax rate is based on special zero emission reduction of normal tax rate less 3.9375*	

Clay Hartman
Signature

Clay Hartman
Print Name

Signature Date

Print Name

City of Roseville
COMPANY/AGENCY

MBTA CalACT Cooperative
RFP #20-01

Customer:	City of Roseville			Quote Date	4/6/2024
Address:	316 Vernon Street	County:	Placer	Expires	2024 chassis
City	Roseville	Zip Code:	95678	Roof design	Mid-Roof Height
Contact:	Zach Presley	Office Phone:	916-774-5365		
Email Address:	zpresley@roseville.ca.us	Cell Phone:		FORD FIN Code	required
Sales Representative	Clay Hartman	Type	E- Transit, Nor Cal Vans/Driverge	Revision Date	2/4/2025

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			Sub-Total Base Unit	**$ 176,858.00**
PUBLISHED OPTIONS				
2	Go-ES Single Seat		$ 1,153.00	2,306.00
1	Delivery Zone 4		$ 800.00	800.00
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1	Bike Rack, Sportworks Stainless, 2 Bike positions, 2 Fat tire positions (Fat tire trays require Apex model rack)		4,216.00	4,216.00
1	Electronics Storage Box, Fenton, 2 shelves and latching door, option deletes Co-Pilot Seat		975.00	975.00
1	Cut-off switch for accessories located in Electronics Storage Box		95.00	95.00
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1	Hanover Front and Side Destination LED Signs		4,675.00	4,675.00
1	Drivers Side Aluminum grate style running board		375.00	375.00
1	GFI Mounting prep. Includes additional floor support for future mounting of GFI Fare Box		675.00	675.00
1	Privacy Tint on side windows		775.00	775.00
1	Prewire for DriveCam and CalAmp. Provides for (2) constant, ignition, and ground wire harness routed per Roseville		620.00	620.00
1	REI 7-Camera HD system. 5 Interior + 2 Exterior. 2TB Hard Drive, Event Marker + GPS (Includes Training)		5,450.00	5,450.00
1	Wrap, Full exterior (except roof and glass) Roseville to provide AI file for actual image		5,160.00	5,160.00
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Seat Fabric:	Ford OEM Charcoal Vinyl	Engine:	Electric	Battery Capacity	89.9kWh + 16kWh
Air Conditioning System:	FORD OEM	GVWR:	9,500	Tie Down Type	QStraint 8100 DLX
Exterior Color/Graphics:	White	Body Length:	19.5 ft	Estimated Delivery:	

BUSSALES AN EMPLOYEE OWNED COMPANY

SBS Secondary Battery System

MBTA CalACT Cooperative
RFP #20-01

DRIVERGE VEHICLE INNOVATIONS



Customer:	**City of Roseville**			Quote Date	4/6/2024
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City	Roseville	Zip Code:	95678	Roof design	**Mid-Roof Height**
Contact:	Zach Presley	Office Phone:	916-774-5365		
Email Address:	zpresley@roseville.ca.us	Cell Phone:		FORD FIN Code	required
Sales Representative	Clay Hartman	Type	E- Transit, Nor Cal Vans/Driverge	Revision Date	2/4/2025

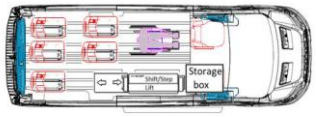
QTY **Option Description** **Contract Price**

SUMMARY STANDARD BID FEATURES & EQUIPMENT

Ford E-Transit Body Code W9C Mid Roof	235/65R16
Ford E-Transit XL Cargo with Driverge Interior	E-Transit Electric Motor
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Smart floor interior tracking for seats and w/c's	1-Speed Motor w/ Electric rear Axle
Headroom Height Interior, 67"	9,500 lb GVWR
Exterior Height 99"	Rear Axle: Single Tires.
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Laminated Side windows in Passenger area (92A)	AM FM Stereo
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CONTRACT PRICING SUMMARY





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CalACT MBTA Fee of 1.5% on the subtotal		**3,049.41**		(sell below re: Tax)
Mobility Aid reduction		**(1,000.00)**	reversal from above	
Total, Each		**212,477.96**		
Less HVIP rebate	$	**(8,625.00)**	Application required	HVIP REBATE
Sub Total		**203,852.96**		
Qty		9		
Grand Total		**1,834,676.68**	*Sales tax rate is based on special zero emission reduction of normal tax rate less 3.9375*	

Clay Hartman
Signature

Clay Hartman
Print Name

Signature Date

Print Name

City of Roseville
COMPANY/AGENCY

COUNCIL COMMUNICATION

CC #: 3851
File #: 0800-04

Title:	Vernon Street/Atlantic Street Multimodal Safety Improvement Project - Approval of Plans and Specifications and Authorization to Call for Bids
Contact:	Karen Vences 916-774-5412 kavences@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.4.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council approve the plans and specifications for the Vernon Street/Atlantic Street Multimodal Safety Improvement Project and authorize staff to call for bids.

BACKGROUND

Vernon Street through Downtown Roseville is a two-lane collector road with on-street parking and posted speed limits ranging between 15 of 25 mph. The Council-adopted Downtown Specific Plan identifies the need for intersection improvements at Vernon Street/Atlantic Street and Folsom Road to improve traffic circulation, improve accessibility for bicyclists and pedestrians, and provide better connectivity between Historic Old Town and Downtown.

The project will include improvements to Vernon Street beginning at Lincoln Street, and will extend through the S-curve up to Yosemite Street. The project scope includes the construction of enhanced pedestrian crosswalks, rectangular rapid flashing beacons, green bike lanes to improve visibility, pavement rehabilitation, lane reductions to slow vehicle speeds, and turning restrictions at low volume intersections to reduce conflict zones. All of these improvements are designed to benefit driver, bicyclist, and pedestrian safety through the corridor. This project will also improve corridor aesthetics by including a raised landscaped median upon entering Vernon Street into the Downtown area.

Construction of the project is anticipated to begin in late summer 2025 and be complete by early spring of 2026. Construction plans and specifications for the project have been completed and are attached.

Public Outreach:

A range of public outreach occurred during the development of the project plans including two postcard mailers, project informational webpage (roseville.ca.us/Atlantic), and a community open house held on June 29, 2022 at the Civic Center.

Public Works staff will be working closely with the Public Affairs and Communications Department to keep the community informed of the project's benefits, progress, and traffic impacts during the construction phase of the project through a variety of methods including, but not limited to, direct mail, signage, social media, web, and email notifications.

FISCAL IMPACT

The project is estimated to cost $1.9 million and will be funded with Highway Safety Improvement Program (HSIP) grant funds, Highway Users Tax (HUT) funds, and Local Transportation Funds (LTF). Once the actual construction costs are known, a budget adjustment will be recommended for approval at the time of Council award of the construction contract if necessary. No General Fund resources will be used for construction of the project.

New landscaping improvements along the corridor will require maintenance by the City's Parks, Recreation and Libraries Department (PRL), and the estimated annual cost increase as a result of the improvements is approximately $2,000 annually in future PRL operating budgets in the General Fund.

ENVIRONMENTAL REVIEW

Development of the Vernon Street/Atlantic Street Multimodal Safety Improvement Project was previously evaluated in the Downtown Specific Plan EIR (certified April 3, 2009, SCH No. 2007102090.), and identified in the associated Downtown Specific Plan. Construction of the Vernon Street/Atlantic Street Multimodal Safety Improvement Project is found to be within the scope of the project covered by the Downtown Specific Plan EIR. As discussed in the Specific Plan EIR, the EIR provides environmental analyses of community infrastructure and facilities, including Gateway Elements, landscaping, and multimodal safety improvements, to the extent applicable. Because the project is consistent with Downtown Specific Plan EIR and Specific Plan, no new effects would be expected to occur and all applicable mitigation measures from the Downtown Specific Plan EIR will be implemented during the design and construction of the Vernon Street/Atlantic Street Multimodal Safety Improvement Project. Because the proposed project meets the requirements identified in Section 15183 of the State CEQA Guidelines, no additional CEQA review is required.

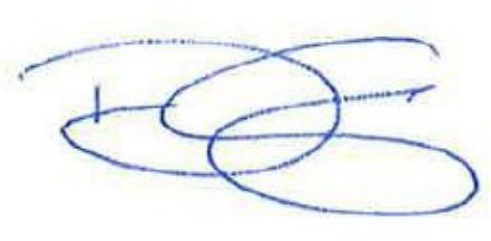
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal C - Maintain a safe and healthy community
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Karen Vences, Assistant Engineer

Jason Shykowski, Public Works Director



Dominick Casey, City Manager

ATTACHMENTS:

Description

Location Map

Vernon-Atlantic Plan Set

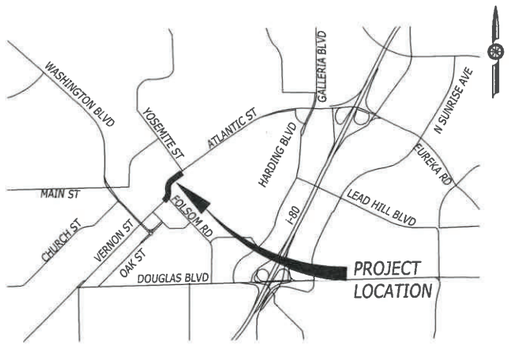
Vernon-Atlantic Project Manual

CITY OF ROSEVILLE CALIFORNIA
Public Works

VERNON STREET/ATLANTIC STREET MULTIMODAL SAFETY IMPROVEMENT PROJECT

LOCATION MAP





VICINITY MAP
NOT TO SCALE

CITY OF ROSEVILLE CALIFORNIA

VERNON /ATLANTIC MULTIMODAL SAFETY IMPROVEMENT PROJECT

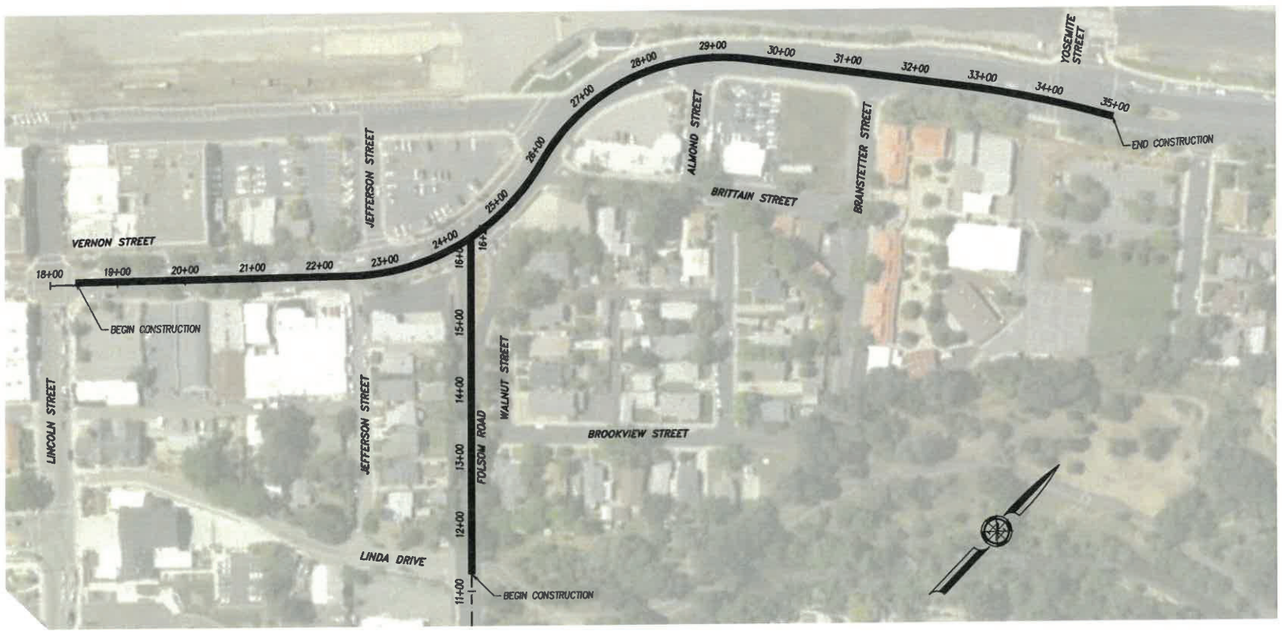
VERNON STREET AND ATLANTIC STREET SEGMENT BETWEEN LINCOLN ST AND YOSEMITE STREET,
IN THE CITY OF ROSEVILLE, COUNTY OF PLACER
PROJECT NO. 500324

INDEX OF PLAN SHEETS

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6-7	L-1 – L-2	LAYOUT SHEET
8-10	PD-1 – PD-3	PAVEMENT DELINEATION
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15-17	E-1 – E-3	RECTANGULAR RAPID FLASHING BEACON SYSTEM
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22-23	LD-1 – LD-2	LANDSCAPE DETAILS

UTILITY CONTACTS

UTILITY	COMPANY	REPRESENTATIVES	PHONE
U.S.A.	U.S.A.		800-642-2444
ELECTRIC	ROSEVILLE ELECTRIC	JOEY MCKINNEY	916-774-5618
SIGNALS	CITY OF ROSEVILLE	ZACH HOPKINS	916-474-9100
FIRE	ROSEVILLE FIRE DEPT.		916-774-5823
WATER	CITY OF ROSEVILLE	JANICE GAINEY	916-774-5535
SEWER	CITY OF ROSEVILLE	TRACIE MUELLER	916-774-5688
DRAINAGE	CITY OF ROSEVILLE	CHRIS TAMEZ	916-774-5791
PARKS	CITY OF ROSEVILLE	JOEL DE JONG	916-223-7757
GAS	PACIFIC GAS & ELECTRIC	DAVE BOND	530-889-3261
TV	CONSOLIDATED COMMUNICATIONS	HANK BRAZ	916-786-1783
TELECOM	XO COMMUNICATIONS	STEVE LEOHNER	408-817-2800
TELECOM	XFINITY	STEVE ABELIA	916-830-6757
TELECOM	CENTURY LINK	CALEB KING	918-547-0007
TELEPHONE	AT&T	ASTRID WILLARD	916-484-2388
JOINT TRENCH	VERIZON	MIC WOODMAN	801-618-4664
ELECTRIC	SMUD	JERRY CLARK	916-732-5246



LOCATION MAP
NOT TO SCALE

SUBMITTED BY:

Carlton D. Allen III 03/20/2025

CARLTON D. ALLEN, III — DATE
RESPONSIBLE ENGINEER IN CHARGE

CITY OF ROSEVILLE
DEPT. OF PUBLIC WORKS

APPROVAL RECOMMENDED BY:

3.26.25

PRINCIPAL ENGINEER — DATE
NOAH SIVIGLIA
R.C.E. 87197

DEPT. OF PUBLIC WORKS

APPROVED BY:

Jason Shykowski 3/26/2025

PUBLIC WORKS DIRECTOR — DATE
JASON SHYKOWSKI
R.C.E. 58234

DIGALERT
DIAL TOLL FREE
1-800-642-2444
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA

NO.	REVISIONS	BY	DATE
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BENCH MARK ELEV : XX DATUM : XX
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DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	C.KELLY
CHECKED BY :	C.ALLEN
SCALE :	N/A
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REGISTERED PROFESSIONAL ENGINEER — CARLTON DONALD ALLEN III — NO. C76894 — STATE OF CALIFORNIA

BEN EN
TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

CITY OF ROSEVILLE CALIFORNIA
CITY OF ROSEVILLE

TITLE SHEET

CALIFORNIA

T-1
1 OF 23

Login Name: bmcleod
Plot Date/Time: Wed Mar 26 2025 - 11:11 am
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GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THESE PLANS AND THE LATEST EDITION AND AMENDMENTS OF THE CITY OF ROSEVILLE DESIGN AND CONSTRUCTION STANDARDS, AND 2023 STATE STANDARD SPECIFICATIONS AND PLANS.
2. THE CITY OF ROSEVILLE IS A MEMBER OF THE UNDERGROUND SERVICE ALERT (U.S.A.) ONE-CALL SYSTEM. THE CONTRACTORS SHALL NOTIFY THE U.S.A. CENTER 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK BY CALLING 1-800-227-2600.
3. THE CONTRACTOR SHALL MARK IN WHITE PAINT ALL AREAS TO BE EXCAVATED PRIOR TO CONTACTING U.S.A. ANY AREAS NOT MARKED WILL NOT BE SUBJECT TO U.S.A., AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM EXCAVATION.
4. THE CONTRACTOR SHALL EXPOSE AND VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OF THE NEW IMPROVEMENTS CONNECTING TO OR IN THE VICINITY OF THE SAME.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS ON THE JOB SITE.
6. THE CONTRACTOR SHALL PLACE BOXED SURVEY MONUMENTS WITH 1-1/2" BRONZE HEAD SET IN CONCRETE (STD. DWG. ST-36) AT LOCATIONS SHOWN ON THESE PLANS.
7. A.C. SURFACE SHALL BE CUT TO A NEAT, STRAIGHT LINE PARALLEL WITH THE STREET CENTERLINE AND THE EXPOSED EDGE SHALL BE TACKED WITH EMULSION PRIOR TO PAVING. THE EXPOSED BASE MATERIAL SHALL BE GRADED, RE-COMPACTED, AND RESEALED PRIOR TO PAVING.
8. ANY EXISTING CONCRETE SURFACE TO BE REMOVED SHALL BE SAW CUT TO A NEAT, STRAIGHT LINE.
9. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN THAT SHALL BE ACCEPTED BY THE ENGINEERING DIVISION OF PUBLIC WORKS BEFORE START OF WORK IN RIGHT-OF-WAY AND SHALL BE IN ACCORDANCE WITH CALIFORNIA MUTCD LATEST EDITION. MAINTAIN LANES OPENED AS SPECIFIED IN THE SPECIAL PROVISIONS UNLESS OTHERWISE SHOWN ON THE PLANS. TRAFFIC CONTROL HOURS ARE SUBJECT TO LIMITATION BY THE CITY. TRAFFIC CONTROL WITH LANE CLOSURES THAT AFFECT TRAFFIC FLOW MAY REQUIRE NIGHT WORK. IF, AS A PART OF TRAFFIC CONTROL MEASURES, A ROADWAY CLOSURE HAS BEEN APPROVED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER 72 HOURS IN ADVANCE OF SETTING UP THIS CLOSURE.
10. CURB RAMPS CONFORMING TO ALL ADA AND TITLE 24 REQUIREMENTS SHALL BE PLACED AT ALL NEW STANDARD CURB RETURNS (STANDARD DRAWING ST-27) AND STANDARD TYPE A-7 DRIVEWAYS. WHERE EXISTING RAMPS DO NOT MEET CURRENT ADA AND TITLE 24 REQUIREMENTS, THE RAMPS SHALL BE UPGRADED IN CONFORMANCE WITH MINIMUM TITLE 24 REQUIREMENTS. WHERE EXISTING RAMPS DO NOT INCLUDE DETECTABLE WARNING PANELS (TRUNCATED DOMES), PANELS SHALL BE RETROFITTED PER THE CONSTRUCTION STANDARDS.
11. DRAIN INLETS NOT WITHIN A PAVED AREA SHALL HAVE A 12" WIDE COLLAR OF 6" THICK P.C.C. OR 2" THICK A.C.
12. PRIOR TO THE CERTIFICATE OF COMPLETION ON ALL SINGLE-FAMILY RESIDENTIAL SUBDIVISIONS, THE DEVELOPER SHALL SUBMIT A LETTER FROM THE POST OFFICE STATING THAT ITS REQUIREMENTS FOR MAILBOX CLUSTER PADS HAVE BEEN SATISFIED.
13. ALL UNDERGROUND UTILITIES WITHIN EXISTING OR PROPOSED CITY OF ROSEVILLE EASEMENTS SHALL REQUIRE A MINIMUM OF 90% COMPACTION ON THE TRENCH BACKFILL. COMPACTION OF BACKFILL BY JETTING IS NOT PERMITTED IN CITY OF ROSEVILLE RIGHT OF WAY AND EASEMENT AREAS OR WITHIN DEDICATED RECLAIMED WATER, STORM, SEWER OR WATER EASEMENTS AND MAINS.
14. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING ONE-WEEK PRIOR TO STARTING WORK. MEMBERS OF THE CITY OF ROSEVILLE DEVELOPMENT SERVICES DEPARTMENT, ENVIRONMENTAL UTILITIES DEPARTMENT AND ALL OTHER UTILITY REPRESENTATIVES SHALL BE NOTIFIED BY THE CONTRACTOR AS TO THE DATE AND LOCATION OF THE MEETING.
15. PRIOR TO EXCAVATION OF TRENCHES 5 FEET OR DEEPER, THE CONTRACTOR SHALL SUBMIT TO THE DEVELOPMENT SERVICES DEPARTMENT OR ENVIRONMENTAL UTILITIES DEPARTMENT INSPECTOR A COPY OF THE COMPANY'S ANNUAL CALOSHA TRENCHING PERMIT AND A COPY OF THE COMPANY'S LETTER INFORMING CALOSHA OF THE TIME THE TRENCHING IS COMMENCING AND THE LOCATION OF THE WORK.
16. ALL PAINTED TRAFFIC STRIPES, ARROWS, AND PAVEMENT MARKINGS SHALL BE CONSTRUCTED WITH THERMOPLASTIC MATERIAL TO THE SPECIFICATIONS SET FORTH IN CHAPTER 3 OF THE CALIFORNIA MUTCD LATEST EDITION. NON-REFLECTIVE PAVEMENT MARKERS SHALL CONSIST OF CERAMIC MARKERS ONLY CONFORMING TO CHAPTER 3 OF THE CALIFORNIA MUTCD LATEST EDITION.
17. THE CONTRACTOR SHALL TAKE EXTREME CARE TO PROTECT EXISTING SITE AND ADJACENT IMPROVEMENTS FROM DAMAGE. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR MAKE REPLACEMENT OF ALL CRACKED AND OTHERWISE PRE-EXISTING DAMAGED PUBLIC IMPROVEMENTS ALONG THE FRONTAGE OF THE PROJECT SITE AND ANY DAMAGE RESULTING FROM CONSTRUCTION TO CURRENT CITY STANDARDS AND AT THEIR OWN EXPENSE. THE EXTENT OF THE REPAIRS SHALL BE DETERMINED BY THE DEVELOPMENT SERVICES CONSTRUCTION INSPECTOR AND SHALL BE COMPLETED PRIOR TO THE CITY ACCEPTANCE OF THE IMPROVEMENTS.
18. WHERE COMBINATIONS OF SIDEWALK OR CURB AND GUTTER ARE PLACED CONTIGUOUS TO EXISTING, ALL ADJOINING EXISTING CONCRETE VERTICAL FACES SHALL BE DOWELED. ALL ABUTTING SIDEWALK ENDS SHALL BE DOWELED MID-SECTION VERTICALLY WITH TWO DOWELS FOR FOUR THROUGH SIX-FOOT WIDE SIDEWALK AND THREE DOWELS FOR WIDER SIDEWALK. ABUTTING CURB AND GUTTER ENDS SHALL BE DOWELED TWICE, 18 INCHES APART AT GUTTER PAN MID-SECTION. DOWEL CONNECTIONS OF LONGITUDINAL RUNS OF SIDEWALK TO BACK OF CURB SHALL BE THREE FEET ON CENTER. ALL DOWELS SHALL BE 16 INCHES LONG, GRADE 60; #4 REBAR PENETRATING FOUR INCHES. THE DOWEL HOLE SHALL BE 5/8-INCH DIAMETER AT A SLIGHT HORIZONTAL ANGLE FROM PERPENDICULAR. THE PENETRATING PORTION OF THE DOWEL AND THE ENTIRE (CLEANED) VERTICAL SURFACE OF THE ADJOINING, EXISTING CONCRETE SHALL BE THOROUGHLY COATED WITH STATE STANDARD TWO-PART EPOXY.
19. WHEN SAWCUTTING WITHIN THE STREET FOR TRENCHING OR OTHER PURPOSES, CONTRACTOR SHALL GRIND 1½' OF PAVEMENT BETWEEN THE LANE LINES (FROM LANE STRIPE TO LANE STRIPE) UPON COMPLETION OF THE SAWCUTTING AND OR TRENCHING WORK. WHERE THE SAWCUTTING OCCURS BETWEEN THE CURB AND GUTTER AND NEAREST LANE STRIPE (INCLUDING BIKE LANES), THE SAME 1 ½' GRIND SHALL BE REQUIRED. CONTRACTOR TO PLACE A PETROMAT FABRIC OR APPROVED EQUAL BY THE CITY OF ROSEVILLE AND OVERLAY FROM LANE STRIPE TO LANE STRIPE, OR CURB TO LANE STRIPE AND RESTRIPE OR REPLACE ANY DELINEATORS REMOVED DURING THE GRIND.
20. THE CONTRACTOR SHALL PLACE FILTER FABRIC BETWEEN THE INITIAL BEDDING AND BACKFILL AND THE TRENCH BACKFILL FOR SANITARY SEWERS DEPTH GREATER THAN 15 FEET MEASURED TO THE PIPE INVERT.

VERIFICATION-LOCATION:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL EXISTING UNDERGROUND UTILITIES, WHETHER OR NOT THEY ARE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CONTACT U.S.A. AND HAVE UTILITIES MARKED AT LEAST 72 HOURS BEFORE BEGINNING WORK. WHERE MARKINGS ARE NEAR PROPOSED FOUNDATIONS, THE CONTRACTOR SHALL LOCATE UNDERGROUND UTILITIES BY POT HOLING PRIOR TO EXCAVATING.
2. THE CONTRACTOR IS SOLELY RESPONSIBLE TO PROVIDE ALL LABOR AND EQUIPMENT NECESSARY TO LOCATE EXISTING UNDERGROUND FACILITIES BEYOND THE INFORMATION PROVIDED BY U.S.A. MARKING INCLUDE, BUT NOT LIMITED TO, METAL DETECTORS, WIRE LOCATIONS (OR WIRE LOCATING EQUIPMENT), AND POTHOLING.
3. LOCATIONS OF SIGNAL STANDARDS, CONTROLLERS, SERVICE PEDESTALS, PULL BOXES AND LOOP DETECTORS AS SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL LOCATE THESE ITEMS AND THE ENGINEER SHALL APPROVE SAID LOCATIONS PRIOR TO EXCAVATION.
4. IN CASE OF BORING, CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.

TRAFFIC CONTROL PLANS:

1. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN THAT SHALL BE ACCEPTED BY THE ENGINEERING DIVISION OF PUBLIC WORKS BEFORE START OF WORK IN RIGHT-OF-WAY AND SHALL BE IN ACCORDANCE WITH CALIFORNIA MUTCD LATEST EDITION. MAINTAIN LANES OPENED AS SPECIFIED IN THE SPECIAL PROVISIONS UNLESS OTHERWISE SHOWN ON THE PLANS. TRAFFIC CONTROL HOURS ARE SUBJECT TO LIMITATION BY THE CITY. TRAFFIC CONTROL WITH LANE CLOSURES THAT AFFECT TRAFFIC FLOW MAY REQUIRE NIGHT WORK. IF, AS A PART OF TRAFFIC CONTROL MEASURES, A ROADWAY CLOSURE HAS BEEN APPROVED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER 72 HOURS IN ADVANCE OF SETTING UP THIS CLOSURE.
2. THE CONTRACTOR SHALL BE REQUIRED TO SUBMIT A WRITTEN TRAFFIC CONTROL PLAN REQUESTING TO DISCONNECT OR DISABLE ANY TRAFFIC SIGNAL LOOP OR SIGNAL INTERCONNECT WIRE. THIS WRITTEN NOTIFICATION SHALL INCLUDE DATE AND TIME OF DISCONNECT, DESCRIPTION OF WORK, INCLUDING LOOP INPUTS IF APPLICABLE, CONTACT PERSON, AND ESTIMATED DATE OF RECONNECTION. THIS REQUEST SHALL BE ON COMPANY LETTERHEAD, FAX OR VIA COMPANY E-MAIL. UPON APPROVAL OF REQUEST, THE CONTRACTOR SHALL NOTIFY THE INSPECTOR 48 HOURS PRIOR TO WORK TO VERIFY SCHEDULE. A COPY OF THE APPROVED REQUEST SHALL BE GIVEN TO THE SIGNAL TECHNICIAN DISCONNECTING THE REQUESTED SYSTEM. THIS COPY IS TO BE PLACED IN THE NEAREST CONTROLLER CABINET DURING THE COURSE WORK. REQUEST TO DISCONNECT OR DISABLE ANY TRAFFIC SIGNAL SYSTEM FOR A PERIOD LONGER THAN FIVE (5) WORKING DAYS WILL NOT BE APPROVED.
3. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGGERS OR OTHER DEVICES NECESSARY TO PROVIDE SAFETY.
4. THE CONTRACTOR SHALL POST EMERGENCY TELEPHONE NUMBERS FOR POLICE, FIRE, AMBULANCE, AND THOSE AGENCIES RESPONSIBLE FOR MAINTENANCE OF UTILITIES IN THE VICINITY OF JOB SITE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL CONSTRUCTION SIGNING AS REQUIRED BY THE LATEST EDITION OF THE CMUTCD TO DELINEATE CONSTRUCTION HAZARDS AT HIS OWN EXPENSE.
6. ALL TRAFFIC STRIPES AND PAVEMENT LEGENDS SHALL BE THERMOPLASTIC.
7. SIGNING AND STRIPING DETAILS REFER TO THOSE SHOWN IN THE LATEST EDITION OF THE CMUTCD.
8. LOCATIONS OF SIGNING AND STRIPING AS SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL LOCATE THESE ITEMS AND THE ENGINEER SHALL APPROVE SAID LOCATIONS PRIOR TO CONSTRUCTION/INSTALLATION.
9. THE CONTRACTOR SHALL REMOVE ALL EXISTING NON-CONFORMING STRIPING AS DIRECTED BY THE ENGINEER AND ALL EXISTING STRIPING THAT CONFLICTS WITH THE PROPOSED STRIPING.

AIR QUALITY:

THE FOLLOWING NOTES ARE PROVIDED AS REFERENCE TO APPLICABLE PLACER COUNTY AIR POLLUTION CONTROL DISTRICT ADOPTED RULES AND REGULATIONS. COMPLIANCE WITH ALL APPLICABLE APCD RULES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. AIR QUALITY RULES ARE ENFORCED SOLELY BY THE PLACER COUNTY AIR POLLUTION CONTROL DISTRICT.

1. CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS SHALL NOT EXCEED PLACER COUNTY APCD RULE 202 VISIBLE EMISSION LIMITATIONS. OPERATORS OF VEHICLES AND EQUIPMENT FOUND TO EXCEED OPACITY LIMITS ARE TO BE IMMEDIATELY NOTIFIED BY APCD TO CEASE OPERATIONS AND THE EQUIPMENT MUST BE REPAIRED WITHIN 72 HOURS. (BASED ON APCD RULE 202)
2. THE CONTRACTOR SHALL SUSPEND ALL GRADING OPERATIONS WHEN FUGITIVE DUST EXCEEDS PLACER COUNTY APCD RULE 228 (FUGITIVE DUST) LIMITATIONS. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING AN INDIVIDUAL WHO IS CARB-CERTIFIED TO PERFORM VISIBLE EMISSIONS EVALUATIONS (VEE). THIS INDIVIDUAL SHALL EVALUATE COMPLIANCE WITH RULE 228 ON A WEEKLY BASIS. IT IS TO BE NOTED THAT FUGITIVE DUST IS NOT TO EXCEED 40% OPACITY AND NOT GO BEYOND THE PROPERTY BOUNDARY AT ANY TIME. LIME OR OTHER DRYING AGENTS UTILIZED TO DRY OUT WET GRADING AREAS SHALL NOT EXCEED PLACER COUNTY APCD RULE 228 FUGITIVE DUST LIMITATIONS. OPERATORS OF VEHICLES AND EQUIPMENT FOUND TO EXCEED OPACITY LIMITS WILL BE NOTIFIED BY APCD AND THE EQUIPMENT MUST BE REPAIRED WITHIN 72 HOURS. ALL PROJECTS IN EXCESS OF 5 ACRES SHALL HAVE AN APPROVED DUST CONTROL PLAN FROM THE PLACER COUNTY AIR POLLUTION CONTROL DISTRICT. (BASED ON APCD RULE 228)
3. DURING CONSTRUCTION, TRAFFIC SPEEDS ON ALL UNPAVED SURFACES SHALL BE LIMITED TO 15 MILES PER HOUR OR LESS. (BASED ON APCD RULE 228 / SECTION 401.2)
4. DURING CONSTRUCTION, NO OPEN BURNING OF REMOVED VEGETATION SHALL BE ALLOWED UNLESS PERMITTED BY THE PCAPCD. ALL REMOVED VEGETATIVE MATERIAL SHALL BE EITHER CHIPPED ON SITE OR TAKEN TO AN APPROPRIATE RECYCLING SITE, OR IF A SITE IS NOT AVAILABLE, A LICENSED DISPOSAL SITE. (BASED ON APCD RULE 310)
5. A PERSON SHALL NOT DISCHARGE INTO THE ATMOSPHERE VOLATILE ORGANIC COMPOUNDS ('VOC'S) CAUSED BY THE USE OR MANUFACTURE OF CUTBACK OR EMULSIFIED ASPHALTS FOR PAVING, ROAD CONSTRUCTION OR ROAD MAINTENANCE, UNLESS SUCH MANUFACTURE OR USE COMPLIES WITH THE PROVISIONS RULE 217. (BASED ON APCD RULE 217).
6. PROCESSES THAT DISCHARGE 2 POUNDS PER DAY OR MORE OF AIR CONTAMINANTS, AS DEFINED BY HEALTH AND SAFETY CODE SECTION 39013, TO THE ATMOSPHERE MAY REQUIRE A PERMIT. PERMITS MAY BE REQUIRED FOR BOTH CONSTRUCTION AND OPERATION. DEVELOPERS/CONTRACTORS SHOULD CONTACT THE DISTRICT PRIOR TO CONSTRUCTION AND OBTAIN ANY NECESSARY PERMITS PRIOR TO THE ISSUANCE OF A BUILDING PERMIT. (BASED ON THE CALIFORNIA HEALTH & SAFETY CODE SECTION 39013: (NEED LINK)

TREE PRESERVATION:

1. GRADING AROUND TREES TO BE LIMITED TO OUTSIDE THE DRIPLINE. ANY TREE WELL GRADED SHOULD BE DRAINED TO SOME OUTFALL OR SWALE.
2. THE FOLLOWING CONDITIONS SHALL APPLY TO ENSURE THE PRESERVATION OF TREES:
   A. EACH TREE OR GROUP OF TREES TO BE SAVED SHALL BE FENCED BY A CHAIN-LINK FENCE PRIOR TO ANY GRADING OR MOVEMENT OF HEAVY EQUIPMENT OR ISSUANCE OF ANY PERMITS.
   B. FENCING SHALL BE LOCATED ONE FOOT (1') OUTSIDE THE DRIPLINE OF THE TREE OR TREES.
   C. SIGNS SHALL BE POSTED ON ALL SIDES OF SAID FENCES STATING:

      WARNING:
      THIS FENCE SHALL NOT BE REMOVED
      OR RELOCATED WITHOUT WRITTEN
      AUTHORIZATION FROM THE
      PLANING DEPARTMENT
3. THE GRADING PLAN FOR THE PROJECT HAS BEEN DESIGNED FOR NO GRADING TO OCCUR WITHIN THE DRIPLINE OF ANY OAK TREE UNLESS SPECIFICALLY APPROVED BY PLANNING DEPARTMENT AND SHOWN ON THESE PLANS. NO GRADES SHALL BE MODIFIED WITHOUT THE APPROVAL OF THE CIVIL ENGINEER AND THE CITY OF ROSEVILLE.
4. NO TRENCHING SHALL OCCUR BENEATH THE DRIPLINE OF ANY OAK TREE TO BE SAVED UNLESS STATED ON THESE PLANS "TRENCHING UNDER THIS TREE IS APPROVED".
5. PARKING OF VEHICLES AND EQUIPMENT OR STORAGE OF MATERIALS UNDER THE DRIPLINE OF TREES SHALL NOT OCCUR AT ANY TIME.

GRADING:

1. GRADING SHALL CONFORM TO APPENDIX CHAPTER 33 UBC, LATEST EDITION, AND TO THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEERING REPORT BY GEOCON FEBRUARY 2013.
2. NON-POTABLE WATER SHALL BE SPRAYED ON ALL EXPOSED EARTH SURFACES DURING CLEARING GRADING EARTH MOVING, AND OTHER SITE PREPARATION ACTIVITIES. THE EXPOSED EARTH SHALL BE WATERED THROUGHOUT THE DAY TO MINIMIZE DUST.
3. TARPAULINS OR OTHER EFFECTIVE COVERS SHALL BE USED ON ALL STOCKPILED EARTH MATERIAL AND ON HALL TRUCKS TO MINIMIZE DUST
4. THE CITY SHALL HAVE THE AUTHORITY TO STOP ALL GRADING OPERATIONS, IF, IN OPINION OF CITY STAFF, INADEQUATE DUST CONTROL MEASURES ARE BEING PRACTICED OR EXCESSIVE WIND CONDITIONS CONTRIBUTE TO FUGITIVE DUST EMISSIONS
5. ADJACENT STREET FRONTAGES SHALL BE SWEPT AT LEAST ONCE A DAY TO REMOVE SILT AND OTHER DIRT WHICH IS EVIDENT FROM CONSTRUCTION ACTIVITIES REFER TO SCHEDULES WITHIN SWPPP.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING CONSTRUCTION VEHICLES LEAVING THE SITE ON A DAILY BASIS TO PREVENT DUST, SILT AND DIRT FROM BEING RELEASED OR TRACKED OFFSITE. REFER TO SWPPP FOR SPECIFIC REQUIREMENTS.
7. CONSTRUCTION SHALL STOP IF CULTURAL RESOURCES ARE SUSPECTED. IT IS POSSIBLE THAT PREVIOUS ACTIVITIES HAVE OBSCURED SURFACE EVIDENCE OF CULTURAL RESOURCES. IF SIGNS OF AN ARCHEOLOGICAL SITE, SUCH AS ANY UNUSUAL AMOUNTS OF STONE, BONE, OR SHELL, ARE UNCOVERED DURING GRADING OR OTHER CONSTRUCTION ACTIVITIES, WORK SHALL BE HALTED WITHIN 100 FEET OF THE FIND AND THE ROSEVILLE COMMUNITY DEVELOPMENT DEPARTMENT SHALL BE NOTIFIED A QUALIFIED ARCHEOLOGIST SHALL BE CONSULTED FOR AN ON-SITE EVALUATION THE ARCHEOLOGIST MAY REQUIRE ADDITIONAL MITIGATION
8. SHOULD GRADING OPERATIONS UNCOVER HAZARDOUS MATERIALS, OR WHAT APPEARS TO BE HAZARDOUS MATERIALS. THE FIRE DEPARTMENT SHALL BE CONTACTED IMMEDIATELY AT (916) 774-5820. THE AREA WHICH CONTAINS THE HAZARDOUS MATERIALS, SHALL BE MARKED OFF UNTIL AN INVESTIGATION BY A MEMBER OF THE FIRE DEPARTMENT IS CONDUCTED
9. THE CONTRACTOR IS EXPECTED TO COMPLY WITH THE FUGITIVE DUST CONTROL REQUIREMENTS FROM THE PLACER COUNTY AIR POLLUTION CONTROL DISTRICT: WWW.PLACERCA.GOV/APCD CONTAMINATED SOIL- CONTRACTOR AGREES TO PROPERLY ADHERE TO ALL THE CURRENT STATE AND FEDERAL REQUIREMENTS WHEN ANY EVIDENCE OF TOXIC HAZARDOUS OR CONTAMINATED SOILS ARE ENCOUNTERED DURING ANY AND ALL EXCAVATION OR GRADING OPERATIONS.
10. TEMPORARY EXCAVATION SLOPES MUST MEET CAL-OSHA REQUIREMENTS AS APPROPRIATE AND THE CONTRACTOR SHOULD HAVE A CAL-OSHA-APPROVED COMPETENT PERSON ONSITE DURING EXCAVATIONS
11. PERMANENT FILL AND CUT SLOPES ADJACENT TO THE ROADWAY (IF ANY) SHOULD BE CONSTRUCTED AT 4H:1V OR FLATTER
12. ENGINEERED FILL WILL NOT CONTAIN DELETERIOUS MATTER, ORGANIC MATERIAL, ROCK OR CEMENTATION LARGER THAN 3 INCHES IN MAXIMUM DIMENSION. EXCAVATED SOILS GENERATED FROM CUT OPERATIONS ALONG THE ALIGNMENT, NEARBY DESIGNATED BORROW AREAS OR EXISTING PAVEMENT SECTION MATERIALS MAY BE INCORPORATED INTO ENGINEERED FILL PROVIDED IT MEETS THE ENGINEERED FILL REQUIREMENTS
13. IF REQUIRED, IMPORT FILL MATERIAL SHOULD BE SIMILAR TO OR BETTER THAN NATIVE SOILS WITH A MINIMUM R-VALUE OF 25, MEETS THE ENGINEERED FALL REQUIREMENTS, AND WILL BE SAMPLED, TESTED, AND APPROVED BY THE GEOTECHNICAL INSPECTOR OR ENGINEER PRIOR TO ITS TRANSPORTATION TO THE SITE APPROVAL MAY TAKE UP TO ONE WEEK IF LABORATORY TESTING IS REQUIRED.
14. CONTRACTORS SHOULD BE AWARE OF MOISTURE SENSITIVITY OF SOILS AND THE POTENTIAL COMPACTION/WORKABILITY DIFFICULTIES. IT IS ANTICIPATED THAT EXPOSED SUBGRADE AND EXCAVATION BOTTOMS WILL LIKELY BE WET AND UNSTABLE, REGARDLESS OF THE TIME OF YEAR, AND MITIGATION ALTERNATIVES MAY BE USED TO ACHIEVE WORKABLE SOIL SITE SPECIFIC RECOMMENDATIONS DURING CONSTRUCTION MAY BE NEEDED BASED ON CONDITIONS ENCOUNTERED
15. OPTIMUM MOISTURE CONTENT OF SUBGRADE SOILS IS APPROXIMATELY 9 PERCENT.
16. GRADING AND EARTHWORK OPERATIONS WILL BE CONTINUOUSLY OBSERVED AND ALL FILLS TESTED FOR RECOMMENDED COMPACTION AND MOISTURE CONTENT BY A GEOTECHNICAL INSPECTOR
17. SITE PREPARATION SHOULD BEGIN WITH REMOVAL OF EXISTING SURFACE AND SUBSURFACE STRUCTURES NOT DESIGNATED TO REMAIN EXISTING PAVEMENT MATERIALS, VEGETATION, TOPSOIL, AND DELETERIOUS MATERIAL SHOULD BE REMOVED AND EXPORTED FROM THE SITE.
18. ANTICIPATED DEPTH OF 2 TO 6 INCHES WILL BE REQUIRED TO EFFECTIVELY REMOVE SURFACE VEGETATION
19. EXISTING LANDSCAPED AND NON-LANDSCAPED MEDIAN AREAS SHOULD BE CLEARED OF VEGETATION AND OTHER UNSUITABLE SURFACE MATERIALS AND EXCAVATED TO REMOVE SATURATED/UNSTABLE SOIL TO EXPOSE FIRM, UNDISTURBED MATERIALS
20. EXCAVATIONS OR DEPRESSIONS TO BE RESTORED WITH ENGINEERED FILL
21. AREAS LEFT AT GRADE. TO RECEIVE FILL, AND THE BOTTOMS OF OVER-EXCAVATED AREAS SHOULD BE SCARIFIED AT LEAST 12 INCHES, UNIFORMLY MOISTURE CONDITIONED TO AT OR ABOVE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO AT LEAST 90% RELATIVE COMPACTION AND PERFORMED IN THE PRESENCE OF A GEOTECHNICAL INSPECTOR.
22. ENGINEERED FILL MATERIAL WILL BE COMPACTED IN HORIZONTAL LIFTS NOT TO EXCEED 8 INCHES (LOOSE THICKNESS) AT OR ABOVE OPTIMUM AND COMPACTED TO AT LEAST 90% RELATIVE COMPACTION, AND BROUGHT TO FINAL SUBGRADE ELEVATIONS
23. THE TOP 6 INCHES OF FINAL PAVEMENT SUBGRADE MUST BE MOISTURE-CONDITIONED AT OR ABOVE OPTIMUM AND COMPACTED TO AT LEAST 95% RELATIVE COMPACTION, AND BE FINISHED TO A SMOOTH, UNYIELDING SURFACE. IT IS RECOMMENDED TO PROOF-ROLL THE SUBGRADE WITH A LOADED WATER TRUCK TO VERIFY STABILITY OF SUBGRADE.
24. UNDERGROUND UTILITY TRENCHES SHOULD BE BACKFILLED WITH PROPERLY COMPACTED MATERIAL (AS USTED ABOVE). PIPE BEDDING, SHADING, AND TRENCH BACKFILL SHOULD CONFORM TO THE REQUIREMENTS OF THE APPROPRIATE UTILITY AUTHORITY.
25. CARE MUST BE TAKEN TO PROPERLY GRADE IMPROVEMENTS SO THAT SURFACE DRAINAGE IS DIRECTED TOWARD APPROPRIATE DRAINAGE FACILITIES.

EROSION/ / SEDIMENT CONTROL:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED AS SPECIFIED IN THE WATER POLLUTION CONTROL PLAN (WPCP) FOR THIS PROJECT OR AS DETERMINED BY THE CITY INSPECTOR. THE WPCP IS CONSIDERED A DYNAMIC DOCUMENT AND WILL CHANGE AS CONDITIONS WARRANT. PERMANENT EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED AS SHOWN ON THE WPCP PLAN.
2. THE PROJECT WATER POLLUTION CONTROL PLAN (WPCP) IS INCORPORATED BY REFERENCE INTO THIS SET OF PLANS. THE WPCP IS CONSIDERED A DYNAMIC DOCUMENT AND WILL CHANGE AS CONDITIONS WARRANT. PERMANENT EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED AS SHOWN ON THESE PLANS.
3. A COPY OF THE WPCP SHALL BE KEPT AT THE PROJECT SITE AT ALL TIMES.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED AS SPECIFIED IN THE WPCP AND/OR AS DIRECTED BY CITY QSD.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE WPCP.
6. THE CONTRACTOR SHALL ESTABLISH A SPECIFIC SITE WITHIN THE DEVELOPMENT FOR MAINTENANCE AND STORAGE OF EQUIPMENT OR ANY OTHER ACTIVITY THAT MAY ADVERSELY CONTRIBUTE TO THE WATER QUALITY OF THE RUNOFF IN ACCORDANCE WITH THE WPCP.

ABBREVIATIONS

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE PAVEMENT
AP	ANGLE POINT
ADA	AMERICAN WITH DISABILITIES ACT
BC	BEGIN CURVE
BM	BENCH MARK
BOW, BW	BACK OF SIDEWALK
℄ ,CL	CENTER LINE
C,G, C&G	CURB AND GUTTER
CONST	CONSTRUCT
CONF	CONFORM
CIR	COLD IN PLACE RECYCLING
CR	CURB RETURN
CT	CALTRANS
DI	DROP INLET, DRAINAGE INLET
DR	DRIVE
DRN	DRAIN
DWG	DRAWING
DWY	DRIVEWAY
E	EAST
EC	END CURVE
EG	EXISTING GROUND
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EX, EXIST	EXISTING
FC, FOC	FACE OF CURB
FH	FIRE HYDRANT
FL	FLOW LINE
G	GAS
GB	GRADE BREAK
HMA	HOT MIX ASPHAULT
HP	HIGH POINT
INTX	INTERSECTION
INV	INVERT
IE	INVERT ELEVATION
JP	JOINT POLE
L, LT	LEFT
LOL	LAYOUT LINE
LF	LINEAR FEET
LL	LIMIT LINE
LP	LOW POINT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MODIFIED
N	NORTH
PB	PULLBOX
PCC	POINT OF COMPOUND CURVE, OR PORTLAND CONCRETE CEMENT
PL	PROPERTY LINE
PP	POWER POLE
PRC	POINT OF REVERSE CURVATURE
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
R, RT	RIGHT
R=	RADIUS
RCP	REINFORCED CONCRETE PIPE
REM	REMOVE
RHMA-G	RUBBERIZED HOT MIX ASPHAULT – GAP GRADED
ROW, R/W	RIGHT OF WAY
S	SOUTH
SCO	SANITARY CLEAN OUT
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SHT	SHEET
SLPB	STREETLIGHT PULLBOX
SNS	STREET NAME SIGNS
SS	SANITARY SEWER
STA	STATION
STD	STANDARD
SW,SDWK	SIDEWALK
SWR	SEWER
T	TANGENT
TC, TOC	TOP OF CURB
TOP	TOP OF PIPE
TP	TELEPHONE POLE
TSC	TRAFFIC SIGNAL CABINET
TSPB	TRAFFIC SIGNAL PULL BOX
TYP	TYPICAL
UGE	UNDERGROUND ELECTRIC
W	WEST
WM	WATER MAIN
WV	WATER VALVE
WTR	WATER
XING	CROSSING

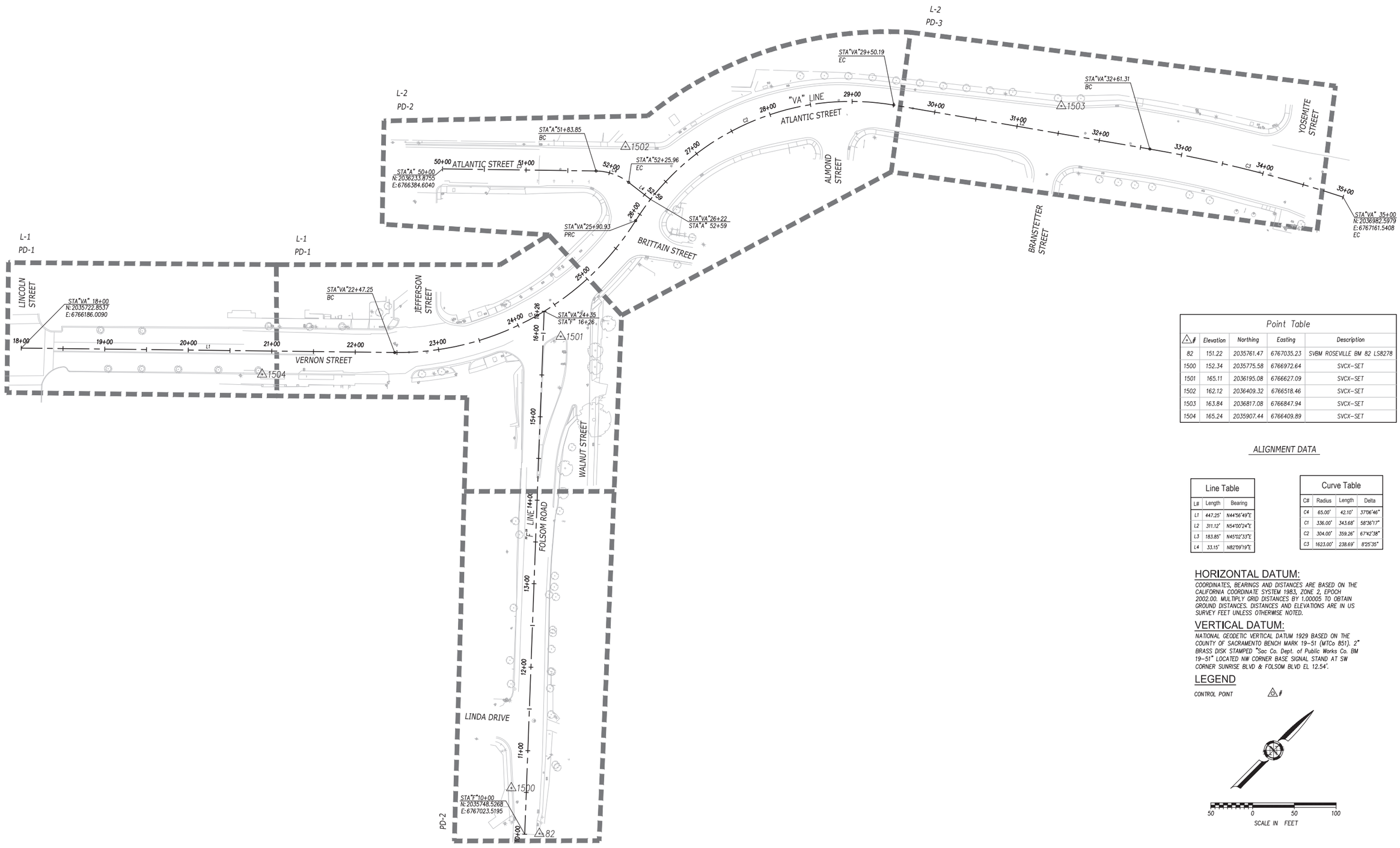
LEGEND

- MONUMENT FIND
- CURB INLET
- FIRE HYDRANT
- GUY POLE
- JOINT POLE
- GUY ANCHOR
- STREET SIGN
- REBAR FND
- FIBER OPTICS
- SANITARY MANHOLE
- COMM BOX
- WATER METER
- CLEAN OUT
- ELECTRICAL BOX
- WATER VALVE
- BACKFLOW ASSEMBLY
- WATER BOX
- STORM MANHOLE
- COMM MANHOLE
- ELECTROLIER
- TREE
- METAL FENCE (IRON, TUBE, ETC.)
- SAWCUT
- TELECOM
- OVERHEAD TELECOM
- ELECTRIC
- OVERHEAD ELECTRIC
- GAS
- SEWER
- WATER
- STORM DRAIN
- FIBEROPTICS

NO.	REVISIONS	BY	DATE
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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
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X
X

DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	C.KELLY
CHECKED BY :	C.ALLEN
SCALE :	N/A
DATE :	FEB



Point Table				
#	Elevation	Northing	Easting	Description
82	151.22	2035761.47	6767035.23	SVBM ROSEVILLE BM 82 LS8278
1500	152.34	2035775.58	6766972.64	SVCX-SET
1501	165.11	2036195.08	6766627.09	SVCX-SET
1502	162.12	2036409.32	6766518.46	SVCX-SET
1503	163.84	2036817.08	6766847.94	SVCX-SET
1504	165.24	2035907.44	6766409.89	SVCX-SET

ALIGNMENT DATA

Line Table		
L#	Length	Bearing
L1	447.25'	N44°56'49"E
L2	311.12'	N54°00'24"E
L3	183.85'	N45°02'33"E
L4	33.15'	N82°09'19"E

Curve Table			
C#	Radius	Length	Delta
C4	65.00'	42.10'	37°06'46"
C1	336.00'	343.68'	58°36'17"
C2	304.00'	359.26'	67°42'38"
C3	1623.00'	238.69'	8°25'35"

HORIZONTAL DATUM:

COORDINATES, BEARINGS AND DISTANCES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM 1983, ZONE 2, EPOCH 2002.00. MULTIPLY GRID DISTANCES BY 1.00005 TO OBTAIN GROUND DISTANCES. DISTANCES AND ELEVATIONS ARE IN US SURVEY FEET UNLESS OTHERWISE NOTED.

VERTICAL DATUM:

NATIONAL GEODETIC VERTICAL DATUM 1929 BASED ON THE COUNTY OF SACRAMENTO BENCH MARK 19-51 (MTCo 851). 2" BRASS DISK STAMPED "Sac Co. Dept. of Public Works Co. BM 19-51" LOCATED NW CORNER BASE SIGNAL STAND AT SW CORNER SUNRISE BLVD & FOLSOM BLVD EL 12.54'.

LEGEND

CONTROL POINT #

50 0 50 100

SCALE IN FEET

NO.	REVISIONS	BY	DATE
6			
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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
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DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	C.KELLY
CHECKED BY :	C.ALLEN
SCALE :	1"=50'
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

NO. C92525 MARISA RINGLSTETTER REGISTERED CIVIL ENGINEER STATE OF CALIFORNIA
Marisa Ringlstetter

BEN EN TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
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VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

CITY OF ROSEVILLE CALIFORNIA
CITY OF ROSEVILLE

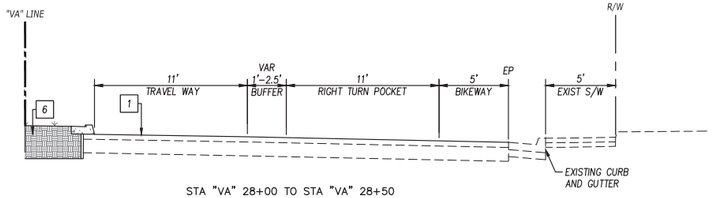
SURVEY CONTROL

CALIFORNIA

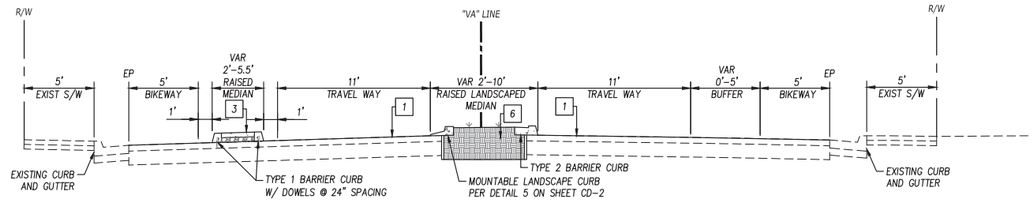
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3 OF 23

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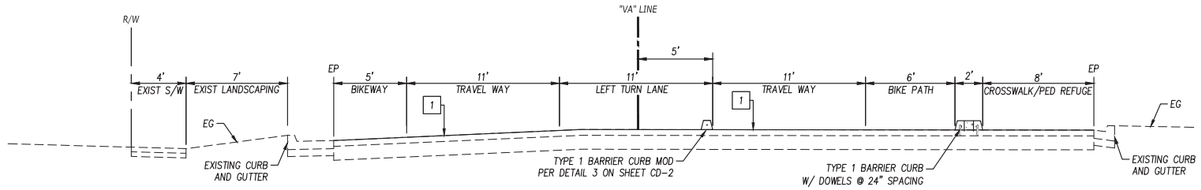


STA "VA" 28+00 TO STA "VA" 28+50



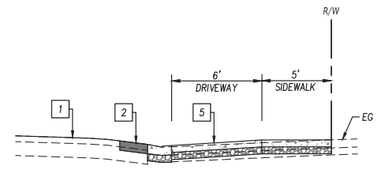
VERNON STREET

STA "VA" 25+50 TO STA "VA" 31+00

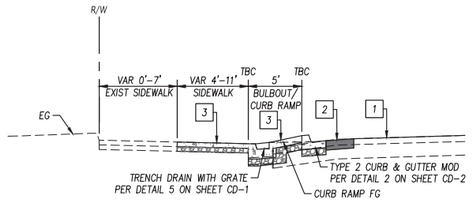


VERNON STREET

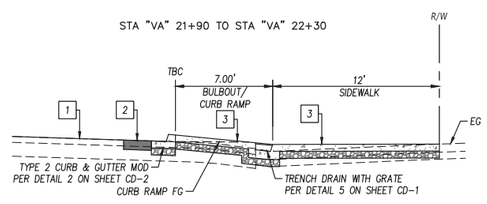
STA "VA" 24+00 TO STA "VA" 25+50



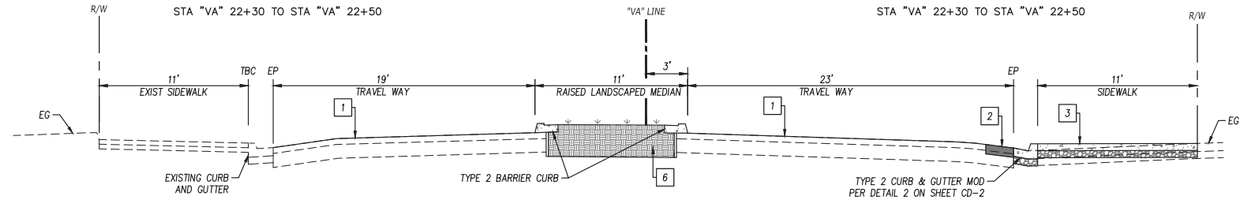
STA "VA" 21+90 TO STA "VA" 22+30



STA "VA" 22+30 TO STA "VA" 22+50



STA "VA" 22+30 TO STA "VA" 22+50



VERNON STREET

STA "VA" 21+50 TO STA "VA" 24+00

NOTES:

1. TYPICAL SECTIONS SHALL BE COORDINATED WITH LAYOUT PLANS. IF THERE ARE DISCREPENCIES BETWEEN THE LIMITS OF WORK SHOWN ON THE TYPICAL SECTIONS AND LAYOUT PLANS, THE LAYOUT PLANS WILL GOVERN.
2. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO THE TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
3. REFER TO SIGNAGE AND STRIPING PLANS FOR LANE STRIPING.
4. REFER TO LAYOUT PLANS FOR SPECIFIC GRADING AND FLOWLINE DETAILS.

STRUCTURAL SECTIONS:

1. MICROSURFACING
2. 8" HMA PLUG (2' WIDE MIN)
3. 4" PCC
   4" CLASS II AB
4. 4" HMA
   12" CLASS II AB
5. 8" PCC
   6" CLASS II AB
6. 2-ft AMENDED SOIL BELOW TOP OF GRADE, PER PLANTING PLAN
7. 4" COLD PLANE
   4" HMA
8. 5" COLD PLANE
   5" HMA

NO.	REVISIONS	BY	DATE
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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
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DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	M.ALQUDSI
CHECKED BY :	C.ALLEN
SCALE :	N/A
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
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REGISTERED PROFESSIONAL ENGINEER MARISA A. RINGLSTETTER NO. C92525 STATE OF CALIFORNIA
Marisa Ringlstetter

BENEN
TRUSTED ENGINEERING ADVISORS
Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

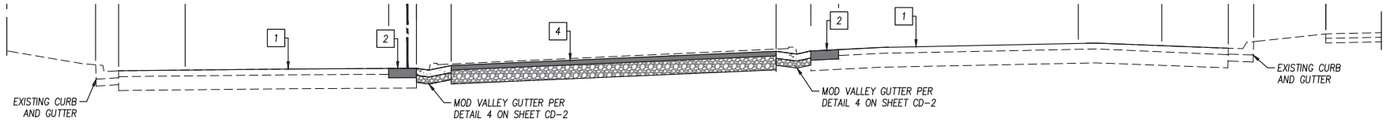
CITY OF ROSEVILLE CALIFORNIA

TYPICAL SECTIONS

CITY OF ROSEVILLE CALIFORNIA

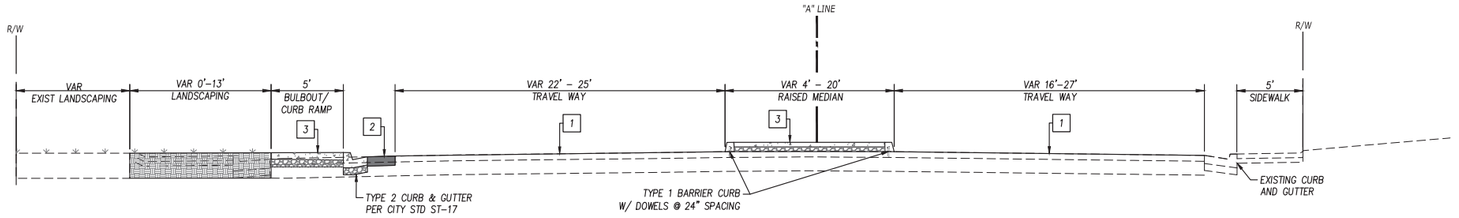
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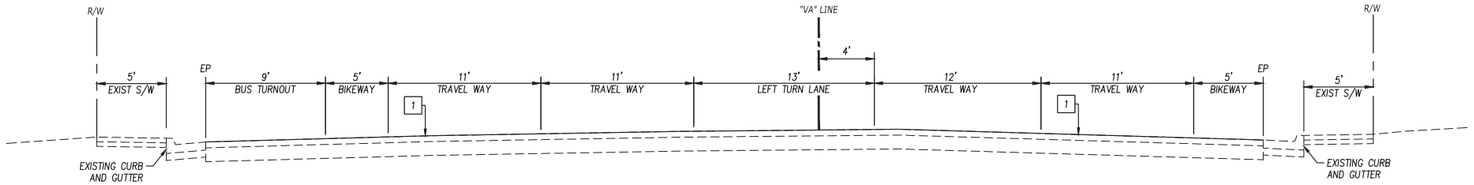
FOLSOM ROAD

STA "F" 15+33 TO STA "F" 15+60



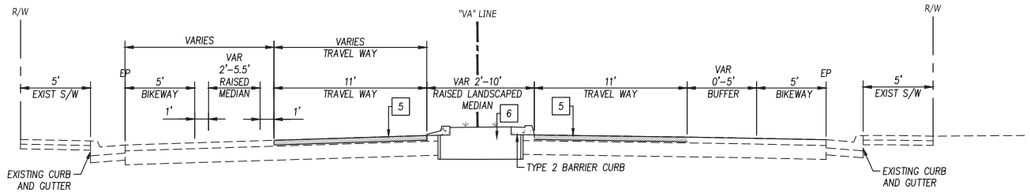
ATLANTIC STREET

STA "A" 51+80 TO STA "A" 52+40



VERNON STREET

STA "VA" 31+00 TO STA "VA" 34+00



VERNON AND ATLANTIC STREET GRIND AND OVERLAY SEGMENTS

STA "VA" 18+20 TO STA "VA" 35+00

NOTES:

1. TYPICAL SECTIONS SHALL BE COORDINATED WITH LAYOUT PLANS. IF THERE ARE DISCREPENCIES BETWEEN THE LIMITS OF WORK SHOWN ON THE TYPICAL SECTIONS AND LAYOUT PLANS, THE LAYOUT PLANS WILL GOVERN.
2. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTION) ARE SUBJECT TO THE TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
3. REFER TO SIGNAGE AND STRIPING PLANS FOR LANE STRIPING.
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7. 4" COLD PLANE
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   5" HMA

NO.	REVISIONS	BY	DATE
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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
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DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	M.ALQUDSI
CHECKED BY :	C.ALLEN
SCALE :	N/A
DATE :	FEBRUARY 2025
PROJ NO. :	500324

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REGISTERED PROFESSIONAL ENGINEER NO. C92525 MARISA RINGLSTETTER
Marisa Ringlstetter

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TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
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Roseville, California 95661
T 916.783.4100
F 916.783.4110

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

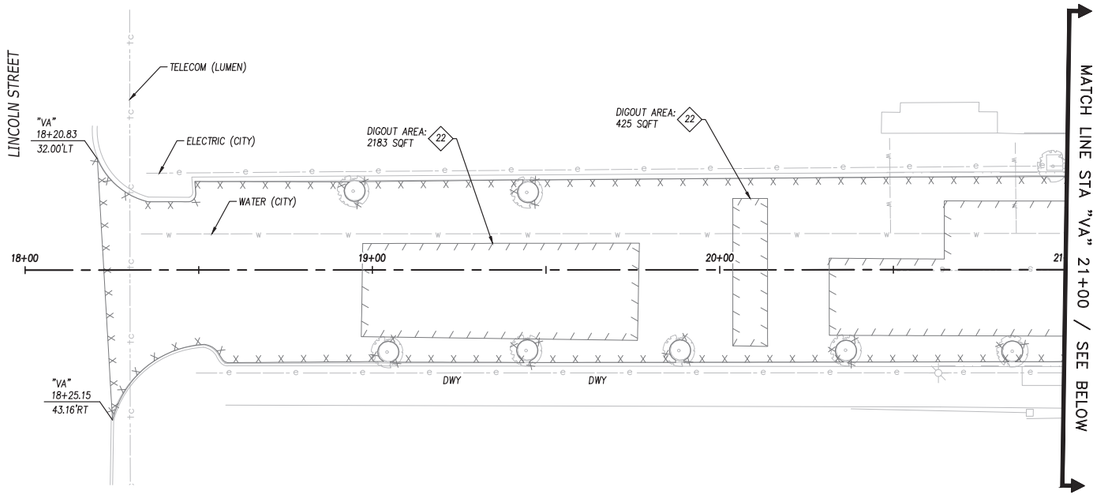
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CITY OF ROSEVILLE

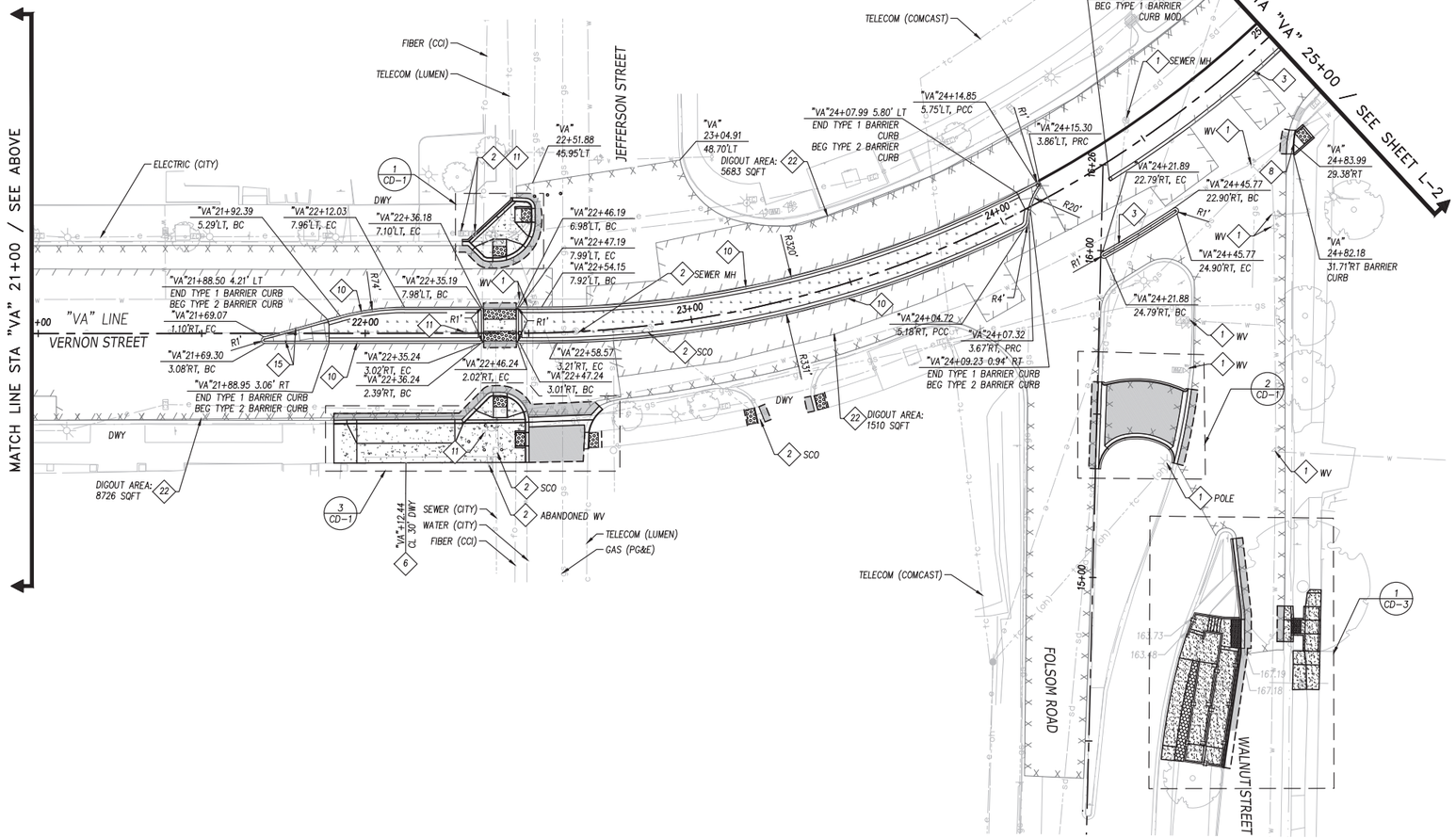
TYPICAL SECTIONS

CALIFORNIA

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23

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CONSTRUCTION NOTES:

1. PROTECT IN PLACE
2. ADJUST TO GRADE
3. CONSTRUCT MODIFIED TYPE 1 BARRIER CURB WITH REBAR PER DETAIL 3 ON SHEET CD-2
4. CONSTRUCT MODIFIED TYPE 2 CURB & GUTTER PER DETAIL 2 ON SHEET CD-2
5. CONSTRUCT 36" VALLEY GUTTER PER CITY STD DRAWING ST-18
6. CONSTRUCT TYPE D DRIVEWAY APRON PER CITY STD DRAWING ST-21
7. CONSTRUCT CURB RAMP PER CALTRANS STD PLAN A88A
8. MODIFY CURB RAMP TO MEET ADA REQUIREMENTS
9. CONSTRUCT TYPE A1-6 CURB PER CALTRANS STD PLAN A87A
10. CONSTRUCT TYPE 2 BARRIER CURB PER CITY STANDARD DETAIL ST-18
11. PROPOSED UTILITY BOX. SEE SHEET E-1 THROUGH E-3 FOR MORE DETAILS.
12. INSTALL PEDESTRIAN HANDRAILS PER PROWAG SECTION R409
13. CONSTRUCT MODIFIED VALLEY GUTTER PER DETAIL 4 ON SHEET CD-2
14. CONSTRUCT MOUNTABLE LANDSCAPE CURB PER DETAIL 5 ON SHEET CD-2
15. CONSTRUCT TYPE 1 BARRIER CURB PER CITY STD DRAWING ST-18
16. INSTALL FIXED BOLLARD PER CITY STD DRAWING ST-38A. CONTRACTOR TO POSITIVELY LOCATE UTILITIES NEAR BOLLARDS AND ADJUST BOLLARD LOCATIONS TO AVOID.
17. INSTALL DECORATIVE POST-TOP STREET LIGHT. SEE SHEET E-1 THROUGH E-3 FOR MORE DETAILS.
18. INSTALL DROP INLET TYPE "C" PER CITY STD DR-1 AND DR-9. TIE INTO EXISTING STORM DRAIN LATERAL.
19. CONSTRUCT TYPE 2 CURB & GUTTER PER CITY STANDARD DETAIL ST-17
20. CONSTRUCT TRENCH DRAIN WITH GRATE PER DETAIL 5 SHEET CD-1
21. ABANDON EXISTING 12" SD PIPE AND REMOVE EXISTING DI
22. FINAL DIGOUT AREAS TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

LEGEND:

- MICROSURFACING (TYPE 2)
- CONCRETE
- HMA
- STAMPED CONCRETE
- DETECTABLE WARNING SURFACE (PER CITY STD ST-35)
- LANDSCAPING (SEE SHEET PL-1)
- CLASS II AB
- GRIND AND OVERLAY

20 0 20 40
SCALE IN FEET

NO.	REVISIONS	BY	DATE
7			
6			
5			
4			
3			
2			
1			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X
X

DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	C.KELLY
CHECKED BY :	C.ALLEN
SCALE :	1"=20'
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

MARISSA RINGLSTETTER NO. C92525 REGISTERED CIVIL ENGINEER
Marissa Ringlstetter

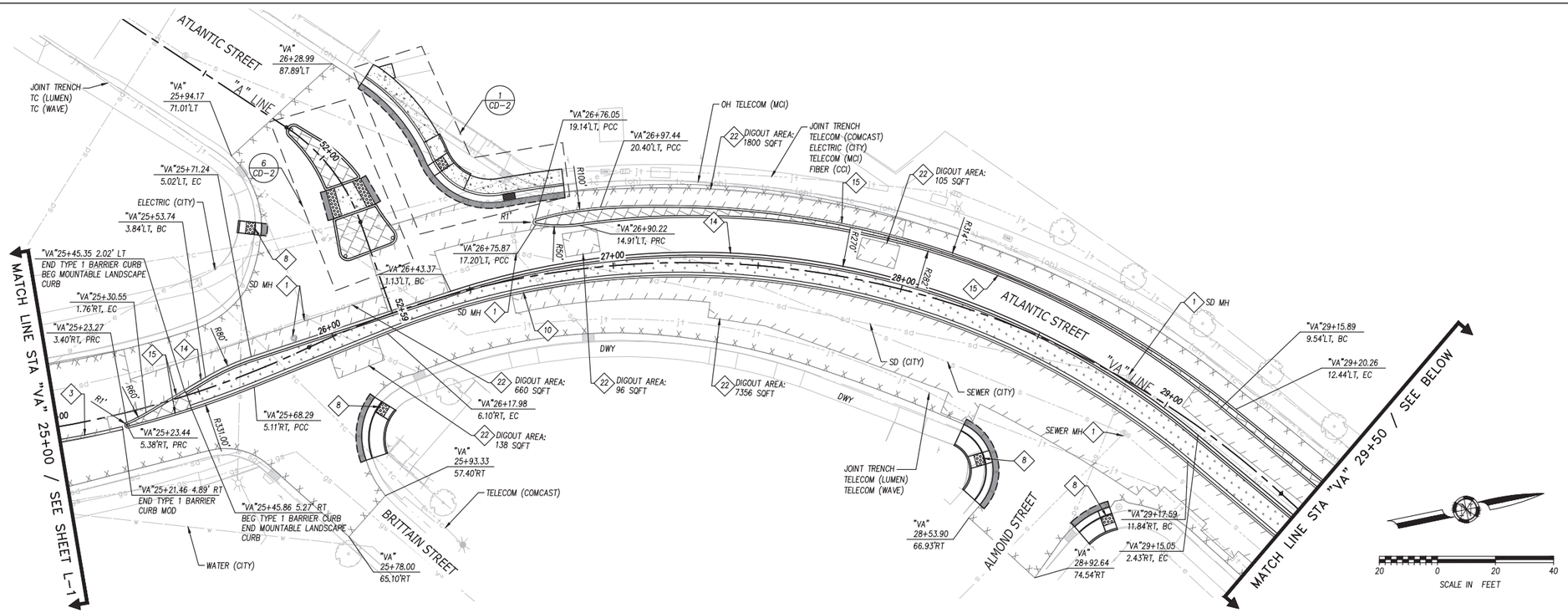
BEN EN TRUSTED ENGINEERING ADVISORS
Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

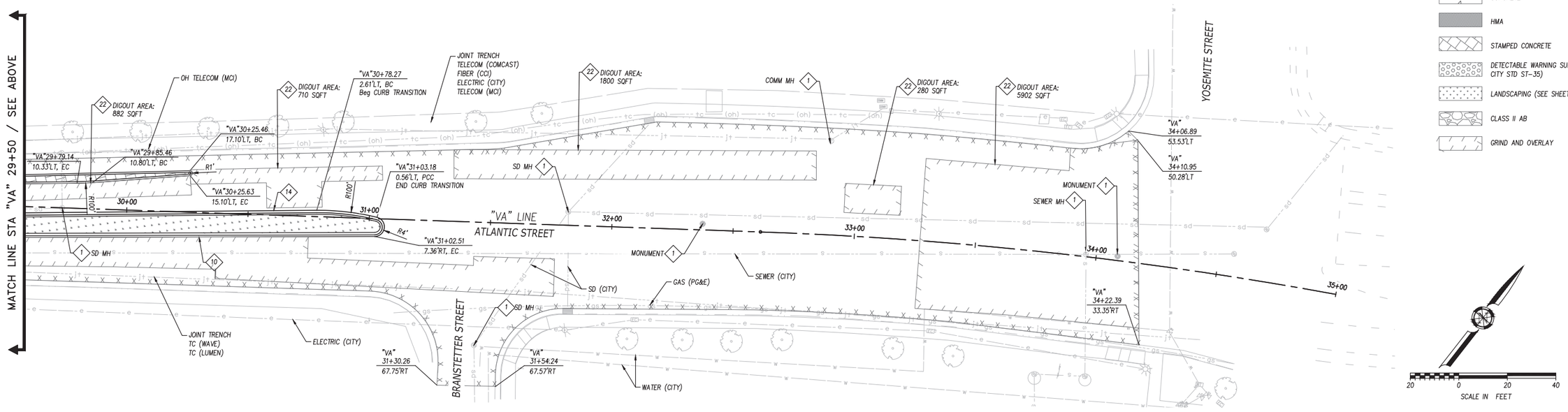
CITY OF ROSEVILLE CALIFORNIA
CITY OF ROSEVILLE

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT
LAYOUT SHEET
STA "VA" 21+50 to STA "VA" 30+50
STA "F" 10+00 to STA "F" 11+00
CALIFORNIA

L-1
6 OF 23

Login Name: jsmoot
Plot Date: March 14, 2025 - 11:41 am
File Name: P:\Proj\23378-01-Roseville-Vernon Atlantic HSIP\03-PLANS\MASTERS\SHEETS\23378_04-LAYOUT SHEETS.dwg
Plot Scale: 1'=20' | 23378_MP.TBL | 23378_MP.TXT | 23378_MP.STB | 23378_MP-HATCH | MP-TSP-41 | 23378_MP-HATCH | MP-TSP-41 | 23378_MP-HATCH | DIGOUT





CONSTRUCTION NOTES:

1. PROTECT IN PLACE
2. ADJUST TO GRADE
3. CONSTRUCT MODIFIED TYPE 1 BARRIER CURB WITH REBAR PER DETAIL 3 ON SHEET CD-2
4. CONSTRUCT MODIFIED TYPE 2 CURB & GUTTER PER DETAIL 2 ON SHEET CD-2
5. CONSTRUCT 36" VALLEY GUTTER PER CITY STD DRAWING ST-18
6. CONSTRUCT TYPE D DRIVEWAY APRON PER CITY STD DRAWING ST-21
7. CONSTRUCT CURB RAMP PER CALTRANS STD PLAN A88A
8. MODIFY CURB RAMP TO MEET ADA REQUIREMENTS
9. CONSTRUCT TYPE A1-6 CURB PER CALTRANS STD PLAN A87A
10. CONSTRUCT TYPE 2 BARRIER CURB PER CITY STANDARD DETAIL ST-18
11. PROPOSED UTILITY BOX. SEE SHEET E-1 THROUGH E-3 FOR MORE DETAILS.
12. INSTALL PEDESTRIAN HANDRAILS PER PROWAG SECTION R409
13. CONSTRUCT MODIFIED VALLEY GUTTER PER DETAIL 4 ON SHEET CD-2
14. CONSTRUCT MOUNTABLE LANDSCAPE CURB PER DETAIL 5 ON SHEET CD-2
15. CONSTRUCT TYPE 1 BARRIER CURB PER CITY STD DRAWING ST-18
16. INSTALL FIXED BOLLARD PER CITY STD DRAWING ST-38A. CONTRACTOR TO POSITIVELY LOCATE UTILITIES NEAR BOLLARDS AND ADJUST BOLLARD LOCATIONS TO AVOID.
17. INSTALL DECORATIVE POST-TOP STREET LIGHT. SEE SHEET E-1 THROUGH E-3 FOR MORE DETAILS.
18. INSTALL DROP INLET TYPE "C" PER CITY STD DR-1 AND DR-9. TIE INTO EXISTING STORM DRAIN LATERAL.
19. CONSTRUCT TYPE 2 CURB & GUTTER PER CITY STANDARD DETAIL ST-17
20. CONSTRUCT TRENCH DRAIN WITH GRATE PER DETAIL 5 SHEET CD-1
21. ABANDON EXISTING 12" SD PIPE AND REMOVE EXISTING DI
22. FINAL DIGOUT AREAS TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

LEGEND:

- MICROSURFACING (TYPE 2)
- CONCRETE
- HMA
- STAMPED CONCRETE
- DETECTABLE WARNING SURFACE (PER CITY STD ST-35)
- LANDSCAPING (SEE SHEET PL-1)
- CLASS II AB
- GRIND AND OVERLAY

NO.	REVISIONS	BY	DATE
7			
6			
5			
4			
3			
2			
1			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X

DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	C.KELLY
CHECKED BY :	C.ALLEN
SCALE :	1"=20'
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REGISTERED PROFESSIONAL ENGINEER NO. C92525 MARISA RINGLSTETTER CIVIL STATE OF CALIFORNIA
Marisa Ringlstetter

BEN|EN TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
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CITY OF ROSEVILLE CALIFORNIA
CITY OF ROSEVILLE

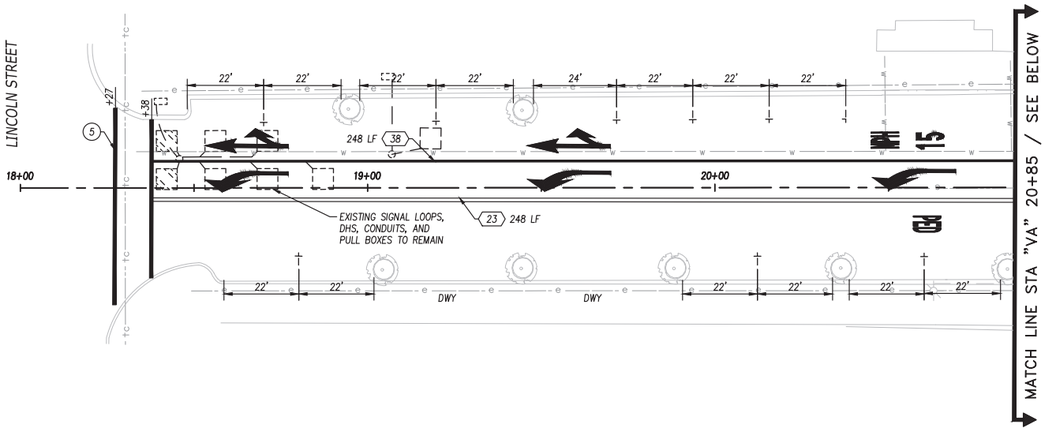
VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

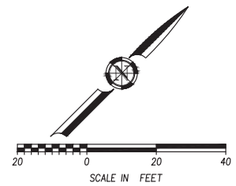
LAYOUT SHEET
STA "VA" 30+50 to STA "VA" 35+25
STA "F" 11+00 to STA "F" 15+25

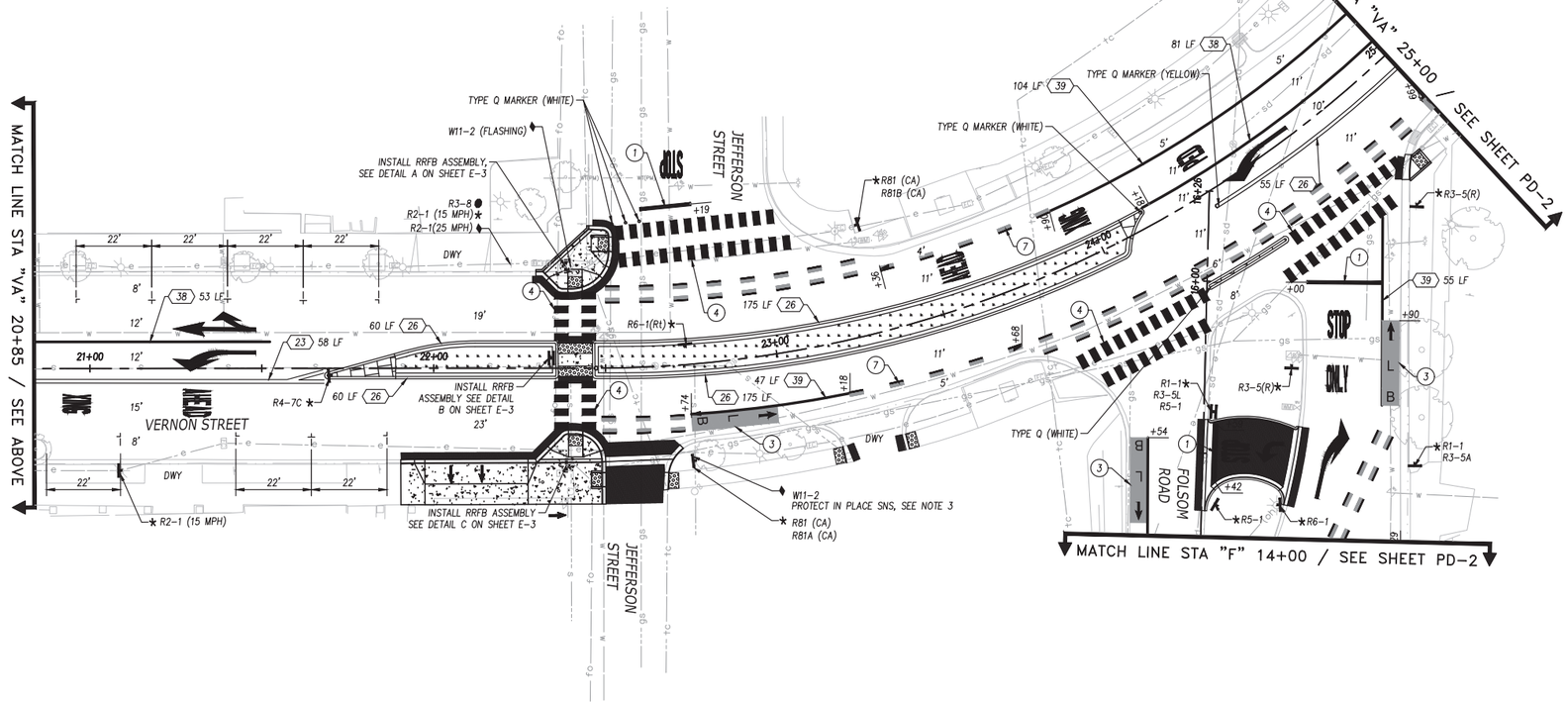
CALIFORNIA

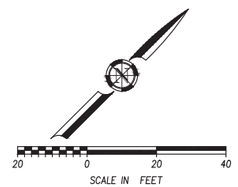
L-2
7 OF 23

Light Name: jmorse
Plot Date: March 14, 2025 - 11:41 am
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23378_SURFACE821.dwg | 23378_SURFACE822.dwg | 23378_SURFACE823.d









STRIPING & SIGNAGE NOTES:

1. INSTALL LIMIT LINE PER CALTRANS STD DETAIL A24G
2. INSTALL BASIC YELLOW CROSSWALK PER CALTRANS STD DETAIL A24F
3. INSTALL BIKE LANE MARKING PER MUTCD FIGURE 9C-3(C)
4. INSTALL WHITE TRIPLE FOUR CROSSWALK PER CALTRANS STD DETAIL A24F
5. INSTALL BASIC WHITE CROSSWALK PER CALTRANS STD DETAIL A24F
6. INSTALL YELLOW TRIPLE FOUR CROSSWALK PER CALTRANS STD DETAIL A24F
7. INSTALL DETAIL 39A MOD PER CITY STD TS-18

NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE PER CALTRANS STANDARD PLANS A24A – A24E.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING STRIPING AND MARKINGS THAT CONFLICT WITH PROPOSED STRIPING AND AS DETERMINED BY THE ENGINEER.
3. CONTRACTOR SHALL COORDINATE REMOVAL OF FLASHING PEDESTRIAN SIGNS WITH CITY SIGNAL TECHNICIANS.
4. W11-2 SIGNS SHALL BE FLUORESCENT YELLOW-GREEN.

LEGEND:

- NEW ROADSIDE SIGN LOCATION
- EXISTING ROADWAY SIGN LOCATION
- REMOVE ROADSIDE SIGN
- RELOCATE EXISTING SIGN
- INSTALL NEW SIGN
- SIGN TO REMAIN
- PARKING SPACE MARKINGS
- BIKE LANE SYMBOL AND BIKE LANE ARROW PAVEMENT MARKING PER MUTCD FIGURE 9C-3(C)
- TYPE III ARROW (Lt OR Rt) PAVEMENT MARKING PER CALTRANS STD PLAN A24B
- TYPE IV ARROW (Lt OR Rt) PAVEMENT MARKING PER CALTRANS STD PLAN A24A
- TYPE VI ARROW PAVEMENT MARKING PER CALTRANS STD PLAN A24A
- DASHED GREEN BIKE MARKING PER DETAIL 1, SHEET PD-3
- RAILROAD CROSSING SYMBOL PER CALTRANS STANDARD PLAN A24B
- (##) ## LF CALTRANS STRIPING DETAIL NUMBER WITH LENGTH IN FEET
- (##) EXISTING STRIPING WITH CALTRANS STRIPING DETAIL NUMBER

NO.	REVISIONS	BY	DATE
1			
2			
3			
4			
5			
6			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION : X X X X X X

DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	M.ALQUDSI
CHECKED BY :	C.ALLEN
SCALE :	1"=20'
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REGISTERED PROFESSIONAL ENGINEER MARISA RINGLSTETTER NO. C92525 CIVIL STATE OF CALIFORNIA
Marisa Ringlstetter

BEN|EN TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

CITY OF ROSEVILLE CALIFORNIA
CITY OF ROSEVILLE

PAVEMENT DELINEATION

CALIFORNIA

PD-1
8
OF
23

Login Name: jmunos
Plot Date: March 14, 2025 - 11:41 am
File Name: P:\Proj\22278-01-Roseville-Vernon Atlantic HSIP\03-PLANS\MASTERS\SHEETS\22278_05-PAVEMENT DELINEATION.dwg
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STRIPING & SIGNAGE NOTES:

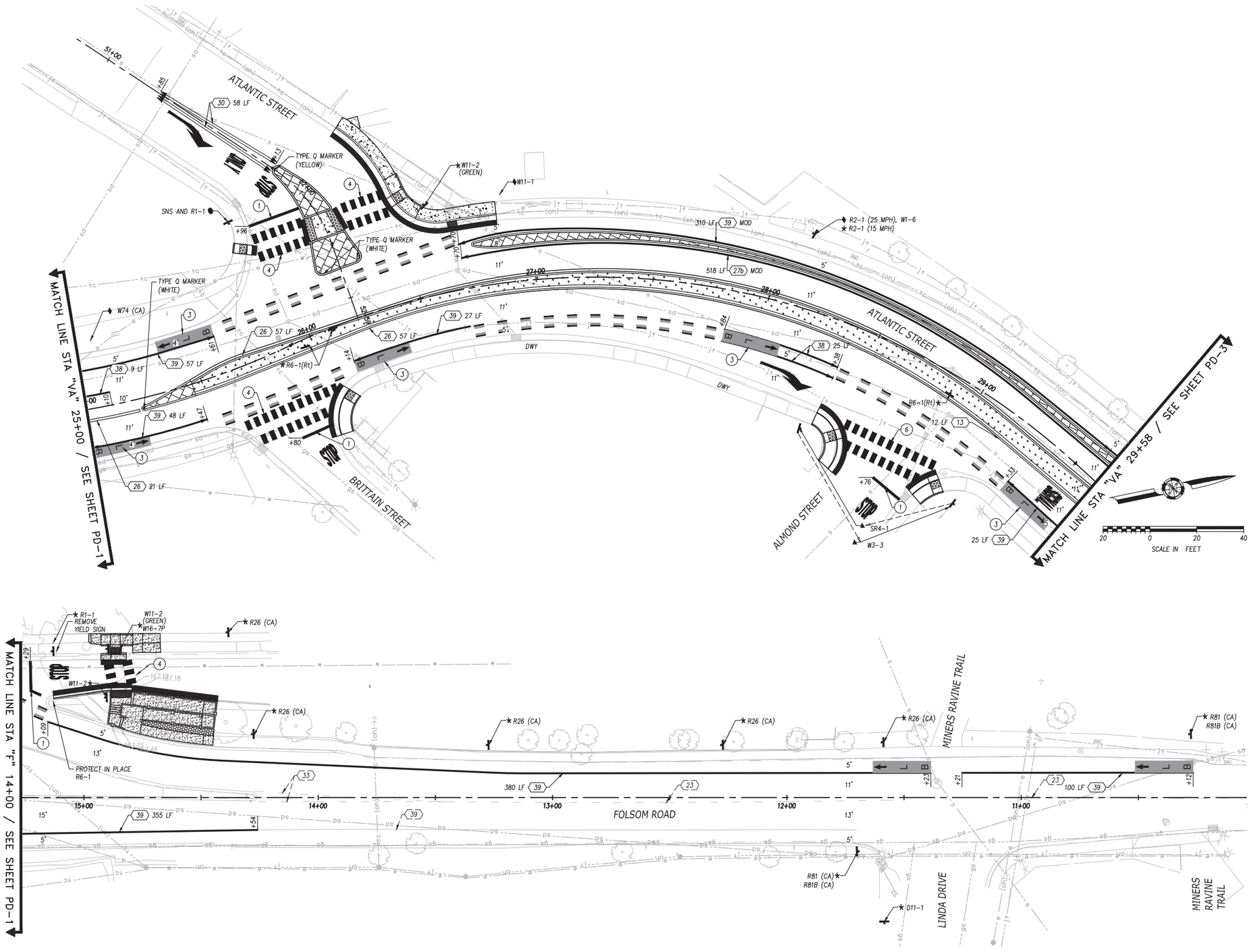
1. INSTALL LIMIT LINE PER CALTRANS STD DETAIL A24G
2. INSTALL BASIC YELLOW CROSSWALK PER CALTRANS STD DETAIL A24F
3. INSTALL BIKE LANE MARKING PER MUTCD FIGURE 9C-3(C)
4. INSTALL WHITE TRIPLE FOUR CROSSWALK PER CALTRANS STD DETAIL A24F
5. INSTALL BASIC WHITE CROSSWALK PER CALTRANS STD DETAIL A24F
6. INSTALL YELLOW TRIPLE FOUR CROSSWALK PER CALTRANS STD DETAIL A24F
7. INSTALL DETAIL 39A MOD PER CITY STD TS-18

NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE PER CALTRANS STANDARD PLANS A24A – A24E.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING STRIPING AND MARKINGS THAT CONFLICT WITH PROPOSED STRIPING AND AS DETERMINED BY THE ENGINEER.
3. CONTRACTOR SHALL COORDINATE REMOVAL OF FLASHING PEDESTRIAN SIGNS WITH CITY SIGNAL TECHNICIANS.
4. W11-2 SIGNS SHALL BE FLUORESCENT YELLOW-GREEN.

LEGEND:

- NEW ROADSIDE SIGN LOCATION
- EXISTING ROADWAY SIGN LOCATION
- REMOVE ROADSIDE SIGN
- RELOCATE EXISTING SIGN
- INSTALL NEW SIGN
- SIGN TO REMAIN
- PARKING SPACE MARKINGS
- BIKE LANE SYMBOL AND BIKE LANE ARROW PAVEMENT MARKING PER MUTCD FIGURE 9C-3(C)
- TYPE III ARROW (Lt OR Rt) PAVEMENT MARKING PER CALTRANS STD PLAN A24B
- TYPE IV ARROW (Lt OR Rt) PAVEMENT MARKING PER CALTRANS STD PLAN A24A
- TYPE VI ARROW PAVEMENT MARKING PER CALTRANS STD PLAN A24A
- DASHED GREEN BIKE MARKING PER DETAIL 1, SHEET PD-3
- RAILROAD CROSSING SYMBOL PER CALTRANS STANDARD PLAN A24B
- ## LF — CALTRANS STRIPING DETAIL NUMBER WITH LENGTH IN FEET



NO.	REVISIONS	BY	DATE
1			
2			
3			
4			
5			
6			
7			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X
X

DESIGN BY :	M.RINGLSTETTER
DRAWN BY :	M.ALQUDSI
CHECKED BY :	C.ALLEN
SCALE :	1"=20'
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REGISTERED PROFESSIONAL ENGINEER — MARISSA RINGLSTETTER — NO. C92525 — CIVIL — STATE OF CALIFORNIA

BENEN — TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

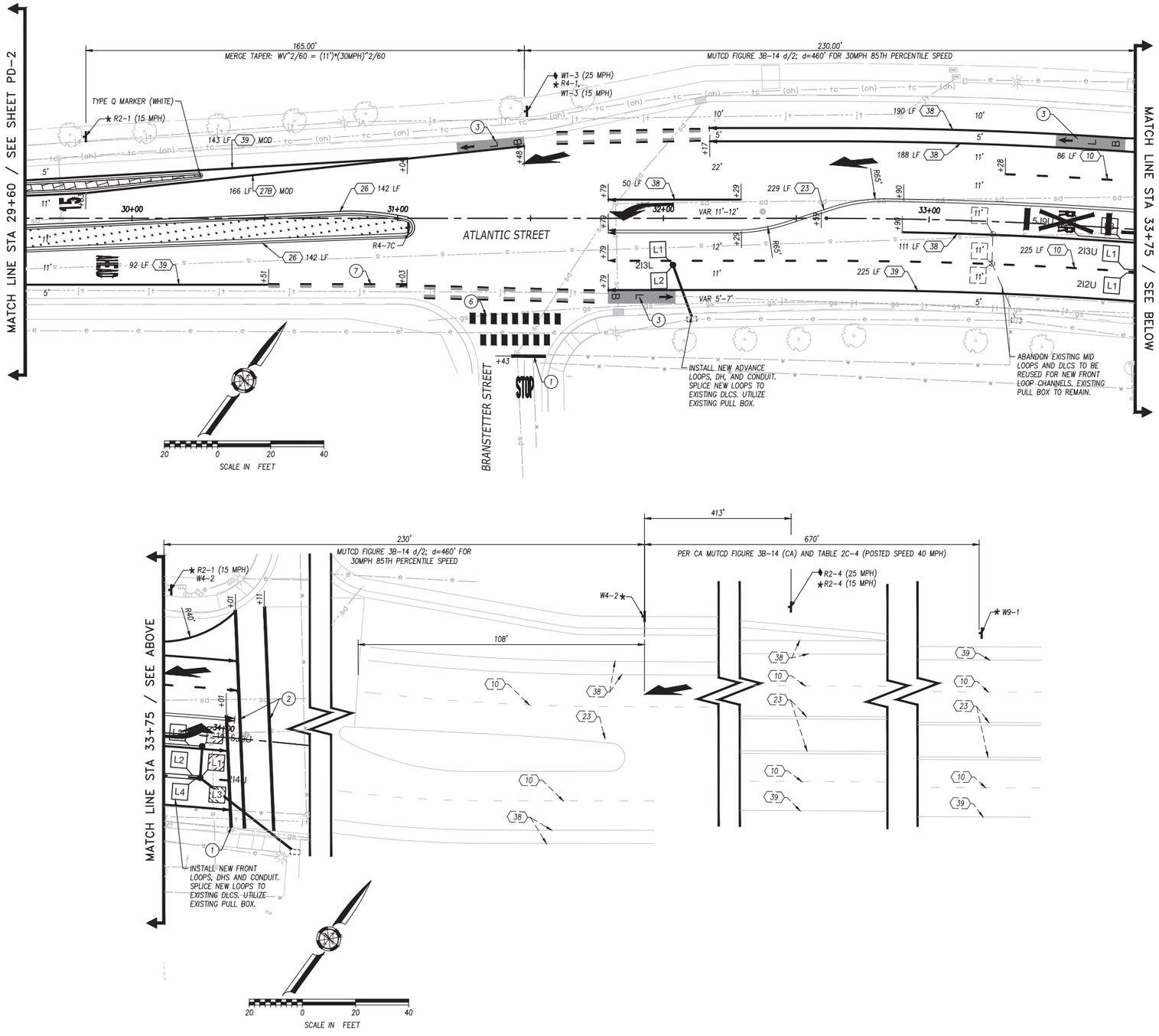
VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

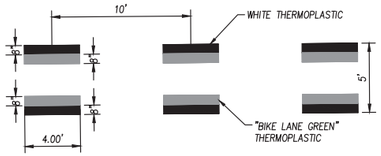
PAVEMENT DELINEATION

CITY OF ROSEVILLE CALIFORNIA

PD-2
9 OF 23

Login Name: jmunoz
Plot Date: March 14, 2025 - 2:25 pm
File Name: P:\Proj\23378-01-Roseville-Vernon Atlantic HSIP\03-PLANS\MASTERS\23378_05-PAVEMENT DELINEATION.dwg
Plot Scale: 1.0000 '/ Unit | Plot Style Table: 23378_ADA.ctb | Active Layout: 23378_ADA-MAIN | 23378-SIGNAL LOOPS



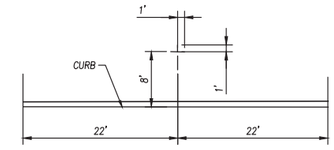


1 MODIFIED DETAIL 39A DASHED GREEN BIKE MARKINGS

SCALE: N.T.S.

2 NOT USED

SCALE: N.T.S.



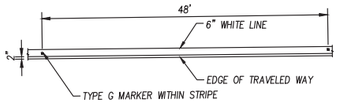
3 PARKING SPACE MARKING

SCALE: N.T.S.



4 DETAIL 39 MODIFIED

SCALE: N.T.S.



5 DETAIL 27B MODIFIED

SCALE: N.T.S.

STRIPING & SIGNAGE NOTES:

1. INSTALL LIMIT LINE PER CALTRANS STD DETAIL A24G
2. INSTALL BASIC YELLOW CROSSWALK PER CALTRANS STD DETAIL A24F
3. INSTALL BIKE LANE MARKING PER MUTCD FIGURE 9C-3(C)
4. INSTALL WHITE TRIPLE FOUR CROSSWALK PER CALTRANS STD DETAIL A24F
5. INSTALL BASIC WHITE CROSSWALK PER CALTRANS STD DETAIL A24F
6. INSTALL YELLOW TRIPLE FOUR CROSSWALK PER CALTRANS STD DETAIL A24F
7. INSTALL DETAIL 39A MOD PER CITY STD TS-18

NOTES:

1. ALL PAVEMENT MARKINGS SHALL BE PER CALTRANS STANDARD PLANS A24A – A24E.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING EXISTING STRIPING AND MARKINGS THAT CONFLICT WITH PROPOSED STRIPING AND AS DETERMINED BY THE ENGINEER.
3. CONTRACTOR SHALL COORDINATE REMOVAL OF FLASHING PEDESTRIAN SIGNS WITH CITY SIGNAL TECHNICIANS.
4. W11-2 SIGNS SHALL BE FLUORESCENT YELLOW-GREEN.

LEGEND:

- NEW ROADSIDE SIGN LOCATION
- EXISTING ROADWAY SIGN LOCATION
- REMOVE ROADSIDE SIGN
- FROM 10 — RELOCATE EXISTING SIGN
- INSTALL NEW SIGN
- SIGN TO REMAIN
- PARKING SPACE MARKINGS
- BIKE LANE SYMBOL AND BIKE LANE ARROW PAVEMENT MARKING PER MUTCD FIGURE 9C-3(C)
- TYPE III ARROW (Lt OR Rt) PAVEMENT MARKING PER CALTRANS STD PLAN A24B
- TYPE IV ARROW (Lt OR Rt) PAVEMENT MARKING PER CALTRANS STD PLAN A24A
- TYPE VI ARROW PAVEMENT MARKING PER CALTRANS STD PLAN A24A
- DASHED GREEN BIKE MARKING PER DETAIL 1, SHEET PD-3
- RAILROAD CROSSING SYMBOL PER CALTRANS STANDARD PLAN A24B
- ## / ## LF — CALTRANS STRIPING DETAIL NUMBER WITH LENGTH IN FEET
- (#) — EXISTING STRIPING WITH CALTRANS STRIPING DETAIL NUMBER

NO.	REVISIONS	BY	DATE
7			
6			
5			
4			
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1			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X
X

DESIGN BY :	M. RINGLSTETTER
DRAWN BY :	M. ALQUDSI
CHECKED BY :	C. ALLEN
SCALE :	1"=XX'
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REGISTERED PROFESSIONAL ENGINEER — MARISSA RINGLSTETTER — NO. C92525 — CIVIL — STATE OF CALIFORNIA
Marissa Ringlstetter

BEN|EN TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, California 95661
T 916.783.4100
F 916.783.4110

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

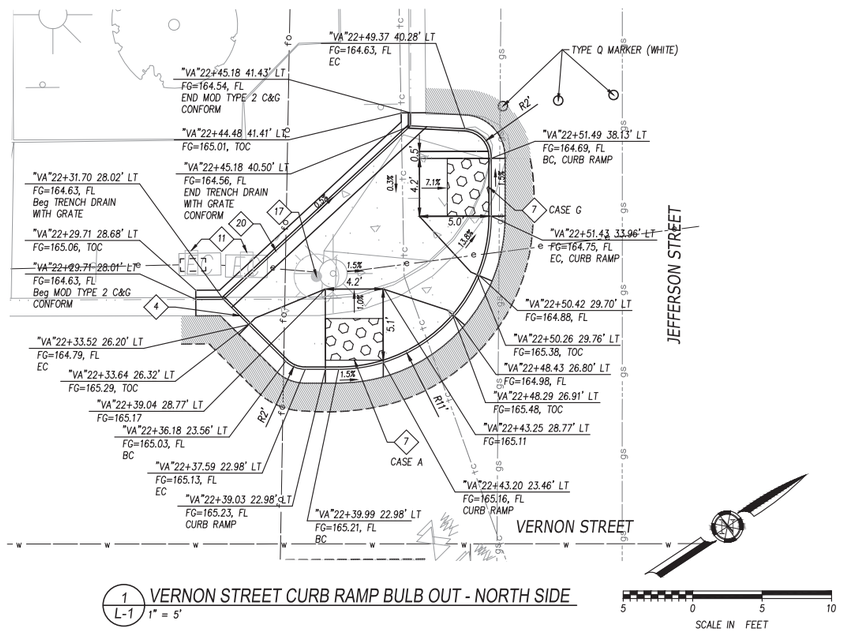
CITY OF ROSEVILLE CALIFORNIA — CITY OF ROSEVILLE

PAVEMENT DELINEATION

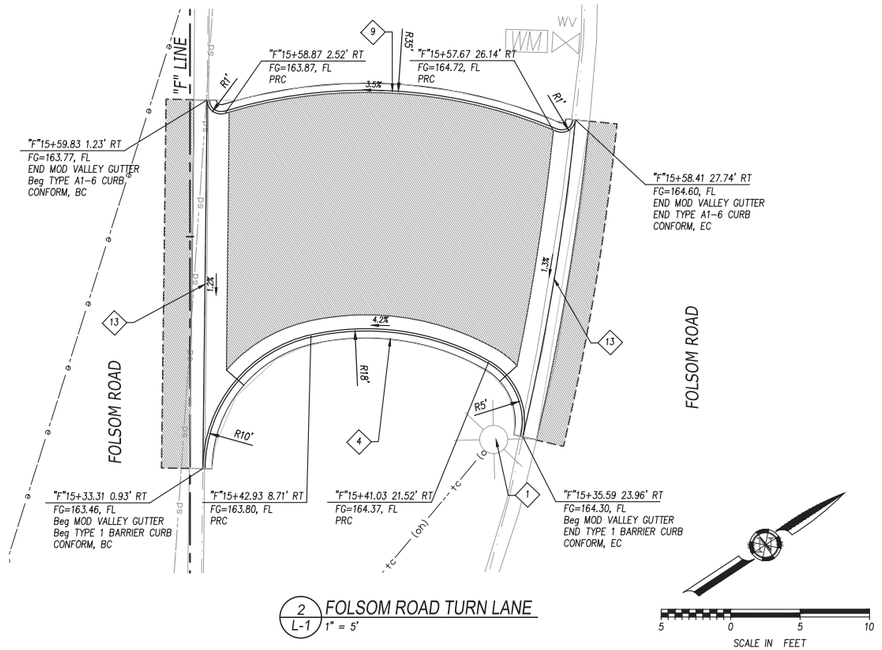
CALIFORNIA

PD-3
10
OF
23

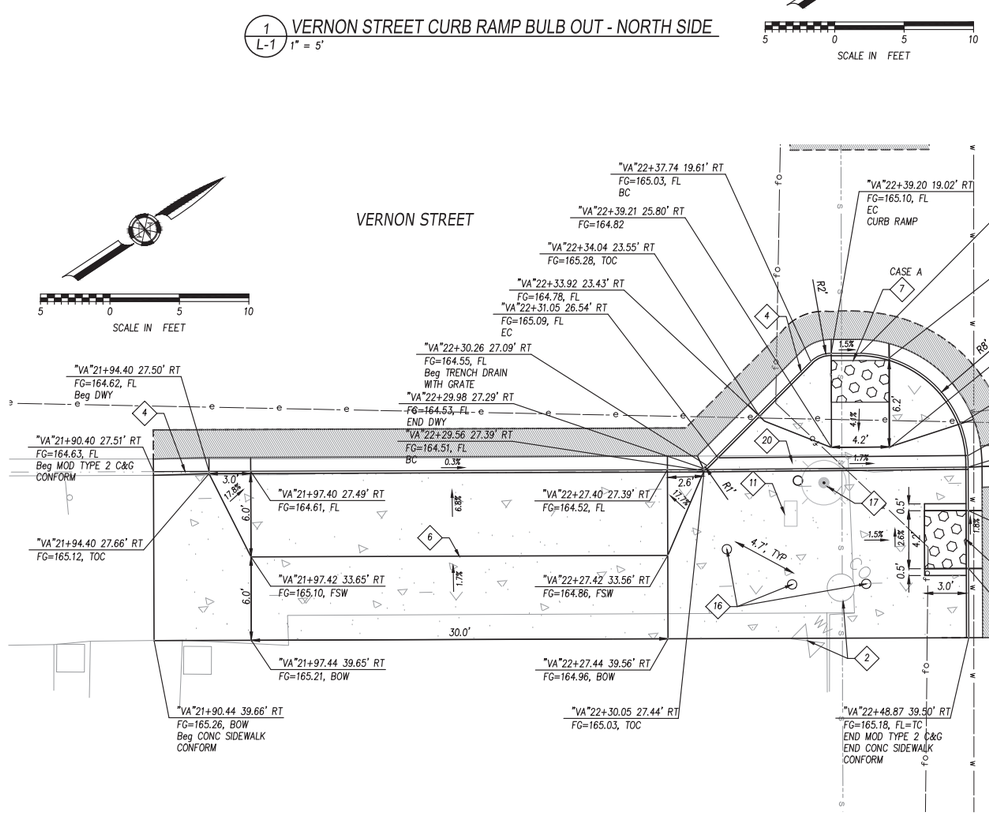
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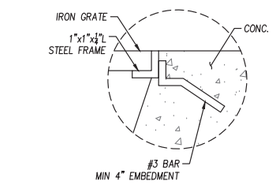
1 L-1 VERNON STREET CURB RAMP BULB OUT - NORTH SIDE
1" = 5'



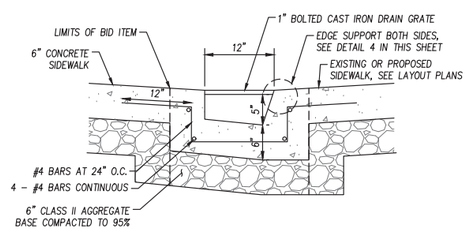
2 L-1 FOLSOM ROAD TURN LANE
1" = 5'



3 L-1 VERNON STREET DRIVEWAY AND CURB RAMP BULB OUT
1" = 5'



4 TRENCH GRATE EDGE SUPPORT
SCALE: N.T.S.



5 TRENCH DRAIN WITH GRATE
SCALE: N.T.S.

CONSTRUCTION NOTES:

1. PROTECT IN PLACE
2. ADJUST TO GRADE
3. CONSTRUCT MODIFIED TYPE 1 BARRIER CURB WITH REBAR PER DETAIL 3 ON SHEET CD-2
4. CONSTRUCT MODIFIED TYPE 2 CURB & GUTTER PER DETAIL 2 ON SHEET CD-2
5. CONSTRUCT 36" VALLEY GUTTER PER CITY STD DRAWING ST-18
6. CONSTRUCT TYPE D DRIVEWAY APRON PER CITY STD DRAWING ST-21
7. CONSTRUCT CURB RAMP PER CALTRANS STD PLAN A88A
8. MODIFY CURB RAMP TO MEET ADA REQUIREMENTS
9. CONSTRUCT TYPE A1-6 CURB PER CALTRANS STD PLAN A87A
10. CONSTRUCT TYPE 2 BARRIER CURB PER CITY STANDARD DETAIL ST-18
11. PROPOSED UTILITY BOX. SEE SHEET E-1 THROUGH E-3 FOR MORE DETAILS.
12. INSTALL PEDESTRIAN HANDRAILS PER PROWAG SECTION R409
13. CONSTRUCT MODIFIED VALLEY GUTTER PER DETAIL 4 ON SHEET CD-2
14. CONSTRUCT MOUNTABLE LANDSCAPE CURB PER DETAIL 5 ON SHEET CD-2
15. CONSTRUCT TYPE 1 BARRIER CURB PER CITY STD DRAWING ST-18
16. INSTALL FIXED BOLLARD PER CITY STD DRAWING ST-38A. CONTRACTOR TO POSITIVELY LOCATE UTILITIES NEAR BOLLARDS AND ADJUST BOLLARD LOCATIONS TO AVOID.
17. INSTALL DECORATIVE POST-TOP STREET LIGHT. SEE SHEET E-1 THROUGH E-3 FOR MORE DETAILS.
18. INSTALL DROP INLET TYPE "C" PER CITY STD DR-1 AND DR-9. TIE INTO EXISTING STORM DRAIN LATERAL.
19. CONSTRUCT TYPE 2 CURB & GUTTER PER CITY STANDARD DETAIL ST-17
20. CONSTRUCT TRENCH DRAIN WITH GRATE PER DETAIL 5 SHEET CD-1
21. ABANDON EXISTING 12" SD PIPE AND REMOVE EXISTING DI
22. FINAL DIGOUT AREAS TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

LEGEND:

- MICROSURFACING (TYPE 2)
- CONCRETE
- HMA
- STAMPED CONCRETE
- DETECTABLE WARNING SURFACE (PER CITY STD ST-35)
- LANDSCAPING (SEE SHEET PL-1)
- CLASS II AB
- GRIND AND OVERLAY

NO.	REVISIONS	BY	DATE
7			
6			
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4			
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2			
1			

BENCH MARK ELEV: XX DATUM: XX
DESCRIPTION:
X
X
X
X
X
X

DESIGN BY :	M. RINGLSTETTER
DRAWN BY :	M. ALQUDSI
CHECKED BY :	C. ALLEN
SCALE :	1"=20'
DATE :	FEBRUARY 2025
PROJ NO. :	500324

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REGISTERED PROFESSIONAL ENGINEER MARISA RINGLSTETTER NO. C92525 CIVIL STATE OF CALIFORNIA
Marisa Ringlstetter

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Roseville, California 95661
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VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

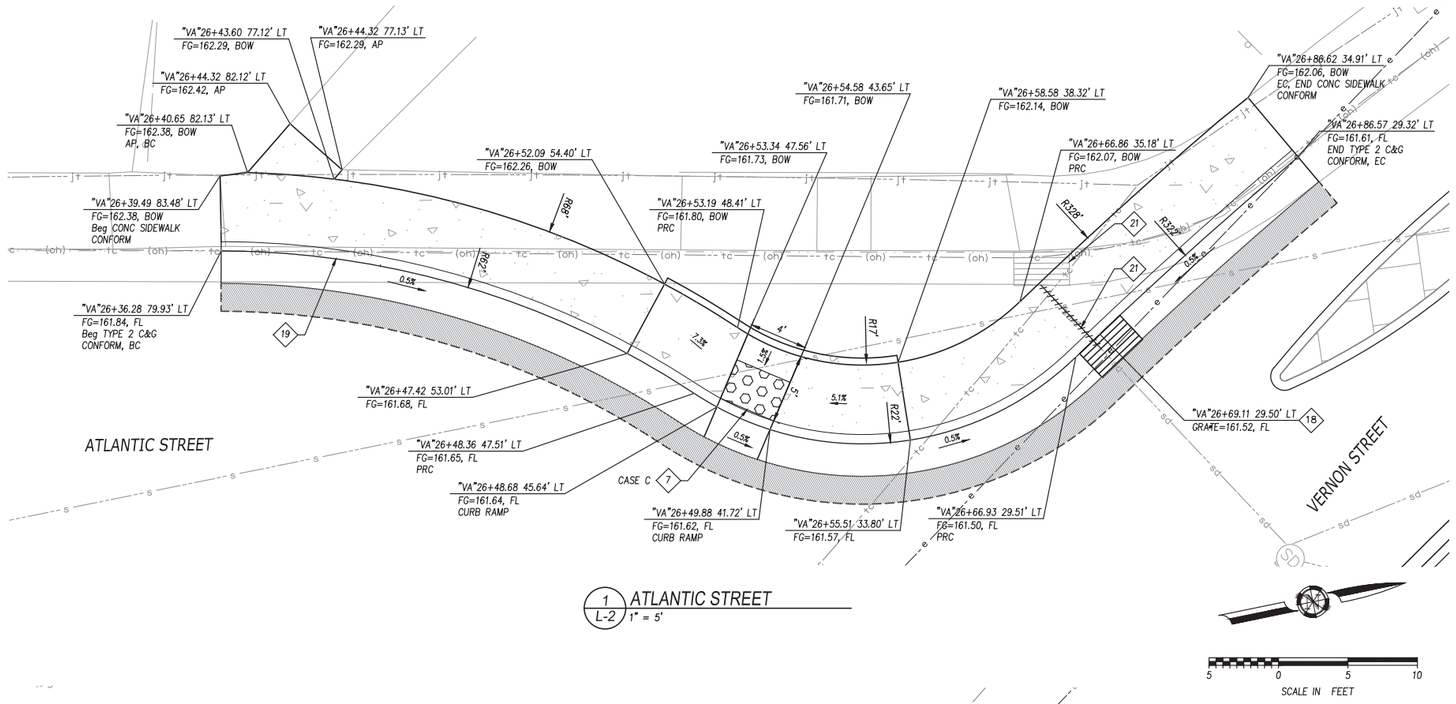
CITY OF ROSEVILLE CALIFORNIA
CITY OF ROSEVILLE

CONSTRUCTION DETAILS

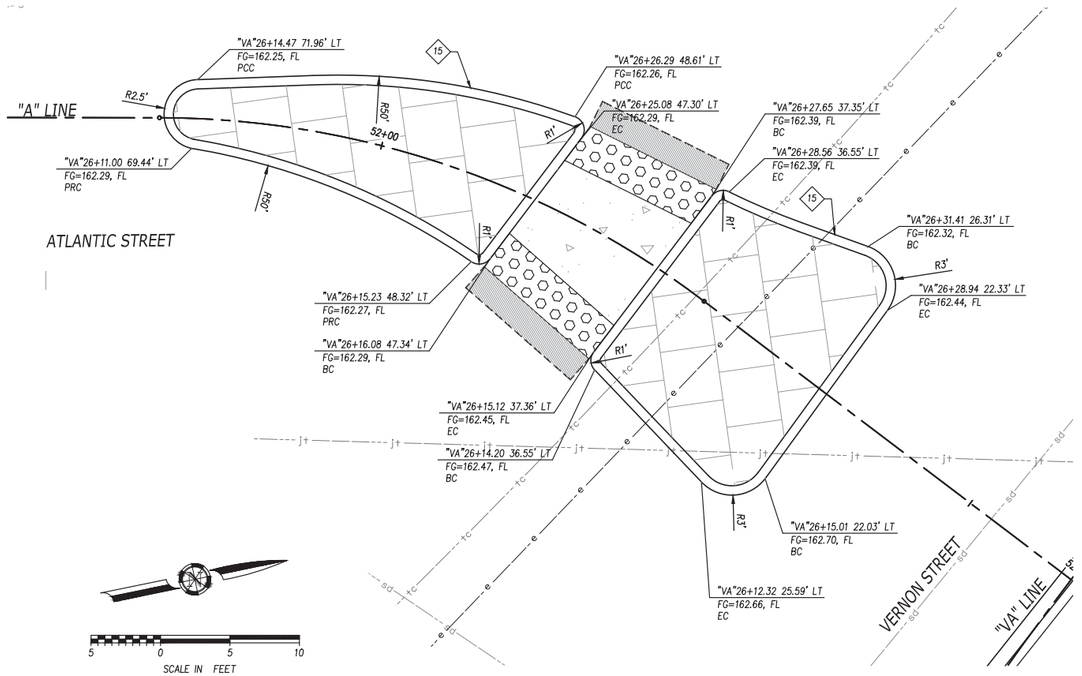
CALIFORNIA

CD-1
11 OF 23

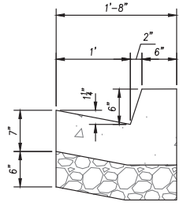
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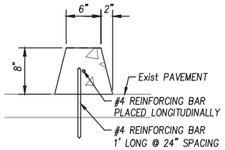
1 ATLANTIC STREET
L-2 1" = 5'

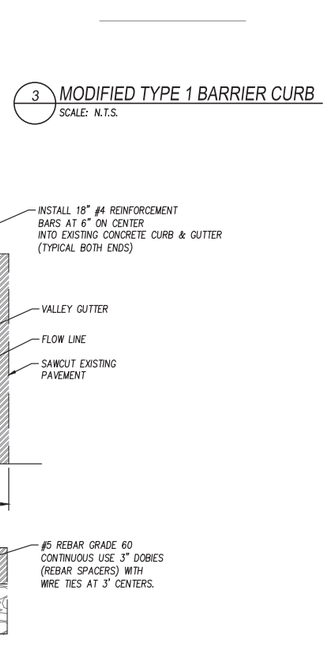


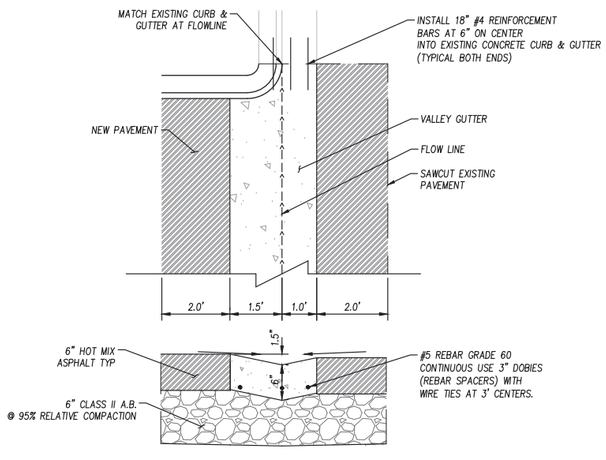
6 ATLANTIC STREET
L-2 1" = 5'



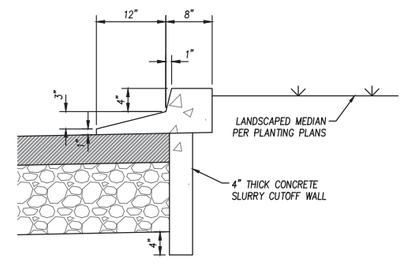
2 MODIFIED TYPE 2 CURB & GUTTER
SCALE: N.T.S.







4 MODIFIED VALLEY GUTTER
SCALE: N.T.S.



5 MOUNTABLE LANDSCAPE CURB
SCALE: N.T.S.

CONSTRUCTION NOTES:

1. PROTECT IN PLACE
2. ADJUST TO GRADE
3. CONSTRUCT MODIFIED TYPE 1 BARRIER CURB WITH REBAR PER DETAIL 3 ON SHEET CD-2
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17. INSTALL DECORATIVE POST-TOP STREET LIGHT. SEE SHEET E-1 THROUGH E-3 FOR MORE DETAILS.
18. INSTALL DROP INLET TYPE "C" PER CITY STD DR-1 AND DR-9. TIE INTO EXISTING STORM DRAIN LATERAL.
19. CONSTRUCT TYPE 2 CURB & GUTTER PER CITY STANDARD DETAIL ST-17
20. CONSTRUCT TRENCH DRAIN WITH GRATE PER DETAIL 5 SHEET CD-1
21. ABANDON EXISTING 12" SD PIPE AND REMOVE EXISTING DI
22. FINAL DIGOUT AREAS TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

LEGEND:

- MICROSURFACING (TYPE 2)
- CONCRETE
- HMA
- STAMPED CONCRETE
- DETECTABLE WARNING SURFACE (PER CITY STD ST-35)

NO.	REVISIONS	BY	DATE
7			
6			
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4			
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2			
1			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X
X

DESIGN BY :	M. RINGLSTETTER
DRAWN BY :	M. ALQUDSI
CHECKED BY :	C. ALLEN
SCALE :	1"=XX'
DATE :	FEBRUARY 2025
PROJ NO. :	500324

VERIFY SCALE
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REGISTERED PROFESSIONAL ENGINEER — NO. C92525 — MARISSA RINGLSTETTER — STATE OF CALIFORNIA
Marissa Ringlstetter

BEN|EN
TRUSTED ENGINEERING ADVISORS
Bennett Engineering Services
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Roseville, California 95661
T 916.783.4100
F 916.783.4110

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

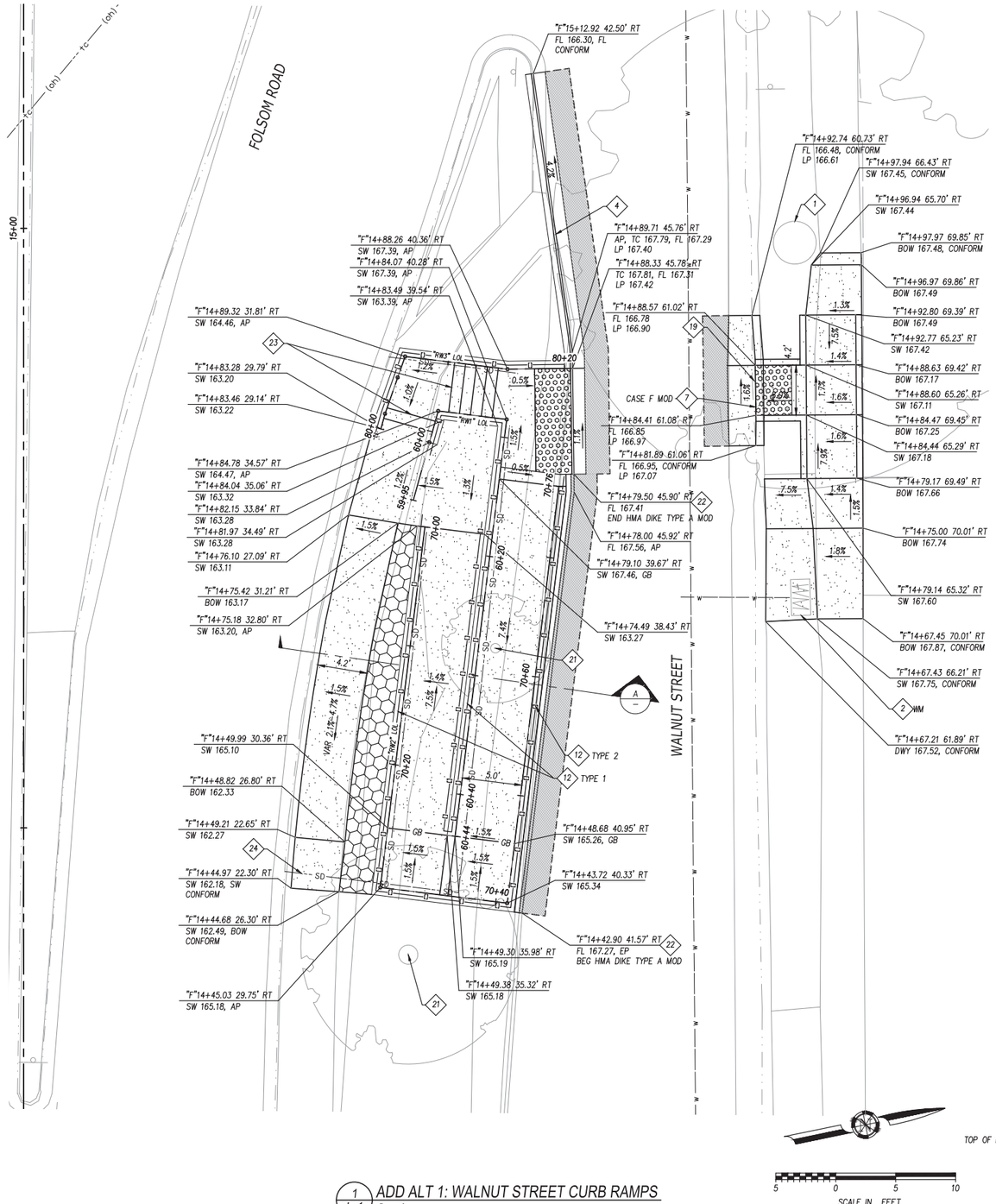
CITY OF ROSEVILLE CALIFORNIA

CONSTRUCTION DETAILS

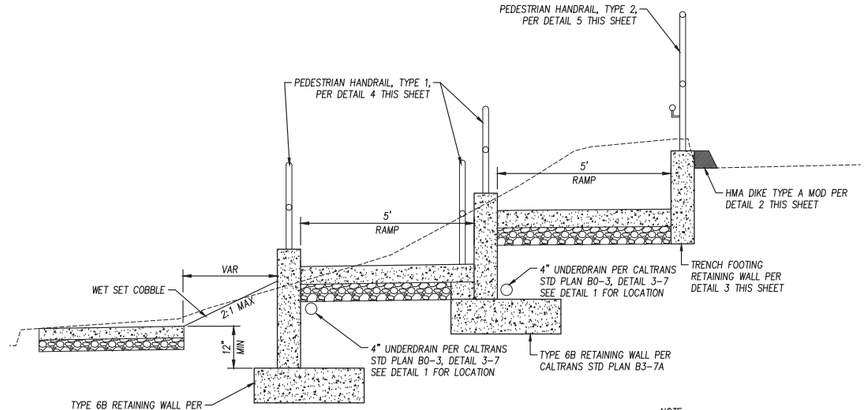
CITY OF ROSEVILLE CALIFORNIA

CD-2
12
OF
23

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1 L-1 ADD ALT 1: WALNUT STREET CURB RAMPS
1" = 5'



A L-1 RAMP SECTION A
SCALE: 1" = 5'

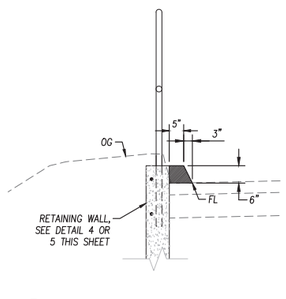
NOTE:
REFER TO RETAINING WALL PROFILE FOR LOCATION OF WALL TYPE

CONSTRUCTION NOTES:

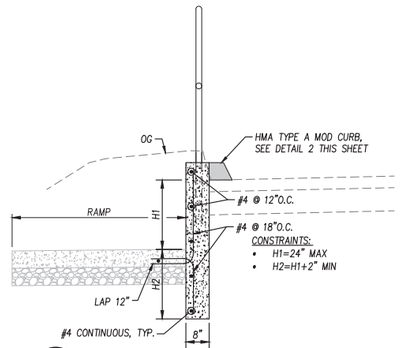
1. PROTECT IN PLACE
2. ADJUST TO GRADE
4. CONSTRUCT MODIFIED TYPE 2 CURB & GUTTER PER DETAIL 2 ON SHEET CD-2
7. CONSTRUCT CURB RAMP PER CALTRANS STD PLAN A88A
12. INSTALL PEDESTRIAN HANDRAILS PER DETAIL 4 & 5 ON SHEET CD-3
19. CONSTRUCT TYPE 2 CURB & GUTTER PER CITY STANDARD DETAIL ST-17
21. REMOVE TREE
22. CONSTRUCT HMA DIKE TYPE A MOD PER DETAIL 2 ON SHEET CD-3
23. CONSTRUCT STAIRS WITH 11" TREAD AND 7" RISERS PER DETAIL 4 ON SHEET CD-3
24. INSTALL UNDER WALK DRAIN PER CITY STANDARD DETAIL ST-42

LEGEND:

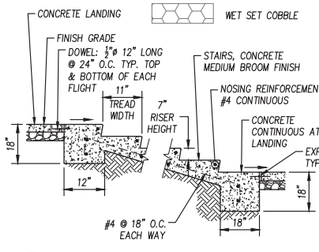
- CONCRETE
- HMA
- DETECTABLE WARNING SURFACE (PER CITY STD ST-35)
- LANDSCAPING (SEE SHEET PL-1)
- CLASS II AB
- WET SET COBBLE



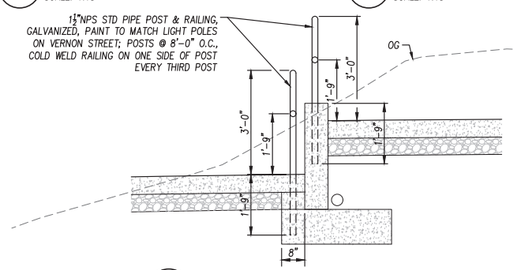
2 - SCALE: NTS TYPE A MODIFIED HMA DIKE



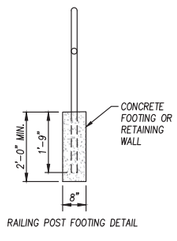
3 - SCALE: NTS RETAINING WALL - TRENCH FOOTING



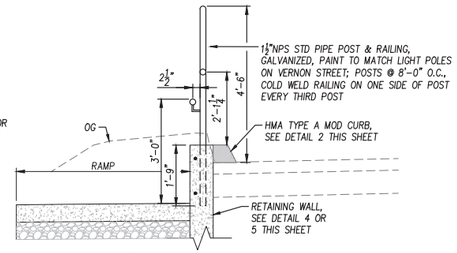
4 - SCALE: NTS CONCRETE STAIRS



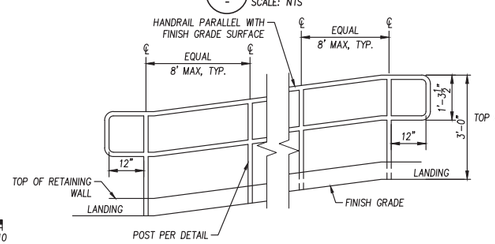
5 - SCALE: NTS TYPE 1 - RAMP HANDRAIL



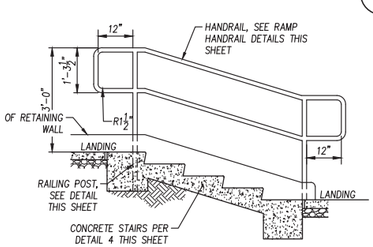
RAILING POST FOOTING DETAIL



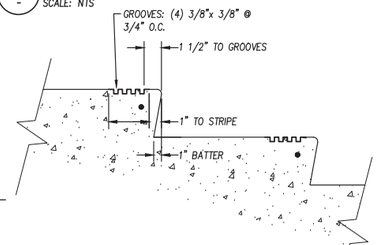
6 - SCALE: NTS TYPE 2 - RAMP HANDRAIL



7 - SCALE: NTS RAMP HANDRAIL - ELEVATION



8 - SCALE: NTS STAIR HANDRAIL - ELEVATION



9 - SCALE: NTS STAIR NOSING

NO.	REVISIONS	BY	DATE
1			
2			
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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X
X

DESIGN BY :	M. RINGLSTETTER
DRAWN BY :	M. ALQUDSI
CHECKED BY :	C. ALLEN
SCALE :	AS SHOWN
DATE :	FEBRUARY 2025
PROJ NO. :	500324

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REGISTERED PROFESSIONAL ENGINEER CARLTON DONALD ALLEN NO. C76694 STATE OF CALIFORNIA

Carlton D Allen

BEN EN
TRUSTED ENGINEERING ADVISORS

Bennett Engineering Services
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Roseville, California 95661
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F 916.783.4110

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

CITY OF ROSEVILLE CALIFORNIA
CITY OF ROSEVILLE

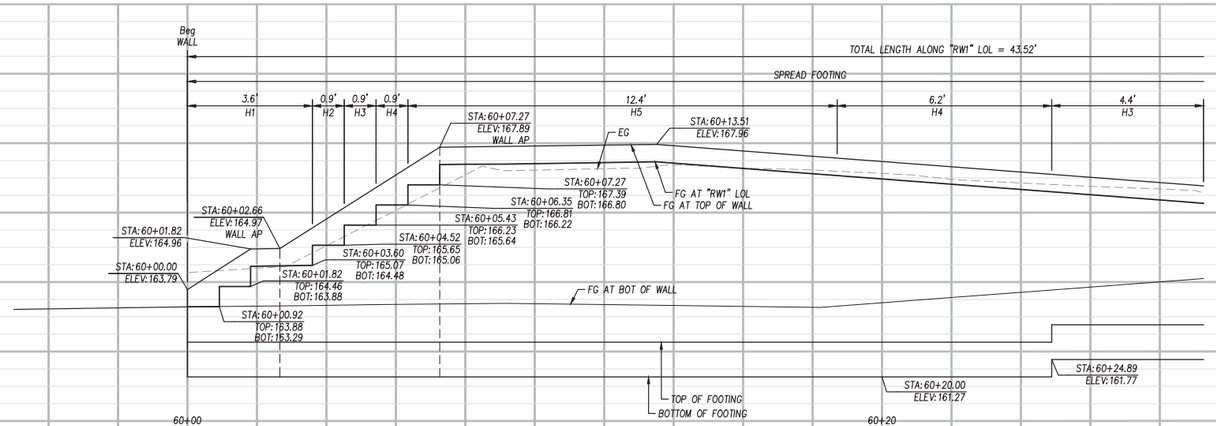
RETAINING WALL DETAILS

CALIFORNIA

R-1
13
OF
23

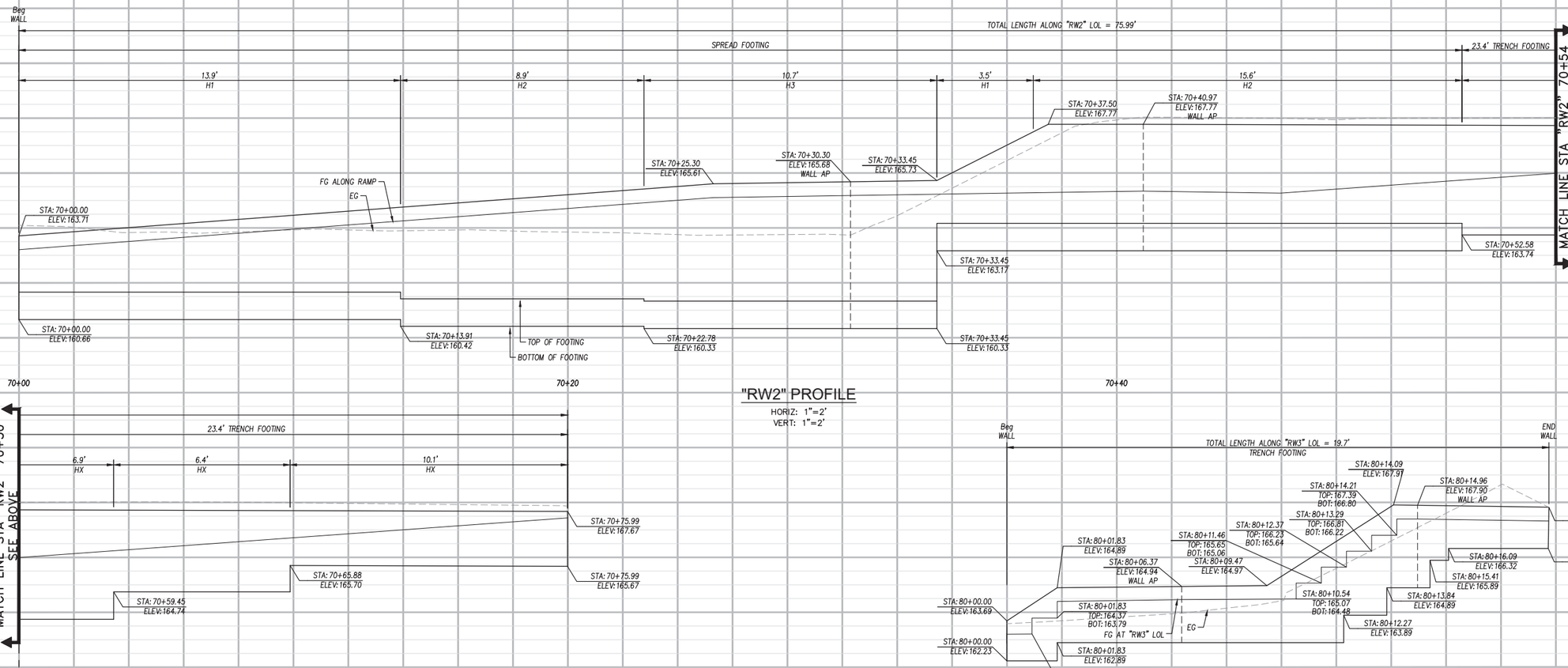
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XREF: 22378_00-TITLE | 22378_01-GENERAL NOTES | 22378_02-LAYOUT | 22378_04-LAYOUT SHEETS | 22378_04-LAYOUT SHEETS | WA-Hatch | 22378_WA-UTIL

SPREAD FOOTING DIMENSIONS TABLE		
H#	WALL HEIGHT	FOOTING WIDTH
H1	3'-4" MAX	2'-8"
H2	4'-0" MAX	3'-0"
H3	4'-8" MAX	3'-4"
H4	5'-4" MAX	4'-2"
H5	6'-0" MAX	4'-6"



"RW1" PROFILE

HORIZ: 1"=2'
VERT: 1"=2'



"RW2" PROFILE

HORIZ: 1"=2'
VERT: 1"=2'

"RW2" PROFILE

HORIZ: 1"=2'
VERT: 1"=2'

"RW3" PROFILE

HORIZ: 1"=2'
VERT: 1"=2'

NO.	REVISIONS	BY	DATE
1			
2			
3			
4			
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6			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X
X

DESIGN BY :	M. RINGLSTETTER
DRAWN BY :	M. ALQUDSI
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0 1"
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VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

CITY OF ROSEVILLE CALIFORNIA

RETAINING WALL PROFILES

CITY OF ROSEVILLE CALIFORNIA

R-2
14
OF
23

Login Name: jmunos
Plot Date: March 14, 2025 - 11:42 am
File Name: P:\Proj\22378-01-Roseville-Vernon Atlantic HSIP\03-PLANS\MASTERS\SHEETS\22378_07-RETAINING WALL PROFILES.dwg

ELECTRICAL INDEX:

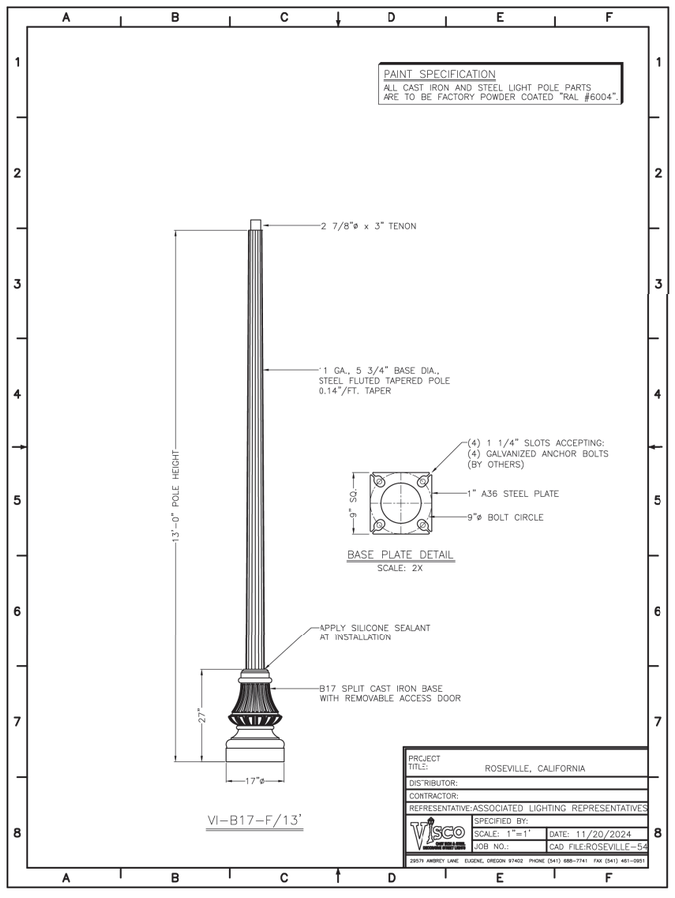
SHEET	DESCRIPTION
E-1	ELECTRICAL INDEX, NOTES AND LEGEND
E-2	RECTANGULAR RAPID FLASHING BEACON SYSTEM
E-3 TO E-4	ELECTRICAL DETAILS

ELECTRICAL GENERAL NOTES:

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE LATEST VERSION OF CITY OF ROSEVILLE DESIGN AND CONSTRUCTION STANDARDS, THE LATEST CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL (CAMUTCD), THE 2024 STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND PLANS, AND SUBSEQUENT REVISED STANDARD SPECIFICATIONS AND PLANS, AND THE SPECIAL PROVISIONS.
2. IN CASE OF DIFFERENCES BETWEEN CITY AND CALTRANS STANDARDS, CITY STANDARDS SHALL GOVERN. IN CASE OF DIFFERENCES BETWEEN CITY DESIGN STANDARDS AND CITY CONSTRUCTION STANDARDS, CITY CONSTRUCTION STANDARD SHALL GOVERN.
3. ALL EXISTING ELECTRICAL EQUIPMENT TO REMAIN, UNLESS OTHERWISE NOTED. IF DAMAGED BY THE CONTRACTOR'S OPERATIONS, EQUIPMENT SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
4. THE CONTRACTOR SHALL CONTACT ALL UTILITIES TO VERIFY UNDERGROUND AND OVERHEAD UTILITIES. THE CONTRACTOR SHALL CALL 811, UNDERGROUND SERVICE ALERT (U.S.A.), 48 HOURS PRIOR TO ALL EXCAVATION.
5. THE CONTRACTOR SHALL VERIFY OVERHEAD AND UNDERGROUND CLEARANCE REQUIREMENTS WITH ROSEVILLE ELECTRIC, COMCAST, AT&T, AND OTHER AFFECTED UTILITIES PRIOR TO THE START OF WORK.
6. THE LOCATION OF ALL EQUIPMENT SHOWN ON THIS PLAN ARE APPROXIMATE AND MAY BE CHANGED TO SUIT FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
7. NEW PULL BOXES SHALL BE FIBERLYTE FL-36 UNLESS OTHERWISE NOTED ON THE PLAN.
8. NEW PULL BOXES SHALL BE LOCATED IN THE SIDEWALK WHERE APPLICABLE AND SHALL NOT BE INSTALLED WITHIN ADA TACTILE STRIP, DETECTABLE WARNING SURFACE, RAMPS OR LANDINGS. PULL BOX RIM AND LID SHALL BE FLUSH WITH THE SURROUNDING SURFACE.
9. "E" SHEETS ARE ACCURATE FOR ELECTRICAL WORK ONLY.

ELECTRICAL LEGEND AND ABBREVIATIONS:

AID	AUDIBLE INFORMATION DEVICE
	EXISTING CITY STREET LIGHT
	EXISTING CITY DECORATIVE STREET LIGHT
	EXISTING CITY RECEPTACLE FOR LANDSCAPE LIGHTING
	RRFB EQUIPMENT AND DECORATIVE STREET LIGHT POST WITH DECORATIVE BASE POLE CAP. POLE TO BE 13' VISCO MODEL VI-A7-F/13'-0" POWDER COATED "RAL #6004". DECORATIVE BASE TO BE VISCO B17. DECORATIVE POLE CAP TO BE VISCO 22D. FOR RRFB ASSEMBLIES, SEE DETAILS ON SHEET E-3.
	RRFB EQUIPMENT, DECORATIVE STREET LIGHT POST WITH DECORATIVE BASE AND LUMINAIRE. POLE TO BE 13' VISCO MODEL VI-A7-F/13'-0" POWDER COATED "RAL #6004". DECORATIVE BASE TO BE VISCO B17. LUMINAIRE TO BE 46W STERNBERG OLD TOWN MODEL PT-A850SRLED-5P-12L-30-T3-MDL014-A-SRR7-CM-RAL6004. FOR RRFB ASSEMBLIES, SEE DETAILS ON SHEET E-3.

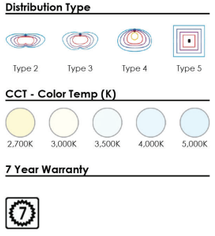


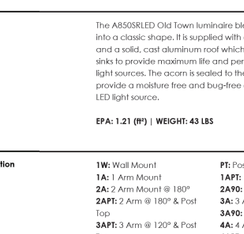
DETAIL A
DECORATIVE STREET LIGHT POST

Configured Specification Sheet — **Old Town** A850SRLED

Project Name Rosville Vernon street — **Qty** _____

Type _____ **Catalog / Part Number** PT-A850SRLED-5P-12L-30-T3-MDL014-A-SRR7-CM/RAL6004





A850SRLED-SP A850SRLED-990

Distribution Type

Type 2 Type 3 Type 4 Type 5

CCT - Color Temp (K)

2,700K 3,000K 3,500K 4,000K 5,000K

7 Year Warranty

IP Rating

IP65

Certifications

cULus LISTED

Description

The A850SRLED Old Town luminaire blends form and function into a classic shape. It is supplied with a cast aluminum finial and a solid, cast aluminum roof which includes optimized heat sinks to provide maximum life and performance for the LED light sources. The acorn is sealed to the cast aluminum roof to provide a moisture free and bug-free optics chamber for the LED light source.

EPA: 1.21 (ft²) | WEIGHT: 43 LBS

Features

Mounting Configuration	**1W:** Wall Mount **1A:** 1 Arm Mount **2A:** 2 Arm Mount @ 180° **2APT:** 2 Arm @ 180° & Post Top **3APT:** 3 Arm @ 120° & Post Top **1AM:** 1 Arm Mid-Mount **450PB:** Pier Base **PT:** Post Top **1APT:** 1 Arm & Post Top **2A90:** 2 Arm Mount @ 90° **3A:** 3 Arms @ 120° **3A90:** 3 Arms @ 90° **4A:** 4 Arms @ 90° **4APT:** 4 Arm @ 90° & Post Top **2AM:** 2 Arm Mid-Mount @180°
Optional Control Receptacle	**R7:** 7-Pin control receptacle only **SRR7:** Roof Mounted 7-Pin Control Receptacle Only
Optional Control	**PE:** Twist-Lock Photocontrol (120V-277V) **PE4:** Twist-Lock Photocontrol (347V-480V) **SC:** Shorting Cap **PEC:** Electronic Button Photocontrol (120V-277V) **PEC4:** Electronic Button Photocontrol (480V)
Optional Fuse	**FHD:** Double Fuse and Holder
Optional House Side Shield	**HSS:** 120° House Side Shield **BLOC:** Back Light Optical Control
Optional Fixed Dimming Resistor Board	**FDRB:** Fixed Dimming Resistor Board

Sternberg

555 Lawrence Ave, Roselle, IL, 60172, US | T 847-588-3400 | contactus@sternberglighting.com
www.sternberglighting.com www.sternberglighting.com/products/639

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1 / 9

DETAIL B
POST-TOP FIXTURE

NO.	REVISIONS	BY	DATE
6			
5			
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3			
2			
1			

BENCH MARK ELEV: XX DATUM: XX
DESCRIPTION:
X
X
X
X
X
X

DESIGN BY :	K. MEYER
DRAWN BY :	B. VERGARA
CHECKED BY :	K. CHAN
SCALE :	NO SCALE
DATE :	FEB 2025
PROJ NO. :	22-378

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REGISTERED PROFESSIONAL ENGINEER — KHAI WILLIAM MENG — No. C85774 — CIVIL — STATE OF CALIFORNIA
3/4/2025

BENEN
TRUSTED ENGINEERING ADVISORS

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VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

CITY OF ROSEVILLE CALIFORNIA

RECTANGULAR RAPID FLASHING BEACON SYSTEM

CITY OF ROSEVILLE CALIFORNIA

E-1
15 OF 23

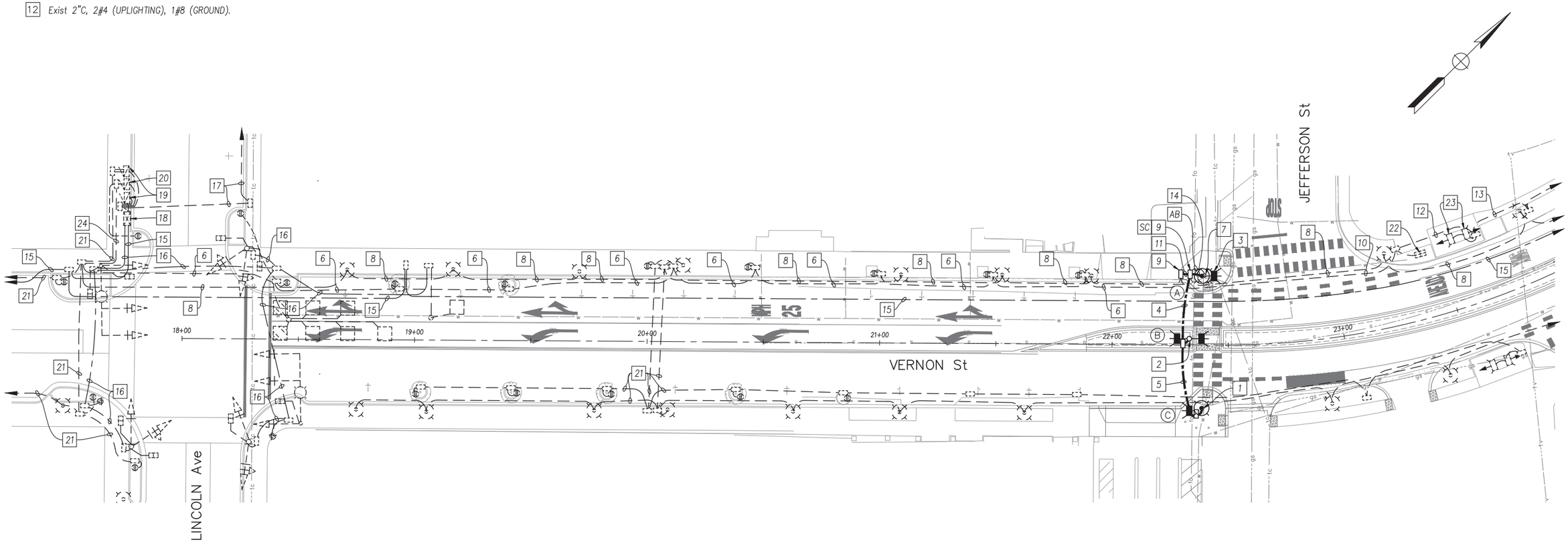
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RRFB Specification Sheet: 22378_SPC-TOPO (DLMA) | 22378_SPC-TOPO | 22378_SPC-SIDE | RP-TOP-14 | RP-SIDE | RP-TOP-C | 22378_SPC-TOPO | 22378_VA-TOPO-TRAC-C | VR-STMP-AM

CONSTRUCTION NOTES: (THIS SHEET ONLY)

1. FURNISH AND INSTALL RRFB EQUIPMENT AND NEW DECORATIVE STREET LIGHT POST. FOR RRFB ASSEMBLY, SEE DETAIL A ON SHEET E-3. MAINTAIN 5' CLEARANCE BETWEEN LIGHT FOUNDATION AND OUTSIDE EDGE CITY OF ROSEVILLE WATER LINE.
2. FURNISH AND INSTALL RRFB EQUIPMENT AND NEW 13' FLUTED ALUMINUM 4" DIAMETER POLE WITH DECORATIVE CAP AND BASE. FOR RRFB ASSEMBLY, SEE DETAIL B ON SHEET E-3.
3. FURNISH AND INSTALL RRFB EQUIPMENT AND NEW DECORATIVE STREET LIGHT POST. FOR RRFB ASSEMBLY, SEE DETAIL C ON SHEET E-3.
4. 2"C, 3 RRFB CABLES, 1 APS CABLE, 2#6 (LIGHTING), 1#10 (GROUND).
5. 2"C, 1 RRFB CABLE, 1 APS CABLE, 2#6 (LIGHTING), 1#10 (GROUND).
6. Exist 2"C, 2#4 (LANDSCAPE), 2#8 (IRRIGATION CONTROLLER), 1#8 (GROUND). ADD 2#10 (RRFB), 1#10 (GROUND).
7. REMOVE EXISTING DECORATIVE LIGHT POST AND FIXTURE AND SALVAGE TO CITY. REMOVE AND DISPOSE EXISTING FOUNDATION.
8. Exist 2"C, 6#6 (LIGHTING), 1#8 (GROUND).
9. REMOVE Exist PULL BOX AND FURNISH AND INSTALL NEW FIBERLYTE FL-36 PULL BOX.
10. Exist 2"C, 2#4 (LANDSCAPE), 2#8 (IRRIGATION CONTROLLER), 1#8 (GROUND).
11. 2"C, 3#6 (LIGHTING), 1#8 (GROUND).
12. Exist 2"C, 2#4 (UPLIGHTING), 1#8 (GROUND).
13. Exist 2"C, EMPTY.
14. 2"C, 2#10 (RRFB), 3 RRFB CABLES, 1 APS CABLE, 2#6 (LIGHTING), 1#10 (GROUND).
15. Exist 3", 1 SIC.
16. Exist TRAFFIC SIGNAL CONDUIT AND CONDUCTORS.
17. Exist SERVICE CONDUIT AND CONDUCTORS.
18. Exist 332 CABINET ASSEMBLY.
19. Exist TYPE IIIAF SERVICE ENCLOSURE.
20. Exist TYPE IIIAF SERVICE ENCLOSURE. ADD NEW 15 A CB (METERED) AND CONNECT NEW RRFB AND ADD PERMANENT LABEL "RRFB".
21. Exist LIGHTING/LANDSCAPE CONDUIT AND CONDUCTORS.
22. Exist IRRIGATION CONTROLLER.
23. Exist SCONCE LIGHT MOUNTED TO ARCH
24. Exist LIGHTING/LANDSCAPE CONDUIT AND CONDUCTORS. ADD 2#10 (RRFB), 1#10 (GROUND).

EQUIPMENT SCHEDULE

NO.	STANDARD TYPE	AID ARROW	AID QUADRANT	REMARKS
(A)	NEW DECORATIVE STREET LIGHT POLE	←	EAST	SEE NOTE 3 ON THIS SHEET.
(B)	NEW FLUTED ALUMINUM POLE			SEE NOTE 2 ON THIS SHEET.
(C)	NEW DECORATIVE STREET LIGHT POLE	→	EAST	SEE NOTE 1 ON THIS SHEET.



NO.	REVISIONS	BY	DATE
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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X

DESIGN BY :	K. MEYER
DRAWN BY :	B. VERGARA
CHECKED BY :	K. CHAN
SCALE :	1" = 20'
DATE :	FEB 2025
PROJ NO. :	22-378

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REGISTERED PROFESSIONAL ENGINEER — KIRK WILLIAM MEYER — NO. C82712 — CIVIL — STATE OF CALIFORNIA
3/4/2025

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VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

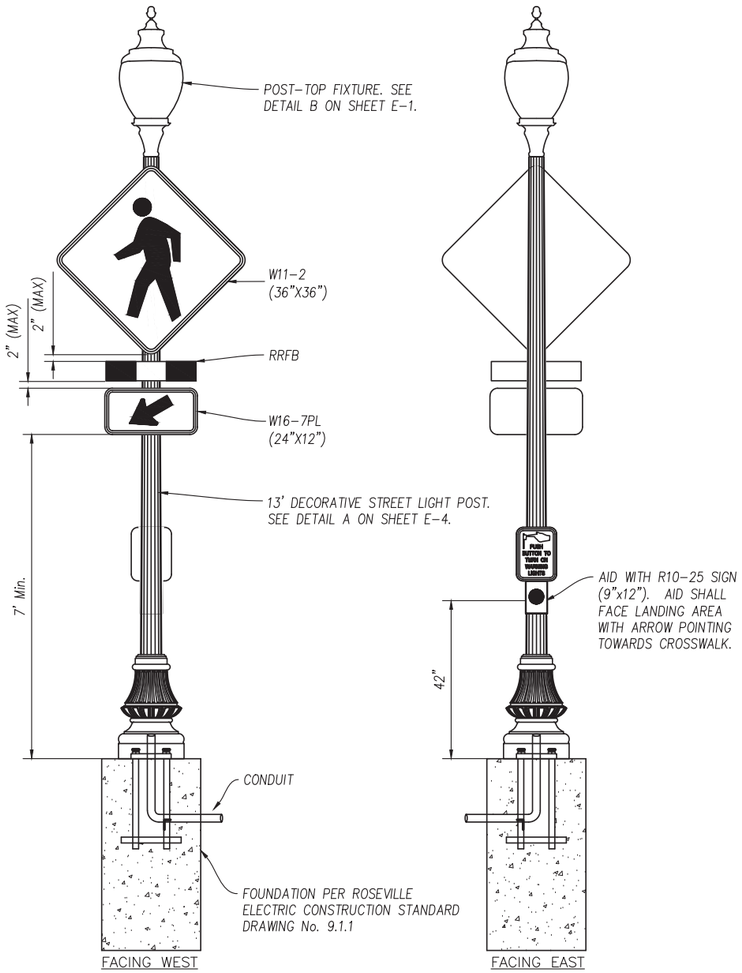
CITY OF ROSEVILLE CALIFORNIA

RECTANGULAR RAPID FLASHING BEACON SYSTEM

CITY OF ROSEVILLE CALIFORNIA

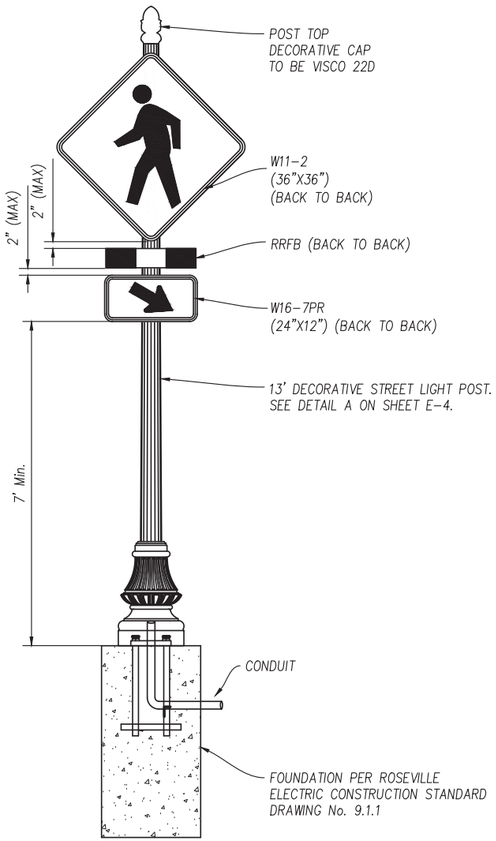
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NOTE: DRILL POLES TO MOUNT APS AND RUN RRFB SYSTEM WIRING.
USE SADDLE AND BRACKETS FOR MOUNTING OTHER EQUIPMENT.



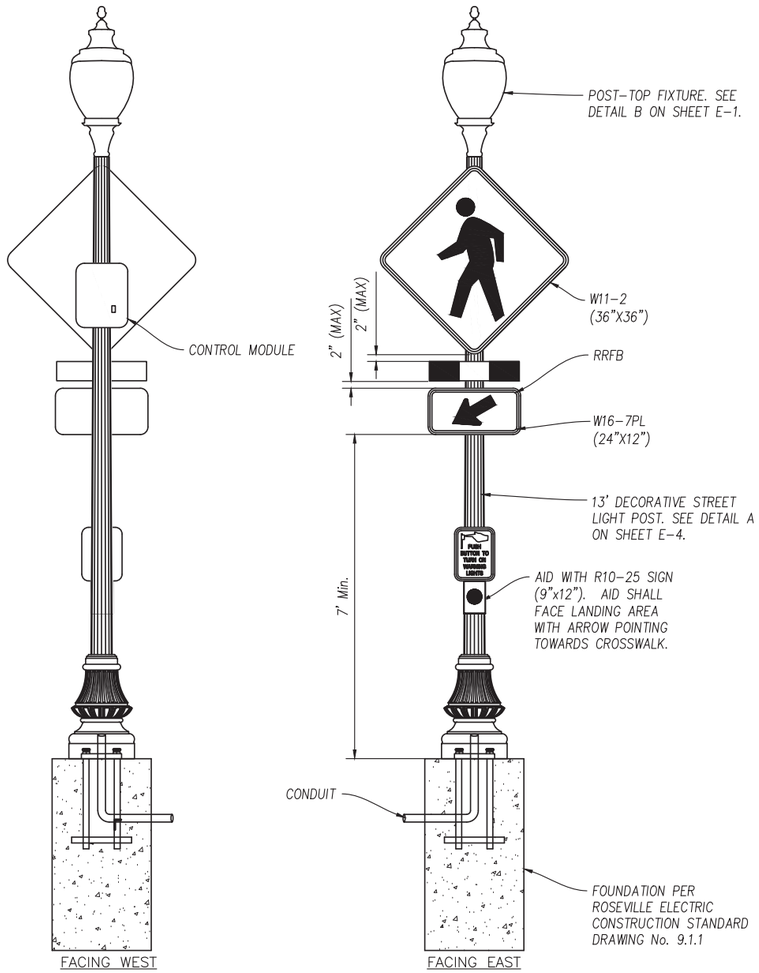
DETAIL A – RRFB ASSEMBLY

AC POWER + SINGLE-SIDED + AID + LUMINAIRE
NO SCALE



DETAIL B – RRFB ASSEMBLY

AC POWER + DOUBLE-SIDED (MEDIAN)
NO SCALE



DETAIL C – RRFB ASSEMBLY

AC POWER + SINGLE-SIDED + AID + CONTROL MODDULE + LUMINAIRE
NO SCALE

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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
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DESIGN BY :	K. MEYER
DRAWN BY :	B. VERGARA
CHECKED BY :	K. CHAN
SCALE :	NO SCALE
DATE :	FEB 2025
PROJ NO. :	22-378

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REGISTERED PROFESSIONAL ENGINEER — KAR WILLIAM MEYER — No. C85712 — CIVIL — STATE OF CALIFORNIA — 3/4/2025

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VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

CITY OF ROSEVILLE CALIFORNIA — CITY OF ROSEVILLE

RECTANGULAR RAPID FLASHING BEACON SYSTEM

CALIFORNIA

E-3
17 OF 23

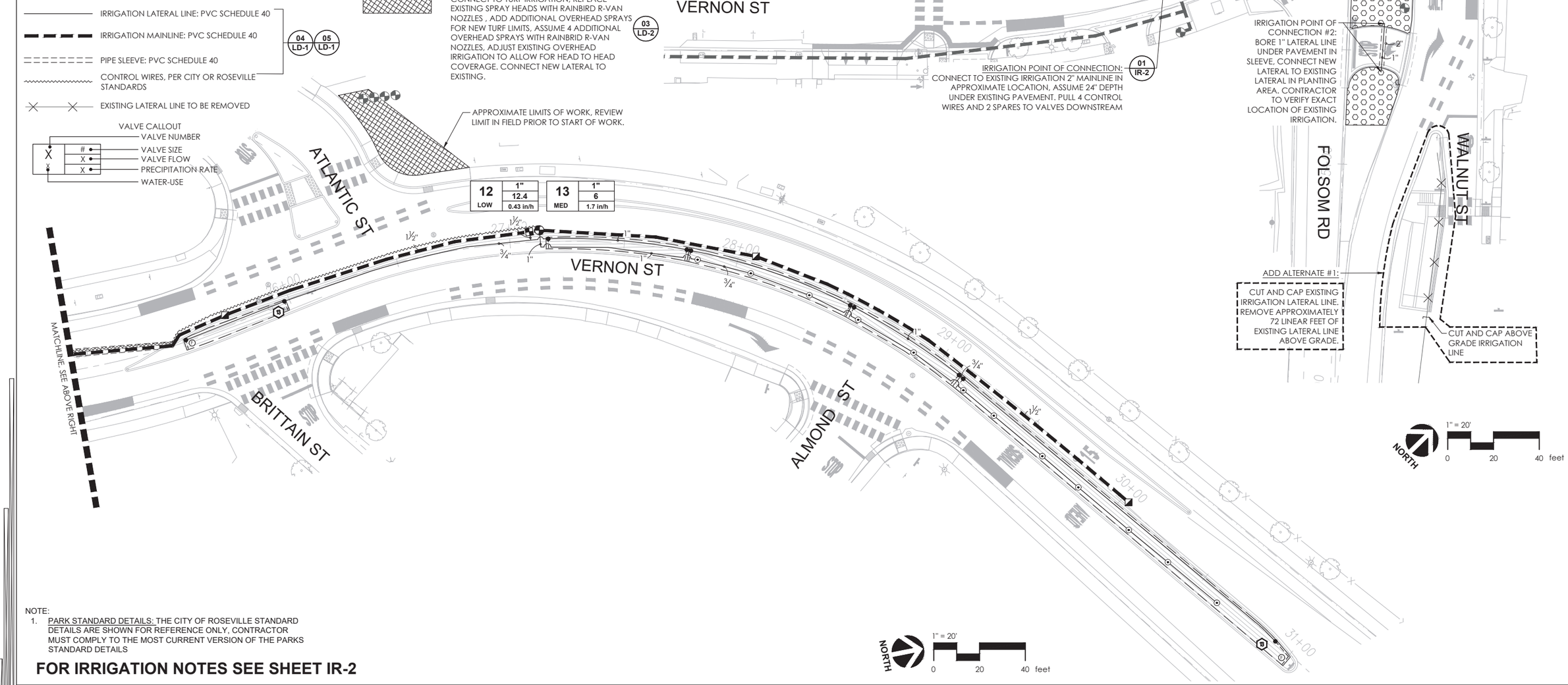
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Plot Date: March 04, 2025 - 10:45 am
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PW Table: Ctb: 22378_MR-TOPO (GSAA) | 22378_MR-SHEET | MR-TOPO-A | MR-LEG | MR-TOPO-E | 22378_MR-TOPO | 22378_MR-TOPO-TRAC-E | MR-STMP-AM

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI
1402	TREE BUBBLER: 1400 SERIES RAIN BIRD RWS-B-C-P 1401 ROOT WATERING SYSTEM WITH CHECK VALVE. EACH SYMBOL REPRESENTS 2 BUBBLERS PER TREE.	30 — 02 LD-1
	REMOTE CONTROL VALVE: RAIN BIRD PEB, LOW FLOW, SIZE PER PLANS. — 01 LD-1	
	DRIP VALVE: RAINBIRD DRIP CONTROL ZONE KIT XCZ-100-, 1IN. PEB VALVE, WITH 1IN. PRESSURE REGULATING 40PSI BASKET FILTER, PER CITY OF ROSEVILLE STANDARDS — 06 LD-1	
	QUICK COUPLER: RAIN BIRD 44-LRC, 1IN., WITH LOCKING THERMOPLASTIC RUBBER COVER, AND 2-PIECE BODY, PER CITY OF ROSEVILLE STANDARDS — 02 LD-2	
	GATE VALVE: NIBCO T-113, SAME SIZE AS MAINLINE PIPE DIAMETER AT VALVE LOCATION. — 03 LD-1	
	FLUSH VALVE AND OPERATION INDICATOR: SCHEDULE 40 PVC BALL VALVE WITH BRASS HOSE THREAD ADAPTER, PER CITY OF ROSEVILLE STANDARDS — 01 LD-2	
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40	
	IRRIGATION MAINLINE: PVC SCHEDULE 40 — 04 LD-1, 05 LD-1	
	PIPE SLEEVE: PVC SCHEDULE 40	
	CONTROL WIRES, PER CITY OR ROSEVILLE STANDARDS	
	EXISTING LATERAL LINE TO BE REMOVED	

VALVE CALLOUT
- VALVE NUMBER
- VALVE SIZE
- VALVE FLOW
- PRECIPITATION RATE
- WATER-USE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	DRIP AREA: RAINBIRD XFS-SUB SURFACE DRIPLINE, XFS-CV-06-18 WITH .6 GPH AND 18" EMITTER SPACING AND 18" O.C DRIPLINE LATERALS. INSTALL ONE DRIP INDICATOR IN EACH PLANTER, PER CITY OF ROSEVILLE STANDARD SPECIFICATIONS. — 04 LD-2, 05 LD-2
	DRIP HEADER: SCHEDULE 40 PVC, 3/4" SIZE
4	VALVE NUMBER FOR DRIP AREA
	PIPE TRANSITION POINT
	PROTECT EXISTING IRRIGATION, ADJUST SHRUB BUBBLER IRRIGATION TO NEW LIMITS OF PAVEMENT OR CURB
	EXISTING REMOTE CONTROL VALVE
	EXISTING MAINLINE, 2" SIZE
C	EXISTING CONTROLLER C
	CONNECT TO TURF IRRIGATION, REPLACE EXISTING SPRAY HEADS WITH RAINBIRD R-VAN NOZZLES , ADD ADDITIONAL OVERHEAD SPRAYS FOR NEW TURF LIMITS, ASSUME 4 ADDITIONAL OVERHEAD SPRAYS WITH RAINBRID R-VAN NOZZLES, ADJUST EXISTING OVERHEAD IRRIGATION TO ALLOW FOR HEAD TO HEAD COVERAGE. CONNECT NEW LATERAL TO EXISTING. — 03 LD-2



NOTE:
1. PARK STANDARD DETAILS: THE CITY OF ROSEVILLE STANDARD DETAILS ARE SHOWN FOR REFERENCE ONLY, CONTRACTOR MUST COMPLY TO THE MOST CURRENT VERSION OF THE PARKS STANDARD DETAILS

FOR IRRIGATION NOTES SEE SHEET IR-2

NO.	REVISIONS	BY	DATE
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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
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DESIGN BY :	AM
DRAWN BY :	AW/OP
CHECKED BY :	MR
SCALE :	AS SHOWN
DATE :	11.19.2024
PROJ NO. :	24017

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CALA
12150 Tributary Point Drive, Suite 140
Gold River, CA 95670
T 916.985.4366
www.callanderassociates.com

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

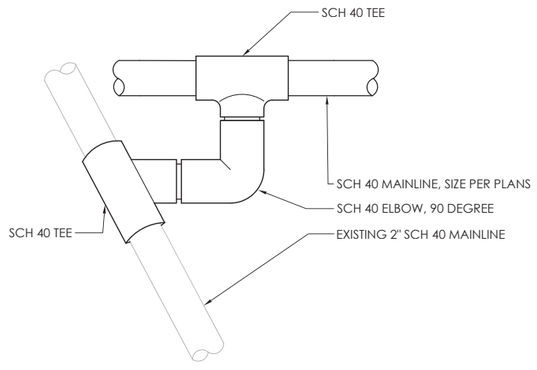
IRRIGATION PLAN

CITY OF ROSEVILLE CALIFORNIA

IR-1
18 OF 23

IRRIGATION NOTES

1. SPECIFICATIONS: SEE IRRIGATION SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. POINT OF CONNECTION: CONNECT NEW MAINLINE TO EXISTING IRRIGATION SYSTEM.
3. UTILITIES: CONTRACTOR SHALL VERIFY LOCATION OF ALL ON-SITE UTILITIES. RESTORATION OF DAMAGED UTILITIES SHALL BE MADE AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
4. SCHEMATIC: SYSTEM FEATURES ARE SHOWN SCHEMATICALLY FOR GRAPHIC CLARITY. INSTALL ALL PIPING AND VALVES IN COMMON TRENCHES WHERE FEASIBLE AND INSIDE PLANTING AREAS WHENEVER POSSIBLE. ALL VALVES SHALL BE LOCATED IN GROUNDCOVER OR SHRUB AREAS WHENEVER POSSIBLE.
5. CODES: IRRIGATION SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH ALL LOCAL CODES AND MANUFACTURER'S SPECIFICATIONS. NOTIFY LANDSCAPE ARCHITECT BY TELEPHONE AND IN WRITING OF ANY CONFLICTS PRIOR TO INSTALLATION.
6. SLEEVING: CONTRACTOR SHALL SIZE ALL SLEEVES TO BE A MINIMUM TWO TIMES THE SIZE OF THE INTERIOR PIPE. SLEEVES SHALL BE INSTALLED AT THE NECESSARY DEPTHS PRIOR TO PAVEMENT CONSTRUCTION. SLEEVING SHALL EXTEND 1'-0" FROM EDGE OF PAVEMENT INTO LAWN OR PLANTING AREA, AND SHALL HAVE ENDS CLEARLY MARKED ABOVE GRADE.
7. MAINTAINING EXISTING IRRIGATION: SHOULD THE EXISTING MAINLINE BREAK OR BE SHUT OFF FOR ANY REASON DURING THE COURSE OF CONSTRUCTION THE CONTRACTOR SHALL HAND WATER ALL TREES, SHRUBS, TURF, AND GROUNDCOVER THAT THE EXISTING IRRIGATION SYSTEM WATERS. THE CONTRACTOR SHALL CONTINUE TO DO SO UNTIL THE IRRIGATION SYSTEM IS OPERABLE.
8. EXISTING IRRIGATION INFORMATION: EXISTING IRRIGATION PLANS WERE MADE AVAILABLE TO THE LANDSCAPE ARCHITECT AND IS SHOWN ON THESE PLANS HALF TONE. LANDSCAPE ARCHITECT SHALL NOT BE HELD LIABLE FOR CHANGES, INACCURACIES, OMISSIONS, OR OTHER ERRORS ON THESE DOCUMENTS. THIS INFORMATION IS PROVIDED AS AN AID ONLY AND THE CONTRACTOR SHALL BE RESPONSIBLE VERIFYING IN THE FIELD. FOR REFERENCE, THE FOLLOWING RECORD DRAWINGS WERE PROVIDED: VERNON STREET IMPROVEMENT PROJECT, 900 BLOCK, SHEET L1.9, 6/8/01.
9. IRRIGATION EQUIPMENT: IN ADDITION TO EQUIPMENT SPECIFICALLY NOTED ON THE PLANS, REMOVAL OF ALL VISIBLE EXISTING IRRIGATION EQUIPMENT AND ANY BELOW-GRADE COMPONENTS THAT WOULD INTERFERE WITH THE WORK IN DURING TRENCHING AND/OR ROUGH GRADING.
10. MAINLINE FLUSH: ALL MAINLINES SHALL BE FLUSHED PRIOR TO INSTALLATION.
11. WIRE SPLICING: ALL WIRE SPLICING SHALL BE DONE IN VALVE BOXES PER SPECS.
12. PUBLIC RIGHT OF WAY: ALL WORK PERFORMED WITHIN THE PUBLIC-RIGHT-OF-WAYS SHALL COMPLY WITH ALL APPLICABLE CITY REQUIREMENTS AND SPECIFICATIONS.
13. IRRIGATION CROSSINGS: EXISTING CROSSOVERS SHOWN IN APPROXIMATE LOCATION BASED ON AS BUILD DRAWINGS. CONTRACTOR TO VERIFY IN FIELD.
14. IRRIGATION MAINLINE LOCATION: PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL LOCATE AND FLAG EXISTING MAINLINE LOCATION IN FIELD FOR REVIEW BY LANDSCAPE ARCHITECT AND CITY CONSTRUCTION MANAGER.
15. PARK STANDARD DETAILS: THE CITY OF ROSEVILLE STANDARD DETAILS ARE SHOWN FOR REFERENCE ONLY, CONTRACTOR MUST COMPLY TO THE MOST CURRENT VERSION OF THE PARKS STANDARD DETAILS



NOTE: REFER TO MOST CURRENT CITY OF ROSEVILLE PARKS, RECREATION AND LIBRARIES STANDARD DETAILS AND SPECIFICATIONS

01 / IR-2 CONNECTION TO EXISTING MAINLINE
N.T.S.

PROJECT INFORMATION

A. DATE: SEE TITLE BLOCK

B. PROJECT APPLICANT: CITY OF ROSEVILLE

C. PROJECT ADDRESS: VERNON ST & JEFFERSON ST TO ALMOND ST

D. TOTAL LANDSCAPE AREA: SEE WATER EFFICIENT LANDSCAPE WORKSHEET

E. PROJECT TYPE: PUBLIC

F. WATER SUPPLY TYPE: POTABLE

G. LANDSCAPE DOCUMENTATION PACKAGE CHECKLIST:

1. ✓ PROJECT INFORMATION
2. ✓ WATER EFFICIENT LANDSCAPE WORKSHEET
3. ____ *SOIL MANAGEMENT REPORT
4. ✓ LANDSCAPE DESIGN PLAN (SEE SHEET PL-1)
5. ✓ IRRIGATION DESIGN PLAN (SEE SHEET IR-1)
6. ✓ GRADING DESIGN (SEE CIVIL PLANS)
7. ____ #CERTIFICATE OF COMPLETION
8. ____ *CERTIFICATE OF INSTALLATION
9. ✓ IRRIGATION SCHEDULE
10. ____ *MAINTENANCE SCHEDULE
11. ____ +*LANDSCAPE IRRIGATION AUDIT

*CONTRACTOR SHALL FURNISH UPON PROJECT COMPLETION.

#OWNER/OWNER'S REPRESENTATIVE SHALL FURNISH UPON PROJECT COMPLETION.

+CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF IRRIGATION AUDIT BY THE LOCAL AGENCY, OR A THIRD PARTY CERTIFIED LANDSCAPE IRRIGATION AUDITOR. LANDSCAPE AUDITS SHALL NOT BE CONDUCTED BY THE PERSON WHO DESIGNED THE LANDSCAPE OR INSTALLED THE LANDSCAPE. CONTRACTOR IS RESPONSIBLE TO PAY FOR ALL ASSOCIATED FEES.

H. PROJECT CONTACTS:

OWNER:
CITY OF ROSEVILLE
311 VERNON ST. ROSEVILLE, CA 95678
PHONE: (916) 774-5200

LANDSCAPE ARCHITECT:
CALLANDER ASSOCIATES
MELISSA RUTH
12150 TRIBUTARY POINT DRIVE, SUITE 140
GOLD RIVER, CA 95670
PHONE: (916) 985-4366
FAX: (916) 985-4391

LANDSCAPE DOCUMENTATION NOTES

1. MWELO CODES AND REFERENCES: A COPY OF THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) DOCUMENT CAN BE FOUND AT WATER.CA.GOV. REFER TO MWELO SECTION 492.9 FOR CERTIFICATE OF COMPLETION REQUIREMENTS AND APPENDIX C FOR SAMPLE OF CERTIFICATE OF COMPLETION AND CERTIFICATE OF INSTALLATION FORM.
2. IRRIGATION PLAN CONTROLLER COPY: THE CONTRACTOR SHALL PLACE A LAMINATED 11X17 COPY OF THE IRRIGATION PLAN SHOWING THE HYDROZONES WITHIN THE IRRIGATION CONTROLLER(S) CABINET FOR FUTURE MANAGEMENT USE.

WATER EFFICIENT LANDSCAPE WORKSHEET

WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package.

Reference Evapotranspiration (ETo) 52.2

Hydrozone # /Planting Description[a]	Plant Factor (PF)[f]	Irrigation Method[b]	Irrigation Efficiency (IE)[c]	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF x Area	Estimated Total Water Use (ETWU)[d]
Regular Landscape Areas							
Low Water Use Plantings	0.2	Drip	0.81	0.25	4,338	1,071	34,665
Medium Water Use Trees	0.4	Drip	0.81	0.49	300	148	4,795
				Totals	4,638 (A)	1,219 (B)	
Special Landscape Areas							
				1			
				1			
				1			
				Totals	0 (C)	0 (D)	
						ETWU Total	39,460
						Maximum Applied Water Allowance (MAWA)[e]	67,547

[a]Hydrozone #/Planting Description
E.g
1.) front lawn
2.) low water use plantings
3.) medium water use planting

[b]Irrigation Method
overhead spray or drip

[c]Irrigation Efficiency
0.75 for spray head
0.81 for drip

[d]ETWU **(Annual Gallons Required) =**
Eto x 0.62 x ETAF x Area
where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year

[e]MAWA (Annual Gallons Allowed) =
(Eto) (0.62) [(ETAF x LA) + ((1-ETAF) x SLA)]
where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year, LA is the total landscape area in square feet (including SLA), SLA is the total special landscape area in square feet, and ETAF is .55 for residential areas and 0.45 for non-residential areas.

[f]Plant Factor
(0.0 - 0.1) very low water use
(0.2 - 0.3) low water use
(0.4 - 0.6) medium water use
(0.7 - 1.0) high water use

ETAF Calculations

Regular Landscape Areas

Total ETAF x Area	1,219	(B)
Total Area	4,638	(A)
Average ETAF	**0.26**	**B ÷ A**

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

All Landscape Areas

Total ETAF x Area	1,219	(B + D)
Total Area	4,638	(A + C)
Sitewide ETAF	**0.26**	**(B + D) ÷ (A + C)**

I AGREE TO COMPLY WITH THE CRITERIA OF THE WATER EFFICIENT LANDSCAPE ORDINANCE AND SUBMIT A COMPLETE LANDSCAPE DOCUMENTATION PACKAGE

SIGNATURE MELISSA RUTH

IRRIGATION SCHEDULE

Valve No.	Description	Plant Water Use (WUCOLS)	Landscape Coefficient (KL)	GPM Flow	Precip Rate	Irrigation Method	Irrigation Efficiency	Landscape Coefficient (KI)	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
									Roseville	1.1	1.7	3.1	4.7	6.2	7.7	8.5	7.3	5.6	3.7	1.7	1	8.5
									% of July ETo	28%	34%	52%	74%	86%	97%	100%	95%	74%	57%	37%	28%	
11	Trees	Low	0.20	13.7	1.7	Drip	0.81	0.20	Minutes per Cycle	4	5	7	10	11	12	13	12	10	8	5	4	
									Days per Month	2	2	2	2	2	2	2	2	2	2	2	2	
									Cycles per Day	3	3	3	3	3	3	3	3	3	3	3	3	
									Total Minutes per Month	24	30	42	60	66	72	78	72	60	48	30	24	
									Total Gallons	329	411	575	822	904	986	1,069	986	822	658	411	329	8,302
12	Shrubs	Low	0.20	12.4	0.97	Drip	0.81	0.20	Minutes per Cycle	6	8	12	16	19	21	22	21	16	13	8	6	
									Days per Month	2	2	2	2	2	2	2	2	2	2	2	2	
									Cycles per Day	3	3	3	3	3	3	3	3	3	3	3	3	
									Total Minutes per Month	36	48	72	96	114	126	132	126	96	78	48	36	
									Total Gallons	446	595	893	1,190	1,414	1,562	1,637	1,562	1,190	967	595	446	12,499
13	Shrubs	Medium	0.50	6	0.94	Bubbler	0.81	0.50	Minutes per Cycle	7	8	12	17	20	22	23	22	17	13	9	7	
									Days per Month	5	5	5	5	5	5	5	5	5	5	5	5	
									Cycles per Day	3	3	3	3	3	3	3	3	3	3	3	3	
									Total Minutes per Month	105	120	180	255	300	330	345	330	255	195	135	105	
									Total Gallons	630	720	1,080	1,530	1,800	1,980	2,070	1,980	1,530	1,170	810	630	15,930

NOTES:

1. WATERING WINDOW: THIS IRRIGATION SCHEDULE IS BASED ON AN 8 HOUR WATERING WINDOW WITH 5 DAYS OF OPERATION PER WEEK. OVERHEAD IRRIGATION SHALL BE SCHEDULED BETWEEN 8:00 PM AND 10:00 AM.
2. VALVE OPERATION: THIS SCHEDULE IS NOT A "STACKING" SCHEDULE, AND DOES NOT OUTLINE WHICH VALVES SHOULD RUN AT THE SAME TIME. ALL PROGRAMMING AND STACKING SHALL BE WITHIN THE LIMITS OF THE AVAILABLE WATER PRESSURE.
3. SCHEDULE ADJUSTMENTS: DUE TO VARIABLE AND UNFORESEEN SITE CONDITIONS, THE IRRIGATION SYSTEM RUN TIMES MAY NEED TO BE ADJUSTED TO ENSURE THAT PROPER MOISTURE IS MAINTAINED IN THE LANDSCAPE.
4. PLANT ESTABLISHMENT PERIOD: CONTRACTOR SHALL PROVIDE THE IRRIGATION SCHEDULE DURING THE PLANT ESTABLISHMENT PERIOD. INCREASE THE OPERATION RUN TIME BY AT LEAST 20% AND DAYS OF OPERATION BY AT LEAST ONE DAY PER WEEK.

NO.	REVISIONS	BY	DATE
1			
2			
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6			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
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DESIGN BY :	AM
DRAWN BY :	AW/OP
CHECKED BY :	MR
SCALE :	AS SHOWN
DATE :	11.19.2024
PROJ NO. :	24017

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

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Gold River, CA 95670
T 916.985.4366
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VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

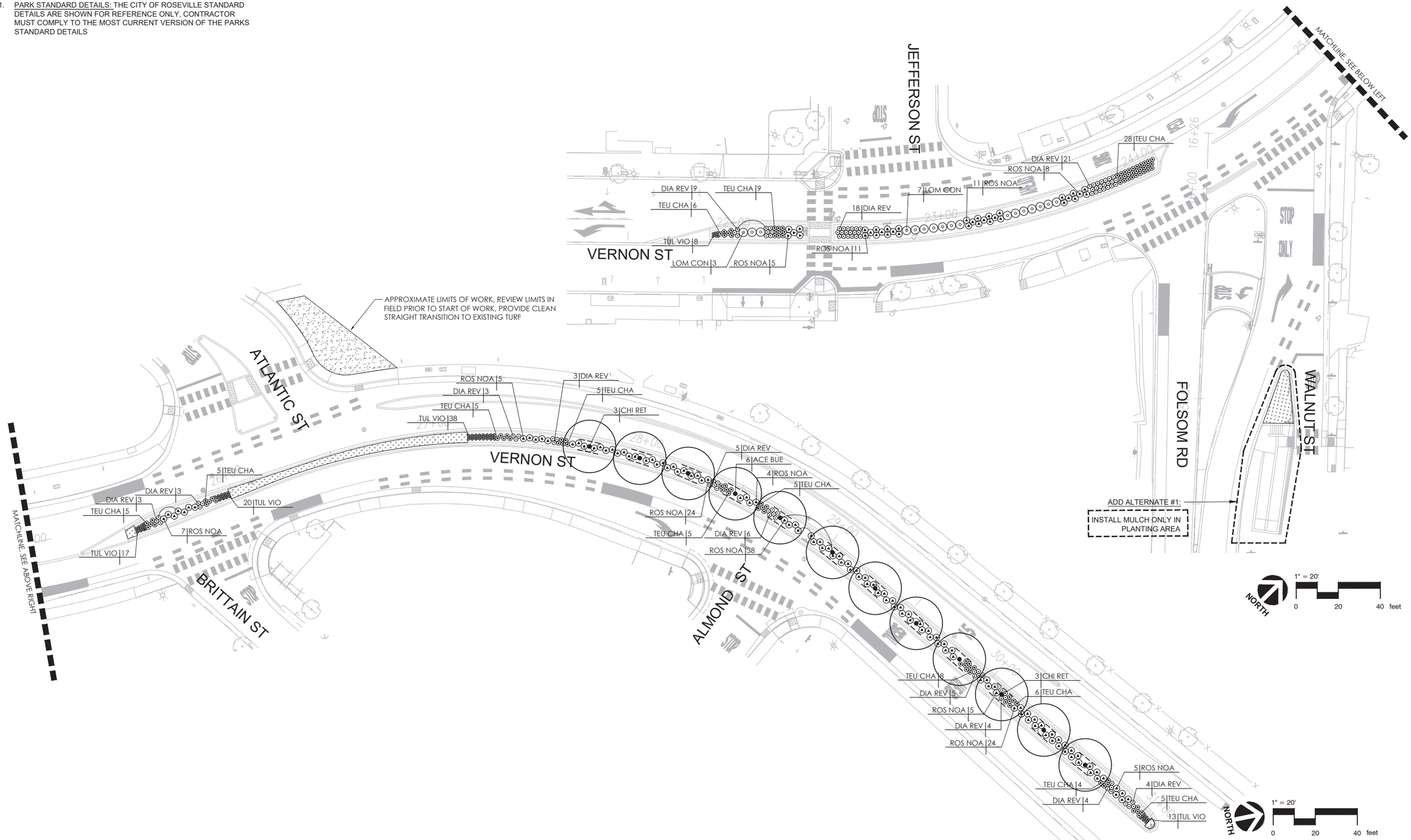
IRRIGATION PLAN

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE CALIFORNIA

NOTE:

1. PARK STANDARD DETAILS: THE CITY OF ROSEVILLE STANDARD DETAILS ARE SHOWN FOR REFERENCE ONLY, CONTRACTOR MUST COMPLY TO THE MOST CURRENT VERSION OF THE PARKS STANDARD DETAILS



FOR LEGEND AND NOTES SEE SHEET PL-2

NO.	REVISIONS	BY	DATE
6			
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BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
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DESIGN BY :	AM
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CITY OF ROSEVILLE CALIFORNIA

PLANTING PLAN

CITY OF ROSEVILLE CALIFORNIA

PL-1

PLANT SCHEDULE

CODE	BOTANICAL / COMMON NAME	SIZE	WATER USE	
TREES				
ACE BUE	ACER BUERGERIANUM / TRIDENT MAPLE	15 GAL	M	
CHI RET	CHIONANTHUS RETUSUS / CHINESE FRINGE TREE	15 GAL	M	
CODE	**BOTANICAL / COMMON NAME**	**SIZE**	**WATER USE**	**SPACING**
SHRUBS				
DIA REV	DIANELLA REVOLUTA 'LITTLE REV' / 'LITTLE REV' FLAX LILY	1 GAL	L	24" o.c.
LOM CON	LOMANDRA CONFERTIFOLIA 'POM POM' / SHORTY MAT RUSH	1 GAL	L	48" o.c.
ROS NOA	ROSA X 'NOATRAUM' / FLOWER CARPET® PINK ROSE	1 GAL	L	36" o.c.
TEU CHA	TEUCRIUM CHAMAEDRYS / GERMANDER	1 GAL	L	24" o.c.
TUL VIO	TULBAGHIA VIOLACEA 'SILVER LACE' / SILVER LACE SOCIETY GARLIC	1 GAL	L	12" o.c.

PLANT LEGEND

BARK MULCH ONLY

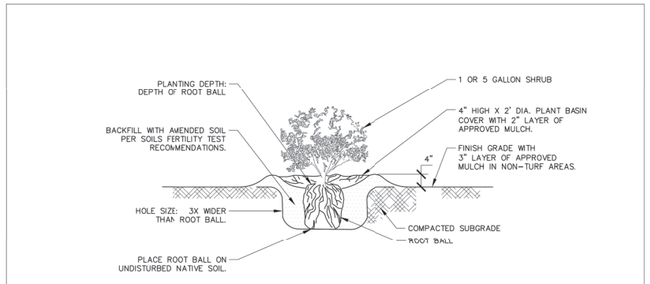
TURF FROM SOD SHALL BE TALL FESCUE BLEND, PER CITY OF ROSEVILLE PARKS STANDARD SPECIFICATIONS

ROOT BARRIER: DEEP ROOT CORP. #UB18, CONTACT 415-781-9700
INSTALL FLUSH WITH INSIDE FACE OF CURB OR PAVING IN LOCATIONS INDICATED. SHOWN ON OUTSIDE OF CURB FOR GRAPHIC PURPOSES ONLY.

PLANTING NOTES

1. EXISTING PLANT MATERIAL: PROTECT ALL EXISTING PLANT MATERIAL TO REMAIN. CONTRACTOR TO REPLACE ANY DAMAGED PLANT MATERIAL INCURRED AS A DIRECT RESULT OF THIS CONTRACT AT NO ADDITIONAL COST TO OWNER.
2. QUANTITIES: THE QUANTITIES SHOWN ON THE LABELS ARE NOT TO BE CONSTRUED AS THE COMPLETE AND ACCURATE LIMITS OF THE CONTRACT. FURNISH AND INSTALL ALL PLANTS SHOWN SCHEMATICALLY ON THE DRAWINGS.
3. TOPSOIL: ALL PLANTING AREAS ELEVATED ABOVE ORIGINAL GRADE AND/OR PREVIOUSLY COVERED BY PAVING SHALL RECEIVE A ONE FOOT LAYER OF IMPORT TOP SOIL AND A TWO FOOT LAYER OF IMPORT TOPSOIL AT TREE PLANTING, PER SPECIFICATIONS. ALL TOPSOIL SHALL BE AMENDED, PER SPECS.
4. SOILS TESTING: SEE SPECIFICATIONS FOR TESTING OF TOPSOIL AND AMENDMENTS. IN ADDITION, CONTRACTOR SHALL SUBMIT A FIVE GALLON SAMPLE OF IMPORT TOPSOIL AND NATIVE TOPSOIL FROM ANY AREAS PREVIOUSLY COVERED BY PAVING, TO WAYPOINT ANALYTICAL IN ANAHEIM, (714) 282-8777, FOR CONFIRMATION TESTING. TESTING REQUIRES FOUR TO FIVE WEEKS. CONTRACTOR SHALL ALLOW SUFFICIENT TIME FOR TESTING PRIOR TO CONSTRUCTION. IF TEST RESULTS INDICATE THAT SOILS FAIL TO MEET THE SPECIFICATION, OVER EXCAVATING BEYOND SPECIFIED MAY BE REQUIRED. OBTAIN OTHER SOURCES OF IMPORT MATERIAL OR RE-AMEND AS REQUIRED. RETEST AND RESUBMIT UNTIL PASSING RESULTS ARE OBTAINED.
5. TREES IN MEDIANS: NEW TREES PLANTED IN MEDIANS ARE TO BE OFFSET TO AVOID A VISUAL "PICKET FENCE" EFFECT.
6. MULCH IN MEDIANS: INSTALL A UNIFORM 3 INCH COVERING, REGULAR "WALK ON" FIR BARK, MANUFACTURED BY REDI-GRO CORPORATION OR APPROVED EQUAL, PER PARKS STANDARDS IN ALL MEDIANS.

   PROVIDE 1'-0" CLEAR ZONE FROM EDGE OF PLANT TO BACK OF CURB. CLEAR ZONE TO BE WALK ON MULCH ONLY PER PARKS STANDARDS, TYPICAL OF ALL BACK OF CURBS.
7. STANDARD SPECIFICATIONS: ALL WORK TO COMPLY WITH THE PARKS CONSTRUCTION STANDARDS LATEST EDITION.
8. PARK STANDARD DETAILS: THE CITY OF ROSEVILLE STANDARD DETAILS ARE SHOWN FOR REFERENCE ONLY, CONTRACTOR MUST COMPLY TO THE MOST CURRENT VERSION OF THE PARKS STANDARD DETAILS



JILL GELLER, CPRE
PARKS, RECREATION & LIBRARIES DIRECTOR

CITY OF ROSEVILLE CALIFORNIA — PARKS, RECREATION & LIBRARIES DEPARTMENT

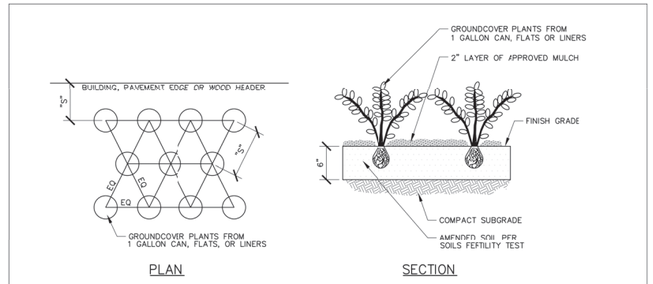
SHRUB PLANTING

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-18

NOTES
1. AMENDMENT SHALL BE CONSISTENT WITH SOILS FERTILITY TEST.
2. PLANTING AREAS SHALL BE TREATED WITH PRE-EMERGENT AFTER PLANTING IS COMPLETE AND PRIOR TO MULCH INSTALLATION.
3. SCORE ROOT BALL IN VARIOUS LOCATIONS.

1 PL-2 SHRUB PLANTING
N.T.S.



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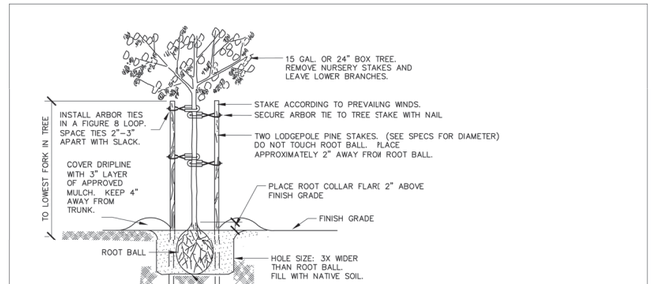
GROUNDCOVER PLANTING

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-17

NOTES
1. "S" REFERS TO PLANT SPACING, SEE PLANT TABLE ON CONSTRUCTION DOCUMENTS.

2 PL-2 GROUND COVER PLANTING
N.T.S.



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TREE PLANTING

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-20

NOTES
1. SCORE ROOT BALL AND CUT GIRDLING ROOTS ON ALL FOUR SIDES OF ROOT BALL.
2. FOR LAWN AREAS: PROVIDE A 3' DIA. AREA FREE OF TURF.
3. TREES FURNISHED IN #15 NURSERY CONTAINERS REQUIRE 2" DIA. STAKES. TREES LESS THAN 8' IN HEIGHT REQUIRE AN 8' STAKE. TREES 8' OR GREATER IN HEIGHT REQUIRE A 10' STAKE. TREES FURNISHED IN 24" BOXES REQUIRE 3" DIA. BY 10' LONG STAKES.
4. INSTALL 2 ARBOR TIES, AT 2/3 OF TREE HEIGHT AND 2 ARBOR TIES AT 1/2 OF TREE HEIGHT.
5. *TREE STAKES SHOULD BE INSERTED INTO THE GROUND TO A MINIMUM DEPTH OF 18".*
6. TREES TO BE STRUCTURALLY PRUNED BEFORE PLANTING. ESTABLISH A CENTRAL LEADER AND REDUCE OR REMOVE CODOMINANT LEADERS.

3 PL-2 TREE PLANTING
N.T.S.

NO.	REVISIONS	BY	DATE
6			
5			
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3			
2			
1			

BENCH MARK ELEV: XX DATUM: XX
DESCRIPTION:
X
X
X
X
X

DESIGN BY:	AM
DRAWN BY:	AW/OP
CHECKED BY:	MR
SCALE:	AS SHOWN
DATE:	11.19.2024
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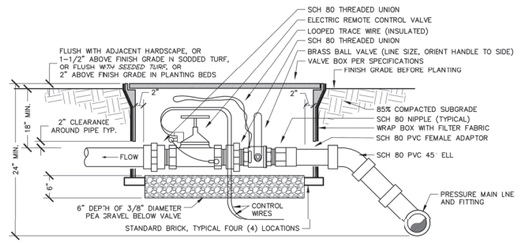
PLANTING PLAN

CITY OF ROSEVILLE CALIFORNIA

PL-2
21 OF 23

NOTE:

1. PARK STANDARD DETAILS: THE CITY OF ROSEVILLE STANDARD DETAILS ARE SHOWN FOR REFERENCE ONLY, CONTRACTOR MUST COMPLY TO THE MOST CURRENT VERSION OF THE PARKS STANDARD DETAILS



NOTES

1. INSTALL VALVES A MINIMUM OF 12" FROM STRUCTURES OR HARDSCAPING.
2. INSTALL VALVES IN PLANTER BEDS WHEREVER POSSIBLE.
3. PLACE VALVE BOX AT RIGHT ANGLES TO STRUCTURES OR HARDSCAPING.
4. INSTALL VALVE BOX SO THAT TOP OF BOX IS FLUSH WITH ADJACENT HARDSCAPING.
5. USE TEFLON TAPE ON ALL MALE THREADS.
6. VALVES ON MAINLINES 3" AND LARGER REQUIRE SADDLE TAPS, 2 ½" AND SMALLER MAINLINE REQUIRES GLUED SCHEDULE 80 FITTINGS.
7. PROVIDE SCHEDULE 80 THREADED UNION ON BOTH UPSTREAM AND DOWNSTREAM SIDES.
8. INSULATE AROUND PIPE AT BOX OPENINGS WITH PLASTIC SHEETING TO PREVENT SOIL FROM ENTERING BOX.
9. REFER TO SPECIFICATIONS FOR REQUIREMENTS FOR TAPING, EXPANSION COILS, WIRE CONNECTIONS, ETC.
10. ALL RCV'S SHALL BE TAGGED INDICATING STATION #'S.
11. ALL VALVE BOXES SHALL HAVE STATION #'S PERMANENTLY BURNED ON VALVE BOX LIDS.
    MARKINGS SHALL BE AS FOLLOWS:
    TURF VALVES: T#
    LANDSCAPE AREA VALVES: L#
    BUBBLER VALVES: B#

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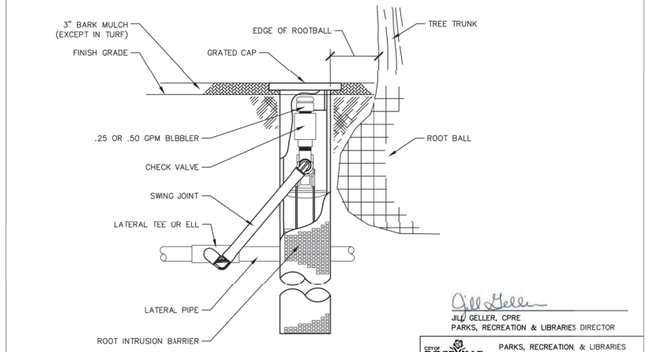
VALVE
REMOTE CONTROL AT GRADE

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-15

01 LD-1 VALVE REMOTE CONTROL AT GRADE

N.T.S.



NOTE

1. INSTALL FILTER FABRIC SLEEVE
2. SEE PLANS AND SPECS FOR APPROVED MANUFACTURERS AND MODEL NUMBERS

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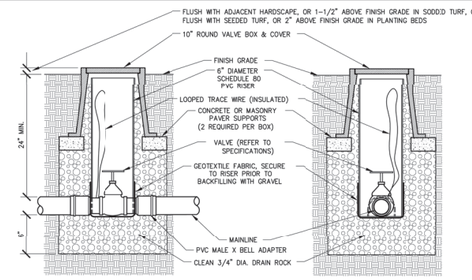
ROOT WATERING SYSTEM

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-9

02 LD-1 TREE BUBBLER

N.T.S.



NOTES

1. COMPACT SOIL AROUND BOX TO 90% MINIMUM COMPACTION.
2. PLACE DRAIN ROCK PRIOR TO INSTALLING VALVE BOX.
3. GATE VALVE AND FITTINGS SHALL BE LINE SIZE UNLESS OTHERWISE NOTED.
4. USE TEFLON TAPE ON ALL THREADED FITTINGS.
5. LOCATE VALVES IN SHRUB/GROUNDCOVER AREAS WHENEVER POSSIBLE.
6. LOOP EXTRA TRACER WIRE UP TO TOP OF BOX.

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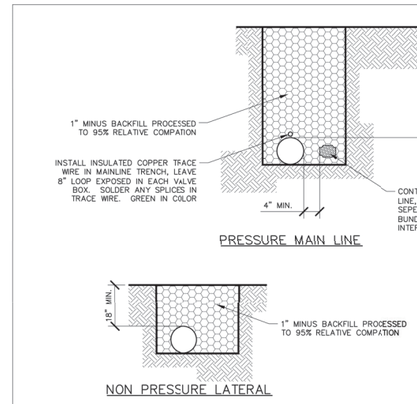
VALVE
3" AND SMALLER

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-11

03 LD-1 GATE VALVE 3" AND SMALLER

N.T.S.



PRESSURE MAIN LINE

NON PRESSURE LATERAL

NOTES

1. RECLAIMED WATER REQUIRES BURIED TAPE LINE PER PUBLIC WORKS CONSTRUCTION STANDARDS.

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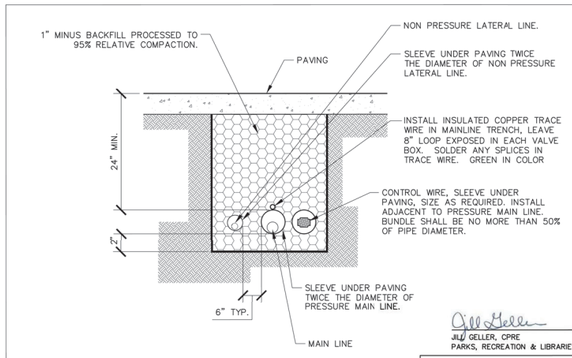
PIPE TRENCH

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-6

04 LD-1 PIPE TRENCH

N.T.S.



NOTES

1. ALL SLEEVES TO BE SCHEDULE 40 PVC.
2. EXTEND ALL SLEEVES 12" BEYOND EDGE OF HARDSCAPING.
3. CAP BOTH ENDS OF ALL SPARE SLEEVES AND MARK BOTH ENDS WITH 3M LOCATOR BALLS.
4. INSTALL SPARE SLEEVE UNDER ROADWAYS

JILL GELLER, CPRE
PARKS, RECREATION & LIBRARIES DIRECTOR

CITY OF ROSEVILLE CALIFORNIA — PARKS, RECREATION & LIBRARIES DEPARTMENT

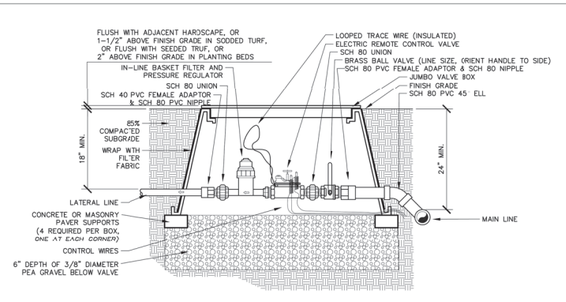
PIPE AT PAVEMENT

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-5

05 LD-1 PIPE AT PAVEMENT

N.T.S.



NOTES

1. INSTALL VALVES A MINIMUM OF 12" FROM STRUCTURES OR HARDSCAPING.
2. INSTALL VALVES IN PLANTER BEDS WHEREVER POSSIBLE.
3. PLACE VALVE BOX AT RIGHT ANGLES TO STRUCTURES OR HARDSCAPING.
4. INSTALL VALVE BOX SO THAT TOP OF BOX IS FLUSH WITH ADJACENT HARDSCAPING.
5. USE TEFLON TAPE ON ALL MALE THREADS.
6. VALVES ON MAINLINES 3" AND LARGER REQUIRE SADDLE TAPS, 2 ½" AND SMALLER MAINLINE REQUIRES GLUED SCHEDULE 80 FITTINGS.
7. PROVIDE SCHEDULE 80 THREADED UNION ON BOTH UPSTREAM AND DOWNSTREAM SIDES.
8. INSULATE AROUND PIPE AT BOX OPENINGS WITH PLASTIC SHEETING TO PREVENT SOIL FROM ENTERING BOX.
9. REFER TO SPECIFICATIONS FOR REQUIREMENTS FOR TAPING, EXPANSION COILS, WIRE CONNECTIONS, ETC.
10. ALL RCV'S SHALL BE TAGGED INDICATING STATION #'S.
11. ALL VALVE BOXES SHALL HAVE STATION #'S PERMANENTLY BURNED ON VALVE BOX LIDS.
    MARKINGS SHALL BE AS FOLLOWS:
    TURF VALVES: T#
    LANDSCAPE AREA VALVES: L#
    BUBBLER VALVES: B#

JILL GELLER, CPRE
PARKS, RECREATION & LIBRARIES DIRECTOR

CITY OF ROSEVILLE CALIFORNIA — PARKS, RECREATION & LIBRARIES DEPARTMENT

VALVE
DRIP CONTROL

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-13

06 LD-1 VALVE DRIP CONTROL

N.T.S.

NO.	REVISIONS	BY	DATE
6			
5			
4			
3			
2			
1			

BENCH MARK ELEV: XX DATUM: XX
DESCRIPTION:
X
X
X
X
X

DESIGN BY:	AM
DRAWN BY:	AW/OP
CHECKED BY:	MR
SCALE:	AS SHOWN
DATE:	11.19.2024
PROJ NO.:	24017

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CALA
12150 Tributary Point Drive, Suite 140
Gold River, CA 95670
T 916.985.4366
www.calanderassociates.com

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

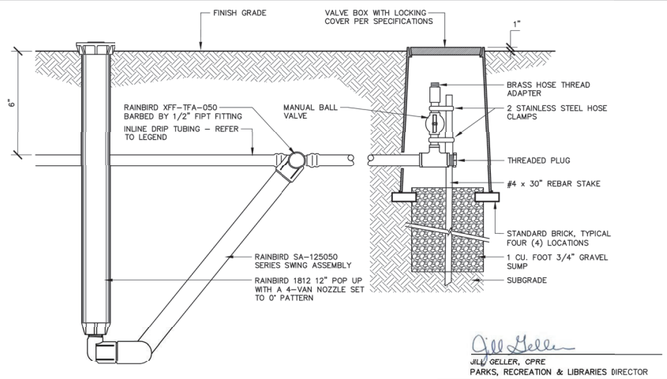
CITY OF ROSEVILLE CALIFORNIA
CITY OF ROSEVILLE

LANDSCAPE DETAILS

CALIFORNIA

LD-1
22 OF 23

NOTE:
1. PARK STANDARD DETAILS: THE CITY OF ROSEVILLE STANDARD DETAILS ARE SHOWN FOR REFERENCE ONLY, CONTRACTOR MUST COMPLY TO THE MOST CURRENT VERSION OF THE PARKS STANDARD DETAILS



NOTES
1. CENTER BALL VALVE IN VALVE BOX OPENING TO ALLOW EASY ACCESS.
2. INSTALL OPERATION INDICATOR WITHIN 18" OF FLUSH VALVE.
3. PLACE VALVE BOX AT RIGHT ANGLES TO STRUCTURES OR HARDSCAPING.
4. USE TEFLON TAPE ON ALL MALE THREADS.
5. INSTALL 3M LOCATOR BALLS AT ALL BOXES.
6. REFER TO SPECIFICATIONS FOR REQUIREMENTS FOR TAPING, EXPANSION COILS, WIRE CONNECTIONS, ETC.

JILL GELLER, CPRE
PARKS, RECREATION & LIBRARIES DIRECTOR

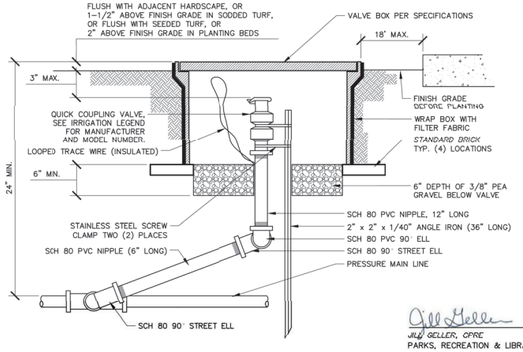
CITY OF ROSEVILLE CALIFORNIA — PARKS, RECREATION, & LIBRARIES DEPARTMENT

DRIP FLUSH VALVE AND OPERATION INDICATOR

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-16

01 LD-2 DRIP FLUSH VALVE AND OPERATION INDICATOR
N.T.S.



NOTES
1. INSTALL VALVE BOXES SO THAT THE TOP OF THE BOX IS FLUSH WITH THE TOP OF THE ADJACENT HARDSCAPE.
2. USE TEFLON TAPE ON ALL THREADED CONNECTIONS.

JILL GELLER, CPRE
PARKS, RECREATION & LIBRARIES DIRECTOR

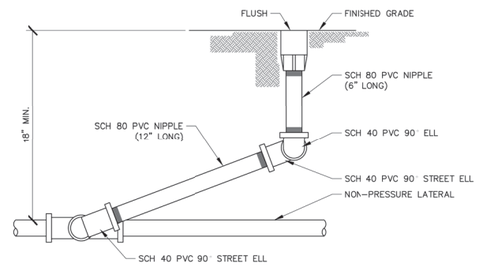
CITY OF ROSEVILLE CALIFORNIA — PARKS, RECREATION, & LIBRARIES DEPARTMENT

VALVE
QUICK COUPLING

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

PK-14

02 LD-2 QUICK COUPLING VALVE
N.T.S.



NOTES
1. LOCATE HEAD 2" FROM WALKS, CURBS, HARDSCAPING, MOW STRIPS, AND HEADER BOARDS, OR AS REQUIRED BY CURRENT WELO REGULATIONS.
2. LOCATE SPRAY HEADS 12" FROM ALL STRUCTURES IN TURF AREAS AND 6" FROM ALL STRUCTURES IN GROUND-COVER AREAS.
3. USE TEFLON TAPE ON ALL THREADED FITTINGS. DO NOT USE MARLEX FITTINGS.
4. PREFABRICATED SWING JOINT ARE ALLOWED, UPON APPROVAL.
5. 6" LONG SCH 80 PVC RISER NIPPLE NOT REQUIRED FOR 12" POPUP HEADS.

JILL GELLER, CPRE
PARKS, RECREATION & LIBRARIES DIRECTOR

CITY OF ROSEVILLE CALIFORNIA — PARKS, RECREATION, & LIBRARIES DEPARTMENT

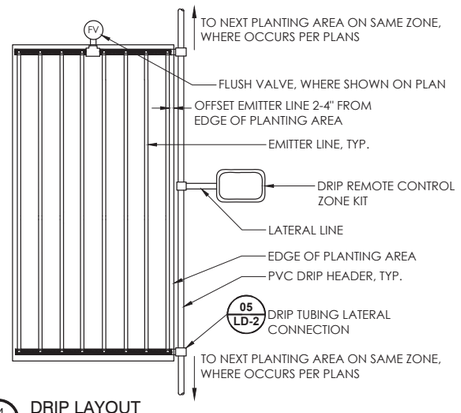
POP-UP SPRAY

SCALE: NONE
REVISED: JULY 2023
REVIEWED BY: T. GEE
APPROVED BY: J. GELLER

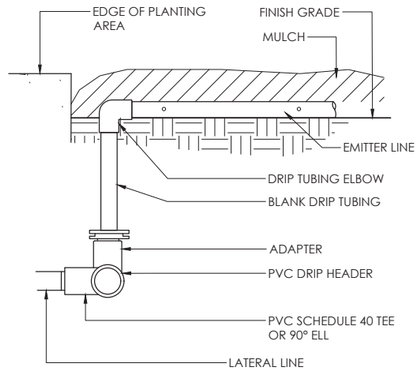
PK-8

03 LD-2 POP-UP SPRAY
N.T.S.

NOTES:
1. STAKE EMITTER LINE EVERY 4 FEET.
2. LATERAL LINE, FLUSH VALVE AND DRIP REMOTE CONTROL ZONE KIT SHOWN OUTSIDE OF PLANTING ARE FOR GRAPHIC PURPOSES ONLY. LOCATE WITHIN PLANTING AREA WHERE POSSIBLE



04 LD-2 DRIP LAYOUT
1" = 1"
P-24-017-20



05 LD-2 DRIP TUBING LATERAL CONNECTION
1 1/2" = 1'-0"
P-CLA-15-28.dwg

NO.	REVISIONS	BY	DATE
1			
2			
3			
4			
5			
6			
7			

BENCH MARK ELEV : XX DATUM : XX
DESCRIPTION :
X
X
X
X
X
X

DESIGN BY :	AM
DRAWN BY :	AW/OP
CHECKED BY :	MR
SCALE :	AS SHOWN
DATE :	11.19.2024
PROJ NO. :	24017

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REGISTERED LANDSCAPE ARCHITECT — MICHAEL RIES — No. 6065 — Exp. 31-2025 — STATE OF CALIFORNIA

CALA
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Gold River, CA 95670
T 916.985.4366
www.callanderassociates.com

VERNON ST/ATLANTIC ST MULTIMODAL SAFETY IMPROVEMENT PROJECT

CITY OF ROSEVILLE CALIFORNIA

LANDSCAPE DETAILS

CITY OF ROSEVILLE — CALIFORNIA

LD-2
23 OF 23



Streets & Bridges Project Manual

Name of project:

Vernon Street/Atlantic Street Multimodal Safety Improvement Project

Department:

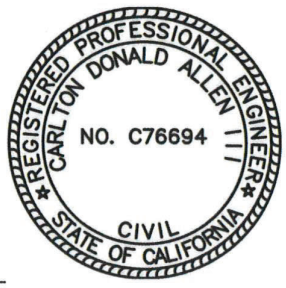
Public Works—Engineering

CITY OF ROSEVILLE CALIFORNIA

Project No. 500324

The special provisions contained herein have been prepared byh or under the direction of the following Registered Persons:

ROADWAY



Carlton D. Allen, III, Registered Civil Engineer

ELECTRICAL



Kirk Meyer, Registered Civil Engineer

LANDSCAPE ARCHITECTURE



Melissa Ruth, Licensed Landscape Architect

VERNON STREET/ATLANTIC STREET MULTIMODAL SAFETY IMPROVEMENT PROJECT

Project Approvals

APPROVAL RECOMMENDED BY:

NOAH SIVIGLIA, P.E.
PRINCIPAL ENGINEER
CITY OF ROSEVILLE
RCE 87197

APPROVED BY:

JASON SHYKOWSKI, P.E.
PUBLIC WORKS DIRECTOR
CITY OF ROSEVILLE
RCE 58234

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Assembly Bill No. 626	AB 626
Special Provisions (if applicable)	SP
Construction Details	CD

NOTICE TO CONTRACTORS

CITY OF ROSEVILLE

DEPARTMENT OF PUBLIC WORKS

Name of Project: VERNON STREET/ATLANTIC STREET MULTIMODAL SAFETY IMPROVEMENT PROJECT

NOTICE TO CONTRACTORS

NOTICE IS HEREBY GIVEN THAT sealed Proposal will be received at the Office of the City Clerk, 311 Vernon Street, Roseville, California, until _____ at 3:00 p.m. Late proposals will be rejected. No exceptions.

The Proposals will be publicly opened and read by the City Clerk or designee of the City of Roseville at 3:05 p.m. on _____, 20__ at the Office of the City Clerk located at 311 Vernon Street, Roseville California for the following project: VERNON STREET/ATLANTIC STREET MULTIMODAL SAFETY IMPROVEMENT PROJECT.

A pre-bid meeting will be held at _____

_____.

A Project Manual, including all Contract Documents and the Proposal forms for bidding this project, may be obtained on-line from the City of Roseville's website at https://www.roseville.ca.us/business/procurement_services/bids_rfps. All communications relative to this project shall be conducted through Public Purchase.

Bids shall be submitted on the City's Proposal Forms included in the Project Manual, plainly endorsed with the Bidder's name together with signed acknowledgement of any and all addenda. Proposal Forms shall be securely sealed in a suitable envelope marked with the name

and address of the Bidder, and marked in capital letters on the front and back of the envelope as follows:

VERNON STREET/ATLANTIC STREET MULTIMODAL SAFETY IMPROVEMENT PROJECT

(Name of Bidder)

(Address of Bidder)

Whether mailed or personally delivered, all bids shall be addressed to the City of Roseville, Office of the City Clerk, 311 Vernon Street, Roseville, California, 95678.

Each bid must be accompanied by a Bid Guaranty in the form of a Certificate of Deposit, Certified or Cashier's Check, Bidder's Bond or Irrevocable Standby Letter of Credit in an amount equal to at least ten percent (10%) of the Bidder's Grand Total Price. The Bid Guaranty will be retained by the City and applied to any and all damages sustained by the City in the event that the successful Bidder fails or refuses to enter into the Contract awarded to it and to furnish all required bonds and Certificates of Insurance. The City intends to award the Contract to the lowest responsible Bidder based on the Grand Total Bid Price for all components of the Project. To the extent allowed by law, the City reserves the right to reject any and all bids and/or to waive any irregularities or informalities in any bid or in the bidding procedure. The City specifically reserves the right to not award the Contract after the opening of bids.

Any bid may be withdrawn at any time prior to the time fixed in the public notice for the deadline submission of bids only by written request for the withdrawal of the bid filed with the City Clerk. The request shall be executed by the Bidder or his or her duly authorized representative. The withdrawal of a bid does not prejudice the right of the Bidder to file a new

bid by the submission deadline. Whether or not bids are opened exactly at the time fixed in the public notice for opening bids, a bid will not be received after the deadline submission of bids nor may any bid be withdrawn after the time fixed in the public notice for deadline for submission of bids. Immediately following the deadline for submission of bids all bids shall become the property of the City of Roseville and the City is under no obligation to return bids.

Bids will be examined and reported to the City Council within sixty (60) business days after the bid opening. Except as permitted by applicable law, no Bidder may withdraw its bid for a period of sixty (60) business days after the date of bid opening. Each Bidder will be notified of any award of the Contract by the City.

The City will affirmatively ensure non-discrimination on the basis of one or more of the following: race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, age, sexual orientation, or military and veteran status in the award and administration of contracts that it awards.

Pursuant to Public Contract Code Section 22300, the successful Bidder may submit certain securities in lieu of the City withholding retention of payments during the Project.

The City has determined that the Contractor shall possess a valid **CLASS A, GENERAL ENGINEERING** Contractor's license at the time that the bid is submitted, as well as any other license classification as may be required by the laws of the California for the performance of the work specified in the Contract Documents. Said license shall be maintained during the Contract period. Failure to possess the specified license shall render the bid nonresponsive and will act as a bar to the award of the Contract to any Bidder not possessing such a license at the time of bid submittal. The Contractor shall provide certification of the license, its number and the expiration date on the proposal form.

The work is to be done in Placer County. Pursuant to California Labor Code Section 1773, the City has ascertained the General Prevailing Rate of Wages in the County in which the work is to be done to be as determined by the Director of Industrial Relations of the State of California. The Contractor is hereby made aware that information regarding prevailing wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm. The Contractor is required to post a copy of the applicable wage rates at the job site. Attention is directed to Section 7 "Legal Relations and Responsibility" of the Standard Construction Specifications.

Pursuant to Labor Code Section 1771.1(b), notice is hereby given that a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in Labor Code Sections 1720, et seq., unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5 or exempt from registration requirements pursuant to Labor Code Section 1725.5(f). It is not a violation of Labor Code Section 1771.1 for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform work pursuant to Labor Code Section 1725.5 at the time the contract is awarded or is exempt from registration requirements pursuant to Labor Code Section 1725.5(f). The Contractor is hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

All questions prior to the deadline for bid submissions shall be directed to the attention of KAREN VENCES via PUBLIC PURCHASE. The deadline for submissions of questions and

clarifications regarding the Contract Documents is _____ calendar days before the deadline for bid submissions. Only Addenda issued by the City are binding.

_____
City Clerk, City of Roseville

Dated: _____

Published: _____

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

SECTION 1. GENERAL

1-1.01 **GENERAL.** These Instructions to Bidders form a part of the Contract Documents. Capitalized terms are defined in Standard Construction Specifications Section 1.

1-1.02 **EXAMINATION OF PLANS, CONTRACT DOCUMENTS AND SITE OF THE WORK.** The Bidder shall examine carefully the site of the Work and all the Contract Documents, including these Instructions to Bidders, and shall inform itself of the conditions relating to the execution of the Work. Failure to do so will not relieve the successful Bidder of its obligation to enter into an Agreement and complete the Work in strict accordance with the Contract Documents. Conditions relating to the execution of the Work include the requirements of federal, state, and local laws, statutes and ordinances relative to the execution of Work, including, but not limited to, applicable regulations concerning prevailing wage rates, non-discrimination in the employment of labor, protection of the public, employee health and safety, and environmental protection.

The submission of a bid shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of Work to be performed, the quantities of materials to be furnished, and as to the requirements of all the Contract Documents.

1-1.03 **EXISTING INFORMATION.** Where the Department has made investigations of site conditions, including subsurface conditions in areas where Work is to be performed under the Contract, such investigations are made only for the purpose of study and design. City does not represent that such conditions as found in these investigations or inferences or conclusions drawn as a result of these investigations will represent actual site

conditions and hereby disclaims any liability as a result of Contractor's or Bidder's reliance on such investigations. City will presume that all Bidders have conducted their own site investigations, including investigations of subsurface conditions. Where such investigations have been made, Bidders or Contractors may, upon written request, inspect the records of the Department as to such investigations subject to the conditions set forth in these Instructions to Bidders. Such inspection of records may be made only at the location noted above. The records of such investigations are not a part of the Contract Documents and are shown solely for the convenience of the Bidder or Contractor. The City assumes no responsibility whatsoever with respect to the sufficiency or accuracy of the investigations made, the records thereof, or of the interpretations set forth therein or made by the City in its use thereof. The City makes no warranty or guarantee, either express or implied, that the conditions indicated by such investigations or records are representative of those existing throughout such areas, or any part thereof, or that unforeseen developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

No information derived from such inspection of records of investigations or compilation thereof made by the City, the Department or from the Engineer, or his or her assistants, will in any way relieve the Bidder or Contractor from properly examining the site and making such additional investigations as it may elect, or from properly fulfilling the terms of the Contract.

SECTION 2: BID REQUIREMENTS

2-1.01 **PROPOSAL FORMS.** The Department will furnish to each Bidder standard Proposal Forms, which, when filled out and executed may be submitted as the bid. Proposals shall include all pages in the Project Manual with page numbers marked "PROP" plus the Addendum acknowledgment form (front sheet) from all Addenda received by the Bidder. Proposals shall be removed from the Project Manual. The full Project Manual shall not be submitted with the proposal. Bids not presented on forms so furnished will be disregarded.

The Proposal and one (1) copy thereof shall be submitted as directed in the "Notice to Contractors" under sealed cover plainly marked as a Proposal, and identifying the project to which the Proposal relates and the date of the bid opening therefor. Proposals which are not properly marked may be disregarded.

All blank spaces in the Proposal must be completed, as required, in ink. All price information shall be shown, clearly legible, in figures where required.

The Bidder shall sign the Proposal in the blank space provided therefor. If the Bidder is the sole owner, the Proposal shall be signed by the owner. If the Bidder is a corporation, the legal name of the corporation and its State of incorporation shall be set forth and the Proposal shall be signed by at least two officers authorized to sign contracts on behalf of the corporation. If the Bidder is a partnership, the true name of the firm shall be set forth, the names and addresses of all partners shall be given and the Proposal shall be signed by a partner in the firm authorized to sign contracts on behalf of the partnership. If the Bidder is a joint venture, the Proposal shall be signed on behalf of each participating company by officers or other individuals who have the full and proper authorization to do so. If the Proposal is signed by an agent of the Bidder other than an officer of a corporation or a member of a partnership, a notarized Power of

Attorney must be on file with the City prior to opening of bids or must be submitted with the Proposal. If requested by the City, the Bidder shall promptly submit evidence satisfactory to the City of the authority of the person signing the Proposal.

2-1.02 **SUBMISSION OF BIDS.** Bids must be submitted at the prescribed time and location specified in the Notice to Contractors. Any submission received after the prescribed time shall be rejected, regardless of whether or not bids are opened exactly at the prescribed time.

Any unauthorized conditions or qualifications entered on, or changes made to, the Proposal may render it invalid and may cause its rejection.

No telegraphic, telephonic, or facsimile or other electronically transmitted bids will be considered.

2-1.03 **REQUIRED LISTING OF PROPOSED SUBCONTRACTORS.** Each Proposal shall list the name, address and Contractor license number of each Subcontractor to whom the Bidder proposes to subcontract portions of the Work in an amount in excess of one-half of one percent (0.5%) of its total bid, in accordance with Section 4100 to 4114, inclusive, of the Public Contract Code for the State of California. The Bidder shall list the Subcontractor's license number and the portion of the Work that will be done by each Subcontractor. If the Bidder fails to specify a Subcontractor for any portion of the Work, the Bidder agrees to perform that portion of the Work itself, and represents that it is qualified to perform that portion of the Work itself. The Bidder's attention is invited to other provisions of the Public Contract Code related to the imposition of penalties for a failure to observe its provisions by using unauthorized Subcontractors or by making unauthorized substitutions.

2-1.04 **CONTRACTOR'S LICENSING LAWS.** Attention is directed to the provisions of Business and Professions Code Chapter 9 of Division 3 concerning the licensing of Contractors.

All Bidders at the time of bid submittal shall be licensed as Contractors in accordance with the laws of this State. Any Bidder or Contractor not so licensed is subject to the penalties imposed by such laws. The form of Contractor's license required is stated in the Notice to Contractors, provided that the City makes no representation as to whether the State may require other or additional licenses. It is the Bidder's and Contractor's responsibility to obtain the correct Contractor's licenses. Bidders shall be skilled and regularly engaged in the general class or type of Work called for under this Contract.

All Bidders and Contractors, including Subcontractors, shall have a current City business license before undertaking any Work.

2-1.05 **NONCOLLUSION DECLARATION.** By submitting a bid, the Bidder represents and warrants that such bid is genuine and not a sham or collusive or made in the interest or on the behalf of any person therein named, and that the Bidder has not, directly or indirectly, included or solicited any other Bidder to put in a sham bid, or any other person, firm, or corporation to refrain from bidding, and that the Bidder has not in any manner sought collusion to secure the Bidder an advantage over any other Bidder.

Bidders shall submit a properly completed and executed "Noncollusion Declaration" in the form required by Public Contract Code Section 7106 and provided with the Proposal (PROP-11).

2-1.06 **DISQUALIFICATION, REMOVAL OR OTHER PREVENTION OF BIDDING.** A bid may be rejected on the basis of a Bidder, any officer of such Bidder, or any

employee of such Bidder who has a proprietary interest in such Bidder, having been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local project because of a violation of law or a safety regulation.

2-1.07 **PROPOSAL GUARANTY.** All bids shall be accompanied by one of the following forms of Bidder's security: Cash, a cashier's check, a certified check, or a Bidder's bond executed by an admitted California surety insurer, made payable to the City of Roseville, or any other form of security deemed acceptable by the City Attorney. The security shall be in an amount equal to at least ten percent (10%) of the amount bid. A bid will not be considered unless one of the form of Bidder's security is enclosed with it.

A Bidder's bond shall conform to the City's bond form in the Proposal and shall be properly filled out and executed.

2-1.08 **SCHEDULE OF BID PRICES.** Bidders are directed to submit firm unit and lump sum prices for all Work set forth in the Contract Documents on the Proposal Form entitled "Schedule of Bid Prices."

Unit prices and lump sum prices, as indicated, must be entered in the appropriate spaces provided in the Schedule of Bid Prices. If applicable, unit prices shall be multiplied by the quantities shown, and the total shall be inserted in the Amount column. In the event of any error or discrepancy between the unit price and the calculated amount, the unit prices shall govern. The City may correct any mathematical errors apparent on the face of the bid.

The amounts shown in the Amount column must be added together in arriving at the Grand Total Bid Price.

Amounts for Allowance bid items must be entered in the exact amount in the Amount column.

The prices included within the Schedule of Bid Prices shall include all costs for labor, materials, tools, equipment, services, Subcontractors, suppliers, taxes, insurance, shipment, delivery, overhead, profit, and all other costs necessary to perform the Work in accordance with the Contract Documents.

The Grand Total Bid Price shall be indicated in the Summary table form included with the Schedule of Bid Prices. The Grand Total Bid Price shall be the sum of the amounts bid for each of the designated portions of the Work, as more specifically described on the Schedule of Bid Prices form itself.

Full compensation for complying with the Contract Documents, including requirements of the Standard Specifications, the Standard Construction Specifications, Supplemental Conditions, and all warranties, shall be considered included in the bid items and no additional compensation shall be allowed therefor.

Full compensation for completion of all work as shown on the plans, as specified in the Specifications, and as directed by the City, shall be considered included in the bid items and no additional compensation shall be allowed.

Bidders are strongly discouraged from submitting unbalanced bids. As used herein, the term "unbalanced bid" is defined as any bid that does not include a reasonable proportionate allocation of indirect costs and profit of each bid item indicated in the Schedule of Bid Prices. The City reserves the right to reject any unbalanced bid if the City determines that there is a reasonable doubt that an acceptance of the bid will not result in the lowest ultimate cost to the City with regard to the work or a disproportionate distribution of contract funds.

The City reserves the right to delete any bid item in its entirety and/or significantly reduce the quantity of Work under a bid item. The City makes no representation that any Work

under a bid item will be performed during the course of the Project or that the Work will be performed at the quantities included in the Schedule of Bid Prices. As provided in the Standard Construction Specifications, for any deleted Work, Contractor shall not be entitled to payment of the indirect costs and profit included for said bid item. All bid items shall be considered distinct and severable from the remaining bid items, and each Bidder acts at its peril if its bid is unbalanced.

The City shall compare bids on the basis of the Grand Total Bid Price, which includes the base bid and any alternates designated on the Schedule of Bid Prices. Alternates may or may not be awarded, or may be awarded in any combination, at the City's discretion.

2-1.09 **WITHDRAWAL OF PROPOSALS.** Any bid may be withdrawn at any time prior to the time fixed in the Notice to Contractors for the opening of bids, provided that a request in writing, executed by the Bidder or its duly authorized representative, for the withdrawal of such bid is filed with the City Clerk. Facsimile and electronic mail requests are not acceptable. The withdrawal of a bid shall not prejudice the right of a Bidder to file a new bid. The withdrawal of any bid after the time fixed in the Notice to Contractors for the opening of bids will not be permitted.

2-1.10 **ADDENDUM.** Proposals shall include all costs and account for all Addenda issued prior to opening of bids. The Bidder is responsible for verifying that all issued Addenda have been received. An Addendum acknowledgment form for each Addendum shall be included as part of the Proposal submittal.

2-1.11 **PUBLIC OPENING OF PROPOSALS.** Proposals will be publicly opened and read at the time and place indicated in the Notice to Contractors. Bidders or their authorized agents are invited to be present.

2-1.12 **TRENCHING AND EXCAVATION WORK.** In accordance with the provisions of California Labor Code Section 6707, if the Work involves construction of a pipeline, sewer, sewage disposal system, boring or jacking pits, or similar trenches or open excavations, which are five feet (5') or deeper, each bid submitted shall contain, as a bid item, adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life or limb, which shall conform to all applicable safety orders.

SECTION 3: EVALUATION OF BIDS

3-1.01 **BID EVALUATION PROCESS.** Bids will be evaluated to determine the apparent low Bidder. The apparent low Bidder will be determined on the basis of the Grand Total Bid Price, as shown in the Schedule of Bid Prices. If additive or deductive alternates are used in the Schedule of Bid Prices, the apparent low Bidder will be the Bidder with the lowest total of the bid prices for base contract items plus the alternates designated by the City as those that will be used for determining the lowest bid price. However, the City reserves the right to (1) not award any alternates or (2) award any combination of alternates.

In case of discrepancy between the total of the base contract items and any specified alternates and the stated Grand Total Bid Price, the total of the base contract items plus specified alternates shall prevail. Any mathematical errors that appear on the face of the bid will be corrected by the City and the City will use the mathematically corrected addition. For example, if the mathematical total of Bidder's base contract items plus specified alternates equals $1,000,000, but the Bidder has written $1,250,000 as the Grand Total Bid Price, the City will consider $1,000,000 to be the Bidder's Grand Total Bid Price for purposes of comparison to other Bidders and actual bid award. The City reserves its rights to reject or accept bids based on discrepancies between the stated Grand Total Bid Price and the actual mathematical total of the base contract bid items, plus specified alternates.

3-1.02 **REJECTION OF IRREGULAR PROPOSALS.** Proposals may be rejected in the City's sole discretion if they show any alterations of form, additions not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind. However, the City reserves the right to waive any minor irregularities and informalities in any bid or in the bid procedure for any reason.

3-1.03 **COMPETITIVE BIDDING.** If more than one proposal is offered by any individual, firm, partnership, corporation, association, or any combination thereof, under the same or different names, all such proposals may be rejected. A party who has quoted prices on materials or Work to a Bidder is not thereby disqualified from quoting prices to other Bidders, or from submitting a bid directly for the materials or Work.

All Bidders are put on notice that any collusive agreement to control or affect the awarding of this Contract is in violation of the competitive bidding requirements of the City Charter, State Contract Act and the Business and Professions Code and may render void any Contract let under such circumstances.

3-1.04 **RELIEF OF BIDDERS.** If the Bidder claims a mistake was made in its bid, the Bidder shall give the Department written notice within five (5) Days after the opening of the bids of the alleged mistake, specifying in the notice in detail how the mistake occurred. No relief from a claimed mistaken bid shall be granted unless such mistake clearly appears on the face of the bid submitted to the City. Claimed mistakes on backup worksheets, spreadsheets, computerized bidding programs, or any other similar calculative bidding mistake which is not apparent on the face of the bid shall not under any circumstance be considered as a basis for relief. The burden of proving the occurrence of a mistake entitling a Bidder to relief from its bid rests entirely on the Bidder. Relief from bids shall be in the City's sole discretion.

SECTION 4: AWARD AND EXECUTION OF CONTRACT

4-1.01 **AWARD OF CONTRACT.** The City reserves the right to reject any and all proposals and to award (or not award) any combination of bid items at its option. Any such award will be to the lowest responsible Bidder whose proposal complies with the requirements prescribed for the bid items awarded. Such award, if made, will be made within sixty (60) business days after the opening of the proposals. If the lowest responsible Bidder refuses or fails to execute the Contract, or provide an acceptable Performance Bond, Payment Bond, and insurance certificate(s), the City may award the Contract to the second lowest responsible Bidder. Such award, if made, will be made within eighty-two (82) business days after the opening of proposals. If the second lowest responsible Bidder refuses or fails to execute the Contract, or provide an acceptable Performance Bond, Payment Bond, and insurance certificate(s), the City may award the Contract to the third lowest responsible Bidder. Such award, if made, will be made within one hundred four (104) business days after the opening of the proposals. The above time periods within which the award of Contract may be made are subject to extension for such further period as may be agreed upon in writing between the City and the Bidder concerned.

4-1.02 **RETURN OF BIDDER'S SECURITIES.** Within ten (10) Days after the award of the Contract, the City Clerk will return all Bidders' securities, other than Bidders' bonds, accompanying the proposals that are not to be further considered in making the award. Retained Bidders' securities will be held until the Contract has been fully executed, after which all Bidders' securities, except Bidders' bonds and any Bidders' securities that have been forfeited, will be returned.

4-1.03 **CONTRACT BONDS.** The successful Bidder shall furnish two (2) bonds in the form contained in the section entitled Insurance Broker Information Packet and Bonds. One (1) bond shall secure the payment of the claims of laborers, mechanics or materialmen employed on the Work under the Contract, and the other bond shall guarantee the faithful performance of the Contract.

Each of the two (2) bonds shall be in a sum equal to one hundred percent (100%) of the Contract Price. If the Contract Price increases by the issuance of Change Orders, the penal amounts of the bonds required shall increase accordingly. Sureties on each of said bonds shall be satisfactory to the City.

All alterations, extensions of time, extra and additional Work, and other changes authorized by the Standard Specifications, the Standard Construction Specifications, the Supplemental Conditions or any part of the Contract may be made without securing the consent of the surety or sureties on the Contract bonds.

Furthermore, the successful Bidder shall furnish a certificate from the County Clerk as required by California Civil Code of Procedure Section 995.660(a)(3).

4-1.04 **INSURANCE.** At the time of the execution of the Contract, the Contractor shall, at its own expense, procure, and at all times during the prosecution of the Work maintain in full force and effect Worker's Compensation Insurance, and Liability Insurance as specified in the Standard Construction Specifications. The Contractor shall provide a Certificate of Insurance in the form contained in the section entitled Insurance Broker Information Packet.

4-1.05 **EXECUTION OF CONTRACT.** The Contract shall be signed by the successful Bidder and returned, together with all the required Contract bonds and insurance

certificates, within fifteen (15) Days after the Contract has been awarded, or as otherwise directed, in writing, by the City.

If the Bidder is an individual, the Contract shall be executed personally by the Bidder. If the Bidder is a partnership, it is desirable that the Contract be executed by all of the partners, but it may be executed by one of them. If the Bidder is a corporation, it must be executed by two officers of the corporation consisting of (1) the chairman of the board, president or vice president; and (2) the secretary, assistant secretary, chief financial officer, treasurer or assistant treasurer, or by a person authorized by the corporation to execute written contracts on its behalf, and the corporate seal affixed thereto. In the alternative, a person other than an officer may sign the Contract, provided evidence satisfactory to the City is provided indicating the individual's authority to bind the corporation. If the corporate seal is not affixed to the Contract, or if it is executed by a person other than officers, or only by one officer, there must be attached to the Contract a certified copy of a resolution of the corporation authorizing such officer or person to execute written contracts for and on behalf of the corporation. If the Bidder is a joint venture, the Contract must be executed on behalf of each participating firm by officers or other individuals who have the full and proper authorization to do so.

4-1.06 **FAILURE TO EXECUTE CONTRACT.** Failure of the lowest responsible Bidder, the second lowest responsible Bidder, or the third lowest responsible Bidder to execute the Contract and file acceptable bonds and insurance as provided within fifteen (15) Days after the Contract has been awarded, or as otherwise directed, in writing, by the City, shall be just cause for annulment of the award and forfeiture of the Bidder's security. The successful Bidder may file with the City Clerk a written notice, signed by the Bidder or Bidder's authorized representative, specifying that the Bidder will refuse to execute the Contract if presented to

Bidder. The filing of such notice shall have the same force and effect as the failure of the Bidder to execute the Contract and furnish acceptable bonds within the time prescribed.

SECTION 5: BID PROTEST PROCEDURES

5-1.01 **POLICY/PROCEDURES.** It is the policy of the City to consider fully and adjudicate promptly protests filed by prospective Bidders relating to the City's bidding procedure or award of the Contract. Protests shall be filed and processed in accordance with Section 4.12.150 of the Roseville Municipal Code. A Bidder's failure to follow the bid protest procedures may result in rejection of the protest by the City.

PROPOSAL

PROPOSAL TO THE DEPARTMENT OF _____

Project:_____

Name of Bidder _____ Business Phone _____

Business Address _____

Place of Business _____

Contractor's License No. _____

License Expiration Date_____

License Classification Type _____

DIR Registration No. _____

Type of business organization: _____

*If a Corporation, incorporated under the laws of the State of: _____

The undersigned Bidder herewith submits this Proposal and binds itself on award by the City of Roseville under this bid to execute a Contract in accordance with its bid and the Contract Documents.

The Notice to Contractors, Instructions to Bidders, Form of Agreement, Standard Specifications, Standard Construction Specifications, Supplemental Conditions, Contract Drawings, and Addenda, if any, are made part of this bid and all provisions thereof are hereby accepted, and all representations and warranties are required thereby are hereby affirmed.

The work to be done is described in the Bidding Documents entitled _____ _____, City of Roseville, California. This offer shall be irrevocable for a period of sixty (60) Days after the date on which bids are opened.

The undersigned Bidder understands that any clarification made to the above or any new and different conditions or information submitted on or with its Proposal, other than that requested, may render the bid non-responsive.

The undersigned, as Bidder, declares that the only persons or parties interested in this Proposal as principals are those named herein; that this Proposal is made without collusion with any other person, firm, or corporation; that the Bidder has carefully examined the location of the proposed Work, the attached Form of Agreement, and the plans, Specifications, and other Contract Documents; and agrees if this Proposal is accepted, that it will contract with the City of Roseville, in the form of a copy of the Agreement contained in the Project Manual, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the Contract Documents, in the manner and time therein prescribed, and according to the requirements of the Director, as therein set forth, and that the Bidder will take in full payment therefore prices indicated in the Schedule of Bid Items, including all work modified by addendum numbers _____. (IF NONE, STATE NONE).

Bids are required for all Bid Items. The amount of the Bid for comparison purposes will be the total of all items awarded.

The Bidder shall set forth for each item of work, in clearly legible figures, an item ("unit") price and a total for the item in the respective spaces provided for this purpose in the Schedule of Bid Items.

The prices included within the Schedule of Bid Items include all costs for labor, materials, tools, equipment, services, Subcontractors, suppliers, taxes, insurance, shipment,

delivery, overhead, profit, and for all other costs necessary to perform the Work in accordance with the Contract Documents.

Accompanying this Proposal is _____.

(Notice: Insert the words "Cash $_____," "Cashier's Check," "Certified Check," or "Bidder's Bond," as the case may be, in an amount equal to at least ten percent (10%) of the total of the Bid.)

The names of all persons interested in the foregoing Proposal as Principals, are as follows: _____

_____

_____

_____

If SOLE OWNER, execute here:

I sign as sole owner of the business named above:

_____

If PARTNERSHIP, one or more partners sign here:

The undersigned certify that we are partners in the business named above and that we sign this bid with the full authority to do so:

_____

_____

If CORPORATION, execute here:

Corporate Name: _____

Incorporated under the laws of the State of _____

The undersigned certify that they sign this bid with the full and proper authorization so to do:

By_____	By_____
*Signature of Authorized Official**	*Signature of Authorized Official**
_____	_____
Title	*Title*
_____	_____
Typewritten or Printed Name	*Typewritten or Printed Name*

If JOINT VENTURE, execute here:

Joint Venture name composed of: _____

The undersigned certify that they sign this bid with the full and proper authorization so to do:

_____	_____
*Signature of Authorized Official**	*Signature of Authorized Official**
_____	_____
Title	*Title*
_____	_____
Typewritten or Printed Name	*Typewritten or Printed Name*

*If Bidder is a partnership or Joint Venture, give the full names of all partners and/or Joint Ventures in the space provided (use additional sheet if required). If Bidder is a corporation, two signatures are required as follows: (1) the Chairman, President, or Vice-President and (2) the Secretary, Assistant Secretary, Chief Financial Officer, Treasurer, or Assistant Treasurer. In the alternative, this Agreement may be executed by a single officer or a person other than an officer provided that evidence satisfactory to City is provided demonstrating that such individual is

authorized to bind the corporation (example, a copy of a certified resolution from the corporation's board or a copy of the corporation's bylaws).

[LIST OF SUBCONTRACTORS FOLLOWS ON NEXT PAGE.]

LIST OF SUBCONTRACTORS

Contractor's Name: _____

The Bidder is required to furnish the following information in accordance with the provisions of Section 4100 and 4114, inclusive, of the Public Contract Code of the State of California. This list and information shall include all Subcontractors that perform work, provide labor or render services to the Bidder in connection with the Project in an amount in excess of one-half of one percent (0.5%) of the total amount of the Bidder Grand Total Price.

PORTION/ TYPE OF WORK	% OF CONTRACT	SUB-CONTRACTOR'S NAME	CONTRACTOR LICENSE NO.	DIR REG NO.	BUSINESS ADDRESS (CITY, STATE)

SECURITY FOR COMPENSATION CERTIFICATE

(Required by California Labor Code Section 1861)

TO: City Council
City of Roseville

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract.

_____

_____
(Signature of Bidder)

_____

_____
Business Address

_____
Telephone

BIDDER'S BOND

City Council of the City of Roseville

KNOW ALL MEN BY THESE PRESENTS:

That we _____

_____, as PRINCIPAL, and

_____

a, _____ and duly authorized to transact business under the laws of the State of California, as SURETY, are held and firmly bound unto the City of Roseville in the penal sum of _____ dollars ($_____), being at least TEN PERCENT (10%) OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the City of Roseville, acting by and through the Public Works Director, for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, to the Director of the Department to which said Bid was submitted, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That whereas the Principal has submitted the above-mentioned Bid to the City Council of the City of Roseville, as aforesaid, for certain construction specifically described as follows, for which Bids are to be opened at the Office of the City Clerk located at 311 Vernon Street, Roseville, California, on _____, 20__ FOR

_____

(Copy here the exact title of work as it appears on the Proposal.)

NOW, THEREFORE, IF THE AFORESAID PRINCIPAL is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented for signature, enters into a written Contract, in the prescribed form, in accordance with the Bid, and files all insurance and two (2) Bonds with the Department, one (1) to guarantee Faithful Performance and the other to guarantee Payment for Labor and Materials, as required by law, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this _____ day of _____, 20___.

_____(Seal)

_____(Seal)

_____(Seal)
Principal

_____(Seal)

_____(Seal)

_____(Seal)
Surety

_____

_____
Business Address

NOTE: To be considered complete, both the Principal and the Surety must sign this Bidder's Bond. In addition, signatures of those executing for the Surety must be properly acknowledged.

VERNON STREET/ATLANTIC STREET MULTIMODAL SAFETY IMPROVEMENT PROJECT

CONTRACTOR:_____

SCHEDULE OF BID ITEMS

ITEM NO.	*	ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	SUBTOTAL
1		Mobilization	1	LS		
2		Traffic Control	1	LS		
3		Water Pollution Control Plan (WPCP)	1	LS		
4		Clearing and Grubbing	1	LS		
5		Roadway Excavation	1,400	CY		
6		Remove Concrete	1,400	SF		
7		Remove Drop Inlet	1	EA		
8		Remove Sign	11	EA		
9		Relocate Sign	2	EA		
10		Abandon Storm Drain Pipe	6	LF		
11		Adjust Utility Cover to Grade	4	EA		
12		Adjust Manhole Lid to Grade	1	EA		
13		Landscape Irrigation	1	LS		
14		Landscape Planting	1	LS		
15		Microsurfacing	11,500	SY		
16		Hot Mix Asphalt (1/2" Type A)	1,220	TON		
17		Cold Plane Asphalt Concrete	5,000	SY		
18		Aggregate Base Class 2	100	CY		
19		Minor Concrete - Curb Ramp (Case A)	2	EA		
20		Minor Concrete - Curb Ramp (Case C)	1	EA		
21		Minor Concrete - Curb Ramp (Case F)	1	EA		
22		Minor Concrete - Curb Ramp (Case G)	1	EA		
23		Minor Concrete - Curb Ramp Modification	600	SF		
24		Minor Concrete - Driveway Type D	1	EA		
25		Minor Concrete - Sidewalk	1,000	SF		
26		Minor Concrete - Stamped Concrete	1,300	SF		
27		Minor Concrete - Type 1 Barrier Curb	900	LF		
28		Minor Concrete - Modified Type 1 Barrier Curb	90	LF		

CONTRACTOR:_____

SCHEDULE OF BID ITEMS

ITEM NO.	*	ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	SUBTOTAL
29		Minor Concrete - Type 2 Barrier Curb	1,000	LF		
30		Minor Concrete - Type A1-6 Curb	30	LF		
31		Minor Concrete - Mountable Landscape Curb	600	LF		
32		Minor Concrete - Mountable Curb	70	LF		
33		Minor Concrete - Type 1 Curb & Gutter	10	LF		
34		Minor Concrete - Modified Type 2 Curb & Gutter	70	LF		
35		Minor Concrete - Valley Gutter	20	LF		
36		Minor Concrete - Modified Valley Gutter	50	LF		
37		Minor Concrete - Trench Drain	40	LF		
38		Detectable Warning Surface	5	EA		
39		Roadside Sign & Post	40	EA		
40		Rectangular Rapid Flashing Beacon System	1	LS		
41		Modify Signal & Lighting Systems	1	LS		
42		Drop Inlet Type "C"	1	EA		
43		Trench Drain Grate & Frame	40	LF		
44		Fixed Bollard	3	EA		
45		Thermoplastic Traffic Stripe	5,000	LF		
46		Pavement Markings	4,000	SF		
47		Pavement Markers	800	EA		
48		Type Q Markers (White)	6	EA		
					TOTAL OF BASE BID ITEMS (1 TO 48)	
		ADD ALTERNATE: WALNUT ST/FOLSOM RD CURB RAMP				
49		Mobilization	1	LS		
50		Traffic Control	1	LS		
51		Water Pollution Control Plan (WPCP)	1	LS		
52		Clearing and Grubbing	1	LS		
53		Roadway Excavation	180	CY		

CONTRACTOR:_____

SCHEDULE OF BID ITEMS

ITEM NO.	*	ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	SUBTOTAL
54		Remove Concrete	520	SF		
55		Remove Sign	1	EA		
56		Adjust Water Meter to Grade	1	EA		
57		Aggregate Base Class II	15	CY		
58		Retaining Wall (Type 6B)	150	LF		
59		Retaining Wall (Trench Wall)	70	LF		
60		Minor Concrete - Curb Ramp (Case F)	1	EA		
61		Minor Concrete - Stairs	80	SF		
62		Minor Concrete - Sidewalk	550	SF		
63		Minor Concrete - Wet Set Cobble	80	SF		
64		Minor Concrete - Type 2 Curb & Gutter	10	LF		
65		Minor Concrete - Modified Type 2 Curb & Gutter	40	LF		
66		Install Pedestrian Handrails	170	LF		
67		Roadside Sign and Post	2	EA		
68		Install Under Walk Drain	20	LF		
69		Hot Mix Asphalt (1/2" Type A)	3	TON		
70		HMA Dike	40	LF		
71		Detectable Warning Surface	1	EA		

TOTAL OF ADD ALT ITEMS (49 TO 71) _____

* NOTES:
(F) DENOTES FINAL PAY ITEM
(P) DENOTES PARTIAL PAYMENT
(S) DENOTES SPECIALTY ITEM

CONTRACTOR'S ACKNOWLEDGEMENT OF BLACK ROCK QUARRY MICRO-SURFACING: _____

NAME & LOCATION OF BLACK ROCK AGGREGATE QUARRY MICRO-SURFACING: _____

NONCOLLUSION DECLARATION TO BE EXECUTED BY
BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid. The Bidder has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or to refrain from bidding. The Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder. All statements contained in the bid are true. The Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a Bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the Bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [date], at _____ [city], _____ [state].

_____
(Signature of Declarant)

DISQUALIFICATION QUESTIONNAIRE

The Bidder shall complete, under the penalty of perjury, the following questionnaire:

Has the Bidder, any officer of the Bidder, or any employee of the Bidder who has proprietary interest in the Bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes_____ No_____

If the answer is yes, explain the circumstances in the following space.

_____

_____

_____

_____

_____

_____

NAME OF BIDDER: _____

SIGNATURE OF BIDDER: _____

TITLE OF BIDDER: _____

DATE: _____

ACKNOWLEDGEMENT OF INSURANCE AND BOND REQUIREMENTS

Included in the Bid Price is full compensation for the requirements set forth in the INSURANCE BROKER INFORMATION PACKET of the Project Manual.

NAME OF BIDDER: _____

SIGNATURE OF BIDDER: _____

TITLE OF BIDDER: _____

DATE: _____

DISCLAIMER OF WARRANTIES AND ACCURACY OF DATA

Although soil and site investigation reports have been obtained from sources believed to be reliable, no warranty expressed or implied is made regarding accuracy, adequacy, completeness, legality, reliability or usefulness of any information contained therein. These reports are subject to change at any time, may be incomplete, and/or may contain errors. This information is provided for informational purposes only. The City of Roseville provides this information on an "as is" basis. Warranties of any kind, express or implied, or statutory, including but not limited to the implied warranties of merchantability, and fitness for a particular purpose ARE DISCLAIMED to any party viewing these documents or to any third party.

The City of Roseville does not accept and expressly disclaims liability to any party viewing such information, or to any third party whatsoever, for any loss, damage, or injury (including incidental or consequential damages) whether such loss, damage, or injury is the result of negligence, willful or intentional misconduct, or any other cause.

I have read and acknowledged the above disclaimer and agree to hold harmless the City of Roseville on any theory of liability for any loss, damage or injury whether in contract, strict liability or tort arising in any way out of the use or contents of the released information or documents described above or the performance of the work called for herein.

Print Name	Signature
Name of Business/Company/Corporation	Date
Address	Phone

END OF PROPOSAL

AGREEMENT

A G R E E M E N T

THIS AGREEMENT, is made and entered into this _____day of _____, 20_____, by and between the City of Roseville, a municipal corporation, ("CITY"), and _____, a _____, ("CONTRACTOR"); and

W I T N E S S E T H:

WHEREAS, the City Council of the CITY, at a meeting held on the _____day of _____, 20_____, approved plans and specifications for the _____ _____

and directed the City Clerk to advertise for sealed proposals for doing said work and providing that bids be submitted on the _____ day of _____, 20_____; and

WHEREAS, the City Clerk, thereafter duly and regularly caused a notice to be published in the manner and for the time prescribed by law; and

WHEREAS, CONTRACTOR, pursuant to the provisions of said notice duly filed a bid with the City Clerk, a true copy of which bid is now on file in the office of the City Clerk, and is hereby referred to and by this reference made a part hereof as fully as if set forth at length herein; and

WHEREAS, all bids received pursuant to said notice were opened and examined and publicly declared at the time specified in said advertisement for bids and at a meeting of the City Council held on the _____ day of _____, 20_____, the Council found and

declared the bid of CONTRACTOR to be the lowest responsible bid and thereupon awarded a contract to CONTRACTOR to do the work referred to in the aforementioned specifications.

NOW, THEREFORE, the parties agree as follows:

1. THE WORK. CONTRACTOR agrees:

a. To do the work and furnish all the labor, materials, tools, supplies, equipment, superintendence, insurance, and bonds required for the _____

_____

in accordance with the Contract Documents (the Work).

b. To do and perform the Work contemplated hereby in a good and workmanlike manner under the direction of and to the satisfaction of the Director of Public Works of the City of Roseville.

2. PAYMENT. CITY shall pay CONTRACTOR _____

_____ dollars ($_____) for the Work to be done under this Agreement in accordance with the Contract Documents.

3. CONTRACT DOCUMENTS. The complete Agreement between the parties hereto consists of the following documents:

a. The advertisement for bids (including the notice to bidders, instructions to bidders and proposals);

b. The accepted bid;

c. Plans and specifications (including standard construction specifications, special provisions and construction details);

d. Bonds and insurance required by the specifications; and

e. This contract.

All documents specified above are intended to operate so that any work called for in any one and not mentioned in the other, or vice versa, is to be executed the same as if mentioned in all said documents.

4. LIQUIDATED DAMAGES. In the event CONTRACTOR does not complete the Work within the time specified, CONTRACTOR agrees that CITY will suffer damages. Inasmuch as the actual damages which would result from such breach by CONTRACTOR under this Agreement are uncertain, and would be impractical or extremely difficult to fix, CONTRACTOR agrees that it shall pay, or CITY shall deduct from CONTRACTOR's fee, the amount of $_____ per day as liquidated damages, in the event of such delay.

5. TIME OF COMPLETION. Time is of the essence of this Agreement. CONTRACTOR shall complete all Work under the Contract Documents within _____ Days of the date of this Contract. CONTRACTOR shall begin work by the date specified in the "Notice to Proceed" letter and shall diligently prosecute all of the Work under this Contract in all parts and requirements as defined in the Contract Documents.

6. SERVICE OF NOTICE. Any notice required or permitted to be given under this Agreement shall be deemed given when (a) personally delivered to the recipient identified below; (b) mailed by registered or certified mail, return receipt requested, postage pre-paid, to the address specified below; or (c) sent by facsimile, with confirmation of receipt, to the facsimile number identified below.

CITY OF ROSEVILLE	CONTRACTOR
_____	_____
_____	_____
_____	_____
_____	_____

CITY may also act through either its architect or construction manager if CITY expressly gives notice to CONTRACTOR, in writing, that CITY's designee has authority to act for CITY in a specific capacity.

7. DISPUTES. Disputes arising from this Agreement will be determined in accordance with the Contract Documents and Public Contract Code Sections 10240-10240.13.

8. GOVERNING LAW. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

9. INDEPENDENT CONTRACTOR. CONTRACTOR shall act as an independent contractor, and covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as, nor claim to be, an officer or employee of CITY by reason of this Agreement.

10. SUCCESSORS IN INTEREST. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

11. MODIFICATION. This Agreement and each provision contained herein may be waived, amended, supplemented or eliminated only by mutual written agreement of the parties.

12. SEVERABILITY. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

13. INTEGRATED AGREEMENT. This is an integrated agreement and contains all of the terms, considerations, understanding and promises of the parties. It shall be read as a whole.

14. CONTRACTORS LICENSE LAW. CONTRACTORS ARE REQUIRED BY LAW TO BE LICENSED AND REGULATED BY THE CONTRACTORS' STATE LICENSE

BOARD WHICH HAS JURISDICTION TO INVESTIGATE COMPLAINTS AGAINST CONTRACTORS IF A COMPLAINT REGARDING A PATENT ACT OR OMISSION IS FILED WITHIN FOUR (4) YEARS OF THE DATE OF THE ALLEGED VIOLATION. A COMPLAINT REGARDING A LATENT ACT OR OMISISON PERTAINING TO STRUCUTRAL DEFECTS MUST BE FILED WITHIN TEN (10) YEARS OF THE DATE OF THE ALLEGED VIOLATION. ANY QUESTIONS CONCERNING A CONTRACTOR MAY BE REFERRED TO THE REGISTRAR, CONTRACTORS' STATE LICENSE BOARD, P.O. BOX 26000, SACRAMENTO, CALIFORNIA 95826.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attestation by its City Clerk under authority of Resolution No. _____, adopted by the Council of the City of Roseville on the _____day of _____, 20_____, and CONTRACTOR has caused this Agreement to be duly executed.

CITY OF ROSEVILLE, a
municipal corporation

BY: _____
DOMINICK CASEY
City Manager

ATTEST:

BY: _____
CARMEN AVALOS
City Clerk

_____
_____

BY: _____
its: _____

and

BY: _____
its: _____

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE:

BY: _____
JASON SHYKOWSKI
Public Works Director

INSURANCE BROKER INFORMATION PACKET

INSURANCE BROKER INFORMATION PACKET

Project:_____

NOTICE TO CONTRACTOR:

For your convenience, this package contains the Requirements for Insurance and Bonds for this project, including the necessary City forms. You are required to return these forms in addition to the executed Contract within fifteen (15) calendar days after the award of the Bid, unless otherwise directed by City in writing. (See the Instructions to Bidders.)

Please insert the dollar amount of your accepted Bid into the blank on page INS-1 and present this entire package to your insurance broker if you are awarded the Bid.

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NOTICE TO INSURANCE BROKER

Your client has been awarded a bid by the City Council of the City of Roseville to perform a public works project known as _____. The Contract Conditions for that project require your client ("the Contractor") to return certain evidence of insurance and bonds to the City Attorney of the City within fifteen (15) days after the Bid award, unless otherwise directed by the City in writing, or else the Bid award may be terminated and awarded to another company.

This package contains the information you will need as an insurance broker to provide the appropriate insurance and bonds to the City. The insurance coverages the Contractor needs are specified in the section entitled "Insurance Requirements." Please note that, in addition to the insurance certificate itself, copies of several endorsements must be actually furnished.

Please refer to Special Provisions for modifications of the Standard Construction Specifications, if any, and the requirements of this insurance packet.

Please use the standard City of Roseville Bond Forms provided in this package.

The Bonds required must each be in the penal amount of: $_____.

Bonds must be sent to the following staff person:

_____

_____

_____

Insurance documents must be provided using one of the following methods:

a. By email to roseville@ebix.com and riskmanagement@roseville.ca.us

b. By fax to (770) 335-5727 and (916) 774-5461

After using one of these methods, please **DO NOT** send the insurance certificate(s) by mail.

When forwarding the documents, please refer to the project name so that the documents can be matched with the Contract for which they are submitted.

Thank you.

INSURANCE REQUIREMENTS

The following sections are quoted from the Standard Construction Specifications:

7-1.06 **INSURANCE COVERAGE.**

A. Evidence of Maintenance Required. The Contractor shall, at its expense, procure and at all times maintain in full force and effect at a minimum the insurance required by this section on all of its operations; and the Contractor shall not allow any Subcontractor to commence work until similar insurance required of the Subcontractor has been obtained and filed. An original Certificate of Insurance, and copies of all required endorsements, all in a form approved by the Risk Manager, evidencing all required coverage or policies shall be filed after the award of the bid and prior to approval of the Contract by the City Council. Contractor shall provide ten (10) days prior written notice to the City of any reduction of coverage limits or cancellation of the coverage or policies shall be given to the City of Roseville as Certificate holder.

B. Qualifying Insurers. With the exception of the State Compensation Insurance Fund, all required insurance policies shall be issued by companies acceptable to the City and licensed to do business in the State of California and who hold a current policy holders alphabetic and financial size category rating of not less than AVII according to the most recent issue of Best's Insurance Reports.

C. Insurance Required.

1. **Commercial General Liability (CGL):** Insurance Services Office Form CG 00 01 covering CGL on an "occurrence" basis, including products and completed operations with limits of no less than Two Million Dollars ($2,000,000) per occurrence for bodily injury, personal injury and property damage for projects under One Million Dollars ($1,000,000) and

limits of no less than Five Million Dollars ($5,000,000) per occurrence for bodily injury, personal injury and property damage for projects over One Million Dollars ($1,000,000). If a general aggregate limit applies, either the aggregate limit shall apply separately to this project or the general aggregate limit shall be twice the required occurrence limit.

The Commercial General Liability insurance shall include the following, copies of which shall be provided:

a. Inclusion of the City of Roseville, and its officers, agents, employees, and volunteers, as additional insureds (except for workers' compensation) as respects services or operations under the Contract. The additional insured endorsement for the general liability policy shall be at least as broad as the ISO CG 2010 10 01 combined with ISO CGL Endorsement CG 2037 10 01. Any other endorsement must be approved in writing by the City. Endorsements must include coverage for on-going and completed operations, which coverage shall be maintained for four (4) years following completion of the Project. Endorsements shall cover the City of Roseville, its officers, agents, employees, and volunteers.

b. The insurance shall provide coverage for claims by one insured against another insured and the policies shall not contain any cross-suits exclusions, cross-liability exclusions, or insured versus insured exclusions. The policies shall not contain any classification exclusions purporting to deny coverage for any work to be performed by Contractor or any of its Subcontractors.

c. Stipulation that the insurance is primary and noncontributory, as evidenced by a separate endorsement (CG 20 01 04 13 or an equivalent) or section of the policy, and that neither the City nor its insurers will be called upon to contribute to a loss.

d. Such insurance shall specifically cover the contractual liability of the Contractor.

e. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (1) the minimum coverage and limits specified in this Agreement; or (2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

f. Waiver of subrogation endorsement.

g. The Contractor shall furnish a certificate for the period covered.

2. **Automobile Liability:** Insurance Services Office Form Number CA 0001 covering Code 1 (any auto), or if Contractor has no owned autos, Code 8 (hired) and Code 9 (non-owned), with limits of no less than One Million Dollars ($1,000,000) per accident for bodily injury and property damage.

3. **Workers' Compensation:** In accordance with the provisions of the California Labor Code, Contractor is required to be insured against liability for Workers' Compensation or to undertake self-insurance. Statutory Workers' Compensation and Employers' Liability of at least One Million Dollars ($1,000,000) shall cover all Contractors staff while performing any work incidental to the performance or this Agreement.

4. **Professional Liability:** Professional Liability (Errors and Omission) Insurance appropriate to Contractor's profession, with a limit of liability not less than One Million Dollars ($1,000,000) per occurrence or claim and Two Million Dollars ($2,000,000) aggregate to cover all design and engineering services rendered by Contractor pursuant to the

Agreement. Coverage must commence from the first day that Contractor or any of its Subcontractors provided any design or engineering services in connection with the Project.

5. **Builder's Risk/Course of Construction Insurance Is ____ OR Is Not ____ Required by Risk Management:** The Contractor shall be responsible for all loss, damage or destruction whatsoever to the work called for by this Contract until the approval of a Notice of Completion or acceptance of the Work if no Notice of Completion is to be recorded.

The Contractor shall secure "All Risk" type of builder's Risk Insurance of the type covering one hundred percent (100%) of the value of the work performed under this Contract (the value is presumed to be the Contract amount unless otherwise stated in Supplemental Conditions) and all materials, equipment, or other items to be incorporated therein while the same are located at the construction site, a bonded warehouse, or its place of manufacture. At any time, the policy shall cover the value of the work completed. The policy shall cover hazards including the losses due to fire, explosion, hail, rain, lightning, flood (separate insurance as needed), vandalism, malicious mischief, wind, collapse, aircraft, and smoke.

The policies providing such insurance shall name the City as a loss payee as its respective interests may appear, and certified copies of such policies shall be filed with the City. The maximum deductible allowable under the Builder's All Risk policy shall be five percent (5%) of the Contract amount.

Builder's Risk Insurance is not required for coverage of losses in excess of five percent (5%) of the Contract amount for damages resulting from earthquake in excess of a magnitude of 3.5 on the Richter scale, or tidal waves. Coverage in the amount of five percent (5%) of the Contract amount for such losses is required.

6. **Pollution Coverage:** Contractor shall procure pollution liability coverage or other insurance covering claims for bodily injury or property damage arising out of the abatement, removal, storage, transportation, or other exposure to hazardous materials or pollutants, in limits not less than Two Million Dollars ($2,000,000). Contractor shall add the City and all parties required to be indemnified by Contractor as additional insured on all pollution liability policies.

7. **Higher Coverage Limits:** If Contractor maintains higher coverage limits than the amounts shown above, then the City requires and shall be entitled to coverage for the higher coverage limits maintained by Contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the City.

8. **Claims Made Coverage:** Liability insurance coverage may not be written on a "claims made" or modified occurrence basis. The Certificate of Insurance must clearly provide that the coverage is on an "occurrence" basis.

7-1.06A **OTHER INSURANCE PROVISIONS.**

A. The requirements of the Standard Specifications as to types and limits of insurance coverage to be maintained by the Contractor, and any approval of insurance by the City, are not intended to, and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by the Contractor pursuant to the Contract, including, but not limited to, the provisions concerning indemnification, nor preclude the City from taking any other action available to it under any other provision of the Contract or law.

B. The City acknowledges that some insurance requirements contained in these Standard Specifications may be fulfilled by self-insurance on the part of the Contractor. However, this shall not in any way limit liabilities assumed by Contractor under the Contract.

Any self-insurance must be approved in writing by the City, in its sole discretion and shall not reduce the limits of liability. Any deductibles or self-insured retentions ("SIR") must be declared on the certificate of insurance and approved by City in writing. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City. City reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

C. The Contractor agrees to include in its contracts with all subcontractors the same requirements and provisions of this Contract, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, the Contractor shall require its subcontractors to agree to be bound to the Contractor and the City in the same manner and to the same extent as the Contractor is bound to the City under this Contract. Additionally, the Contractor shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of the City's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request. Alternatively, the Contractor may insure subcontractor(s) under its own policy.

D. The City, its officers, agents, employees, and volunteers are to be covered as insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the Contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. Coverage shall not extend to any indemnity coverage

for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under California Insurance Code Section 11580.04.

E. The limits of insurance required in this Contract may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of the City (if agreed to in a written contract) before the City's own insurance shall be called upon to protect it as a named insured.

F. The insurance procured by Contractor shall be subject to the approval of the City, but any acceptance of insurance certificates by the City shall in no way limit or relieve Contractor of its duties and responsibilities under the Agreement.

G. Contractor shall be responsible for all premiums, deductibles, and self-insured retention applicable to the insurance it is required to procure under the Contract. All deductibles or self-insured retentions over five hundred thousand dollars ($500,000) must be approved by the City, in writing. Contractor shall be responsible for all deductibles, self-insured retention payments, and/or increased premiums incurred if the City's policies of insurance are forced to cover damages or respond to claims for which Contractor or its Subcontractors were obligated to provide insurance under the Contract.

H. Failure of the City to enforce in a timely manner any of the requirements of these insurance provisions shall not act as a waiver to enforcement of any of these provisions at a later date.

I. Contractor's indemnity obligations shall not be limited by these insurance provisions and shall survive the expiration of the Contract and the insurance provisions of the Contract shall likewise not be limited by the indemnity provisions of the Contract.

J. THE CITY RESERVES THE RIGHT TO WITHHOLD ANY PROGRESS PAYMENTS TO THE CONTRACTOR IN THE EVENT OF NONCOMPLIANCE WITH ANY INSURANCE REQUIREMENTS.

Bond No. _____
Premium $_____

PUBLIC WORKS
FAITHFUL PERFORMANCE BOND

(Project: _____)

WHEREAS, the City of Roseville ("CITY") has awarded a bid and contract to _____ as contractor ("PRINCIPAL") for the public work described as _____ _____ (the "WORK"). The contract ("AGREEMENT"), for the public work described above, and all of its terms and conditions are incorporated by reference and made a part hereof; and

WHEREAS, the PRINCIPAL is required to furnish a bond in connection with the AGREEMENT guaranteeing its faithful performance; and

NOW, THEREFORE, we the undersigned PRINCIPAL and _____ _____, a _____, admitted and duly authorized to transact business under the laws of the State of California, as SURETY ("SURETY"), are held and firmly bound unto the CITY or its successors and assigns in the sum of _____ dollars ($_____) (which amount is not less than 100% of the AGREEMENT price) to be paid to the CITY or its successors and assigns; and for which payment, well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors or assigns jointly and severally, firmly by these presents.

The condition of this obligation is such that if the PRINCIPAL, or its heirs, executors, administrators, successors or assigns, shall abide by, and in all respects promptly and faithfully perform the covenants, conditions and provisions in said AGREEMENT and any alteration thereof made as therein provided, notice of which alterations to Surety being hereby waived, on its part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless CITY, its officers, agents, employees, volunteers as therein stipulated, then this obligation shall be null and void; otherwise, this obligation shall be and remain in full force and effect.

As condition precedent to the satisfactory completion of the contract, the obligation of the PRINCIPAL and SURETY under this Bond shall remain in effect for a period of one (1) year after the completion and acceptance of the WORK. During that time, if the PRINCIPAL, its heirs, executors, administrators, successors or assigns fails to make full, complete and satisfactory repair and replacement or totally protect the CITY from any loss or damage made evident during that year which results from or is caused by either defective materials or faulty workmanship in the prosecution of the WORK, then the obligation shall remain in full force and effect. However, anything in

this paragraph to the contrary notwithstanding, the obligation of the SURETY shall continue so long as any obligation of the PRINCIPAL remains.

No prepayment or delay in payments, and no change, extension, addition or alteration of any provision of the AGREEMENT or in the specifications agreed to between the PRINCIPAL and the CITY, or any forbearance on the part of the CITY shall operate to relieve the SURETY. The SURETY hereby waives the provisions of Section 2819 of the California Civil Code. The SURETY waives all rights of subrogation against the CITY or any person employed by the CITY. If the contract price increases by the issuance of change orders, the amount specified in this bond shall increase by the same amount.

Whenever PRINCIPAL shall be and declared by CITY to be in default under the AGREEMENT, SURETY shall promptly remedy the default, or shall promptly do one of the follow at CITY's election:

1. Undertake through its agents or independent contractors, reasonably acceptable to CITY, to complete the AGREEMENT in accordance with its terms and conditions and to pay and perform all obligations of PRINCIPAL under the AGREEMENT, including without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages.

2. Reimburse CITY for all costs CITY incurs in completing the AGREEMENT, and in correcting, repairing or replacing defects in materials or workmanship and/or materials and workmanship which do not conform to the specifications in the AGREEMENT.

SURETY's obligations hereunder are independent of the obligations of any other surety for the performance of the AGREEMENT, and suit may be brought against SURETY and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing CITY's rights against the others.

No right of action shall accrue on this bond to or for the use of any person or corporation other than CITY or its successors or assigns.

As part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorneys' fees, incurred by CITY in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

[SIGNATURES NEXT PAGE]

IN WITNESS WHEREOF, this instrument has been duly executed by the PRINCIPAL and SURETY above-named, on the ____ day of _____, 20___.

PRINCIPAL:

BY:_____

PRINT NAME: _____

PRINT TITLE: _____

AND

BY: _____

PRINT NAME: _____

PRINT TITLE:_____

SURETY:

BY:_____

PRINT NAME: ____ _____

PRINT TITLE:_____

MAILING ADDRESS:

_____

_____

_____

(Notarization by Surety and copy of Power of Attorney required.)

APPROVED AS TO FORM:

BY: _____
City Attorney

Bond No. _____
Premium $_____

PUBLIC WORKS
LABOR AND MATERIALS PAYMENT BOND
(Project: _____)

WHEREAS, the City of Roseville ("CITY"), has awarded a bid and contract to _____ as contractor ("PRINCIPAL"), for the public work described as _____ _____ (the "WORK"). The contract ("AGREEMENT"), for the public work described above, and all of its terms and conditions are incorporated by reference and made a part hereof; and

WHEREAS, the PRINCIPAL is required to furnish a bond in connection with the AGREEMENT guaranteeing payment of persons who provide labor and material; and

NOW, THEREFORE, we the undersigned PRINCIPAL and _____ _____, a _____, admitted and duly authorized to transact business under the laws of the State of California, as SURETY ("SURETY"), are held and firmly bound unto the CITY or its successors and assigns in the sum of _____ dollars ($_____) (which amount is not less than 100% of the AGREEMENT price) to be paid to the CITY or its successors and assigns; and for which payment, well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors or assigns jointly and severally, firmly by these presents.

The condition of the obligation is such that if the PRINCIPAL, its subcontractors, heirs, executors, administrators, successors or assigns fails to pay any of the persons named in Section 8004 or 9100 of the Civil Code of the State of California, or the amounts due under the Unemployment Insurance Code of the State of California, or any amounts required to be deducted, withheld and paid over to the Employment Development Department from the wages of employees of the PRINCIPAL and its subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to work or labor performed by any such claimant, that the SURETY will pay for the same, in an amount not exceeding the sum specified in this bond, and also, in case suit is brought upon the bond, shall pay reasonable attorneys' fees, to be fixed by the Court.

This bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file a Stop Payment Notice pursuant to the provisions of Section 9350 et seq. of the Civil Code of the State of California, so as to give a right of action to them or their assigns in any suit brought upon this bond.

No prepayment or delay in payments, and no change, extension, addition or alteration of any provision of the AGREEMENT or in the specifications agreed to between the PRINCIPAL and the CITY, or any forbearance on the part of the CITY shall operate to relieve the SURETY. The SURETY hereby waives the provisions of Section 2819 of the California Civil Code. The SURETY waives all rights of subrogation against the CITY or any person employed by the CITY. If the contract price increases by the issuance of change orders, the amount specified in this bond shall increase by the same amount.

As part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorneys' fees, incurred by CITY in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

IN WITNESS WHEREOF, this instrument has been duly executed by the PRINCIPAL and SURETY above-named, on the _____ day of _____, 20__.

PRINCIPAL:	SURETY:
BY:_____	BY:_____
PRINT NAME: _____	**PRINT NAME:** ____ _____
PRINT TITLE: _____	**PRINT TITLE:**_____
AND	MAILING ADDRESS:
BY: _____	_____
PRINT NAME: _____	_____
PRINT TITLE:_____	_____

(Notarization by Surety and copy of Power of Attorney required.)

APPROVED AS TO FORM:

BY: _____
City Attorney

STANDARD CONSTRUCTION SPECIFICATIONS

CITY OF ROSEVILLE

STANDARD CONSTRUCTION SPECIFICATIONS

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ADOPTION OF STATE SPECIFICATIONS

1. The State of California Department of Transportation ("Caltrans") Standard Specifications dated 2015, are hereby adopted as the Standard Specifications of the City of Roseville except insofar as they may be modified by these Standard Construction Specifications.

2. Except for Division 1, Section 2, numbering in these Standard Construction Specifications conforms to that in the Caltrans Standard Specifications. The existence of a section in these Standard Construction Specifications means that the corresponding section of the Standard Specifications is modified in some respect. Unless otherwise specified, the modified Standard Specification provisions are deleted entirely, and the provisions of these Standard Construction Specifications are substituted.

DIVISION 1. GENERAL PROVISIONS

SECTION 1. GENERAL

ACCEPTANCE. Shall mean the formal Acceptance by resolution of the Roseville City Council of an entire Contract which has been completed in all respects in accordance with the Plans and specifications and any modifications thereof previously approved, causing a notice of completion to be filed with the County Recorder.

ATTORNEY GENERAL. The City Attorney of the City of Roseville.

CITY ATTORNEY. The City Attorney of the City of Roseville.

CITY CLERK. Shall mean the City Clerk of the City of Roseville.

DEPARTMENT. Shall mean the Department of Public Works of the City of Roseville, also referred to as the Department of Contract Administration. References made to the Department of Transportation otherwise shall mean the State of California Department of Transportation.

DIRECTOR. Shall mean the Public Works Director of the City of Roseville or his or her duly authorized representative.

ENGINEER. Shall mean the Public Works Director of the City of Roseville or his or her duly authorized representative.

ESTIMATED COST. The estimate prepared by the Public Works Director of quantities of work to be performed.

LIQUIDATED DAMAGE. The amount to be deducted from payments due or to become due to the Contractor for delay, as set forth in the Special Provisions.

PLANS. The official Project Plans, Standard Plans, Improvement Plans, Construction Standards, profiles, typical cross sections, general cross sections, working drawings, and supplemental drawings, or reproductions thereof, approved by the Director which show the location, character, dimensions and details of the work to be performed. All such documents are to be considered as a part of the Plans whether or not reproduced in the Special Provisions.

In the above definition, the following terms are defined as follows:

a. Standard Plans - The Standard Plans of the Department of Transportation of the State of California.

b. Project Plans - The Project Plans are specific details and dimension peculiar to the Work and supplemented by the Standard Plans, insofar as the same may apply.

c. Construction Standards - The City of Roseville Design and Construction Standards.

STATE. Reference to the State or State of California shall mean City or City of Roseville unless the reference is to a law or regulation of the State, and reference to Sacramento shall mean Roseville unless otherwise noted.

SECTION 2. BIDDING

SECTION 2 SHALL BE DELETED IN ITS ENTIRETY AND REPLACED WITH THE FOLLOWING:

2-1.01 **PROPOSAL FORMS.** The Department will furnish to each Bidder a standard proposal form, which, when filled out and executed shall be submitted as its bid. Bids not presented on forms so furnished will be disregarded.

The proposal form is bound in a book together with the Notice to Contractors, special provisions, and Contract. The proposal shall set forth for each item of work, in clearly legible figures and words, an item price and a total for the item in the respective spaces provided, and shall be signed by the Bidder, who shall fill out all blanks in the proposal form as required therein.

All items shown on the schedule of bid items shall be properly filled in and shall include all costs of labor, materials, equipment, and State, Federal, or other taxes applicable to the transaction. The completed forms shall be without inter-lineations, erasures or alterations of any nature. If the proposal is made by an individual, his or her name and post office address must be shown; if made by a firm or partnership, the name and post office address of each member of the

firm or partnership must be shown; or if made by a corporation, the proposal shall show the name of the State under the laws of which the corporation was chartered and the names, titles, and business addresses of the president, secretary, and treasurer of said corporation. If the proposal is signed by an agent, a "Power of Attorney" must be filed with the proposal.

The proposal shall be submitted as directed in the "Notice to Contractors" under sealed cover plainly marked as a proposal, and identifying the project to which the proposal relates and the time and date of the bid opening therefor. Proposals which are not properly marked may be disregarded. Proposal forms shall be obtained from the Director of Public Works, City of Roseville, California. Proposal forms are not transferable.

2-1.02 **REJECTION OF PROPOSALS AND DISQUALIFICATION OF BIDDERS.** Proposals may be rejected if they show any alterations of the forms, additions not called for, conditional bids, incomplete bids, erasures or irregularities of any kind. More than one proposal from an individual, firm, partnership, corporation or association under the same or different names, will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one (1) proposal for the work contemplated, will cause the rejection of all proposals in which the Bidder is interested. The City reserves the right to reject any and all proposals.

2-1.03 **PROPOSAL GUARANTY.** All bids shall be presented under sealed cover and accompanied by one (1) of the following forms of Bidder's security.

a. Cash, a cashier's check, a certified check, or a Bidder's bond executed by an admitted California surety insurer, made payable to the City.

b. The security shall be in an amount equal to at least ten percent (10%) of the bid amount. A bid will not be considered unless one (1) of the forms of Bidder's security is enclosed with it.

c. A Bidder's bond will not be accepted unless it conforms to a bond form approved by the City Attorney. Upon request "Bidder's Bond" forms may be obtained from the Department.

2-1.04 **WITHDRAWAL OF PROPOSALS.** Any bid may be withdrawn at any time prior to the time fixed in the public notice for the deadline submission of bids only by written request for the withdrawal of the bid filed with the Director. The request shall be executed by the Bidder or his or her duly authorized representative. The withdrawal of a bid does not prejudice the right of the Bidder to file a new bid. Whether or not bids are opened exactly at the time fixed in the public notice for opening bids, a bid will not be received after the deadline for submission of bids nor may any bid be withdrawn after the time fixed in the public notice for deadline for submission of bids. Immediately following the deadline for submission of bids all bids shall become the property of the City of Roseville and City is under no obligation to return the bids.

2-1.05 **RELIEF OF BIDDERS.** If the Bidder claims a mistake was made in his or her bid, the Bidder shall give the Department written notice within five (5) calendar days after the opening of the bids of the alleged mistake, specifying in the notice in detail how the mistake occurred. No relief from a claimed mistaken bid shall be granted unless such mistake clearly appears on the face of the bid submitted to the City. Claimed mistakes on backup worksheets, spreadsheets, computerized bidding programs, or any other similar calculative bidding mistake which is not apparent on the face of the bid shall not under any circumstance be considered as a

basis for relief. The burden of proving the occurrence of a mistake entitling a Bidder to relief from its bid rests entirely on the Bidder. Relief from bids shall be in the City's sole discretion.

2-1.06 **PREVIOUS DISQUALIFICATION, REMOVAL OR OTHER PREVENTION OF BIDDING.** A bid may be rejected on the basis of a Bidder, any officer of such Bidder, or any employee of such Bidder who has a proprietary interest in such Bidder, having been disqualified, removed, or otherwise prevented from bidding on, or completing a Federal, State, or local project because of a violation of law or a safety regulation.

2-1.07 **COMPETENCY OF BIDDERS.** If two (2) or more prospective Bidders desire to bid jointly as a joint venture on a single project, they must file an affidavit of joint venture with the Bid on a form approved by the City Attorney, and such affidavit of joint venture will be valid only for the specific project for which it is filed. If such affidavit of joint venture is not filed as aforesaid and approved by the City Attorney prior to the time for awarding bids on the specific project for which it is submitted, a joint bid submitted by said Bidders will be disregarded. No bid will be accepted from or a Contract awarded to any Bidder to whom a proposal form has not been issued pursuant to Section 2-1.06.

2-1.08 **GUARANTY AND WARRANTY.** The Contractor shall guarantee and warrant all materials supplied as being fit for the purpose intended. The Contractor shall guarantee and warrant all work performed as having been accomplished in a proper and workman-like manner. The guarantee and warranty required by this section shall continue for a period of one (1) year after Acceptance of the Work.

Should any failure of the work occur within a period of one (1) year, after Acceptance of the project by the City Council due to faulty materials, poor workmanship, or defective equipment, the Contractor shall promptly make the needed repairs at his or her expense.

The City is hereby authorized to make such repairs if the Contractor fails to make or undertake with due diligence the aforesaid repairs within ten (10) calendar days after being given written notice of such failure; provided, however, that in case of emergency where in the opinion of the Engineer, providing a reasonable attempt has been made to notify the Contractor, delay would cause serious loss or damages, or a serious hazard to the public, the repairs may be made or lights, signs, and barricades erected without prior notice to the Contractor, and the Contractor shall pay the entire cost thereof. At the completion of the work the faithful performance bond may be reduced at the discretion of the City Council to not less than ten percent (10%) of the Contract price to cover said guarantee.

Additional guarantees or warranties may be required by the Special Provisions.

SECTION 3. CONTRACT AWARD AND EXECUTION

3-1.04 **CONTRACT AWARD.** The right is reserved to reject any and all proposals. The award of the Contract, if it be awarded, will be to the lowest responsible Bidder whose proposal complies with all the requirements prescribed. Such award, if made, will be made within sixty (60) business days after the public opening of the proposals. If the lowest responsible Bidder refuses or fails to execute the Contract, the Roseville City Council may award the Contract to the second lowest responsible Bidder. Such award, if made, will be made within eighty-two (82) business days after the public opening of proposals. If the second lowest responsible Bidder refuses or fails to execute the Contract, the City may award the Contract to the third lowest responsible Bidder. Such award, if made, will be made within one hundred and four (104) business days after public opening of the proposals. The above time periods within

which the award of Contract may be made are subject to extension for such further period as may be agreed upon in writing between the City and the Bidder concerned.

All bids will be compared on the basis of the Director's estimate of the quantities of work to be done.

3-1.05 **CONTRACT BONDS.** The successful Bidder, simultaneously with the execution of the Contract, will be required to furnish a payment bond in an amount equal to one hundred percent (100%) of the Contract price, and a faithful performance bond in an amount equal to one hundred percent (100%) of the Contract price; said bonds shall be in a form approved by the City Attorney and shall be secured by a surety company satisfactory to the City Attorney. If the Contract price increases by the issuance of Change Orders, the penal amounts of the bonds required shall increase accordingly.

Furthermore, the successful Bidder shall furnish a certificate from the County Clerk as required by California Civil Code of Procedure Section 995.660(a)(3).

3-1.18 **CONTRACT EXECUTION.** The Contract, in form and contents satisfactory to the City, shall be executed by the successful Bidder and returned, together with the Contract bonds and certificates of insurance within fifteen (15) calendar days after written notice that the Contract has been awarded, or as otherwise directed, in writing, by the City. No proposal shall be considered binding upon the City until the execution of the Contract by the City.

3-1.20 **FAILURE TO EXECUTE CONTRACT.** Section 3-1.20, "Failure to Execute Contract" is added as follows:

"Failure of the lowest responsible Bidder, the second lowest responsible Bidder, or the third lowest responsible Bidder to execute the Contract and file acceptable bonds

and insurance as provided herein within fifteen (15) calendar days, or within a different timeframe specified by City in writing, after such Bidder has received notice that the Contract has been awarded to him or her, shall be just cause for the annulment of the award and the forfeiture of the Bidder's security to the City as Liquidated Damages. The successful Bidder may file with the Roseville City Council a written notice, signed by the Bidder or his or her authorized representative, specifying that the Bidder will refuse to execute the Contract if presented to him or her. The filing of such notice shall have the same force and effect as the failure of the Bidder to execute the Contract and furnish acceptable bonds and insurance within the time prescribed by Section 3-1.18."

SECTION 4. SCOPE OF WORK

There are no amendments to the Standard Specifications.

SECTION 5. CONTROL OF WORK

5-1.02 **CONTRACT COMPONENTS.** These Standard Construction Specifications, the Standard Specifications, the Standard Plans, the Improvement Plans, Construction Standards, Project Plans, project Special Provisions (and any addenda), the Agreement, Contract Change Orders, and all supplementary documents are all essential parts of the Contract between Contractor and the City. A requirement occurring in one (1) is as binding

as though occurring in all. They are intended to be complementary, and to describe and provide for a complete work.

In resolving inconsistencies among two (2) or more sections of the Contract Documents, precedence shall be given in the following order:

A. Special Provisions

B. City of Roseville Standard Construction Specifications

C. City of Roseville Design and Construction Standards

D. State Standard Specifications and Amendments to the State Standard Specifications, Standard Special Provisions, and Plans

E. Drawings

Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in these specifications, the special provisions, or the Plans, the Contractor shall apply in writing to the Director for such further explanations as may be necessary and shall conform to them as part of the Contract. In the event of any doubt or question arising respecting the true meaning of these specifications, the special provisions or the Plans, reference shall be made to the Director, whose decision thereon shall be final.

In the event of any discrepancy, between any drawing and the figures written thereon, the figures shall be taken as correct. Detail drawings shall prevail over general drawings.

5-1.20B(5) **CITY OF ROSEVILLE ENCROACHMENT PERMITS.** Section 5-1.20B(5), "City of Roseville Encroachment Permits" is added as follows:

"The Contractor need not obtain a separate encroachment permit from the City prior to construction within street rights-of-way or other City rights-of-way. Execution of the Contract by the City shall be deemed an encroachment permit for work required by

the Contract within rights-of-way. All work shall conform to the rules and regulations of encroachment permits and shall be subject to the inspection and approval of the Director."

5-1.20B(6) **CITY OF ROSEVILLE BUSINESS LICENSE.** Section 5-1.20B(6), "City of Roseville Business License" is added as follows:

"The Contractor shall obtain a business license from the City prior to commencing work."

5-1.20B(7) **OTHER PERMITS.** Section 5-1.20B(7), "Other Permits" is added as follows:

"The Contractor in coordination with the Director shall procure any necessary permits which the City has not specifically mentioned as obtaining."

5-1.31 **JOB SITE APPEARANCE.** The Contractor shall maintain a neat appearance to the work. In any area visible to the public, the following shall apply:

When practicable, broken concrete and debris developed during clearing and grubbing shall be disposed of concurrently with its removal. If stockpiling is necessary, the material shall be removed or disposed of weekly.

The Contractor shall furnish trash bins for all debris from structure construction. All debris shall be placed in trash bins daily. Forms or falsework that are to be reused shall be stacked neatly concurrently with their removal. Forms and falsework that are not to be reused shall be disposed of concurrently with their removal.

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in price paid for the various Contract items of work involved, and no additional compensation will be allowed therefore.

5-1.38 **MAINTENANCE AND PROTECTION RELIEF.** Section 5-1.38 is deleted.

5-1.43 **POTENTIAL CLAIMS AND DISPUTE RESOLUTION.** Section 5-1.43 is deleted in its entirety and replaced with the following:

5-1.43A **NOTICE OF POTENTIAL CLAIM.** The Contractor shall not be entitled to payment for any additional compensation for any act or failure to act by the City, including failure or refusal to issue a Change Order, or for the happening of any event, thing, occurrence or other cause unless he or she shall have given the City due written Notice of Potential Claim as hereinafter specified.

The written Notice of Potential Claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. The said Notice as above required must have been given to the Director prior to the time that the Contractor shall have performed the Work giving rise to the potential claim for additional compensation, if based on an act or failure to act by the Director, or in all other cases within three (3) Days after the happening of the event, thing, occurrence or other cause giving rise to the potential claim.

If the Notice of Potential Claim does not include complete information about the claim or the parties do not execute a Contract Change Order in connection with the Notice of Potential Claim, Contractor shall submit a complete information about its claim for additional compensation and/or extension of time for performance within fifteen (15) calendar days after such work is performed. Failure to provide written notice of claim prior to undertaking such work or failure to timely submit a complete and specific information about the claim for

additional compensation and/or extension of the time for performance shall be deemed a waiver and abandonment of such claim.

If there is a dispute over any claim, the Contractor shall continue to work during the dispute resolution process in a diligent and timely manner as directed by the City, and shall be governed by all applicable provision of the Agreement.

The Contractor shall maintain cost records of all work that is the basis of any dispute. On a daily basis, Contractor shall submit to City completed daily forms, the format of which will be acceptable to the City, with respect to the Contractor's costs of performing the disputed work. These daily forms shall itemize all of Contractor's costs in performing the disputed work, including, but not limited to, all costs relating to materials, labor and equipment with respect to the disputed work. These daily forms shall provide names or identification and classification of affected workers, the hourly rate of pay and hours worked, and also the size, type, and identification number of equipment and hours operated. Said daily work forms shall be duly signed and verified by the Contractor or its authorized representative. The City's receipt of the Contractors' daily forms shall not constitute an approval of the Contractor's claim. Contractor's failure to submit the daily forms on a daily basis shall constitute a waiver of the Contractor's right to claim any additional compensation for the disputed work.

Each Contractor claim shall include full and complete information concerning the Claim. Contractor shall provide a clear, concise recital of the basis, upon which the claim is asserted, including a designation of the provisions of the Contract Documents upon which the claim is based. Contractor shall also include a statement as to the amount of time and/or compensation sought pursuant to the claim; if Contractor's claim arises from an ongoing occurrence, Contractor shall so state in its claim, including a description of the specific Work activities

affected by the claim. All costs, expenses or damages and extensions of time claimed shall be described in reasonable detail under the circumstances together with complete supporting documentation.

The City will review any timely Notice of Potential Claim and supporting information submitted by Contractor. In conducting this review, the City shall have the right to require the Contractor to submit such additional or supporting documents, data and other information as the City may require.

If an agreement can be reached which resolves the Contractor's claim, the parties will execute a Contract Change Order to document the resolution of the claim. If the parties cannot reach agreement with respect to the Contractor's claim, the Contractor shall still be obligated to comply with the claim identification provisions identified in these Standard Construction Specifications, including but not limited to Section 5-1.43B.

It is the intention of this Section 5-1.43A that differences between the parties arising under and by virtue of the Contract be brought to the attention of the Director at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that he or she shall have no right to additional compensation for any Claim that may be based on any such act, failure to act, event, thing or occurrence for which no timely written Notice of Potential Claim as herein required was filed.

5-1.43B **CLAIMS.** Contractor must submit all Claims, for which it has previously submitted a Notice of Potential Claim, prior to Acceptance of the Work. Each such Claim must be sent to the City by registered mail or certified mail with return receipt requested and must contain reasonable documentation to support the Claim.

Upon receipt of a Claim, the City shall conduct a reasonable review of the Claim and, within a period not to exceed forty-five (45) calendar days, or such further time as mutually agreed upon or necessary pursuant to Public Contract Code Section 9204, the City shall provide the Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. If the City does not respond to a Claim from the Contractor within the time specified herein, such Claim shall be deemed rejected in its entirety.

Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) calendar days after the City issues its written statement.

If the Contractor disputes the City's written response, or if the City does not respond within the time specified herein, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the City shall schedule a meet and confer conference within thirty (30) calendar days for settlement of the dispute.

Within ten (10) business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the City shall provide the Contractor a written statement identifying the portion of the Claims that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claims shall be processed and made within sixty (60) calendar days after the public entity issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the City and the Contractor sharing the associated costs equally. The City and the Contractor shall mutually agree to a mediator within ten (10) business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a

qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall be responsible for the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be resolved in accordance with Section 9-1.22.

5-1.46 **FINAL INSPECTION AND CONTRACT ACCEPTANCE.** When the Director has made the final inspection and determines that the Contract work has been completed in all respects in accordance with the Plans and specifications, the Director will recommend that the Roseville City Council formally accept the work, and immediately upon and after such Acceptance by the City, the Contractor will be responsible for the work done for a period of one (1) year.

SECTION 6. CONTROL OF MATERIALS

6-1.03 **LOCAL MATERIALS.** Local material sites used by the Contractor shall be graded so that, at the time of final inspection of the Contract, they will drain and will blend in with the surrounding terrain.

SECTION 7. LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

7-1.02K(2) **WAGES.** The provisions of paragraphs 1and 2 of Section 7-1.02K(2) of the Standard Specifications are amended to read as follows:

"Pursuant to the provisions of California Labor Code Section 1773, the City has identified the source, stated below, of the general prevailing rate of wages applicable to the

work to be done, for straight time, overtime, Saturday, Sunday and holiday work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of workmen concerned. The wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm, and are incorporated herein as part of the Contract.

Pursuant to California Labor Code Section 1773.2, general prevailing wage rates shall be posted by the Contractor at a prominent place at the site of the work."

7-1.02K(6)(b) **EXCAVATION SAFETY.** For trenches or excavation five feet (5') or deeper, the Contractor shall obtain from the Division of Industrial Safety, a permit authorizing such construction.

7-1.02O **VEHICLE CODE.** Pursuant to the authority contained in Vehicle Code Section 591, the Department has determined that, within such areas as are within the limits of the project and are open to public traffic, the Contractor shall comply with all the requirements set forth in Vehicle Code Divisions 11, 12, 13, 14, and 15. Attention is directed to the statement in Section 591 that this section shall not relieve the Contractor nor any person from the duty of exercising due care. The Contractor shall take all necessary precautions for safe operation of equipment and the protection of the public from injury and damage from such equipment.

7-1.03 **PUBLIC CONVENIENCE.** Section 7-1.03 of the Standard Specifications is amended in part as follows:

1. Delete paragraph 10 ("Install signs, lights, flares . . .") and substitute the following:

"In order to expedite the passage of public traffic through or around the work, the Contractor shall install signs, lights, flares, temporary railing (type K), barricades, and other facilities for the sole convenience and direction of public traffic as may be required. Also, as may be required, the Contractor shall furnish competent flaggers whose sole duties shall consist of directing the movement of public traffic through or around the work. The cost of furnishing and installing such signs, lights, flares, temporary railing (type K), barricades, flaggers, and other facilities shall be included in the lump sum paid for traffic control and no additional compensation will be allowed therefor.

In addition to the requirements previously specified for furnishing facilities and flaggers to expedite the safe passage of the public through or around the work, the Contractor shall at his or her expense furnish and erect within or adjacent to the work such warning, regulatory, or guide signs, markers, or devices as are necessary."

2. Add a paragraph at the end of the section to read as follows:

"In addition to the requirements hereinbefore specified for furnishing facilities and flaggers for expediting the passage of public traffic through or around the work, the Contractor shall furnish and erect, within or adjacent to the limits of the Contract, such warning, regulatory, and guide signs as may be required. The Contractor shall furnish, install and remove all such signs. Payment for furnishing, installing and removing all such signs shall be included in the lump sum price paid for traffic control and no additional compensation will be allowed therefor."

7-1.04 **PUBLIC SAFETY.** It is the intent of the parties that the City is not an exposing, creating, controlling, or correcting employer under California Labor Code Section 6400. In accordance with generally accepted construction practices and State law, the Contractor

shall have the authority and be solely and completely responsible for conditions on the job site, including safety of all persons and property during performance of the Work. Moreover, the Contractor shall be the controlling employer and has the authority and responsibility to enforce worksite safety. The Contractor shall be responsible for conducting daily safety inspections and assuring all hazards and violations are abated. The Contractor is responsible for assuring that all subcontractors adhere to the minimum CAL/OSHA safety requirements and that each subcontractor has an effective CAL/OSHA IIP (Illness and Injury Protection Program) in place that specifically addresses all potential exposures, such as, but not limited to, fall protection, confined space, and trenching/shoring. These requirements shall apply continuously and not be limited to normal working hours. The Contractor shall be responsible for any delay costs or damages in the event the progress of Work is slowed or stopped due to a safety violation.

The services of the Director in conducting construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's Work methods, equipment, bracing or scaffolding, or safety measures, in, on, or near the construction site. If a City employee observes a safety violation, the City employee will report the violation to the Contractor who is then responsible for assuring the violation is abated.

The Contractor is hereby informed that Work on this project could be hazardous. The Contractor shall carefully instruct all personnel working in potentially hazardous Work areas as to potential dangers and shall provide such necessary safety equipment and instructions as are necessary to prevent injury to personnel and damage to property. Special care shall be exercised relative to Work underground.

All Work and materials shall be in strict accordance with all applicable State, City, County, and Federal Rules, Regulations, and Codes, and attention is drawn to the requirements

of CAL/OSHA. The Contractor shall be solely responsible for compliance with all City, County and State blasting requirements and for any damages caused by his or her operations.

In accordance with California Labor Code Section 6705, the Contractor shall submit to the City specific plans to show details of provisions for worker protection from caving ground. This in no way relieves the Contractor from the requirement of maintaining safety in all operations performed by the Contractor or the Contractor's subcontractors. The detailed plan showing design of shoring, bracing, sloping or other provisions shall be prepared by a registered civil or structural engineer in the State of California as required. Acceptance by the City or its designated agent only constitutes acknowledgment of the submission and does not constitute review or approval of the designs, design assumptions or criteria, completeness of submissions, applicability to areas of intended use, nor implementation of the plans, which are solely the responsibility of the Contractor and his or her registered engineer.

Notwithstanding any classifications relative to the Tunnel Safety Orders, Work within confined spaces on this project is subject to the definitions and applicable provisions of California Code of Regulations Section 8400 et seq., Title 8.

The Contractor shall so perform its Work as not to expose personnel to, or to discharge into the atmosphere from any source whatever, smoke, dust, asbestos, toxic chemicals or other air contaminants in violation of the laws, rules, and regulations of the governmental entities having jurisdiction. Contractors or subcontractors removing one hundred or more square feet (100') of asbestos must be “Certified” in accordance with State law. All Work involving exposure to asbestos and all other hazardous materials shall be performed with protection of personnel in compliance with all applicable regulations and safety requirements.

Nothing in these Standard Construction Specifications is to be construed to permit Work not conforming to governing codes. When Contract Documents differ from governing codes, the Contractor shall furnish and install the higher standards called for without extra charge. All equipment furnished shall be grounded and provided with guards and protection as required by safety codes. Where vapor tight or explosion proof electrical installation is required by code, this shall be provided. In accordance with the provisions of Labor Code Section 6707, the Contractor shall provide adequate sheeting, shoring and bracing for employee protection, as provided in the proposal as separate Bid Items.

7-1.05 **INDEMNIFICATION.** The City of Roseville and its officers, agents, employees, and volunteers, including but not limited to the Director, shall not be answerable or accountable in any manner: for any loss or damage that may happen to the work or any part thereof; for any loss or damage to any of the materials or any things used or employed in performing the work; for injury to or death of any person, either workers or the public; or for damage to property from any cause which might have been prevented by the Contractor, his or her workers, or anyone employed by the Contractor or his or her subcontractors.

The Contractor shall be responsible for any liability imposed by law and for injuries to, or death of, any person including, but not limited to, workers and the public, or damage to property resulting from defects or obstructions, or from any cause whatsoever during the progress of the work or at any time before its completion and final Acceptance.

To the fullest extent allowed by law, the Contractor shall defend (through counsel acceptable to the City), indemnify, and save harmless the City of Roseville and its officers, agents, employees, and volunteers from all claims, suits, or actions of every name, kind, and description, brought forth, or on account of, injuries to or death of any person including, but not

limited to, workers and the public, or damage to property resulting from the performance of the Contract, except as otherwise provided by statute.

The duty of the Contractor to defend, indemnify, and save harmless includes, but is not limited to, the duties to defend as set forth in Civil Code Section 2778. The Contractor waives any and all rights to any type of express or implied indemnity against the City, its officers, agents, employees, or volunteers.

It is the intent of the parties that the Contractor will defend, indemnify, and hold harmless the City of Roseville, its officers, agents, employees, and volunteers from any and all claims, suits, or actions as set forth above regardless of existence or degree of fault or negligence, on the part of the City, the Contractor, the subcontractor or employee of any of these; except the duty does not apply where the injury or damage is due to the sole or active negligence or willful misconduct of the City.

The Contractor's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Contract for the full period of time allowed by law. The defense and indemnity obligations of this Contract are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Contract. The parties intend that the defense and indemnity obligations in this Contract shall be broadly construed.

In addition to any remedy authorized by law, so much of the money due the Contractor under and by virtue of the Contract as shall be considered necessary by the City may be retained by the City until disposition has been made of such suits or claims for damages.

The retention of money due the Contractor shall be subject to the following:

A. The City will give the Contractor thirty (30) calendar days' notice of its intention to retain funds from any partial payment which may become due to the Contractor prior

to Acceptance of the Contract. Retention of funds from any payment made after Acceptance of the Contract may be made without such prior notice to the Contractor.

B. No retention of additional amounts out of partial payments will be made if the amount to be retained does not exceed the amount being withheld from partial payments pursuant to Section 9-1.16F, "Retentions," of the Standard Construction Specifications.

C. If the City had retained funds and it is subsequently determined that the City is not entitled to be indemnified and saved harmless by the Contractor in connection with the matter for which such retention was made, the City shall be liable for interest on the amount retained at the legal rate of interest for the period of such retention.

7-1.06 **INSURANCE COVERAGE.** Section 7-1.06 Insurance in the Standard Specifications shall be deleted in its entirety and replaced with the following:

A. Evidence of Maintenance Required. The Contractor shall, at its expense, procure and at all times maintain in full force and effect at a minimum the insurance required by this section on all of its operations; and the Contractor shall not allow any Subcontractor to commence work until similar insurance required of the Subcontractor has been obtained and filed. An original Certificate of Insurance, and copies of all required endorsements, all in a form approved by the Risk Manager, evidencing all required coverage or policies shall be filed after the award of the bid and prior to approval of the Contract by the City Council. Contractor shall provide ten (10) days prior written notice to the City of any reduction of coverage limits or cancellation of the coverage or policies shall be given to the City of Roseville as Certificate holder.

B. Qualifying Insurers. With the exception of the State Compensation Insurance Fund, all required insurance policies shall be issued by companies acceptable to the

City and licensed to do business in the State of California and who hold a current policy holders alphabetic and financial size category rating of not less than AVII according to the most recent issue of Best's Insurance Reports.

C. Insurance Required.

1. **Commercial General Liability (CGL):** Insurance Services Office Form CG 00 01 covering CGL on an "occurrence" basis, including products and completed operations with limits of no less than Two Million Dollars ($2,000,000) per occurrence for bodily injury, personal injury and property damage for projects under One Million Dollars ($1,000,000) and limits of no less than Five Million Dollars ($5,000,000) per occurrence for bodily injury, personal injury and property damage for projects over One Million Dollars ($1,000,000). If a general aggregate limit applies, either the aggregate limit shall apply separately to this project or the general aggregate limit shall be twice the required occurrence limit.

The Commercial General Liability insurance shall include the following, copies of which shall be provided:

a. Inclusion of the City of Roseville, and its officers, agents, employees, and volunteers, as additional insureds (except for workers' compensation) as respects services or operations under the Contract. The additional insured endorsement for the general liability policy shall be at least as broad as the ISO CG 2010 10 01 combined with ISO CGL Endorsement CG 2037 10 01. Any other endorsement must be approved in writing by the City. Endorsements must include coverage for on-going and completed operations, which coverage shall be maintained for four (4) years following completion of the Project. Endorsements shall cover the City of Roseville, its officers, agents, employees, and volunteers.

b. The insurance shall provide coverage for claims by one insured against another insured and the policies shall not contain any cross-suits exclusions, cross-liability exclusions, or insured versus insured exclusions. The policies shall not contain any classification exclusions purporting to deny coverage for any work to be performed by Contractor or any of its Subcontractors.

c. Stipulation that the insurance is primary and noncontributory, as evidenced by a separate endorsement (CG 20 01 04 13 or an equivalent) or section of the policy, and that neither the City nor its insurers will be called upon to contribute to a loss.

d. Such insurance shall specifically cover the contractual liability of the Contractor.

e. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (1) the minimum coverage and limits specified in this Agreement; or (2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

f. Waiver of subrogation endorsement.

g. The Contractor shall furnish a certificate for the period covered.

2. **Automobile Liability:** Insurance Services Office Form Number CA 0001 covering Code 1 (any auto), or if contractor has no owned autos, Code 8 (hired) and Code 9 (non-owned), with limits of no less than One Million Dollars ($1,000,000) per accident for bodily injury and property damage.

3. **Workers' Compensation:** In accordance with the provisions of the California Labor Code, Contractor is required to be insured against liability for Workers'

Compensation or to undertake self-insurance. Statutory Workers' Compensation and Employers' Liability of at least One Million Dollars ($1,000,000) shall cover all Contractors staff while performing any work incidental to the performance or this Agreement.

4. **Professional Liability:** Professional Liability (Errors and Omission) Insurance appropriate to Contractor's profession, with a limit of liability not less than One Million Dollars ($1,000,000) per occurrence or claim and Two Million Dollars ($2,000,000) aggregate to cover all design and engineering services rendered by Contractor pursuant to the Agreement. Coverage must commence from the first day that Contractor or any of its Subcontractors provided any design or engineering services in connection with the Project.

5. **Builder's Risk/Course of Construction Insurance (If Required by Risk Management):** The Contractor shall be responsible for all loss, damage or destruction whatsoever to the work called for by this Contract until the approval of a Notice of Completion or acceptance of the Work if no Notice of Completion is to be recorded.

The Contractor shall secure "All Risk" type of builder's Risk Insurance of the type covering one hundred percent (100%) of the value of the work performed under this Contract (the value is presumed to be the Contract amount unless otherwise stated in Supplemental Conditions) and all materials, equipment, or other items to be incorporated therein while the same are located at the construction site, a bonded warehouse, or its place of manufacture. At any time, the policy shall cover the value of the work completed. The policy shall cover hazards including the losses due to fire, explosion, hail, rain, lightning, flood (separate insurance as needed), vandalism, malicious mischief, wind, collapse, aircraft, and smoke.

The policies providing such insurance shall name the City as a loss payee as its respective interests may appear, and certified copies of such policies shall be filed with the City. The

maximum deductible allowable under the Builder's All Risk policy shall be five percent (5%) of the Contract amount.

Builder's Risk Insurance is not required for coverage of losses in excess of five percent (5%) of the Contract amount for damages resulting from earthquake in excess of a magnitude of 3.5 on the Richter scale, or tidal waves. Coverage in the amount of five percent (5%) of the Contract amount for such losses is required.

6. **Pollution Coverage:** Contractor shall procure pollution liability coverage or other insurance covering claims for bodily injury or property damage arising out of the abatement, removal, storage, transportation, or other exposure to hazardous materials or pollutants, in limits not less than Two Million Dollars ($2,000,000). Contractor shall add the City and all parties required to be indemnified by Contractor as additional insured on all pollution liability policies.

7. **Higher Coverage Limits:** If Contractor maintains higher coverage limits than the amounts shown above, then the City requires and shall be entitled to coverage for the higher coverage limits maintained by Contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the City.

8. **Claims Made Coverage:** Liability insurance coverage may not be written on a "claims made" or modified occurrence basis. The Certificate of Insurance must clearly provide that the coverage is on an "occurrence" basis.

7-1.06A **OTHER INSURANCE PROVISIONS.**

A. The requirements of the Standard Specifications as to types and limits of insurance coverage to be maintained by the Contractor, and any approval of insurance by the City, are not intended to, and shall not in any manner limit or qualify the liabilities and

obligations otherwise assumed by the Contractor pursuant to the Contract, including, but not limited to, the provisions concerning indemnification, nor preclude the City from taking any other action available to it under any other provision of the Contract or law.

B. The City acknowledges that some insurance requirements contained in these Standard Specifications may be fulfilled by self-insurance on the part of the Contractor. However, this shall not in any way limit liabilities assumed by Contractor under the Contract. Any self-insurance must be approved in writing by the City, in its sole discretion and shall not reduce the limits of liability. Any deductibles or self-insured retentions ("SIR") must be declared on the certificate of insurance and approved by City in writing. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City. City reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

C. The Contractor agrees to include in its contracts with all subcontractors the same requirements and provisions of this Contract, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, the Contractor shall require its subcontractors to agree to be bound to the Contractor and the City in the same manner and to the same extent as the Contractor is bound to the City under this Contract. Additionally, the Contractor shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of the City's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request. Alternatively, the Contractor may insure subcontractor(s) under its own policy.

D. The City, its officers, agents, employees, and volunteers are to be covered as insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the Contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under California Insurance Code Section 11580.04.

E. The limits of insurance required in this Contract may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of the City (if agreed to in a written contract) before the City's own insurance shall be called upon to protect it as a named insured.

F. The insurance procured by Contractor shall be subject to the approval of the City, but any acceptance of insurance certificates by the City shall in no way limit or relieve Contractor of its duties and responsibilities under the Agreement.

G. Contractor shall be responsible for all premiums, deductibles, and self-insured retention applicable to the insurance it is required to procure under the Contract. All deductibles or self-insured retentions over five hundred thousand dollars ($500,000) must be approved by the City, in writing. Contractor shall be responsible for all deductibles, self-insured retention payments, and/or increased premiums incurred if the City's policies of insurance are forced to cover damages or respond to claims for which Contractor or its Subcontractors were obligated to provide insurance under the Contract.

H. Failure of the City to enforce in a timely manner any of the requirements of these insurance provisions shall not act as a waiver to enforcement of any of these provisions at a later date.

I. Contractor's indemnity obligations shall not be limited by these insurance provisions and shall survive the expiration of the Contract and the insurance provisions of the Contract shall likewise not be limited by the indemnity provisions of the Contract.

J. THE CITY RESERVES THE RIGHT TO WITHHOLD ANY PROGRESS PAYMENTS TO THE CONTRACTOR IN THE EVENT OF NONCOMPLIANCE WITH ANY INSURANCE REQUIREMENTS.

SECTION 8. PROSECUTION AND PROGRESS

8-1.04 **START OF JOB SITE ACTIVITIES.** The Contractor shall begin work by the date specified in the "Notice to Proceed" letter, and the Contractor shall thereafter diligently prosecute the work to completion.

The Contractor shall notify the Director, in writing, of his or her intent to commence work at least seventy-two (72) hours before work is begun. The notice shall specify the date on which the Contractor intends to begin work. If a project has more than one (1) location of work, a separate notice shall be given for each location.

Should the Contractor begin work in advance of issuance of a "Notice to Proceed," any work performed in advance of such issuance shall be considered to have been done at Contractor's own risk and as a volunteer.

SECTION 9. PAYMENT

9-1.11C **PAYMENT INCLUSIONS.** The following is added to Section 9-1.11C Payment Inclusions:

"No additional compensation will be made to the Contractor for claims of increased overhead costs occurring within the originally specified construction Contract period plus any time extensions granted by Change Order. No compensation for extended performance will be granted unless the delay exceeds more than half of the float time available at the time of the delay."

9-1.16E(4) **STOP NOTICE WITHHOLDS.** The City may, at its option and at any time, retain out of amounts due the Contractor, sums sufficient to cover claims (including costs and attorneys' fees), filed pursuant to California Civil Code Section 9350 et seq.

9-1.16F **RETENTIONS.** The Department shall retain five percent (5%) of the Contract price as part security for the fulfillment of the Contract by the Contractor.

9-1.16G **PAYMENT OF WITHHELD FUNDS.** Section 9-1.16G, "Payment of Withheld Funds" is added as follows:

"Except as otherwise prohibited by law, the Contractor may elect to receive all payments due under the Contract pursuant to without any retention. If the Contractor so elects, a deposit with the City of securities with a value equivalent to the retention that would otherwise be withheld by the City shall be made. Said security shall be as provided in California Public Contract Code Section 22300, and shall be approved by the City both as to sufficiency and form. In the alternative, the Contractor may elect to deposit such securities in an escrow account and enter into a standard form Escrow

Agreement for Security Deposits in Lieu of Retention. Blank Agreements are available from the Public Works Director and the City Attorney's Office."

9-1.17 **PAYMENT AFTER CONTRACT ACCEPTANCE.** "Final Payment" shall be made in accordance with this section. The Contractor shall, after the completion of the Contract, submit a final estimate of the amount of work done thereunder and the value of such work. Upon approval of the estimate by the Director, the City of Roseville shall pay the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the Contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. The final payment shall not be due and payable until the expiration of thirty five (35) calendar days from the date of Acceptance of the work by the City Council, and thirty-five (35) calendar days after filing of the Notice of Completion with the County of Placer.

No certificate given or payments made under the Contract, except the final certificate or final payment, shall be conclusive evidence of the performance of the Contract, either wholly or in part, and no payment (including the final payment) or certificate shall be construed to be an Acceptance of any defective work or improper materials. Final payment shall not release the Contractor from one (1) year guarantee of the work as provided in Section 7-1.17, "Acceptance of Contract" and Section 2-1.12 "Guarantee and Warranty" of these Specifications.

SECTION 14. ENVIRONMENTAL STEWARDSHITP

14-8.02 **NOISE CONTROL.** The provisions of Section 14-8.02 of the Standard Specifications are amended by adding the following:

"The Contractor shall additionally conform to the provisions of Roseville Municipal Code Chapter 9.24 where such provisions are more restrictive than these specifications."

14-9.01 **AIR QUALITY GENERAL.** The provisions of Section 14-9.01, "Air Quality General" of the Standard Specifications are amended by adding the following:

"Material to be disposed of shall not be burned unless the Contractor has obtained a permit to burn combustible material resulting from clearing and grubbing operations from the Placer County Air Pollution Control District and City of Roseville Fire Marshall. A copy of the permits shall be filed with the Director

before beginning any burning. All such burning shall be conducted in strict conformance with the provision stipulated in said permits and at such times and in such manner as to prevent fire from spreading to areas adjoining the right-of-way."

14-11.02A **ASBESTOS REMOVAL AND DISPOSAL.** Section 14-11.02A, "Asbestos Removal and Disposal" is added as follows:

"The Contractor shall comply with all rules, regulations, statutes and ordinances regarding asbestos removal and disposal, including but not limited to, 42 U.S.C. Sections 7401, 7412 and 7601 and 40 C.F.R. Part 61, Subpart M.

If the Contractor discovers that a building to be demolished or renovated contains asbestos containing material, the Contractor shall immediately cease work and notify the City."

END OF STANDARD SPECIFICATIONS

ASSEMBLY BILL NO. 626

TEXT OF AB 626

Assembly Bill No. 626

CHAPTER 810

An act to add and repeal Section 9204 of the Public Contract Code, relating to public contracts.

[Approved by Governor September 29, 2016. Filed with Secretary of State September 29, 2016.]

LEGISLATIVE COUNSEL'S DIGEST

AB 626, Chiu. Public contracts: claim resolution.

Existing law prescribes various requirements regarding the formation, content, and enforcement of state and local public contracts. Existing law applicable to state public contracts generally requires that the resolution of claims related to those contracts be subject to arbitration. Existing law applicable to local agency contracts prescribes a process for the resolution of claims related to those contracts of $375,000 or less.

This bill would establish, for contracts entered into on or after January 1, 2017, a claim resolution process applicable to any claim by a contractor in connection with a public works project. The bill would define a claim as a separate demand by the contractor for one or more of the following: a time extension for relief from damages or penalties for delay, payment of money or damages arising from work done pursuant to the contract for a public work, or payment of an amount disputed by the public entity, as specified.

This bill would require a public entity, defined to exclude certain state entities, upon receipt of a claim sent by registered or certified mail, to review it and, within 45 days, provide a written statement identifying the disputed and undisputed portions of the claim. The bill would authorize the 45-day period to be extended by mutual agreement. The bill would require any payment due on an undisputed portion of the claim to be processed within 60 days, as specified. The bill would require that the claim be deemed rejected in its entirety if the public entity fails to issue the written statement.

This bill would authorize, if the claimant disputes the public entity's written response or if the public entity fails to respond to a claim within the time prescribed, the claimant to demand to meet and confer for settlement of the issues in dispute. The bill would require any disputed portion of the claim that remains in dispute after the meet and confer conference to be subject to nonbinding mediation, as specified. The bill would provide that unpaid claim amounts accrue interest at 7% per annum. The bill would prescribe a procedure by which a subcontractor or lower tier contractor may make a claim through the contractor.

This bill would require the text of these provisions, or a summary, to be set forth in the plans or specifications for any public work which may give rise to a claim. The bill would specify that a waiver of these rights is void and contrary to public policy, except as specified. The bill would also specify that it does not impose liability on a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

By increasing the duties of local agencies and officials, this bill would impose a state-mandated local program.

This bill would, on January 1, 2020, repeal the provision establishing the claim resolution process.

This bill would specify that these provisions constitute a matter of statewide concern.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that, if the Commission on State Mandates determines that the bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to these statutory provisions.

The people of the State of California do enact as follows:

SECTION 1. Section 9204 is added to the Public Contract Code, to read:

9204. (a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3) (A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) ”Public works project” means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) ”Subcontractor” means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d) (1) (A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2) (A) If the claimant disputes the public entity’s written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each

party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

SECTION 2.
The Legislature finds and declares that it is of statewide concern to require a charter city, charter county, or charter city and county to follow a prescribed claims resolution process to ensure there are uniform and equitable procurement practices.

SECTION 3.
If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

SPECIAL PROVISIONS

SPECIAL PROVISIONS
FOR THE
CITY OF ROSEVILLE

VERNON/ATLANTIC MULTIMODAL SAFETY IMPROVEMENT PROJECT

SCOPE

The work described in these Special Provisions must be done in conformance with the latest editions of the City of Roseville Design and Construction Standards, and 2015 State Standard Specifications and Plans, unless otherwise noted in these Special Provisions or Plans, except insofar as they may be modified by these Special Provisions

ORGANIZATION

Special provisions are under headings that correspond with the main-section headings of the *Standard Specifications*. A main-section heading is a heading shown in the table of contents of the *Standard Specifications*.

Each special provision begins with a revision clause that describes or introduces a revision to the *Standard Specifications* as revised by any revised standard specification.

Any paragraph added or deleted by a revision clause does not change the paragraph numbering of the *Standard Specifications* for any other reference to a paragraph of the *Standard Specifications*.

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DIVISION I GENERAL PROVISIONS

1 GENERAL

Add to section 1-1.07B:

Administrator: The Public Works Director, as created by law, also the City

Agency: Department of Public Works, City of Roseville

Bidder: Prime Contractor

Bid book: Bid Proposal

City: City of Roseville

City Council: City Council of the City of Roseville, a Charter City in the State of California

Contract Documents: Plans, Notice to Bidder and Special Provisions, and Bid Book and Contract

Department: Department of Public Works, City of Roseville

Department of Transportation: State of California Agency

Department of Industrial Relations: State of California Agency

District: The Public Works Department, City of Roseville

Division of Labor Standards Enforcement: State of California Agency

Laboratory: The laboratories authorized by the Engineer to test materials and work involved in the contract

Office Engineer: City of Roseville, Department of Public Works

Transportation Building: Department of Public Works, City of Roseville

Replace the following definitions in section 1-1.07B:

Director: Director of Public Works, City of Roseville

Engineer: The Director of Public Works/City Engineer, and agents or assistants duly authorized by the Director of the Public Works/City Engineer to act on their behalf

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5 CONTROL OF WORK

Add to section 5-1.01:

For the award of the "Project", the City will provide inspection and Resident Engineer (RE) on an eight-hour (8) day and a forty-hour (40) week (Monday through Friday) basis only. You must reimburse the City at a rate of $175/hr for all inspection and $200/hr for RE time in excess of those hours listed above, including designated holidays and weekends. Requests for authorization to perform work outside the hours of 7:00 a.m. to 4:00 p.m., Monday through Friday, must be made in writing at least 48 hours in advance.

Designated holidays are observed: New Year's Day, Martin Luther King Day, Presidents Day, Memorial Day, 4th of July, Labor Day, Veterans Day, Thanksgiving Day, the day after Thanksgiving and Christmas Day. When a designated holiday falls on a Saturday or Sunday, the preceding Friday or following Monday (respectively) must be a designated holiday.

Provide a competent person during normal working hours to assist the Engineer, when required, in checking lines and grades of the Contractor's layout and measuring quantities for payment purposes. Cooperate with the Engineer so that checking, and measuring may be accomplished with the least interference to your operations. No additional compensation will be made to you for fulfilling this requirement.

Replace section 5-1.04 with:

5-1.04 Order of Work

The first Order of Work shall be to place the order for the luminares, poles, rectanglar flashing beacons, electrical equipment, and any other items with long lead times for procuring the materials upon the Engineer’s approval of submittals. The Engineer shall be furnished a statement from the vendors that the order for the materials has been received and accepted by the vendor. The Contractor shall determine the integrety of the existing electrical conduits feeding the RRFB locations an provide report to the Engineer.

The Contractor shall prepare a written schedule denoting locations and times of planned activities, and other impacts. The schedule for planned activities shall be submitted to the Engineer before or at the time of the pre-construction meeting. Contractor shall note that Work shall not start unless a schedule has been submitted and accepted by the Engineer. The schedule shall be prepared and submitted using either Microsoft Project or Primavera P6, or similar software acceptable to the City.

The Contractor must field verify (USA) all existing utilities and shall submit the report to the Engineer prior to beginning any Work at each site. After the construction, the Contractor shall remove all USA markings

within the curb and sidewalk area from the residential streets. Removal shall be to a standard of what was existing prior to markings or better.

The Work shall be performed in conformance with the phases of construction shown on the Contractor's Traffic Control Plan and Stage Construction Plan as approved by the Engineer. At the discretion of the Engineer non conflicting Work in subsequent phases may proceed concurrently with Work in preceding phases.

The Contractor shall place and maintain Best Management Practices (BMP) in compliance with the Water Pollution Control Plan, the BMP's shall remain in place until Work is completed.

General order of Work shall be as follows:

1. Materials submittal and ordering of all long lead time procurement items.
2. Prepare and submit WPCP, Stage Construction Plan, and Traffic Control Plan
3. Place and maintain erosion control Best Management Practices (BMP), the BMP's shall remain in place until paving is completed.
4. Notify Underground Service Alert (USA) at (800) 642-2444 at least seventy-two (72) hours in advance of beginning Work on the Project
5. Locate all underground utilities and protect-in-place
6. Place Traffic Control plan and Changeable Message Sign (CMS)
7. Place temporary striping for all stages of Work
8. Complete Work per Contractor's stage construction plans

After paving the roadway and before the roadway is opened for use by the public, the Contractor shall place temporary pavement delineation.

Permanent pavement delineation shall be installed no later than fourteen (14) Calendar Days after paving.

Add to the end of section 5-1.09A:

The Department encourages the project team to exhaust the use of partnering in dispute resolution before you submit any potential claims.

Replace section 5-1.13E with:

5-1.13E Prompt Payment

Section 5-1.13E applies to all contracts.

Pay your subcontractors within 7 days of receipt of each progress payment under Pub Cont Code §§ 10262 and 10262.5. Pay other entities, such as material suppliers, within 30 days of receipt of each progress payment.

Each month, after the 15th and prior to 20th, submit the following payment information through the Department's prompt payment monitoring system at https://caltrans.dbesystem.com:

1. Subcontractor's or entity's business name
2. Description of work performed
   2.1. Bid item numbers or change order numbers
   2.2. Written narrative of work performed
3. Value of work performed
4. Amount paid to subcontractor or entity
5. Withhold amount, if applicable
6. Explanation of withhold reasoning, if applicable

Your subcontractors and other entities may validate payments received using the prompt payment monitoring system.

If a subcontractor's or other entity's work is in dispute, provide a written withhold notification to the subcontractor or entity and the Engineer no later than 7 days after receipt of the corresponding progress payment that includes the following:

1. Value of the disputed work
2. Amount of the withhold being taken
3. Bid item numbers or change order numbers associated with the disputed work
4. Explanation of the deficiencies of the disputed work and how the corresponding value was calculated
5. Corrective actions to be taken for release of withheld amount

The Department may request additional documentation from you to evaluate whether you applied the withhold in good faith.

If the Department determines your withhold was not applied in good faith or that you failed to submit the required withhold notification, the Department may withhold the same amount from your future progress pay estimate. The Department may also apply a 2 percent penalty on the withhold amount for every month payment is not made.

Add to the end of section 5-1.20A:

During the progress of the work under this Contract, work under the following contracts may be in progress at or near the job site of this Contract:

Coincident or Adjacent Contracts

Contract no.	County–Route–Post Mile	Location	Type of work

Coordinate lane closures and traffic handling with the Engineer and with contractors of coincident or adjacent projects. Potential conflicts may not be limited to the contracts listed above.

Replace section 5-1.26 with:

5-1.26A Summary

Section 5-1.26 includes specifications for furnishing and setting construction stakes and marks.

Conform to Chapter 12, Construction Surveys, of the Caltrans publication entitled, "Surveys Manuel," except as amended below.

5-1.26B Action Submittals

Section 5-1.26 includes specifications for furnishing and setting construction stakes and marks.

Before starting any survey work, submit for Engineer's approval the proposed procedures, methods, equipment, and typical stake markings to be used.

Upon completion of the construction staking and prior to acceptance of the contract, submit all computations, survey notes, and other data used to accomplish the work.

5-1.26C Materials

Stakes must be wooden hubs with sufficient length to assure solid embedment in the grounds. Use nails only when setting points on existing pavement.

5-1.26D Construction

You are responsible to provide all surveys at your cost to control the lines, elevations, and dimensions of the work in conformance with the plans. Any deviations from the lines, elevation, and dimensions shown on the plans must receive prior approval from the Engineer.

You are responsible for the accuracy of your own layout work and you are liable for the preservation of all established lines, grades, and layout points.

Furnish and set construction stakes and marks required for the completion of the work. Set stakes with the accuracy adequate to assure that the completed work conforms to the lines, grades, and sections shown on the plans. Remove construction stakes when no longer needed.

Set hubs using total stationing. Horizontal tolerances must be within the tolerances specified in the Caltrans Survey Manual.

Set grades stakes at even 50-foot stations and at vertical and horizontal transition points.

Only use a level to establish the elevation of all hubs and points used for setting grades. Submit the required cut-sheets to the Engineer prior to starting any work for approval.

Coordinate with the City for Vertical Control Benchmark. If you destroy any of the survey control points, replace the control points at your cost. Notify the Engineer before replacing the control points. The Engineer will verify you work.

Make all computations necessary to establish the exact position of the work from control points. Maintain neat, legible, and accurate records of all computations, survey notes, and other records necessary to accomplish the work. Submit such records prior to beginning the work that requires their use.

All delay and costs due to the correcting of survey points found to be out of tolerance will be your responsibility.

Stakes damaged or destroyed by the public or your operations will be replaced at your expense. Submit all survey records to the Engineer for the project records.

Add to section 5-1.32:

The contractor shall submit a haul route.

The haul route must be utilized by all construction traffic. Any observed deviation from this route shall result in damages in the amount of $1,000 per occurrence.

^^

6 CONTROL OF MATERIALS

Replace section 6-1.03B with:

6-1.03B Submittals

6-1.03B(1) General

Not Used

6-1.03B(2) Work Plan

For local material, such as rock, gravel, earth, structure backfill, pervious backfill, imported borrow, and culvert bedding, obtained from a (1) noncommercial source, or (2) source not regulated under California jurisdiction, submit a local material plan for each material at least 60 days before placing the material. The local material plan must include:

1. Certification signed by you and an engineer who is registered as a civil engineer in the State or a professional geologist licensed as a professional geologist by the State stating:

> I am aware local material from a noncommercial source or a source not regulated under CA jurisdiction must be sampled and analyzed for pH and lead and may require sampling and analysis under section 6-1.03B(3) for other constituents of concern based on the land use history. I am aware that local material sources must not contain ADL at concentrations greater than 80 mg/kg total lead or equal to or greater than 5 mg/L soluble lead as determined by the Waste Extraction Test (WET) Procedures, 22 CA Code of Regs § 66261.24(a)(2) App II. I am aware that a maximum quantity of material may be excavated at the site based on the minimum number of samples taken before excavating at the site under section 6-1.03B(3).

2. Land use history of the local material location and surrounding property
3. Sampling protocol
4. Number of samples per volume of local material
5. QA and QC requirements and procedures
6. Qualifications of sampling personnel
7. Stockpile history
8. Name and address of the analytical laboratory that will perform the chemical analyses
9. Analyses that will be performed for lead and pH
10. Other analyses that will be performed for possible hazardous constituents based on:
    - 10.1. Source property history
    - 10.2. Land use adjacent to source property
    - 10.3. Constituents of concern in the ground water basin where the job site is located

The plan must be sealed and signed by an engineer who is registered as a civil engineer in the State or a professional geologist licensed as a professional geologist by the State.

If the plan requires revisions, the Engineer provides comments. Submit a revised plan within 7 days of receiving comments. Allow 7 days for the review.

6-1.03B(3) Analytical Test Results

At least 15 days before placing local material, submit analytical test results for each local material obtained from a noncommercial source or a source not regulated under CA jurisdiction. The analytical test results must include:

1. Certification signed by an engineer who is registered as a civil engineer in the State or a professional geologist licensed as a professional geologist by the State stating:

> The analytical testing described in the local material plan has been performed. I performed a statistical analysis of the test results using the US EPA's ProUCL software with the applicable 95 percent upper confidence limit. I certify that the material from the local material source is suitable for unrestricted use at the job site, it has a pH above 5.0, does not contain soluble lead in concentrations equal to or greater than 5mg/l as determined by the Waste Extraction Test (WET) Procedures, 22 CA Code of Regs § 66261.24(a)(2) App II, does not contain lead in concentrations above 80 mg/kg total lead, is free from all other contaminants identified in the local material plan, and will comply with the job site's basin plan and water quality objectives of the RWQCB.

2. Chain of custody of samples
3. Analytical results no older than 1 year
4. Statistical analysis of the data using US EPA’s ProUCL software with a 95 percent upper confidence limit
5. Comparison of sample results to hazardous waste concentration thresholds and the RWQCB's basin plan requirements and water quality objectives for the job site location

6-1.03B(4) Sample and Analysis

Sample and analyze local material from a (1) noncommercial source or (2) a source not regulated under CA jurisdiction:

1. Before bringing the local material to the job site

2. As described in the local material plan
3. Under US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)

The sample collection must be designed to generate a data set representative of the entire volume of proposed local material.

Before excavating at the (1) noncommercial material source or (2) a source not regulated under CA jurisdiction, collect the minimum number of samples and perform the minimum number of analytical tests for the corresponding maximum volume of local material as shown in the following table:

Minimum Number of Samples and Analytical Tests for Local Material

Maximum volume of imported borrow (cu yd)	Minimum number of samples and analytical tests
< 5,000	8
5,000–10,000	12 for the first 5,000 cu yd plus 1 for each additional 1,000 cu yd or portion thereof
10,000–20,000	17 for the first 10,000 cu yd plus 1 for each additional 2,500 cu yd or portion thereof
20,000-40,000	21 for the first 20,000 cu yd plus 1 for each additional 5,000 cu yd or portion thereof
40,000–80,000	25 for the first 40,000 cu yd plus 1 for each additional 10,000 cu yd or portion thereof
> 80,000	29 for the first 80,000 cu yd plus 1 for each additional 20,000 cu yd or portion thereof

Do not collect composite samples or mix individual samples to form a composite sample.

Analyze the samples using the US EPA's ProUCL software with a 95 percent upper confidence limit. All chemical analysis must be performed by a laboratory certified by the SWRCB's Environmental Laboratory Accreditation Program (ELAP).

The analytical test results must demonstrate that the local material:

1. Is not a hazardous waste
2. Has a pH above 5.0
3. Has an average total lead concentration, based upon the 95 percent upper confidence limit, at or below 80 mg/kg
4. Is free of possible contaminants identified in the local material plan
5. Complies with the RWQCB's basin plan for the job site location
6 Complies with the RWQCB's water quality objectives for the job site location

^^

7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

Add to section 7-1.03:

The use of flaggers, barricades and construction signing shall comply with the current edition of the MUTCD and/or State of California Manual of Traffic Controls for "Construction and Maintenance Work Zones" or as required by the Engineer. All construction traffic control devices shall be in place and operational prior to beginning work or different phases throughout the contract.

Temporary lane closures will be allowed only during approved working hours. Contractor to provide at least one through lane in each direction for two-way traffic on all existing streets throughout the construction project unless otherwise identified in these Special Provisions or approved in writing by the Engineer. Refer to Chart No. 1 and exhibit below for City street closure and working hour restrictions.

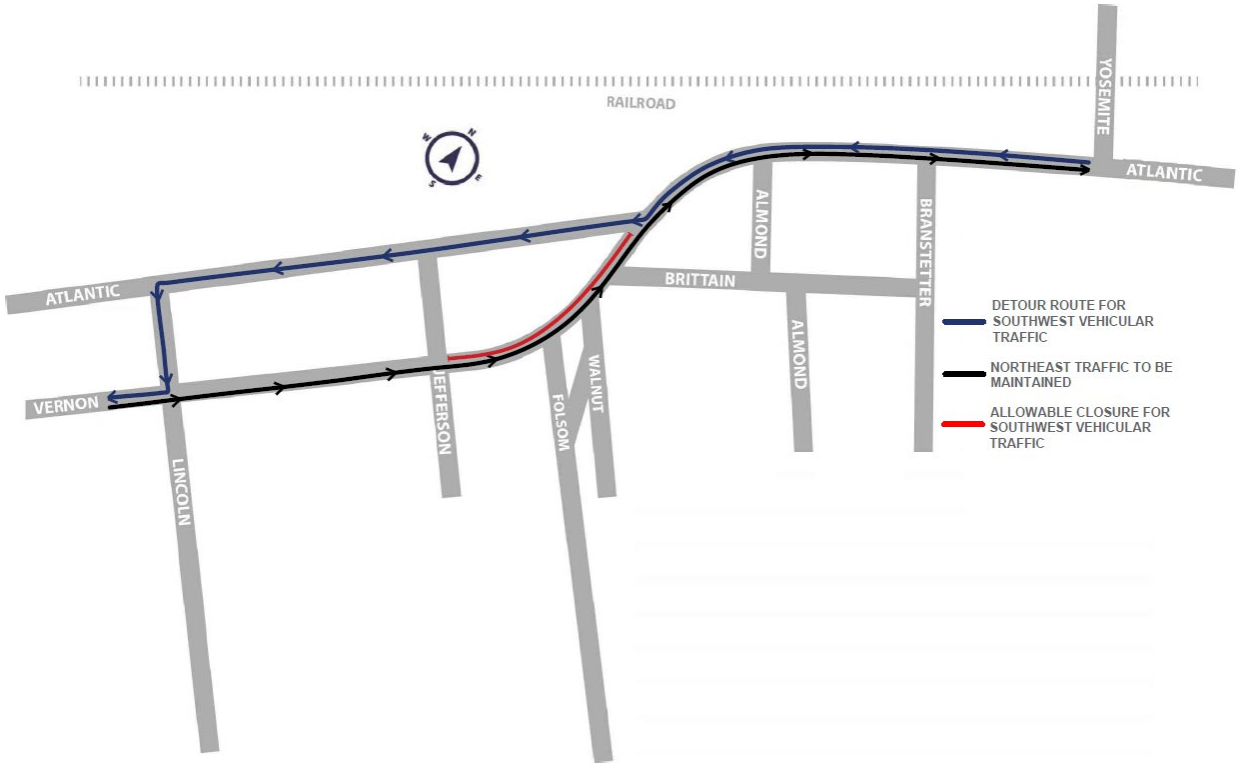
Only work that does not require motorized vehicles or power equipment shall be allowed with prior written approval by the Engineer on state, federal and designated holidays and outside of the noted working hours. If work outside the times specified below becomes necessary, request authorization from the Engineer to perform work outside of these hours at least 10 working days in advance.

Chart No. 1			
Location:	*Direction:*	*Working Hours:*	*Description:*
Vernon & Atlantic Street	[1]Northeast	7:00 AM – 3:00 PM	*Hours for entire project duration.*
	[2]Southwest	9:00 AM – 5:00 PM	*Hours for entire project duration.*
	All directions (For microsurfacing)	9:00 PM – 5:00 AM	*Hours are only for two **(2)** allowable night shifts for microsurfacing work. Contractor to coordinate schedule with downtown businesses and events.*
	[3]All directions (For digouts and loops)	9:00 PM – 5:00 AM	*Hours are only for **five (5)** allowable night shifts for digout and loop operations. Contractor to coordinate schedule with downtown businesses and events.*
Intersection of Vernon and Lincoln Street		9:00 PM – 5:00 AM	*Hours are for red flash operations at intersection, with approval from the Engineer.*

[1]Northeast Direction: One (1) thru lane must be maintained at all times on Vernon/Atlantic Street, from Lincoln Street to Yosemite Street. Intersecting streets must maintain access. Refer to exhibit below.

[2]Southwest Direction: One (1) thru lane to be maintained at all times on Atlantic Street, from Yosemite Street to just north of Brittain Street. With approval from the Engineer, Vernon Street may be closed from just north of Brittain Street to Jefferson Street in southwest direction. Southwest direction to be detoured through Atlantic Street. Refer to exhibit below.

[3]All Directions: With approval from the Engineer, Vernon Street may be closed from Lincoln Street to Almond Street for a one-way reversing traffic control lane closure for microsurfacing, digout, and loop operations. One (1) thru lane to be maintained for use by both directions of traffic with flaggers in place.



Contractor shall be responsible for informing the public of the traffic conditions existing within the construction area at all times by placement of appropriate warning and advisory signs. You shall provide and maintain all traffic control and safety items. You will provide flaggers as required and you will be responsible for the entire cost of flaggers. You will assume the sole and complete responsibility for job and site conditions during the course of construction, including safety of all persons and property. This requirement shall apply continuously 24 hours/day and shall not be limited to normal working hours.

The Contractor shall cooperate, keep current and notify the local police, City public information, public works and fire departments, ambulance services, post office, and trash collectors of his/her construction operation and traffic control changes at least three (3) working days before work is to begin or traffic changes are made. The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make his own arrangements in keeping the working area clear of parked vehicles.

Unless otherwise approved by the Engineer, or as described in Chart No. 1, a minimum of one through lane in each direction, not less than 11' wide, shall be maintained at all times on all roads within the construction limits. You shall submit a traffic control plan to the Engineer for acceptance. The traffic control plan shall include the anticipated limits and time required if City street closures are necessary as described in Chart No. 1. The City requires a minimum review period of seven (7) days for Traffic Control Plans. The Contractor cannot begin any work until the Traffic Control Plan has been accepted by the City and the Contractor has notified adjacent businesses of the work and anticipated road closure and impacts. Portable changeable message signs shall be used for prior notifications of road/parking area closures.

The minimum traveled way described above shall be open for use by public traffic on Saturdays, Sundays, designated holidays, after 4:00 p.m. on Fridays and the day preceding designated holidays, and when construction operations are not actively in progress. Designated holidays are listed in Section 5-1.01 of these Special Provisions.

Whenever vehicles or equipment are parked within a traffic lane, the shoulder area shall be closed with fluorescent traffic cones or portable delineators; placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 25-foot intervals to a point not less than 25 feet past the last vehicle or piece of equipment. A minimum of 9 cones or portable delineators shall be used for the

taper. A C23 (Road Work Ahead) or a C24 (Shoulder Work Ahead) sign shall be mounted on a telescoping flag tree with flags. The flag tree shall be placed in a location approved by the Engineer.

Minor deviations from the requirements of this section and these Special Provisions concerning hours of work which do not significantly change the cost of the work may be permitted upon your written request, if in the opinion of the Engineer public traffic will be better served and the work expedited. Such deviations shall not be adopted until the Engineer has indicated his written approval. All other modifications will be made by contract change order.

You shall notify local residents and businesses 72 hours prior to cutting off their access for periods in excess of 2 hours. Notice must be given in writing two days prior to cutting off access and verbally the evening prior to cutting of access. For businesses that only have one primary driveway for access, you will coordinate the work to always maintain access to their driveway or develop an alternative access point for them. You will need to get in writing an approval from the business to modify their driveway location and provide that to the Engineer 72 hours prior to modifying the driveway. If two driveways access a single business, one of those driveways shall always remain accessible.

Personal vehicles of your employees shall not be parked on the traveled way or shoulders, including any section closed to public traffic. No equipment will be allowed to be parked within any traffic lane or median after work hours.

You shall notify the Engineer of your intent to begin work at least 3 working days before work begins. You shall cooperate with local authorities relative to handling traffic through the work area and shall make your own arrangements to keep the working area clear of parked vehicles.

Three days prior to implementing any City approved road or lane closures, the Contractor shall notify the Engineer. The Contractor shall notify the Engineer at a minimum of seventy-two (72) hours in advance of any revisions to the road or lane closure schedules.

Portable Changeable Message Signs (PCMS) shall be placed at the locations identified below, as approved by the Engineer, and required by your Traffic Control Plans:

1. Vernon Street in the Eastbound direction
2. Atlantic Street in the Westbound direction
3. Folsom Road in the Northbound direction

Actual locations for the PCMS shall be placed as directed by the Engineer in the field.

PCMSs shall be placed at least fourteen (14) days prior to the start of construction and shall remain in place for the duration of the project. PCMSs shall not be removed without approval from the Engineer.

Payment for Portable Changeable Message Signs is to be included in the payment item for Traffic Control and no additional payments will be made to you for Portable Changeable Message Signs.

^^

8 PROSECUTION AND PROGRESS

Replace paragraphs of section 8-1.04B with:

The Contractor shall begin work no later than 15 calendar days after receiving the "Notice to Proceed" letter executed by the Director of Public Works or authorized staff representing the City of Roseville.

This work shall be diligently prosecuted to completion before the expiration of **100 Working Days** beginning on the fifteenth calendar day after receiving the "Notice to Proceed" letter. Completion of Punch List items is included in the 100 Working Days.

A preconstruction meeting shall be held between you and the Engineer for the purpose of discussing the scope of work, contract drawings, specifications, existing conditions, materials to be tested, equipment to

be used, and all essential matters pertaining to the prosecution and the satisfactory completion of the project as required. Your representative at this conference shall include all major superintendents for the work and may include major subcontractors and material suppliers.

You shall be responsible to coordinate utilities relocations within the project area. Coordination of utilities within the project limits, including relocations and maintenance of existing facilities shall be confirmed in writing by utility representatives and you prior to the preconstruction meeting or within five (5) working days after the preconstruction meeting.

Add to section 8-1.05:

Contract time of **100 Working Days** does not include the plant establishment period.

Add to section 8-1.10:

The Contractor shall pay to the City of Roseville the sum of $4.000.00 per day, each and every calendar day's delay in finishing the work (regardless of weather conditions) in excess of the number of working days to complete the entire project. Any payment made after the completion date shall not be construed as a waiver of liquidated damages.

^^

9 PAYMENT

Add to the beginning of section 9-1.00:

The Contractor shall furnish to the Engineer a cost break-down and schedule of values as specified in these Special Provisions and the State Standard Specifications.

Add to the end of section 9-1.02:

Payment for all work bid at a price per unit of measurement will be based upon actual quantities of work as measured upon completion unless otherwise noted. The City does not expressly or by implication agree that the actual amount of work or materials of any class will correspond to the estimated quantities given in the proposal.

The Contractor shall make no claim for anticipated profits, or loss of profit, for damages, or for any extra payment whatever because of any difference between the amount of work actually done or materials furnished and the estimated amount.

Replace the 1st paragraph of section 9-1.16A with:

Submit all requests for progress payments using the forms included in Appendix A:

1. Form CC 1: Progress Payment Request - This form is to be completed and signed by you and attached as a cover sheet to each request for payment. This form will be mandatory on all contract payment requests.
2. Form CC2: Progress Payment Request (Detail) - This form may be used by you to provide the detail required to verify the payment quantities. (City will accept your form if it provides the required information.)
3. Form CC3: Quantity Changes Verification Form - This form is required before any payment can be made based on actual quantities exceeding estimated quantities. At the conclusion of the project, the City will issue a "Balancing Change Order" incorporating all quantity increases and decreases in the contract item of work.

Add to section 9-1.17D(1):

The Contractor shall submit Form CC4: Final Release Form (see Appendix A). This form must accompany all requests for final payment.

^^

DIVISION II GENERAL CONSTRUCTION

10 GENERAL

Add to the end of section 10-1.02C(2):

You must protect all irrigation component or systems not identified on the plans to be removed or relocated. Irrigation components/systems to be relocated shall be done before performing any other construction activity in the area.

If you damage any irrigation component or system you will replace it to an equal or better condition at your cost.

Replace section 10-1.02C(3) with:

You must protect all existing landscaping, including trees, not identified on the plans to be removed.

If you damage any landscaping not identified to be removed, you will replace it at your cost.

Add section 10-1.02F:

10-1.02F Potholing for Utilities

It is recognized by you and the City that the locations of existing utilities as shown on the plans are approximate, their actual location is unknown. Recognition is given to the fact there may be additional existing utilities unknown to either party to the contract. Location of utilities, as shown on the drawings, represents the best information obtainable from utility maps and information furnished by the various agencies and companies involved. The City warrants neither the accuracy nor the extent of the actual utilities involved.

All existing utilities are to remain in service and operational during construction. All required relocation of existing facilities which interfere with the work shall be made by the owning agencies or as identified in these Special Provisions and plans.

Perform all operations necessary to excavate, expose, and verify the location of existing utility mains and laterals that may cross or be in conflict with the proposed facilities and at tie-in locations.

Notify Underground Service Alert (USA) at 1-800-642-2444 and all utility companies which have underground facilities within the limits of work 72 hours before beginning any excavation work.

Where a possible at-grade conflict with existing underground utilities appears on the plans, determine its location a minimum of 100 feet ahead of the work prior to trenching unless prior pothole information is shown. Grade and alignment changes must be made only if approved by the Engineer.

The horizontal and vertical locations shown for the existing underground utilities are approximate. It is your responsibility to locate all utility lines in the construction area prior to excavation. Any damage to existing utility, structure, or service, whether or not indicated on the plans must be repaired at your expense in a manner approved by the Engineer.

Submit a report for each pothole. The report must be typed and clearly drawn to show all necessary details, including:

1. Sketch showing the location, date, depth, conditions encountered, person in charge of potholing, and any other information requested by the Engineer
2. Utility and City Public Work person(s) notified

Do not proceed with excavation operations where underground utilities lie as shown on the plans or marked by USA until related potholing work has been completed to the satisfaction of the Engineer. Notify the Engineer of any potential conflicts with underground utilities.

Hand dig as necessary to protect existing utilities.

Notify the Engineer of conflicts in which there is less than two foot of separation between the existing and proposed utility.

Payment for potholing utilities is included in the payment for the various items of work involved.

Replace the paragraph in section 10-1.04 with:

10-1.04A General

Not Used

10-1.04B Preconstruction Conference

As requested by the Engineer, the Contractor and representatives of sub-contractors may be requested to attend a preconstruction meeting. Agenda and preparation and distribution of the meeting minutes must be per the requirements set forth by the Engineer.

10-1.04C Progress Meetings

Schedule appropriately throughout progress of work at weekly intervals, or at intervals determined by the Engineer.

Make arrangements for attendance of appropriate participants, including Subcontractors.

Progress Meeting Agenda must be determined by the Engineer and may include:

1. Review minutes of previous meetings
2. Review of Work in progress
3. Field observations, problems, and decisions
4. Identification of problems which impede progress
5. Review: Submittal schedule; status of submittals; off-site fabrication; delivery schedules; and progress schedule
6. Corrective measures to regain projected schedules, if any
7. Planned progress during succeeding work period; Contractor to provide a three-week “look-ahead” schedule at each meeting; coordination of projected progress; effect of proposed changes on progress schedule and coordination
8. Maintenance of quality and work standards
9. Other business relating to Work

10-1.04D Safety Meetings

Run weekly meetings and require attendance of construction crew and Subcontractors. Record minutes and distribute copies within two calendar days after meeting to participants, the Engineer, and those affected by decisions made.

^^

12 TEMPORARY TRAFFIC CONTROL

Add to the beginning of section 12-1.01A:

Nothing in these Special Provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7-1.03.

The Contractor shall be responsible for informing the public of the traffic conditions existing within the construction area at all times by placement of appropriate warning and advisory signs. The Contractor shall provide and maintain all traffic control and safety items. The Contractor assumes sole and complete responsibility for job and site conditions during the course of construction, including safety of all persons

and property. This requirement shall apply continuously 24 hours/day and shall not be limited to normal working hours.

Replace the section 12-1.04 with:

The payment for furnishing flaggers is included in the payment for Traffic Control System.

Add to the end of section 12-1.05:

At the pre-construction meeting, the Contractor shall submit a traffic control plan showing traffic control measures and/or, if approved, detours for vehicles and pedestrians affected by the construction work. A minimum of five (5) working days will be required to review and provide the Contractor with comments on the plan. The Contractor shall revise the plan per the City's comments until the plan is accepted by the Engineer. The Contractor will not be allowed to begin work until the Engineer has accepted the traffic control plan.

The Traffic Control Plan shall cover all stages of work, per site, and include (but not limited to) the following information and detail: (1) Street closures and detours including pedestrian access and detours; (2) construction, warning, detour and restriction signs, including "No Parking", “Loose Gravel”, “Construction Area Speed limit Signs,” and “Bump Ahead” signs; (3) temporary striping and pavement markers; (4) barricades; (5) flashing arrow signs; (6) lighted message boards; (7) portable delineators; (8) traffic barrels/channelizers; (9) lights, flares, flaggers, spacings, and taper lengths; (10) temporary railing (Type K) and crash cushions; (11) temporary pavement.

A copy of the accepted Traffic Control Plan must be kept at the job site at all times, including Sub-Contractors.

The Contractor will be responsible for notifying residents and businesses of the proposed construction. Notifications shall be distributed to residents and businesses within a 300 foot radius of the job limits, including residents and businesses located on streets adjacent to the construction.

Notifications to affected residents and businesses within the Project area shall consist of two (2) phases.

The first phase notifies the affected residents and businesses of the upcoming construction through the use of “door hanger” type formatted notifications. The notification shall state the street name, the working hours, and the anticipated begin and completion dates for each street. The Contractor shall distribute the door hanger notifications a minimum of 5 (five) working days in advance of the work. The City will provide a digital copy of “door hanger” for use by the Contractor.

Notifications shall be tucked neatly in doorjambs, handles, or partially under mats. Notifications shall not be glued, stapled, tacked, or otherwise attached to property. The Contractor shall take care to stay on designated walkways during delivery of notifications and be polite to citizens encountered.

The second phase consists of the Contractor posting “No Parking” signs on barricades 72 hours prior to the work. The “No Parking” signs shall also include the exact working day that the resurfacing and/or other work requiring "No Parking" signs will take place. A warning indicating that vehicles will be towed away at the owner’s expense shall also be included on the “No Parking” signs. In addition, the Contractor shall make available a 24-hour telephone number in case of emergencies and/or problems and shall post the telephone number on the “No Parking” signs. At the pre-construction meeting, Contractor shall submit to the Engineer a sample “No Parking” sign for acceptance. The Contractor shall be responsible for placing temporary “No Parking” signs in advance of any construction activity. Barricades shall be placed a maximum of 100 feet apart, on both sides of the affected street. (Not required for streets already marked “No Parking”).

The Contractor shall be responsible for placing “Construction Speed Limit” signs on both sides of the affected street one (1) hour prior to the Street being opened to traffic. The speed limit for the “Construction Speed Limit” signs cannot be reduced more than 10 mph below the posted speed. At the pre-construction meeting, Contractor shall submit to the Engineer a sample “Construction Speed Limit”

sign for acceptance. Signs shall be placed a maximum of 500 feet apart, on both sides of the affected street.

Emergency access to driveways, intersections, and residential streets shall be maintained at all times. If vehicles are parked in the working area, the Contractor shall not attempt to move the vehicle. The Contractor shall notify the Engineer immediately, and the Engineer shall make proper arrangements to remove the vehicle.

Lane and street closure shall not be allowed without proper advance warning devices and signing in conformance with the State Standard Specifications and these Special Provisions.

Full compensation for complying with the above requirements shall be considered as included in the contract lump sum price paid for Traffic Control System and no additional compensation will be allowed.

Replace section 12-3.11D with:

Payment for construction area signs is included in the payment for Traffic Control System.

Add to the end of section 12-3.32B:

The PCMSs must be controlled either locally or remotely by a dedicated controller or computer.

Authorized users must be able to both locally and remotely override motorist information messages.

The general system functions of the PCMSs must be capable of:

1. Preventing any unauthorized users or systems from gaining access to the PCMSs through an industry authentication and encryption standard level of security.
2. Providing current operational status locally and remotely. Operational status must include current messages, communications system, and power status.
3. Delivering notifications either by telephone, voice, or text messages to alert support staff of trouble conditions.
4. Generating trouble alerts for conditions such as (1) low roadside equipment power or voltage, (2) system communications failure.
5. Measuring periodically and automatically the power levels of all equipment. Alert support staff, locally and remotely via a telephone message, in time to provide supplemental power before the system ceases to operate.
6. Displaying preprogrammed messages based on the time of day and day of week.

Add to the beginning of the RSS for section 12-3.32C:

Place PCMSs as dictated in Section 7 of these Special Provisions and as authorized by the Engineer.

Replace Not Used in section 12-3.32D with:

Payment for portable changeable message signs is included in the payment for Traffic Control System.

Add to section 12-4.01A:

When work is performed within 200’ of an intersection, the Contractor shall request that the traffic signal be placed in red flash. This shall apply to all intersections with the exception of the intersection at Atlantic Street and Yosemite Street, which will not be permitted to be placed in red flash at any time. The Contractor shall submit a Red Flash Request form at minimum 72 hours in advance of the date of work to the Resident Engineer and the City Traffic Engineering Team. Requests placed after 4:30pm shall be considered as placed 8:00am the following business day. The Red Flash Request Form is included in the City of Roseville Construction Standards. If no work is being performed with an intersection, the Contractor shall inform a City representative so the signal will be restored to normal operations. The

intent is that the traffic signal is placed in Red Flash when lanes will be taken approaching and at the intersection and when work will occur within the limit lines.

At all intersections, the Contractor shall provide a minimum of 2 flaggers per intersection while the intersections are in red flash, or as determined by the Engineer.

The Contractor shall diligently progress with operations within signalized intersections and communicate with the Engineer for restoring signalized intersections to normal operations once the Contractor's operations are complete within the limits of signalized intersections.

Replace section 12-4.02C(3)(d) with:

12-4.02C(3)(d) City Street Closure Requirements

With approval from the Engineer, the Contractor may close portions of Vernon Street as described and shown on Chart No. 1 and exhibit below.

Replace section 12-4.02C(3)(m) with:

12-4.02C(3)(m) City Street Closure Hour Charts and City Street Lane Requirement Charts

Comply with the requirements for a City Street Closure and Working Hours shown in the following chart:

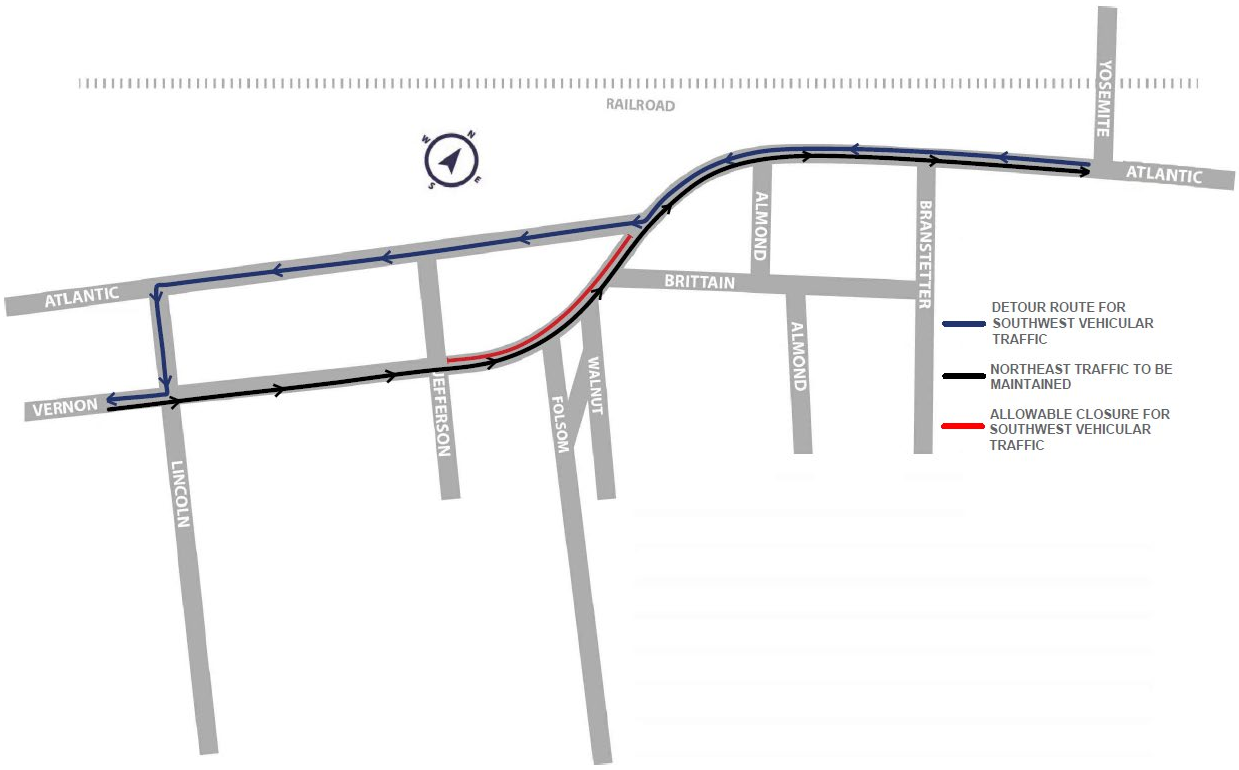
Chart No. 1

Location:	*Direction:*	*Working Hours:*	*Description:*
Vernon & Atlantic Street	[1]Northeast	7:00 AM – 3:00 PM	*Hours for entire project duration.*
	[2]Southwest	9:00 AM – 5:00 PM	*Hours for entire project duration.*
	All directions (For microsurfacing)	9:00 PM – 5:00 AM	*Hours are only for two **(2)** allowable night shifts for microsurfacing work. Contractor to coordinate schedule with downtown businesses and events.*
	[3]All directions (For digouts and loops)	9:00 PM – 5:00 AM	*Hours are only for **five (5)** allowable night shifts for digout and loop operations. Contractor to coordinate schedule with downtown businesses and events.*
Intersection of Vernon and Lincoln Street		9:00 PM – 5:00 AM	*Hours are for red flash operations at intersection, with approval from the Engineer.*

[1]Northeast Direction: One (1) thru lane must be maintained at all times on Vernon/Atlantic Street, from Lincoln Street to Yosemite Street. Intersecting streets must maintain access. Refer to exhibit below.

[2]Southwest Direction: One (1) thru lane to be maintained at all times on Atlantic Street, from Yosemite Street to just north of Brittain Street. With approval from the Engineer, Vernon Street may be closed from just north of Brittain Street to Jefferson Street in southwest direction. Southwest direction to be detoured through Atlantic Street. Refer to exhibit below.

[3]All Directions: With approval from the Engineer, Vernon Street may be closed from Lincoln Street to Almond Street for a one-way reversing traffic control lane closure for microsurfacing, digout, and loop operations. One (1) thru lane to be maintained for use by both directions of traffic with flaggers in place.



Add between the 1st and 2nd paragraphs of section 12-4.04C:

A pedestrian facility closure on the same side of the roadway is limited to no more than 1 block. When working on one side of the roadway, the pedestrian facility on opposite side of the roadway within the same block must be open for a sufficient pedestrian detour.

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13 WATER POLLUTION CONTROL

Add to section 13-1.04:

Submit a Water Pollution Control Lump Sum Cost Break-Down which itemizes the contract lump sum for water pollution control work. Use the Water Pollution Control Lump Sum Cost Break-Down provided in this section as the basis for the cost break-down. Use the Water Pollution Control Lump Sum Cost Break-Down to identify items, quantities and values for water pollution control work, including Temporary Water Pollution Control Practices. You are responsible for the accuracy of the quantities and values used in the cost break-down submitted. Partial payment for the item of water pollution control will not be made until the Water Pollution Control Cost Break-Down is approved by the Engineer.

Line items indicated in the Water Pollution Control Lump Sum Cost Break-Down in this section with a specified Estimated Quantity must be considered "Project-Specific Minimum Requirements." Incorporate Project-Specific Minimum Requirements with Contractor-designated quantities and values into the Water Pollution Control Lump Sum Cost Break-Down.

Line items indicated in the Water Pollution Control Lump Sum Cost Break-Down in this section without a specified Estimated Quantity must be considered by the Contractor for selection to meet the applicable "Minimum Requirements" as defined in the Manuals, or for other water pollution control work as identified in the "Construction Site BMPs Consideration Checklist" presented in the Preparation Manual. Refer to

the Downtown Roseville Specific Plan Mitigation Monitoring Program in Appendix D for the applicable measures for the project. In the Water Pollution Control Cost Break-Down, list only those water pollution control practices selected for the project, including quantities and values required to complete the work for those items.

The sum of the amounts for the items of work listed in the Water Pollution Control Cost Break-Down must be equal to the contract lump sum price bid for water pollution control. Overhead and profit must be included in the individual items listed in the cost break-down.

Adjustments in the items of work and quantities listed in the approved cost break-down must be made when required to address amendments to the WPCP, except when the adjusted items are paid for as extra work.

No adjustment in compensation will be made to the contract lump sum price paid for water pollution control due to differences between the quantities shown in the approved cost break-down and the quantities required to complete the work as shown on the approved WPCP. No adjustment in compensation will be made for ordered changes to correct WPCP work resulting from your own operations or from your negligence.

At the Engineer's discretion, the approved cost break-down may be used to determine partial payments during the progress of the work and as the basis of calculating the adjustment in compensation for the item or items of work due to changes ordered by the Engineer. When an ordered change increases or decreases the quantities of an approved cost break-down, the adjustment in compensation may be determined, at the Engineer's discretion, in the same manner specified for increases and decreases in the quantity of a contract item of work in section 9-1.06.

At your request and approved by the Engineer, changes to the water pollution control practices listed in the approved cost break-down, including addition of new water pollution control practices, will be allowed. Changes must be included in the approved amendment of the WPCP. If the requested changes result in a net cost increase to the lump sum price for water pollution control, an adjustment in compensation will be made without change to the water pollution control item. The net cost increase to the water pollution control item will be paid for as extra work as provided in section 4-1.05.

Payment for maintaining, removing and disposing construction site best management practices is included in the payment for water pollution control.

WATER POLLUTION CONTROL LUMP SUM COST BREAK-DOWN

ITEM	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	VALUE	AMOUNT
Soil Stabilization					
SS-1	Scheduling				
SS-2	Preservation of Property/Preservation of Existing Vegetation				
SS-3	Temporary Hydraulic Mulch (Bonded Stabilized Fiber Matrix)				
SS-6	Temporary Erosion Control (Straw Mulch with Stabilizing Emulsion)				
SS-7	Temporary Erosion Control Blanket (On Slope)				
SS-7	Temporary Erosion Control Blanket (In Swale or Ditch)				
SS-7	Temporary Cover (Geotextiles and Mats)				
SS-9	Earth Dikes/Drainage Swales & Lined Ditches				
SS-10	Outlet Protection/Velocity Dissipation Devices				
SS-12	Streambank Stabilization				
Sediment Control					
SC-1	Temporary Silt Fence				
SC-4	Temporary Check Dam				
SC-5	Fiber Rolls				
SC-7	Street Sweeping				
SC-10	Storm Drain Inlet Protection				
Tracking Control					
TC-1	Temporary Construction Entrance				
Wind Erosion Control					
WE-1	Wind Erosion Control				
TOTAL					

^^

15 EXISTING FACILITIES

Replace the first paragraph of section 15-1.03B with:

Where concrete is described to be removed, remove the concrete to the bottom of the proposed improvements.

Add to section 15-1.03B:

Section 15-1.03B includes specifications for removing concrete curb, curb and gutter, sidewalk, curb ramp, and pedestrian ramps. Additionally, follow Section 73-10 for the removal of curbs and sidewalks.

Delete the 7th and 8th paragraph of section 15-1.03B

Replace section 15-1.03D with:

15-1.03D ABANDON PIPE

Abandon pipes in place as shown on the plans. Pipes to be abandoned shall be plugged with concrete on either end and filled with controlled low-strength material or slurry cement that comply with City Construction Standard 101-8A.

^^

DIVISION III EARTHWORK AND LANDSCAPE

17 GENERAL

Add to the end of section 17-2.03D:

Surplus materials resulting from clearing and grubbing not to be reused in the project or salvaged to the City shall become the property of the Contractor unless otherwise specified, and he or she shall dispose of surplus materials off the City rights-of-way and easements. The disposal of such materials shall conform to all local ordinances and regulations of the City of Roseville. All costs, charges and fees associated with such disposal shall be borne by the Contractor. Surplus materials are not to be confused with salvaged materials, which shall remain the property of the City and shall be delivered to the City at no extra charge.

Replace the section 17-2.04 with:

All tree removal and root ball removal is considered clearing and grubbing and is included in the payment for "Clearing and Grubbing".

^^

19 EARTHWORK

Add to end of section 19-1.01A

The Contractor shall perform all excavation required for the complete project, to the lines and grades as shown on the Project Plans, as described in these Special Provisions, and as directed by the Engineer.

Replace section 19-1.03B with:

Should unsuitable material be encountered which, in the opinion of the Engineer, cannot be stabilized, the Contractor shall remove the unsuitable material to the dimensions and limits directed by the Engineer. The Contractor shall use extra care in excavating unsuitable materials so as not to aggravate the conditions. If, in the opinion of the Engineer, the Contractor's methods and equipment are increasing the amount of unsuitable materials to be excavated, the Engineer will require the Contractor to take necessary steps to correct the situation. Should the problem continue, the Contractor shall pay all costs beginning from the time correction steps were last implemented.

Excavate and dispose of unsuitable material encountered below the natural ground surface in embankment areas or below the grading plane in excavation areas as ordered.

When unsuitable material is removed and disposed of, the resulting space shall be filled with material suitable for the planned use. Place and compact suitable material under section 19-5 of the State Standard Specifications. Unsuitable materials shall be removed from the job site and not incorporated into embankments.

Typical treatment for unsuitable base will include excavation of 12 inches of material, placement of Tensar BX1200 Geogrid or equal, and placement of Class II Aggregate Base.

The estimated quantity for "Unsuitable Material" is for bidding purposes only and an estimated 50 cubic yards has been included. The quantity can be extended, reduced, or deleted at the discretion of the Engineer, with no change in the unit bid price. If unsuitable material is discovered, the Contractor will notify the Engineer for approval of excavation and backfill. If the Engineer does not approve that the material is unsuitable prior to excavation and backfill, the Contractor will be responsible for the cost of excavation and backfill.

Payment for Unsuitable Material shall include full compensation for furnishing all labor, materials, tools, equipment, excavation, backfill, geogrid, aggregate base, compaction, removal and incidentals, and for doing all work involved in removing and replacing Unsuitable Material, complete in place, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Add the end of section 19-2.03A:

Excavated material not reused shall be disposed of in accordance with the provisions of Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" and 16-1.04 "Removal and disposal of Materials", of the State Standard Specifications.

The Contractor shall do all excavation of whatever substance is encountered to the lines and grades shown on the plans. All material suitable for use as backfill shall be piled in an orderly manner a sufficient distance from the side of the excavation to avoid overloading and to prevent sliding into the excavation. The Contractor shall do such grading as is necessary to prevent surface water from entering the excavation.

Excavations adjacent to the existing roadway shall be closed at the end of each day's work. At the option of the Contractor, steel cover plates may be used at the end of each workday to cover excavations not backfilled adjacent to the roadway.

Excess excavated material suitable for use elsewhere in the construction may be reused therein. All surplus or unsuitable material shall become the property of the Contractor and shall be removed from the job site to a predetermined disposal site at the Contractor's expense.

The Contractor shall remove and dispose of all water entering excavations. Disposal of water shall be done in a manner to prevent damage or nuisance to adjacent properties.

Existing asphalt concrete pavement that is to remain intact shall be saw cut in a neat, straight, parallel line. All pavements damaged during the work shall be cut out in a rectangular pattern and removed and paved.

The maximum lift of backfill material shall depend upon the type of backfill material, relative compaction required, and proposed compaction method to be used, but in no case shall the loose lift thickness of any material exceed 8 inches.

Add section 19-2.03I:

19-2.03I Hazardous Material Disposition

During the course of trenching, grading, grinding, or other excavation, should potentially hazardous materials or other questionable materials be encountered, the Engineer shall be contacted immediately. The Contractor shall mark the site. The City will respond within 24 hours to investigate the site and render an opinion on the questionable materials regarding future action at the site. The intent is to minimize schedule delays to the construction.

The City will be responsible for delineating any required exclusions zones, removing and containerizing questionable material, as well as monitoring the work site for compliance with applicable health and safety compliance.

Removed material will be contained in drums, or drop boxes, depending on the volume, and temporarily staged within the fenced area behind the existing building located at the west side of the parking lot. The staging duration will only be long enough to obtain analytical laboratory results and confirm disposition instructions on the material. For each discovery, it is anticipated the material will be staged for less than 30 days.

^^

20 LANDSCAPE

Add to section 20-1.01A:

Landscape work must comply with provisions in the latest version of City of Roseville's Parks Construction Standards and Supplement.

Notify the Engineer not less than 72 hours prior to requiring initial access to the existing irrigation controllers. When the Engineer determines that access to the controllers is required at other times, arrangements will be made to provide this access.

Add to section 20-1.01C:

Submit a cost break-down for the contract lump sum items of planting and irrigation system. Cost break-down tables must be submitted to the Engineer for approval within 10 working days after the contract has been approved. Cost break-down tables will be approved, in writing, by the Engineer before any partial payment will be made for the applicable items of planting and irrigation system involved.

Cost break-downs must be completed and furnished in the format shown in the samples of the cost break-downs included in this section. Line item descriptions of work shown in the samples are the minimum to be submitted. You may designate additional line item descriptions of work. If you designate additional line item descriptions of work, the quantity, value and amount for those line items must be completed in the same manner as for the unit descriptions shown in the samples. The line items and quantities given in the samples are to show the manner of preparing the cost break-downs.

Determine the quantities required to complete the work shown on the plans. The quantities and their values must be included in the cost break-downs submitted to the Engineer for approval. You are responsible for the accuracy of the quantities and values used in the cost break-downs submitted for approval.

The sum of the amounts for the line items of work listed in each cost break-down table for planting and for irrigation system work must be equal to the contract lump sum price bid for Planting and Irrigation System, respectively. Overhead and profit must be included in each individual line item of work listed in a cost break-down table.

No adjustment in compensation will be made in the contract lump sum prices paid for planting and irrigation system due to differences between the quantities shown in the cost break-downs you submit and the quantities required to complete the work as shown on the plans and as specified in these special provisions.

Individual line item values in the approved cost break-down tables will be used to determine partial payments during the progress of the work and as the basis for calculating an adjustment in compensation for the contract lump sum items of planting and irrigation system due to changes in line items of work ordered by the Engineer. When the total of ordered changes to line items of work increases or decreases the lump sum price bid for Planting and Irrigation System by more than 25 percent, the adjustment in compensation for the applicable lump sum item will be determined in the same manner specified for increases and decreases in the total pay quantity of an item of work in Section 4-1.05.

PLANTING COST BREAK-DOWN (SAMPLE)

UNIT DESCRIPTION	UNIT	APPROXIMATE QUANTITY	VALUE	AMOUNT
Trees, 24” box	EA			
Shrubs and Groundcover, 1 Gal.	EA			
Root Barrier	LF			
Mulch	CY			
Soil Prep and Fine Grading	LS			
Import Top Soil	CY			
Plant Establishment	MO			

TOTAL _____

IRRIGATION SYSTEM COST BREAK-DOWN (SAMPLE)

UNIT DESCRIPTION	UNIT	APPROXIMATE QUANTITY	VALUE	AMOUNT
Irrigation Point of Connection	LS			
Mainline, Sch 40, 1 ½” Size	LF			
Irrigation Sleeve	LF			
Gate Valve	EA			
Remote Control Valve	EA			
Drip Control Valve	EA			
Tree Bubblers System	EA			
Drip Irrigation System	LS			
Control Wire	LF			
Connect to Turf Irrigation	LS			
Bore and Sleeve Irrigation Control Wire	LF			

TOTAL

Add to section 20-1.01D(1):

Do not apply pesticides before approval from the Engineer. **Delete edits to section 20-1.01D(2) in the RSS and replace the 1st paragraph of section 20-1.01D(2) with:**

The Engineer performs a progress inspection at:

1. During pressure testing of the pipelines on the supply side of control valves.
2. Before planting begins and after completion of the work specified for planting in Section 20-3.02C(2).
3. Before plant establishment work begins and after completion of the work specified for planting in Section 20-3.
4. At intervals of one month during the plant establishment period.

Add to section 20-1.02C:

Pesticide used must be limited to the following materials:

1. Aminopyralid
2. Diquat
3. Dithiopyr
4. Clopyralid MEA
5. Fluazifop-P-Butyl
6. Flumioxazin
7. Glyphosate
8. Imazapyr
9. Isoxaben (Preemergent)
10. Oryzalin (Preemergent)
11. Oxyfluorfen (Non-odor type)
12. Pendimethalin (Preemergent)
13. Prodiamine (Preemergent)
14. Sethoxydim
15. Melfluidide (Growth regulator)

Add to section 20-1.03B:

Granular preemergent shall be limited to the following material:

1. Oxadiazon

A minimum of 100 days must elapse between applications of preemergent.

Granular preemergent must be applied prior to the application of mulch. Mulch applications must be completed in these areas on the same working day.

Glyphosate must be used to kill stolon type weeds.

Add to section 20-2.01A(3)(a)5:

5. City Standards: Install irrigation per the most current Standards including but not limited to:
   5.1. City of Roseville Park Construction Standards
   5.2 City of Roseville Design and Construction Standards
   5.3 City of Roseville Electric Department Standard Specifications
   5.4 Local, state and federal electrical codes, manuals and guidelines, and
   5.5 Local, state and federal plumbing codes, manuals and guidelines

Add to section 20-2.01A(4)(d):

Tests must demonstrate to the Engineer, through one complete cycle of the irrigation controllers in the automatic mode, that the associated automatic components of the irrigation systems operate properly. If automatic components of the irrigation systems fail a functional test, these components must be repaired at your expense and the testing repeated until satisfactory operation is obtained.

Associated automatic components must include, but not be limited to, remote control valve actuator systems and remote control valves.

Upon completion of work on an irrigation system, including correction of deficiencies and satisfactory functional tests for the systems involved, the plants to be planted in the area watered by the irrigation system may be planted provided the planting areas have been prepared as specified in these special provisions.

Add section 20-2.01A(4)(e)

Irrigation System Audit

Contractor shall coordinate and provide assistance of a certified irrigation auditor to complete the irrigation audit per City of Roseville Specifications. The Contractor shall schedule the audits once the irrigation system is 100% complete, including functionality of the irrigation controller. Provide a two week (14 day) notice for scheduling the audit. Contractor shall anticipate providing staff to assist auditor during the process, allow up to two (2) days at site.

Add section 20-2.01A(4)(f)

Establishment

A. Full automated utilization of the irrigation system shall be included as part of the maintenance of the project. See Section 329000: Planting for additional information.

B. Program and utilize the establishment schedule as submitted with the turn-in items.

C. Contractor to run the system in “quantity” mode or “time plus flow” for a minimum of one (1) week.

D. Check the irrigation system weekly to ensure proper operations. Make all necessary adjustments, including watering schedule to ensure proper and healthy plant growth. At no time shall pools of water be present within any part of the project. Conversely, at no point shall dry or under-watered spots be visible upon inspection. Improper irrigation management resulting in flooding or dry conditions to the detriment of plant material may constitute an extension of the establishment period, at no additional cost to the City.

Final Review

A. The Contractor shall demonstrate to the City, valve by valve, the entire irrigation system to be operable. All heads shall be adjusted/flushed and all drip zones shall be flushed prior to the on-site review. Any item requiring adjustments shall be completed immediately and to the satisfaction of the City.

B. Provide necessary training to City staff in the proper operations and maintenance of the booster pump.

C. The date of final acceptance by the City Council or the recordation of the property transfer shall signify the start date of the warranty period. Final acceptance shall include the project in total and will not segregate any specific item or trade included in the construction of the project.

Add Section 20-2.01A(4)(g):

Record Drawing

A. Contractor shall regularly update a print of the system and any changes made to the system throughout the project. Features below ground shall be indicated with at least two measurements from surface features such as walks, building, or sprinkler heads. All changes shall be recorded on this plan before trenches are backfilled. The record drawing shall be completed and submitted to the City before final payment shall be made for work installed.

B. The contractor shall furnish two complete color coded irrigation charts. Charts shall identify individual RCV sections with a different color for each RCV. Charts are to be presented on fully laminated 11”X17” As-Built plans.

Replace the section 20-2.01B(7) with:

Valve boxes shall be per City Standards.

Valve boxes must be precast concrete within paved areas and reinforced plastic in all other areas.

Covers for concrete valve boxes shall be concrete.

Covers for plastic valve boxes must be glass fiber reinforced plastic.

Valve boxes shall be labeled per City Standards.

Add to section 20-2.04A(1):

Low voltage, as used in in this section mean 36 V or less.

Allowance in bid for new irrigation control wires, 2- wire communication wire, and trenching shall be as indicated on the plans.

Add to section 20-2.04B:

Low voltage control and neutral conductors in pull boxes and valve boxes, at irrigation controller terminals, and at splices must be marked with adhesive cloth wrap-around markers.

Low voltage control and neutral conductors in pull boxes and valve boxes, at irrigation controller terminals, and at splices must be marked as follows:

1. Conductor terminations and splices must be marked with adhesive backed paper markers or adhesive cloth wrap-around markers, with clear, heat-shrinkable sleeves sealed over the markers.
2. Non-spliced conductors in pull boxes and valve boxes shall be marked with clip-on, "C" shaped, white extruded polyvinyl chloride sleeves. Marker sleeves shall have black, indented legends of uniform depth with transparent overlays over the legends and "chevron" cuts for alignment of 2 or more sleeves

Markers for the control conductors must be identified with the appropriate number or letter designations of irrigation controllers and station numbers. Markers for neutral conductors must be identified with the appropriate number or letter designations of the irrigation controllers.

New control and neutral conductors that are to replace existing control and neutral conductors must be the same size and color as the existing control and neutral conductors being connected to.

The color of low voltage neutral and control conductor insulation, except for the striped portions, must be homogeneous throughout the entire thickness of the insulation.

Insulation for conductors may be UL listed polyethylene conforming to UL44 test standards with a minimum insulation thickness of 41 mils for wire sizes 10AWG and smaller.

Add to section 20-2.08C(1)

Sleeves must extend 6 inches beyond paving. The ends of the sleeve must be capped until use.

Replace the section 20-2.10B(2) with:

Ball valves must be per City Standards.

Ball valves must be of the same size as the pipeline which the valves serve, unless otherwise noted on the plans.

Add to section 20-2.10C(2):

Section 20-2.10C(2) includes specifications for constructing electric remote control valves.

Electric remote control valves must be outfitted with adjustable pressure regulators as shown. Adjust the pressure regulators to provide proper operation of the irrigation system downstream of the electric remote control valves.

Fittings for irrigation sleeve must be per City of Roseville Parks Construction Standards.

Add to section 20-3.01A(3)(c):

Submit certificate stating quantity, type, and composition, weight and origin for all amendments and chemicals must be delivered to the City's Representative before the material is used on the site.

Add to section 20-3.01A(4):

Request at least two working days in advance the following reviews prior to progressing with the work:

1. Completion of rough grading
2. Verification of amendment incorporation depths
3. Finish grade

Provide one-quart sample of proposed amendment to an approved agriculture-based lab. Do not deliver materials to the site until the City's Representative approves the samples. Contractor is responsible for the testing costs.

Add to section 20-3.01B(3):

Organic Amendment must be nitrogen-treated fir bark conforming to:

1. Physical Properties: 95% - 100% passing, sieve size 6.35 mm (1/4 inch), 80%-100% passing, sieve size 2.38mm (No. 8, 8 mesh), and 0%-30% passing, sieve size 500 micron (no. 35, 32 mesh).
2. Chemical Properties: Nitrogen Content (dry weight basis), 0.4%-0.6% iron content, minimum 0.08% dilute acid soluble Fe on dry weight basis, soluble salts, maximum 3.5 millimhos/centime @ 25 degree C. as determined by saturation extract method; ash – 6.0%.

Add to section 20-3.01B(4)(a):

Fertilizer must be determined from soils analysis results. For purposes of bidding only, assume the use of 6-20-20 commercial fertilizer, 20-10-5 planting tablets by Agriform International Chemicals, Inc., and iron sulfate.

Add to section 20-3.01C(1):

Organic amendment and fertilizer incorporation: Materials determined from the soils test must be uniformly distributed throughout all irrigated planting areas and incorporated to a homogeneously blended soil depth of six inches. Assume per 1000 square feet:

6 cubic yards nitrogen stabilized organic amendment
30 pounds commercial fertilizer (6-20-20)
10 pounds iron sulfate

Apply iron sulfate cautiously, and avoid contact with concrete, since permanent staining may result. Any such stained concrete must be replaced at your expense.

Plant pits must have their sides and bottoms loosened or otherwise broken to prevent glazed or compacted surfaces, and must be as shown on the planting detail.

Only un-amended soil must be used beneath the root ball; cultivate bottom of plant pit to improve porosity. Backfill around sides of rootball must be the amended soil taken from adjacent prepared areas. Spread material excavated from plant pits onto adjacent areas as replacement. If additional back fill be necessary, a mixture of one-third organic amendment/fertilizer mix and two-thirds topsoil may be used.

All container plants shall receive plant tablets as follows:

One-gallon plants	Two 21-gram tablets
Five-gallon plants	Five 21-gram tablets
Fifteen-gallon plants	Twelve 21-gram tablets
24 inch box trees	Eighteen 21-gram tablets

Space the tablets evenly around the root ball halfway up backfill touching side of root ball. City's Representative may require excavation of up to 5 percent of all plants selected at random for conformance review.

Finish grade all irrigated planting areas unless otherwise noted, and remove all rocks and clods over one cubic inch to a depth of one inch below finish grade. All areas must be smooth and uniformly graded. Repair all erosion damage during the construction period.

Unless otherwise noted, all soil finish grades must be one inch below finish grade of walks, pavements, and curbs.

Add to section 20-3.02A:

Request the following reviews prior to progressing with the work:

1. Plant material approval
2. Plant layout
3. Finish grade
4. Substantial completion
5. Final completion

Replace *Not Used* in section 20-3.02B with:

Plant botanical names must conform to "Standardized Plant Names", second edition, and secondly, "A Checklist of Woody Ornamental Plants of California", Manual 32, University of California. All plants of each clone, species, and cultivar must be delivered to the site labeled with their full botanical names. Every plant species must be labeled with no less than one label for every ten plants of a species.

Minimum quality of all plant material must conform to prevailing published specifications of the California Association of Nurserymen and the American Association of Nurserymen's American Standard for Nursery Stock unless otherwise indicated. Additional specifications must be indicated on the drawings.

The quantities shown on the plant list and in labels are for the City's Representative's use and are not to be construed as the complete and accurate limits of the contract. Furnish and install all plants shown schematically on the drawings. Any unlabeled plants must be considered as the smaller size shown for that type on the drawings.

All container-grown stock must be grown in its container for at least six months prior to its planting. Inspect all root systems on plant materials. Inspection must include, but not be limited to, checking for rootbound stock, encircling roots at the perimeter of the container, girdling roots at the top surface of the rootball, and other defective root conditions. Such inspections must include the complete removal of soil from one percent of plant material containers, or at least one plant from each nursery and each plant type. Cut defective or potentially defective girdling, rootbound, and encircling roots and spread the root system into the surrounding backfill. Any plant material, within one year following the final acceptance of the project, determined by the City's Representative to be defective, restricted, declining or otherwise deficient due to abnormal root growth, must be replaced to the equal condition of adjacent plants at the time of replacement. Reject plants with excessively defective root systems.

All trees must have straight trunks of uniform taper, larger at the bottom. Trunks must be free of damaged bark, with all minor abrasions and cuts showing healing tissue. Sucker basal growth and sucker lateral growth must be removed and treated to eliminate re-sprouting. Normal lower side branching must remain. Reject trees unable to stand upright without support.

Foliage roots and stems of all plants must be of vigorous health and normal habit of growth for its species. All plants must be free of all diseases, insect stages, burns, or disfiguring characteristics.

All plant material, within two years following the final acceptance of the project, determined by the City's Representative to be untrue to the species, clone, and/or variety specified, must be replaced, to the equal condition of adjacent plants at the time of replacement.

Before planting operations commence all or a representative sampling of plant material will be reviewed at the site by the City's Representative. Remove defective plants installed without such review from the site upon request by the City's Representative and substitute acceptable plant in its place.

Add to section 20-3.02C(1):

Only those plants to be planted in any single day must be laid out. Locations of all plants must be reviewed prior to planting. Plants installed without this review will be transplanted as directed by the City's Representative.

Maintain all plant material in a healthy growing condition prior to and during planting operations. You are responsible for vandalism, theft and damage to plant material until the commencement of the maintenance period.

Do not perform pruning without the specific approval of the City's Representative. Plants pruned without approval must be replaced, if required.

Construct basins as necessary to water plants. Remove basins from all plants under a permanent irrigation system prior to final inspection and finish grade the planting area. Basins for plants to be hand-watered must remain in place. Basin bottoms must drain to berm away from plant stem.

All trees must be staked as drawn with stakes driven securely into existing soil aligned with the trunk and perpendicular to the direction of the prevailing winds. A minimum of two figure-eight wire and rubber tree ties required per stake.

Remove all trash, excess soil and other debris after completion of all operations. All walks and pavement must be swept and washed clean, leaving the entire area in a neat, orderly condition.

Replace paragraphs 1 and 2 of section 20-4.01B:

Section 20-4 includes specifications for performing plant establishment work. The plant establishment period must not be less than 90 working days commencing from the date of substantial completion.

Substantial completion is deemed as the time all major plantings, including groundcover, are installed, and when all other work is satisfactorily completed (with the exception of minor items to be completed as noted upon a checklist compiled by the City's Representative). The maintenance period will not commence until work is deemed substantially complete by the City's Representative.

Add to section 20-4.02A:

Establishment Period

A. Active maintenance is required throughout the entire establishment period:
   1. Immediately replace all dead plants.
   2. As necessary, raise all trees and shrubs which have sunk within the plant pit beyond the levels indicated in the Standard details.
   3. Keep all areas free of weeds, pests and disease.
   4. For trees located in turf areas, maintain a circle free of turf at a distance described in the Standard details
B. Prior to the start of the final thirty (30) days of establishment:
   1. All plant replacements shall be completed.
   2. All plantings and turf shall be thriving and in a healthy condition.
   3. The lack of active maintenance prior to the final thirty (30) days may constitute a delay in the start of the final thirty (30) days of the establishment period.

Final Review

A. The Inspector shall review the site for completion of items noted, but not limited to, "B" below. All corrective action is required to enter into the final thirty (30) days of establishment.
B. The site shall be prepared for review, by ensuring that:
   1. All spray heads have been properly adjusted,
   2. Dead plants have been replaced,
   3. Planting areas have been weeded,
   4. Walkways and paved areas have been swept and washed
C. Failure to complete any one or all of the above items may constitute non- performance of the final review and will require re-scheduling. In this case, the cost of the extended establishment period shall be at no additional cost to the City.

Add to section 20-10.02A(1):

Maintain existing irrigation facilities throughout the life of the contract. Before the start of maintaining existing irrigation facilities work, the facilities must be checked for proper operation, and repaired in conformance. Document the condition of existing irrigation facilities. Repair work ordered by the Engineer will be paid for as extra work per section 4-1.05.

Add to the end of 5th paragraph of section 20-10.02C(3):

During winter season, irrigation systems must be operated automatically a minimum of 2 minutes every 2 weeks.

Add to section 20-10.03A(1):

Maintain existing planted areas throughout the life of the contract.

Water existing plants per section 20-4.03G.

^^

DIVISION V SURFACINGS AND PAVEMENTS

^^

37 SEAL COATS

Add to section 37-3.01B(2):

Aggregate for micro-surfacing must be Type II.

Replace section 37-3.03 with:

37-3.03 MICRO-SURFACINGS

37-3.03A General

37-3.03A(1) Summary

Section 37-3.03 includes specifications for applying micro-surfacings.

Applying a micro-surfacing shall consist of mixing a polymer modified, cationic micro-surfacing emulsion (MSE), aggregate, mineral filler, set-control additives, and water and spreading the mixture on a pavement surface where shown on the plans, in conformance with the provisions in these Special Provisions and State Revised Standard Specifications, and as directed by the Engineer.

37-3.03B Material

37-3.03B(1) Micro-surfacing Emulsion (MSE)

Micro-surfacing emulsion (MSE) shall be homogenous and shall conform to the provisions of these Special Provisions. The polymer shall be milled or blended into the asphalt or blended into the emulsifier solution prior to the emulsification process.

The MSE shall conform to the following requirements when tested in conformance with the following test methods:

Polymer Modified, Cationic Micro-Surfacing Emulsion (MSE)

Specific Designation	Test Method	Requirement
Viscosity SSF @ 25°C	AASHTO T59	15 – 90 seconds
Sieve, max	AASHTO T59	0.30 percent
Settlement, 5 days, max	ASTM D6930 or AASHTO T59	5 percent
Storage Stability, 1 day, max	AASHTO T59	1 percent
Residue by Evaporation, min	California Test 331	64 percent
Specification Designation for Residue		
Specific Designation	Test Method	Requirement
Penetration @ 25°C, 100g, 5s, 0.1 mm	AASHTO T49	40 – 90
Softening Point, min	AASHTO T53	61°C
G*, @ 20°C, 10 rad/sec[a]	AASHTO T315	Report Only
Phase angle @ 50°C, 10 rad/sec, PA (max) – PA base[b]	AASHTO T315	Report Only
Stiffness, @ -12°C, MPa and M-value	AASHTO T315	Report Only
Torsional Recovery, %	California Test 332	>21%
Polymer Content, % (by weight)	California Test 402	>3.5%
25mm plates for the 50°C test. 8mm plates for the 20°C test.		

37-3.03B(2) Water and Additives

Water shall be of such quality that the asphalt will not separate from the MSE before the micro-surfacing is placed on the pavement. If necessary for workability, a set-control agent that will not adversely affect the micro-surfacing product may be used.

37-3.03B(3) Mineral Filler

Mineral filler shall be Portland cement or hydrated lime that is free of lumps. Portland cement shall be either Type I, Type II, or combination thereof. The type of mineral filler shall be determined by the Contractor based on laboratory mix designs. The mineral filler will be considered part of the aggregate gradation requirement.

37-3.03B(4) Aggregate

The aggregate used for micro-surfacing shall be Type II. The material shall be free from vegetation matter and other deleterious substances. Aggregate shall be free of lumps and oversize particles. The aggregate shall be 100% crushed with no rounded particles, volcanic in origin and black in color. The use of gray or light-colored aggregate shall not be allowed. The Contractor shall specify in the bid proposal the name and location of the black rock aggregate quarry and shall provide certification at the preconstruction conference that the rock was crushed a minimum of 90 days prior. The Contractor shall submit samples of the black rock aggregate to the Engineer for review and acceptance.

Aggregate, prior to the addition of the MSE, shall conform to the provisions of these Special Provisions. If aggregates are blended, each component aggregate shall conform to the Sand Equivalent and Durability Index requirements of these Special Provisions when tested in conformance with the respective California Tests.

The percentage composition by mass of the aggregate (including mineral filler) shall conform to the following grading requirements when tested in conformance with California Test 202:

Type II

Sieve Size	Percent Passing
3/8 inch (9.5 mm)	100
#4 (4.75 mm)	94 – 100
#8 (2.36 mm)	65 – 90
#16 (1.18 mm)	40 – 70
#30 (600 µm)	25 – 50
#200 (75 µm)	5 – 15

The aggregate (excluding mineral filler) shall conform to the following quality requirements:

Type II

Test	California Test	Requirement
Sand Equivalent (min)	217	70
Durability Index (min)	229	75
Percentage of Crushed Particles (min)[1]	205	100%
Los Angeles Rattler Loss at 500 Rev. (max)[2]	211	35%

[1] CT205, Section D, is amended to read: "Any particle having 2 or more freshly, mechanically fractured faces shall be considered a crushed particle."

[2] Los Angeles Rattler shall be performed on the parent aggregate before crushing.

If the results of the aggregate grading do not meet the specified gradation, the micro-surfacing represented by the test shall be removed within 5 working days of the Engineer's written notice. However, if requested in writing by the Contractor and approved by the Engineer, the micro-surfacing represented by the tests containing a percentage passing (PP) range value +/- 1 in any of the Sieve sizes, but not greater than +/-4, may remain in place. The Contractor shall pay to the City the following amount for the screenings represented by the test and left in place:

Sieve Sizes	Percentage Passing	Allowable Tolerances	Allowable Tolerances	Allowable Tolerances	Allowable Tolerances
3/8 inch (9.5 mm)	100	PP +/- 1	PP +/- 2	PP +/- 3	PP +/- 4
#4 (4.75 mm)	94 – 100	PP +/- 1	PP +/- 2	PP +/- 3	PP +/- 4
#8 (2.36 mm)	65 – 90	PP +/- 1	PP +/- 2	PP +/- 3	PP +/- 4
#16 (1.18 mm)	40 – 70	PP +/- 1	PP +/- 2	PP +/- 3	PP +/- 4
#30 (600 µm)	25 – 50	PP +/- 1	PP +/- 1	PP +/- 1	PP +/- 1
#200 (75 µm)	5 – 15	PP +/- 1	PP +/- 1	PP +/- 1	PP +/- 1
PAYMENT TO CITY		$5.00 per ton	$7.50 per ton	$10.00 per ton	$15.00 per ton

If the results of the Sand Equivalent test for aggregate do not meet the specified requirement, the micro-surfacing represented by the test shall be removed within 5 working days of the Engineer's written notice. However, if requested in writing by the Contractor and approved by the Engineer, the Micro-surfacing represented by the tests containing a sand equivalent Value below 70, but not less than 65, may remain in place. The Contractor shall pay to the City the following amount for the screenings represented by the test and left in place:

Sand Equivalent	Payment to City
70 or over	NONE
68 – 69	$5.00 per ton
66 – 67	$7.50 per ton
65	$10.00 per ton

If the results of the Durability Index test for aggregate do not meet the specified requirement, the micro-surfacing represented by the test shall be removed within 5 working days of the Engineer's written notice. However, if requested in writing by the Contractor and approved by the Engineer, the micro-surfacing represented by the tests containing a durability index value below 75, but not less than 70, may remain in place. The Contractor shall pay to the City the following amount for the screenings represented by the test and left in place:

Durability Index	Payment to City
75 or over	NONE
73 – 74	$5.00 per ton
71 – 72	$7.50 per ton
70	$10.00 per ton

When the results of 2 or all 3 of the aggregate grading, the Sand Equivalent, and Durability Index tests do not conform to the specified requirements, both or all three payments to the City shall apply. The City shall deduct these amounts from any moneys due or to become due to the Contractor.

Any progress payment made after the completion date shall not be construed as a waiver of material deductions.

No single aggregate grading, durability index or Sand Equivalent test shall represent more than 300 tons or one day's production, whichever is smaller.

37-3.03B(4)(a) Aggregate for Rut filling

Micro-surfacing (Type III) shall be used for rut filling and shall conform to these Special Provisions.

The aggregate used for Type III shall be grey rock aggregate. The grey rock aggregate shall be 100% crushed with no rounded particles. The material shall be free from vegetation and other deleterious substances. The Contractor shall submit samples and test results of the grey rock aggregate to the Engineer for review and acceptance.

Aggregate, prior to the addition of the MSE, shall conform to the provisions of these Special Provisions. If aggregates are blended, each component aggregate shall conform to the Sand Equivalent and Durability Index requirements of these Special Provisions when tested in conformance with the respective California Tests.

The percentage composition by mass of the aggregate (including mineral filler) shall conform to the following grading requirements when tested in conformance with California Test 202:

Type III

Sieve Size	Percent Passing
3/8 inch (9.5 mm)	100
#4 (4.75 mm)	70 – 90
#8 (2.36 mm)	45 – 70
#16 (1.18 mm)	28 – 50
#30 (600 µm)	19 – 34
#200 (75 µm)	5 – 15

The aggregate (excluding mineral filler) shall conform to the following quality requirements:

Type III

Test	California Test	Requirement
Sand Equivalent (min)	217	70
Durability Index (min)	229	70
Percentage of Crushed Particles (min)[1]	205	100%
Los Angeles Rattler Loss at 500 Rev. (max)[2]	211	35%
[1] CT205, Section D, is amended to read: “Any particle having 2 or more freshly, mechanically fractured faces shall be considered a crushed particle.” [2] Los Angeles Rattler shall be performed on the parent aggregate before crushing.		

If the results of the aggregate grading do not meet the specified gradation, the micro-surfacing represented by the test shall be removed within 5 working days of the Engineer’s written notice. However,

if requested in writing by the Contractor and approved by the Engineer, the micro-surfacing represented by the tests containing a percentage passing (PP) range value +/- 1 in any of the Sieve sizes, but not greater than +/-4, may remain in place. The Contractor shall pay to the City the following amount for the screenings represented by the test and left in place:

Sieve Sizes	Percentage Passing	Allowable Tolerances	Allowable Tolerances	Allowable Tolerances	Allowable Tolerances
3/8 inch (9.5 mm)	100	PP +/- 1	PP +/- 2	PP +/- 3	PP +/- 4
#4 (4.75 mm)	70 – 90	PP +/- 1	PP +/- 2	PP +/- 3	PP +/- 4
#8 (2.36 mm)	45 – 70	PP +/- 1	PP +/- 2	PP +/- 3	PP +/- 4
#16 (1.18 mm)	28 – 50	PP +/- 1	PP +/- 2	PP +/- 3	PP +/- 4
#30 (600 µm)	19 – 34	PP +/- 1	PP +/- 1	PP +/- 1	PP +/- 1
#200 (75 µm)	5 – 15	PP +/- 1	PP +/- 1	PP +/- 1	PP +/- 1
PAYMENT TO CITY		$5.00 per ton	$7.50 per ton	$10.00 per ton	$15.00 per ton

If the results of the Sand Equivalent test for aggregate do not meet the specified requirement, the micro-surfacing represented by the test shall be removed within 5 working days of the Engineer's written notice. However, if requested in writing by the Contractor and approved by the Engineer, the micro-surfacing represented by the tests containing a sand equivalent Value below 70, but not less than 65, may remain in place. The Contractor shall pay to the City the following amount for the screenings represented by the test and left in place:

Sand Equivalent	Payment to City
70 or over	NONE
68 – 69	$5.00 per ton
66 – 67	$7.50 per ton
65	$10.00 per ton

If the results of the Durability Index test for aggregate do not meet the specified requirement, the micro-surfacing represented by the test shall be removed within 5 working days of the Engineer's written notice. However, if requested in writing by the Contractor and approved by the Engineer, the micro-surfacing represented by the tests containing a durability index value below 70, but not less than 65, may remain in place. The Contractor shall pay to the City the following amount for the screenings represented by the test and left in place:

Durability Index	Payment to City
75 or over	NONE
73 – 74	$5.00 per ton
71 – 72	$7.50 per ton
70	$10.00 per ton

When the results of 2 or all 3 of the aggregate grading, the Sand Equivalent, and Durability Index tests do not conform to the specified requirements, both or all three payments to the City shall apply. The City shall deduct these amounts from any moneys due or to become due to the Contractor.

Any progress payment made after the completion date shall not be construed as a waiver of material deductions.

No single aggregate grading, durability index, or Sand Equivalent test shall represent more than 300 tons or one day's production, whichever is smaller.

37-3.03B(5) Mix Design

At least 7 working days before the micro-surfacing placement commences, the Contractor shall submit for approval of the Engineer a laboratory report of tests and a proposed mix design covering the specific materials proposed for use on the project.

The percentages of each individual material proposed in the mix design shall be shown in the laboratory report. Individual materials shall be within the following limits:

Micro-surfacing Mix Design

Material	Proportion Limits
Residual Asphalt	7.5% to 10.5% by dry mass of aggregate
Mineral Filler	0% to 3% by dry mass of aggregate
Additive	As needed
Water	As needed

Adjustments may be required during construction based on field conditions.

The mix design and aggregate tests shall be performed by a laboratory capable of performing the applicable International Slurry Surfacing Association (ISSA) tests. The proposed micro-surfacing mixture shall conform to the specified requirements when tested in conformance with the following tests:

Test	ISSA Test Method	Requirements
Wet Cohesion	TB* 139	
@ 30 minute (Set) (min)		12 kg-cm
@ 60 minute (Traffic) (min)		20 kg-cm
Excess Asphalt	TB* 109	540 g/m2
Wet Stripping (min)	TB* 114	90%

TB* = Technical Bulletin

Test	ISSA Test Method	Requirements
Wet Track Abrasion 6-day soak loss (max) 1-hour soak	TB* 100	 810 g/m2 538 g/m2
Displacement Lateral (max) Specific Gravity after 1000 cycles of 56.8 kg (max)	TB* 147A	 5% 2.10
Classification Compatibility	TB* 144	(AAA, BAA) 11 Grade Points
Mix Time @ 25°C	TB* 113	Controllable to 120 seconds

TB* = Technical Bulletin

The laboratory that performed the tests and designed the mixture shall sign the laboratory report. The report shall show the results of the tests on individual materials and shall compare their values to those required by these Special Provisions. The report shall clearly show the proportions of aggregate, filler (minimum and maximum), water (minimum and maximum), set control additive, and MSE solids content (minimum and maximum) based on the dry mass of aggregate. The laboratory shall report the quantitative effects of moisture content on the unit mass of the aggregate (bulking effect) in conformance with the requirements of ASTM Designation C 29M. Previous laboratory reports covering the same materials may be accepted provided the material test reports were completed within the previous 12 months. The mix design shall further show the recommended changes in mineral filler, water, and additive proportions for high temperature weather conditions by reporting proportions of materials required for 60 seconds of mix time with materials heated to 100°F. This 100°F mixing report will not be required for projects requiring nighttime application.

The component materials used in the mix design shall be representative of the micro-surfacing materials proposed by the Contractor for use on the project.

Once the mix design is approved by the Engineer, no substitution of other material will be permitted unless the materials proposed for substitution are first tested and a laboratory report is submitted for the substituted design in conformance with the provisions of these Special Provisions. Substituted materials shall not be used until the mix design for those materials has been approved by the Engineer.

The completed mixture, after addition of water and set control agent, if used, shall be such that the micro-surfacing mixture has proper workability. At the expiration of the road closure hours, in conformance with the provisions in these Special Provisions, the micro-surfacing mixture shall be sufficiently cured to support unrestricted traffic.

37-3.03C Construction

37-3.03C(1) Surface Preparation

Before placing the micro-surfacing, the pavement surface shall be cleaned by sweeping, flushing or by other means necessary to remove loose particles of paving, dirt, vegetation, and other extraneous material. When required, the roadway surface may be fogged with water ahead of the spreader box. The application of the fog spray may be adjusted to suit temperatures, surface texture, humidity and dryness of pavement.

37-3.03C(2) Weather Conditions

The micro-surfacing mixture shall not be placed when the ambient temperature is below 55°F or during unsuitable weather. Micro-surfacing shall not be placed if rain is imminent or if there is the possibility that there will be freezing temperatures within 24 hours.

37-3.03C(3) Equipment

37-3.03C(3)(a) General

The equipment used by the Contractor for pavement cleaning and excess aggregate removal shall include a self-propelled rotary power broom, mobile pick-up broom or top dumping mobile pick-up broom.

37-3.03C(3)(b) Mixing and Spreading Equipment

The micro-surfacing shall be mixed in continuous pugmill mixers of adequate size and power for the type of micro-surfacing to be placed. All indicators shall be in conformance with the provisions of these Special Provisions and shall be in working order prior to commencing mixing and spreading operations.

Mixer-spreader trucks shall be equipped to proportion the MSE, water, aggregate, mineral filler, and set-control additives by volume. Rotating and reciprocating equipment on mixer-spreader trucks shall be covered with metal guards.

The mixer-spreader truck shall not be operated unless low-flow and no-flow devices and revolution counters are in good working condition and functioning and metal guards are in place. Indicators required by these Special Provisions shall be visible while walking alongside the mixer-spreader truck.

Aggregate feeders shall be connected directly to the drive on the emulsion pump. The drive shaft of the aggregate feeder shall be equipped with a revolution counter reading to the nearest one-tenth of a revolution.

In addition to the requirements of the fourth paragraph of section 5-1.33, “Equipment,” of the State Standard Specifications, the identifying number of mixer-spreader trucks shall be at least 3 inches in height, located on the front and rear of the vehicle.

The micro-surfacing mixture shall be spread by means of a spreader box conforming to sections 37-3.03C(3)(b)(i) and 37-3.03C(3)(b)(ii).

37-3.03C(3)(b)(i) Spreader Box

The mixture shall be agitated and spread uniformly in the surfacing box by means of motor driven twin-shafted paddles or spiral augers fixed in the spreader box. A front seal shall be provided to insure no loss of the mixture at the road contact point. The rear seal shall act as a final strike-off and shall be adjustable. The spreader box and rear strike-off shall be so designed and operated that a uniform consistency is achieved to produce a free flow of material to the rear strike-off. The spreader box shall have suitable means provided to side shift the box to compensate for variations in the pavement geometry, the box shall be adjustable. Spreader box skids shall be maintained in such manner as to prevent chatter (wash boarding) in the finished mat. The spreader box in use shall be clean and free of micro-surfacing and MSE at the start of each work shift.

The spreader box shall have a series of strike-off devices at the rear of the box. The leading strike-off device shall be fabricated of steel, stiff rubber or other suitable material. The number of strike-off devices shall be determined by the Contractor. The first strike-off device shall be designed to maintain close contact with the pavement during the spreading operations, shall obtain the thickness required, and shall be capable of being adjusted to the various pavement cross sections for application of a uniform micro-surfacing finished surface. The final strike-off device shall be fabricated of flexible material suitable for the intended use and shall be designed and operated to ensure a uniform texture is achieved in the

finished surface of the micro-surfacing. The final strike-off device shall be cleaned or changed daily if problems with longitudinal scouring occur.

Flexible fabric drags attached to the rear of the spreader box shall not be used.

37-3.03C(3)(b)(ii) Wheel Path Depression (Rut) Box

The wheel path depression (rut) box shall be designed to have adjustable strike-off devices to regulate the depth and shall have a width of between 5 feet and 6 feet. Hydraulic augers, or similar devices, shall be installed and shall be capable of moving the mixed material from the rear to the front of the filling chamber. These devices shall also be capable of guiding the larger aggregate into the center, deeper section of the wheel path depression, and forcing the finer material toward the outer edges of the spreader box.

The micro-surfacing mixture, to be spread in areas inaccessible to the controlled spreader box, may be spread by other methods upon approval of the Engineer.

Flexible fabric drags attached to the rear of the wheel path depression (rut) box shall not be used.

37-3.03C(3)(c) Mixer and Spreader Truck Calibration

Each mixer/spreader truck used on the project shall be calibrated in accordance with California Test 109. The trucks shall be calibrated for rock, emulsion, cement, additives, and any mineral filler used. Calibrations shall take place a maximum of 10 days prior to application of micro-surfacing. The Contractor shall notify the Engineer a minimum of 3 working days prior to calibration so that City representatives may make arrangements to observe.

For all material calibrated, 3 consecutive runs per gate setting shall be completed and these 3 test runs must not deviate from their combined mathematical average by more than 2.0%.

Calibrations will take place at most once a week or as required by the Engineer and no machine will be allowed to work on the project until the calibration has been completed and/or accepted 3 working days before the start of work. Weigh back tickets shall be submitted at the end of each work day that micro-surfacing is placed.

With approval from the Engineer, Contractor may provide verified calibrations from other work performed within the previous 3 months from start of work, utilizing the same mix design proposed in this project, in-lieu of the calibration requirements set forth in this section.

37-3.03C(4) Proportioning

Aggregate, mineral filler, MSE, water, and additives, including the set-control agent, if used, shall be proportioned by volume utilizing the mix design approved by the Engineer. If more than 1 kind of aggregate is used, the correct amount of each kind of aggregate to produce the required grading shall be proportioned separately, prior to adding the other materials of the mixture, in a manner that will result in a uniform and homogeneous blend.

The aggregate shall be proportioned using a belt feeder operated with an adjustable cutoff gate. The height of the gate opening shall be determinable. The MSE shall be proportioned by a positive displacement pump. Variable rate emulsion pumps, if used, shall be calibrated and sealed in the pump's calibrated condition in conformance with California Test 109 prior to usage.

The delivery rate of aggregate and MSE per revolution of the aggregate feeder shall be calibrated at the appropriate gate settings for each mixer-spreader truck used on the project in conformance with California Test 109 and in conformance with the provisions of these Special Provisions.

The aggregate belt feeder shall deliver aggregate to the pugmill with such volumetric consistency that the deviation for any individual aggregate delivery rate check-run shall not exceed 2.0 percent of the mathematical average of 3 runs of at least 3 tons each. The emulsion pump shall deliver MSE to the pugmill with such volumetric consistency that the deviation for any individual delivery rate check-run shall

be within 2.0 percent of the mathematical average of 3 runs of at least 300 gallons each. The water pump shall deliver water to the pugmill with such volumetric consistency that the deviation for any individual delivery rate check-run shall be within 2.0 percent of the mathematical average of 3 runs of at least 300 gallons each.

The MSE storage tank shall be located immediately before the emulsion pump and shall be equipped with a device which will automatically shut down the power to the emulsion pump and aggregate belt feeder when the MSE level is lowered to a point where the pump suction line is exposed.

A temperature-indicating device shall be installed in the emulsion storage tank at the pump suction level. The device shall indicate the temperature of the MSE and shall be accurate to within 10°F.

The belt delivering the aggregate to the pugmill shall be equipped with a device to monitor the depth of aggregate being delivered to the pugmill. The device for monitoring the depth of aggregate shall automatically shut down the power to the aggregate belt feeder whenever the depth of aggregate is less than the target depth of flow. A second device shall be located where the device will monitor the movement of the aggregate belt by detecting revolutions of the belt feeder. The devices for monitoring no flow or belt movement shall automatically shut down the power to the aggregate belt when the aggregate belt movement is interrupted. The device to detect revolutions of the belt feeder will not be required where the aggregate delivery belt is an integral part of the drive chain. To avoid erroneous shutdown by normal fluctuation, a delay of 3 seconds will be permitted between sensing and shutdown of the operation.

37-3.03C(5) Application Rate of Aggregate

Micro-surfacing spread rates must be within the ranges shown on the following table:

Micro-surfacing Type	Application Range (lb of dry aggregate/sqyd)
Type II	15 – 18
Type III	20 – 30

The micro-surfacing mixture shall be uniformly spread on the existing surfacing within the rate specified without spotting, re-handling, or otherwise shifting of the mixture.

37-3.03C(6) Repair Wheel Path Depressions

When wheel path depressions have a cross section that is deformed 1/2 inch or more, the individual wheel paths shall first be filled utilizing a wheel path depression (rut) box. The depth of the wheel path depression shall be determined after the adjacent ridges have been removed, when applicable. The maximum single application for wheel path depressions shall be 1 inch. Wheel path depressions of depths greater than 1 inch shall require multiple applications in each depression. A pneumatic tired roller shall be used after all rut filling operations. The roller shall make 2 passes at slow speed no more than 7 mph. Wheel path depressions having a cross section greater than 1/2 inch and less than 1 inch shall be paid for under the contract bid item “Micro-surfacing (Type III)”.

Wheel path depression repair shall be constructed with a slight crown to allow for initial compaction by traffic on the micro-surfacing.

Freshly filled wheel path depressions shall be compacted by traffic for a minimum of 12 hours before additional lifts of micro-surfacing material are placed for rut filling purposes or as surface courses.

37-3.03C(7) Placement

Micro-surfacing shall be placed no earlier than 7 calendar days after Chip Seal operation on roads to receive the Roseville Cape Seal as shown on the plans.

Longitudinal joints shall correspond with the edges of the traffic lanes. The Engineer may permit other patterns of longitudinal joints if the patterns will not adversely affect the quality of the finished product, this shall be required for approval in writing 5 working days prior to the start of work.

Through traffic lanes shall be spread in full lane widths only. Longitudinal joints common to 2 traffic lanes shall be butt joints with overlaps not to exceed 3 inches. Building paper shall be placed at the transverse joints to avoid double placement of the micro-surfacing. Other suitable methods to avoid double placement of the micro-surfacing will be allowed. Hand tools shall be available to remove spillage.

The mixture shall be uniform and homogeneous after placing on the surfacing and shall not show separation of the MSE and aggregate after setting. The completed surface shall be of uniform texture and free from ruts, humps, depressions, or irregularities.

Adequate means shall be provided to protect the micro-surfacing from damage by traffic until such time that the mixture has cured sufficiently so that the micro-surfacing will not adhere to or be picked up by the tires of vehicles.

If the micro-surfacing is not capable of supporting unrestricted traffic at the expiration of the road closure hours, the Contractor shall pay the liquidated damaged per the provisions of these Special Provisions. Placement of the micro-surfacing shall cease before the expiration of road closure hours as specified in these Special Provisions.

37-3.03C(8) Sweeping

Initial sweeping shall begin 1 day after the micro-surfacing placement. Care shall be taken to avoid unraveling the micro-surfacing. Excessive sweeping will not be allowed.

Seven sweepings shall be considered as included in the contract price paid for micro-surfacing. The first sweeping shall be performed the day after the application is applied. The second sweeping shall be performed 3 days after the micro-surfacing application is applied. The third sweeping shall be performed 5 days after the micro-surfacing application is applied. The fourth sweeping shall be performed 7 days after the micro-surfacing is applied. The fifth sweeping shall be performed 10 days after the micro-surfacing is applied. The sixth sweeping shall be performed 15 days after the micro-surfacing is applied. The seventh sweeping shall be performed during the punch list process.

Prior to each sweeping, the Contractor shall contact the Engineer with the street's sweeping schedule. After sweeping takes place, the Contractor shall contact the Engineer for acceptance of the street sweeping.

If the sweeping is not done to the schedule listed above, the Contractor shall pay the liquidated damaged per the provisions of these Special Provisions.

The Contractor shall remove all loose aggregate from the curbs, gutters, driveways, and sidewalks prior to sweeping the roadway surface. The Contractor will be responsible to sweep abutting adjacent areas and haul routes. The Contractor shall have 1 working day to sweep the adjacent areas and haul route when requested in writing by the Engineer.

The Contractor shall sweep the micro-surfaced streets and adjacent areas with a self-propelled vacuum or regenerative air sweeper. Any additional sweepings required to remove excess material shall be performed as directed by the Engineer at no additional expense to the City.

37-3.03C(9) Test Strip

The Contractor shall construct a test strip for evaluation by the Engineer 10 working days prior to the micro-surfacing application. The test strip shall be 500 feet to 1000 feet long and shall consist of the application courses specified. The test strip shall be constructed at the same time of day or night that the full production of micro-surfacing will be placed and may be constructed in 2 days or nights when multiple course applications are specified. The location of the test strip shall be specified by the City.

The micro-surfacing test strip shall have a break time and shall be able to be open to cross traffic no greater than 1 hour after the micro-surfacing is placed. This time will be reflected on the global projects break time and capability of being open to cross traffic. The global project shall have this break time and shall be able to be open to cross traffic no greater than 1 hour after placement of the micro-surfacing. If the test strip does not meet this requirement the test strip will be rejected and shall be removed at the Contractors expense.

The Engineer will evaluate the completed test strip after 12 hours of traffic on the completed test strip to determine if the mix design and placement procedure are acceptable. If the mix design or the placement procedure is determined by the Engineer to be unacceptable, the test strip will be rejected, the Contractor shall make modifications, and a new test strip shall be constructed and evaluated by the Engineer. The cost of materials and placement of the test strips, which have been rejected, shall be borne by the Contractor and will not be considered as part of the contract work. If ordered by the Engineer, rejected test strips shall be removed at the Contractors expense.

37-3.03C(10) Repair of Early Distress

If bleeding, raveling, delamination, rutting, or washboarding occurs within 60 days after placing the micro-surfacing, the Contractor shall diligently pursue repairs by any method approved by the Engineer. The Contractor shall not be relieved from maintenance until repairs have been completed.

37-3.03D Payment

The contract price paid per square yard for Microsurfacing Type 2 shall include full compensation for providing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in the test strip and installing microsurfacing, complete in place, including cleaning the existing surface as needed, as shown on the plans, as specified in Section 37, "Bituminous Seals" of these Technical Specifications, and as directed by the Engineer.

No payment shall be made for any area requiring re-application of slurry seal.

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39 ASPHALT CONCRETE

Add to section 39-2.01:

Produce and place HMA Type A under the section 39-3, method construction process.

Hot Mix Asphalt shall be placed back by within the same shift after the existing asphalt has been removed.

Add to section 39-2.01A with:

Asphalt concrete pavement shall be Hot Mix Asphalt (Type A, 1/2" Maximum Medium Gradation) and conform to the applicable provisions in Section 71, “Streets” of the City of Roseville’s Construction Standards and Section 39 of the State Standard Specifications.

In addition to the requirements specified in this section of the State Standard Specifications, the following shall apply:

The cost for grading and compaction of existing aggregate base material, where shown on the plans, profiles, and cross sections, shall be included within the price paid for placement of Hot Mix Asphalt (Type A).

Add to section 39-2.02A(2):

processed RAP: RAP that has been fractionated.

substitution rate: Amount of RAP aggregate substituted for virgin aggregate in percent.

binder replacement: Amount of RAP binder in OBC in percent.

surface course: Upper 0.2 feet of HMA exclusive of OGFC.

Add to section 39-2.02B(3):

Asphalt binder used in HMA Type A must be PG 64-10.

Add to section 39-2.02B(4)(a):

Aggregate used in HMA Type A must comply with the 1/2-inch HMA Types A.

Add the following to Section 39-3.04A with:

The contractor shall Cold Plane areas identified as digouts to a depth of 4 inches with the exception of areas where vehicle detection will be impacted by digouts. These areas shall be Cold Planed to a depth of 5 inches.

Replace *Not Used* in Section 39-3.04D with:

The contract price paid per square yard for Cold Plane Asphalt Concrete shall include full compensation for providing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in cold planing the asphalt concrete, complete in place, including cleaning the existing surface as needed, and disposal of materials, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

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DIVISION VI STRUCTURES

47 EARTH RETAINING SYSTEMS

Replace section 47-5 with:

47-5 RETAINING WALLS

47-5.01 GENERAL

Section 47-5 includes specifications for constructing retaining walls.

Reinforced concrete footings and stems must comply with Section 51 of these Specifications and the State Standard Specifications.

Reinforcement must comply with Section 52 of these Specifications and the State Standard Specifications.

Tubular handrailing must comply with Section 83 of these Specifications and the State Standard Specifications.

47-5.02 MATERIALS

Caulking for sealing expansion joints must be a non-sag polysulfide or polyurethane type complying with ASTM C920.

Grout must comply with Section 58-2.02D of the State Standard Specifications and contain at least 590 lb/cu yd of cementitious material.

47-5.03 CONSTRUCTION

Construct wall stems of reinforced concrete.

47-5.04 PAYMENT

Pay quantities of retaining walls will be determined by the linear foot of completed wall, measured along the horizontal length.

The contract price paid per linear foot for Retaining Wall (all types) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the wall, complete in place, including excavation, backfill, pervious backfill, drainage pipes, tubular railings, concrete, reinforcement, geotextile fabric, application of anti-graffiti coating, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

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included in the contract unit price paid for the adjacent inlet type and no additional compensation is allowed.

Add to section 51-7.01D:

The contract price paid per each for Drainage Inlet (Type C) and (Type F) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing concrete inlet structures and other miscellaneous concrete structures, complete in place, including removal of existing drainage facilities, connection to existing pipes, saw cutting, structure excavation and structure backfill, frames, grates, racks, covers, miscellaneous hardware, and adjustment of frame and grate to grade, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

52 REINFORCEMENT

Add to section 52-1.04:

Payment for steel reinforcement used for trench drains, drainage inlets, and retaining walls is included in the payment for various items of work.

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DIVISION VII DRAINAGE FACILITIES

Replace section 63 with:

63 TRENCH DRAIN GRATE

63-1.01 GENERAL

63-1.01A Summary

This work shall consist of furnishing and installing ornamental trench grates where shown on the drawings.

63-1.01B Definitions

Reserved

63-1.01C Submittals

Grates shall be independently tested to AASHTO M-306.

Contractor shall submit the following submittals:

A. Product Data: manufacturer's written recommendations for installation, mounting details, and catalog cut sheets.
B. Provide shop drawings illustrating length and number of grates required to accommodate each separate installation along the street.; shop drawings shall detail the installation of the frame in the concrete opening and the fitting of the grate.
C. Powder coating submittals. Powder coating submittals shall include:
    1. Manufacture’s descriptive data and applications instructions
    2. Your name, address, telephone and fax numbers
    3. Page numbers in the lower right hand corner

63-1.01D Quality Assurance

Reserved

63-1.02 MATERIALS

63-1.02A Ornamental Trench Grates

Trench grate material shall be Class 35 Cast iron per ASTM A48 - latest edition. All trench grate castings shall be manufactured true to pattern and component parts and shall fit together in a satisfactory manner. The castings shall be of uniform pattern and quality, free from blowholes, hard spots, shrinkage, distortion or other defects. Castings shall be cleaned by sand blasting.

Grates are to be for pedestrian use only.

Ornamental trench grates shall be 12" wide.

Grate sections shall be 24" minimum.

Cast with 1/4" maximum slot openings for increased pedestrian safety and compliance with ADA guidelines.

Pattern: Openings shall run in stripped pattern across the tree grate; the length of the stripes shall vary to create an edge pattern which of pair circular edges.

See plan drawings for quantity and location of trench grates.

63-1.02B Trench Grate Frames

Trench grate frame material shall be raw cast iron or steel.

Frame to be installed per details on drawings.

63-1.02C Manufacturer

Trench drain grates and frames shall be supplied by Ironsmith Architectural Products or approved equal.

Model shall be "Thistle", Trench Grate #M9047 or approved equal.

63-1.02D Powder Coating

Furnish a certificate of compliance for powder coating.

Powder coating is a TGIC polyester powder, electrostatically adhered to metal surfaces and baked to a uniform, durable surface.

Powder coating conforms to the following table:

Property	Reference	Value
Adhesion	ASTM D3359B	≥ 4B
Pencil Hardness	ASTM D3363	H-2H
Impact Resistance	ASTM D2794 Modified	Pass, 80 inch-pounds

Finish of the powder coating must match color number 30166 of FED-STD-595.

63-1.03 CONSTRUCTION

Construction of trench drains and joints must comply with the manufacturer's instructions.

Construct trench drains to the lines and grades with sections closely jointed and secured such that no separation of the forms occur during backfilling.

The frame or grate must not extend above the level of the surrounding concrete.

Connect trench drains to new or existing drainage facilities as shown.

Secure frames or line drain wall to the surrounding concrete backfill with steel anchoring rods per the manufacturer's instructions. Alternative securing methods must provide a minimum pullout resistance of 685 lb/ft of length of grated line drain frame.

Contractor to use the manufacturer's supports, anchors and accessories: Standard and integral with site furnishings, as recommended by manufacturer.

Contractor to verify bolts are the number, size and type recommended by manufacturer for anchoring. Contractor to verify anchor bolt mounting locations with factory prior to mounting, installation or preparation.

Contractor shall protect surrounding and finished surfaces from damage during installation.

63-1.03A Powder Coating

Clean and prepare all surfaces to be powder coated per the manufacturer's instructions.

Apply a minimum thickness of 3 mils of powder coating. Form a durable skid-resistant surface.

63-1.03B Field Quality Control

Formwork is to be fully removed, without exception, to allow for inspection and if needed repair of any voids and or concrete consolidation issues below the frame, trench walls and invert. Grate and grate retainer inspection shall be performed to ensure that all grates and retainers are installed and are properly seated in place.

63-1.04 PAYMENT

Payment for Trench Drain Grate and Frame must include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing the trench drains, complete in place, including all the grates and hardware, and reinforcement, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

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DIVISION VIII MISCELLANEOUS CONSTRUCTION

73 CONCRETE CURBS AND SIDEWALKS

Add to section 73-1.01:

Portland Cement Concrete curbs, gutters, sidewalks, curb ramps, valley gutters and driveways shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the State Standard Specifications and these special provisions.

Prefabricated detectable warning surface shall be in conformance with the requirements established by the Department of General Services, Division of State Architect and be attached in conformance with the manufacturer's recommendations. A sample of the detectable warning surface shall be provided to the Engineer and the City of Roseville for approval.

The manufacturer shall provide a written 5 year warranty for prefabricated detectable warning surfaces, guaranteeing replacement when there is defect in the dome shape, color fastness, sound on cane acoustic quality, resilience, or attachment. The warranty period shall begin upon acceptance of the contract.

All concrete shall be Class A, six sack mix unless otherwise specified. For all driveway locations, where early opening to traffic is required, concrete shall be rapid setting concrete.

All newly placed concrete shall be cured in accordance with the provisions in Section 90-1.03B(3)(b) of the State Standard Specifications, the City Standard Construction Specifications, and these Special Provisions. Concrete curing compound shall be clear with fugitive red dye (Street, Section 71-5 Materials, I: Concrete Curing Compound)).

Minor Concrete shall be constructed as shown on the plans and shall conform to the City of Roseville Standard Plans.

Pedestrian ramps shall conform to the City of Roseville Standard Plans ST-26 and ST-27 and shall meet all requirements outlined in the City of Roseville ADA transition plan.

Pedestrian ramp detectable warning surface shall consist of raised truncated domes constructed or installed on curb ramps. Detectable warning surface shall be a prefabricated surface installed on the curb ramp, in accordance with the approved materials within the City of Roseville.

Steel dowel bars connecting curb to existing or previously poured concrete pavement must be epoxy coated complying with section 40-1.02C(3). The dowel bar must be installed complying with section 40-1.03D except exposed portion must not be lubricated.

Apply a bonding agent between curb placed on existing or previously poured concrete pavement in accordance with section 41-1.02D.

Salvage the existing cobble between Folsom Road and Walnut Street in the area of the ramp. Clean cobbles of dirt and other loose material. Place cobbles randomly in at least 6” of wet concrete, with approximately 1/3 of cobble exposed above the concrete surface, spacing between cobbles not to exceed 2 inches.

Add to section 73-1.02A:

Concrete must be minor concrete complying with section 90-2 and may contain returned plastic concrete complying with section 90-9, except as follows:

1. For all miscellaneous concrete work except valley gutters, cementitious material content of concrete must be at least 505 lb/cu yd.
2. For valley gutters, cementitious material content of concrete must be at least 590 lb/cu yd.
3. The maximum size of aggregate used for miscellaneous concrete construction shall be 1 inch.

Add to section 73-1.03A:

Construct new sidewalk and new curb monolithically.

Do not deviate the shape and design of curb ramps and driveways with sidewalk from the standard plans unless noted on the project plans or approved by the Engineer. Do not free form these facilities.

Clean all sawcuts by abrasive blasting or other methods approved by the Engineer.

If new curb, sidewalk or driveway is constructed adjacent to existing curb, sidewalk or driveway, dowel the existing concrete to the new concrete with #4 reinforcing bars as shown.

For new curb ramps, detectable warning surfaces shall be prefabricated tiles set directly in newly poured concrete; surface applied tiles or stamped into surface detectable warning surfaces will not be allowed.

Reference out and restore any curb markings (S-indicating sanitary sewer lateral; W-indicating water service lateral; arrows and Roman Numerals-indicating ties to water main valves; high-pressure gas main) that may be destroyed by its work. In the case of construction of curb ramps where the vertical curb is eliminated new ties to water valves shall be made on the closest available vertical curb with proper direction of arrows and proper distances from water valve to tie indicated in three-inch (3") high Roman Numerals.

<u>WATER TEST – FLAT GUTTERS</u>

Prior to final acceptance, or as part of the preliminary final inspection, the Contractor, as directed by the Engineer, shall water test curbs with gutters on slopes of 0.75% or flatter and paved surfaces to verify proper drainage. Any ponding of water greater than ¼ inch depth will be considered as evidence of poor work techniques and shall be corrected by removing and replacing those portions of curb and gutter as necessary to comply with the requirements of this special provision, at no additional expense to the Agency.

Add to section 73-3.01C:

Within 2 business days of completing the surveys, submit preconstruction and post-construction surveys sealed and signed by one of the following:

1. Land surveyor licensed in the State
2. Engineer who is registered as a civil engineer in the State

Replace *Reserved* in section 73-3.01D(3) with:

For locations shown, perform a preconstruction survey to ensure forms and job site constraints will allow for compliance with required design dimensions and slopes shown. Upon completing the work, perform a post-construction survey to verify design dimensions and slopes requirements are met. The post-construction survey must include a minimum of 3 measurements for each dimension and slope requirement shown. Individual measurements must be equally distributed across the specified slope or dimensional surface. Document and submit these measurements on the Americans with Disabilities Act Compliance Inspection Report form for the facility type shown. Include the equipment and control used to conduct the survey.

Add to the beginning of section 73-3.03:

Before placing concrete, verify that forms and job site constraints allow the required dimensioning and slopes shown. Immediately notify the Engineer if you encounter job site conditions that will not accommodate the design details. Ordered modifications are change order work.

Add to section 73-3.03:

Excavation and backfill must comply with section 19-3.

Trench drains must be constructed in trenches excavated to the lines and grades established by the Engineer. Grade and prepare the bottom of the trench to provide a firm and uniform bearing throughout the entire length of the trench drain.

Immediately remove foreign material that falls into the trench before or during concrete placement.

Where necessary, construct and compact earth plugs at the ends of the concrete backfill to contain the concrete within the trench.

Concrete backfill must be finished flush with the adjacent surfacing.

The surface of the concrete must be textured with a broom or burlap drag to produce a durable skid-resistant surface.

Replace *Not Used* in section 73-3.04 with:

Payment for Minor Concrete (Curb Ramp) (all types) shall include full compensation for all labor, materials, tools, aggregate base and placement, complying with ADA requirements, placing concrete, compaction, raising existing facilities to grade, incidentals and equipment required to complete these items of the work, including adjacent retaining curb and tooled joints, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Minor Concrete (Curb Ramp Modification) shall include a total area of 600 square feet, consisting of concrete sidewalk paving, concrete curb ramp paving, asphalt concrete paving, curb and gutter, and retaining curbs required. The cost to complete work beyond the aforementioned limit shall be paid at the rate of the bid unit prices submitted. Under this item of the proposal, the Contractor shall include the cost for demolishing, furnishing, placing, finishing and curing, of the concrete curb and gutter, concrete curb,

asphalt paving, and concrete paving in the unit price of the Minor Concrete (Curb Ramp Modification) bid item.

Payment for Minor Concrete (Curb Ramp Modification) shall include full compensation for all labor, materials, tools, aggregate base and placement, complying with ADA requirements, placing concrete, compaction, raising existing facilities to grade, incidentals and equipment required to complete these items of the work, including adjacent retaining curb and tooled joints, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Payment for Detectable Warning Surface shall include full compensation for all labor, materials, tools, complying with ADA requirements, incidentals and equipment required to complete these items of the work, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Payment for Minor Concrete (Driveway) (all types) shall include full compensation for all labor, materials, tools, aggregate base and placement, complying with ADA requirements, placing concrete, compaction, raising existing facilities to grade, incidentals and equipment required to complete these items of the work, including tooled joints, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Payment for Minor Concrete (Sidewalk) shall include full compensation for all labor, materials, tools, aggregate base and placement, complying with ADA requirements, placing concrete, compaction, raising existing facilities to grade, incidentals and equipment required to complete these items of the work, including tooled joints and under sidewalk drains, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Payment for Minor Concrete (Curb) (all types) shall include full compensation for all labor, materials, tools, aggregate base and placement, complying with ADA requirements, placing concrete, compaction, raising existing facilities to grade, incidentals and equipment required to complete these items of the work, including tooled joints, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Payment for Minor Concrete (Valley Gutter) (all types) shall include full compensation for all labor, materials, tools, aggregate base and placement, complying with ADA requirements, placing concrete, compaction, raising existing facilities to grade, incidentals and equipment required to complete these items of the work, including tooled joints, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Payment for Minor Concrete (Trench Drain) shall include full compensation for all labor, materials, tools, aggregate base and placement, complying with ADA requirements, placing concrete, compaction, incidentals and equipment required to complete these items of the work, including tooled joints, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer. The frame and grate are paid for as specified in Section 63.

Payment for Minor Concrete (Stairs) shall include full compensation for all labor, materials, tools, aggregate base and placement, pedestrian handrailings, complying with ADA requirements, placing concrete, compaction, raising existing facilities to grade, incidentals and equipment required to complete these items of the work, including tooled joints, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Payment for Minor Concrete (Wet Set Cobble) shall include full compensation for all labor, materials, tools, aggregate base and placement, salvaging and cleaning cobbles, complying with ADA requirements, placing concrete, compaction, incidentals and equipment required to complete these items of the work, including tooled joints, as shown on the plans, as specified in the City of Roseville Design and

Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Replace section 75-9 with:

75-9 BOLLARDS

75-9.01 GENERAL

Section 75-9 includes specifications for constructing bollards.

75-9.02 MATERIALS

Pipe for bollards shall be black steel pipe, 6" outside diameter, ¼" wall thickness.

Bollards shall be painted with two coats of zinc chromate primer and two coats of exterior enamel paint in Safety Yellow Gloss.

Concrete shall be minor concrete and conform to section 71-5B of the City Standard Specifications.

75-9.03 CONSTRUCTION

Install bollards per City Standard detail for Fixed Bollard.

75-9.04 PAYMENT

Payment for Fixed Bollard shall include full compensation for all labor, materials, tools, steel pipe, primer, paint, reflective tape, minor concrete, concrete finishing, hot mix asphalt, aggregate base aggregate base and placement, excavation, backfill, compaction, incidentals and equipment required to complete these items of the work, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

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77 LOCAL INFRASTRUCTURE

Replace *Reserved* in section 77 with:

77-1 GENERAL

77-1.01 GENERAL

Section 77-1 includes general specifications for constructing electrical systems.

77-1.02 MATERIALS

The electrical equipment and materials must comply with section 86 of the City's Construction Standard and section 86 of the Caltrans Standard Specifications.

77-1.03 CONSTRUCTION

Install electrical equipment under section 86 of the City's Construction Standard and section 87 of the Caltrans Standard Specifications.

77-2 RECTANGULAR RAPID FLASHING BEACON SYSTEM

77-2.01 GENERAL

77-2.01A Summary

Section 77-2 includes specifications for constructing rectangular rapid flashing beacon (RRFB) system.

Rapid flashing beacon system includes removing, adjusting, or adding:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Decorative street light post
6. Luminaires
7. Fuse splice connectors
8. Light indicators
9. Signs
10. Control module
11. Audible information device

Rectangular rapid flashing beacon system must conform to the latest applicable provisions of the California MUTCD, Caltrans Standard Plans and Specifications, the City of Roseville Standard Design and Construction Specifications and Details, and these Special Provisions. The components of the rectangular rapid flashing beacon system are shown on the project plans.

RRFB system must be AC powered Carmanah R920-MX series or approved equal.

77-2.01A Submittal

Submit 2 copies of:

1. 5-year limited warranty documents.
2. Shop drawings or installation manual.

77-2.02 MATERIALS

77-2.02A Decorative Street Light Post

Contractor shall furnish and install decorative street light post as indicated on the plans. Decorative Street Light Post shall be Visco model: VI-A7-F/13'-0", Roseville Standard Fluted Steel Pole with Visco B17 Cast Iron Base. The pole shall be factory powder coated to match "RAL #6004".

77-2.02B Luminaires

Contractor shall furnish and install luminaires as indicated on the plans. Luminaires shall be Sternberg Old Town model: PT-A850SRLED-5P-12L-30-T3-MDL014-A-SRR7-CM-RAL6004, having 3,000K CCT, Type 3 light distribution, post top base, twist-lock photo control, fuse and holder, 120 V led driver, and color matched finish to "RAL #6004".

For decorative street light posts without luminaires, they shall have decorative pole cap to be Visco 22D and powder coated to match "RAL #6004".

77-2.02C Light Indicators

Each RRFB unit shall consist of two rapidly flashing rectangular-shaped yellow indicator lights that shall be a minimum size of at least 5" wide x 3" high and shall be horizontally aligned and separated by 7" on the same bar.

The light intensity of the yellow indications during daytime conditions shall meet the minimum specifications for Class 1 yellow peak luminous intensity in the publication "Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles J595," 2005 Society of Automotive Engineers (SAE).

77-2.02D Signs

All sign panels must be supplied and installed as part of this bid item. RRFB system shall include W11-2 and W16-7P signs as shown on the plans and shall be fluorescent yellow and must conform to the Caltrans Standard Specifications, and these Special Provisions.

77-2.02E Control Module

Control module must include:

1. On-board user interface
2. Enclosure

77-2.02E(1) On-Board User interface

On-Board User Interface must include:

1. System status
2. Flash patterns: RFB1 (WW+S), RFB2 (WSDOT), 0.5 sec alternating (MUTCD), 0.5 sec unison (MUTCD), 0.1 sec. unison, 0.25 sec. unison, 0.1 sec x3 quick flashes unison, 0.1 sec, x3 quick flashes alternating
3. Input type: momentary for push button activation, normally open switch, normally closed switch
4. Flash duration: 5 sec. to 1 hr.
5. Intensity setting: 20 to 1400 mA for multiple RRFBs, circular beacons, or LED enhanced signs
6. Nighttime dimming: 10 to 100% of daytime intensity
7. Ambient auto-adjust increases intensity during bright daytime
8. Automatic Light Control: reduces intensity if the battery is extremely low
9. LED temperature correction: yellow or red beacons
10. Internal time clock function
11. Radio settings: enable/disable, selectable channel from 1 to 14
12. Digital output: activation counts and data reporting

77-2.02E(2) Enclosure

Control module enclosure must be:

1. NEMA 3R weatherproof enclosure.
2. Lockable with hinged lid for access to on-board user interface.
3. Corrosion -resistant aluminum with stainless steel hardware.
4. Prewired to minimize installation time.
5. High efficiency optics and EMS.
6. 39 lbs or less including on-board user interface and any batteries.

77-2.02F Audible Information Device (AID)

The audible information device (AID) must conform to the latest applicable provisions of the California MUTCD, and these special provisions. The AID must be supplied by the same manufacturer of RRFB and must be furnished and installed as one package. A R10-25 sign shall be furnished and installed with the AID and must conform to the Caltrans Standard Specifications, and these Special Provisions.

The AID shall be Polara iNX or approved equal. Audible message shall be: “Warning lights are flashing.”

77-2.03 CONSTRUCTION

77-2.03A Foundations

Contractor shall install foundations for decorative street light posts as indicated on the project plans. For foundation size and details see Roseville Electric Standard Construction Drawings.

77-2.03B Pull Boxes

For pull boxes see City of Roseville Construction Standards Section 86 Traffic Signals, Lighting and Electrical Systems. All pull boxes and lids shall be Fiberlyte FL36 unless otherwise directed by the Engineer. Pull box lids shall be labeled “ELECTRICAL”

77-2.03C Light Indicators

A minimum of two RRFB units shall be facing each direction of vehicular traffic at the pedestrian crossing. The two indications must be aligned horizontally, with the longer dimension of the indication horizontal, and a minimum space between the two indications of approximately 7” measured from inside edge of one indication to inside edge of second indication.

A single indicator must be installed on an assembly facing in the direction of approaching pedestrian traffic to serve as a confirmation for the pedestrian that the system has been activated.

The outside edges of the two indications, including any housing, must not protrude beyond the outside edges of the integral signage of the assembly.

Each indication must be located between the bottom of the crossing warning sign and the top of the supplemental downward diagonal arrow plaque.

77.2.03D RRFB Assembly Mounting

The RRFB assembly shall be installed using strap and saddle mounting bracket method. Contractor shall drill holes in the decorative street light post to run wiring for the light indicators and the AID system.

77-2.03E Underground Construction

For underground construction, see City of Roseville Construction Standards Section 86 Traffic Signals, Lighting and Electrical Systems.

All conduits installed in existing roadways shall be buried at a minimum depth of 18 inches below finished grade.

All trenches shall be constructed per Section 31-2 of City Construction Standards; see City Standard Detail TS-13.

77-2.04 PAYMENT

The contract lump sum price paid for rectangular rapid flashing beacon system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for all the work involved in installing AC powered rectangular rapid flashing beacon (RRFB) system, complete in-place, including, but not limited to, all items included in rectangular rapid flashing beacon system assemblies, decorative street light posts, foundations, luminaires, pull boxes, conduit, wiring, and power equipment considered, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

77-3 MODIFYING SIGNAL AND LIGHTING SYSTEMS (CITY)

77-3.01 GENERAL

77-3.01A Summary

Section 77-3 includes general specifications for constructing electrical systems.

Modifying signal and lighting system (City) includes removing, adjusting, or adding:

1. Loop detectors
2. Pull boxes
3. Conduit
4. Conductors
5. Cables

The components of modifying signal and lighting systems (City) are shown on the project plans.

77-3.02 MATERIALS

The electrical equipment and materials must comply with section 86 of the City’s Construction Standard and section 86 of the Caltrans Standard Specifications.

77-3.03 CONSTRUCTION

Install electrical equipment under section 86 of the City's Construction Standard and section 87 of the Caltrans Standard Specifications.

Vehicle detection that is impacted by digout operations shall be replaced by the Contractor per the latest City Standards, not limited to but including loop layout. Reference to existing vehicle detection as-builts are included in Appendix B.

Obliteration of loops outside the Contractors' work will be replaced in kind between the new lifts of HMA at the cost of the Contractor.

77-3.04 PAYMENT

The contract lump sum price paid for modifying signal and lighting systems (City) shall include full compensation for furnishing all labor, materials, scheduling, tools, equipment, and incidentals and for doing all the work, complete in place, including layout work, coordination with Hot Mix Asphalt placement, installation of vehicle detector loops, pulling wire, moving existing DLC wire, splicing and incidentals for all the work involved in installing loop detectors, complete in-place, including, but not limited to, loop wire, sawcutting, sealants, conduit, wiring, splicing, pull boxes, and detector hand holes as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

The contract price paid for modifying signal and lighting systems (City) shall also include abandoning traffic signal detector loops, and no additional compensation shall be allowed therefore. Traffic loops may be Type A, Type D, Type E preformed, or bike loops as shown on the as-built plans and as required by the latest City Standards. No unit price adjustment shall be made for adding or deleting any type of traffic loop.

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DIVISION IX TRAFFIC CONTROL DEVICES

82 SIGNS AND MARKERS

Add to section 82-1.01:

Signs must be constructed in accordance with the section 56 of City of Roseville Construction Standards.

Add to section 82-3.02A:

Roadside sign must comply with section 56-2.02 of City of Roseville Construction Standards.

Replace paragraphs of section 82-3.02B with:

Metal posts must comply with City of Roseville Standard Drawing TS-17A and must conform to section 56-2.02A of City of Roseville Construction Standards.

Replace paragraphs of section 82-3.02C with:

Not Used

Replace paragraphs of section 82-3.02D with:

Not Used

Replace paragraphs of section 82-3.02E with:

Sign panel fastening hardware must comply with section 56-2.02D of City of Roseville Construction Standards.

Replace paragraphs of section 82-3.03A with:

Sign panel installation must comply with section 56-2.04 of City of Roseville Construction Standards.

Replace paragraphs of section 82-3.03B with:

Not Used

Replace paragraphs of section 82-3.04 with:

Payment for furnishing sign panels is included in the payment for roadside sign.

^^

83 RAILINGS AND BARRIERS

Replace section 83-2.10 with:

83-2.10 PEDESTRIAN HANDRAILING

83-2.10A General

83-2.10A(1) Summary

Section 83-2.10 includes specifications for constructing pedestrian handrailings.

83-2.10A(2) Definitions

Not Used

83-2.10A(3) Submittals

83-2.01A(3)(a) General

Not used

83-2.10(A)(3)(b) Shop Drawings

Submit shop drawings for the pedestrian handrailing. Shop drawings must include:

1. Pedestrian handrailing.
2. Details for venting and pickup holes in posts, rails and pickets.
4. Complete details for the construction of work, including construction methods, sequence of shop and field assembly, and installation sequence and procedures for the pedestrian handrailing.

Submit 7 copies of the shop drawings. Allow 25 days for review. Upon authorization, the Engineer returns 2 copies to you for use during construction.

83-2.01A(3)(c) Certificate of Compliance

Submit a certificate of compliance signed by the supplier's QC representative for the pedestrian handrailing.

83-2.10A(4) Quality Assurance

Not used

83-2.10B Materials

The materials for pedestrian handrailing must comply with section 83-2.08 of the State Standard Specifications.

83-2.10C Construction

Construction of pedestrian handrailing must comply with 83-2.08C of the State Standard Specifications.

Powder coating of the ornamental railing must use the following procedure.

1. All surfaces to be sandblasted to a while metal surfaces to achieve a 1 MIL surface profile.
2. Apply epoxy powder coat primer at 1-1.5" MIL thickness.
3. Apply Tiger Series38 super durable topcoat or approved equal.

Powder coating product must be certified for a 3000-hour salt spray test per ASTM B117.

Follow all manufacturer's instructions for surface preparation, primer application, and topcoat application.

Color to match streetlights on Vernon Avenue.

83-2.10D Payment

The payment for pedestrian handrailing, included powder coating, is included in the payment for Retaining Walls and Minor Concrete (Stairs).

^^

84 MARKINGS

Add to section 84-1.01:

Traffic stripes, pavement markings, and pavement markers shall conform to the provisions in Section 84 TRAFFIC STRIPES AND PAVEMENT MARKINGS and Section 85 MARKERS of the City of Roseville Construction Standards and the Standard Construction Specifications, and these special provisions.

The Contractor shall install temporary pavement striping and markings as necessary during construction. All temporary pavement striping and marking shall be refreshed as needed or when directed by the Engineer, at the Contractor's expense, until permanent pavement striping and marking is installed.

Add to section 84-1.04:

The contract unit price paid per linear foot for Thermoplastic Traffic Stripe shall include full compensation for all labor, materials, tools, incidentals and equipment required to complete these items of the work, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

The contract unit price paid per square foot for Thermoplastic Pavement Marking shall include full compensation for all labor, materials, tools, incidentals and equipment required to complete these items of the work, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

The contract unit price paid per each for Pavement Markers shall include full compensation for all labor, materials, tools, incidentals and equipment required to complete these items of the work, as shown on the plans, as specified in the City of Roseville Design and Construction Standards, the State Standard Specifications and these special provisions and as directed by the Engineer.

Add to section 84-2.03C(3):

All striping or pavement markings damaged during construction must be repaired at your expense. Repairs must consist of complete replacement of striping or markings as directed by the Engineer.

When you are unable to place traffic stripes and marking due to unsuitable weather conditions, the Engineer can temporarily suspend work per section 8-1.06. When the work is suspended for greater than 14 days, install temporary traffic stripe and pavement markings. Placement of temporary traffic strip and temporary pavement marking is considered extra work per section 4-1.05.

Replace *Reserved* in section 84-9.03C with:

Residue from the removal of painted or thermoplastic traffic stripes and pavement markings contains lead from the paint or thermoplastic. The average lead concentrations are less than 1,000 mg/kg total lead and 5 mg/L soluble lead. This residue:

1. Is a nonhazardous waste
2. Does not contain heavy metals in concentrations exceeding the thresholds established by the Health and Safety Code and 22 CA Code of Regs

3. Is not regulated under the Federal Resource Conservation and Recovery Act (RCRA), 42 USC § 6901 et seq.

Management of this material exposes workers to health hazards that must be addressed in your lead compliance plan.

^^

DIVISION X ELECTRICAL WORK

87 ELECTRICAL SYSTEMS

Replace paragraphs of section 87-2.01B with:

Lighting systems must comply with these Special Provisions and the Roseville Electric Construction Standard Specifications, unless otherwise directed by specific comments or details in the electrical plans.

APPENDICES

Appendix A:
Progress Payment Forms

CITY OF ROSEVILLE CALIFORNIA

Department of Public Works
311 Vernon Street
Roseville, CA 95678

MONTHLY PROJECT PAYMENT ESTIMATE SUMMARY

Payment Estimate No: _____

Work Performed Through: _____

Contractor: _____ Project: _____

Address: _____ Acct.No: _____

_____

Contract Summary		
Original Contract Amount:	(1)	
Approved Change Orders through #: _____	(2)	
Quantity Changes (Requires Project Engineer/Inspector verification):	(3)	
Total Contract Amount to Date:	(4)	

Payment Summary	CURRENT PAY PERIOD AMOUNT	PREVIOUS AMOUNT	TO DATE AMOUNT
Contract Payments (Payment through PP#_____)			
Change Order Payments (CCO#_____ through _____)			
Total Earnings			
Less: Retention: (0%) In escrow account Yes ☐ No ☐			
Less: Administrative Deductions (Deducted from PP# _____)			
Payment Due to Contractor			

The undersigned Contractor or Contractor's Authorized Representative certifies that to the best of his knowledge, information, and belief, the work covered in this application for payment has been completed in accordance with the contract documents and the costs shown are true and correct.

Resident Engineer:	**Senior Engineer:**	**Contractor:**
Date:	**Date:**	**Date:**

CITY OF ROSEVILLE CALIFORNIA

Department of Public Works
311 Vernon Street
Roseville, CA 95678

Project: _____

Acct#: _____

Contrac: _____

_____

PROJECT PAYMENT ESTIMATE

Payment Estimate No: _____

Work Performed Through: _____

Item No.	Item Description	Unit	Estimated Quantity	Unit Cost	Contract Amount	This Estimate		Previous Estimates		Work Completed		Work Remaining	
						Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
					$ -		$ -	0	$ -	0%	$ -	0%	$ -
					$ -		$ -	0	$ -	0%	$ -	0%	$ -
					$ -		$ -	0	$ -	0%	$ -	0%	$ -
					$ -		$ -	0	$ -	0	$ -	0	$ -
					$ -		$ -	0	$ -	0	$ -	0	$ -
					$ -		$ -	0	$ -	0	$ -	0	$ -
					$ -		$ -	0	$ -	0	$ -	0	$ -
					$ -		$ -	0	$ -	0	$ -	0	$ -
					$ -		$ -	0	$ -	0	$ -	0	$ -
					$ -		$ -	0	$ -	0	$ -	0	$ -
					$ -		$ -	0	$ -	0	$ -	0	$ -
TOTALS:					$ -		$ -		$ -		$ -		$ -

CITY OF ROSEVILLE
CALIFORNIA

Department of Public Works
311 Vernon Street
Roseville, CA 95678

Project: _____

Acct.No: _____

Contractor: _____

QUANTITY ADJUSTMENT FORM

Payment Estimate No: _____

Work Performed Through: _____

INSTRUCTIONS

This form is to accompany Progress Payments or the Final Payment where there are quantity changes (variations in quantities) authorized by the Department of Public Works that adjust the Total Contract Amount.

Quantity Changes in the amount of:
Accompanying Progress Payment # (or Final Payment) _____ **have been reviewed and the actual quantities verified.**

Item No.	Item Description	Unit	Unit Cost	Contract Quantity Adjustments								
				This Estimate			Previous Estimates			To-Date Totals		
				Quantity	Increase (Decrease)	Amount	Quantity	Increase (Decrease)	Amount	Quantity	Increase (Decrease)	Amount
						$ -			$ -	0		$ -
						$ -			$ -	0		$ -
						$ -			$ -	0		$ -
						$ -			$ -	0		$ -
						$ -			$ -	0		$ -
						$ -			$ -	0		$ -
						$ -			$ -	0		$ -
Totals						$ -			$ -			$ -

Contractor Signature **Date**

Resident Engineer Signature **Date**

CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

From: _____
Name of Contractor/Claimant

_____
Address

Date: _____

Payment Request No: _____

Acct.No: _____

Project Name:
_____
_____

To/Owner: CITY OF ROSEVILLE
Department of Public Works
Engineering Division
311 Vernon Street
Roseville, CA 95678

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: _____

Check Payable To: _____

Exceptions

Signature

Claimant Signature _____ **Print Name:** _____

Claimant Title _____ **Date:** _____

CITY OF ROSEVILLE CALIFORNIA

CONTRACT CHANGE ORDER

Change Order No. _____

Date Prepared: _____

Department of Public Works
311 Vernon Street
Roseville, CA 95678

Contractor: _____ Project: _____

Address: _____ Acct.No: _____

You are directed to make the following changes from the plans and specifications or do the following described work not included in the plans and specifications for this contract.

Description of work to be done, estimate of quantities, and prices to be paid:

Segregate between additional work at contract price, agreed price, and force account.
Unless otherwise stated, rates for rental of equipment cover only such time as equipment is actually used and no allowance will be made for idle time.

Estimated Cost: ☐ ***Decrease*** ☐ ***Increase*** **$** **-**

By reason of this order, the time of completion will be adjusted as follows:

Original Contract Amount:

Total Change by Previous Change Orders and/or Quantity Adjustment: $ -

Contract Amount Prior to this Change Order:

Contract Amount to be (*Increased/Decreased)* _____ by this Change Order: $ -

Adjusted Contract Amount Including this Change Order:

SIGNATURE	(PRINT NAME & TITLE)	DATE

CITY APPROVAL BY:

SIGNATURE	(PRINT NAME & TITLE)	DATE

We, the undersigned contractor, have given careful consideration to the change proposed and agree, if this proposal is approved, that we will provide all equipment, furnish the materials, except as may otherwise be noted above, and perform all services necessary for the work above specified, and will accept as full payment, therefore, the prices shown above. **NOTE: If you, the contractor, do not sign acceptance of this order, your attention is directed to the requirements of the specifications as to proceeding with the ordered work and filing a written protest within the time therein specified.**

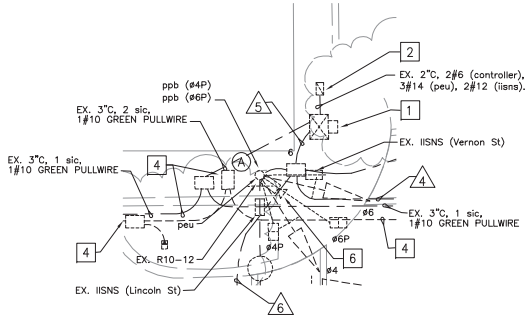
CONTRACTOR ACCEPTANCE BY:

SIGNATURE	(PRINT NAME & TITLE)	DATE

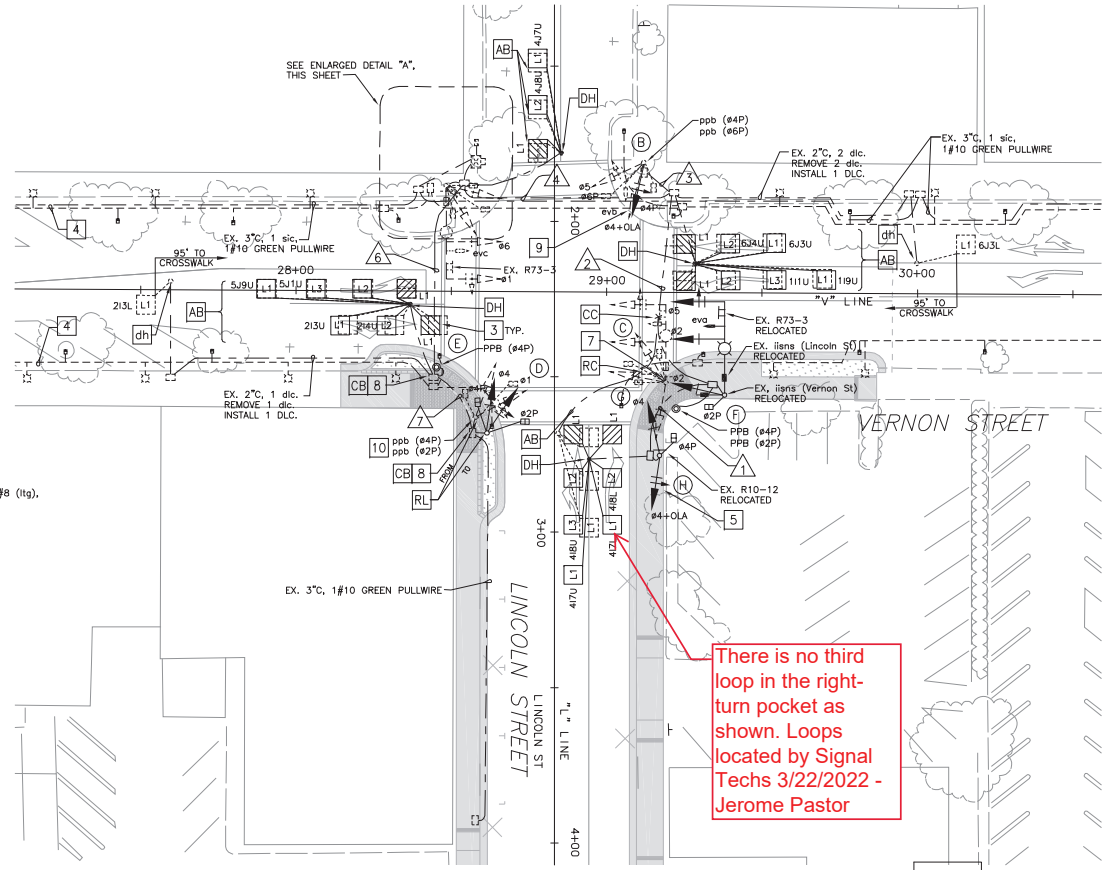
Appendix B:
Traffic Signal Loop As-Builts

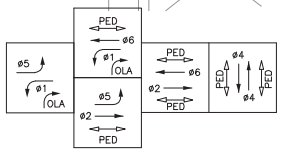
PROJECT NOTES (THIS SHEET ONLY):

1. EXISTING MODEL 332 CONTROLLER CABINET WITH MODEL 2070 CONTROLLER TO REMAIN.
2. EXISTING TYPE III–AF SERVICE EQUIPMENT ENCLOSURE TO REMAIN.
3. SEE DETECTOR LOOP LAYOUT ON SHEET E–1. DLC'S SHALL BE TYPE B.
4. EXISTING STREET LIGHT, UPLIGHT AND OUTLET CONDUCTORS, CONDUIT, AND PULL BOXES TO REMAIN.
5. INSTALL 5–SECTION VEHICLE SIGNAL HEAD. SEE DETAIL ON SHEET E–1.
6. EX. PAN, TILT, ZOOM (PTZ) CCTV CAMERA.
7. REMOVE AND SALVAGE EXISTING SIGNAL POLE AND EQUIPMENT TO THE CITY OF ROSEVILLE. RELOCATE EXISTING eva, iisns, R73–3, AND R12–10 AS SHOWN IN EQUIPMENT SCHEDULE. REMOVE EXISTING SIGNAL POLE FOUNDATION.
8. ADJUST EXISTING PULL BOX TO NEW FINISH GRADE.
9. REMOVE AND SALVAGE EXISTING 3–SECTION SIGNAL HEAD. INSTALL 5–SECTION VEHICLE SIGNAL HEAD. SEE DETAIL ON SHEET E–1.
10. REMOVE AND SALVAGE EXISTING ø4 ppb.



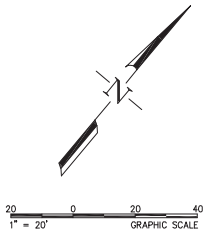
ENLARGED DETAIL "A"
1" = 10'





EXISTING PHASE DIAGRAM

EMERGENCY VEHICLE PREEMPTION
EVA = ø2 + ø5
EVB = ø4
EVC = ø6 + ø1



ORIGINAL SCALE IN INCHES FOR REDUCED PLAN
0 2 4 6

E-8

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION _____ DATUM _____
DESCRIPTION _____

DESIGN BY:	MJ
DRAWN BY:	JM
CHECKED BY:	KC
SCALE:	1"=20'
DATE:	02/22/13
PROJECT NO:	RS11–2943

BY: _____
PLANS APPROVAL DATE _____

PRELIMINARY — NOT FOR CONSTRUCTION — EVIL, STATE OF CALIFORNIA
DATE

FEHR PEERS
2990 Lava Ridge Court Suite 200 Roseville, CA 95661 (916) 773-1900
Walnut Creek, CA · Roseville, CA · San Jose, CA · San Francisco, CA · Orange County, CA · Los Angeles County, CA · San Diego, CA · Salt Lake City, UT · Reno, NV · Denver, CO · Seattle, WA

CITY OF ROSEVILLE
DEPARTMENT OF PUBLIC WORKS
311 VERNON STREET
ROSEVILLE, CA 95678
(916) 746–1300

CITY OF ROSEVILLE CALIFORNIA

ROSEVILLE SPECIFIC PLAN STREETSCAPE & INFRASTRUCTURE IMPROVEMENTS
SIGNAL MODIFICATION
LINCOLN ST\VERNON ST

59 or 62

CONDUCTOR SCHEDULE

CONDUCTOR DESIGNATION			NUMBER OF CONDUCTORS						
CABLE TYPE	STD	PHASE	RUN NUMBER						
			1	2	3	4	5	6	7
VEH-PED 12CSC	Ⓐ	1,6,4,4P,6P 4P,6P					2	2	
	Ⓑ	5,4,OLA,4P,6P 4P,6P			2	2	2	2	
	Ⓓ	1,4,2P,4P 2P					2	2	2
	Ⓔ	4P					1	1	1
	Ⓕ	2,5,2P		1		1	1		
PPB 3CSC	Ⓖ	2P,4P		2		2	2		
	Ⓗ	4,OLA,4P	1	1		1	1		
TOTAL CABLES 12/3 CONDUCTORS			1	2	2	4	8	2	2
			–	2	2	4	8	2	1
#14	PEU						3		
#12	IISNS			2		2	2		
#10	PULLWIRE +		1	1	1	1	1	1	1
#8	LUMINAIRES			2		2	2		
DLC	ø1					2	2		
	ø2						3	3	
	ø4		4	4		4	6		
	ø5						2	2	
	ø6					3	3		
	TOTAL		4	4	–	9	16	5	–
EVP				1		2	3		
	PTZ CCTV CABLE ⊙						1		
	PTZ CCTV POWER CABLE *						1		
CONDUIT SIZE			2"	3"	3"	3"	4"	3"	2"
NEW/EXISTING			N	E	E	E	E	E	E
PERCENT FILL			21	24	14	47	53	19	28

"+" = PROVIDE PULLWIRE IN EACH CONDUIT.

'⊙' = FURNISH AND INSTALL ONE(1) COMMSCOPE, ULTRA II ENHANCED CAT 5e CABLE, PART #5NF4 – 4 TWISTED PAIR FLOODED CABLE, OR APPROVED EQUAL TO TOP OF POLE. COIL 10 FEET OF SLACK AT TOP OF POLE.

'*' = FURNISH AND INSTALL ONE(1) IMSA-14-3/20-1-STR 600 VOLT POWER CABLE COLOR CODE 3/C (BELDEN PN 601195 OR CITY APPROVED EQUIVALENT) TO TOP OF POLE. COIL 10 FEET OF SLACK AT TOP OF POLE.

EQUIPMENT SCHEDULE

STANDARD				VEHICLE SIGNAL MOUNTING		PEDESTRIAN SIGNAL MOUNTING			HPS LUMINAIRE WATTAGE	REMARKS
LOC	TYPE	SIG. MA (FEET)	LUM. MA (FEET)	MAST ARM	POLE		PPB ø	ARROW		
Ⓐ	(26-4-129)	(30')	(15')	(MAT) (MAS)	(SV-2-TB)	(SP-1-CS) (SP-1-CS)	(ø4) (ø6)	(LEFT) (LEFT)	(200)	EXISTING SIGNAL POLE TO REMAIN.
Ⓑ	(1-B)	–	–	–	(TV-2-T)	(SP-1-CS) (SP-1-CS)	(ø4) (ø6)	(LEFT) (LEFT)	–	2
Ⓒ	(26-4-129)	(25')	(15')	(MAT) (MAS)	(SV-2-TB)	(SP-1-CS) (SP-1-CS)	(ø2) (ø4)	(LEFT) (LEFT)	(200)	1
Ⓓ	(1-B)	–	–	–	(TV-2-T)	(SP-1-CS) (SP-1-CS)	(ø2) ~~ø4~~	(LEFT) ~~LEFT~~	–	3
Ⓔ	PPB POST	–	–	–	–	–	ø4	RIGHT	–	
Ⓕ	19-4-100	30'	15'	MAT MAS	SV-1-T	SP-1-CS	–	–	200	INSTALL EXISTING eva, iisns, AND R73-3 FROM POLE Ⓒ.
Ⓖ	PPB POST	–	–	–	–	–	ø2 ø4	RIGHT LEFT	–	
Ⓗ	1-B (14')	–	–	–	SV-2-T	SP-1-CS	–	–	–	INSTALL EXISTING R10-12 FROM POLE Ⓒ.

( ) – DENOTES EXISTING SIGNAL EQUIPMENT.

PROJECT NOTES (THIS SHEET ONLY):

1. REMOVE AND SALVAGE EXISTING SIGNAL POLE AND EQUIPMENT TO THE CITY OF ROSEVILLE. RELOCATE EXISTING eva, iisns, AND R73-3 TO POLE F. REMOVE EXISTING SIGNAL POLE FOUNDATION.
2. REMOVE AND SALVAGE EXISTING 3-SECTION SIGNAL HEAD. INSTALL 5-SECTION VEHICLE SIGNAL HEAD. SEE DETAIL ON SHEET E-1.
3. RELOCATE EXISTING SIGNAL POLE. REMOVE AND SALVAGE EXISTING ø4 ppb.

ORIGINAL SCALE IN INCHES FOR REDUCED PLAN

0 2 4 6

E-9

NO.	REVISIONS	BY	DATE

BENCH MARK
ELEVATION _____ DATUM _____
DESCRIPTION _____

DESIGN BY:	MJ
DRAWN BY:	JM
CHECKED BY:	KC
SCALE:	NONE
DATE:	02/22/13
PROJECT NO:	RS11-2943

BY: _____
PLANS APPROVAL DATE _____

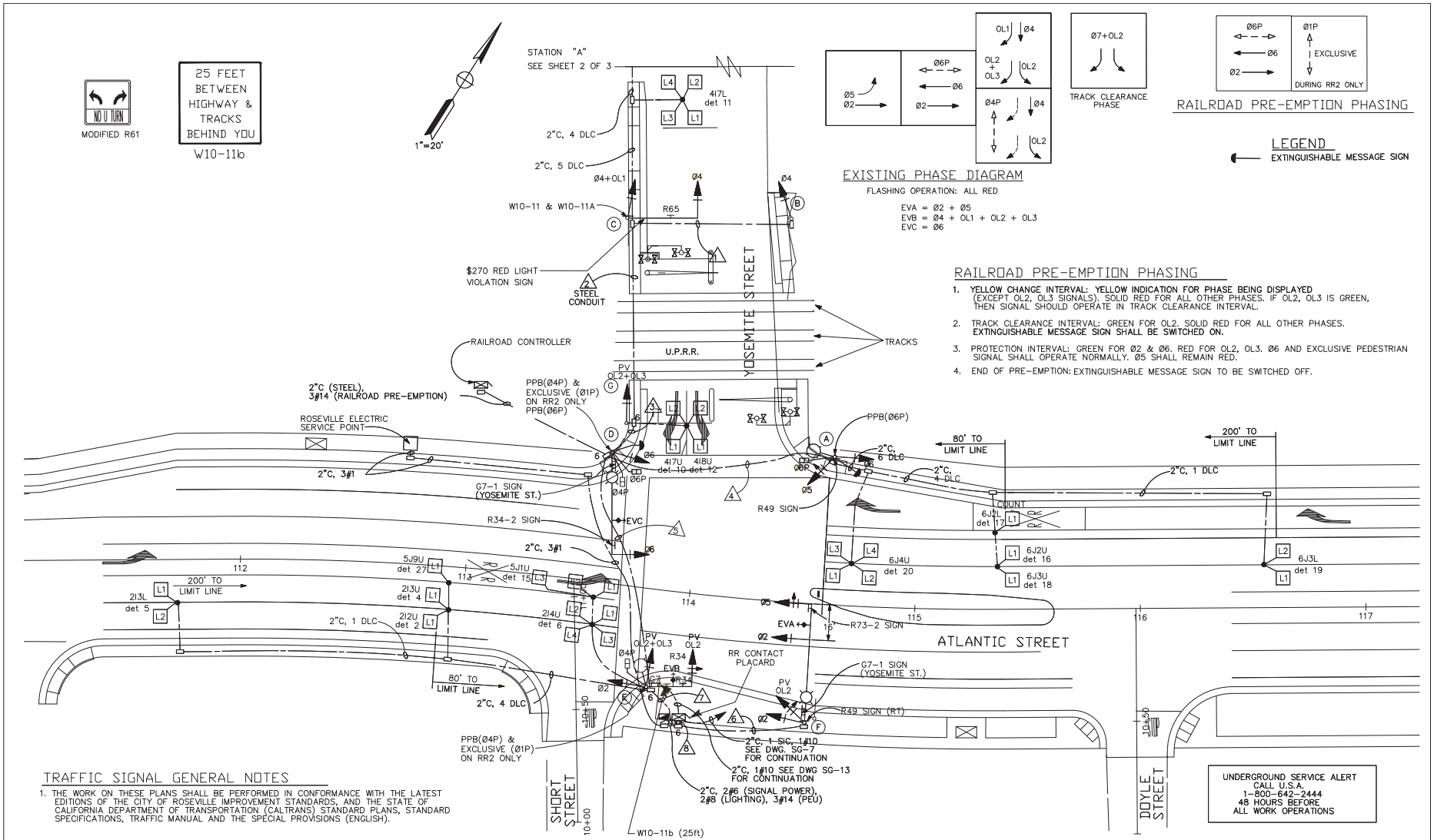
REGISTERED PROFESSIONAL ENGINEER KRISTINE K. CAZIER PRELIMINARY NOT FOR CONSTRUCTION No. 76749 CIVIL STATE OF CALIFORNIA
DATE _____

FEHR PEERS
2990 Lava Ridge Court Suite 200 Roseville, CA 95661 (916) 773-1900
Walnut Creek, CA · Roseville, CA · San Jose, CA · San Francisco, CA · Orange County, CA · Los Angeles County, CA · San Diego, CA · Salt Lake City, UT · Reno, NV · Denver, CO · Seattle, WA

CITY OF ROSEVILLE
DEPARTMENT OF PUBLIC WORKS
311 VERNON STREET
ROSEVILLE, CA 95678
(916) 746-1300

CITY OF ROSEVILLE CALIFORNIA

ROSEVILLE SPECIFIC PLAN
STREETSCAPE & INFRASTRUCTURE IMPROVEMENTS
SIGNAL INSTALLATION
OAK ST\LINCOLN ST



THIS PLAN ACCURATE FOR ELECTRICAL WORK ONLY

DSGN	JS	D	4/18	Remove OL3 from Track Clearance Phase.	TZ		CITY OF ROSEVILLE CALIFORNIA	City of Roseville Public Works Department 311 Vernon Street Roseville, CA 95678	Highway/Rail Signal Atlantic & Yosemite 2010 Update (2070/332)
DR	TZ	C	8/10	Remove det logic scheme, use overlaps.	TZ				SHEET 1 OF 4
CHK	JS	B	5/10	Update detector logic scheme.	TZ				DWG NO.
APVD		A	5/09	Replace 170E controller with 2070.	TZ				DATE 04/04/18
		NO.	DATE	REVISION	BY	APVD			PROJ NO.

CITY BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

CONDUCTOR SCHEDULE

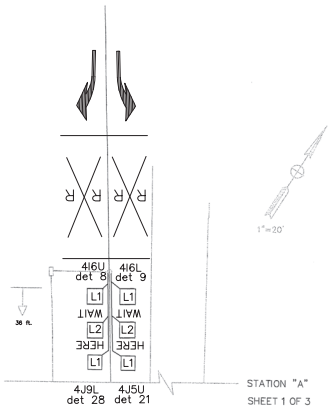
CONDUCTOR DESIGNATION	NUMBER OF CONDUCTORS — RUN NUMBER 1	2	3	4	5	6	7	8
NO.14 CONDUCTORS								
02						3	3	6
04	3	3	3		3	3	3	6
05				3	3	3	3	6
06				3	3		3	6
DL2			3		3	3	3	6
DL1/DL3		3	3/3		3/3		3/3	
04P					2		2	2
06P				2	2		2	2
PPB(04P)					1		1	1
PPB(06P)				1	1		1	1
PPB NEUTRAL				1	1		1	1
PEU							3	
NO RIGHT TURN				2	2		2	2
SPARES	3	3	3	3	3	3	3	6
RAILROAD PRE-EMPTION					3		3	3
TOTAL NO.14	6	9	15	15	33	11	39	48
NO.8 CONDUCTORS								
LIGHTING (120V)				2	2	2	2	2
SIGNAL NUETRAL	1	1	1	1	1	1	1	1
TOTAL NO.8	1	1	1	3	3	3	3	3
TOTAL NO.6 SIGNAL POWER								2
DETECTOR CABLES								
212U, 212L							2	2
213L							1	1
214U							1	1
716L, 716U		1/1	1/1		1/1		1/1	1/1
7J9L, 7J5U		2	2		2		2	2
417U			1/1		1/1		1/1	1/1
5J9U							1	1
5J1U							1	1
6J3L				1	1		1	1
6J3U				1	1		1	1
6J2U, 6J2L				2	2		2	2
6J4U, 6J4L				2	2		2	2
417L		1	1		1		1	1
TOTAL DETECTOR CABLES		4	5	6	11		17	17
EVP CABLE		1	1		2			
CONDUIT SIZE (INCHES)	3	2*	2	1 1/2*	3	1 1/2	1 1/2	2-3
CONDUIT FILL (%)	3	22	20	13	21	12	19	21

* STEEL CONDUIT

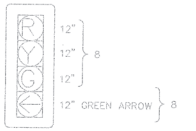
POLE AND EQUIPMENT SCHEDULE

NO.	STANDARD TYPE	STANDARD SIG. MA (Feet)	STANDARD LUM. MA (Feet)	VEH. SIGNAL MOUNTING MAST ARM	VEH. SIGNAL MOUNTING POLE	PED SIGNAL MOUNTING	PPB Ø	HPS LUMINAIRE (WATTS)	SPECIAL REQUIREMENT*
(A)	15				SV-2-T	SP-1-CS	6	250W	
(B)	1-8				~~SV-1-T~~ SV-1-T				
(C)	24-3-70	35	15	MAS	SV-1-T			250W	INSTALL W10-11 & W10-11A SIGNS INSTALL 5-SECTION HEAD @ 8'. REMOVE EXISTING SIGN & INSTALL R13 AND R65 SIGNS.
(D)	26-4-70	40	15	MAS	SV-1-T	SP-2-CS	6 4	250W	INSTALL R34-2 AND G7-1 (YOSEMITE ST.) ~~SIGNS ON SAME~~
(E)	17-3-70	20	15	MAS	SV-2-TB	SP-1-CS	4	250W	INSTALL 5-SECTION PV HEAD
(F)	29-5-70	55	15	MAT MAS	SV-2-TA			250W	INSTALL R34-2 AND G7-1 (YOSEMITE ST.) ~~SIGNS ON SAME~~
(G)	1-8				~~SV-1-T~~ SV-1-T				INSTALL 5-SECTION PV HEAD @ 8'

* OTHER REQUIREMENTS ARE COVERED BY NOTES, LEGEND, SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS. FOR TYPE OF STANDARD AND VEHICLE SIGNAL MOUNTING, SEE CALTRANS STANDARD PLANS.



SHEET 1 OF 3



DETAIL A
4-SECTION HEAD (MAS 4C)
NOT TO SCALE



DETAIL B
EXTINGUISHABLE MESSAGE SIGN
NOT TO SCALE

DSGN JS	D	4/18	Remove OL3 from Track Clearance Phase.	TZ		VERIFY SCALE	CITY OF ROSEVILLE CALIFORNIA	City of Roseville Public Works Department 311 Vernon Street Roseville, CA 95678	Highway/Rail Signal Atlantic & Yosemite 2010 Update (2070/332)	SHEET 2 OF 4
DR TZ	C	8/10	Remove det logic scheme, use overlaps.	TZ						DWG NO.
CHK JS	B	5/10	Update detector logic scheme.	TZ						DATE 04/04/18
APVD	A	5/09	Replace 170E controller with 2070.	TZ		NOT TO SCALE.				PROJ NO.
	NO.	DATE	REVISION	BY	APVD					



DSGN	JS
DR	TZ
CHK	JS
APVD	

NO.	DATE	REVISION	BY	APVD
D	4/18	Remove OL3 from Track Clearance Phase.	TZ	
C	8/10	Remove det logic scheme, use overlaps.	TZ	
B	5/10	Update detector logic scheme.	TZ	
A	5/09	Replace 170E controller with 2070.	TZ	

NOT TO SCALE.

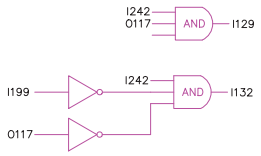
CITY OF ROSEVILLE CALIFORNIA

City of Roseville
Public Works Department
311 Vernon Street
Roseville, CA 95678

Highway/Rail Signal
Atlantic & Yosemite
2010 Update (2070/332)

SHEET	3 OF 4
DWG NO.	
DATE	04/04/18
PROJ NO.	

PPB (crossing Atlantic)



Ped push botton to call Ø1P:
Ø1P during RR dwell time.
Ø1P using Ø1 load switch.

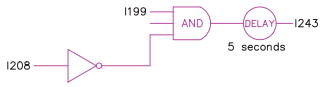
Ped push botton to call Ø4P:
Ø4P during normal operation.

I129 = Ø1P call input
I132 = Ø4P call input

I242 = C1, pin 69 input
(physically the PPB crossing Atlantic)

I199 = RR #2 pre-emption input
O117 = RR #2 pre-emption output

"No Right Turn" Flashing Signs



"No Right Turn" flashing sign.
Activated during RR #2 input.

I243 = pseudo pin
(physically the C11S aux harness: pin 1)
(connects to sign #1, sign #2)
I199 = RR #2 pre-emption input
I208 = local flash

DSGN	JS	D	4/18	Remove OL3 from Track Clearance Phase.	TZ			City of Roseville Public Works Department 311 Vernon Street Roseville, CA 95678	Highway/Rail Signal Atlantic & Yosemite 2010 Update (2070/332)	SHEET 4 OF 4
DR	TZ	C	8/10	Remove det logic scheme, use overlaps.	TZ					DWG NO.
CHK	JS	B	5/10	Update detector logic scheme.	TZ					DATE 04/04/18
APVD		A	5/09	Replace 170E controller with 2070.	TZ					PROJ NO.
		NO.	DATE	REVISION	BY	APVD	NOT TO SCALE.			

Appendix C:
Red Flash Approval Form

Public Works
Engineering
311 Vernon Street
Roseville, California 95678-2649

INTERSECTION RED FLASH APPROVAL

With stamped approval of this letter by the Traffic Section, Red Flash/Dark Signal is approved for the following intersection as specified below:

LOCATION: _____

PROJECT ACCOUNT NUMBER: _____

DATE: _____

TIME/DURATION: _____

☐ RED FLASH APPROVED:

1. Contractor shall submit the completed Intersection Red Flash Approval Form to the City Inspector and to TRedFlashRequests@roseville.ca.us 72 hours prior to needing the intersection in red flash. Signal shutdown shall be performed only by City personnel, unless otherwise directed by the Engineer.
2. During normal working hours (M-F, 7am-5pm) the contractor shall contact the Traffic Signal Technician either by telephone at **(916) 746-1760** or by email or text message at pagesignaltechnicians@roseville.ca.us one hour prior to needing the traffic signal placed into or removed from red flash. Outside of normal working hours - no phone call required.
3. The traffic signal will not be permitted to be placed in red flash during rain, lightning, or inclement weather conditions (including wet pavement conditions).
4. The Contractor shall reimburse the City for the actual cost of all inspection, including City Traffic Signal Technician time as required.
5. "Road Work Ahead" Signs required at all approaches to intersection when in red flash.
6. The Contractor shall furnish and place 36" "Stop" signs on arterial roadway approaches. Signs shall be mounted at a height of 84".

☐ DARK SIGNAL APPROVED – ADDITIONAL REQUIREMENTS

1. The Contractor shall place "Stop Ahead" C-W17 and "Stop" R-1 signs to direct vehicle and pedestrian traffic through the intersection during traffic signal system shutdown. Temporary "Stop Ahead" and "Stop" signs shall be removed when the system is turned on.
2. "Stop Ahead" and "Stop" signs shall be furnished by the Contractor. Minimum size of "Stop" signs shall be 36" for single sign placements and 24" for dual sign placements. Signs shall be mounted at a **height of 84"**.
3. One "Stop Ahead" sign and one "Stop" sign shall be placed for each direction of traffic. For approaches with two or more through or left turn lanes, two "Stop" signs shall be placed. Typical sign placement should be between the left turn and through lanes. Additional "Stop" signs should be placed on the shoulder. No "Stop" signs shall be placed in a manner that blocks bike lanes.
4. "Stop Ahead" and "Stop" signs shall be in place in each direction immediately prior to the intersection going dark and removed immediately after the intersection is placed back into red flash.
5. **Red flashing beacons or flares shall** be placed and maintained at each "Stop" sign during nighttime (dark) hours.
6. Traffic control must be verified by the Public Works Construction Inspector prior to the signal being deactivated.

☐ **I have read the above Intersection Red Flash Approval requirements.**

REQUESTOR INFO: _____
Name of Company

_____ ( ) _____
Print Name of Requestor Contact Phone Number

SIGNATURE: **X**_____ / / _____
Date

INSPECTOR NAME: _____ Inspector. Phone #: _____

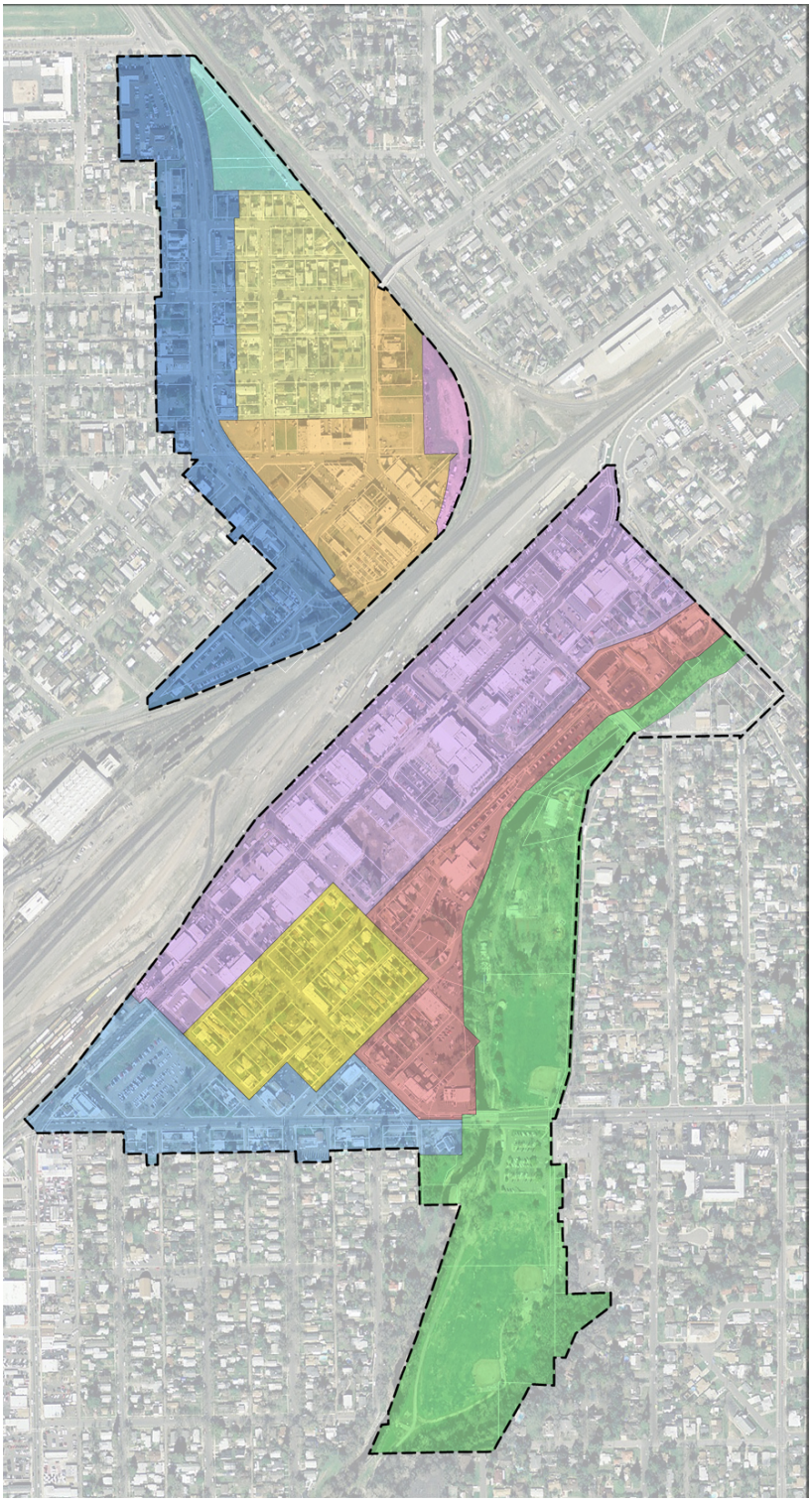
Copy To: Contractor, Public Works Inspector, Signal Technicians, NOTE: Contractor is required to follow all requirements of this letter and keep a signed and stamped copy at job site.

Appendix D:

Downtown Roseville Specific Plan – Mitigation Monitoring Program

Mitigation Monitoring Program

Downtown Roseville Specific Plan









Prepared by:

EDAW
2022 J Street
Sacramento, CA 95811

March 2009

EDAW | AECOM

Mitigation Monitoring Program

Downtown Roseville Specific Plan









Prepared for:

City of Roseville
Department of Planning
and Redevelopment
311 Vernon Street
Roseville, CA 95678

Attn: Kevin Payne
Assistant Development
Director
916/774-5256

Prepared by:

EDAW
2022 J Street
Sacramento, CA 95811

Contact:

John Hope
Project Manager
916/414-5800

March 2009

EDAW | AECOM

P 07110247.01

MITIGATION MONITORING PROGRAM FOR DOWNTOWN ROSEVILLE SPECIFIC PLAN PROJECT

INTRODUCTION

Sections 15091(d) and 15097 of the State Guidelines for the California Environmental Quality Act (CEQA) require public agencies "to adopt a reporting and monitoring program for changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." A Mitigation Monitoring Program (MMP) is required by the City of Roseville (City) for the Downtown Roseville Specific Plan project because the Final Environmental Impact Report (EIR) for the project identified potentially significant adverse impacts related to construction and implementation activities, and mitigation measures have been identified to mitigate those impacts.

The MMP contained herein is intended to satisfy the requirements of CEQA as it relates to the Downtown Roseville Specific Plan Project EIR. This MMP is intended to be used by City staff and mitigation monitoring personnel to ensure compliance with mitigation measures during implementation of the project. Mitigation measures presented in this MMP were developed during the preparation of the Draft EIR (December 23, 2008) and Final EIR (March 2009) for the project.

The intent of this MMP is to ensure the effective implementation and enforcement of all adopted mitigation measures. The MMP will provide for monitoring of construction activities and in-the-field identification and resolution of environmental concerns that may arise during project implementation. The MMP may be modified by the City during project implementation, as necessary, in response to changing conditions or other refinements.

MITIGATION MONITORING PROGRAM DESCRIPTION

COMPLIANCE

The City will coordinate all monitoring activities and document the implementation of mitigation measures. Unless otherwise specified herein, the City is responsible for taking all actions necessary to implement the mitigation measures according to the specifications provided for each measure, and for demonstrating that the action has been successfully completed. The City, at its discretion, may delegate implementation responsibility or portions thereof to the developer, a licensed contractor, or other designated agent.

The City will coordinate the overall administration of the MMP and will verify that City staff members and/or the construction contractor and other responsible parties have completed the necessary actions for each measure. The table below identifies the mitigation measures adopted in the Final EIR, additional information on the monitoring actions and specific implementing entities, including the responsible parties for monitoring actions, and timing of each mitigation action. In cases where the implementing responsibility is shared between the City and construction contractors, the City will be responsible for ensuring that mitigation requirements are implemented.

FIELD MONITORING OF MITIGATION MEASURES

Prior to the issuance of City-approved construction contracts and applicant-sponsored grading and building permits, and during such time as development plans are being prepared for approval by City staff, the City will be responsible for ensuring compliance with mitigation monitoring applicable to the project design phase.

During construction, the City's Public Works Department will assign inspectors to be responsible for monitoring the implementation of mitigation measures. These inspectors will report to the City's Public Works Department and will be thoroughly familiar with mitigation measures in the MMP. In addition, the inspectors will be familiar

with construction contract requirements, schedules, standard construction practices, and mitigation techniques. The City will be responsible for onsite, day-to-day monitoring of construction activities, reviewing construction plans, and reviewing equipment staging/access plans to ensure conformance with adopted mitigation measures. The City will also have the authority to enforce mitigation measures by suspending specific construction activities.

Once construction has been completed, the City will monitor the project, as necessary.

If any mitigation measures are not being implemented, the City may pursue corrective action. Penalties may include, but are not limited to, the following:

1. Written notification and request for compliance,
2. Withholding of permits,
3. Administrative fines,
4. Stop-work orders,
5. Criminal prosecution and/or administrative fines,
6. Forfeiture of security bonds or other guarantees, and/or
7. Revocation of permits or other entitlements.

Mitigation measures applicable to construction contracts issued by the City (e.g., for parking garages) will be conveyed in contract documents. Failure to comply with these requirements by the construction contractor may also necessitate contract-based penalties.

CHANGES TO MITIGATION MEASURES

Any substantive change to the MMP made by City staff shall be reported in writing to the Planning Department. Modification to any mitigation measures may be made by City staff subject to one of the following findings, documented by evidence included in the record:

a) The mitigation measure included in the Final EIR and the adopted MMP is no longer required because the significant environmental impact identified in the Final EIR has been found to not exist, or to occur at a level which makes the impact less than significant as a result of changes in the project, changes in conditions of the environment, or other factors.

OR

b) The modified or substitute mitigation measure to be included in the MMP provides a level of environmental protection equal to or greater than that afforded by the mitigation measure included in the Final EIR and the adopted MMP; and the modified or substitute mitigation measures do not have significant adverse effects on the environment in addition to or greater than those which were considered by the responsible hearing bodies in their decisions on the Final EIR and the proposed project; and the modified or substitute mitigation measures are feasible, and the City, through measures included in the MMP or other City procedures, can ensure their implementation.

Findings and related documentation supporting the findings involving modifications to mitigation measures shall be maintained in the project file with the MMP and shall be made available to the public upon request.

MITIGATION MONITORING PROGRAM

The table presented on the following pages provides the MMP for the Downtown Roseville Specific Plan project. The MMP identifies the following.

Mitigation Measure – This provides the text of the mitigation measure identified in the Final EIR and identifies the mitigation measure according to the number in the Final EIR. The mitigation measures are presented by topic (e.g., air quality) in the same sequence as that presented in the Final EIR.

Implementation – This identifies the entity responsible for complying with the requirements of the mitigation measure and identifies the method and/or process by which the mitigation measure will be implemented.

Timing – This identifies the time frame in which the mitigation will take place.

Reviewing Party – This identifies the party responsible for reviewing and ensuring implementation of each mitigation measure.

Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
Public Services			
4.3-4: Increased Demand for Public School Facilities and Services. The proposed project would generate approximately 23 high school students. To ensure adequate funding is available for high school facilities necessary to accommodate the increase in student population caused by the proposed project, landowners and developers shall pay school mitigation fees in accordance with the City of Roseville Ordinance 2434 before issuance of building permits for construction in the Plan area. Development projects in the Plan area that include only residential land uses shall enter into a Mutual Benefit Agreement (MBA) with school districts serving that area. Implementation of Mitigation Measure 4.3-4 would ensure adequate funding is made available to school districts to pay for construction and operation of new school facilities as needed to serve development. School impact fees are typically an insufficient amount to fund 100% of new school facility construction. However, the California Legislature has declared that the school impact fee is deemed to be full and adequate mitigation under CEQA (Government Code Section 65996). With payment of the state-mandate fees, impacts on school services and facilities would be reduced to a less-than-significant level.	The applicant shall pay school mitigation fees in accordance with the City of Roseville Ordinance 2434	Prior to issuance of building permits	PRD
Geology and Soils			
4.4-3: Seismically-Induced Risks to People and Structures Caused by Landsides. To minimize potential damage from unstable soil (landslides) along Dry Creek, the project applicant shall hire a qualified, licensed geotechnical engineer to map the Dry Creek corridor for clay-rich, weak soils, and high groundwater conditions prior to any construction or grading activities occurring in Dry Creek. Any unstable or hazardous slopes identified during the geotechnical investigation shall be identified by the geotechnical engineer and the geotechnical engineer shall provide recommendations for preventing landslides during project design and/or construction. These measures shall be included in grading permits prior to approval by the City.	The applicant shall hire a qualified, licensed geotechnical engineer to map the Dry Creek corridor for clay-rich, weak soils, and high groundwater conditions The project contractor shall Implement standard engineering requirements The project contractor shall implement all recommendations of the geotechnical investigation	Prior to issuance of grading permit; prior to ground-disturbing construction activities associated with bridges During ground-disturbing construction activities During ground-disturbing construction activities	PWD PWD PWD

PRD = Planning and Redevelopment Department PWD = Public Works Department

Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
Aesthetics			
4.5-3: Impacts from Lighting and Reflective Surfaces. Operation of the golf course at nighttime would require the use of high-powered floodlights mounted on poles approximately 25 to 30 feet high that would be placed near or adjacent to existing residences. Prior to installation of nighttime lighting at the golf course, the City shall coordinate with a company specializing in or expertise with exterior lighting systems for golf courses (e.g., Abacus). Floodlighting used shall consist of a double asymmetric beam distribution that ensures minimum upward light and tight control of light overspill into adjacent areas. The golf course shall be designed to incorporate a line of trees located along the outermost boundary between the golf course and all adjacent residences.	The applicant shall coordinate with a company specializing in or expertise with exterior lighting systems for golf courses The applicant shall design the golf course with double asymmetric beam distribution floodlights The applicant shall design the golf course with a line of trees located along the outermost boundary between the golf course and all adjacent residences	Prior to installation of nighttime lighting at the golf course Prior to operation of the golf course Prior to operation of the golf course	PRD PRD PRD
Traffic and Circulation			
4.6-1: Unacceptable Peak Hour LOS at Signalized Intersections under Existing Plus Project Conditions. The Specific Plan would establish a Pedestrian Overlay District within the Plan area. The Pedestrian Overlay District is would construct physical improvements at intersections in the Plan area to encourage pedestrian activity and increase pedestrian safety. Although three signalized intersections in the study area would operate below LOS C, they would be located in the Pedestrian Overlay District which would make the intersections exempt from the City's LOS C policy. Therefore, the project would result in a less-than-significant impact.	No actions necessary		
4.6-2: Unacceptable p.m. Peak Hour LOS at Signalized Intersections under Cumulative (2020) Plus Project Conditions. The Specific Plan would establish a Pedestrian Overlay District within the Plan area. The Pedestrian Overlay District is would construct physical improvements at intersections in the Plan area to encourage pedestrian activity and increase pedestrian safety. Establishment of a Pedestrian Overlay District would reduce impacts to the Judah Street/Vernon Street and Washington Boulevard/Main Street intersections because it would these intersections exempt from the City's LOS C policy such that the intersections would operate at an acceptable LOS. The following mitigation measures are identified for the significant impacts under the Cumulative (2020) Plus Project scenario at signalized study intersections:			

PRD = Planning and Redevelopment Department PWD = Public Works Department

Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
► LOS D at Yosemite Street/Atlantic Street. The addition of project traffic at this intersection under cumulative 2020 conditions would deteriorate operations from LOS C to LOS D. To mitigate project impacts, the southbound right-turn lane could be restriped as a shared left/right-turn lane. With this restriping, the intersection would operate at an acceptable LOS C. The project would be responsible to pay their fair share toward this improvement. This intersection improvement shall be incorporated into the City of Roseville Capital Improvement Program. Incorporating this intersection improvement into the City's Capital Improvement Program would establish a funding mechanism to collect the remaining funds for this improvement (beyond the project's fair share). Therefore, implementation of the ultimate improvement would be guaranteed and the impact is considered less than significant.	The City of Roseville shall incorporate into the City of Roseville Capital Improvement Program the restriping of the southbound right-turn lane at the Yosemite Street/Atlantic Street intersection as a shared left/right-turn lane	As part of approval of the Specific Plan	PRD
► LOS D at Orlando Avenue/Marlin Drive/Cirby Way. The addition of project traffic at this intersection under cumulative 2020 conditions would deteriorate operations from LOS C to LOS D. To mitigate project impacts, the northbound and southbound approaches should be widened to provide one dedicated left-turn lane, one through lane, and one right-turn lane. With these improvements, the intersection phasing could be modified to provide protected left-turn movements, and would operate at an acceptable LOS C. Please note that, given the curvature of Marlin Drive and Orlando Avenue, the creek just north of the intersection, and right-of-way constraints, the identified mitigation may not be feasible. Therefore, this impact is considered significant and unavoidable.	No actions necessary		
► LOS D at Harding Drive/Estates Drive. The addition of project traffic at this intersection under cumulative 2020 conditions would deteriorate operations from LOS C to LOS D. To mitigate project impacts, a dedicated southbound right-turn lane would be needed. With this improvement, the intersection would operate at an acceptable LOS C. The project would be responsible to pay a fair share toward this improvement. Please note that existing development is present on all four quadrants of the intersection, limiting the available right-of-way to implement the improvement which may make the identified mitigation infeasible. Therefore, this impact is considered significant and unavoidable.	No actions necessary		
► LOS E at Sunrise Avenue/Eureka Road. The addition of project traffic at this intersection under cumulative 2020 conditions would deteriorate operations from LOS D to LOS E. To mitigate project impacts, a third eastbound left-turn lane could be added to the intersection. With the	No actions necessary		

PRD = Planning and Redevelopment Department PWD = Public Works Department

Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
improvement, the intersection would operate at LOS D, consistent with the No Project Condition. However, there are potential right-of-way constraints and inherent design complexities of implementing triple left-turn lanes. Therefore, this impact is considered significant and unavoidable.			
4.6-5: Parking. To mitigate parking impacts for the Plan area, the project shall provide an additional 580 parking spaces. This shall be accommodated by providing extra spaces within the three planned parking structures, providing additional public parking spaces (as part of developing and implementing the Parking Management Plan), or require development to provide additional parking (e.g., in-lieu fees).	The City of Roseville shall provide an additional 580 parking spaces in the Plan area	As part of approval of the Specific Plan	PRD
Cultural Resources			
4.7-1: Disturbance of Architectural Resources. Two of the historic-era resources located within the Plan area to appear to be eligible for CRHR listing. These resources include: 316 Vernon Street and 419-425 Vernon Street. The Old Town Roseville area is designated as a historic district at the local level by the City of Roseville. Consequently, it is recommended that any alterations made to these eligible resources be conducted in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, and the Design Guidelines for Central Roseville. Generally, under CEQA, a project that complies with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of Interior's Standards for Rehabilitation is considered to have mitigated impacts to a historical resource to a less-than-significant level (State CEQA Guidelines Section 15064.5).	The applicant shall ensure alterations made to buildings at 316 Vernon Street and 419-425 Vernon Street be conducted in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, and the Design Guidelines for Central Roseville	Prior to issuance of demolition or building permit	PRD
Development within the Plan area could result in new land uses, infill development, and streetscape improvements. Over the 20-year build-out period for the Specific Plan, future developments within the Plan area could result in impacts to 25 buildings built between 1963 and 1983. These buildings and their locations are listed in Table 4.7-2. Prior to the approval of demolition or building permits that would result in substantial alteration of any of the 15 buildings that will reach 45 years in age by the build-out date, the City shall ensure that an evaluation of significance according to CRHR criteria shall be performed. If the evaluation indicates the property is not eligible for listing in the CRHR, no further action is necessary. If any of these buildings are found to be eligible for listing in the CRHR in conjunction with future evaluations, the	The applicant shall ensure alterations made to 25 buildings built between 1963 and 1983 are evaluated for significance according to CRHR criteria.	Prior to issuance of demolition or building permit	PRD

PRD = Planning and Redevelopment Department PWD = Public Works Department

Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
City shall ensure that the proposed development is consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties or develop other methods to avoid significant impacts to these properties in consultation with the State Office of Historic Preservation (OHP). This measure would reduce potentially significant impacts to Architectural Resources to a less-than-significant level.			
If it is not feasible to retain an eligible historic resource, prior to demolition, documentation similar to the standards of the Historic American Building Survey (HABS) shall be conducted. A HABS -like recordation would document the site history, construction history, and current appearance of the eligible resource in the context of Roseville's history. The HABS-like recordation shall be completed by an architectural historian who meets the Secretary of the Interior's professional qualifications standards, and an experienced HABS photographer. The final document shall be filed in a local library / repository. Although this type of documentation eliminates one adverse impact of demolition (i.e., loss of historical information) it does not prevent the physical loss of a historically significant resource.	If an evaluation determines any of the 25 buildings built between 1963 and 1983 are found to be eligible for listing in the CRHR, the applicant shall ensure development consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties or develop other methods to avoid significant impacts to these properties in consultation with the State Office of Historic Preservation (OHP)	Prior to issuance of demolition or building permit	PRD
Implementation of the above mitigation measure would reduce impacts related to disturbance of architectural resources. However, the potential loss of a historically significant resource could occur. While implementation of mitigation measure 4.7-1 would lessen project impacts, demolition of a historical resource would be a significant adverse change and, therefore, considered a significant and unavoidable impact.	If retention of an eligible historic resource is considered infeasible, the applicant shall conduct documentation similar to the standards of the Historic American Building Survey (HABS)	Prior to issuance of demolition or building permit	PRD
4.7-2: Disturbance of Potential Subsurface Cultural Deposits. In the event that unrecorded cultural materials are identified during construction-related ground disturbing activities, potentially destructive work in the vicinity of the find shall cease until a qualified archaeologist can determine the significance of the find and, if appropriate, provide recommendations for treatment to the City. Treatment approved by the City shall be implemented prior to resuming ground disturbing activities.	The project contractor shall Suspend construction work if unrecorded cultural materials are identified	During construction-related ground disturbing activities	PRD
4.7-3: Undiscovered / Unrecorded Human Remains. If human remains are discovered at any project construction site during any phase of construction, work within 50 feet of the remains shall be suspended immediately, and the	The project contractor suspend construction work, if human remains are discovered, and	During construction-related ground disturbing activities	PRD

PRD = Planning and Redevelopment Department PWD = Public Works Department

Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
City of Roseville, the project applicant, and the county coroner shall be notified immediately. If the remains are determined by the county coroner to be Native American, the Native American Heritage Commission (NAHC) shall be notified within 24 hours, and the guidelines of the NAHC shall be adhered to in the treatment and disposition of the remains. The City or the project applicant shall also retain a professional archaeologist with Native American burial experience who shall conduct a field investigation of the specific site and consult with the Most Likely Descendant (MLD) identified by the NAHC. As necessary, the archaeologist may provide professional assistance to the MLD including the excavation and removal of the human remains. The City or the project applicant shall implement any mitigation before the resumption of activities at the site where the remains were discovered.	notify City of Roseville The City of Roseville shall notify County Coroner if human remains are discovered The City of Roseville shall notify Native American Heritage Commission if human remains are discovered	 During construction-related ground disturbing activities During construction-related ground disturbing activities	 PRD PRD
Hazards and Hazardous Materials			
4.8-1: Exposure of Construction Workers, Residents, and Others to Hazardous Materials. A Health and Safety Plan (HASP) prepared for the construction process, consistent with general industry standards and Occupational Safety and Health Administration (OSHA) requirements, would address the risks to construction personnel and public safety, such that these health and safety risks would be mitigated to an acceptable level. A qualified professional, such as a Certified Industrial Hygienist (CIH), would prepare the HASP to provide guidance for personnel involved in trenching and other excavation work where there is evidence of hydrocarbons or other hazardous materials. The HASP utilized for each construction phase would describe in detail the health and safety guidelines, procedures, and work practices that must be adhered to and the work to be performed, and would also include special details governing certain work, such as working in confined spaces. Should contaminants be found, appropriate measures would be taken to mitigate potential effects related to construction/implementation of the proposed project. This may include excavation of contaminated soils and disposal at an appropriate facility. The potential contaminants of concern are petroleum hydrocarbons and associated chemicals, such as oxygenates and fuel scavengers, and volatile organic carbons (e.g., PCE, TCE).	The project contractor shall prepare site-specific Health and Safety Plan	Prior to grading or construction	PWD

PRD = Planning and Redevelopment Department PWD = Public Works Department

Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
The HASP would address appropriate personal protective equipment (PPE), monitoring to protect on-site workers; and the appropriate level of worker training (e.g., Hazardous Waste Operations and Emergency Response training). Monitoring may include visual and olfactory observation (e.g., soil staining or unusual odors), or air monitoring with hand-held devices (e.g., photo-ionization detector) to detect volatile hydrocarbons. Health-risk based action levels should be identified for various contaminants that would trigger modifications to work practices. Work practice modifications may include the cessation of construction activities until soil or groundwater sampling is performed, or an increase in the level of PPE or worker training. A Sampling and Analysis Plan (SAP) would accompany the HASP to determine if contaminants of concern are present and at what concentrations. The HASP would also address procedures to follow if unknown objects (e.g., USTs, underground piping) are encountered during construction activities. Specialized contractors would be hired to decommission and remove such USTs and perform confirmation sampling as necessary. The implementation of an adequate site-specific HASP would reduce the health risk to construction personnel by these recognized environmental conditions to a less-than-significant level. In addition, the following measures shall apply to construction activities, as appropriate.			
1) The construction contractor shall notify the Roseville Fire Department if evidence of soil or groundwater contamination (e.g., stained soil, unusual odor in groundwater) is encountered during construction activities. Any contaminated areas shall be remediated in accordance with recommendations made by the Fire Department, RWQCB, DTSC, or other appropriate federal, state, or local regulatory agencies.	The project contractor shall notify the Roseville Fire Department if evidence of soil or groundwater contamination is encountered	During construction-related ground disturbing	PRD
	The applicant shall remediate contaminated areas in accordance with recommendations made by the Fire Department, RWQCB, DTSC, or other appropriate federal, state, or local regulatory agencies	Prior to construction-related ground disturbing activities	PRD

PRD = Planning and Redevelopment Department PWD = Public Works Department

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2) Prior to demolition of any buildings constructed before 1977, the project applicant shall hire a qualified consultant to investigate whether any of these buildings contain lead and/or asbestos-containing materials and lead that could become friable or mobile during demolition activities. If found, the lead and/or asbestos-containing materials shall be removed by an accredited contractor in accordance with EPA and California OSHA standards. In addition, all activities (construction or demolition) in the vicinity of these materials shall comply with California OSHA lead and asbestos worker construction standards. The lead and asbestos-containing materials shall be disposed of properly at an appropriate off-site disposal facility.	The applicant or project contractor shall investigate whether any building constructed before 1977 contain lead and/or asbestos-containing materials and lead that could become friable or mobile during demolition activities	Prior to approval of building or demolition permit	PRD
The City would require contractors to prepare a site-specific HASP for individual projects within the Plan area to address current or historic RECs identified in the Phase I to verify that contractors are aware of site-specific RECs. As an alternative, the City could prepare a Plan-wide programmatic HASP to address all RECs identified in the Plan area, although preparation of the HASP is the ultimate responsibility of the contractor.	The applicant or project contractor shall remove lead and/or asbestos-containing materials by an accredited contractor in accordance with EPA and California OSHA standards	Prior to approval of building or demolition permit	PRD
Biological Resources			
Effects on Special-status Fish Species. The following measures shall be implemented to mitigate adverse effects to special-status fish species potentially resulting from the proposed project. To the extent feasible, the project shall be designed and constructed to avoid and minimize adverse effects to special-status fish species and aquatic habitats within the Specific Plan area. ► Project construction activities within the aquatic habitat of the active creek channel shall be conducted between June 15 and October 15, during the season that migrating chinook salmon and steelhead are not likely to be present. Construction within the riparian habitat along the upper banks of the creek need not be restricted to this timeframe, provided that the following measures (and those described in Section 4.12, Hydrology and Water Quality") are implemented to avoid or minimize sediment runoff into the creek.	The project contractor shall restrict construction activities within the aquatic habitat of the active creek channel to between June 15 and October 15	During construction-related activities	PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
► Silt fencing shall be placed around the construction areas within the aquatic habitat of the active creek channel. Silt fencing shall protect upstream and downstream areas from any construction related impacts. All construction activities within the aquatic habitat of the active creek channel shall be conducted within the silt fence area. Cofferdams shall be used if construction in a live channel is necessary. To the extent feasible, they shall be designed to maintain an open channel to allow continued movement of aquatic species. If dewatering of a construction area is needed, it shall occur according to a Fish Translocation and Salvage Plan prepared by a qualified biologist.	The project contractor shall place silt fencing around the construction areas within the aquatic habitat of the active creek channel	During construction-related activities	PRD
	The project contractor shall conduct construction activities inside the silt fence area	During construction-related activities	PRD
	The project contractor shall design silt fence to maintain an open channel to allow continued movement of aquatic species	During construction-related activities	PRD
► All outflow from any project-related dewatering that may be necessary when excavating the outfall installation areas shall be filtered and pumped downstream of the construction area.	The project contractor shall filter and pump all outflows downstream of the construction area	During construction-related activities	PRD
► After completion of construction within the aquatic habitat of the active creek channel, all remaining side cast shall be removed from the work area and silt fencing shall be removed.	The project contractor shall remove all remaining side cast and silt fencing	After completion of construction-related activities	PRD
► Revegetation of disturbed areas within the riparian habitat of the active creek channel with native riparian plants shall be accomplished prior to the onset of the winter rains in the year of construction.	The project contractor shall revegetate disturbed areas within the riparian habitat of the active creek channel with native riparian plants	After completion of construction-related activities; Prior to onset of winter rains in the year of construction	PRD
4.9-2: Effects on Valley Elderberry Longhorn Beetles. The following measures shall be implemented to mitigate adverse effects to valley elderberry longhorn beetles potentially resulting from the proposed project. If valley elderberry longhorn beetles are delisted in the future, as has recently been proposed by USFWS (USFWS 2006a), these measures may be amended to conform to any revised USFWS guidelines regarding this species.	The applicant shall design and construct project components to avoid and minimize adverse effects to elderberry shrubs	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► To the extent feasible, implementation of the project shall be designed and constructed to avoid and minimize adverse effects to elderberry shrubs.			
► Before project construction within the riparian habitat of the active creek channel would begin, focused surveys for elderberry shrubs shall be conducted within the Dry Creek riparian corridor and adjacent municipal parks in and within 100 feet of proposed construction-sites. Such surveys will not be required within areas lacking suitable habitat for elderberry	The applicant shall conduct focused surveys for elderberry shrubs shall be conducted within the Dry Creek riparian corridor and adjacent municipal parks in	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
shrubs (i.e., areas already in residential development).	and within 100 feet of proposed construction-sites		
► Where elderberry shrubs with 1.0 inch or greater stem diameter are found, USFWS conservation guidelines for valley elderberry longhorn beetles shall be followed by establishing a 100-foot buffer around the dripline of such shrubs wherever feasible to completely avoid potential impacts to valley elderberry longhorn beetles (USFWS 1999). All buffers shall be marked with brightly colored flags or fencing and shall be maintained until project construction is complete. Earthmoving activities, herbicide use, and other construction and maintenance activities with potential to impact valley elderberry longhorn beetles and/or their host shrubs would be avoided within these buffer zones. A qualified biologist will provide project contractors and construction crews working in the vicinity of an elderberry shrub buffer zone with a worker-awareness program before such work begins. This program will be used to describe the species, its habits and habitats, its legal status and required protection, and all applicable mitigation measures.	The project contractor shall establish a 100-foot buffer around the dripline of elderberry shrubs wherever feasible with brightly colored flags or fencing The project contractor shall restrict earthmoving activities, herbicide use, and other construction and maintenance activities within the 100-foot buffer zone The project contractor shall hire qualified biologist to provide a worker-awareness program	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel During construction-related ground disturbing activities within the riparian habitat of the active creek channel Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD PRD PRD
► If complete avoidance of shrub buffer zones is not feasible, USFWS shall be consulted. It is anticipated that either a new buffer width would be agreed upon along with additional protections for the safety of the beetles and shrubs, or that shrubs that could not be adequately protected would be transplanted to a protected location before construction would begin, in accordance with established USFWS guidelines (USFWS 1999) and a USFWS-approved mitigation and monitoring plan. Shrubs shall be transplanted to an area protected in perpetuity as habitat for valley elderberry longhorn beetles through a conservation easement or similar mechanism. Replacement mitigation plantings shall also be provided based on USFWS guidelines, which require replacement ratios ranging from 1:1 to 8:1 for lost stems at least 1 inch in diameter, depending on the size of the affected stems. Associated native species will be planted at ratios ranging from 1:1 to 2:1 for each elderberry planting. Transplants and mitigation plantings shall be monitored to ensure that USFWS success criteria are met (i.e., 60 percent survival of elderberry plants and associated riparian plantings). The proponent may elect either 10 years of monitoring, with surveys and reports to USFWS every year; or 15 years of monitoring, with surveys and reports on years 1, 2, 3, 5, 7, 10, and 15. The mitigation and monitoring plan shall describe both short- and long-term maintenance and management of the mitigation site; and specify remedial measures to be	The applicant shall consult with USFWS If complete avoidance of elderberry shrub buffer zones is not feasible The applicant shall implement measures as determined through consultation with USFWS	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
undertaken if mitigation success criteria are not met. Long-term management of mitigation lands shall be ensured by establishing a management endowment or other suitable funding source. The mitigation shall be implemented in a preserved portion of the project site in Dry Creek's riparian corridor, elsewhere within the Dry Creek watershed, or in suitable habitat elsewhere in Placer County or an adjacent county. If mitigation occurs off-site, it shall be at a location that would provide at least equal-quality habitat for valley elderberry beetles as the project site after implementation of the mitigation.			
4.9-3: Effects on Raptors and Special-status Birds. The following measures shall be implemented to mitigate adverse effects to raptors and special-status birds potentially resulting from the proposed project.	The project contractor shall restrict vegetation removal and grading activities to between September 1 to February 28	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► Potential disturbance of nesting special-status birds and raptors shall be reduced by limiting vegetation removal and grading to the non-breeding season (generally September 1 to February 28) to the extent feasible.			
► To avoid nest disturbance and a potential reduction in fledging success resulting from construction activities within the riparian habitat of the active creek channel and during the breeding season (March 1 to August 31), focused surveys for raptors and special-status birds would be conducted by a qualified biologist no more than 15 days prior to the beginning of construction. Surveys for raptors and special-status birds would include suitable nesting habitat within 500 feet of construction areas. If no active nests are found, no further measures would be needed.	The project contractor shall conduct focused surveys for raptors and special-status birds would be conducted by a qualified biologist during the breeding season	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► If active raptor or special-status bird nests are found, impacts would be avoided by the establishment of appropriate buffers and/or nest monitoring by a qualified biologist. The size of the buffer would be determined by a qualified biologist and may vary, depending on the species biology, location, nest stage, and specific construction activities to be performed while the nest is active. A qualified biologist shall monitor active nests to determine when the young have fledged and are feeding on their own, or the nest has failed. No construction activities would occur within a buffer zone until a qualified biologist confirms that the nest is no longer active.	If focused surveys find active raptor or special-status bird nests, the project contractor shall establish appropriate buffers as determined by a qualified biologist and/or conduct nest monitoring by a qualified biologist	During construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
	The project contractor shall restrict construction activities inside buffer zone until a qualified biologist confirms that the nest is no longer active	During construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
4.9-6: Jurisdictional Waters and Sensitive Natural Communities. The following measures shall be implemented to mitigate adverse effects to jurisdictional waters and sensitive habitats potentially resulting from the proposed project. ► To the extent feasible, the project shall be designed and constructed to avoid and minimize adverse effects to jurisdictional waters of the United States and riparian habitat within the Specific Plan area. Bioengineering bank stabilization techniques shall be used to the extent feasible and the installation of hardscape within jurisdictional waters of the United States shall be minimized to the greatest extent feasible to achieve the overall project objectives.	The applicant shall design and construct project components to avoid and minimize adverse effects to jurisdictional waters of the United States and riparian habitat	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► Wherever possible, riparian woodland habitat shall be avoided and preserved; the connectivity of the Dry Creek riparian corridor shall be maintained and enhanced. Areas of riparian woodland to remain undisturbed shall be clearly marked for avoidance during construction by methods such as fencing of flagging and construction personnel shall be educated about the need to avoid adverse effects on this resource.	The applicant shall avoid and preserve riparian woodland habitat The applicant shall maintain and enhance the connectivity of the Dry Creek riparian corridor The project contractor shall mark areas of riparian woodland with fencing or flagging The project contractor shall avoid construction activities inside areas of riparian woodland	During construction-related ground disturbing activities within the riparian habitat of the active creek channel During construction-related ground disturbing activities within the riparian habitat of the active creek channel During construction-related ground disturbing activities within the riparian habitat of the active creek channel During construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD PRD PRD PRD
► The project shall incorporate restoration and enhancement of the riparian corridor into the final design plans and construction specifications. Loose rock and concrete debris along the creek banks shall be removed as appropriate. The riparian corridor along the creek channel shall be enhanced by the planting of native shrub, tree, and understory species to	The applicant shall design and construct project components to incorporate restoration and enhancement of the riparian corridor	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
	The project contractor shall remove Loose rock and concrete debris along the creek banks	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
	The project contractor shall enhance the riparian corridor along the creek channel by planting of native shrub, tree, and understory species	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► Before any ground disturbing activities begin within the aquatic or riparian habitat of the active creek channel, a qualified biologist shall map potential waters of the United States as part of a formal delineation of waters of the United States and shall identify all riparian habitat that could be affected by the project. The findings shall be documented in a detailed report and submitted to the USACE for verification as part of the formal Section 404 wetland delineation process. If there would be unavoidable effects under USACE jurisdiction, the Section 404 process shall be completed and the acreage of affected jurisdictional habitat shall be replaced and/or rehabilitated. The acreage of jurisdictional wetland affected shall be replaced on a "no-net-loss" basis is accordance with USACE regulations. Habitat restoration, rehabilitation, and/or replacement shall be at a location and by feasible methods agreeable to USACE. All minimization and compensation measures adopted through the permitting process shall be implemented.	The applicant shall prepare formal delineation map of potential waters of the United States and identify all riparian habitat that could be affected by a qualified biologist	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
	The applicant shall submit findings to USACE for verification as part of the formal Section 404 wetland delineation process	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► Approval by the RWQCB, as determined during the Section 401 and Section 404 permitting processes, shall be required. All mitigation requirements determined through this process shall be implemented before any ground disturbing activities begin.	The applicant shall acquire approval from the RWQCB and implement all requirements of approval	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► If there would be unavoidable effects to habitats under DFG jurisdiction, a streambed alteration agreement shall be obtained and affected habitat shall be replaced and/or rehabilitated. Because project implementation could result change to the natural flow and/or bed and bank of Dry Creek, the project could require a Section 1602 streambed alteration agreement from DFG. If complete avoidance of indentified riparian habitat is not feasible, the acreage of riparian habitat that would be removed shall be replaced or rehabilitated on a "no-net-loss" basis in accordance with DFG regulations	The applicant shall obtain streambed alteration agreement, if there would be unavoidable effects to habitats under DFG jurisdiction.	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
and as specified in the streambed alteration agreement, if needed. Habitat restoration, rehabilitation, and/or replacement shall be at a location and by feasible methods agreeable to DFG. All minimization and compensation measures adopted through the permitting process shall be implemented.	The applicant shall replace or rehabilitate affected habitat on a "no-net-loss" basis in accordance with DFG regulations and as specified in the streambed alteration agreement	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
4.9-8: Protected Trees. The following measures shall be implemented to mitigate adverse effects to protected trees potentially resulting from the proposed project. Tree removal shall be avoided unless 1) necessary for project construction, 2) identified as safety hazards in a Certified Arborist Tree Survey and located in existing or planned public access areas (e.g., streets, trails), or 3) if exotic invasive species (e.g., tree of heaven). In the Dry Creek riparian corridor, snags, dead wood and branches on live trees, and fallen branches shall be retained to the maximum extent possible due to the important habitat functions that they provide for wildlife.	The applicant shall avoid tree removal to the maximum extent possible	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► Based on final approved project plans, the project applicant shall determine where protected trees are present within areas proposed for construction and shall identify trees for avoidance or removal.	The applicant shall determine where protected trees are present within areas proposed for construction and shall identify trees for avoidance or removal	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
► A Tree Preservation Plan shall be prepared for the protected trees within the Plan area that shall be avoided by the project to ensure that they are adequately protected during construction activities. A Certified Arborist shall prepare a Tree Preservation Plan in accordance with the Title 19 Article IV of the Roseville Municipal Code, which shall contain detailed recommendations for tree preservation and removal based on construction and grading plans. The Tree Preservation Plan shall address each tree potentially affected by construction and recommend preservation or removal based on its suitability for preservation, proximity to construction activities, and ability to tolerate impacts. The Tree Preservation Plan shall also include general preservation and construction guidelines to assist in the protection of trees within or near the grading limits or near construction zones. The Tree Preservation Plan shall include recommendations for specific protective measures for trees before, during, and after construction to reduce impacts to trees from development and maintain their health throughout the construction process. The Tree Preservation Plan shall be prepared using information in a Tree Survey and Assessment or similar report including information on each tree's species, size, location,	The applicant shall prepare a Tree Preservation Plan, by a Certified Arborist and in accordance with the Title 19 Article IV of the Roseville Municipal Code The applicant shall submit the Tree Preservation Plan to the City of Roseville for review and approval	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
condition, and suitability for preservation.			
► Where the removal of protected oaks is deemed necessary, the loss shall be mitigated according to Section 19.66.070 of the Roseville Municipal Code which requires that the replacement be calculated based upon an inch-for-inch replacement of the diameter at breast height of the tree removed. Mitigation trees shall be planted at appropriate sites and with appropriate maintenance to ensure their long-term self-sustaining survival. Where possible, mitigation oaks will be planted in canopy gaps along Dry Creek's riparian corridor within the Plan area, or elsewhere within the City of Roseville. A performance standard of 80 percent of the established mitigation trees shall be met after 5 years. The mitigation trees shall not be dependent upon significant maintenance measures within the last 2 years of monitoring, including supplemental irrigation and staking. Alternatively, an in-lieu fee payment can be made to the City of Roseville Native Oak Tree Propagation Fund, which is calculated per inch based on the diameter at breast height of the tree removed.	The applicant shall mitigate loss of protected trees according to Section 19.66.070 of the Roseville Municipal Code	Prior to construction-related ground disturbing activities within the riparian habitat of the active creek channel	PRD
Air Quality			
4.10-1: Generation of Short-term Construction-Related Emissions of Criteria Air Pollutants and Precursors. In accordance with the PCAPCD, the applicant shall comply with all applicable rules and regulations as listed above (e.g., Rule 202, 218 and 228). In addition, the following mitigation measures shall be implemented to reduce short-term construction-related air quality impacts. In addition, dust control measures are required to be implemented by all projects in accordance with the City of Roseville Grading Ordinance, and the PCAPCD Fugitive Dust Rule 228. 1. The applicant shall submit to PCAPCD a Construction Emission / Dust Control Plan within 30 days prior to groundbreaking. If the PCAPCD does not respond within 20 days, the plan shall be considered approved. The plan must address the minimum requirements found in section 300 and 400 of District Rule 228, Fugitive Dust (www.placer.ca.gov/airpollution/airpolut.htm). The applicant shall keep a hard or electronic copy of Rule 228, Fugitive Dust on-site for reference.	The project contractor shall submit a Construction Emission / Dust Control Plan to PCAPCD for review and approval	30 days prior to construction-related ground disturbing activities	PRD

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2. The Construction Emission/Dust Control Plan shall include a comprehensive inventory (i.e. make, model, year, emission rating) of all heavy-duty off-road equipment (50 horsepower (HP) of greater) that will be used an aggregate of 40 or more hours for the construction project. The project representative shall provide PCAPCD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The plan shall demonstrate that the heavy-duty (> 50 HP) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20% NOX reduction and 45% particulate reduction compared to the most recent ARB fleet average. PCAPCD shall be contacted for average fleet emission data. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. Contractors can access the Sacramento Metropolitan Air Quality Management District's web site to determine if their off-road fleet meets the requirements listed in this measure (http://www.airquality.org/ceqa/Construction_Mitigation_Calculator.xls).	The project contractor shall prepare a Construction Emission/ Dust Control Plan that includes a comprehensive inventory list of f all heavy-duty off-road equipment that will be used an aggregate of 40 or more hours for the construction project The project contractor shall prepare a Construction Emission/ Dust Control Plan that includes anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman The project contractor shall prepare a Construction Emission / Dust Control Plan that demonstrates that the heavy-duty (> 50 HP) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20% NOX reduction and 45% particulate reduction compared to the most recent ARB fleet average	30 days prior to construction-related ground disturbing activities 30 days prior to construction-related ground disturbing activities 30 days prior to construction-related ground disturbing activities	PRD PRD PRD
3. Clean earth moving construction equipment with water or sweep clean, once per day, or as necessary (e.g., when moving onsite), consistent with National Pollutant Discharge Elimination System Best Management Practices, local ordinances, and municipal codes. Water shall be applied to control dust as needed to prevent dust impacts offsite. Operational water truck(s), shall be on-site, as required, to control fugitive dust. Construction vehicles leaving the site shall be cleaned, as needed, to prevent dust, silt, mud, and dirt from being released or tracked off-site.	The project contractor shall clean earth moving construction equipment with water or sweep clean, once per day, or as necessary (e.g., when moving onsite), consistent with National Pollutant Discharge Elimination System Best Management Practices, local ordinances, and municipal codes	During construction-related ground disturbing activities	PRD

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	The project contractor shall apply water to control dust as needed to prevent dust impacts offsite	During construction-related ground disturbing activities	PRD
4. Spread soil binders on unpaved roads and employee/equipment parking areas. Soil binders shall be non-toxic in accordance with state and local regulations. Apply approved chemical soil stabilizers, or vegetated mats, etc. according to manufacturers' specifications, to all-inactive construction areas (previously graded areas which remain inactive for 96 hours).	The project contractor shall spread soil binders on unpaved roads and employee/equipment parking areas	During construction-related ground disturbing activities	PRD
5. Minimize diesel idling time to a maximum of 10 minutes.	The project contractor shall minimize diesel idling time to a maximum of 10 minutes	During construction-related ground disturbing activities	PRD
6. Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary diesel power generators, if feasible.	The project contractor shall utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary diesel power generators, if feasible	During construction-related ground disturbing activities	PRD
7. Measures specific to 20+ acre project sites:	The project contractor shall hold a pre-construction meeting to review the construction emission/dust control plan	Prior to construction-related ground disturbing activities	PRD
► A pre-construction meeting shall be held to review the construction emission/dust control plan for projects requiring grading of 20+ acres. PCAPCD shall be notified and may attend.			
► The applicant shall comply with PCAPCD Fugitive Dust Rule 228; including suspending grading operations when conditions exceed designated wind speeds, and executing proper control of lime or other drying agents.	The project contractor shall comply with PCAPCD Fugitive Dust Rule 228	During construction-related ground disturbing activities	PRD
	The project contractor shall perform a Visible Emissions Evaluations, by an ARB-certified representative, routinely (i.e., once per week) to evaluate project related off-road and heavy-duty on-road equipment emissions for compliance with this requirement	During construction-related ground disturbing activities	PRD
► An applicant representative, ARB-certified to perform Visible Emissions Evaluations (VEE), shall routinely (i.e., once per week) evaluate project related off-road and heavy-duty on-road equipment emissions for compliance with this requirement for projects grading	The project contractor shall comply with PCAPCD Visible Emissions Rule 202	During construction-related ground disturbing activities	PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
more than 20 acres in size, regardless of how many acres are to be disturbed daily.			
► Construction equipment exhaust emissions shall not exceed the PCAPCD Visible Emissions Rule 202. Fugitive dust is not to exceed 40% opacity and not go beyond property boundary at any time. Operators of vehicles and equipment found to exceed opacity limits are to be immediately notified and the equipment must be repaired within 72 hours.	The project contractor shall notify PCAPCD if Operators of vehicles and equipment found to exceed opacity limits	During construction-related ground disturbing activities	PRD
4.10-2: Generation of Long-Term Operation-Related (Regional) Emissions of Criteria Air Pollutants and Ozone Precursors. The following is a list of mitigation measures developed by PCAPCD to reduce long-term operational impacts to local and regional air quality. Due to the severe nonattainment designation in western Placer County for federal standards, all projects should implement those measures that are logical and feasible.	The applicant shall design projects to exceed California Title 24 energy requirements	Prior to issuance of building permit	PRD
1. Exceed California Title 24 2008 energy efficiency standards by a minimum of 10%. Areas of Title 24 to be exceeded (e.g., insulation, appliances, and fixtures) shall be determined by the applicant and the City.			
2. All truck loading and unloading docks shall be equipped with one 110/208-volt power outlet for every two-dock door. Diesel trucks shall be prohibited from idling more than five minutes and must be required to connect to the 110/208-volt power to run any auxiliary equipment. Signage shall be provided.	The applicant shall equip all truck loading and unloading docks with one 110/208-volt power outlet for every two-dock door	During project operation	PRD
	The applicant shall prohibit diesel trucks from idling more than five minutes and require diesel trucks to connect to the 110/208-volt power to run any auxiliary equipment	Prior to issuance of building permit	PRD
3. Install a gas outlet in all outdoor recreational fire pits, and permanently installed cooking appliances.	The applicant shall install a gas outlet in all outdoor recreational fire pits, and permanently installed cooking appliances	Prior to issuance of building permit	PRD

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Mitigation Measure	Implementation	Timing	Reviewing Party
4. Only natural gas fireplace appliances are permitted. Where propane or natural gas service is not available, only EPA Phase II certified wood-burning devices shall be allowed in single-family residences. The emission potential from each residence shall not exceed 7.5 grams per hour. Wood-burning or Pellet appliances shall not be permitted in multi-family developments.	The applicant shall allow only natural gas fireplace appliances	Prior to issuance of building permit	PRD
	Where propane or natural gas service is not available, the applicant shall allow only EPA Phase II certified wood-burning devices	Prior to issuance of building permit	PRD
	The applicant shall prohibit wood-burning or pellet appliances in multi-family developments.	Prior to issuance of building permit	PRD
5. Where feasible, install solar electric generation systems. Recommend participation in Roseville Electric incentive programs for energy-efficient development.	The applicant shall install solar electric generation systems, where feasible	Prior to issuance of building permit	PRD
4.10-3: Exposure of Sensitive Receptors to Toxic Air Contaminant Emissions. The following mitigation measures shall be implemented to reduce the exposure of sensitive receptors to TACs: ► All proposed homes in the Plan area shall be equipped with filter systems with high Minimum Efficiency Reporting Value (MERV) for removal of small particles (such as 0.3 micron) at all air intake points to the home. All proposed dwelling units shall be constructed with mechanical ventilation systems which would allow occupants to keep windows and doors closed and allow for the introduction of fresh outside air, without the requirement of open windows.	The applicant shall equip homes with filter systems with high Minimum Efficiency Reporting Value (MERV) for removal of small particles (such as 0.3 micron) at all air intake points to the home	Prior to issuance of building permit	PRD
► Proposed commercial uses that have the potential to emit TACs (e.g., diesel-fueled engines) shall be located as far away as possible from existing and proposed receptors.	The applicant shall locate commercial uses that have the potential to emit TACs (e.g., diesel-fueled engines) as far away as possible from existing and proposed receptors	Prior to approval of use permit	PRD
► Proponents of projects with a residential component shall provide disclosure to future residents advising them of the proximity to the JR Davis Rail Yard and associated health risk impacts.	The applicant shall disclose future residents advising them of the proximity to the JR Davis Rail Yard and associated health risk impacts	Prior to issuance of building permit	PRD

PRD = Planning and Redevelopment Department PWD = Public Works Department

Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
► When determining the exact type of facility that would occupy the proposed commercial space, the project shall take into consideration its toxic-producing potential.	The applicant shall take into consideration its toxic-producing potential of proposed commercial space	Prior to approval of use permit	PRD
► Proposed facilities that would require the long-term use of diesel equipment and heavy-duty trucks shall develop a plan to reduce emissions, which may include such measures as scheduling such activities when the residential uses are the least occupied, and requiring such equipment to be shut off when not in use and prohibiting heavy-trucks from idling.	The applicant shall prepare and submit plan to reduce emissions to the City of Roseville for review and approval	Prior to issuance of building permit	PRD
► To the extent feasible, sensitive receptors shall be located as far away from the UPRR maintenance facility as possible.	The applicant shall locate sensitive receptors as far away from the UPRR maintenance facility as possible	Prior to approval of use permit	PRD
► Implement Mitigation Measure 4.10-2-2, described above, with respect to electrification of commercial loading dock areas to reduce emissions associated with truck idling.	The applicant shall equip all truck loading and unloading docks with one 110/208-volt power outlet for every two-dock door	Prior to issuance of building permit	PRD
4.10-5: Exposure of Sensitive Receptors to Odors. Implementation of Mitigation Measure 4.10-3 to reduce indoor exposure to TACs would also result in a reduction in the intensity of offensive odors from the surrounding odor sources. In addition, the applicant shall require all businesses that occupy the property to install odor-controls as necessary to prevent a substantial dispersion of odors to adjacent residential areas.	The applicant shall install odor-controls as necessary to prevent a substantial dispersion of odors to adjacent residential areas	During project operation	PRD
Noise			
4.11-1: Short-Term Construction-Generated Noise Levels. Although impacts related to short-term construction-generated noise were considered to be less than significant with implementation of the project, the following mitigation is provided to ensure impacts remain at a less-than-significant level. Construction contractors shall implement the following measures during construction activities.	The project contractor shall maintain construction equipment per manufacturers' specifications and fitted with the best available noise suppression devices (i.e., mufflers, silencers, wraps, etc)	During construction activities	PRD
► Construction equipment shall be properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (i.e., mufflers, silencers, wraps, etc). Shroud or shield all impact tools, and muffle or shield all intake and exhaust ports on power equipment.	The project contractor shall Shroud or shield all impact tools, and muffle or shield all intake and exhaust ports on power equipment	During construction activities	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
► Construction operations and related activities associated with the proposed project shall comply with the operational hours outlined in the City of Roseville Municipal Code Noise Ordinance; construction operations shall be limited to between the hours of 7 a.m. and 7 p.m. Monday through Friday and between 8 a.m. and 8 p.m. Saturday and Sunday.	The project contractor shall comply with the operational hours outlined in the City of Roseville Municipal Code Noise Ordinance	During construction activities	PRD
	The project contractor shall restrict construction activities to between the hours of 7 a.m. and 7 p.m. Monday through Friday and between 8 a.m. and 8 p.m. Saturday and Sunday	During construction activities	PRD
► Construction equipment should not be idled for extended periods of time in the vicinity of noise-sensitive receptors.	The project contractor shall restrict construction equipment from idling for extended periods of time in the vicinity of noise-sensitive receptors	During construction activities	PRD
► Locate fixed and/or stationary equipment as far as possible from noise sensitive receptors (e.g., generators, compressors, rock crushers, cement mixers). Shroud or shield all impact tools, and muffle or shield all intake and exhaust ports on powered construction equipment.	The project contractor shall locate fixed and/or stationary equipment as far as possible from noise sensitive receptors (e.g., generators, compressors, rock crushers, cement mixers).	During construction activities	PRD
	The project contractor shall shroud or shield all impact tools, and muffle or shield all intake and exhaust ports on powered construction equipment.	During construction activities	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
► Where feasible, temporary barriers shall be placed as close to the noise source or as close to the receptor as possible and break the line of sight between the source and receptor where modeled levels exceed applicable standards. Acoustical barriers shall be constructed material having a minimum surface weight of 2 pounds per square foot or greater, and a demonstrated Sound Transmission Class (STC) rating of 25 or greater as defined by American Society for Testing and Materials (ASTM) Test Method E90. Placement, orientation, size, and density of acoustical barriers shall be specified by a qualified acoustical consultant.	The project contractor shall place temporary barriers as close to the noise source or as close to the receptor as possible and break the line of sight between the source and receptor where modeled levels exceed applicable standards	During construction activities	PRD
	The project contractor shall construct acoustical barriers, as needed, with material having a minimum surface weight of 2 pounds per square foot or greater, and a demonstrated Sound Transmission Class (STC) rating of 25 or greater as defined by American Society for Testing and Materials (ASTM) Test Method E90	During construction activities	PRD
	The project contractor shall acquire expertise of qualified acoustical consultant for placement, orientation, size, and density of acoustical barriers, as needed	During construction activities	PRD
4.11-3: Long-Term Operational Stationary Source Noise Levels. Project applicant(s) for industrial and commercial/office land uses shall implement the following measures to reduce exposure of sensitive receptors to excessive noise levels from future stationary sources.	The applicant shall determine if the proposed use would likely generate noise levels adversely affecting the adjacent noise-sensitive uses	Prior to issuance of use permit	PRD
1. Industrial and Commercial/Office Land Uses. Where these land uses adjoin common property lines with noise-sensitive uses, the following mitigation measures shall be incorporated into the project design to reduce noise exposure from future stationary sources. a. During project review the City's Planning Department shall determine if the proposed use would likely generate noise levels adversely affecting the adjacent noise-sensitive uses. If a proposed project has the potential to generate or expose noise-sensitive uses to noise levels	The applicant shall prepare a site-specific acoustical analysis, If a proposed project has the potential to generate or expose noise-sensitive uses to noise levels exceeding the City of Roseville noise standards or result in a substantial (3 dB or greater)	Prior to issuance of use permit	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
exceeding the City of Roseville noise standards (Tables 4.11-4 through 4.11-6) or result in a substantial (3 dB or greater) permanent increase in ambient noise levels, the project applicant shall prepare a site-specific acoustical analysis. The acoustical analysis shall be conducted in accordance with the City of Roseville General Plan requirements shown in Table 4.11-5.	permanent increase in ambient noise levels		
b. Loading and unloading areas shall be located so that commercial buildings shield nearby residential land uses from noise generated by loading dock and delivery activities. If necessary, additional sound barriers shall be constructed on the commercial sites to protect nearby noise-sensitive uses.	The applicant shall locate loading and unloading areas so that commercial buildings shield nearby residential land uses from noise generated by loading dock and delivery activities	Prior to issuance of use permit	PRD
c. Loading dock activity and delivery truck activity at the commercial uses developed on the project site shall only occur during the daytime hours of 7 a.m. to 10 p.m., in order to prevent evening and nighttime sleep disturbance at nearby residential land uses.	The applicant shall restrict loading dock activity and delivery truck activity at the commercial uses to only occur during the daytime hours of 7 a.m. to 10 p.m.	During project operation	PRD
d. All commercial HVAC machinery shall be located within mechanical equipment rooms wherever possible. Equipment manufacturer's specifications for venting and access to outside air shall be maintained.	The applicant shall locate all commercial HVAC machinery within mechanical equipment rooms wherever possible	Prior to issuance of use permit	PRD
	The applicant shall maintain equipment manufacturer's specifications for venting and access to outside air	During project operation	PRD
e. Localized noise barriers or rooftop parapets shall be constructed around the HVAC, cooling towers, and mechanical equipment so that line-of-site to the noise source from the property line of the noise-sensitive receptors is blocked. Equipment manufacturer's specifications for venting and access to outside air shall be maintained.	The applicant shall construct localized noise barriers or rooftop parapets around the HVAC, cooling towers, and mechanical equipment	Prior to issuance of use permit	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
f. Property maintenance activities at commercial and office uses shall be restricted to daytime hours between 8 a.m. and 9 p.m.	The applicant shall restrict maintenance activities at commercial and office uses to daytime hours between 8 a.m. and 9 p.m.	During project operation	PRD
g. The owner or developer of any mixed-use building containing residential units shall provide written notice to all future residents, occupants, and users that the surrounding area may be subject to levels of noise associated with commercial uses at higher levels than would be expected in residential areas.	The applicant shall provide notice to all future residents, occupants, and users that the surrounding area	Prior to issuance of occupancy permit	PRD
Project applicant(s) for parking structures shall implement the following measures to reduce exposure of sensitive receptors to excessive noise levels from future stationary sources.	The applicant shall orientate parking structures so that nearby noise-sensitive receptors would be shielded from all on-site circulation routes	Prior to issuance of use permit	PRD
2. Parking Structures. Parking structures located in the immediate vicinity of noise-sensitive land uses shall include the following mitigation measures.			
a. Orientate parking structures so that nearby noise-sensitive receptors would be shielded from all on-site circulation routes (entrances, exits, and internal routes). If maintaining visibility is required transparent acoustical screens shall be installed on openings with direct line-of-sight to noise-sensitive receptors.			
b. Parking structures driveways and entrances shall be located so that the structure serves as a barrier to nearby noise-sensitive receptors.	The applicant shall locate parking structures driveways and entrances to act as a barrier to nearby noise-sensitive receptors	Prior to issuance of use permit	PRD
c. Interior reflective surfaces (i.e., ceilings), exposing nearby noise-sensitive receptors to elevated noise levels shall have an acoustically absorptive treatment, such as spray-in cellulose applied.	The applicant shall apply acoustically absorptive treatment to interior reflective surfaces	Prior to issuance of building permit	PRD
d. Parking structure capacity shall be limited during more sensitive evening and nighttime hours (7 p.m. to 7 a.m.). (i.e., 50% capacity from 7 p.m. to 10 p.m., 30% capacity from 10 p.m. to 7 a.m.).	The City of Roseville shall limit parking structure capacity during more sensitive evening and nighttime hours	During project operation	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
e. To ensure compliance, further analysis of on-site noise generation from the proposed parking structures shall be conducted when tentative maps become available.	The City of Roseville shall conduct noise analysis of on-site noise generation from the proposed parking structures	During project operation	PRD
4.11-4: Land Use Compatibility of On-site Sensitive Receptors with Future Traffic Noise Levels. Project applicant(s) shall implement the following measures to substantially reduce the exposure of sensitive receptors to excessive roadway traffic noise levels.	The applicant shall determine if the proposed land use would potentially be exposed to noise levels exceeding the City's noise level standards	Prior to issuance of use permit	PRD
► During project review, the City's planning staff shall determine if the proposed land use would potentially be exposed to noise levels exceeding the City's noise level standards. If a proposed project has the potential to generate or be exposed to noise levels exceeding the City of Roseville noise standards (refer to Tables 4.11-4 through 4.11-6) or result in a substantial permanent increase in ambient noise levels (3 dB or greater), the project applicant shall prepare a site-specific acoustical analysis. The acoustical analysis shall be conducted in accordance with the City of Roseville General Plan requirements shown in Table 4.11-5.	The applicant shall prepare a site-specific acoustical analysis, if a proposed project has the potential to generate or expose noise-sensitive uses to noise levels exceeding the City of Roseville noise standards or result in a substantial (3 dB or greater) permanent increase in ambient noise levels	Prior to issuance of use permit	PRD
► Disclose all transportation noise (i.e., roadway, railway, race track), vibration levels, and their meanings to purchasers and/or renters prior to contract or title transfer for residential property within the Plan area.	The applicant shall disclose all transportation noise (i.e., roadway, railway, race track), vibration levels, and their meanings to purchasers and/or renters prior to contract or title transfer for residential property	Prior to issuance of use permit	PRD
► Incorporate site specific design considerations to reduce exterior noise exposure levels. Site design shall include the following measures as applicable to the project-specific site and when feasible: • Common outdoor activity areas, such as play structures, swimming pools, or other outdoor congregation areas included in multi-family residential and/or mixed-use developments shall be located such that the building(s) serve as a sound barrier to the nearest predominant noise source. • Distances between noise sources and noise-sensitive uses shall be maximized through the use of noise buffers/setbacks. Setback areas can	The applicant shall incorporate site specific design considerations to reduce exterior noise exposure levels	Prior to issuance of use permit	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
take the form of open space, frontage roads, recreational areas, storage yards, or other City approved setback. • Noise barriers shall be constructed to provide shielding of noise-sensitive uses and outdoor activity areas. Barriers may include manmade walls, earthen berms, a combination of walls and berms, and other structures breaking line of sight from noise source to receptor. Barriers shall be located in close proximity to either the noise source or the sensitive receptor. • A site specific acoustical analysis shall be performed consistent with Table 4.11-5, and determine effectiveness of various site design measures based on specific construction plans.	The applicant shall conduct site-specific acoustical analysis to determine effectiveness of various site design measures based on specific construction plans	Prior to issuance of use permit	PRD
4.11-5: Land Use Compatibility of On-site Sensitive Receptors with Future Railroad Noise Levels. Implement mitigation measure 4.11-4 to reduce the exposure of sensitive receptors (i.e., residential, mixed-use development) to significant noise associated with future railroad and rail yard operations.	The applicant shall conduct actions listed above for 4.11-4: Land Use Compatibility of On-site Sensitive Receptors with Future Traffic Noise Levels	Prior to issuance of use permit	PRD
4.11-6: Future Interior Noise Levels at On-site Sensitive Receptors. Project applicant(s) shall implement the following measures for all noise-sensitive land uses with direct exposure to roadways, parking areas, and railways and exterior noise levels greater than 70 dB Ldn: ► All residential uses shall be constructed with air conditioning and mechanical ventilation systems that allow for windows and doors to remain closed and achieve acoustical isolation from traffic and railroad noise. The systems shall allow for the introduction of fresh outside air, without the requirement of open windows. Access to outside air shall be automatically controlled to prevent unintentionally flowing seasonally hot or cold into conditioned space.	The applicant shall construct residential uses with air conditioning and mechanical ventilation systems that allow for windows and doors to remain closed and achieve acoustical isolation from traffic and railroad noise	Prior to issuance of building permit	PRD
► Attic vents direct exposure to elevated noise levels shall be acoustically baffled, containing at least one 90 degree obstruction to the flow of air. The baffle shall be fitted with an acoustically absorbent liner.	The applicant shall acoustically baffle attic vents	Prior to issuance of building permit	PRD
► Exterior walls shall be constructed of a three-coat stucco or wood siding with an exterior underlayment or sound board.	The applicant shall construct exterior walls shall be constructed of a three-coat stucco	Prior to issuance of building permit	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
	or wood siding with an exterior underlayment or sound board		
► All residential windows and doors with direct exposure to elevated noise levels shall be required to meet a minimum STC rating of 34.	The applicant shall design residential windows and doors with direct exposure to elevated noise levels to meet a minimum STC rating of 34	Prior to issuance of building permit	PRD
► Windows and sliding glass doors shall be mounted in low infiltration rate frames (0.5 cubic feet per minute or less, per ANSI specifications).	The applicant shall mount windows and sliding glass doors in low infiltration rate frames (0.5 cubic feet per minute or less, per ANSI specifications)	Prior to issuance of building permit	PRD
► Exterior doors shall be solid core with perimeter weather-stripping and threshold seals.	The applicant shall design exterior doors to be solid core with perimeter weather-stripping and threshold seals	Prior to issuance of building permit	PRD
► The City shall require project applicants to submit an acoustical analysis which verifies compliance with the City of Roseville interior noise level standard of 45 dB L_{dn}. The analysis shall be based on detailed construction plans and site configuration details, and be conducted by a qualified acoustical consultant.	The applicant shall prepare and submit an acoustical analysis which verifies compliance with the City of Roseville interior noise level standard of 45 dB L_{dn}.	Prior to issuance of building permit	PRD
Ground-Borne Noise and Vibration Levels at Sensitive Receptors. Project applicant(s) shall implement the following measures to reduce the potential for human annoyance and architectural/structural damage resulting from elevated ground-borne noise and vibration levels.	The applicant shall utilize alternative installation methods were possible for pile driving required within a 50-foot radius of historic structures	During construction activities	PRD
► Construction-Induced Vibration: • Pile driving required within a 50-foot radius of historic structures should utilize alternative installation methods were possible (e.g., pile cushioning, jetting, pre-drilling, cast-in-place systems, resonance-free vibratory pile drivers). Specifically, geo pier style cast in place systems shall be used where feasible as an alternative to pile driving to reduce the number and amplitude of impacts required for seating the pile.	The project contractor shall record the pre-existing condition of all buildings within a 50-foot radius, and historical buildings within the immediate vicinity of proposed construction activities	Prior to construction activities	PRD
• The pre-existing condition of all buildings within a 50-foot radius, and historical buildings within the immediate vicinity of proposed construction activities shall be recorded in the form of a preconstruction	The project contractor shall document fixtures and finishes within a 50-foot radius of construction activities susceptible to damage	Prior to construction activities	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
survey. The preconstruction survey shall determine conditions that exist			
before construction begins for use in evaluating damage caused by construction activities. Fixtures and finishes within a 50-foot radius of construction activities susceptible to damage shall be documented (photographically and in writing) prior to construction. All damage will be repaired back to its pre-existing condition.	The project contractor shall repair all damage back to its pre-existing condition	Within 30 days after completion of construction activities	PRD
• Vibration monitoring shall be conducted prior to and during pile driving operations occurring within 100 feet of the historic structures. Every attempt shall be made to limit construction generated vibration levels in accordance with Caltrans recommendations during pile driving and impact activities in the vicinity of the historic structures.	The project contractor shall conduct vibration monitoring prior to and during pile driving operations occurring within 100 feet of the historic structures	Prior to and during construction activities	PRD
• Provide protective coverings or temporary shoring of on-site or adjacent historic features as necessary, in consultation with the Preservation Director.	The project contractor shall provide protective coverings or temporary shoring of on-site or adjacent historic features	During construction activities	PRD
► Railroad Induced Vibration: • Vibration sensitive uses shall be located a minimum of 100 feet from the UPRR centerline. To ensure compliance with FTA and Caltrans recommended guidelines, and site specific ground-borne noise and vibration assessment should be conducted.	The applicant shall locate vibration sensitive uses a minimum of 100 feet from the UPRR centerline	Prior to issuance of use permit	PRD
• A ground-borne vibration assessment shall be conducted at proposed building pad locations within 200 feet of UPRR right of ways, prior to project approval. Vibration monitoring and assessment shall be conducted by a qualified noise and vibration control engineer.	The applicant shall conduct ground-borne vibration assessment, by a qualified noise and vibration control engineer, at proposed building pad locations within 200 feet of UPRR right of ways	Prior to issuance of use permit	PRD
Hydrology and Water Quality			
4.12-5: Expose People or Structures to a Significant Risk of Flooding. All habitable structures constructed in the Plan area shall be located outside the adjusted 100-year flood plain as identified in the *Downtown Specific Plan Hydraulic Study* (RBF 2008) prepared for the Downtown Roseville Specific Plan. Additional encroachment into areas within the adjusted 100-year flood plain shall require site specific hydraulic modeling. Specific structures identified in the Downtown Roseville Specific Plan shall be prohibited from being constructed inside the adjusted 100-year flood plain unless evaluated and	The applicant shall locate all habitable structures constructed in the Plan area outside the adjusted 100-year flood plain as identified in the *Downtown Specific Plan Hydraulic Study* (RBF 2008) prepared for the Downtown Roseville Specific	Prior to issuance of use permit	PRD

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Table 1
Downtown Roseville Specific Plan Project Mitigation Monitoring Program

Mitigation Measure	Implementation	Timing	Reviewing Party
	Plan		
approved through project specific hydraulic modeling including structures associated with mixed-use development and high-density residential.	The applicant shall conduct site specific hydraulic modeling when additional encroachment into areas within the adjusted 100-year flood plain is required	Prior to issuance of use permit	PRD
4.12-6: Proposed Project Structures within the 100-year Flood Zone Could Impede or Redirect Flood Flows. To prevent impeding or redirecting storm water flows in Dry Creek, the following actions shall be implemented for design and construction of improvements identified in the Downtown Roseville Specific Plan adjacent to Dry Creek.	The applicant shall construct Creek Walk at the existing top of bank elevation for Dry Creek and make the area south of the new library bridge inaccessible during major storm events	Prior to construction activities	PWD
1. The Creek Walk identified in the Downtown Roseville Specific Plan shall be constructed at the existing top of bank elevation for Dry Creek and the area south of the new library bridge shall be made inaccessible during major storm events.	The applicant shall align all pedestrian bridges and the grand staircase to prevent increased 100-year flood water surface elevations in Dry Creek	Prior to construction activities	PWD
2. All pedestrian bridges in the Specific Plan area and the grand staircase shall be aligned to prevent increased 100-year flood water surface elevations in Dry Creek. Additional hydraulic analyses shall be conducted for the new pedestrian bridge alignments that are inconsistent with the RBF hydraulic analysis.	The applicant shall conduct hydraulic analyses for new pedestrian bridge alignments if inconsistent with the RBF hydraulic analysis	Prior to construction activities	PWD
3. Prior to any golf course related development activities in Saugstad Park, a site-specific hydraulic analysis or other acceptable analysis shall be conducted for a more specific golf course development plan to ensure that there is no risk of impeding or redirecting flood flows. This future analysis shall be reviewed and approved by the City's Public Works Department.	The applicant shall conduct hydraulic analyses for a more specific golf course development plan to ensure that there is no risk of impeding or redirecting flood flows	Prior to construction activities	PWD
	The applicant shall submit the hydraulic analyses for a more specific golf course development plan to PWD for review and approval	Prior to construction activities	PWD
4.12-7: Inundation by Seiche, Tsunami, or Mudflow. Implement Mitigation Measure 4.4-3.	The applicant shall hire a qualified, licensed geotechnical engineer to map the Dry Creek corridor for clay-rich, weak soils,	Prior to any construction or grading activities occurring in Dry Creek	PWD

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Table 1 Downtown Roseville Specific Plan Project Mitigation Monitoring Program			
Mitigation Measure	Implementation	Timing	Reviewing Party
	and high groundwater conditions		

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COUNCIL COMMUNICATION

CC #: 3843
File #: 0800-02 & 0201-01

Title:	Aquifer Storage and Recovery Wells 13 (Campus Oaks) and 19 (Misty Wood) – Approve Plans and Specifications, Design-Assist Construction Agreement, and Budget Adjustment
Contact:	Keith Schmidt 916-746-1194 kjschmidt@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.5.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council:

1. Approve the construction plans and specifications for the Aquifer Storage and Recovery Wells 13 (Campus Oaks) and 19 (Misty Wood) ("Project");
2. Approve the Design-Assist Construction Agreement for the Project with Auburn Constructors in the amount of $13,883,300 and adopt a resolution authorizing the City Manager to execute it on behalf of the City of Roseville;
3. Authorize the City Manager or his designee to approve and pay for contract change orders for this project that could increase the contract amount by no more than 10 percent ($1,388,330), for a not-to-exceed total contract amount of $15,271,630; and
4. Adopt an ordinance to approve a budget adjustment of $2,950,000 from available resources in the Water Construction Fund to fully fund the project.

BACKGROUND

The City is actively implementing the Aquifer Storage and Recovery (ASR) Program, which involves construction of ASR wells capable of both water recharge and groundwater extraction. The next two wells for construction are the Campus Oaks (Well 13) and Misty Wood (Well 19) ASR wells. The City drilled the wells in 2023 and completed design of the remaining above-ground facilities including pumping system, buildings, and site grading and paving in 2024.

On December 17, 2024, staff published Request for Proposals (RFP) No. 08-135 for Design-Assist construction services. On February 5, 2025, four (4) firms proposed on the Project. The proposals were evaluated by a panel including Environmental Utilities Department engineering and operations staff, a Public Works engineering staff member, the project Construction Manager from the consulting firm Brown and Caldwell, and a member of the City Attorney's Office. The panel ranked each firm based on the criteria specified in the RFP. The panel determined the Auburn Constructors proposal provided the best value based on the evaluation criteria of the RFP. Staff successfully negotiated the attached Design-Assist Construction Agreement (Exhibit

A). The project is scheduled to complete the majority of the sitework and materials procurement in 2025 and complete all construction in the summer of 2026.

FISCAL IMPACT

The Campus Oaks and Misty Wood ASR well project is funded by the Water Construction Fund and grant funding from the state's Natural Resources Agency and Department of Water Resources. City participation in the grant funding agreement was approved by Council on September 20, 2023. The grant is administered by the Regional Water Authority (RWA), a joint powers authority the City is a member of, as part of a larger American River Terms for Ecosystem Support and Infrastructure Assistance Needs (ARTESIAN) Project.

The ARTESIAN grant provides this project with $8,010,000 in grant funding to be utilized by December 31, 2025. This project will utilize grant money first for both Construction and Construction Management until those funds are expended, then will utilize funds available in the City's Water Construction Fund.

An additional $2,950,000 of funding is requested to fully fund the project, including $2,704,000 for capital outlay and $246,000 for internal secondary labor. This budget adjustment will bring the current project budget of $16,625,865 to a new total project cost of $19,575,865, using available funds in the Water Construction Fund.

ENVIRONMENTAL REVIEW

Project level CEQA compliance for the Campus Oaks ASR well project was accomplished with the preparation of the Hewlett Packard Master Plan EIR and subsequent CEQA addendums for the Campus Oaks Master Plan (SCH No.1995112022). Additionally, both proposed well sites were evaluated in the Aquifer Storage and Recovery (ASR) Program Draft and Final EIR certified in 2012 (SCH 2009072018), and the Supplement to the ASR Final EIR (certified December 17, 2020). Because the action is consistent with the projects evaluated in the previously certified and adopted CEQA documents, no new affects would be expected to occur and all applicable mitigation measures from the CEQA documents will be implemented. As such, no additional CEQA action is required at this time.

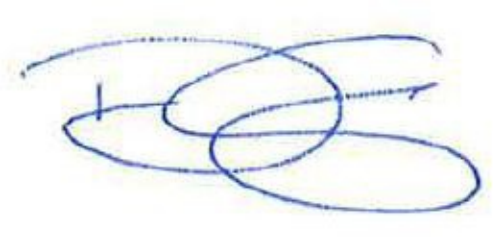
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal F – Invest in well-planned infrastructure and growth

Respectfully Submitted,

Keith Schmidt, Senior Engineer

Sean Bigley, Environmental Utilities Director



Dominick Casey, City Manager

ATTACHMENTS:

Description

Plans and Specifications Cover Sheet

Project Vicinity Map

Project Plans - Part A

Project Plans - Part B

Project Specifications - Part A

Project Specifications - Part B

Resolution 25-099

Design-Assist Construction Agreement

Auburn Constructors Proposal - Part 1

Auburn Constructors Proposal - Part 2

Ordinance 6929

AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CAMPUS OAKS & MISTY WOOD ASR WELLS

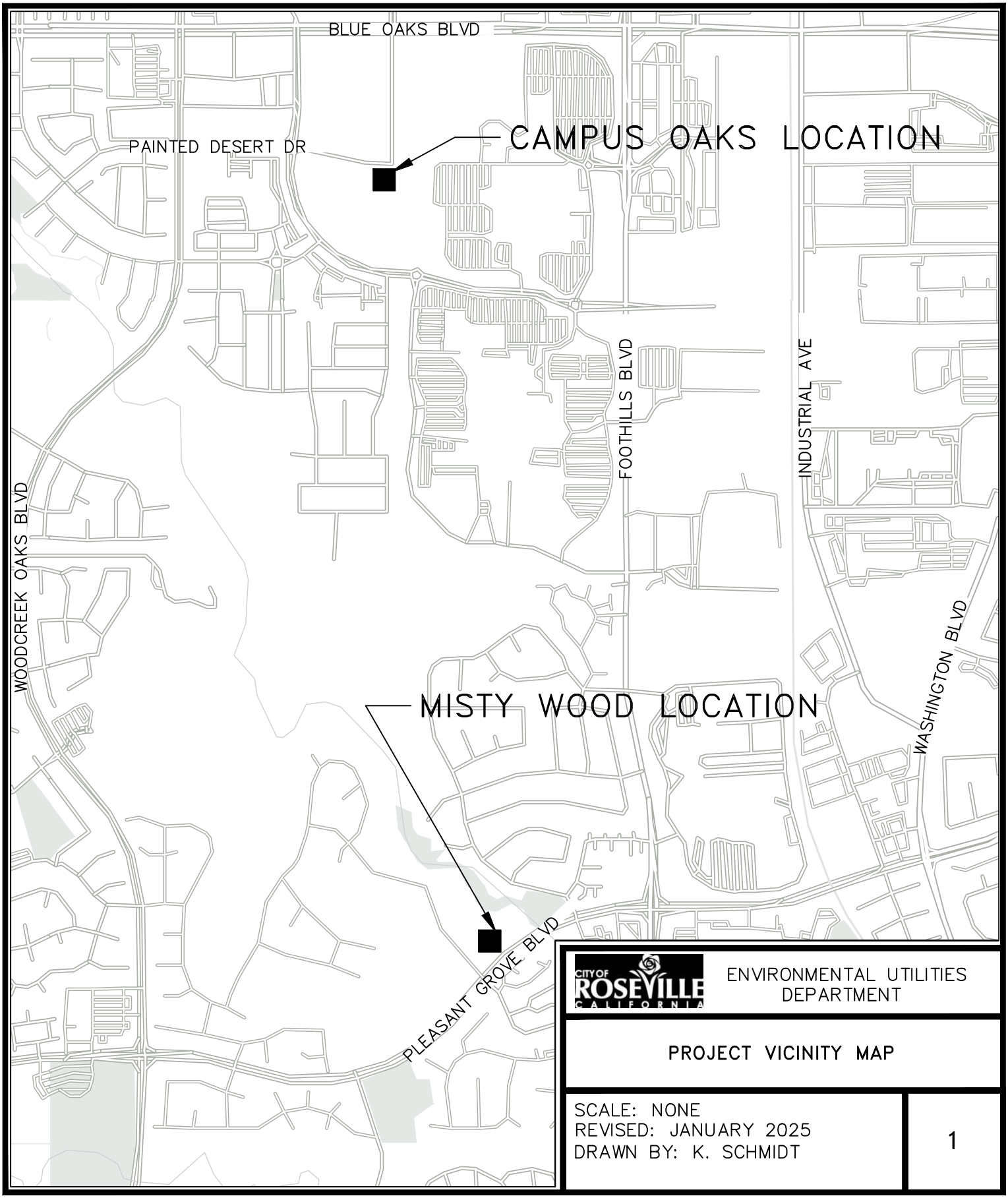
The Request for Proposals (RFP) contained 4 volumes:

1. Vol. 1 – RFP
2. Vol 2 – Sample Contract
3. Vol 3A and 3B – Project Specifications
4. Vol 4 – Project Plans

Project Plans A and Project Plans B contain the plans provided to proposers during the RFP process

Project Specifications A and Project Specifications B contain the specifications for the Design-Assist Construction Agreement

The Proposal from Auburn Contractors is contained in two attachments, Part 1 and Part 2



CITY OF ROSEVILLE CALIFORNIA

ENVIRONMENTAL UTILITIES DEPARTMENT

PROJECT VICINITY MAP

SCALE: NONE
REVISED: JANUARY 2025
DRAWN BY: K. SCHMIDT

1

CITY OF ROSEVILLE

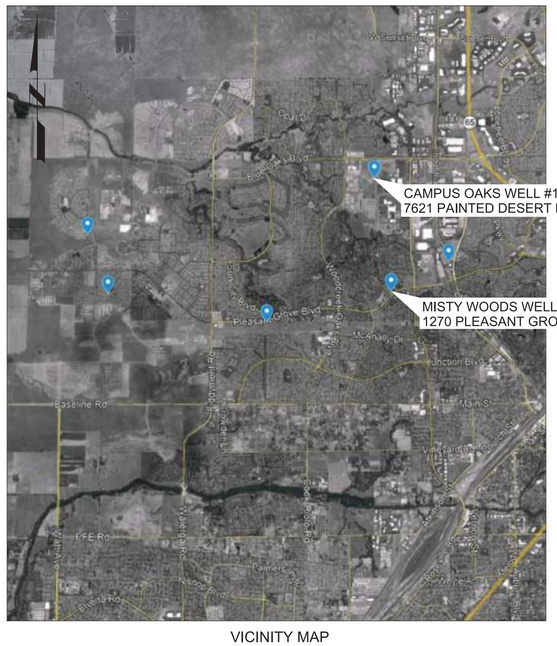
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CAMPUS OAKS & MISTY WOOD ASR WELLS

CITY PROJECT 500315

DECEMBER 2024

VOLUME 4 OF 4

RFP #08-135



VICINITY MAP

APPROVAL RECOMMENDED BY: _____ DATE: 12/16/24

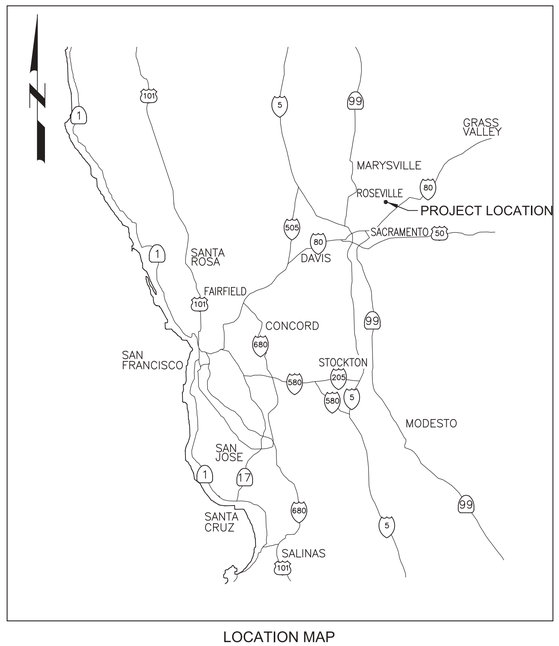
JANICE GAINEY, P.E.
PRINCIPAL ENGINEER
DEPARTMENT OF ENVIRONMENTAL UTILITIES
CITY OF ROSEVILLE

APPROVED BY: _____ DATE: 12/17/2024

GEORGE HANSON, P.E.
WATER UTILITY MANAGER
DEPARTMENT OF ENVIRONMENTAL UTILITIES
CITY OF ROSEVILLE

SUBMITTED BY: _____ DATE: 12/17/24

MICHAEL DUCKER, P.E.
PROJECT MANAGER
CAROLLO ENGINEERS, INC.



LOCATION MAP

UTILITY CONTACT INFORMATION

UTILITY	COMPANY	CONTACT	PHONE
U.S.A.	CALL BEFORE YOU DIG		(800) 612-2444 OR 811
GAS	PACIFIC GAS & ELECTRIC	NICHOLAS MORLOCK	(916) 760-5737
ELECTRIC	CITY OF ROSEVILLE	JOSEPH MCKINNEY	(916) 774-5691
FIRE	CITY OF ROSEVILLE	MICHAEL BRADLEY	(916) 774-5802
WATER	CITY OF ROSEVILLE	MIKE SIMI	(916) 774-5753
SEWER	CITY OF ROSEVILLE	DAN PRUDEN	(916) 746-1891
STORM DRAIN	CITY OF ROSEVILLE	DEVELOPMENT SERVICES	(916) 774-5539
T.V./CABLE	CONSOLIDATED COMMUNICATIONS	ANTHONY NOLASCO	(916) 675-6370
T.V./CABLE	COMCAST	STEVE ABELIA	(916) 830-6757
INSPECTIONS	CITY OF ROSEVILLE	ORVILLE CHATTERTON	(916) 774-5576

carollo®

ASR SYSTEMS

Luhdorff & Scalmanini
Consulting Engineers

JOB NO. 11843A.10

DRAWING NO. 00G01

SHEET NO. 1 OF 178

Plot Date: 9/12/2022 7:29:07 AM

	SHEET #	DRAWING #	DESCRIPTION
			(G) - GENERAL
	1	00G01	COVER SHEET
	2	00G02	DRAWING INDEX
	3	00G03	ABBREVIATIONS
	4	00G04	GENERAL NOTES, LEGENDS AND SYMBOLS
	5	00G05	DESIGN CRITERIA
	6	13G06	CAMPUS OAKS SURVEY CONTROL DATA
	7	19G06	MISTY WOOD SURVEY CONTROL DATA
X	8	00G07	CALIFORNIA GREEN BUILDING STANDARDS CODE CHECKLIST 1
X	9	00G08	CALIFORNIA GREEN BUILDING STANDARDS CODE CHECKLIST 2
X	10	00G09	CALIFORNIA GREEN BUILDING STANDARDS CODE CHECKLIST 3
X	11	00G10	CALIFORNIA GREEN BUILDING STANDARDS CODE CHECKLIST 4
			(C) - CIVIL
	12	00GC01	GENERAL CIVIL NOTES AND LEGEND
	13	13C01	CAMPUS OAKS - PAVING, GRADING, AND SITE PLAN
	14	13C02	CAMPUS OAKS - YARD PIPING AND UTILITIES PLAN
	15	13C03	CAMPUS OAKS - PIPE PROFILES
	16	13C04	CAMPUS OAKS - PERIMETER WALL IMPROVEMENTS
	17	13C05	CAMPUS OAKS - DETAILS AND SECTIONS
	18	13C06	CAMPUS OAKS - COORDINATE POINTS
	19	19C00	MISTY WOOD - OVERALL SITE PLAN
	20	19C01	MISTY WOOD - PAVING, GRADING, AND SITE PLAN
	21	19C02	MISTY WOOD - YARD PIPING AND UTILITIES PLAN
	22	19C03	MISTY WOOD - PIPE PROFILES
	23	19C04	MISTY WOOD - PERIMETER WALL IMPROVEMENTS
	24	19C05	MISTY WOOD - DETAILS AND SECTIONS
	25	19C06	MISTY WOOD - COORDINATE POINTS
			(A) - ARCHITECTURAL
	26	13GA01	CAMPUS OAKS - BUILDING CODE ANALYSIS AND SCHEDULES
	27	13GA02	CAMPUS OAKS - EGRESS PLAN
	28	13A01	CAMPUS OAKS - FLOOR PLAN
	29	13A02	CAMPUS OAKS - ROOF PLAN
	30	13A03	CAMPUS OAKS - NORTH AND WEST ELEVATIONS
	31	13A04	CAMPUS OAKS - SOUTH AND EAST ELEVATIONS
	32	13A05	CAMPUS OAKS - INTERIOR ELEVATIONS
	33	19GA01	MISTY WOOD - BUILDING CODE ANALYSIS AND SCHEDULES
	34	19GA02	MISTY WOOD - EGRESS PLAN
	35	19A01	MISTY WOOD - FLOOR PLAN
	36	19A02	MISTY WOOD - ROOF PLAN
	37	19A03	MISTY WOOD - NORTH AND EAST ELEVATIONS
	38	19A04	MISTY WOOD - SOUTH AND WEST ELEVATIONS
	39	19A05	MISTY WOOD - INTERIOR ELEVATIONS
			(S) - STRUCTURAL
	40	00GS01	CAMPUS OAKS - GENERAL STRUCTURAL NOTES
	41	13S01	CAMPUS OAKS - FOUNDATION PLAN
	42	13S02	CAMPUS OAKS - ROOF PLANS
	43	13S03	CAMPUS OAKS - SECTIONS AND DETAILS 1
	44	13S04	CAMPUS OAKS - SECTIONS AND DETAILS 2
	45	13S05	CAMPUS OAKS - SECTIONS AND DETAILS 3
	46	19S01	MISTY WOOD - FOUNDATION PLAN
	47	19S02	MISTY WOOD - ROOF PLANS
	48	19S03	MISTY WOOD - SECTIONS AND DETAILS 1
	49	19S04	MISTY WOOD - SECTIONS AND DETAILS 2
	50	19S05	MISTY WOOD - SECTIONS AND DETAILS 3

SHEET #	DRAWING #	DESCRIPTION
		(M) - MECHANICAL
51	00GM01	GENERAL MECHANICAL NOTES AND LEGEND
52	00GM02	GENERAL PLUMBING NOTES, ABBREVIATIONS, AND SYMBOLS
53	00GM03	GENERAL HVAC NOTES, ABBREVIATIONS, AND SYMBOLS
54	00GM04	PROCESS EQUIPMENT AND PIPE SCHEDULES 1
55	00GM05	PROCESS EQUIPMENT AND PIPE SCHEDULES 2
56	13M01	CAMPUS OAKS - BUILDING PLAN
57	13M02	CAMPUS OAKS - BUILDING SECTIONS AND DETAILS 1
58	13M03	CAMPUS OAKS - BUILDING SECTIONS AND DETAILS 2
59	13M04	CAMPUS OAKS - PLUMBING SCHEDULES
60	13M05	CAMPUS OAKS - PLUMBING PLAN
61	13M06	CAMPUS OAKS - HVAC SCHEDULES
62	13M07	CAMPUS OAKS - HVAC PLAN
63	13M08	CAMPUS OAKS - HVAC AIRFLOW SCHEMATIC
64	13M09	CAMPUS OAKS - WELLHEAD DETAILS
65	13M10	CAMPUS OAKS - CHEMICAL ROOM
66	13M11	CAMPUS OAKS - WELL PROFILE
67	13M12	CAMPUS OAKS - MONITORING WELL SECTIONS AND DETAILS
68	19M01	MISTY WOOD - BUILDING PLAN
69	19M02	MISTY WOOD - BUILDING SECTIONS AND DETAILS 1
70	19M03	MISTY WOOD - BUILDING SECTIONS AND DETAILS 2
71	19M04	MISTY WOOD - PLUMBING SCHEDULES
72	19M05	MISTY WOOD - PLUMBING PLAN
73	19M06	MISTY WOOD - HVAC SCHEDULES
74	19M07	MISTY WOOD - HVAC PLAN
75	19M08	MISTY WOOD - HVAC AIRFLOW SCHEMATIC
76	19M09	MISTY WOOD - WELLHEAD DETAILS
77	19M10	MISTY WOOD - CHEMICAL ROOM
78	19M11	MISTY WOOD - WELL PROFILE
79	19M12	MISTY WOOD - MONITORING WELL SECTIONS AND DETAILS
		(E) - ELECTRICAL
80	00GE01	LEGEND
81	00GE02	ABBREVIATIONS
82	00GE03	SCHEMATIC SYMBOLS
83	00E01	CONTROL SCHEMATICS 1
84	00E02	CONTROL SCHEMATICS 2
85	00E03	ELECTRICAL SCHEDULES
86	13E01	CAMPUS OAKS - ELECTRICAL SITE PLAN
87	13E02	CAMPUS OAKS - UNDERGROUND POWER AND CONTROL PLAN
88	13E03	CAMPUS OAKS - EXPOSED POWER AND CONTROL PLAN
89	13E04	CAMPUS OAKS - LIGHTING AND GROUNDING PLAN
90	13E05	CAMPUS OAKS - DUCT BANK SECTIONS
91	13E06	CAMPUS OAKS - WD31-MCCX-30100 ELEVATION
92	13E07	CAMPUS OAKS - WD31-MCCX-30100 ONE-LINE DIAGRAM
93	13E08	CAMPUS OAKS - PANELBOARD & HANDHOLE/MANHOLE SCHEDULES
94	19E01	MISTY WOOD - ELECTRICAL SITE PLAN
95	19E02	MISTY WOOD - UNDERGROUND POWER AND CONTROL PLAN
96	19E03	MISTY WOOD - EXPOSED POWER AND CONTROL PLAN
97	19E04	MISTY WOOD - LIGHTING AND GROUNDING PLAN
98	19E05	MISTY WOOD - DUCT BANK SECTIONS
99	19E06	MISTY WOOD - WD31-MCCX-36100 ELEVATION
100	19E07	MISTY WOOD - WD31-MCCX-36100 ONE-LINE DIAGRAM
101	19E08	MISTY WOOD - PANELBOARD & HANDHOLE/MANHOLE SCHEDULES
		(N) - INSTRUMENTATION
102	00GN01	SYMBOLS AND ABBREVIATIONS 1
103	00GN02	SYMBOLS AND ABBREVIATIONS 2
104	00GN03	SYMBOLS AND ABBREVIATIONS 3
105	00GN04	SYMBOLS AND ABBREVIATIONS 4
106	00GN05	SYMBOLS AND ABBREVIATIONS 5

107	00GN06	SAMPLE LOOP DRAWING
108	13GN01	CAMPUS OAKS - CONNECTION DIAGRAM
109	13GN02	CAMPUS OAKS - PCM EXTERNAL ELEVATION
110	13GN03	CAMPUS OAKS - PCM INTERNAL ELEVATION
111	13GN04	CAMPUS OAKS - PCM WIRING DIAGRAM
112	13GN05	CAMPUS OAKS - PCM P&ID
113	13GN06	CAMPUS OAKS - I/O TABLES
114	13N01	CAMPUS OAKS - WELL PUMP AND VALVES P&ID 1
115	13N02	CAMPUS OAKS - WELL PUMP AND VALVES P&ID 2
116	13N03	CAMPUS OAKS - WELL PUMP AND VALVES P&ID 3
117	13N04	CAMPUS OAKS - SODIUM HYPOCHLORITE FEED SYSTEM P&ID
118	13N05	CAMPUS OAKS - LIQUID FLUORIDE FEED SYSTEM P&ID
119	13N06	CAMPUS OAKS - WATER QUALITY P&ID
120	13N07	CAMPUS OAKS - RESTROOM, DRAIN AND SEWER P&ID
121	19GN01	MISTY WOOD - CONNECTION DIAGRAM
122	19GN02	MISTY WOOD - PCM EXTERNAL ELEVATION
123	19GN03	MISTY WOOD - PCM INTERNAL ELEVATION
124	19GN04	MISTY WOOD - PCM WIRING DIAGRAM
125	19GN05	MISTY WOOD - PCM P&ID
126	19GN06	MISTY WOOD - I/O TABLES
127	19N01	MISTY WOOD - WELL PUMP AND VALVES P&ID 1
128	19N02	MISTY WOOD - WELL PUMP AND VALVES P&ID 2
129	19N03	MISTY WOOD - WELL PUMP AND VALVES P&ID 3
130	19N04	MISTY WOOD - SODIUM HYPOCHLORITE FEED SYSTEM P&ID
131	19N05	MISTY WOOD - LIQUID FLUORIDE FEED SYSTEM P&ID
132	19N06	MISTY WOOD - WATER QUALITY P&ID
133	19N07	MISTY WOOD - RESTROOM, DRAIN AND SEWER P&ID
		(T) - TYPICAL DETAILS
134	00TA01	ARCHITECTURAL 1
135	00TA02	ARCHITECTURAL 2
136	00TA03	ARCHITECTURAL 3
137	00TC01	CIVIL 1
138	00TC02	CIVIL 2
139	00TC03	CIVIL 3
140	00TC04	CIVIL 4
141	00TC05	CIVIL 5
142	00TC06	CIVIL 6
143	00TC07	CIVIL 7
144	00TE01	ELECTRICAL 1
145	00TE02	ELECTRICAL 2
146	00TE03	ELECTRICAL 3
147	00TE04	ELECTRICAL 4
148	00TE05	ELECTRICAL 5
149	00TE06	ELECTRICAL 6
150	00TE07	ELECTRICAL 7
151	00TE08	ELECTRICAL 8
152	00TE09	ELECTRICAL 9
153	00TE10	ELECTRICAL 10
154	00TH01	HVAC 1
155	00TH02	HVAC 2
156	00TH03	HVAC 3
157	00TH04	HVAC 4
158	00TM01	MECHANICAL 1
159	00TM02	MECHANICAL 2
160	00TM03	MECHANICAL 3
161	00TM04	MECHANICAL 4
162	00TM05	MECHANICAL 5
163	00TN01	INSTRUMENTATION 1
164	00TN02	INSTRUMENTATION 2
165	00TN03	INSTRUMENTATION 3
166	00TN04	INSTRUMENTATION 4
167	00TN05	INSTRUMENTATION 5
168	00TN06	INSTRUMENTATION 6

(T) - TYPICAL DETAILS (CONT.)

169	00TN07	INSTRUMENTATION 7
170	00TN08	INSTRUMENTATION 8
171	00TS01	STRUCTURAL 1
172	00TS02	STRUCTURAL 2
173	00TS03	STRUCTURAL 3
174	00TS04	STRUCTURAL 4
175	00TS05	STRUCTURAL 5
176	00TS06	STRUCTURAL 6
177	00TS07	STRUCTURAL 7
178	00TS08	STRUCTURAL 8

"X" INDICATES NOT PART OF THIS SUBMITTAL

LAST SAVED BY: hgarcia

REV	DATE	BY	DESCRIPTION

DRAFT FINAL SUBMITTAL
NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN HPG
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
MICHAEL E. DUCKER
No. 63626
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
GENERAL
DRAWING INDEX

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00G02
SHEET NO. 2 OF 178

PROJECT NO.
FILE NAME: 11843A1000G002.dwg

@	AT (MEASUREMENT)	
△	DEFLECTION ANGLE, CENTRAL ANGLE	
#	NUMBER (REBAR Ø)	

A

AB	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE
ABS	ACRYLONITRILE BUTADIENE STYRENE
AC	ASPHALTIC CONCRETE
ACB	AIR CIRCUIT BREAKER
ACI	AMERICAN CONCRETE INSTITUTE
ACP	ASBESTOS CEMENT PIPE
ACU	AIR CONDITIONING UNIT
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJACENT, ADJUST, ADJUSTABLE
ADMIN	ADMINISTRATION
ADR	ACCESS DOOR
AED	AREA EQUIPMENT DRAIN
AER	AERAT(ION)(OR)
AFC	AFTERCOOLER
AF	AQUIFER FLUSH
AFF	ABOVE FINISHED FLOOR
AFM	AIR FLOW MONITOR
AHU	AIR HANDLING UNIT
AIC	AIR COMPRESSOR
AIL	AIR INTAKE LOUVER
ALT	ALTERNATE
AL	ALUMINUM
ANCH	ANCHOR
ANV	ANGLE VALVE
APPROX	APPROXIMATE, APPROXIMATELY
ARCH	ARCHITECTURAL
ARV	AIR RELEASE VALVE
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AV	ACID VENT
AVG	AVERAGE
AVV	AIR AND VACUUM VALVE
AW	ACID WASTE

B

BC	BEGIN CURVE, BRASS CAP, BACK OF CURB, BOLT CIRCLE
BCKR	BACKER BOARD
BCM	BATCHMETER
BD	BOARD
BDD	BACKDRAFT DAMPER
BDR	BASIN DRAIN LINE
BF	BLIND FLANGE
BFG	BELOW FINISHED GRADE
BFP	BELT FILTER PRESS
BFV	BUTTERFLY VALVE
BG	BREAK GLASS HAND SWITCH
BKW	BACKWASH
BLDG	BUILDING
BLK	BLOCK
BLKHD	BULKHEAD
BLR	PROCESS BLOWER
BM	BEAM, BENCH MARK
BOTT	BOTTOM
BOTTS	BOTTOM SLUDGE
BPV	BACK PRESSURE VALVE
BRG	BEARING
BSP	BLACK STEEL PIPE
BTU	BRITISH THERMAL UNITS
BTWN	BETWEEN
BV	BALL VALVE
BWCCP	BAR-WRAPPED CONCRETE CYLINDER PIPE

C

C	CLOSE, CONDUIT CHANNEL (STRUCTURAL)
CA	CONCRETE ANCHOR
CAUSTIC	CAUSTIC SOLUTION (CONCENTRATED OR DILUTE)
CB	CATCH BASIN
CC	CENTER OF CURVATURE, CENTER TO CENTER
CCB	CHLORINE CONTACT BASIN
CD	CEILING DIFFUSER, CONDENSATE DRAIN
CDL	CHEMICAL DRAIN LINE
CDT	CONDUIT
CEF	CEILING EXHAUST FAN
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEMD	CHEMICAL DRAIN
CHF	CHEMICAL FEEDER
CHKD PL	CHECKERED PLATE
CI	CAST IRON
CIP	CAST IRON PIPE
CIRC	CIRCUMFERENTIAL/CIRCUMFERENCE
CJ	CONSTRUCTION JOINT
CKA	CHECK VALVE, ANGLE
CKB	CHECK VALVE, BALL
CKF	CHECK VALVE, FLAP
CKS	CHECK VALVE, SWING
CL	CENTER LINE
CLK	CHAIN LINK
CLD	CHLORINE LEAK DETECTOR
CLL	CHLORINE LIQUID
CLP	CHLORINE GAS (PRESSURE)
CLR	CLEAR
CLS	CHLORINE SOLUTION
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CLV	CHLORINE GAS (VACUUM)
CML	CEMENT MORTAR LINED
CMLC	CEMENT MORTAR LINED AND COATED
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNV	CONVEYOR
CO	CLEANOUT
COL(S)	COLUMN(S)
CONC	CONCRETE
CONN	CONNECT, CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS OR CONTINUATION OR (D) (OUS)
CORR	CORRUGATE(D), CORROSION
CP	CONTROL POINT
CPLG	COUPLING
CPT	CARPET
CPTS	CATHODIC PROTECTION TEST STATION
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CARBON STEEL, CIRCULATING SLUDGE
CSP	CHEMICAL SUMP PUMP, CORRUGATED STEEL PIPE
CT	CURRENT TRANSFORMER, CERAMIC TILE
CTJ	CONTROL JOINT
CTL	CONTROL
CTR	CENTER, CENTERED
CTSK	COUNTERSUNK
CU	CUBIC
CUP	COPPER PIPE
CV	CHECK VALVE
CW	COLD WATER
CWV	COMBINATION WASTE AND VENT
CY	CUBIC YARD

D

D	DEPTH, DIGITAL OR DISCRETE, DRAIN
D/W	DRIVEWAY
DBL	DOUBLE
DDR	DESICCANT DRYER
DEG or °	DEGREE
DEMO	DEMOLISH, DEMOLITION
DET	DETAIL
DFL	DECANT/FILTRATE
DG	DOOR GRILLE
DIA or Ø	DIAMETER
DIAG	DIAGONAL
DIF	DIFFUSER
DIG	DIGESTER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DIW	DEIONIZED WATER
DL	DEAD LOAD, DRAIN LINE
DLV	DOOR LOUVER
DMP	DAMPER
DMS	DIAPHRAGM SEAL
DN	DOWN
do	DITTO
DO	DOOR OPENING
DP	DEEP (OR DEPTH)
DPV	DIAPHRAGM VALVE
DR	DOOR, DRAIN
DRT	DRIP TRAP
DRV	DRAIN VALVE
DS	DIGESTED SLUDGE, DOWN SPOUT
DSW	DISTILLED WATER, DOOR SWITCH
DUC	DUST COLLECTOR
DUH	DUCT HEATER UNIT
DW	DISTILLED WATER
DWD	DEWATERING DRAIN
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)

E

E	EAST
EA	EACH
EC	END OF CURVE
ECC RED	ECCENTRIC REDUCER
ECU	EVAPORATOR COOLING UNIT
ED	EQUIPMENT DRAIN
EF	EXHAUST FAN, EACH FACE
EFF	EFFLUENT
EG	EXHAUST GRILLE
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EJ	EXPANSION JOINT
EJR	INJECTOR/EDUCTOR
EL	ELEVATION
ELEC	ELECTRICAL
ELL	ELBOW
EMBED	EMBEDMENT
EMH	ELECTRICAL MANHOLE
EP	EDGE OF PAVEMENT
EPS	EXPANDED POLYSTYRENE
EPV	ECCENTRIC PLUG VALVE
EQ	EQUAL
EQUIP	EQUIPMENT
ER	EXHAUST REGISTER
ES	EACH SIDE
ESEW	EMERGENCY SHOWER AND EYE WASH
ESS	EMERGENCY HAND SWITCH
ET	ELECTRICALLY HEAT TRACED
EUH	ELECTRIC UNIT HEATER
EVR	EVAPORATOR
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EWEF	EACH WAY EACH FACE
EWH	ELECTRIC WATER HEATER, EXHAUST
EX	EXISTING
EXIST	EXISTING
EXP	EXPANSION, EXPANSION TANK
EXPO	EXPOSED
EXT	EXTERIOR

F

FACT	FACTORY
FAD	FOUL AIR DUCT
FB	FLAT BAR
FBW	FILTER BACKWASH
FC	FACE OF CURB, FLEXIBLE COUPLING
FCA	FLANGE COUPLING ADAPTER
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FIRE DAMPER, FLOOR DRAIN, FOUND
FDC	FIRE DEPARTMENT CONNECTION
FDL	FLOOR DRAIN LINE
FDR	FEEDER
FG	FLAP GATE, FINISHED GRADE
FH	FIRE HYDRANT
FILT	FILTRATE
FIN	FINISH
FIN FL	FINISHED FLOOR
FIN GR	FINISHED GRADE
FL	FLOOR, FLOW LINE
FLA	FOUL AIR
FLD	FILTER DRAIN
FLEX	FLEXIBLE
FLG	FLANGE, OR FLANGED
FLR	FILTER
FM	FORCE MAIN
FND	FOUNDATION
FO	FUEL OIL
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FPP	FLEXIBLE PLASTIC PIPE
FPW	FIRE PROTECTION WATER
FRP	FIBERGLASS REINFORCED PLASTIC
FRPP	FIBERGLASS REINFORCED PLASTIC PIPE
FRS	FROTH SPRAY
FS	FAR SIDE
FSTN	FASTEN(ED)
FT or '	FOOT, FEET
FTG	FOOTING
FUP	FUEL DISPENSER
FV	FLAP VALVE
FW	FLUSHING WATER
FX	FIRE EXTINGUISHER
FXC	FIRE EXTINGUISHER CABINET
FXE	FIRE EXTINGUISHER - ELECTRICAL

G

G	GAS, GROUND, GUTTER
GA	GAUGE or GAGE
GAL	GALLONS
GALV	GALVANIZE(D)
GAV	GRAVITY VENTILATOR
GB	GRADE BREAK
GBT	GRAVITY BELT THICKENER
GC	GROOVED COUPLING
GEL	GRAVITY EXHAUST LOUVER
GEN	GENERAL, GENERATOR
GL	GLASS
GLV	GLOBE VALVE
GM	GAS METER
GND	GROUND
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GR	GRADE
GRTG	GRATING
GRV	GRAVITY VENTILATOR
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GYP	GYPSUM

H

H	EXPLOSION-PROOF, HIGH, HORIZONTAL
H1E	HOOK ONE END
H2E	HOOK TWO ENDS
HAS	HEADED ANCHOR STUD
HB	HOSE BIBB
HDPE	HIGH DENSITY POLYETHYLENE
HDW	HARDWARE
HDWL	HEADWALL
HEF	HOOD EXHAUST FAN
HGT	HEIGHT
HH	HAND HOLE, ELECTRICAL PULL BOX
HORIZ	HORIZONTAL
HP	HEAT PUMP, HORSEPOWER, HIGH PRESSURE
HPA	HIGH PRESSURE AIR
HPT	HIGH POINT
HPU	HEAT PUMP UNIT AIR
HR	HANDRAIL, HOSE REEL, HOUR
HSF	HOOD SUPPLY FAN
HSS	HOLLOW STRUCTURAL SECTION (STEEL)
HTX	HEAT EXCHANGER
HV	HOSE VALVE
HW	HOT WATER
HWL	HIGH WATER LEVEL
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HxW	HEIGHT BY WIDTH
HYD	HYDRANT

I

IA	INSTRUMENT AIR
ID	INSIDE DIAMETER, INSIDE DIMENSION, IDENTIFICATION
I.F.	INSIDE FACE
IN or "	INCHES
INCL	INCLUDE, INCLUDING
INF	INFLUENT
INJ	INJECTOR
INSTR	INSTRUMENTATION
INSUL	INSULAT(E)(ED)(ING)(ION)
INT	INTERIOR
INV	INVERT
IP	IRON PIPE
ISR	INTRINSICALLY SAFE RELAY

J

JST	JOIST
JT	JOINT

K

KGV	KNIFE GATE VALVE

L

L	ANGLE (STRUCTURAL), LENGTH, LOUVER
LAB	LABORATORY
LAV	LAVATORY
LB(S)	POUND(S)
LDF	LIQUID DIESEL FUEL
LDFR	LIQUID DIESEL FUEL RETURN
LF	LINEAL FEET
LG	LONG
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LHRA	LEFT HAND REVERSE ACTIVE
LHRB	LEFT HAND REVERSE BEVEL
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW PRESSURE
LPA	LOW PRESSURE AIR
LPG	LIQUIFIED PROPANE GAS
LPT	LOW POINT
LR	LONG RADIUS
LS	LAB SINK
LT	LEFT
LWL	LOW WATER LEVEL

M

M	MOTOR
MAINT	MAINTENANCE
MAN	MANUAL
MASY	MASONRY
MATL	MATERIAL
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MECHANICAL COUPLING
MCJ	MASONRY CONTROL JOINT
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MET	METAL
MFR	MANUFACTURER
MG/L	MILLIGRAMS PER LITER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MIX	MIXER
MJ	MECHANICAL JOINT
MK	MARK
ML	MIXED LIQUOR
MO	MASONRY OPENING
MOD	MODIFIED
MOIST	MOISTURE
MON	MONUMENT
MOS	MOISTURE SEPARATOR
MPM	METERING PUMP
MS	MOP SINK
MTD	MOUNTED

N

N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEV	VALVE, NEEDLE
NG	NATURAL GRADE, NATURAL OR LP GAS
NIC	NOT IN CONTRACT
NO., #	NUMBER
NOM	NOMINAL
NPT	NATIONAL PIPE THREAD
NPW	NON-POTABLE WATER
NS	NEAR SIDE
NTS	NOT TO SCALE

O

O	OPEN
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER, OUTSIDE DIMENSION
OED	OPEN EQUIPMENT DRAIN
O.F.	OUTSIDE FACE
OFL	OVERFLOW
OPNG	OPENING
OPP	OPPOSITE
OPP HND	OPPOSITE HAND
OZ	OUNCE

P

P	POLE
PBL	POLYMER BLENDER
PC	POINT OF CURVATURE
PCC	PLANT CONTROL CENTER
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PCP	PROGRESSIVE CAVITY PUMP
PD	POSITIVE DISPLACEMENT, PLANT DRAIN
PD, PLD	PULSATION DAMPENER
PDP	POSITIVE DISPLACEMENT PUMP
PE	PLAIN END
PERP	PERPENDICULAR
PG	PRESSURE GAUGE
PH	PHASE, PHYSICALLY HANDICAPPED
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL	PLATE, PROPERTY LINE
PLAS	PLASTIC
PLCS	PLACES
PLS	POLYMER SOLUTION
PLWD	PLYWOOD
PMP	PUMP
PNL(S)	PANEL(S)
POL	POLYMER
POLY	POLYETHYLENE
POS	POSITION
PP	POWER POLE
PPMV	PARTS PER MILLION (VOLUME)
PRC	POINT OF REVERSE CURVATURE
PREFAB	PREFABRICATED
PRG	PRESSURE REGULATOR
PRI	PRIMARY
PROJ	PROJECTION
PRR	PRESSURE OR VACUUM RELIEF VALVE
PRV	PRESSURE REDUCING VALVE, PRESSURE REGULATION VALVE, PRESSURE RELIEF VALVE
PS	PUMP STATION, PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSG	PRESSURE GAUGE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	POINT, POINT OF TANGENCY
PV	PLUG VALVE
PVC	POINT OF VERTICAL CURVATURE, POLYVINYL CHLORIDE
PVDF	POLYVINYLIDENE FLUORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
PW	POTABLE WATER

Q

QTY	QUANTITY

R

R/W	RIGHT OF WAY
RAD	RADIUS, RADIAL
RAS	RETURN ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
RCCP	REINFORCED CONCRETE CYLINDER PIPE
RD	ROOF DRAIN
RDL	ROOF DRAIN LINE
RDOF	ROOF DRAIN OVERFLOW
RECIRC	RECIRCULATING
RED	REDUCER, ROOF EQUIPMENT DRAIN
REF	REFERENCE
REG	REGULATOR, REGULATING
REINF	REINFORCE(D)(ING)(MENT)
REJ	RUBBER EXPANSION JOINT
REQD	REQUIRED
RER	REACTOR
RES	RESERVOIR
REV	REVISION, REVERSE
RF	RETURN FAN
RG	RETURN GRILLE RUBBER GASKET
RH	RIGHT HAND
RHR	RIGHT HAND REVERSE
RHRA	RIGHT HAND REVERSE ACTIVE
RHRB	RIGHT HAND REVERSE BEVEL
RLS	REGISTERED LAND SURVEYOR
RM	ROOM
RO	ROUGH OPENING
ROT	ROTAMETER
RP	RADIUS POINT
RPM	REVOLUTIONS PER MINUTE
RPMP	REINFORCED PLASTIC MORTAR PIPE
RR	RETURN REGISTER
RSR	RISER
RT	RIGHT
RTF	ROTARY FEEDER
RTU	ROOF TOP UNIT
RUD	RUPTURE DISK
RW	RECLAIMED WATER, REUSE WATER
RWR	RECLAIMED WATER RETURN

S

S/W	SIDEWALK
S	SOUTH, SWITCH, SLOPE
SC	SECONDARY CLARIFIER
SCB	SCRUBBER
SCD	SMOKE CONTROL DAMPER
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SCO	SURFACE CLEANOUT
SCR	BAR SCREEN
SCR	SILICON CONTROL RECTIFIER
SD	SMOKE DETECTOR, SPLITTER DAMPER, STORM DRAIN
SDL	SUMP DISCHARGE DRAIN LINE
SDO	SLUDGE DRAWOFF
SE	SECONDARY EFFLUENT
SEC	SECONDARY, SECOND
SECT	SECTION
SED	SEDIMENTATION
SEP	SEPTAGE
SF	SUPPLY FAN
SFW	SOFTENED WATER
SG	SUPPLY GRILLE
SGS	STORE FRONT GLAZING SYSTEM
SHD	SHOWER DRAIN
SHDR	SOLIDS HANDLING-RECYCLE
SHR	SHOWER
SHT	SHEET
SIM	SIMILAR
SK	SKIMMINGS
SL	SLOPE, SLUDGE
SLC	SLUDGE COLLECTOR DRIVE
SLG	SLIDE GATE
SLV	SLEEVE VALVE
SMP	SAMPLER, SUMP PUMP
SN	SUPERNATANT OR SUBNATANT
SOL	SOLUTION
SP	STATIC PRESSURE, SET POINT
SPD	SUMP PUMP DRAIN
SPDT	SINGLE POLE DOUBLE THROW
SPEC(S)	SPECIFICATION(S)
SPL	SPLITTER BOX
SPR	SPARE
SPS	SAMPLE SINK
SPW	SAMPLE WATER
SQ	SQUARE
SQ FT	SQUARE FEET
SQ IN(S)	SQUARE INCH(ES)
SR	SHORT RADIUS, SUPPLY REGISTER
SRL	SCRUBBER RECIRCULATION LIQUID (CAUSTIC)
SS	SANITARY SEWER, SELECTOR SWITCH
SSK	SERVICE SINK
SSL	SECONDARY SLUDGE
SST	STAINLESS STEEL
ST	SLUDGE TRANSFER
STA	STATION
STB	STABILIZER
STD(S)	STANDARDS(S)
STIFF	STIFFENER
STIR	STIRRUPS
STL	STEEL
STM	STEAM
STP	STEEL PIPE
STR	STRAINER
STRUCT	STRUCTURAL
SUG	SLUICE GATE
SUPT	PIPE SUPPORT, SUPPORT
SV	SERVICE VALVE, SHUTOFF VALVE, SOLENOID VALVE
SWR	SEAL WATER
SYM	SYMMETRICAL
SYN	SYNTHETIC

T

T	TANGENT LENGTH, THERMOSTAT, TIMER
T&B	TOP AND BOTTOM
TAS	THREADED ANCHOR STUD
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TCV	TEMPERATURE CONTROL VALVE
TDH	TOTAL DYNAMIC HEAD
TDR	TIME DELAY RELAY, TOWEL DISPENSER/RECEPTACLE
TEL	TELEPHONE
TH	TEST HOLE
THK	THICKENER, THICKNESS, THICK
TKS	THICKENED SLUDGE
TLV	TELESCOPING VALVE
TMH	TELEPHONE MANHOLE
TMP	TEMPERATURE
TNK	TANK
T.O.	TOP OF
TOC	TOP OF CONCRETE
TOG	TOP OF GRATING
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
T.O.W.	TOP OF WALL
TR	TRIAD (THREE CONDUCTOR SHIELDED CABLE), TIMING RELAY
TRD	TREAD
TS	THICKENER SUPERNATANT OR SUBNATANT
TSD	THICKENED SLUDGE DECANT
TSPL	TURBIDIMETER SAMPLE
TSTAT	THERMOSTAT
TTB	TELEPHONE TERMINAL BOARD
TUR	TURBINE
TV	TURNING VANES
TWV	THREE-WAY VALVE
TYP	TYPICAL

U

UC	UNDERCUT
UG	UNDERGROUND
UHMWPE	ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE
UHMW	ULTRA HIGH MOLECULAR WEIGHT
UNO	UNLESS NOTED OTHERWISE
US	UTILITY SINK

V

VAR	VARIES
VB	VALVE BOX
VCP	VITRIFIED CLAY PIPE
VEC	VINYL ESTER COATING
VERT	VERTICAL
VFR	VOLUMETRIC FEEDER
VG	VACUUM GAUGE, VALLEY GUTTER
VOL	VOLUME
VRV	VACUUM REGULATING VALVE
VTR	VENT THROUGH ROOF

W

W	WEST, WIDTH
W/	WITH
W/O	WITHOUT
WAS	WASTE ACTIVATED SLUDGE
WCO	WALL CLEANOUT
WEF	WALL EXHAUST FAN
WF	WALL FITTING, WASH FOUNTAIN
WH	WATER HEATER
WI	WEIGHT INDICATOR
WL	WALL LOUVER, WATER LEVEL
WM	WATER METER
WOD	WASTE OIL DRAIN
WP	WEATHERPROOF, WATERPROOF
WPT	WORKING POINT
WRG	WEIR GATE
WRS	WATER SOFTENER
WS	WATER SURFACE
WSTP	WATERSTOP
WT	WALK THROUGH, WEIGHT
WTF	WATER TREATMENT FACILITY
WTP	WATER TREATMENT PLANT
WTR	WATER
WV	WATER CONTROL VALVE
WW	WASTEWATER
WWF	WELDED WIRE FABRIC
WWTF	WASTEWATER TREATMENT FACILITY
WWTP	WASTEWATER TREATMENT PLANT

Y

Y	WYE
YCO	YARD CLEANOUT
YH	YARD HYDRANT

PROCESS FLOW ABBREVIATIONS

AF	AQUIFER FLUSH
AR	AQUIFER RECOVERY
AS	AQUIFER SUPPLY
BWW	BACKWASH WATER
DR	DRAIN
FE	FILTER EFFLUENT
FI	FILTER INFLUENT
FIBER	FIBER OPTIC CABLE
FPW	FIRE PROTECTION WATER
FTW	FILTER TO WASTE, FLUSH TO WASTE
N	NITROGEN
NAF	SODIUM FLUORIDE
PW	POTABLE WATER
RW	RECYCLED WATER
SAM	SAMPLE
SD	STORM DRAIN
SH	SODIUM HYPOCHLORITE
SS	SANITARY SEWER
SW	SOFTENED WATER
V	VENT

REV	DATE	BY	DESCRIPTION

DRAFT FINAL SUBMITTAL
NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED CE
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
GENERAL
ABBREVIATIONS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00G03
SHEET NO. 3 OF 178

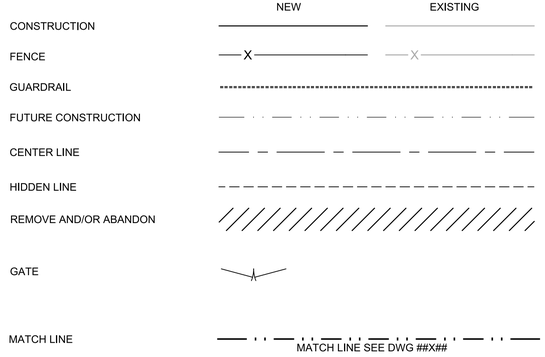
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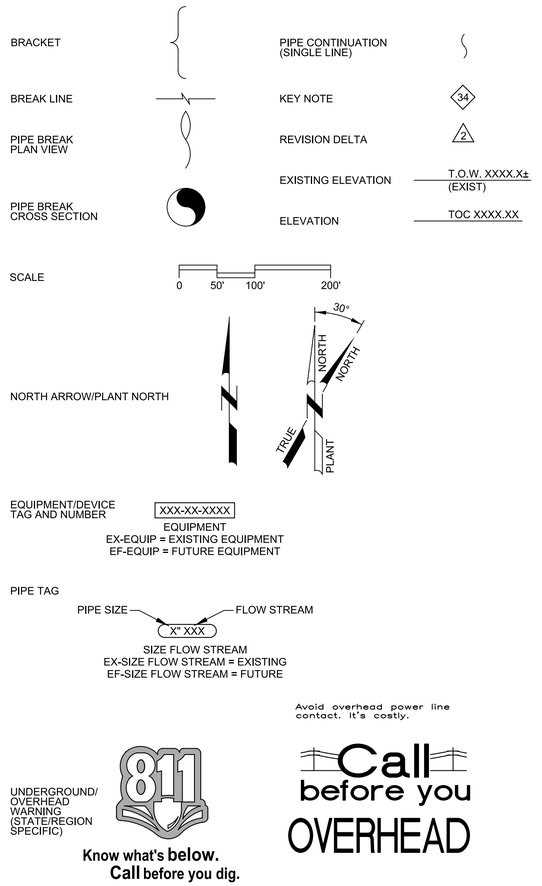
GENERAL NOTES

1. FOLLOWING NOTES ARE GENERAL AND APPLY TO ALL SHEETS OF THESE CONTRACT DOCUMENTS AS IF THEY WERE WRITTEN IN THEIR ENTIRETY ON EACH SHEET.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE STARTING WORK AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS INCLUDING LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES. CONTRACTOR SHALL NOTIFY ENGINEER IF THERE IS A CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONSTRUCTION BEFORE PROCEEDING WITH WORK. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THESE PLANS AND THE LATEST EDITION AND AMENDMENTS OF THE CITY OF ROSEVILLE DESIGN AND CONSTRUCTION STANDARDS.
3. UNLESS DETAILED, SPECIFIED, OR OTHERWISE INDICATED ON THE DRAWINGS, CONSTRUCTION SHALL BE AS INDICATED IN THE APPLICABLE TYPICAL DETAILS AND GENERAL NOTES. TYPICAL DETAILS SHALL APPLY EVEN THOUGH NOT REFERENCED AT SPECIFIC LOCATIONS ON DRAWINGS.
4. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF WORK. DETAILS SHALL BE IN THE SAME AS FOR OTHER SIMILAR WORK.
5. CONTRACTOR SHALL COMPLY WITH LOCAL CONSTRUCTION STORM WATER DISCHARGE REGULATIONS AND REQUIREMENTS.
6. PRIOR TO EXCAVATION FOR NEW STRUCTURES, ELECTRICAL CONDUIT, FABRICATION OF NEW PIPING AND/OR OTHER PROPOSED UTILITIES, CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL EXISTING PIPING AND UTILITIES IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL TEMPORARILY RELOCATE CONFLICTING EXISTING UTILITIES AT TIE-IN/CONNECTION LOCATIONS AND REINSTALL THEM AS REQUIRED TO ELIMINATE THE CONFLICT AT NO ADDITIONAL COST TO THE OWNER.
7. ALL PIPELINES 12" AND LARGER SHALL HAVE A MINIMUM COVER OF 36" UNLESS THE COVER DEPTH IS SPECIFICALLY INDICATED ON THE DRAWINGS. PIPE SMALLER THAN 12" SHALL HAVE A MINIMUM COVER OF 30" UNLESS NOTED OTHERWISE. PIPES SHALL BE ROUTED AS SHOWN UNLESS MINOR REVISIONS ARE NECESSARY TO MISS EXISTING PIPES, STRUCTURES, ETC. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL FITTINGS AND ADAPTERS REQUIRED TO MAKE THE ROUTING CHANGES AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL INCLUDE COST FOR THIS IN THE BID.
8. EXISTING FACILITY AND UTILITY INFORMATION SHOWN ON THE DRAWINGS WAS OBTAINED FROM AVAILABLE RECORDS OR ELECTRONIC FILES. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR FACILITIES AND UTILITIES NOT SHOWN OR NOT IN THE LOCATION SHOWN. THE CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS, SIZES, MATERIAL TYPES, AND ELEVATIONS SHOWN AROUND OR NEAR AREAS OF NEW CONSTRUCTION PRIOR TO START OF CONSTRUCTION.
9. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT FROM DAMAGE EXISTING FACILITIES AND UTILITIES SHOWN OR NOT SHOWN THAT ARE TO REMAIN IN PLACE. ALL FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED TO THE ORIGINAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE WITHOUT ADDITIONAL COMPENSATION.
10. CONTRACTOR SHALL MAKE CONNECTIONS TO EXISTING PIPE, EQUIPMENT, ETC. AS REQUIRED AND SHALL PROVIDE ALL FITTINGS, ADAPTERS, AND APPURTENANCES REQUIRED TO MAKE THE CONNECTIONS. PROVIDE ALL SUPPORTS REQUIRED FOR A RIGIDLY SUPPORTED COMPLETE AND WORKING SYSTEM.
11. ADJUST ALL VALVE BOXES, VAULTS, PULL BOXES, AND MANHOLES TO FINISHED GRADE UNLESS OTHERWISE SHOWN OR DIRECTED. MANHOLES IN OPEN FIELDS SHALL BE SET TWELVE INCHES ABOVE FINISHED GRADE AND VAULTS SHALL BE SIX INCHES ABOVE FINISHED GRADE.
12. THE CONTRACTOR SHALL CONTACT THE PROPER UTILITY REPRESENTATIVE AS FOLLOWS FOR QUESTIONS OR COORDINATION OF CONSTRUCTION RELATED TO EXISTING UTILITIES.
13. CONTRACTOR SHALL VERIFY THAT PIPING SHOWN TO BE ABANDONED OR AS ABANDONED PREVIOUSLY IS NO LONGER IN SERVICE. LINES IN SERVICE SHALL BE MAINTAINED UNTIL NO LONGER REQUIRED BY THE CITY.
14. ALL EXISTING PIPES THAT ARE TO BE ABANDONED IN PLACE OR REMOVED MAY NOT BE SHOWN. WHERE PIPING IS TO BE ABANDONED AND MUST REMAIN IN SERVICE UNTIL COMPLETION OF OTHER PHASES OF WORK, AND IT CONFLICTS WITH NEW PIPING, TEMPORARILY RELOCATE PIPING AS REQUIRED TO MAINTAIN SERVICE BY THE CITY.
15. CONTRACTOR SHALL REROUTE THE EXISTING PIPING IF REQUIRED TO MISS THE PROPOSED STRUCTURES. THE EXISTING PIPE SHALL REMAIN IN SERVICE UNTIL NEW PIPING IS READY TO BE PLACED INTO SERVICE. DOWNTIME SHALL BE A MAXIMUM OF 2 HOURS, UNLESS SPECIFIED OR SHOWN OTHERWISE.
16. ALL SIDEWALKS WILL BE 3'-0" WIDE OR AT A MINIMUM MATCH THE EXISTING SIDEWALK. THERE ARE UTILITIES RUNNING ACROSS AND PARALLEL TO THE EXISTING SIDEWALKS. NOTIFY DIG ALERT PRIOR TO REMOVING SIDEWALK.
17. THE CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS IN THE VICINITY OF ANY OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL ABIDE BY THE NATIONAL ELECTRIC CODE AND ANY REQUIREMENT BY THE OWNER OF THE ELECTRIC LINES.
18. PROVIDE ALL SHEETING/SHORING REQUIRED TO PROTECT EXISTING STRUCTURES, PIPES AND FACILITIES.
19. CONTRACTOR SHALL VERIFY LOCATION OF ALL ARCHITECTURAL, MECHANICAL, AND ELECTRICAL ITEMS BEFORE PLACING ANY STRUCTURAL STEEL OR CONCRETE. ALSO, STRUCTURAL DIMENSIONS AND OPENINGS CONTROLLED BY ARCHITECTURAL, MECHANICAL, OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
20. MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES, AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS, THAT ARE REQUIRED BY OTHER CONTRACT DRAWINGS, SHALL BE PROVIDED PRIOR TO CASTING CONCRETE.
21. WATER DISTRIBUTION SYSTEM VALVES ARE ONLY TO BE OPERATED BY CITY STAFF.
22. WASTEWATER COLLECTION SYSTEM OPERATOR MUST BE ON SITE WHEN CORE DRILLING INTO SEWER MANHOLES.
23. NOTIFY THE CITY OF ROSEVILLE UNDERGROUND SERVICE ALERT (U.S.A.) ONE-CALL SYSTEM. THE CONTRACTOR SHALL NOTIFY THE U.S.A. CENTER 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK BY CALLING 1-800-227-2600.

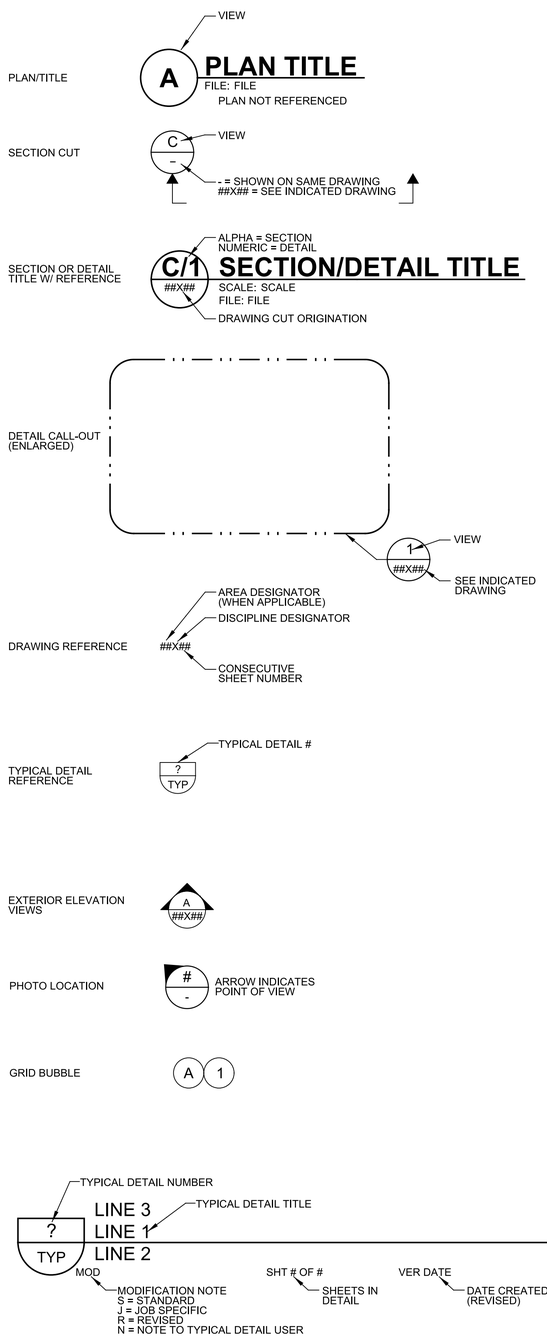
LINE WORK



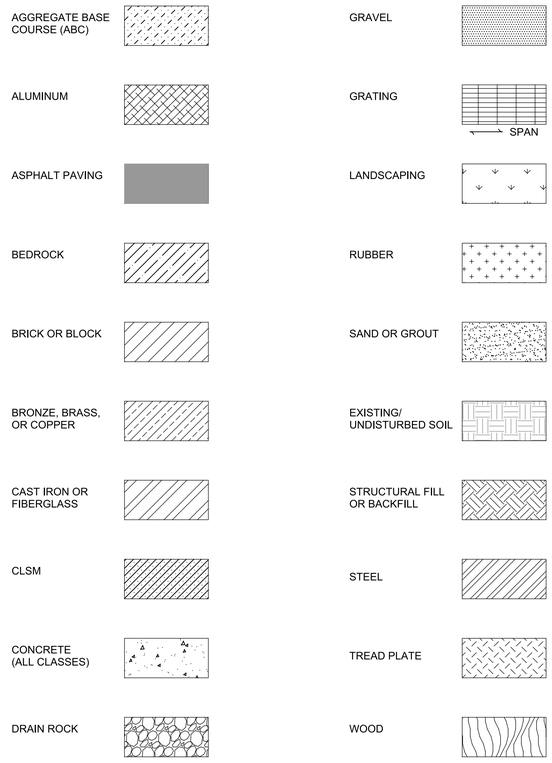
SYMBOLS



DETAIL REFERENCES



HATCH PATTERNS



MISCELLANEOUS

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED CE
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
MICHAEL E. DUCKER
No. 63626
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
GENERAL
GENERAL NOTES, SYMBOLS, AND LEGENDS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00G04
SHEET NO. 4 OF 178

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		CAMPUS OAKS 7621 PAINTED DESERT DRIVE	MISTY WOOD 1270 PLEASANT GROVE BOULEVARD
DESIGN CRITERIA			
DESCRIPTION	**UNIT**	**VALUE**	VALUE
EXISTING WELL			
CONDUCTOR CASING	INCH	36	36
WELL CASING	INCH	20	20
COLUMN PIPE DIA.	INCH	12	12
WELL DEPTH	FT (BGS)	380	435
SCREEN DEPTH	FT (BGS)	280-360	265-410
SOUNDING TUBE	FT (BGS)	230	210
GRAVEL FILL TUBE	FT (BGS)	260	240
WELL PUMP			
PUMP			
DESIGN FLOW	GPM	2,500	2,700
LINE PRESSURE AT POC	FT (PSI)	265.6 (115)	265.6 (115)
TDH	FT	553	461
HORSEPOWER	HP	500	450
STATIC WATER LEVEL	FT (BGS)	118	118
PUMPING WATER LEVEL	FT (BGS)	230	138
PUMP ELEVATION	FT (BGS)	266	266
PUMP DISCHARGE	INCH	12	12
ANNULUS RECHARGE INLET	INCH	10	10
GROUNDWATER WATER QUALITY TEST RESULTS		10/19/2023	10/12/2023
SPECIFIC CONDUCTANCE (EC)	UMHOS/CM	340	310
TURBIDITY	NTU	0.2	0.25
IRON	MG/L	ND	ND
IRON, DISSOLVED	MG/L	ND	ND
MANGANESE	MG/L	ND	ND
MANGANESE, DISSOLVED	MG/L	ND	ND
TOTAL HARDNESS AS CaCO□	MG/L	62	56
CALCIUM	MG/L	13	12
MAGNESIUM	MG/L	6.8	6
POTASSIUM	MG/L	1.3	2.2
SODIUM	MG/L	46	38
SILICA (SIO2)	MG/L	63	67
ARSENIC	UG/L	3.8	2.2
SODIUM HYPOCHLORITE PUMP			
TYPE		PACKAGED SYSTEM	PACKAGED SYSTEM
PUMP TYPE		DOUBLE DIAPHRAGM	DOUBLE DIAPHRAGM
DUTY/STANDBY	EACH	1 DUTY/1 STANDBY	1 DUTY/1 STANDBY
MAX DOSAGE	MG/L	3.4	3.4
DESIGN FLOWRATE	GPH	4.4	4.1
PUMP CAPACITY	GPH	0.001-8.5	0.001-8.5
SOLUTION NaOCL	%	12.50%	12.50%
TANK SIZE DAYS OF STORAGE	GAL	32	34.7
SODIUM HYPOCHLORITE TANK			
TYPE		DOUBLE WALL	DOUBLE WALL
DUTY/FUTURE		1 DUTY/1 FUTURE	1 DUTY/1 FUTURE
MATERIAL		POLYETHYLENE (XLPE	POLYETHYLENE (XLPE)
VOLUME	GAL	1,000	1,000
DIAMETER	FT	6'-5"	6'-5"
HEIGHT	FT	7'-1"	7'-1"
WATER SOFTENER			
FLOW	GPM	5	5
PRESSURE	PSI	30	30
SODIUM FLUORIDE - PACKAGED SYSTEM			
CONTAINMENT		SECONDARY	SECONDARY
DESIGN PROCESS FLOW RATE	GPM	2,500	2,700
SATURATION TANK	GAL	55	55
TANK TYPE		POLYETHYLENE (LINEAR)	POLYETHYLENE (LINEAR)
CAPACITY, SODIUM FLUORIDE	LBS	300	300
SOLUTION TANK	GAL	70	70
TANK TYPE		POLYETHYLENE (LINEAR)	POLYETHYLENE (LINEAR)
PUMP TYPE		DIAPHRAGM	DIAPHRAGM
FEED RATE	MG/L	1.5	1.5
DESIGN FLOWRATE	GPH	5.63	6.08
PUMP CAPACITY	GPH	0.069 - 6.9	0.069 - 6.9
PRESSURE	PSIG	90	90
NO. OF PUMPS		1 DUTY/0 STANDBY	1 DUTY/0 STANDBY

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN HPG
CHECKED RAH
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
MICHAEL E. DUCKER
No. 63626
CIVIL
STATE OF CALIFORNIA

carollo®

CITY OF ROSEVILLE CALIFORNIA

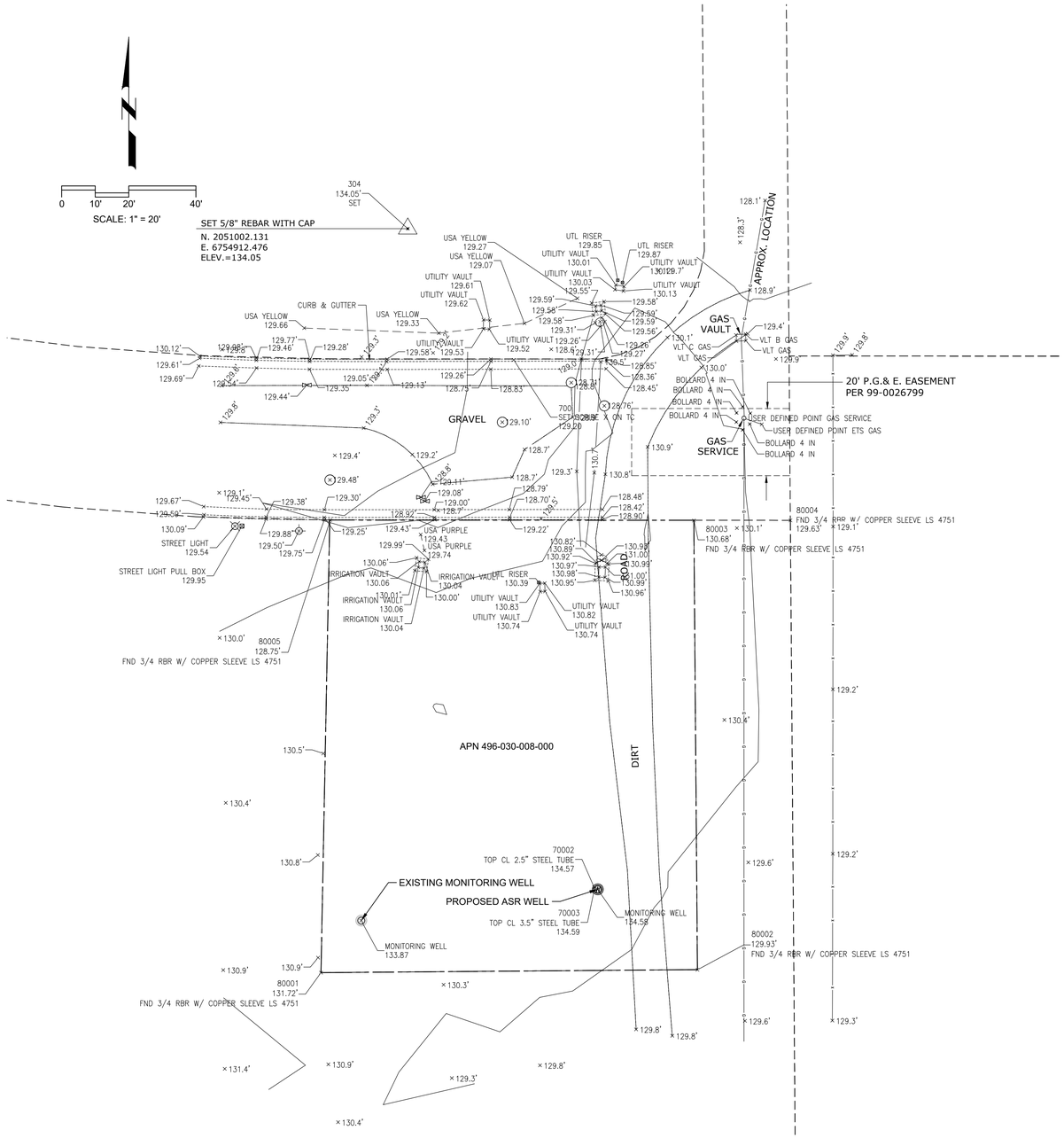
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
GENERAL
DESIGN CRITERIA

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00G05
SHEET NO. 5 OF 178

PROJECT NO.
FILE NAME: 11843A1000G005.dgn

Plot Date: 13-DEC-2024 3:52:27 PM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: hgarcia



LEGEND:

- CONTROL POINT SET THIS SURVEY
- FOUND MONUMENT AS NOTED
- FOUND MONUMENT WELL
- DIMENSION POINT, NOTHING FOUND OR SET
- SUBJECT PARCEL(S) PROPERTY LINE
- EXISTING PROPERTY/RW LINE
- EXISTING EASEMENT LINE
- WOOD FENCE
- WIRE/BARBED WIRE FENCE
- WROUGHT IRON FENCE
- EXISTING WATER LINE AND SIZE (Ø12"W)
- WATER BLOWOFF VALVE
- WATER VALVE
- FIRE HYDRANT
- EXISTING DRAIN LINE SIZE & FLOW DIRECTION (8"SIZED)
- DRAIN MANHOLE
- DRAIN INLET OR CATCH BASIN
- EXISTING SEWER LINE SIZE & FLOW DIRECTION (8"SIZE)
- SEWER MANHOLE
- SEWER CLEANOUT
- STREET LIGHT
- UTILITY PULLBOX
- UTILITY/JOINT POLE
- SIGN
- BORING LOCATION
- CONCRETE SURFACE
- ASPHALT SURFACE

HORIZONTAL/VERTICAL DATUM

THE HORIZONTAL DATUM FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, NAD83, ZONE II AND IS BASED UPON GPS OBSERVATIONS TO NGS STATIONS "NEWFIDDY" (PID DL9185) AND "HPGN CA 03 09" (PID JS4669)

THE VERTICAL DATUM FOR THIS SURVEY IS NAVD88 AND IS BASED UPON CITY OF ROSEVILLE BENCHMARKS BM-10 (3 1/4" BRASS DISK STAMPED 2018 PLS 8278 AT WEST OF D.I. AT SOUTHEAST CORNER OF CIRBY WAY AND SUNRISE BLVD, ELEV. 158.13) AND BM-96 (3 1/4" BRASS DISK STAMPED PLS 8278, AT TOP OF THE CURB 1 FOOT SOUTH OF D.I. AT THE SOUTHWEST CORNER OF THE INTERSECTION OF BLUE OAKS BLVD. AND WOODCREEK OAKS BLVD., ELEV. 114.97)

PROPERTY LINE INFORMATION

THE PROPERTY LINES FOR THE SUBJECT PARCEL ARE BASED ON THE LARGE LOT FINAL MAP OF "CAMPUS OAKS" FILED IN BOOK "DD" OF MAPS, PAGE 47. ADJACENT PROPERTY LINES SHOWN HEREON WERE TAKEN FROM THE CITY OF ROSEVILLE G.I.S. SHAPEFILE ON JUNE 10, 2020 AND ADJUSTED TO FIT THE MONUMENTATION FOUND IN THE COURSE OF THIS SURVEY.

THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

KEVIN A. HEENEY, P.L.S. 5914 — DATE

LICENSED LAND SURVEYOR KEVIN A. HEENEY NO.5914 Exp.12-31-2022 STATE of CALIFORNIA

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN HPG
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
GENERAL
CAMPUS OAKS ASR WELL
SURVEY CONTROL DATA

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13G06
SHEET NO. 6 OF 178

Plot Date: 12/5/2024 11:33:31 AM
LAST SAVED BY: hgarcia
PROJECT NO.
FILE NAME: 11843A1013G006.dwg

Plot Date: 12/13/2024 5:48:41 PM



LEGEND:

- CONTROL POINT SET THIS SURVEY
- FOUND MONUMENT AS NOTED
- FOUND MONUMENT WELL
- DIMENSION POINT, NOTHING FOUND OR SET
- SUBJECT PARCEL(S) PROPERTY LINE
- EXISTING PROPERTY/RW LINE
- EXISTING EASEMENT LINE
- WOOD FENCE
- WIRE/BARBED WIRE FENCE
- WROUGHT IRON FENCE
- EXISTING WATER LINE AND SIZE (Ø12"W)
- WATER BLOWOFF VALVE
- WATER VALVE
- FIRE HYDRANT
- EXISTING DRAIN LINE SIZE & FLOW DIRECTION (<–SIZE)
- DRAIN MANHOLE
- DRAIN INLET OR CATCH BASIN
- EXISTING SEWER LINE SIZE & FLOW DIRECTION (<–SIZE)
- SEWER MANHOLE
- SEWER CLEANOUT
- STREET LIGHT
- UTILITY PULLBOX
- UTILITY/JOINT POLE
- SIGN
- BORING LOCATION
- CONCRETE SURFACE
- ASPHALT SURFACE

HORIZONTAL/VERTICAL DATUM

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PROPERTY LINE INFORMATION

THE PROPERTY LINES SHOWN HEREON WERE TAKEN FROM THE CITY OF ROSEVILLE G.I.S. SHAPEFILE ON JUNE 10, 2020 AND ADJUSTED TO FIT THE CENTERLINE MONUMENTATION FOUND IN THE COURSE OF THIS SURVEY.

THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

KEVIN A. HEENEY, P.L.S. 5914 — DATE

LICENSED LAND SURVEYOR KEVIN A. HEENEY NO.5914 Exp.12-31-2022 STATE of CALIFORNIA

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN HPG
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
GENERAL
MISTY WOOD ASR WELL
SURVEY CONTROL DATA

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19G06
SHEET NO. 7 OF 178

LAST SAVED BY: hgarcia

PROJECT NO. FILE NAME: 11843A1019G006.dwg

NOTES

GENERAL PIPELINE NOTES:

1. DIMENSIONS TO STRUCTURES, REFERENCED PIPING, PAVING, AND OTHER IMPROVEMENTS IS APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS 14 DAYS IN ADVANCE OF THE CONSTRUCTION PROGRESS. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. CONTRACTOR SHALL MAINTAIN A MINIMUM CLEARANCE OF 10 FEET HORIZONTAL AND 3 FEET VERTICAL BETWEEN THE SEWER LINES AND EXISTING WATER LINES.
3. REFER TO THE GEOTECHNICAL REPORT LOCATED IN THE APPENDIX OF THE SPECIFICATIONS FOR ADDITIONAL INFORMATION ON THE GEOTECHNICAL CONDITIONS AND BORING INFORMATION.
4. IN ALL LOCATIONS WHERE TRENCH PLATE IS USED FOR VEHICULAR OR PEDESTRIAN TRAFFIC, THE CONTRACTOR SHALL APPLY SKID RESISTANT COATING ON THE TRENCH PLATES AND COLD MIX ASPHALT CONCRETE AT THE EDGES. THE TRENCH PLATES SHALL BE NOTCHED INTO THE ASPHALT, CONCRETE, OR TRAVELED SURFACE TO PREVENT SLIPPAGE AND ROCKING UNDER TRAFFIC.
5. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES ADJACENT TO THE WORK, THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL OPEN TRENCHES, WORK AREAS AND SHAFTS SHALL HAVE A SHORING SYSTEM IN ACCORDANCE WITH OSHA, STATE AND LOCAL REQUIREMENTS.
7. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, COUNTY, AND LOCAL LAWS AND ORDINANCES RELATING TO THE SAFETY AND CHARACTER OF WORK, EQUIPMENT AND PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO SHEETING, SHORING, BRACING, VENTILATION, CONFORMANCE WITH TRAFFIC CONTROL AND MAINTENANCE OF BARRICADES AND WARNING DEVICES.
8. LAYOUT DRAWINGS ARE REQUIRED FOR PIPING INSTALLED.
9. CONTRACTOR SHALL TAKE ALL PRACTICAL PRECAUTIONS TO MINIMIZE DISTURBANCES TO STREAMS, VEGETATION, TREES AND CROP LANDS. WHEREVER PRACTICAL LEAVE EXISTING TREES AND VEGETATED AREAS UNDISTURBED.

UTILITY NOTES:

1. EXISTING UTILITIES IN THE PROJECT MAY BE IN A FRAGILE CONDITION. THE CONTRACTOR SHALL EXERCISE NECESSARY CAUTION WHEN WORKING NEAR EXISTING UTILITIES.
2. PLAN LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES ARE BASED ON RECORD DRAWINGS, POTHOLING AND SURVEY INFORMATION AND ARE CONSIDERED APPROXIMATE ONLY. WHERE NO ELEVATIONS ARE SHOWN, NO INFORMATION WAS AVAILABLE DURING THE DESIGN PERIOD.
3. SOME UTILITY SERVICES MAY NOT BE SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL TAKE NECESSARY MEASURES TO LOCATE AND PROTECT SERVICE DURING CONSTRUCTION.
4. CONTRACTOR SHALL CALL THE LOCAL UTILITY LOCATOR PRIOR TO ANY EXCAVATION ACTIVITIES.
5. NOTIFY THE CITY OF ROSEVILLE UNDERGROUND SERVICE ALERT (U.S.A.) ONE-CALL SYSTEM. THE CONTRACTOR SHALL NOTIFY THE U.S.A. CENTER 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK BY CALLING 1-800-227-2600.
6. THE LOCATION, SIZE, AND MATERIALS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE AND IS SHOWN FOR BIDDING PURPOSES. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT THE UTILITY OWNERS SO THAT THOSE UTILITIES MAY MARK THE LOCATION OF THEIR UTILITIES PRIOR TO ANY EXCAVATION ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE AND PROTECT EXISTING UTILITIES.

EARTHWORK NOTES:

1. CLEAR THE CONSTRUCTION AREA OF NATURAL OBSTRUCTIONS EXISTING FOUNDATIONS, BUILDINGS, FENCES, LUMBER, WALLS, STUMPS, BRUSH, WEEDS, RUBBISH, TREES, BOULDERS, AND ANY OTHER ITEMS WHICH INTERFERES WITH CONSTRUCTION OPERATIONS OR ARE DESIGNATED FOR REMOVAL.
2. GRUB OUT AND DISPOSE OF TREE TRUNKS AND ROOT MATERIAL BELOW THE GROUND SURFACE REMAINING AFTER CLEARING.
3. DISPOSE OF THE UNACCEPTABLE BACKFILL MATERIAL FROM THE CLEARING AND GRUBBING OPERATIONS AT NO ADDITIONAL COST TO THE OWNER.
4. STRIP AND STOCKPILE THE TOPSOIL. THE DEPTH OF STRIPPING SHALL BE ESTIMATED TO BE 12-INCHES BUT WILL BE DETERMINED IN THE FIELD AS SOIL CONDITIONS DICTATE.
5. REPLACE STOCKPILED SOIL AND RESTORE SITE AS SPECIFIED.
6. ROCK AND AGGREGATE STORAGE AREAS SHALL BE RESTORED BY EXCAVATING ANY SOILS CONTAINING ROCK OR AGGREGATE AND BACKFILLING WITH TOPSOIL. SOIL REMOVED MAY BE USED FOR TRENCH BACKFILL ABOVE THE PIPE ZONE AND 3 FEET BELOW FINISHED GRADE.

STAGING AREAS:

1. THE CITY SHALL PROVIDE STAGING AREAS ON AND/OR NEAR TO THE SITES FOR THE TEMPORARY STORAGE OF MATERIALS AND EQUIPMENT. THE CITY IS NOT RESPONSIBLE FOR SECURITY AND THEFT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PUBLIC SAFETY. REFER TO TECHNICAL SPECIFICATIONS.

LINE WORK

NEW STRUCTURES OR EDGE OF PAVEMENT
EXISTING STRUCTURES (SCREENED)
NEW PIPING (TRIPLE LINES)
NEW PIPING (SINGLE LINE)
EXISTING PIPING (TRIPLE LINES) (SCREENED)
EXISTING PIPING (SINGLE LINE)(SCREENED)
HIDDEN LINE OR TRAIL EDGE
CENTER, MONUMENT, OR SURVEY LINE
GUARDRAIL
EXISTING CONTOURS (SCREENED) — 310
NEW CONTOURS — 310
NEW FENCE
EXISTING FENCE (SCREENED)
REMOVE OR ABANDONED (CROSS HATCHING: FENCE SHOWN AS EXAMPLE)
POWER POLE & LINE — OHE — PP — OHE
CABLE TV (UNDERGROUND) — CTV — CTV
FIBER OPTIC — FO — FO
FUEL — F — F
NATURAL GAS — G — G
UNDERGROUND ELECTRIC — UGE — UGE
SANITARY SEWER — SS — SS
FORCEMAIN SANITARY SEWER — FM — FM
STORM DRAIN — SD — SD
TELEPHONE — TEL — TEL
WATER — W — W
PROPERTY LINE OR RIGHT OF WAY
SLOPE
NEW ROAD
EXISTING ROAD (SCREENED)
FUTURE ROAD, WATER EDGE OR RIDGE
CURB & GUTTER
CURB
SWALE
FLOWLINE
SHORING
RAILROAD TRACKS
LIMITS OF CONSTRUCTION — LOC — LOC
SILT FENCE — SF — SF
EASEMENT
EXISTING EASEMENT
CITY LIMITS
EXISTING GRADE (PROFILE)
PROPOSED GRADE (PROFILE)
MATCH LINE — MATCH LINE STA XXX SEE DWG XXX

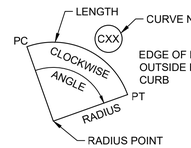
COORDINATES / ELEVATION

COORDINATES — XX — N=1600000 E=1000000 — N=XXXXXX.XX E=XXXXXX.XX
CONTROL POINT — XX
SPOT ELEVATION — FG XX.XX / TC XX.XX (REFER TO ABBREVIATIONS FOR DESIGNATION)
EXISTING SPOT ELEVATION — X 1325.00
SLOPE CALLOUT — 2:1 — 2:1 — 2.0% — S=0.0020

ROADWAY / PIPE CURVES

ROADWAY / PIPE CURVE

(SEE TABLE ON EACH PAVING AND GRADING OR CIVIL PIPING DWG WITH ROADWAY / PIPE CURVES.)



HATCH PATTERNS

AGGREGATE BASE COURSE (ABC)
ASPHALT PAVING
OR
(WITH AERIAL)
BEDROCK
CLSM
CONCRETE (ALL CLASSES)
DRAIN ROCK
GRAVEL
GRATING — SPAN
LANDSCAPING
RIPRAP
EXISTING/ UNDISTURBED SOIL
STRUCTURAL FILL OR BACKFILL
STEEL
STAGING AREA
TREAD PLATE

SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EXISTING CONTROL POINT		LIGHT
	EXISTING MONUMENT		UTILITY POLE
XX	CONTROL POINT		UTILITY POLE GUY WIRE
B-XX	SOIL BORING LOCATIONS	PP	POWER POLE
PH	POTHOLE		FIRE HYDRANT
PHXX	POTHOLE NUMBER	CO	CLEANOUT
	FLOW/SLOPE DIRECTION		AIR RELEASE VALVE
	MANHOLE (PLAN)		BLOW OFF VALVE
	MANHOLE (PROFILE)		HOSE BIBB / YARD HYDRANT
			SERVICE CONNECTION
	CATCH BASIN		BURIED VALVE
E	ELECTRICAL MANHOLE AND PULL BOX		FLANGE
M	METER BOX		BALL VALVE
P	PULL BOX		BUTTERFLY VALVE
T	TELEPHONE PEDESTAL		CHECK VALVE
CTV	CABLE TV		GATE VALVE
	POWER TOWER		PLUG VALVE
	GATE		PIPE CAP OR CONNECTION
	GUARD POST		REDUCER
	HEADWALL	CPTS	CATHODIC PROTECTION TEST STATION
	ROCK WALL		
	SHRUB/HEDGE		
	TREE		
	SIGN/SIGN POST		

NOTE: ALL SYMBOLS SHOWN AS NEW. EXISTING SYMBOLS ARE SCREENED.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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DRAWN CE
CHECKED CE
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICAELA R. ROBERTSON — No. 93260 — CIVIL — STATE OF CALIFORNIA

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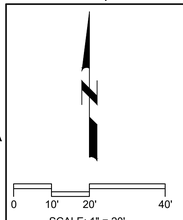
CITY OF ROSEVILLE CALIFORNIA

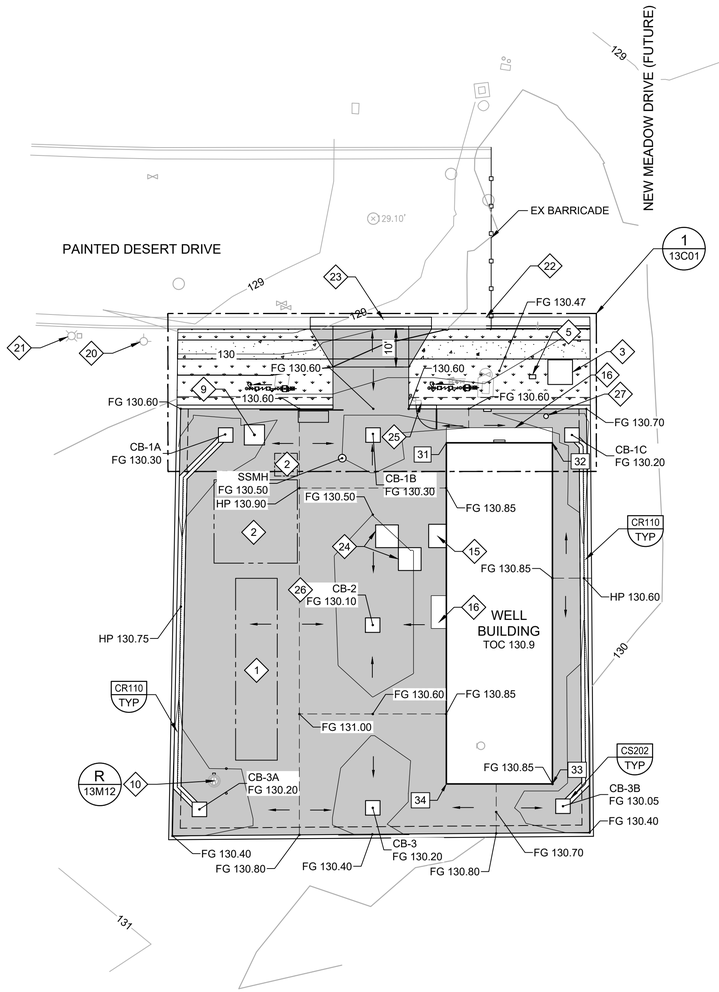
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
GENERAL CIVIL NOTES AND LEGEND

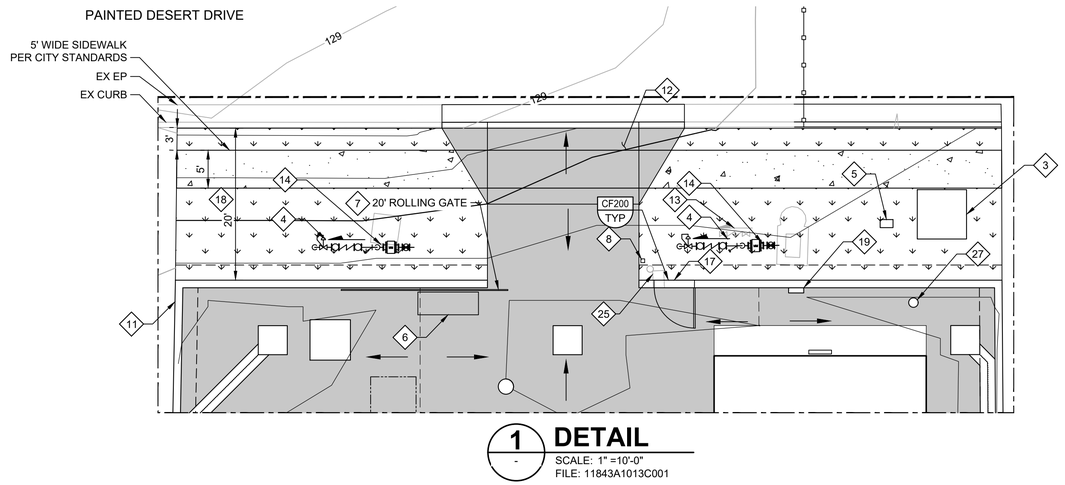
VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00GC01
SHEET NO. 12 OF 178

Plot Date: 12/11/2024 5:47:10 PM
FILE NAME: 11843A1000GC001.dwg
PROJECT NO.
LAST SAVED BY: hgarcia







1 DETAIL

SCALE: 1" =10'-0"
FILE: 11843A1013C001

GENERAL NOTES:

1. THE PLANS HAVE BEEN PREPARED IN PART BASED ON AVAILABLE RECORD INFORMATION. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING THE WORK.
2. SURFACE RESTORATION REQUIRED AT TRENCHES AND EXCAVATION IS NOT SHOWN ON THESE PLANS.
3. SEE DETAIL 2/13C05 FOR TYPICAL PAVEMENT SECTION.

X KEY NOTES:

1. FUTURE WATER TREATMENT FILTER VESSELS, IF REQUIRED. NOT PART OF THIS CONTRACT.
2. FUTURE FILTER BACKWASH TANK AND SEWER AIR-GAP, IF REQUIRED. NOT PART OF THIS CONTRACT.
3. ELECTRICAL TRANSFORMER, SEE 13E01.
4. 2" BACKFLOW PREVENTER INSTALL SIMILAR TO CITY OF ROSEVILLE STANDARD DETAIL W-7.
5. FIBER OPTIC HANDHOLE, SEE 13E01.
6. AUTOMATIC GATE OPENER PER SECTION 02820.
7. AUTOMATIC ROLLING GATE PER SECTION 02820.
8. GATE KEY PAD PER SECTION 02820.
9. AIR-GAP STRUCTURE TO STORM DRAIN. SEE DETAIL 1/13C05 FOR DETAILS.
10. EXISTING MONITORING WELL.
11. CMU WALL (REFER TO 13C04 FOR COORDINATE POINTS).
12. PAVED DRIVE. REMOVE AND REPLACE CURB AND GUTTER TO MEET CITY STANDARD DETAIL ST-21. INSTALL DETACHED SIDEWALK PER CITY DETAIL ST-7.
13. FUTURE LOCATION FOR FIRE PROTECTION BACKFLOW AND FDC ASSEMBLY PER CITY OF ROSEVILLE STANDARD DETAIL W-2.
14. FLOW METER INSTALL SIMILAR TO CITY OF ROSEVILLE STANDARD DETAIL W-7.
15. CONDENSING UNIT, SEE MECHANICAL DRAWINGS.
16. CONCRETE LANDING, SLOPED AT 1/4" PER FOOT AWAY FROM THE BUILDING FOR DRAINAGE PER CR306/TYP.
17. PEDESTRIAN ACCESS GATE.
18. INSTALL 20 FT WIDE IRRIGATED LANDSCAPED STRIP WITH CITY APPROVED SHRUBS AND GROUND COVER.
19. IRRIGATION CONTROL PANEL AND CONDUIT. POST MOUNT OR SURFACE MOUNT ON PERIMETER WALL.
20. EXISTING FIRE HYDRANT.
21. EXISTING STREET LIGHT.
22. INSTALL TYPE 2 VERTICAL CURB AND GUTTER PER CITY OF ROSEVILLE STANDARD DETAIL ST-17. START AND STOP AT EXISTING SCORE MARKS OR JOINTS. REMOVE AND REPLACE BARRICADES AS REQUIRED.
23. INSTALL TYPE D DRIVEWAY APRON PER CITY OF ROSEVILLE STANDARD DETAIL ST-21.
24. ELECTRICAL PULL BOX, SEE 13E01.
25. EXISTING FIBER OPTIC STUB UP AND ELECTRICAL UTILITY VAULT. CONTRACTOR TO DEMOLISH AND ROUTE NEW FO CABLE AND ELEC CONDUIT TO THE NEW FIBER OPTIC HANDHOLE AND TRANSFORMER. SEE ELECTRICAL DRAWINGS..
26. STORM DRAIN MANHOLE PER CITY OF ROSEVILLE STANDARD DETAIL DR-4 WITH DETAIL DR-8 GRATE COVER.
27. POLE FOR LICENSE PLATE READER CAMERAS, SEE ELECTRICAL DRAWINGS.

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REV	DATE	BY	DESCRIPTION
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DESIGNED MED
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
MICAELA R. ROBERTSON
No. 93260
CIVIL
STATE OF CALIFORNIA

carollo

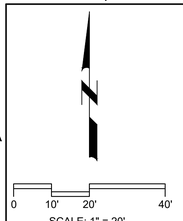
CITY OF ROSEVILLE CALIFORNIA

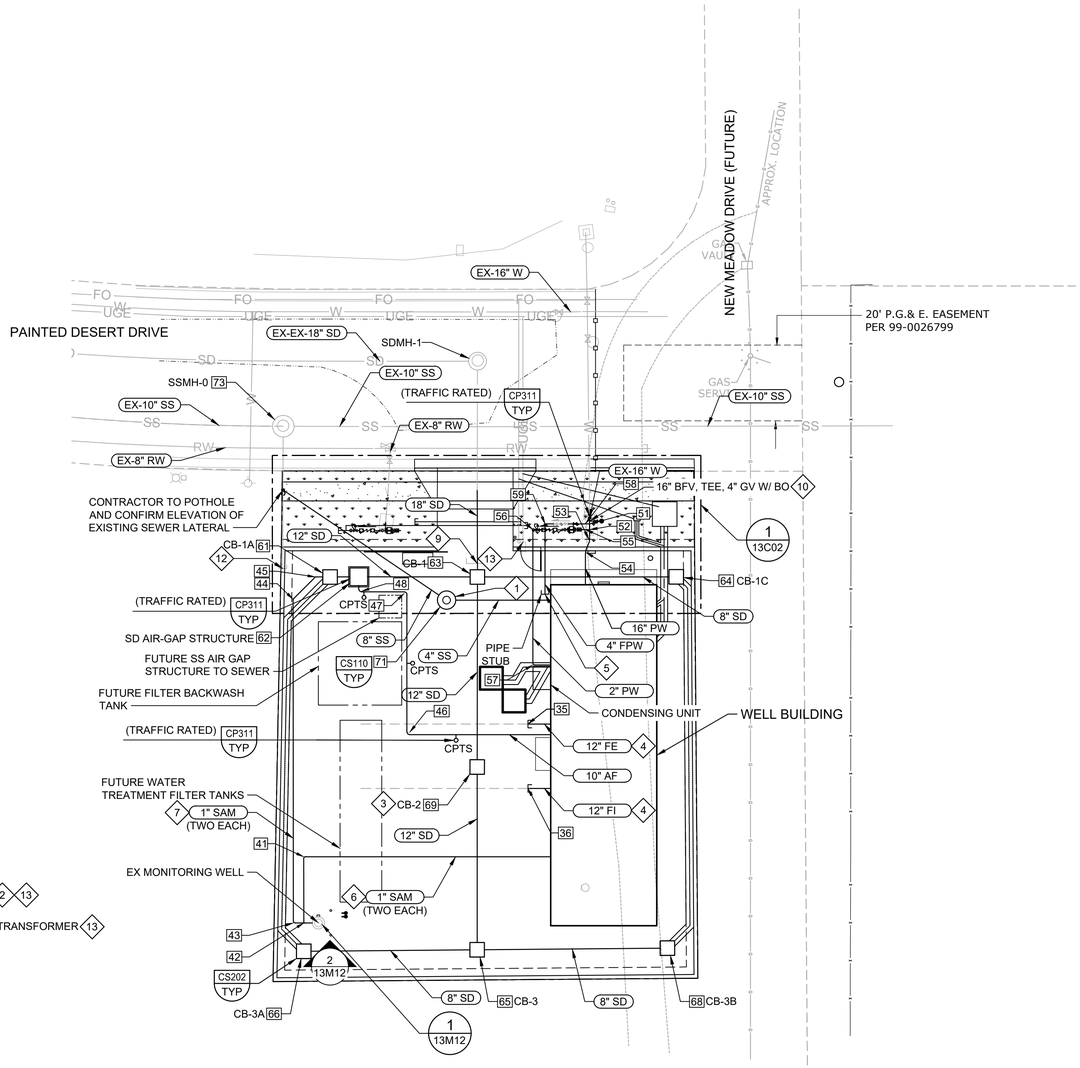
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
CAMPUS OAKS
PAVING, GRADING, AND SITE PLAN

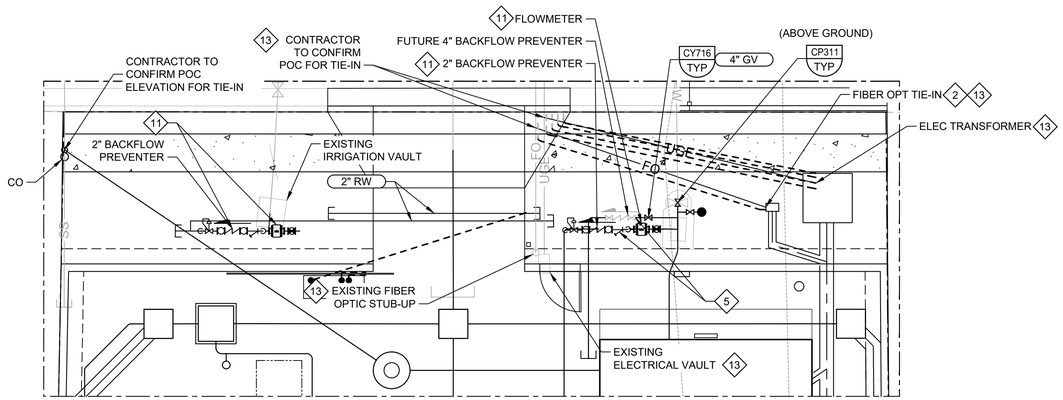
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JOB NO. 11843A.10
DRAWING NO. 13C01
SHEET NO. 13 OF 178

LAST SAVED BY: hgarcia
PROJECT NO.
FILE NAME: 11843A1013C001.dwg







1 **DETAIL**
SCALE: 1" =10'-0"
FILE: 11843A1013C002

GENERAL NOTES:

1. SEE GENERAL NOTES ON SHEET 00G04 AND CIVIL NOTES ON 00GC01.
2. OFFSITE UTILITIES EXTENDED TO SITE BY OTHERS. CONNECT TO SERVICES PROVIDED IN FIELD.
3. REFER TO PIPE PROFILES FOR INVERT ELEVATIONS NOT CALLED OUT ON THE PLANS. MAINTAIN MINIMUM 36" COVER WHERE ANY INVERT ELEVATION IS NOT IDENTIFIED.
4. PIPE TRENCHING AND SURFACE RESTORATION SHALL BE PER THE CITY OF ROSEVILLE STANDARD DETAILS AND CY111/TYP.
5. THE CONTRACTOR SHALL RESTORE ALL LANDSCAPING AND IRRIGATION COMPONENTS PER THE CITY OF ROSEVILLE STANDARDS WHERE DISTURBED AS A RESULT OF THIS WORK. PLANTS SHALL BE REPLACED IN KIND AND SIZE BY THE CONTRACTOR.
6. REFER TO DRAWING 00GM05 FOR PIPE SCHEDULE AND SECTION 15052 FOR GENERAL PIPING REQUIREMENTS.
7. THESE PLANS HAVE BEEN PREPARED IN PART BASED ON AVAILABLE RECORD INFORMATION. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING OF THE WORK.
8. EXISTING INVERT ELEVATIONS ARE BASED ON AVAILABLE RECORD INFORMATION. CONTRACTOR SHALL FIELD VERIFY INVERT ELEVATIONS PRIOR TO BEGINNING THE WORK.
9. SEE DWG 13C06 FOR COORDINATE POINTS.
10. BURIED DI PIPE SHALL BE PROTECTED WITH A CATHODIC PROTECTION SYSTEM OR WAX TAPE PER SPECIFICATION 15320. ANODE AND TEST STATION SPACING/PLACEMENT ARE APPROXIMATE BASED ON OBSTACLES IN AREA AND MAY BE MOVED. ALL ISOLATION FLANGES MUST HAVE ISOLATION JOINT FLANGE KIT TEST STATION INSTALLED AT THE LOCATION. ISOLATE ALL DISSIMILAR PIPE, VALVES, ETC. ADD JOINT BONDING TO DIP, REFER TO CP150 FOR JOINT BOND DETAILS.

KEY NOTES:

1. NOT USED
2. PROVIDE HAND HOLE PER ROSEVILLE ELECTRIC REQUIREMENTS.
3. STORM DRAIN MANHOLE PER CITY OF ROSEVILLE STANDARD DETAIL DR-4 WITH DETAIL DR-8 GRATE COVER.
4. STUB OUT FOR FUTURE CONNECTION.
5. PROVIDE 4" DIP WITH BLIND FLANGE AND BLOW OFF 24" ABOVE FINISHED GRADE. TYPICAL OF THREE LOCATIONS.
6. ROUTE EACH 1" SAMPLE LINE FROM EXISTING MONITORING WELL TO INSIDE THE BUILDING (TWO TOTAL). ROUTE SAMPLE LINE TO AVOID OTHER UTILITIES. WORK INCLUDES ALL FITTINGS, WALL PENETRATIONS, AT-GRADE HANDHOLES, AND PIPE SUPPORTS AS REQUIRED.
7. ROUTE EACH 1" SAMPLE LINE FROM EXISTING MONITORING WELL TO THE SD AIR GAP STRUCTURE (TWO TOTAL). ROUTE SAMPLE LINE TO AVOID OTHER UTILITIES, WORK INCLUDES ALL FITTINGS, WALL PENETRATIONS AT-GRADE HANDHOLES, AND PIPE SUPPORTS AS REQUIRED.
8. NOT USED.
9. CONNECT TO EXISTING 18" STORM DRAIN STUB OUT.
10. EXISTING 16" STUB UP. INSTALL BUTTERFLY ISOLATION VALVE AND 4" BLOW OFF SIMILAR TO TYP/CY733.
11. BACKFLOW PREVENTER, FLOW METER AND CORP STOP PER CITY OF ROSEVILLE STANDARD DETAIL W-7.
12. CONTRACTOR TO DEMOLISH EXISTING SEWER LATERAL PIPE AND ROUTE NEW SEWER PIPE FROM EXISTING SSMH-0 TO THE FACILITY.
13. CONTRACTOR TO DEMOLISH EXISTING FIBER OPTIC STUB UP AND ELECTRICAL UTILITY VAULT AND ROUTE NEW FO CABLE AND ELEC CONDUIT TO THE NEW FIBER OPTIC HANDHOLE AND TRANSFORMER. SEE ELECTRICAL DRAWINGS.

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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
MICAELA R. ROBERTSON
No. 93260
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

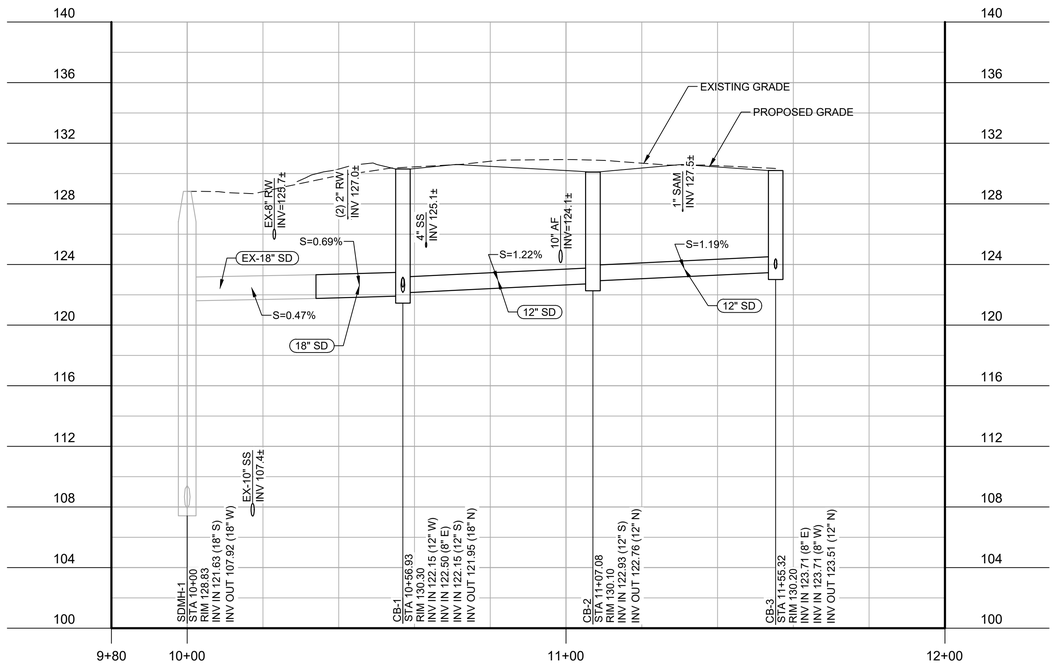
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
CAMPUS OAKS
YARD PIPING AND UTILITIES PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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JOB NO. 11843A.10
DRAWING NO. 13C02
SHEET NO. 14 OF 178

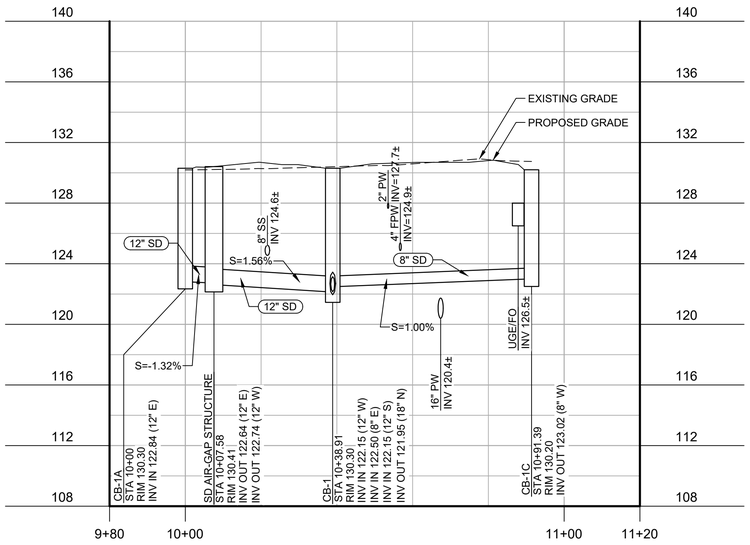
LAST SAVED BY: hgarcia

PROJECT NO.
FILE NAME: 11843A1013C002.dwg



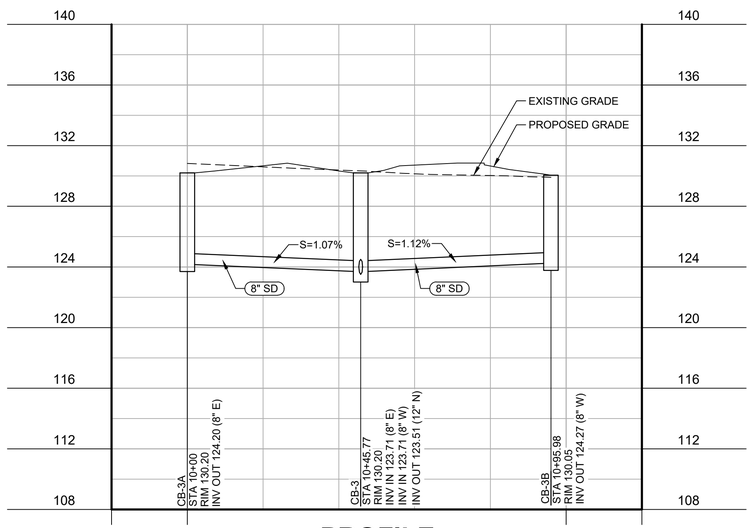
PROFILE

HORIZ SCALE: 1"=20'
VERT SCALE: 1"=5'
FILE: 11843A1013C003



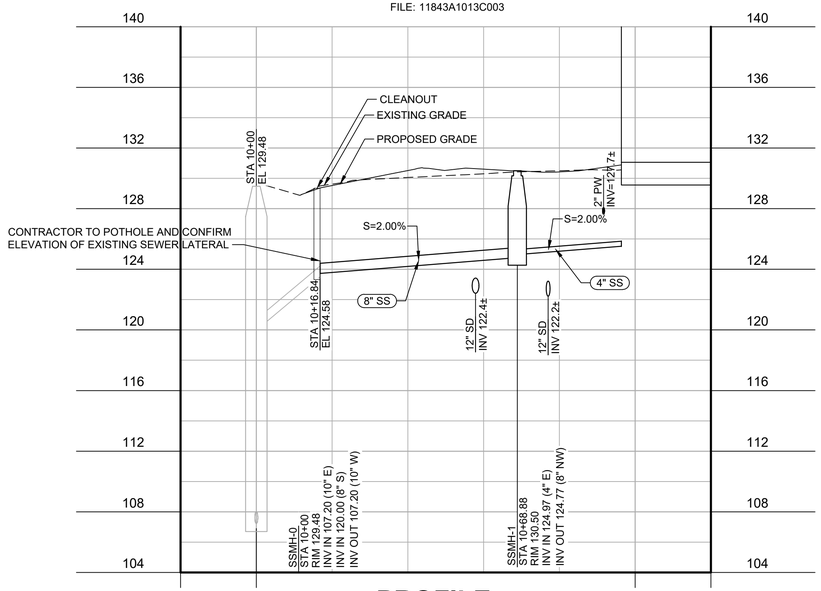
PROFILE

HORIZ SCALE: 1"=20'
VERT SCALE: 1"=5'
FILE: 11843A1013C003



PROFILE

HORIZ SCALE: 1"=20'
VERT SCALE: 1"=5'
FILE: 11843A1013C003



PROFILE

HORIZ SCALE: 1"=20'
VERT SCALE: 1"=5'
FILE: 11843A1013C003

GENERAL NOTES:

1. SEE GENERAL NOTES ON SHEET 00G04 AND CIVIL NOTES ON 00GC01.
2. OFFSITE UTILITIES EXTENDED TO SITE BY OTHERS. CONNECT TO SERVICES PROVIDED IN FIELD.
3. EXISTING INVERT ELEVATIONS ARE BASED ON AVAILABLE RECORD INFORMATION. CONTRACTOR SHALL FIELD VERIFY INVERT ELEVATIONS PRIOR TO BEGINNING THE WORK.

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STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

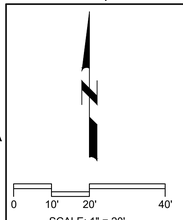
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
CAMPUS OAKS
PIPE PROFILES

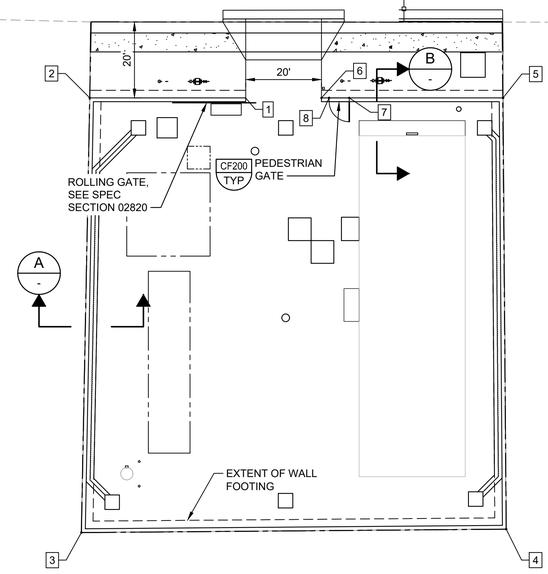
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JOB NO. 11843A.10
DRAWING NO. 13C03
SHEET NO. 15 OF 178

Plot Date: 9/12/2022 7:29:07 AM
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PROJECT NO.
FILE NAME: 11843A1013C003.dwg

Plot Date: 12/11/2024 8:34:15 AM

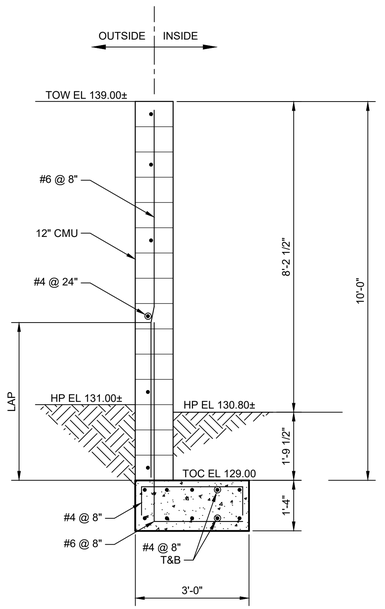




GENERAL NOTES:

1. THE PLANS HAVE BEEN PREPARED IN PART BASED ON AVAILABLE RECORD INFORMATION. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING THE WORK.
2. SURFACE RESTORATION REQUIRED AT TRENCHES AND EXCAVATION IS NOT SHOWN ON THESE PLANS.

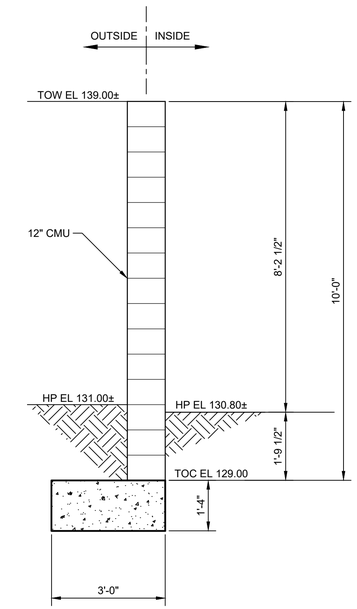
COORDINATE CONTROL POINTS				
POINT	NORTHING	EASTING	DESCRIPTION	TOW
1	2050895.31	6754930.02	BEGIN WALL	130.70
2	2050895.31	6754888.84	WALL CORNER	130.61
3	2050780.60	6754886.65	WALL CORNER	131.00
4	2050781.48	6754998.78	WALL CORNER	131.00
5	2050895.31	6754997.95	WALL CORNER	130.70
6	2050895.31	6754950.02	END WALL	130.70
7	2050895.31	6754957.35	BEGIN WALL	130.70
8	2050895.31	6754952.02	BEGIN WALL	130.70



WEST, SOUTH, AND EAST PERIMETER WALL

A SECTION

SCALE: 1/2" = 1-0"
FILE: 11843A1013S310



NOTES:
1. SEE SECTION A FOR REINFORCEMENT.

NORTH PERIMETER WALL

B SECTION

SCALE: 1/2" = 1-0"
FILE: 11843A1013S310

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REGISTERED PROFESSIONAL ENGINEER
MICAELA R. ROBERTSON
No. 93260
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
CAMPUS OAKS
PERIMETER WALL IMPROVEMENTS

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13C04
SHEET NO. 16 OF 178

LAST SAVED BY: hgarcia

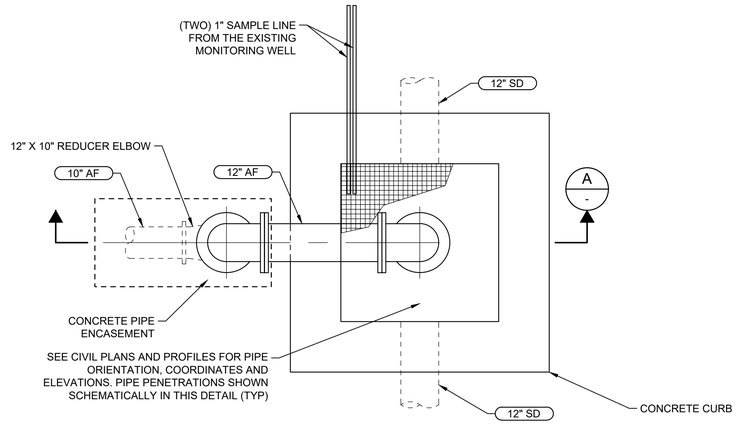
PROJECT NO.
FILE NAME: 11843A1013C004.dwg

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY PIPE CONFIGURATION AT BURIED VALVE AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

KEY NOTES:

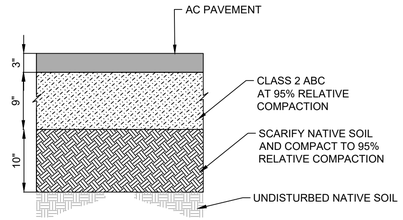
1. 2" H-20 RATED WELDED GALVANIZED STEEL GRATING.



BACKFLUSH AIR GAP

1 / 13C01 — DETAIL

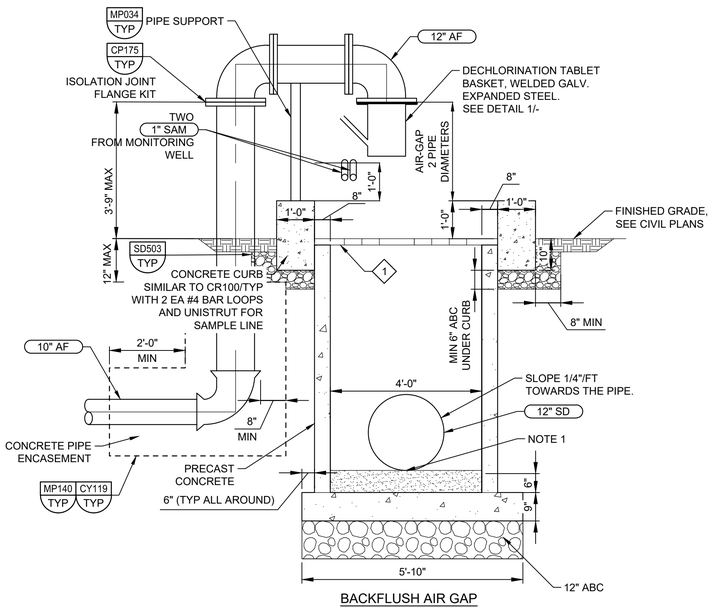
SCALE: 1/2" =1'-0"
FILE: 11843A10C400



ASPHALT CONCRETE PAVEMENT

2 / 13C01 — DETAIL

SCALE: 1" =1'-0"
FILE: 11843A10C400



BACKFLUSH AIR GAP

A / 13C05 — SECTION

SCALE: 1/2" =1'-0"
FILE: 11843A10C400



DECHLORINATION BASKET

1 / - — DETAIL

SCALE: NO SCALE
FILE: 11843A10C400

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REGISTERED PROFESSIONAL ENGINEER — MICAELA R. ROBERTSON — No. 93260 — CIVIL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

CIVIL

CAMPUS OAKS
DETAILS AND SECTIONS

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13C05
SHEET NO. 17 OF 178

Plot Date: 12/11/2024 8:37:28 AM

COORDINATE CONTROL POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
31	2050885.33	6754987.94	BLDG CORNER
32	2050795.33	6754987.95	BLDG CORNER
33	2050795.33	6754959.94	BLDG CORNER
34	2050885.33	6754959.94	BLDG CORNER

PRESSURE PIPE COORDINATES POINTS				
POINT NUMBER	NORTHING	EASTING	CL ELEVATION	DESCRIPTION
35	2050848.58	6754953.94	124.00	12" STUB
36	2050831.58	6754953.94	124.00	12" STUB
41	2050813.54	6754894.75	127.98	1" 90° ELL
42	2050796.08	6754894.77	127.25	1" TEE
43	2050796.08	6754892.00	127.25	1" 90 ELL
44	2050881.52	6754891.94	127.25	1" 90 ELL
45	2050887.39	6754897.82	127.25	1" 90 ELL
46	2050845.76	6754921.98	124.54	10" 90° ELL
47	2050883.47	6754921.98	124.54	10" 90° ELL
48	2050883.47	6754909.28	124.54	10" 90° ELL
51	2050901.40	6754970.22	118.07	16" X 4" TEE
52	2050899.87	6754970.22	118.07	16" X 2" TEE
53	2050896.96	6754970.22	118.07	16" 45 ELL
54	2050893.96	6754969.09	121.07	16" 45 ELL
55	2050899.90	6754969.10	126.43	2" 90 ELL
56	2050899.91	6754955.23	127.75	2" 90 ELL
57	2050864.16	6754955.23	127.95	2" 90 ELL
58	2050901.40	6754969.09	125.00	4" 90 ELL
59	2050901.40	6754958.44	125.47	4" 90 ELL

YARD PIPING STRUCTURES COORDINATES POINTS			
POINT NUMBER	NORTHING	EASTING	DESCRIPTION
61	2050887.39	6754901.70	CB-1A
62	2050887.43	6754909.28	SD AIR-GAP STRUCTURE
63	2050887.39	6754940.60	CB-1
64	2050887.41	6754993.09	CB-1C
65	2050789.00	6754940.53	CB-3
66	2050788.60	6754894.76	CB-3A
68	2050789.44	6754990.74	CB-3B
69	2050837.24	6754940.53	CB-2
71	2050881.26	6754932.45	SSMH-1
73	2050927.18	6754889.33	SSMH-0

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REGISTERED PROFESSIONAL ENGINEER
MICAELA R. ROBERTSON
No. 93260
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
CAMPUS OAKS
COORDINATE POINTS

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13C06
SHEET NO. 18 OF 178

PROJECT NO.
FILE NAME: 11843A1013C006.dwg

Plot Date: 12/11/2024 9:10:13 AM

SCALE: 1" = 30'

ASR FACILITY

ASR WELL

1270 PLEASANT GROVE BLVD

SEWER STATION LIFT

STORM DISCHARGE LOCATION

5
19C05

REMOVE EXISTING BOMANITE HERRINGBONE PATTERN BRICKWORK ON THE DRIVEWAY AND REPLACE TO MATCH EXISTING

SEWER TIE-IN LOCATION

EXISTING 16" CONCRETE BAND WITH 8" SOLDER COURSE AND HERRINGBONE BOMANITE BRICKWORK. BOMANITE COLOR SHALL BE MEXICAN TILE WITH AUTUMN BROWN RELEASE. REFER TO IMPROVEMENTS PLANS FOR WOODCREEK OAKS VILLAGE 3 RECORD DRAWINGS, PROVIDED BY THE CITY

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MICAELA R. ROBERTSON
No. 93260
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

CIVIL

MISTY WOOD
OVERALL SITE PLAN

VERIFY SCALES
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JOB NO. 11843A.10

DRAWING NO. 19C00

SHEET NO. 19 OF 178

LAST SAVED BY: hgarcia

PROJECT NO.

FILE NAME: 11843A1019C000.dwg

Plot Date: 12/11/2024 12:16:02 PM

SCALE: 1" = 20'

WELL BUILDING
TOC 131.50

GRASS-LINED SWALE, FINISHED GRADE TO DRAIN TO THE SOUTHWEST CORNER

GRASS LINED SWALE

6' WROUGHT IRON FENCE

8' BLOCK WALL

SET 5/8" REBAR WITH CAP
N. 2043588.884
E. 6755857.263
ELEV.=134.65

SET 5/8" REBAR WITH CAP
N. 2043520.796
E. 6756192.466
ELEV.=129.70

COMM MH
RIM=124.28

STORM DRAIN MANHOLE
RIM EL. = 131.86
INV.12"NW = 125.21
INV.18"SE = 125.26
INV.18"S = 125.33
INV.18"SW = 125.11

EX MONITORING WELL R 19M12

DI GRATE EL = 131.21
INV.12"SE = 128.95

LAPORTE DR

PLEASANT GROVE BLVD

"NO PARKING"

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GENERAL NOTES:

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2. SURFACE RESTORATION REQUIRED AT TRENCHES AND EXCAVATION IS NOT SHOWN ON THESE PLANS.
3. SEE DETAIL 2/19C05 FOR TYPICAL PAVEMENT SECTION.
4. CONTRACTOR SHALL FOLLOW TREE PERMIT REQUIREMENTS, SEE SPECIFICATION 01562.
5. SEE CITY STANDARD CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
6. SLOPE ALL FINISHED PAVEMENT WITHIN 4 FEET AT A MINIMUM OF 2% SLOPE AWAY FROM STRUCTURE.

KEY NOTES CONT'D:

18. REMOVE AND REPLACE EXISTING CONCRETE SQUARE CURB AND GUTTER WITH DEPRESSED CURB PER CITY STANDARD DETAIL ST-21. START AND STOP AT EXISTING SCORE MARKS OR JOINTS.
19. REMOVE AND REPLACE EXISTING 8 FT WIDE CONCRETE SIDEWALK. MATCH EXISTING CONCRETE COLOR AND FINISH. START AND STOP AT EXISTING SCORE MARKS OR JOINTS.
20. THE CONTRACTOR SHALL PROVIDE A TEMPORARY SAFE, SMOOTH, AND FIRM PEDESTRIAN ACCESS ALONG THE EXISTING SIDEWALK PATHWAY.
21. ESTABLISH NEW 2'-6" POST AND CABLE FENCE TO MATCH EXISTING.
22. FIRE HYDRANT AND 6" GATE VALVE PER CITY OF ROSEVILLE STANDARD DETAIL W-13 AND W-16.
23. IRRIGATION CONTROL PANEL AND CONDUIT. POST MOUNT OR SURFACE MOUNT ON PERIMETER WALL.
24. REMOVE EXISTING SMALL TREES, (LESS THAN 6" DIAMETER) AND CUT LIMBS TO PROVIDE 10' CLEARANCE. COORDINATE WITH CITY ARBORIST.
25. INSTALL 10 FT WIDE IRRIGATED LANDSCAPED STRIP WITH CITY APPROVED SCREENING BUSHES OR TREES.
26. LIMITS OF DISTURBANCE/CONTRACTOR WORK AREA.
27. ALLOWANCE ITEM #1 REPLACE EXISTING RESIDENTIAL WROUGHT IRON FENCE.
28. KEYSTONE STYLE BLOCK WALL.
29. CONCRETE LANDING PAD, MIN 2% SLOPE TO DRAIN.
30. POLE FOR LICENSE PLATE READER CAMERAS, SEE ELECTRICAL DRAWINGS.
31. INSTALL "NO PARKING" SIGN.
32. HAND PLACE 4"-6" RIP RAP AT BOTH ENDS OF THE CROSS GUTTER, WITH FILTER FABRIC UNDERLAYMENT.
33. ELECTRICAL PULL BOX, SEE 19E01.
34. NOT USED

KEY NOTES:

1. FUTURE WATER TREATMENT FILTER VESSELS AND BACKWASH TANK.
2. FUTURE FILTER BACKWASH TANK.
3. ELECTRICAL TRANSFORMER, SEE 19E01.
4. 2" BACKFLOW PREVENTER INSTALL SIMILAR TO CITY OF ROSEVILLE STANDARD DETAIL W-7.
5. FIBER OPTIC HANDHOLE, SEE 19E01.
6. AUTOMATIC GATE OPENER PER SECTION 02820.
7. AUTOMATIC ROLLING GATE PER SECTION 02820.
8. GATE KEY PAD PER SECTION 02820.
9. AIR-GAP STRUCTURE TO STORM DRAIN. SEE 19C05 FOR DETAILS.
10. FUTURE AIR GAP STRUCTURE TO SEWER.
11. CMU WALL (REFER TO 13C04 FOR COORDINATE POINTS).
12. PAVED DRIVE WAY.
13. FUTURE LOCATION FOR FIRE PROTECTION BACKFLOW AND FDC ASSEMBLY PER CITY OF ROSEVILLE STANDARD DETAIL W-2.
14. FLOWMETER INSTALL SIMILAR TO CITY OF ROSEVILLE STANDARD DETAIL W-7.
15. CONDENSING UNIT, SEE MECHANICAL DRAWINGS.
16. CONCRETE LANDING, SLOPED AT 1/4" PER FOOT FOR DRAINAGE PER CR306/TYP.
17. PEDESTRIAN ACCESS GATE.

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REGISTERED PROFESSIONAL ENGINEER MICAELA R. ROBERTSON No. 93260 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
MISTY WOOD
PAVING, GRADING, AND SITE PLAN

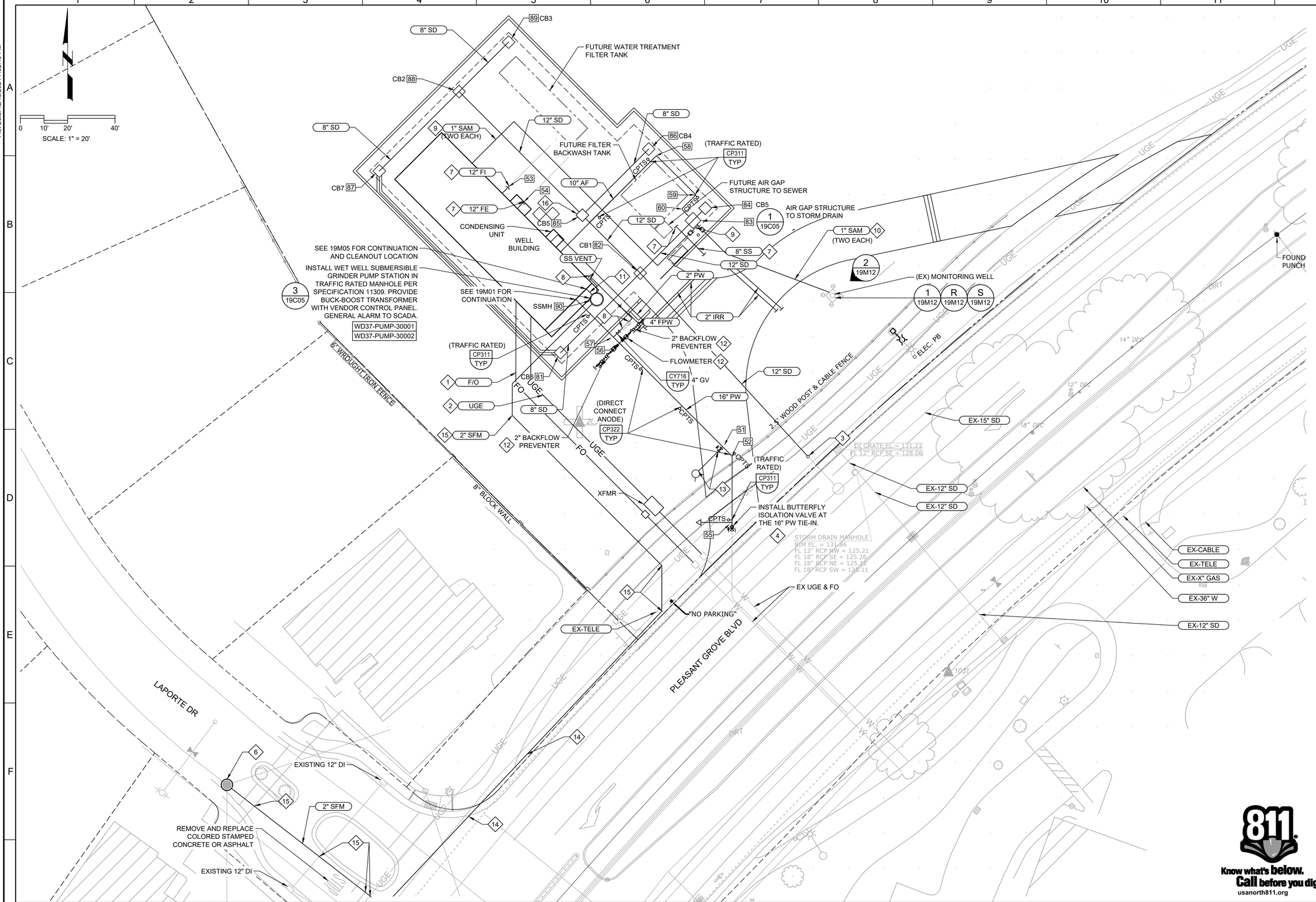
VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 19C01
SHEET NO. 20 OF 178

LAST SAVED BY: hgarcia

PROJECT NO. FILE NAME: 11843A1019C001.dwg

Plot Date: 12/13/2024 7:02:19 PM



GENERAL NOTES:

1. SEE GENERAL NOTES ON SHEET 00G04 AND CIVIL NOTES ON 00GC01.
2. REFER TO DEMOLITION DRAWINGS FOR REQUIRED SITE WORK.
3. REFER TO PIPE PROFILES FOR INVERT ELEVATIONS NOT CALLED OUT ON THE PLANS. MAINTAIN MINIMUM 36" COVER WHERE ANY INVERT ELEVATION IS NOT IDENTIFIED.
4. PIPE TRENCHING AND SURFACE RESTORATION SHALL BE PER THE CITY OF ROSEVILLE STANDARD DETAILS AND CY111/TYP.
5. THE CONTRACTOR SHALL RESTORE ALL LANDSCAPING AND IRRIGATION COMPONENTS PER THE CITY OF ROSEVILLE STANDARDS WHERE DISTURBED AS A RESULT OF THIS WORK. PLANTS SHALL BE REPLACED IN KIND AND SIZE BY THE CONTRACTOR.
6. REFER TO DRAWING 00GM05 FOR PIPE SCHEDULE AND SECTION 15052 FOR GENERAL PIPING REQUIREMENTS.
7. BURIED DI PIPE SHALL BE PROTECTED WITH A CATHODIC PROTECTION SYSTEM OR WAX TAPE PER SPECIFICATION 15320. ANODE AND TEST STATION SPACING/PLACEMENT ARE APPROXIMATE BASED ON OBSTACLES IN AREA AND MAY BE MOVED. ALL ISOLATION FLANGES MUST HAVE ISOLATION JOINT FLANGE KIT TEST STATION INSTALLED AT THE LOCATION. ISOLATE ALL DISSIMILAR PIPE, VALVES, ETC. ADD JOINT BONDING TO DIP, REFER TO CP150 FOR JOINT BOND DETAILS.
8. OFFSITE UTILITIES EXTENDED TO SITE BY OTHERS. CONNECT TO SERVICES PROVIDED IN FIELD.

X KEY NOTES:

1. (1) 2" CONDUIT WITH FIBER OPTIC CABLE AND (1) 2" CONDUIT SPARE WITH PULL WIRE.
2. (1) 4" CONDUIT POWER AND (1) 4" CONDUIT SPARE WITH PULL WIRE, PER ROSEVILLE ELECTRIC REQUIREMENTS.
3. CONNECT TO EXISTING 12" SD.
4. EXISTING 4" BLOW OFF.
5. NOT USED.
6. CONNECT TO EXISTING SSMH. DROP INLET OR OTHER SIMILAR TO CITY OF ROSEVILLE STANDARD DETAILS SS-12.
7. STUB OUT FOR FUTURE CONNECTION.
8. PROVIDE 4" DIP WITH BLIND FLANGE AND BLOW OFF 24" ABOVE FINISHED GRADE. TYPICAL OF THREE LOCATIONS.
9. ROUTE EACH 1" SAMPLE LINE FROM EXISTING MONITORING WELL TO INSIDE THE BUILDING (TWO TOTAL). ROUTE SAMPLE LINE TO AVOID OTHER UTILITIES. WORK INCLUDES ALL FITTINGS, WALL PENETRATIONS, AT-GRADE HANDHOLES, AND PIPE SUPPORTS AS REQUIRED.
10. ROUTE EACH 1" SAMPLE LINE FROM EXISTING MONITORING WELL TO THE SD AIR GAP STRUCTURE (TWO TOTAL).
11. ENCASE 4" DRAIN IN CONCRETE FROM THE BUILDING TO THE MANHOLE INSTALL TWO FLEXIBLE COUPLINGS (FLEX-SEAL ARC SHIELDED ADJUSTABLE SEWER REPAIR COUPLING MR56 ARC SERIES OR EQUAL) TO ALLOW FOR DEFLECTION BETWEEN THE BUILDING AND MANHOLE.
12. BACKFLOW PREVENTER AND FLOWMETER PER CITY OF ROSEVILLE STANDARD DETAIL W-7.
13. FIRE HYDRANT AND 6" GATE VALVE PER CITY OF ROSEVILLE STANDARD DETAIL W-13 AND W-16.
14. SPECIAL TRENCH: CUT PAVEMENT RESTORATION SECTION PER CITY STANDARD TB-6, 3' BEHIND THE BACK OF CURB, TYP OF ALL WORK IN PAVED AREA.
15. CONTRACTOR SHALL POTHOLE TO IDENTIFY EXISTING UTILITY CROSSINGS ALONG THE PROPOSED SEWER FORCE MAIN. SUBMIT A CONSTRUCTION PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL.
16. STORM DRAIN MANHOLE PER CITY OF ROSEVILLE STANDARD DETAIL DR-4 WITH DETAIL DR-8 GRATE COVER.

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DRAWN HPG
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICAELA R. ROBERTSON No. 93260 CIVIL STATE OF CALIFORNIA

carollo

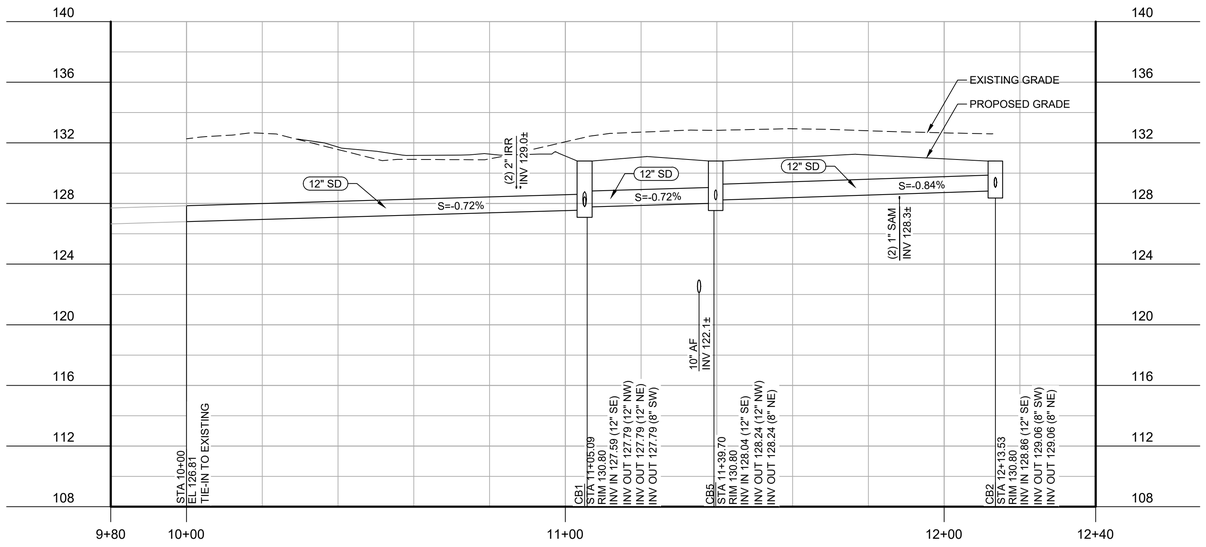
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
MISTY WOOD
YARD PIPING AND UTILITIES PLAN

VERIFY SCALES
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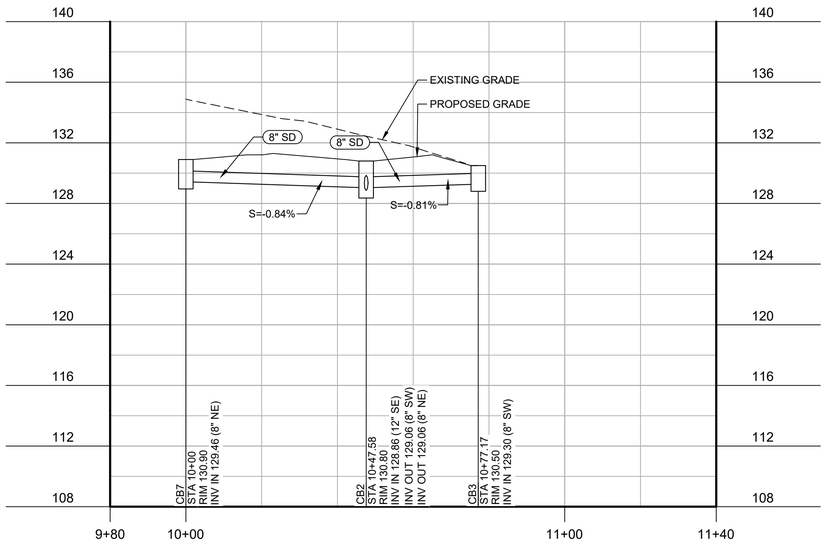
JOB NO. 11843A.10
DRAWING NO. 19C02
SHEET NO. 21 OF 178

PROJECT NO. FILE NAME: 11843A1019C002.dwg



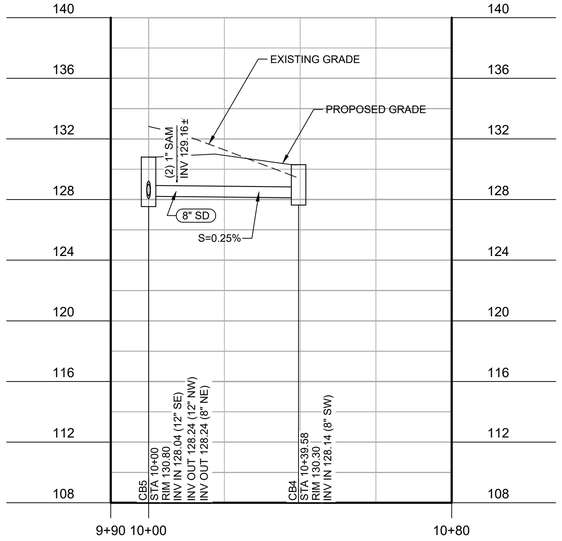
PROFILE

HORIZ SCALE: 1"=20'
VERT SCALE: 1"=5'
FILE: 11843A1019C004



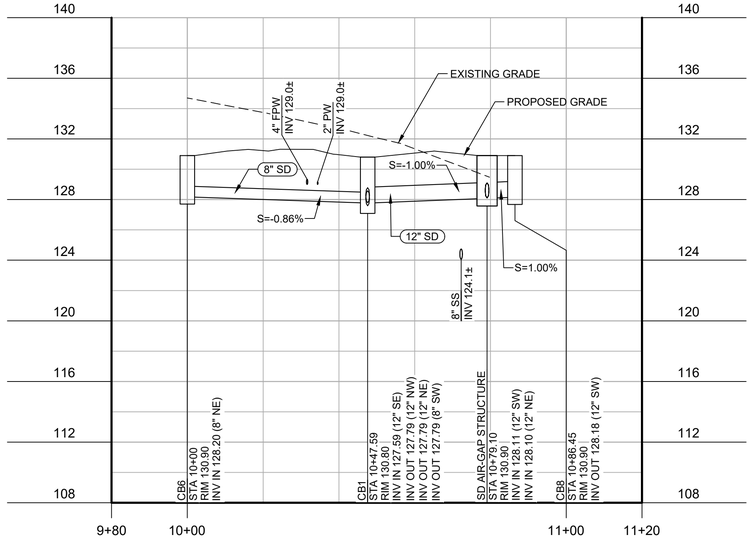
PROFILE

HORIZ SCALE: 1"=20'
VERT SCALE: 1"=5'
FILE: 11843A1019C004



PROFILE

HORIZ SCALE: 1"=20'
VERT SCALE: 1"=5'
FILE: 11843A1019C004



PROFILE

HORIZ SCALE: 1"=20'
VERT SCALE: 1"=5'
FILE: 11843A1019C004

GENERAL NOTES:

1. SEE GENERAL NOTES ON SHEET 00G04 AND CIVIL NOTES ON 00GC01.
2. OFFSITE UTILITIES EXTENDED TO SITE BY OTHERS. CONNECT TO SERVICES PROVIDED IN FIELD.
3. EXISTING INVERT ELEVATIONS ARE BASED ON AVAILABLE RECORD INFORMATION. CONTRACTOR SHALL FIELD VERIFY INVERT ELEVATIONS PRIOR TO BEGINNING THE WORK.

REV	DATE	BY	DESCRIPTION
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MICAELA R. ROBERTSON
No. 93260
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

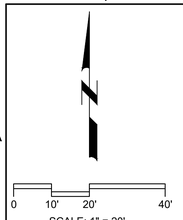
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
MISTY WOOD
PIPE PROFILES

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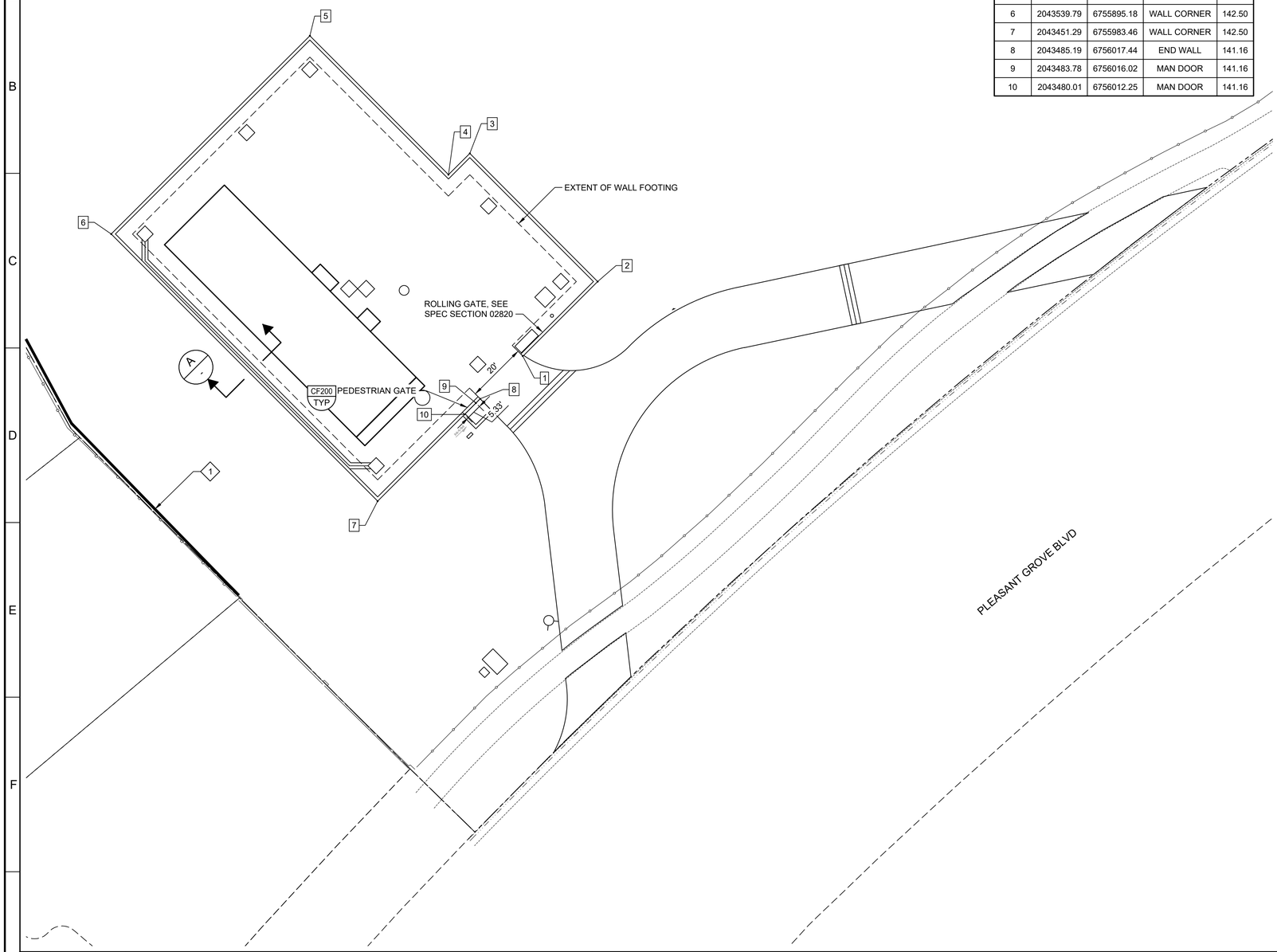
JOB NO. 11843A.10
DRAWING NO. 19C03
SHEET NO. 22 OF 178

Plot Date: 9/12/2022 7:29:07 AM
LAST SAVED BY: hgarcia
PROJECT NO.
FILE NAME: 11843A1019C003.dwg

Plot Date: 12/11/2024 10:03:08 AM



COORDINATE CONTROL POINTS				
POINT	NORTHING	EASTING	DESCRIPTION	TOW
1	2043499.37	6756031.54	BEGIN WALL	141.16
2	2043524.03	6756056.38	WALL CORNER	142.50
3	2043566.51	6756014.00	WALL CORNER	142.50
4	2043559.45	6756006.92	WALL CORNER	142.50
5	2043605.47	6755961.02	WALL CORNER	142.50
6	2043539.79	6755895.18	WALL CORNER	142.50
7	2043451.29	6755983.46	WALL CORNER	142.50
8	2043485.19	6756017.44	END WALL	141.16
9	2043483.78	6756016.02	MAN DOOR	141.16
10	2043480.01	6756012.25	MAN DOOR	141.16

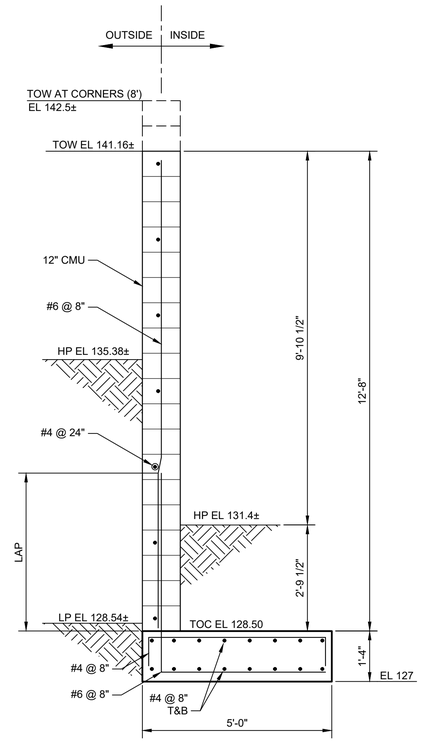


GENERAL NOTES:

1. THE PLANS HAVE BEEN PREPARED IN PART BASED ON AVAILABLE RECORD INFORMATION. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING THE WORK.
2. SURFACE RESTORATION REQUIRED AT TRENCHES AND EXCAVATION IS NOT SHOWN ON THESE PLANS.

KEY NOTES:

1. ALLOWANCE ITEM #1 REPLACE EXISTING RESIDENTIAL WROUGHT IRON FENCE.



PERIMETER WALL

A - **SECTION**

SCALE: 1/2" = 1-0"
FILE: 11843A1019S310

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REGISTERED PROFESSIONAL ENGINEER
MICAELA R. ROBERTSON
No. 93260
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

CIVIL

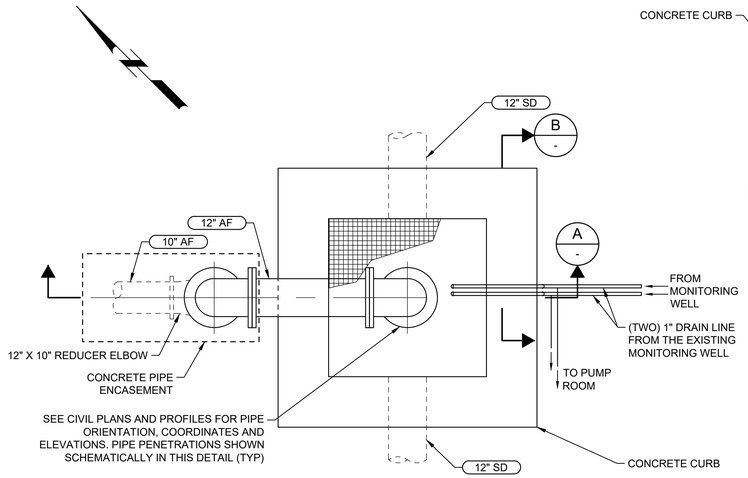
MISTY WOOD
PERIMETER WALL IMPROVEMENTS

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 19C04
SHEET NO. 23 OF 178

PROJECT NO.

FILE NAME: 11843A1019C004.dwg

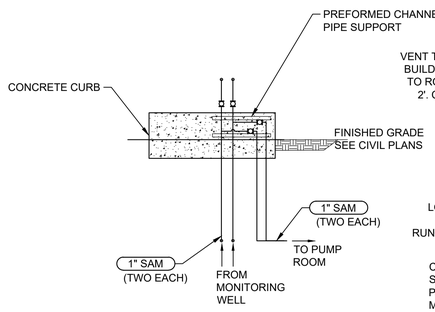


BACKFLUSH AIR GAP

1 DETAIL

19C01

SCALE: 1/2" =1'-0"
FILE: 11843A10C400

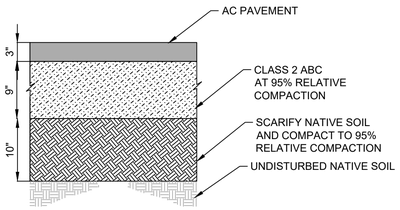


BACKFLUSH AIR GAP

B SECTION

-

SCALE: NO SCALE
FILE: 11843A10C400

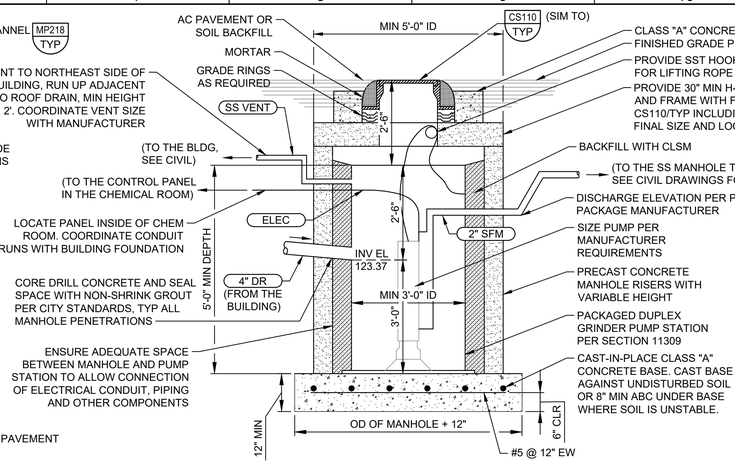


ASPHALT CONCRETE PAVEMENT

2 DETAIL

19C01

SCALE: 1" =1'-0"
FILE: 11843A10C400



GRINDER PUMP STATION

3 DETAIL

19C01
19C02

SCALE: NO SCALE
FILE: 11843A10C400

GENERAL NOTES:

1. CONTRACTOR TO FIELD VERIFY PIPE CONFIGURATION AT BURIED VALVE AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

KEY NOTES:

1. 2" H-20 RATED WELDED GALVANIZED STEEL GRATING.

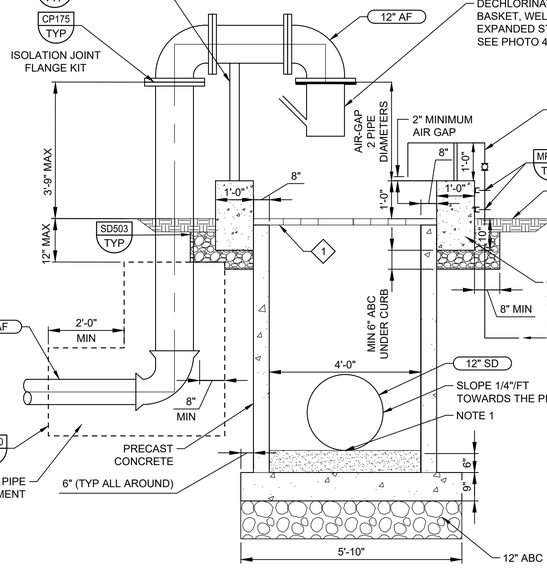


DECHLORINATION BASKET

4 PHOTO

-

FILE: FILE

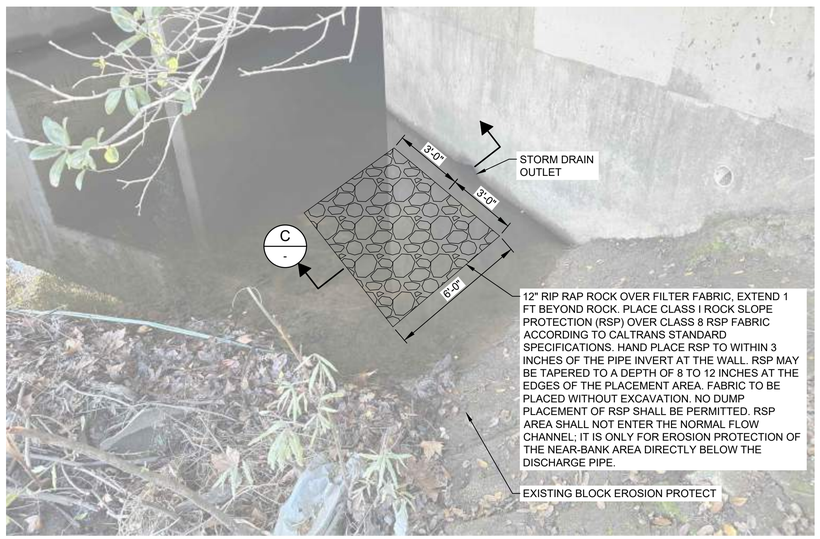


BACKFLUSH AIR GAP

A SECTION

19C05

SCALE: 1/2" =1'-0"
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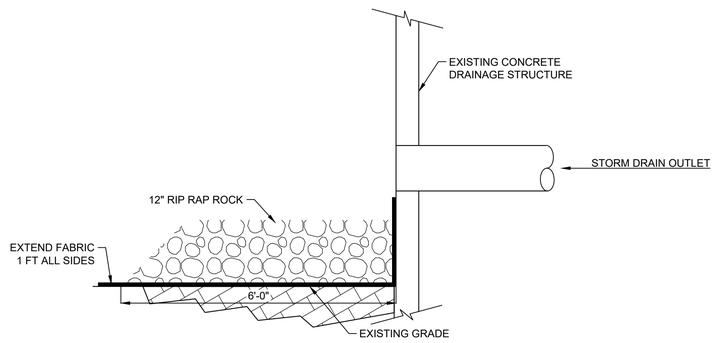


STORM DRAIN OUTLET TO CREEK ENERGY DISSIPATOR

5 PHOTO

19C00

FILE: FILE



ENERGY DISSIPATOR PROFILE

C SECTION

-

SCALE: NO SCALE
FILE: 11843A10C400

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carollo

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CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

CIVIL

MISTY WOOD
DETAILS AND SECTIONS

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JOB NO. 11843A.10
DRAWING NO. 19C05
SHEET NO. 24 OF 178

Plot Date: 12/11/2024 10:16:39 AM
FILE NAME: 11843A10I19C005.dwg
PROJECT NO.
LAST SAVED BY: hgarcia

Plot Date: 12/11/2024 3:31:15 PM

COORDINATE CONTROL POINTS			
POINT	NORTHING	EASTING	DESCRIPTION
31	2043556.00	6755932.67	BLDG CORNER
32	2043492.29	6755996.23	BLDG CORNER
33	2043472.51	6755976.41	BLDG CORNER
34	2043536.23	6755912.85	BLDG CORNER
35	2043476.15	6756026.31	EP
36	2043449.89	6756038.88	EP
37	2043392.52	6756045.65	EP
38	2043368.12	6756041.83	EP
39	2043441.87	6756061.65	EP
40	2043502.15	6756104.96	EP
41	2043502.53	6756066.73	EP
42	2043522.17	6756102.97	EP
43	2043499.58	6756031.86	EP
44	2043526.48	6756220.79	EP
45	2043555.28	6756258.31	EP
46	2043393.08	6756067.41	EP

PRESSURE PIPE COORDINATE POINTS				
POINT NUMBER	NORTHING	EASTING	CL ELEVATION	DESCRIPTION
51	2043423.17	6756051.57	124.33	16" X 6" TEE
52	2043419.22	6756055.51	123.97	16" 45° ELL
53	2043533.28	6755961.22	124.33	12" STUB
54	2043526.85	6755967.64	124.33	12" STUB
55	2043391.15	6756055.49	121.99	16" X 6" TEE
56	2043466.94	6756007.90	124.33	16" X 6" CROSS
57	2043469.53	6756005.32	124.33	16" X 6" TEE
58	2043546.29	6756023.53	122.54	10" 90° ELL
59	2043529.69	6756040.17	122.54	10" 90° ELL
60	2043523.67	6756034.16	122.54	10" 90° ELL

YARD PIPING STRUCTURES COORDINATE POINTS			
POINT NUMBER	NORTHING	EASTING	DESCRIPTION
81	2043463.00	6755982.96	CB6
82	2043496.60	6756016.65	CB1
83	2043518.88	6756038.94	SD AIR-GAP STRUCTURE
84	2043524.06	6756044.16	CB
85	2043521.11	6755992.20	CB5
86	2043549.06	6756020.23	CB4
87	2043539.77	6755906.37	CB7
88	2043573.38	6755940.06	CB2
89	2043594.27	6755961.00	CB3
90	2043485.53	6755998.27	SS MH

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REGISTERED PROFESSIONAL ENGINEER
MICAELA R. ROBERTSON
No. 93260
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
CIVIL
MISTY WOOD
COORDINATE POINTS

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 19C06
SHEET NO. 25 OF 178

PROJECT NO.
FILE NAME: 11843A1019C006.dwg

BUILDING CODE ANALYSIS

2022 CALIFORNIA BUILDING CODE, TITLE 24, PART 2, VOL.1 & 2

BUILDING NAME, ROOM #, & ROOM WITHIN STRUCTURE		CONST. TYPE	OCCUPANCY CLASSIFICATION	ALLOW. STORIES/HEIGHT	ACTUAL STORIES/HEIGHT	ALLOW. AREA (EA. FLOOR)	ACTUAL FLOOR AREA (EA. FLOOR)	OCCUPANT LOAD FACTOR	ACTUAL OCCUPANT LOAD	NO. OF EXITS REQ/ PROVIDED	OCCUPANCY SEPARATION	FIRE SUPPRESSION	ACCESSIBILITY
ROOM #	ROOM NAME												
CAMPUS OAKS ASR WELL - REFERENCE DRAWING 13A01													
101	PUMP ROOM	V-B	F-1	1 STORIES/40 '-0"	1 STORY/14 '-0"	8,500	1,123 SF	300	4	1/1	NR	NO	*NR
102	RESTROOM	V-B	B	1 STORIES/40 '-0"	1 STORY/14 '-0"	9,000	65 SF	100	1	1/1	NR	NO	R
103	CHEMICAL ROOM	V-B	F-1	1 STORIES/40 '-0"	1 STORY/14 '-0"	8,500	501 SF	300	2	1/2	NR	NO	*NR
104	ELECTRICAL ROOM	V-B	F-1	1 STORIES/40 '-0"	1 STORY/14 '-0"	8,500	464 SF	300	2	2/2	NR	NO	*NR

*MACHINERY SPACES VISITED ONLY BY SERVICE PERSONNEL FOR MAINTENANCE, REPAIR OR OCCASIONAL MONITORING OF EQUIPMENT SHALL NOT BE REQUIRED TO COMPLY WITH ADA ACCESSIBILITY (2022 CALIFORNIA TITLE 24).

2022 CALIFORNIA ENERGY CODE, TITLE 24, PART 6

ENVELOPE COMPONENT		REQUIRED	PROVIDED
ROOFS		U-0.034	U-0.034
WALLS ABOVE GRADE, MASS LIGHT		U-0.170 ci	U-0.170 ci
SLAB ON GRADE FLOORS		U-0.039	U-0.039
ROOF - STEEP SLOPE		U-0.25	U-0.25
ROOF - STEEP SLOPE	AGED SOLAR REFLECTANCE	U-0.80	U-0.80
	THERMAL EMITTANCE	REQ	**NR, PROCESS BUILDING
DOORS - SWINGING		U-0.70	U-0.70
DOORS - NONSWINGING		U-1.45	U-1.45
FIXED FENESTRATION		U-0.34	U-0.34
OPERABLE FENESTRATION		U-0.46	U-0.46
SKYLIGHTS - PLASTIC DOME		U-0.88	U-0.88

TABLE 140.3-B, CHAPTER 5, 2022 CALIFORNIA ENERGY CODE, TITLE 24, PART 6
**REFERENCE BUILDING ENERGY ANALYSIS COMPLIANCE REPORT NRCC-PRF PREPARED BY GABLE ASSOCIATES LLC

ARCHITECTURAL SCHEDULES

DOOR & HARDWARE SCHEDULE

DOOR NUMBER	POSITION INT/EXT	DOOR						FRAME						DETAILS			UL LABEL	LOUVER SIZE	CARD READER	PANIC HARDWARE	HARDWARE GROUP
		WIDTH	HEIGHT	THICK	TYPE (AJ103/TYP)	MATL	FINISH	WIDTH	HEIGHT	DEPTH	TYPE (AJ100/TYP)	MATL	FINISH	HEAD (AJ105/TYP)	JAMB (AJ107/TYP)	SILL (AJ109/TYP)					
CAMPUS OAKS ASR WELL - REFERENCE DRAWING 13A01																					
101-1	EXT	8'-0"	10' - 0"	3/4"	C	STEEL	FACT FIN	-	-	-	-	STEEL	FACT FIN	AJ123/TYP	AJ123/TYP	AJ123/TYP	NR	-	-	-	-
101-2	EXT	8'-0"	10' - 0"	3/4"	C	STEEL	FACT FIN	-	-	-	-	STEEL	FACT FIN	AJ123/TYP	AJ123/TYP	AJ123/TYP	NR	-	-	-	-
101-3	EXT	PR 3'-2"	7' - 10"	1 3/4"	F	STEEL	COATING	6'-8"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	E	NR	NR	REQ	REQ	HW-1
102-1	INT	3'-0"	7' - 2"	1 3/4"	F	STEEL	COATING	3'-4"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	B	NR	NR	NR	NR	HW-3
103-1	INT	3'-0"	7' - 2"	1 3/4"	F	STEEL	COATING	3'-4"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	B	NR	NR	NR	REQ	HW-4
103-2	EXT	10'-0"	10' - 0"	3/4"	C	STEEL	FACT FIN	-	-	-	-	STEEL	FACT FIN	AJ123/TYP	AJ123/TYP	AJ123/TYP	NR	-	-	-	-
103-3	EXT	3'-0"	7' - 2"	1 3/4"	F	STEEL	COATING	3'-4"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	E	NR	NR	NR	REQ	HW-2
104-1	INT	3'-0"	7' - 2"	1 3/4"	F	STEEL	COATING	3'-4"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	B	NR	NR	NR	REQ	HW-5
104-2	EXT	PR 3'-2"	7' - 10"	1 3/4"	F	STEEL	COATING	6'-8"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	E	NR	NR	NR	REQ	HW-1

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR		BASE	NORTH		EAST		SOUTH		WEST		CEILING			REMARKS
		MATL	FINISH	MATL	MATL	FINISH	MATL	FINISH	MATL	FINISH	MATL	FINISH	MATL	INT CLR	FINISH	
CAMPUS OAKS ASR WELL - REFERENCE DRAWING 13A01																
101	PUMP ROOM	CONC	SEALER	N/A	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	GYP	±14'-0"	PAINTED	PAMP - QUANTITY TO BE DETERMINED
102	RESTROOM	CONC	SEALER	WFRP	CMU	INT CLR/WFRP	CMU	INT CLR/WFRP	CMU	INT CLR/WFRP	CMU	INT CLR/WFRP	GYP	±8'-8"	PAINTED	-
103	CHEMICAL ROOM	CONC	SEALER	N/A	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	GYP	±12'-6"	PAINTED	-
104	ELECTRICAL ROOM	CONC	SEALER	N/A	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	GYP	±14'-0"	PAINTED	-

HAZARDOUS MATERIAL INVENTORY STATEMENT TABLE

ROOM NAME	CHEMICAL	HAZARD CLASS	CAS NO.	MANUFACTURER	STORAGE	EXEMPT QUANTITY	IBC OCCUPANCY CLASSIFICATION	NFPA RATING				REMARKS
								H	F	I	O	
CAMPUS OAKS ASR WELL - REFERENCE DRAWING 13A01												PER TABLE 307.1(2) OF THE 2019 CBC-1,000 GALLONS STORAGE PERMITTED, WAIVER SUBMITTED TO PERMIT EXPANSION OF 2,000 GALLONS AT FULL BUILD OUT
ELECTRICAL ROOM	SODIUM FLUORIDE	N/A	7681-49-4	TO BE DETERMINED	TO BE DETERMINED	YES	F-1	2	0	1	-	
ELECTRICAL ROOM	SODIUM HYPOCHLORITE 12.5%	CORROSIVE	7681-52-9	TO BE DETERMINED	2 - 1,000 GALLON DAY TANK (MAX)	YES	F-1	3	0	0	-	

SCHEDULE ABBREVIATION LIST:

B:	BUSINESS GROUP (2022, TITLE 24)
ci:	CONTINUOUS INSULATION
CMU:	INTEGRALLY COLORED CONCRETE MASONRY UNIT, REFERENCE SPECIFICATION SECTION 04220
CONC:	CONCRETE
EXPO:	EXPOSED MATERIAL
F-1:	FACTORY INDUSTRIAL GROUP, MODERATE HAZARD OCCUPANCY (2022, TITLE 24)
FACT FIN:	FACTORY FINISH
GYP:	GYPSUM WALL BOARD, REFERENCE SPECIFICATION SECTION 09250
HW:	HARDWARE GROUP, REFERENCE SPECIFICATION SECTION 08710
MATL:	MATERIAL
MTL DECK	METAL DECK PER STRUCTURAL DESIGN
N/A	NOT APPLICABLE
NR:	NOT REQUIRED
PAMP:	PERFORATED ACOUSTICAL METAL PANELS. SYSTEM SHALL EXTEND TO THE UNDERSIDE OF GYP CEILING. REFERENCE SPECIFICATION SECTION 09523
PR:	PAIR
REQ:	REQUIRED
SEALER:	FLOOR COATING, REFERENCE SPECIFICATION SECTION 09960
U-FACTOR:	THERMAL TRANSMITTANCE, IS THE COEFFICIENT OF HEAT TRANSMISSION (AIR TO AIR) THROUGH A BUILDING COMPONENT OR ASSEMBLY, EQUAL TO THE TIME RATE OF HEAT FLOW PER UNIT AREA AND UNIT TEMPERATURE DIFFERENCE BETWEEN THE WARM SIDE AND COLD SIDE AIR FILMS (2022, TITLE 24)
WDECK:	WOOD DECK PER STRUCTURAL DESIGN
WFRP:	STANDARD FRP WALL SYSTEM, SMOOTH FINISH, LIGHT GRAY S490N AS MANUFACTURED BY MARLITE OR EQUAL. FRP SHALL BE INSTALLED AT THE PERIMETER (INTERIOR FACE) OF THE FOUR RESTROOM WALLS, THE FRP WALL SYSTEM SHALL BE 4'H FROM FINISH FLOOR.
INT CLR:	INTEGRAL COLOR

REV	DATE	BY	DESCRIPTION
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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ARCHITECTURAL
CAMPUS OAKS ASR WELL
BUILDING CODE ANALYSIS, AND SCHEDULES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

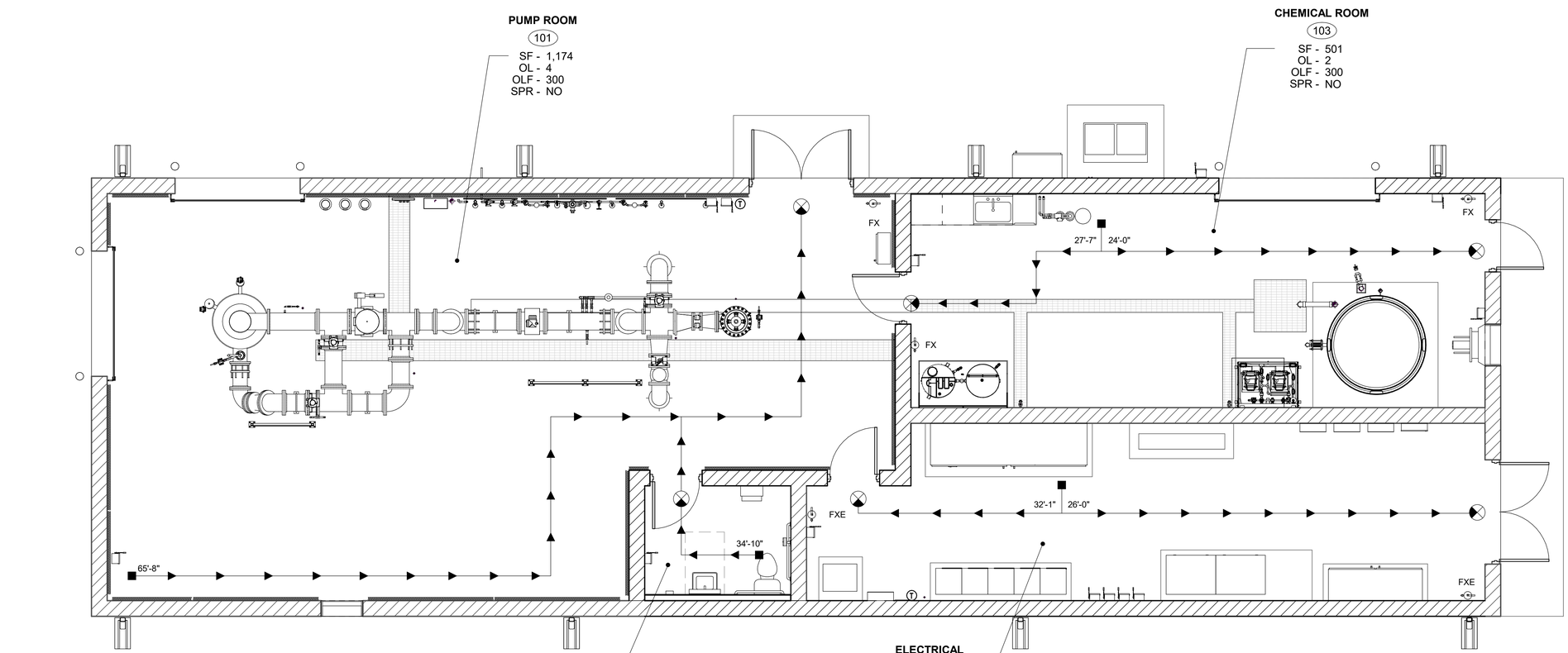
JOB NO. 11843A.10
DRAWING NO. 13GA01
SHEET NO. 26 OF 178

PLOT DATE: 12/6/2024 2:30:32 PM

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EGRESS ABBREVIATION & SYMBOLS LIST:

SF:	SQUARE FEET
OL:	OCCUPANT LOAD
OLF:	OCCUPANT LOAD FACTOR
SPR:	AUTOMATIC SPRINKLER
NR:	NOT REQUIRED
	EXIT, REFERENCE ELECTRICAL DRAWINGS FOR LOCATION OF ILLUMINATED SIGNS
FX FXE	FIRE EXTINGUISHER, TYPE AS INDICATED, REFERENCE DETAIL AN400/TYP AND SPECIFICATION SECTION 10520
#	FIRE RATED WALL: HOUR AS # INDICATES
X'-X"	MEANS OF EGRESS PATH OF TRAVEL TRAVEL DIRECTION TOTAL TRAVEL DISTANCE COMMON PATH TERMINATION PATH START / MOST REMOTE POINT



EGRESS

A PLAN

SCALE: 1/4" = 1'-0"

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

ARCHITECTURAL

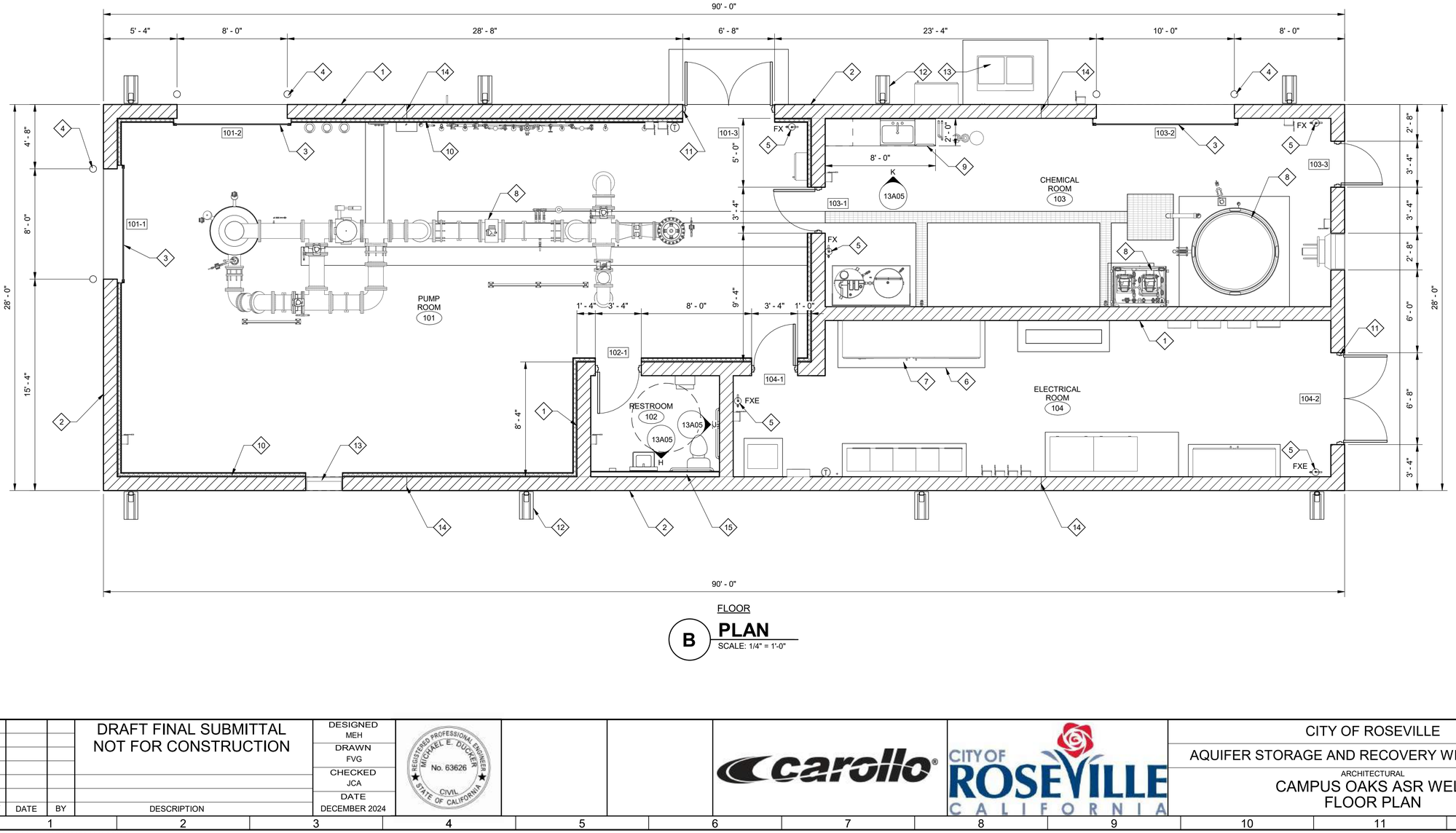
CAMPUS OAKS ASR WELL
EGRESS PLAN

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13GA02
SHEET NO. 27 OF 178

PLOT DATE: 12/6/2024 2:30:38 PM

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FLOOR

B PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. EXTERIOR FACE OF ALL CONCRETE MASONRY UNITS SHALL BE FINISHED WITH WATER REPELLANT, REFERENCE SPECIFICATION SECTION 07190.
2. FOR DOOR SCHEDULES AND ROOF FINISHES REFERENCE SHEET 13GA01.
3. FOR EXTERIOR ENTRANCE PADS REFERENCE CIVIL DRAWINGS.
4. FOR RESTROOM ACCESSORY MOUNTING REFERENCE TYPICAL DETAIL AN400/TYP AND SPECIFICATION SECTION 10810.

KEY NOTES:

1. 12" X 8" X 16" INTEGRALLY COLORED SMOOTH-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
2. 12" X 8" X 16" INTEGRALLY COLORED SPLIT-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
3. OVERHEAD COILING DOOR, REFERENCE SPECIFICATION SECTION 08332
4. GUARD POST AT EACH SIDE OF COILING DOOR, REFERENCE CIVIL DRAWINGS
5. FIRE EXTINGUISHER, REFERENCE SPECIFICATION SECTION 10520 AND AN400/TYP
6. FOR EQUIPMENT PADS AND GRATING, REFERENCE STRUCTURAL DRAWINGS
7. FOR EQUIPMENT REQUIREMENTS, REFERENCE ELECTRICAL DRAWINGS
8. FOR EQUIPMENT REQUIREMENTS, REFERENCE MECHANICAL DRAWINGS
9. 24"D x 34"H METAL LABORATORY BASE CABINETS, MOLDED EPOXY WORK SURFACE WITH 4" BACK SPLASH, AND UNDERMOUNTED MOLDED EPOXY SINK WITH HOT AND COLD WATER SUPPLY PER PLUMBING
10. PREFABRICATED ACOUSTICAL METAL PANELS, REFERENCE SPECIFICATION SECTION 09523
11. HOLLOW METAL DOOR AND FRAME, REFERENCE SPECIFICATION SECTION 08110
12. FOR CONCRETE SPLASH BLOCK, REFERENCE TYPICAL DETAIL AG229/TYP
13. FOR HVAC UNIT, LOUVERS, AND EQUIPMENT, REFERENCE MECHANICAL DRAWINGS
14. MASONRY CONTROL JOINT, REFERENCE STRUCTURAL DRAWINGS
15. 2" X 4" WOOD STUDS WITH 5/8" GYPSUM WALL BOARD

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CAMPUS OAKS ASR WELL FLOOR PLAN

VERIFY SCALES
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DRAWING NO. 13A01
SHEET NO. 28 OF 178

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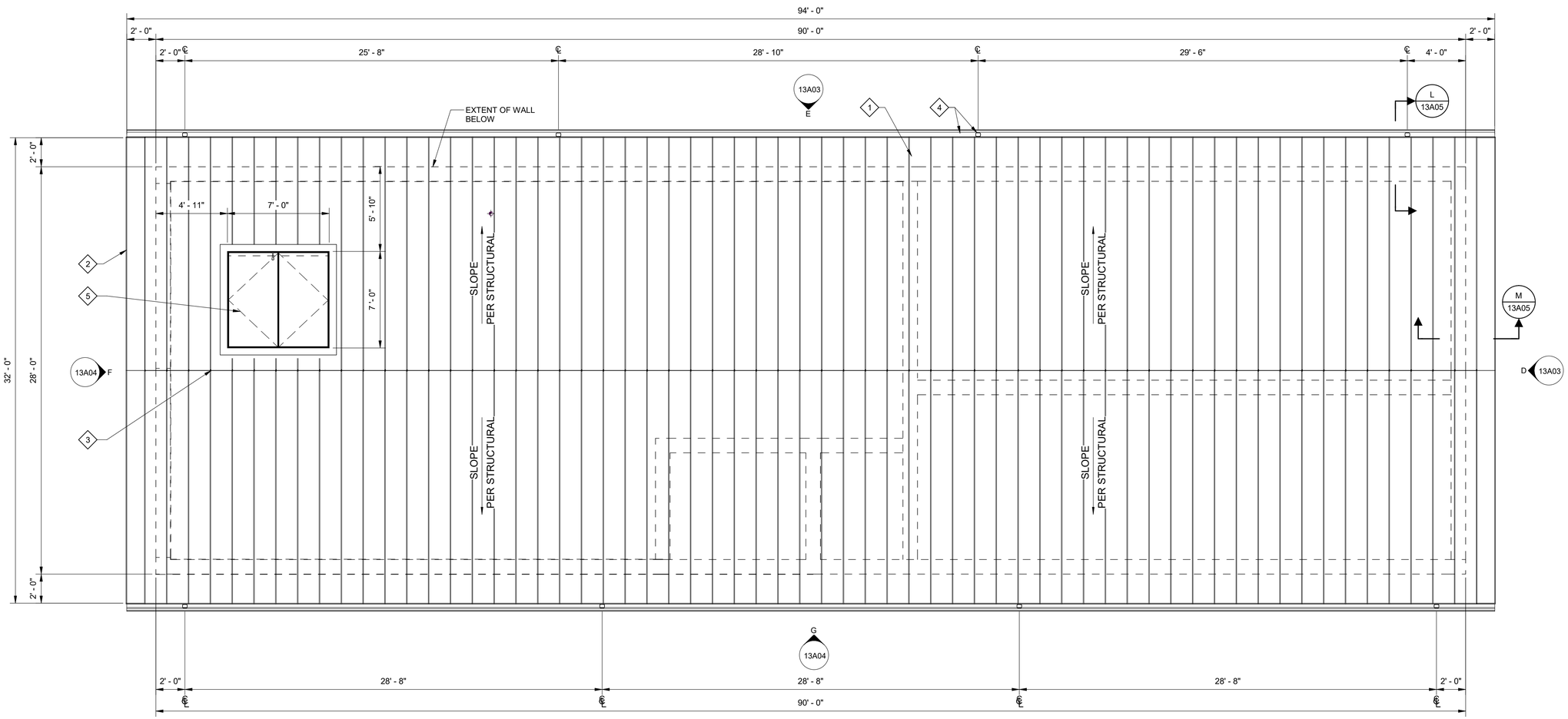
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GENERAL NOTES:

1. COORDINATE WITH STRUCTURAL DRAWINGS FOR SLOPE OF WOOD TRUSSES AND PLYWOOD DECKING REQUIREMENTS.

KEY NOTES:

1. STANDING SEAM METAL ROOF SYSTEM, REFERENCE SPECIFICATION SECTION 07415
2. ALUMINUM FASCIA, REFERENCE SPECIFICATION SECTION 07415
3. ROOF RIDGE, REFERENCE SPECIFICATION SECTION 07415
4. FOR GUTTER AND DOWNSPOUT, REFERENCE TYPICAL DETAIL AG227/TYP
5. ROOF HATCH AND PREFABRICATED CURB, REFERENCE SPECIFICATION SECTION 07722 AND AG170/TYP



ROOF

C PLAN

SCALE: 1/4" = 1'-0"

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

ARCHITECTURAL

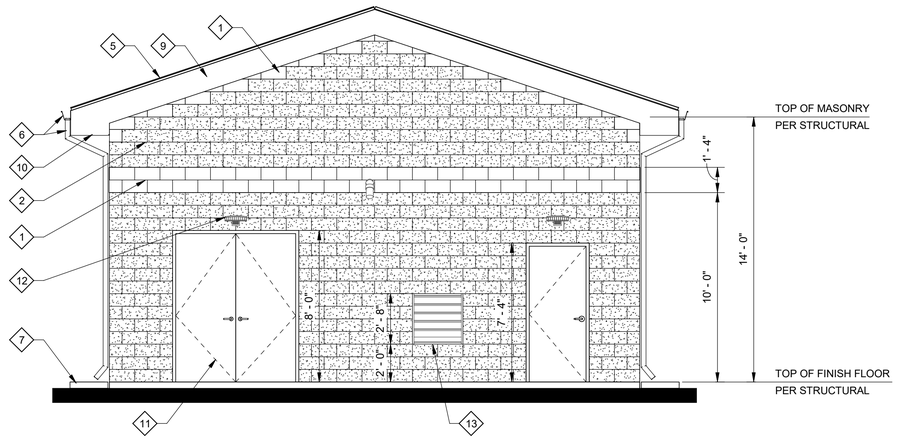
CAMPUS OAKS ASR WELL
ROOF PLAN

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13A02
SHEET NO. 29 OF 178

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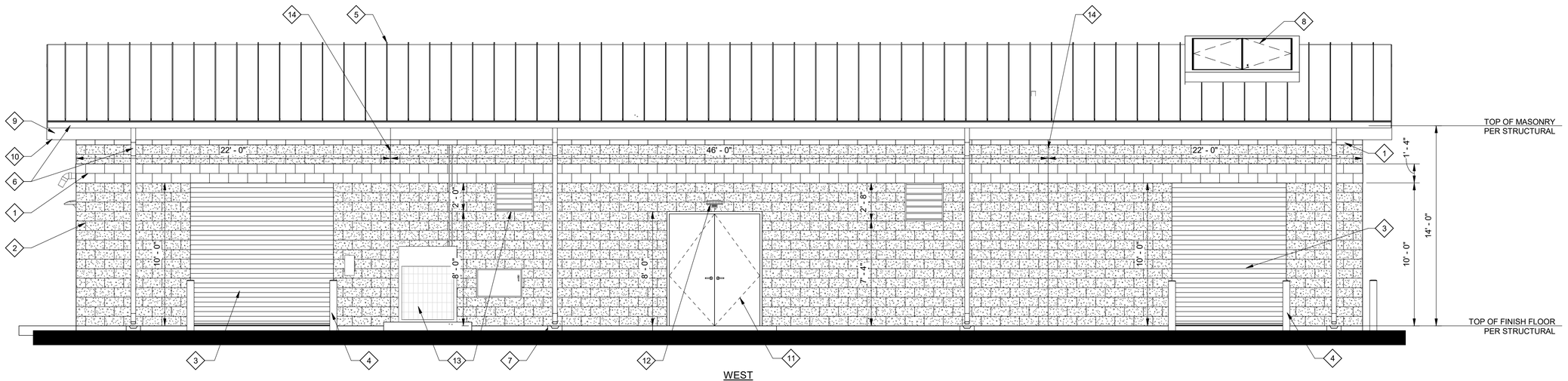


NORTH

D ELEVATION

13A02

SCALE: 1/4" = 1'-0"



WEST

E ELEVATION

13A02

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. EXTERIOR FACE OF ALL CONCRETE MASONRY UNITS SHALL BE FINISHED WITH WATER REPELLANT, REFERENCE SPECIFICATION SECTION 07190.
2. FOR DOOR SCHEDULES AND ROOF FINISHES, REFERENCE SHEET 13GA01.
3. FOR EXTERIOR ENTRANCE PADS, REFERENCE CIVIL DRAWINGS.
4. COORDINATE WITH STRUCTURAL DRAWINGS SLOPE OF WOOD TRUSSES AND PLYWOOD DECKING REQUIREMENTS.

KEY NOTES:

1. 12" X 8" X 16" INTEGRALLY COLORED SMOOTH-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
2. 12" X 8" X 16" INTEGRALLY COLORED SPLIT-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
3. OVERHEAD COILING DOOR, REFERENCE SPECIFICATION SECTION 08332
4. GUARD POST AT EACH SIDE OF COILING DOOR, REFERENCE CIVIL DRAWINGS
5. STANDING SEAM METAL ROOF SYSTEM, REFERENCE SPECIFICATION SECTION 07415
6. FOR GUTTER AND DOWNSPOUT, REFERENCE TYPICAL DETAIL AG227/TYP
7. FOR CONCRETE SPLASH BLOCK, REFERENCE TYPICAL DETAIL AG229/TYP
8. ROOF HATCH PREFABRICATED CURB, REFERENCE SPECIFICATION SECTION 07722
9. ALUMINUM FASCIA, REFERENCE SPECIFICATION SECTION 07415
10. ALUMINUM SOFFIT, REFERENCE SPECIFICATION SECTION 07415
11. HOLLOW METAL DOOR AND FRAME, REFERENCE SPECIFICATION SECTION 08110
12. FOR EXTERIOR LIGHT FIXTURE, REFERENCE ELECTRICAL DRAWINGS
13. FOR HVAC UNIT, LOUVERS, AND EQUIPMENT, REFERENCE MECHANICAL DRAWINGS
14. MASONRY CONTROL JOINT, REFERENCE STRUCTURAL DRAWINGS

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

ARCHITECTURAL

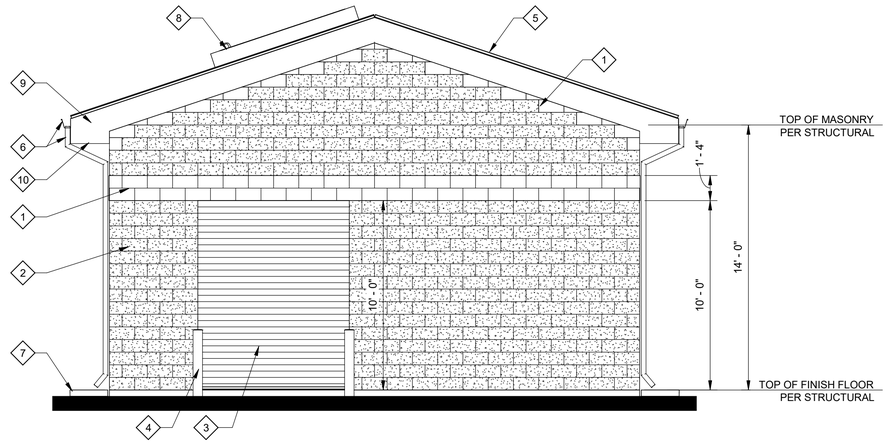
CAMPUS OAKS ASR WELL
NORTH AND WEST ELEVATIONS

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JOB NO. 11843A.10
DRAWING NO. 13A03
SHEET NO. 30 OF 178

PLOT DATE: 12/6/2024 2:30:29 PM

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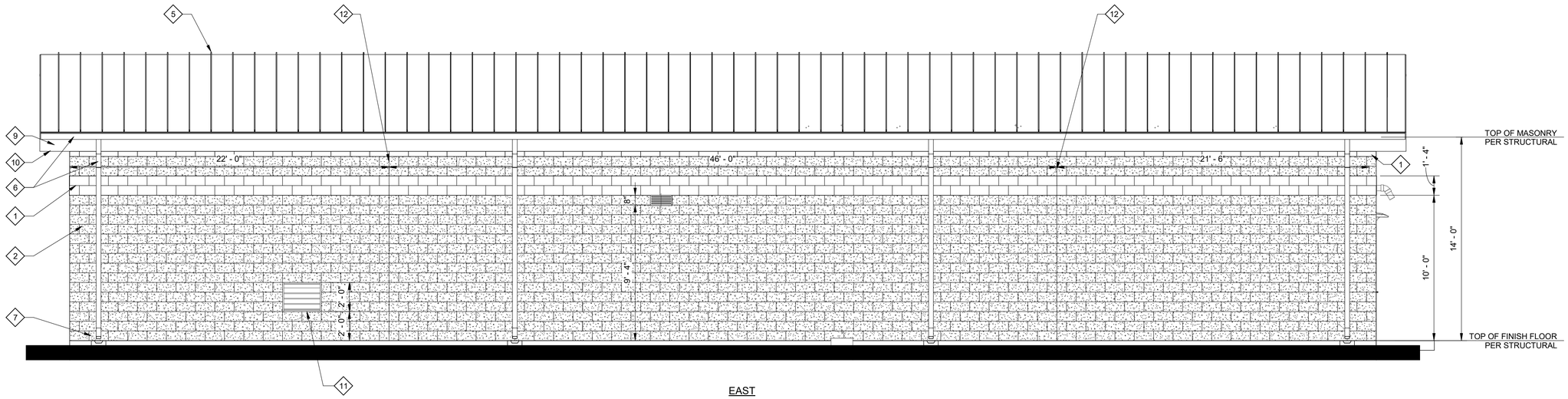


SOUTH

F ELEVATION

13A02

SCALE: 1/4" = 1'-0"



EAST

G ELEVATION

13A02

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. EXTERIOR FACE OF ALL CONCRETE MASONRY UNITS SHALL BE FINISHED WITH WATER REPELLANT, REFERENCE SPECIFICATION SECTION 07190.
2. FOR DOOR SCHEDULES AND ROOF FINISHES, REFERENCE SHEET 13GA01.
3. FOR EXTERIOR ENTRANCE PADS, REFERENCE CIVIL DRAWINGS.
4. COORDINATE WITH STRUCTURAL DRAWINGS SLOPE OF WOOD TRUSSES AND PLYWOOD DECKING REQUIREMENTS.

KEY NOTES:

1. 12" X 8" X 16" INTEGRALLY COLORED SMOOTH-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
2. 12" X 8" X 16" INTEGRALLY COLORED SPLIT-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
3. OVERHEAD COILING DOOR, REFERENCE SPECIFICATION SECTION 08332
4. GUARD POST AT EACH SIDE OF COILING DOOR, REFERENCE CIVIL DRAWINGS
5. STANDING SEAM METAL ROOF SYSTEM, REFERENCE SPECIFICATION SECTION 07415
6. FOR GUTTER AND DOWNSPOUT, REFERENCE TYPICAL DETAIL AG227/TYP
7. FOR CONCRETE SPLASH BLOCK, REFERENCE TYPICAL DETAIL AG229/TYP
8. ROOF HATCH AND PREFABRICATED CURB, REFERENCE SPECIFICATION SECTION 07722
9. ALUMINUM FASCIA, REFERENCE SPECIFICATION SECTION 07415
10. ALUMINUM SOFFIT, REFERENCE SPECIFICATION SECTION 07415
11. FOR HVAC UNIT, LOUVERS, AND EQUIPMENT, REFERENCE MECHANICAL DRAWINGS
12. MASONRY CONTROL JOINT, REFERENCE STRUCTURAL DRAWINGS

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

ARCHITECTURAL

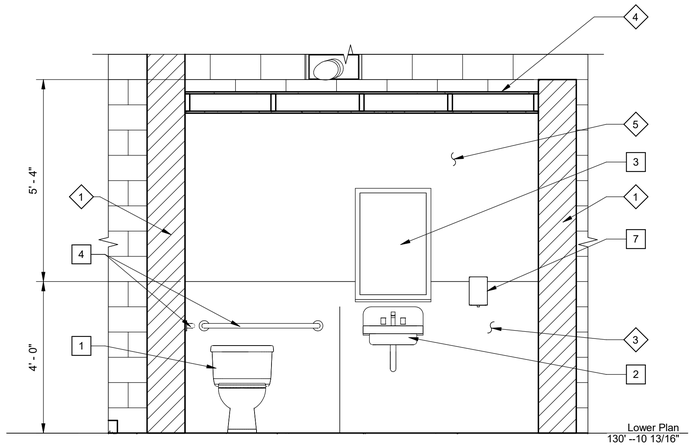
CAMPUS OAKS ASR WELL
SOUTH AND EAST ELEVATIONS

VERIFY SCALES
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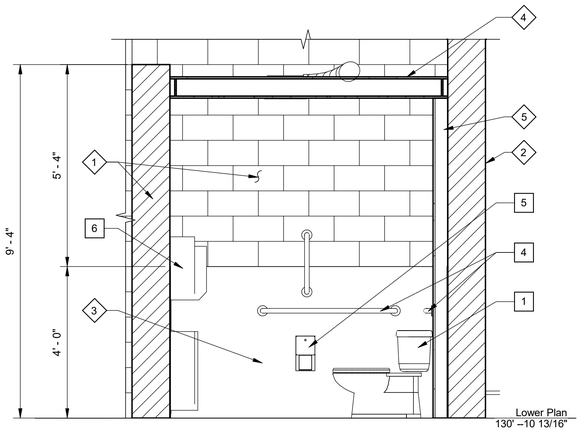
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DRAWING NO. 13A04
SHEET NO. 31 OF 178

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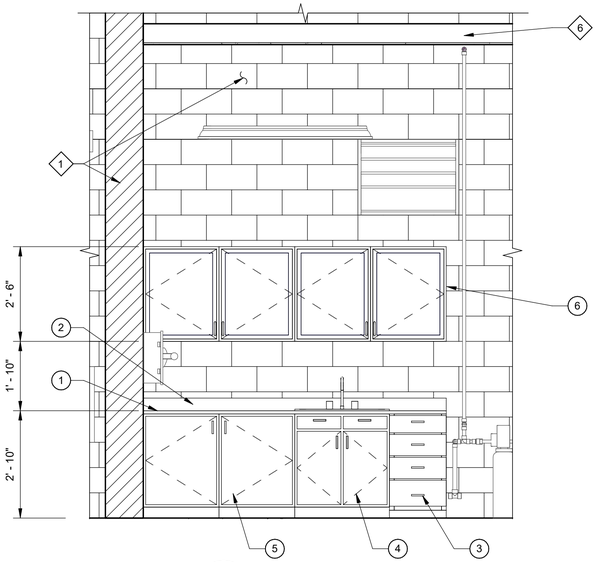
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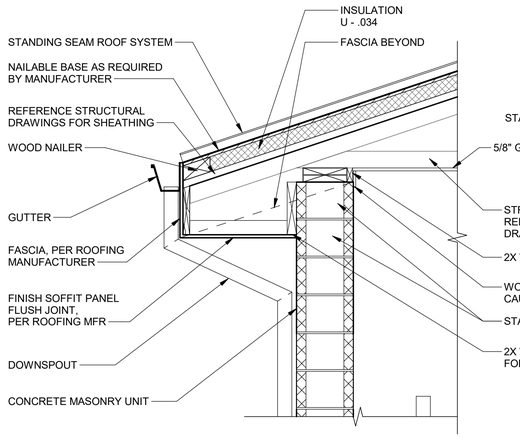
H 13A01 **ELEVATION**
SCALE: 1/2" = 1'-0"



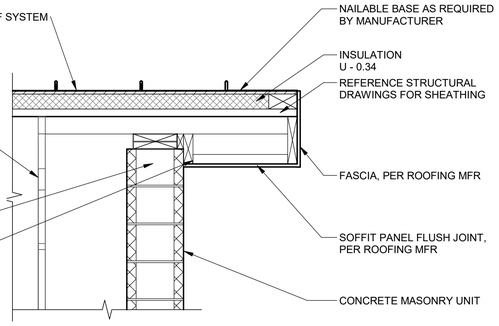
J 13A01 **ELEVATION**
SCALE: 1/2" = 1'-0"



K 13A01 **ELEVATION**
SCALE: 1/2" = 1'-0"



L 13A02 **SECTION**
SCALE: 3/4" = 1'-0"



M 13A02 **SECTION**
SCALE: 3/4" = 1'-0"

GENERAL NOTES:

1. FOR RESTROOM ACCESSORY MOUNTING, REFERENCE TYPICAL DETAIL AN100/TYP.
2. FOR LAB CABINETS REFER TO SPECIFICATION SECTION.
3. FOR RESTROOM ACCESSORIES, REFERENCE SPECIFICATION SECTION 10810.
4. FOR PLUMBING SYSTEMS, REFERENCE SPECIFICATION SECTION 15400.

◇ KEY NOTES:

1. 12" X 8" X 16" INTEGRALLY COLORED SMOOTH-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
2. 12" X 8" X 16" INTEGRALLY COLORED SPLIT-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
3. 4'-0" H MIN. FRP WALL SYSTEM, SMOOTH FINISH, LIGHT GRAY S490N COLOR AS MANUFACTURED BY MARLITE OR EQUAL. SYSTEM SHALL BE INSTALLED AT THE BASE OF ALL THE RESTROOM WALLS
4. WOOD STUDS PER STRUCTURAL, 5/8" TYPE X FIRE RATED GYPSUM WALLBOARD EACH SIDE
5. 2" X 4" WOOD STUDS WITH 5/8" GYPSUM WALL BOARD
6. 2" X 6" FIRE RETARDANT WOOD STUDS AT 12 0.C. MAX WITH 5/8" TYPE X GYPSUM BOARD, TEXTURED AND PAINTED PER SPECIFICATIONS

RESTROOM AND ANALYSIS AREA SCHEDULE

1. FLOOR MOUNTED WATER CLOSET
2. SURFACE MOUNTED ADA LAVATORY
3. ADA MIRROR
4. GRAB BARS
5. SURFACE MOUNTED TOILET PAPER HOLDER
6. SURFACE MOUNTED PAPER TOWEL DISPENSER AND RECEPTACLE
7. SURFACE MOUNTED LIQUID SOAP DISPENSER

CABINETRY SCHEDULE

1. 1" THICK MOLDED EPOXY WORK SURFACE
2. 4"H MOLDED EPOXY BACK SPLASH
3. 18"W x 24"D x 34"H METAL LABORATORY BASE CABINET WITH FOUR DRAWERS
4. 30"W x 24"D x 24"H METAL LABORATORY BASE CABINET WITH UNDERMOUNTED MOLDED EPOXY SINK, REFERENCE SPECIFICATION SECTION 15400 FOR FAUCET WITH HOT AND COLD WATER SUPPLY
5. 48"W x 24"D x 34"H DOUBLE DOOR METAL LABORATORY BASE CABINET
6. 48"W x 14"D x 30"H DOUBLE DOOR METAL LABORATORY WALL MOUNTED CABINET WITH TWO SHELVES

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ARCHITECTURAL
CAMPUS OAKS ASR WELL
INTERIOR ELEVATIONS

VERIFY SCALES
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DRAWING NO. 13A05
SHEET NO. 32 OF 178

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BUILDING CODE ANALYSIS

2022 CALIFORNIA BUILDING CODE, TITLE 24, PART 2, VOL.1 & 2

BUILDING NAME, ROOM #, & ROOM WITHIN STRUCTURE		CONST. TYPE	OCCUPANCY CLASSIFICATION	ALLOW. STORIES/HEIGHT	ACTUAL STORIES/HEIGHT	ALLOW. AREA (EA. FLOOR)	ACTUAL FLOOR AREA (EA. FLOOR)	OCCUPANT LOAD FACTOR	ACTUAL OCCUPANT LOAD	NO. OF EXITS REQ/PROVIDED	OCCUPANCY SEPARATION	FIRE SUPPRESSION	ACCESSIBILITY
ROOM #	ROOM NAME												
MISTY WOODS ASR WELL - REFERENCE DRAWING 19A01													
101	PUMP ROOM	V-B	F-1	1 STORIES/40 '-0"	1 STORY/14 '-0"	8,500	1,123 SF	300	4	1/1	NR	NO	*NR
102	RESTROOM	V-B	B	1 STORIES/40 '-0"	1 STORY/14 '-0"	9,000	65 SF	100	1	1/1	NR	NO	R
103	CHEMICAL ROOM	V-B	F-1	1 STORIES/40 '-0"	1 STORY/14 '-0"	8,500	501 SF	300	2	1/2	NR	NO	*NR
104	ELECTRICAL ROOM	V-B	F-1	1 STORIES/40 '-0"	1 STORY/14 '-0"	8,500	464 SF	300	2	2/2	NR	NO	*NR

*MACHINERY SPACES VISITED ONLY BY SERVICE PERSONNEL FOR MAINTENANCE, REPAIR OR OCCASIONAL MONITORING OF EQUIPMENT SHALL NOT BE REQUIRED TO COMPLY WITH ADA ACCESSIBILITY (2022 CALIFORNIA TITLE 24).

2022 CALIFORNIA ENERGY CODE, TITLE 24, PART 6

ENVELOPE COMPONENT		REQUIRED	PROVIDED
ROOFS		U-0.034	U-0.034
WALLS ABOVE GRADE, MASS LIGHT		U-0.170 ci	U-0.170 ci
SLAB ON GRADE FLOORS		U-0.039	U-0.039
ROOF - STEEP SLOPE		U-0.25	U-0.25
ROOF - STEEP SLOPE	AGED SOLAR REFLECTANCE	U-0.80	U-0.80
	THERMAL EMITTANCE	REQ	**NR, PROCESS BUILDING
DOORS - SWINGING		U-0.70	U-0.70
DOORS - NONSWINGING		U-1.45	U-1.45
FIXED FENESTRATION		U-0.34	U-0.34
OPERABLE FENESTRATION		U-0.46	U-0.46
SKYLIGHTS - PLASTIC DOME		U-0.88	U-0.88

TABLE 140.3-B, CHAPTER 5, 2022 CALIFORNIA ENERGY CODE, TITLE 24, PART 6
**REFERENCE BUILDING ENERGY ANALYSIS COMPLIANCE REPORT NRCC-PRF PREPARED BY GABLE ASSOCIATES LLC

ARCHITECTURAL SCHEDULES

DOOR & HARDWARE SCHEDULE

DOOR NUMBER	POSITION INT/EXT	DOOR						FRAME						DETAILS			UL LABEL	LOUVER SIZE	CARD READER	PANIC HARDWARE	HARDWARE GROUP
		WIDTH	HEIGHT	THICK	TYPE (AJ103/TYP)	MATL	FINISH	WIDTH	HEIGHT	DEPTH	TYPE (AJ100/TYP)	MATL	FINISH	HEAD (AJ105/TYP)	JAMB (AJ107/TYP)	SILL (AJ109/TYP)					
MISTY WOODS ASR WELL - REFERENCE DRAWING 19A01																					
101-1	EXT	8'-0"	10' - 0"	3/4"	C	STEEL	FACT FIN	-	-	-	-	STEEL	FACT FIN	AJ123/TYP	AJ123/TYP	AJ123/TYP	NR	-	-	-	-
101-2	EXT	8'-0"	10' - 0"	3/4"	C	STEEL	FACT FIN	-	-	-	-	STEEL	FACT FIN	AJ123/TYP	AJ123/TYP	AJ123/TYP	NR	-	-	-	-
101-3	EXT	PR 3'-2"	7' - 10"	1 3/4"	F	STEEL	COATING	6'-8"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	E	NR	NR	REQ	REQ	HW-1
102-1	INT	3'-0"	7' - 2"	1 3/4"	F	STEEL	COATING	3'-4"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	B	NR	NR	NR	NR	HW-3
103-1	INT	3'-0"	7' - 2"	1 3/4"	F	STEEL	COATING	3'-4"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	B	NR	NR	NR	REQ	HW-4
103-2	EXT	10'-0"	10' - 0"	3/4"	C	STEEL	FACT FIN	-	-	-	-	STEEL	FACT FIN	AJ123/TYP	AJ123/TYP	AJ123/TYP	NR	-	-	-	-
103-3	EXT	3'-0"	7' - 2"	1 3/4"	F	STEEL	COATING	3'-4"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	E	NR	NR	NR	REQ	HW-2
104-1	INT	3'-0"	7' - 2"	1 3/4"	F	STEEL	COATING	3'-4"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	B	NR	NR	NR	REQ	HW-5
104-2	EXT	PR 3'-2"	7' - 10"	1 3/4"	F	STEEL	COATING	6'-8"	7'-4"	5 3/4"	R	STEEL	COATING	C	C	E	NR	NR	NR	REQ	HW-1

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR		BASE	NORTH		EAST		SOUTH		WEST		CEILING			REMARKS
		MATL	FINISH	MATL	MATL	FINISH	MATL	FINISH	MATL	FINISH	MATL	FINISH	MATL	INT CLR	FINISH	
MISTY WOODS ASR WELL - REFERENCE DRAWING 19A01																
101	PUMP ROOM	CONC	SEALER	N/A	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	GYP	±14'-0"	PAINTED	PAMP - QUANTITY TO BE DETERMINED
102	RESTROOM	CONC	SEALER	WFRP	CMU	INT CLR/WFRP	CMU	INT CLR/WFRP	CMU	INT CLR/WFRP	CMU	INT CLR/WFRP	GYP	±8'-8"	PAINTED	-
103	CHEMICAL ROOM	CONC	SEALER	N/A	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	GYP	±12'-6"	PAINTED	-
104	ELECTRICAL ROOM	CONC	SEALER	N/A	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	CMU	INT CLR	GYP	±14'-0"	PAINTED	-

HAZARDOUS MATERIAL INVENTORY STATEMENT TABLE

ROOM NAME	CHEMICAL	HAZARD CLASS	CAS NO.	MANUFACTURER	STORAGE	EXEMPT QUANTITY	IBC OCCUPANCY CLASSIFICATION	NFPA RATING				REMARKS
								H	F	I	O	
MISTY WOODS ASR WELL - REFERENCE DRAWING 19A01												
ELECTRICAL ROOM	SODIUM FLUORIDE	N/A	7681-49-4	TO BE DETERMINED	TO BE DETERMINED	YES	F-1	2	0	1	-	PER TABLE 307.1(2) OF THE 2019 CBC-1,000 GALLONS STORAGE PERMITTED, WAIVER SUBMITTED TO PERMIT EXPANSION OF 2,000 GALLONS AT FULL BUILD OUT
ELECTRICAL ROOM	SODIUM HYPOCHLORITE 12.5%	CORROSIVE	7681-52-9	TO BE DETERMINED	2 - 1,000 GALLON DAY TANK (MAX)	YES	F-1	3	0	0	-	

SCHEDULE ABBREVIATION LIST:

B:	BUSINESS GROUP (2022, TITLE 24)
ci:	CONTINUOUS INSULATION
CMU:	INTEGRALLY COLORED CONCRETE MASONRY UNIT, REFERENCE SPECIFICATION SECTION 04220
CONC:	CONCRETE
EXPO:	EXPOSED MATERIAL
F-1:	FACTORY INDUSTRIAL GROUP, MODERATE HAZARD OCCUPANCY (2022, TITLE 24)
FACT FIN:	FACTORY FINISH
GYP:	GYPSUM WALL BOARD, REFERENCE SPECIFICATION SECTION 09250
HW:	HARDWARE GROUP, REFERENCE SPECIFICATION SECTION 08710
MATL:	MATERIAL
MTL DECK	METAL DECK PER STRUCTURAL DESIGN
N/A	NOT APPLICABLE
NR:	NOT REQUIRED
PAMP:	PERFORATED ACOUSTICAL METAL PANELS. SYSTEM SHALL EXTEND TO THE UNDERSIDE OF GYP CEILING. REFERENCE SPECIFICATION SECTION 09523
PR:	PAIR
REQ:	REQUIRED
SEALER:	FLOOR COATING, REFERENCE SPECIFICATION SECTION 09960
U-FACTOR:	THERMAL TRANSMITTANCE, IS THE COEFFICIENT OF HEAT TRANSMISSION (AIR TO AIR) THROUGH A BUILDING COMPONENT OR ASSEMBLY, EQUAL TO THE TIME RATE OF HEAT FLOW PER UNIT AREA AND UNIT TEMPERATURE DIFFERENCE BETWEEN THE WARM SIDE AND COLD SIDE AIR FILMS (2022, TITLE 24)
WDECK:	WOOD DECK PER STRUCTURAL DESIGN
WFRP:	STANDARD FRP WALL SYSTEM, SMOOTH FINISH, LIGHT GRAY S490N AS MANUFACTURED BY MARLITE OR EQUAL. FRP SHALL BE INSTALLED AT THE PERIMETER (INTERIOR FACE) OF THE FOUR RESTROOM WALLS, THE FRP WALL SYSTEM SHALL BE 4'H FROM FINISH FLOOR.
INT CLR:	INTEGRAL COLOR

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ARCHITECTURAL
MISTY WOODS ASR WELL
BUILDING CODE ANALYSIS, AND SCHEDULES

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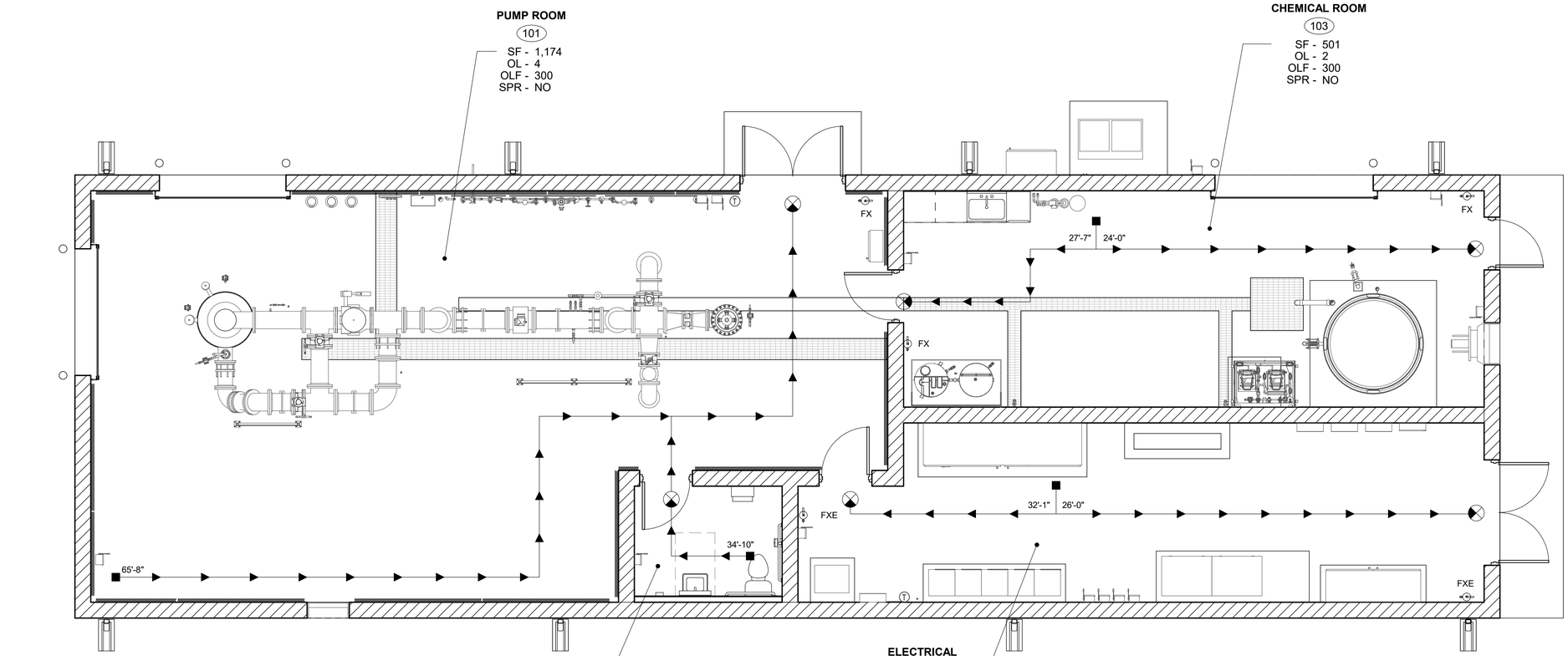
JOB NO. 11843A.10
DRAWING NO. 19GA01
SHEET NO. 33 OF 178

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EGRESS ABBREVIATION & SYMBOLS LIST:

SF:	SQUARE FEET
OL:	OCCUPANT LOAD
OLF:	OCCUPANT LOAD FACTOR
SPR:	AUTOMATIC SPRINKLER
NR:	NOT REQUIRED
	EXIT, REFERENCE ELECTRICAL DRAWINGS FOR LOCATION OF ILLUMINATED SIGNS
FX / FXE	FIRE EXTINGUISHER, TYPE AS INDICATED, REFERENCE DETAIL AN400/TYP AND SPECIFICATION SECTION 10520
#	FIRE RATED WALL: HOUR AS # INDICATES
X'-X"	MEANS OF EGRESS PATH OF TRAVEL TRAVEL DIRECTION TOTAL TRAVEL DISTANCE COMMON PATH TERMINATION PATH START / MOST REMOTE POINT



EGRESS

A PLAN

SCALE: 1/4" = 1'-0"

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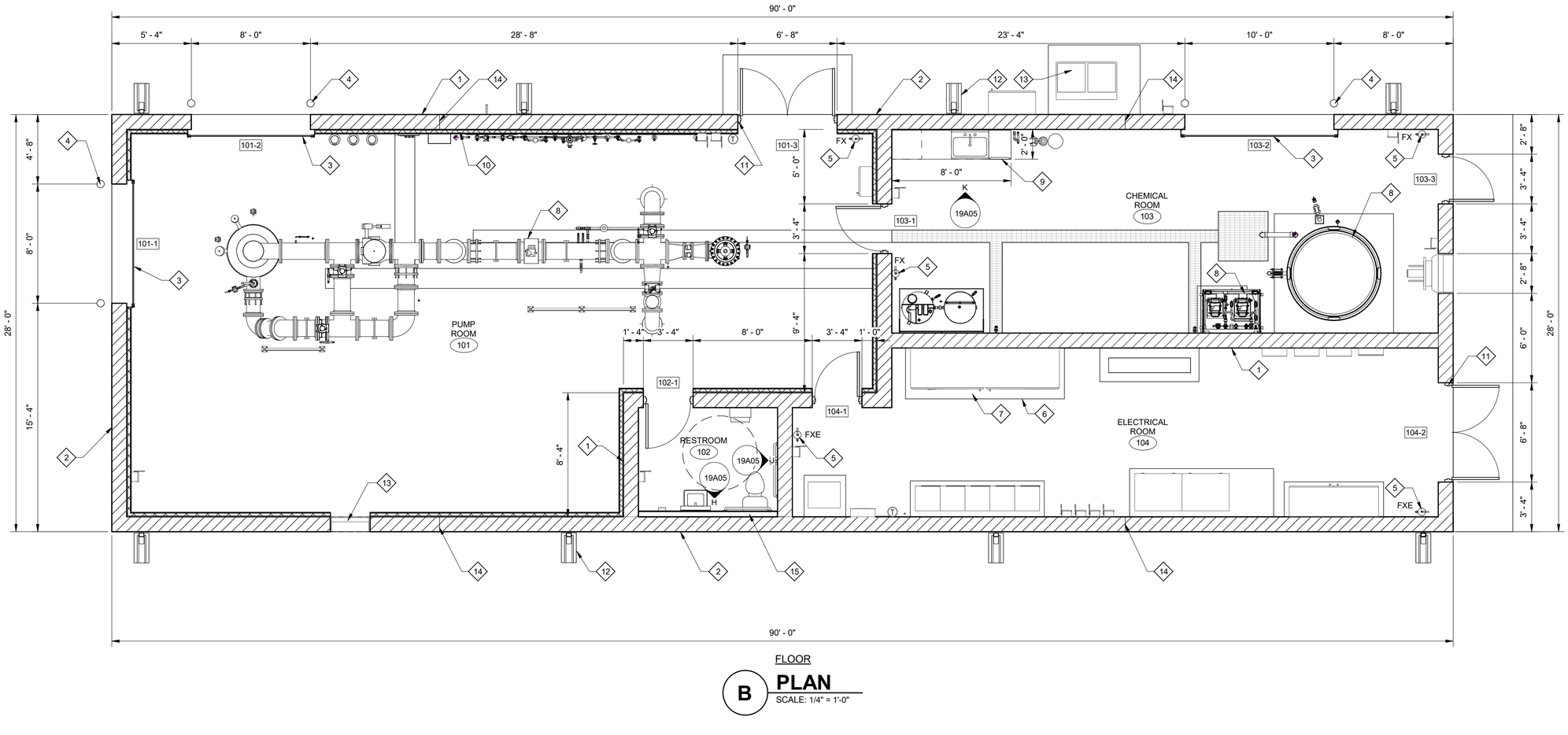
MISTY WOODS ASR WELL EGRESS PLAN

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DRAWING NO. 19GA02
SHEET NO. 34 OF 178

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FLOOR

B PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. EXTERIOR FACE OF ALL CONCRETE MASONRY UNITS SHALL BE FINISHED WITH WATER REPELLANT, REFERENCE SPECIFICATION SECTION 07190.
2. FOR DOOR SCHEDULES AND ROOF FINISHES REFERENCE SHEET 19GA01.
3. FOR EXTERIOR ENTRANCE PADS REFERENCE CIVIL DRAWINGS.
4. FOR RESTROOM ACCESSORY MOUNTING REFERENCE TYPICAL DETAIL AN400/TYP AND SPECIFICATION SECTION 10810.

KEY NOTES:

1. 12" X 8" X 16" INTEGRALLY COLORED SMOOTH-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
2. 12" X 8" X 16" INTEGRALLY COLORED SPLIT-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
3. OVERHEAD COILING DOOR, REFERENCE SPECIFICATION SECTION 08332
4. GUARD POST AT EACH SIDE OF COILING DOOR, REFERENCE CIVIL DRAWINGS
5. FIRE EXTINGUISHER, REFERENCE SPECIFICATION SECTION 10520 AND AN400/TYP
6. FOR EQUIPMENT PADS AND GRATING, REFERENCE STRUCTURAL DRAWINGS
7. FOR EQUIPMENT REQUIREMENTS, REFERENCE ELECTRICAL DRAWINGS
8. FOR EQUIPMENT REQUIREMENTS, REFERENCE MECHANICAL DRAWINGS
9. 24"D x 34"H METAL LABORATORY BASE CABINETS, MOLDED EPOXY WORK SURFACE WITH 4" BACK SPLASH, AND UNDERMOUNTED MOLDED EPOXY SINK WITH HOT AND COLD WATER SUPPLY PER PLUMBING
10. PREFABRICATED ACOUSTICAL METAL PANELS, REFERENCE SPECIFICATION SECTION 09523
11. HOLLOW METAL DOOR AND FRAME, REFERENCE SPECIFICATION SECTION 08110
12. FOR CONCRETE SPLASH BLOCK, REFERENCE TYPICAL DETAIL AG229/TYP
13. FOR HVAC UNIT, LOUVERS, AND EQUIPMENT, REFERENCE MECHANICAL DRAWINGS
14. MASONRY CONTROL JOINT, REFERENCE STRUCTURAL DRAWINGS
15. 2" X 4" WOOD STUDS WITH 5/8" GYPSUM WALL BOARD

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MISTY WOODS ASR WELL FLOOR PLAN

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SHEET NO. 35 OF 178

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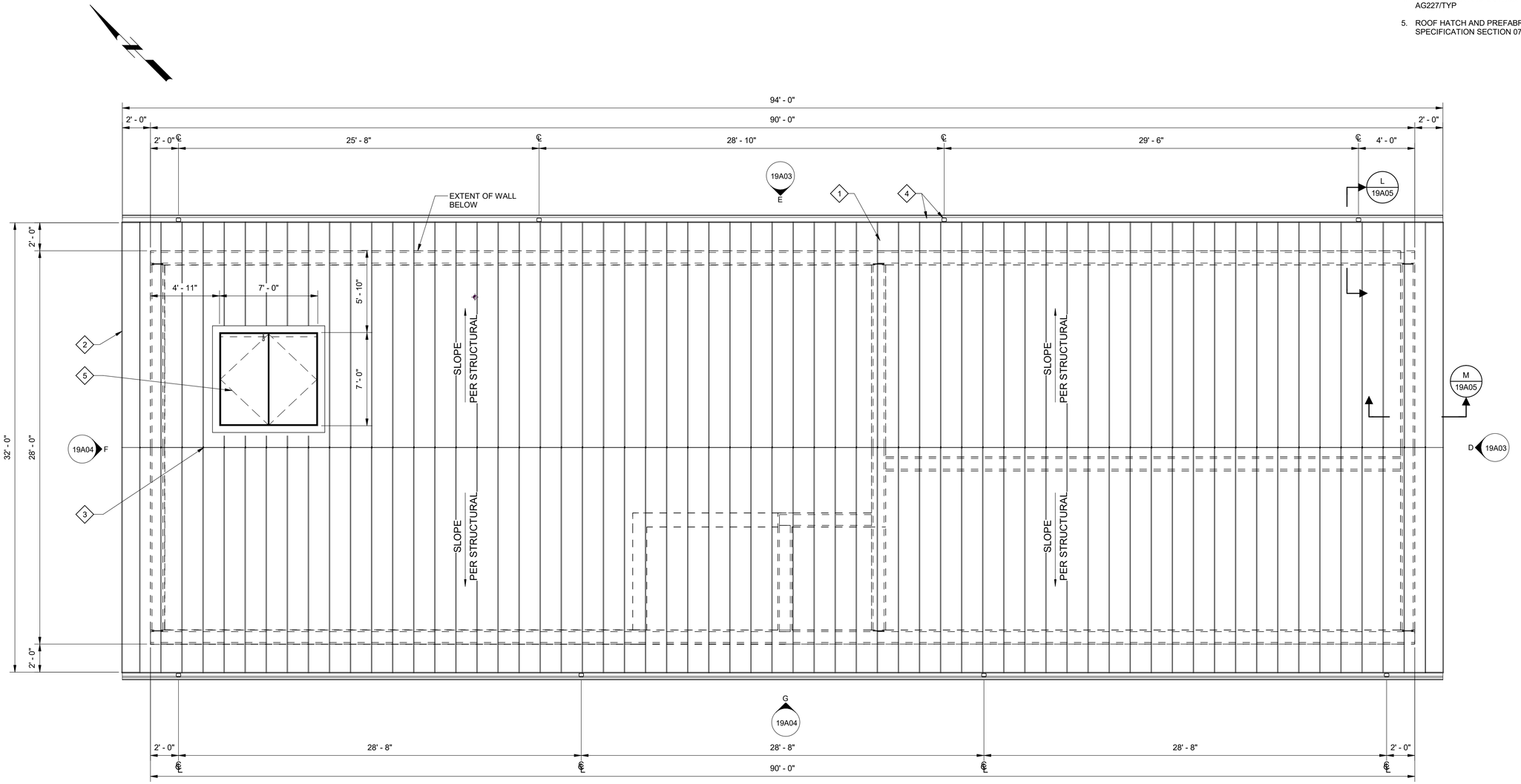
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GENERAL NOTES:

1. COORDINATE WITH STRUCTURAL DRAWINGS FOR SLOPE OF WOOD TRUSSES AND PLYWOOD DECKING REQUIREMENTS.

KEY NOTES:

1. STANDING SEAM METAL ROOF SYSTEM, REFERENCE SPECIFICATION SECTION 07415
2. ALUMINUM FASCIA, REFERENCE SPECIFICATION SECTION 07415
3. ROOF RIDGE, REFERENCE SPECIFICATION SECTION 07415
4. FOR GUTTER AND DOWNSPOUT, REFERENCE TYPICAL DETAIL AG227/TYP
5. ROOF HATCH AND PREFABRICATED CURB, REFERENCE SPECIFICATION SECTION 07722 AND AG170/TYP



ROOF

C PLAN

SCALE: 1/4" = 1'-0"

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

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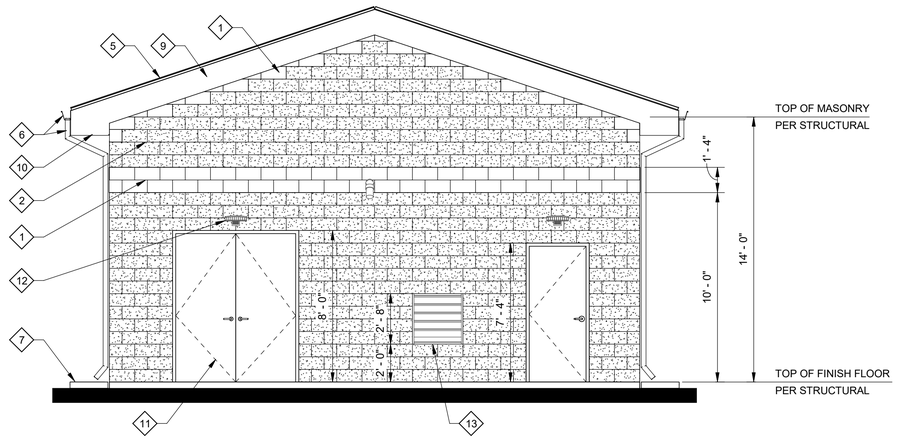
MISTY WOODS ASR WELL
ROOF PLAN

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JOB NO. 11843A.10
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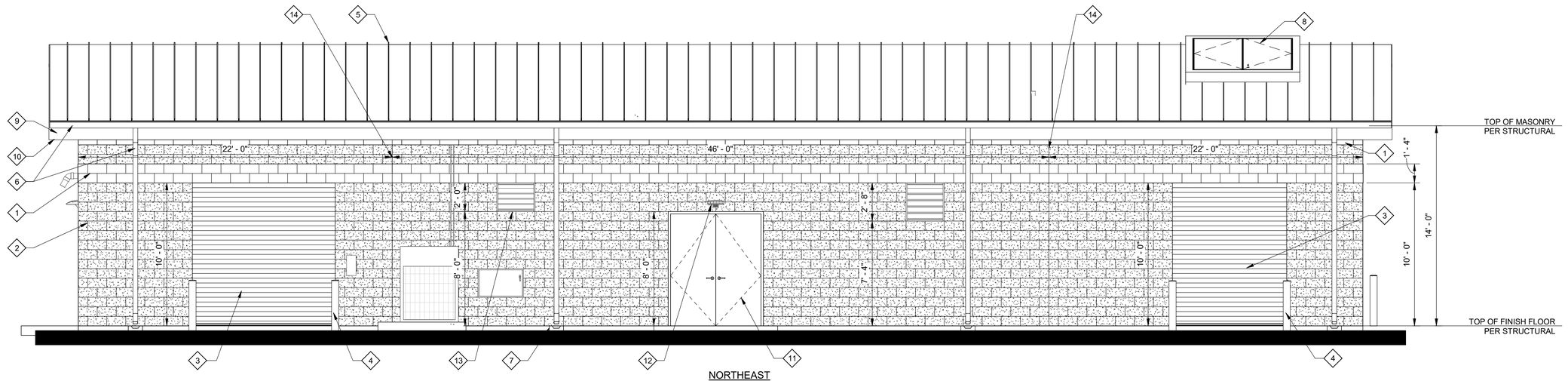


SOUTHEAST

D ELEVATION

19A02

SCALE: 1/4" = 1'-0"



NORTHEAST

E ELEVATION

19A02

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. EXTERIOR FACE OF ALL CONCRETE MASONRY UNITS SHALL BE FINISHED WITH WATER REPELLANT, REFERENCE SPECIFICATION SECTION 07190.
2. FOR DOOR SCHEDULES AND ROOF FINISHES, REFERENCE SHEET 19GA01.
3. FOR EXTERIOR ENTRANCE PADS, REFERENCE CIVIL DRAWINGS.
4. COORDINATE WITH STRUCTURAL DRAWINGS SLOPE OF WOOD TRUSSES AND PLYWOOD DECKING REQUIREMENTS.

KEY NOTES:

1. 12" X 8" X 16" INTEGRALLY COLORED SMOOTH-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
2. 12" X 8" X 16" INTEGRALLY COLORED SPLIT-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
3. OVERHEAD COILING DOOR, REFERENCE SPECIFICATION SECTION 08332
4. GUARD POST AT EACH SIDE OF COILING DOOR, REFERENCE CIVIL DRAWINGS
5. STANDING SEAM METAL ROOF SYSTEM, REFERENCE SPECIFICATION SECTION 07415
6. FOR GUTTER AND DOWNSPOUT, REFERENCE TYPICAL DETAIL AG227/TYP
7. FOR CONCRETE SPLASH BLOCK, REFERENCE TYPICAL DETAIL AG229/TYP
8. ROOF HATCH AND PREFABRICATED CURB, REFERENCE SPECIFICATION SECTION 07722
9. ALUMINUM FASCIA, REFERENCE SPECIFICATION SECTION 07415
10. ALUMINUM SOFFIT, REFERENCE SPECIFICATION SECTION 07415
11. HOLLOW METAL DOOR AND FRAME, REFERENCE SPECIFICATION SECTION 08110
12. FOR EXTERIOR LIGHT FIXTURE, REFERENCE ELECTRICAL DRAWINGS
13. FOR HVAC UNIT, LOUVERS, AND EQUIPMENT, REFERENCE MECHANICAL DRAWINGS
14. MASONRY CONTROL JOINT, REFERENCE STRUCTURAL DRAWINGS

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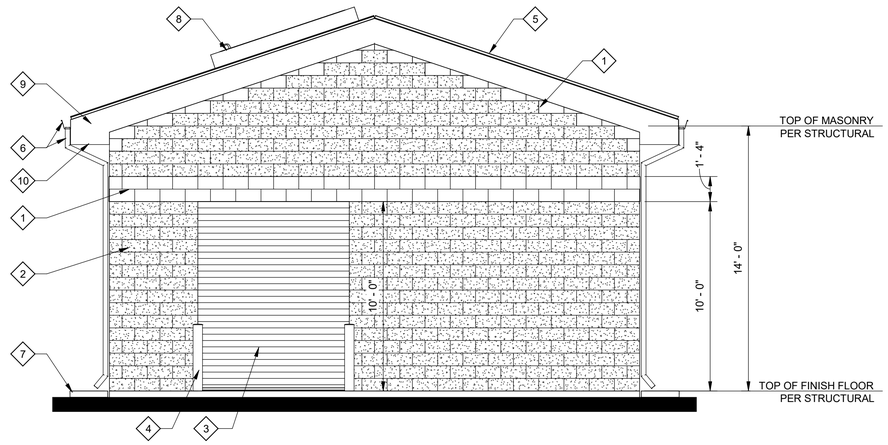
MISTY WOODS ASR WELL
NORTH AND EAST ELEVATIONS

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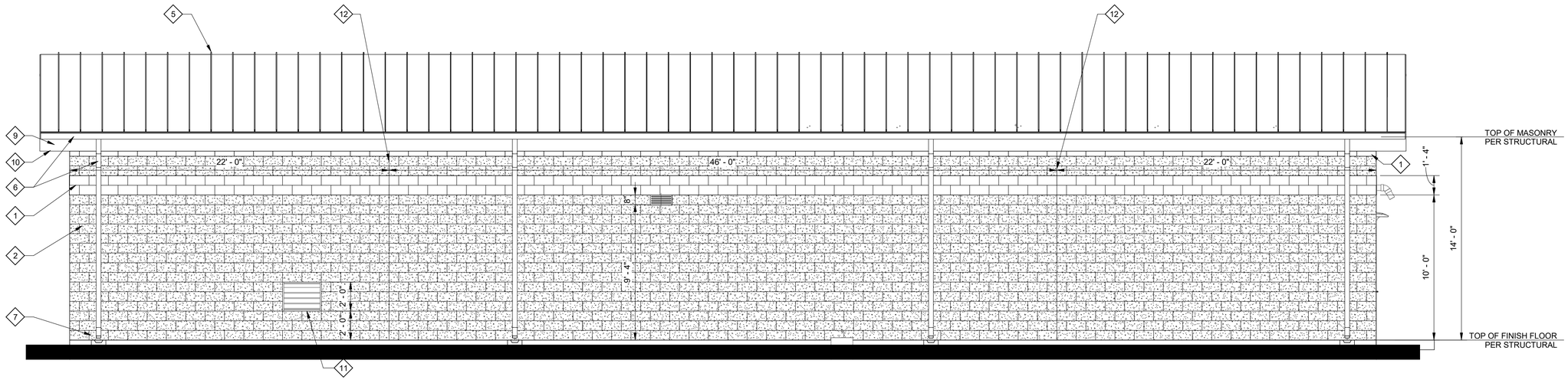


NORTHWEST

F ELEVATION

19A02

SCALE: 1/4" = 1'-0"



SOUTHWEST

G ELEVATION

19A02

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. EXTERIOR FACE OF ALL CONCRETE MASONRY UNITS SHALL BE FINISHED WITH WATER REPELLANT, REFERENCE SPECIFICATION SECTION 07190.
2. FOR DOOR SCHEDULES AND ROOF FINISHES, REFERENCE SHEET 19GA01.
3. FOR EXTERIOR ENTRANCE PADS, REFERENCE CIVIL DRAWINGS.
4. COORDINATE WITH STRUCTURAL DRAWINGS SLOPE OF WOOD TRUSSES AND PLYWOOD DECKING REQUIREMENTS.

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9. ALUMINUM FASCIA, REFERENCE SPECIFICATION SECTION 07415
10. ALUMINUM SOFFIT, REFERENCE SPECIFICATION SECTION 07415
11. FOR HVAC UNIT, LOUVERS, AND EQUIPMENT, REFERENCE MECHANICAL DRAWINGS
12. MASONRY CONTROL JOINT, REFERENCE STRUCTURAL DRAWINGS

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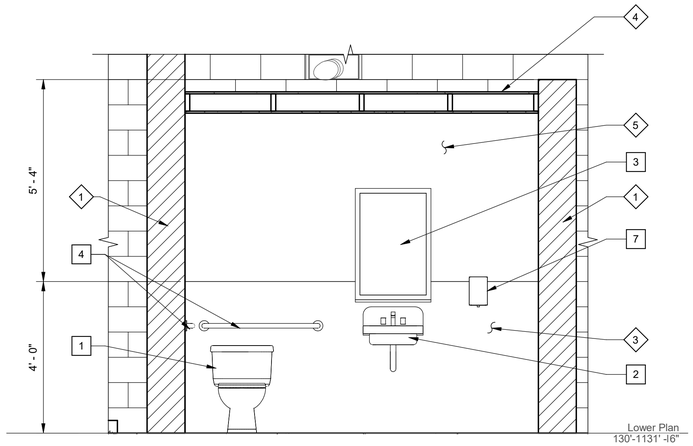
MISTY WOODS ASR WELL
SOUTH AND WEST ELEVATIONS

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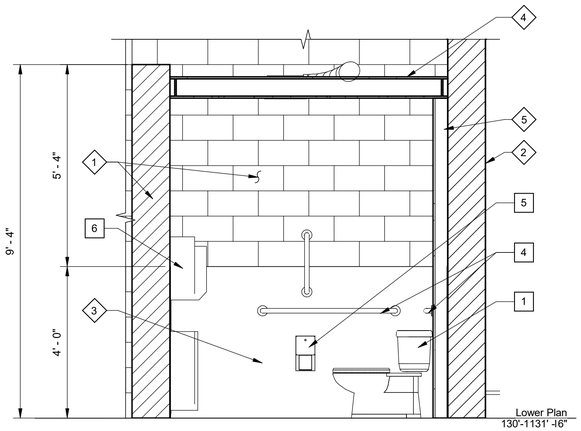
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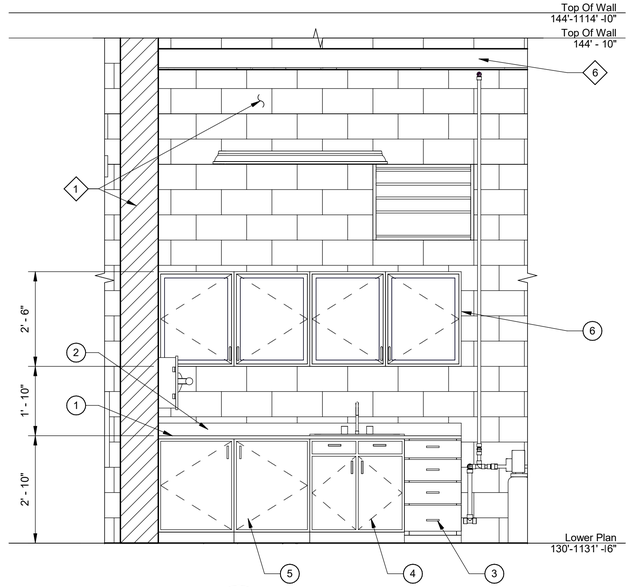
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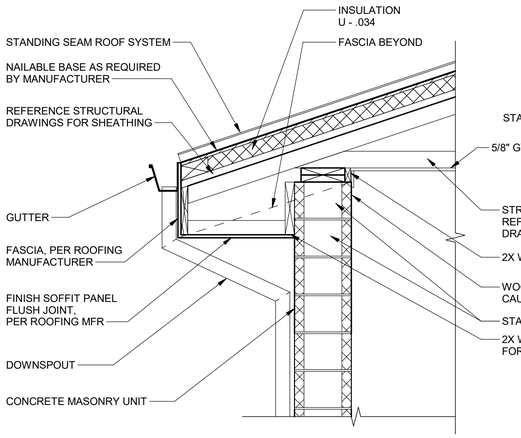
H ELEVATION
19A01 SCALE: 1/2" = 1'-0"



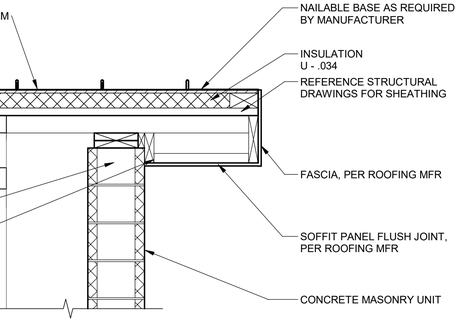
J ELEVATION
19A01 SCALE: 1/2" = 1'-0"



K ELEVATION
19A01 SCALE: 1/2" = 1'-0"



L SECTION
19A02 SCALE: 3/4" = 1'-0"



M SECTION
19A02 SCALE: 3/4" = 1'-0"

GENERAL NOTES:

1. FOR RESTROOM ACCESSORY MOUNTING, REFERENCE TYPICAL DETAIL AN100/TYP.
2. FOR LAB CABINETS REFER TO SPECIFICATION SECTION.
3. FOR RESTROOM ACCESSORIES, REFERENCE SPECIFICATION SECTION 10810.
4. FOR PLUMBING SYSTEMS, REFERENCE SPECIFICATION SECTION 15400.

KEY NOTES:

1. 12" X 8" X 16" INTEGRALLY COLORED SMOOTH-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
2. 12" X 8" X 16" INTEGRALLY COLORED SPLIT-FACE CONCRETE MASONRY UNITS, COLOR AS SELECTED BY OWNER
3. 4'-0" H MIN. FRP WALL SYSTEM, SMOOTH FINISH, LIGHT GRAY S490N COLOR AS MANUFACTURED BY MARLITE OR EQUAL. SYSTEM SHALL BE INSTALLED AT THE BASE OF ALL THE RESTROOM WALLS
4. WOOD STUDS PER STRUCTURALLY, 5/8" TYPE X FIRE RATED GYPSUM WALLBOARD EACH SIDE
5. 2" X 4" WOOD STUDS WITH 5/8" GYPSUM WALL BOARD
6. 2" X 6" FIRE RETARDANT WOOD STUDS AT 12 O.C. MAX WITH 5/8" TYPE X GYPSUM BOARD, TEXTURED AND PAINTED PER SPECIFICATIONS

RESTROOM AND ANALYSIS AREA SCHEDULE

1. FLOOR MOUNTED WATER CLOSET
2. SURFACE MOUNTED ADA LAVATORY
3. ADA MIRROR
4. GRAB BARS
5. SURFACE MOUNTED TOILET PAPER HOLDER
6. SURFACE MOUNTED PAPER TOWEL DISPENSER AND RECEPTACLE
7. SURFACE MOUNTED LIQUID SOAP DISPENSER

CABINETRY SCHEDULE

1. 1" THICK MOLDED EPOXY WORK SURFACE
2. 4"H MOLDED EPOXY BACK SPLASH
3. 18"W x 24"D x 34"H METAL LABORATORY BASE CABINET WITH FOUR DRAWERS
4. 30"W x 24"D x 24"H METAL LABORATORY BASE CABINET WITH UNDERMOUNTED MOLDED EPOXY SINK, REFERENCE SPECIFICATION SECTION 15400 FOR FAUCET WITH HOT AND COLD WATER SUPPLY
5. 48"W x 24"D x 34"H DOUBLE DOOR METAL LABORATORY BASE CABINET
6. 48"W x 14"D x 30"H DOUBLE DOOR METAL LABORATORY WALL MOUNTED CABINET WITH TWO SHELVES

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MEH
DRAWN FVG
CHECKED JCA
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ARCHITECTURAL
MISTY WOODS ASR WELL
INTERIOR ELEVATIONS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19A05
SHEET NO. 39 OF 178

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Model: Layout1
LAST SAVED BY: rwelch

GENERAL NOTES:

1. USE STRUCTURAL DRAWINGS IN CONJUNCTION WITH PROJECT DRAWINGS BY OTHER DISCIPLINES AND WITH THE SPECIFICATIONS.
2. UNLESS DETAILED, SPECIFIED, OR INDICATED OTHERWISE, CONSTRUCTION SHALL BE AS INDICATED IN THE GENERAL NOTES AND TYPICAL DETAILS.
3. PRESENTATION CONVENTIONS FOR STRUCTURAL DRAWINGS:
   A. SCREENED LINE WORK INDICATES EXISTING CONDITIONS.
   B. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED SIZES.
   C. PLANS ARE TREATED AS HORIZONTAL SECTIONS. (I.E.: "PLAN AT ELEVATION 110" SHOWS CONSTRUCTION AT AND BELOW ELEVATION 110.)
4. VERIFY DIMENSIONS AND CONDITIONS BEFORE BEGINNING WORK. ADVISE ENGINEER IMMEDIATELY OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND DIMENSIONS, AND INFORMATION SHOWN ON THESE DRAWINGS. CONFIRM THE FOLLOWING BEFORE PREPARATION AND SUBMITTAL OF SHOP DRAWINGS:
   A. DIMENSIONS AND WEIGHTS FOR EQUIPMENT SELECTED.
   B. SIZES AND LOCATIONS OF EQUIPMENT PADS FOR EQUIPMENT SELECTED.
5. TYPICAL DETAILS ARE INCLUDED ON THE "TS" DRAWINGS.
   A. TYPICAL DETAILS ARE INTENDED TO APPLY AT LOCATIONS DESCRIBED BY THEIR TITLES, EVEN WHEN NOT SPECIFICALLY REFERENCED ON THE DRAWINGS.
   B. IN STRUCTURAL TYPICAL DETAILS, ORIENTATION OF BARS IN EACH MAT OF REINFORCEMENT (WHETHER "LINES" OR "DOTS"ARE CLOSER TO THE FACE OF THE CONCRETE) IS GENERALLY ARBITRARY. SEE DRAWINGS OF EACH STRUCTURE FOR ORIENTATION REQUIRED AT THAT STRUCTURE.
6. SEE CIVIL DRAWINGS FOR STRUCTURE COORDINATES. POINTS ON THE STRUCTURES TO WHICH SITE COORDINATES REFER ARE SHOWN ON THE STRUCTURAL PLANS.
7. DRAWINGS PREPARED BY OTHER DISCIPLINES INCLUDE OPENINGS, ANCHORS, PIPES, CONDUITS, AND OTHER ITEMS THAT ARE EMBEDDED INTO OR PASS THROUGH STRUCTURES.
   A. CONFIRM SIZE AND LOCATIONS OF OPENINGS, PENETRATIONS AND EMBEDMENT FOR ITEMS AND EQUIPMENT FURNISHED.
   B. IN GENERAL, OPENINGS, EMBEDMENTS, AND PENETRATIONS LESS THAN 12 INCHES IN DIAMETER ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS.
   C. SEE MECHANICAL DRAWINGS FOR DETAILS OF PIPE PENETRATIONS, PIPE SUPPORTS, AND ASSOCIATED STRUCTURAL REQUIREMENTS.
   D. SEE MECHANICAL DRAWINGS FOR EQUIPMENT PADS AND PIPE SUPPORTS.
8. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND SIZES OF DOOR AND WINDOW OPENINGS.

STRUCTURAL DESIGN CRITERIA - GENERAL:

SEE DRAWINGS OF INDIVIDUAL STRUCTURES FOR SPECIFIC DESIGN CRITERIA BASED ON THESE OVERALL CRITERIA FOR THE SITE.

1. BUILDING CODE:
   A. 2022 CALIFORNIA BUILDING CODE ("CBC 2022") WITH ASCE 7-16.
   B. LOCAL AMENDMENTS: CITY OF ROSEVILLE.
2. STRUCTURE RISK CATEGORY: SEE PLANS FOR EACH STRUCTURE.
3. DEAD LOADS: CALCULATED FOR STRUCTURE SELF-WEIGHT.
4. LIVE LOADS: (REDUCTIONS NOT USED)
   A. FLOOR LIVE LOAD: SEE PLANS.
   B. GRATING AND CHECKERED PLATE: 100 PSF (UNO).
   C. ROOF LIVE LOAD: SEE PLANS (25 PSF MINIMUM).
   D. EQUIPMENT LOADS: SEE PLANS.
5. FLUID PRESSURE LOADS: 63 PSF/FT (UNO).
6. WIND DESIGN DATA FOR MISTY WOODS AND CAMPUS OAKS:
   A. SPECIAL WIND REGION: NO
   B. WIND-BORNE DEBRIS REGION: NO
   C. BASIC WIND SPEED (3 SEC GUST, 33 FEET ABOVE GROUND): 105 MPH.
7. MISTY WOODS EARTHQUAKE DESIGN DATA:

		0.2 SECOND	*1.0 SECOND
A.	SITE CLASS: D.		
B.	MAPPED SPECTRAL RESPONSE ACCELERATIONS:	Ss = 0.447 g	S1 = 0.223 g
C.	SITE COEFFICIENTS:	Fa = 1.443	Fv = 2.154
D.	MAXIMUM CONSIDERED ACCELERATIONS:*	Sms =0.645 g	Sm1 = 0.48
E.	DESIGN SPECTRAL RESPONSE ACCELERATIONS:* (* 5% DAMPED)	Sds = 0.43 g	Sd1 = 0.32

8. CAMPUS OAKS EARTHQUAKE DESIGN DATA:

		0.2 SECOND	*1.0 SECOND
A.	SITE CLASS: D.		
B.	MAPPED SPECTRAL RESPONSE ACCELERATIONS:	Ss = 0.447 g	S1 = 0.224 g
C.	SITE COEFFICIENTS:	Fa = 1.443	Fv = NULL
D.	MAXIMUM CONSIDERED ACCELERATIONS:*	Sms =0.645 g	Sm1 = NULL
E.	DESIGN SPECTRAL RESPONSE ACCELERATIONS:* (* 5% DAMPED)	Sds = 0.43 g	Sd1 = NULL

9. CONSTRUCTION LOADS:
   STRUCTURES HAVE BEEN DESIGNED FOR OPERATING LOADS ON COMPLETED FACILITIES. UNTIL CONSTRUCTION IS COMPLETE AND MEMBERS HAVE ACHIEVED THEIR DESIGN STRENGTH, PROTECT STRUCTURES AS REQUIRED BY SHORING, BRACING, AND BALANCING.

GEOTECHNICAL REPORT / FOUNDATION DESIGN CRITERIA FOR MISTY WOODS:

1. GEOTECHNICAL INVESTIGATION REPORT:
   TITLE: AQUIFER STORAGE RECOVERY WELL AND PUMP STATION MISTY WOODS ASR WELL (WELL 19).
   PREPARED BY: ENGEO.
   REPORT NO: 17340.000.000 DATED: FEBRUARY 27, 2023.
2. FOUNDATION DESIGNS ARE BASED ON RECOMMENDATIONS IN THE GEOTECHNICAL INVESTIGATION REPORT.
   A. NET ALLOWABLE BEARING PRESSURE SEE PLANS.
   B. FROST DEPTH: 0
   C. LATERAL EARTH PRESSURE (UNO):
      SURCHARGE: EQUIVALENT TO 2 FEET OF SOIL ABOVE FINISHED GRADE.

	STATIC	SEISMIC
ACTIVE (PSF/FT):	40	53
AT REST (PSF/FT):	60	80
PASSIVE (PSF/FT):	300	450
SLIDING COEFFICIENT OF FRICTION:	0.30	0.45

   D. GROUNDWATER EL 0.00'.

GEOTECHNICAL REPORT / FOUNDATION DESIGN CRITERIA FOR CAMPUS OAKS:

1. GEOTECHNICAL INVESTIGATION REPORT:
   TITLE: AQUIFER STORAGE RECOVERY WELL AND PUMP STATION CAMPUS OAKS WELL.
   PREPARED BY: ENGEO.
   REPORT NO: 17340.000.000 DATED: AUGUST 30, 2021.
2. FOUNDATION DESIGNS ARE BASED ON RECOMMENDATIONS IN THE GEOTECHNICAL INVESTIGATION REPORT.
   A. NET ALLOWABLE BEARING PRESSURE SEE PLANS.
   B. FROST DEPTH: 0
   C. LATERAL EARTH PRESSURE (UNO):
      SURCHARGE: EQUIVALENT TO 2 FEET OF SOIL ABOVE FINISHED GRADE.

	STATIC	SEISMIC
ACTIVE (PSF/FT):	40	53
AT REST (PSF/FT):	60	80
PASSIVE (PSF/FT):	300	450
SLIDING COEFFICIENT OF FRICTION:	0.30	0.45

   D. GROUNDWATER EL 19.00'.

TYPICAL STRUCTURAL MATERIALS:

1. MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. SEE PROJECT SPECIFICATIONS AND NOTES ON DRAWINGS OF SPECIFIC STRUCTURES FOR DETAILED AND LOCATION-SPECIFIC REQUIREMENTS.

REINFORCING STEEL (FOR CONCRETE AND MASONRY):

1. DEFORMED BARS:
   A. TYPICAL: ASTM A 615, GRADE 60.
   B. WHERE INDICATED ON THE DRAWINGS: ASTM A 706.
2. WELDED WIRE FABRIC: ASTM A 1064.

CONCRETE:

1. NORMAL DENSITY.
2. MINIMUM SPECIFIED CONCRETE COMPRESSIVE STRENGTH, f'c (AT 28 DAYS UNO).
   A. STRUCTURES: "CLASS A"OR "CLASS B" f'c = 4000 PSI.
   B. FILL AND THRUST BLOCKS: "CLASS C" f'c = 2500 PSI.
   C. PIPE ENCASEMENT: "CLASS CE" f'c = 2500 PSI.
   D. ELECTRICAL DUCT ENCASEMENT: "CLASS CE" f'c = 2500 PSI.

MASONRY:

1. CONCRETE MASONRY
   A. UNITS: ASTM C 90, NORMAL WEIGHT.
   B. MORTAR: ASTM C 270, MINIMUM 28-DAY COMPRESSIVE STRENGTH = 1800 PSI.
   C. GROUT: ASTM C 476. MINIMUM 28-DAY COMPRESSIVE STRENGTH = 2000 PSI.
   D. MINIMUM SPECIFIED COMPRESSIVE STRENGTH, f'm (AT 28 DAYS).
      1) SOLID GROUTED: f'm = 1500 PSI.

STRUCTURAL STEEL:

1. SECTIONS
   A. SHAPES W, WT: ASTM A 992 (Fy = 50 KSI)
   B. SHAPES S, ST, M, MT, HP, C, MC, L: ASTM A 36 (Fy = 36 KSI)
   C. PLATES AND BARS: ASTM A 36 (Fy = 36 KSI)
   D. PIPES: ASTM A 53, GRADE B (Fy = 35 KSI)
   E. HOLLOW STRUCTURAL SECTIONS:
      ROUND: ASTM A 500, GRADE B (Fy = 42 KSI)
      SQUARE AND RECTANGULAR: ASTM A 500, GRADE B (Fy = 46 KSI)
2. CONNECTIONS:
   A. BOLTS - STEEL TO-STEEL:
      ASTM F 3125 GRADE A325 HIGH-STRENGTH BOLTS, WITH LOAD INDICATOR WASHERS.
   B. BOLTS - STEEL TO CONCRETE OR MASONRY:
      ANCHOR BOLTS WITH HEX FORGED HEAD.
      ASTM F 593, STAINLESS TYPE 316 (304)
      ASTM F 1554, GRADE 36 GALVANIZED.
   C. WELDS - SHIELDED METAL ARC PROCESS USING E70-XX ELECTRODES.

STAINLESS STEEL:

1. ANSI TYPE 316/316L EXCEPT WHERE TYPE 304/304L IS INDICATED ON THE DRAWINGS.
2. SECTIONS: SHAPES AND BARS: ASTM A 276.
3. BOLTED CONNECTIONS - BOLTS AND ANCHOR BOLTS:
   A. MATCH ALLOY OF THE STRUCTURAL MEMBERS CONNECTED.
   B. TYPE 316/316L: ASTM F 593, GRADE B8M, CLASS 1, HEAVY HEX.
   C. TYPE 304/304L: ASTM F 593, GRADE B8, CLASS 1, HEAVY HEX.
4. WELDED CONNECTIONS:
   A. TYPE 316L: E316L-15 ELECTRODES.
   B. TYPE 304L: E304L-15 ELECTRODES.

CONSTRUCTION:

CONFORM TO THE FOLLOWING REQUIREMENTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

EXCAVATION AND BACKFILLING:

1. EXPOSE AND PREPARE SUBGRADE AS SHOWN ON THE DRAWINGS AND SPECIFIED. OBTAIN ENGINEER'S OBSERVATION OF SUBGRADE SURFACES, AS EXPOSED AND AS PREPARED, BEFORE PROCEEDING WITH FOUNDATION CONSTRUCTION.
2. DO NOT PLACE BACKFILL AGAINST WALLS UNTIL STRUCTURES SUPPORTING THE TOP OF THE WALL ARE IN PLACE, ARE COMPLETE, AND (IN THE CASE OF CONCRETE) HAVE CURED TO THEIR MINIMUM SPECIFIED 28-DAY COMPRESSIVE STRENGTH.
3. WHERE BACKFILL MUST BE PLACED AGAINST WALLS BEFORE STRUCTURES ABOVE ARE COMPLETE, PROVIDE BRACING FOR WALLS. KEEP BRACING IN PLACE UNTIL THE STRUCTURE ABOVE IS COMPLETE AND (IN THE CASE OF CONCRETE) HAS CURED TO ITS MINIMUM SPECIFIED 28-DAY COMPRESSIVE STRENGTH.

CONCRETE:

1. SEE SC001/TYP FOR CONCRETE NOTES, INCLUDING CLEAR COVER AND LAP SPLICE LENGTH REQUIREMENTS FOR REINFORCING.
2. SUBMIT LOCATIONS OF CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS FOR ACCEPTANCE BY THE ENGINEER BEFORE FORM LAYOUT.
3. PROVIDE CHAMFER AT EXPOSED EDGES OF CAST-IN-PLACE CONCRETE. SEE SPECIFICATION 03102 FOR CHAMFERS.
4. PROVIDE REINFORCING:
   A. AT OPENINGS - AS INDICATED IN SC012/TYP.
5. WELDING OF REINFORCING IS NOT PERMITTED UNLESS DETAILED ON THE DRAWINGS OR ACCEPTED IN ADVANCE BY THE ENGINEER.
6. MAINTAIN MINIMUM 3 INCHES CLEAR CONCRETE COVER BETWEEN REINFORCING AND EMBEDMENTS.
7. FINISH CONCRETE AS SPECIFIED IN SECTION 03366.
8. CONCRETE PADS
   A. (E) EQUIPMENT PAD SEE SD512/TYP.
   B. (H) HOUSEKEEPING PAD FOR ELECTRICAL EQUIPMENT SEE SD702/TYP.

MASONRY:

1. SEE SF002/TYP FOR MASONRY NOTES, INCLUDING LAP SPLICE LENGTHS.
2. PROVIDE REINFORCING:
   A. AT CORNERS AND JUNCTIONS AS INDICATED IN SF230/TYP.
   B. AT OPENINGS AS INDICATED IN SF220/TYP.
3. WELDING OF REINFORCING IS NOT PERMITTED UNLESS DETAILED ON THE DRAWINGS OR ACCEPTED IN ADVANCE BY THE ENGINEER.
4. GROUTING:
   A. FULLY GROUTED.

STEEL, STAINLESS STEEL, AND ALUMINUM - CONNECTIONS:

1. BOLTED:
   A. MADE USING 3/4-INCH DIAMETER BOLTS.
   B. HAVING A MINIMUM OF 2 BOLTS, SPACED NOT CLOSER THAN 3 INCHES ON CENTER.
   C. WITH A DISTANCE OF AT LEAST 1 1/2 INCHES FROM CENTER OF BOLT TO ANY EDGE OF A PLATE OR STRUCTURAL ELEMENT.
2. WELDED:
   A. FILLET WELDS: PER AWS CODE BASED ON THE THICKNESS OF THE MATERIALS BEING JOINED, AND FULL LENGTH OF THE JOINT.
3. INTERFACE BETWEEN MATERIALS:
   A. AT BOLTED CONNECTIONS THAT INCLUDE DIFFERENT METALS (E.G.: STEEL AND STAINLESS STEEL, OR ALUMINUM AND STEEL) PROVIDE ISOLATING SLEEVES AND WASHERS AS SPECIFIED IN SECTION 05190.
   B. WHERE ALUMINUM IS IN CONTACT WITH MASONRY OR CONCRETE, COAT ALUMINUM SURFACES AS SPECIFIED IN SECTION 09960.
4. POST-INSTALLED ANCHORS IN CONCRETE AND MASONRY:
   A. INSTALL IN FULL COMPLIANCE WITH ACCEPTED BUILDING CODE EVALUATION REPORT AND MANUFACTURER'S INSTRUCTIONS.
   B. DO NOT CUT, DAMAGE, OR INTERRUPT EXISTING REINFORCEMENT TO INSTALL ANCHORS. USE NON-DESTRUCTIVE TESTING EQUIPMENT TO IDENTIFY LOCATIONS OF REINFORCEMENT IN MEMBERS BEFORE DRILLING HOLES FOR ANCHORS.

METAL FABRICATIONS:

1. GRATING:
   A. ALUMINUM WITH TYPE 316 STAINLESS STEEL FASTENERS, UNLESS OTHERWISE NOTED.
   B. GRATING AND ITS SEATS OR SUPPORTS SHALL BE OF THE SAME MATERIAL.
   C. UNLESS INDICATED ON THE DRAWINGS AS "REMOVABLE GRATING", SECURELY FASTEN GRATING TO SUPPORTS AS INDICATED IN SR601/TYP.
2. COVER PLATES:
   A. ALUMINUM WITH TYPE 316 STAINLESS STEEL FASTENERS, UNLESS OTHERWISE NOTED.
   B. COVER PLATE AND ITS SEATS OR SUPPORTS SHALL BE OF THE SAME MATERIAL.

SPECIAL INSPECTION:

1. SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING STRUCTURAL MATERIALS AND CONSTRUCTION. SEE SPECIFICATION SECTION 01455 FOR DETAILS.
2. DIVISION 2 SITE CONSTRUCTION (EARTHWORK)
   A. EXCAVATION DEPTH.
   B. ADEQUACY OF EXPOSED SURFACE TO PROVIDE REQUIRED SUPPORT.
   C. PREPARATION OF SOILS/SURFACES SUPPORTING CONSTRUCTION.
   D. FILL AND BACKFILL.
3. DIVISION 3 CONCRETE:
   A. LOCATIONS.
   B. FORMWORK AND MEMBER SIZES.
   C. REINFORCING STEEL.
   D. ANCHORS: CAST-IN AND POST-INSTALLED.
   E. CONCRETE MIX AND PLACEMENT.
   F. PROTECTION AND CURING PROCEDURES.
   G. PRECAST CONCRETE.
4. DIVISION 4 MASONRY
   A. LOCATIONS.
   B. MEMBER SIZES.
   C. REINFORCING STEEL.
   D. ANCHORS: BUILT-IN AND POST-INSTALLED.
   E. MORTAR AND JOINTS.
   F. GROUT AND GROUTING.
   G. PROTECTION AND CURING PROCEDURES.
5. DIVISION 5 METALS
   A. GENERAL ALL METALS:
      1) MEMBER LOCATIONS.
      2) MEMBER SIZES/TYPES.
      3) ANCHORS - CAST-IN AND BUILT-IN ANCHOR BOLTS.
      4) ANCHORS - POST-INSTALLED MECHANICAL AND ADHESIVE.
   B. STEEL DECKING.
      1) CONNECTIONS TO SUPPORTS.
      2) SIDE CONNECTIONS BETWEEN ADJACENT SHEETS.
   C. COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION.
6. DIVISION 6 WOOD, PLASTICS AND COMPOSITES.

STRUCTURAL OBSERVATION:

1. STRUCTURAL OBSERVATION IS REQUIRED DURING AND AT SPECIFIC STAGES OF CONSTRUCTION. SEE SPECIFICATION SECTION 01455 FOR DETAILS.

STRUCTURAL SYMBOLS:

1. SEE DRAWING G03 FOR KEY TO DRAWING TITLES AND SECTION CUTS, AND FOR DEFINITION OF MATERIALS SHADING PATTERNS.
2. WELDING: SYMBOLS: IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) A2.4.

STRUCTURAL ABBREVIATIONS:

1. SEE DRAWING G02 FOR GENERAL LIST OF ABBREVIATIONS USED ON DRAWINGS.
2. ABBREVIATIONS FOR NAMES OF TECHNICAL GROUPS MAY BE FOUND IN THE PROJECT SPECIFICATIONS.
3. STRUCTURAL MEMBERS:
   A. STEEL: ABBREVIATIONS AND DESIGNATIONS ARE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S STEEL CONSTRUCTION MANUAL, CURRENT EDITION.
   B. ALUMINUM: ABBREVIATIONS AND DESIGNATIONS ARE IN ACCORDANCE WITH THE ALUMINUM ASSOCIATION'S ALUMINUM DESIGN MANUAL, CURRENT EDITION.
4. ABBREVIATIONS FOR STRUCTURAL DRAWINGS:
   WHEN USED ON THE STRUCTURAL DRAWINGS, THE FOLLOWING ABBREVIATIONS HAVE THE MEANINGS LISTED.

REINFORCEMENT:		OTHER:	
BO	BOTTOM OF	L	ANGLE
EF	EACH FACE	PL	PLATE
I.F.	INSIDE FACE		
O.F.	OUTSIDE FACE		
T.O.	TOP OF		
#	NUMBER (REINFORCING BAR SIZE)		

DEFERRED DESIGN SUBMITTALS

AS DEFINED IN THE BUILDING CODE, DEFERRED DESIGN SUBMITTALS ARE PORTIONS OF THE DESIGN THAT ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION, AND THAT ARE TO BE REVIEWED BY THE REGISTERED DESIGN PROFESSIONAL AND SUBSEQUENTLY SUBMITTED TO THE BUILDING OFFICIAL.

DEFERRED DESIGN SUBMITTALS FOR THIS PROJECT INCLUDE:

1. DIVISION 6 WOOD AND PLASTICS.
   A. 06174 SHOP-FABRICATED WOOD TRUSSES.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED ABE
DRAWN RYW
CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — AZMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

carollo®

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
GENERAL NOTES

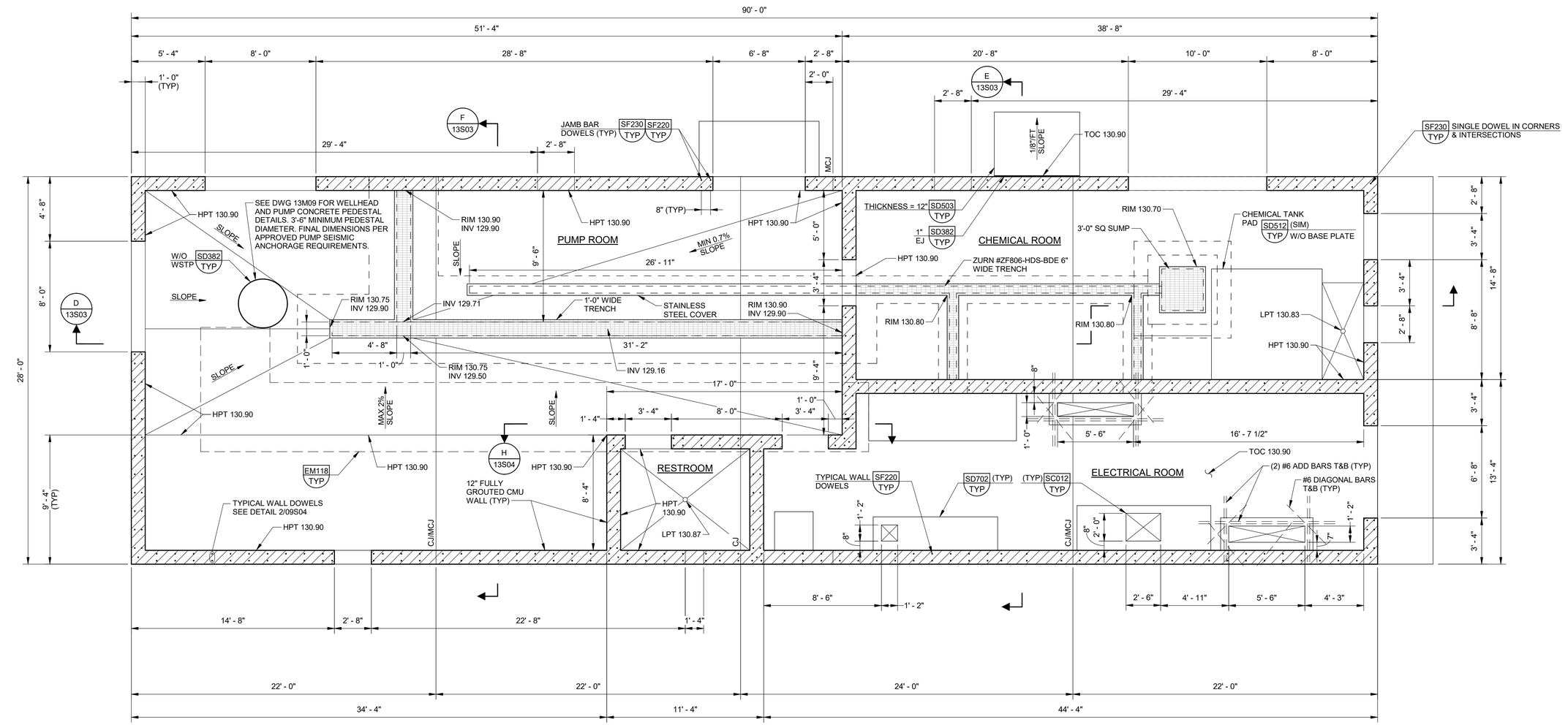
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00GS01
SHEET NO. 40 OF 178

PROJECT NO.
FILE NAME: 11843A1000GS01.dgn

GENERAL NOTES:

1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. SEE DRAWING 13S02 FOR STRUCTURE DESIGN CRITERIA.
3. SEE DRAWING 13S03 FOR STRUCTURE FOUNDATION DESIGN CRITERIA.



A PLAN

SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED ABE
DRAWN RYW
CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER KAMAN EZADDIN No. 53219 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

STRUCTURAL

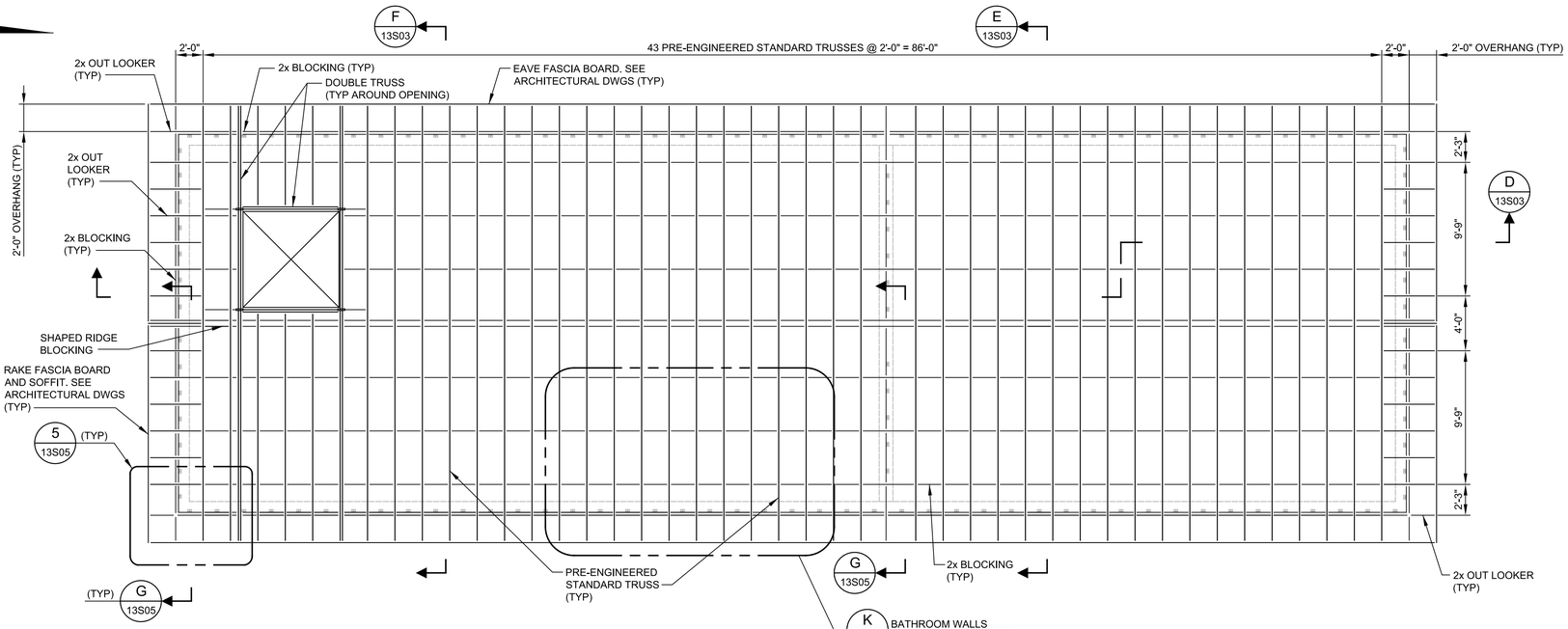
CAMPUS OAKS ASR WELL FOUNDATION PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13S01
SHEET NO. 41 OF 178

PLOT DATE: 12/6/2024 1:10:55 PM

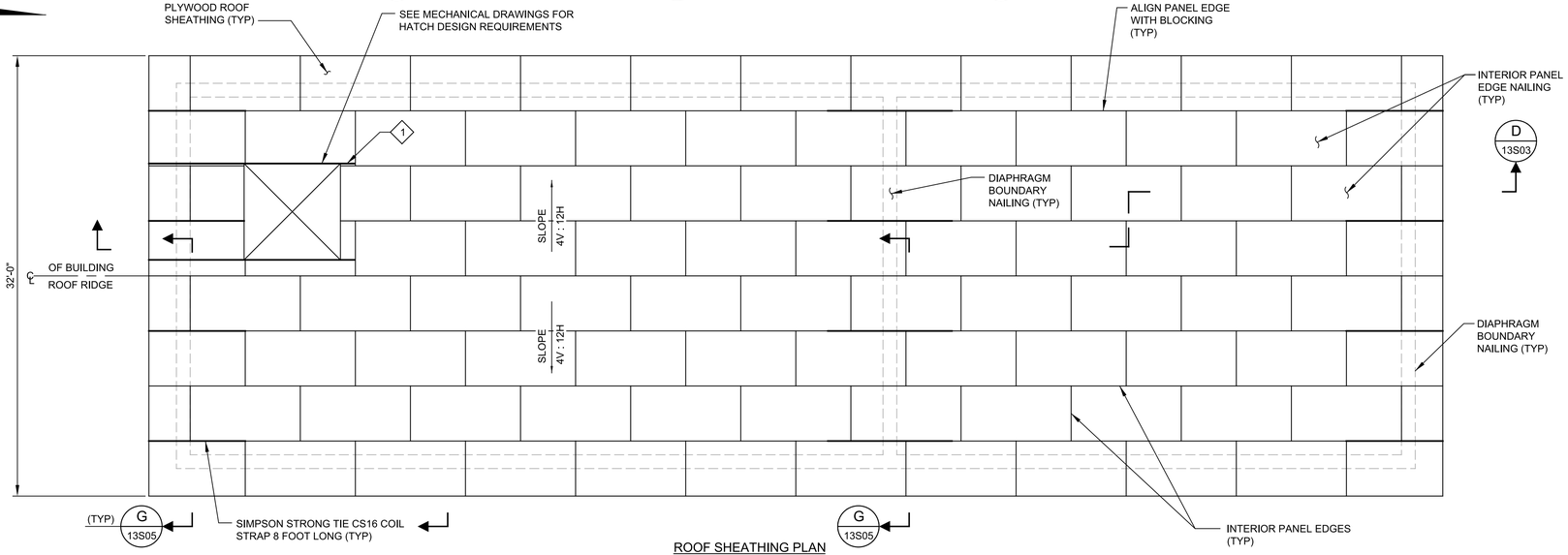
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ROOF FRAMING PLAN

B PLAN

SCALE: 3/16" = 1'-0"
FILE: 11843A1013S100



ROOF SHEATHING PLAN

C PLAN

SCALE: 3/16" = 1'-0"
FILE: 11843A1013S101

GENERAL NOTES:

1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. STRUCTURAL DESIGN CRITERIA.
   1. DESIGN LIVE LOAD:
      A. ROOF: 20 PSF.
      B. GRATING: 100 PSF.
      C. FLOOR: 200 PSF DISTRIBUTED LOAD, 8,000 LBS SINGLE WHEEL POINT LOAD.
   2. DESIGN DEAD LOAD:
      A. ROOF: 25 PSF.
      B. WALL: NORMAL WEIGHT 12" CMU, SOLID GROUTED: 133 PSF.
      C. SLAB AND EQUIPMENT: SELF WEIGHT.
   3. SEISMIC DESIGN CRITERIA:
      A. BASIC SEISMIC FORCE RESISTING SYSTEM: SPECIAL REINFORCED MASONRY SHEAR WALL, R: 5.
      B. ANALYSIS PROCEDURE: ASCE 7-16 § 12.8.1.
      C. IMPORTANCE FACTOR: 1.5.
      D. RISK CATEGORY: IV.
      E. SEISMIC RESPONSE COEFFICIENT, Cs: 0.1335.
   4. WIND DESIGN CRITERIA:
      A. EXPOSURE FACTOR: C.
      B. IMPORTANCE FACTOR, Iw: 1.0.
3. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR PENETRATION SIZE AND LOCATION.
4. ROOF UNDERLAYMENT AND STANDING SEAM ROOFING NOT SHOWN FOR CLARITY.
5. (2) 2x10 TOP PLATE FOR 12x8x16 CMU. TOP PLATES SHALL BE PRESSURE TREATED. STAGGER STITCH NAIL TOP PLATES TOGETHER WITH 10d NAILS @6".
6. PROVIDE SIMPSON STRONG-TIE MSTA 21 STRAP AT EACH SIDE OF TOP PLATE AT SPLICE LOCATIONS.

I ROOF SHEATHING: 15/32" STRUCTURAL 1 C-D SHEATHING:

1. NAILING SCHEDULE:
   A. EAST AND WEST DIAPHRAGM BOUNDARIES: 10d NAILS AT 6" SPACING.
   B. NORTH AND SOUTH DIAPHRAGM BOUNDARIES: 10d NAILS AT 4" SPACING.
   C. INTERIOR PANEL: 10d NAILS AT 6" SPACING.
2. STAGGER NAILS AT ADJOINING PANEL EDGES.

II FRAMING NOTES:

1. PROVIDE 2X FULL DEPTH BLOCKING BETWEEN TRUSS TOP.
2. ALL EDGES OF PLYWOOD SHEATHING SHALL BE BLOCKED WITH FULL DEPTH BLOCKING.

III TRUSS NOTES:

1. ALL ROOF TRUSSES SHALL HAVE DUAL 1.5" NOMINAL WIDTH CHORD AND WEB MEMBERS.
2. TRUSS LOADING SEE SR620 / TYP.
3. ALL TRUSSES SHALL BE LATERALLY BRACED FOR STABILITY PER PRE-ENGINEERED TRUSS MANUFACTURER'S RECOMMENDATIONS DURING TRUSS ERECTION. LATERAL BRACING SHALL NOT BE REMOVED AND SHALL REMAIN PERMANENTLY A PART OF TRUSS SYSTEM.

KEY NOTES:

1. PROVIDE SIMPSON STRONG-TIE CS16 COIL STRAP AT OPENING.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED ABE
DRAWN RYW
CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — AZMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
CAMPUS OAKS ASR WELL
ROOF PLANS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13S02
SHEET NO. 42 OF 178

PROJECT NO.
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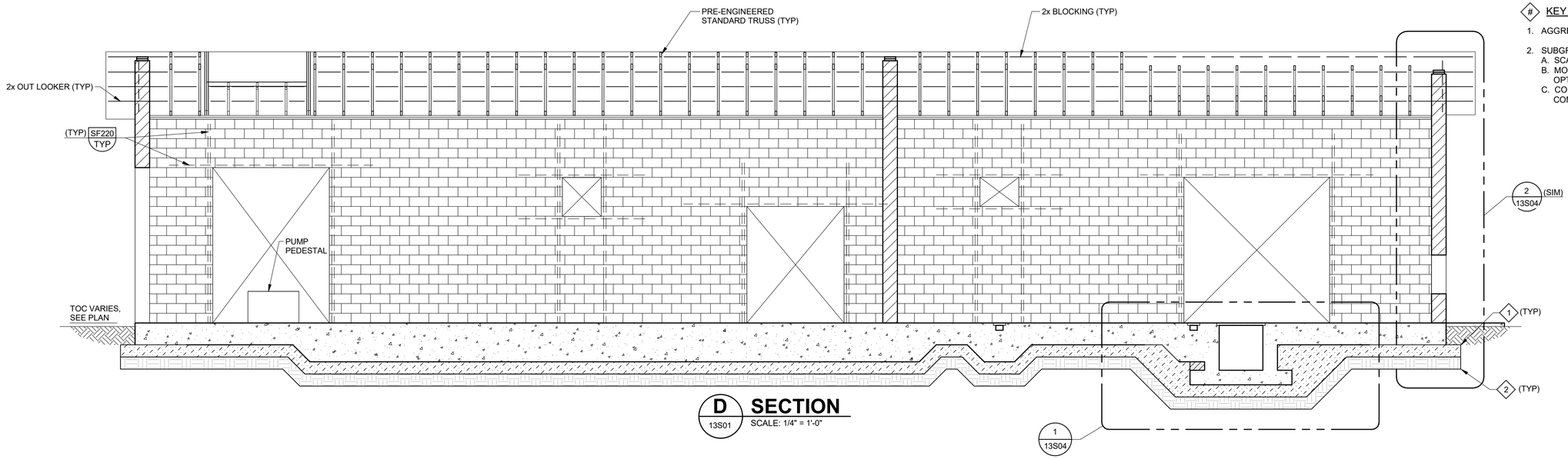
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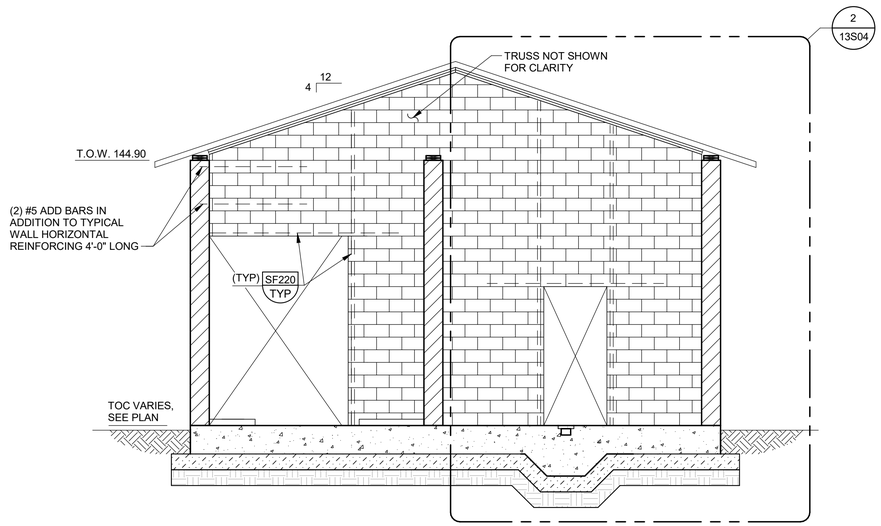
1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. NET ALLOWABLE BEARING PRESSURES:
   A. DEAD LOAD ONLY: 2,500 PSF.
   B. DEAD + LIVE LOAD: 2,500 PSF.
   C. TOTAL (INCLUDING WIND OR SEISMIC): 3,333 PSF.

KEY NOTES:

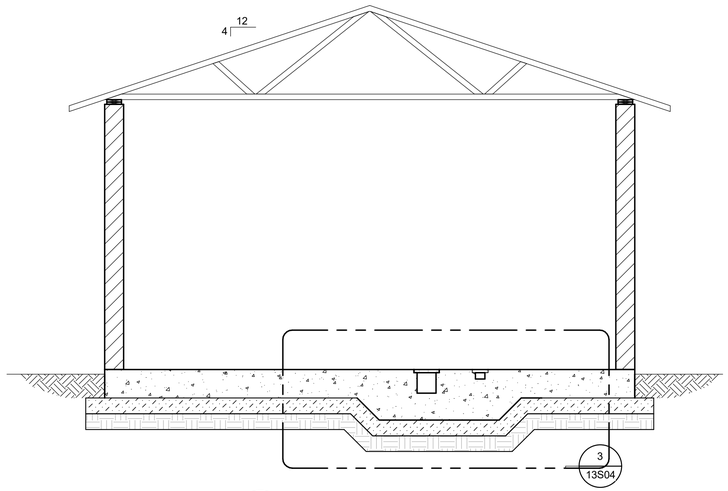
1. AGGREGATE BASE PER SPECIFICATION 02050 AND 02300.
2. SUBGRADE PREP:
   A. SCARIFY TO A DEPTH OF AT LEAST 10 INCHES.
   B. MOISTURE CONDITION SOIL TO AT LEAST 3 PERCENT ABOVE OPTIMUM MOISTURE CONTENT.
   C. COMPACT SUBGRADE TO AT LEAST 90 PERCENT RELATIVE COMPACTION.



D 13S01 SECTION
SCALE: 1/4" = 1'-0"



E 13S01 SECTION
SCALE: 1/4" = 1'-0"



F 13S01 SECTION
SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED ABE
DRAWN RYW
CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — ZAMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

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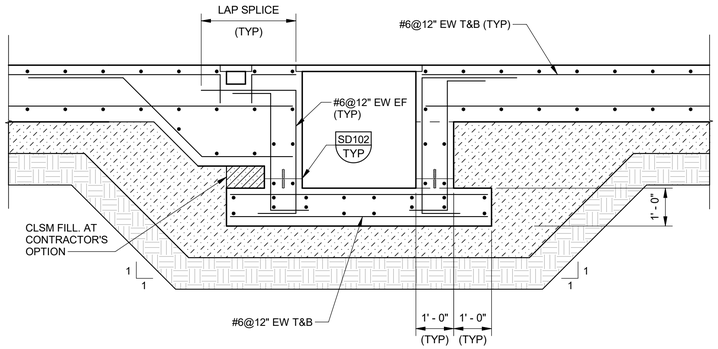
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
CAMPUS OAKS ASR WELL
SECTIONS AND DETAILS 1

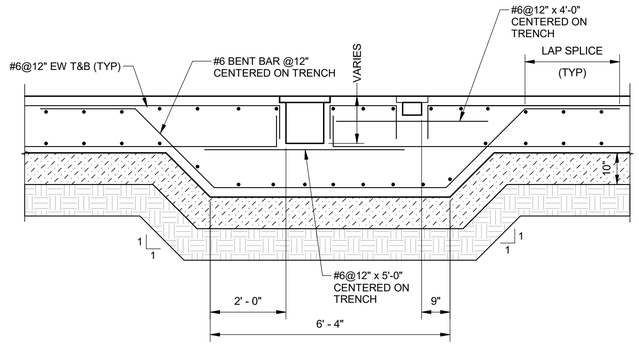
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JOB NO. 11843A.10
DRAWING NO. 13S03
SHEET NO. 43 OF 178

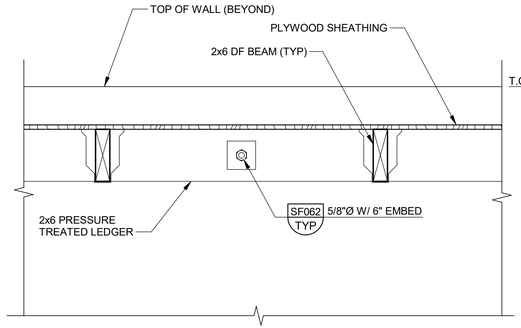
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1 DETAIL (13S03)
SCALE: 1/2" = 1'-0"



3 DETAIL (13S03)
SCALE: 1/2" = 1'-0"



J SECTION (-)
SCALE: 1 1/2" = 1'-0"

GENERAL NOTES:

1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. BATHROOM ROOF LOADING:
   A. LIVE LOAD: 15 PSF
   B. DEAD LOAD: 20 PSF
3. PROVIDE 3/4" BEVEL OR CHAMFER (REFER TO SECTION 03102).
4. SEE KEY NOTES ON DRAWING 13S03 FOR BUILDING FOUNDATION SUBGRADE MATERIALS AND PREPARATION.

2 DETAIL (13S03)
SCALE: 3/8" = 1'-0"

H SECTION (13S01)
SCALE: 3/8" = 1'-0"

RESTROOM CEILING PLAN

K PLAN
SCALE: 1/2" = 1'-0"

REV	DATE	BY	DESCRIPTION
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DRAWN RYW
CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
AZMAN EZADDIN
No. 53219
CIVIL
STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

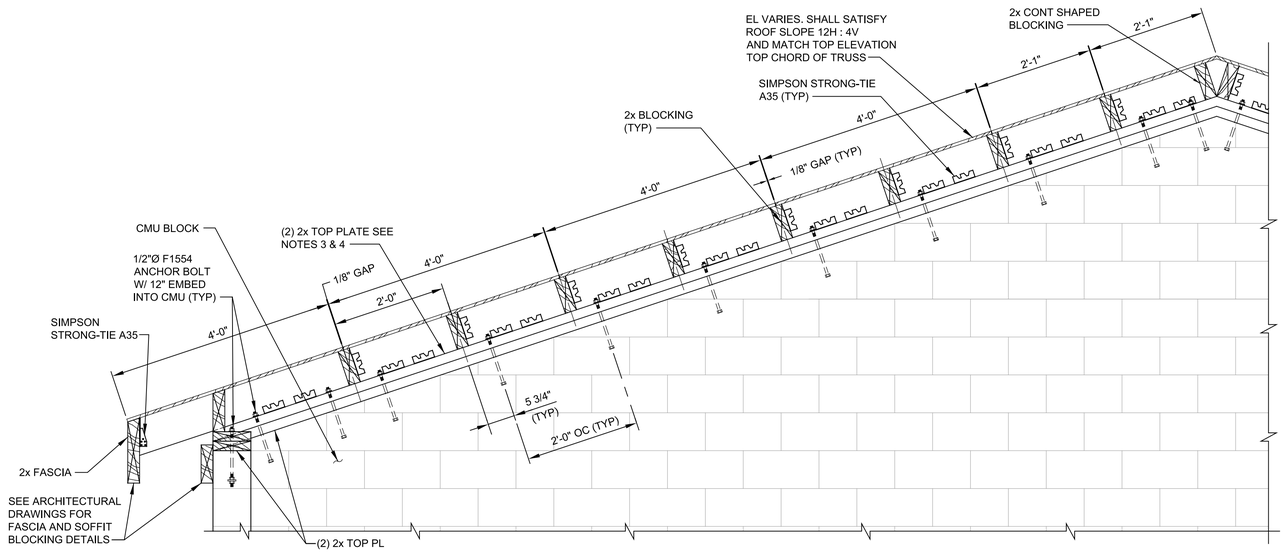
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
CAMPUS OAKS ASR WELL
SECTIONS AND DETAILS 2

VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

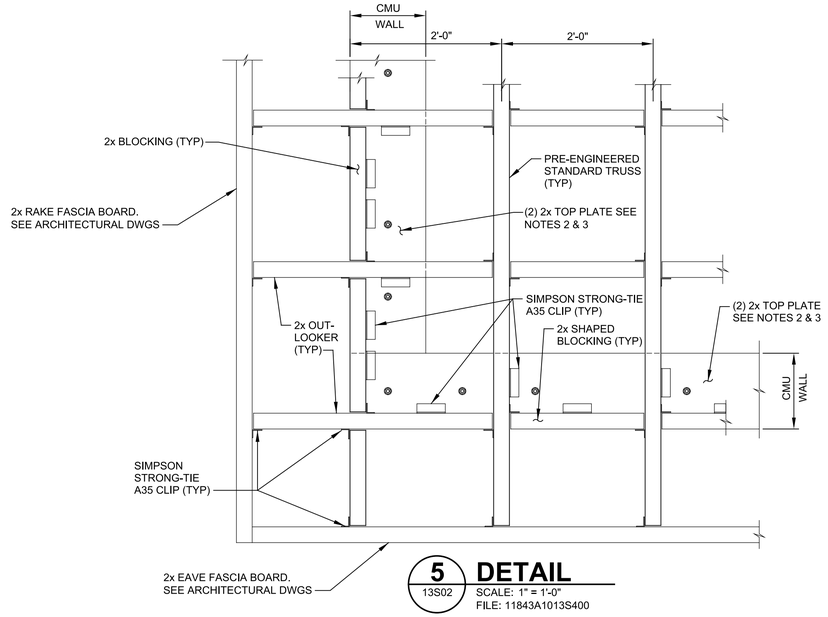
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DRAWING NO. 13S04
SHEET NO. 44 OF 178

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LAST SAVED BY: rwelch



G 13S02 **SECTION**
SCALE: 3/4" = 1'-0"
FILE: 11843A1013S300



5 13S02 **DETAIL**
SCALE: 1" = 1'-0"
FILE: 11843A1013S400

GENERAL NOTES:

1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. (2) 2x10 TOP PLATE FOR 12x8x16 CMU. TOP PLATE SHALL BE PRESSURE TREATED. STAGGER STITCH NAIL TOP PLATES TOGETHER WITH 10d NAILS @6".
3. PROVIDE SIMPSON STRONG-TIE MSTA 21 STRAP AT EACH SIDE OF TOP PLATE AT SPLICE LOCATION.
4. STAGGER SIMPSON STRONG-TIE A35 CLIPS WHEN INSTALLED ON OPPOSITE FACES OF MEMBER.
5. PROVIDE (12) 0.131" x 1 1/2" FASTENERS AT SIMPSON STRONG-TIE A35 CONNECTORS.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER AZMAN EZADDIN No. 53219 CIVIL STATE OF CALIFORNIA

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
CAMPUS OAKS ASR WELL
SECTIONS AND DETAILS 3

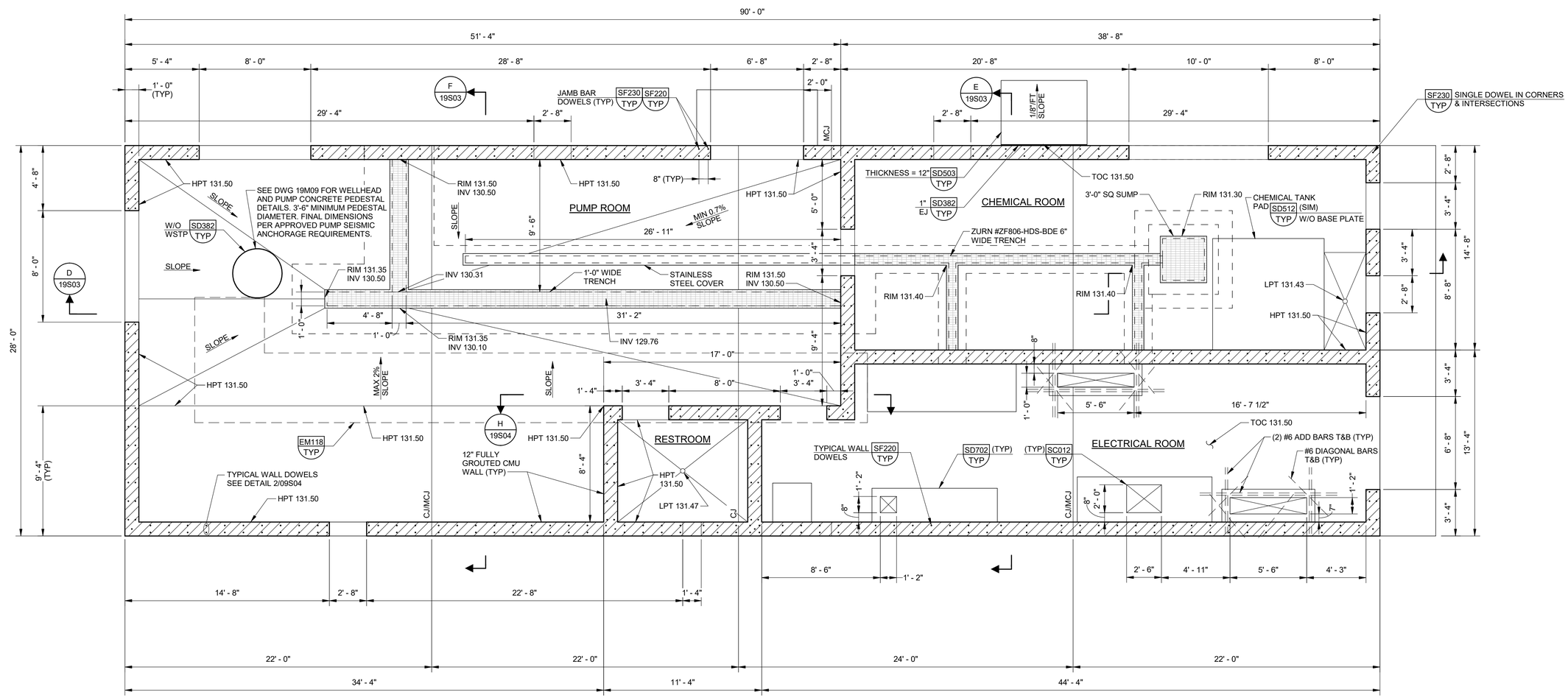
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JOB NO. 11843A.10
DRAWING NO. 13S05
SHEET NO. 45 OF 178

PROJECT NO.
FILE NAME: 11843A1013S005.dgn

GENERAL NOTES:

1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. SEE DRAWING 19S02 FOR STRUCTURE DESIGN CRITERIA.
3. SEE DRAWING 19S03 FOR STRUCTURE FOUNDATION DESIGN CRITERIA.



A PLAN

SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED ABE
DRAWN RYW
CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER RZAMAN EZADDIN No. 53219 CIVIL STATE OF CALIFORNIA

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CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

STRUCTURAL

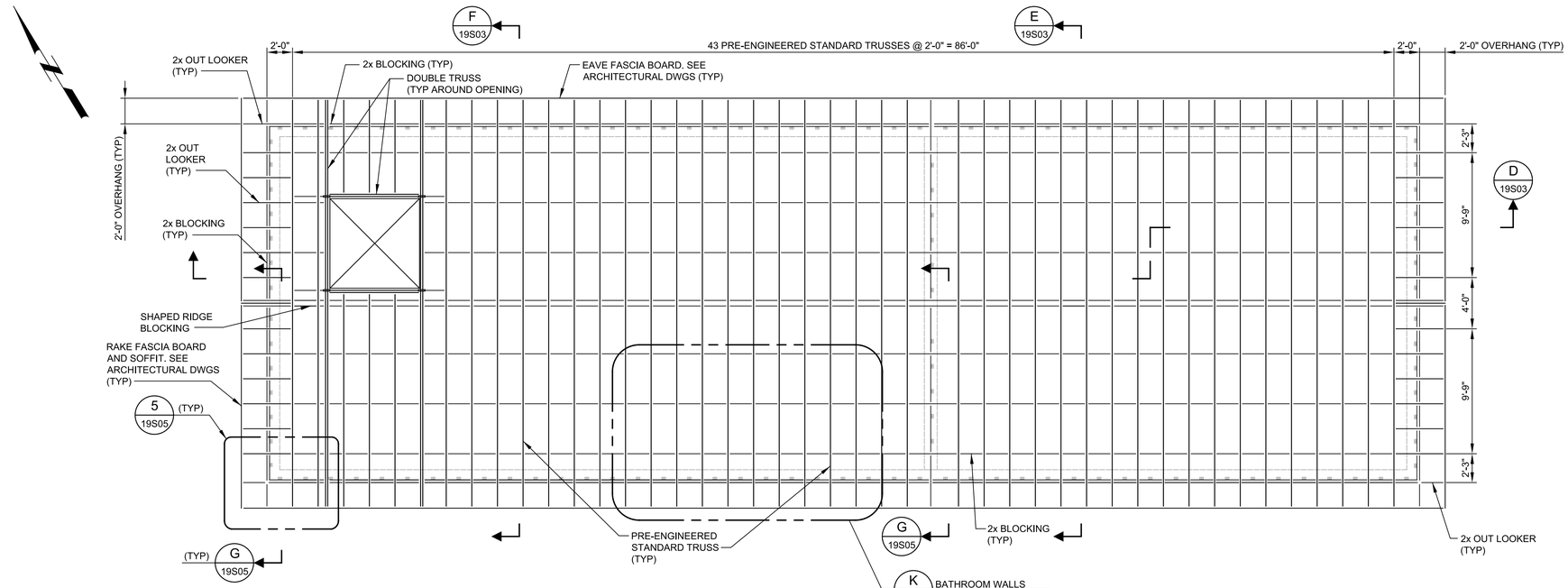
MISTY WOODS ASR WELL FOUNDATION PLAN

VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19S01
SHEET NO. 46 OF 178

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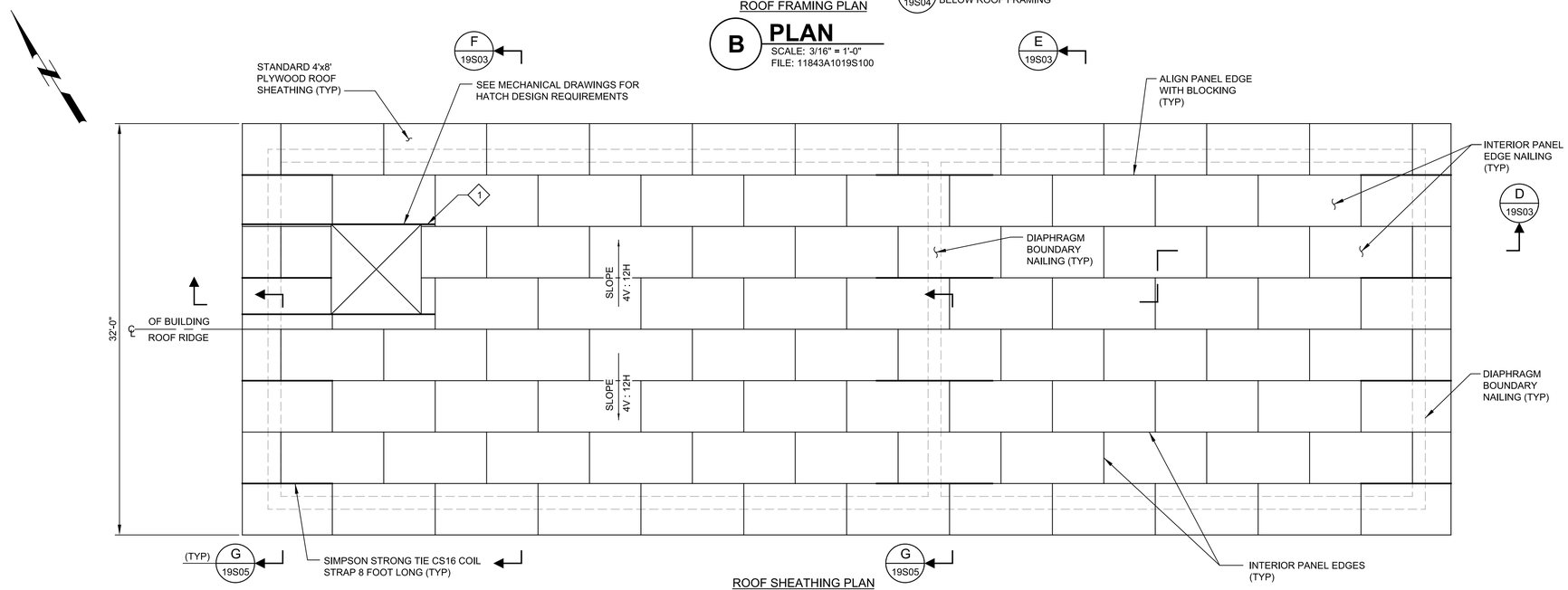
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ROOF FRAMING PLAN

B PLAN

SCALE: 3/16" = 1'-0"
FILE: 11843A1019S100



ROOF SHEATHING PLAN

C PLAN

SCALE: 3/16" = 1'-0"
FILE: 11843A1019S101

GENERAL NOTES:

1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. STRUCTURAL DESIGN CRITERIA.
   1. DESIGN LIVE LOAD:
      A. ROOF: 20 PSF.
      B. GRATING: 100 PSF.
      C. FLOOR: 200 PSF DISTRIBUTED LOAD, 8,000 LBS SINGLE WHEEL POINT LOAD.
   2. DESIGN DEAD LOAD:
      A. ROOF: 25 PSF.
      B. WALL: NORMAL WEIGHT 12" CMU, SOLID GROUTED: 133 PSF.
      C. SLAB AND EQUIPMENT: SELF WEIGHT.
   3. SEISMIC DESIGN CRITERIA:
      A. BASIC SEISMIC FORCE RESISTING SYSTEM: SPECIAL REINFORCED MASONRY SHEAR WALL, R: 5.
      B. ANALYSIS PROCEDURE: ASCE 7-16 § 12.8.1.
      C. IMPORTANCE FACTOR: 1.5.
      D. RISK CATEGORY: IV.
      E. SEISMIC RESPONSE COEFFICIENT, Cs: 0.1335.
   4. WIND DESIGN CRITERIA:
      A. EXPOSURE FACTOR: C.
      B. IMPORTANCE FACTOR, Iw: 1.0.
3. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR PENETRATION SIZE AND LOCATION.
4. ROOF UNDERLAYMENT AND STANDING SEAM ROOFING NOT SHOWN FOR CLARITY.
5. (2) 2x10 TOP PLATE FOR 12x8x16 CMU. TOP PLATES SHALL BE PRESSURE TREATED. STAGGER STITCH NAIL TOP PLATES TOGETHER WITH 10d NAILS @6".
6. PROVIDE SIMPSON STRONG-TIE MSTA 21 STRAP AT EACH SIDE OF TOP PLATE AT SPLICE LOCATIONS.

I ROOF SHEATHING: 15/32" STRUCTURAL 1 C-D SHEATHING:

1. NAILING SCHEDULE:
   A. EAST AND WEST DIAPHRAGM BOUNDARIES: 10d NAILS AT 6" SPACING.
   B. NORTH AND SOUTH DIAPHRAGM BOUNDARIES: 10d NAILS AT 4" SPACING.
   C. INTERIOR PANEL: 10d NAILS AT 6" SPACING.
2. STAGGER NAILS AT ADJOINING PANEL EDGES.

II FRAMING NOTES:

1. PROVIDE 2X FULL DEPTH BLOCKING BETWEEN TRUSS TOP.
2. ALL EDGES OF PLYWOOD SHEATHING SHALL BE BLOCKED WITH FULL DEPTH BLOCKING.

III TRUSS NOTES:

1. ALL ROOF TRUSSES SHALL HAVE DUAL 1.5" NOMINAL WIDTH CHORD AND WEB MEMBERS.
2. TRUSS LOADING SEE SR620 / TYP.
3. ALL TRUSSES SHALL BE LATERALLY BRACED FOR STABILITY PER PRE-ENGINEERED TRUSS MANUFACTURER'S RECOMMENDATIONS DURING TRUSS ERECTION. LATERAL BRACING SHALL NOT BE REMOVED AND SHALL REMAIN PERMANENTLY A PART OF TRUSS SYSTEM.

KEY NOTES:

1. PROVIDE SIMPSON STRONG-TIE CS16 COIL STRAP AT OPENING.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER AZMAN EZADDIN No. 53219 CIVIL STATE OF CALIFORNIA

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CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
MISTY WOODS ASR WELL
ROOF PLANS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19S02
SHEET NO. 47 OF 178

PROJECT NO.
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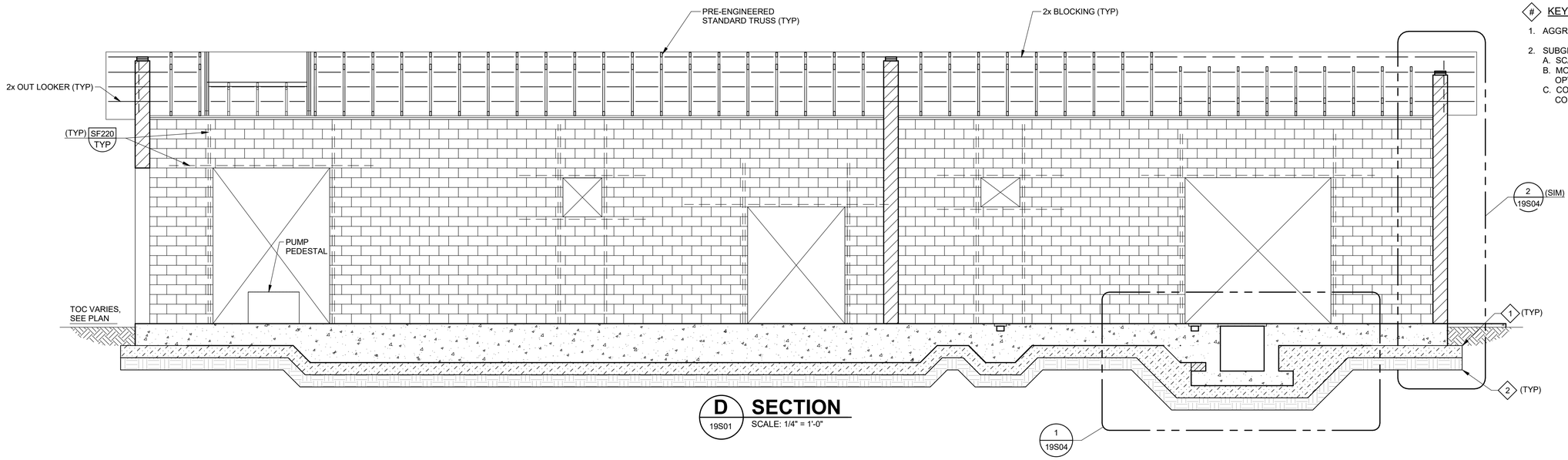
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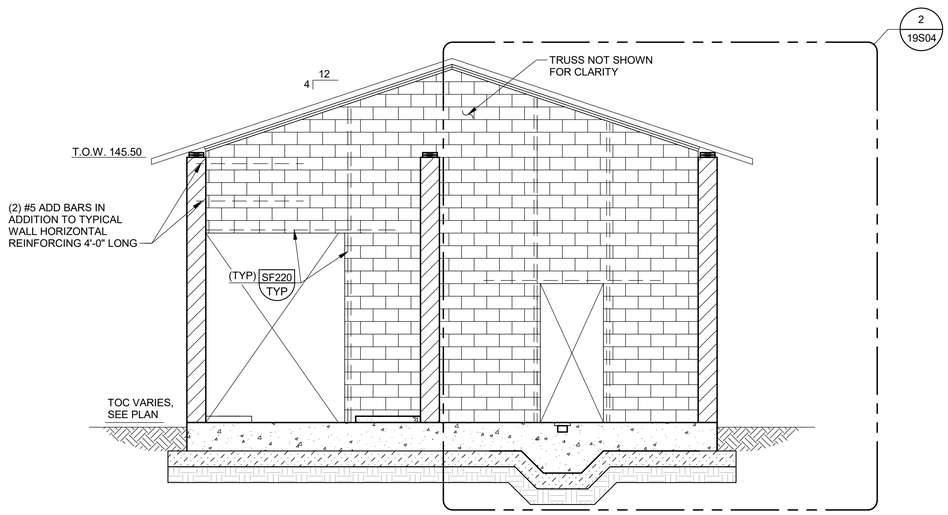
1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. NET ALLOWABLE BEARING PRESSURES:
   A. DEAD LOAD ONLY: 2,500 PSF.
   B. DEAD + LIVE LOAD: 2,500 PSF.
   C. TOTAL (INCLUDING WIND OR SEISMIC): 3,333 PSF.

◇# KEY NOTES:

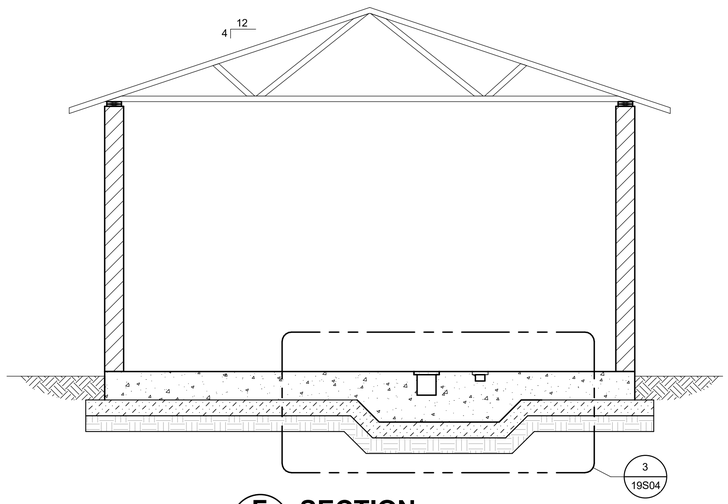
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2. SUBGRADE PREP:
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   B. MOISTURE CONDITION SOIL TO AT LEAST 3 PERCENT ABOVE OPTIMUM MOISTURE CONTENT.
   C. COMPACT SUBGRADE TO AT LEAST 90 PERCENT RELATIVE COMPACTION.



D 19S01 **SECTION**
SCALE: 1/4" = 1'-0"



E 19S01 **SECTION**
SCALE: 1/4" = 1'-0"



F 19S01 **SECTION**
SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
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DESIGNED ABE
DRAWN RYW
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — EZMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

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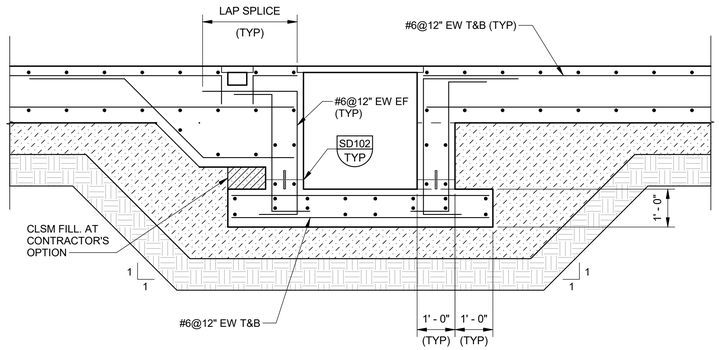
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
MISTY WOODS ASR WELL
SECTIONS AND DETAILS 1

VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

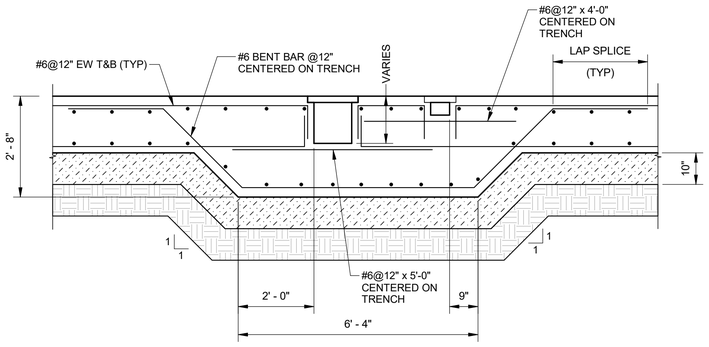
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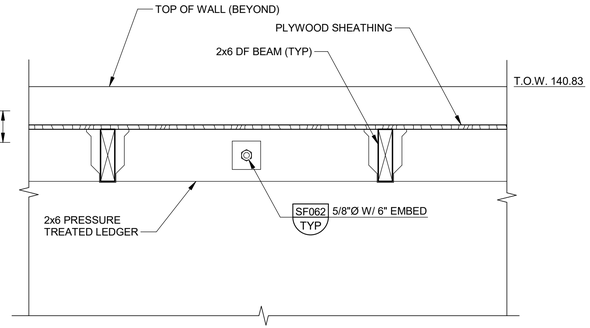
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1 / 19S03 DETAIL
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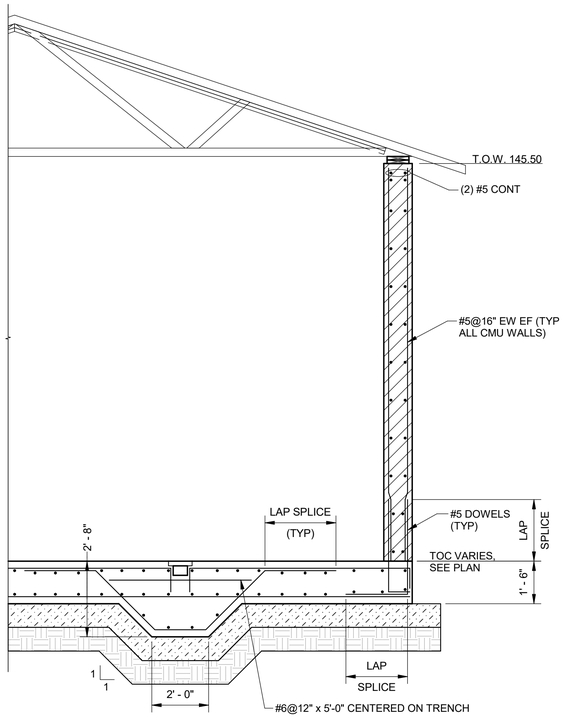
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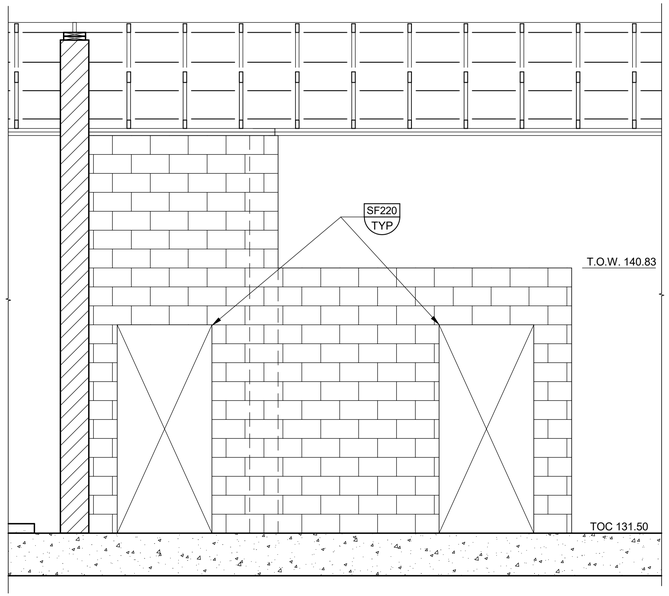
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SCALE: 1 1/2" = 1'-0"

GENERAL NOTES:

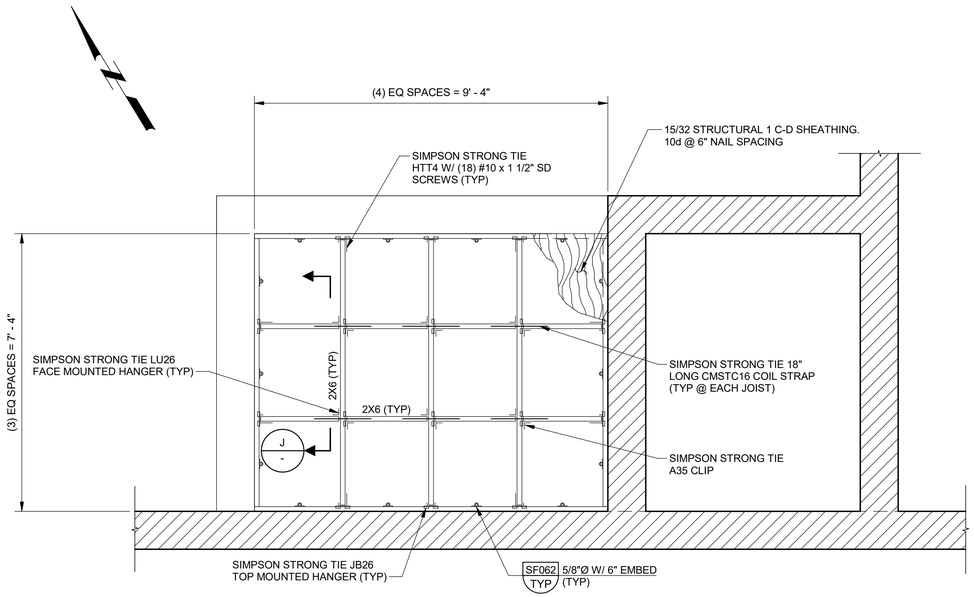
1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. BATHROOM ROOF LOADING:
   A. LIVE LOAD: 15 PSF
   B. DEAD LOAD: 20 PSF
3. PROVIDE 3/4" BEVEL OR CHAMFER (REFER TO SECTION 03102).
4. SEE KEY NOTES ON DRAWING 19S03 FOR BUILDING FOUNDATION SUBGRADE MATERIALS AND PREPARATION.



2 / 19S03 DETAIL
SCALE: 3/8" = 1'-0"



H / 19S01 SECTION
SCALE: 3/8" = 1'-0"



RESTROOM CEILING PLAN

K / - PLAN
SCALE: 1/2" = 1'-0"

REV	DATE	BY	DESCRIPTION
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DRAWN RYW
CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
AZMAN EZADDIN
No. 53219
CIVIL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE
CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
MISTY WOODS ASR WELL
SECTIONS AND DETAILS 2

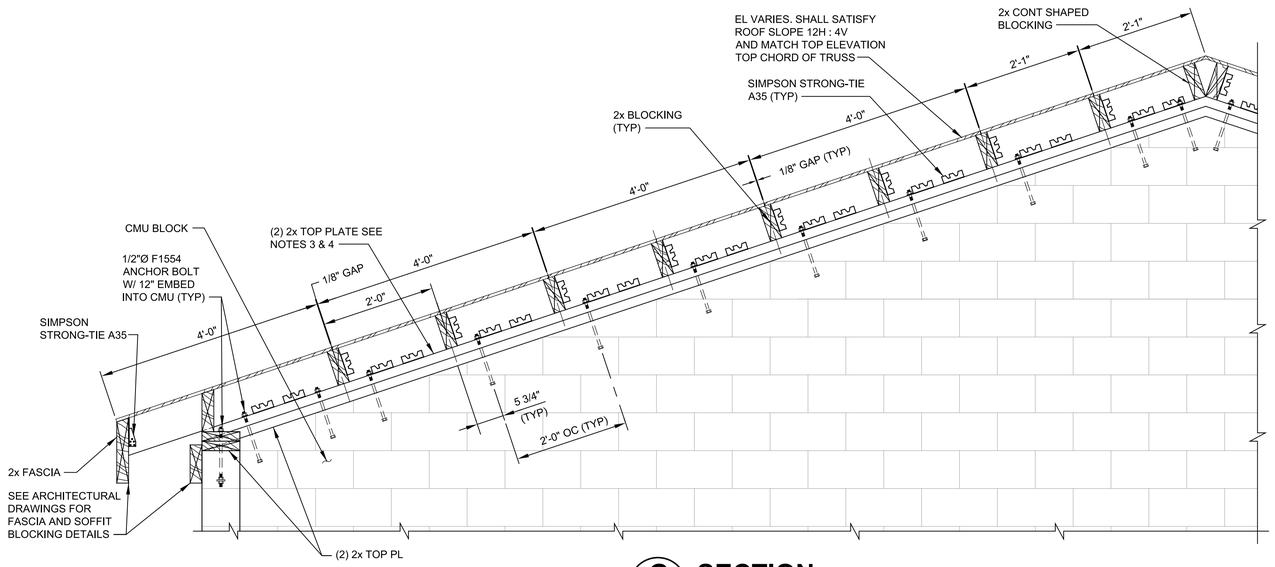
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JOB NO. 11843A.10
DRAWING NO. 19S04
SHEET NO. 49 OF 178

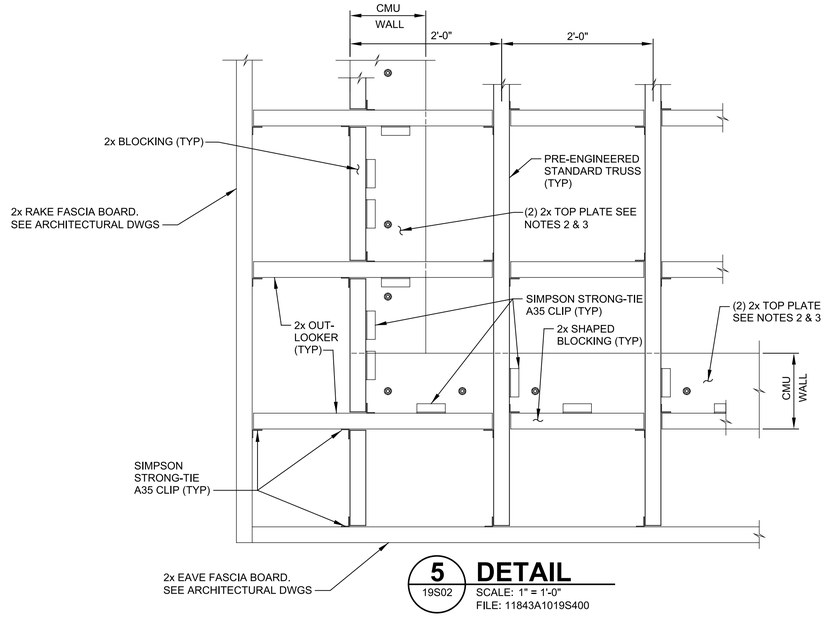
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ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: rwelch



G 19S02 **SECTION**
SCALE: 3/4" = 1'-0"
FILE: 11843A1019S300



5 19S02 **DETAIL**
SCALE: 1" = 1'-0"
FILE: 11843A1019S400

GENERAL NOTES:

1. SEE DRAWING 00GS01 FOR GENERAL STRUCTURAL NOTES.
2. (2) 2x10 TOP PLATE FOR 12x8x16 CMU. TOP PLATE SHALL BE PRESSURE TREATED. STAGGER STITCH NAIL TOP PLATES TOGETHER WITH 10d NAILS @6".
3. PROVIDE SIMPSON STRONG-TIE MSTA 21 STRAP AT EACH SIDE OF TOP PLATE AT SPLICE LOCATION.
4. STAGGER SIMPSON STRONG-TIE A35 CLIPS WHEN INSTALLED ON OPPOSITE FACES OF MEMBER.
5. PROVIDE (12) 0.131" x 1 1/2" FASTENERS AT SIMPSON STRONG-TIE A35 CONNECTORS.

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DESIGNED ABE
DRAWN RYW
CHECKED EQ
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER AZMAN EZADDIN No. 53219 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT
STRUCTURAL
MISTY WOODS ASR WELL
SECTIONS AND DETAILS 3

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JOB NO. 11843A.10
DRAWING NO. 19S05
SHEET NO. 50 OF 178

PROJECT NO.
FILE NAME: 11843A1019S005.dgn

PIPING SYMBOLS

DOUBLE LINE	SINGLE LINE	DESCRIPTION
		WELDED JOINT
		GROOVED END JOINT
		FLANGED JOINT
		HUB & SPIGOT JOINT (RUBBER GASKET)
		PUSH-ON JOINT (RESTRAINED)
		ADAPTER SIDE GROOVED END ADAPTER FLANGE
		FLANGED COUPLING ADAPTER
		FLANGED COUPLING ADAPTER WITH THRUST TIES
		FLEXIBLE COUPLING
		FLEXIBLE COUPLING WITH THRUST TIES
		METAL BELLOWS EXP JOINT
		ELASTOMER BELLOWS EXP JOINT
		FLEXIBLE COUPLING ADAPTER
		DISMANTLING JOINT
		EXPANSION COMPENSATOR
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		LATERAL UP
		LATERAL DOWN
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER (FOT. FOB)
		UNION
		CAP
		ANCHOR
		ELBOW, 90 DEGREE
		CROSS
		TEE
		ELBOW, 45 DEGREE
		ELBOW, 22.5 DEGREE
		ELBOW, 11.25 DEGREE
		LATERAL

SINGLE LINE	DESCRIPTION
	GATE VALVE
K	KNIFE GATE VALVE
	BUTTERFLY VALVE
V	CHARACTERIZED BALL CONTROL VALVE
	BALL VALVE
	GLOBE VALVE
	3-WAY GLOBE TYPE MIXING VALVE
	FOUR WAY VALVE
	PINCH VALVE
	DIAPHRAGM VALVE
	PLUG VALVE
	LUBRICATED PLUG VALVE
	ECCENTRIC PLUG VALVE
	CONCENTRIC PLUG VALVE
	SWING CHECK VALVE
	WAFER CHECK VALVE
	SILENT CHECK VALVE
	BALL CHECK VALVE
	DUAL CHECK VALVE
	CHECK BACKFLOW PREVENTER
	HOSE VALVE, BIB
	MUD VALVE (PLAN VIEW)
	NEEDLE VALVE
	CONE VALVE
	PRESSURE RELIEF PRESSURE-REDUCING REGULATOR
	TELESCOPING VALVE
	THREE WAY VALVE AIR OPERATED
M	THREE WAY VALVE MOTOR OPERATED
S	THREE WAY VALVE SOLENOID OPERATED
	VACUUM VALVE
	BACKPRESSURE REGULATOR SELF-CONTAINED
	BACKPRESSURE REGULATOR W/ EXTERNAL PRESSURE TAP
	PRESSURE-REDUCING REGULATOR: SELF-CONTAINED
	PRESSURE-REDUCING REGULATOR W/EXTERNAL PRESSURE TAP

MECHANICAL SYMBOLS

SINGLE LINE	DESCRIPTION
	AIR OR CHEMICAL DIFFUSER
	QUICK DISCONNECT HIGH PRESSURE AIR OR FLUSHING
	BATCHMETER
	AIR VENT
	BASKET STRAINER
	BLOWER
	CALIBRATION COLUMN
	COMPRESSOR/TURBINE
	COMPRESSOR: RECIPROCATING
	DIAPHRAGM SEAL
	DRAIN
	EJECTOR OR EDUCTOR
M	ELECTRIC MOTOR
	EQUIPMENT DRAIN
	EXPANSION JOINT, FLEXIBLE VIBRATION JOINT
	FAN: EXHAUST/SUPPLY
	FILTER
	FIRE HYDRANT
	FLAME ARRESTER
	FLAME ARRESTER WITH THERMALLY OPERATED VALVE
	FLOOR DRAIN
	FLOW SWITCH
	GAUGE: PRESSURE
	GAUGE: DIFFERENTIAL PRESSURE
	WEIR
	MIXER
	OIL OR MOISTURE TRAP
	PRIMARY LEVEL ELEMENT: BUBBLER
	PRIMARY LEVEL ELEMENT: ELECTRODE
	PRIMARY LEVEL ELEMENT: FLOAT SWITCH
	PRIMARY LEVEL ELEMENT: FLUID
	PRIMARY LEVEL ELEMENT: INVERTED COLUMN

SINGLE LINE	DESCRIPTION
	PRIMARY LEVEL ELEMENT: RADAR
	PRIMARY LEVEL ELEMENT: ULTRASONIC
	PRIMARY FLOW ELEMENT: FLUME
X	PRIMARY FLOW ELEMENT: X = C - CORIOLIS X = M - MAGNETIC X = P - PROPELLER X = PT - PITOT TUBE X = R - ROTAMETER X = T - TURBINE X = TH - THERMAL X = U - ULTRASONIC X = D - DENSITY
	PRIMARY FLOW ELEMENT: ORIFICE PLATE
	PRIMARY FLOW ELEMENT: VENTURI TUBE
	PRIMARY FLOW ELEMENT: WEIR
	PULSATION DAMPENER
	PUMP: CENTRIFUGAL
	PUMP: DIAPHRAGM
	PUMP: METERING
	PUMP: PLUNGER
	PUMP: PERISTALTIC TUBE METERING
	PUMP: PROGRESSIVE CAVITY
	PUMP: RECIPROCATING
	PUMP: ROTARY
	PUMP: SCREW
	PUMP: SUBMERSIBLE
	PUMP: VERTICAL LIFT
	PIPE REDUCER: CONCENTRIC
	PIPE REDUCER: ECCENTRIC (FOT, FOB)
	ROTARY CHEMICAL FEEDER
	RUPTURE DISK
	SAMPLE PORT
	SIGHT GLASS
	SLIDE GATE
	SLUICE GATE
	STRAINER: WYE TYPE

SINGLE LINE	DESCRIPTION
	STRAINER: WYE TYPE WITH BLOWOFF
	THERMOMETER
	VALVE: ANGLE
	VALVE: AIR RELIEF
	PIPE MATERIAL CHANGE
	ROTAMETER

IDENTIFICATION SYMBOLS

CHEMICAL INJECTION POINT — CHEMICAL / DWG NO.

PIPE DESIGNATOR — PIPE SIZE, FLOW STREAM, X" XXX

CONTINUATION TAG — UNIQUE IDENTIFIER, CONTINUATION FROM DWG NO., CONTINUATION TO DWG NO., A, B, C

EQUIPMENT / VALVE TAG — XXX-XX-XXXX

KEY TAG — X

LINE SYMBOLS

PIPE ABOVE OR BELOW GROUND

PIPE UNDERNEATH SLAB OR STRUCTURE

FUTURE

EXISTING

DEMO

PROCESS LINE SYMBOLS

PRIMARY PROCESS FLOW IN PIPE

SECONDARY PROCESS FLOW IN PIPE

PRIMARY PROCESS FLOW IN CHANNEL

SECONDARY PROCESS FLOW IN CHANNEL

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REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
GENERAL MECHANICAL NOTES AND LEGEND

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 00GM01
SHEET NO. 51 OF 178

PROJECT NO.
FILE NAME: 11843A1000GM001.dgn

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ColorTable: gshade.ctb
Model: Layout1
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ABBREVIATIONS

A	@	AT
	AD	AREA DRAIN
	AFF	ABOVE FINISHED FLOOR
B	BFP	BACKFLOW PREVENTER
	BLDG	BUILDING
	BOP	BOTTOM OF PIPE
	BWV	BACKWATER VALVE
C	CL	CENTERLINE
	CA	COMPRESSED AIR
	CI	CAST IRON
	CO	CLEANOUT
	CONT	CONTINUOUS, CONTINUE
	CU FT	CUBIC FEET
	CV	CHECK VALVE
	CW	COLD WATER
D	D	DRAIN
	DCO	DOUBLE CLEANOUT
	DI	DUCTILE IRON
	DN	DOWN
	DWG	DRAWING
E	E	EMERGENCY WATER
	ECO	EXTERIOR CLEANOUT
	EL	ELEVATION
	ES	EMERGENCY SHOWER
	ESEW	EMERGENCY SHOWER / EYEWASH STATION
	ETP	ELECTRONIC TRAP PRIMER
	EWC	ELECTRIC WATER COOLER
	EWH	ELECTRIC WATER HEATER
	EWU	EYE WASH UNIT
F	FAS	FLOW ALARM SWITCH
	FCO	FLOOR CLEANOUT
	FD	FLOOR DRAIN
	FE	FIRE EXTINGUISHER
	FHV&C	FIRE HOSE VALVE AND CABINET
	FS	FLOW SWITCH
	FV	FIRE VALVE
	F/BS	FACE/BODY SPRAY
G	G	GAS
	GPM	GALLONS PER MINUTE
H	HB	HOSE BIBB
	HD	HUB DRAIN
	HEV	HOSE END VALVE
	HP	HANDICAPPED (ADA ACCESSIBLE)
	HW	HOT WATER
	HWR	HOT WATER RETURN
	HWS	HOT WATER SUPPLY
I	INV	INVERT
	IOS	INSTALLED BY OTHER SECTION
	IPS	IRON PIPE SIZE
K	KS	KITCHEN SINK
	KU	KITCHEN UNIT
L	LAB	LABORATORY
	LAV	LAVATORY
	LBV	LOCKABLE BALL VALVE
	LSV	LOCK SHIELD VALVE
M	MAX	MAXIMUM
	MIN	MINIMUM
	MR	MOP RECEPTOR
N	ND	NUMBER
	NPW	NON-POTABLE WATER
O	OED	OPEN END OR OPEN EQUIPMENT DRAIN
P	P	PROTECTED WATER
	PD	PUMP DISCHARGE
	PG	PRESSURE GAUGE
	PH	POST HYDRANT
	PHW	PROTECTED HOT WATER
	PRW	PRESSURE WATER
	PRH	HIGH PRESSURE
	PSI	POUNDS PER SQUARE INCH
	PSL	LOW PRESSURE
	P&T	PRESSURE & TEMPERATURE
	PVC	POLYVINYL CHLORIDE
	PW	POTABLE WATER
R	RD	ROOF DRAIN
	RM	ROOM
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
S	S	SOIL
	SA	SHOCK ABSORBER
	SF	SQUARE FOOT
	SH	SHOWER
	SHT	SHEET
	SP	SPRINKLER
	SQ	SQUARE
	SS	SANITARY SEWER
	SK	SINK
	SSK	SAMPLE
T	T&P	TEMPERATURE & PRESSURE RELIEF
	TD	TANK DRAIN
	THK	THICK(NESS)
	TP	TRAP PRIMER
	TW	TEPID WATER
	TWH	TANKLESS WATER HEATER
	TYP	TYPICAL
U	UNO	UNLESS NOTED OTHERWISE
	UR	URINAL
V	V	VENT
	VAC	VACUUM
	VB	VACUUM BREAKER
	VE	VACUUM EXHAUST
	VTR	VENT THROUGH ROOF
W	W	WASTE
	W/	WITH
	WC	WATER CLOSET
	WCO	WALL CLEANOUT
	WF	WASH FOUNTAIN
	WH	WALL HYDRANT
	WHA	WATER HAMMER ARRESTOR
	WHS	WASH HOSE STATION
	WT	(SANITARY) WASTE
	W&T	WASTE & TRAP
	W&V	WASTE & VENT

PLUMBING LINE SYMBOLS

- NEW COLD WATER (POTABLE)
- EXISTING COLD WATER (POTABLE)
- NEW HOT WATER (POTABLE)
- EXISTING HOT WATER (POTABLE)
- NON-POTABLE WATER
- NEW SANITARY SEWER
- EXISTING SANITARY SEWER
- SOIL OR WATER (DRAINAGE) (D)
- TEMPERED WATER (POTABLE)
- VENT

PLUMBING SYMBOLS

- CO — CLEANOUT
- FLOOR CLEANOUT
- WCO — WALL CLEANOUT
- YCO — DOUBLE YARD CLEANOUT
- FLOOR DRAIN
- HUB DRAIN
- HOSE BIBB OR WALL HYDRANT
- HOSE RACK
- WATER PROOF SLEEVE
- DN OR DROP
  "DN" DENOTES PIPE WHICH PENETRATE THE FLOOR BELOW.
  "DROP" DENOTES PIPES WHICH DO NOT.
- UP OR RISE
  "UP" DENOTES PIPE WHICH PENETRATE THE FLOOR ABOVE.
  "RISE" DENOTES PIPES WHICH DO NOT.

NOTE: THE TERMS "DN" "DROP" "UP" & "RISE" ARE USED TO INDICATE THE VERTICAL DIRECTION IN WHICH A PIPE LINE CONTINUES FROM THE IMAGINARY PLANE OF VIEW. THE TERMS HAVE NO RELEVANCE TO THE DIRECTION OF FLOW WITHIN THE PIPE LINE.

- P-TRAP
- TEE
- TEE UP
- TEE DOWN
- LOCKABLE BALL VALVE
- CHECK VALVE
- GATE VALVE
- COLD BYPASS VALVE
- OR — BALL VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- PLUG VALVE
- FLOW CONTROL
- PRESSURE REGULATOR VALVE
- UNION
- BOTTOM CONNECTION
- TOP CONNECTION
- REDUCED PRESSURE BACKFLOW PREVENTER
- TEMPERATURE GAUGE
- RE-CIRCULATION PUMP

NOTE: THIS IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS. NOT ALL ITEMS SHOWN HERE APPEAR ON THE CONTRACT DRAWINGS.

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CHECKED CG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHAD GREEN — No. 37915 — MECHANICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
PLUMBING
GENERAL PLUMBING NOTES, ABBREVIATIONS, AND SYMBOLS

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DRAWING NO. 00GM02
SHEET NO. 52 OF 178

PROJECT NO.
FILE NAME: 11843A1000GM002.dgn

NOTES

1. SIZES OF EQUIPMENT PADS INDICATED ON THE DRAWINGS ARE APPROXIMATE. EXACT DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR FOR THE EQUIPMENT FURNISHED. ALL FLOOR MOUNTED EQUIPMENT SHALL BE SET ON CONCRETE PADS CONFORMING TO DETAILS SHOWN ON THE TYPICAL STRUCTURAL DRAWINGS.
2. DIELECTRIC COUPLINGS, FLANGES OR UNIONS SHALL BE INSTALLED AT ALL CONNECTIONS OF COPPER PIPE TO OTHER TYPES OF METALLIC PIPING.
3. HVAC PIPING AND DUCTWORK DRAWINGS DO NOT SHOW ALL DRAINS, VENTS, OFFSETS AND FITTINGS ETC. REQUIRED FOR THE COMPLETE SYSTEM. SMALL PIPING IS SHOWN APPROXIMATELY TO SCALE BUT NOT EVERY FITTING AND OFFSET IS SHOWN. THE CONTRACTOR SHALL FURNISH, INSTALL AND TEST ALL HVAC SYSTEMS TO PROVIDE THE COMPLETE SYSTEM.
4. UNLESS OTHERWISE SHOWN ON THE DRAWINGS ALL FLOOR SLAB AND WALL PENETRATIONS SHALL BE AS SHOWN ON THE TYPICAL DETAILS.
5. NOT ALL AND ONLY CERTAIN TYPES OF SUPPORTS ARE SHOWN ON THE HVAC DRAWINGS. UNLESS OTHERWISE DETAILED ON THE DRAWINGS ALL PIPE AND DUCT SUPPORTS SHALL BE DESIGNED, FURNISHED AND INSTALLED BY THE CONTRACTOR AS SPECIFIED.
6. THIS IS A GENERAL LIST OF SYMBOLS. NOT ALL ITEMS SHOWN HERE APPEAR ON CONTRACT DRAWINGS.
7. TYPICAL DETAILS SHALL BE USED FOR ALL PERMANENT WORK EVEN THOUGH THEY ARE NOT CALLED OUT AT ALL LOCATIONS WHERE THEY APPLY.
8. COORDINATE FINAL LOUVER SIZE AND LOCATION WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.
9. PROVIDE TURNING VANES IN ALL ELBOWS. (SHOWN OR NOT)

ABBREVIATIONS

A	@	AT
	AC	AIR CONDITIONING
	AFF	ABOVE FINISHED FLOOR
	AFF	ABOVE FINISHED FLOOR
	AFS	AIR FLOW SWITCH
	AHU	AIR HANDLING UNIT
B	BD	BALANCING DAMPER
	BDD	BACKDRAFT DAMPER
	BLR	BOILER
	BOD	BOTTOM OF DUCT
C	CH	CHILLER
	CO	CARBON MONOXIDE DETECTOR
	CT	COOLING TOWER
	CS	CURRENT SENSOR
	CU	CONDENSING UNIT
D	DG	DOOR GRILLE
	DP	DIFFERENTIAL PRESSURE
E	EA	EXHAUST AIR
	ECU	EVAPORATIVE COOLING UNIT
	EF	EXHAUST FAN
	EUH	ELECTRIC UNIT HEATER
F	FA	FOUL AIR
	FCU	FAN COIL UNIT
	FD	FIRE DAMPER
G	GUH	GAS UNIT HEATER
H	HP	HEAT PUMP
M	MAU	MAKEUP AIR UNIT
	MD	MOTORIZED DAMPER
N	NC	NORMALLY CLOSED
	NO	NORMALLY OPEN
O	OA	OUTSIDE AIR
	OCF	ODOR CONTROL FAN
P	PPU	POSITIVE PRESSURIZATION UNIT
R	RA	RETURN AIR
	RR	RETURN REGISTER OR GRILLE
S	SA	SUPPLY AIR
	SD	SMOKE DAMPER OR SMOKE DETECTOR
	SF	SUPPLY FAN
	SFD	SMOKE & FIRE DAMPER COMBINATION
	SR	SUPPLY REGISTER, GRILLE OR DIFFUSER
V	VAV	VARIABLE AIR VOLUME
W	WUH	WATER UNIT HEATER

DUCTWORK SYMBOLS

FEATURE	SYMBOL
DIRECTION OF FLOW	
DUCT SIZE- FIRST NUMBER IS SIDE SHOWN	12x20
ROUND DUCT	12 DIA OR 12"Ø
DUCT SECTION, POSITIVE PRESS FIRST NUMBER IS TOP	20x12
DUCT SECTION, NEGATIVE PRESS FIRST NUMBER IS TOP	20x12
SIDE MOUNT DEVICE	
ELEVATION CHANGE (R) RISE, (D) DROP	R
ACCESS DOOR	AD / AD
BOTTOM MOUNT DEVICE REGISTER, GRILLE, DIFFUSER OR DUCT TAKEOFF	
FLEXIBLE CONNECTION	
FLEXIBLE DUCT	OR
TURNING VANES	
RECTANGULAR TO RECTANGULAR TRANSITION	20x12 16x8
RECTANGULAR TO ROUND TRANSITION	20x12 16 DIA
POSITIVE PRESSURE DUCT - ELBOW TURNED UP (USE ONE DIAGONAL FOR NEGATIVE PRESSURE)	
POSITIVE PRESSURE DUCT - ELBOW TURNED DOWN (USE ONE DIAGONAL FOR NEGATIVE PRESSURE)	
SMOKE DETECTOR CONFIRM ORIENTATION OF INSTALLATION	
DAMPERS	
BACKDRAFT	
BALANCING	
FIRE W/ ACCESS DOOR	FD
MOTORIZED	M
SMOKE CONFIRM ORIENTATION OF INSTALLATION	
COMBINATION SMOKE AND FIRE CONFIRM ORIENTATION OF INSTALLATION	

EQUIPMENT SYMBOLS

FEATURE	SYMBOL
A/C OR HEAT PUMP COMPRESSOR	
CENTRIFUGAL FAN	
CONTROL PANEL	
COOLING COIL	C / C
CURRENT SENSOR	CS
DIRECT EXPANSION COIL	D / X
DUCT SMOKE DETECTOR	
ELECTRIC HEATER	
FILTER	
AIR FLOW SWITCH	AFS
GAS HEATER	
HUMIDISTAT	H
INLINE/AXIAL FAN	
MOTOR OPERATED VALVE	M
PRESSURE DIFFERENTIAL SWITCH	PD
ROOF/SIDEWALL FAN	
ROOF VENT OR ROOF FAN	
SOLENOID VALVE	S
THERMOSTAT 60" ABOVE FINISH FLOOR	T
UNIT HEATER (HORIZONTAL TYPE)	
UNIT HEATER (VERTICAL TYPE)	

REGISTERS, GRILLES & LOUVERS SYMBOLS

FEATURE	SYMBOL
LOUVER/BRICK VENT - FIXED	
LOUVER/BRICK VENT - OPERABLE	
TRANSFER GRILLE	
TO SPACE	
FROM SPACE	
SUPPLY DIFFUSER OR GRILLE ARROWS INDICATE FLOW DIRECTION	
RETURN DIFFUSER OR GRILLE ARROWS INDICATE FLOW DIRECTION	
EXHAUST DIFFUSER OR GRILLE ARROWS INDICATE FLOW DIRECTION	

LEGEND FOR REGISTERS & GRILLES

TYPE OF REGISTER OR GRILLE (AS DESCRIBED IN SPECIFICATIONS) — BOOT (IF REQ'D) — NECK SIZE

SR-1(B)/12x12

CFM — 400/4

FLOW PATTERN; SIDEWALL-ADJUSTABLE; C-CORNER

	SUPPLY	RETURN	EXHAUST
DUCT UP THRU ROOF OR FLOOR			
DUCT UP			
DUCT DOWN			

REV	DATE	BY	DESCRIPTION

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REGISTERED PROFESSIONAL ENGINEER — CHAD GREEN — No. 37915 — MECHANICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
HVAC
GENERAL HVAC NOTES, ABBREVIATIONS, AND SYMBOLS

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 00GM03
SHEET NO. 53 OF 178

PROJECT NO.
FILE NAME: 11843A1000GM003.dgn

LAST SAVED BY: jshaffer
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User: svcPW

VALVE AND PUMP STATUS FOR VARIOUS MODES OF OPERATION											VALVE ACTUATOR SCHEDULE							
TAG	PROCESS	EQUIPMENT	VALVE TYPE	RECHARGE (COLUMN ONLY)	RECHARGE (COLUMN + ANNULUS)	WASTE	RECOVERY	FILTER BYPASS	MAINTENANCE (OFF)	STORAGE (MAINTENANCE)	VALVE TYPE	SIZE	DUTY	ACTUATOR TYPE	NEMA RATING	VOLTAGE	CONTROLS	COMMENT
CAMPUS OAKS WELL 13																		
WD34-PUIMP-30101		ASR PUMP WITH VFD SPEED CONTROL	N/A	OFF	OFF	ON	ON	ON	OFF	OFF	N/A	N/A	N/A	N/A	N/A	N/A		
WD34-FCVX-30150	AS	MODULATING RECHARGE CONTROL VALVE	BFV	OPEN (MODULATING)	OPEN (MODULATING)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	BFV	8"	MD	MOD	4X	120/1/60		
WD34-MOVX-30130	AS	PUMP COLUMN RECHARGE CONTROL	BFV	OPEN	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	BFV	12"	STD	O/C	4X	120/1/60		
WD34-VALV-30111	AS	MODULATING DOWNHOLE RECHARGE CONTROL VALVE	DHCV	OPEN (MODULATING)	OPEN (MODULATING)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	DHCV	12"	MD	MOD	4X	NEED TO CONFIRM		USE THE BASKI VENDOR CONTROL PANEL
WD34-MOVX-30120	AS	WELL ANNULUS RECHARGE VALVE	BFV	CLOSED	OPEN (MODULATING)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	BFV	12"	STD	O/C	4X	120/1/60		
WD34-MOVX-30160	AR	AQUIFER RECOVERY PRODUCTION	BFV	CLOSED	CLOSED	CLOSED	OPEN	OPEN	CLOSED	CLOSED	BFV	12"	STD	O/C	4X	120/1/60	A	
WD34-MOVX-30140	AF	AQUIFER & WELL FLUSH TO WASTE	BFV	CLOSED	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	BFV	10"	STD	O/C	4X	120/1/60	A	
		TRICKLE FLOW VALVE	BV	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN (MANUAL)	BV	3/4"	N/A	O/C	N/A	N/A		
WD34-PDTX-30106		PRESSURE REDUCING VALVE										10"		MANUAL	N/A	N/A		PRV HAS A VERTICAL INLET, HORIZONTAL OUTLET (ANGLE
WD34-PDIT-30151		STRAINER										10"		MANUAL	N/A	N/A		VERTICAL CONFIGURATION
MISTY WOOD WELL 19																		
WD34-PUIMP-36101		ASR PUMP WITH VFD SPEED CONTROL	N/A	OFF	OFF	ON	ON	ON	OFF	OFF	N/A	N/A	N/A	N/A	N/A	N/A		
WD34-FCVX-36150	AS	MODULATING RECHARGE CONTROL VALVE	BFV	OPEN (MODULATING)	OPEN (MODULATING)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	BFV	8"	MD	MOD	4X	120/1/60		
WD34-MOVX-36130	AS	PUMP COLUMN RECHARGE CONTROL	BFV	OPEN	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	BFV	12"	STD	O/C	4X	120/1/60		
WD34-VALV-36111	AS	MODULATING DOWNHOLE RECHARGE CONTROL VALVE	DHCV	OPEN (MODULATING)	OPEN (MODULATING)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	DHCV	12"	MD	MOD	4X	Need to Confirm		USE THE BASKI VENDOR CONTROL PANEL
WD34-MOVX-36120	AS	WELL ANNULUS RECHARGE VALVE	BFV	CLOSED	OPEN (MODULATING)	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	BFV	12"	STD	O/C	4X	120/1/60		
WD34-MOVX-36160	AR	AQUIFER RECOVERY PRODUCTION	BFV	CLOSED	CLOSED	CLOSED	OPEN	OPEN	CLOSED	CLOSED	BFV	12"	STD	O/C	4X	120/1/60	A	
WD34-MOVX-36140	AF	AQUIFER & WELL FLUSH TO WASTE	BFV	CLOSED	CLOSED	OPEN	CLOSED	CLOSED	CLOSED	CLOSED	BFV	8"	STD	O/C	4X	120/1/60	A	
		TRICKLE FLOW VALVE	BV	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN (MANUAL)	BV	3/4"	N/A	O/C	N/A	N/A		
WD34-PDTX-36106		PRESSURE REDUCING VALVE										10"		MANUAL	N/A	N/A		PRV HAS A VERTICAL INLET, HORIZONTAL OUTLET (ANGLE
WD34-PDIT-36151		STRAINER										10"		MANUAL	N/A	N/A		VERTICAL CONFIGURATION

Abbreviations:

Type:
- BFV = Butterfly Valve
- BV = Ball Valve
- PV = Plug Valve
- SG = Slide Gate

Duty:
- MD = Modulating duty (~1,200 starts/hr)
- STD = Standard service (0-60 starts/hr) duty

Service:
- MOD = Modulating
- O/C - Open/Close

NEMA Rating:
- 4X for general locations
- 6P for vaults and possible submergence
- XP for Class I, Division 1 and Division 2 locations

Controls:
- A = Analog (4-20mA) control, modulating
- D JOD = Position control using discrete jumps
- D O/C - Discrete open/close
- DN = DeviceNet
- DP = Profibus DP
- E-IP = Ethernet/IP

PIPE SCHEDULE ABBREVIATIONS	
ABBREVIATIONS TO DESIGNATE TEST PRESSURE/METHOD PER SPECIFICATION SECTION 15956:	
AM	AIR METHOD
GR	GRAVITY METHOD
HH	HIGH HEAD METHOD
LH	LOW HEAD METHOD
SC	SPECIAL CASE
ABBREVIATIONS TO DESIGNATE PIPE MATERIAL:	
BSP	BLACK STEEL PIPE
CI	CAST IRON
CISP	CAST IRON SOIL PIPE
CL	CLASS, FOLLOWED BY THE DESIGNATION
CPVC	CHLORINATED POLYVINYL CHLORIDE
DIP	DUCTILE IRON PIPING
FRP	FIBERGLASS REINFORCED PIPE
GA	GAUGE, PRECEDED BY THE DESIGNATION
GE	GROOVED END JOINT
GSP	GALVANIZED STEEL PIPE
HDPE	HIGH DENSITY POLYETHYLENE
PVC	POLYVINYL CHLORIDE
SCH	SCHEDULE, FOLLOWED BY THE DESIGNATION
SDR	STANDARD DIMENSION RATIO
SST	STAINLESS STEEL
VCP	VITRIFIED CLAY PIPING
WSP	WELDED STEEL PIPE
ABBREVIATIONS TO DESIGNATE PIPING JOINTS/FITTINGS & COATING/LINING:	
B&SP	BELL & SPIGOT
BFW	BUTT FUSION WELD
BW	BUTT-WRAPPED
BZD	BRAZED
CF	COMPRESSION FITTINGS
CM	CEMENT MORTAR
EPP	EPOXY POLYURETHANE COATING (SEE SECTION 09960)
FL	FLANGED
GE	GROOVED END
MJ	MECHANICAL JOINT
NH	NO HUB
PEE	POLYETHYLENE ENCASEMENT
PO	PUSH ON
RMJ	RESTRAINED MECHANICAL JOINT
RPO	RESTRAINED PUSH ON
SCRD	SCREWED
SFW	SOCKET FUSION WELD
SLD	SOLDERED
SW	SOLVENT WELD
WLD	WELDED

ABBREVIATIONS TO DESIGNATE LINING AND COATINGS:	
CEP	CERAMIC EPOXY
CTP	COAL TAR PITCH
CM	CEMENT MORTAR
EPP	EPOXY AND POLYURETHANE COATING SYSTEM PER SECTION 09960
FBE	FUSION BONDED EPOXY
GL	GLASS LINING
PEN	POLYETHYLENE ENCASED
PTW	POLYETHYLENE TAPE WRAP
WAE	WATERBORNE ACRYLIC EMULSION
ZNC	ZINC

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL
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CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

ASR SYSTEMS

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
PROCESS EQUIPMENT AND PIPE SCHEDULES 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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JOB NO. 11843A.10
DRAWING NO. 00GM04
SHEET NO. 54 OF 178

PROJECT NO.
FILE NAME: 11843A1000GM004.dgn

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Model: Layout1
LAST SAVED BY: DFassbinder

PIPING SCHEDULE											
ABBR.	SERVICE	DIAMETER (INCHES)	MATERIALS[3]	MIN. PRESSURE CL, SPECIAL THICKNESS CL, OR SCHEDULE	JOINTS/ FITTINGS[4]	TEST PRESSURE/ METHOD[2]	LINING[5]	COATING[6]	PIPE SPEC SECTION	COATING COLOR	COMMENTS
AF	AQUIFER FLUSH										
	BURIED	ALL	DIP	150	RPO OR RMJ	200 PSI/HH	CM	2 LAYERS PEE	15244		CLEAR PEE PER CITY CONSTRUCTION STANDARDS
CLS	CHLORINE SOLUTION										
	EXPOSED	ALL	PVC	SCH 80	SW	175 PSI/HH	NONE	NONE	15230	YELLOW	
	BURIED	ALL	PVC	SCH 80	SW		NONE	NONE	15230		
SD	STORM DRAIN										
	BURIED	SMALLER THAN 8"	PVC	SDR 35	B&SP	10 FEET/GR	NONE	NONE	15247		
		8" AND LARGER	RCP	MIN CLASS III	B&SP		NONE	NONE	15229		
DR	DRAIN										
	EXPOSED, INTERIOR	1-1/2" TO 10"	PVC	SCH 80	SW	10 FEET/GR	NONE	NONE	15400		
	CONC. ENCASED	ALL	PVC	SCH 80	SW		NONE	NONE			
FI / FE	FILTER INFLUENT / EFFLUENT										
	ALL	1" AND SMALLER	PVC	SCH 80	SW	150 PSI/HH	NONE	NONE		DARK BLUE	
	EXPOSED	ALL	DIP	150	RMJ OR FL		CM	EPP	15211	DARK BLUE	
	CONC. ENCASED	ALL	DIP	150	RMJ		CM	CTE	15211		
	BURIED	ALL	DIP	150	RPO OR RMJ		CM	2 LAYERS PEE	15211		CLEAR PEE PER CITY CONSTRUCTION STANDARDS
		2" AND SMALLER	PVC	SCH 80	SW		NONE	NONE	15244		
		LARGER THAN 2"	PVC	SCH 80	RPO		NONE	NONE	15244		
FPW	FIRE PROTECTION WATER										
	BURIED	ALL	DIP	150	RPO OR RMJ	200 PSI/HH	CM	2 LAYERS PEE	15244		CLEAR PEE PER CITY CONSTRUCTION STANDARDS
	CONC. ENCASED	ALL	DIP	250	FL OR RMJ		CM	CTE	15244		
IRR	IRRIGATION										
	BURIED	ALL	PVC	SCH 40	SW	200 PSI/HH	NONE	NONE	15230	WHITE	
NAF	SODIUM FLUORIDE										
	EXPOSED	ALL	PVC	SCH 80	SW	150 PSI/HH	NONE	NONE	15230	GREEN	
		1" AND SMALLER	PFA	0.0625 in	CF		NONE	NONE			
	BURIED	ALL	PVC	SCH 80	SW		NONE	NONE	15230		
PW	POTABLE WATER / SOFTENED WATER										
	EXPOSED	3" AND SMALLER	COPPER	ASTM B88	SOLDERED	200 PSI/HH	NONE	NONE			
	EXPOSED	4" AND LARGER	DIP	CL 53	FL OR GE		CM	EPP	15211	LIGHT BLUE	
	CONC. ENCASED	4" AND LARGER	DIP	250	FL OR RMJ		CM	CTE	15244		
	BURIED	ALL	DIP	150	RPO OR RMJ		CM	2 LAYERS PEE	15244		CLEAR PEE PER CITY CONSTRUCTION STANDARDS
		2" AND SMALLER	PVC	SCH 80	SW		NONE	NONE			
		LARGER THAN 2"	PVC	SCH 80	RPO		NONE	NONE			
RW	RECYCLED WATER										
		ALL	PVC	SCH 40	SW	200 PSI/HH	NONE	NONE	15230	PURPLE	
SAM	SAMPLE LINE										
	EXPOSED	ALL	PVC	SCH 80	SW	150 PSI/HH	NONE	NONE	15230	VARIES	
	BURIED	ALL	PVC	SCH 80	SW		NONE	NONE			
SH	SODIUM HYPOCHLORITE										
	EXPOSED	ALL	CPVC	SCH 80	SW	150 PSI/HH	NONE	NONE	15230	YELLOW	
		1/2" AND SMALLER	PFA	0.0625 in	CF		NONE	NONE			
SS	SANITARY SEWER										
	EXPOSED									LIGHT GRAY	
	CONCRETE ENCASED BELOW STRUCTURE	ALL	PVC	SCH 80	SW	10 FEET/GR	NONE	NONE	15247		
	BURIED	ALL	PVC	SDR 26 PER ASTM D3034	PO						
		2" PRESSURIZED	PVC	SCH 80	SW	150 PSI/HH	NONE	NONE	15230		
V	VENT										
	ALL	ALL	PVC	SCH 80	SW	10 FEET/GR	NONE	NONE	15230		

NOTES: [1] ALL PIPING TO BE FULLY RESTRAINED FOR HH TESTS

ABBREVIATIONS:

[2] TEST PRESSURE/METHOD: METHODS ARE SPECIFIED IN SECTION 15956 - PIPING SYSTEMS TESTING.
- AM AIR METHOD
- GR GRAVITY METHOD
- HH HIGH HEAD METHOD
- LH LOW HEAD METHOD
- SC SPECIAL CASE

[3] MATERIALS:
- DIP DUCTILE IRON PIPE
- PVC POLYVINYL CHLORIDE
- RCP REINFORCED CONCRETE PIPE

[4] JOINTS/FITTINGS
- B&SP BELL AND SPIGOT
- CF COMPRESSION FITTING
- FL FLANGE
- GE GROOVED END JOINT
- PO PUSH ON
- RMJ RESTRAINED MECHANICAL JOINT
- RPO RESTRAINED PUSH ON JOINT
- SW SOLVENT WELDED

REV	DATE	BY	DESCRIPTION
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

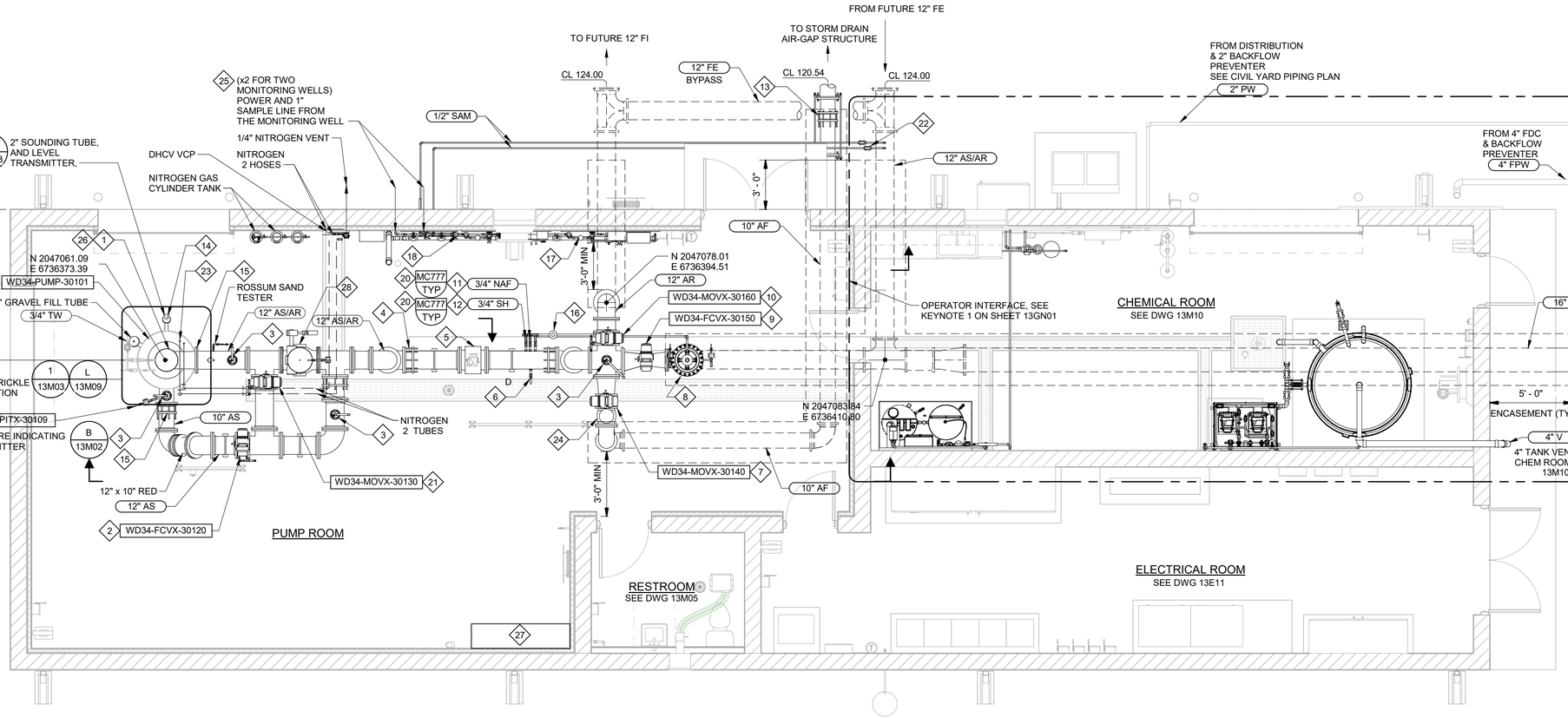
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
PROCESS EQUIPMENT AND PIPE SCHEDULES 2

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 00GM05
SHEET NO. 55 OF 178

PROJECT NO.
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ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: jshaffer



A PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. SEE CIVIL FOR PIPING CONTINUATIONS
2. NOT ALL REQUIRED PIPE SUPPORTS ARE SHOWN.
3. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN, PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.

KEY NOTES:

1. ASR WELL PUMP
2. WELL ANNULUS RECHARGE VALVE
3. 2" AIR RELEASE VALVE (TYP)
4. RESTRAINED FLANGE COUPLING ADAPTER (TYP)
5. BI-DIRECTIONAL FLOW METER
6. 1" SPARE NIPPLE AND FULL-PORT BALL VALVE FROM CENTERLINE SIDE OF PIPE
7. AQUIFER & WELL FLUSH TO WASTE VALVE.
8. PRESSURE REDUCING VALVE.
9. MODULATING RECHARGE CONTROL VALVE.
10. AQUIFER RECOVERY PRODUCTION VALVE.
11. FLUORIDE INJECTION SIM TO TYP DETAIL MC777/TYP. ROUTE TO THE CHEMICAL TRENCH DRAIN.
12. SODIUM HYPOCHLORITE INJECTION SIM TO TYP DETAIL MC777/TYP. ROUTE TO THE CHEMICAL TRENCH DRAIN.
13. RESTRAINED FLEXIBLE COUPLING PER TYP DETAIL MP310/TYP.
14. 1/2" AIR RELEASE VALVE, SEE DETAIL 2/13M03.
15. INSTALL DIELECTRIC ISOLATION FLANGE AT INTERFACE BETWEEN SST WELLHEAD AND DOWNHOLE WELL PIPING FROM DISTRIBUTION PIPING.
16. INSTALL 1" SAMPLE TAP AND BALL VALVE, 1/2" TUBING, POOL/HOUSE WATER FILTER CARTRIDGE WITH CLEAR CASING, AND PREFORMED CHANNEL PIPE SUPPORTS AS REQUIRED FOR VISUAL INSPECTION AND HAND TURBIDITY TESTING. WASTE TO DRAIN. REFER TO P&ID DRAWINGS FOR LAYOUT AND VALVES.
17. FLUORIDE ANALYZER, SEE DETAIL 4/13M03.
18. CHLORINE ANALYZER, SEE DETAIL 4/13M03.
19. NOT USED
20. ROUTE 1/2" CHEMICAL FLUORIDE AND CHLORINE TUBING FROM THE CHEMICAL PUMPS IN THE CHEMICAL ROOM THROUGH THE CHEMICAL TRENCH DRAIN TO THE INJECTION POINTS. 3/4" PIPE SHALL BE USED AT THE INJECTION POINTS.
21. PUMP COLUMN RECHARGE CONTROL VALVE.
22. LOCATE BURIED SAMPLE TAP OUTSIDE OF CONCRETE ENCASEMENT. INSTALL CORPORATION STOP. SEE SITE CIVIL YARD PIPING PLAN.
23. NITROGEN PNEUMATIC HOSES TO DOWNHOLE CONTROL VALVE (SEE WELLHEAD DETAIL).
24. AQUIFER FLUSH SWING CHECK VALVE.
25. ROUTE 1" SAMPLE LINE FROM EXISTING MONITORING WELL TO INSIDE BUILDING. ROUTE SAMPLE LINE TO AVOID OTHER ABOVE PEDESTAL OR WALL MOUNTED ENCLOSURES, AT-GRADE HANDHOLES, AND PIPE SUPPORTS AS REQUIRED.
26. MOUNT CABLE TO MAXIMIZE ACCESS TO WELLHEAD. COORDINATE LOCATION WITH OPERATION STAFF DURING CONSTRUCTION.
27. INSTALL SHELF, COORDINATE LOCATION WITH OPERATIONS STAFF.
28. SWING CHECK VALVE WITH WEIGHTED ARM.

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			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

ASR SYSTEMS

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL BUILDING PLAN

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13M01
SHEET NO. 56 OF 178

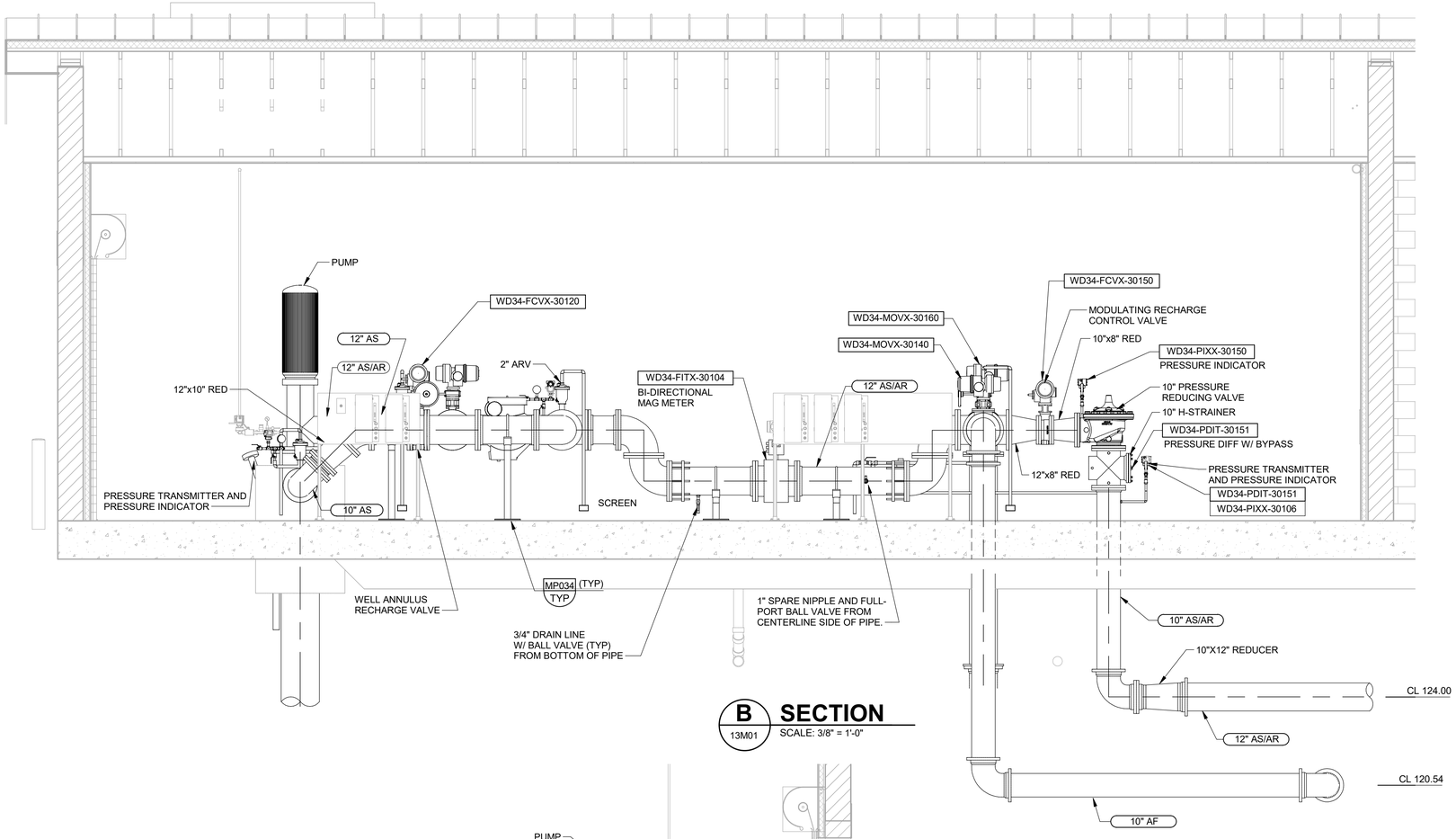
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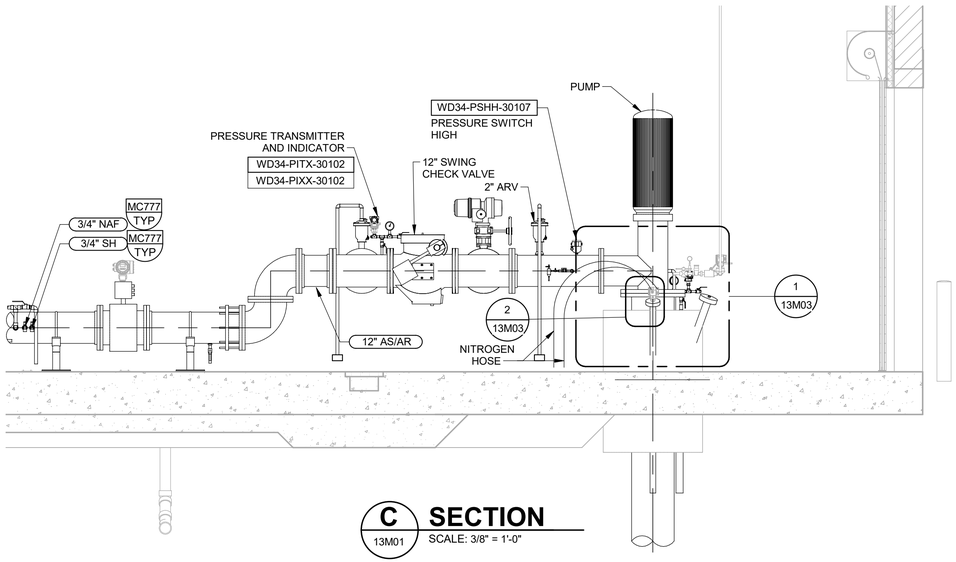
GENERAL NOTES:

1. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN. PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.

2. PROVIDE ISOLATION FLANGE KIT BETWEEN THE WELLHEAD AND ABOVE GROUND PIPING.



B 13M01 **SECTION**
SCALE: 3/8" = 1'-0"



C 13M01 **SECTION**
SCALE: 3/8" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

ASR SYSTEMS

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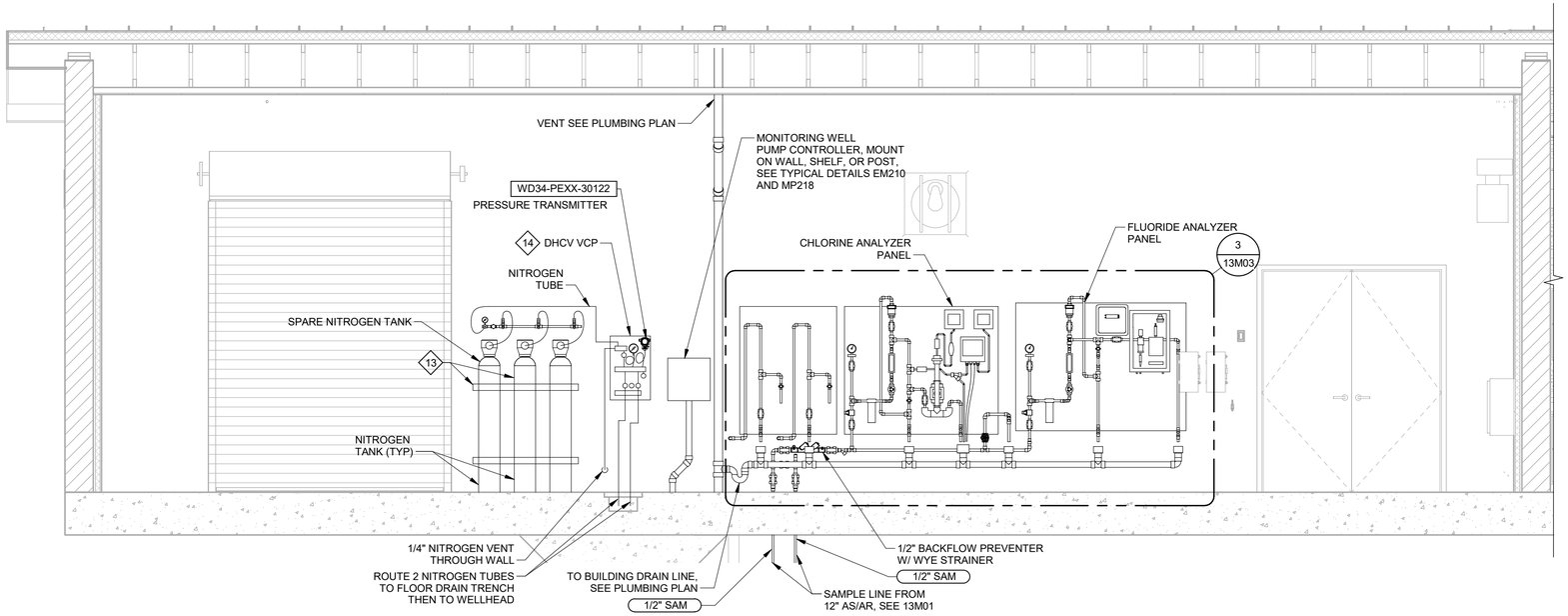
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL
BUILDING SECTIONS AND DETAILS 1

VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

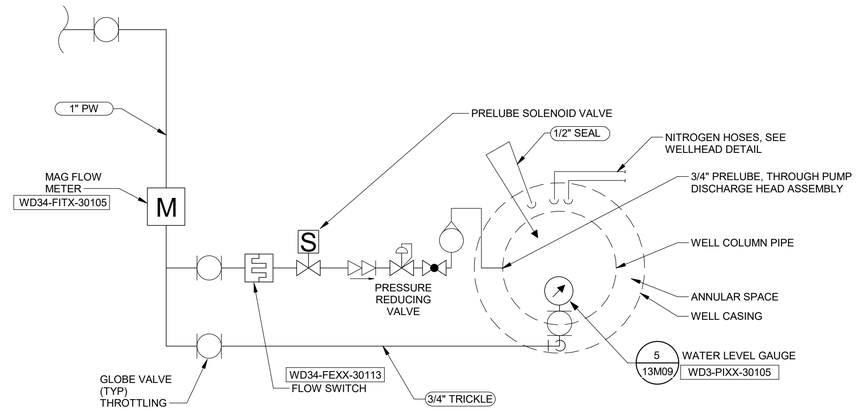
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SHEET NO. 57 OF 178

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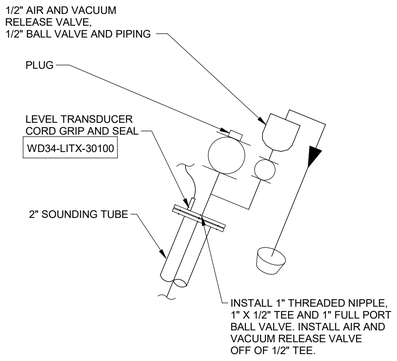
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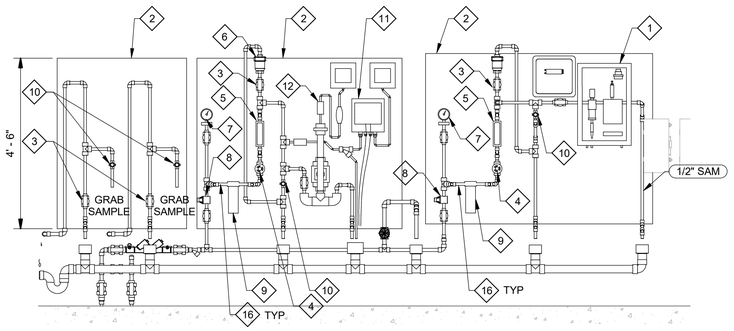
D 13M01 **SECTION**
SCALE: 3/8" = 1'-0"



1 13M01 **DETAIL**
SCALE:NO SCALE



2 13M01 **DETAIL**
SCALE:NO SCALE



3 13M03 **DETAIL**
SCALE: 1/2" = 1'-0"

GENERAL NOTES:

1. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN, PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.

KEY NOTES:

1. FLUORIDE ANALYZER, ROUTE SAMPLE DRAIN AND OVERFLOW TUBES TO DRAIN FUNNEL WITH 2 DIAMETER AIR GAP.
2. 1" PVC BACKER BOARD MOUNTED ON MASONRY WALL WITH 1/2" ANCHORS.
3. BALL VALVE (TYP).
4. DIAPHRAGM VALVE.
5. 0-40 GPM ROTAMETER.
6. AIR RELEASE VALVE.
7. PRESSURE GAUGE.
8. PRESSURE REDUCING VALVE.
9. 10" FILTER, 50 MICRON.
10. NEEDLE VALVE.
11. CHLORINE RESIDUAL ANALYZER, ROUTE SAMPLE DRAIN AND OVERFLOW TUBES TO DRAIN FUNNEL WITH 2 DIAMETER AIR GAP.
12. pH SENSOR.
13. THREE "K" SIZE NITROGEN CYLINDERS, 1 DUTY + 2 SPARE, (228 SCF 9" DIA. x 51" TALL). SECURE TO WALL WITH PREFORMED CHANNEL CHAIN, OR OTHER ACCEPTABLE MEANS.
14. BASKI VENDOR CONTROL PANEL FOR DOWNHOLE FLOW CONTROL VALVE. ONLY A SCHEMATIC LAYOUT IS SHOWN. REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR LAYOUT, PIPE SIZES, AND MATERIALS.
15. NOT USED.
16. INSTALL UNIONS OR VALVES WITH UNION CONNECTIONS AS REQUIRED THROUGHOUT THE SAMPLE AND ANALYZER ASSEMBLIES TO AID IN THE REMOVAL AND RE-ASSEMBLY OF VALVES AND EQUIPMENT FOR MAINTENANCE.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN OB
CHECKED SMB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL
BUILDING SECTIONS AND DETAILS 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13M03
SHEET NO. 58 OF 178

PLOT DATE: 12/13/2024 2:29:28 PM
FILE NAME: R:\d1341485\11843A1013M800.rvt

WATER HEATER SCHEDULE									
EQUIPMENT TAG	**AREA SERVED**	**FLOW CAPACITY (GPM)**	**TEMP. RISE (°F)**	**ELEMENT (kW)**	**MCA (Amps)**	**VOLTAGE**	**PHASE**	**BASIS OF DESIGN**	**NOTES**
WD05-HXGR-30002	RESTROOM	.3	56	4.1	20	208	1	EEMAX EX4208T	-
WD37-HXGR-30401	CHEMICAL ROOM	23	21	72	87	480	3	HAWS 9327	1

NOTES:

1 PROVIDE NEMA TYPE 4X CONTROL PANEL.

PLUMBING ROUGH IN SCHEDULE					
TAG NO.	PW (IN.)	HW (IN.)	D/SS (IN.)	VENT (IN.)	FIXTURE DESCRIPTION
WC	1-1/4"	N/A	4"	3"	WATER CLOSET (ADA ACCESSIBLE)
LAV	1/2"	1/2"	1-1/4"	1-1/2"	LAVATORY (ADA ACCESSIBLE)
HXGR	1-1/4"	N/A	N/A	N/A	TANKLESS WATER HEATER (HB&ESEW)
HXGR	3/4"	N/A	N/A	N/A	TANKLESS WATER HEATER (SINK)

WATER HAMMER ARRESTOR SCHEDULE		
SMITH MODEL *	PDI SYMBOL **	FIXTURE UNIT RATING
5005	A	1-11
5010	B	12-32
5020	C	33-60
5030	D	61-113
5040	E	114-154
5050	F	155-330

* SMITH OR EQUAL
** PLUMBING DRAINAGE INSTITUTE
"STANDARD PDI WH-201"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL
			NOT FOR CONSTRUCTION

DESIGNED WJS
DRAWN KHB
CHECKED CG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHAD GREEN
No. 37915
MECHANICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

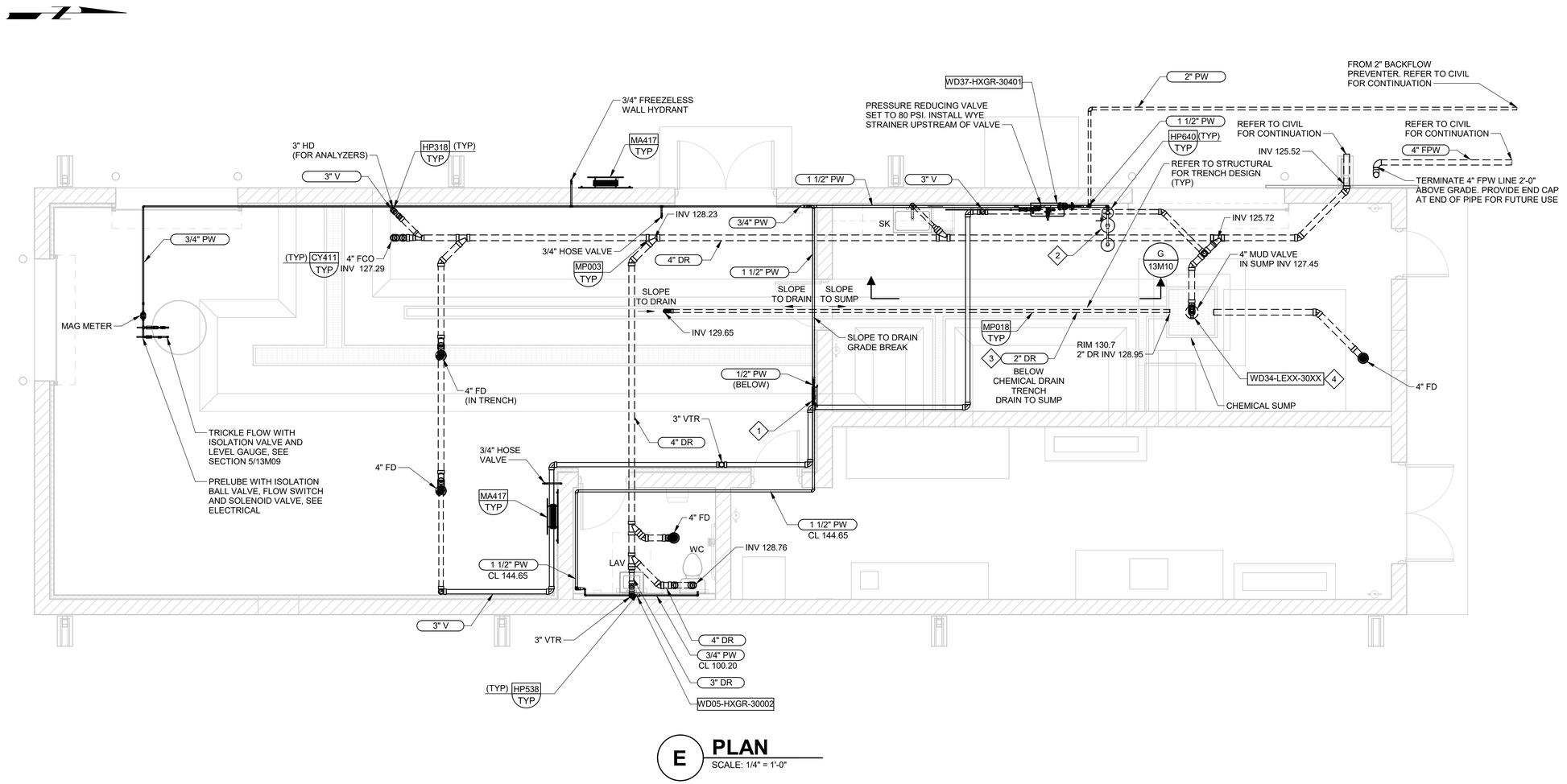
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL
PLUMBING SCHEDULES

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13M04
SHEET NO. 59 OF 178

PROJECT NO.
FILE NAME: 11843A1013M004.dgn

Plot Date: 13-DEC-2024 6:07:59 AM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kbequette



E PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. PIPING SHALL BE FIELD ROUTED TO AVOID EQUIPMENT, PROCESS PIPING, AND OTHER ITEMS AS NECESSARY.
2. SLOPE ALL DRAIN LINES 2-1/2'' AND BELOW AT A MINIMUM OF 1/4'' PER FOOT IN THE DIRECTION OF FLOW.
3. SLOPE ALL DRAIN LINES 3'' AND ABOVE AT A MINIMUM OF 1/8'' PER FOOT IN THE DIRECTION OF FLOW.
4. ALL PIPING SHALL BE CONSTRUCTED FROM MATERIALS DEFINED IN SPECIFICATION 15052.
5. ALL DRAINS CONNECTED TO THE SANITARY SEWER SYSTEM TO CONTAIN P-TRAPS PER DETAILS HP220/TYP AND MA201/TYP.
6. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN, PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.
7. REFER TO STRUCTURAL AND MECHANICAL FOR TRENCH DETAILS, SLOPING, AND PIPING. TRENCHES SHOWN ON THIS SHEET FRO REFERENCE ONLY.

KEY NOTES:

1. SURFACE MOUNTED MECHANICAL TRAP PRIMER. PRIMER TO SERVE ALL DRAINS WITH P-TRAPS.
2. MAINTAIN 32'' CLEARANCE AROUND EMERGENCY SHOWERHEAD.
3. MINIMUM 1.5% SLOPE BACK TO CHEMICAL SUMP WITHIN DEEPENED SLAB SECTION. REFER TO STRUCTURAL NOTES FOR MINIMUM CLEARANCE AND OTHER REQUIREMENTS.
4. LEVEL SWITCH IN CHEMICAL SUMP.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED WJS
DRAWN KHB
CHECKED CAG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHAD GREEN No. 37915 MECHANICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL
PLUMBING PLAN

VERIFY SCALES
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0 1"
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JOB NO. 11843A.10
DRAWING NO. 13M05
SHEET NO. 60 OF 178

PLOT DATE: 12/13/2024 9:30:38 AM

FILE NAME: R:\d1341489\11843A10013P800.rvt

Plot Date: 13-DEC-2024 6:08:28 AM
User: svcPW
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1
LAST SAVED BY: jshaffer

AIR CONDITIONING / HEAT PUMP SCHEDULE

EQUIPMENT TAG	AREA SERVED	AIRFLOW (CFM)	ESP (IN. W.C.)	COOLING DATA				MECHANICAL HEATING DATA			FILTER DATA		ELECTRICAL DATA			BASIS OF DESIGN	NOTES
				OA DB/WB (°F)	EAT DB/WB (°F)	LAT DB/WB (°F)	TOTAL / SENSIBLE CAPACITY (MBH)	EAT DB/WB (°F)	LAT DB/WB (°F)	TOTAL CAPACITY (MBH)	EFFICIENCY	THICKNESS (IN.)	VOLTAGE	PHASE	MCA (AMPS)		
WD37-HVAC-30101	ELECTRICAL ROOM	-	-	105	-	-	160	-	-	130	-	-	460	3	55.1	DAIKIN RXYQ198XATJA	4
WD37-HVAC-30102	ELECTRICAL ROOM	1,165	-	105	90/67	PER MFR	36/28	55	PER MFR	40	MERV 13	1	208	1	1.5	DAIKIN FXFQ36TVJU	1, 2, 3, 4
WD37-HVAC-30103	ELECTRICAL ROOM	1,218	-	105	90/67	PER MFR	48/34	55	PER MFR	54	MERV 13	1	208	1	1.8	DAIKIN FXFQ48TVJU	1, 2, 3, 4
WD37-HVAC-30104	ELECTRICAL ROOM	1,165	-	105	90/67	PER MFR	36/28	55	PER MFR	40	MERV 13	1	208	1	1.5	DAIKIN FXFQ36TVJU	1, 2, 3, 4
WD37-HVAC-30105	ELECTRICAL ROOM	1,218	-	105	90/67	PER MFR	48/34	55	PER MFR	54	MERV 13	1	208	1	1.8	DAIKIN FXFQ48TVJU	1, 2, 3, 4

NOTES:

1 THERMOSTAT PROVIDED BY MANUFACTURER.
2 CONTROL SYSTEM SPECIFIED IN SECTION 15936- INSTRUMENTATION AND CONTROL DEVICES FOR HVAC.
3 PROVIDE INTERNAL CONDENSATE LIFT PUMP ACCESSORY.
4 PROVIDE CONDENSING UNIT SIZED PER VRF MANUFACTURER TO PROVIDE HEATING AND COOLING REQUIREMENTS AS INDICATED FOR ASSOCIATED FAN COIL UNITS

FAN SCHEDULE

EQUIPMENT TAG	AREA SERVED	FAN TYPE	AIR FLOW (CFM)	ESP (IN. W.C.)	FAN RPM	NOISE (SONES)	MOTOR				DRIVE TYPE	BASIS OF DESIGN	NOTES
							HP	RPM	V/PH/HZ	ENCLOSURE			
WD05-FANx-30303	RESTROOM	TYPE 5	140	0.7	1050	4.5	0.128 (kW)	1050	115/60/1	ODP	DIRECT	GREENHECK SP-B150	5
WD37-FANx-30301	PUMP ROOM	TYPE 4	700	0.35	1160	12.2	1/4	1160	460/60/3	TEFC	DIRECT	GREENHECK AER-E20C-603-B3	1, 2, 3, 4, 6, 7
WD37-FANx-30302	CHEMICAL ROOM	TYPE 4	700	0.35	1160	12.2	1/4	1160	460/60/3	TEFC	DIRECT	GREENHECK AER-E20C-603-B3	1, 2, 3, 6, 7

NOTES:

1 PROVIDE BIRD SCREEN.
2 PROVIDE BACKDRAFT DAMPER BDD-3, COUNTERBALANCED FOR MINIMUM PRESSURE LOSS.
3 PROVIDE DISCONNECT SWITCH AT FAN, NEMA TYPE 4X.
4 PROVIDE THERMOSTAT AS SPECIFIED IN SECTION 15936.
5 FAN SHALL BE INTERLOCKED WITH LIGHT SWITCH.
6 PROVIDE HI-PRO POLYESTER COATING.
7 PROVIDE ACOUSTICAL LOUVER L-3 AS SPECIFIED IN SECTION 08910.

ELECTRIC UNIT HEATER SCHEDULE

EQUIPMENT TAG	AREA SERVED	HEATING CAPACITY (kW)	AIRFLOW (CFM)	MCA (Amps)	VOLTAGE	PHASE	BASIS OF DESIGN	NOTES
WD37-HEAT-30201	PUMP ROOM	3	700	5	480	3	TRIAD 234-U11N-0030U	1, 2, 3, 4
WD37-HEAT-30202	PUMP ROOM	3	700	5	480	3	TRIAD 234-U11N-0030U	1, 2, 3, 4
WD37-HEAT-30203	CHEMICAL ROOM	5	700	8	480	3	TRIAD 234-U11N-0050U	1, 2, 3, 4
WD37-HEAT-30204	ELECTRICAL ROOM	3	700	5	480	3	TRIAD 234-U11N-0030U	1, 2, 3, 4

NOTES:

1 THERMOSTAT PROVIDED BY HEATER MANUFACTURER. THERMOSTAT SHALL BE LOCKED OUT AND NOT ALLOW HEATING ABOVE 55 DEGREES FAHRENHEIT.
2 WALL MOUNTED.
3 SIDE AIR DISCHARGE.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL
			NOT FOR CONSTRUCTION

DESIGNED WJS
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CHECKED CG
DATE DECEMBER 2024

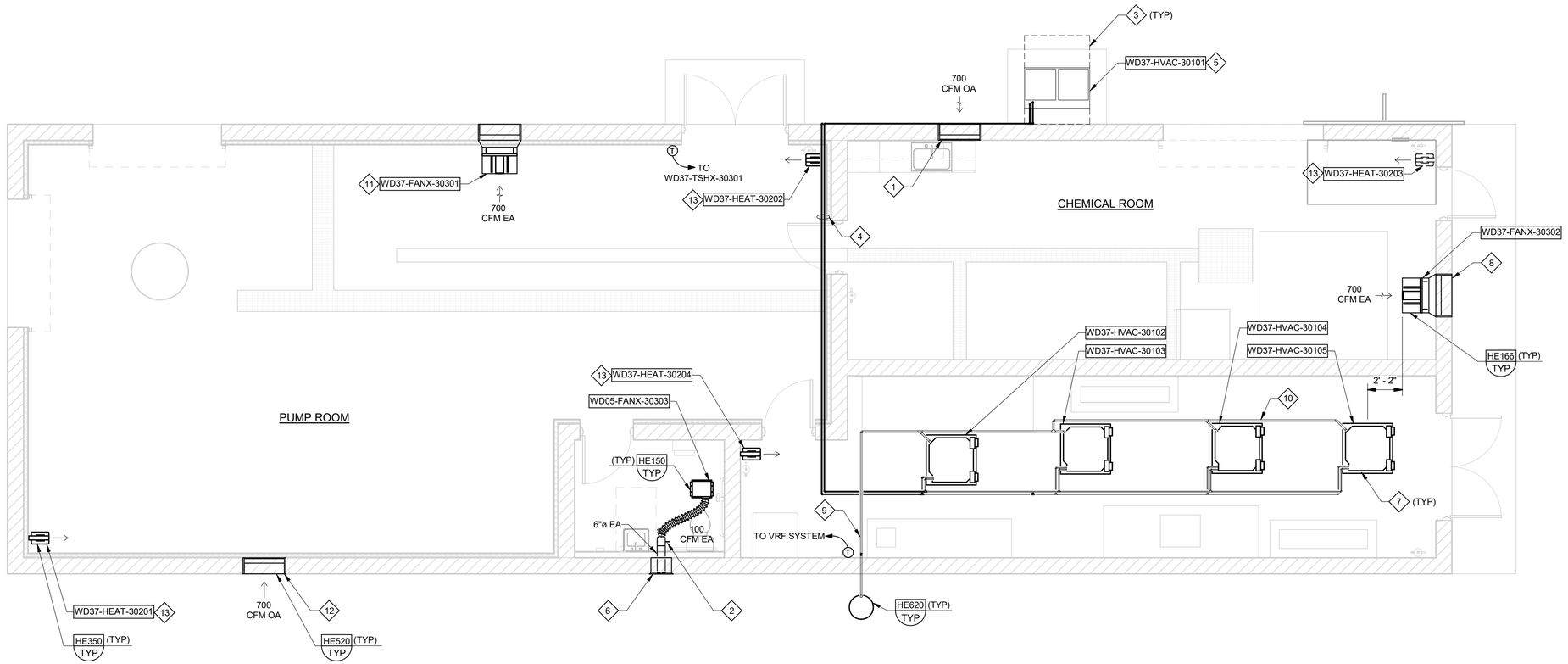
REGISTERED PROFESSIONAL ENGINEER CHAD GREEN No. 37915 MECHANICAL STATE OF CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL
HVAC SCHEDULES

VERIFY SCALES
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0 1"
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JOB NO. 11843A.10
DRAWING NO. 13M06
SHEET NO. 61 OF 178

PROJECT NO.
FILE NAME: 11843A1013M006.dgn



K **PLAN**
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. MOUNT THERMOSTATS AT 48" AFF AND LABEL WITH ITS CONTROLLING DEVICE. THERMOSTAT LOCKBOXES TO BE PROVIDED BY MECHANICAL CONTRACTOR.
2. DUCTWORK SERVING ELECTRICAL ROOM TO BE ALUMINUM PER SECTION 16133. DO NOT ROUTE ABOVE ELECTRICAL EQUIPMENT.
3. ALL DUCTWORK AND SUPPORTS SHALL BE CONSTRUCTED PER SMACNA. REFER TO SPECIFICATION SECTION 16133 FOR ADDITIONAL REQUIREMENTS.
4. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN. PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.

KEY NOTES:

1. 32''x24'' INTAKE LOUVER TYPE L-3 TO BE MOUNTED AT 8'-0'' AFF.
2. BACKDRAFT DAMPER (BDD-3).
3. MANUFACTURER REQUIRED CLEARANCE. DO NOT BLOCK.
4. REFRIGERANT LINES. LINES WILL ENTER THE PUMP ROOM DOWN LOW THEN RISE TO BE ROUTED UNDER THE HARD CEILING. FIELD ROUTE TO FAN COIL UNITS IN ELECTRICAL ROOM. AVOID RUNNING LIQUID SIDE PIPE OVER ELECTRICAL EQUIPMENT. INSULATE ALL PIPING PER SPECIFICATIONS.
5. HEAT PUMP TYPE CONDENSING UNIT SERVING VRF. CONTRACTOR TO SUBMIT ANCHORAGE CALCULATIONS PER SPECIFICATION 01850.
6. 16"x8" EXHAUST BRICK VENT TO BE MOUNTED AT 9'-4'' AFF.
7. INDOOR VRF FAN COIL UNIT TO BE MOUNTED UNDER CEILING PER MANUFACTURER STANDARDS. SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR INDOOR UNIT SUPPORTS PER SPECIFICATION 01850. CONTRACTOR TO COORDINATE WITH TRUSS MANUFACTURER FOR ADDITIONAL LOADING. DO NOT PLACE ABOVE ELECTRICAL EQUIPMENT.
8. WALL MOUNTED EXHAUST FAN AND CORRESPONDING ACOUSTICAL LOUVER TYPE L-3 TO BE MOUNTED IN WALL AT 2'-0" AFF PROVIDE FAN WITH GUARD.
9. ROUTE CONDENSATE PIPING OUT OF BUILDING AND INTO DRY WELL. SLOPE CONDENSATE DRAIN AT 1/8" PER FOOT IN THE DIRECTION OF FLOW.
10. 1" SCH 40 PVC CONDENSATE DRAIN PIPE. INSULATE PER SPECIFICATIONS.
11. WALL MOUNTED EXHAUST FAN AND CORRESPONDING ACOUSTICAL LOUVER TYPE L-3 TO BE MOUNTED IN WALL AT 7'-4" AFF PROVIDE FAN WITH GUARD.
12. 32"x24" INTAKE LOUVER TYPE L-3 TO BE MOUNTED AT 2'-0" AFF.
13. WALL MOUNTED ELECTRIC UNIT HEATER. MOUNT HEATER AT 8'-0'' AFF.

REV	DATE	BY	DESCRIPTION
1	1/28/2022	WJS	DC003

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DESIGNED WJS | DRAWN KHB | CHECKED CAG | DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHAD GREEN No. 37915 MECHANICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL
HVAC PLAN

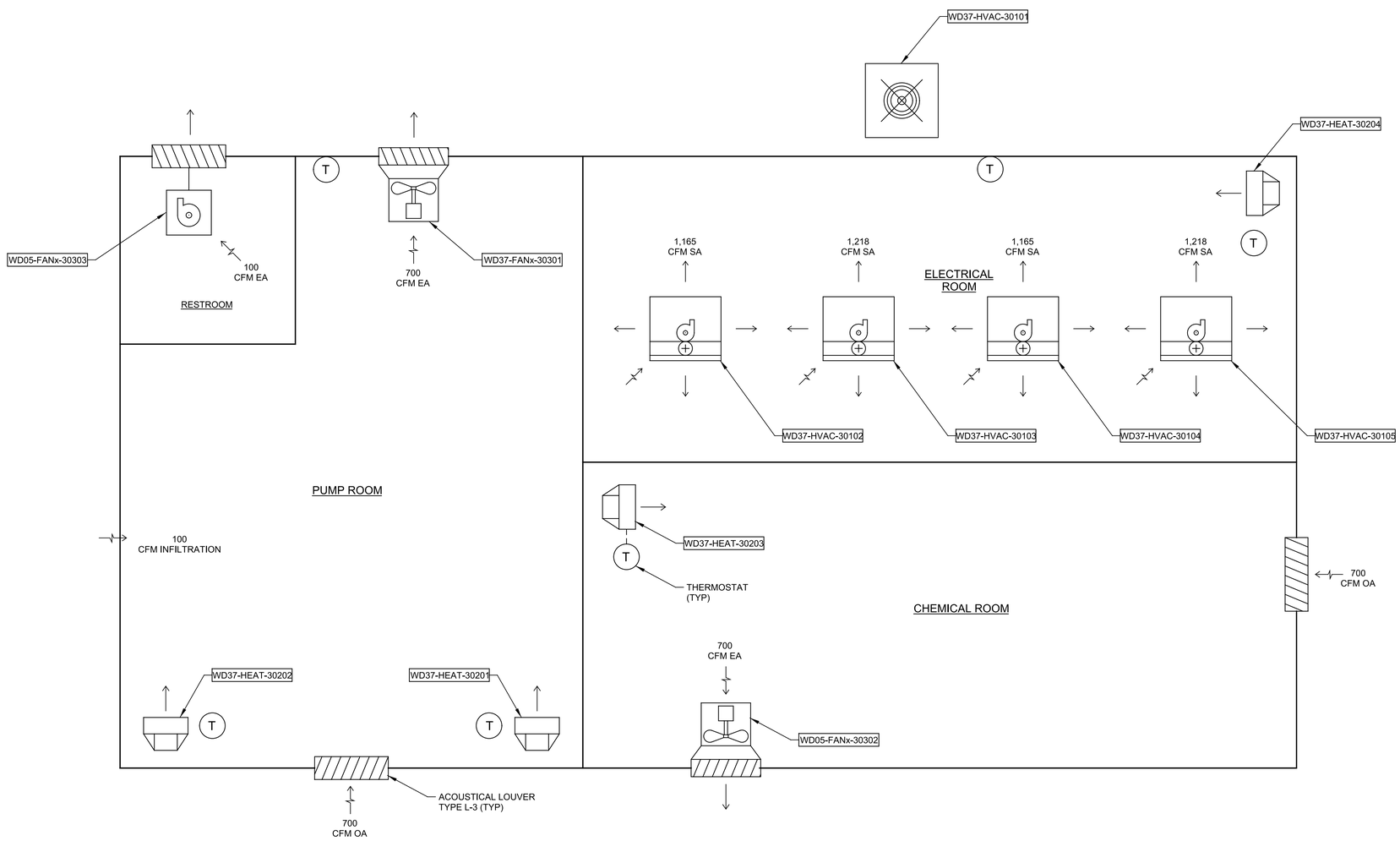
VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13M07
SHEET NO. 62 OF 178

PLOT DATE: 12/13/2024 9:32:19 AM

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User: svcPW
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ColorTable: gshade.ctb
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LAST SAVED BY: jshaffer



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REV	DATE	BY	DESCRIPTION

DESIGNED WJS
DRAWN KHB
CHECKED CG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHAD GREEN — No. 37915 — MECHANICAL — STATE OF CALIFORNIA

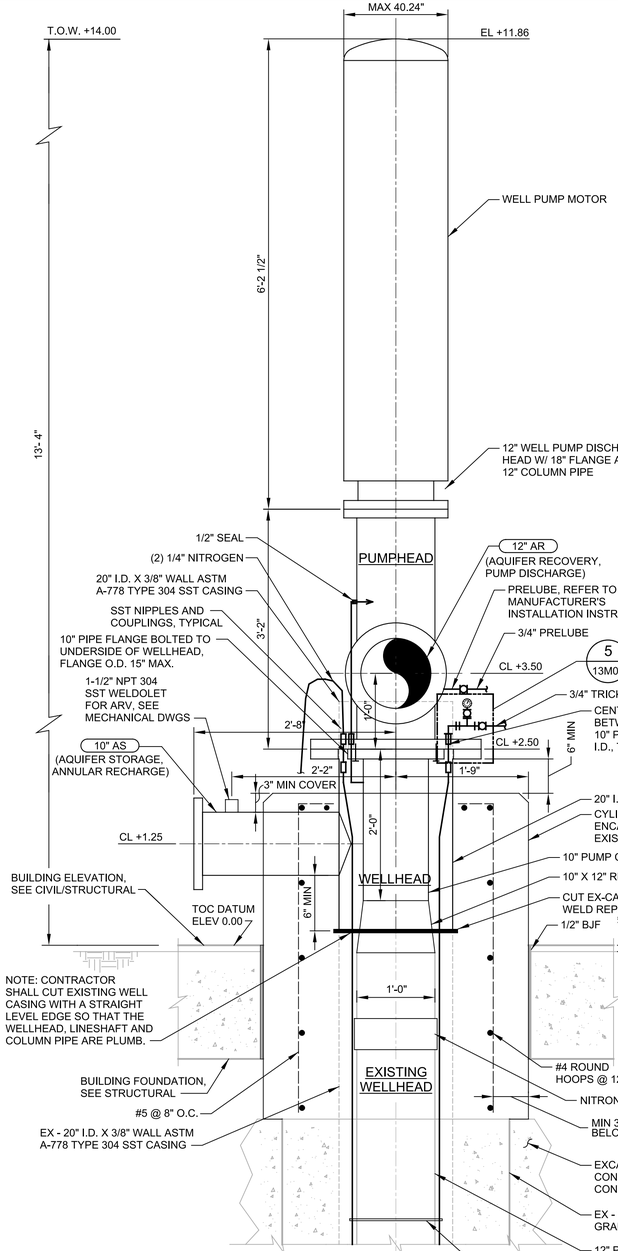
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL
HVAC AIRFLOW SCHEMATIC

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13M08
SHEET NO. 63 OF 178

PROJECT NO.
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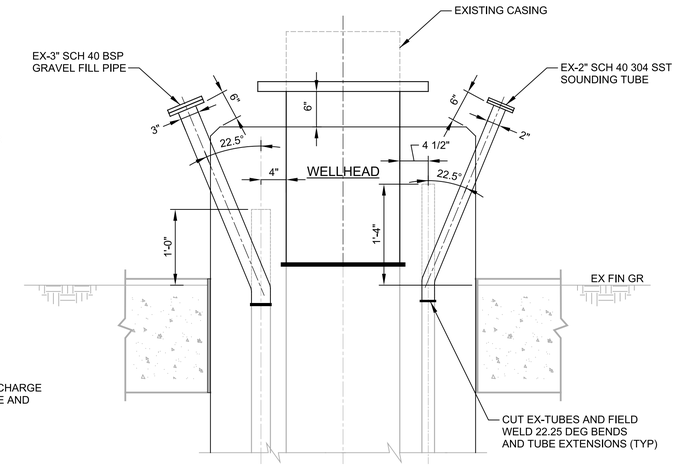


NOTE: THE WELL HEAD AND PUMP HEAD ARE STRUCTURAL COMPONENTS. QUALIFIED WELDERS SHOULD BE USED, AND WELDS SHOULD BE INSPECTED. PERFORM AS MANY WELDS AS POSSIBLE IN THE SHOP UNDER IDEAL AND CONTROLLED CONDITIONS. FIELD WELDING SHOULD BE KEPT TO A MINIMUM. ALL STAINLESS STEEL WELDS SHALL BE PICKLED AND PASSIVATED.

WELLHEAD

M - SECTION

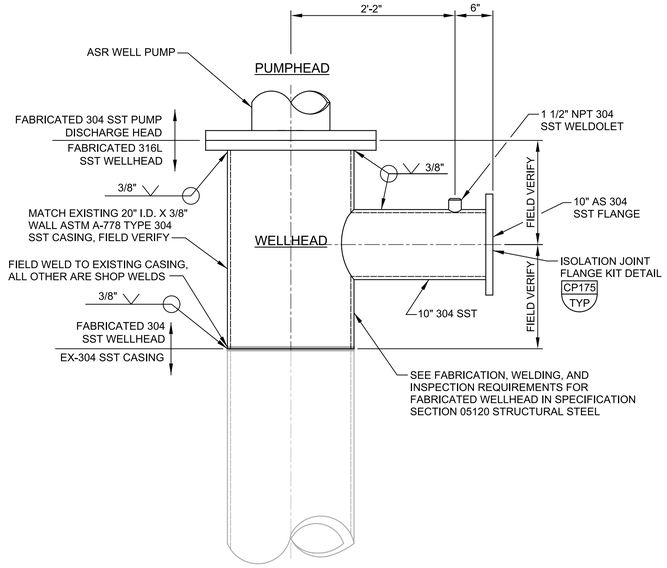
SCALE: 1" = 1'-0"
FILE: 11843A1013M400



WELLHEAD (TYP A & B)

N - SECTION

SCALE: 1" = 1'-0"
FILE: 11843A1013M400



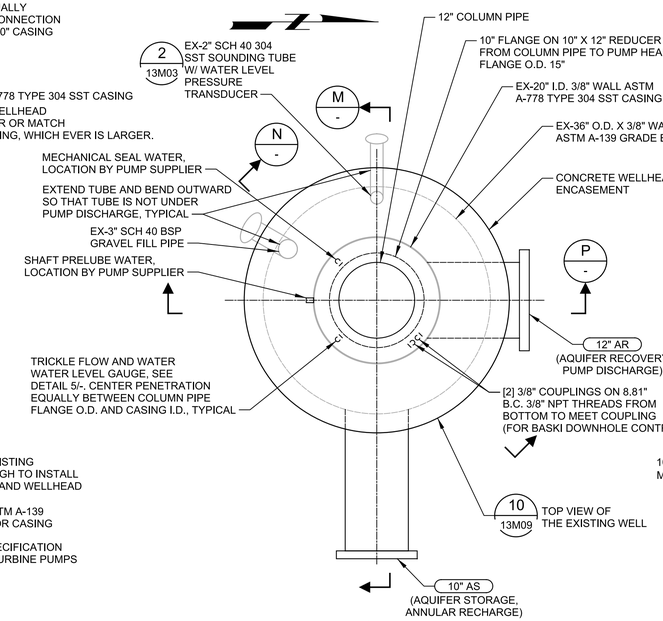
WELLHEAD (TYP A & B)

P - SECTION

SCALE: 1" = 1'-0"
FILE: 11843A1013M400

GENERAL NOTES:

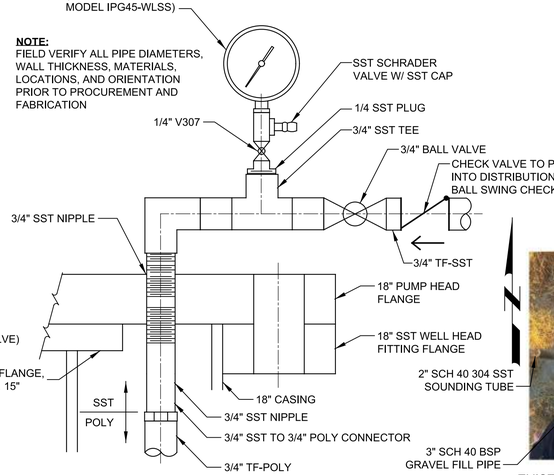
1. THE EXISTING WELL WAS CONSTRUCTED BY OTHERS. FOR EXISTING WELL CONSTRUCTION SEE "CAMPUS OAKS WELL AS-BUILTS, BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS, JANUARY 2024
2. THE EXISTING STAINLESS STEEL WELL CASING, SOUNDING TUBE, AND GRAVEL FILL TUBE EXTENDS ABOVE EXISTING GRADE. THE EXISTING CARBON STEEL CONDUCTOR CASING AND CONCRETE SEAL AND ENCASEMENT EXTEND TO APPROXIMATELY EXISTING GRADE. EXPOSE AND DEMOLISH EXISTING CONDUCTOR CASING AND CONCRETE ENCASEMENT ENOUGH TO INSTALL CONCRETE BUILDING SLAB AND WELLHEAD. CUT EXISTING SST CASING TO ELEVATION WITH A CLEAN LEVEL/PLUMB EDGE. THE FABRICATED WELLHEAD SHALL BE WELDED PLUMB AND TRUE. THE SIZE DIMENSIONS AND PLACEMENT OF THE TOP FLANGE AND THE BOLT HOLES SHALL BE COORDINATED WITH THE PUMP MOUNTING AND PIPING ORIENTATION REQUIREMENTS. MATCH NEW SST SIZE, THICKNESS, AND MATERIAL TO EXISTING SST CASING. CUT EXISTING SOUNDING TUBE AND GRAVEL FILL PIPE AND FIELD WELD ON NEW FABRICATED TUBES TO BEND OUTWARD FROM THE CENTER OF THE WELL HEAD AND OUT FROM UNDER THE CASING FLANGE AS TO ENABLE THE EASY REMOVAL OF THE FLANGED FITTINGS, BOLTS, VALVES, AND LEVEL INSTRUMENT. MATCH NEW PIPE THICKNESS, AND MATERIAL TO EXISTING SOUNDING TUBE AND GRAVEL FILL PIPE. INSTALL REINFORCED CONCRETE ENCASEMENT AROUND NEW WELLHEAD. PROVIDE MINIMUM COVER OVER BAR AND CHAMFER EDGE.
3. THE FIELD WELDING TO THE EXISTING WELLHEAD AND THE NEW FABRICATED WELLHEAD SHALL BE CONSIDERED TO BE STRUCTURAL STEEL, SHALL BE PERFORMED BY A CERTIFIED WELDER AND IS SUBJECT TO FIELD WELDING AND SHOP WELDING PROCEDURES AND INSPECTIONS PER THE CONTRACT SCOPE OF WORK AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPAIR, AND REPLACE ANY UNSATISFACTORY WELDS OR DAMAGED MATERIALS AND COMPONENTS.
4. THE WELL SHALL BE PROTECTED FROM THE ENTRY OF FOREIGN MATERIALS AT ALL TIMES DURING CONSTRUCTION BY THE USE OF A TEMPORARY INFLATABLE PLUG NEAR THE SURFACE WHEN OPEN TO ATMOSPHERE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENTRY OF FOREIGN MATERIALS DURING THE CONSTRUCTION PROCESS. PROMPTLY REMOVE ANY MATERIALS THAT FALL IN ABOVE THE PLUG.
5. INSTALL THE VERTICAL TURBINE PUMP AS PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL SPECIAL CONNECTIONS AND APPURTENANCES AS SHOWN AND AS SPECIFIED ON THESE DRAWINGS.
6. PROVIDE 0.75-INCH DIAMETER SEMI-RIGID POLYETHYLENE TUBING STRAPPED TO THE PUMP COLUMN WITH SST HOSE CLAMPS AT 10 FT SPACING TO A DEPTH OF 1 FOOT ABOVE THE BOWL ASSEMBLY. THE TUBING SHALL SERVE A DUAL PURPOSE OF DIRECTING CHLORINATED WATER VIA TRICKLE FLOW (TF) CONNECTION INTO THE WELL, AND SHALL SERVE AS A BACKUP MEANS OF MEASURING WATER LEVEL VIA A MANUAL TAPE THAT CAN BE DROPPED THROUGH THE TOP OF THE TEE ON THE PUMP BASE. OR AS A BUBBLER TYPE INDICATOR WHEN AIR IS CHARGED THROUGH THE SCHRADER VALVE. ALL MATERIALS SHALL BE NSF APPROVED FOR POTABLE WATER USE.
7. THE CONTRACTOR SHALL PROVIDE THE REINFORCED CONCRETE ENCASEMENT. AROUND THE FINISHED WELLHEAD ASSEMBLY AS SHOWN, SHALL BE FULLY SEATED TO THE TOP OF THE SURFACE CASING AND SUPPORTED BY THE GROUT AROUND THE CASING. PROVIDE 0.5-INCH MINIMUM CHAMFER ALL EXPOSED EDGES OF THE CONCRETE. THE CONCRETE AND REINFORCING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS DESCRIBED ON THE DRAWINGS.



PUMP HEAD & WELLHEAD

L - PLAN

13M01
SCALE: 1" = 1'-0"
FILE: 11843A1013M400



TRICKLE FLOW CONNECTION

5 - DETAIL

13M03, 13M09 SCALE: 6" = 1'-0"
FILE:11843A1013M400



EXISTING WELL - TOP VIEW EXISTING WELL - NORTH ELEVATION

10 - DETAIL

SCALE: NOT TO SCALE
FILE: 11843A1013M601/602

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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DRAWN TLR
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKETT No. 63626 CIVIL STATE OF CALIFORNIA

ASR SYSTEMS

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

carollo

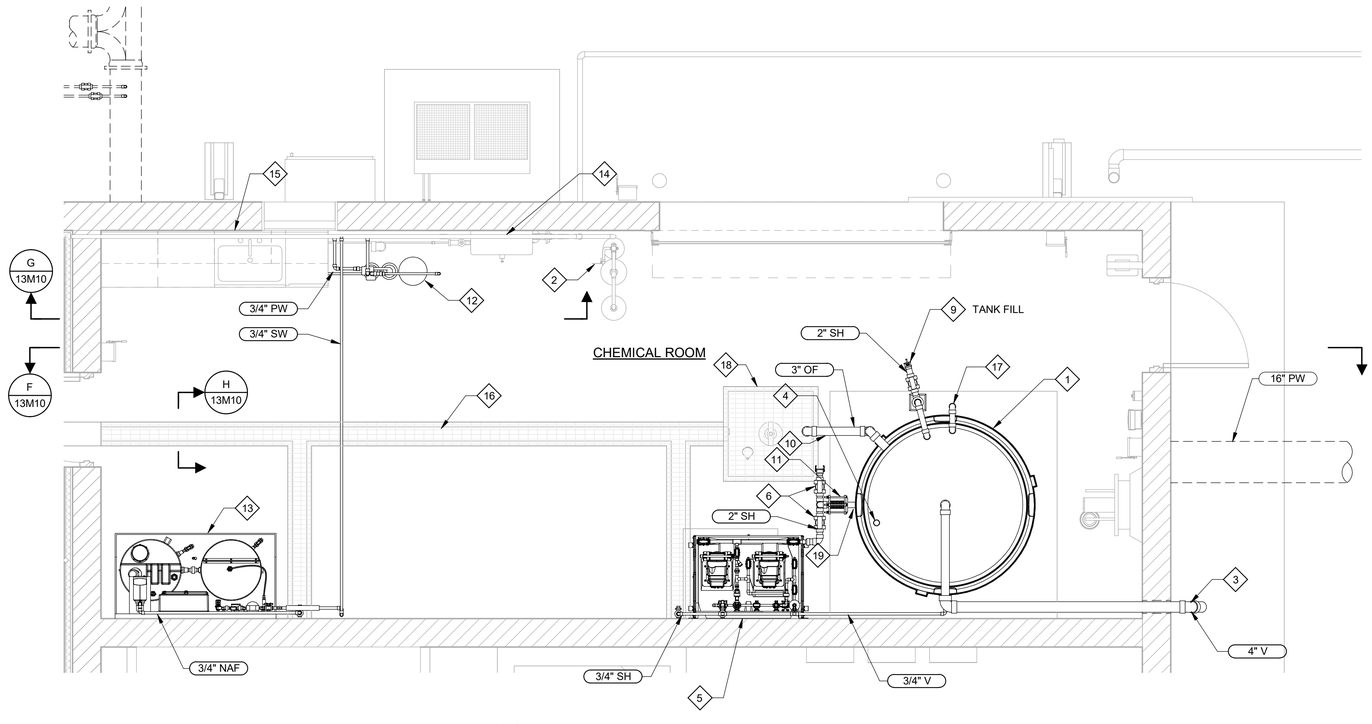
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL WELLHEAD DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

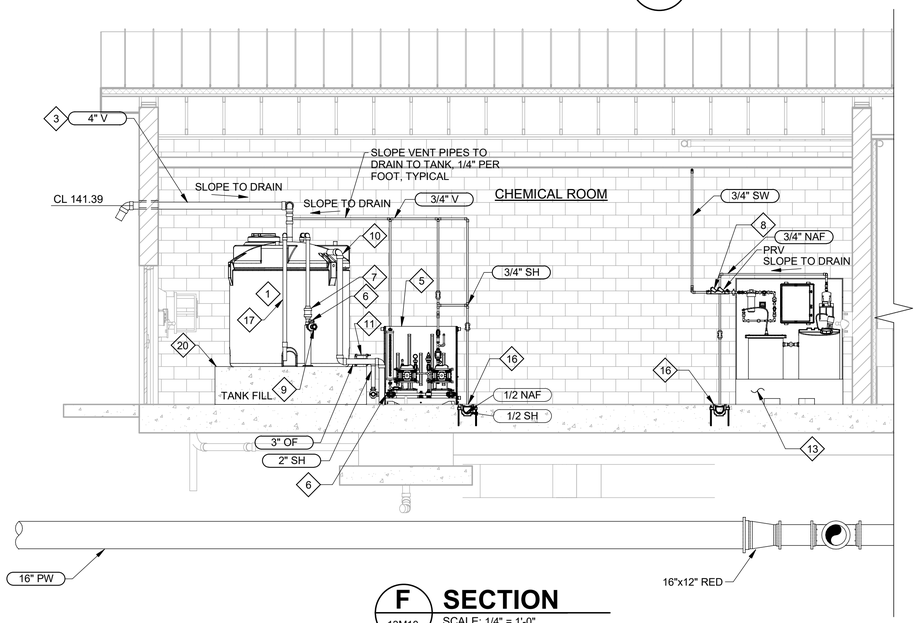
JOB NO. 11843A.10
DRAWING NO. 13M09
SHEET NO. 64 OF 178

PROJECT NO.
FILE NAME: 11843A1013M009.dgn



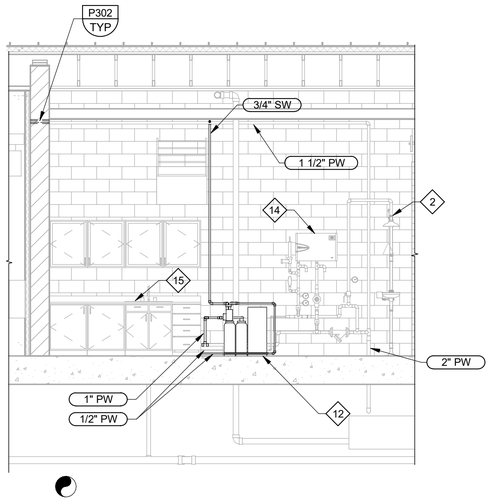
E ENLARGED PLAN

13M01 SCALE: 3/8" = 1'-0"



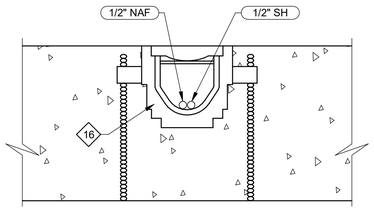
F SECTION

13M10 SCALE: 1/4" = 1'-0"



G SECTION

13M10 SCALE: 1/4" = 1'-0"



H SECTION

13M10 SCALE: 1" = 10'-0"

GENERAL NOTES:

1. SEE CIVIL FOR PIPING CONTINUATIONS
2. NOT ALL REQUIRED PIPE SUPPORTS ARE SHOWN.
3. ALL PIPE SUPPORTS WITHIN THE CHEMICAL ROOM SHALL BE FRP, UNLESS OTHERWISE NOTED. WALL PIPE SUPPORTS PER MP218/TYP, FLOOR PIPE SUPPORTS PER MP034/TYP, AND VERTICAL PIPE SUPPORTS PER MP042/TYP.
4. ALL PIPE SUPPORTS USED FOR CHEMICAL SERVICE TO USE CUSHION STRIPS BY ANVIL #AS 3792 OR EQUAL.
5. ALL BALL VALVES USED FOR SODIUM HYPOCHLORITE SERVICE SHALL BE VENTED BALL TYPE.

KEY NOTES:

1. 1,000 GALLON DOUBLE CONTAINED SODIUM HYPOCHLORITE TANK PER SPEC 13208
2. EMERGENCY SHOWER & EYEWASH STATION PER HP640/TYP SEE PLUMBING PLAN, DWG 13M05
3. TANK VENT ROUTED THROUGH WALL PER P302/TYP, TERMINATE AT A 45 DEGREE ANGLE WITH BIRD SCREEN
4. LEVEL INSTRUMENT
5. SODIUM HYPOCHLORITE DUAL PUMP SKID PER SPEC 11242
6. 2" VENTED BALL VALVE
7. 2" BALL CHECK VALVE
8. BACKFLOW PREVENTER, DIRECT DRAIN TO FLOOR DRAIN BELOW
9. TANK FILL 2" QUICK DISCONNECT HOSE COUPLING WITH CAP ANGLED DOWNWARD 22 DEGREES, VENTED BALL VALVE, AND BALL CHECK VALVE SUPPORTED FROM FLOOR
10. 3" OVERFLOW, ROUTE PIPING TO SUMP
11. FLEXIBLE FITTING PER TANK MANUFACTURER.
12. WATER SOFTENER PER KINETICO, MODEL S650XP AND BRINE TANK MODEL 7202
13. PACKAGED FLUORIDE DOSING SKID PER SPEC 11249
14. INSTANT WATER HEATER. SEE PLUMBING PLAN, DWG 13M05.
15. UTILITY SINK
16. ZURN 6" WIDE TRENCH DRAIN #ZF806-HDS-BDE WITH STAINLESS STEEL TOP FRAME AND GRATING COVER. TRANSITION FROM PVC PIPE TO PFA TUBING IN TRENCH
17. REVERSE LEVEL FLOAT GAUGE
18. FRP GRATING COVER FOR SUMP, TRAFFIC RATED.
19. TANK DRAIN TO BE LOCATED AT THE BOTTOM OF THE TANK TO ALLOW FULL DRAINAGE. CUT NOTCH OUT OF CONCRETE PAD AND ADJUST REBAR TO AVOID CONFLICTS.
20. PRIOR TO INSTALLING CONCRETE TANK PAD, VERIFY WITH PUMP CHEMICAL PUMP MANUFACTURER AND SUPPLIER THAT MINIMUM LIQUID LEVEL OF TANK MEETS MINIMUM NET POSITIVE SUCTION HEAD REQUIRED FOR CHEMICAL FEED PUMPS. RAISE TANK PAD IF REQUIRED.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED SKG
DRAWN OB
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS ASR WELL
CHEMICAL ROOM

VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

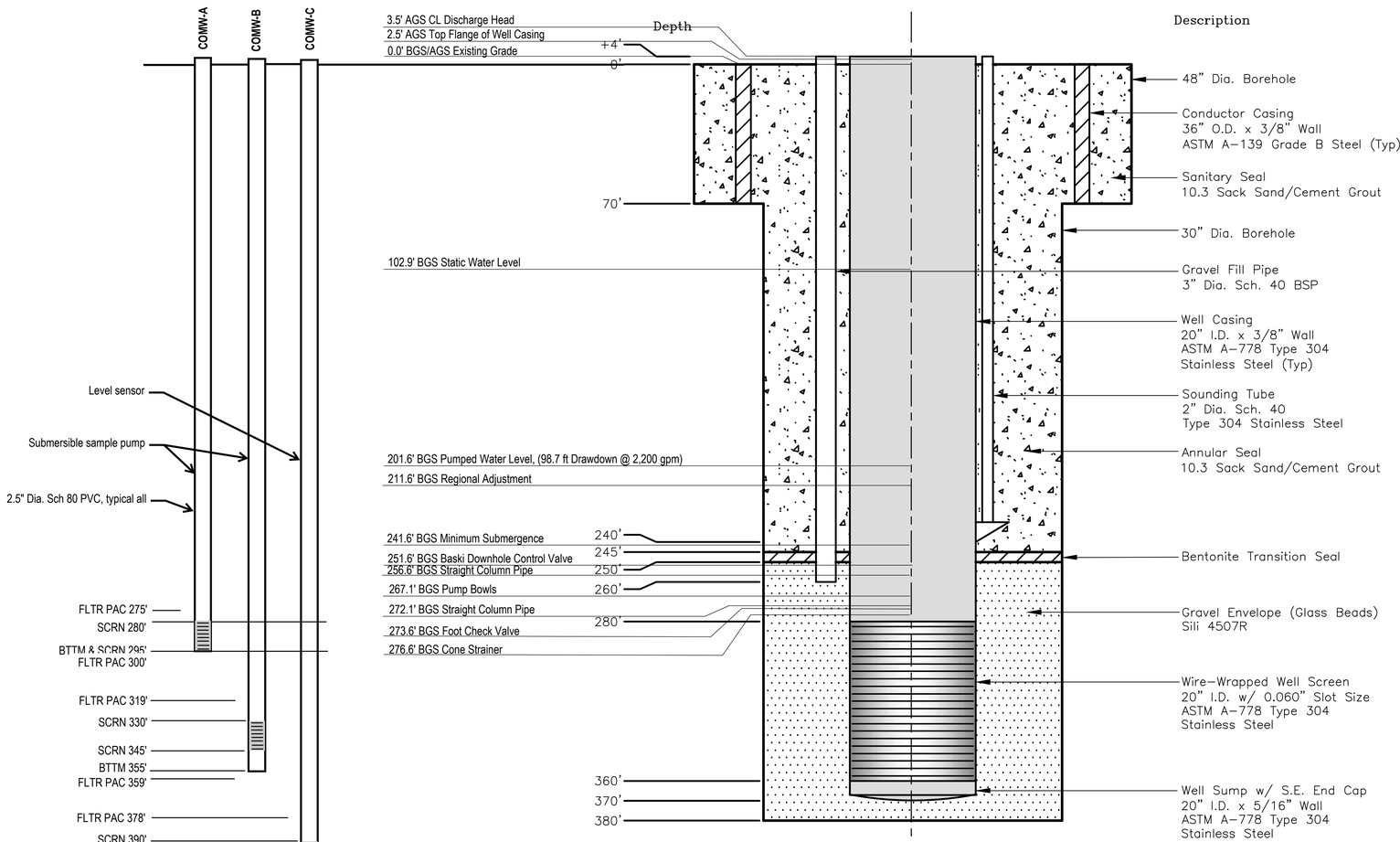
JOB NO. 11843A.10
DRAWING NO. 13M10
SHEET NO. 65 OF 178

PLOT DATE: 12/13/2024 2:29:32 PM

FILE NAME: R:\d1341485\11843A1013M800.rvt

NOTES:

1. SEE VALVE TYPE SCHEDULE, (SHEET 00GM04) AND VALVE SPECIFICATIONS.
2. SEE SCHEDULE, (SHEET 00GM05) AND PIPE SPECIFICATIONS FOR SST PIPING REQUIREMENTS.
3. PROVIDE CENTRALIZER AT BOTTOM FLANGE AT PUMP AND AT 20' SPACING ON PUMP COLUMN FLANGES. CENTRALIZERS SHALL CLEAR CASING 1/2" ON ALL SIDES.
4. CENTRALIZERS SHALL ALSO BE USED FOR THE INSTALLATION OF THE R.O. RELIABILITY WELL PUMP COLUMN PIPING.
5. COMMERCIALLY AVAILABLE CENTRALIZERS MADE OF POLYETHYLENE AND STAINLESS STEEL AS MANUFACTURED BY ADVANCE PRODUCTS & SYSTEMS, LAFAYETTE, LA MAY BE SUBSTITUTED SUBJECT TO APPROVAL OF THE ENGINEER.
6. CONTRACTOR SHALL VERIFY THE INTERNAL DIAMETER OF THE WELL CASING BY PASSING A FULL-SCALE DUMMY GAGE WITH THE OUTER DIAMETER & LENGTH OF THE 10" FOOT VALVE ASSEMBLY. THIS TEST SHALL CONFIRM THE INSIDE DIAMETER & ROUNDNESS OF THE WELL CASING, AS WELL AS CONFIRM THAT THE 10" FOOT VALVE CAN BE INSTALLED WITHIN THE CASING. THE 10" FOOT VALVE HAS A FLANGE OUTER DIAMETER OF 17.5".



CAMPUS OAKS WELL 13

6 DETAIL
-
SCALE: NOT TO SCALE
FILE: 11843A1013M301

GENERAL NOTES:

1. THE EXISTING WELL WAS CONSTRUCTED BY OTHERS. FOR EXISTING WELL CONSTRUCTION SEE "CAMPUS OAKS WELL AS-BUILTS, BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS, JANUARY 2024
2. THE EXISTING STAINLESS STEEL WELL CASING, SOUNDING TUBE, AND GRAVEL FILL TUBE EXTENDS ABOVE EXISTING GRADE. THE EXISTING CARBON STEEL CONDUCTOR CASING AND CONCRETE SEAL AND ENCASEMENT EXTEND TO APPROXIMATELY EXISTING GRADE. EXPOSE AND DEMOLISH EXISTING CONDUCTOR CASING AND CONCRETE ENCASEMENT ENOUGH TO INSTALL CONCRETE BUILDING SLAB AND WELLHEAD. CUT EXISTING SST CASING TO ELEVATION WITH A CLEAN LEVEL/PLUMB EDGE. THE FABRICATED WELLHEAD SHALL BE WELDED PLUMB AND TRUE. THE SIZE DIMENSIONS AND PLACEMENT OF THE TOP FLANGE AND THE BOLT HOLES SHALL BE COORDINATED WITH THE PUMP MOUNTING AND PIPING ORIENTATION REQUIREMENTS. FIELD VERIFY AND MATCH NEW SST SIZE, THICKNESS, AND MATERIAL TO EXISTING SST CASING. CUT EXISTING SOUNDING TUBE AND GRAVEL FILL PIPES AND FIELD WELD ON NEW FABRICATED TUBES TO BEND OUTWARD FROM THE CENTER OF THE WELL HEAD AND OUT FROM UNDER THE CASING FLANGE AS TO ENABLE THE EASY REMOVAL OF THE FLANGED FITTINGS, BOLTS, VALVES, AND LEVEL INSTRUMENT. MATCH NEW PIPE, THICKNESS, AND MATERIAL TO EXISTING SOUNDING TUBE AND GRAVEL FILL PIPE. INSTALL REINFORCED CONCRETE ENCASEMENT AROUND NEW WELLHEAD. PROVIDE MINIMUM COVER OVER BAR AND CHAMFER EDGE.
3. THE FIELD WELDING TO THE EXISTING WELLHEAD AND THE NEW FABRICATED WELLHEAD SHALL BE CONSIDERED TO BE STRUCTURAL STEEL, SHALL BE PERFORMED BY A CERTIFIED WELDER AND IS SUBJECT TO FIELD WELDING AND SHOP WELDING PROCEDURES AND INSPECTIONS PER THE CONTRACT SCOPE OF WORK AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPAIR, AND REPLACE ANY UNSATISFACTORY WELDS OR DAMAGED MATERIALS AND COMPONENTS.
4. THE WELL SHALL BE PROTECTED FROM THE ENTRY OF FOREIGN MATERIALS AT ALL TIMES DURING CONSTRUCTION BY THE USE OF A TEMPORARY INFLATABLE PLUG NEAR THE SURFACE WHEN OPEN TO ATMOSPHERE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENTRY OF FOREIGN MATERIALS DURING THE CONSTRUCTION PROCESS. PROMPTLY REMOVE ANY MATERIALS THAT FALL IN ABOVE THE PLUG.
5. INSTALL THE VERTICAL TURBINE PUMP AS PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL SPECIAL CONNECTIONS AND APPURTENANCES AS SHOWN AND AS SPECIFIED ON THESE DRAWINGS.
6. PROVIDE 0.75-INCH DIAMETER SEMI-RIGID POLYETHYLENE TUBING STRAPPED TO THE PUMP COLUMN WITH SST HOSE CLAMPS AT 10 FT SPACING TO A DEPTH OF 1 FOOT ABOVE THE BOWL ASSEMBLY. THE TUBING SHALL SERVE A DUAL PURPOSE OF DIRECTING CHLORINATED WATER VIA TRICKLE FLOW (TF) CONNECTION INTO THE WELL, AND SHALL SERVE AS A BACKUP MEANS OF MEASURING WATER LEVEL VIA A MANUAL TAPE THAT CAN BE DROPPED THROUGH THE TOP OF THE TEE ON THE PUMP BASE. OR AS A BUBBLER TYPE INDICATOR WHEN AIR IS CHARGED THROUGH THE SCHRADER VALVE. ALL MATERIALS SHALL BE NSF APPROVED FOR POTABLE WATER USE.
7. THE CONTRACTOR SHALL PROVIDE THE REINFORCED CONCRETE ENCASEMENT, AROUND THE FINISHED WELLHEAD ASSEMBLY AS SHOWN, SHALL BE FULLY SEATED TO THE TOP OF THE SURFACE CASING AND SUPPORTED BY THE GROUT AROUND THE CASING. PROVIDE 0.5-INCH MINIMUM CHAMFER ALL EXPOSED EDGES OF THE CONCRETE. THE CONCRETE AND REINFORCING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS DESCRIBED ON THE DRAWINGS.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN TLR
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

ASR SYSTEMS

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

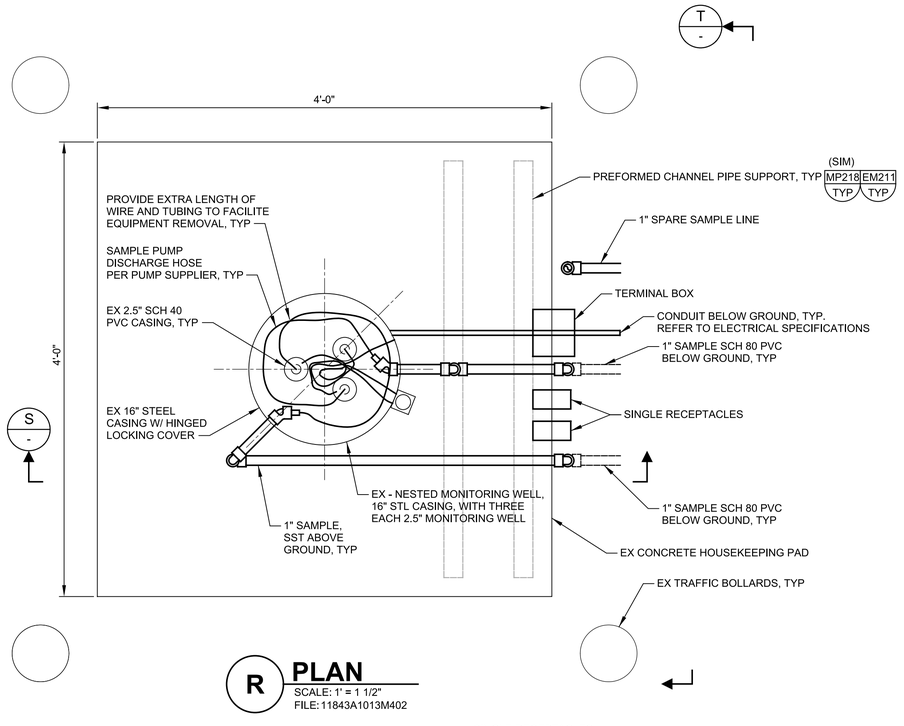
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS - WELL PROFILE

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13M11
SHEET NO. 66 OF 178

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R PLAN
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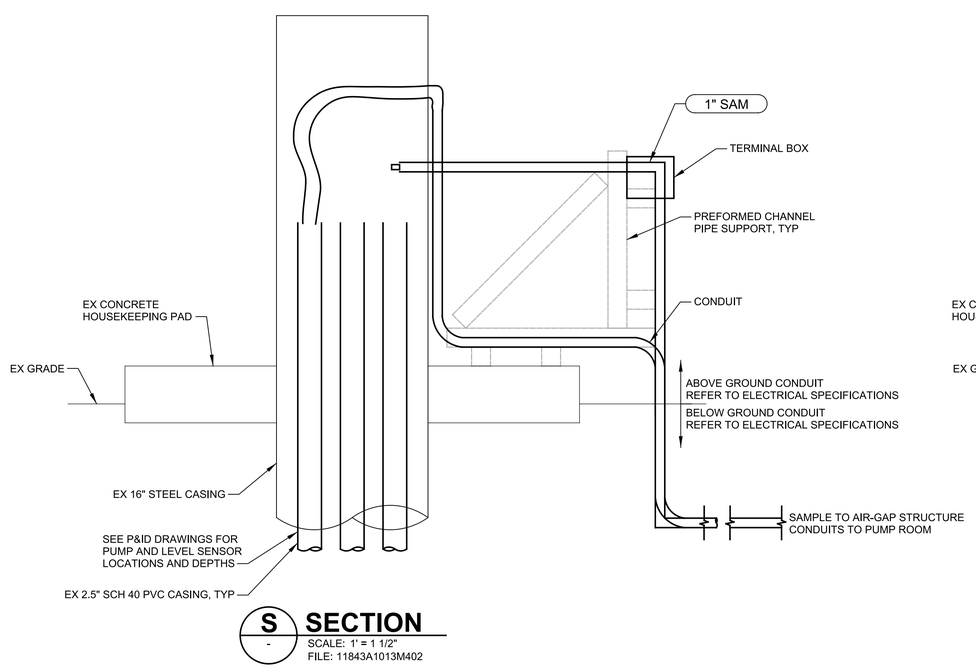


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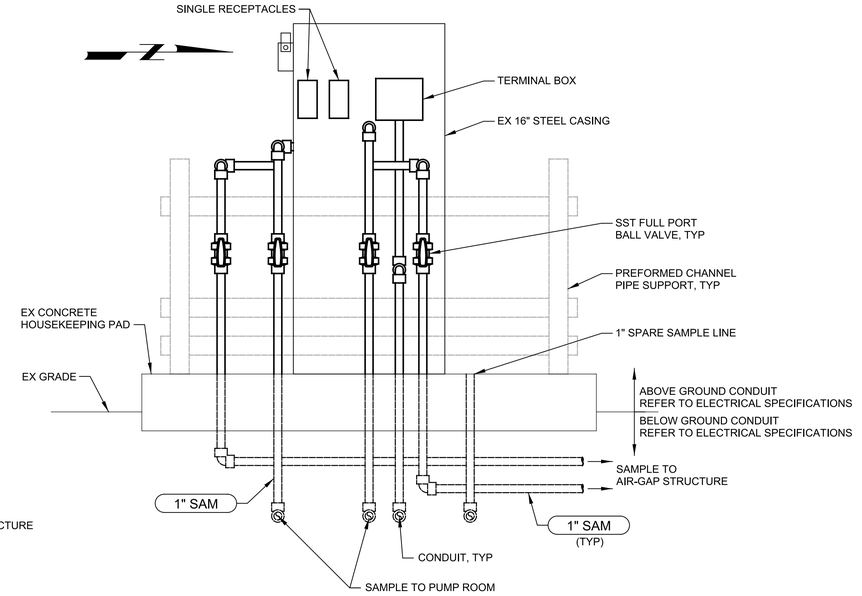
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13C02
SCALE: NO SCALE
FILE: 11843A1013M603

GENERAL NOTES:

1. A LOCKABLE, FABRICATED ALUMINUM, HINGED CLAM-SHELL OPENING ENCLOSURE AS SHOWN ON DRAWING M18. MOUNT THE ENCLOSURE TO THE CONCRETE SLAB USING 1#2" X 4" EXPANSION ANCHORS WITH SECURITY PATTERN TO INHIBIT TAMPERING AND REMOVAL. ALL FASTENERS SHALL BE TYPE 316 SST. .
2. THE MONITOR WELL CASING TUBES WERE INSTALLED BY OTHERS, AND WERE EXTENDED APPROXIMATELY 6-INCHES ABOVE THE EXISTING GRADE WITH NPT THREADED ENDS. EXTEND THE PVC CASING TUBES AND TERMINATE ABOVE CONCRETE SLAB AND INSTALL A 316 SST TOP FLANGE FOR EACH TUBE IN THE STAGGERED HEIGHT PATTERN AS SHOWN. (ALL CONNECTIONS SHALL BE THREADED, DO NOT USE SOLVENT WELDED PVC ON MONITOR WELL.) PROVIDE A MATCHING 316 SST BLIND FLANGE AS PER THE DETAILS ON THIS DRAWING WITH HOLES AND TAPS AS SHOWN. TUBE C SHALL INCLUDE THE FOLLOWING: A) 1" SST CONNECTION BETWEEN BORELINE HOSE FROM THE SAMPLE PUMP AND THE 1" SAM-PVC DISCHARGE PIPING, B) PRESSURE SEALED CABLE OPENING FOR PUMP POWER CABLE, C) PRESSURE SEALED CABLE OPENING FOR WATER LEVEL PROBE, D) 1/2 " NPT THREADED CONNECTION FOR AIR RELEASE VALVE ASSEMBLY WHICH SHALL ALSO BE EASILY REMOVABLE TO FACILITATE A DROP TAPE FOR MANUALLY MEASURING THE WATER LEVEL IN THE WELL. THE WELLHEAD ASSEMBLY WILL BE UNDER PRESSURE DURING ASR RECHARGE OPERATIONS AND SHALL BE CAPABLE OF A WELLHEAD PRESSURE OF 20 PSI.
3. FOR STORAGE ZONE MONITOR WELL TUBE C - INSTALL THE SUBMERSIBLE WATER LEVEL TRANSDUCER LT-55 AS PROVIDED WITH THE INSTRUMENTATION AND CONTROL SYSTEM PACKAGE. PROVIDE A PRESSURE-TIGHT CABLE FITTING RATED FOR 20 PSI WELLHEAD PRESSURE.
4. FOR MONITOR WELL TUBES A & B - PROVIDE A SST FLANGE WITH NPT THREADED NIPPLE CONNECTION TO AIR RELEASE VALVE AND A NPT THREADED AND PLUGGED HOLE AS SHOWN. (THE PLUG CAN BE REMOVED TO PROVIDE ACCESS FOR PERIODIC WATER LEVEL MEASUREMENTS.)
5. PROVIDE A 3/4 HP SST SUBMERSIBLE SAMPLE PUMP, TO BE SET AT A DEPTH OF 150 FT BLS USING 1" BORELINE HOSE. THE PUMP SHALL BE RATED AT 8 GPM AT 140 FT TDH, AND SHALL BE PROVIDED COMPLETE WITH 200 FT OF SUBMERSIBLE POWER CABLE AND 150 FT OF BORELINE HOSE AS MANUFACTURED BY HOSE SOLUTIONS, INC. THE PUMP SHALL BE GRUNDFOS MODEL 22SQE07-120, 208V/1-P/60Hz, OR EQUAL.



S SECTION
-
SCALE: 1" = 1 1/2"
FILE: 11843A1013M402



T SECTION
-
SCALE: 1" = 1 1/2"
FILE: 11843A1013M402



MONITORING SAMPLE LINE

1 PHOTO
13C02
SCALE: NO SCALE
FILE: 11843A1013M603

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
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CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

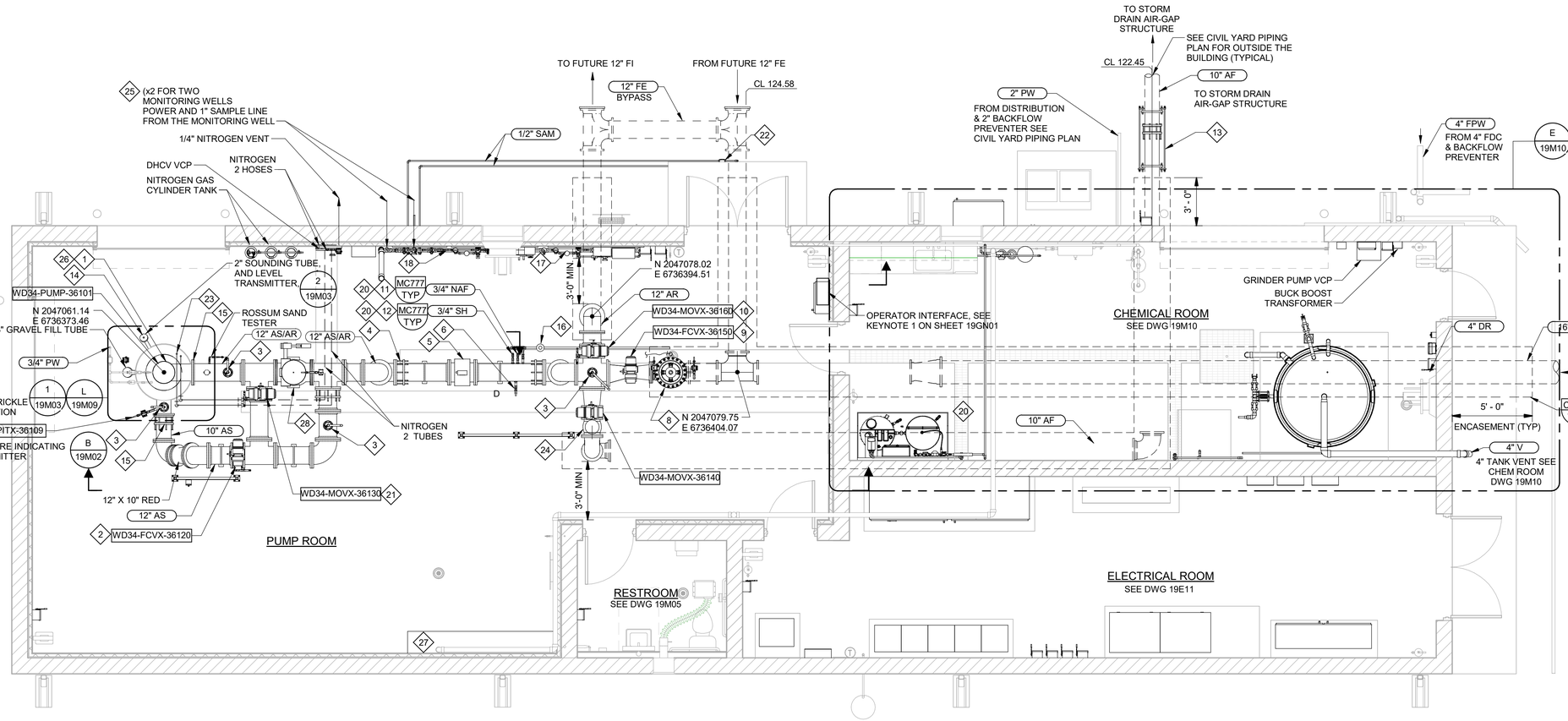
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
CAMPUS OAKS - MONITORING WELL SECTIONS AND DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13M12
SHEET NO. 67 OF 178

PROJECT NO.
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Plot Date: 13-DEC-2024 2:03:42 PM
User: svcPW



A PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. SEE CIVIL FOR PIPING CONTINUATIONS
2. NOT ALL REQUIRED PIPE SUPPORTS ARE SHOWN.
3. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN, PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.

KEY NOTES:

1. ASR WELL PUMP
2. WELL ANNULUS RECHARGE VALVE
3. 2" AIR RELEASE VALVE (TYP)
4. RESTRAINED FLANGE COUPLING ADAPTER (TYP)
5. BI-DIRECTIONAL FLOW METER
6. 1" SPARE NIPPLE AND FULL-PORT BALL VALVE FROM CENTERLINE SIDE OF PIPE
7. AQUIFER & WELL FLUSH TO WASTE VALVE.
8. PRESSURE REDUCING VALVE.
9. MODULATING RECHARGE CONTROL VALVE.
10. AQUIFER RECOVERY PRODUCTION VALVE.
11. FLUORIDE INJECTION SIM TO TYP DETAIL MC777/TYP.
12. SODIUM HYPOCHLORITE INJECTION SIM TO TYP DETAIL MC777/TYP.
13. RESTRAINED FLEXIBLE COUPLING PER TYP DETAIL MP310/TYP.
14. 1/2" AIR RELEASE VALVE, SEE DETAIL 2/19M03.
15. INSTALL DIELECTRIC ISOLATION FLANGE AT INTERFACE BETWEEN SST WELLHEAD AND DOWNHOLE WELL PIPING FROM DISTRIBUTION PIPING.
16. INSTALL 1" SAMPLE TAP AND BALL VALVE, 1/2" TUBING, POOL/HOUSE WATER FILTER CARTRIDGE WITH CLEAR CASING, AND PREFORMED CHANNEL PIPE SUPPORTS AS REQUIRED FOR VISUAL INSPECTION AND HAND TURBIDITY TESTING. WASTE TO DRAIN. REFER TO P&ID DRAWINGS FOR LAYOUT AND VALVES.
17. FLUORIDE ANALYZER, SEE DETAIL 4/19M03
18. CHLORINE ANALYZER, SEE DETAIL 4/19M03
19. NOT USED.
20. ROUTE 1/2" CHEMICAL FLUORIDE AND CHLORINE TUBING FROM THE CHEMICAL PUMPS IN THE CHEMICAL ROOM THROUGH THE CHEMICAL TRENCH DRAIN TO THE INJECTION POINTS. ABOVE GRADE TUBING WILL BE 3/4".
21. PUMP COLUMN RECHARGE CONTROL VALVE.
22. LOCATE BURIED SAMPLE TAP OUTSIDE OF CONCRETE ENCASEMENT. INSTALL CORPORATION STOP. SEE SITE CIVIL YARD PIPING PLAN.
23. NITROGEN PNEUMATIC HOSES TO DOWNHOLE CONTROL VALVE (SEE WELLHEAD DETAIL)
24. AQUIFER FLUSH SWING CHECK VALVE
25. ROUTE 1" SAMPLE LINE FROM EXISTING MONITORING WELL TO INSIDE BUILDING. ROUTE SAMPLE LINE TO AVOID OTHER ABOVE PEDESTAL OR WALL MOUNTED ENCLOSURES, AT-GRADE HANDHOLES, AND PIPE SUPPORTS AS REQUIRED.
26. MOUNT CABLE TO MAXIMIZE ACCESS TO WELLHEAD. COORDINATE LOCATION WITH OPERATION STAFF DURING CONSTRUCTION.
27. INSTALL SHELF, COORDINATE LOCATION WITH OPERATIONS STAFF.
28. SWING CHECK VALVE WITH WEIGHTED ARM.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN OB
CHECKED SMB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

ASR SYSTEMS

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOODS ASR WELL BUILDING PLAN

VERIFY SCALES
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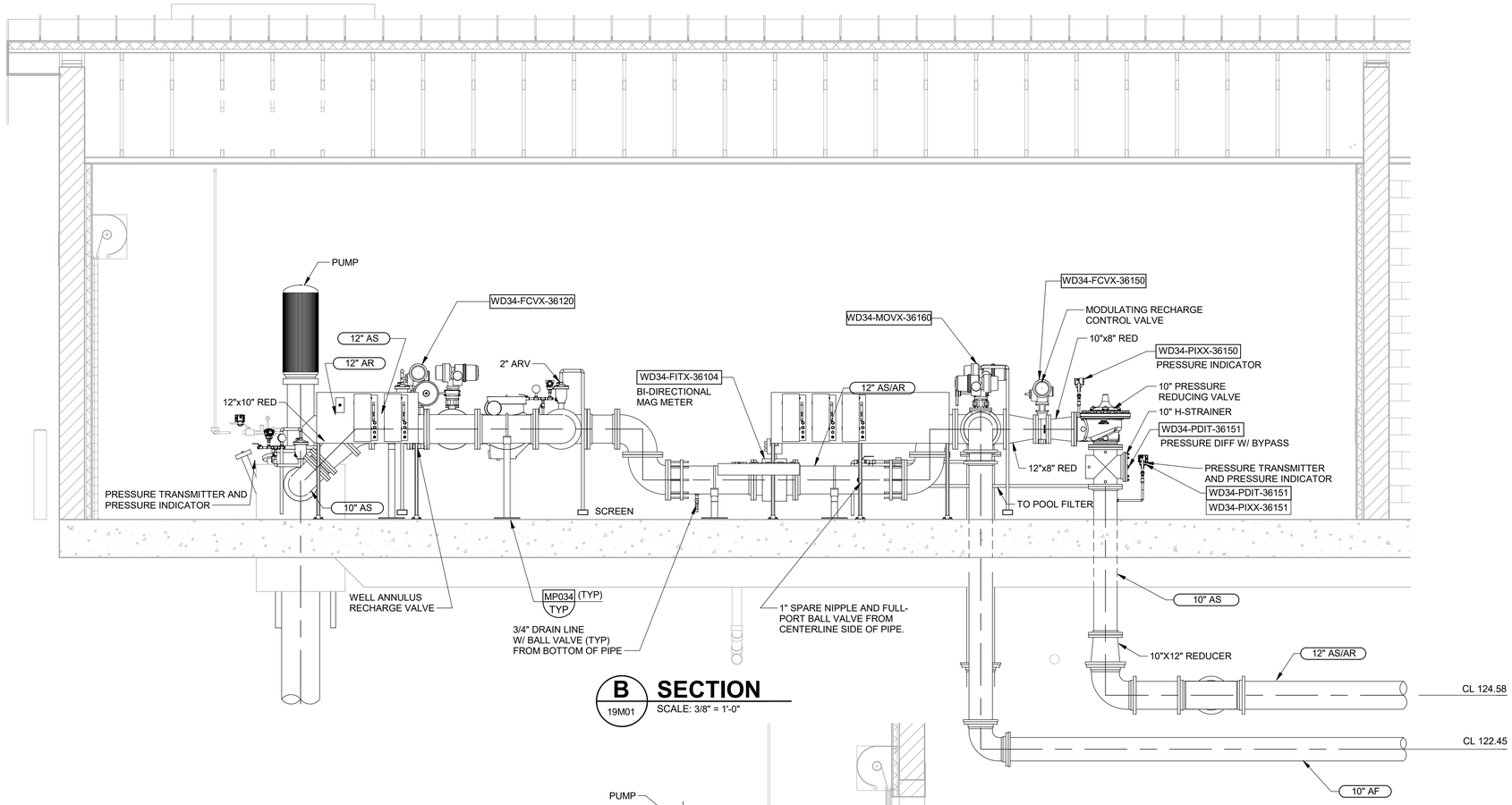
JOB NO. 11843A.10
DRAWING NO. 19M01
SHEET NO. 68 OF 178

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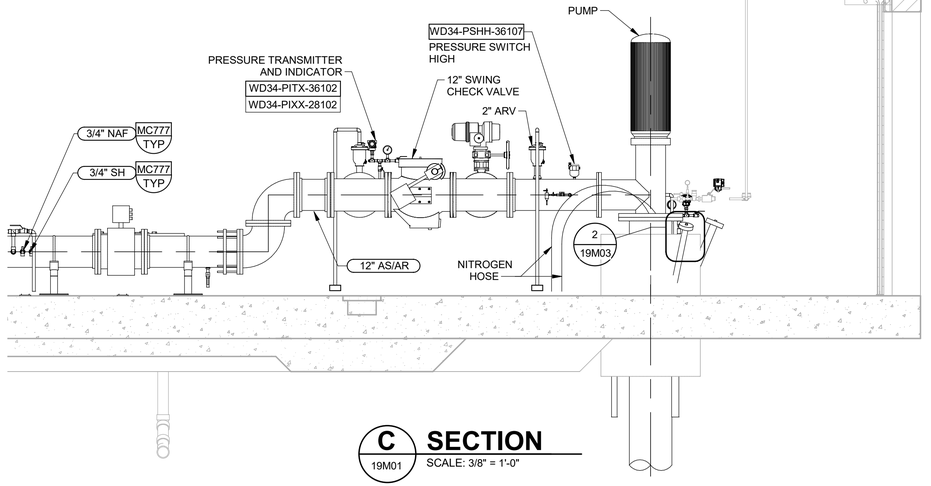
GENERAL NOTES:

1. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN. PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.

2. PROVIDE ISOLATION FLANGE KIT BETWEEN THE WELLHEAD AND ABOVE GROUND PIPING.



B 19M01 **SECTION**
SCALE: 3/8" = 1'-0"



C 19M01 **SECTION**
SCALE: 3/8" = 1'-0"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN OB
CHECKED SMB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

ASR SYSTEMS

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOODS ASR WELL
BUILDING SECTIONS AND DETAILS 1

VERIFY SCALES
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0 1"
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JOB NO. 11843A.10
DRAWING NO. 19M02
SHEET NO. 69 OF 178

PLOT DATE: 12/13/2024 3:00:30 PM

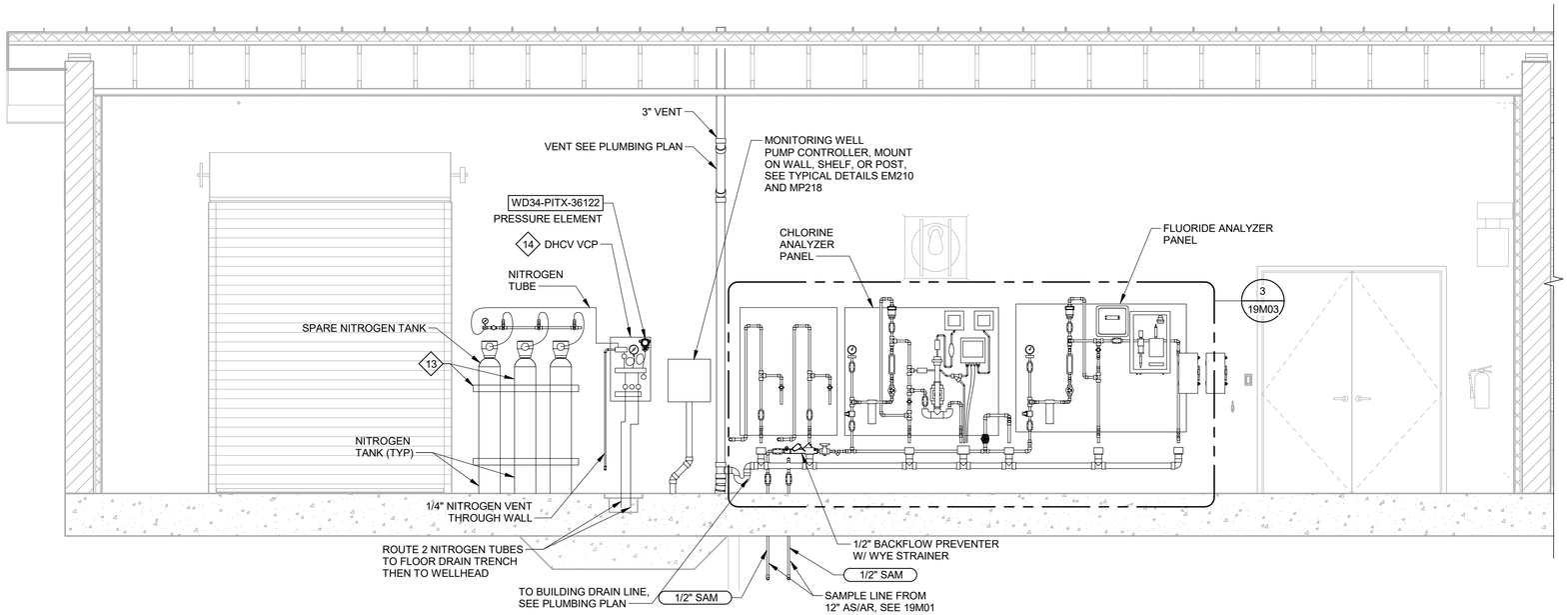
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GENERAL NOTES:

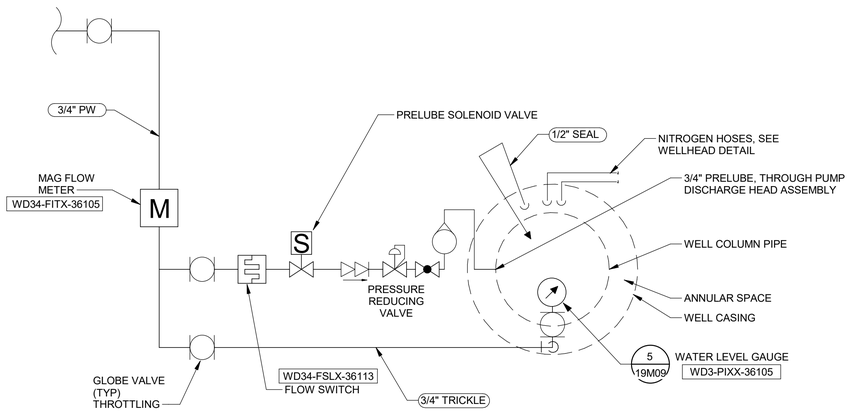
1. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN, PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.

KEY NOTES:

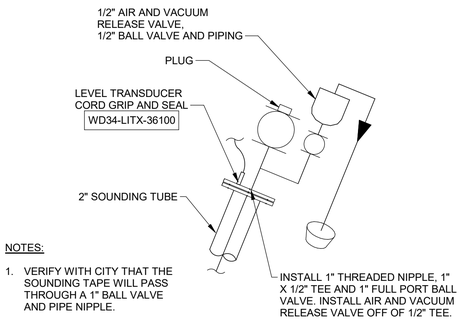
1. FLUORIDE ANALYZER, ROUTE SAMPLE DRAIN AND OVERFLOW TUBES TO DRAIN FUNNEL WITH 2 DIAMETER AIR GAP
2. 1" PVC BACKER BOARD MOUNTED ON MASONRY WALL WITH 1/2" ANCHORS
3. BALL VALVE (TYP)
4. DIAPHRAGM VALVE
5. 0-40 GPM ROTAMETER
6. AIR RELEASE VALVE
7. PRESSURE GAUGE
8. PRESSURE REDUCING VALVE
9. 10" FILTER, 50 MICRON
10. NEEDLE VALVE
11. CHLORINE RESIDUAL ANALYZER, ROUTE SAMPLE DRAIN AND OVERFLOW TUBES TO DRAIN FUNNEL WITH 2 DIAMETER AIR GAP
12. pH SENSOR
13. THREE "K" SIZE NITROGEN CYLINDERS, 1 DUTY + 2 SPARE, (228 SCF 9" DIA. x 51" TALL). SECURE TO WALL WITH PREFORMED CHANNEL CHAIN, OR OTHER ACCEPTABLE MEANS
14. BASKI VENDOR CONTROL PANEL FOR DOWNHOLE FLOW CONTROL VALVE. ONLY A SCHEMATIC LAYOUT IS SHOWN. REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR LAYOUT, PIPE SIZES, AND MATERIALS.
15. NOT USED.
16. INSTALL UNIONS OR VALVES WITH UNION CONNECTIONS AS REQUIRED THROUGHOUT THE SAMPLE AND ANALYZER ASSEMBLIES TO AID IN THE REMOVAL AND RE-ASSEMBLY OF VALVES AND EQUIPMENT FOR MAINTENANCE.



D SECTION 19M01
SCALE: 3/8" = 1'-0"



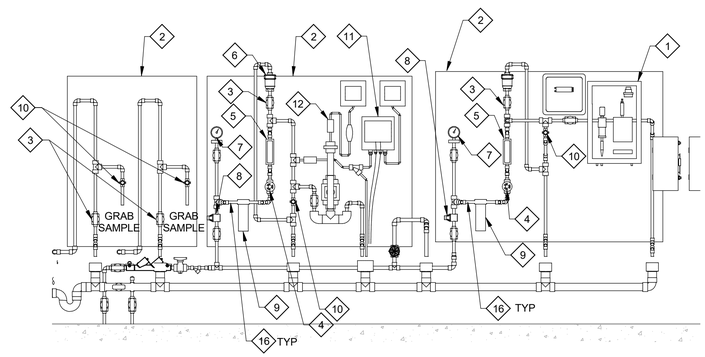
1 DETAIL 19M01
SCALE:NO SCALE



NOTES:

1. VERIFY WITH CITY THAT THE SOUNDING TAPE WILL PASS THROUGH A 1" BALL VALVE AND PIPE NIPPLE.

2 DETAIL 19M01
SCALE:NO SCALE



3 DETAIL 19M03
SCALE: 1/2" = 1'-0"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN OB
CHECKED SMB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

ASR SYSTEMS

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOODS ASR WELL
BUILDING SECTIONS AND DETAILS 2

VERIFY SCALES
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0 1"
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JOB NO. 11843A.10
DRAWING NO. 19M03
SHEET NO. 70 OF 178

PLOT DATE: 12/13/2024 3:00:31 PM

FILE NAME: R:\d1341485\11843A1019M800.rvt

WATER HEATER SCHEDULE									
EQUIPMENT TAG	**AREA SERVED**	**FLOW CAPACITY (GPM)**	**TEMP. RISE (°F)**	**ELEMENT (kW)**	**MCA (Amps)**	**VOLTAGE**	**PHASE**	**BASIS OF DESIGN**	**NOTES**
WD05-HXGR-36002	RESTROOM	.3	56	4.1	20	208	1	EEMAX EX4208T	-
WD37-HXGR-36401	CHEMICAL ROOM	23	21	72	87	480	3	HAWS 9327	1
NOTES: 1 PROVIDE NEMA TYPE 4X CONTROL PANEL.									

PLUMBING ROUGH IN SCHEDULE					
TAG NO.	PW (IN.)	HW (IN.)	D/SS (IN.)	VENT (IN.)	FIXTURE DESCRIPTION
WC	1-1/4"	N/A	4"	2"	WATER CLOSET (ADA ACCESSIBLE)
LAV	1/2"	1/2"	1-1/4"	1-1/2"	LAVATORY (ADA ACCESSIBLE)
HXGR	1-1/4"	N/A	N/A	N/A	TANKLESS WATER HEATER (HB&ESEW)
HXGR	3/4"	N/A	N/A	N/A	TANKLESS WATER HEATER (SINK)

WATER HAMMER ARRESTOR SCHEDULE		
SMITH MODEL *	PDI SYMBOL **	FIXTURE UNIT RATING
5005	A	1-11
5010	B	12-32
5020	C	33-60
5030	D	61-113
5040	E	114-154
5050	F	155-330

* SMITH OR EQUAL
** PLUMBING DRAINAGE INSTITUTE
"STANDARD PDI WH-201"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL
			NOT FOR CONSTRUCTION

DESIGNED WJS
DRAWN KHB
CHECKED CG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHAD GREEN
No. 37915
MECHANICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

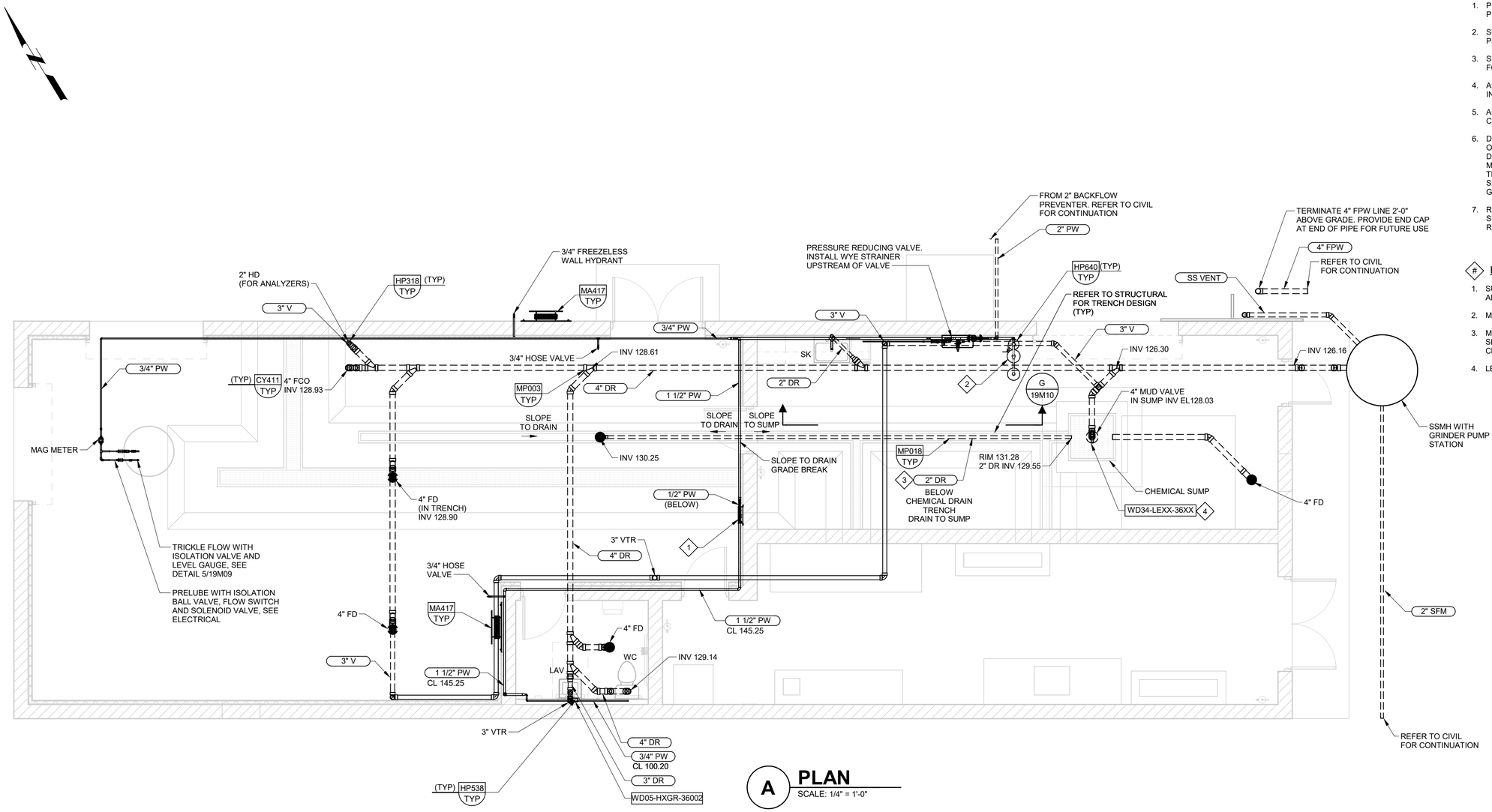
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOODS ASR WELL
PLUMBING SCHEDULES

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 19M04
SHEET NO. 71 OF 178

PROJECT NO.
FILE NAME: 11843A1019M004.dgn

Plot Date: 13-DEC-2024 6:08:32 AM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kbequette



A **PLAN**
SCALE: 1/4" = 1'-0"

GENERAL NOTES:

1. PIPING SHALL BE FIELD ROUTED TO AVOID EQUIPMENT, PROCESS PIPING, AND OTHER ITEMS AS NECESSARY.
2. SLOPE ALL DRAIN LINES 2-1/2'' AND BELOW AT A MINIMUM OF 1/4'' PER FOOT IN THE DIRECTION OF FLOW.
3. SLOPE ALL DRAIN LINES 3'' AND ABOVE AT A MINIMUM OF 1/8'' PER FOOT IN THE DIRECTION OF FLOW.
4. ALL PIPING SHALL BE CONSTRUCTED FROM MATERIALS DEFINED IN SPECIFICATION 15052.
5. ALL DRAINS CONNECTED TO THE SANITARY SEWER SYSTEM TO CONTAIN P-TRAPS PER DETAILS HP220/TYP AND MA201/TYP.
6. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN, PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.
7. REFER TO STRUCTURAL AND MECHANICAL FOR TRENCH DETAILS, SLOPING, AND PIPING. TRENCHES SHOWN ON THIS SHEET FRO REFERENCE ONLY.

KEY NOTES:

1. SURFACE MOUNTED MECHANICAL TRAP PRIMER. PRIMER TO SERVE ALL DRAINS WITH P-TRAPS.
2. MAINTAIN 32'' CLEARANCE AROUND EMERGENCY SHOWERHEAD.
3. MINIMUM 1.5% SLOPE BACK TO CHEMICAL SUMP WITHIN DEEPENED SLAB SECTION. REFER TO STRUCTURAL NOTES FOR MINIMUM CLEARANCE AND OTHER REQUIREMENTS.
4. LEVEL SWITCH IN CHEMICAL SUMP.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED WJS
DRAWN KHB
CHECKED CAG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHAD GREEN No. 37915 MECHANICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOODS ASR WELL
PLUMBING PLAN

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 19M05
SHEET NO. 72 OF 178

PLOT DATE: 12/13/2024 9:23:50 AM
FILE NAME: R:\d1341489\11843A10019P800.rvt

AIR CONDITIONING / HEAT PUMP SCHEDULE

EQUIPMENT TAG	AREA SERVED	AIRFLOW (CFM)	ESP (IN. W.C.)	COOLING DATA				MECHANICAL HEATING DATA			FILTER DATA		ELECTRICAL DATA			BASIS OF DESIGN	NOTES
				OA DB/WB (°F)	EAT DB/WB (°F)	LAT DB/WB (°F)	TOTAL / SENSIBLE CAPACITY (MBH)	EAT DB/WB (°F)	LAT DB/WB (°F)	TOTAL CAPACITY (MBH)	EFFICIENCY	THICKNESS (IN.)	VOLTAGE	PHASE	MCA (AMPS)		
WD37-HVAC-36101	ELECTRICAL ROOM	-	-	105	-	-	160	-	-	130	-	-	460	3	55.1	DAIKIN RXYQ198XATJA	4
WD37-HVAC-36102	ELECTRICAL ROOM	1,165	-	105	90/67	PER MFR	36/28	55	PER MFR	40	MERV 13	1	208	1	1.5	DAIKIN FXFQ36TVJU	1, 2, 3, 4
WD37-HVAC-36103	ELECTRICAL ROOM	1,218	-	105	90/67	PER MFR	48/34	55	PER MFR	54	MERV 13	1	208	1	1.8	DAIKIN FXFQ48TVJU	1, 2, 3, 4
WD37-HVAC-36104	ELECTRICAL ROOM	1,165	-	105	90/67	PER MFR	36/28	55	PER MFR	40	MERV 13	1	208	1	1.5	DAIKIN FXFQ36TVJU	1, 2, 3, 4
WD37-HVAC-36105	ELECTRICAL ROOM	1,218	-	105	90/67	PER MFR	48/34	55	PER MFR	54	MERV 13	1	208	1	1.8	DAIKIN FXFQ48TVJU	1, 2, 3, 4

NOTES:

1 THERMOSTAT PROVIDED BY MANUFACTURER.
2 CONTROL SYSTEM SPECIFIED IN SECTION 15936- INSTRUMENTATION AND CONTROL DEVICES FOR HVAC.
3 PROVIDE INTERNAL CONDENSATE LIFT PUMP ACCESSORY.
4 PROVIDE CONDENSING UNIT SIZED PER VRF MANUFACTURER TO PROVIDE HEATING AND COOLING REQUIREMENTS AS INDICATED FOR ASSOCIATED FAN COIL UNITS

FAN SCHEDULE

EQUIPMENT TAG	AREA SERVED	FAN TYPE	AIR FLOW (CFM)	ESP (IN. W.C.)	FAN RPM	NOISE (SONES)	MOTOR				DRIVE TYPE	BASIS OF DESIGN	NOTES
							HP	RPM	V/PH/HZ	ENCLOSURE			
WD05-FANx-36303	RESTROOM	TYPE 5	140	0.7	1050	4.5	0.128 (kW)	1050	115/60/1	ODP	DIRECT	GREENHECK SP-B150	5
WD37-FANx-36301	PUMP ROOM	TYPE 4	700	0.35	1160	12.2	1/4	1160	460/60/3	TEFC	DIRECT	GREENHECK AER-E20C-603-B3	1, 2, 3, 4, 6, 7
WD37-FANx-36302	CHEMICAL ROOM	TYPE 4	700	0.35	1160	12.2	1/4	1160	460/60/3	TEFC	DIRECT	GREENHECK AER-E20C-603-B3	1, 2, 3, 6, 7

NOTES:

1 PROVIDE BIRD SCREEN.
2 PROVIDE BACKDRAFT DAMPER BDD-3, COUNTERBALANCED FOR MINIMUM PRESSURE LOSS.
3 PROVIDE DISCONNECT SWITCH AT FAN, NEMA TYPE 4X.
4 PROVIDE THERMOSTAT AS SPECIFIED IN SECTION 15936.
5 FAN SHALL BE INTERLOCKED WITH LIGHT SWITCH.
6 PROVIDE HI-PRO POLYESTER COATING.
7 PROVIDE ACOUSTICAL LOUVER L-3 AS SPECIFIED IN SECTION 08910.

ELECTRIC UNIT HEATER SCHEDULE

EQUIPMENT TAG	AREA SERVED	HEATING CAPACITY (kW)	AIRFLOW (CFM)	MCA (Amps)	VOLTAGE	PHASE	BASIS OF DESIGN	NOTES
WD37-HEAT-36201	PUMP ROOM	3	700	5	480	3	TRIAD 234-U11N-0030U	1, 2, 3, 4
WD37-HEAT-36202	PUMP ROOM	3	700	5	480	3	TRIAD 234-U11N-0030U	1, 2, 3, 4
WD37-HEAT-36203	CHEMICAL ROOM	5	700	8	480	3	TRIAD 234-U11N-0050U	1, 2, 3, 4
WD37-HEAT-36204	ELECTRICAL ROOM	3	700	5	480	3	TRIAD 234-U11N-0030U	1, 2, 3, 4

NOTES:

1 THERMOSTAT PROVIDED BY HEATER MANUFACTURER. THERMOSTAT SHALL BE LOCKED OUT AND NOT ALLOW HEATING ABOVE 55 DEGREES FAHRENHEIT.
2 WALL MOUNTED.
3 SIDE AIR DISCHARGE.

REV	DATE	BY	DESCRIPTION

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DESIGNED WJS
DRAWN KHB
CHECKED CAG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHAD GREEN No. 37915 MECHANICAL STATE OF CALIFORNIA

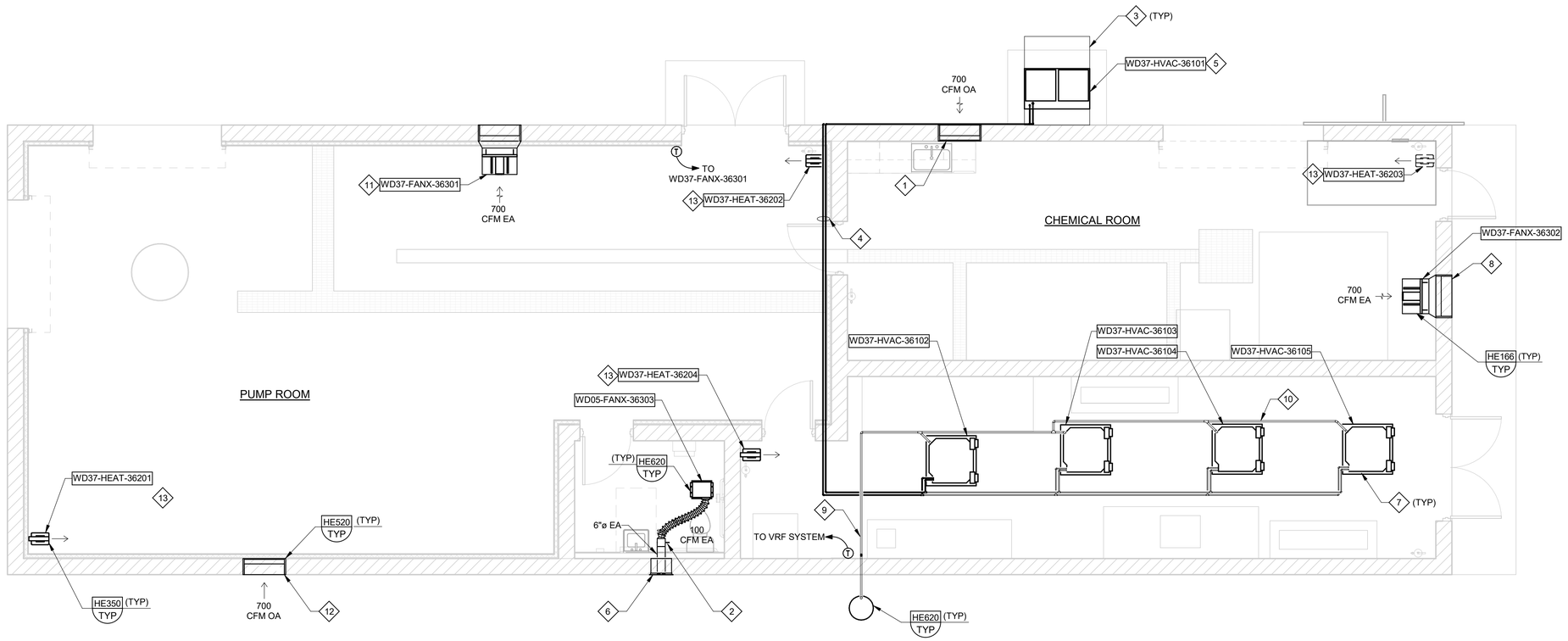
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOODS ASR WELL
HVAC SCHEDULES

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 19M06
SHEET NO. 73 OF 178

PROJECT NO.
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Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1
LAST SAVED BY: kbequette



GENERAL NOTES:

1. MOUNT THERMOSTATS AT 48" AFF AND LABEL WITH ITS CONTROLLING DEVICE. THERMOSTAT LOCKBOXES TO BE PROVIDED BY MECHANICAL CONTRACTOR.
2. DUCTWORK SERVING ELECTRICAL ROOM TO BE ALUMINUM PER SECTION 16133. DO NOT ROUTE ABOVE ELECTRICAL EQUIPMENT.
3. ALL DUCTWORK AND SUPPORTS SHALL BE CONSTRUCTED PER SMACNA. REFER TO SPECIFICATION SECTION 16133 FOR ADDITIONAL REQUIREMENTS.
4. DRAWINGS ARE DIAGRAMMATICAL AND NOT EVERY PIPING OFFSET, SIZE, MATERIAL, FITTING, VALVE, INSTRUMENT, OR DIELECTRIC IS SHOWN. PROVIDE AS REQUIRED. PROVIDE MINOR MODIFICATIONS TO PIPING AND SUPPORTS AS REQUIRED. SEE THE PROCESS AND INSTRUMENTATION DIAGRAMS AND SPECIFICATION SECTION 15052-COMMON WORK RESULTS FOR GENERAL PIPING.

KEY NOTES:

1. 32''x24'' INTAKE LOUVER TYPE L-3 TO BE MOUNTED AT 8'-0'' AFF.
2. BACKDRAFT DAMPER (BDD-3).
3. MANUFACTURER REQUIRED CLEARANCE. DO NOT BLOCK.
4. REFRIGERANT LINES. LINES WILL ENTER THE PUMP ROOM DOWN LOW THEN RISE TO BE ROUTED UNDER THE HARD CEILING. FIELD ROUTE TO FAN COIL UNITS IN ELECTRICAL ROOM. AVOID RUNNING LIQUID SIDE PIPE OVER ELECTRICAL EQUIPMENT. INSULATE ALL PIPING PER SPECIFICATIONS.
5. HEAT PUMP TYPE CONDENSING UNIT SERVING VRF. CONTRACTOR TO SUBMIT ANCHORAGE CALCULATIONS PER SPECIFICATION 01850.
6. 16"x8" EXHAUST BRICK VENT TO BE MOUNTED AT 9'-4'' AFF.
7. INDOOR VRF FAN COIL UNIT TO BE MOUNTED UNDER CEILING PER MANUFACTURER STANDARDS. SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR INDOOR UNIT SUPPORTS PER SPECIFICATION 01850. CONTRACTOR TO COORDINATE WITH TRUSS MANUFACTURER FOR ADDITIONAL LOADING. DO NOT PLACE ABOVE ELECTRICAL EQUIPMENT.
8. WALL MOUNTED EXHAUST FAN AND CORRESPONDING ACOUSTICAL LOUVER TYPE L-3 TO BE MOUNTED IN WALL AT 2'-0" AFF PROVIDE FAN WITH GUARD.
9. ROUTE CONDENSATE PIPING OUT OF BUILDING AND INTO DRY WELL. SLOPE CONDENSATE DRAIN AT 1/8" PER FOOT IN THE DIRECTION OF FLOW.
10. 1" SCH 40 PVC CONDENSATE DRAIN PIPE. INSULATE PER SPECIFICATIONS.
11. WALL MOUNTED EXHAUST FAN AND CORRESPONDING ACOUSTICAL LOUVER TYPE L-3 TO BE MOUNTED IN WALL AT 7'-4" AFF PROVIDE FAN WITH GUARD.
12. 32"x24" INTAKE LOUVER TYPE L-3 TO BE MOUNTED AT 2'-0" AFF.
13. WALL MOUNTED ELECTRIC UNIT HEATER. MOUNT HEATER AT 8'-0'' AFF.

K PLAN
SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
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DESIGNED WJS
DRAWN KHB
CHECKED CAG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHAD GREEN No. 37915 MECHANICAL STATE OF CALIFORNIA

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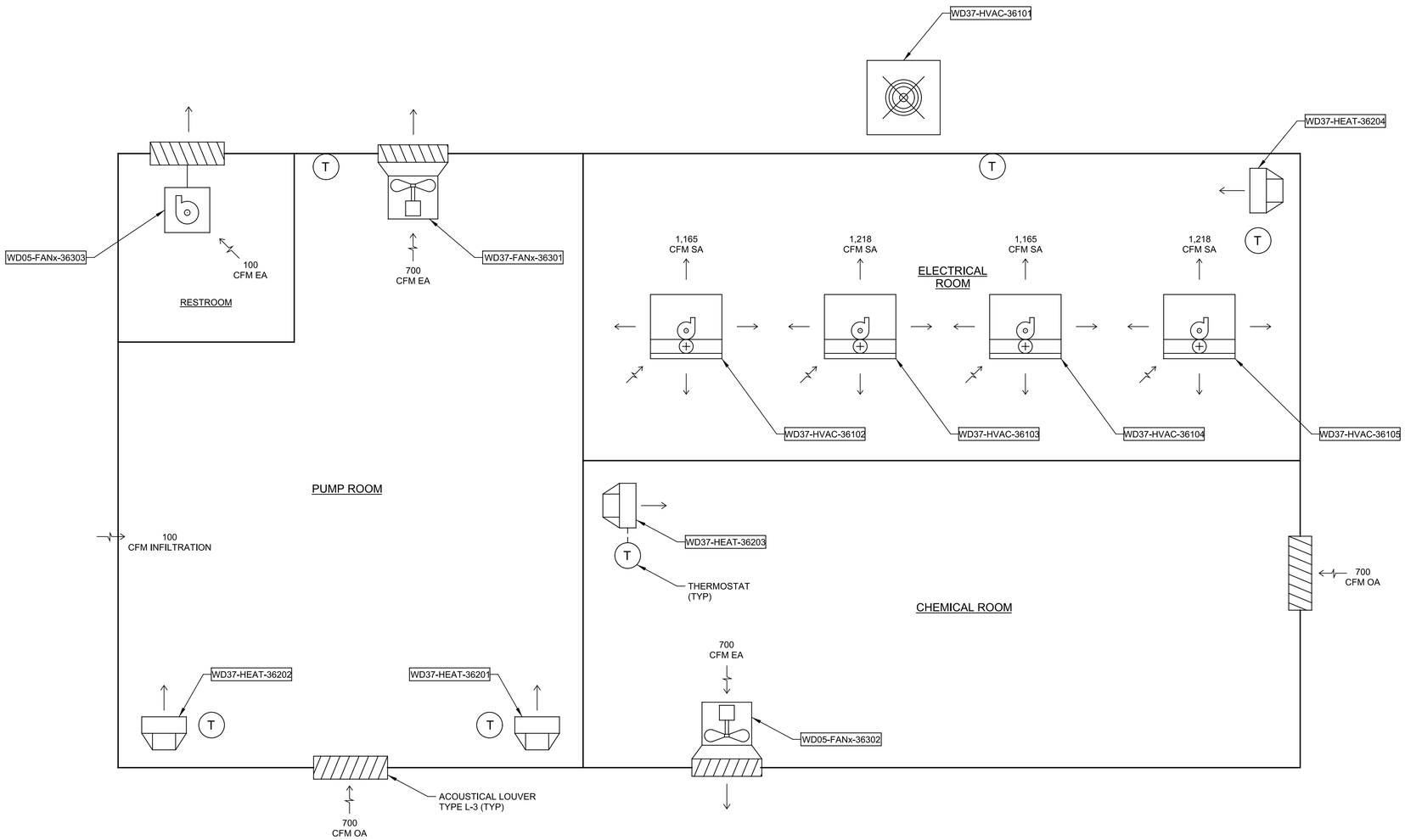
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOODS ASR WELL
HVAC PLAN

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 19M07
SHEET NO. 74 OF 178

PLOT DATE: 12/13/2024 9:29:30 AM
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No. 37915
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STATE OF CALIFORNIA

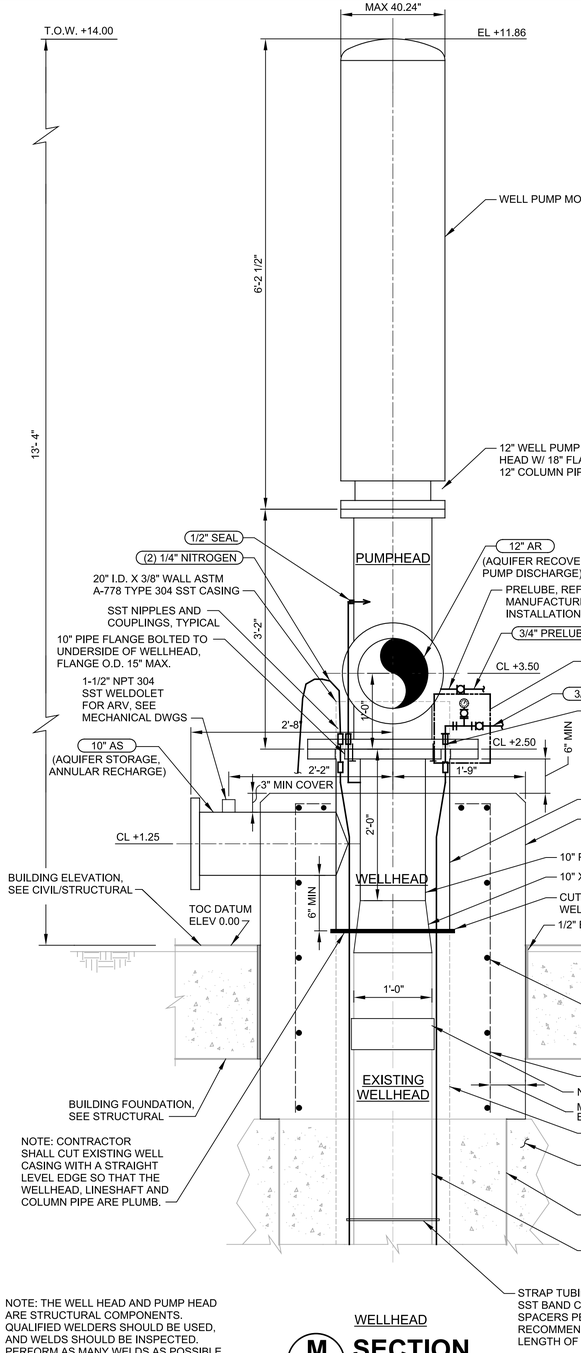
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOODS ASR WELL
HVAC AIRFLOW SCHEMATIC

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JOB NO. 11843A.10
DRAWING NO. 19M08
SHEET NO. 75 OF 178

PROJECT NO.
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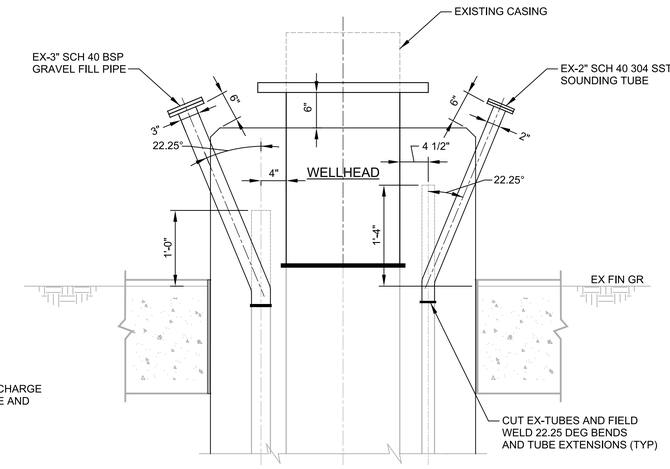


NOTE: THE WELL HEAD AND PUMP HEAD ARE STRUCTURAL COMPONENTS. QUALIFIED WELDERS SHOULD BE USED, AND WELDS SHOULD BE INSPECTED. PERFORM AS MANY WELDS AS POSSIBLE IN THE SHOP UNDER IDEAL AND CONTROLLED CONDITIONS. FIELD WELDING SHOULD BE KEPT TO A MINIMUM. ALL STAINLESS STEEL WELDS SHALL BE PICKLED AND PASSIVATED.

WELLHEAD

M - SECTION

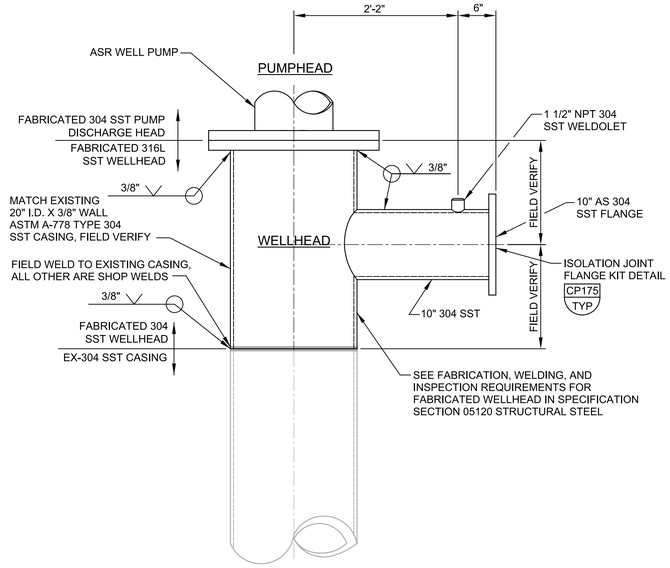
SCALE: 1" = 1'-0"
FILE: 11843A1009M400



WELLHEAD (TYP A & B)

N - SECTION

SCALE: 1" = 1'-0"
FILE: 11843A1009M400



WELLHEAD (TYP A & B)

P - SECTION

SCALE: 1" = 1'-0"
FILE: 11843A1009M400

GENERAL NOTES:

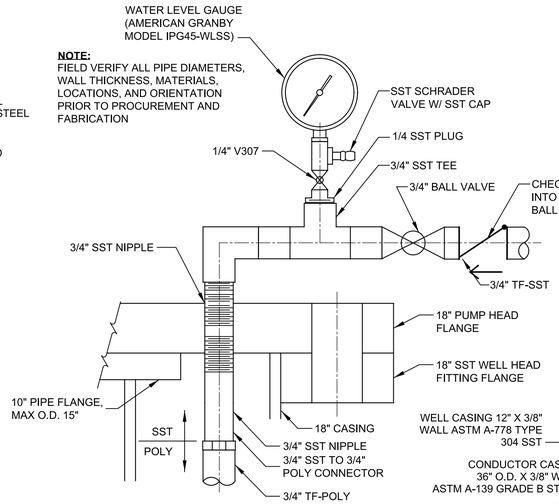
1. THE EXISTING WELL WAS CONSTRUCTED BY OTHERS. FOR EXISTING WELL CONSTRUCTION SEE "MISTY WOOD WELL AS-BUILTS, BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS, JANUARY 2024
2. THE EXISTING STAINLESS STEEL WELL CASING, SOUNDING TUBE, AND GRAVEL FILL TUBE EXTENDS ABOVE EXISTING GRADE. THE EXISTING CARBON STEEL CONDUCTOR CASING AND CONCRETE SEAL AND ENCASEMENT EXTEND TO APPROXIMATELY EXISTING GRADE. EXPOSE AND DEMOLISH EXISTING CONDUCTOR CASING AND CONCRETE ENCASEMENT ENOUGH TO INSTALL CONCRETE BUILDING SLAB AND WELLHEAD. CUT EXISTING SST CASING TO ELEVATION WITH A CLEAN LEVEL/PLUMB EDGE. THE FABRICATED WELLHEAD SHALL BE WELDED PLUMB AND TRUE. THE SIZE DIMENSIONS AND PLACEMENT OF THE TOP FLANGE AND THE BOLT HOLES SHALL BE COORDINATED WITH THE PUMP MOUNTING AND PIPING ORIENTATION REQUIREMENTS. MATCH NEW SST SIZE, THICKNESS, AND MATERIAL TO EXISTING SST CASING. CUT EXISTING SOUNDING TUBE AND GRAVEL FILL PIPES AND FIELD WELD ON NEW FABRICATED TUBES TO BEND OUTWARD FROM THE CENTER OF THE WELL HEAD AND OUT FROM UNDER THE CASING FLANGE AS TO ENABLE THE EASY REMOVAL OF THE FLANGED FITTINGS, BOLTS, VALVES, AND LEVEL INSTRUMENT. MATCH NEW PIPE THICKNESS, AND MATERIAL TO EXISTING SOUNDING TUBE AND GRAVEL FILL PIPES. INSTALL REINFORCED CONCRETE ENCASEMENT AROUND NEW WELLHEAD. PROVIDE MINIMUM COVER OVER BAR AND CHAMFER EDGE.
3. THE FIELD WELDING TO THE EXISTING WELLHEAD AND THE NEW FABRICATED WELLHEAD SHALL BE CONSIDERED TO BE STRUCTURAL STEEL, SHALL BE PERFORMED BY A CERTIFIED WELDER AND IS SUBJECT TO FIELD WELDING AND SHOP WELDING PROCEDURES AND INSPECTIONS PER THE CONTRACT SCOPE OF WORK AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPAIR, AND REPLACE ANY UNSATISFACTORY WELDS OR DAMAGED MATERIALS AND COMPONENTS.
4. THE WELL SHALL BE PROTECTED FROM THE ENTRY OF FOREIGN MATERIALS AT ALL TIMES DURING CONSTRUCTION BY THE USE OF A TEMPORARY INFLATABLE PLUG NEAR THE SURFACE WHEN OPEN TO ATMOSPHERE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENTRY OF FOREIGN MATERIALS DURING THE CONSTRUCTION PROCESS. PROMPTLY REMOVE ANY MATERIALS THAT FALL IN ABOVE THE PLUG.
5. INSTALL THE VERTICAL TURBINE PUMP AS PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL SPECIAL CONNECTIONS AND APPURTENANCES AS SHOWN AND AS SPECIFIED ON THESE DRAWINGS.
6. PROVIDE 0.75-INCH DIAMETER SEMI-RIGID POLYETHYLENE TUBING STRAPPED TO THE PUMP COLUMN WITH SST HOSE CLAMPS AT 10 FT SPACING TO A DEPTH OF 1 FOOT ABOVE THE BOWL ASSEMBLY. THE TUBING SHALL SERVE A DUAL PURPOSE OF DIRECTING CHLORINATED WATER VIA TRICKLE FLOW (TF) CONNECTION INTO THE WELL, AND SHALL SERVE AS A BACKUP MEANS OF MEASURING WATER LEVEL VIA A MANUAL TAPE THAT CAN BE DROPPED THROUGH THE TOP OF THE TEE ON THE PUMP BASE, OR AS A BUBBLER TYPE INDICATOR WHEN AIR IS CHARGED THROUGH THE SCHRADER VALVE. ALL MATERIALS SHALL BE NSF APPROVED FOR POTABLE WATER USE.
7. THE CONTRACTOR SHALL PROVIDE THE REINFORCED CONCRETE ENCASEMENT. AROUND THE FINISHED WELLHEAD ASSEMBLY AS SHOWN, SHALL BE FULLY SEATED TO THE TOP OF THE SURFACE CASING AND SUPPORTED BY THE GROUT AROUND THE CASING. PROVIDE 0.5-INCH MINIMUM CHAMFER ALL EXPOSED EDGES OF THE CONCRETE. THE CONCRETE AND REINFORCING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS DESCRIBED ON THE DRAWINGS.

PUMP HEAD & WELLHEAD

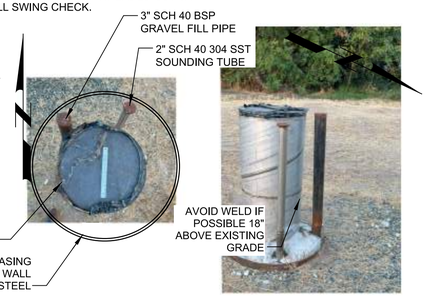
L - PLAN

19M01

SCALE: 1" = 1'-0"
FILE: 11843A1009M400



NOTE:
FIELD VERIFY ALL PIPE DIAMETERS, WALL THICKNESS, MATERIALS, LOCATIONS, AND ORIENTATION PRIOR TO PROCUREMENT AND FABRICATION



EXISTING WELL - TOP VIEW

EXISTING WELL - NORTH ELEVATION

TRICKLE FLOW CONNECTION

5 - DETAIL

19M03
19M09

SCALE: 6" = 1'-0"
FILE: 11843A1009M400

11 - DETAIL

SCALE: NOT TO SCALE
FILE: 11843A1019M601/602

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN TLR
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKETT — No. 63626 — CIVIL — STATE OF CALIFORNIA

ASR SYSTEMS

REGISTERED PROFESSIONAL ENGINEER — STEPHEN BELSER — M 40713 — MECHANICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

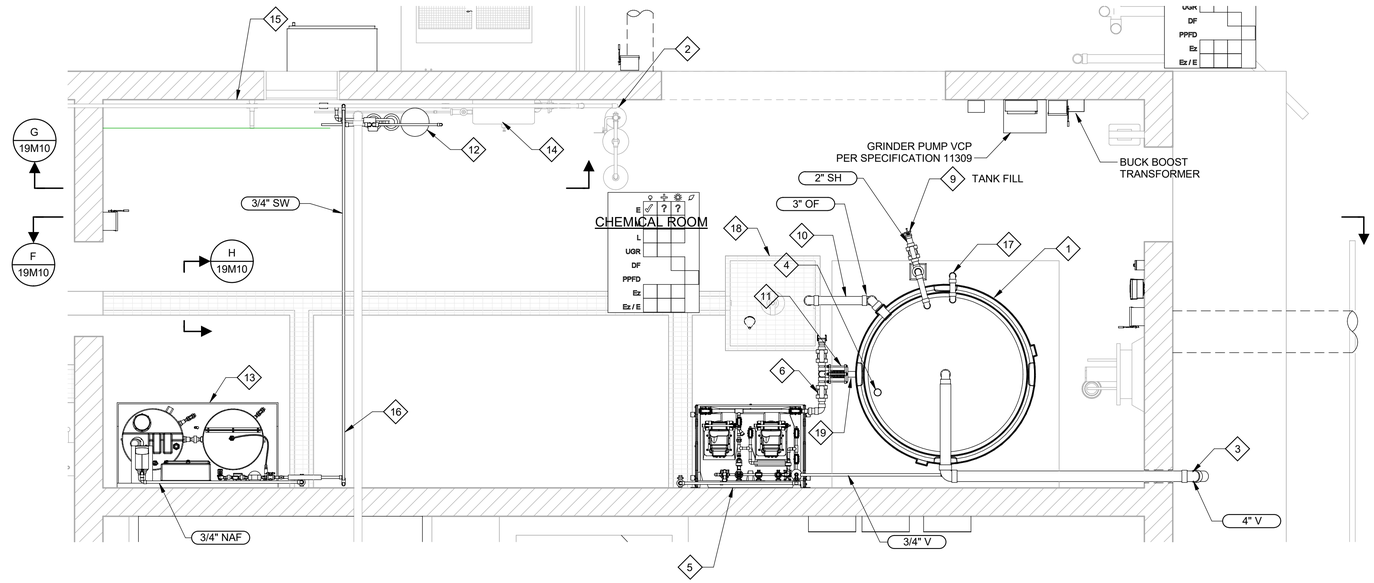
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOOD ASR WELL
WELLHEAD DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19M09
SHEET NO. 76 OF 178

PROJECT NO.
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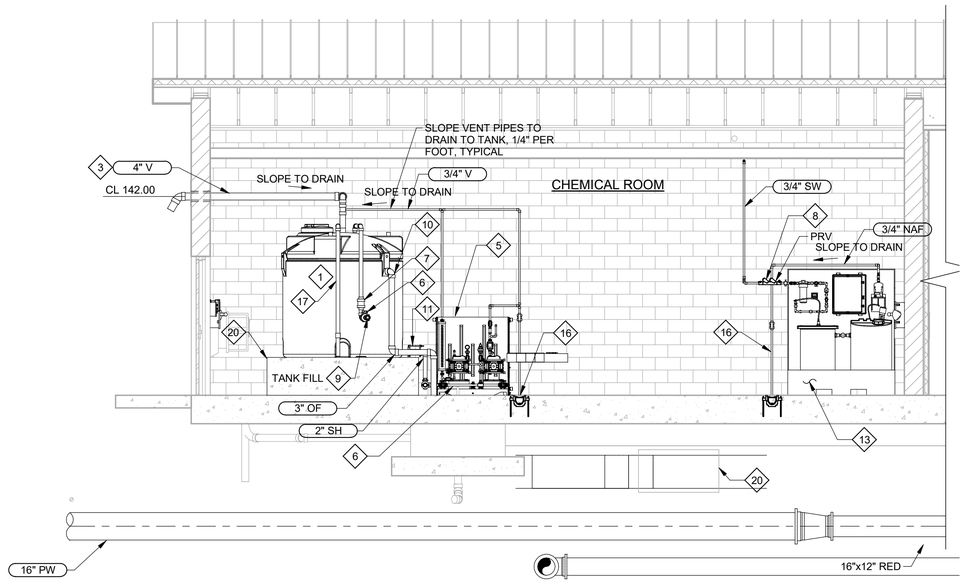
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E ENLARGED PLAN

19M01

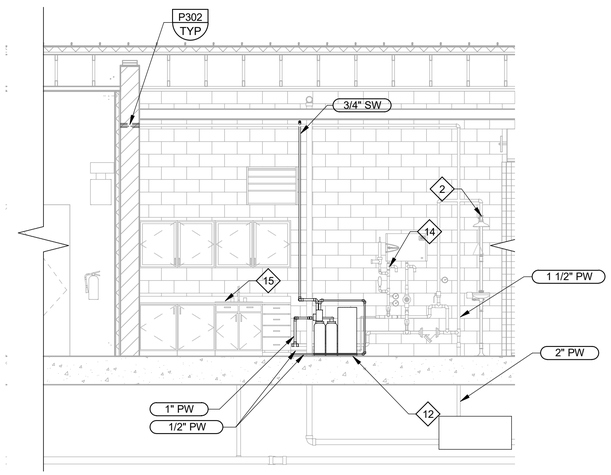
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F SECTION

19M10

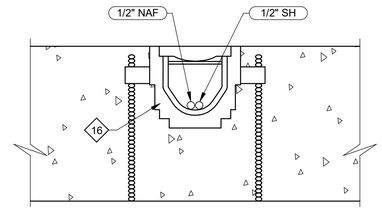
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G SECTION

19M10

SCALE: 1/4" = 1'-0"



H SECTION

19M10

SCALE: 1" = 10'-0"

GENERAL NOTES:

1. SEE CIVIL FOR PIPING CONTINUATIONS
2. NOT ALL REQUIRED PIPE SUPPORTS ARE SHOWN.
3. ALL PIPE SUPPORTS WITHIN THE CHEMICAL ROOM SHALL BE FRP, UNLESS OTHERWISE NOTED. WALL PIPE SUPPORTS PER MP218/TYP, FLOOR PIPE SUPPORTS PER MP034/TYP, AND VERTICAL PIPE SUPPORTS PER MP042/TYP.
4. ALL PIPE SUPPORTS USED FOR CHEMICAL SERVICE TO USE CUSHION STRIPS BY ANVIL #AS 3792 OR EQUAL.
5. ALL BALL VALVES USED FOR SODIUM HYPOCHLORITE SERVICE SHALL BE VENTED BALL TYPE.

KEY NOTES:

1. 1,000 GALLON DOUBLE CONTAINED SODIUM HYPOCHLORITE TANK PER SPEC 13208
2. EMERGENCY SHOWER & EYEWASH STATION PER HP640/TYP SEE PLUMBING PLAN, DWG 19M05.
3. TANK VENT ROUTED THROUGH WALL PER P302/TYP, TERMINATE AT A 45 DEGREE ANGLE WITH BIRD SCREEN
4. LEVEL INSTRUMENT
5. SODIUM HYPOCHLORITE DUAL PUMP SKID PER SPEC 11242
6. 2" VENTED BALL VALVE
7. 2" BALL CHECK VALVE
8. BACKFLOW PREVENTER, DIRECT DRAIN TO FLOOR DRAIN BELOW
9. TANK FILL 2" QUICK DISCONNECT HOSE COUPLING WITH CAP ANGLED DOWNWARD 22 DEGREES, VENTED BALL VALVE, AND BALL CHECK VALVE SUPPORTED FROM FLOOR
10. 3" OVERFLOW, ROUTE PIPING TO SUMP
11. FLEXIBLE FITTING PER TANK MANUFACTURER
12. WATER SOFTENER PER KINETICO, MODEL S650XP AND BRINE TANK MODEL 7202
13. PACKAGED FLUORIDE DOSING SKID PER SPEC 11249
14. INSTANT WATER HEATER. SEE PLUMBING PLAN, DWG 19M05.
15. UTILITY SINK
16. ZURN 6" WIDE TRENCH DRAIN #ZF806-HDS-BDE WITH STAINLESS STEEL TOP FRAME AND GRATING COVER. TRANSITION FROM PVC PIPE TO PFA TUBING IN TRENCH
17. REVERSE LEVEL FLOAT GAUGE
18. FRP GRATING COVER FOR SUMP, TRAFFIC RATED.
19. TANK DRAIN TO BE LOCATED AT THE BOTTOM OF THE TANK TO ALLOW FULL DRAINAGE. CUT NOTCH OUT OF CONCRETE PAD AND ADJUST REBAR TO AVOID CONFLICTS.
20. PRIOR TO INSTALLING CONCRETE TANK PAD, VERIFY WITH PUMP CHEMICAL PUMP MANUFACTURER AND SUPPLIER THAT MINIMUM LIQUID LEVEL OF TANK MEETS MINIMUM NET POSITIVE SUCTION HEAD REQUIRED FOR CHEMICAL FEED PUMPS. RAISE TANK PAD IF REQUIRED.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED RM
DRAWN OB
CHECKED SKG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

MECHANICAL

MISTY WOODS ASR WELL
CHEMICAL ROOM

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

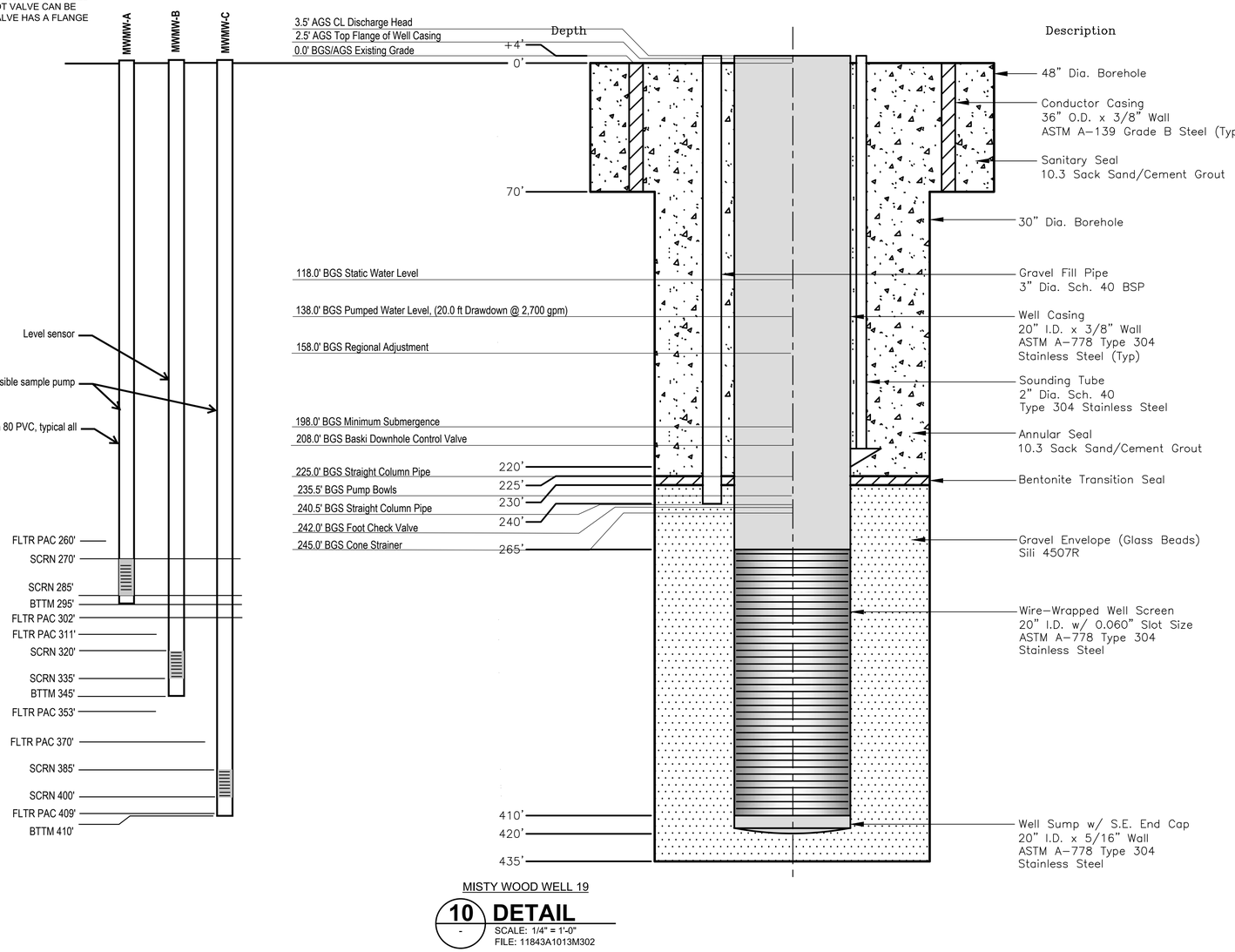
JOB NO. 11843A.10
DRAWING NO. 19M10
SHEET NO. 77 OF 178

PLOT DATE: 12/13/2024 3:00:36 PM

FILE NAME: R:\d1341485\11843A1019M800.rvt

NOTES:

1. SEE VALVE TYPE SCHEDULE, (SHEET 00GM04) AND VALVE SPECIFICATIONS.
2. SEE SCHEDULE, (SHEET 00GM05) AND PIPE SPECIFICATIONS FOR SST PIPING REQUIREMENTS.
3. PROVIDE CENTRALIZER AT BOTTOM FLANGE AT PUMP AND AT 20' SPACING ON PUMP COLUMN FLANGES. CENTRALIZERS SHALL CLEAR CASING 1/2" ON ALL SIDES.
4. CENTRALIZERS SHALL ALSO BE USED FOR THE INSTALLATION OF THE R.O. RELIABILITY WELL PUMP COLUMN PIPING.
5. COMMERCIALLY AVAILABLE CENTRALIZERS MADE OF POLYETHYLENE AND STAINLESS STEEL AS MANUFACTURED BY ADVANCE PRODUCTS & SYSTEMS, LAFAYETTE, LA MAY BE SUBSTITUTED SUBJECT TO APPROVAL OF THE ENGINEER.
6. CONTRACTOR SHALL VERIFY THE INTERNAL DIAMETER OF THE WELL CASING BY PASSING A FULL-SCALE DUMMY GAGE WITH THE OUTER DIAMETER & LENGTH OF THE 10" FOOT VALVE ASSEMBLY. THIS TEST SHALL CONFIRM THE INSIDE DIAMETER & ROUNDNESS OF THE WELL CASING, AS WELL AS CONFIRM THAT THE 10" FOOT VALVE CAN BE INSTALLED WITHIN THE CASING. THE 10" FOOT VALVE HAS A FLANGE OUTER DIAMETER OF 17.5".



MISTY WOOD WELL 19

10 - DETAIL

SCALE: 1/4" = 1'-0"
FILE: 11843A1013M302

GENERAL NOTES:

1. THE EXISTING WELL WAS CONSTRUCTED BY OTHERS. FOR EXISTING WELL CONSTRUCTION SEE "MISTY WOOD WELL AS-BUILTS, BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS, JANUARY 2024
2. THE EXISTING STAINLESS STEEL WELL CASING, SOUNDING TUBE, AND GRAVEL FILL TUBE EXTENDS ABOVE EXISTING GRADE. THE EXISTING CARBON STEEL CONDUCTOR CASING AND CONCRETE SEAL AND ENCASEMENT EXTEND TO APPROXIMATELY EXISTING GRADE. EXPOSE AND DEMOLISH EXISTING CONDUCTOR CASING AND CONCRETE ENCASEMENT ENOUGH TO INSTALL CONCRETE BUILDING SLAB AND WELLHEAD. CUT EXISTING SST CASING TO ELEVATION WITH A CLEAN LEVEL/PLUMB EDGE. THE FABRICATED WELLHEAD SHALL BE WELDED PLUMB AND TRUE. THE SIZE DIMENSIONS AND PLACEMENT OF THE TOP FLANGE AND THE BOLT HOLES SHALL BE COORDINATED WITH THE PUMP MOUNTING AND PIPING ORIENTATION REQUIREMENTS. FIELD VERIFY AND MATCH NEW SST SIZE, THICKNESS, AND MATERIAL TO EXISTING SST CASING. CUT EXISTING SOUNDING TUBE AND GRAVEL FILL PIPES AND FIELD WELD ON NEW FABRICATED TUBES TO BEND OUTWARD FROM THE CENTER OF THE WELL HEAD AND OUT FROM UNDER THE CASING FLANGE AS TO ENABLE THE EASY REMOVAL OF THE FLANGED FITTINGS, BOLTS, VALVES, AND LEVEL INSTRUMENT. MATCH NEW PIPE, THICKNESS, AND MATERIAL TO EXISTING SOUNDING TUBE AND GRAVEL FILL PIPE. INSTALL REINFORCED CONCRETE ENCASEMENT AROUND NEW WELLHEAD. PROVIDE MINIMUM COVER OVER BAR AND CHAMFER EDGE.
3. THE FIELD WELDING TO THE EXISTING WELLHEAD AND THE NEW FABRICATED WELLHEAD SHALL BE CONSIDERED TO BE STRUCTURAL STEEL, SHALL BE PERFORMED BY A CERTIFIED WELDER AND IS SUBJECT TO FIELD WELDING AND SHOP WELDING PROCEDURES AND INSPECTIONS PER THE CONTRACT SCOPE OF WORK AND TECHNICAL SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPAIR, AND REPLACE ANY UNSATISFACTORY WELDS OR DAMAGED MATERIALS AND COMPONENTS.
4. THE WELL SHALL BE PROTECTED FROM THE ENTRY OF FOREIGN MATERIALS AT ALL TIMES DURING CONSTRUCTION BY THE USE OF A TEMPORARY INFLATABLE PLUG NEAR THE SURFACE WHEN OPEN TO ATMOSPHERE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENTRY OF FOREIGN MATERIALS DURING THE CONSTRUCTION PROCESS. PROMPTLY REMOVE ANY MATERIALS THAT FALL IN ABOVE THE PLUG.
5. INSTALL THE VERTICAL TURBINE PUMP AS PER THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL SPECIAL CONNECTIONS AND APPURTENANCES AS SHOWN AND AS SPECIFIED ON THESE DRAWINGS.
6. PROVIDE 0.75-INCH DIAMETER SEMI-RIGID POLYETHYLENE TUBING STRAPPED TO THE PUMP COLUMN WITH SST HOSE CLAMPS AT 10 FT SPACING TO A DEPTH OF 1 FOOT ABOVE THE BOWL ASSEMBLY. THE TUBING SHALL SERVE A DUAL PURPOSE OF DIRECTING CHLORINATED WATER VIA TRICKLE FLOW (TF) CONNECTION INTO THE WELL, AND SHALL SERVE AS A BACKUP MEANS OF MEASURING WATER LEVEL VIA A MANUAL TAPE THAT CAN BE DROPPED THROUGH THE TOP OF THE TEE ON THE PUMP BASE. OR AS A BUBBLER TYPE INDICATOR WHEN AIR IS CHARGED THROUGH THE SCHRADER VALVE. ALL MATERIALS SHALL BE NSF APPROVED FOR POTABLE WATER USE.
7. THE CONTRACTOR SHALL PROVIDE THE REINFORCED CONCRETE ENCASEMENT, AROUND THE FINISHED WELLHEAD ASSEMBLY AS SHOWN, SHALL BE FULLY SEATED TO THE TOP OF THE SURFACE CASING AND SUPPORTED BY THE GROUT AROUND THE CASING. PROVIDE 0.5-INCH MINIMUM CHAMFER ALL EXPOSED EDGES OF THE CONCRETE. THE CONCRETE AND REINFORCING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS DESCRIBED ON THE DRAWINGS.

REV	DATE	BY	DESCRIPTION

DRAFT FINAL SUBMITTAL
NOT FOR CONSTRUCTION

DESIGNED MED
DRAWN TLR
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKETT No. 63626 CIVIL STATE OF CALIFORNIA

ASR SYSTEMS

REGISTERED PROFESSIONAL ENGINEER STEPHEN BELSER M 40713 MECHANICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

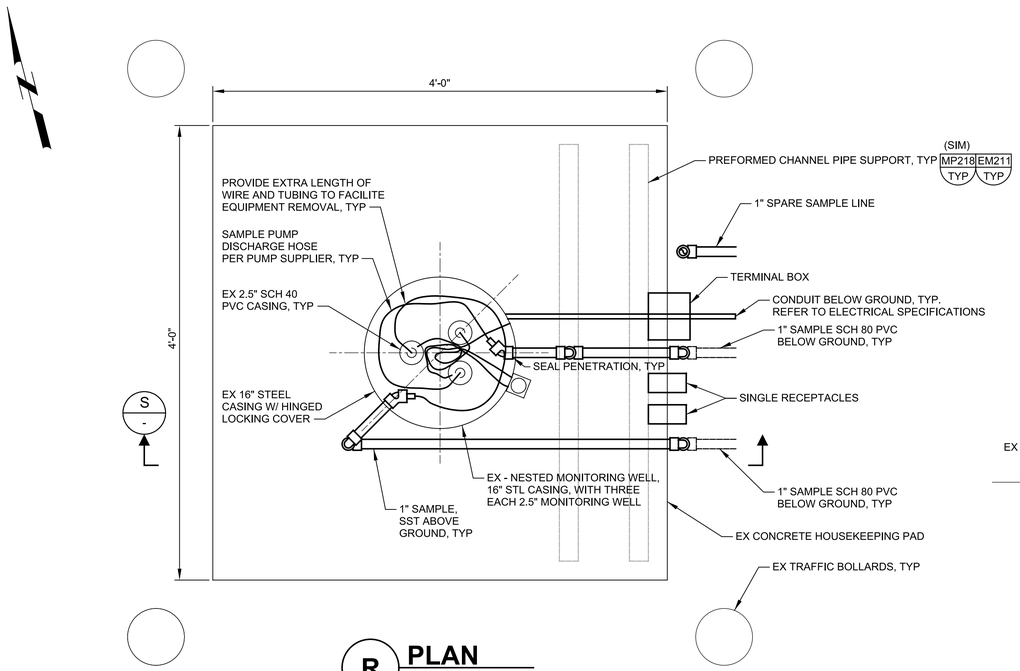
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOOD - WELL PROFILE

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

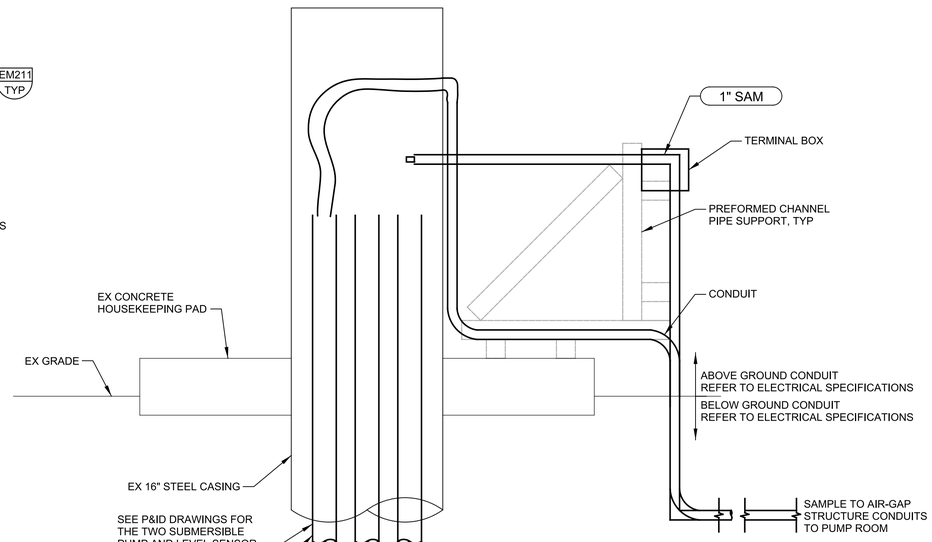
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DRAWING NO. 19M11
SHEET NO. 78 OF 178

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LAST SAVED BY: eparker



R **PLAN**
SCALE: 1' = 1 1/2"
FILE: 11843A1009M402



S - **SECTION**
SCALE: 1' = 1 1/2"
FILE: 11843A1009M402

GENERAL NOTES:

1. A LOCKABLE, FABRICATED ALUMINUM, HINGED CLAM-SHELL OPENING ENCLOSURE AS SHOWN ON DRAWING M18. MOUNT THE ENCLOSURE TO THE CONCRETE SLAB USING 1#2" X 4" EXPANSION ANCHORS WITH SECURITY PATTERN TO INHIBIT TAMPERING AND REMOVAL. ALL FASTENERS SHALL BE TYPE 316 SST. .
2. THE MONITOR WELL CASING TUBES WERE INSTALLED BY OTHERS, AND WERE EXTENDED APPROXIMATELY 6-INCHES ABOVE THE EXISTING GRADE WITH NPT THREADED ENDS. EXTEND THE PVC CASING TUBES AND TERMINATE ABOVE CONCRETE SLAB AND INSTALL A 316 SST TOP FLANGE FOR EACH TUBE IN THE STAGGERED HEIGHT PATTERN AS SHOWN. (ALL CONNECTIONS SHALL BE THREADED, DO NOT USE SOLVENT WELDED PVC ON MONITOR WELL.) PROVIDE A MATCHING 316 SST BLIND FLANGE AS PER THE DETAILS ON THIS DRAWING WITH HOLES AND TAPS AS SHOWN. TUBE C SHALL INCLUDE THE FOLLOWING: A) 1" SST CONNECTION BETWEEN BORELINE HOSE FROM THE SAMPLE PUMP AND THE 1" SAM-PVC DISCHARGE PIPING, B) PRESSURE SEALED CABLE OPENING FOR PUMP POWER CABLE, C) PRESSURE SEALED CABLE OPENING FOR WATER LEVEL PROBE, D) 1/2 " NPT THREADED CONNECTION FOR AIR RELEASE VALVE ASSEMBLY WHICH SHALL ALSO BE EASILY REMOVABLE TO FACILITATE A DROP TAPE FOR MANUALLY MEASURING THE WATER LEVEL IN THE WELL. THE WELLHEAD ASSEMBLY WILL BE UNDER PRESSURE DURING ASR RECHARGE OPERATIONS AND SHALL BE CAPABLE OF A WELLHEAD PRESSURE OF 20 PSI.
3. FOR STORAGE ZONE MONITOR WELL TUBE C - INSTALL THE SUBMERSIBLE WATER LEVEL TRANSDUCER LT~55 AS PROVIDED WITH THE INSTRUMENTATION AND CONTROL SYSTEM PACKAGE. PROVIDE A PRESSURE-TIGHT CABLE FITTING RATED FOR 20 PSI WELLHEAD PRESSURE.
4. FOR MONITOR WELL TUBES A & B - PROVIDE A SST FLANGE WITH NPT THREADED NIPPLE CONNECTION TO AIR RELEASE VALVE AND A NPT THREADED AND PLUGGED HOLE AS SHOWN. (THE PLUG CAN BE REMOVED TO PROVIDE ACCESS FOR PERIODIC WATER LEVEL MEASUREMENTS.)
5. PROVIDE A 3/4 HP SST SUBMERSIBLE SAMPLE PUMP, TO BE SET AT A DEPTH OF 150 FT BLS USING 1" BORELINE HOSE. THE PUMP SHALL BE RATED AT 8 GPM AT 140 FT TDH, AND SHALL BE PROVIDED COMPLETE WITH 200 FT OF SUBMERSIBLE POWER CABLE AND 150 FT OF BORELINE HOSE AS MANUFACTURED BY HOSE SOLUTIONS, INC. THE PUMP SHALL BE GRUNDFOS MODEL 22SQE07-120, 208V/1-P/60Hz, OR EQUAL.



TOP FLANGE

1 19C02 **PHOTO**
SCALE: NO SCALE
FILE: 11843A1019M603



MONITORING SAMPLE LINE

2 19C02 **PHOTO**
SCALE: NO SCALE
FILE: 11843A1019M604

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
MECHANICAL
MISTY WOOD - MONITORING WELL SECTIONS AND DETAILS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWING NO. 19M12
SHEET NO. 79 OF 178

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LAST SAVED BY: eparker

ELECTRICAL PLAN SYMBOLS

IDENTIFICATION SYMBOLS

EQUIP # — EQUIPMENT AND INSTRUMENT IDENTIFICATION

EQUIPMENT/INSTRUMENT LOCATOR

LUMINAIRE IDENTIFICATION
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED FROM
c = MOUNTING HEIGHT IN FEET TO BOTTOM OF FIXTURE
X = LUMINAIRE TYPE, REFER TO THE LUMINAIRE SCHEDULE

XXXX — CONDUIT IDENTIFICATION
XXXX = CONDUIT NUMBER, REFER TO CONDUIT SCHEDULE
UNLESS OTHERWISE NOTED, GROUPED CONDUITS ARE LABELED LEFT TO RIGHT OR TOP TO BOTTOM.

X — INDICATES KEYNOTE X
(PERTAINS ONLY TO SHEET WHERE NOTE IS FOUND)

A — DISCONNECT SWITCH
A = TYPE, REFER TO DISCONNECT SCHEDULE

CAMERA

LUMINAIRES

LINEAR FIXTURE

2' X 2' LAY-IN TROFFER

2' X 4' LAY-IN TROFFER

LUMINAIRE POLE MOUNTED

LUMINAIRE, EMERGENCY BATTERY-POWERED

LUMINAIRE, EMERGENCY/EXIT BATTERY-POWERED

LUMINAIRE, EMERGENCY BATTERY-POWERED REMOTE

LUMINAIRE, SURFACE OR PENDANT MOUNTED

LUMINAIRE, WALL MOUNTED

LUMINAIRE, FLOOD/SPOT

LUMINAIRE, EXIT ONE OR TWO FACES AS INDICATED. ARROW POINTS IN DIRECTION OF EGRESS.

SWITCHES/RECEPTACLES

SINGLE POLE SWITCH
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED DESIGNATION
c = TYPE
2 = DOUBLE POLE SWITCH
3 = THREE-WAY SWITCH
3P = THREE POSITION SWITCH
4 = FOUR-WAY SWITCH
K = KEY OPERATED SWITCH
F = SWITCH AND FUSESTAT HOLDER
P = SWITCH AND PILOT LIGHT
T = THERMOSTAT
D = DIMMER SWITCH
L = LOW VOLTAGE LIGHT SWITCH
M = MANUAL MOTOR STARTER
N = NETWORKED SINGLE OR MULTIPLE SWITCH LOCATIONS
WP = WEATHER PROOF
REFER TO ABBREVIATIONS LEGEND FOR ALL OTHER DESIGNATIONS.

OCCUPANCY SENSOR
X = REFERENCE LIGHTING CONTROL COMPONENT SCHEDULE
a = CIRCUIT DESIGNATION
b = DEVICE SWITCHED DESIGNATION
c = MOUNTING HEIGHT IN FEET TO BOTTOM OF SENSOR

PE — PHOTOCELL

SWITCH AND SINGLE RECEPTACLE
a = CIRCUIT DESIGNATION
b = DEVICE TYPE DESIGNATION

DUPLEX RECEPTACLE

QUADRUPLEX RECEPTACLE

IN FLOOR DUPLEX RECEPTACLE

IN FLOOR QUADRUPLEX RECEPTACLE

DUPLEX RECEPTACLE w/SPLIT WIRE

DEDICATED RECEPTACLE

SPECIAL PURPOSE RECEPTACLE

WELDING RECEPTACLE
a = CIRCUIT DESIGNATION
b = DISCONNECT TYPE

TWIST LOCK RECEPTACLE
a = AMP RATING

TELEPHONE OUTLET

DATA COMMUNICATIONS OUTLET
a = NETWORK SWITCH

FIRE ALARM

FACP — FIRE ALARM CONTROL PANEL

RACEWAY

EXPOSED CONDUIT

BREAK AND CONTINUATION IN CONDUIT RUN

EXPOSED CONDUIT HIDDEN BEHIND WALLS, FLOORS OR OTHER STRUCTURES

UNDERGROUND CONDUIT, DIRECT BURIED OR IN DUCT BANK

CONDUIT IN SLAB

CONDUIT VERTICAL CHANGE IN DIRECTION

CONDUIT CAP

J — JUNCTION BOX

CONDUIT SEAL

CONDUIT TEE

DUCT BANK
APPROXIMATE DIMENSIONS SHOWN ON DUCT BANK SECTIONS

CONDUIT SIZE AND CONDUCTORS

INDIVIDUAL CONDUCTORS

W"C-(3-X (Ø), 1-Y (N) & 1-Z (G))

W"C (WHERE INDICATED): W = CONDUIT TRADE SIZE

3-X (Ø):
3 = QUANTITY
X = SIZE OF CONDUCTORS
(Ø) = DESIGNATES PHASE CONDUCTORS

1-Y (N) (WHERE INDICATED):
1 = QUANTITY
Y = SIZE OF CONDUCTORS
(N) = DESIGNATES NEUTRAL CONDUCTORS

1-Z (G) (WHERE INDICATED):
1 = QUANTITY
Z = SIZE OF CONDUCTORS
(G) = DESIGNATES GROUND CONDUCTORS

U{3-X (Ø) & 1-X (G)}
U = NUMBER OF PARALLEL RUNS

VFD CONDUCTORS

U{[N/C-X (Ø) & INTEGRAL (G)]:VFD}
U = NUMBER OF PARALLEL RUNS
N/C = NUMBER OF PHASE CONDUCTORS IN CABLE
X = SIZE OF CONDUCTORS
VFD = VFD CABLE

MULTI CONDUCTOR CABLES

K/2/C#16S
K (WHERE INDICATED) = NUMBER OF PAIRS
2/C#16S = TWO CONDUCTOR, 16 GAUGE, TWISTED SHIELDED PAIR

K/3/C#16S
K (WHERE INDICATED) = NUMBER OF TRIPLETS
3/C#16S = THREE CONDUCTOR, 16 GAUGE, TWISTED SHIELDED TRIPLETS

U{[N/C-X (Ø) & INTEGRAL (G)]:MC}
U = NUMBER OF PARALLEL RUNS
MC = MULTICONDUCTOR CABLE
N/C = NUMBER OF PHASE CONDUCTORS IN THE CABLE
X = SIZE OF CONDUCTORS

FIBER OPTIC CABLES

FO/N
N = NUMBER OF INDIVIDUAL FIBERS

GROUNDING

UNDERGROUND GROUND CABLE
#4/0 SDBC UNLESS OTHERWISE NOTED

GROUND ROD

GROUND ROD AND GROUND WELL

ELECTRICAL ONE-LINE SYMBOLS

MEDIUM VOLTAGE

52 — CIRCUIT BREAKER, MEDIUM VOLTAGE
a = CIRCUIT BREAKER NUMBER
b = FRAME SIZE

ANSI RELAY DEVICE
a = ANSI DEVICE FUNCTION
b = QUANTITY

MEDIUM VOLTAGE DISCONNECT SWITCH NON-FUSED CUT OUT

MEDIUM VOLTAGE DISCONNECTING FUSE SINGLE FUSE CUT OUT

MEDIUM VOLTAGE DISCONNECTING FUSE DOUBLE FUSE CUT OUT

MEDIUM VOLTAGE SINGLE FUSE

MEDIUM VOLTAGE DOUBLE FUSE

MEDIUM VOLTAGE LIVE FRONT TERMINATOR

MEDIUM VOLTAGE ELBOW

MEDIUM VOLTAGE TEE

MEDIUM VOLTAGE CONTACTOR

MEDIUM VOLTAGE STARTER

MOV-ELBOW ARRESTER

LOW VOLTAGE

LOW VOLTAGE CIRCUIT BREAKER
a = TYPE
MCP = MOTOR CIRCUIT PROTECTOR
TM = THERMAL MAGNETIC
SS = SOLID STATE
b = FRAME SIZE (MANUFACTURER TO DETERMINE FRAME SIZE UNLESS INDICATED)
c = NUMBER OF POLES
d = TRIP SETTING (AT = AMP TRIP) (AC = MCP CONTINUOUS RATING)
e = DESIGNATION
f = INTERRUPTING RATING

LOW VOLTAGE CIRCUIT BREAKER AUXILIARY OPERATOR
* = S = SHUNT TRIP
= G = GROUND FAULT INTERRUPTER
= V = SOLENOID KEY RELEASE

A — DISCONNECT SWITCH
A = TYPE, REFER TO DISCONNECT SCHEDULE

B — FUSED DISCONNECT SWITCH
B = TYPE, REFER TO DISCONNECT SCHEDULE
b = FUSE RATING

FUSE

COMBINATION STARTER WITH CONTROL POWER TRANSFORMER
a = CIRCUIT BREAKER DISCONNECT, TYPE AS NOTED
b = STARTER TYPE REFER TO THE SPECIFICATIONS FOR STARTER DEFINITIONS.
c = NEMA STARTER SIZE
d = OVERLOAD

MOTOR STARTER/DRIVES:
a = DEVICE TYPE
VFD-6 = 6-PULSE VFD
VFD-18 = 18-PULSE VFD
VFD-RH = REDUCED HARMONIC VFD (18-PULSE OR ACTIVE FRONT END AS DEFINED IN THE SPECIFICATIONS)
RVSS = REDUCED VOLTAGE SOLID STATE STARTER
RVAT = REDUCED VOLTAGE AUTO TRANSFORMER
a/B = DEVICE WITH BYPASS STARTER. REFER TO THE SPECIFICATIONS
b = INPUT OPTIONS
LL = LINE REACTOR
PHF = PASSIVE HARMONIC FILTER
c = OUTPUT OPTIONS
LR = LOAD REACTOR
DV/DT = Dv/dt FILTER
SWF = SINE WAVE FILTER

EQUIPMENT ENCLOSURE

MISCELLANEOUS

HP — MOTOR
HP = HORSEPOWER RATING
FULL LOAD AMPS AS NOTED

PACKAGED EQUIPMENT
LOAD RATING AS INDICATED
a = RATED LOAD
b = UNIT(HP, KW, KVA) AS INDICATED

TRANSFORMER
a = DEVICE I.D.
b = KVA RATING
c = NUMBER OF PHASES
d = PRIMARY VOLTAGE
e = SECONDARY VOLTAGE
f,g = CONNECTION TYPE SYMBOL
h = IMPEDANCE

GROUNDED WYE CONNECTION

DELTA CONNECTION

G — ENGINE-GENERATOR RATINGS AS INDICATED ON THE DRAWINGS
a = KVA/KW
b = VOLTAGE/CONNECTION
c = PHASE
d = WIRE
e = PF

CURRENT TRANSFORMER WITH SHORTING TERMINAL BLOCK
a = QUANTITY
b = RATIO

POTENTIAL TRANSFORMER
a = QUANTITY
b = RATIO
c,d = CONNECTION TYPE SYMBOL

SSM — SOLID STATE MULTIFUNCTION METER

ATP — AMPERE TEST POINT

VTP — VOLTAGE TEST POINT

UTILITY METER

LIGHTNING ARRESTER

SPD — SURGE PROTECTIVE DEVICE

DRAWOUT CONNECTION

GROUND

CAPACITOR

BATTERY

K — KIRK KEY INTERLOCK

LOAD BANK

REV	DATE	BY	DESCRIPTION
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REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER ALAN CRAWFORD — No. 20740 — ELECTRICAL — STATE OF CALIFORNIA

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JOB NO. 11843A.10
DRAWING NO. 00GE01
SHEET NO. 80 OF 178

PROJECT NO.
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Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1
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ABBREVIATIONS

A	AMP
ABS	ABSOLUTE
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
ACTR	ACTUATOR
AF	AMP FRAME
AFC	AUTOMATIC FREQUENCY CONTROL
AIC	AMP INTERRUPTING CAPACITY
AM	AMMETER
ANN	ANNUNCIATOR
ANT	ANTENNA
APU	AUXILIARY POWER UNIT
ARM	ARMORED CABLE
AS	AMMETER SWITCH
ASYM	ASYMMETRICAL
AT	AMP TRIP
ATO	AUTOMATIC THROW OVER
ATP	AMMETER TEST POINT
ATS	AUTOMATIC TRANSFER SWITCH
AUTO XFMR	AUTOMATIC TRANSFORMER
AUX	AUXILIARY
AWG	AMERICAN WIRE GAGE
B	BELL
BAT	BATTERY
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSEPOWER
BKR	BREAKER
BRF	BELOW RAISED FLOOR
C	CONDUIT / CONTINUOUS LOAD
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CCW	COUNTER CLOCKWISE
CKT	CIRCUIT
COAX	COAXIAL CABLE
COM	COMMON
COMM	COMMUNICATION
CPT	CONTROL POWER TRANSFORMER
CR	CONTROLLED RECEPTACLE
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CV	CONTROL VALVE
CW	CLOCKWISE / COOL WHITE
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU - X	DISTRIBUTED CONTROL UNIT NO. X
DEMO	DEMOLITION
DISC	DISCONNECT SWITCH
DM	DEMAND METER
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DS	DOOR SWITCH
E/G	EMERGENCY GENERATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
ENG	ENGINE
ENT	ELECTRICAL NON-METALLIC TUBING
EP	EXPLOSION PROOF
ETM	ELAPSED TIME METER
F	SUB-FED
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDR	FEEDER
FLA	FULL LOAD AMPS
FLX	FLEXIBLE CONDUIT
FO	FIBER OPTIC
FRC	FIBERGLASS RIGID CONDUIT
FREQ	FREQUENCY
FU	FUSE
FU	SW FUSED SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
FWD	FORWARD
G	GROUND / EQUIPMENT GROUND / GROUND FAULT
GEN	GENERATOR
GRC	GALVANIZED STEEL RIGID CONDUIT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER (RECEPTACLE)
GFI	GROUND FAULT INTERRUPTER (BREAKER)
GFR	GROUND FAULT RELAY
H	HOT-LEG
HF	HIGH FREQUENCY
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HR	HOUR
HSTAT	HUMIDISTAT
HV	HIGH VOLTAGE
HVAC	HEATING/VENTILATION/AIR CONDITIONING
HZ	HERTZ
I	INSTANTANEOUS / INTERMITTENT LOAD
IC	INTERRUPTING CAPACITY
IJB	INSTRUMENT JUNCTION BOX
IMC	INTERMEDIATE METAL CONDUIT
INST	INSTANTANEOUS
INT	INTERLOCK
INTERCOM	INTERCOMMUNICATION
J	JUNCTION BOX
K	KEY INTERLOCK
KA	KILOAMP
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR (REACTANCE)
KW	KILOWATT
KWD	KILOWATT DEMAND
KWH	KILOWATT HOUR
L	LONG-TIME
L-B	LINE-BUS
L-G	LINE-GROUND
LA	LIGHTNING ARRESTOR
LBL	LABEL
LC	LIGHTING CONTACTOR
LCP- X	LOCAL CONTROL PANEL NO. X
LL	LEAD-LAG LOAD REACTOR
LP	LIGHT POLE
LP - X	LIGHTING PANEL NO. X
LTG	LIGHTING
LV	LOW VOLTAGE
LVL	LEVEL
M-X	MOTOR CONTROLLER NO. X
MA	MILLIAMPERE
MCA	MOTOR CIRCUIT AMPS
MCC - X	MOTOR CONTROL CENTER NO. X
MCP	MOTOR CIRCUIT PROTECTOR
MH	MANHOLE / MOUNTING HEIGHT
MLO	MAIN LUGS ONLY
MOD	MOTOR OPERATED DAMPER
MOV	METAL OXIDE VARISTOR
MPR	MOTOR PROTECTION RELAY
MS-X	MOTOR STARTER NO. X
MSP	MOTOR STARTING PANEL
MTO	MANUAL THROW OVER
MTR-X	MOTOR NO. X
MTS	MANUAL TRANSFER SWITCH
MV	MEGAVOLT
MVA	MEGAVOLT-AMPERES
MVS	MEDIUM VOLTAGE SWITCH
MW	MEGAWATT
N	NEUTRAL
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NFC	NONMETALLIC FLEXIBLE CONDUIT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NP	NAMEPLATE
O	OPEN OR OPENED
OH	OVERHEAD
OL	OVERLOAD RELAY
P	POLE
PA	PUBLIC ADDRESS
PB	PUSHBUTTON / PULL BOX
PCS	PVC COATED GALVANIZED STEEL CONDUIT
PCM	PROCESS CONTROL MODULE
PE	PHOTOCELL
PF	POWER FACTOR
PFCC	POWER FACTOR CORRECTION CAPACITOR
PFR	PHASE FAILURE RELAY
PH	PHASE
PNL	PANEL
PPX	POWER PANEL NO. X
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE RIGID PLASTIC CONDUIT
PWR	POWER
RAC	RIGID ALUMINUM CONDUIT
RECPT	RECEPTACLE
REV	REVERSE
RF	RADIO FREQUENCY
RMS	ROOT MEAN SQUARED
RVAT	REDUCED VOLTAGE AUTO TRANSFORMER
RVNR	REDUCED VOLTAGE NON-REVERSING
RVSS	REDUCED VOLTAGE SOLID STATE
S	SHIELD / SHORT-TIME
SA	SURGE ARRESTER
SC	SHORT CIRCUIT
SDBC	SOFT DRAWN BARE COPPER
SFL	SUB FEED LUGS
SLT	SEALTIGHT LIQUIDTIGHT FLEXIBLE CONDUIT
SM	SURFACE MOUNTED
SP	SINGLE POLE
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SPKR	SPEAKER
SS	SOLID STATE
STB	SHORTING TERMINAL BLOCK
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
TACH	TACHOMETER
TB - X	TERMINAL BLOCK - UNIT X
TC	THERMOCOUPLE / TIME CLOCK / TRAY CABLE
TD	TEMPERATURE DETECTOR RELAY
TE	TOTALLY ENCLOSED
TEFC	TOTALLY ENCLOSED FAN COOLED
TENV	TOTALLY ENCLOSED NON-VENTILATED
TERM	TERMINAL
TJB	TERMINAL JUNCTION BOX
TM	THERMAL MAGNETIC
TP	TWISTED PAIR
TS	TEMPERATURE SWITCH
TS1W	TWO SPEED CONSEQUENT POLE, ONE WINDING
TS2W	TWO SPEED SEPARATE WINDING
TSTAT	THERMOSTAT
UHF	ULTRA HIGH FREQUENCY
UNG	UNGROUNDED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UVR	UNDER VOLTAGE RELAY
V	VOLT
VA	VOLT AMPERE
VAR	VARMETER
VCP	VENDOR CONTROL PANEL
VFD	VARIABLE FREQUENCY DRIVE
VHF	VERY HIGH FREQUENCY
VM	VOLTMETER
VP	VAPORPROOF
VR	VOLTAGE REGULATOR
VS	VOLTAGE SWITCH
VT	VOLTAGE TRANSFORMER
VTP	VOLTAGE TEST POINT
W	WATT / WEST
WT	WATER TIGHT
WP	WEATHER PROOF
XFMR	TRANSFORMER

NOTES:

1. REFER TO SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL ABBREVIATIONS.

POWER DEVICE FUNCTION NUMBERS

1	MASTER ELEMENT
2	TIME-DELAY STARTING OR CLOSING RELAY
3	CHECKING OR INTERLOCKING RELAY
4	MASTER CONTACTOR
5	STOPPING DEVICE
6	STARTING CIRCUIT BREAKER
7	ANODE CIRCUIT BREAKER
8	CONTROL POWER DISCONNECTING DEVICE
9	REVERSING DEVICE
10	UNIT SEQUENCE SWITCH
11	MULTIFUNCTION DEVICE
12	OVER-SPEED DEVICE
13	SYNCHRONOUS-SPEED DEVICE
14	UNDER-SPEED DEVICE
15	SPEED OR FREQUENCY MATCHING DEVICE
16	DATA COMMUNICATIONS DEVICE
17	SHUNTING OR DISCHARGE SWITCH
18	ACCELERATING OR DECELERATING DEVICE
19	STARTING-TO-RUNNING TRANSITION CONTACTOR
20	ELECTRICALLY OPERATED VALVE
21	DISTANCE RELAY
22	EQUALIZER CIRCUIT BREAKER
23	TEMPERATURE CONTROL DEVICE
24	VOLTS PER HERTZ RELAY
25	SYNCHRONIZING OR SYNCHRONISM-CHECK DEVICE
26	APPARATUS THERMAL DEVICE
27	UNDERVOLTAGE RELAY
27N	GROUND FAULT UNDERVOLTAGE RELAY
28	FLAME DETECTOR
29	ISOLATING CONTACTOR
30	ANNUNCIATOR RELAY
31	SEPARATE EXCITATION DEVICE
32	DIRECTIONAL POWER RELAY
33	POSITION SWITCH
34	MASTER SEQUENCE DEVICE
35	BRUSH-OPERATING OR SLIP-RING SHORT-CIRCUITING DEVICE
36	POLARITY DEVICE
37	UNDERCURRENT OR UNDERPOWER RELAY
38	BEARING PROTECTIVE DEVICE
39	MECHANICAL CONDITION MONITOR
40	FIELD RELAY
41	FIELD CIRCUIT BREAKER
42	RUNNING CIRCUIT BREAKER
43	MANUAL TRANSFER OR SELECTOR DEVICE
44	UNIT SEQUENCE STARTING RELAY
45	ABNORMAL ATMOSPHERIC CONDITION MONITOR
46	REVERSE-PHASE OR BALANCE CURRENT RELAY
47	PHASE-BALANCE OR PHASE-SEQUENCE VOLTAGE RELAY
48	INCOMPLETE SEQUENCE RELAY
49	MACHINE OR TRANSFORMER THERMAL RELAY
50	INSTANTANEOUS OVERCURRENT RELAY
51	AC TIME OVERCURRENT RELAY
52	AC CIRCUIT BREAKER
53	FIELD EXCITATION RELAY
54	TURNING GEAR ENGAGING DEVICE
55	POWER FACTOR RELAY
56	FIELD APPLICATION RELAY
57	SHORT-CIRCUITING OR GROUNDING DEVICE
58	RECTIFICATION FAILURE RELAY
59	OVERVOLTAGE RELAY
60	VOLTAGE OR CURRENT BALANCE RELAY
61	DENSITY SWITCH OR SENSOR
62	TIME-DELAY STOPPING OR OPENING RELAY
63	PRESSURE SWITCH
64	GROUND DETECTOR RELAY
65	GOVERNOR
66	NOTCHING OR JOGGING DEVICE
67	AC DIRECTIONAL OVERCURRENT RELAY
68	BLOCKING OR OUT OF STEP RELAY
69	PERMISSIVE CONTROL DEVICE
70	RHEOSTAT
71	LIQUID LEVEL SWITCH
72	DC CIRCUIT BREAKER
73	LOAD-RESISTOR CONTACTOR
74	ALARM RELAY
75	POSITION CHANGING MECHANISM
76	DC OVERCURRENT RELAY
77	TELEMETERING DEVICE
78	PHASE-ANGLE MEASURING RELAY
79	AC RECLOSING RELAY
80	FLOW SWITCH
81	FREQUENCY RELAY
82	DC LOAD MEASURING RECLOSING RELAY
83	AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY
84	OPERATING MECHANISM
85	PILOT COMMUNICATIONS, CARRIER OR PILOT-WIRE RELAY
86	LOCKOUT RELAY
87	DIFFERENTIAL PROTECTIVE RELAY
88	AUXILIARY MOTOR OR MOTOR GENERATOR
89	LINE SWITCH
90	REGULATING DEVICE
91	VOLTAGE DIRECTIONAL RELAY
92	VOLTAGE AND POWER DIRECTIONAL RELAY
93	FIELD-CHANGING CONTACTOR
94	TRIPPING OR TRIP-FREE RELAY

COMMONLY USED SUFFIX LETTERS APPLIED TO POWER DEVICE FUNCTION NUMBERS

A	ALARM ONLY
B	BUS PROTECTION
G	GROUND FAULT PROTECTION (RELAY CT IN A SYSTEM NEUTRAL CIRCUIT OR GENERATOR PROTECTION)
GS	GROUND FAULT PROTECTION (RELAY CT IN TOROIDAL OR GROUND SENSOR TYPE)
L	LINE PROTECTION
M	MOTOR PROTECTION
N	GROUND FAULT PROTECTION (RELAY COIL CONNECTED IN RESIDUAL CT CIRCUIT)
T	TRANSFORMER PROTECTION
V	VOLTAGE
P	PHASE PROTECTION

ABBREVIATIONS

AFD	- ARC FLASH DETECTOR
CLK	- CLOCK OR TIMING SOURCE
DDR	- DYNAMIC DISTURBANCE RECORDER
DFR	- DIGITAL FAULT RECORDER
ENV	- ENVIRONMENTAL DATA
HIZ	- HIGH IMPEDANCE FAULT DETECTOR
HMI	- HUMAN MACHINE INTERFACE
HST	- HISTORIAN
LGC	- SCHEME LOGIC
MET	- SUBSTATION METERING
PDC	- PHASOR DATA CONCENTRATOR
PMU	- PHASOR MEASUREMENT UNIT
PQM	- POWER QUALITY MONITOR
RIO	- REMOTE I/O DEVICE
RTU	- REMOTE TELEMETRY UNIT/REMOTE TERMINAL UNIT
SER	- SEQUENCE OF EVENTS RECORDER
TCM	- TRIP CIRCUIT MONITOR

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ABBREVIATIONS

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DRAWING NO. 00GE02
SHEET NO. 81 OF 178

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PROCESS SWITCHES

- FLOAT SWITCH — CLOSE ON RISING LEVEL
- FLOAT SWITCH — OPEN ON RISING LEVEL
- PRESSURE SWITCH — CLOSE ON RISING PRESSURE
- PRESSURE SWITCH — OPEN ON RISING PRESSURE
- TEMPERATURE SWITCH — CLOSE ON RISING TEMPERATURE
- TEMPERATURE SWITCH — OPEN ON RISING TEMPERATURE
- FLOW SWITCH — CLOSE ON INCREASE IN FLOW
- FLOW SWITCH — OPEN ON INCREASE IN FLOW
- VIBRATION SWITCH — OPEN ON RISING VIBRATION
- VIBRATION SWITCH — CLOSE ON RISING VIBRATION
- TORQUE SWITCH — OPEN ON HIGH TORQUE
- TORQUE SWITCH — CLOSE ON HIGH TORQUE
- NORMALLY CLOSED — LIMIT SWITCH
- NORMALLY CLOSED — HELD OPEN LIMIT SWITCH
- NORMALLY OPEN — LIMIT SWITCH
- NORMALLY OPEN — HELD CLOSED LIMIT SWITCH

HAND SWITCHES

- NORMALLY OPEN — MOMENTARY PUSHBUTTON
- NORMALLY CLOSED — MOMENTARY PUSHBUTTON
- THREE POSITION SELECTOR SWITCH (xoo) — x - DENOTES POSITION CONTACTS CLOSED IN
- TWO POSITION SELECTOR SWITCH (xo) — x - DENOTES POSITION CONTACTS CLOSED IN
- MUSHROOM HEAD PUSHBUTTON
- PUSH-PULL PUSHBUTTON — MAINTAINED CONTACT
- PADLOCK SWITCH (xox) — x - DENOTES POSITION CONTACTS CLOSED IN
- PULL CORD SWITCH
- STOP-LOCKOUT PUSHBUTTON
- SPRING-RETURN (xoo) — x - DENOTES POSITION CONTACTS CLOSED IN

INDICATORS

- PILOT LIGHT — a = LENS COLOR: R = RED, G = GREEN, W = WHITE, A = AMBER, B = BLUE, Y = YELLOW, C = CLEAR
- BEACON — a = LENS COLOR: R = RED, G = GREEN, W = WHITE, A = AMBER, B = BLUE, M = MAGENTA, C = CLEAR
- HORN

RELAYS

RELAY COIL (a, b, c, d)
- a = TYPE: CR - CONTROL RELAY; TD - TIME DELAY RELAY; M - MOTOR STARTER COIL; L - MOTOR STARTER COIL - LOW SPEED; H - MOTOR STARTER COIL - HIGH SPEED; F - MOTOR STARTER COIL - FORWARD; R - MOTOR STARTER COIL - REVERSE
- b = TDON - TIME DELAY ON ENERGIZATION; TDOFF - TIME DELAY ON DEENERGIZATION
- c = TIMING RANGE/SETTING
- d = DESCRIPTION

- NORMALLY OPEN — CONTROL CONTACT
- NORMALLY CLOSED — CONTROL CONTACT
- NOTC — TIME DELAY CONTACT, NORMALLY OPEN, TIMED CLOSING
- NCTO — TIME DELAY CONTACT, NORMALLY CLOSED, TIMED OPENING
- NOTO — TIME DELAY CONTACT, NORMALLY OPEN, TIMED OPENING
- NCTC — TIME DELAY CONTACT, NORMALLY CLOSED, TIMED CLOSING

TERMINAL BLOCKS

- TERMINAL — IN PLC/PCM PANEL
- TERMINAL — IN MOTOR CONTROL CENTER
- TERMINAL — IN LOCAL STARTER CONTROL PANEL
- TERMINAL — AT FIELD DEVICE
- TERMINAL — IN RTU
- TERMINAL — IN FIELD PANEL
- TERMINAL — IN (USER CHOICE)
- DIGITAL BUS CONNECTOR — * = D - DEVICENET; * = PA - PROFIBUS PA; * = DP - PROFIBUS DP; * = H1 - FOUNDATION FIELDBUS H1; * = H2 - FOUNDATION FIELDBUS H2; * = E - ETHERNET

I/O

- PLC DISCRETE (a) — a = INPUT OR OUTPUT AS INDICATED
- PLC ANALOG (ANALOG / a) — a = INPUT OR OUTPUT AS INDICATED
- DIGITAL BUS (DIGITAL / BUS)

MISC

- SOLENOID
- METER UNIT (M) — M = TYPE
- MOTOR (HP)
- CIRCUIT BREAKER
- DISCONNECT
- FUSE
- TRANSIENT SURGE PROTECTION
- MOTOR WINDING HEATER (MWH-*) — * - MOTOR TAG I.D.
- SPACE HEATER
- VARISTOR
- CAPACITOR
- RESISTOR
- BATTERY
- DIODE
- MOTOR OVERLOAD HEATERS
- OVERLOAD CONTACT
- DRAWOUT CONNECTION
- GROUND
- LIGHTNING ARRESTOR
- CONTROL POWER TRANSFORMER (H1, H3, H2, H4, X1, X2)
- ELAPSED TIME METER (KI-* / ETM)

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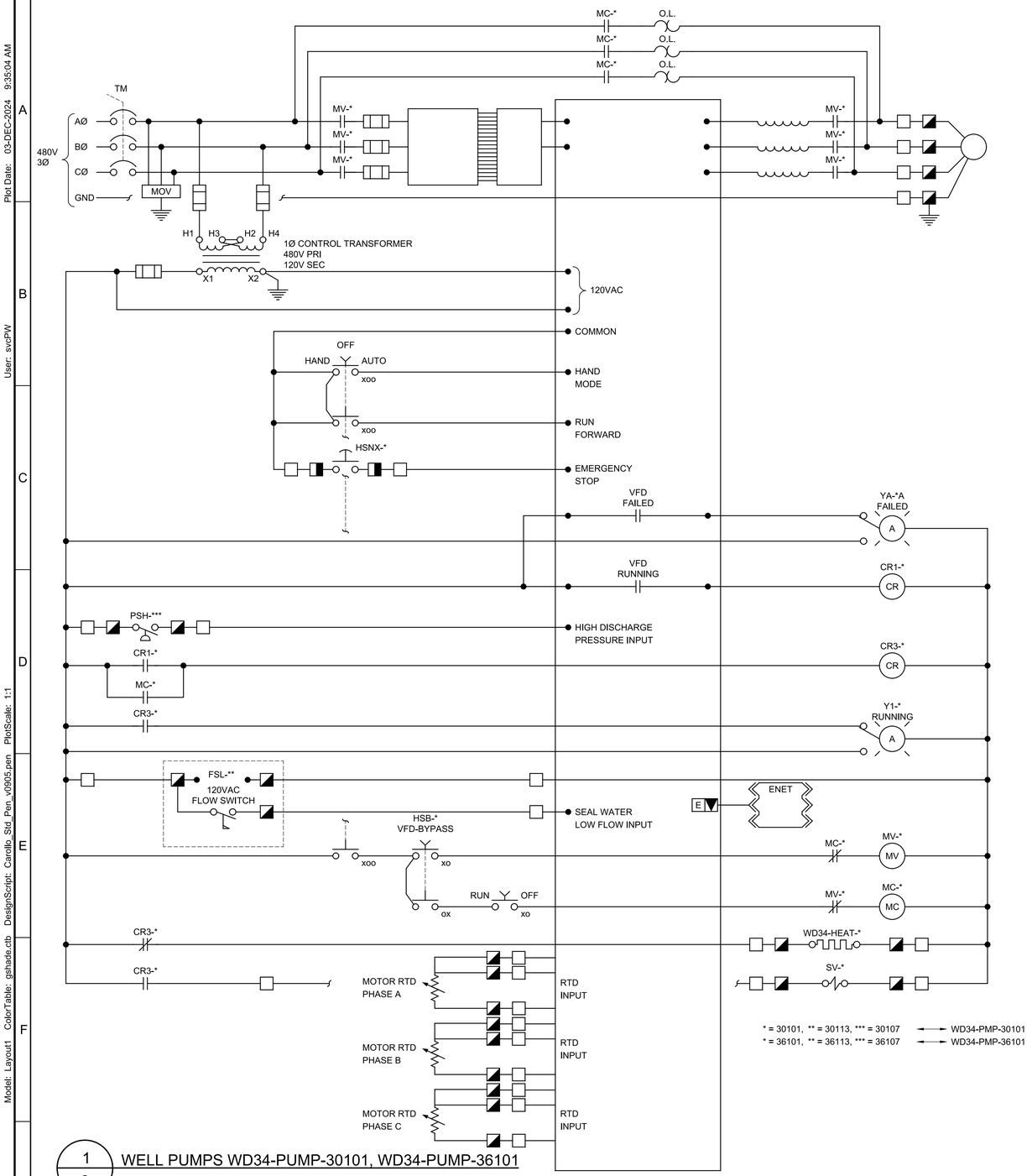
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0 — 1"
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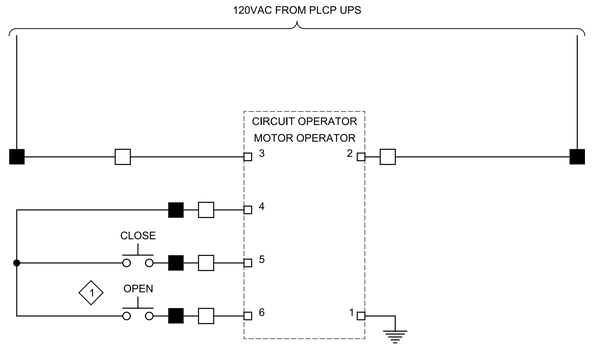
JOB NO. 11843A.10
DRAWING NO. 00GE03
SHEET NO. 82 OF 178

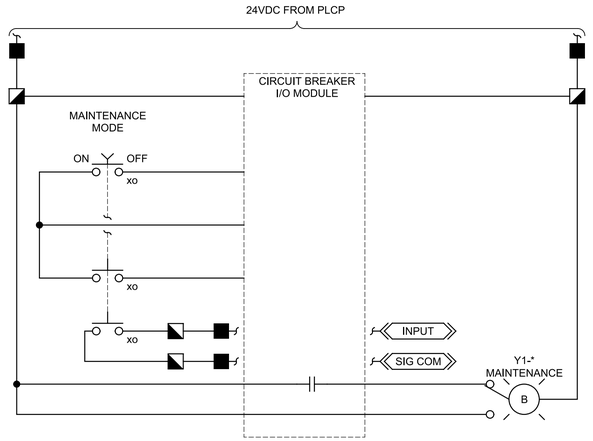
PROJECT NO.
FILE NAME: 11843A1000GE03.dgn



1 WELL PUMPS WD34-PUMP-30101, WD34-PUMP-36101

13E07, 19E07





2 MAIN BREAKERS WD31-BKRX-30105, WD34-BKRX-36105

13E07, 19E07

GENERAL NOTES:

1. SCHEMATICS SHOW FUNCTIONALITY. REVISE THE SCHEMATIC AS REQUIRED TO PERFORM THE OPERATION INDICATED HERE AS DESCRIBED IN THE SPECIFICATIONS BASED ON THE SELECTED MANUFACTURER.
2. TERMINAL BLOCK LEGEND:
   - = MOTOR CONTROLLER
   - = PLCP
   - = FIELD
   - = FIELD PANEL
   - = DIGITAL BUS CONNECTOR
     * = E - ETHERNET
     * = DP - PROFIBUS DP
     * = PA - PROFIBUS PA

KEY NOTES:

1. TO RESET THE BREAKER, PRESS THE OPEN BUTTON AND THEN THE CLOSE BUTTON.

DRAFT FINAL SUBMITTAL
NOT FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION

DESIGNED CAC
DRAWN BLS
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CERVETTO No. 20740 ELECTRICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
CONTROL SCHEMATICS 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

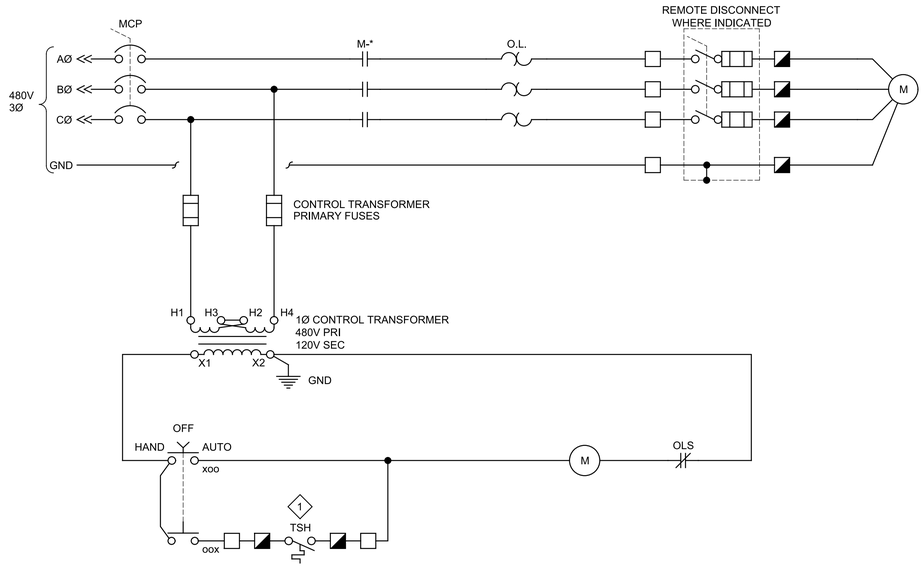
JOB NO. 11843A.10
DRAWING NO. 00E01
SHEET NO. 83 OF 178

PROJECT NO.
FILE NAME: 11843A1000E01.dgn

LAST SAVED BY: OWestbrook
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Plot Date: 03-DEC-2024 9:35:04 AM
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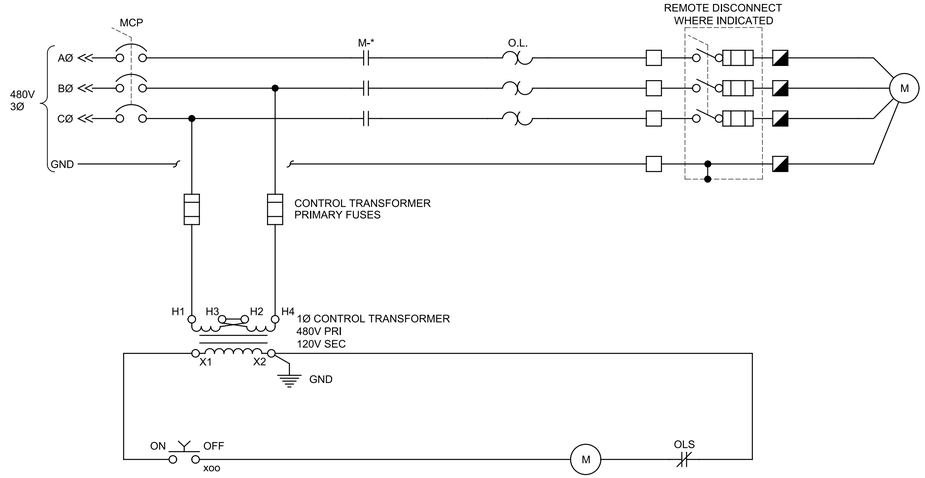
KEY NOTES:

1. HVAC SUPPLIER PROVIDED THERMOSTAT.



GENERAL NOTES:

1. SCHEMATICS SHOW FUNCTIONALITY. REVISE THE SCHEMATIC AS REQUIRED TO PERFORM THE OPERATION INDICATED HERE AS DESCRIBED IN THE SPECIFICATIONS BASED ON THE SELECTED MANUFACTURER.
2. TERMINAL BLOCK LEGEND:
   - = MOTOR CONTROLLER
   - = PLCP
   - = FIELD
   - = FIELD PANEL
   - * = DIGITAL BUS CONNECTOR
     - * = E - ETHERNET
     - * = DP - PROFIBUS DP
     - * = PA - PROFIBUS PA



3 — PUMP ROOM EXHAUST FANS: WD37-FANX-30301, WD37-FANX-36301
13E07, 19E07

4 — CHEMICAL ROOM EXHAUST FANS: WD37-FANX-30302, WD37-FANX-36302
13E07, 19E07

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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DRAWN BLS
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CARRATO
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
CONTROL SCHEMATICS 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00E02
SHEET NO. 84 OF 178

PROJECT NO.
FILE NAME: 11843A1000E02.dgn

Plot Date: 03-DEC-2024 9:35:22 AM
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Model: Layout1
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PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: nself

LUMINAIRE SCHEDULE

4/22/2024

ITEM	DESCRIPTION	MOUNTING METHOD	LAMP		LUMINAIRE SPECIFICATIONS			
			QUANTITY	TYPE	MANUFACTURER	CATALOG	VOLTS	VA
A	IP65, IP66 & IP67 RATED; NEMA 4X RATED LENS AND HOUSING; 1500 PSI HOSE -DOWN; AMBIENT TEMPERATURE RATED FOR -35C TO 25C	SUSPENDED OR CEILING AS NEEDED	N/A	LED	HOLOPHANE	EMS L48 4000LM LPPFL MD 120 40K 80CRI	120	26
B	IP65, IP66 & IP67 RATED; NEMA 4X RATED LENS AND HOUSING; 1500 PSI HOSE -DOWN; AMBIENT TEMPERATURE RATED FOR -35C TO 25C WITH EMERGENCY BACK-UP BATTERY PACK	SUSPENDED OR CEILING AS NEEDED	N/A	LED	HOLOPHANE	EMS L48 4000LM LPPFL MD 120 40K 80CRI E10WMCP	120	26
C	IP55 RATED, UL WET LOCATION LISTED, RATED FOR -40C, PHOTOCELL	WALL	N/A	LED	HOLOPHANE	WCNG P2 40K T3M 120 20KV BKSDP TMPS PR7 SF PCLL RSBOR	120	39
D	LED EXIT SIGN, CORROSION PROOF, EL94V-0 FLAME RATING, LOW ENERGY LED LAMP, 90 MIN BATTERY BACK UP	WALL	N/A	LED	HOLOPHANE	QM LED R HO	120	9

DISCONNECT SCHEDULE

11/4/2024

TAG	VOLTAGE	POLES	AMPS	NEMA TYPE	TYPE	HORSEPOWER	FUSE SIZE	BREAKER AF/AT	ACCESSORIES
A	600 VAC	3P	30A	4X-NON-METALLIC	FUSED				
B	600 VAC	3P	100A	4X-NON-METALLIC	FUSED				
C	600 VAC	3P	30A	4X-SS	FUSED				
D	600 VAC	3P	30A	12	FUSED				
E	600 VAC	3P	100A	4X-SS	FUSED				
S	120 VAC	1P	30A	12	FUSED				

ACCESSORIES

1= "B" TYPE ELECTRICAL INTERLOCK FOR POSITION INDICATION
2= INSULATED GROUNDABLE NEUTRAL KIT
3= DRAIN AND BREATHER KIT WHEN OUTDOORS
4= EARLY BREAK AUXILIARY CONTACT

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN EYV
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CARLATO
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
ELECTRICAL SCHEDULES

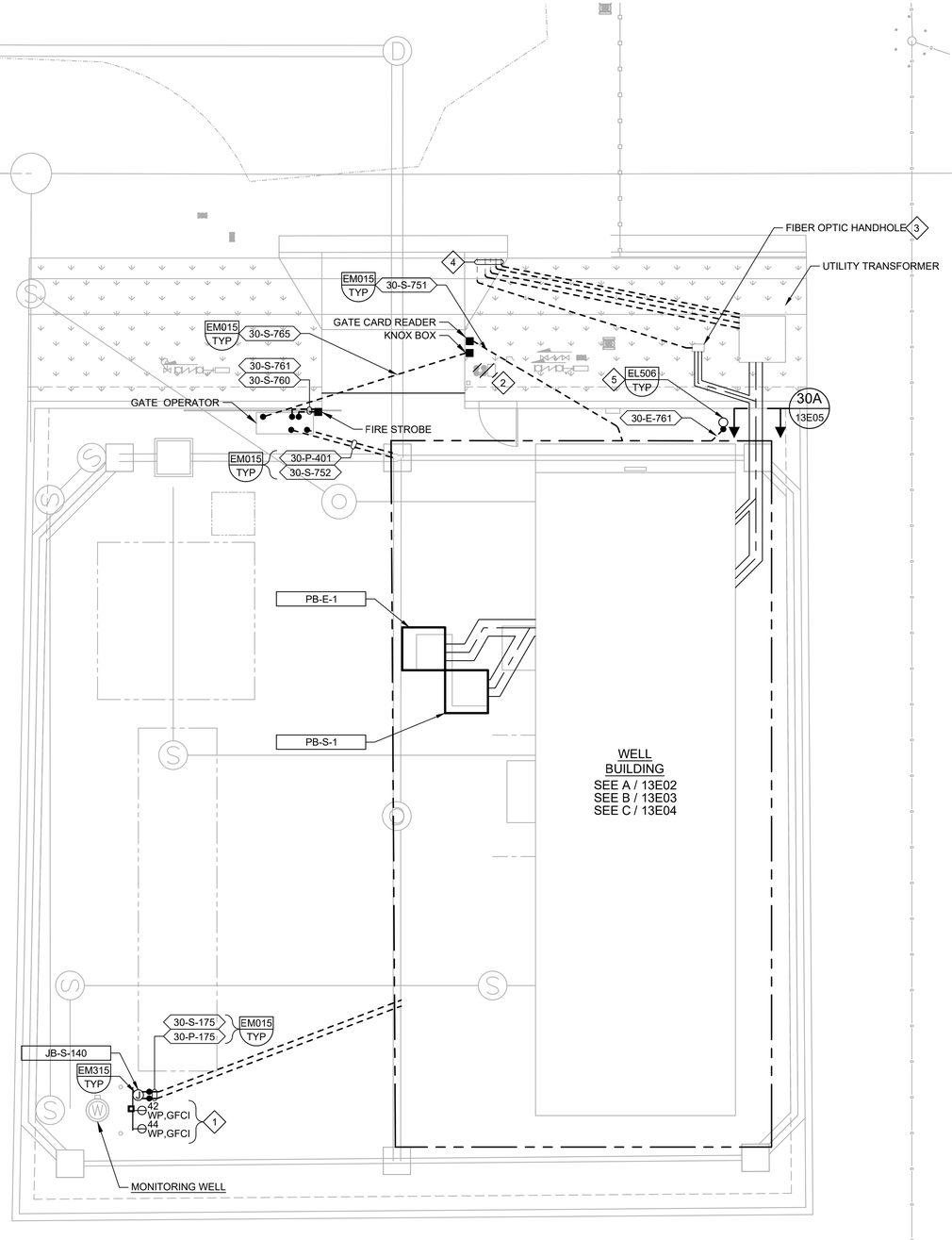
VERIFY SCALES
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0 1"
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JOB NO. 11843A.10
DRAWING NO. 00E03
SHEET NO. 85 OF 178

PROJECT NO.
FILE NAME: 11843A1000E03.dgn

Plot Date: 12/5/2024 3:53:16 PM





KEY NOTES:

1. 20A SINGLE RECEPTACLE.
2. APPROXIMATE LOCATION OF EXISTING FIBER OPTIC HANDHOLE AND CONDUIT STUB UPS (4"C-QTY 4, AND 2"C-QTY 1) TO BE RELOCATED.
3. MOVE EXISTING FIBER OPTIC HANDHOLE TO THIS LOCATION.
4. INTERCEPT EXISTING CONDUITS AT THIS LOCATION. ROUTE TO UTILITY TRANSFORMER AND FIBER OPTIC HANDHOLE.
5. PROVIDE 12' ALUMINUM ROUND STRAIGHT POLE FOR LICENSE PLATE READER CAMERAS. CAMERAS PROVIDED BY OTHERS.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN TLM
CHECKED
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CARVALHO
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
CAMPUS OAKS ASR WELL
ELECTRICAL SITE PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13E01
SHEET NO. 86 OF 178

LAST SAVED BY: OWestbrook

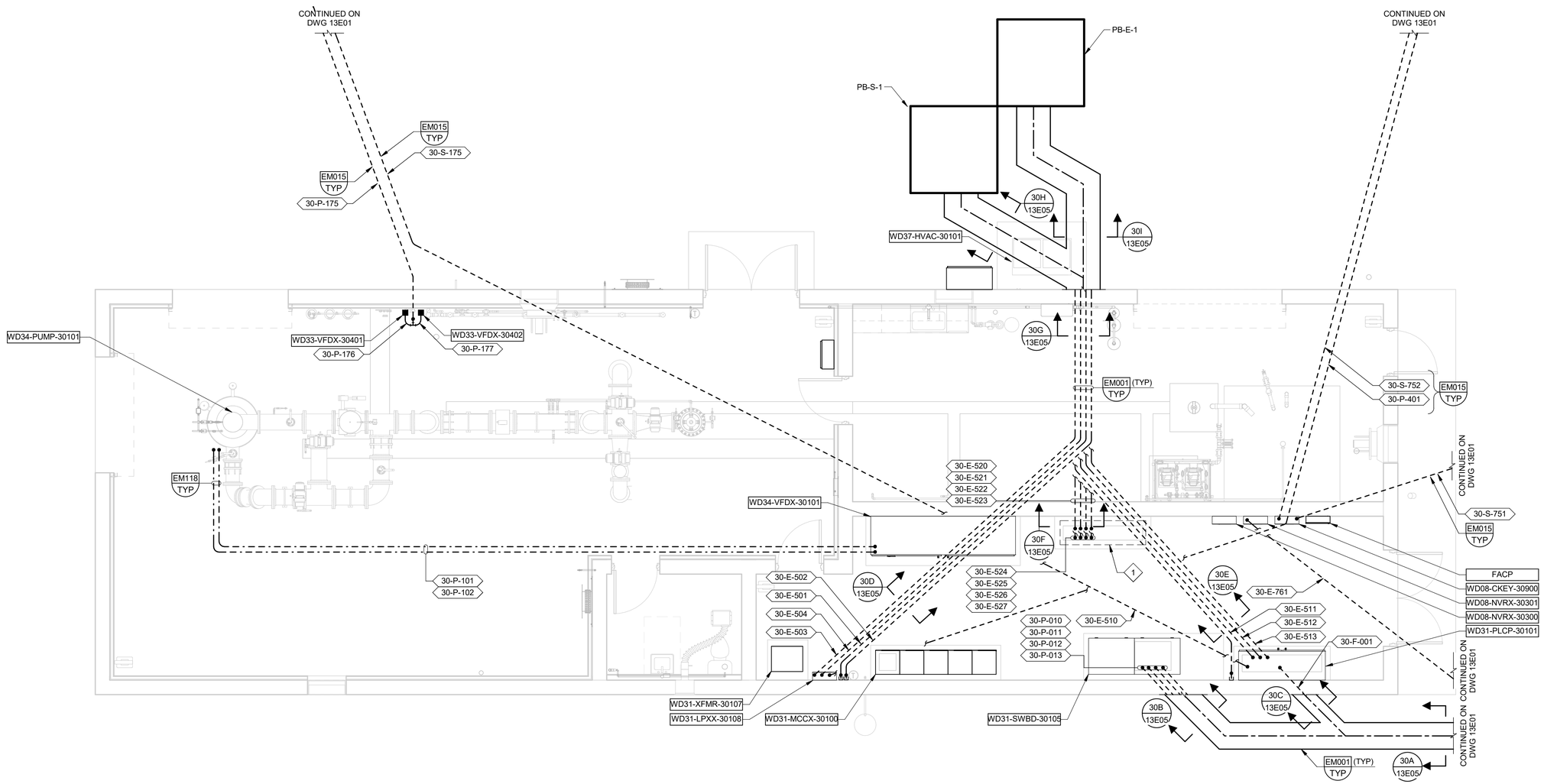
PROJECT NO.
FILE NAME: 11843A1013E01.dwg

GENERAL NOTES:

1. SEE DRAWING 13E01 FOR LOCATION OF FACILITY ON SITE PLAN.

KEY NOTES:

1. FUTURE WATER TREATMENT CONTROL PANEL.



A ENLARGED PLAN

A / 13E01

SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN TLM
CHECKED
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CERVANTES No. 20740 ELECTRICAL STATE OF CALIFORNIA

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CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

ELECTRICAL

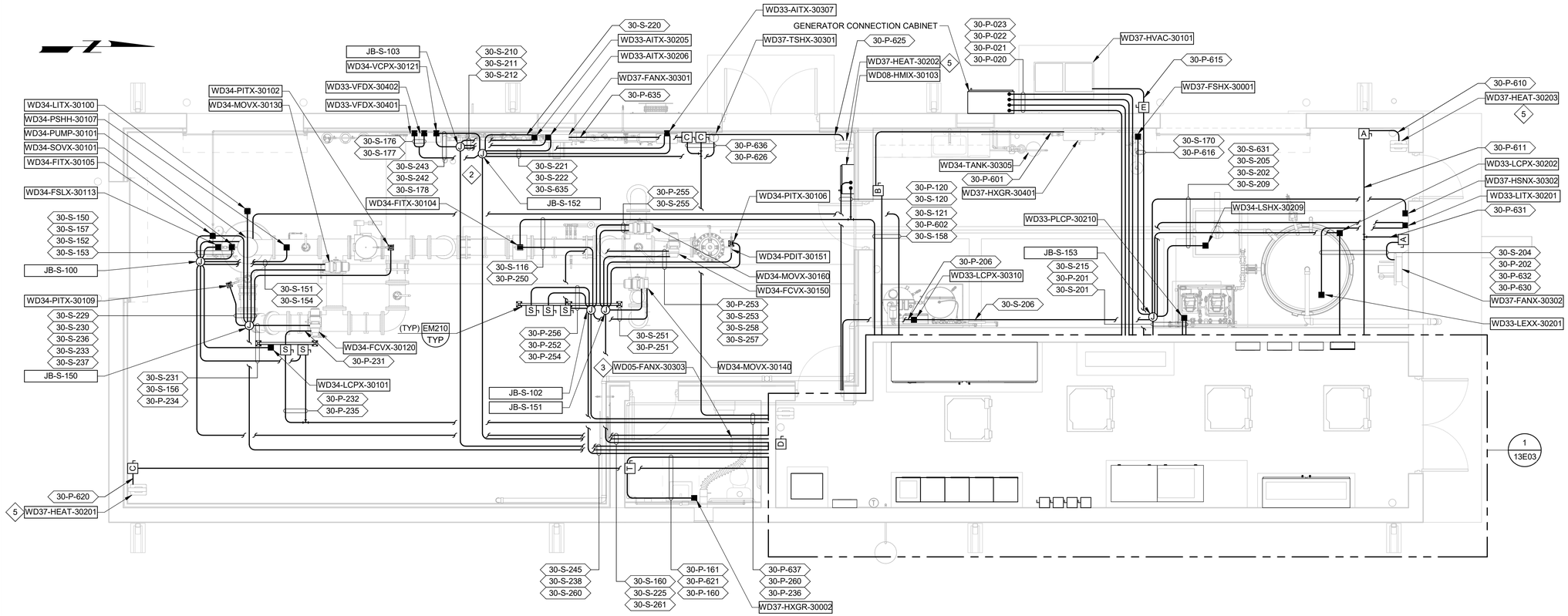
CAMPUS OAKS ASR WELL
UNDERGROUND POWER AND CONTROL PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13E02
SHEET NO. 87 OF 178

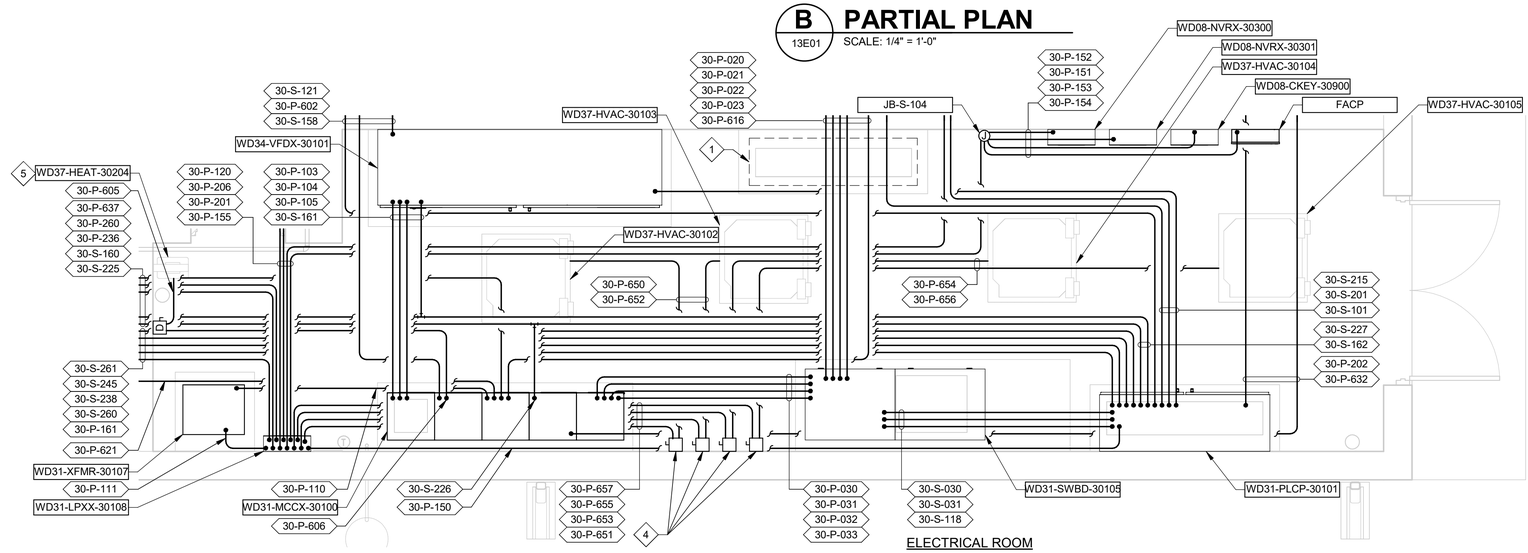
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FILE NAME: R:\d1341482\11843A1013E801.rvt



B PARTIAL PLAN

13E01 SCALE: 1/4" = 1'-0"



ELECTRICAL ROOM

1 DETAIL

1 13E03 SCALE: 3/8" = 1'-0"

GENERAL NOTES:

1. SEE DRAWING 13E01 FOR LOCATION OF FACILITY ON SITE PLAN.
2. DO NOT ATTACH CONDUIT OR ELECTRICAL EQUIPMENT TO THE ACOUSTICAL PANELS.

KEY NOTES:

1. FUTURE WATER TREATMENT CONTROL PANEL.
2. DO NOT ROUTE CONDUIT THROUGH TRENCHES.
3. WIRE THE RESTROOM EXHAUST FAN TO THE RESTROOM LIGHT SWITCH.
4. PROVIDE 2-POLE MANUAL MOTOR STARTERS FOR INDOOR HVAC UNITS.
5. PROVIDE CONDUIT AND PULL STRING TO MANUFACTURER THERMOSTAT.

REV	DATE	BY	DESCRIPTION
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CERVANTES No. 20740 ELECTRICAL STATE OF CALIFORNIA

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CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
CAMPUS OAKS ASR WELL
EXPOSED POWER AND CONTROL PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13E03
SHEET NO. 88 OF 178

PLOT DATE: 12/13/2024 11:36:58 AM

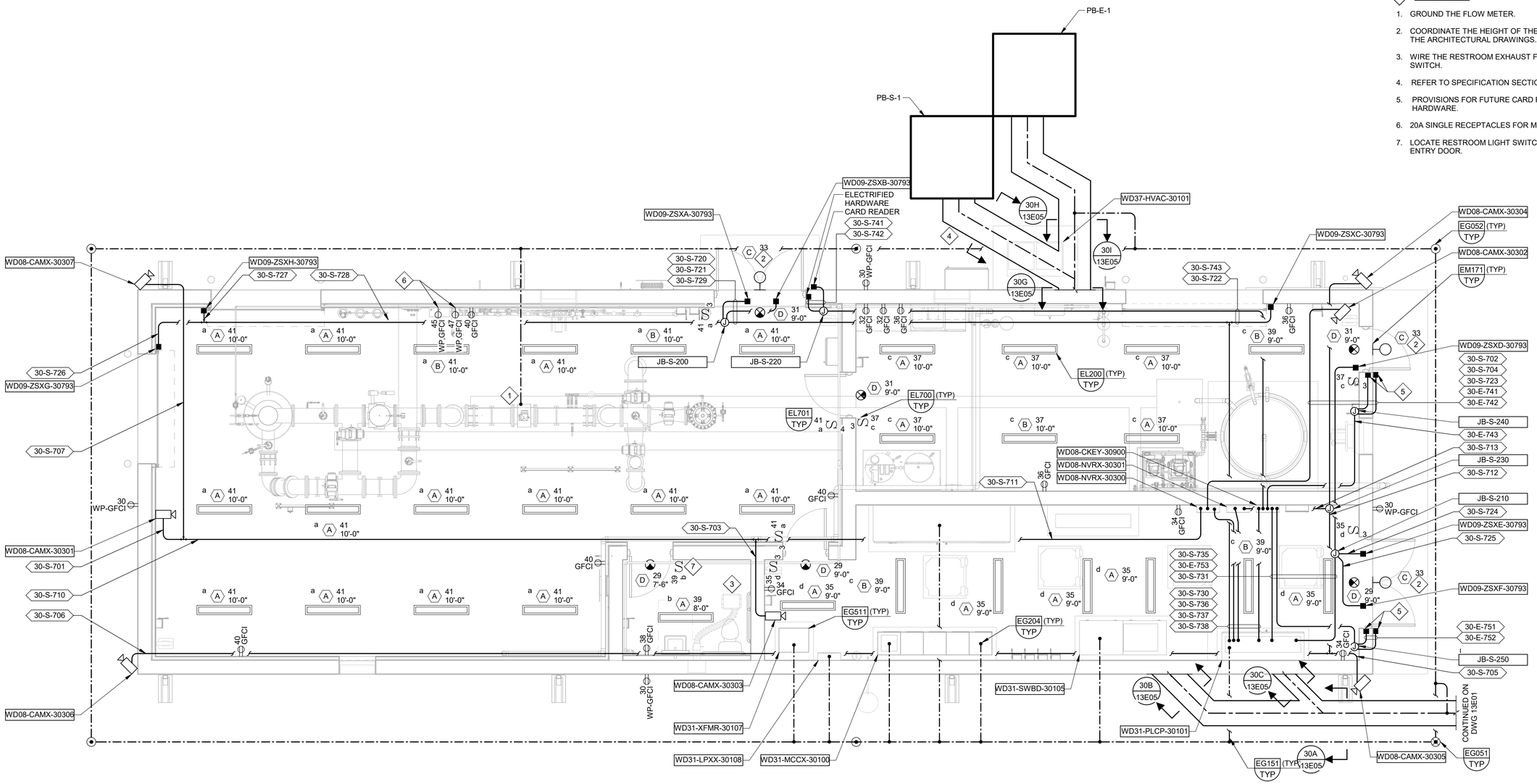
FILE NAME: R:\d1341482\11843A1013E801.rvt

GENERAL NOTES:

1. SEE DRAWING 13E01 FOR LOCATION OF FACILITY ON SITE PLAN.
2. ALL CIRCUIT DESIGNATIONS REFER TO PANELBOARD WD31-LPXX-30108.
3. BOND DUCT BANK GROUND CONDUCTORS TO THE GROUND RING.

KEY NOTES:

1. GROUND THE FLOW METER.
2. COORDINATE THE HEIGHT OF THE FIXTURES OVER THE DOORS WITH THE ARCHITECTURAL DRAWINGS.
3. WIRE THE RESTROOM EXHAUST FAN TO THE RESTROOM LIGHT SWITCH.
4. REFER TO SPECIFICATION SECTION 08710 FOR DEVICE DETAILS.
5. PROVISIONS FOR FUTURE CARD READER AND ELECTRIFIED HARDWARE.
6. 20A SINGLE RECEPTACLES FOR MONITORING WELL PUMP VFDS.
7. LOCATE RESTROOM LIGHT SWITCH AS CLOSE AS POSSIBLE TO ENTRY DOOR.



C ENLARGED PLAN

13E01

SCALE: 1/4" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CARVALHO No. 20740 ELECTRICAL STATE OF CALIFORNIA

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CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

ELECTRICAL

CAMPUS OAKS ASR WELL LIGHTING AND GROUNDING PLAN

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13E04
SHEET NO. 89 OF 178

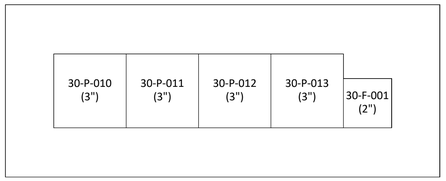
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GENERAL NOTES:

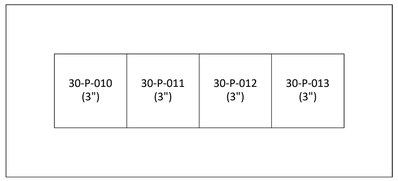
1. CONSTRUCT DUCT BANK PER DETAIL EM001/TYP UNLESS OTHERWISE INDICATED.



Width: 3'-1"
Height: 1'-6"

30A DUCT BANK SECTION

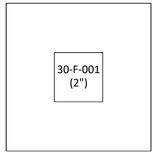
13E01, 13E02 , 13E04



Width: 2'-8"
Height: 1'-6"

30B DUCT BANK SECTION

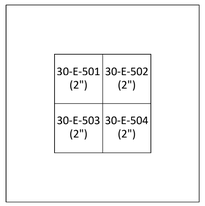
13E02, 13E04



Width: 1'-2"
Height: 1'-5"

30C DUCT BANK SECTION

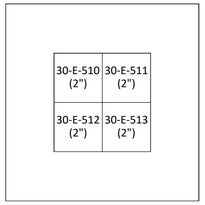
13E02, 13E04



Width: 1'-7"
Height: 1'-9"

30D DUCT BANK SECTION

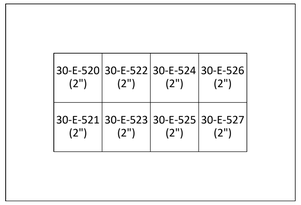
13E02



Width: 1'-7"
Height: 1'-9"

30E DUCT BANK SECTION

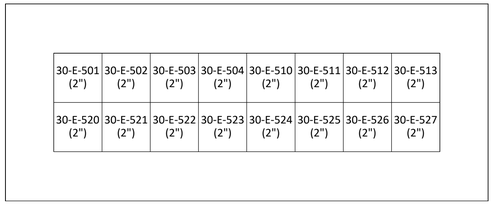
13E02



Width: 2'-4"
Height: 1'-9"

30F DUCT BANK SECTION

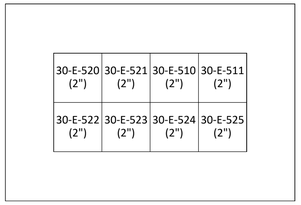
13E02



Width: 3'-10"
Height: 1'-9"

30G DUCT BANK SECTION

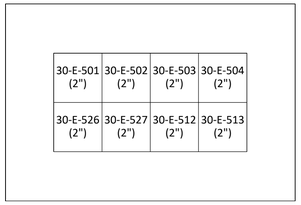
13E02



Width: 2'-4"
Height: 1'-9"

30H DUCT BANK SECTION

13E02, 13E04



Width: 2'-4"
Height: 1'-9"

30I DUCT BANK SECTION

13E02, 13E04

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			DRAFT FINAL SUBMITTAL
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN GARVENS
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

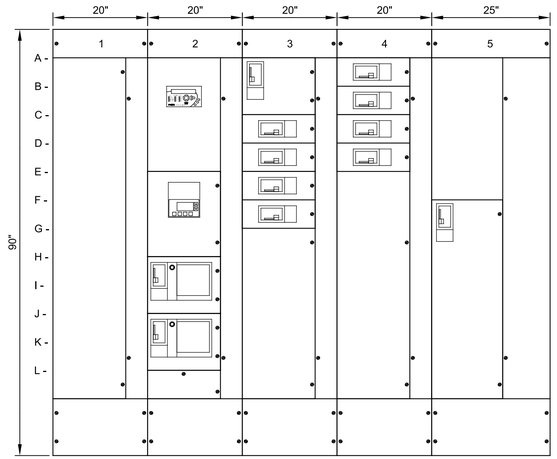
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
CAMPUS OAKS ASR WELL
DUCT BANK SECTIONS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13E05
SHEET NO. 90 OF 178

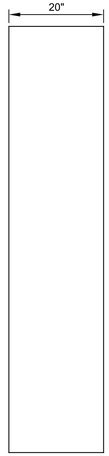
LAST SAVED BY: OWestbrook

PROJECT NO.
FILE NAME: 11843A1013E05.dwg



FRONT VIEW

SCALE: 3/4" = 1'-0"
FILE: 11843A1003E601



SIDE VIEW

SCALE: 3/4" = 1'-0"
FILE: 11843A1003E601

1A- MAIN LUGS (TOP FEED)	2A- WD31-PQMX-30104 POWER METER	3A- WD31-XFMR-30107 WD31-LPXX-30108 LIGHTING PANEL	4A- WD37-HEAT-30204 ELECTRICAL ROOM UNIT HEATER	5A- SPACE
	2E- SPD	3C- WD37-HVAC-30101 ELECTRICAL ROOM OUTDOOR UNIT	4B- WD37-HXGR-30401 ESS TANKLESS WATER HEATER	5F- WD34-PUMP-30101 ASR PUMP
	2H- WD37-FANX-30301 PUMP ROOM EXHAUST FAN	3D- WD37-HEAT-30201 PUMP ROOM UNIT HEATER NO. 1	4C- SPARE	
	2J- WD37-FANX-30302 CHEMICAL ROOM EXHAUST FAN	3E- WD37-HEAT-30202 PUMP ROOM UNIT HEATER NO. 2	4D- SPARE	
	2L- SPACE	3F- WD37-HEAT-30203 CHEMICAL ROOM UNIT HEATER	4E- SPACE	
		3G- SPACE		

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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DRAWN BLS
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CARLATO
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

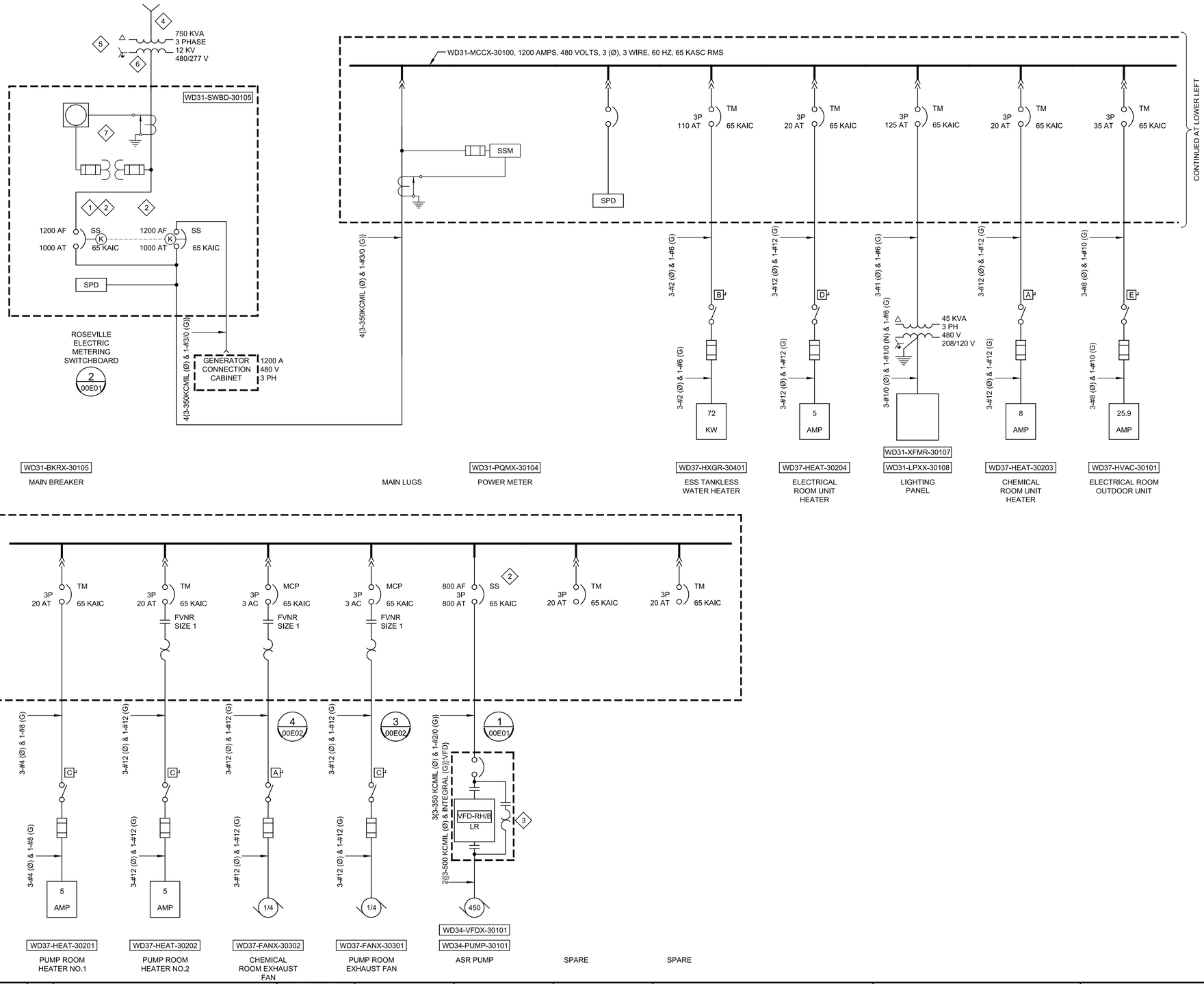
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
CAMPUS OAKS ASR WELL
WD31-MCCX-30100 ELEVATION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13E06
SHEET NO. 91 OF 178

PROJECT NO.
FILE NAME: 11843A1013E06.dgn

Plot Date: 03-DEC-2024 9:36:07 AM
User: svcPW
DesignScript: Carollo_Std_Pen_v0905.pen
PlotScale: 1:1
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: OWestbrook



GENERAL NOTES:

1. ALL WORK ON THE INCOMING SERVICE SHALL CONFORM TO ROSEVILLE ELECTRIC STANDARDS.
2. REFER TO THE MCC ELEVATION DRAWING FOR REQUIRED SPACE COMPARTMENTS.

KEY NOTES:

1. PROVIDE THE MAIN BREAKER WITH A MOTOR OPERATOR ALLOWING FOR REMOTE OPEN, CLOSE AND RESET.
2. THE SOLID STATE CIRCUIT BREAKER TRIP UNITS SHALL INCLUDE MAINTENANCE MODE SETTINGS.
3. ACTIVE FRONT-END VFD WITH FULL VOLTAGE, NON-REVERSING BYPASS STARTER.
4. PROVIDE A 4" CONDUIT FROM THE UTILITY TRANSFORMER TO THE ROSEVILLE ELECTRIC VAULT AT THE LOCATION SHOWN ON THE ELECTRICAL SITE PLAN. THE PRIMARY CONDUCTORS ARE PROVIDED BY ROSEVILLE ELECTRIC
5. PROVIDE TRANSFORMER PAD PER ROSEVILLE ELECTRIC STANDARDS. THE TRANSFORMER IS PROVIDED BY ROSEVILLE ELECTRIC.
6. PROVIDE SECONDARY CONDUIT AND CONDUCTORS AS SHOWN ON THE ELECTRICAL PLANS AND THE CONDUIT SCHEDULE
7. THE INSTRUMENT TRANSFORMERS AND METER ARE PROVIDED BY ROSEVILLE ELECTRIC. THE METER SOCKET AND SWITCHBOARD ARE PROVIDED BY THE CONTRACTOR.

REV	DATE	BY	DESCRIPTION

DRAFT FINAL SUBMITTAL
NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN BLS
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER ALAN CARROLL — No. 20740 — ELECTRICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
CAMPUS OAKS ASR WELL
WD31-MCCX-30100 ONE-LINE DIAGRAM

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13E07
SHEET NO. 92 OF 178

PROJECT NO.
FILE NAME: 11843A1013E07.dgn

Plot Date: 10-DEC-2024 1:37:42 PM
User: svcPW
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1
LAST SAVED BY: OWestbrook

PANEL WD31-LPXX-30108

12/1/2024

LOCATION: CAMPUS OAKS
VOLTS: 208/120
PHASE & WIRE: 3 PH 4W
INTERRUPT: 10 KAIC
OPTIONS: SPD

NEMA: 1
FEED: BOTTOM
MTG. SURFACE
BUS RATING: 150
MAIN: CB
MAIN RATING: 150 AF 150 AT

PH A WEIGHTED VA 10358
PH B WEIGHTED VA 11168
PH C WEIGHTED VA 10955
EQUIP SIZING VA 33503
PANEL AMPS 93.0

I/C/S	DESCRIPTION	LOAD (VA)	BKR	CIR	Ø	CIR	BKR	LOAD (VA)	DESCRIPTION	I/C/S
S	WD31-PLCP-30101 - PLC AUX POWER	350	15A-1P	1	A	2	15A-2P	150	WD37-HVAC-30102 - ELECTRICAL ROOM INDOOR UNIT 1	C
C	WD31-PLCP-30101 - PLC UPS POWER	1000	15A-1P	3	B	4		150		C
C	WD37-HXGR-30002 - RESTROOM WATER HEATER	2050	25A-2P	5	C	6	15A-2P	150	WD37-HVAC-30103 - ELECTRICAL ROOM INDOOR UNIT 2	C
C		2050		7	A	8		150		C
C	WD05-FANX-30303 - RESTROOM LIGHT AND EXHAUST FAN	160	15A-1P	9	B	10	15A-2P	150	WD37-HVAC-30104 - ELECTRICAL ROOM INDOOR UNIT 3	C
C	WD08-HMIX-30103 - OPERATOR INTERFACE	500	15A-1P	11	C	12		150		C
C	WD08-NVRX-30300 - VIDEO RECORDER	500	15A-1P	13	A	14	15A-2P	150	WD37-HVAC-30105 - ELECTRICAL ROOM INDOOR UNIT 4	C
C	WD08-NVRX-30301 - VIDEO RECORDER	500	15A-1P	15	B	16		150		C
C	WD08-CKEY-30900 - CARD READER PANEL	500	15A-1P	17	C	18	15A-1P	1676	WD33-LCPX-30310 - SODIUM FLUORIDE	I
I	GATE OPERATOR	3000	35A-1P	19	A	20	15A-1P	1176	WD34-FCVX-30120 - WELL ANNULUS RECHARGE VALVE	I
I	WD33-PLCP-30210 - HYPOCHLORITE VCP	2852	30A-1P	21	B	22	15A-1P	1176	WD34-FCVX-30150 - RECHARGE CONTROL VALVE	I
I	WD34-MOVX-30130 - PUMP COLUMN RECHARGE CONTROL VALVE	1176	15A-1P	23	C	24	20A-1P		SPARE	
I	WD34-MOVX-30140 - AQUIFER & WELL FLUSH TO WASTE VALVE	1176	15A-1P	25	A	26	20A-1P	400	FACP	C
I	WD34-MOVX-30160 - RECOVERY/PRODUCTION VALVE	1176	15A-1P	27	B	28	20A-1P		SPARE	
C	EXIT LIGHTS	27	20A-1P	29	C	30	20A-1P	720	EXTERIOR RECEPTACLES	I
C	EXIT LIGHTS	27	20A-1P	31	A	32	20A-1P	360	CHEMICAL ROOM RECEPTACLES	I
C	EXTERIOR LIGHTS	117	20A-1P	33	B	34	20A-1P	540	ELECTRICAL ROOM RECEPTACLES	I
I	ELECTRICAL ROOM LIGHTS	182	20A-1P	35	C	36	20A-1P	540	CHEMICAL ROOM RECEPTACLES	I
I	CHEMICAL ROOM LIGHTS	182	20A-1P	37	A	38	20A-1P	180	RESTROOM RECEPTACLE	I
	SPARE		20A-1P	39	B	40	20A-1P	720	PUMP ROOM RECEPTACLES	I
C	PUMP ROOM LIGHTS	416	20A-1P	41	C	42	25A-1P	1920	MONITORING WELL RECEPTACLE	S
	SPARE		20A-1P	43	A	44	25A-1P	1920	MONITORING WELL RECEPTACLE	S
I	WD33-PUMP-30401 - MONITORING WELL PUMP 1	1920	25A-1P	45	B	46	20A-1P		SPARE	
I	WD33-PUMP-30402 - MONITORING WELL PUMP 2	1920	25A-1P	47	C	48	20A-1P		SPARE	
	SPARE		20A-1P	49	A	50	20A-1P		SPARE	
	SPARE		20A-1P	51	B	52	20A-1P		SPARE	
	SPARE		20A-1P	53	C	54	20A-1P		SPARE	

ELECTRICAL HANDHOLE AND MANHOLE SCHEDULE

11/21/2024

TAG NO	MINIMUM INTERIOR DIMENSIONS (INCHES)			CONSTRUCTION	TYPICAL DETAIL	SURFACE LOADING	COMMENTS
	WIDTH	LENGTH	DEPTH				
PB-S-1	60	60	60	PRECAST		ROADWAY	CONTROL AND SIGNAL PULLBOX
PB-E-1	60	60	60	PRECAST		ROADWAY	POWER PULLBOX

NOTES:

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL

DESIGNED CAC
DRAWN EYV
CHECKED
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CARLSON
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
CAMPUS OAKS ASR WELL
PANELBOARD & HANDHOLE/MANHOLE SCHEDULES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13E08
SHEET NO. 93 OF 178

PROJECT NO.
FILE NAME: 11843A1013E08.dwg

Plot Date: 12/1/2024 6:41:11 PM
LAST SAVED BY: OWestbrook

Plot Date: 12/10/2024 12:19:20 PM

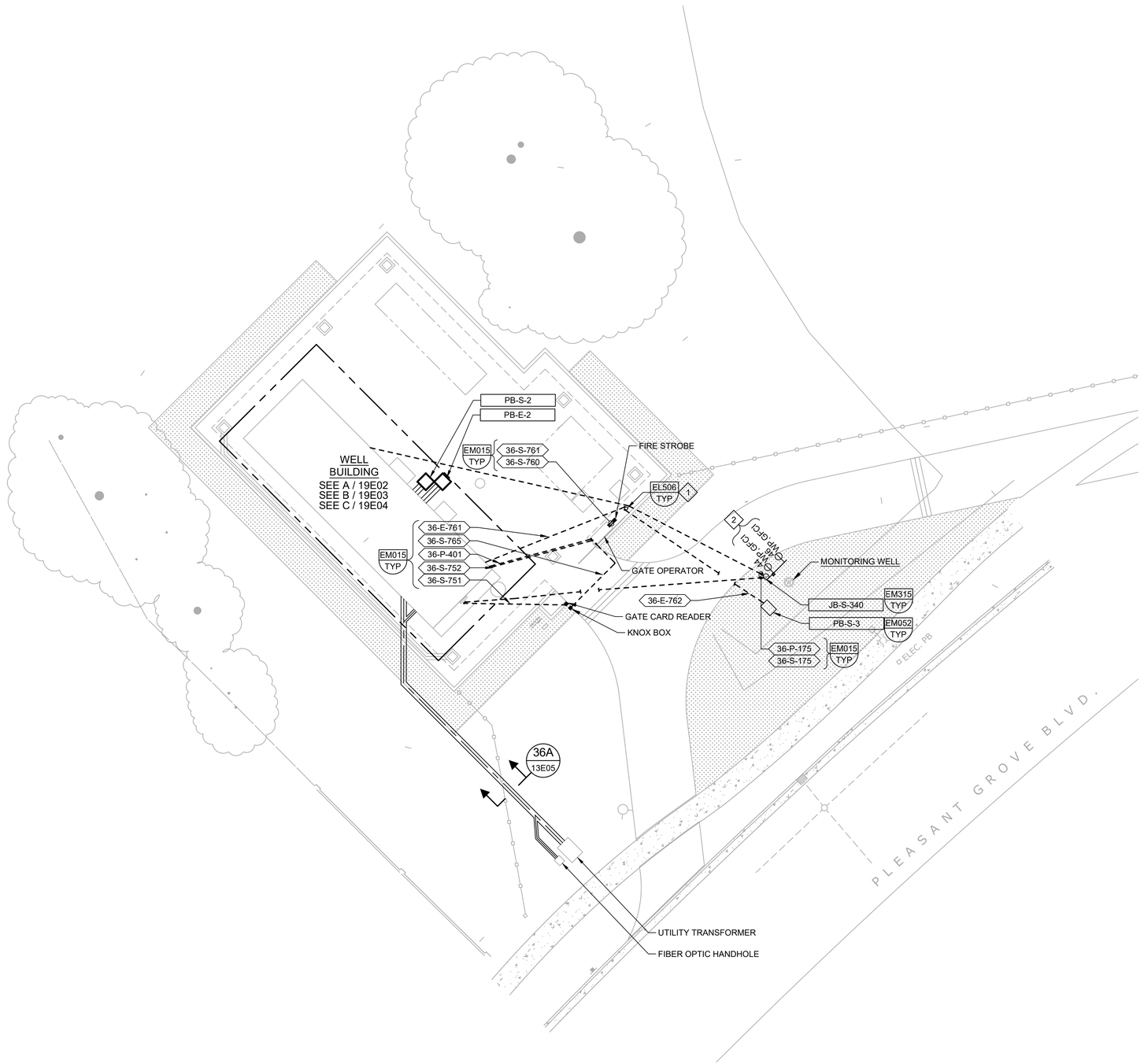
N

0 10' 20' 40'

SCALE: 1" = 20'

KEY NOTES:

1. PROVIDE 12' ALUMINUM ROUND STRAIGHT POLE FOR LICENSE PLATE READER CAMERAS. CAMERAS PROVIDED BY OTHERS.
2. 20A SINGLE RECEPTACLE.



REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN TLM
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN GARVARD
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

ELECTRICAL

MISTY WOOD ASR WELL
ELECTRICAL SITE PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19E01
SHEET NO. 94 OF 178

LAST SAVED BY: OWestbrook

PROJECT NO.

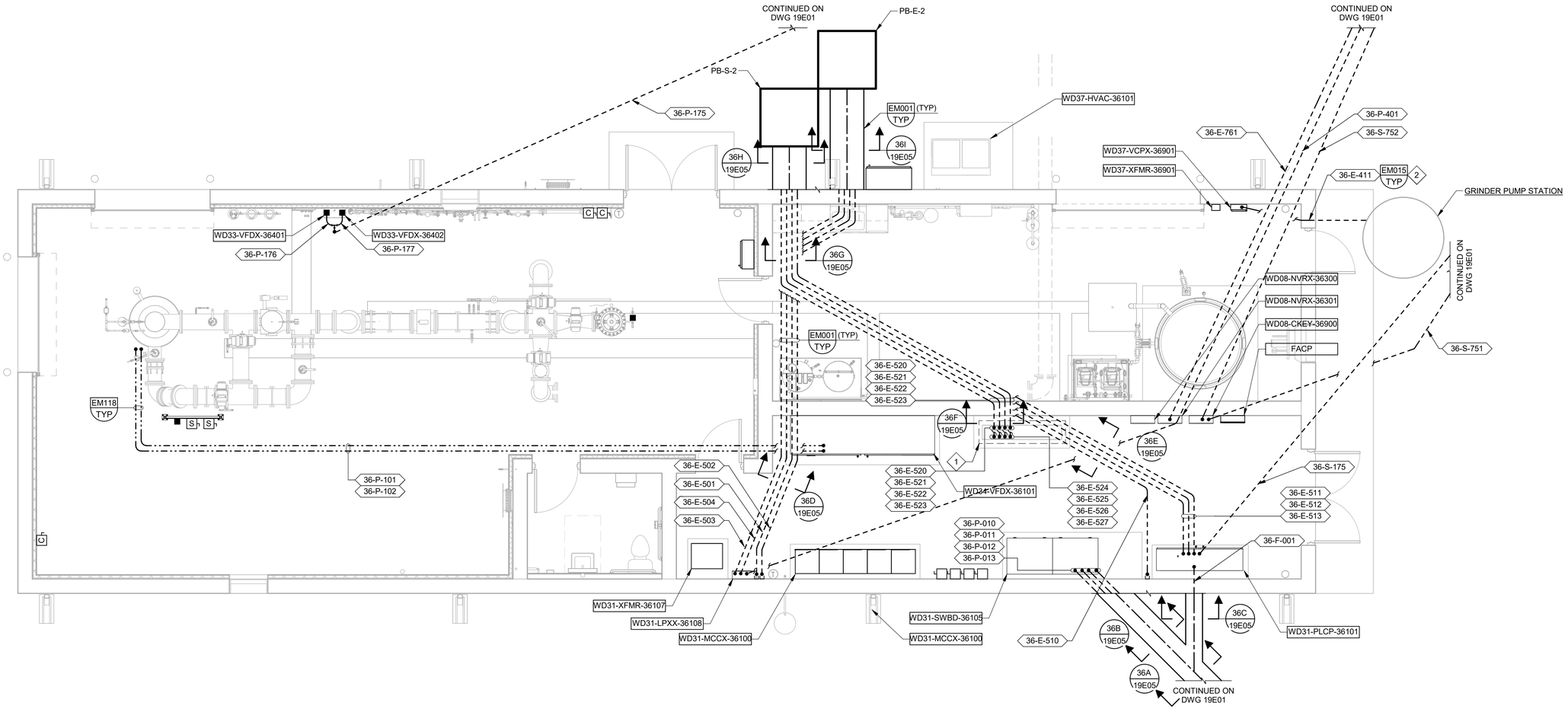
FILE NAME: 11843A1019E01.dwg

GENERAL NOTES:

1. SEE DRAWING 19E01 FOR LOCATION OF FACILITY ON SITE PLAN.

KEY NOTES:

1. FUTURE WATER TREATMENT CONTROL PANEL.
2. CORE DRILL CONDUIT PENETRATION IN WET WELL AND FILL WITH NON-SHRINK EPOXY GROUT. ROUTE SUBMERSIBLE PUMP CABLES IN CONDUIT TO VCP AND TERMINATE. PROVIDE STRAIN RELIEF IN WET WELL WHERE SUBMERSIBLE CABLE ENTERS CONDUIT.



A PLAN
SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN TLM
CHECKED
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CERVANTES No. 20740 ELECTRICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

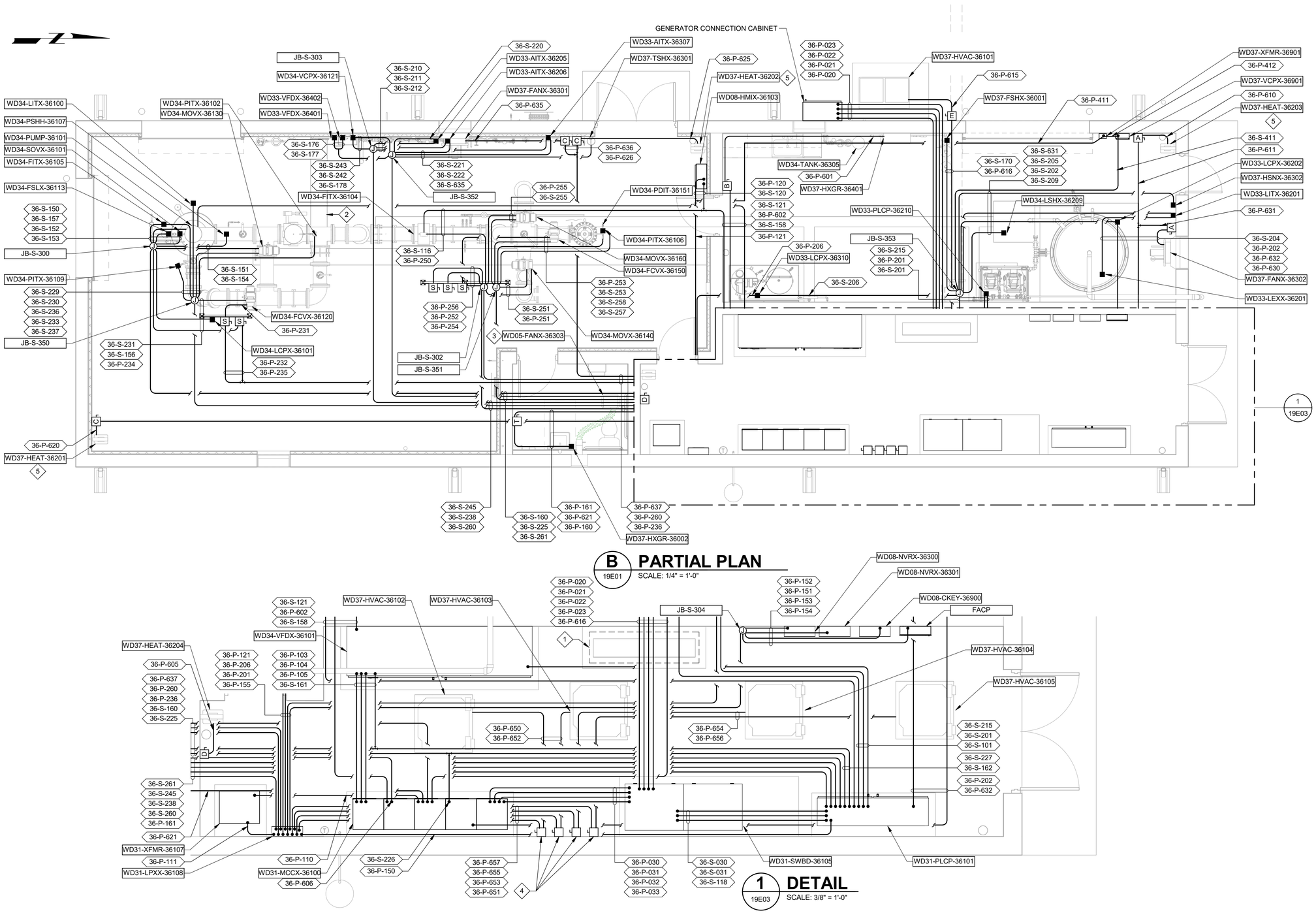
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
MISTY WOOD ASR WELL
UNDERGROUND POWER AND CONTROL PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19E02
SHEET NO. 95 OF 178

PLOT DATE: 12/10/2024 1:23:01 PM

FILE NAME: R:\d1341482\11843A1019E801.rvt

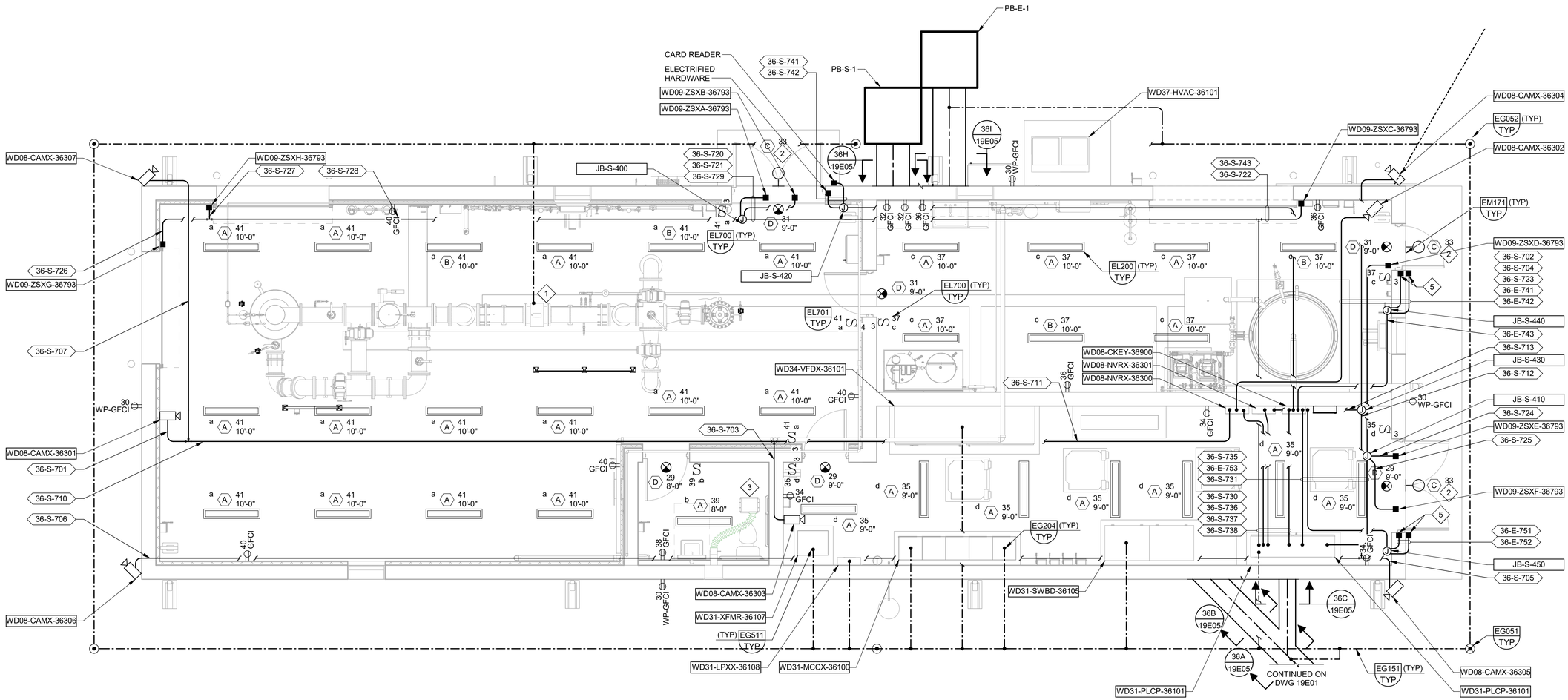

GENERATOR CONNECTION CABINET
JB-S-303
WD34-VCPX-36121
WD34-LITX-36100
WD34-PSHH-36107
WD34-PUMP-36101
WD34-SOVX-36101
WD34-FITX-36105
WD34-FSLX-36113
WD34-PITX-36102
WD34-MOVX-36130
WD33-VFDX-36402
WD33-VFDX-36401
WD34-FITX-36104
JB-S-300
JB-S-350
WD34-PITX-36109
WD34-FCVX-36120
WD34-LCPX-36101
WD37-HEAT-36201
WD33-AITX-36307
WD37-TSHX-36301
WD33-AITX-36205
WD33-AITX-36206
WD37-FANX-36301
WD37-HEAT-36202
WD08-HMIX-36103
JB-S-352
WD34-PDIT-36151
WD34-PITX-36106
WD34-MOVX-36160
WD34-FCVX-36150
WD05-FANX-36303
WD34-MOVX-36140
JB-S-302
JB-S-351
WD37-HXGR-36002
WD37-HVAC-36101
WD37-FSHX-36001
WD34-TANK-36305
WD37-HXGR-36401
WD33-PLCP-36210
JB-S-353
WD33-LCPX-36310
WD34-LSHX-36209
WD37-XFMR-36901
WD37-VCPX-36901
WD37-HEAT-36203
WD33-LCPX-36202
WD37-HSNX-36302
WD33-LITX-36201
WD37-FANX-36302
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GENERAL NOTES:

1. SEE DRAWING 19E01 FOR LOCATION OF FACILITY ON SITE PLAN.
2. ALL CIRCUIT DESIGNATIONS REFER TO PANELBOARD WD31-LPXX-36108.

KEY NOTES:

1. GROUND THE FLOW METER.
2. COORDINATE THE HEIGHT OF THE FIXTURES OVER THE DOORS WITH THE ARCHITECTURAL DRAWINGS.
3. WIRE THE RESTROOM EXHAUST FAN TO THE RESTROOM LIGHT SWITCH.



C PLAN

SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN EYV
CHECKED
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CARVALHO No. 20740 ELECTRICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
MISTY WOOD ASR WELL
LIGHTING AND GROUNDING PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19E04
SHEET NO. 97 OF 178

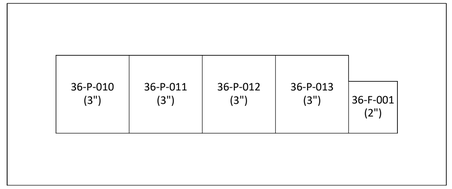
PLOT DATE: 12/9/2024 10:55:06 AM

FILE NAME: R:\d1341482\11843A1019E801.rvt

Plot Date: 12/10/2024 12:07:13 PM

GENERAL NOTES:

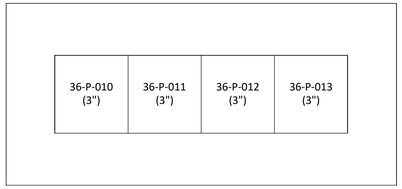
1. CONSTRUCT DUCT BANK PER DETAIL EM001/TYP UNLESS OTHERWISE INDICATED.



Width: 3'-1"
Height: 1'-6"

36A DUCT BANK SECTION

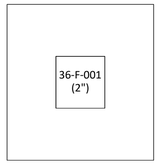
19E01, 19E02, 19E04



Width: 2'-8"
Height: 1'-6"

36B DUCT BANK SECTION

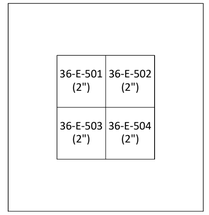
19E02, 19E04



Width: 1'-2"
Height: 1'-5"

36C DUCT BANK SECTION

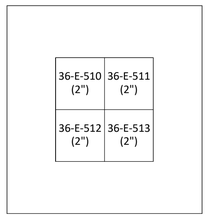
19E02, 19E04



Width: 1'-7"
Height: 1'-9"

36D DUCT BANK SECTION

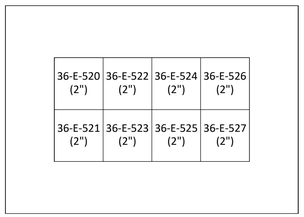
19E02



Width: 1'-7"
Height: 1'-9"

36E DUCT BANK SECTION

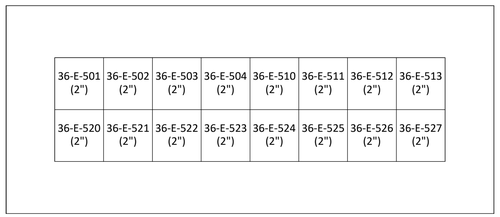
19E02



Width: 2'-4"
Height: 1'-9"

36F DUCT BANK SECTION

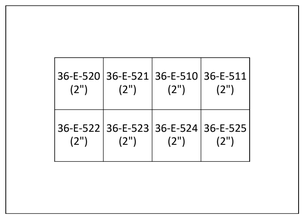
19E02



Width: 3'-10"
Height: 1'-9"

36G DUCT BANK SECTION

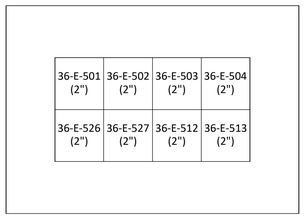
19E02



Width: 2'-4"
Height: 1'-9"

36H DUCT BANK SECTION

19E02, 19E04



Width: 2'-4"
Height: 1'-9"

36I DUCT BANK SECTION

19E02, 19E04

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL
			NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN EYV
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CARLSTROM
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

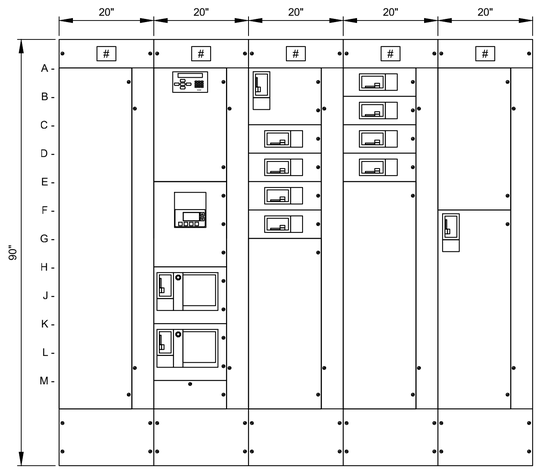
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
MISTY WOOD ASR WELL
DUCT BANK SECTIONS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
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JOB NO. 11843A.10
DRAWING NO. 19E05
SHEET NO. 98 OF 178

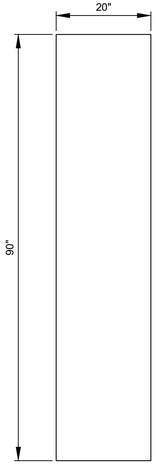
LAST SAVED BY: OWestbrook

PROJECT NO.
FILE NAME: 11843A1019E05.dwg



FRONT VIEW

SCALE: 3/4" = 1'-0"



SIDE VIEW

SCALE: 3/4" = 1'-0"

1A- MAIN LUGS (TOP FEED)

2A- WD31-PQMX-36104 POWER METER

2E- SPD

2H- WD37-FANX-36301 PUMP ROOM EXHAUST FAN

2J- WD37-FANX-36302 CHEMICAL ROOM EXHAUST FAN

2L- SPACE

3A- WD31-XFMR-36107 WD31-LPXX-36108 LIGHTING PANEL

3C- WD37-HVAC-36101 ELECTRICAL ROOM OUTDOOR UNIT

3D- WD37-HEAT-36201 PUMP ROOM UNIT HEATER NO. 1

3E- WD37-HEAT-36202 PUMP ROOM UNIT HEATER NO. 2

3F- WD37-HEAT-36203 CHEMICAL ROOM UNIT HEATER

3G- SPACE

4A- WD37-HEAT-36204 ELECTRICAL ROOM UNIT HEATER

4B- WD37-HXGR-36401 ESS TANKLESS WATER HEATER

4C- SPARE

4D- SPARE

4E- SPACE

5A- SPACE

5F- WD34-PUMP-36101 ASR PUMP

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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CARVALHO
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

ELECTRICAL

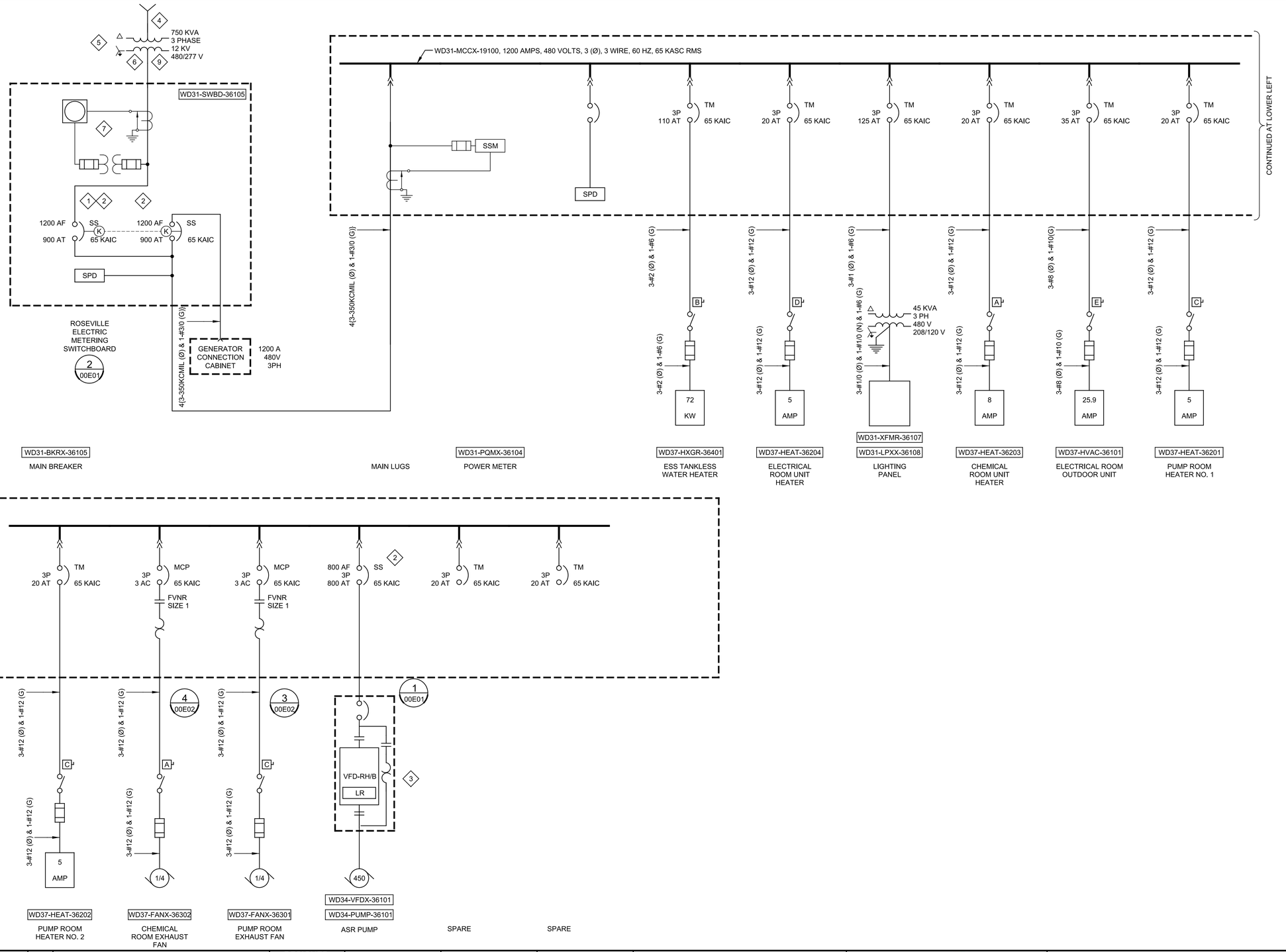
MISTY WOOD ASR WELL
WD31-MCCX-36100 ELEVATION

VERIFY SCALES
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0 1"
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JOB NO. 11843A.10
DRAWING NO. 19E06
SHEET NO. 99 OF 178

LAST SAVED BY: avates
LAST SAVED BY: Bentley Bypass tools user
Plot Date: 12/13/2024 12:18:11 PM
FILE NAME: 11843A1019E06.DWG

PROJECT NO.
FILE NAME: 11843A1019E06.dwg



GENERAL NOTES:

1. ALL WORK ON THE INCOMING SERVICE SHALL CONFORM TO ROSEVILLE ELECTRIC STANDARDS.
2. REFER TO THE MCC ELEVATION DRAWING FOR REQUIRED SPACE COMPARTMENTS.

KEY NOTES:

1. PROVIDE THE MAIN BREAKER WITH A MOTOR OPERATOR ALLOWING FOR REMOTE OPEN, CLOSE AND RESET.
2. THE SOLID STATE CIRCUIT BREAKER TRIP UNITS SHALL INCLUDE MAINTENANCE MODE SETTINGS.
3. ACTIVE FRONT-END VFD WITH FULL VOLTAGE, NON-REVERSING BYPASS STARTER.
4. PROVIDE A 4" CONDUIT FROM THE UTILITY TRANSFORMER TO THE ROSEVILLE ELECTRIC VAULT AT THE LOCATION SHOWN ON THE ELECTRICAL SITE PLAN. THE PRIMARY CONDUCTORS ARE PROVIDED BY ROSEVILLE ELECTRIC
5. PROVIDE TRANSFORMER PAD PER ROSEVILLE ELECTRIC STANDARDS. THE TRANSFORMER IS PROVIDED BY ROSEVILLE ELECTRIC.
6. PROVIDE SECONDARY CONDUIT AND CONDUCTORS AS SHOWN ON THE ELECTRICAL PLANS AND THE CONDUIT SCHEDULE
7. THE INSTRUMENT TRANSFORMERS AND METER ARE PROVIDED BY ROSEVILLE ELECTRIC. THE METER SOCKET AND SWITCHBOARD ARE PROVIDED BY THE CONTRACTOR.
8. NOT USED.
9. REFER TO THE CONDUIT SCHEDULE FOR TRANSFORMER SECONDARY CONDUCTORS.

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CAC
DRAWN BLS
CHECKED
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER ALAN CARRERO — No. 20740 — ELECTRICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
MISTY WOOD ASR WELL
WD31-MCCX-36100 ONE-LINE DIAGRAM

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19E07
SHEET NO. 100 OF 178

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Model: Layout1
LAST SAVED BY: OWestbrook

PANEL WD31-LPXX-36108

12/13/2024

LOCATION: MISTY WOOD
VOLTS: 208/120
PHASE & WIRE: 3 PH 4W
INTERRUPT: 10 KAIC
OPTIONS: SPD

NEMA: 1
FEED: BOTTOM
MTG. SURFACE
BUS RATING: 150
MAIN: CB
MAIN RATING: 150 AF 150 AT

PH A WEIGHTED VA 11778
PH B WEIGHTED VA 13088
PH C WEIGHTED VA 11455
EQUIP SIZING VA 39263
PANEL AMPS 109.0

I/C/S	DESCRIPTION	LOAD (VA)	BKR	CIR	Ø	CIR	BKR	LOAD (VA)	DESCRIPTION	I/C/S
S	WD31-PLCP-36101 - PLC AUX POWER	350	15A-1P	1	A	2	15A-2P	150	WD37-HVAC-36102 - ELECTRICAL ROOM INDOOR UNIT 1	C
C	WD31-PLCP-36101 - PLC UPS POWER	1000	15A-1P	3	B	4		150		C
C	WD37-HXGR-36002 - RESTROOM WATER HEATER	2050	25A-2P	5	C	6	15A-2P	150	WD37-HVAC-36103 - ELECTRICAL ROOM INDOOR UNIT 2	C
C		2050		7	A	8		150		C
C	WD05-FANX-36303 - RESTROOM LIGHT AND EXHAUST FAN	160	15A-1P	9	B	10	15A-2P	150	WD37-HVAC-36104 - ELECTRICAL ROOM INDOOR UNIT 3	C
C	WD08-HMIX-36103 - OPERATOR INTERFACE	500	15A-1P	11	C	12		150		C
C	WD08-NVRX-36300 - VIDEO RECORDER	500	15A-1P	13	A	14	15A-2P	150	WD37-HVAC-36105 - ELECTRICAL ROOM INDOOR UNIT 4	C
C	WD08-NVRX-36301 - VIDEO RECORDER	500	15A-1P	15	B	16		150		C
C	WD08-CKEY-36900 - CARD READER PANEL	500	15A-1P	17	C	18	15A-1P	1676	WD33-LCPX-36310 - SODIUM FLUORIDE	I
I	GATE OPERATOR	3000	35A-1P	19	A	20	15A-1P	1176	WD34-FCVX-36120 - WELL ANNULUS RECHARGE VALVE	I
I	WD33-PLCP-36210 - HYPOCHLORITE VCP	2852	30A-1P	21	B	22	15A-1P	1176	WD34-FCVX-36150 - RECHARGE CONTROL VALVE	I
I	WD34-MOVX-36130 - PUMP COLUMN RECHARGE CONTROL VALVE	1176	15A-1P	23	C	24	20A-1P		SPARE	
I	WD34-MOVX-36140 - AQUIFER & WELL FLUSH TO WASTE VALVE	1176	15A-1P	25	A	26	20A-2P	1920	WD37-XFMR-36901 - GRINDER PUMP CONTROL PANEL	I
I	WD34-MOVX-36160 - RECOVERY/PRODUCTION VALVE	1176	15A-1P	27	B	28		1920		I
C	EXIT LIGHTS	27	20A-1P	29	C	30	20A-1P	720	EXTERIOR RECEPTACLES	I
C	EXIT LIGHTS	27	20A-1P	31	A	32	20A-1P	360	CHEMICAL ROOM RECEPTACLES	I
C	EXTERIOR LIGHTS	117	20A-1P	33	B	34	20A-1P	540	ELECTRICAL ROOM RECEPTACLES	I
I	ELECTRICAL ROOM LIGHTS	182	20A-1P	35	C	36	20A-1P	540	CHEMICAL ROOM RECEPTACLES	I
I	CHEMICAL ROOM LIGHTS	182	20A-1P	37	A	38	20A-1P	180	RESTROOM RECEPTACLE	I
	SPARE		20A-1P	39	B	40	20A-1P	720	PUMP ROOM RECEPTACLES	I
C	PUMP ROOM LIGHTS	416	20A-1P	41	C	42	20A-1P	400	FACP	C
	SPARE		20A-1P	43	A	44	25A-1P	1920	MONITORING WELL RECEPTACLE	S
I	WD33-PUMP-36401 - MONITORING WELL PUMP 1	1920	25A-1P	45	B	46	25A-1P	1920	MONITORING WELL RECEPTACLE	S
I	WD33-PUMP-36402 - MONITORING WELL PUMP 2	1920	25A-1P	47	C	48	20A-1P		SPARE	
	SPARE		20A-1P	49	A	50	20A-1P		SPARE	
	SPARE		20A-1P	51	B	52	20A-1P		SPARE	
	SPARE		20A-1P	53	C	54	20A-1P		SPARE	

ELECTRICAL HANDHOLE AND MANHOLE SCHEDULE

TAG NO	MINIMUM INTERIOR DIMENSIONS (INCHES)			CONSTRUCTION	TYPICAL DETAIL	SURFACE LOADING	COMMENTS
	WIDTH	LENGTH	DEPTH				
PB-S-1	60	60	60	PRECAST		ROADWAY	CONTROL AND SIGNAL PULLBOX
PB-E-1	60	60	60	PRECAST		ROADWAY	POWER PULLBOX

NOTES:
1. SEE SPECIFICATION 02581 FOR PRECAST ELECTRICAL HANDHOLES AND MANHOLES.

REV	DATE	BY	DESCRIPTION
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DESIGNED CE
DRAWN CE
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CARLOTTO No. 20740 ELECTRICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
ELECTRICAL
PANELBOARD AND HANDHOLE/ MANHOLE SCHEDULES

VERIFY SCALES
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0 1"
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JOB NO. 11843A.10
DRAWING NO. 19E08
SHEET NO. 101 OF 178

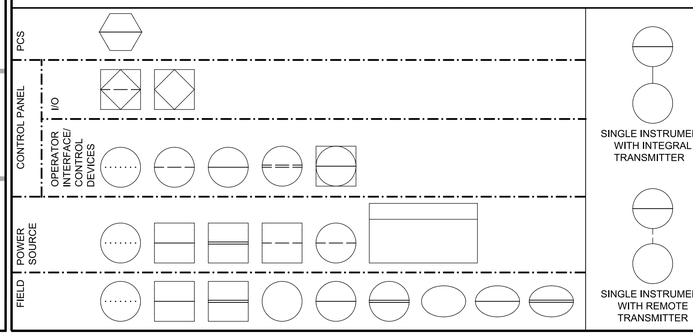
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FILE NAME: 11843A1019E08.dwg

Plot Date: 12/13/2024 12:25:11 PM
FILE NAME: 11843A1019E08.DWG
LAST SAVED BY: OWestbrook
Express tools user

SYMBOL	DRAWING VISIBLE FIELDS	FIELD - 1	FIELD - 2	FIELD - 3	FIELD - 4	FIELD - 5	FIELD - 6
HMI/SCADA SYSTEM OPERATOR INTERFACE TERMINAL	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - DESCRIPTION 5 - DESCRIPTION 6 - EXISTING/FUTURE	REFER ◇1 ◇2	REFER ◇3	ACTION ALARM NUM - NUMERIC SP - SET POINT STATUS TREND	DESCRIPTION ◇2 ◇5	DESCRIPTION	E - EXISTING F - FUTURE
HARDWIRED I/O POINT	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - DESCRIPTION 5 - LOCATION 6 - EXISTING/FUTURE	REFER ◇1 ◇2 ◇4	REFER ◇3	AI - ANALOG INPUT AO - ANALOG OUTPUT DI - DISCRETE INPUT DO - DISCRETE OUTPUT HSC - HIGH SPEED COUNTER INPUT RTD - RTD INPUT	DESCRIPTION	PAC - PROGRAMMABLE AUTOMATION CONTROLLER NO. PLC - PROGRAMMABLE LOGIC CONTROLLER NO. RIO - REMOTE I/O VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
NETWORK / SOFTI/O	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - DESCRIPTION 5 - LOCATION 6 - EXISTING/FUTURE 7 - DIGITAL NETWORK TABLE	REFER ◇1 ◇2	REFER ◇3	BUS ID CNET - CONTROLNET DNET - DEVICENET ENET - ETHERNET/IP FF - FOUNDATION FIELDBUS MB - MODBUS RTU MB+ - MODBUS PLUS MBTCP - MODBUS TCP DP - PROFIBUS DP PA - PROFIBUS PA PNET - PROFINET SERIAL - PROPRIETARY PROTOCOL	DESCRIPTION	PAC - PROGRAMMABLE AUTOMATION CONTROLLER NO. PLC - PROGRAMMABLE LOGIC CONTROLLER NO. RIO - REMOTE I/O VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
LOCAL OPERATOR INTERFACE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - DESCRIPTION 5 - LOCATION 6 - EXISTING/FUTURE	REFER ◇1 ◇2	REFER ◇3	ACTION ALARM NUM - NUMERIC SP - SET POINT STATUS	DESCRIPTION ◇2 ◇5	LOI - LOCAL OPERATOR INTERFACE NO. LCP - LOCAL CONTROL PANEL NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
PILOT DEVICE OPERATOR INTERFACE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - DESCRIPTION 5 - LOCATION 6 - EXISTING/FUTURE	REFER ◇1 ◇2	REFER ◇3	AM - AUTO/MANUAL BYPASS - BYPASS CL - CLOSE E-STOP - EMERGENCY STOP FRLR - FIXED RATE/LEVEL RATE HOA - HAND /OFF/AUTO JOHC - JOG OPEN/HOLD/CLOSE JOJC - JOG OPEN/JOG CLOSE LH - LOW/HIGH LOR - LOCAL/OFF/REMOTE LOS - LOCK OUT STOP LS - LEAD/STANDBY LSR - LOCAL/STOP/REMOTE NOOT - NO OFFLINE/OFFLINE TRANSITION OC - OPEN/CLOSE OLOL - ON LINE/OFF LINE OO - OFF/ON OP - OPEN OSC - OPEN/STOP/CLOSE RST - RESET SAAM - SEMI AUTO/AUTO/MANUAL SEL - SELECT SP - STOP SPD - SPEED SS - START/STOP ST - START	DESCRIPTION	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. RVSS - REDUCED VOLTAGE SOLID STARTER NO. VCP - VENDOR CONTROL PANEL NO. VFD - VARIABLE FREQUENCY DRIVE NO.	E - EXISTING F - FUTURE
POWER DEVICE PRIMARY FUNCTION OPERATOR ACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - VOLTAGE-POLE 5 - LOCATION 6 - EXISTING/FUTURE	CB - CIRCUIT BREAKER DISC - DISCONNECT FU - FUSE	REFER ◇3	TM - THERMAL MAGNETIC CIRCUIT BREAKER	24VDC - 1P 120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 3P 240VAC - 2P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	DP - DISTRIBUTION PANEL NO. LCP - LOCAL CONTROL PANEL NO. LP - LIGHTING PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. PP - POWER PANEL NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
POWER DEVICE AUXILIARY FUNCTION FOR OPERATOR ACCESSIBLE DEVICES	1 - TAG 2 - LOOP NUMBER 3 - DESCRIPTION 4 - DESCRIPTION 5 - DESCRIPTION 6 - EXISTING/FUTURE	DISC - DISCONNECT	REFER ◇3	DESCRIPTION	DESCRIPTION	DESCRIPTION	E - EXISTING F - FUTURE
POWER DEVICE PRIMARY FUNCTION OPERATOR INACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - VOLTAGE-POLE 5 - LOCATION 6 - EXISTING/FUTURE	CB - CIRCUIT BREAKER FU - FUSE	REFER ◇3	MCP - MOTOR CIRCUIT PROTECTOR SS - SOLID STATE CIRCUIT BREAKER TM - THERMAL MAGNETIC CIRCUIT BREAKER	24VDC - 1P 120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 2P 240VAC - 3P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	DP - DISTRIBUTION PANEL NO. LCP - LOCAL CONTROL PANEL NO. LP - LIGHTING PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. PP - POWER PANEL NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE

SYMBOL	DRAWING VISIBLE FIELDS	FIELD - 1	FIELD - 2	FIELD - 3	FIELD - 4	FIELD - 5	FIELD - 6
INSTRUMENT PRIMARY ELEMENT	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER ◇1	REFER ◇3	DESCRIPTION ◇5	DESCRIPTION ◇6	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT PRIMARY FUNCTION OPERATOR ACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - DESCRIPTION 6 - EXISTING/FUTURE	REFER ◇1	REFER ◇3	DESCRIPTION ◇5	DESCRIPTION ◇6	DESCRIPTION	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT AUXILIARY FUNCTION OPERATOR ACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - DESCRIPTION 6 - EXISTING/FUTURE	REFER ◇1	REFER ◇3	DESCRIPTION	DESCRIPTION ◇6	DESCRIPTION	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT PRIMARY FUNCTION OPERATOR INACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER ◇1 ◇3 XR - PROTECTION RELAY CR - CONTROL RELAY IR - INTERPOSING RELAY	REFER ◇3	DESCRIPTION	DESCRIPTION ◇6	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
INSTRUMENT/CONTROL ELEMENT AUXILIARY FUNCTION OPERATOR INACCESSIBLE	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER ◇1 ◇3 XR - PROTECTION RELAY CR - CONTROL RELAY IR - INTERPOSING RELAY	REFER ◇3	DESCRIPTION	DESCRIPTION ◇6	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT NON-POWERED	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION/SIZE 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER ◇3	REFER ◇3	DESCRIPTION	DESCRIPTION ◇6	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT PRIMARY FUNCTION POWERED	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - LOCATION 6 - EXISTING/FUTURE	REFER ◇3	REFER ◇3	DESCRIPTION	DESCRIPTION ◇6	AREA NO. BUILDING NO. ROOM NO.	E - EXISTING F - FUTURE
FIELD EQUIPMENT AUXILIARY FUNCTION POWERED	1 - TAG 2 - LOOP NUMBER 3 - FUNCTION 4 - FURNISHED BY 5 - DESCRIPTION 6 - EXISTING/FUTURE	MWH - MOTOR WINDING HEATER TSH - TEMPERATURE SWITCH XSH - TORQUE SWITCH	REFER ◇3	DESCRIPTION	DESCRIPTION ◇6	DESCRIPTION	E - EXISTING F - FUTURE
FIELD EQUIPMENT STARTER/DRIVE CUBICLE/CABINET	1 - TAG 2 - LOOP NUMBER 3 - TYPE 4 - VOLTAGE-POLE 5 - POWER SOURCE 6 - EXISTING/FUTURE	MS - MOTOR STARTER RVAT - REDUCED VOLTAGE AUTO TRANSFORMER STARTER RVSS - REDUCED VOLTAGE SOLID STATE STARTER VFD - VARIABLE FREQUENCY DRIVE	REFER ◇3	FVNR - FULL VOLTAGE NON-REVERSING STARTER FVR - FULL VOLTAGE REVERSING STARTER PWS - PART-WINDING STARTER RVAT - REDUCED VOLTAGE AUTO TRANSFORMER STARTER RVSS - REDUCED VOLTAGE SOLID STATE STARTER TS1W - TWO SPEED SINGLE WINDING TS2W - TWO SPEED TWO WINDINGS VFD - VARIABLE FREQUENCY DRIVE	120VAC - 1P 208VAC - 2P 208VAC - 3P 240VAC - 2P 240VAC - 3P 480VAC - 3P 2400VAC - 3P 4160VAC - 3P	LCP - LOCAL CONTROL PANEL NO. MCC - MOTOR CONTROL CENTER NO. PCM - PROCESS CONTROL MODULE NO. VCP - VENDOR CONTROL PANEL NO.	E - EXISTING F - FUTURE

INSTRUMENT BUBBLE LOCATIONS



NOTES

1. INSTRUMENT TAG IDENTIFICATION LETTERS TABLE
2. OPERATOR PILOT DEVICE LEGEND
3. EQUIPMENT TAGGING TABLE
4. I/O TYPE DESIGNATIONS TABLE
5. INSTRUMENT TYPE DESIGNATIONS TABLE
6. FURNISHED BY: FBO FURNISHED BY OWNER
FBV FURNISHED BY VENDOR

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED CE
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
DANIEL ROBINSON
No. 20405
ELECTRICAL
STATE OF CALIFORNIA

carollo®

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
ASR WELL
SYMBOLS AND ABBREVIATIONS 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00GN01
SHEET NO. 102 OF 178

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Model: Layout1
LAST SAVED BY: kkwarsick

INSTRUMENT TAG IDENTIFICATION LETTERS (PER ROSEVILLE DEVICE NAMING STANDARD APPENDIX F, TAG PREFIXES ARE 4 CHARACTERS LONG)

	MEASURED VARIABLE / INSTRUMENT FUNCTION	ELEMENT	TRANSMITTER	INDICATING TRANSMITTER	CONVERTER TRANSDUCER, RELAY SPECIAL DEVICES	INDICATOR	RECORDER	CONTROLLER	INDICATING CONTROLLER	RECORDING CONTROLLER	SWITCH	SWITCH LOW LOW	SWITCH LOW	SWITCH HIGH	SWITCH HIGH HIGH	SWITCH COMBINATION HIGH LOW	ACTION	ALARM LOW LOW	ALARM LOW	ALARM HIGH	ALARM HIGH HIGH	TOTALIZE INDICATOR TRANSMITTER	VALVE	GAUGE	LIGHT	SPEED SETTING
A	ANALYSIS	AE	AT	AIT	AY	AI	AR	AC	AIC	ARC	AS	ASLL	ASL	ASH	ASHH	ASHL		AALL	AAL	AAH	AAHH				AL	
B	BURNER FLAME	BE	BT	BIT	BY	BI	BR	BC	BIC	BRC	BS	BSLL	BSL	BSH	BSHH			BALL	BAL	BAH	BAHH				BL	
C	CONDUCTIVITY	CE	CT	CIT	CY	CI	CR	CC	CIC	CRC	CS	CSLL	CSL	CSH	CSHH	CSHL		CALL	CAL	CAH	CAHH				CL	
D	DENSITY	DE	DT	DIT	DY	DI	DR	DC	DIC	DRC	DS	DSLL	DSL	DSH	DSHH	DSHL		DALL	DAL	DAH	DAHH				DL	
E																										
F	FLOW	FE	FT	FIT	FY	FI	FR	FC	FIC	FRC	FS	FSLL	FSL	FSH	FSHH	FSHL		FALL	FAL	FAH	FAHH	FQI	FCV	FG	FL	
FF	FLOW RATIO				FFY	FFI		FFC	FFIC		FFS														FFL	
G	GAUGING (DIMENSION)																									
H	HAND (MANUAL)*							HC			HS*						HA*						HV		HL	HSS
I	CURRENT		IT	IIT	IY	II	IR	IC	IIC	IRC	IS	ISLL	ISL	ISH	ISHH			IALL	IAL	IAH	IAHH				IL	
J	POWER																									
K	TIME				KY	KI	KR	KC	KIC	KRC	KS	KSLL	KSL	KSH	KSHH			KALL	KAL	KAH	KAHH		KV		KL	
L	LEVEL	LE	LT	LIT	LY	LI	LR	LC	LIC	LRC	LS	LSLL	LSL	LSH	LSHH	LSHL		LALL	LAL	LAH	LAHH		LCV	LG	LL	
M	MOISTURE OR HUMIDITY	ME	MT	MIT	MY	MI	MR	MC	MIC	MRC	MS	MSLL	MSL	MSH	MSHH			MALL	MAL	MAH	MAHH				ML	
N	EMERGENCY SHUTDOWN																									
O																										
P	PRESSURE OR VACUUM	PE	PT	PIT	PY	PI***	PR	PC	PIC	PRC	PS****	PSLL	PSL	PSH	PSHH	PSHL		PALL	PAL	PAH	PAHH		PCV		PL	
PD	DIFFERENTIAL PRESSURE		PDT	PDIT	PDY	PDI	PDR	PDC	PDIC	PDRC	PDS	PDSLL	PDSL	PDSH	PDSHH			PDALL	PDAL	PDAH	PDAHH		PDCV		PDL	
Q	QUANTITY	QE	QT	QIT	QY	QI	QR				QS	QSLL	QSL	QSH	QSHH			QALL	QAL	QAH	QAHH					
R	RADIOACTIVITY																									
S	SPEED	SE	ST	SIT	SY	SI	SR	SC	SIC	SRC	SS	SSLL	SSL	SSH	SSHH			SALL	SAL	SAH	SAHH					
T	TEMPERATURE	TE	TT	TIT	TY	TI	TR	TC	TIC	TRC	TS	TSLL	TSL	TSH	TSHH	TSHL		TALL	TAL	TAH	TAHH		TCV		TL	
TD	DIFFERENTIAL TEMPERATURE		TDT	TDIT	TDY	TDI	TDR	TDC	TDIC	TDRC	TDS	TDSLL	TDSL	TDSH	TDSHH			TDALL	TDAL	TDAH	TDAHH		TDCV		TDL	
U	MULTIVARIABLE					UI	UR	UC	UIC	URC	US														UL	
V	VISCOSITY	VE	VT	VIT	VY	VI	VR	VC	VIC	VRC	VS	VSLL	VSL	VSH	VSHH			VALL	VAL	VAH	VAHH				VL	
W	WEIGHT	WE	WT	WIT	WY	WI	WR				WS	WSLL	WSL	WSH	WSHH			WALL	WAL	WAH	WAHH					
X	UNCLASSIFIED	XE	XT	XIT	XY	XI	XR	XC	XIC	XRC	XS	XSLL	XSL	XSH	XSHH			XALL	XAL	XAH	XAHH		XCV	XG	XL	
XV	VIBRATION	XVE	XVT		XVY	XVI	XVR				XVS			XVSH	XVSHH					XVAH	XVAHH				XVL	
Y	STATUS***					YI***																			YL	
Z	POSITION	ZE	ZT	ZIT	ZY	ZI					ZS**												ZV		ZL**	

* REFER TO OPERATOR PILOT DEVICE LEGEND
** LETTER INDICATES POSITION (O=OPEN, C=CLOSED, R=RAISE, L=LOWER, ETC)
*** PI# # = 1,2,3 ETC. AND REPRESENTS A UNIQUE IDENTIFIER AND IS APPLICABLE TO ALL ITEMS IN THE TABLE ABOVE
**** COULD ALSO BE PIS - FOR PRESSURE INDICATING SWITCH

OPERATOR PILOT DEVICE LEGEND (PER ROSEVILLE SCADA AND P&ID TAG NAMING STANDARD 06062018)

DEVICE TYPE / PILOT DEVICE FUNCTION	"AUTO" OR "NOT IN AUTO" FROM HOA OR LOA SWITCH	"STOP" STATUS	"START" STATUS	OFF-ON (OO) SWITCH STATUS	CLOSED POSITION	"LOCAL" OR "HAND" FROM LOA OR HOA SWITCH	"MAINTENANCE MODE" STATUS	"ESTOP" STATUS	OPEN POSITION	RESET (RST)	"INTRUSION BYPASS" STATUS	"LOCAL/AUTO" SWITCH STATUS - AKA LOCAL/REMOTE
PILOT DEVICE TAG (HAND SWITCHES)	HSAX	HSBX	HSCX	HSEX	HSGX	HSLX	HSMX	HSNX	HSOX	HSRX	HSWX	HSXX
SCADA/HMI TAG (HAND ACTION)	HCAX	HCBX	HCCX		HCGX				HCOX	HCRX		HCXX

SPECIFIC ABBREVIATIONS

APH	A PHASE	MWH	MOTOR WINDING HEATER
BPH	B PHASE	SSG	SECONDARY SWITCHGEAR
BRB	BEARING BOTTOM	SV*	SOLENOID VALVE
BRT	BEARING TOP	SPD	SURGE PROTECTIVE DEVICE
BTFLY	BUTTERFLY	UPS	UNINTERRUPTIBLE POWER SUPPLY
CPH	C PHASE	YA	STATUS AUTO
CC*	CALIBRATION COLUMN	YR	STATUS REMOTE
HTR	HEATER	Y1	STATUS RUNNING
HTU	HEAT TRACE UNIT	Y2	ALARM FAILED/FAULT

* CC# AND SV# # = 1, 2, 3 ETC. AND REPRESENTS A UNIQUE IDENTIFIER

I/O TYPE DESIGNATIONS

AUX1	RUNNING	MSL	MOTOR START LOW
AUX2	FAILED/FAULT	MSM	VALVE MODULATE
AUXF1	RUNNING FORWARD	MSP	MOTOR STOP
AUXH1	RUNNING HIGH	MSR	MOTOR START REVERSE
AUXL1	RUNNING LOW	MST	MOTOR START
AUXR1	RUNNING REVERSE	SS	SPEED SIGNAL
SVC	SOLENOID VALVE CLOSE	ZC	POSITION COMMAND
SVO	SOLENOID VALVE OPEN	ZCC	POSITION COMMAND CLOSE
MS	RUN	ZCO	POSITION COMMAND OPEN
MSF	MOTOR START FORWARD		
MSH	MOTOR START HIGH		

INSTRUMENT TYPE DESIGNATIONS

AM	AMMONIA	O3	OZONE	SH	SODIUM HYPOCHLORITE
CAP	CAPACITANCE	ORP	OXIDATION REDUCTION POTENTIAL	TDR	TIME DOMAIN REFLECTOMETRY
CGD	COMBUSTIBLE GAS DETECTOR	P	PRESSURE	TH	THERMAL
CL	CHLORINE	P-SUB	PRESSURE SUBMERSIBLE	TSS	TOTAL SUSPENDED SOLIDS
COND	CONDUCTIVITY	PC	PARTICLE COUNTER	TURB	TURBIDITY
DO	DISSOLVED OXYGEN	PO	PHOSPHOROUS	US	ULTRASONIC
FMCW	FREQ. MODULATED CONT. WAVE	PTOF	PULSE TIME OF FLIGHT	UVI	UV INTENSITY
HSF	FLUORIDE	R/I	RESISTANCE TO CURRENT	UVT	UV TRANSMITTANCE
IS	INTRINSIC SAFETY BARRIER	ROT	ROTAMETER	VAC	VACUUM
LEL	LOWER EXPLOSIVE LIMIT	RTD	RESISTANCE TEMP DETECTOR		
MAG	MAGNETIC	SC	STREAMING CURRENT		

INSTRUMENT LINE SYMBOLS

- INSTRUMENT OR CONNECTION TO PROCESS
- PNEUMATIC SIGNAL
- ELECTRIC SIGNAL
- HYDRAULIC SIGNAL — L L L L L
- CAPILLARY TUBE — X X X X X X
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
- ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)
- INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK) — o o o o o o
- COPPER ETHERNET — C C C C C
- FIBER OPTIC ETHERNET — F F F F F
- WIRELESS ETHERNET — W W W W W
- PROFIBUS DP — PBD PBD PBD PBD PBD
- PROFIBUS PA — PBA PBA PBA PBA PBA
- DEVICENET — DN DN DN DN DN
- FOUNDATION FIELDBUS — FF FF FF FF FF

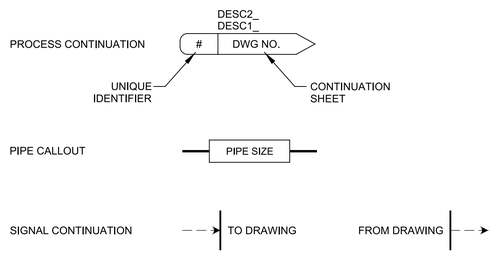
PROCESS LINE SYMBOLS

- PRIMARY PROCESS FLOW IN PIPE
- SECONDARY PROCESS FLOW IN PIPE
- PRIMARY PROCESS FLOW IN CHANNEL
- SECONDARY PROCESS FLOW IN CHANNEL

DESIGNATIONS

- EQUIPMENT ENCLOSURE
- EXISTING
- FUTURE — FUTURE

MISCELLANEOUS P&ID SYMBOLS



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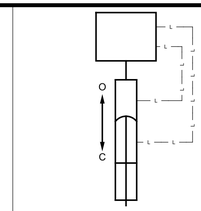
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DRAWING NO. 00GN02
SHEET NO. 103 OF 178

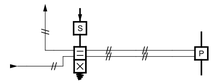
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FILE NAME: 11843A1000GN02.dgn

ACTUATORS

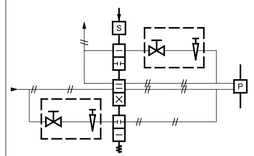
- DIAPHRAGM
- ELECTRIC DISCRETE
- ELECTRIC MODULATING
- ELECTRIC HYDRAULIC
- HAND
- HYDRAULIC
- PNEUMATIC
- SOLENOID



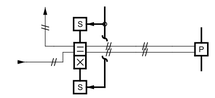
HYDRAULIC MODULATING



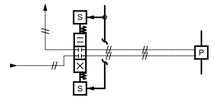
PNEUMATIC SINGLE SOLENOID OPEN/CLOSE



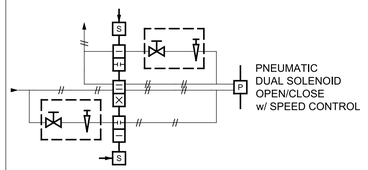
PNEUMATIC SINGLE SOLENOID w/ SPEED CONTROL



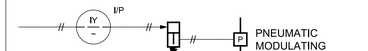
PNEUMATIC DUAL SOLENOID OPEN/CLOSE



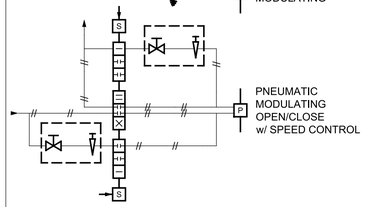
PNEUMATIC DUAL SOLENOID OPEN/HOLD/CLOSE



PNEUMATIC DUAL SOLENOID OPEN/CLOSE w/ SPEED CONTROL



PNEUMATIC MODULATING



PNEUMATIC MODULATING OPEN/CLOSE w/ SPEED CONTROL

PIPING

- AIR GAP
- BLIND FLANGE
- CAPPED OR PLUGGED
- CONCENTRIC INCREASER
- CONCENTRIC REDUCER
- DRAIN
- ECCENTRIC INCREASER
- TEE
- UNION
- ECCENTRIC REDUCER
- EXPANSION COUPLING
- EXPANSION JOINT VIBRATION CENTER
- FLEXIBLE CONNECTION
- QUICK DISCONNECT

PUMPS

- AIR DRIVEN
- CENTRIFUGAL
- CHEMICAL FEED DIAPHRAGM
- DIAPHRAGM
- GEAR
- PERISTALTIC OR HOSE
- PISTON
- PROGRESSIVE CAVITY

OR SUBMERSIBLE

- VERTICAL TURBINE
- VERTICAL CHOPPER
- WATER CHAMP

BLOWERS/ COMPRESSORS

- CENTRIFUGAL SINGLE STAGE BLOWER
- CENTRIFUGAL MULTI STAGE BLOWER
- RECIPROCATING COMPRESSOR
- SCREW COMPRESSOR
- FAN
- LIQUID RING COMPRESSOR
- ROTARY LOBE BLOWER

CHECK VALVES

- BACK FLOW PREVENTER
- BALL
- DIAPHRAGM CHECK
- DOUBLE FLAP
- FLAPPER
- SPRING LOADED GENERAL
- SPRING LOADED SWING
- SWING

PRESSURE VALVES

- BACKPRESSURE REGULATING SELF CONTAINED
- BACKPRESSURE REGULATING EXTERNAL TAP
- PRESSURE REDUCING SELF CONTAINED
- PRESSURE REDUCING EXTERNAL PRESSURE TAP
- REGULATING
- PRESSURE RELIEF
- VACUUM RELIEF

VALVES

- 3-WAY
- 3-WAY PLUG
- 4-WAY
- AIR-RELIEF
- ANGLE
- BALL
- BALL V-NOTCH
- BUTTERFLY
- BUTTERFLY-BURIED VALVE BOX
- CONE
- DIAPHRAGM
- GATE
- GATE-BURIED VALVE BOX
- GLOBE
- HOSE
- MUD
- NEEDLE
- PINCH
- PLUG ECCENTRIC
- PLUG ECCENTRIC w-VALVE BOX
- PLUG ECCENTRIC LUBRICATED
- PLUG ECCENTRIC LUBRICATED BURIED VALVE BOX
- PLUG CONCENTRIC
- PLUG CONCENTRIC -BURIED VALVE BOX
- PLUG CONCENTRIC LUBRICATED
- PLUG CONCENTRIC LUBRICATED BURIED VALVE BOX
- PUMP DISCHARGE
- TELESCOPING
- FOOT VALVE

VALVE DESIGNATIONS

NO	NORMALLY OPEN
NC	NORMALLY CLOSED
FO	FAIL OPEN
FC	FAIL CLOSE
FLP	FAIL LAST POSITION

MISC

- AIR DAMPER
- AIR / CHEMICAL DIFFUSER
- BASKET STRAINER
- BLOW-OFF SILENCER
- CALIBRATION COLUMN
- COALESCER
- DESICCANT DRYER
- EDUCTOR/EJECTOR
- EQUIPMENT/INSTRUMENT LOCATOR
- EXHAUST FAN
- EYEWASH
- FILTER
- FILTER SEPARATOR
- FINE FILTER
- FIRE ALARM/SENSOR
- FLAME ARRESTER
- FLAME ARRESTER w/THERMALLY OPERATED VALVE
- FLOW CONDITIONER
- GAS CANNON
- GRINDER
- HEAT EXCHANGER
- HOIST
- HORIZONTAL MIXER
- HOSE CONNECTION
- INLET STRAINER
- INLINE STATIC MIXER
- MATERIAL CHANGE
- MIXER
- MOTOR
- NOZZLE
- ORIFICE RESTRICTION
- PERISTALTIC COMPOSITE SAMPLER

OR PULSATION DAMPENER

- REFRIGERATED DRYER
- RUPTURE DISK
- SAMPLE PORT
- SIGHT TUBE
- SMOKE DETECTOR
- STRAINER - MECHANICALLY CLEANED
- STRAINER WITH BLOW OFF
- STRAINER WYE TYPE
- VAPOR HEATER
- VAPORIZER
- VENT
- VENT TO ATMOSPHERE

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SHEET NO. 104 OF 178

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FLOW

- BATCH
- CORIOLIS
- MAGNETIC
- ORIFICE
- PADDLE WHEEL
- PISTON
- ANNUBAR
- PITOT TUBE
- POSITIVE-DISPLACEMENT
- PROPELLER-TURBINE
- ROTAMETER
- THERMAL
- ULTRASONIC
- ULTRASONIC BIOGAS
- V-CONE
- VENTURI TUBE OR FLOW NOZZLE
- VORTEX

FLUMES

- LEOPOLD-LAGCO
- PALMER-BOWLUS
- PARSHALL
- REGULAR CUTTHROAT
- TRAPEZOIDAL

GATES

SIDE VIEW	PLAN VIEW
SLIDE	FLAP
SLUICE	KNIFE
STOP	SLIDE
	SLUICE
	STOP
	WEIR
	BUTTERFLY

LEVEL

- BUBBLER
- CAPACITANCE
- DIFFERENTIAL PRESSURE (TANK, PDE, LDIT)
- ELECTRODE
- FLOAT
- INVERTED COLUMN
- PROBE
- RADAR PTOF
- RADAR (FREQUENCY MODULATED CONTINUOUS WAVE)
- RADAR TDR
- SUSPENDED/ SUBMERSIBLE
- TUNING FORK
- ULTRASONIC

PRESSURE/VACUUM

PRESSURE	DIFFERENTIAL PRESSURE	PRESSURE SEALS
GAUGE (PI)	GAUGE DIFFERENTIAL INDICATOR (PDI)	SEAL ANNULAR
MANOMETER	DIFFERENTIAL PRESSURE SWITCH (PDSL, PDE)	SEAL DIAPHRAGM
PRESSURE SWITCH (PSH, PE)	DIFFERENTIAL PRESSURE TRANSMITTER (PDIT, PDE)	SEAL SANITARY
PRESSURE TRANSMITTER (PIT, PE)		EXAMPLE: PRESSURE SWITCH (PSH, PE)

TEMPERATURE

- TEMPERATURE w/THERMOWELL
- TEMPERATURE GAUGE
- THERMOMETER (T)

WEIGHT

- HYDRAULIC
- STRAIN GAUGE

WEIRS

SIDE VIEW	PLAN VIEW
RECTANGULAR w/o END CONTRACTIONS	RECTANGULAR w/o END CONTRACTIONS
RECTANGULAR w/ END CONTRACTIONS	RECTANGULAR w/ END CONTRACTIONS
V-NOTCH (TRIANGULAR)	V-NOTCH (TRIANGULAR)
TRAPEZOIDAL (CIPOLLETTI)	TRAPEZOIDAL (CIPOLLETTI)

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SHEET NO. 105 OF 178

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EQUIPMENT TAGGING SYSTEM

XX # # _ XXX X _ # # # # #

- EQUIPMENT
- PRIMARY EQUIPMENT
- REMOTE STATION DESIGNATOR
- MODIFIER
- FUNCTION
- SUB-SYSTEM
- SYSTEM
- FACILITY

KEY NOTES:

1. REFER TO GN02 FOR ADDITIONAL ISA ABBREVIATIONS.

CG	COMPRESSED NATURAL
DC	DRY CREEK WWTP
FD	FIRE DEPARTMENT
PG	PLEASANT GROVE WWTP
PD	POLICE DEPARTMENT
PR	PARKS AND RECREATION
RW	RECYCLED WATER
SO	SOLID WASTE
SW	STORM WATER
WT	BARTON RD WTP
WC	WASTEWATER COLLECTION
WD	**WATER DISTRIBUTION**

SYSTEM DESIGNATOR	SUB-SYSTEM DESIGNATOR	SCADA ALARM	DESCRIPTION
0			**COMMON SUPPORT FACILITIES**
	1	WD	ADMINISTRATION
	2	WD	SHOP FACILITIES
	3	WD	WAREHOUSE / STORAGE
	4	WD	LABORATORY
	5	WD	UTILITIES (HVAC, SANITARY SEWER, POTABLE UTILITY WATER, COMPRESSED AIR)
	6	WD	ELECTRICAL DISTRIBUTION
	7	WD	COMMUNICATIONS / OFFICE NETWORKING
	8	WD	SCADA / PLANT NETWORKING / HDR, RADIO BASE STATION, SECURITY & FIRE SYSTEMS
	9	WD	HEALTH & SAFETY (PPE, PORTABLE GAS GAS DETECTORS, FIRE SYSTEMS, SECURITY
10			**TRANSMISSION**
	11	WD	ELECTRICAL & CONTROL (PLC, PP, MCC, RADIO)
	12	WD	
	13	WD	PROCESS CHEMICAL / PHYSICAL ADJUSTMENT
	14	WD	PRODUCT CONVEYANCE
	15	WD	PROCESS BASINS / TANKS / CHANNELS
	16	WD	
	17	WD	BUILDINGS / STRUCTURES / VAULT / SUMPS
	18	WD	
	19	WD	
20			**DISTRIBUTION**
	21	WD	ELECTRICAL & CONTROL (PLC, PP, MCC, RADIO)
	22	WD	
	23	WD	PROCESS CHEMICAL / PHYSICAL ADJUSTMENT
	24	WD	PRODUCT CONVEYANCE
	25	WD	PROCESS BASINS / TANKS / CHANNELS
	26	WD	
	27	WD	BUILDINGS / STRUCTURES / VAULT / SUMPS
	28	WD	
	29	WD	
30			**WELLS**
	31	**WD**	**ELECTRICAL & CONTROL (PLC, PP, MCC, RADIO)**
	32	**WD**	
	33	**WD**	**PROCESS CHEMICAL / PHYSICAL ADJUSTMENT**
	34	**WD**	**PRODUCT CONVEYANCE**
	35	**WD**	**PROCESS BASINS / TANKS / CHANNELS**
	36	**WD**	
	37	**WD**	**BUILDINGS / STRUCTURES / VAULT / SUMPS**
	38	**WD**	**AQUIFER STORAGE SYSTEM**
	39	**WD**	
40			**STORAGE**
	41	WD	ELECTRICAL & CONTROL (PLC, PP, MCC, RADIO)
	42	WD	
	43	WD	PROCESS CHEMICAL / PHYSICAL ADJUSTMENT
	44	WD	PRODUCT CONVEYANCE
	45	WD	PROCESS BASINS / TANKS / CHANNELS
	46	WD	
	47	WD	BUILDINGS / STRUCTURES / VAULT / SUMPS
	48	WD	
	49	WD	
50			**INTERTIES**
	51	WD	ELECTRICAL & CONTROL (PLC, PP, MCC, RADIO)
	52	WD	
	53	WD	PROCESS CHEMICAL / PHYSICAL ADJUSTMENT
	54	WD	PRODUCT CONVEYANCE
	55	WD	PROCESS BASINS / TANKS / CHANNELS
	56	WD	
	57	WD	BUILDINGS / STRUCTURES / VAULT / SUMPS
	58	WD	
	59	WD	

ACRONYM	DESCRIPTION
ADFF	DIFFUSER, AERATION
AERD	AERATOR, DISC
AERS	AERATOR, SURFACE
AFHx	ACTIVE HARMONIC FILTER
AGIT	AGITATOR
AITx	ANALYZER INDICATING TRANSMITTER
ATSx	AUTOMATIC TRANSFER SWITCH (USE MTSx FOR MANUAL TRANSFER SWITCH)
BASN	BASIN: SED BASIN, AERATION BASIN, U.V. CONTACT BASIN
BATT	BATTERIES
BCHG	BATTERY CHARGER
BFPx	PRESS, BELT FILTER
BIOA	BIO-ASSAY
BOIL	BOILER
BLDG	BUILDING
BLWR	BLOWERS: CENTRIFUGAL, ROTARY LOBE
BKRx	BREAKER, ELECTRICAL
BRNR	BURNERS
BSCR	BAR SCREEN
BCKT	BUCKET (CONTROLS COMPARTMENT LOCATED IN SWGR OR
CAMx	CAMERA
CAPx	CAPACITOR, POWER FACTOR CORRECTION
CENT	CENTRIFUGE
CHAN	CHANNEL, PROCESS FLOW
CLAR	CLARIFIER: PRIMARY, SECONDARY
CLAS	CLASSIFIER, GRIT
CNVR	CONVEYOR
COLL	COLLECTOR, SLUDGE
COMP	COMPRESSORS - ALL TYPES
CTFN	COOLING TOWER FAN
CTWR	COOLING TOWERS
DAMP	VENTILATION AIR DAMPER
DISP	DISPENSER (CNG)
DITx	DENSITY INDICATING TRANMITTER
DRVc	CENTRIFUGE DRIVE
DRYR	GAS DRYER / DESICANT
EDUC	EDUCTOR (VENTURI NOZZLE)
EGEN	EMERGENCY GENERATOR
ENGN	ENGINE: DIESEL BACK-UP, INTERNAL COMBUSTION
EVAP	EVAPORATORATIVE COOLER
EXCH	EXCHANGERS, HEATED SLUDGE
FANx	FAN, COOLING OR VENTILATING
EWSS	EYEWASH – SAFETY SHOWER STATIONS
FALL	FALL RESTAINT, FALL PROTECTION
FGSD	FIXED GAS DETECTOR
FIRE	FIRE SYSTEMS
FITx	FLOW INDICATING TRANSMITTER
FLAS	FLASH PROTECTION EQUIPMENT (FACE SHIELDS, SUITS)
FSCR	FINE SCREENS
FLTR	FILTER: EFFLUENT FILTER AND MECHANICAL FILTERS
FQxx	FLOW TOTALIZER (MECHANICAL COMPOUND OR TURBO
GAGE	GAUGES: PRESSURE, TEMPERATURE, VACUUM - ALL TYPES, CALIBRATION COLUMNS
GATE	ENTRY/EXIT VEHICLE, PERSONNEL
GCND	GAS CONDITIONING EQUIPMENT
GENx	GENERATOR
GRBT	GRAVITY BELT THICKENER
GRBX	GEAR BOX: INCREASER, REDUCER - ALL TYPES
GRND	GRINDER
HEAT	HEATER: BLOCK, PIPE, STRIP
HPGN	SODIUM HYPOCHLORITE GENERATOR
HPRx	HOPPER
HSTS	HOISTS / CRANES
HVAC	HEATING, VENTILATION, AIR CONDITIONING: CLIMATE
HXGR	HEAT EXCHANGER, DEMAND HEATERS, HOT WATER TANKS
HYDc	HYDRAULIC UNIT, CENTRIFUGE
HYDu	HYDRAULIC POWER UNIT (ULTRAVIOLET)
HYDx	HYDRAULIC POWER UNIT
IJBx	INSTRUMENT JUNCTION BOX

ACRONYM	DESCRIPTION
INJR	INJECTOR - CL2 / SO2
LCPx	LOCAL CONTROL PANEL
LDBK	LOAD BANK
LITx	LEVEL INDICATING TRANSMITTER
LPxx	LIGHTING PANEL
LSPx	LOAD SHED RELAY PANEL
LUBE	LUBRICATING OIL SYSTEM
MCCx	MOTOR CONTROL CENTER
MIXR	MIXER
MODL	LAMP MODULE
MONT	MONITOR (WATER CANNON)
MODx	MOTOR OPERATED DOOR
MOGx	MOTOR OPERATED GATE VALVE
MOVx	MOTOR OPERATED VALVE (SLIDE, BALL, GLOBE…)
MSTR	MOTOR STARTER
MTRB	MICROTURBINE
MTRx	MOTOR
MTSx	MANUAL TRANSFER SWITCH
MVFD	MOTOR V.F.D.
ODOR	ODOR SCRUBBING SYSTEM
PCxx	PERSONAL COMPUTERS
PDCu	POWER DISTRIBUTION CENTER (ULTRA-VIOLET)
PEDx	METERING PEDESTAL
PITx	PRESSURE INDICATING TRANSMITTER
PMIX	POLYMER MIXING UNIT
POND	TREATMENT PLANT EMERGENCY OR PROCESS STORAGE
POVx	PNEUMATICALLY OPERATED VALVE
PPxx	POWER DISTRIBUTION PANEL, PANELBOARD
PLCx	PROGRAMMED LOGIC CONTROLLERS
PLCP	PLC PANEL
PQMx	POWER QUALITY MONITOR
PUMP	PUMPS - ALL TYPES
PWRS	POWER SUPPLY (USE UPSx FOR UNINTERRUPTIBLE POWER
RADx	RADIO SYSTEMS
RADI	RADIATORS
RDTx	ROTARY DRUM THICKENER
RELx	RELAY, MULTI-FUNCTION ELECTRICAL PROTECTIVE
RESP	RESPIRATORS (FULL & HALF FACE, AIR SUPPLIED, AIR
RVSS	REDUCED VOLTAGE SOFT STARTER
SAMP	SAMPLER UNIT
SECR	SECURITY SYSTEMS
SRVR	SERVER, SCADA / CONTROL
SBFP	SLUDGE BELT FILTER PRESS
SGAT	GATE: SLIDE, SLUICE, KNIFE
SKMR	SKIMMERS: SLUDGE, SCUM
SOVx	SOLENOID OPERATED VALVE
SPDx	SURGE PROTECTIVE DEVICE (TVSS & SPD)
STAT	STATION (PUMPING, PRESSURE REDUCING…)
STNR	STRAINERS
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TANK	TANKS, STORAGE VESSELS, PRESSURE ACCUMULATORS
TCOM	TELECOMMUNICATIONS SYSTEMS
TCPx	TEMPERATURE CONTROL PANEL
TITx	TEMPERATURE INDICATING TRANSMITTER
TOOL	TOOLS, LATHES, MILLS, SHEARS, PRESS
TRAP	TRAPS: DRIP, CONDENSATE
UPSx	POWER SUPPLY, UNINTERRUPTIBLE
UVRx	ULTRAVIOLET BANK
VALV	VALVES: BALL, GATE, GLOBE, BUTTERFLY - ALL TYPES
VFDx	DRIVE, VARIABLE FREQUENCY
VGLV	VOLTAGE GLOVES
VSCD	VISCOUS, HYDRAULIC DRIVE / TORQUE CONVERTER
WEIR	FLOW REGULATION WEIR
WASH	WASHER / COMPACTOR
WITx	WEIGHT INDICATING TRANSMITTER
WKST	WORKSTATION, SCADA / CONTROL
XFMR	TRANSFORMER

REMOTE STATION DESIGNATOR	DESCRIPTION
0	PRIMARY FACILITY
1	PRESSURE REDUCING STATION, 1589 PLEASANT GROVE BLVD
2	PRESSURE REDUCING STATION, 1303 CANEVARI DR (AKA WOODCREEK OAKS)
3	PRESSURE REDUCING STATION, BLUE OAKS BLVD
4	PRESSURE REDUCING STATION, JUNCTION BLVD (WEST #2)
5	PRESSURE REDUCING STATION, 3400 BASELINE ROAD (WEST
6	PRESSURE REDUCING STATION, 2054 PFE
7	UNUSED
08 – 19	PRESSURE REDUCING STATIONS – FUTURE
20	WELL 1 401 ATLANTIC STREET (SHORT STREET)
21	WELL 3 CHURCH STREET (DECOMMISSIONED)
22	WELL 2 PACIFIC STREET (DECOMMISSIONED)
23	WELL 4 1002 DARLING WAY (DARLING)
24	WELL 5 1746 CHELSEA WAY (OAKMONT)
25	WELL 6 1490 NORTH PARK DRIVE (DIAMOND CREEK)
26	WELL 7 WOODCREEK NORTH
27	WELL 8 2100 HAYDEN PARKWAY
28	WELL, WEST SIDE DRIVE (FUTURE), WELL 9 WESTBROOK BLVD
29	WELL 12 1745 BLUE OAKS BLVD
30	WELL 13 HEWLETT PACKARD
31	WELL 14 FIDDYMENT ROAD
32	WELL, SIERRA VISTA SPECIFIC PLAN #1
33	WELL, SIERRA VISTA SPECIFIC PLAN #2
34 – 40	WELL SITES - FUTURE #35 WELL 18 SOLAIRE DRIVE
41	RESERVOIR – NORTHEAST
42	RESERVOIR – BARTON ROAD
43	RESERVOIR – STONERIDGE
44	UNUSED
45	UNUSED
46-50	RESERVOIR - FUTURE
51	PUMP STATION – DUAL PURPOSE
52	PUMP STATION – HIGHLAND RESERVE, 9300 FAIRWAY DR
53	PUMP STATION – 1589 PLEASANT GROVE BYPASS PUMP STN
54	PUMP STATION – 4501 WESTPARK DRIVE RESERVOIR AND PUMPING STATION
55	PUMP STATION – 2054 PFE BYPASS PUMP STN
56 – 60	PUMP STATION - FUTURE
61	INTER-TIE - PCWA TINKER
62	INTER-TIE – PCWA CROWDER
63	INTER-TIE – PCWA STONERIDGE
64	INTER-TIE – PFE
65	INTER-TIE – BARTON ROAD (9341 BARTON ROAD)
66	INTER-TIE – BIANCHI (3551 BASELINE ROAD)
67	INTER-TIE – BLOSSOM HILL (1406 BLOSSOM HILL WAY)
68	INTER-TIE – CAVITT (8098 SIERRA COLLEGE BLVD)
69	INTER-TIE – FIVE STAR (6712 STANFORD RANCH ROAD)
70	INTER-TIE – HIGHLAND (9000 HIGHLAND PARK DR)
71	INTER-TIE – ORLANDO (1205 ORLANDO AVE)
72	INTER-TIE – PLEASANT GROVE (600 PLEASANT GROVE BLVD)
73	INTER-TIE – SIERRA COLLEGE (9200 SIERRA COLLEGE BLVD)
74	INTER-TIE – VERNON OAKS (651 VERNON OAKS DR)
75	INTER-TIE – AMERICAN VINEYARD VILLAGE
76	INTER-TIE – BUREAU OF RECLAMATION 72" RAW WATER
76-94	INTER-TIE – FUTURE
95-98	MISCELLANEOUS WD RELATED REMOTE SITES
99	316 REPEATER LOCATION

REV	DATE	BY	DESCRIPTION
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REGISTERED PROFESSIONAL ENGINEER — DANIEL ROBINSON — No. 20405 — ELECTRICAL — STATE OF CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
ASR WELL
SYMBOLS AND ABBREVIATIONS 5

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 00GN05
SHEET NO. 106 OF 178

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ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kkwarsick

PROJECT NO.
FILE NAME: 11843A1000GN05.dgn

PMP-210
UTILITY WATER PUMP
MOTOR:
25HP, 480VAC, 3Ø
INV. DUTY, TEFC
TOSHIBA MODEL: XYZ

PUMP
200 GPM @ 20 FT TDH
900-1800 RPM
GOULD MODEL: XYZ

P-01-001 J-BOX P-01-002
H, C — MWH 210
T1, T2, T3 — PMP 210
NC, C — TSH 210

(MWH210-H/VFD210-33)
(MWH210-C/VFD210-X2)
(PMP210-T1/VFD210-T1)
(PMP210-T2/VFD210-T2)
(PMP210-T3/VFD210-T3)
(TSH210-NC/PCM300-CB1300H1)
(TSH210-C/PCM300-I001)

C-01-003 J-BOX

PE/PSH-210
UTILITY WATER HIGH PRESSURE
MODEL: XYZ
RANGE: 0-200 PSIG
SETPOINT: 50 PSIG

PE 210 — PSH 210

C-01-001
1, 2
(PSH210-1/PCM300-CB1300H2)
(PSH210-2/PCM300-C0001)

FE/FIT/FQT-210
UTILITY WATER FLOW METER
ENDRESS HAUSER
CAT NO.: XYZ
FLOW RANGE: 200-2500 GPM
FLOW TOTAL: 1 PULSE/500 GAL

FE 210 — FIT 210 — FQT 210

L-01-001
L, N, G
S-01-001 J-BOX S-01-003
1, 2, 4, 5

S-01-002
LCP-210
HSS 210
P1, P2, P3
(LCP210-P1/VFD210-1)
(LCP210-P2/VFD210-2)
(LCP210-P3/VFD210-3)

C-01-002
HSA 210 — OFF / LOCAL / REMOTE — xoo
HSB 210 — STOP — oox
HSC 210 — START
1, 2, 3, 4, 5, 6, 7, 8
(LCP210-1/VFD210-5)
(LCP210-2/VFD210-6)
(LCP210-5/VFD210-7)
(LCP210-6/VFD210-8)
(LCP210-7/VFD210-9)
(LCP210-8/VFD210-10)

VFD-210
SECTION - 3
CUBICLE - 2
30HP, 480VAC, 42 AMPS

33, X2 — MWH-210 MOTOR WINDING HEATER
T1, T2, T3 — MOTOR CONNECTION
SS-210 VFD SPEED OUT — 11, 12
SB-210 REMOTE SPEED IN — 13, 14
MSP-210 REMOTE STOP — 15, 16
E-STOP — 23, 24
MS-210 REMOTE START — 17, 18
AUX1-210 RUNNING — 19, 20
AUX2-210 FAIL — 21, 22
LOCAL SPEED IN — 1, 2, 3, 4
HSAL-210 LOCAL MODE — 5, 6
HSB-210 LOCAL STOP — 7, 8
HSC-210 LOCAL START — 9, 10

(VFD210-11,12/PCM300-AQ001)
(VFD210-13,14/PCM300-AI001)
(TSH210-NC/PCM300-FU1300H1)
(TSH210-NC/PCM300-I001)
(VFD210-15/PCM300-Q001A)
(VFD210-16/PCM300-Q001B)
(PSH210-1/PCM300-FU1300H2)
(VFD210-23/PCM300-C0002)
(VFD210-24/PCM300-C0003)
(PSH210-1/PCM300-C001)
(VFD210-17/PCM300-Q002A)
(VFD210-18/PCM300-Q002B)
(FIT210-L/PCM300-CB1210H)
(FIT210-N/PCM300-CB1210N)
(FIT210-1,2/PCM300-AI002)
(FQT210-4,5/PCM300-FU1300P3; C0004)
(VFD210-19/PCM300-FU13000H3)
(VFD210-20/PCM300-I003)
(VFD210-21/PCM300-FU1300H4)
(VFD210-22/PCM300-I004)
(LCP210-3/PCM300-FU1300H5)
(LCP210-4/PCM300-I006)

AQ0001+ <BLK-1>
AQ0001- <WHT-1>
SHLD
FU1300-P1
AI001+ <BLK-1>
FU1300-M1 <WHT-1>
SHLD
FU1300-H1
I001 <BLK>
Q001A <BLK>
Q001B <RED>
FU1300-H2
C0002
C0003
C0001
Q002A <BLU>
Q002B
CB1-210H
CB1-210N
GND
FU1300-P2
AI002+ <BLK-2>
FU1300-M2 <WHT-2>
SHLD
FU1300-P3
C0004
SHLD
FU1300-H3
I003 <BLU>
FU1300-H4
I004 <ORG>
FU1300-H5
I006 <YEL>

PHOENIX
MODEL: XYZ
120 VAC
(C0002)
(C0003)
(C0001)
(CB1300-H6)
CR1 210 — 3, 4, 1, 2, 5, 6
(CB1-300N1)
(I005)
120VAC

(FU1300-M3)
(C0004)
(CB1300-H7)
CR2 210 — 3, 4, 1, 2, 5, 6
(I002)
PHOENIX
MODEL: XYZ
120 VAC

FU1-300M
FU1-300P
24 VDC
(FU1300-P)
(CB1300-H)
CB1-300H
120 VAC
CB1-300N
(CB1300-N)

PLC:
1, 2 — SS 210 — %AQ001 SPEED OUT — RACK 1 SLOT 2
1, 2 — SB 210 — %AI001 SPEED IN — RACK 1 SLOT 3
1, 2 — TSH 210 — %I001 MTR TEMP — RACK 1 SLOT 4
1, 2 — MSP 210 — %Q001 STOP — RACK 1 SLOT 5
9, 10 — PSH 210 — %I005 HI PRESS — RACK 1 SLOT 4
3, 4 — MS 210 — %Q002 START — RACK 1 SLOT 5
3, 4 — F 210 — %AI002 FLOW — RACK 1 SLOT 2
3, 4 — FQ 210 — %I002 FLOW TOT — RACK 1 SLOT 4
5, 6 — AUX1 210 — %I003 RUNNING — RACK 1 SLOT 4
7, 8 — AUX2 210 — %I004 FAIL — RACK 1 SLOT 4
11, 12 — HSAR 210 — %I006 REMOTE — RACK 1 SLOT 4

THE ABOVE DRAWING IS INCLUDED AS AN EXAMPLE ONLY AND IS NOT PROJECT SPECIFIC. CONTRACTOR SHALL FURNISH LOOP DIAGRAMS FOR THE ENTIRE FACILITY. PRELIMINARY DETAILED LOOP DIAGRAMS TO BE SUBMITTED FOR REVIEW PRIOR TO BEGINNING CONSTRUCTION. THE LOOP DIAGRAM SHOWN ABOVE DISPLAYS THE LEVEL OF EXPECTED DETAIL.

REV	DATE	BY	DESCRIPTION

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DESIGNED CE
DRAWN CE
CHECKED CE
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — DANIEL ROBISON — No. 20405 — ELECTRICAL — STATE OF CALIFORNIA

carollo

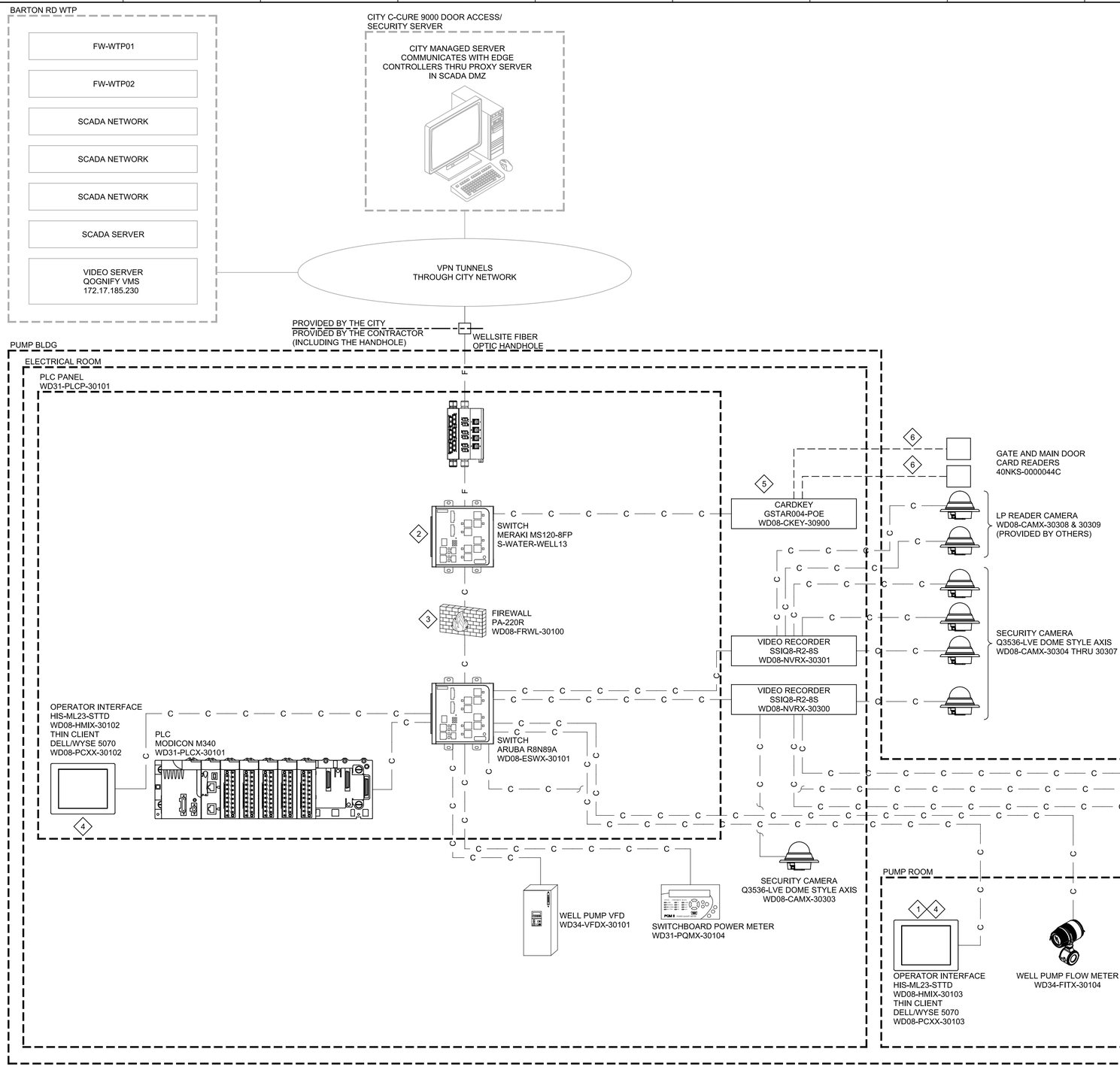
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
ASR WELL
SAMPLE LOOP DRAWING

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 00GN06
SHEET NO. 107 OF 178

Plot Date: 06-DEC-2024 2:47:00 PM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kkwarsick



GENERAL NOTES:

1. ALL ETHERNET CABLE SHALL BE CAT6.
2. FIBER OPTIC CONNECTORS SHALL BE LC TYPE.
3. FIBER OPTIC CABLE SHALL BE SINGLE MODE.
4. THE NETWORK SPEED IS 1GB.
5. THE NETWORK IS ALL UNDER THE SAME SUBNET.
6. NETWORK PROTOCOL IS MODBUS TCP.
7. CORNING ALTOS IS THE END USER'S PREFERRED FIBER OPTIC CABLE.
8. CORNING SPH-01P-DIN IS THE END USER'S PREFERRED TERMINATION PANEL.

◇# KEY NOTES:

1. SHALL BE IN A WALL MOUNTED CABINET WITH A PULLOUT SHELF FOR THE MOUSE AND KEYBOARD.
2. ETHERNET SWITCH PROVIDED BY THE CITY.
3. FIREWALL PROVIDED BY THE CONTRACTOR BUT CONFIGURED BY THE CITY.
4. THE THIN CLIENTS SHALL HAVE PENTIUM SILVER PROCESSOR WITH UBUNTU OPERATING SYSTEM.
5. SHALL HAVE A DI CARD AND CONNECT ALL DOOR CONTACTS AND ALARM RELATED SENSORS FROM PLC PANEL RELAYS.
6. RS-485

REV	DATE	BY	DESCRIPTION
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DESIGNED JKR
DRAWN TCD
CHECKED GEB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
DANIEL ROBINSON
No. 20405
ELECTRICAL
STATE OF CALIFORNIA

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CITY OF ROSEVILLE
CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

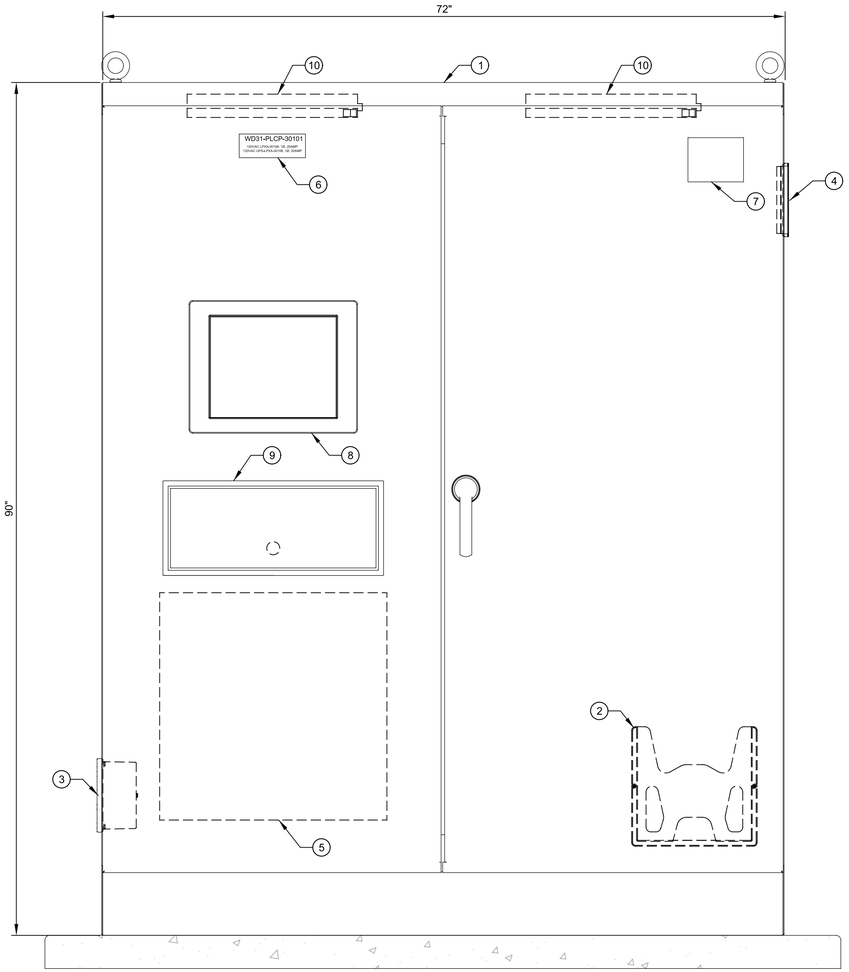
CAMPUS OAKS ASR WELL CONNECTION DIAGRAM

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JOB NO. 11843A.10
DRAWING NO. 13GN01
SHEET NO. 108 OF 178

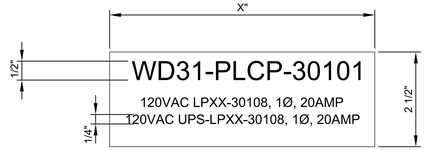
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PlotScale: 1:1
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EXTERNAL ELEVATION

SCALE: NO SCALE
FILE: 11843A1002N601



NAMEPLATE DETAIL

SCALE: NO SCALE
FILE: 11843A1002N601

GENERAL NOTES:

1. PROVIDE LABEL INDICATING INTEGRATOR'S LOGO WITH COMPANY NAME AND ADDRESS MOUNTED ON THE FRONT OF THE ENCLOSURE.
2. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS. ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
5. ALL ENCLOSURES SHALL BE MOUNTED ON A HOUSEKEEPING PAD.

MAJOR EQUIPMENT SCHEDULE

ITEM	DESCRIPTION
1	ENCLOSURE, NEMA 12, FREE STANDING
2	DATA POCKET
3	COOLING FAN
4	EXHAUST GRILLE
5	FOLDING SHELF
6	NAMEPLATE
7	MANUFACTURER'S LABEL
8	INDUSTRIAL MONITOR
9	KEYBOARD BOX
10	LIGHT W/ INTRUSION SWITCH

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED JKR
DRAWN TCD
CHECKED GEB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
DANIEL ROBINSON
No. 20405
ELECTRICAL
STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

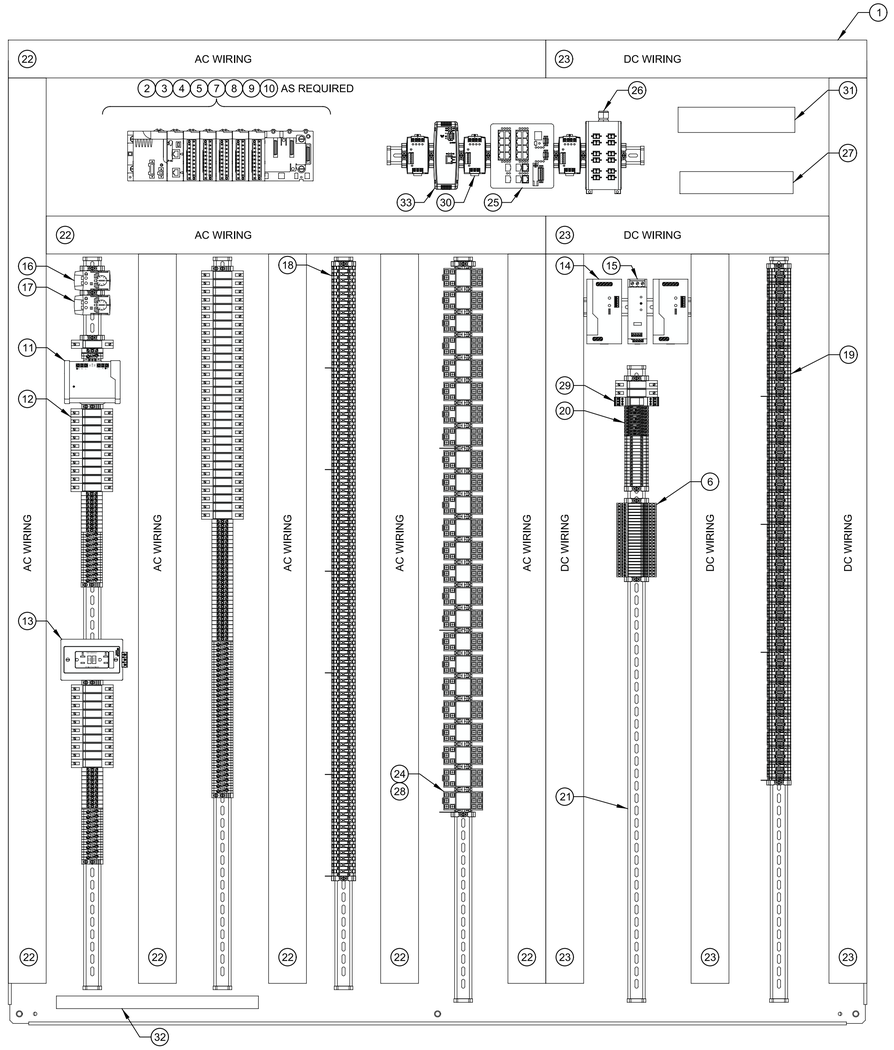
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
CAMPUS OAKS ASR WELL
PCM EXTERNAL ELEVATION

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JOB NO. 11843A.10
DRAWING NO. 13GN02
SHEET NO. 109 OF 178

PROJECT NO.
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ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kkwarsick



INTERNAL ELEVATION

SCALE: NO SCALE
FILE: 11843A1002N601

GENERAL NOTES:

1. ENCLOSURE DRAWING REPRESENTS DESIGN INTENT. CONTRACTOR TO SUPPLY AS-BUILT DRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
2. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES. CONSTRUCT PANEL TO MEET THE FULL INTENT OF ARTICLE 409 OF THE NATIONAL ELECTRIC CODE.
3. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
4. CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
5. ALL TIE WRAPS SHALL BE LOCATED OUTSIDE OF THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
6. ELEVATE ALL TERMINAL BLOCK DIN RAIL A MINIMUM OF 2 INCHES OFF OF BACK PANEL.
7. NO 480VAC CIRCUITS SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
8. NO CAMERA OR TELEPHONE CABLES SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
9. ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE TOP OR BOTTOM OF THE ENCLOSURE. NO SIDE, FRONT, OR REAR PENETRATIONS ALLOWED.
10. QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
11. REFER TO INSTRUMENTATION TYPICAL DETAILS FOR PANEL CONSTRUCTION AND WIRING REQUIREMENTS.
12. PROVIDE PANEL SURGE PROTECTION FOR ALL ANALOG/DIGITAL INSTRUMENTS LOCATED OUTDOORS OR OTHERWISE INDICATED IN THE DRAWING OR SPECIFICATIONS.
13. REFER TO TYPICAL DETAILS NE101, NE102, NE103, NE104, NE105, NE304, NE305, NE306, NE307, NE308, NE310, NE311, NE312, NE313, NE314, NE315, NE350, NE351, NE352, NE353, NE354.

MAJOR EQUIPMENT SCHEDULE

ITEM	DESCRIPTION
1	BACK PANEL
2	PLC BACKPLANE
3	PLC PROCESSOR
4	PLC POWER SUPPLY
5	PLC ETHERNET COMMUNICATION MODULES
6	SIGNAL CONDITIONERS
7	PLC DI MODULES
8	PLC DO MODULES
9	PLC AI MODULES
10	PLC AO MODULES
11	120VAC PANEL SURGE PROTECTOR
12	CIRCUIT BREAKERS
13	RECEPTACLE, 5A
14	24VDC POWER SUPPLY
15	REDUNDANCY MODULE
16	HVAC CONTROL
17	ENCLOSURE TEMPERATURE SWITCH
18	DISCRETE TERMINAL BLOCKS
19	ANALOG TERMINAL BLOCKS
20	24VDC FUSED TERMINAL BLOCKS
21	DIN RAIL
22	GRAY WIRE DUCT
23	WHITE WIRE DUCT
24	TIMER / CONTROL RELAYS
25	ETHERNET SWITCH
26	FIBER PATCH PANEL
27	ETHERNET SWITCH (PROVIDED BY THE CITY)
28	INTERPOSING RELAYS
29	24VDC PANEL SURGE PROTECTOR
30	ELECTRONIC CIRCUIT PROTECTOR
31	FIREWALL (PROVIDED BY THE CITY)
32	GROUND BAR
33	GATEWAY

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED JKR
DRAWN TCD
CHECKED GEB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
DANIEL ROBINSON
No. 20405
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE
CALIFORNIA

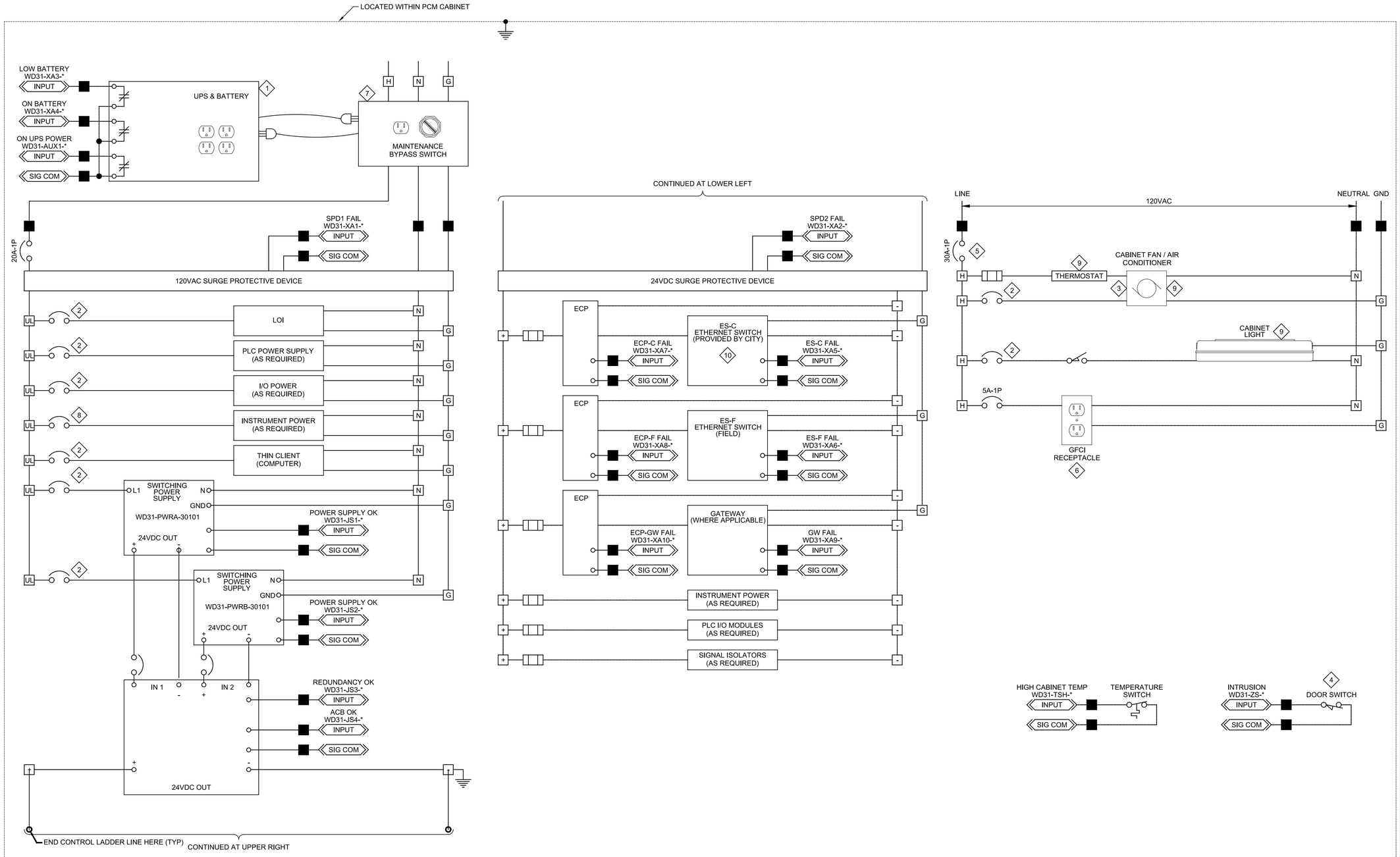
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
CAMPUS OAKS ASR WELL
PCM INTERNAL ELEVATION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13GN03
SHEET NO. 110 OF 178

PROJECT NO.
FILE NAME: 11843A1013GN03.dgn

Plot Date: 06-DEC-2024 2:47:52 PM
User: svcPW
DesignScript: Carollo_Std_Pen_v0905.pen
PlotScale: 1:1
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kkwarsick



GENERAL NOTES:

1. SCHEMATIC ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.

KEY NOTES:

1. SIZE UPS AND BATTERY BASED ON UPS SPECIFICATION REQUIREMENTS.
2. SIZE BASED ON PROTECTION NEEDS.
3. VERIFY LOADS BASED ON TEMPERATURE CALCULATIONS. PROVIDE ADDITIONAL CIRCUIT IF REQUIRED.
4. INSTALL SWITCH ON OUTERMOST DOOR OF OVERLAPPING DOORS. PROVIDE ADDITIONAL SWITCHES. WIRED IN SERIES, FOR NON-OVERLAPPING DOORS.
5. SIZE BASED ON LOAD REQUIREMENT.
6. PROVIDE QUANTITY REQUIRED PER SPECIFICATIONS. SIZE RECEPTACLE FOR LAPTOP.
7. PROVIDE HARDWIRED CONNECTIONS OR RECEPTACLE/PLUG AS REQUIRED BY MAINTENANCE BYPASS SWITCH.
8. SIZE BASED ON PROTECTION NEEDS. PROVIDE SEPARATE CIRCUIT BREAKERS FOR EACH INSTRUMENT POWERED FROM THE PCM CABINET.
9. PROVIDE QUANTITY REQUIRED PER SPECIFICATIONS.
10. CITY IT SWITCH.

TERMINAL BLOCK LEGEND

- PCM
- H — 120VAC
- N — NEUTRAL
- G — GROUND
- UL — UPS 120VAC
- \+ — 24VDC (+)
- \- — 24VDC (-)

TAG	LOOP	REFERENCE DWG.
30101	WD31-PLCP-30101	13GN11

1 PCM WIRING DIAGRAM

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INSTRUMENTATION
CAMPUS OAKS ASR WELL
PCM WIRING DIAGRAM

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JOB NO. 11843A.10
DRAWING NO. 13GN04
SHEET NO. 111 OF 178

PROJECT NO.
FILE NAME: 11843A1013GN04.dwg

Plot Date: 06-DEC-2024 2:51:52 PM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
kkwarsick

I/O

POWER SOURCE

FIELD

WD37-ZSXA DI INTRUSION 30793 WD31-PLCX-30101
WD37-ZSXB DI INTRUSION 30793 WD31-PLCX-30101
WD37-ZSXC DI INTRUSION 30793 WD31-PLCX-30101
WD37-ZSXD DI INTRUSION 30793 WD31-PLCX-30101
WD37-ZSXE DI INTRUSION 30793 WD31-PLCX-30101
WD37-ZSXF DI INTRUSION 30793 WD31-PLCX-30101
WD37-ZSXG DI INTRUSION 30793 WD31-PLCX-30101
WD37-ZSXH DI INTRUSION 30793 WD31-PLCX-30101
WD37-HSNX DI FAN E-STOP 30302 WD31-PLCX-30101
WD31-ZS DI INTRUSION 30101 WD31-PLCX-30101

INTRUSION WD37-ZSXA 30793
INTRUSION WD37-ZSXB 30793
INTRUSION WD37-ZSXC 30793
INTRUSION WD37-ZSXD 30793
INTRUSION WD37-ZSXE 30793
INTRUSION WD37-ZSXF 30793
INTRUSION WD37-ZSXG 30793
INTRUSION WD37-ZSXH 30793
E-STOP WD37-HSNX 30302 (2) CHEM RM
INTRUSION DR 1 WD31-ZS1 30101
INTRUSION DR 2 WD31-ZS2 30101

(3) PQM_1
MBTCP WD31-PQMX 30104 WD34-PLCX-30101
DI PWR SUP OK WD31-JS1 30101 WD31-PLCX-30101
DI PWR SUP OK WD31-JS2 30101 WD31-PLCX-30101
DI REDUNDANCY OK WD31-JS3 30101 WD31-PLCX-30101
DI ACB OK WD31-JS4 30101 WD31-PLCX-30101

DI ES-C FAIL WD31-XA5 30101 WD31-PLCX-30101
DI ES-F FAIL WD31-XA6 30101 WD31-PLCX-30101
AI TEMP WD31-TIXX 30101 WD31-PLCX-30101
DI SPD1 FAIL WD31-XA1 30101 WD31-PLCX-30101
DI SPD2 FAIL WD31-XA2 30101 WD31-PLCX-30101

DI GW FAIL WD31-XA9 30101 WD31-PLCX-30101
DI ECP-GW FAIL WD31-XA10 30101 WD31-PLCX-30101
DI ECP-C FAIL WD31-XA7 30101 WD31-PLCX-30101
DI ECP-F FAIL WD31-XA8 30101 WD31-PLCX-30101

DI ON UPS POWER WD31-AUX1 30101 WD31-PLCX-30101
DI LOW BATTERY WD31-XA3 30101 WD31-PLCX-30101
DI ON BATTERY WD31-XA4 30101 WD31-PLCX-30101

TM 120VAC-1P WD31-CB1 30101 WD31-LPXX-30108

WD31-UPS 30101

WD31-PLCP 30101

KEY NOTES:

1. CITY IT SWITCH.
2. E-STOP SWITCH FOR THE EXHAUST FAN IN THE CHEMICAL ROOM.
3. POWER QUALITY METER IS LOCATED IN THE SWITCHGEAR.

WD37-ZSXA-30793 PUMP ROOM DOOR A
WD37-ZSXB-30793 PUMP ROOM DOOR B
WD37-ZSXC-30793 CHEM ROOM ROLLUP DOOR
WD37-ZSXD-30793 CHEM ROOM DOOR
WD37-ZSXE-30793 ELECTRICAL ROOM DOOR E
WD37-ZSXF-30793 ELECTRICAL ROOM DOOR F
WD37-ZSXG-30793 PUMP ROOM ROLLUP DOOR G
WD37-ZSXH-30793 PUMP ROOM ROLLUP DOOR H

WD31-PLCP-30101 (1 / 13GN10)

WD31-UPS-30101 PCM UPS

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INSTRUMENTATION
CAMPUS OAKS ASR WELL
PCM P&ID

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13GN05
SHEET NO. 112 OF 178

PROJECT NO.
FILE NAME: 11843A1013GN05.dwg

FLOW_1						
MAGNETIC FLOW METER						
PROTOCOL: MODBUS TCP						
DESCRIPTION	CONTROL	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
VOLUME FLOW		✓	✓	✓	✓	
FLOW TOTALIZER 1		✓	✓		✓	
FLOW TOTALIZER 2						
FLOW TOTALIZER 3						
RESET TOTALIZER 1	✓		✓			
RESET TOTALIZER 2						
RESET TOTALIZER 3						
MAINTENANCE REQUIRED		✓		✓		
SOFTWARE FAILURE				✓		
MEASUREMENT FAILURE		✓		✓		
HARDWARE FAILURE				✓		
COMMUNICATION FAILURE				✓		

MP_1						
METERING PUMP						
PROTOCOL: MODBUS TCP						
DESCRIPTION	CONTROL	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL			✓			
OFF	✓		✓			
REMOTE			✓			
STOP	✓		✓			
START	✓		✓			
SPEED	✓		✓			
SPEED FEEDBACK		✓	✓		✓	
DIRECTION OF ROTATION	✓		✓			
RUNNING		✓	✓		✓	
LEAK DETECTED			✓	✓		
WRONG SPEED			✓	✓		
OVER VOLTAGE			✓	✓		
UNDER VOLTAGE			✓	✓		
CURRENT ALARM HIGH			✓	✓		
TEMPERATURE ALARM HIGH			✓	✓		
COMMON ALARM		✓	✓	✓		✓

PQM_1						
POWER QUALITY METER POWER MONITOR M5000 (PM5000)						
PROTOCOL: MODBUS TCP						
DESCRIPTION	CONTROL	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
A PH V		✓	✓		✓	
B PH V		✓	✓		✓	
C PH V		✓	✓		✓	
A PH CURRENT		✓	✓		✓	
B PH CURRENT		✓	✓		✓	
C PH CURRENT		✓	✓		✓	
A PH DEMAND CURRENT		✓	✓			
B PH DEMAND CURRENT		✓	✓			
C PH DEMAND CURRENT		✓	✓			
3 PH AVG DEMAND CURRENT		✓	✓		✓	
WATTS		✓	✓		✓	
VARS		✓	✓		✓	
VA		✓	✓		✓	
VA DEMAND		✓	✓		✓	
W DEMAND		✓	✓		✓	
ENERGY		✓	✓		✓	
FREQUENCY		✓	✓			
AN PH V %THD		✓	✓			
BN PH V %THD		✓	✓			
CN PH V %THD		✓	✓			
A PH CURRENT %THD		✓	✓			
B PH CURRENT %THD		✓	✓			
C PH CURRENT %THD		✓	✓			
AB PH V %THD		✓	✓			
BC PH V %THD		✓	✓			
CA PH V %THD		✓	✓			
POWER FACTOR		✓	✓		✓	

VFD_1						
VFD						
PROTOCOL: MODBUS TCP						
DESCRIPTION	CONTROL	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL			✓			
OFF	✓		✓			
REMOTE			✓			
STOP	✓		✓			
START	✓		✓			
SPEED	✓		✓			
SPEED FEEDBACK		✓	✓		✓	
RESET ELAPSED TIME	✓		✓			
RUNNING		✓	✓		✓	
TOTAL STARTS		✓	✓			
DAILY STARTS		✓	✓			
ELAPSED TIME		✓	✓			
DAILY RUN TIME		✓	✓			
A PH V		✓	✓		✓	
B PH V		✓	✓		✓	
C PH V		✓	✓		✓	
A PH CURRENT		✓	✓		✓	
B PH CURRENT		✓	✓		✓	
C PH CURRENT		✓	✓		✓	
AVERAGE 3 PH CURRENT		✓	✓		✓	
POWER KVA		✓	✓		✓	
POWER KW		✓	✓		✓	
POWER FACTOR		✓	✓		✓	
CURRENT ALARM HIGH			✓	✓		✓
OVERLOAD			✓	✓		✓
FAULT		✓	✓	✓		✓
SMART OVERLOAD FAILED			✓	✓		✓
FAIL TO RESPOND			✓	✓		✓
EQUIPMENT SHUTDOWN			✓			✓

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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
DANIEL ROBINSON
No. 20405
ELECTRICAL
STATE OF CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
I/O TABLES

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13GN06
SHEET NO. 113 OF 178

LAST SAVED BY: kkwarsick

PROJECT NO.
FILE NAME: 11843A1013GN06.dwg

I/O

POWER SOURCE

FIELD

MBTCP
WD34-FIXX FLOW
30105
[P&ID Mismatch]

WD34-VFDX-30101
38 13N02

WD34-VFDX-30101
40 13N02

TM
WD34-BKRX 120VAC-1P
30105
WD31-PLCP-30101

SB
WD34-FUSE 120VAC-1P
30113
WD31-VFDX-30101

DO
WD34-HCOX DEFLATE
30124
WD31-PLCX-30101

DO
WD34-HCOX INFLATE
30123
WD31-PLCX-36101

AI
WD34-PIXX PRESS
30122
WD31-PLCX-30101

STUBOUT FOR FIRE SUPPRESSION SYSTEM

4" PW

WD34-FITX
30105
INT
MAGNETIC
WD34-FEXX
30105

WD34-FSLX
30113
THERMAL
WD34-FEXX
30113

WD34-SOVX
30101

WD34-FIXX
30103

DISTRIBUTION SYSTEM

16" PW

16" PW

DISTRIBUTION
0 13N03

2" FLOW METER

2" BACKFLOW PREVENTER

2" PW

2" PW

VARIOUS EQUIPMENT AND HOSE BIBS

SET TO 80 PSIG

3/4" PW

MM

S

WD34-VALV
30101

3/4" PRELUBE

PRELUBE
3/4" PRELUBE 1 13N02

PRELUBE ROTAMETER
10 GPM FOR 5 MIN
ROTAMETER RANGE 0-30 GPM

WD34-FIXX
30108

WD34-PIXX
30105

PRESSURE REDUCING VALVE
RANGE 0-25 PSI

TRICKLE FLOW
1 WELL VOL CHANGE PER DAY
(5 GPM, RANGE 2-10 GPM)

TRICKLE
3/4" TRICKLE 3 13N02

NITROGEN CYLINDERS

WD34-VCPX-30121
VENDOR (BASKI) DOWNHOLE
FLOW CONTROL VALVE
CONTROLLER

WD34-SOVX FBV
30123

WD34-PIXX FBV
30122

WD34-PEXX FBV
30122

DOWNHOLE CONTROL PANEL PRESSURE RANGE IS 0-600 PSI

WD34-SOVX FBV
30124

NITROGEN BLEED TO ATMOSPHERE

NITROGEN 1
1/4" NITROGEN 5 13N02

NITROGEN 2
1/4" NITROGEN 4 13N02

WD34-FIXX-30103
PROPELLER TURBINE

WD34-FEXX-30105
ASR WELL PUMP PRELUBE/TRICKLE FLOW ELEMENT
0-25 GPM
* TYP NF130 NF136

WD34-FEXX-30113
PRELUBE FLOW SWITCH
7 GPM
0-40 GPM
* TYP NF111

WD34-SOVX-30101
SOLENOID VALVE

WD34-PIXX-30105
TRICKLE FLOW PRESSURE GAUGE
0-160 PSI
* TYP NP502

WD34-FIXX-30108
PRELUBE ROTAMETER
0-10 GPM

WD34-SOVX-30123
NITROGEN SUPPLY SOLENOID VALVE

WD34-PIXX-30122
NITROGEN PRESSURE GAUGE
0-600 PSI

WD34-PEXX-30122
NITROGEN PRESSURE ELEMENT
0-600 PSI

WD34-SOVX-30124
NITROGEN BLEED SOLENOID VALVE

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DATE DECEMBER 2024

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DANIEL ROBINSON
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STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

CAMPUS OAKS ASR WELL
WELL PUMP AND VALVES P&ID 1

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13N01
SHEET NO. 114 OF 178

PROJECT NO.

FILE NAME: 11843A1013N01.dwg

KEY NOTES:

1. CHEMICAL LEAKAGE DRAINS TO THE CHEMICAL DRAIN TRENCH.
2. THIS PRESSURE SUSTAINING VALVE IS SHOWN IN THE WESTBROOK AND SOLAIRE P&IDS HERE. HOWEVER FOR CAMPUS OAKS AND MISTY WOOD WELLS THIS VALVE WILL BE PLACES IN ANOTHER LOCATION; PERHAPS LOCATED ON THE INJECTOR QUILL. AT THIS TIME THE LOCATION IS TO BE DETERMINED.

I/O

POWER SOURCE

FIELD

WD34-LIXX 30100 AI LEVEL → WD31-PLCX-36101
VFD_1 MBTCP WD34-VFDX 30101 → WD31-PLCX-30101
WD34-PIXX 30102 AI PRESS → WD31-PLCX-30101
WD34-PIXX 30109 AI PRESS → WD31-PLCX-30101
WD34-ZCX 30120 AO POSITION → WD31-PLCX-30101
WD34-HSXX 30120 DI REMOTE → WD31-PLCX-36101
WD34-ZSOX 30120 DI OPENED → WD31-PLCX-30101
WD34-MOVX 30120 DI CLOSED → WD31-PLCX-36101
WD34-ZX 30120 AI POSITION → WD31-PLCX-30101
WD34-HCOX 30130 DO OPEN → WD31-PLCX-36101
WD34-HCGX 30130 DO CLOSE → WD31-PLCX-30101
WD34-HSXX 30130 DI REMOTE → WD31-PLCX-36101
WD34-ZSOX 30130 DI OPENED → WD31-PLCX-30101
WD34-MOVX 30130 DI CLOSED → WD31-PLCX-36101
FLOW_1 MBTCP WD34-FIXX 30104 → WD31-PLCX-30101

WD34-FSLX-30105 38 13N01
WD34-SOVX30101 40 13N01
WD34-BKR2 30101 SS 480VAC-3P → WD31-MCCX-30100

VFD- 30101
VFD-RH
480VAC-3P
WD31-MCCX-30100

WD34-BKRX 30120 TM 120VAC-1P → WD31-LPXX-30108
WD34-BKRX 30130 TM 120VAC-1P → WD31-LPXX-30108
WD34-BKRX 30104 TM 120VAC-1P → WD31-PLCP-30101

WD34-LITX 30100 INT SUB WD34-LEXX 30100
E-STOP WD34-HSNX 30101 WD34-LCPX 30101
WD34-PUMP 30101
WD34-HEAT 30101
WD34-TE4X 30101 RTD SPARE
WD34-TE5X 30101 RTD SPARE
WD34-TE6X 30101 RTD SPARE
WD34-TE1X 30101 RTD
WD34-TE2X 30101 RTD
WD34-TE3X 30101 RTD
WD34-ZTX 30120
WD34-ZSOC 30120
WD34-HSAX 30120 LSR
WD34-HSGX 30120 OSC
WD34-FCVX 30120
WD34-DISC 30120
WD34-ZSOC 30130
WD34-HSAX 30130 LSR
WD34-HSGX 30130 OSC
WD34-MOVX 30130
WD34-DISC 30130
WD34-FITX 30104 INT MAGNETIC WD34-FEXX 30104

NITROGEN 1 5 13N01 → 1/4" NITROGEN
NITROGEN 2 4 13N01 → 1/4" NITROGEN
3/4" PRELUBE
3/4" TRICKLE
PRELUBE 1 13N01
TRICKLE 3 13N01

ROSSUM SAND TESTER

WD34-PSHH 30107 INT PRESSURE WD34-PEXX 30107
WD34-PIXX 30102 PRESSURE
WD34-PITX 30102 INT PRESSURE WD34-PEXX 30102
WD34-PIXX 30109 PRESSURE
WD34-PITX 30109 INT PRESSURE WD34-PEXX 30109

12" AR
12"AS
12" AS
12" AS/AR
3/4" SEAL
STATIC WSE
PUMPING WSE
TRICKLE FLOW
DOWN-HOLE FLOW CONTROL VALVE
PUMP BOWLS
"FOOT" CHECK VALVE
INLET SCREEN
WD34-VALV 30111 DOWN HOLE BASKI
FLOOR TRENCH DRAIN
TRENCH DRAIN
DRAIN ON BOTTOM
MM
3/4" SH
3/4" NAF
SPARE TAP ON SIDE
SEWER/DRAIN 11 13N03
CHEMICAL SUMP
CHEMICAL TRENCH DRAIN

HYPOCHLORITE FEED PUMPS 13N04 9
SODIUM FLUORIDE FEED PUMPS 13N05 10
AQUIFER STORAGE/RECOVERY 6 13N03

WD34-PEXX-30107 ASR WELL RECOVERY PRESSURE SWITCH HI HI @ ~ 125 PSIG — * TYP NP501
WD34-PEXX-30102 ASR WELL RECOVERY PRESSURE TRANSMITTER 0-160 PSIG — * TYP NP501
WD34-PEXX-30109 ASR WELL STORAGE PRESSURE TRANSMITTER 0-150 PSIG — * TYP NP501
WD34-LEXX-30100 ASR WELL LEVEL TRANSDUCER __'-__"FT
WD34-PUMP-30101 ASR PUMP 450HP 480VAC 3PH — 1 00E01
WD34-VALV-30111 DOWN HOLE BASKI VALVE
WD34-PIXX-30102 ASR WELL RECOVERY PRESSURE GAUGE 0-150 PSIG
WD34-PIXX-30109 ASR WELL STORAGE PRESSURE GAUGE 0-150 PSIG
WD34-FCVX-30120 WELL ANNULUS RECHARGE VALVE 0.5HP 120VAC 1PH
WD34-MOVX-30130 PUMP COLUMN RECHARGE CONTROL VALVE 0.5HP 120VAC 1PH
WD34-FEXX-30104 SEAL WATER/PRELUBE FLOW METER 0-3000 GPM — * TYP NF130 NF136

REV	DATE	BY	DESCRIPTION

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DATE DECEMBER 2024

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CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
CAMPUS OAKS ASR WELL
WELL PUMP AND VALVES P&ID 2

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 13N02
SHEET NO. 115 OF 178

PROJECT NO.
FILE NAME: 11843A1013N02.dwg

Plot Date: 06-DEC-2024 2:49:05 PM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
kkwarsick

I/O

POWER SOURCE

FIELD

AI WD34-PIXX PRESS 30106 WD31-PLCX-30101

AI WD34-PDXX PRESS DIFF 30151 WD31-PLCX-30101

AO WD34-ZCXX POSITION 30150 WD31-PLCX-30101

DI WD34-HSXX REMOTE 30150 WD31-PLCX-36101

DI WD34-ZSOX OPENED 30150 WD31-PLCX-30101

DI WD34-MOVX CLOSED 30150 WD31-PLCX-36101

AI WD34-ZXXX POSITION 30150 WD31-PLCX-30101

DO WD34-HCOX OPEN 30160 WD31-PLCX-36101

DO WD34-HCGX CLOSE 30160 WD31-PLCX-30101

DI WD34-HSXX REMOTE 30160 WD31-PLCX-36101

DI WD34-ZSOX OPENED 30160 WD31-PLCX-30101

DI WD34-MOVX CLOSED 30160 WD31-PLCX-36101

DO WD34-HCOX OPEN 30140 WD31-PLCX-36101

DO WD34-HCGX CLOSE 30140 WD31-PLCX-30101

DI WD34-HSXX REMOTE 30140 WD31-PLCX-36101

DI WD34-ZSOX OPENED 30140 WD31-PLCX-30101

DI WD34-MOVX CLOSED 30140 WD31-PLCX-36101

TM WD34-BKRX 120VAC-1P 30150 WD31-LPXX-30108

TM WD34-BKRX 120VAC-1P 30160 WD31-LPXX-30108

TM WD34-BKRX 120VAC-1P 30140 WD31-LPXX-30108

WD34-ZTX 30150

WD34-ZSOC 30150

LSR WD34-HSAX 30150

OSC WD34-HSGX 30150

WD34-FCVX 30150

WD34-DISC 30150

WD34-ZSOC 30160

LSR WD34-HSAX 30160

OSC WD34-HSGX 30160

WD34-MOVX 30160

WD34-DISC 30160

WD34-ZSOC 30140

LSR WD34-HSAX 30140

OSC WD34-HSGX 30140

WD34-MOVX 30140

WD34-DISC 30140

DISTRIBUTION 0 13N01

16" PW

12" AS/AR

WD34-PIXX 30106

WD34-PITX 30106 INT PRESSURE

WD34-PEXX 30106

WD34-PDIT 30151

PRESS DIFF WD34-PEXX 30151

WD34-PIXX 30150

MODULATING WD34-FCVX 30150

12" AS

1" PW

CARTRIDGE POOL FILTER WITH CLEAR CASE FOR VISUAL INSPECTION

AQUIFER STORAGE/RECOVERY 6 13N02

12" AS/AR

12" AR

WD34-MOVX 30160

GRAB SAMPLE TAP

TRENCH DRAIN 11 13N02

FLOOR TRENCH DRAIN

8" FTW

WD34-MOVX 30140

DECHLORINATION TABLET BASKET

INSECT SCREEN & AIR GAP

CHLORINE AND FLUORIDE ANALYZERS 1/2" SAM 2 7 13N06

SPARE 1/2" SAM 3 8 13N06

FUTURE WATER TREATMENT, IF REQUIRED

FUTURE WATER TREATMENT, IF REQUIRED

MONITORING WELL 1" SAM 13N03 17

OFFSITE STORM DRAIN 12" SD

SEWER/DRAIN TRENCH DRAIN 12 13N04

WD34-PEXX-30151
H-STRAINER PRESSURE DIFF ELEMENT
0-5 PSI

NP189 TYP

WD34-PIXX-30106
STORAGE LINE PRESSURE GAUGE
0-160 PSIG

WD34-PEXX-30106
STORAGE LINE PRESSURE ELEMENT
___-___ PSIG

NP501 TYP

WD34-PIXX-30150
RECHARGE LINE PRESSURE GAUGE
0-150 PSIG

NP501 TYP

WD34-FCVX-30150
RECHARGE CONTROL VALVE
0.5HP 120VAC 1PH

WD34-MOVX-30160
RECOVERY/PRODUCTION VALVE
0.5HP 120VAC 1PH

WD34-MOVX-30140
AQUIFER & WELL FLUSH TO WASTE VALVE
0.5HP 120VAC 1PH

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REV	DATE	BY	DESCRIPTION

DESIGNED JKR
DRAWN KIK
CHECKED GEB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER DANIEL ROBINSON No. 20405 ELECTRICAL STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

CAMPUS OAKS ASR WELL
WELL PUMP AND VALVES P&ID 3

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13N03
SHEET NO. 116 OF 178

PROJECT NO. FILE NAME: 11843A1013N03.dwg

KEY NOTES:

1. PUMP HAS INTEGRATED CONTROLLER WITH HARDWIRED I/O, MODBUS RTU COMMUNICATION, AND POWER BETWEEN THE PUMP AND THE VENDOR CONTROL PANEL.
2. THE WIRING BETWEEN THE VENDOR CONTROL PANEL AND THE EQUIPMENT WILL BE BY THE VENDOR SINCE THE CONTROL PANEL IS SKID MOUNTED.

I/O

DI WD37-FSXX 30001 FLOW — WD31-PLCX-30101
DI WD33-LIXX 30202 LEAK — WD31-PLCX-30101
AI WD33-LIXX 30201 LEVEL — WD31-PLCX-30101
MP_1 MBTCP WD33-PUMP 30210 — WD31-PLCX-30101

POWER SOURCE

TM WD33-BKRX 30500 480VAC-3P — WD31-MCCX-30100
TM WD33-BKRX 30202 120VAC-1P — WD31-PLCP-30101
TM WD33-BKRX 30210 120VAC-1P — WD31-LPXX-30108

FIELD

BUILDING SERVICE — 2" PW — VARIOUS EQUIPMENT AND HOSE BIBS

WD37-FSHX 30001
WD37-FEXX FBV 30001
3/4" PW
1/2" PW
1" PW
1/2" PW
WD37-HXGR-30401 INSTANT HOT WATER HEATER
WD37-PIXX 30001

EMERGENCY EYEWASH, SHOWER, AND HOT WATER HEATER (INSIDE CHEMICAL ROOM)

LABORATORY SINK

FBV WD33-LCPX 30202
WD33-LEXX FBV LEAK 30202

WD33-LITX 30201
INT RADAR
WD33-LEXX 30201

3" VENT TO OUTSIDE BUILDING
3/4" V
OVERFLOW
WD33-TANK 30201
1" SH
2" SH
3" OF
CHEMD
4" D

WD33-PLCP FBV 30210
1 2 WD33-PUMPFBV 30211
1 2 WD33-PUMPFBV 30212
2 WD33-FITX FBV 30203
WD33-FEXX FBV 30203
MM
HYPOCHLORITE INJECTION ON RECOVERY PIPE — 9 13N02
3/4" SH

SODIUM HYPOCHLORITE FEED SKID

CHEMICAL SUMP
CHEMICAL TRENCH DRAIN — 13 13N05
DRAIN/SEWER — 15 13N05
CHEMICAL TRENCH DRAIN — 12 13N03

FLOOR TRENCH DRAIN

WD37-FEXX-30001
EMERGENCY SHOWER/EYEWASH FLOW SWITCH
0-20 GPM

WD33-LEXX-30202
TANK LEAK DETECTION SWITCH

WD33-TANK-30201
SODIUM HYPOCHLORITE TANK

WD33-LEXX-30201
SODIUM HYPOCHLORITE STORAGE TANK LEVEL ELEMENT
0-7 FT 1 IN

WD33-PUMP-30211
HYPOCHLORITE FEED PUMP 1
0.25HP 120VAC 1PH

WD33-PUMP-30212
HYPOCHLORITE FEED PUMP 2
0.25HP 120VAC 1PH

WD33-FEXX-30203
FLOW SWITCH
___-___ GPM
NF130 NF136 TYP

NL174 TYP

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DATE DECEMBER 2024

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
CAMPUS OAKS ASR WELL
SODIUM HYPOCHLORITE FEED SYSTEM P&ID

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13N04
SHEET NO. 117 OF 178

PROJECT NO.
FILE NAME: 11843A1013N04.dwg

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PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
kkwarsick

I/O

POWER SOURCE

FIELD

WD33-MIXR DI RUNNING 30313 WD31-PLCX-30101
WD33-YAXX DI DIA LEAK 30313 WD31-PLCX-30101
WD33-LALX DI TANK 30312 WD31-PLCX-30101
WD33-LAXX DI CONTAINMENT 30310 WD31-PLCX-30101
WD33-HSNX DI E-STOP 30313 WD31-PLCX-30101
WD33-HSXX DI REMOTE 30313 WD31-PLCX-30101
WD33-SIXX AI SPEED IN 30313 WD31-PLCX-30101
WD33-SCXX AO SPEED OUT 30313 WD31-PLCX-30101
WD33-HCCX DO ENABLE 30313 WD31-PLCX-30101
WD33-PUMP DI RUNNING 30313 WD31-PLCX-30101
WD33-YAFX DI FAILED 30313 WD31-PLCX-30101

WD33-BKRX TM 120VAC-1P 30310 WD31-LPXX-30108

WD33-LCPX FBV 30310

KEY NOTES:

1. PUMP HAS INTEGRATED CONTROLLER WITH HARDWIRE I/O AND POWER BETWEEN IT AND THE VENDOR CONTROL PANEL.
2. CHEMICAL ROOM FLOOR DRAIN.

BUILDING BACKFLOW PREVENTER
3/4" PW
SEWER
WD34-TANK 30306
WD34-TANK 30305
WD34-TANK 30304
VENDOR SUPPLIED WATER SOFTENER
WATER SOFTENER (INSIDE CHEMICAL ROOM)

WD33-LSXX FBV 30310
WD33-FQIT FBV 30311
WD33-SOVX FBV 30311
3/4" SW
WD34-TANK FBV 30311
WD33-LSXX FBV 30312
WD33-PUMP FBV 30313 (1)
WD33-MIXR FBV 30312
WD33-FITX FBV 30313
WD33-FEXX FBV 30313
WD34-TANK FBV 30312
3/4" NAF
SODIUM FLUORIDE INJECTION POINT 10 13N02
VENDOR SUPPLIED SODIUM FLUORIDE SYSTEM
SODIUM FLUORIDE (INSIDE CHEMICAL ROOM)

CHEMICAL TRENCH DRAIN 13 13N04 — CHEMD — CHEMICAL SUMP 14 13N07
FLOOR TRENCH DRAIN 15 13N04 — 4" D (2) — DRAIN/SEWER 16 13N07

WD34-TANK-30306 WATER SOFTENER TANK 1
WD34-TANK-30305 WATER SOFTENER TANK 2
WD34-TANK-30304 BRINE TANK
WD33-LSXX-30310 SODIUM FLUORIDE CONTAINMENT LEVEL SWITCH
WD34-TANK-30311 SATURATOR TANK
WD33-FQIT-30311 SODIUM FLUORIDE TOTALIZER
WD33-LSXX-30312 SOLUTION TANK LEVEL SWITCH
WD34-TANK-30312 SOLUTION TANK
WD33-PUMP-30313 SODIUM FLUORIDE FEED PUMP 0.5HP 120VAC 1PH
WD33-FEXX-30313 FLOW SWITCH ___-___ GPM
WD33-MIXR-30312 SOLUTION TANK MIXER

REV	DATE	BY	DESCRIPTION

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
CAMPUS OAKS ASR WELL
LIQUID FLUORIDE FEED SYSTEM P&ID

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13N05
SHEET NO. 118 OF 178

PROJECT NO.
FILE NAME: 11843A1013N05.dwg

KEY NOTES:

1. EACH MONITORING WELL PUMP IS POWERED BY PORTABLE VFD. THE VFDS ARE NOT CONNECTED TO ANY CONTROLLER. THEY ARE STAND ALONE.

I/O

POWER SOURCE

FIELD

WD33-LIXX 30401 AI LEVEL → WD31-PLCX-30101

WD33-AIXX 30205 AI CHLORINE → WD31-PLCX-30101

WD33-AIXX 30206 AI pH → WD31-PLCX-30101

WD33-AIXX 30307 AI FLUORIDE → WD31-PLCX-30101

WD33-BKRX 30205 TM 120VAC-1P → WD31-PLCX-30101

WD33-BKRX 30206 TM 120VAC-1P → WD31-PLCX-30101

WD33-BKRX 30307 TM 120VAC-1P → WD31-PLCX-30101

WD33-AITX 30205 CHLORINE FBV

WD33-AITX 30206 pH FBV

WD33-AITX 30307 FLUORIDE FBV

WD33-AEXX 30205 CHLORINE FBV

WD33-AEXX 30206 pH FBV

WD33-AEXX 30307 FLUORIDE FBV

1 WD33-PUMP 30402

WD33-LITX 30401 INT

WD33-LEXX 30401 SUB

1 WD33-PUMP 30401

SAMPLE FROM DISTRIBUTION

7 | 13N03 | 1/2" SAM 2

SPARE

8 | 13N03 | 1/2" SAM 2

1/2" SAM 2

pH CTL PANEL

CI2 RESID CTL PNL

FLUORIDE PANEL CTL PNL

WD33-PIXX 30205 FBV

WD33-FIXX 30205 FBV

CI2 PROBE

pH PROBE

pH PROBE

WD33-PIXX 30207 FBV

1" SAM

1" SAM

1" SAM

1/2" SAM

1/2" SAM

1/2" SAM

DRAIN SEWER

19 | 13N07

PURGE TO STORM DRAIN AIR-GAP STRUCTURE

1" SAM

COMW-A (WELL DEPTH 295 FT BGS)

COMW-C (WELL DEPTH 415 FT BGS)

COMW-B (WELL DEPTH 415 FT BGS)

EXISTING MULTIPLE COMPLETION MONITORING WELL

MONITORING WELL SAMPLE (INSIDE PUMP ROOM)

CHLORINE ANALYZER (INSIDE PUMP ROOM)

FLUORIDE ANALYZER (INSIDE PUMP ROOM)

WD33-FIXX-30205
CHLORINE ANALYZER ROTAMETER
0-12 GPH

WD33-PUMP-30402
MONITORING WELL PUMP 2
1HP 120VAC 1PH

WD33-LEXX-30401
COMW-C WELL WATER LEVEL

WD33-PUMP-30401
MONITORING WELL PUMP 1
1HP 120VAC 1PH

WD33-PIXX-30205
CHLORINE ANALYZER PRESSURE GAUGE
0-100 PSI

WD33-AEXX-30205
CHLORINE RESIDUAL ANALYZER
__.__ mg/l

WD33-AEXX-30206
pH ANALYZER
__.__ pH

WD33-PIXX-30207
FLUORIDE ANALYZER PRESSURE GAUGE
0-100 PSI

WD33-AEXX-30307
FLUORIDE ANALYZER
__.__ mg/l

REV	DATE	BY	DESCRIPTION
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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

CAMPUS OAKS ASR WELL
WATER QUALITY P&ID

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13N06
SHEET NO. 119 OF 178

PROJECT NO.

FILE NAME: 11843A1013N06.dwg

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User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
kkwarsick

1 2 3 4 5 6 7 8 9 10 11 12 13

A B C D E F G

I/O

POWER SOURCE

FIELD

KEY NOTES:

1. CIRCUIT BREAKER FOR RESTROOM RECEPTACLES. INSTANT HOT WATER HEATER PLUGS INTO A RECEPTACLE.

DI
WD33-LSHX LEVEL
30209
WD31-PLCX-30101

1
TM
WD33-BKRX 120VAC-1P
30002
WD31-LPXX-30108

WD33-LSHX
30209

CAPACITANCE
WD33-LEXX
30209

BUILDING SERVICE
2" PW

VARIOUS EQUIPMENT AND HOSE BIBS

1/2" PW

1/2" PW

1/2" PW

INSTANT HOT WATER HEATER
WD37-HXGR-30002

WD37-PIXX
30002

HOT

TOILET

RESTROOM SINK

CHEMICAL TRENCH DRAIN
14 13N05

CHEMD

FLOOR TRENCH DRAINS IN PUMP ROOM AND CHEMICAL ROOM

CHEMICAL TRENCH DRAINS IN PUMP AND CHEMICAL ROOMS

RESTROOM

DRAIN/SEWER
16 13N05
4" D

OFFSITE SANITARY SEWER

DRAIN/SEWER FROM TRENCH DRAIN
43 13N06

DRAIN/SEWER FROM TRENCH DRAIN
19 13N06

SUMP AND LEVEL SWITCH IN CHEMICAL ROOM

WD37-PIXX-30002
RESTROOM HOT WATER PRESSURE GAUGE
0-60 PSI
* TYP NP502

WD33-LEXX-30209
CHEMICAL TRENCH DRAIN LEVEL SWITCH
__ FT
* TYP NL113

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DESIGNED JKR
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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

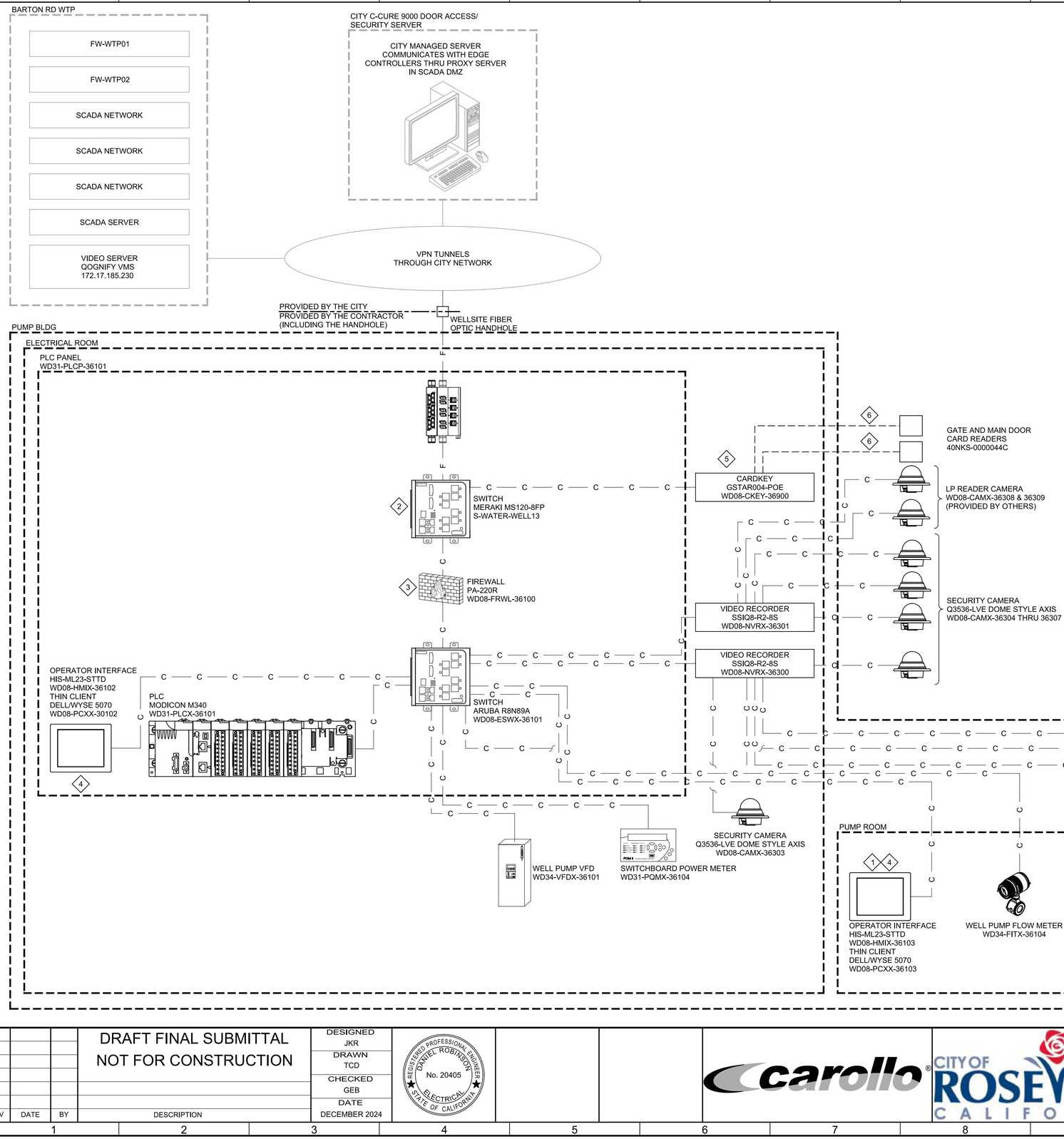
INSTRUMENTATION

CAMPUS OAKS ASR WELL RESTROOM, DRAIN AND SEWER P&ID

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 13N07
SHEET NO. 120 OF 178

PROJECT NO.
FILE NAME: 11843A1013N07.dwg



GENERAL NOTES:

1. ALL ETHERNET CABLE SHALL BE CAT6.
2. FIBER OPTIC CONNECTORS SHALL BE LC TYPE.
3. FIBER OPTIC CABLE SHALL BE SINGLE MODE.
4. THE NETWORK SPEED IS 1GB.
5. THE NETWORK IS ALL UNDER THE SAME SUBNET.
6. NETWORK PROTOCOL IS MODBUS TCP.
7. CORNING ALTOS IS THE END USER'S PREFERRED FIBER OPTIC CABLE.
8. CORNING SPH-01P-DIN IS THE END USER'S PREFERRED TERMINATION PANEL.

KEY NOTES:

1. SHALL BE IN A WALL MOUNTED CABINET WITH A PULLOUT SHELF FOR THE MOUSE AND KEYBOARD.
2. ETHERNET SWITCH PROVIDED BY THE CITY.
3. FIREWALL PROVIDED BY THE CONTRACTOR BUT CONFIGURED BY THE CITY.
4. THE THIN CLIENTS SHALL HAVE PENTIUM SILVER PROCESSOR WITH UBUNTU OPERATING SYSTEM.
5. SHALL HAVE A DI CARD AND CONNECT ALL DOOR CONTACTS AND ALARM RELATED SENSORS FROM PLC PANEL RELAYS.
6. RS-485

REV	DATE	BY	DESCRIPTION
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DESIGNED JKR | DRAWN TCD | CHECKED GEB | DATE DECEMBER 2024

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

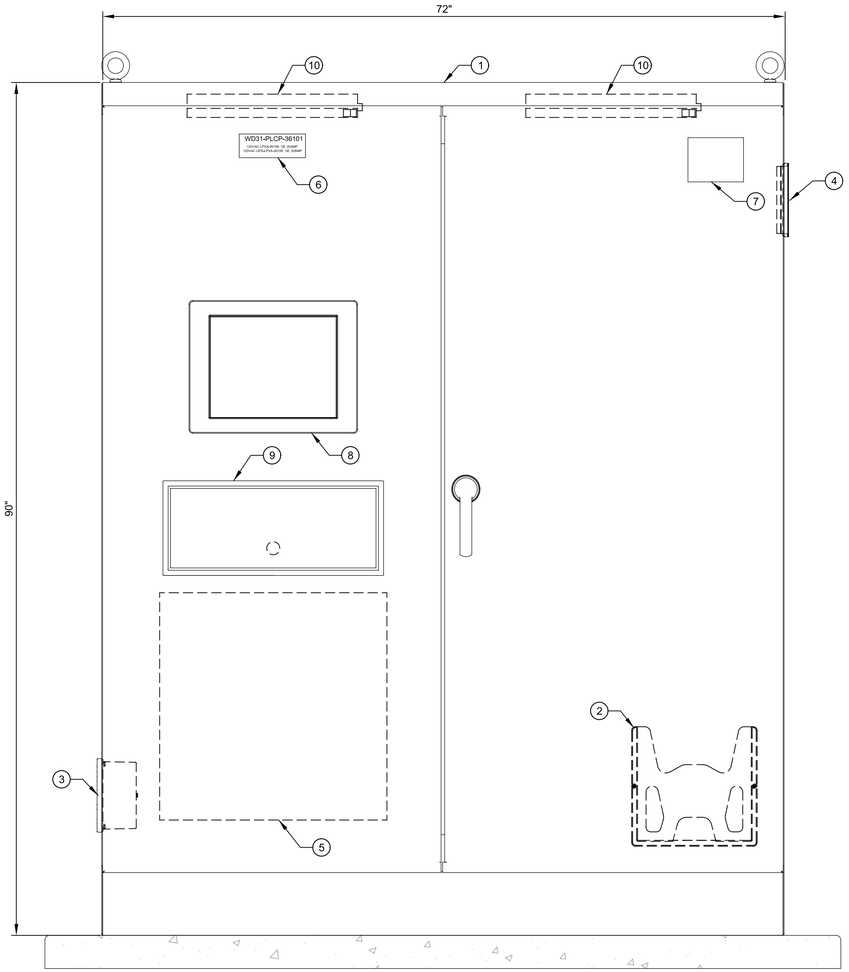
MISTY WOOD ASR WELL
CONNECTION DIAGRAM

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19GN01
SHEET NO. 121 OF 178

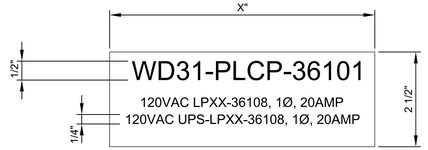
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User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kkwarsick



EXTERNAL ELEVATION

SCALE: NO SCALE
FILE: 11843A1002N602



NAMEPLATE DETAIL

SCALE: NO SCALE
FILE: 11843A1002N602

GENERAL NOTES:

1. PROVIDE LABEL INDICATING INTEGRATOR'S LOGO WITH COMPANY NAME AND ADDRESS MOUNTED ON THE FRONT OF THE ENCLOSURE.
2. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS. ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
5. ALL ENCLOSURES SHALL BE MOUNTED ON A HOUSEKEEPING PAD.

MAJOR EQUIPMENT SCHEDULE

ITEM	DESCRIPTION
1	ENCLOSURE, NEMA 12, FREE STANDING
2	DATA POCKET
3	COOLING FAN
4	EXHAUST GRILLE
5	FOLDING SHELF
6	NAMEPLATE
7	MANUFACTURER'S LABEL
8	INDUSTRIAL MONITOR
9	KEYBOARD BOX
10	LIGHT W/ INTRUSION SWITCH

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED JKR
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
DANIEL ROBINSON
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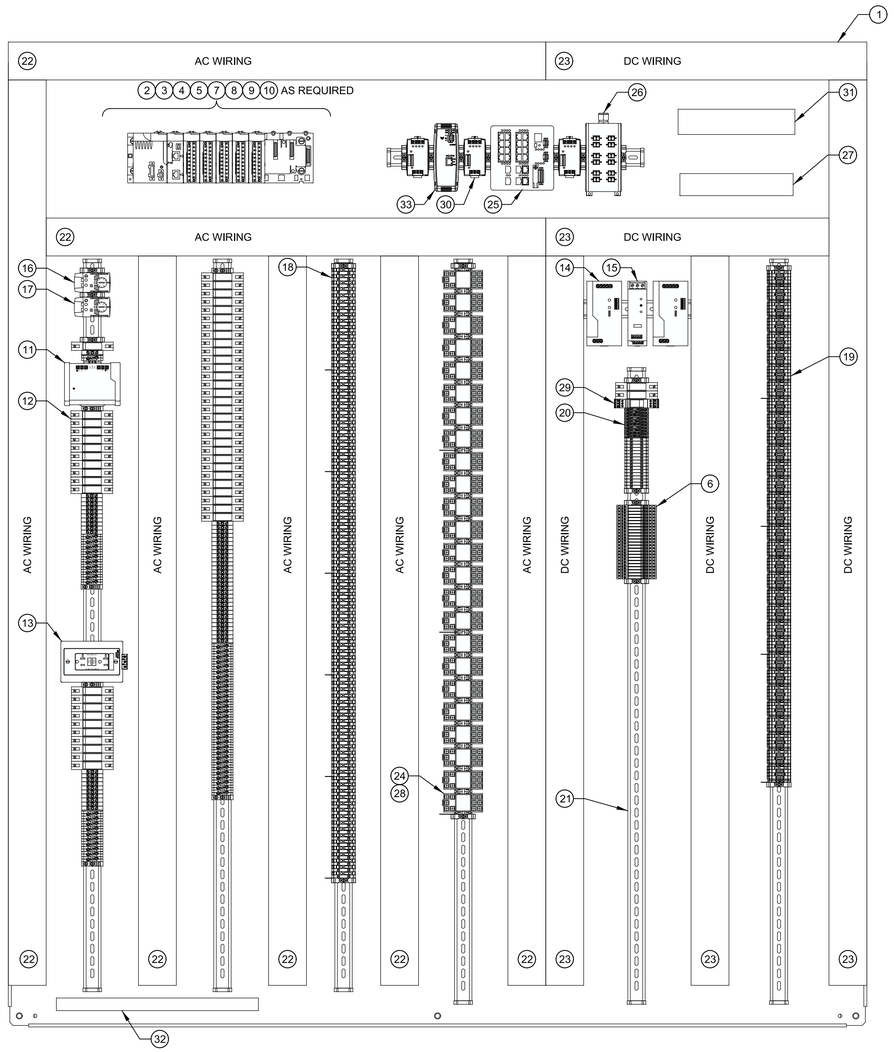
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
MISTY WOOD ASR WELL
PCM EXTERNAL ELEVATION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19GN02
SHEET NO. 122 OF 178

PROJECT NO.
FILE NAME: 11843A1019GN02.dgn

Plot Date: 06-DEC-2024 2:48:07 PM
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PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kkwarsick



INTERNAL ELEVATION

SCALE: NO SCALE
FILE: 11843A1002N602

GENERAL NOTES:

1. ENCLOSURE DRAWING REPRESENTS DESIGN INTENT. CONTRACTOR TO SUPPLY AS-BUILT DRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
2. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES. CONSTRUCT PANEL TO MEET THE FULL INTENT OF ARTICLE 409 OF THE NATIONAL ELECTRIC CODE.
3. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
4. CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
5. ALL TIE WRAPS SHALL BE LOCATED OUTSIDE OF THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
6. ELEVATE ALL TERMINAL BLOCK DIN RAIL A MINIMUM OF 2 INCHES OFF OF BACK PANEL.
7. NO 480VAC CIRCUITS SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
8. NO CAMERA OR TELEPHONE CABLES SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
9. ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE TOP OR BOTTOM OF THE ENCLOSURE. NO SIDE, FRONT, OR REAR PENETRATIONS ALLOWED.
10. QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
11. REFER TO INSTRUMENTATION TYPICAL DETAILS FOR PANEL CONSTRUCTION AND WIRING REQUIREMENTS.
12. PROVIDE PANEL SURGE PROTECTION FOR ALL ANALOG/DIGITAL INSTRUMENTS LOCATED OUTDOORS OR OTHERWISE INDICATED IN THE DRAWING OR SPECIFICATIONS.
13. REFER TO TYPICAL DETAILS NE101, NE102, NE103, NE104, NE105, NE304, NE305, NE306, NE307, NE308, NE310, NE311, NE312, NE313, NE314, NE315, NE350, NE351, NE352, NE353, NE354.

MAJOR EQUIPMENT SCHEDULE

ITEM	DESCRIPTION
1	BACK PANEL
2	PLC BACKPLANE
3	PLC PROCESSOR
4	PLC POWER SUPPLY
5	PLC ETHERNET COMMUNICATION MODULES
6	SIGNAL CONDITIONERS
7	PLC DI MODULES
8	PLC DO MODULES
9	PLC AI MODULES
10	PLC AO MODULES
11	120VAC PANEL SURGE PROTECTOR
12	CIRCUIT BREAKERS
13	RECEPTACLE, 5A
14	24VDC POWER SUPPLY
15	REDUNDANCY MODULE
16	HVAC CONTROL
17	ENCLOSURE TEMPERATURE SWITCH
18	DISCRETE TERMINAL BLOCKS
19	ANALOG TERMINAL BLOCKS
20	24VDC FUSED TERMINAL BLOCKS
21	DIN RAIL
22	GRAY WIRE DUCT
23	WHITE WIRE DUCT
24	TIMER / CONTROL RELAYS
25	ETHERNET SWITCH
26	FIBER PATCH PANEL
27	ETHERNET SWITCH (PROVIDED BY THE CITY)
28	INTERPOSING RELAYS
29	24VDC PANEL SURGE PROTECTOR
30	ELECTRONIC CIRCUIT PROTECTOR
31	FIREWALL (PROVIDED BY THE CITY)
32	GROUND BAR
33	GATEWAY

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED JKR
DRAWN TCD
CHECKED GEB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
DANIEL ROBINSON
No. 20405
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE
CALIFORNIA

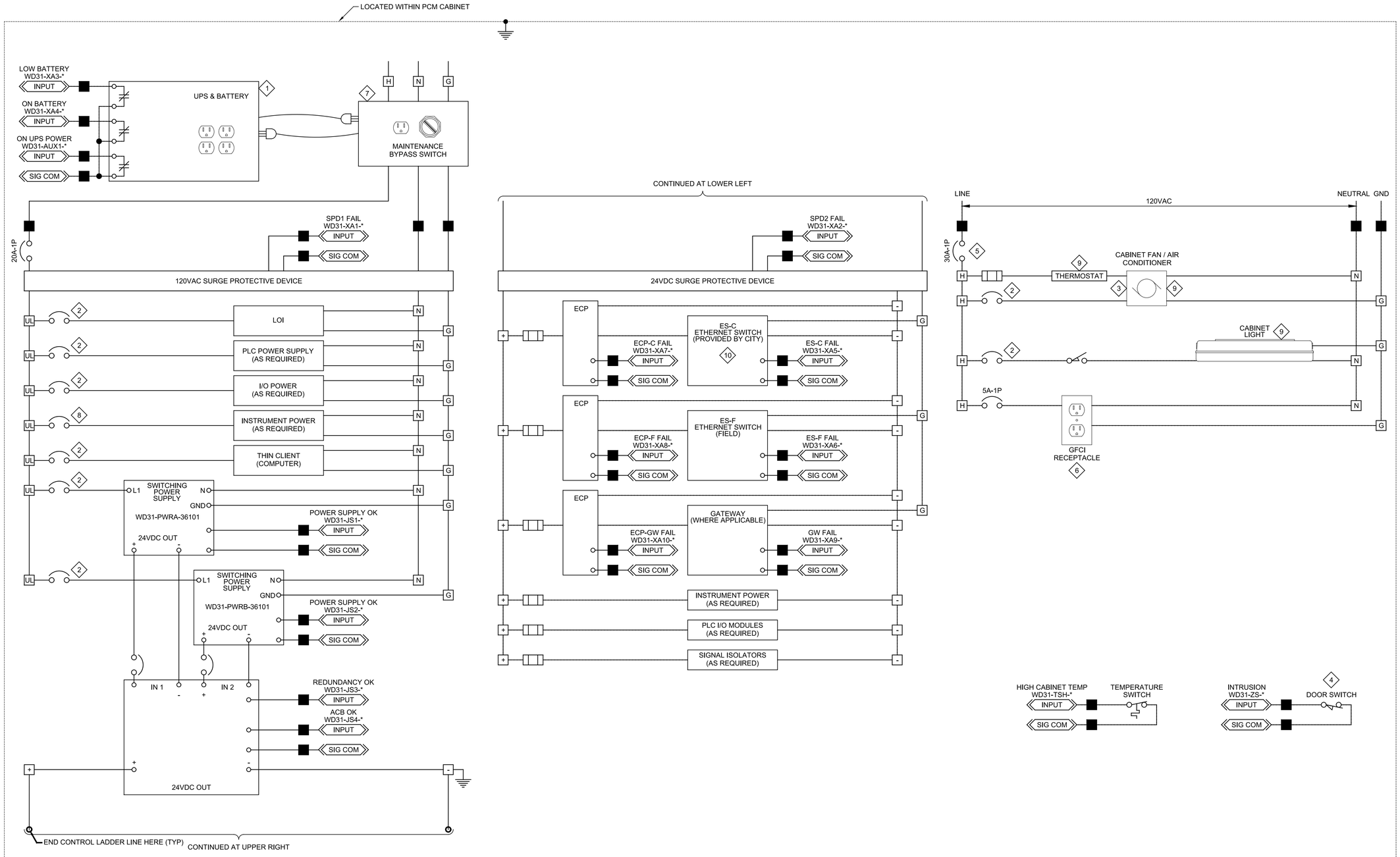
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
MISTY WOOD ASR WELL
PCM INTERNAL ELEVATION

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19GN03
SHEET NO. 123 OF 178

PROJECT NO.
FILE NAME: 11843A1019GN03.dgn

Plot Date: 06-DEC-2024 2:47:09 PM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: kkwarsick



GENERAL NOTES:

1. SCHEMATIC ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.

KEY NOTES:

1. SIZE UPS AND BATTERY BASED ON UPS SPECIFICATION REQUIREMENTS.
2. SIZE BASED ON PROTECTION NEEDS.
3. VERIFY LOADS BASED ON TEMPERATURE CALCULATIONS. PROVIDE ADDITIONAL CIRCUIT IF REQUIRED.
4. INSTALL SWITCH ON OUTERMOST DOOR OF OVERLAPPING DOORS. PROVIDE ADDITIONAL SWITCHES. WIRED IN SERIES, FOR NON-OVERLAPPING DOORS.
5. SIZE BASED ON LOAD REQUIREMENT.
6. PROVIDE QUANTITY REQUIRED PER SPECIFICATIONS. SIZE RECEPTACLE FOR LAPTOP.
7. PROVIDE HARDWIRED CONNECTIONS OR RECEPTACLE/PLUG AS REQUIRED BY MAINTENANCE BYPASS SWITCH.
8. SIZE BASED ON PROTECTION NEEDS. PROVIDE SEPARATE CIRCUIT BREAKERS FOR EACH INSTRUMENT POWERED FROM THE PCM CABINET.
9. PROVIDE QUANTITY REQUIRED PER SPECIFICATIONS.
10. CITY IT SWITCH.

TERMINAL BLOCK LEGEND

■	PCM
H	120VAC
N	NEUTRAL
G	GROUND
UL	UPS 120VAC
+	24VDC (+)
-	24VDC (-)

TAG	LOOP	REFERENCE DWG.
36101	WD31-PLCP-36101	19GN11

1 PCM WIRING DIAGRAM

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED JKR
DRAWN TCD
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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — DANIEL ROBINSON — No. 20405 — ELECTRICAL — STATE OF CALIFORNIA

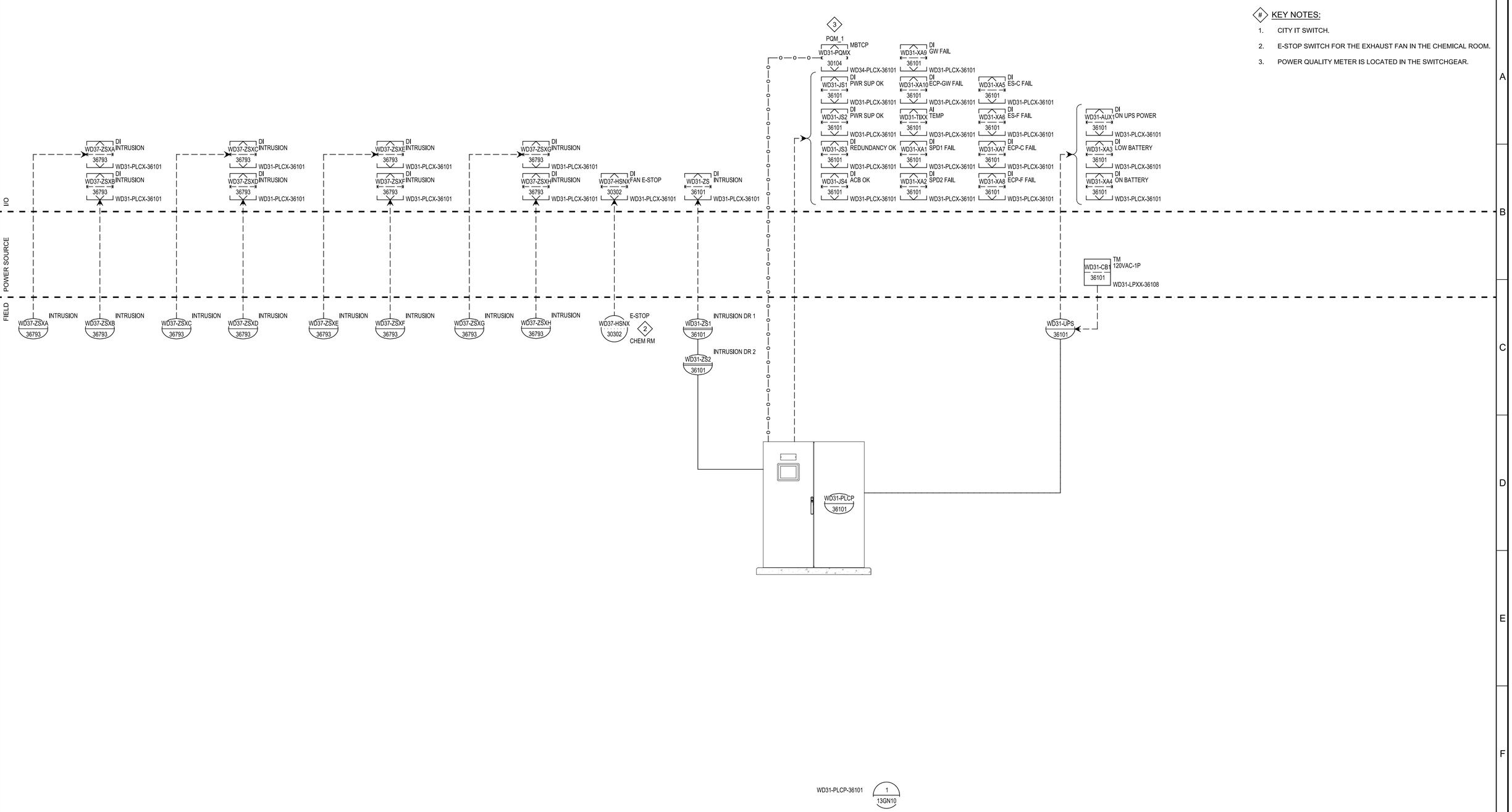
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
MISTY WOOD ASR WELL
PCM WIRING DIAGRAM

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19GN04
SHEET NO. 124 OF 178

PROJECT NO.
FILE NAME: 11843A1019GN04.dwg

Plot Date: 06-DEC-2024 3:58:23 PM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
kkwarsick



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DESIGNED JKR
DRAWN TCD
CHECKED GEB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
DANIEL ROBINSON
No. 20405
ELECTRICAL
STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
MISTY WOOD ASR WELL
PCM P&ID

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19GN05
SHEET NO. 125 OF 178

PROJECT NO.
FILE NAME: 11843A1019GN05.dwg

Plot Date: 06-DEC-2024 2:49:57 PM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
kkwarsick

FLOW_1						
MAGNETIC FLOW METER						
PROTOCOL: MODBUS TCP						
DESCRIPTION	CONTROL	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
VOLUME FLOW		✓	✓	✓	✓	
FLOW TOTALIZER 1		✓	✓		✓	
FLOW TOTALIZER 2						
FLOW TOTALIZER 3						
RESET TOTALIZER 1	✓		✓			
RESET TOTALIZER 2						
RESET TOTALIZER 3						
MAINTENANCE REQUIRED		✓		✓		
SOFTWARE FAILURE				✓		
MEASUREMENT FAILURE		✓		✓		
HARDWARE FAILURE				✓		
COMMUNICATION FAILURE				✓		

MP_1						
METERING PUMP						
PROTOCOL: MODBUS TCP						
DESCRIPTION	CONTROL	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL			✓			
OFF	✓		✓			
REMOTE			✓			
STOP	✓		✓			
START	✓		✓			
SPEED	✓		✓			
SPEED FEEDBACK		✓	✓		✓	
DIRECTION OF ROTATION	✓		✓			
RUNNING		✓	✓		✓	
LEAK DETECTED			✓	✓		
WRONG SPEED			✓	✓		
OVER VOLTAGE			✓	✓		
UNDER VOLTAGE			✓	✓		
CURRENT ALARM HIGH			✓	✓		
TEMPERATURE ALARM HIGH			✓	✓		
COMMON ALARM		✓	✓	✓		✓

PQM_1						
POWER QUALITY METER POWER MONITOR M5000 (PM5000)						
PROTOCOL: MODBUS TCP						
DESCRIPTION	CONTROL	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
A PH V		✓	✓		✓	
B PH V		✓	✓		✓	
C PH V		✓	✓		✓	
A PH CURRENT		✓	✓		✓	
B PH CURRENT		✓	✓		✓	
C PH CURRENT		✓	✓		✓	
A PH DEMAND CURRENT		✓	✓			
B PH DEMAND CURRENT		✓	✓			
C PH DEMAND CURRENT		✓	✓			
3 PH AVG DEMAND CURRENT		✓	✓		✓	
WATTS		✓	✓		✓	
VARS		✓	✓		✓	
VA		✓	✓		✓	
VA DEMAND		✓	✓		✓	
W DEMAND		✓	✓		✓	
ENERGY		✓	✓		✓	
FREQUENCY		✓	✓			
AN PH V %THD		✓	✓			
BN PH V %THD		✓	✓			
CN PH V %THD		✓	✓			
A PH CURRENT %THD		✓	✓			
B PH CURRENT %THD		✓	✓			
C PH CURRENT %THD		✓	✓			
AB PH V %THD		✓	✓			
BC PH V %THD		✓	✓			
CA PH V %THD		✓	✓			
POWER FACTOR		✓	✓		✓	

VFD_1						
VFD						
PROTOCOL: MODBUS TCP						
DESCRIPTION	CONTROL	HISTORIZE	INDICATE	ALARM	TREND	INTERLOCK
LOCAL			✓			
OFF	✓		✓			
REMOTE			✓			
STOP	✓		✓			
START	✓		✓			
SPEED	✓		✓			
SPEED FEEDBACK		✓	✓		✓	
RESET ELAPSED TIME	✓		✓			
RUNNING		✓	✓		✓	
TOTAL STARTS		✓	✓			
DAILY STARTS		✓	✓			
ELAPSED TIME		✓	✓			
DAILY RUN TIME		✓	✓			
A PH V		✓	✓		✓	
B PH V		✓	✓		✓	
C PH V		✓	✓		✓	
A PH CURRENT		✓	✓		✓	
B PH CURRENT		✓	✓		✓	
C PH CURRENT		✓	✓		✓	
AVERAGE 3 PH CURRENT		✓	✓		✓	
POWER KVA		✓	✓		✓	
POWER KW		✓	✓		✓	
POWER FACTOR		✓	✓		✓	
CURRENT ALARM HIGH			✓	✓		✓
OVERLOAD			✓	✓		✓
FAULT		✓	✓	✓		✓
SMART OVERLOAD FAILED			✓	✓		✓
FAIL TO RESPOND			✓	✓		✓
EQUIPMENT SHUTDOWN			✓			✓

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED JKR
DRAWN JW
CHECKED
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER DANIEL ROBINSON No. 20405 ELECTRICAL STATE OF CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
I/O TABLES

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19GN06
SHEET NO. 126 OF 178

LAST SAVED BY: kkwarsick

PROJECT NO.
FILE NAME: 11843A1019GN06.dwg

I/O

POWER SOURCE

FIELD

AI WD34-FIXX FLOW 36105 WD31-PLCX-36101

DO WD34-HCOX DEFLATE 36124 WD31-PLCX-36101

DO WD34-HCOX INFLATE 36124 WD31-PLCX-36101

AI WD34-PIXX PRESS 36122 WD31-PLCX-36101

WD34-VFDX-36101 41 19N02

WD34-VFDX-36101 42 19N02

TM WD34-BKRX 120VAC-1P 36105 WD31-PLCP-36101

SB WD34-FUSE 120VAC-1P 36113 WD31-VFDX-36101

STUBOUT FOR FIRE SUPPRESSION SYSTEM

4" PW

WD34-FIXX 36103

WD34-FITx 36105 INT

WD34-FEXX 36105 MAGNETIC

WD34-FSLX 36113

WD34-FEXX 36113 THERMAL

WD34-SOVX 30101

DISTRIBUTION SYSTEM

16" PW

DISTRIBUTION 20 19N03

2" FLOW METER

2" BACKFLOW PREVENTER

2" PW

SET TO 80 PSIG

VARIOUS EQUIPMENT AND HOSE BIBS

NITROGEN CYLINDERS

WD34-VCPX-30121
VENDOR (BASKI) DOWNHOLE
FLOW CONTROL VALVE CONTROLLER

WD34-SOVx FBV 36123

WD34-PIXX FBV 36122

WD34-PITX FBV 36122

DOWNHOLE CONTROL PANEL PRESSURE RANGE IS 0-600 PSI

WD34-SOVx FBV 36124

NITROGEN BLEED TO ATMOSPHERE

NITROGEN 1 1/4" NITROGEN 25 19N02

NITROGEN 2 1/4" NITROGEN 24 19N02

3/4" PW

MM

S WD34-VALV 36101

ADJ FLOW CTL GLOBE VALVE TYPICAL

PRELUBE ROTAMETER 10 GPM FOR 5 MIN ROTAMETER RANGE 0-30 GPM

WD34-FIXX 36108

PRELUBE 3/4" PRELUBE 21 19N02

WD34-PIXX 36105

3/4" PRELUBE

PRESSURE REDUCING VALVE RANGE 0-25 PSI

TRICKLE 3/4" TRICKLE 23 19N02

TRICKLE FLOW
1 WELL VOL CHANGE PER DAY
(5 GPM, RANGE 2-10 GPM)

WD34-FIXX-36103 PROPELLER TURBINE

WD34-FEXX-36105 ASR WELL PUMP PRELUBE/TRICKLE FLOW ELEMENT 0-25 GPM * TYP NF130 NF136

WD34-FEXX-36113 PRELUBE FLOW SWITCH 7 GPM 0-40 GPM * TYP NF111

WD34-SOVX-30101 SOLENOID VALVE

WD34-PIXX-36105 TRICKLE FLOW PRESSURE GAUGE 0-160 PSI * TYP NP502

WD34-FIXX-36108 PRELUBE ROTAMETER 3-30 GPM

WD34-SOVX-36123 NITROGEN SUPPLY SOLENOID VALVE

WD34-SOVX-36124 NITROGEN BLEED SOLENOID VALVE

WD34-PIXX-36122 NITROGEN PRESSURE GAUGE 0-600 PSI

WD34-PITX-36122 NITROGEN PRESSURE TRANSMITTER 0-600 PSI

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED JKR
DRAWN KIK
CHECKED GEB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER DANIEL ROBINSON No. 20405 ELECTRICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

MISTY WOOD ASR WELL
WELL PUMP AND VALVES P&ID 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19N01
SHEET NO. 127 OF 178

PROJECT NO.

FILE NAME: 11843A1019N01.dwg

KEY NOTES:

1. CHEMICAL LEAKAGE DRAINS TO THE CHEMICAL DRAIN TRENCH.
2. THIS PRESSURE SUSTAINING VALVE IS SHOWN IN THE WESTBROOK AND SOLAIRE P&IDS HERE. HOWEVER FOR CAMPUS OAKS AND MISTY WOOD WELLS THIS VALVE WILL BE PLACES IN ANOTHER LOCATION; PERHAPS LOCATED ON THE INJECTOR QUILL. AT THIS TIME THE LOCATION IS TO BE DETERMINED.

I/O

POWER SOURCE

FIELD

WD34-FSLX-36105 — 41 — 19N01

WD34-FSLX-36101 — 42 — 19N01

WD34-LIX 36100 — AI LEVEL — WD31-PLCX-36101

VFD_1 — MBTCP — WD34-VFDX 36101 — WD31-PLCX-36101

VFD- 36101

VFD-RH
480VAC-3P
WD31-MCCX-36100

WD34-BKR2 36101 — SS 480VAC-3P — WD31-MCCX-36100

WD34-PIXX 36102 — AI PRESS — WD31-PLCX-36101

WD34-PIXX 36109 — AI PRESS — WD31-PLCX-36101

WD34-ZCX 36120 — AO POSITION — WD31-PLCX-36101

WD34-HSXX 36120 — DI REMOTE — WD31-PLCX-36101

WD34-ZSOX 36120 — DI OPENED — WD31-PLCX-36101

WD34-MOVX 36120 — DI CLOSED — WD31-PLCX-36101

WD34-ZX 36120 — AI POSITION — WD31-PLCX-36101

WD34-HCOX 36130 — DO OPEN — WD31-PLCX-36101

WD34-HCGX 36130 — DO CLOSE — WD31-PLCX-36101

WD34-HSXX 36130 — DI REMOTE — WD31-PLCX-36101

WD34-ZSOX 36130 — DI OPENED — WD31-PLCX-36101

WD34-MOVX 36130 — DI CLOSED — WD31-PLCX-36101

FLOW_1 — MBTCP — WD34-VFDX 36104 — WD34-PLCX-36101

WD34-BKRX 36120 — TM 120VAC-1P — WD31-LPXX-36108

WD34-BKRX 36130 — TM 120VAC-1P — WD31-LPXX-36108

WD34-BKRX 36104 — TM 120VAC-1P — WD31-PCMP-36101

WD34-LITX 36100 — INT
WD34-LEXX 36100 — SUB

E-STOP
WD34-LCPX 36101
WD34-HSNX 36101

WD34-PUMP 36101
WD34-HEAT 36101

WD34-TE1X 36101 — RTD
WD34-TE4X 36101 — RTD SPARE
WD34-TE2X 36101 — RTD
WD34-TE5X 36101 — RTD SPARE
WD34-TE3X 36101 — RTD
WD34-TE6X 36101 — RTD SPARE

WD34-ZTX 36120
WD34-ZSOC 36120 — LSR
WD34-HSAX 36120 — OSC
WD34-HSGX 36120
WD34-FCVX 36120
WD34-DISC 36120

WD34-ZSOC 36130 — LSR
WD34-HSAX 36130 — OSC
WD34-HSGX 36130
WD34-MOVX 36130
WD34-DISC 36130

WD34-FITX 36104 — INT
WD34-FEXX 36104 — MAGNETIC

WD34-PSHH 36107 — INT PRESSURE
WD34-PEXX 36107

WD34-PIXX 36102 — PRESSURE

WD34-PITX 36102 — INT PRESSURE
WD34-PEXX 36102

WD34-PIXX 36109 — PRESSURE

WD34-PITX 36109 — INT PRESSURE
WD34-PEXX 36109

NITROGEN 1 — 25 — 19N01 — 1/4" NITROGEN

NITROGEN 2 — 24 — 19N01 — 1/4" NITROGEN

3/4" PRELUBE

3/4" TRICKLE

3/4" SEAL

ROSSUM SAND TESTER

STATIC WSE

PUMPING WSE

TRICKLE FLOW

DOWN-HOLE FLOW CONTROL VALVE

PRELUBE — 21 — 19N01

TRICKLE — 23 — 19N01

PUMP BOWLS

"FOOT" CHECK VALVE

INLET SCREEN

12" AR

12"AS

WD34-VALV 36111 — DOWN HOLE BASKI

WD34-FCVX 36120

WD34-MOVX 36130

12" AS

12" AS/AR

MM

DRAIN ON BOTTOM

SPARE TAP ON SIDE

3/4" SH

3/4" NAF

TRENCH DRAIN

SEWER/DRAIN — 31 — 19N03

CHEMICAL SUMP

FLOOR TRENCH DRAIN

CHEMICAL TRENCH DRAIN

HYPOCHLORITE FEED PUMPS — 19N04 — 29

SODIUM FLUORIDE FEED PUMPS — 19N05 — 30

AQUIFER STORAGE/RECOVERY — 26 — 19N03

WD34-PEXX-36107 — ASR WELL RECOVERY PRESSURE SWITCH HI HI @ ~ 125 PSIG — NP501 TYP

WD34-PEXX-36102 — ASR WELL RECOVERY PRESSURE ELEMENT 0-150 PSIG — NP501 TYP

WD34-PEXX-36109 — ASR WELL STORAGE PRESSURE ELEMENT 0-150 PSIG — NP501 TYP

WD34-LEXX-36100 — ASR WELL LEVEL TRANSDUCER __'-__"FT

WD34-PUMP-36101 — ASR PUMP 450HP 480VAC 3PH — 1 — 00E01

WD34-VALV-36111 — DOWN HOLE BASKI VALVE

WD34-PIXX-36102 — ASR WELL RECOVERY PRESSURE INDICATOR 0-150 PSIG

WD34-PIXX-36109 — ASR WELL STORAGE PRESSURE INDICATOR 0-150 PSIG

WD34-FCVX-36120 — WELL ANNULUS RECHARGE VALVE 0.5HP 120VAC 1PH

WD34-MOVX-36130 — PUMP COLUMN RECHARGE CONTROL VALVE 0.5HP 120VAC 1PH

WD34-FEXX-36104 — AQUIFER STORAGE/RECOVERY FLOW ELEMENT 0-3000 GPM — NF130 TYP NF136

REV	DATE	BY	DESCRIPTION

DRAFT FINAL SUBMITTAL
NOT FOR CONSTRUCTION

DESIGNED	JKR
DRAWN	KIK
CHECKED	GEB
DATE	DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — DANIEL ROBINSON — No. 20405 — ELECTRICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

MISTY WOOD ASR WELL
WELL PUMP AND VALVES P&ID 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19N02
SHEET NO. 128 OF 178

PROJECT NO.

FILE NAME: 11843A1019N02.dwg

1 2 3 4 5 6 7 8 9 10 11 12 13

I/O

POWER SOURCE

FIELD

WD34-PIXX 36106 AI PRESS WD31-PLCX-36101

WD34-PDXX 36151 AI PRESS DIFF WD31-PLCX-36101

WD34-ZCXX 36150 AO POSITION WD31-PLCX-36101
WD34-HSXX 36150 DI REMOTE WD31-PLCX-36101
WD34-ZSOX 36150 DI OPENED WD31-PLCX-36101
WD34-MOVX 36150 DI CLOSED WD31-PLCX-36101
WD34-ZXXX 36150 AI POSITION WD31-PLCX-36101

WD34-BKRX 36150 TM 120VAC-1P WD31-LPXX-36108

WD34-ZTX 36150
WD34-ZSOC 36150
WD34-HSAX 36150 LSR
WD34-HSGX 36150 OSC
WD34-FCVX 36150
WD34-DISC 36150

WD34-HCOX 36160 DO OPEN WD31-PLCX-36101
WD34-HCGX 36160 DO CLOSE WD31-PLCX-36101
WD34-HSXX 36160 DI REMOTE WD31-PLCX-36101
WD34-ZSOX 36160 DI OPENED WD31-PLCX-36101
WD34-MOVX 36160 DI CLOSED WD31-PLCX-36101

WD34-BKRX 36160 TM 120VAC-1P WD31-LPXX-36108

WD34-ZSOC 36160
WD34-HSAX 36160 LSR
WD34-HSGX 36160 OSC
WD34-MOVX 36160
WD34-DISC 36160

WD34-HCOX 36140 DO OPEN WD31-PLCX-36101
WD34-HCGX 36140 DO CLOSE WD31-PLCX-36101
WD34-HSXX 36140 DI REMOTE WD31-PLCX-36101
WD34-ZSOX 36140 DI OPENED WD31-PLCX-36101
WD34-MOVX 36140 DI CLOSED WD31-PLCX-36101

WD34-BKRX 36140 TM 120VAC-1P WD31-LPXX-36108

WD34-ZSOC 36140
WD34-HSAX 36140 LSR
WD34-HSGX 36140 OSC
WD34-MOVX 36140
WD34-DISC 36140

DISTRIBUTION 20 19N01
16" PW
12" AS/AR
WD34-PIXX 36106
WD34-PITX 36106 INT PRESSURE
WD34-PEXX 36106

WD34-PDIT 36151 INT PRESS DIFF
WD34-PEXX 36151
WD34-PIXX 36150
H-STRAINER
1" PW

E/P WD34-FCVX 36150 MODULATING
12" AS

CARTRIDGE POOL FILTER WITH CLEAR CASE FOR VISUAL INSPECTION

AQUIFER STORAGE/RECOVERY 26 19N02
12" AS/AR
12" AR
E/P WD34-MOVX 36160

GRAB SAMPLE TAP

MONITORING WELL 1" SAM 19N03 37

INSECT SCREEN & AIR GAP
DECHLORINATION TABLET BASKET

E/P WD34-MOVX 36140
8" FTW

OFFSITE STORM DRAIN 12" SD

TRENCH DRAIN 31 19N02
FLOOR TRENCH DRAIN

SEWER/DRAIN TRENCH DRAIN 32 19N04

CHLORINE AND FLUORIDE ANALYZERS 1/2" SAM 2 7 19N06

SPARE 1/2" SAM 3 8 19N06

FUTURE WATER TREATMENT, IF REQUIRED

FUTURE WATER TREATMENT, IF REQUIRED

WD34-PEXX-36151 H-STRAINER DIFFERENTIAL PRESSURE TRANSMITTER * TYP NP189
0-5 PSI

WD34-PIXX-36106 RECHARGE LINE PRESSURE GAUGE 0-160 PSIG

WD34-PEXX-36106 STORAGE LINE PRESSURE ELEMENT __-__ PSIG * TYP NP501

WD34-PIXX-36150 RECHARGE LINE PRESSURE GAUGE 0-150 PSIG * TYP NP501

WD34-FCVX-36150 RECHARGE CONTROL VALVE 0.5HP 120VAC 1PH

WD34-MOVX-36160 RECOVERY/PRODUCTION VALVE 0.5HP 120VAC 1PH

WD34-MOVX-36140 AQUIFER & WELL FLUSH TO WASTE VALVE 0.5HP 120VAC 1PH

REV	DATE	BY	DESCRIPTION

DRAFT FINAL SUBMITTAL
NOT FOR CONSTRUCTION

DESIGNED JKR
DRAWN KIK
CHECKED GEB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER DANIEL ROBINSON No. 20405 ELECTRICAL STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
MISTY WOOD ASR WELL
WELL PUMP AND VALVES P&ID 3

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19N03
SHEET NO. 129 OF 178

PROJECT NO. FILE NAME: 11843A1019N03.dwg

KEY NOTES:

1. PUMP HAS INTEGRATED CONTROLLER WITH HARDWIRED I/O, MODBUS RTU COMMUNICATION, AND POWER BETWEEN THE PUMP AND THE VENDOR CONTROL PANEL.
2. THE WIRING BETWEEN THE VENDOR CONTROL PANEL AND EQUIPMENT WILL BE BY THE VENDOR SINCE THE CONTROL PANEL IS SKID MOUNTED.

I/O

DI WD37-FSXX FLOW 36001 WD31-PLCX-36101

DI WD33-LIXX LEAK 36202 WD31-PLCX-36101

AI WD33-LIXX LEVEL 36201 WD31-PLCX-36101

MP_1 MBTCP WD33-PUMP 36210 WD31-PLCX-36101

POWER SOURCE

TM WD33-BKRX 480VAC-3P 36500 WD31-MCXX-36100

TM WD33-BKRX 120VAC-1P 36202 WD31-PLCP-36101

TM WD33-BKRX 120VAC-1P 36210 WD31-LPXX-36108

FIELD

FBV WD33-LCPX 36202

LEAK WD33-LEXX FBV 36202

WD33-LITX 36201 INT

RADAR WD33-LEXX 36201

WD33-PLCP FBV 36210

1 2 WD33-PUMPFBV 36211

1 2 WD33-PUMPFBV 36212

2 WD33-FITX FBV 36203 INT

WD33-FEXX FBV 36203

BUILDING SERVICE — 2" PW — VARIOUS EQUIPMENT AND HOSE BIBS

WD37-FSHX 36001

WD37-FEXX FBV 36001

3/4" PW

1/2" PW

1" PW

1/2" PW

WD37-HXGR-36401 INSTANT HOT WATER HEATER

WD37-PIXX 36001

EMERGENCY EYEWASH, SHOWER, AND HOT WATER HEATER (INSIDE CHEMICAL ROOM)

LABORATORY SINK

3" VENT TO OUTSIDE BUILDING

3/4" V

OVERFLOW

WD33-TANK 36201

1" SH

2" SH

SODIUM HYPOCHLORITE FEED SKID

MM

HYPOCHLORITE INJECTION ON RECOVERY PIPE 29 19N02

3/4" SH

CHEMICAL TRENCH DRAIN 32 19N03

3" OF

CHEMD

4" D

CHEMICAL SUMP

CHEMICAL TRENCH DRAIN 33 19N05

DRAIN/SEWER 35 19N05

FLOOR TRENCH DRAIN

WD37-FEXX-36001 FLOW SWITCH 0-20 GPM

WD33-LEXX-36202 TANK LEAK DETECTION SWITCH

WD33-TANK-36201 SODIUM HYPOCHLORITE TANK

WD33-LEXX-36201 SODIUM HYPOCHLORITE TANK LEVEL ELEMENT 0-7 FT 1 IN

* TYP NL174

WD33-PUMP-36211 HYPOCHLORITE FEED PUMP 1 0.25HP 120VAC 1PH

WD33-PUMP-36212 HYPOCHLORITE FEED PUMP 2 0.25HP 120VAC 1PH

WD33-FEXX-36203 FLOW SWITCH ___-___ GPM

* TYP NF130 NF136

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

MISTY WOOD ASR WELL
SODIUM HYPOCHLORITE FEED SYSTEM P&I D

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19N04
SHEET NO. 130 OF 178

PROJECT NO.
FILE NAME: 11843A1019N04.dwg

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User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
kkwarsick

I/O

POWER SOURCE

FIELD

DI WD33-MIXR RUNNING 36313 WD31-PLCX-36101
DI WD33-YAXX DIA LEAK 36313 WD31-PLCX-36101
DI WD33-LALX TANK 36312 WD31-PLCX-36101
DI WD33-LAXX CONTAINMENT 36310 WD31-PLCX-36101

DI WD33-HSNX E-STOP 36313 WD31-PLCX-36101
DI WD33-HSXX REMOTE 36313 WD31-PLCX-36101
AI WD33-SIXX SPEED IN 36313 WD31-PLCX-36101
AO WD33-SCXX SPEED OUT 36313 WD31-PLCX-36101

DO WD33-HCCX ENABLE 36313 WD31-PLCX-36101
DI WD33-PUMP RUNNING 36313 WD31-PLCX-36101
DI WD33-YAFX FAILED 36313 WD31-PLCX-36101

TM WD33-BKRX 120VAC-1P 36310 WD31-LPXX-36108

WD33-LCPX FBV 36310

KEY NOTES:

1. PUMP HAS INTEGRATED CONTROLLER WITH HARDWIRE I/O AND POWER BETWEEN IT AND THE VENDOR CONTROL PANEL.
2. CHEMICAL ROOM FLOOR DRAIN.

BUILDING BACKFLOW PREVENTER — 3/4" PW

SEWER

WD34-TANK 36306
WD34-TANK 36305
WD34-TANK 36304

VENDOR SUPPLIED WATER SOFTENER

WATER SOFTENER (INSIDE CHEMICAL ROOM)

3/4" SW

WD33-LSXX FBV 36310
WD33-FQIT FBV 36311
WD33-SOVX FBV 36311

WD34-TANK FBV 36311
WD34-TANK FBV 36312

WD33-LSXX FBV 36312
WD33-PUMP FBV 36313 (1)
WD33-MIXR FBV 36312
WD33-FITX FBV 36313
WD33-FEXX FBV 36313

3/4" NAF — SODIUM FLUORIDE INJECTION POINT 30 19N02

VENDOR SUPPLIED SODIUM FLUORIDE SYSTEM

SODIUM FLUORIDE (INSIDE CHEMICAL ROOM)

CHEMICAL TRENCH DRAIN 33 19N04 — CHEMD — CHEMICAL SUMP 34 19N07

FLOOR TRENCH DRAIN 35 19N04 — 4" D (2) — DRAIN/SEWER 36 19N07

WD34-TANK-36306 WATER SOFTENER TANK 1
WD34-TANK-36305 WATER SOFTENER TANK 2
WD34-TANK-36304 BRINE TANK
WD33-LSXX-36310 SODIUM FLUORIDE CONTAINMENT LEVEL SWITCH
WD34-TANK-36311 SATURATOR TANK
WD33-FQIT-36311 SODIUM FLUORIDE FLOW METER
WD33-LSXX-36312 SOLUTION LEVEL SWITCH
WD33-PUMP-36313 SODIUM FLUORIDE FEED PUMP 0.5HP 120VAC 1PH
WD34-TANK-36312 SOLUTION TANK
WD33-MIXR-36312 SOLUTION TANK MIXER

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
MISTY WOOD ASR WELL LIQUID FLUORIDE FEED SYSTEM P&ID

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19N05
SHEET NO. 131 OF 178

PROJECT NO.
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User: svcPW
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1
kkwarsick

KEY NOTES:

1. BY PORTABLE VFD. THE VFDS ARE NOT CONNECTED TO ANY CONTROLLER. THEY ARE STAND ALONE

I/O
POWER SOURCE
FIELD

WD33-LIXX 36401 AI LEVEL — WD31-PLCX-36101
WD33-AIXX 36205 AI CHLORINE — WD31-PLCX-36101
WD33-AIXX 36206 AI pH — WD31-PLCX-36101
WD33-AIXX 36307 AI FLUORIDE — WD31-PLCX-36101

WD33-BKRX 36205 TM 120VAC-1P — WD31-PLCX-36101
WD33-BKRX 36206 TM 120VAC-1P — WD31-PLCX-36101
WD33-BKRX 36307 TM 120VAC-1P — WD31-PLCX-36101

WD33-AITX 36205 CHLORINE FBV
WD33-AITX 36206 pH FBV
WD33-AITX 36307 FLUORIDE FBV

WD33-AEXX 36205 CHLORINE FBV
WD33-AEXX 36206 pH FBV
WD33-AEXX 36307 FLUORIDE FBV

1 WD33-PUMP 36402
WD33-LITX 36401 INT
WD33-LEXX 36401 SUB
1 WD33-PUMP 36401

SAMPLE FROM DISTRIBUTION — 7 — 19N03 — 1/2" SAM 2
SPARE — 8 — 19N03 — 1/2" SAM 2
1/2" SAM 2

pH CTL PANEL
CI2 RESID CTL PNL
FLUORIDE PANEL CTL PNL

WD33-PIXX 36205 FBV
WD33-FIXX 36205 FBV
CI2 PROBE
pH PROBE
pH PROBE

WD33-PIXX 36207 FBV

COMW-A (WELL DEPTH 295 FT BGS)
COMW-C (WELL DEPTH 415 FT BGS)
COMW-B (WELL DEPTH 415 FT BGS)

1" SAM
1" SAM
1" SAM
1" SAM
1/2" SAM
1/2" SAM

PURGE TO STORM DRAIN AIR-GAP STRUCTURE

DRAIN SEWER — 39 — 19N07

EXISTING MULTIPLE COMPLETION MONITORING WELL

MONITORING WELL SAMPLE (INSIDE PUMP ROOM)

CHLORINE ANALYZER (INSIDE PUMP ROOM)

FLUORIDE ANALYZER (INSIDE PUMP ROOM)

WD33-PUMP-36402
MONITORING WELL PUMP 2
1HP 120VAC 1PH

WD33-LEXX-36401
COMW-C WELL WATER LEVEL

WD33-PUMP-36401
MONITORING WELL PUMP 1
1HP 120VAC 1PH

WD33-FIXX-36205
CHLORINE ANALYZER ROTAMETER
0-12 GPH

WD33-PIXX-36205
CHLORINE ANALYZER PRESSURE GAUGE
0-100 PSI

WD33-AEXX-36205
CHLORINE RESIDUAL ANALYZER
__.__ mg/l

WD33-AEXX-36206
pH ANALYZER
__.__ pH

WD33-PIXX-36207
FLUORIDE ANALYZER PRESSURE GAUGE
0-100 PSI

WD33-AEXX-36307
FLUORIDE ANALYZER
__.__ mg/l

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CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
INSTRUMENTATION
MISTY WOOD ASR WELL
WATER QUALITY P&ID

VERIFY SCALES
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19N06
SHEET NO. 132 OF 178

PROJECT NO.
FILE NAME: 11843A1019N06.dwg

KEY NOTES:

1. THE CONTAINER AND DUPLEX PUMPS ARE VENDOR PROVIDED AND COME PRE-ASSEMBLED.
2. CIRCUIT BREAKER FOR RESTROOM RECEPTACLES. INSTANT HOT WATER HEATER PLUGS INTO RECEPTACLE.

I/O

POWER SOURCE

FIELD

DI WD33-LSHX 36209 LEVEL — WD31-PLCX-36101

DI WD37-YAXX 36901 FAULT — WD31-PLCX-36101

(2) TM WD31-CBKR 36002 120VAC 1PH

TM WD31-CBXX 36901 208VAC-3POLE — WD31-LPXX-36108

WD33-LSHX 36209 LEVEL

REM

WD33-LEXX 36209 CONDUCTIVITY

WD37-VCPX 36901 FBV

BUILDING SERVICE — 2" PW

VARIOUS EQUIPMENT AND HOSE BIBS

1/2" PW

1/2" PW

1/2" PW

INSTANT HOT WATER HEATER WD37-HXGR-36002

WD37-PUMP 36901 FBV

WD37-PUMP 36902 FBV

WD37-PIXX 36002

HOT

TOILET

(1)

OFFSITE SANITARY SEWER

RESTROOM SINK

CHEMICAL TRENCH DRAIN — 34 — 19N05 — CHEMD

FLOOR TRENCH DRAINS IN PUMP ROOM AND CHEMICAL ROOM

CHEMICAL TRENCH DRAINS IN PUMP AND CHEMICAL ROOMS

RESTROOM

DRAIN/SEWER — 36 — 19N05 — 4" D

DRAIN/SEWER FROM TRENCH DRAIN — 44 — 19N06

DRAIN/SEWER FROM TRENCH DRAIN — 39 — 19N06

SUMP AND LEVEL SWITCH IN CHEMICAL ROOM

WD37-PUMP-36901
PROGRESSIVE CAVITY SEWER PUMP 1

WD37-PUMP-36902
PROGRESSIVE CAVITY SEWER PUMP 2

WD37-PIXX-36002
RESTROOM HOT WATER PRESSURE GAUGE
0-60 PSI
(*) TYP — NP502

WD33-LEXX-36209
CHEMICAL TRENCH DRAIN LEVEL SWITCH
___ FT
(*) TYP — NL113

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DATE DECEMBER 2024

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

INSTRUMENTATION

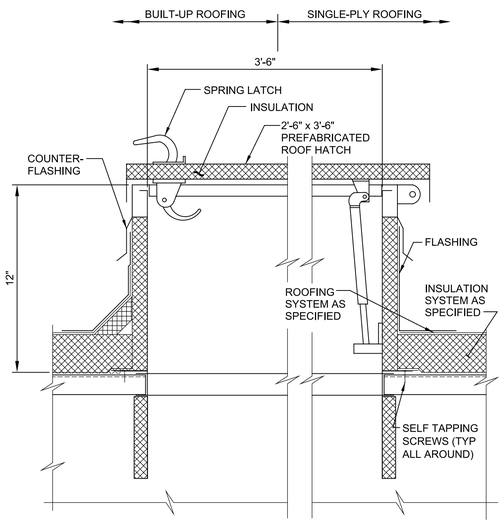
MISTY WOOD ASR WELL
RESTROOM, DRAIN AND SEWER P&ID

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 19N07
SHEET NO. 133 OF 178

PROJECT NO.
FILE NAME: 11843A1019N07.dwg

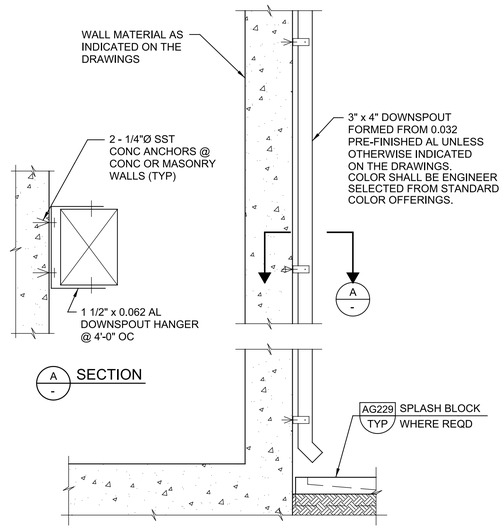
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LAST SAVED BY: DFassbinder



AG170 TYP — ROOF SYSTEM - HATCH

J

06/21/19

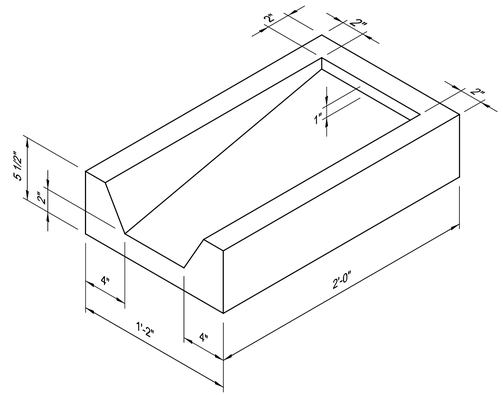


NOTE:

1. PROVIDE SPLASH BLOCK AS SHOWN EXCEPT AT PAVING AND SIDEWALKS.
2. ALTERNATE SIZE DOWNSPOUTS WILL BE REQUIRED, IF SO INDICATED ON THE DRAWINGS.
3. COAT AL IN CONTACT WITH CONC AND CMU AS SPECIFIED.

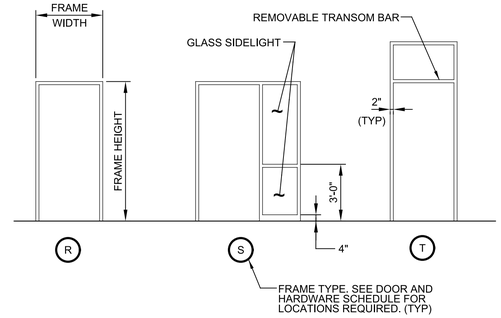
AG227 TYP — DOWN SPOUT - ALUMINUM

06/21/19



AG229 TYP — SPLASH BLOCK - CONCRETE - SURFACE MOUNTED

06/21/19

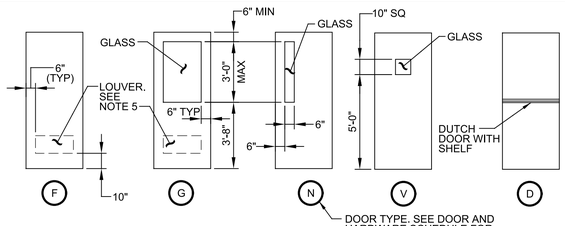


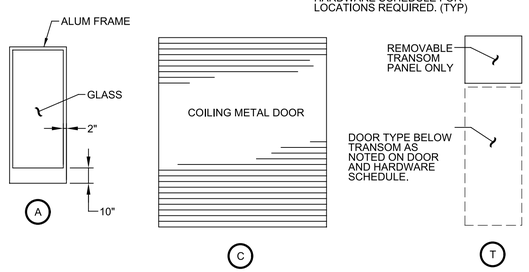
NOTES:

1. SEE DOOR AND HARDWARE SCHEDULE FOR FRAME SIZE, MATERIAL, AND DETAILS.
2. SIDELIGHT MAY BE ON EITHER SIDE OF DOOR. SEE DRAWINGS FOR REQUIRED SIDELIGHT LOCATION.
3. GLASS AT SIDELIGHTS SHALL BE TEMPERED.
4. GLASS AT INTERIOR SIDELIGHTS SHALL BE CLEAR. GLASS AT EXTERIOR SIDELIGHTS SHALL BE TINTED INSULATING GLASS.

AJ100 TYP — DOOR - FRAME - STICK

06/21/19





NOTES:

1. DOOR SIZE AND TYPE SHALL BE IN ACCORDANCE WITH DOOR AND HARDWARE SCHEDULE.
2. GLASS AT DOORS SHALL BE TEMPERED UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
3. GLASS AT INTERIOR DOORS SHALL BE CLEAR. GLASS AT EXTERIOR DOORS SHALL BE TINTED.
4. PROVIDE WIRE GLASS AT LABELED DOORS.
5. LOUVER MAY BE REQD AT ANY DOOR TYPE. IF A LOUVER IS REQUIRED, SIZES AND LOCATIONS WILL BE NOTED ON DOOR AND HARDWARE SCHEDULE.
6. PROVIDE LABELED DOORS IN ACCORDANCE WITH DOOR AND HARDWARE SCHEDULE.

AJ103 TYP — DOOR - ELEVATIONS - TYPES

06/21/19

REV	DATE	BY	DESCRIPTION

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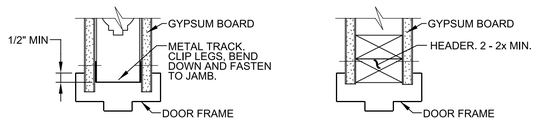
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ARCHITECTURAL 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TA01
SHEET NO. 134 OF 178

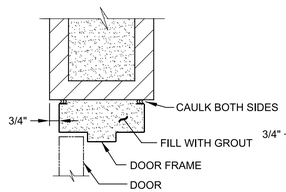
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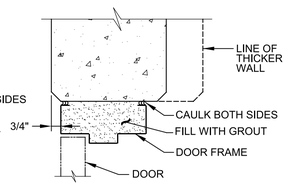


A - METAL FRAMING

B - WOOD FRAMING

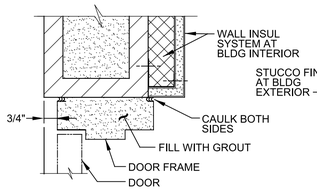


C - MASONRY

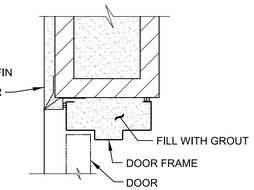


D - CONCRETE

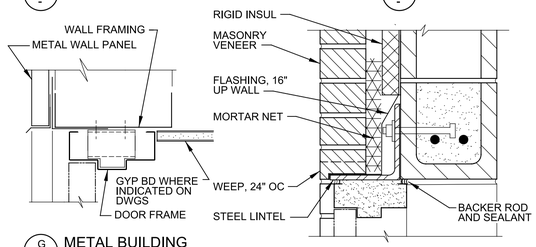
AJ105 TYP — DOOR - HEAD - DETAILS



E - WALL INSULATION



F - STUCCO



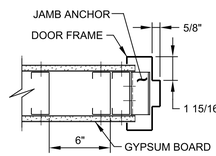
G - METAL BUILDING

H - MASONRY VENEER

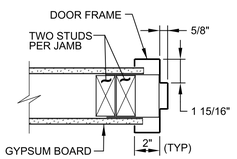
NOTE:

1. DOOR AND FRAME SIZE AND MATERIAL SHALL BE IN ACCORDANCE WITH DOOR AND HARDWARE SCHEDULE.
2. FRAME DIMENSIONS SHALL MATCH THOSE OF JAMB DETAILS ON AJ107/TYP.
3. SEE SPEC FOR WALL INSULATION SYSTEM DETAILS.
4. SEE STRUCT DRAWINGS FOR LINTEL DETAILS.

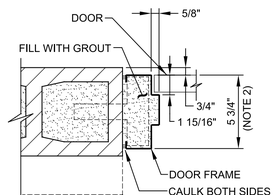
AJ105 TYP — DOOR - HEAD - DETAILS



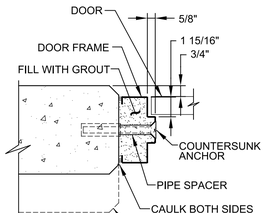
A - METAL FRAMING



B - WOOD FRAMING

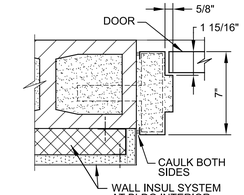


C - MASONRY

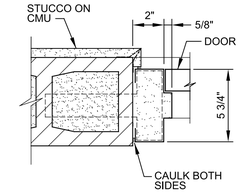


D - CONCRETE

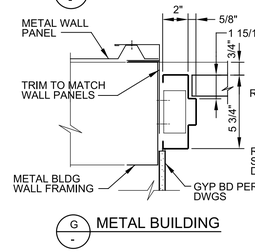
AJ107 TYP — DOOR - JAMB - DETAILS



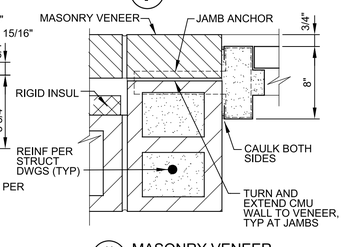
E - FURRED MASONRY



F - STUCCO



G - METAL BUILDING

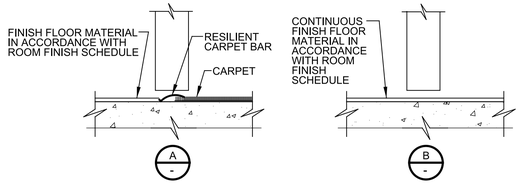


H - MASONRY VENEER

NOTES:

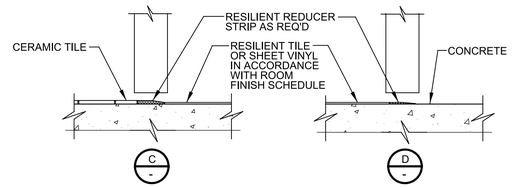
1. DOOR AND FRAME SIZE AND MATERIAL SHALL BE IN ACCORDANCE WITH DOOR AND HARDWARE SCHEDULE.
2. PROVIDE 2" FRAME WIDTH, 5 3/4" FRAME DEPTH AND 1/2" BACKBEND TYPICAL UNLESS OTHERWISE SHOWN OR SCHEDULED.
3. PROVIDE MINIMUM 3 ANCHORS PER JAMB AT MASONRY AND 4 ANCHORS PER JAMB AT STUD OR CONCRETE CONSTRUCTION. FILL FRAMES IN MASONRY WITH GROUT.

AJ107 TYP — DOOR - JAMB - DETAILS

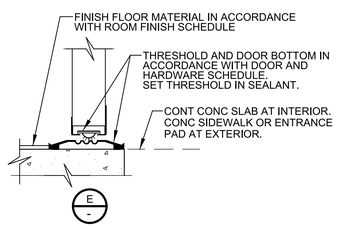


A

B



C D



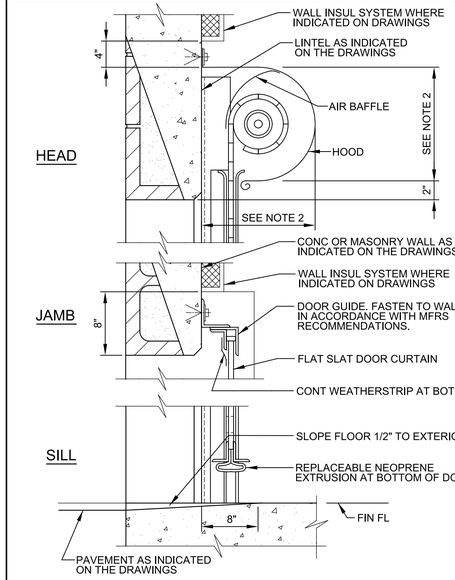
E

NOTE:

1. DOOR CLEARANCE AT BOTTOM OF DOOR SHALL BE 1/4" MIN AND 3/8" MAX.

AJ109 TYP — DOOR - SILL - DETAILS

06/21/19



NOTES:

1. SEE DRAWINGS FOR OPERATOR TYPE AND LOCATION.
2. DIMENSIONS VARY WITH MANUFACTURER, SEE SHOP DWGS FOR ACTUAL SIZE.

AJ123 TYP — DOOR - OVERHEAD COILING - MASONRY WALL

06/21/19

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED JA
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

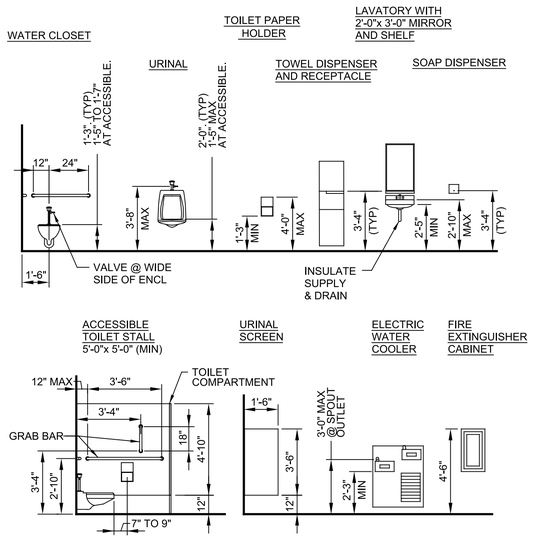
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ARCHITECTURAL 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TA02
SHEET NO. 135 OF 178

PROJECT NO.
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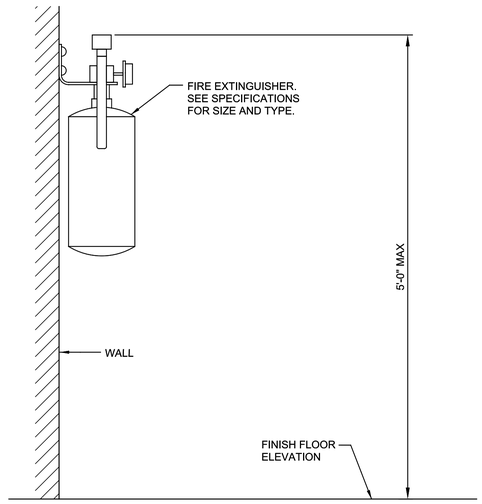


NOTES:

1. SEE DWGS FOR ACCESSIBLE FIXTURE LOCATIONS.
2. FIXTURES AND ACCESSORIES AT ACCESSIBLE LOCATIONS SHALL BE COMPLIANT WITH THE AMERICANS WITH DISABILITIES ACT.
3. A MIN 30"x 48" CLEAR FLOOR SPACE SHALL BE PROVIDED IN FRONT OF ALL ACCESSIBLE FIXTURES.

AN100 TYP — BATHROOM - ACCESSORY - MOUNTING

06/21/19

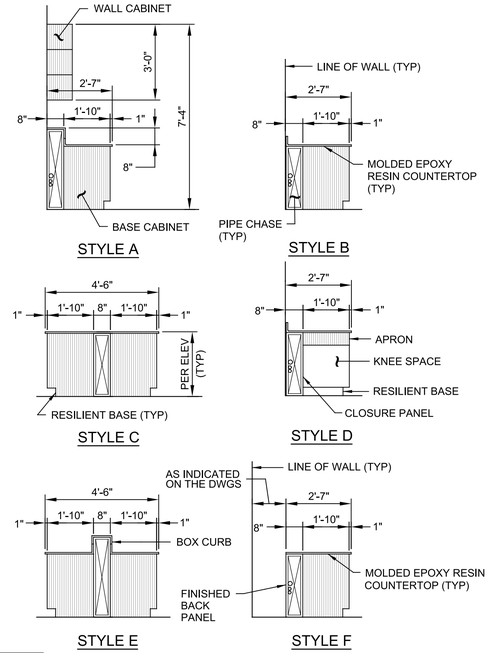


NOTES:

1. MOUNT TO WALL WITH NUMBER AND SIZE OF ANCHORS TO MATCH BRACKET. USE CONCRETE ANCHORS FOR MASONRY OR CONCRETE WALLS. AT MASONRY INSTALL AT GROUTED CELL. MOUNT TO STUD WITH LAG BOLTS, OR WOOD SCREWS FOR WOOD PARTITION WALL.
2. SEE SPECIFICATIONS FOR SIGNAGE REQUIREMENTS ABOVE FIRE EXTINGUISHERS.

AN400 TYP — FIRE EXTINGUISHER WALL-MOUNTED

06/21/19



AP200 TYP — LABORATORY - METAL - CABINETS

06/21/19

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REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

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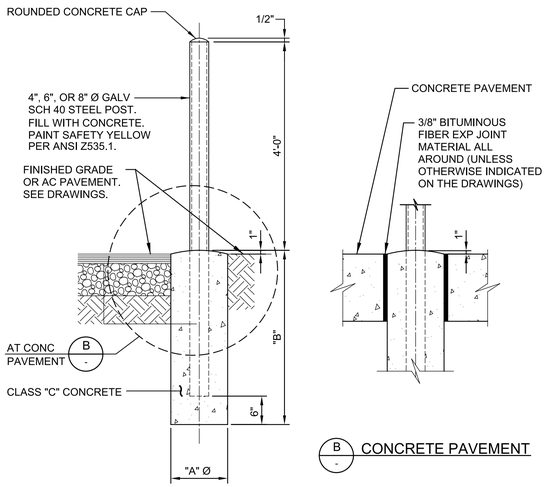
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ARCHITECTURAL 3

VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TA03
SHEET NO. 136 OF 178

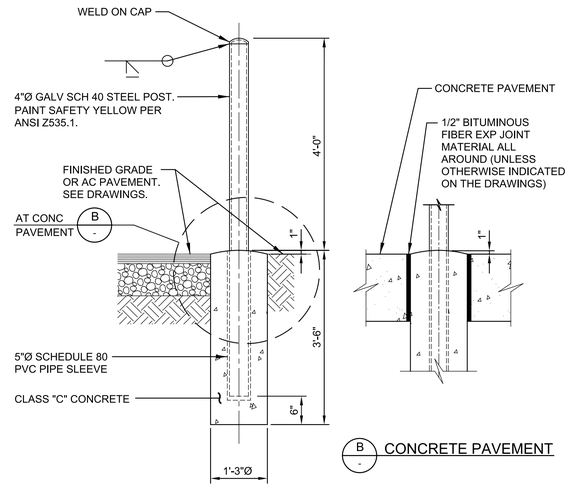
PROJECT NO.
FILE NAME: 11843A1000TA03.dgn



SIZE	"A"	"B"
4"	1'-3"	3'-0"
6"	1'-6"	4'-0"
8"	1'-9"	5'-0"

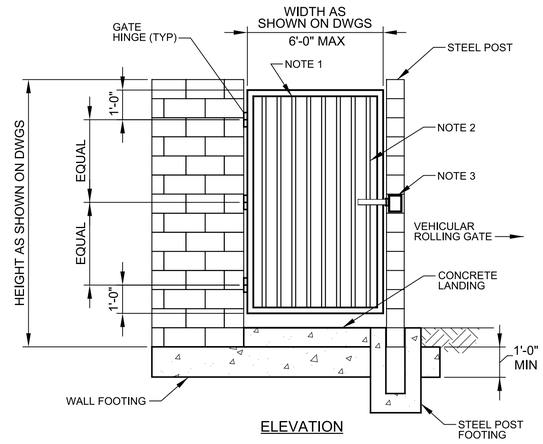
CF160 TYP N — GUARD POST

12/24/2020



CF161 TYP N — GUARD POST - REMOVABLE

12/29/2020

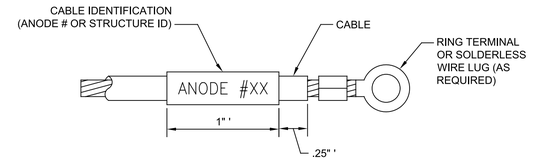


NOTES:

1. HSS2 1/2x2 1/2x3/16 FRAME, MITER CORNERS AND FULLY WELD ALL JOINTS. COORDINATE GATE WIDTH WITH HARDWARE TO PROPERLY FIT IN THE ROUGH OPENING . GRIND SMOOTH ALL SHARP CORNERS.
2. 16 GAUGE PANEL WITH 1/4" DIA HOLES AT 1/2" STAGGER. WELD TO SUPPORTING FRAME AS SHOWN IN THE DETAILS.
3. DOOR HANDLE WITH CARD READER-OPERATED LOCK, LOCATE OUTSIDE GATE AS DIRECTED BY OWNER. REFER TO SECTION 02820 FOR ADDITIONAL REQUIREMENTS.
4. PAINT ENTIRE GATE ASSEMBLY AFTER FABRICATION USING SYSTEM 300, COLOR SELECTED BY OWNER.

CF200 TYP J — STEEL SINGLE-LEAF PEDESTRIAN GATE

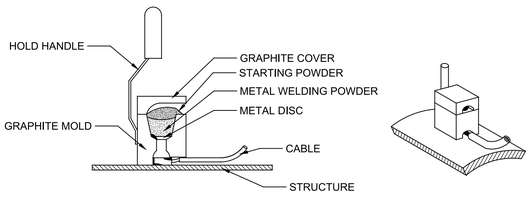
12/04/24



NOTES:

1. COVER CABLE ID WITH CLEAR HEAT SHRINK TUBING.
2. CABLE ID REQUIRED FOR ANODES, STRUCTURES, REFERENCES, AND ALL ADDITIONAL CABLES ENTERING TESTING UNITS.
3. ANODE NUMBERS ARE BASED ON THE LOCATION OF THE ANODE RELATIVE TO PIPE OR STRUCTURE STATIONING. IDENTIFY THE ANODE LOCATED AT THE LOWEST STATION AS "ANODE 1" AND INCREASE CONSECUTIVELY IN THE DIRECTION OF THE STATIONING.

CP100 TYP S — CORROSION MONITORING & CATHODIC PROTECTION CABLE IDENTIFICATION



STEP 1. GRIND STRUCTURE CONNECTION AREA (3' X 3') TO BARE SHINY METAL AND CLEAN.

STEP 2. STRIP INSULATION FROM WIRE. ATTACH SLEEVE.

STEP 3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE WITH FLINT GUN.

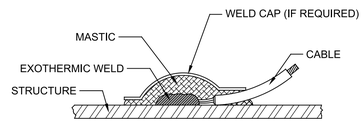
STEP 4. REMOVE SLAG FROM CONNECTION AND PEEN WELD FOR SOUNDNESS.

STEP 5A. FOR CONNECTION TO METALLIC STRUCTURES COVER CONNECTION WITH THERMITE WELD CAP. MAKE CERTAIN ALL COPPER IS COVERED. COAT WELD AREA WITH MASTIC COATING COMPOUND.

STEP 5B. FOR CONNECTIONS TO MORTAR COATED STEEL, COVER CONNECTION WITH MASTIC COATING COMPOUND BEFORE REPAIRING MORTAR COATING.

NOTE: PROCEDURE IS TO BE USED AS A GENERAL GUIDE ONLY. CONSULT MANUFACTURER'S LITERATURE FOR SPECIFIC INSTALLATION INSTRUCTIONS.

CP101 TYP S — CONNECTION - CABLE TO STRUCTURE EXOTHERMIC WELDING PROCEDURE



NOTES:

1. REFER TO CP101 FOR EXOTHERMIC WELDING PROCEDURE.
2. CABLE SIZE MAY REQUIRE COPPER SLEEVE. SEE MANUFACTURER'S INSTRUCTIONS.

CP102 TYP S — CONNECTION - CABLE TO STRUCTURE METALLURGICAL EXOTHERMIC WELD

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

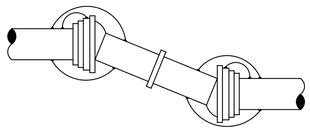
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
CIVIL 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

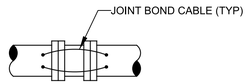
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DRAWING NO. 00TC01
SHEET NO. 137 OF 178

PROJECT NO.
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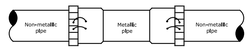
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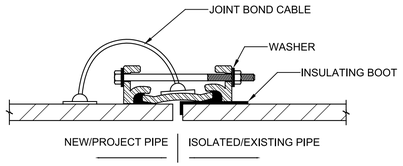
FLEXIBLE JOINT



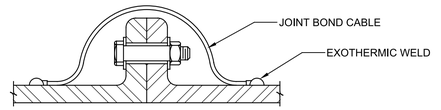
ISOLATED APPURTENANCE



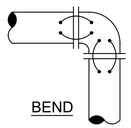
NON-METALLIC TO METALLIC



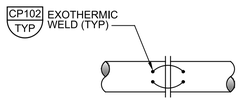
INSULATED COUPLING



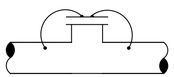
FLANGED-JOINT (NON-ISOLATING)



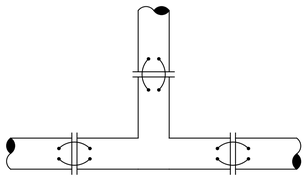
BEND



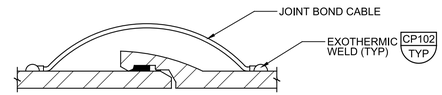
FLANGE-FLANGE



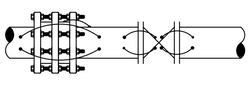
BLIND FLANGE



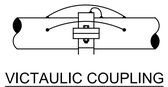
TEE



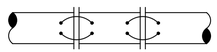
PUSH-ON JOINT



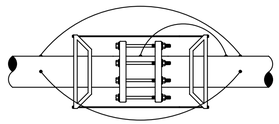
DISMANTLING JOINT WITH VALVE



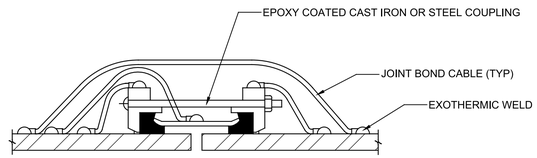
VICTAULIC COUPLING



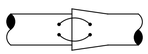
ADAPTER/SLEEVE



FLEX COUPLING WITH RESTRAINER



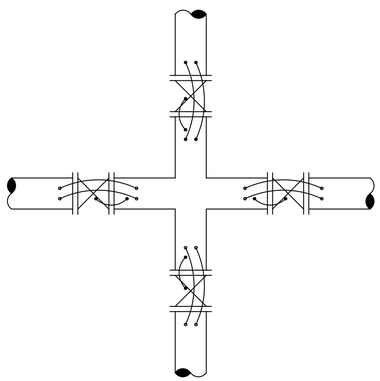
FLEXIBLE COUPLING/ MECHANICAL SLEEVE
(MULTIPLE COMPONENT)



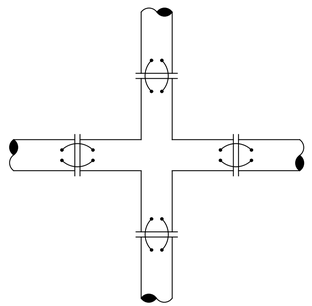
BELL & SPIGOT



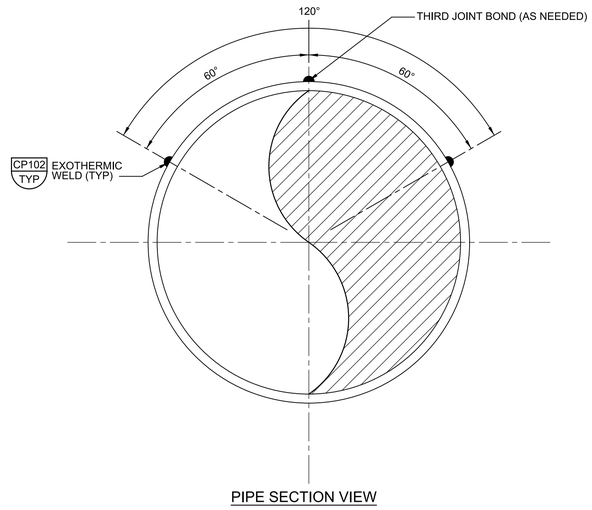
VALVE



VALVE CROSSING



CROSS



PIPE SECTION VIEW

NOTES:

1. TYPICAL FOR NON-WELDED PIPING OR WELDED PIPING WITH MECHANICAL COUPLINGS.
2. CLEAN PIPE PRIOR TO WELDING.
3. INSULATED STRANDED COPPER BOND CABLES SHALL BE SIZED ACCORDING TO THE SPECIFICATION.
4. DO NOT BOND ACROSS ANY INSULATING FLANGES, COUPLING, OR UNIONS.
5. ALL CABLE CONNECTIONS SHALL BE MADE BY EXOTHERMIC WELDING OR PIN BRAZING, EXCEPT CABLE CONNECTIONS ON CAST IRON PIPE IN SOIL.
6. EXOTHERMIC WELDING OF BOND CABLE TO PIPE SHALL BE DONE ACCORDING TO CP101, CP102, AND MANUFACTURER INSTALLATION INSTRUCTIONS.
7. NUMBER OF BOND CABLES PER JOINT AS SPECIFIED.
8. BOND CABLES SHALL BE INSTALLED WITH ALLOWANCE FOR FULL ALLOWABLE JOINT MOVEMENT. BOND CABLES ACROSS FLEXIBLE PORTIONS OF FLEXIBLE JOINTS SHALL BE PROVIDED WIT HAN ADDITIONAL 24" OF EXCESS CABLE.
9. BOND WIRES SHALL BE SPACED A MINIMUM OF 6" APART.
10. WAX TAPE FOR BURIED BOLTED FITTINGS PER AWWA C217.

CP150 TYP — CONTINUITY BONDING FOR NON-WELDED METALLIC PIPE AND MECHANICAL FITTINGS

J 12/04/24

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
CIVIL 2

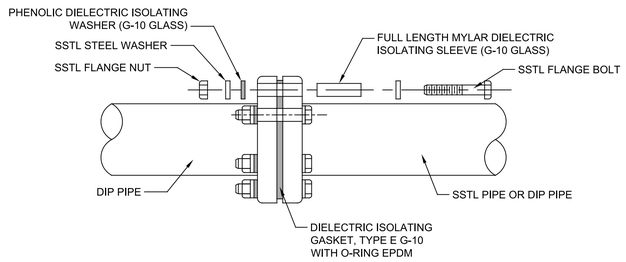
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JOB NO. 11843A.10
DRAWING NO. 00TC02
SHEET NO. 138 OF 178

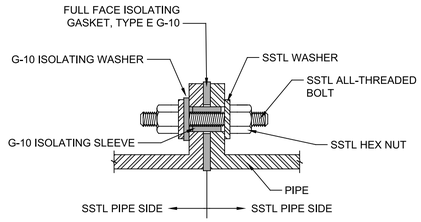
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TOP VIEW ISOLATION JOINT FLANGE KIT

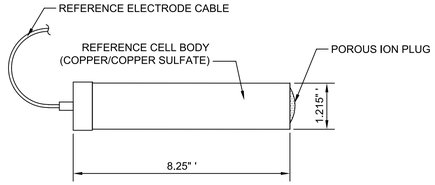


SIDE VIEW ISOLATION JOINT FLANGE KIT

NOTES:

1. TYPICAL FOR NON-WELDED PIPING OR WELDED PIPING WITH MECHANICAL COUPLINGS.
2. FULL LENGTH ISOLATING SLEEVES REQUIRED FOR ALL THRU-FLANGE BOLTS OR STUDS.
3. ISOLATION IS TO BE TESTED AFTER INSTALLATION.
4. DO NOT INCLUDE ISOLATION WASHER FROM STAINLESS STEEL SIDE OF FLANGE.
5. FOR NOMINAL PIPE DIAMETERS UP TO 36", PROVIDE ONE ISOLATING AND ONE STEEL WASHER ON EITHER SIDE OF FLANGE BOLT. FOR PIPE DIAMETERS GREATER THAN 36", ISOLATING WASHERS SHALL BE INSTALLED SANDWICHED BETWEEN A PAIR OF MATCHING STEEL WASHERS AT BOTH SIDES OF FLANGE BOLT.

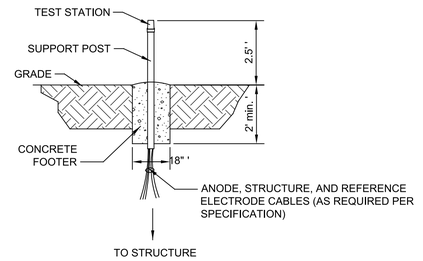
CP175 TYP J — ISOLATION JOINT FLANGE KIT DETAILS



NOTES:

1. REFERENCE ELECTRODE SHALL BE DESIGNED FOR PERMANENT BURIAL OR IMMERSION, BASED ON ELECTROLYTE.
2. REMOVE PROTECTIVE END CAP FROM POROUS ION PLUG WITHIN 24 HOURS PRIOR TO BURIAL OR IMMERSION.

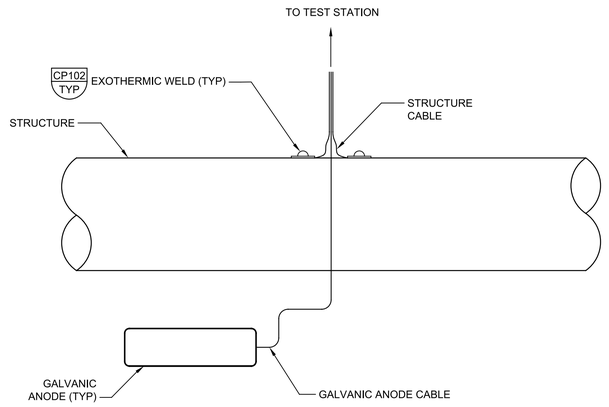
CP201 TYP S — BURIED OR IMMERSED REFERENCE ELECTRODE



NOTES:

1. EXTEND DEPTH OF CONCRETE FOOTER TO MIN REQUIRED FOR CLIMATES WITH HIGHER FREEZE/THAW DEPTH REQUIREMENTS.
2. IF ABOVE GROUND TEST STATION IS NOT ALLOWED AND A TRAFFIC RATED TEST STATION IS REQUIRED, REFER TO CP306.

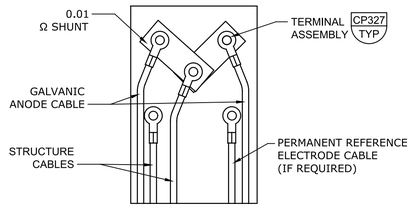
CP303 TYP S — TEST STATION MOUNTING - PE SUPPORT POST ABOVE GROUND



NOTES:

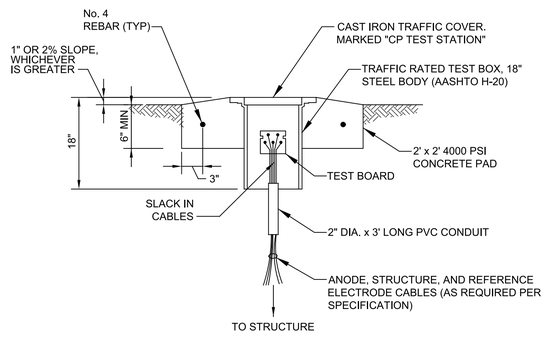
1. PROVIDE 18" SLACK IN CABLES TO ALLOW FOR STRUCTURE SETTLEMENT AND MOVEMENT.
2. ROUTE ALL WIRES THROUGH RIGID PVC UNDERGROUND AND GRS ABOVE GROUND TO TEST STATION.
3. TYPE, NUMBER, AND PLACEMENT OF ANODES PER SPECIFICATION REQUIREMENTS.
4. REFERENCE ELECTRODE AND COUPON (IF REQUIRED) NOT SHOWN, FOR CLARITY.
5. REFER TO THE SPECIFICATIONS FOR CABLE SIZES AND COLOR.
6. REFER TO CP100 FOR CABLE LABEL INSTRUCTIONS.

CP311 TYP R — CATHODIC PROTECTION TEST STATION



CATHODIC PROTECTION TEST STATION TERMINAL BOARD LAYOUT

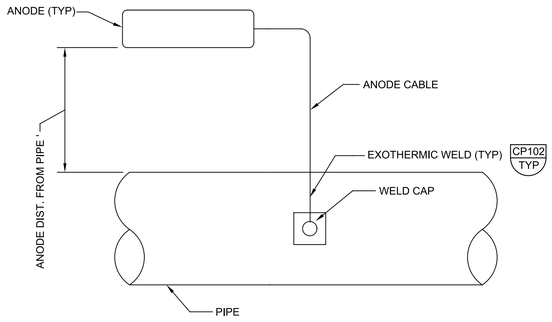
NOTE:
COUPON AND REFERENCE ELECTRODES NOT SHOWN FOR CLARITY. REFER TO DETAIL CP328/TYP FOR COUPON AND REFERENCE ELECTRODE DETAILS.



NOTES:

1. PROVIDE 18" SLACK IN CABLES TO ALLOW TEST BOARD TO BE LIFTED 2' OUT OF THE FLUSH SERVICE BOX.
2. BOTTOM OF TEST BOX SHALL BE NATIVE SOIL. DO NOT PLACE ROCK, SAND, OR GRAVEL IN TEST BOX.
3. TEST BOX TO BE FIELD LOCATED +/- 5' FROM STATIONING GIVEN ON DRAWINGS. DO NOT INSTALL TEST STATION IN TRAFFIC LANES OR PARKING STALLS.
4. WRAP ENTIRE TEST BOX BODY WITH POLYETHYLENE TAPE PRIOR TO CASTING CONCRETE PAD.
5. PROVIDE ENOUGH SLOPE AWAY FROM TEST STATION TO PROVIDE DRAINAGE AWAY FROM TEST BOX.
6. EXTEND DEPTH OF CONCRETE PAD TO MIN REQUIRED FOR CLIMATES WITH HIGHER FREEZE/THAW DEPTH REQUIREMENTS.
7. CONCRETE PAD SHALL BE RATED TO 4500 PSI IN CLIMATES WITH FREEZE/THAW CONDITIONS (I.E. MOUNTAIN REGIONS, COLD NORTHERN CLIMATES).

CP306 TYP S — AT GRADE TRAFFIC RATED TEST STATION



NOTES:

1. PROVIDE SLACK IN CABLES TO ALLOW FOR STRUCTURE SETTLEMENT AND MOVEMENT.
2. TYPE, NUMBER, AND PLACEMENT OF ANODES PER SPECIFICATION REQUIREMENTS.
3. REFER TO THE SPECIFICATIONS FOR CABLE SIZES AND COLOR.
4. ANODE TO BE INSTALLED IN NATIVE SOIL ALONG WITH CLOTH BAG OF ANODE BACKFILL. BACKFILL TO 6" ABOVE ANODE WITH THE NATIVE SOIL.
5. ANODE MAY BE PLACED BESIDE OR BELOW PIPE, PER SPECIFICATION REQUIREMENTS..

CP322 TYP S — DIRECT CONNECT ANODE TO PIPE WITHOUT TEST STATION

REV	DATE	BY	DESCRIPTION
	12/11/24		DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

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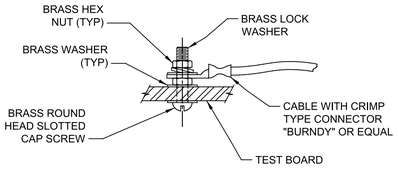
CITY OF ROSEVILLE CALIFORNIA

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TYPICAL DETAILS
CIVIL 3

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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWING NO. 00TC03
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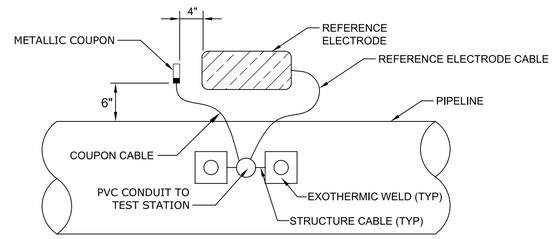


CP327 TEST BOARD TERMINAL ASSEMBLY

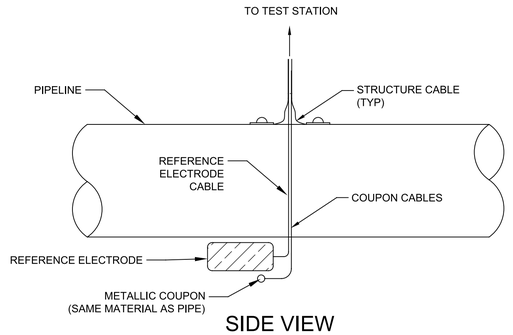
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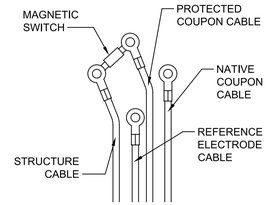
TOP VIEW



SIDE VIEW

GENERAL NOTES:

1. TEST STATIONS CAN BE PURCHASED WITH UP TO 11 TERMINALS.
2. ANODES CONNECTED TO STRUCTURE CABLES VIA SHUNTS. ONE ANODE PER TERMINAL.
3. TWO COUPONS WITH COUPON HOLDER INCLUDED AT EACH LOCATION. ONE CALLED NATIVE COUPON, THE OTHER CALLED CP COUPON.
4. COUPON (PROTECTED) ALWAYS CONNECTED TO STRUCTURE CABLE VIA A SWITCH DEVICE. UNPROTECTED COUPON NOT CONNECTED TO STRUCTURE CABLE.
5. REFERENCE ELECTRODE IS STAND ALONE.
6. INSTALL REFERENCE ELECTRODES AND COUPONS IN NATIVE SOILS AND PLACE 6" FROM EDGE OF THE PIPE. COUPONS SHALL CONSIST OF THE SAME MATERIAL AS THE PIPE AT THE LOCATION OF INSTALLATION.
7. ROUTE ALL CABLES IN APPROPRIATELY SIZED CONDUIT BETWEEN THE PIPE AND THE TEST STATION BASE. THE CONDUIT WILL ALSO AID THE INSTALLER AS THE PIPELINE IS PADDED AND BACKFILLED BY PROVIDING MEANS TO LEAN THE TEST STATION AGAINST THE TRENCH WALL.
8. TEST BOARD LAYOUT FOR COUPON AND REFERENCE ELECTRODE IS IN ADDITION TO REGULAR TEST BOARD LAYOUT.

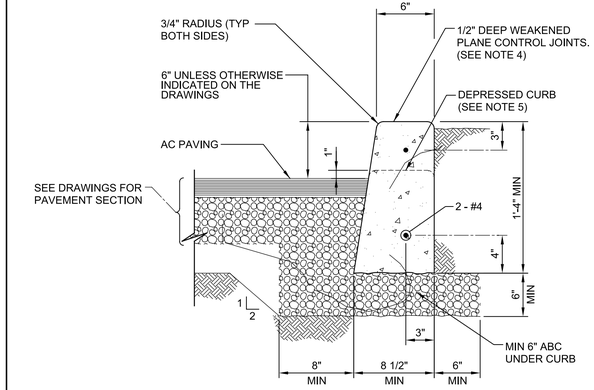


COUPON AND REFERENCE ELECTRODE

CP328 COUPON AND REFERENCE ELECTRODE INSTALLATION

TYP

S



A SECTION

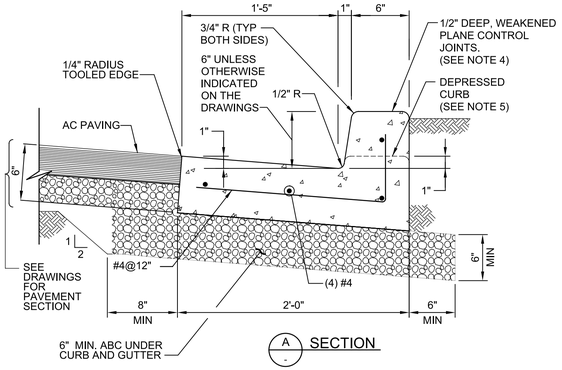
NOTES:

1. FINISH CURB ON TOP, 8" DOWN FRONT FACE, AND 2" DOWN BACK.
2. PROVIDE 3/4" EXPANSION JOINTS AT ENDS OF CONCRETE PLACEMENT, AT POINTS OF CURVATURE, AT BOTH SIDES OF DRIVEWAYS AND WALKWAYS, AT CURB RETURNS, AT STRUCTURES, AND AT MAXIMUM SPACING OF 30 FEET. EXPANSION JOINTS SHALL BE 3/4" WIDE WITH 1/4" RADIUS CONCRETE EDGES AT BOTH SIDES OF JOINT. USE BITUMINOUS FIBER EXPANSION JOINT MATERIAL.
3. DO NOT PASS REINFORCING BARS THROUGH EXPANSION JOINTS.
4. PROVIDE WEAKENED PLANE JOINTS AT 10 FEET OC MAXIMUM. AT FRONT, TOP AND BACK FACES, PROVIDE 1/2" RADIUSED EDGE EACH SIDE AT JOINTS.
5. DEPRESS CURB AT DRIVEWAYS, ROADWAYS, SIDEWALKS FOR HANDICAPPED ACCESS, AND WHERE INDICATED ON THE DRAWINGS.

CR100 YARD CURB

TYP

12/29/2020



A SECTION

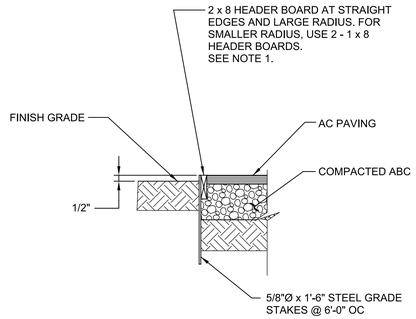
NOTES:

1. FINISH CURB ON TOP, DOWN FRONT FACE AND ACROSS GUTTER TO PAVING, AND 2" DOWN BACK.
2. PROVIDE 3/4" EXPANSION JOINTS AT ENDS OF CONCRETE PLACEMENT, AT POINTS OF CURVATURE, AT BOTH SIDES OF DRIVEWAYS AND WALKWAYS, AT CURB RETURNS, AT STRUCTURES, AND AT MAXIMUM SPACING OF 30 FEET. EXPANSION JOINTS SHALL BE 3/4" WIDE WITH 1/4" RADIUS CONCRETE EDGES AT BOTH SIDES OF JOINT. USE BITUMINOUS FIBER EXPANSION JOINT MATERIAL.
3. DO NOT PASS REINFORCING BARS THROUGH EXPANSION JOINTS.
4. PROVIDE WEAKENED PLANE JOINTS AT 10 FEET OC MAXIMUM. AT FRONT, TOP AND BACK FACES, PROVIDE 1/2" RADIUSED EDGE EACH SIDE AT JOINTS.
5. DEPRESS CURB AT DRIVEWAYS, ROADWAYS, SIDEWALKS FOR HANDICAPPED ACCESS, AND WHERE INDICATED ON THE DRAWINGS.

CR102 YARD CURB AND GUTTER

TYP

12/24/2020



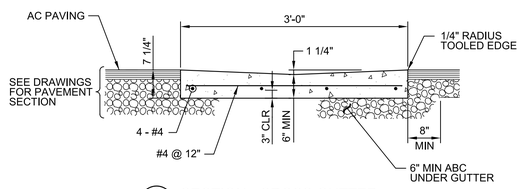
NOTES:

1. HEADER BOARD MATERIAL SHALL BE EITHER PRESSURE TREATED DOUGLAS FIR OR REDWOOD.

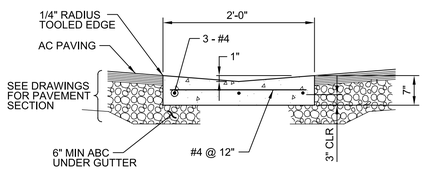
CR106 YARD CURB - WOOD HEADER

TYP

12/29/2020



A SECTION - CROSS GUTTER



B SECTION - VALLEY GUTTER

NOTES:

1. PROVIDE 3/4" EXPANSION JOINTS AT ENDS OF CONCRETE PLACEMENT, AT POINTS OF CURVATURE, AT INTERSECTIONS, AND AT MAXIMUM SPACING OF 30 FEET. EXPANSION JOINTS SHALL BE 3/4" WIDE WITH 1/4" RADIUS CONCRETE EDGES AT BOTH SIDES OF JOINT. USE BITUMINOUS FIBER EXPANSION JOINT MATERIAL.
2. DO NOT PASS REINFORCING BARS THROUGH EXPANSION JOINTS.
3. PROVIDE WEAKENED PLANE JOINTS AT 10 FEET OC MAXIMUM. AT FRONT, TOP AND BACK FACES, PROVIDE 1/2" RADIUSED EDGE EACH SIDE AT JOINTS.

CR110 GUTTER - CROSS AND VALLEY

TYP

12/29/2020

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REGISTERED PROFESSIONAL ENGINEER MICHAEL E. DUCKER No. 63626 CIVIL STATE OF CALIFORNIA

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TYPICAL DETAILS

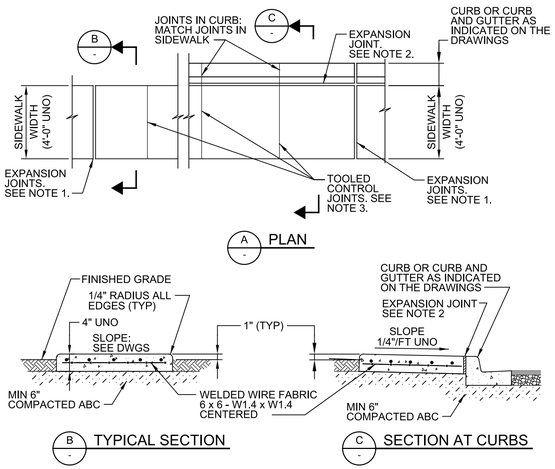
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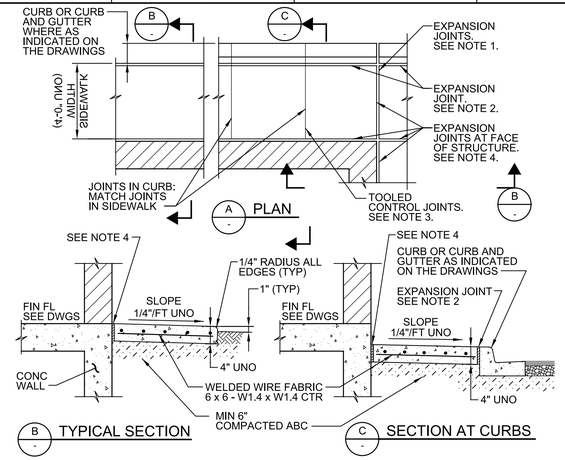


NOTES:

1. PROVIDE EXPANSION JOINTS AT ENDS OF CONCRETE PLACEMENT, AT POINTS OF CURVATURE, AT BOTH SIDES OF DRIVEWAYS, AT INTERSECTIONS, AT CORNERS OF STRUCTURES, AND AT MAXIMUM SPACING OF 30 FEET. EXPANSION JOINTS SHALL BE 3/4" WIDE BITUMINOUS FIBER WITH 1/4" RADIUS CONCRETE EDGES AT EACH SIDE.
2. PROVIDE EXPANSION JOINT AT CURB. JOINT SHALL BE 3/8" WIDE BITUMINOUS FIBER WITH 1/4" RADIUS CONCRETE EDGE AT SIDEWALK.
3. PROVIDE WEAKENED PLANE JOINTS AT UNIFORM SPACING EQUAL TO 1.0 TO 1.25 TIMES SIDEWALK WIDTH, BUT NOT GREATER THAN 10 FEET OC MAXIMUM. PROVIDE 1/4" RADIUS CONCRETE EDGES EACH SIDE AT JOINTS.
4. TOP OF CONCRETE ELEVATIONS: AS INDICATED ON THE DRAWINGS.

CR302 TYP — SIDEWALK

N 12/24/2020

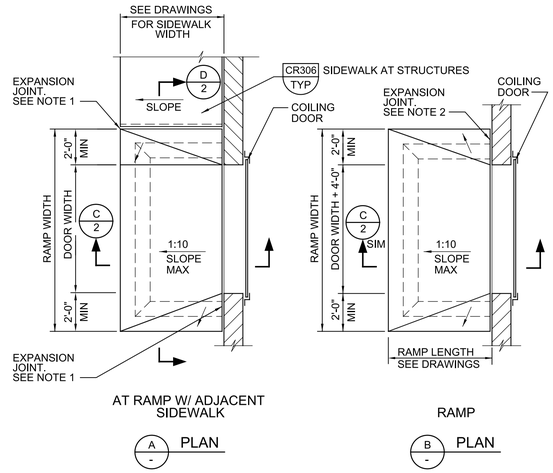


NOTES:

1. PROVIDE EXPANSION JOINTS AT ENDS OF CONCRETE PLACEMENT, AT POINTS OF CURVATURE, AT BOTH SIDES OF DRIVEWAYS, AT INTERSECTIONS, AT CORNERS OF STRUCTURES, AND AT MAXIMUM SPACING OF 30 FEET. EXPANSION JOINTS SHALL BE 3/4" WIDE BITUMINOUS FIBER WITH 1/4" RADIUS CONCRETE EDGES AT EACH SIDE.
2. PROVIDE EXPANSION JOINT AT CURB. JOINT SHALL BE 3/8" WIDE BITUMINOUS FIBER WITH 1/4" RADIUS CONCRETE EDGE AT SIDEWALK.
3. PROVIDE WEAKENED PLANE JOINTS AT UNIFORM SPACING EQUAL TO 1.0 TO 1.25 TIMES SIDEWALK WIDTH, BUT NOT GREATER THAN 10 FEET OC MAXIMUM. PROVIDE 1/4" RADIUS CONCRETE EDGE EACH SIDE AT JOINTS.
4. PROVIDE EXPANSION JOINT AT FACE OF STRUCTURE. CONTINUE JOINTS THROUGH ADJACENT SIDEWALKS. JOINTS SHALL BE 3/8" WIDE BITUMINOUS FIBER.
5. TOP OF CONCRETE ELEVATIONS: AS INDICATED ON THE DRAWINGS.

CR306 TYP — SIDEWALK - AT STRUCTURES

N 07/26/21

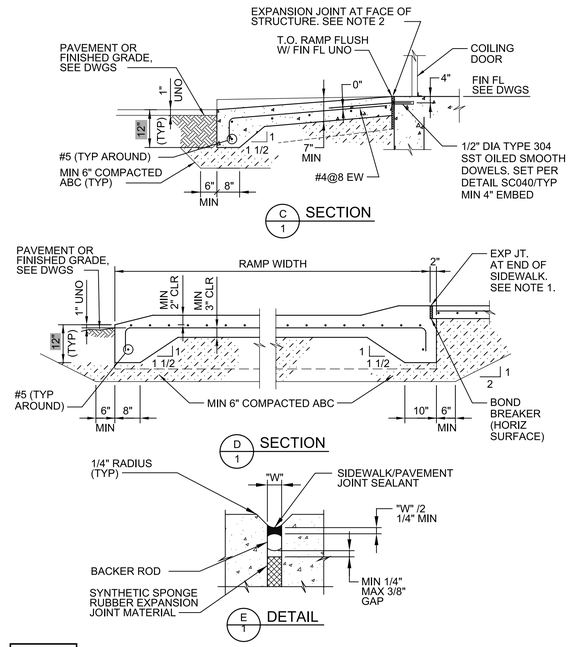


NOTES:

1. EXPANSION JOINT AT END OF SIDEWALK CONCRETE PLACEMENT. JOINT 3/4" WIDE, AND AS INDICATED IN DETAIL E ON SHEET 2
2. EXPANSION JOINT AT FACE OF STRUCTURE, CONTINUE JOINT TO PERPENDICULAR EXPANSION JOINTS AT ENDS OF SIDEWALK. JOINT 3/8" WIDE, AND AS INDICATED IN DETAIL E ON SHEET 2.

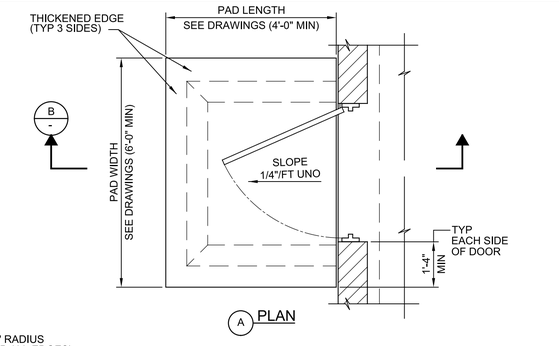
CR310 TYP — SIDEWALK - AT STRUCTURES - RAMP AT COILING DOOR

SHEET 1 OF 2 12/24/2020



CR310 TYP — SIDEWALK - AT STRUCTURES - RAMP AT COILING DOOR

R SHEET 2 OF 2 11/14/2024

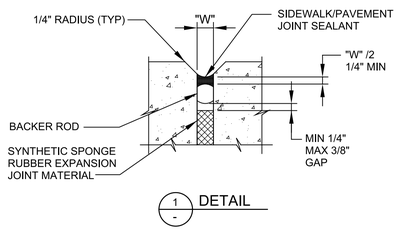


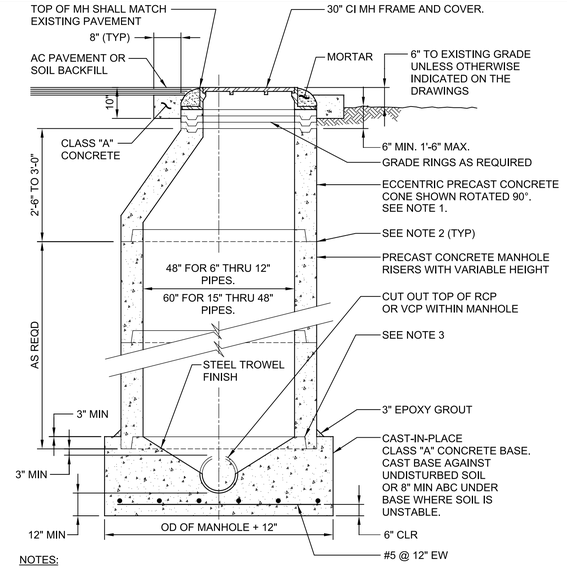
NOTES:

1. EXPANSION JOINT AT FACE OF STRUCTURE: 3/8" WIDE AND AS INDICATED IN DETAIL 1.

CR314 TYP — SIDEWALK - ENTRANCE PAD

R 11/14/2024





NOTES:

1. LOCATE MANHOLE COVER ON DOWNSTREAM SIDE OF MANHOLE. SET MANHOLE FRAME IN GROUT.
2. SEAL JOINTS WITH PRECAST CONCRETE JOINT SEALANT.
3. FORM GROOVE IN MANHOLE BASE WITH STEEL OR ALUMINUM BASE RING PER MANUFACTURER'S DETAIL.

CS110 TYP — MANHOLE

N 12/24/2020

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

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CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

CIVIL 5

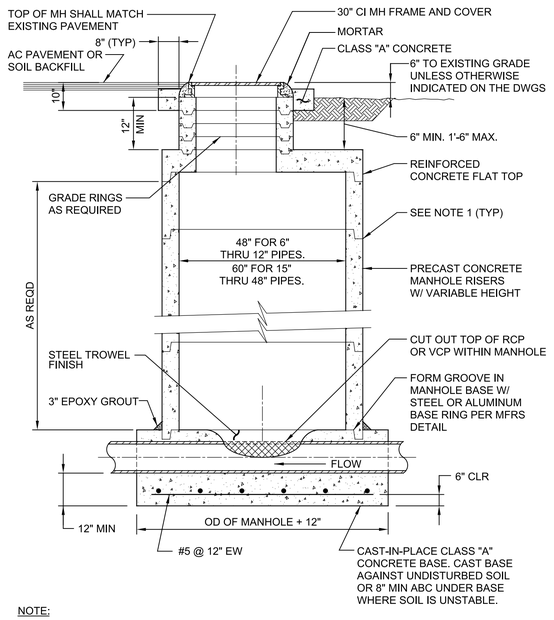
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TC05
SHEET NO. 141 OF 178

PROJECT NO.
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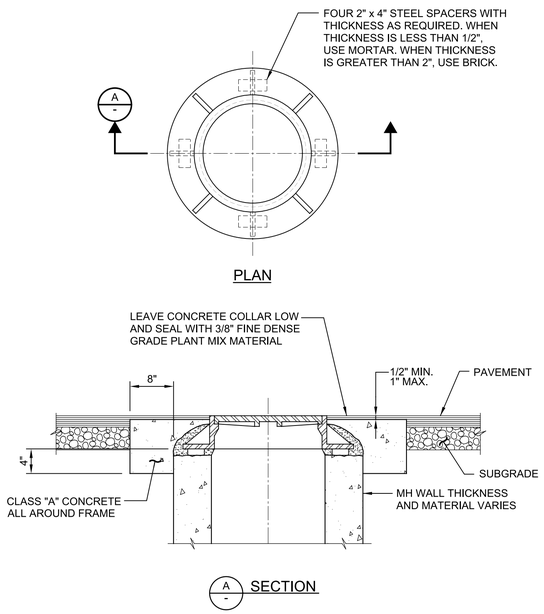


NOTE:

1. SEAL JOINTS WITH PRECAST CONCRETE JOINT SEALANT.

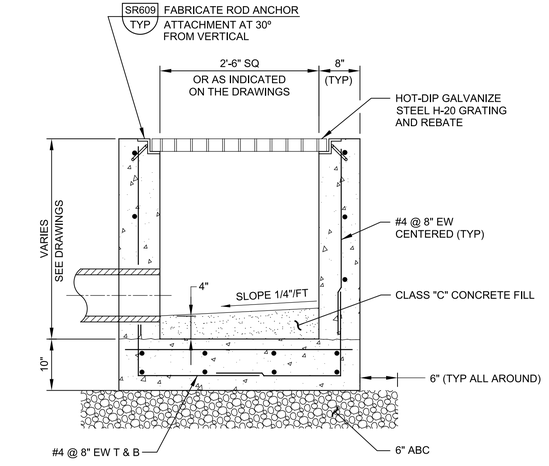
CS116 TYP — MANHOLE - MINIMUM COVER CONDITION

N 12/29/2020



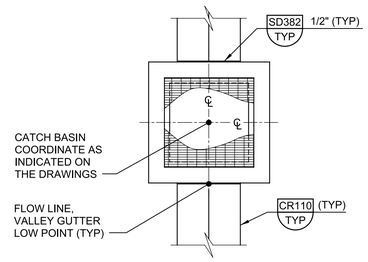
CS124 TYP — MANHOLE - GRADE ADJUSTMENT

12/29/2020



CS202 TYP — CATCH BASIN

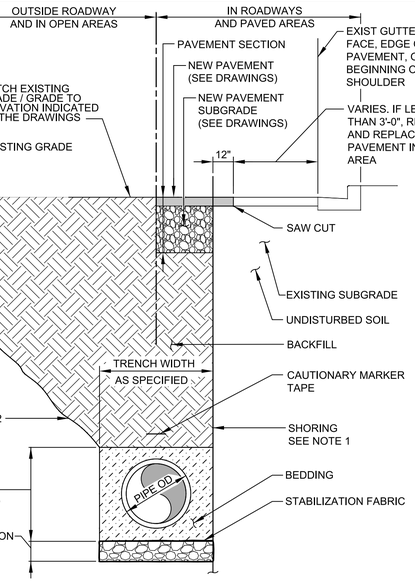
R SHEET 1 OF 2 11/14/2024



TYPE 2 - CATCH BASIN AT VALLEY GUTTER

CS202 TYP — CATCH BASIN

R SHEET 2 OF 2 11/14/24

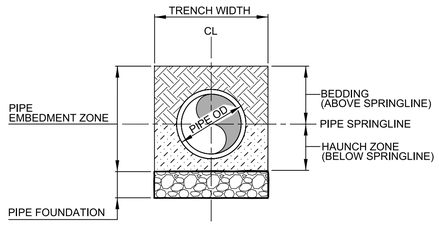


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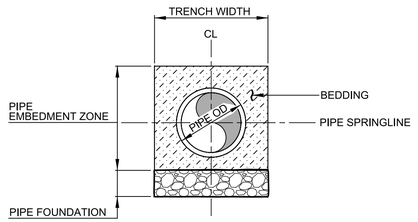
1. SEE SPECIFICATIONS FOR SHORING REQUIREMENTS.
2. SEE SPECIFICATIONS FOR SLOPE REQUIREMENTS.
3. SEE SPECIFICATIONS FOR DEPTH AND WIDTH REQUIREMENTS.

CY111 TYP — PIPE TRENCH

SN SHEET 1 OF 2 08/19/22



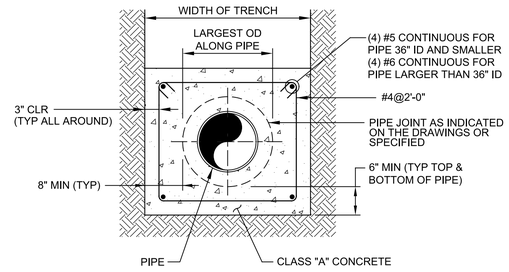
A - PIPE ZONE EMBEDMENT - RIGID PIPE



B - PIPE ZONE EMBEDMENT - FLEXIBLE PIPE

CY111 TYP — PIPE TRENCH

SN SHEET 2 OF 2 08/19/22



SECTION

NOTE:

1. TYPE OF PIPE AND TYPE OF PIPE JOINT OR COUPLER AS INDICATED ON THE DRAWINGS.

CY119 TYP — PIPE ENCASEMENT - CONCRETE

R 11/14/2024

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

carollo

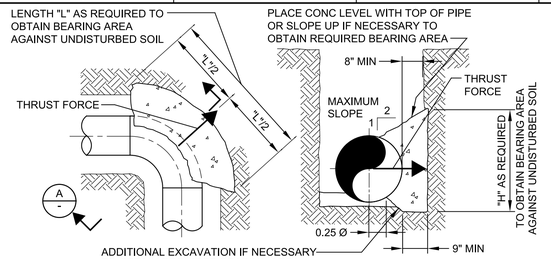
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
CIVIL 6

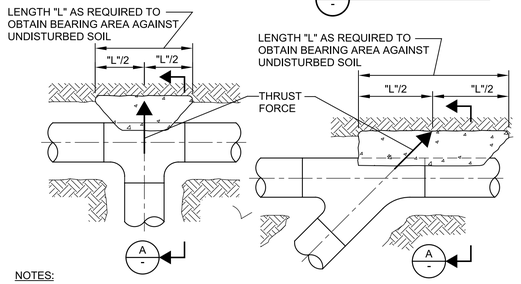
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TC06
SHEET NO. 142 OF 178

PROJECT NO. FILE NAME: 11843A1000TC06.dgn



TYPICAL SECTION

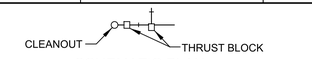


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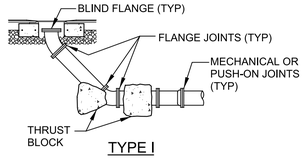
1. BEARING AREA IS THE AREA REQUIRED TO OBTAIN A MAXIMUM PRESSURE NOT GREATER THAN 1500 PSF AT THE TOP OF THRUST BLOCK WHEN THE PIPE IS SUBJECTED TO ITS TEST PRESSURE, OR BEARING AREA INDICATED ON THE DRAWINGS USING A PASSIVE RESISTANCE OF 200 PSF/FT DEPTH.
2. CONCRETE SHALL BE CLASS "A" OR "C".
3. THRUST BLOCK SHALL BEAR ON UNDISTURBED SOIL.

CY131 TYP — THRUST RESTRAINT - BURIED THRUST BLOCK

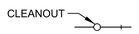
SN 08/19/22



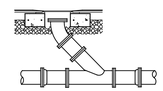
SCHEMATIC PLAN



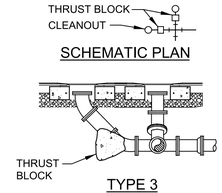
TYPE I



SCHEMATIC PLAN

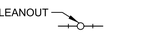


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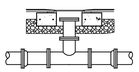


SCHEMATIC PLAN

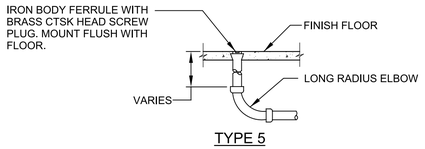
TYPE 3



SCHEMATIC PLAN



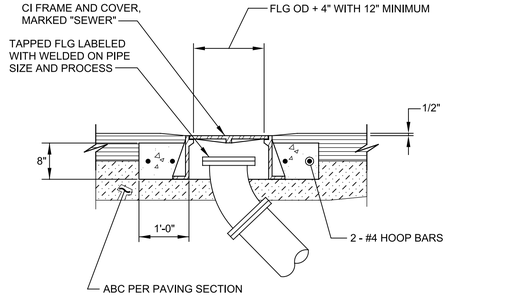
TYPE 4



TYPE 5

CY411 TYP — CLEANOUTS

S SHEET 1 OF 2 12/29/2020



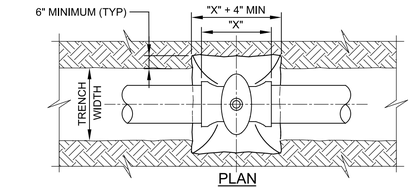
TERMINATION IN PAVEMENT
ALL TYPES FOR 4"Ø TO 12"Ø

NOTES:

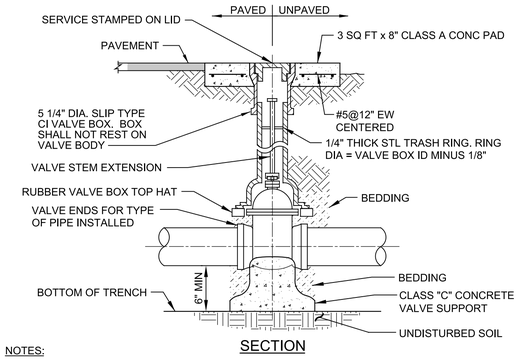
1. ALL THRUST BLOCKS SHALL BE PLACED PER TYPICAL DETAIL CY131.
2. CONCRETE RING SHALL BE PLACED AFTER PAVEMENT PLACEMENT.
3. ALL FLANGES SHALL BE TAPPED TO ALLOW THE INSTALLATION OF BLIND FLANGES WITH BOLTS.
4. CLEANOUT PIPE SHALL BE SAME SIZE AS LINE PIPE.
5. FOR CLEANOUTS IN YARD AREA, PLACE 12" SQUARE BY 4" THICK CONCRETE PAD.

CY411 TYP — CLEANOUTS

S SHEET 2 OF 2 12/29/2020



PLAN



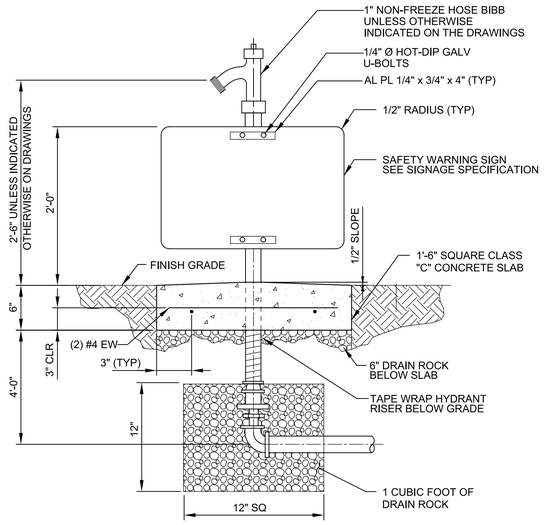
SECTION

NOTES:

1. ALL BURIED VALVES SHALL BE PROVIDED WITH EXTENSION STEM OPERATION WITH 2" SQUARE AWWA NUT WITHIN 36" OF VALVE BOX COVER. NUT IS TO INDICATE DIRECTION OF ROTATION TO OPEN VALVE.
2. COAT BURIED PIPE AND VALVE BOX AS SPECIFIED.
3. CLEAN VALVE BOX OF ALL DEBRIS AND SOIL.
4. VALVE TYPE AS INDICATED ON THE DRAWINGS.

CY716 TYP — GATE VALVE - DIRECT BURY

S 10/20/20

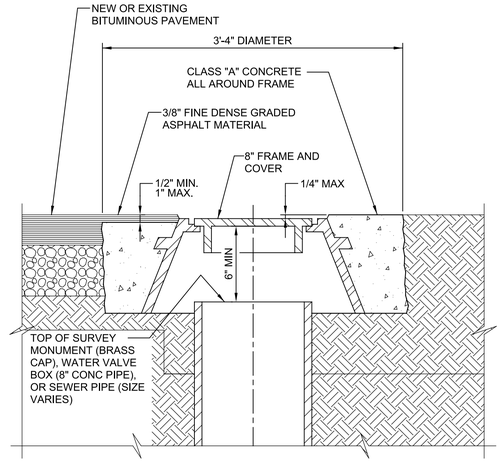


NOTES:

1. SIGN SHALL BE 3/8" THICK PLASTIC RESISTANT TO SUNLIGHT (ULTRAVIOLET) DETERIORATION.
2. SIGN SHALL BE 7" x 10" AND SHALL CONFORM TO THE SPECIFICATIONS.
3. SIGN AS SHOWN IS ROTATED 90° OFF TRUE POSITION. SIGN SHALL BE MOUNTED TO PERMIT EASY READING.
4. INSTALL HOSE RACK PER DETAIL MA417/TYP AT EACH HOSE BIBB.

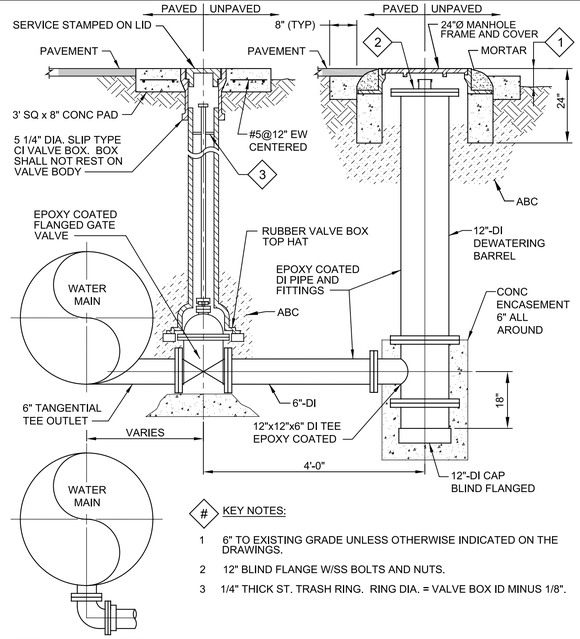
CY722 TYP — FREEZELESS HOSE BIBB

SN 12/18/2023



CY739 TYP — VALVE BOX FRAME - GRADE ADJUSTMENT

S 12/29/2020



KEY NOTES:

1 6" TO EXISTING GRADE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2 12" BLIND FLANGE W/SS BOLTS AND NUTS.
3 1/4" THICK ST. TRASH RING. RING DIA. = VALVE BOX ID MINUS 1/8".

BOTTOM OUTLET ALTERNATIVE

CY733 TYP — BLOWOFF - DIRECT BURY

11/13/19

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED DM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. DUCKER — No. 63626 — CIVIL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

CIVIL 7

VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

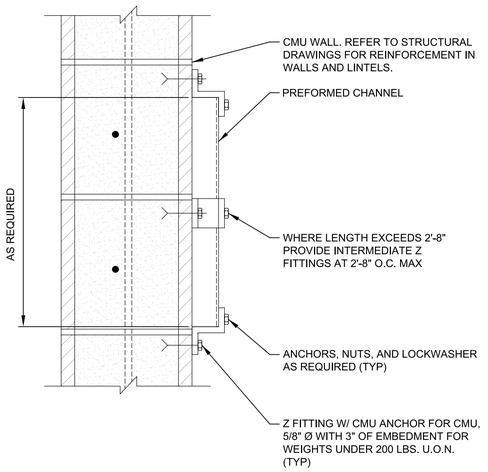
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DRAWING NO. 00TC07
SHEET NO. 143 OF 178

PROJECT NO.

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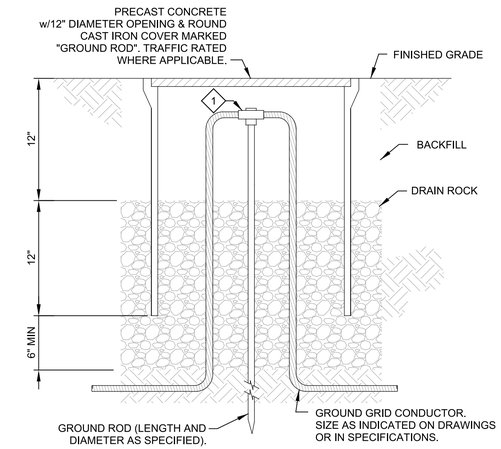
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DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: OWestbrook



GENERAL NOTES:

1. THIS DETAIL TYPICAL FOR BOTH VERTICAL AND HORIZONTAL MOUNTING.
2. SUPPORTS TO BE SPACED IN ACCORDANCE WITH NEC REQUIREMENTS. CONCRETE ANCHORS SHALL BE PER THE SPECIFICATIONS.

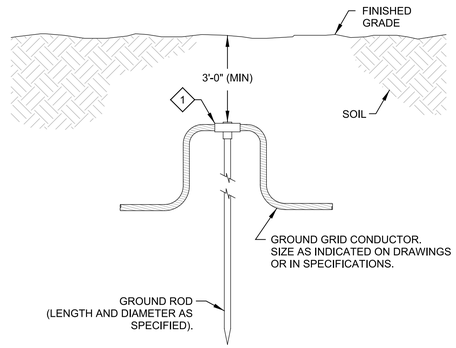
EA080 TYP S — PREFORMED CHANNEL ATTACHMENT TO FULLY GROUTED CMU WALL



KEY NOTES:

1 THROUGH CABLE TO GROUND ROD CONNECTION.

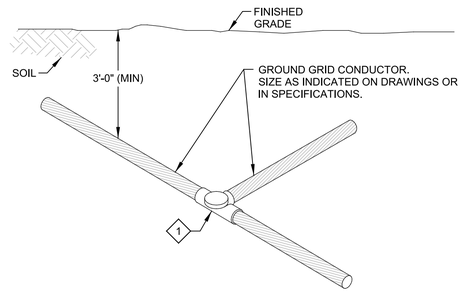
EG051 TYP S — GROUND ROD AND GROUNDWELL EXOTHERMIC CONNECTION



KEY NOTES:

1 THROUGH CABLE TO GROUND ROD CONNECTION.

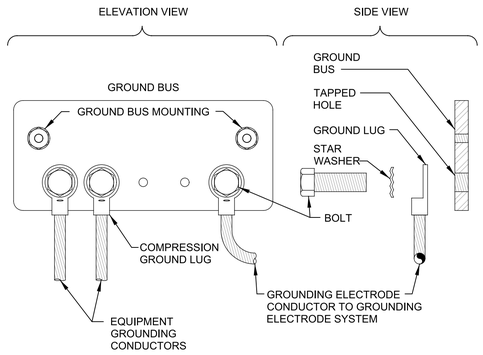
EG052 TYP S — GROUND ROD EXOTHERMIC CONNECTION



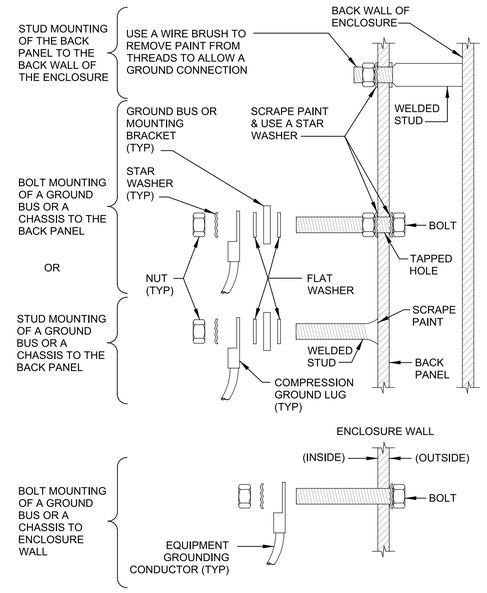
KEY NOTES:

1 HORIZONTAL TEE CONNECTION.

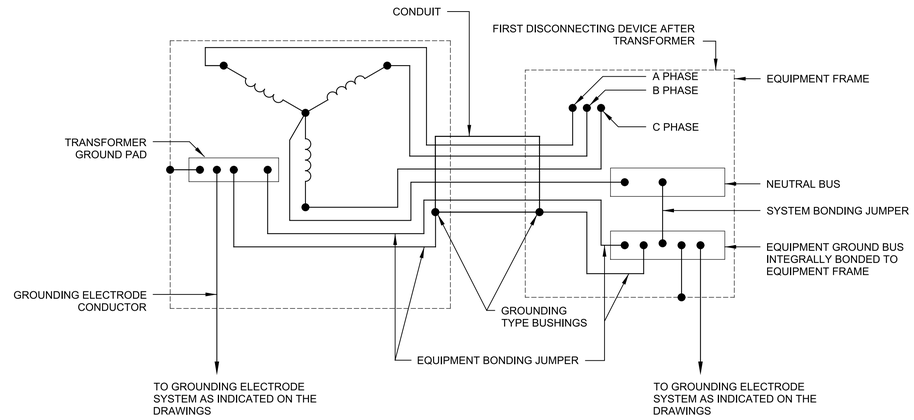
EG151 TYP S — COPPER GROUNDING CABLE CONNECTION EXOTHERMIC CONNECTION



EG204 TYP S — GROUND BUS CONNECTIONS



EG205 TYP S — ENCLOSURE GROUNDING DETAILS



EG511 TYP S — TRANSFORMER (NON-UTILITY) 3-PHASE, 4-WIRE SECONDARY POWER GROUNDING DETAIL

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER ALAN CARPENTER — No. 20740 — ELECTRICAL — STATE OF CALIFORNIA

carollo®

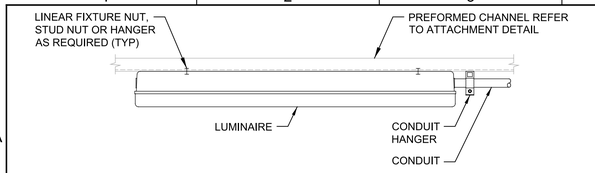
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 1

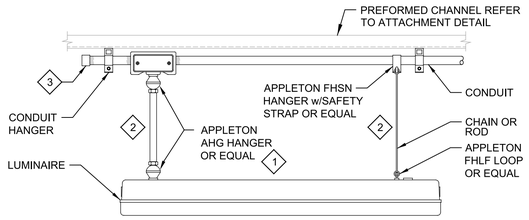
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TE01
SHEET NO. 144 OF 178

PROJECT NO.
FILE NAME: 11843A1000TE01.dgn



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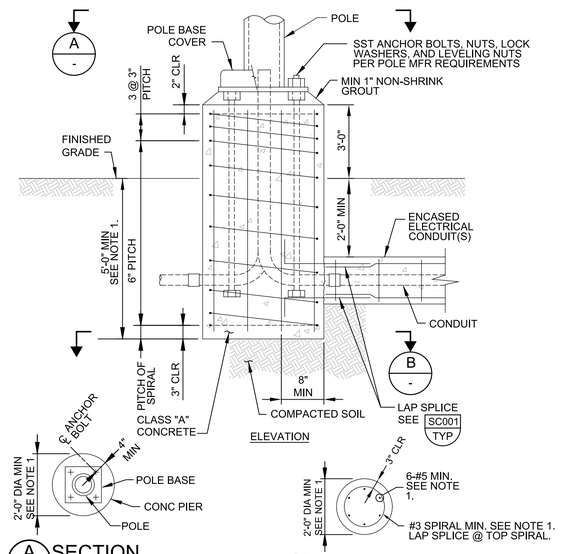


SUSPENDED

KEY NOTES:

1. USE MEYERS HUB IN WET AND/OR CORROSIVE AREAS.
2. LENGTH AS REQUIRED FOR INDICATED MOUNTING HEIGHT.
3. CAP END CONDUIT AS REQUIRED.

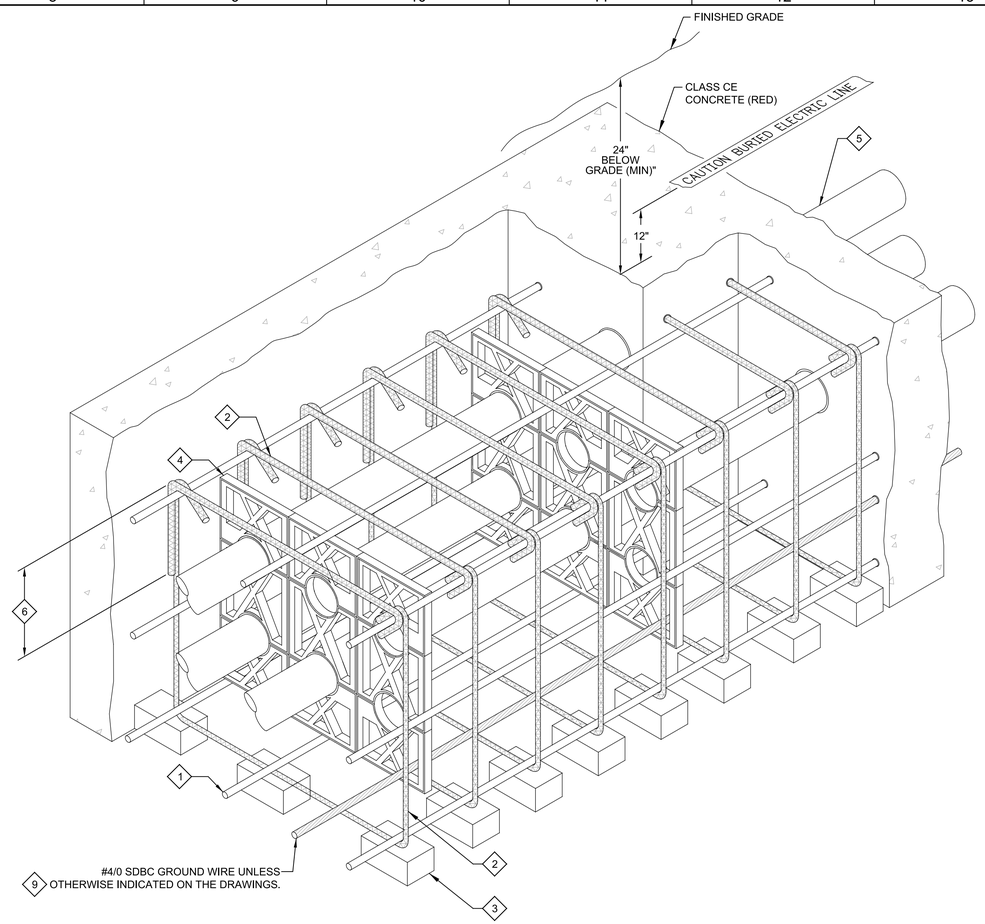
EL200 TYP S — LINEAR LUMINAIRE MOUNTING



GENERAL NOTES:

1. USE MINIMUM DIMENSIONS AND REINFORCEMENT SHOWN UNLESS OTHERWISE NOTED. PROVIDE WIND LOAD CALCULATIONS AND INCREASE DIMENSIONS AS REQUIRED.

EL506 TYP S — POLE FOUNDATION TRAFFIC AREAS

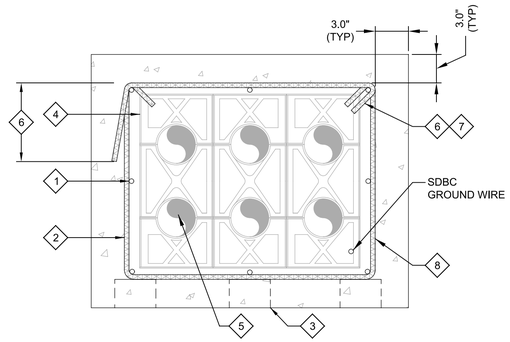


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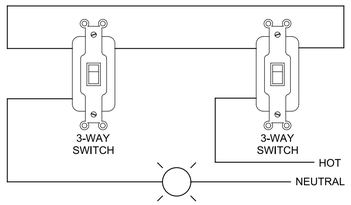
1. DIMENSIONS SHOWN ARE MINIMUM.
2. ADJUST SIZE OF DUCT BANK BASED UPON THESE GUIDELINES AND THE DUCT BANK SPECIFICATION TO ACCOMMODATE ACTUAL NUMBER OF CONDUITS WITHIN DUCT BANK. REFER TO DUCT BANK SECTIONS, AND CONDUIT SCHEDULE FOR NUMBER AND SIZE OF CONDUITS.
3. MAKE PROVISIONS TO PREVENT CONDUIT FLOTATION DURING CONCRETE PLACEMENT & CURING.

KEY NOTES:

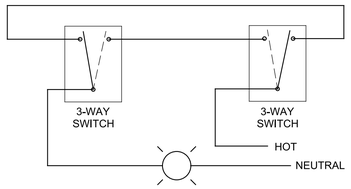
1. #4 REINFORCING STEEL 12" MAXIMUM ON CENTER AROUND ENTIRE PERIMETER OF DUCT BANK.
2. #4 REINFORCING STEEL TIES MAXIMUM 24" ON CENTER ALONG LENGTH OF DUCT BANK.
3. MINIMUM OF TWO PRECAST CONCRETE BAR SUPPORTS PLACED UNDER A TIE AT EACH PVC CONDUIT SPACER ALONG LENGTH OF DUCT BANK. PROVIDE PRECAST BAR SUPPORTS AT INTERVALS OF 24" TO REDUCE DEFLECTION.
4. PVC CONDUIT SPACERS ON 8'-0" CENTERS (MAXIMUM). LOCATE 12" FROM TIES.
5. REFER TO DUCT BANK SECTIONS AND SPECIFICATIONS FOR CONDUIT REQUIREMENTS.
6. 1'-4" OR 135 DEGREE HOOK FOR SHALLOW DUCT BANKS SHALLOWER THAN 21"
7. CONTRACTOR'S OPTION TO PROVIDE 1'-4" LAP LENGTH EACH SIDE OF HORIZONTAL TIE.
8. LOWER PORTION OF TIES COULD BE U-BARS IF UPPER PORTIONS PROVIDES 1'-4" VERTICAL LEGS EACH SIDE.
9. BOND THE DUCT BANK GROUND WIRE TO THE GROUNDING SYSTEM AT BOTH ENDS OF THE DUCT BANK.



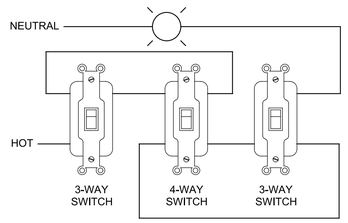
EM001 TYP S — REINFORCED CONCRETE DUCT BANK



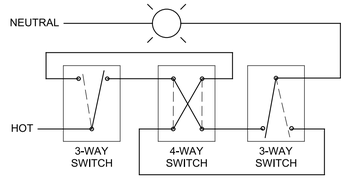
3-WAY SWITCH WIRING DIAGRAM



EL700 TYP S — 3-WAY SWITCH ONE-LINE DIAGRAM



4-WAY SWITCH WIRING DIAGRAM



EL701 TYP S — 4-WAY SWITCH ONE-LINE DIAGRAM

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER ALAN CARLSTED — No. 20740 — ELECTRICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 2

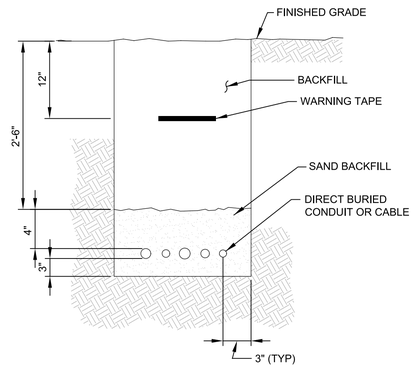
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TE02
SHEET NO. 145 OF 178

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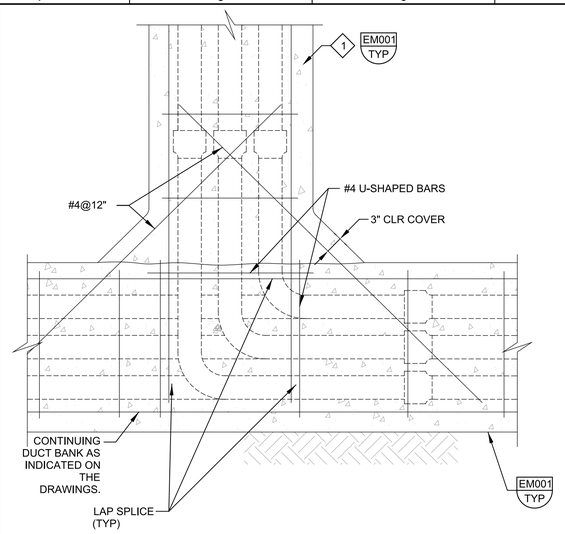
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LAST SAVED BY: OWestbrook



NOTES:

1. ALL DIMENSIONS ARE MINIMUM UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. REFER TO THE SPECIFICATIONS FOR TRENCH BACKFILL REQUIREMENTS.

EM015 TYP S — DIRECT BURIED CONDUIT OR CABLE



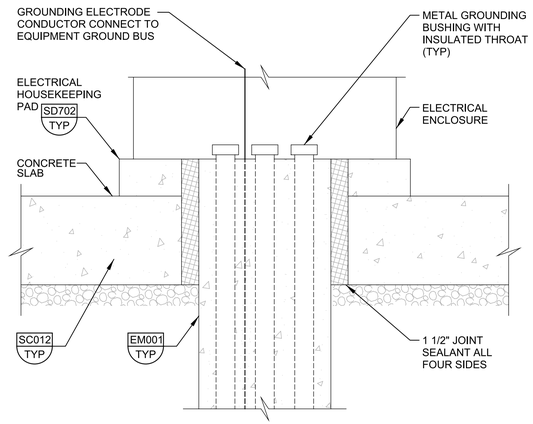
GENERAL NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

KEY NOTES:

1. ADJUST DUCT SPACING TO FIT OPENING IN THE SLAB AND EQUIPMENT ABOVE.

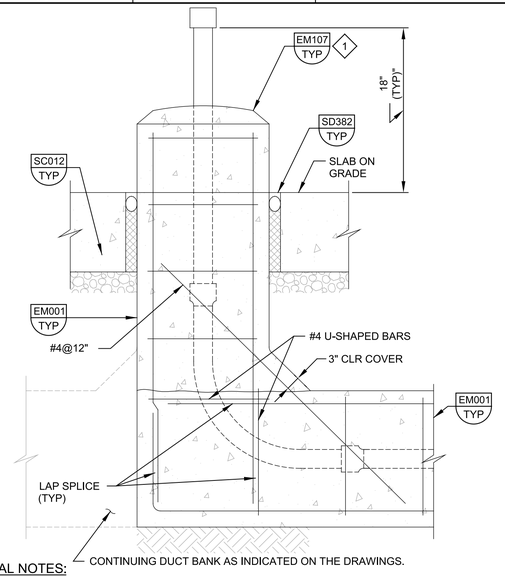
EM020 TYP S — DUCT BANK RISER



NOTES:

1. OPENING SIZE IN CONCRETE HOUSE KEEPING PAD IS SET BY CONDUIT SIZE AND NUMBER OF CONDUITS. CONDUITS AT TOP OF HOUSE KEEPING PAD MUST FIT IN MANUFACTURER PROVIDED WINDOW IN BOTTOM OF ELECTRICAL ENCLOSURE.

EM022 TYP S — DUCT BANK ENTRY INTO ELECTRICAL EQUIPMENT



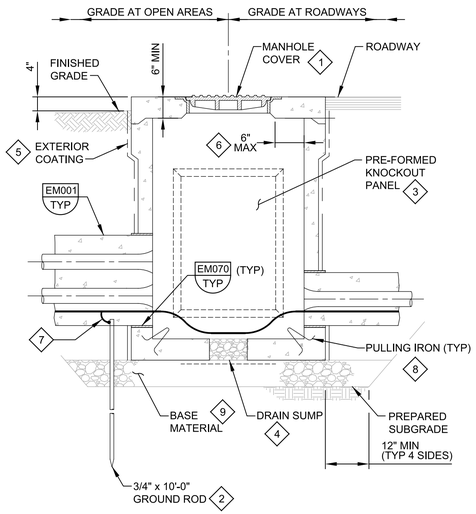
GENERAL NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

KEY NOTES:

1. PROVIDE CONDUIT HOUSE KEEPING CURB AT ALL LOCATIONS WHERE THE CONDUIT IS NOT PROTECTED BY AN EQUIPMENT PAD.

EM032 TYP S — RISER FROM DUCT BANK SLAB ON GRADE



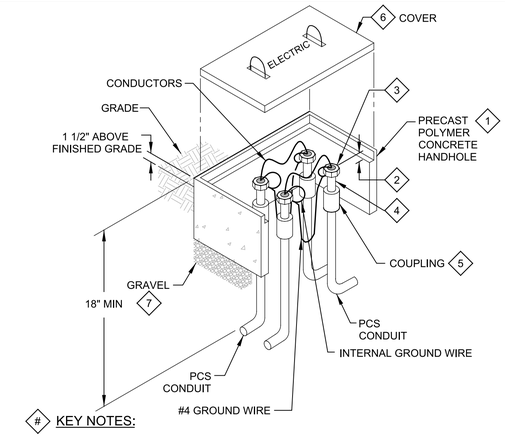
NOTES:

1. PROVIDE MINIMUM INTERIOR DIMENSIONS AS SHOWN IN THE ELECTRICAL HANDHOLE AND MANHOLE SCHEDULE (MAXIMUM INTERIOR DIMENSIONS: 48"WIDE x 48"LONG x 48"DEEP)
2. BOND ALL METALLIC ITEMS INSIDE HANDHOLE TO GROUND ROD USING #4 AWG BARE COPPER CABLE.
3. SEE DRAWINGS FOR ORIENTATION, NUMBER, AND SIZE OF DUCT BANKS AT EACH HANDHOLE.

KEY NOTES:

1. PROVIDE 36"Ø EMBEDDED TOP FLANGE FRAME AND MANHOLE COVER.
2. BOND DUCT BANK AND INTERIOR GROUND CABLE TO GROUND ROD LOCATED OUTSIDE OF DUCT BANK. REFER TO THE SPECIFICATIONS FOR CONNECTION REQUIREMENTS.
3. INSTALL DUCT BANKS ONLY THROUGH CAST-IN OPENINGS OR PREFORMED KNOCKOUT PANELS. PROVIDE KNOCKOUTS ON EACH WALL AROUND HANDHOLE.
4. PROVIDE MINIMUM 4 INCH DIAMETER, GRAVEL FILLED PENETRATION THROUGH FLOOR OF HANDHOLE. SET SUMP OPENING OVER MINIMUM 18" SQUARE FILTER FABRIC TO ISOLATE GRAVEL FROM BASE MATERIAL BELOW.
5. COAT EXTERIOR WALLS BELOW GRADE WITH BITUMINOUS DAMP PROOFING.
6. MAXIMUM TOP SLAB OVERHANG IS TYPICAL AROUND 4 SIDES OF HANDHOLE.
7. GROUNDING CABLE CONNECTION. REFER TO THE SPECIFICATIONS FOR CONNECTION REQUIREMENTS.
8. PROVIDE ONE PULLING IRON ON EACH WALL OF HANDHOLE.
9. BASE MATERIAL: PROVIDE MIN 12" COMPACTED AGGREGATE BASE COURSE.

EM058 TYP S — ELECTRICAL HANDHOLE: PRECAST CONCRETE W/ MANHOLE COVER



KEY NOTES:

1. PRECAST POLYMER CONCRETE HANDHOLE WITH OPEN BOTTOM FOR DRAINAGE. DO NOT INSTALL POLYMER CONCRETE HANDHOLES IN ROADWAYS.
2. ALLOW SUFFICIENT SPACE BETWEEN THE CONDUIT AND HANDHOLE LID FOR BENDING RADIUS OF WIRES AND CABLES.
3. INSULATED GROUNDING BUSHINGS. BOND BUSHINGS TO EACH OTHER WITH #4 WIRE AND TO GROUND CONDUCTORS IN EACH CONDUIT.
4. NIPPLE (USED TO COMPACT DUCT SEAL IN COUPLING).
5. PACK COUPLING AREA WITH DUCT SEAL BY MANVILLE OR APPROVED EQUAL.
6. PROVIDE "TIER"-RATED COVER PER MANHOLE AND HANDHOLE SCHEDULE.
7. GRAVEL BED FOR LEVELING & DRAINAGE. MINIMUM 12" DEEP & EXTENDING AT LEAST 6" EACH WAY PAST OUTSIDE LIMITS OF HANDHOLE.

EM052 TYP S — ELECTRICAL HANDHOLE: PRECAST POLYMER CONCRETE

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER ALAN CARPENTER — No. 20740 — ELECTRICAL — STATE OF CALIFORNIA

carollo®

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 3

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TE03
SHEET NO. 146 OF 178

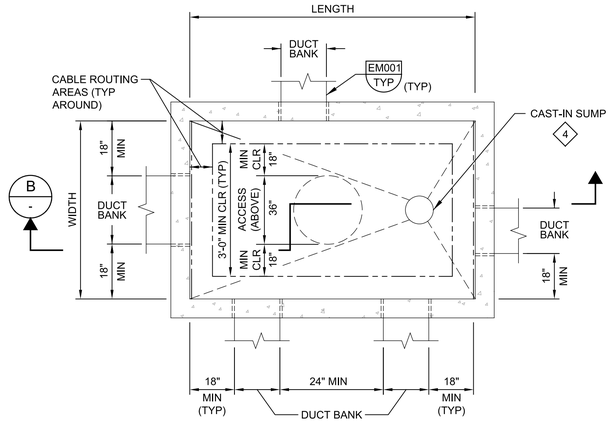
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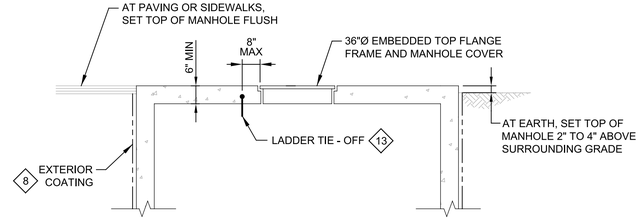
1. PROVIDE MINIMUM INTERIOR DIMENSIONS AS SHOWN IN THE ELECTRICAL HANDHOLE AND MANHOLE SCHEDULE.
2. PROVIDE MANHOLE ALTERNATES (TOP OR BASE) AS SHOWN IN THE HANDHOLE AND MANHOLE SCHEDULE.
3. BOND ALL METALLIC ITEMS INSIDE MANHOLE TO GROUND ROD USING #4 AWG BARE COPPER CABLE.
4. SEE DRAWINGS FOR ORIENTATION, NUMBER, AND SIZE OF DUCT BANKS AND PENETRATIONS AT EACH MANHOLE.
5. RACK MEDIUM VOLTAGE CABLES USING PORCELAIN INSULATOR CLAMPS PER TYPICAL DETAIL EM076.

KEY NOTES:

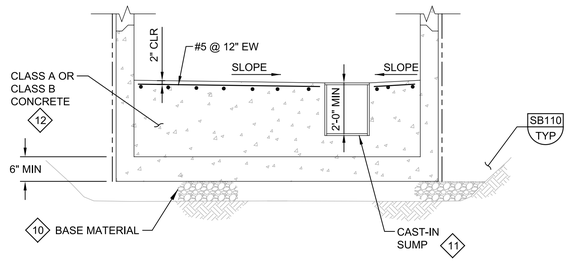
1. MANHOLE ACCESS FOR BURIED MANHOLE SHOWN IN SECTION B. FOR MANHOLES WITH EXPOSED TOP SLAB, SEE SECTION C (ALTERNATE 1).
2. STANDARD MANHOLE BASE SHOWN. FOR MANHOLES WITH DEEPER SUMP OR CONCRETE BALLAST TO RESIST FLOTATION, SEE SECTION D (ALTERNATE 2).
3. SPACE EMBEDDED CHANNELS TO CLEAR DUCT BANK KNOCKOUTS AND MAXIMUM 24" ON CENTER AROUND PERIMETER OF MANHOLE.
4. MINIMUM 12" DIAMETER x MIN 2" DEEP SUMP WITH REMOVABLE SLOTTED COVER. LOCATE SUMP OUTSIDE VERTICAL ACCESS CORRIDOR BELOW MANHOLE COVER.
5. BOND DUCT BANK AND INTERIOR GROUND CABLE TO GROUND ROD. SEE SPECIFICATIONS FOR CONNECTION REQUIREMENTS.
6. INSTALL DUCT BANKS ONLY THROUGH BLOCKOUTS, WINDOWS OR PREFORMED KNOCKOUT PANELS. PROVIDE KNOCKOUTS ON EACH WALL AROUND MANHOLE.
7. COAT EXTERIOR WALLS AND BURIED TOP SLAB OF MANHOLE WITH BITUMINOUS DAMP PROOFING.
8. COAT EXTERIOR WALLS OF MANHOLE WITH BITUMINOUS DAMP PROOFING. LEAVE EXPOSED TOP SLAB UNCOATED.
9. PROVIDE ONE PULLING IRON ON EACH WALL ABOVE OR BELOW EACH DUCT BANK PENETRATION.
10. PROVIDE MIN 12" COMPACTED AGGREGATE BASE COURSE.
11. MINIMUM 12" DIAMETER SUMP WITH REMOVABLE SLOTTED COVER. LOCATE SUMP OUTSIDE VERTICAL CORRIDOR BELOW MANHOLE COVER.
12. SEE SPECIFICATIONS FOR CAST-IN-PLACE CONCRETE FULL MIXING, PLACING, FINISHING AND CURING REQUIREMENTS.
13. AT ONE SIDE OF MANHOLE ACCESS, PROVIDE LADDER TIE - OFF PER DETAIL E.



A PLAN - LAYOUT

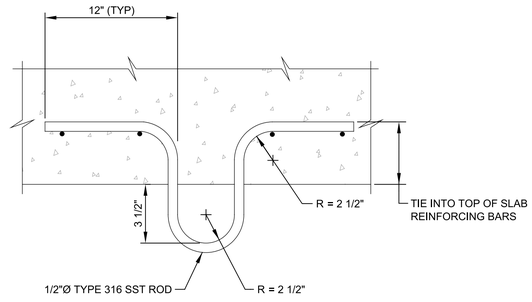


C - ALTERNATE 1: SECTION EXPOSED TOP SLAB



B - SECTION

D - ALTERNATE 2: SECTION BASE WITH SUMP OR BALLAST



E - LADDER TIE-OFF

EM062 TYP S ELECTRICAL MANHOLE: PRECAST CONCRETE

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CARVAHLO No. 20740 ELECTRICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

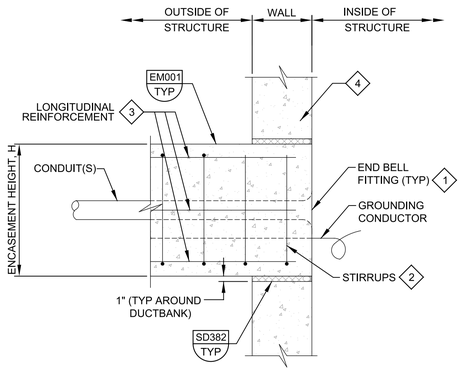
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 4

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWING NO. 00TE04
SHEET NO. 147 OF 178

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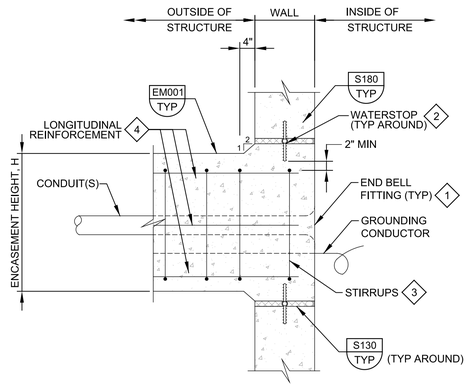
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KEY NOTES:

1. PROVIDE GROUNDING FITTING FOR METALLIC CONDUITS ENTERING MANHOLE. BOND GROUNDING FITTING TO DUCTBANK GROUNDING CONDUCTOR.
2. FOR FIRST 12'-0" FROM INSIDE FACE OF STRUCTURE, STIRRUP SPACING IN INCHES = (H-4)/2 WHERE H = CONCRETE ENCASEMENT HEIGHT IN INCHES.
3. ADDITIONAL #4 x 12'-0" @ 12" ON ALL FOUR FACES OF ENCASEMENT. ALTERNATE WITH TYPICAL REINFORCEMENT FOR 6" SPACING.
4. PROVIDE ADDITIONAL REINFORCEMENT AROUND OPENING AS REQUIRED. FOR CAST-IN-PLACE STRUCTURES, PROVIDE REINFORCEMENT PER SC012 TYP

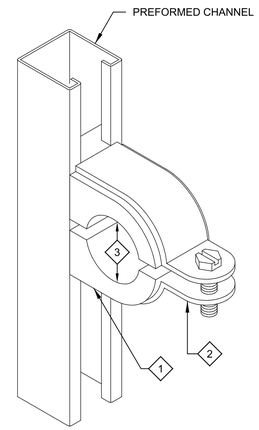
EM070 TYP S ENCASED CONDUITS AT MANHOLES OR STRUCTURES - W/O WATERSTOP



KEY NOTES:

1. PROVIDE GROUNDING FITTING FOR METALLIC CONDUITS ENTERING MANHOLE. BOND GROUNDING FITTING TO DUCTBANK GROUNDING CONDUCTOR.
2. 6" PVC CENTERBULB WATERSTOP TYPICAL AROUND PERIMETER OF ENCASEMENT.
3. FOR FIRST 12'-0" FROM INSIDE FACE OF STRUCTURE, STIRRUP SPACING, IN INCHES = (H-4)/2, WHERE H = CONCRETE ENCASEMENT HEIGHT IN INCHES.
4. ADDITIONAL #4 x 12'-0" @ 12" ON ALL FOUR FACES OF ENCASEMENT. ALTERNATE WITH TYPICAL REINFORCEMENT FOR 6" SPACING.

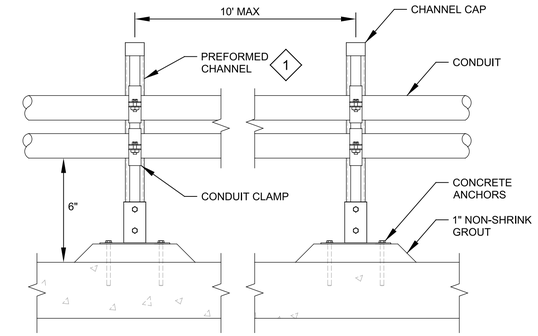
EM071 TYP S ENCASED CONDUITS AT MANHOLES OR STRUCTURES - WITH WATERSTOP



KEY NOTES:

1. PORCELAIN CABLE CLAMP
2. PIPE CLAMP
3. SIZE HOLE BASED ON CONDUCTOR SIZE

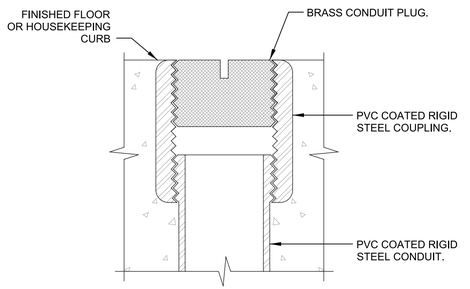
EM076 TYP S PORCELAIN CABLE CLAMP



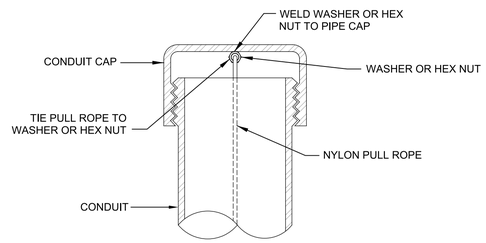
KEY NOTES:

1. SIZE PREFORMED CHANNEL FOR CONDUITS INDICATED ON THE DRAWINGS.

EM104 TYP S CONDUIT FLOOR SUPPORT FOR ELECTRICAL CONDUITS



ENCASED CONDUITS

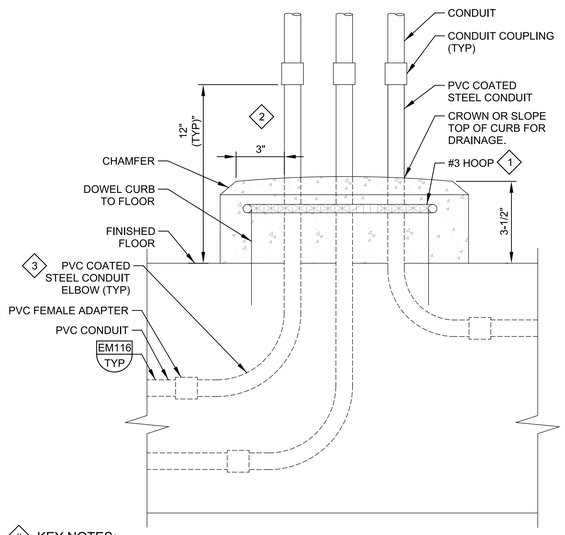


EXPOSED CONDUITS

NOTES:

1. PROVIDE 2" MIN CLEAR BETWEEN ADJACENT CONDUITS

EM105 TYP S SPARE CONDUIT DETAIL



KEY NOTES:

1. COORDINATE REINFORCING STEEL REQUIREMENTS WITH THE GENERAL CONTRACTOR.
2. TYPICAL BOTH SIDES, FRONT AND REAR.
3. FIELD BEND 1" CONDUITS. PROVIDE MANUFACTURED PCS ELBOWS FOR CONDUITS 1.25" AND LARGER.

EM107 TYP S CONDUIT HOUSEKEEPING CURB

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER ALAN CARPENTER — No. 20740 — ELECTRICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 5

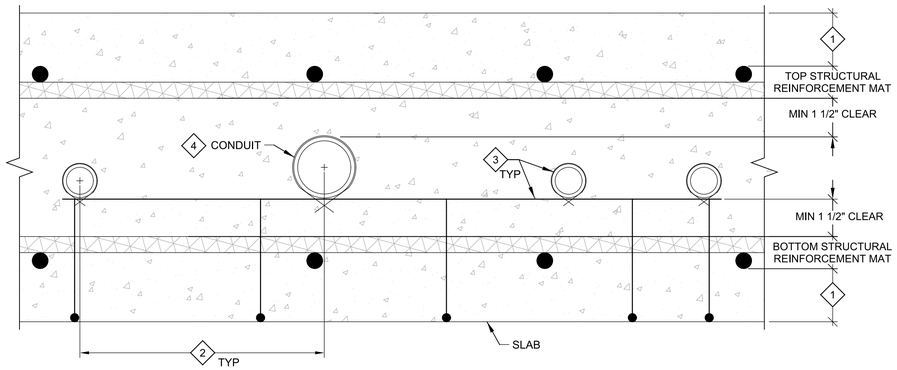
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWING NO. 00TE05
SHEET NO. 148 OF 178

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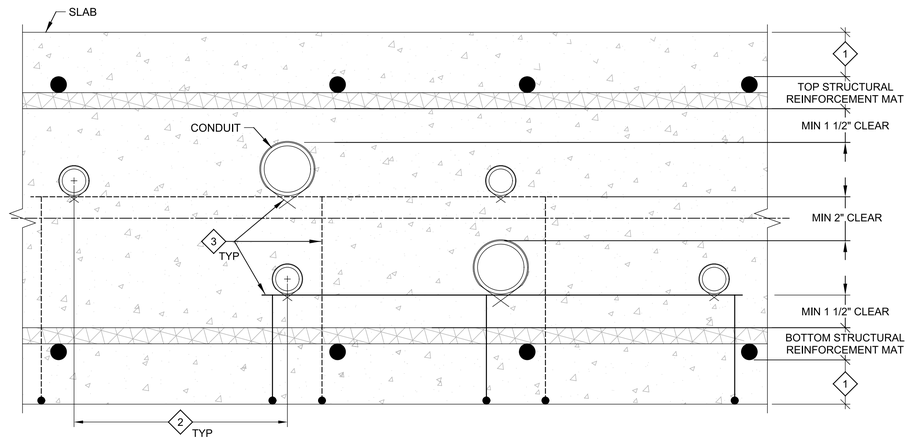
NOTES:

1. MOVE CONDUITS TO AVOID CONFLICTS WITH WATERSTOPS. WHERE HORIZONTAL & VERTICAL CLEARANCES CANNOT BE MAINTAINED, CONTACT ENGINEER FOR INSTRUCTION'S BEFORE PLACING CONCRETE.

KEY NOTES:

1. FOR REQUIRED TOP AND BOTTOM COVER OVER REINFORCEMENT SEE DETAIL. SC001 TYP
2. MINIMUM ON CENTER HORIZONTAL SPACING OF PARALLEL CONDUITS = 4X OUTSIDE DIAMETER OF THE LARGER CONDUIT.
3. SUPPORT CONDUITS ON ADDED REINFORCEMENT CHAIRS OR BOLSTERS. TIE CONDUITS TO SUPPORTS & ANCHOR TO PREVENT FLOTATION.
4. CENTER LARGEST DIAMETER CONDUIT BETWEEN TOP AND BOTTOM REINFORCEMENT MATS.

EM115 TYP S EMBEDDED CONDUIT IN CONCRETE SLAB SINGLE RUN



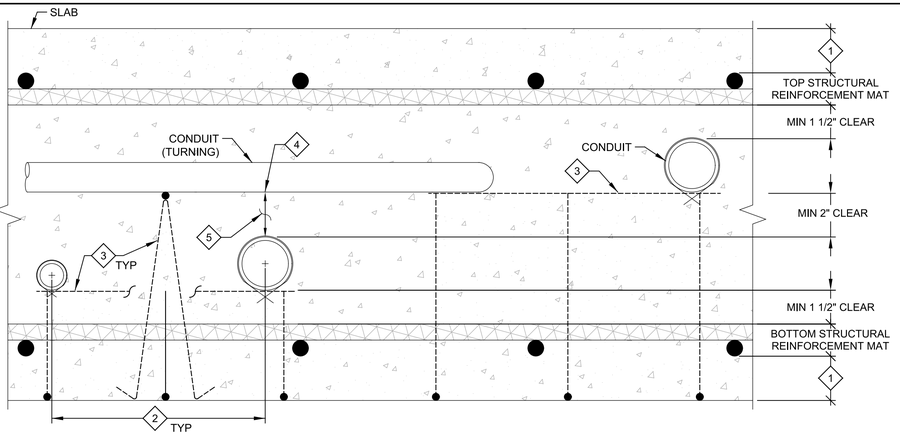
NOTES:

1. MOVE CONDUITS TO AVOID CONFLICTS WITH WATERSTOPS. WHERE HORIZONTAL & VERTICAL CLEARANCES CANNOT BE MAINTAINED, CONTACT ENGINEER FOR INSTRUCTION'S BEFORE PLACING CONCRETE.

KEY NOTES:

1. FOR REQUIRED TOP AND BOTTOM COVER OVER REINFORCEMENT SEE DETAIL. SC001 TYP
2. MINIMUM ON CENTER HORIZONTAL SPACING OF PARALLEL CONDUITS = 4X OUTSIDE DIAMETER OF THE LARGER CONDUIT.
3. SUPPORT CONDUITS ON ADDED REINFORCEMENT CHAIRS OR BOLSTERS. TIE CONDUITS TO SUPPORTS & ANCHOR TO PREVENT FLOTATION.
4. WHERE MORE THAN 2 RUNS ARE STACKED, PROVIDE HORIZONTAL & VERTICAL SPACING SHOWN BETWEEN EACH PAIR.

EM116 TYP S EMBEDDED CONDUIT IN CONCRETE SLAB STACKED RUNS



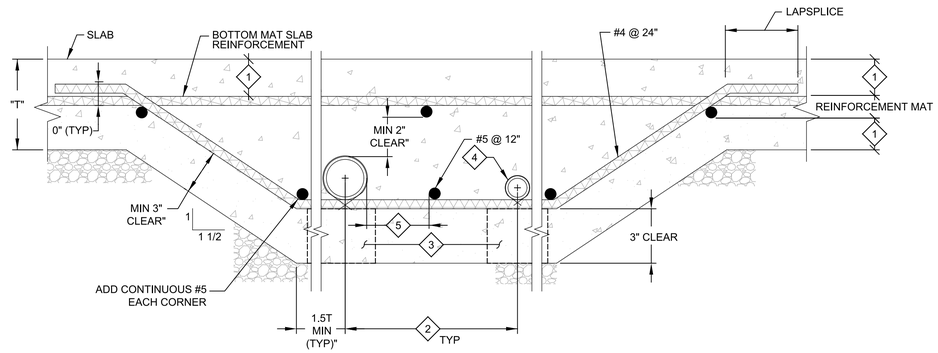
NOTES:

1. MOVE CONDUITS TO AVOID CONFLICTS WITH WATERSTOPS. WHERE HORIZONTAL & VERTICAL CLEARANCES CANNOT BE MAINTAINED, CONTACT ENGINEER FOR INSTRUCTION'S BEFORE PLACING CONCRETE.

KEY NOTES:

1. FOR REQUIRED TOP AND BOTTOM COVER OVER REINFORCEMENT SEE DETAIL. SC001 TYP
2. MINIMUM ON CENTER HORIZONTAL SPACING OF PARALLEL CONDUITS = 4X OUTSIDE DIAMETER OF THE LARGER CONDUIT.
3. SUPPORT CONDUITS ON ADDED REINFORCEMENT BOLSTERS, OCM METAL BAR SUPPORT PRODUCT TYPE OR EQUAL. TIE CONDUITS TO SUPPORTS & ANCHOR TO PREVENT FLOTATION.
4. WHERE CONDUITS CROSS, PROVIDE MIN HORIZONTAL SPACING BETWEEN PARALLEL CONDUITS NOT LESS THAN DIAMETER OF THE LARGER CONDUIT IN THE SAME HORIZONTAL PLAN.
5. SUPPORT CONDUITS AT CROSSING TO PREVENT SAG & MAINTAIN CLEARANCE SHOWN.
6. WHERE MORE THAN 2 RUNS ARE STACKED, PROVIDE HORIZONTAL & VERTICAL SPACING SHOWN BETWEEN EACH PAIR.

EM117 TYP S EMBEDDED CONDUIT IN CONCRETE SLAB CROSSING RUNS



NOTES:

1. MOVE CONDUITS TO AVOID CONFLICTS WITH WATERSTOPS. WHERE HORIZONTAL & VERTICAL CLEARANCES SHOWN CANNOT BE MAINTAINED, CONTACT ENGINEER FOR INSTRUCTIONS BEFORE PLACING CONCRETE.

KEY NOTES:

1. FOR REQUIRED TOP AND BOTTOM COVER OVER REINFORCEMENT SEE DETAIL. SC001 TYP
2. MINIMUM ON CENTER HORIZONTAL SPACING OF PARALLEL CONDUITS = 4X OUTSIDE DIAMETER OF THE LARGER CONDUIT.
3. TYPICAL SLAB REINFORCEMENT SUPPORT. SPACE AS REQUIRED TO PREVENT #4 CONDUIT SUPPORTS FROM SAGGING.
4. TIE CONDUITS TO SUPPORTS & ANCHOR TO PREVENT FLOTATION.
5. PROVIDE MIN 2" CLEAR BETWEEN CONDUIT & ADJACENT PARALLEL REINFORCEMENT (TYP).

EM118 TYP S ENCASED CONDUIT UNDER CONCRETE SLAB ON GRADE

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CARPENTER No. 20740 ELECTRICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

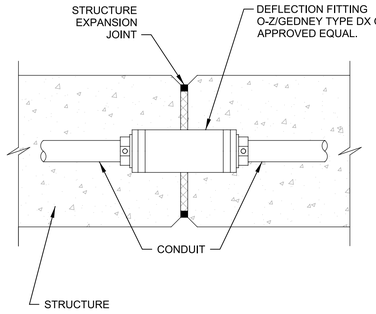
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 6

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TE06
SHEET NO. 149 OF 178

PROJECT NO.
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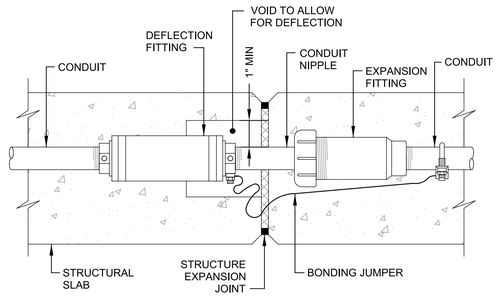
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LAST SAVED BY: hgarcia



NOTES:

1. PROVIDE ADAPTERS AS REQUIRED TO COUPLE PVC CONDUIT TO THE FITTING.

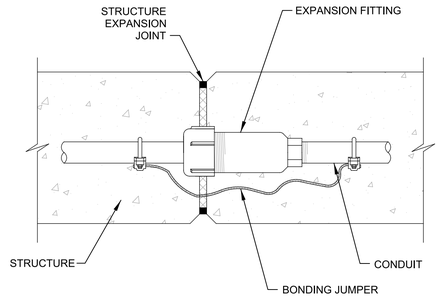
EM120 TYP S — EMBEDDED CONDUIT DEFLECTION/EXPANSION FITTING



NOTES:

1. WRAP ENTIRE ASSEMBLY IN BURLAP PRIOR TO CONCRETE POUR.
2. PROVIDE ADAPTERS AS REQUIRED TO COUPLE PVC CONDUITS TO THE FITTING.

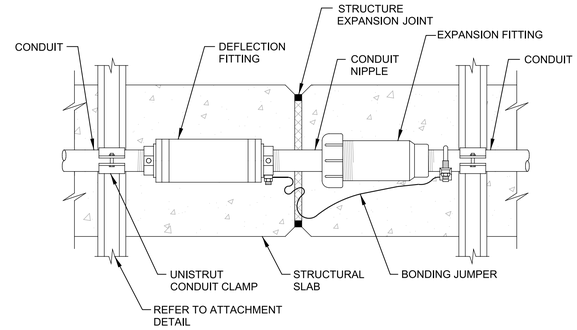
EM121 TYP S — EMBEDDED COMBINATION DEFLECTION/EXPANSION FITTING



NOTES:

1. WHERE SEVERAL CONDUITS ARE INSTALLED, FITTINGS MAY BE STAGGERED. BUT, IN NO CASE SHALL FITTINGS BE MORE THAN 5'-0" FROM STRUCTURE'S EXPANSION JOINT.
2. FOR PVC COATED CONDUIT, USE PVC COATED EXPANSION FITTING BY CONDUIT MANUFACTURER.

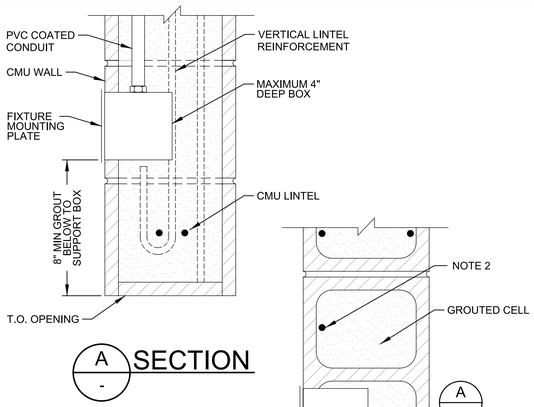
EM125 TYP S — EXPOSED CONDUIT EXPANSION FITTING



GENERAL NOTES:

1. WHERE SEVERAL CONDUITS ARE INSTALLED, FITTINGS MAY BE STAGGERED, BUT IN NO CASE SHALL A FITTING BE MORE THAN 3'-0" FROM THE EXPANSION JOINT.

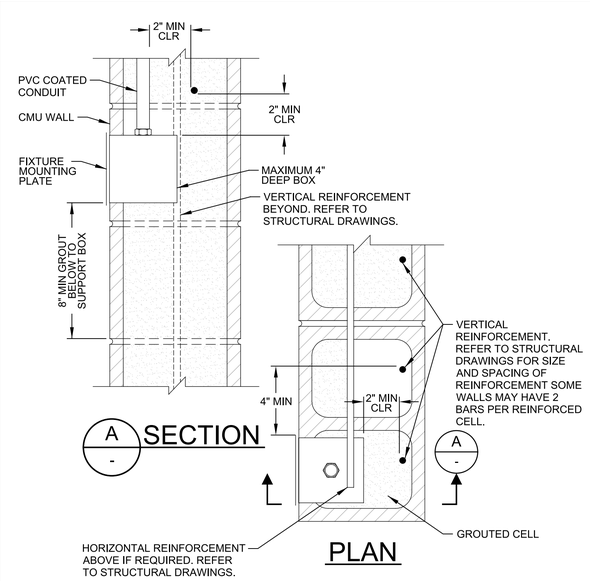
EM126 TYP S — EXPOSED EXPANSION/DEFLECTION FITTING AT CONCRETE WALL EXPANSION JOINT



NOTES:

1. REFER TO STRUCTURAL DRAWING FOR ADDITIONAL GROUT AND REINFORCEMENT REQUIREMENTS.
2. DISCONTINUE VERTICAL BAR AT BOX. PROVIDE VERTICAL BARS IN CELLS NEXT TO BOX.
3. REFER TO STRUCTURAL DRAWINGS FOR REINFORCEMENT IN WALLS AND LINTELS.

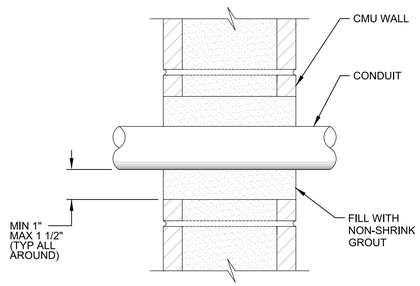
EM171 TYP S — ELECTRICAL BOX ABOVE OPENING FULLY GROUTED CMU WALL



NOTES:

1. REFER TO STRUCTURAL DRAWING FOR ADDITIONAL GROUT AND REINFORCEMENT REQUIREMENTS.

EM172 TYP S — ELECTRICAL BOX BESIDE OPENING FULLY GROUTED CMU WALL



NOTES:

1. PROVIDE NON-DESTRUCTIVE TESTING TO DETERMINE LOCATIONS OF REINFORCEMENT. MAINTAIN MIN 2" CLEAR BETWEEN CORE DRILLED OPENING AND REINFORCEMENT.
2. ROUGHEN SURFACE OF OPENING TO A 1/4" AMPLITUDE AND APPLY EPOXY CEMENT BONDING AGENT IMMEDIATELY PRIOR TO GROUTING.
3. PROVIDE 8" MINIMUM CENTER-TO-CENTER SPACING FOR CONDUITS.

EM173 TYP S — CORE HOLE PENETRATION FULLY GROUTED CMU WALL

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DESIGNED CE
DRAWN CE
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CARPENTER No. 20740 ELECTRICAL STATE OF CALIFORNIA

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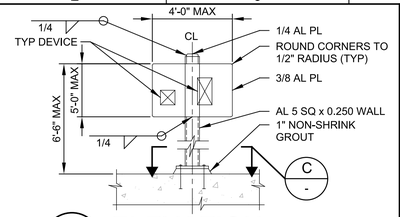
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 7

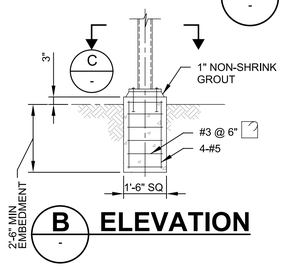
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TE07
SHEET NO. 150 OF 178

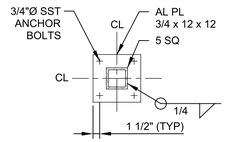
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FILE NAME: 11843A1000TE07.dgn



A - ELEVATION



B - ELEVATION

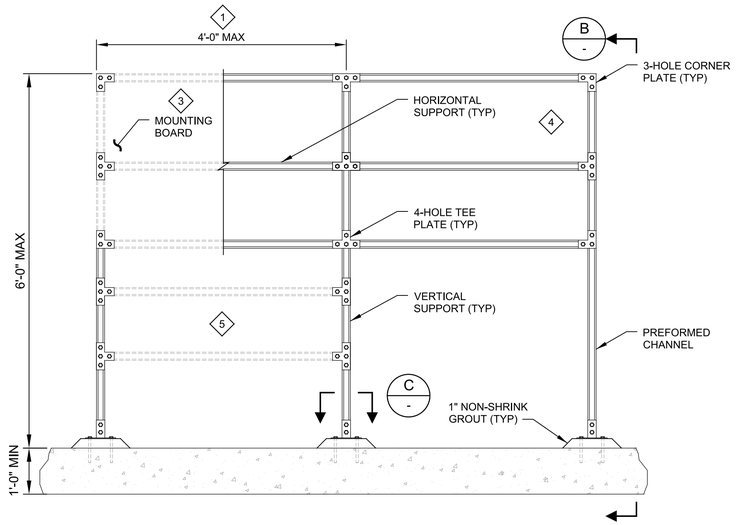


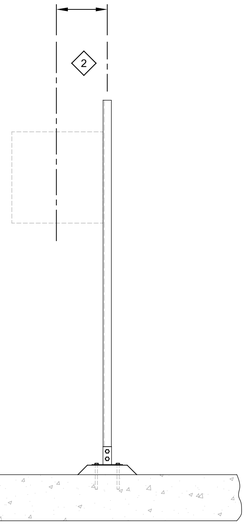
C - SECTION

GENERAL NOTES:

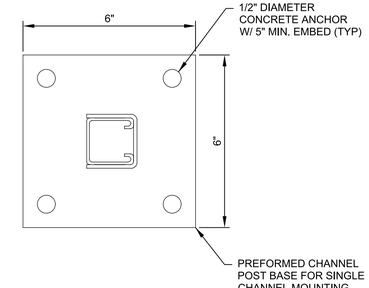
1. USE ELEVATION B WHERE A SEPARATE FOUNDATION IS REQUIRED.
2. COAT ALUMINUM SURFACES IN CONTACT W/ CONCRETE PER SPECIFICATIONS.
3. USE STAINLESS STEEL FASTENERS FOR MOUNTING DEVICES.
4. WEIGHT OF DEVICE(S) SHALL NOT EXCEED 300 POUNDS.

EM202 TYP S — DEVICE SUPPORT AND MOUNTING





B - SECTION



C - POST BASE

NOTES:

1. AS SHOWN, THE MOUNTING STAND IS SUITABLE FOR THE FOLLOWING DESIGN CRITERIA.
   - STAINLESS STEEL OR HOT-DIPPED GALVANIZED PREFORMED CHANNEL
   - SEISMIC DESIGN CATEGORY: A THROUGH D
   - RISK CATEGORY: III AND IV
   - MAXIMUM EQUIPMENT LOAD OF 100 LBS PER VERTICAL SUPPORT

   SUBMIT DESIGN CALCULATIONS FOR EACH INSTALLATION THAT EXCEEDS THE SPECIFIED DESIGN CRITERIA OR DIMENSIONAL LIMITATIONS IN THIS DETAIL. REFER TO THE SPECIFICATIONS FOR DESIGN CALCULATION SUBMITTAL REQUIREMENTS
2. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
3. WHERE CONCRETE ANCHORS COME IN CONTACT WITH DISSIMILAR METALS, ISOLATE DISSIMILAR METALS AS SPECIFIED IN THE SPECIFICATIONS.
4. HORIZONTAL AND VERTICAL SUPPORTS SHALL CONSIST OF PREFORMED SINGLE CHANNELS.

KEY NOTES:

1. FOR MOUNTING STANDS WIDER THAN 4 FEET PROVIDE EQUALLY SPACED VERTICAL SUPPORTS AT 4 FOOT MAXIMUM SPACING.
2. MAXIMUM OFFSET TO THE CENTERLINE OF EQUIPMENT OR ENCLOSURES IS 1'-6".
3. PROVIDE A MOUNTING BOARD FOR INSTRUMENTS AND DEVICES WEIGHING LESS THAN 20 POUNDS THAT CANNOT BE MOUNTED DIRECTLY TO PREFORMED CHANNEL. EQUIPMENT ANCHORAGE TO THE MOUNTING BOARD SHALL BE DESIGNED BY THE CONTRACTOR.
4. PROVIDE ADDITIONAL PREFORMED CHANNEL SUPPORTS FOR ENCLOSURES THAT CAN BE MOUNTED DIRECTLY TO THE PREFORMED CHANNEL.
5. OPTIONAL HORIZONTAL SUPPORTS AND AVAILABLE SPACE FOR JUNCTION BOXES.

EM210 TYP S — INDOOR EQUIPMENT MOUNTING STAND

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER ALAN CARLATO
No. 20740
ELECTRICAL
STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

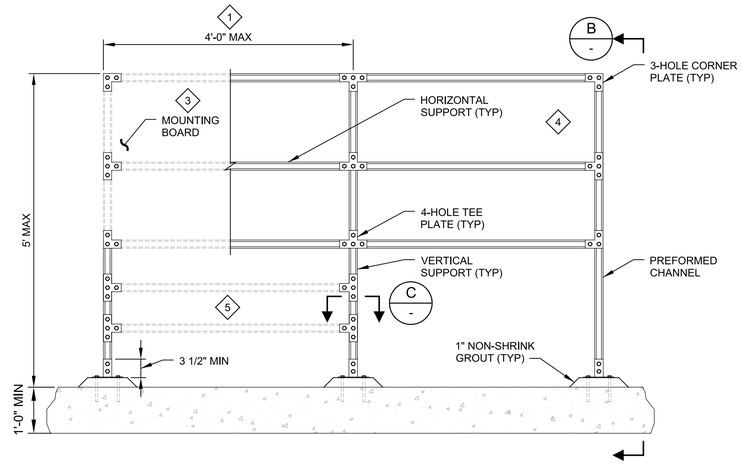
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 8

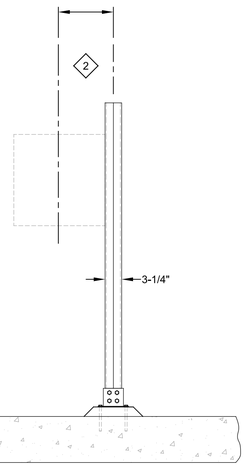
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TE08
SHEET NO. 151 OF 178

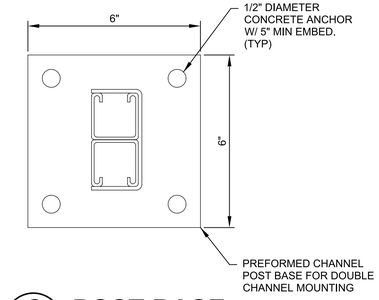
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B SECTION



C POST BASE

NOTES:

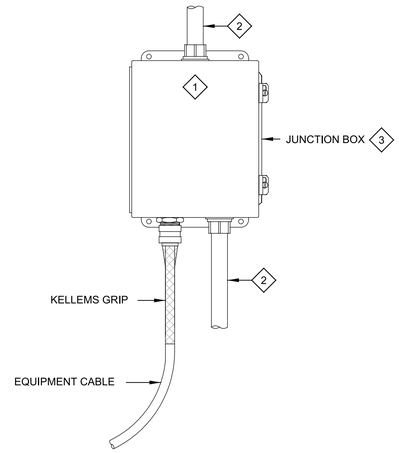
1. AS SHOWN, THE MOUNTING STAND IS SUITABLE FOR THE FOLLOWING DESIGN CRITERIA.
   - STAINLESS STEEL OR HOT-DIPPED GALVANIZED PREFORMED CHANNEL
   - BASIC WIND SPEED (3 SECOND GUST, 33 FEET ABOVE GROUND) : 120 MPH
   - WIND EXPOSURE CATEGORY: C
   - NON -SPECIAL WIND REGIONS
   - SEISMIC DESIGN CATEGORY: A THROUGH D
   - RISK CATEGORY: III AND IV
   - MAXIMUM EQUIPMENT LOAD OF 100 LBS PER VERTICAL SUPPORT

   SUBMIT DESIGN CALCULATIONS FOR EACH INSTALLATION THAT EXCEEDS THE SPECIFIED DESIGN CRITERIA OR DIMENSIONAL LIMITATIONS IN THIS DETAIL. REFER TO THE SPECIFICATIONS FOR DESIGN CALCULATION SUBMITTAL REQUIREMENTS.
2. THE TOTAL SURFACE AREA OF ALL EQUIPMENT AND MOUNTING BOARDS SHALL NOT EXCEED 12 SQUARE FEET PER VERTICAL SUPPORT.
3. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
4. WHERE CONCRETE ANCHORS COME IN CONTACT WITH DISSIMILAR METALS, ISOLATE DISSIMILAR METALS AS SPECIFIED IN THE SPECIFICATIONS.
5. VERTICAL SUPPORTS SHALL CONSIST OF PREFORMED DOUBLE CHANNELS. HORIZONTAL SUPPORTS SHALL CONSIST OF PREFORMED SINGLE CHANNELS.

KEY NOTES:

1. FOR MOUNTING STANDS WIDER THAN 4 FEET PROVIDE EQUALLY SPACED VERTICAL SUPPORTS AT 4 FOOT MAXIMUM SPACING.
2. MAXIMUM OFFSET TO THE CENTERLINE OF EQUIPMENT OR ENCLOSURES IS 1'-6".
3. PROVIDE A MOUNTING BOARD FOR INSTRUMENTS AND DEVICES WEIGHING LESS THAN 20 POUNDS THAT CANNOT BE MOUNTED DIRECTLY TO PREFORMED CHANNEL. EQUIPMENT ANCHORAGE TO THE MOUNTING BOARD SHALL BE DESIGNED BY THE CONTRACTOR.
4. PROVIDE ADDITIONAL PREFORMED CHANNEL SUPPORTS FOR ENCLOSURES THAT CAN BE MOUNTED DIRECTLY TO THE PREFORMED CHANNEL.
5. OPTIONAL HORIZONTAL SUPPORTS AND AVAILABLE SPACE FOR JUNCTION BOXES.

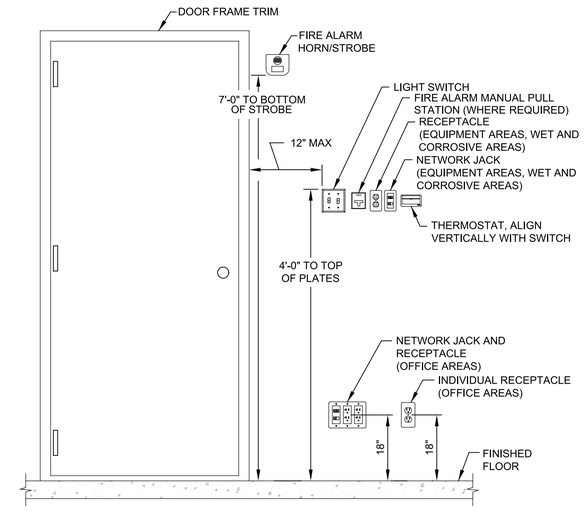
EM211 TYP S OUTDOOR EQUIPMENT MOUNTING STAND



KEY NOTES:

1. PROVIDE TERMINAL STRIPS OR POWER DISTRIBUTION BLOCKS TO TRANSITION FROM THE EQUIPMENT CABLE TO FIELD WIRING. PROVIDE CIRCUIT BREAKERS OR FUSES, AS REQUIRED, TO MEET THE AVAILABLE FAULT CURRENT REQUIREMENTS.
2. POWER AND CONTROL CONDUITS. REFER TO THE ELECTRICAL DRAWINGS, CONDUIT AND CABLE SCHEDULE FOR DETAILS.
3. REFER TO SPECIFICATIONS AND PLANS FOR NEMA TYPE.

EM315 TYP S SUBMERSIBLE EQUIPMENT CABLE CONNECTION DETAIL



GENERAL NOTES:

1. ALL SWITCHES AND RECEPTACLES SHALL BE EMBEDDED IN THE WALL UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

EM725 TYP S OUTLET BOX MOUNTING

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
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CHECKED RM
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER ALAN CARLATO — No. 20740 — ELECTRICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

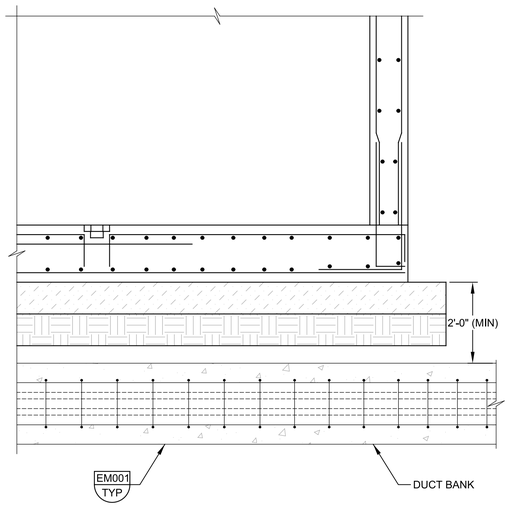
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 9

VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

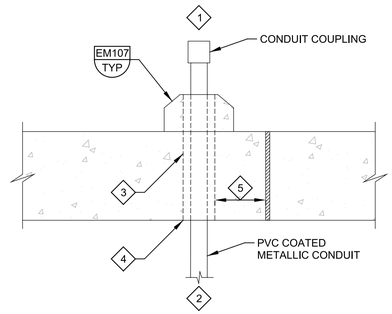
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SHEET NO. 152 OF 178

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EM900 TYP J DUCT BANK CROSSING UNDER SLAB



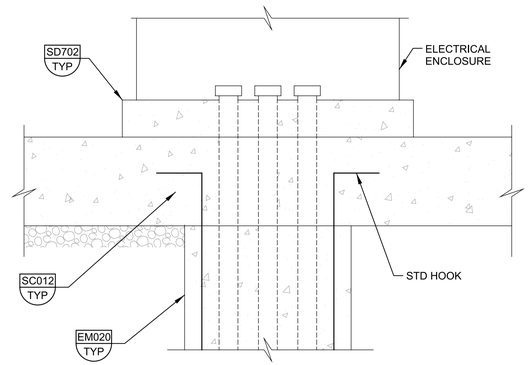
GENERAL NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

KEY NOTES:

1. TRANSITION TO THE SPECIFIED EXPOSED CONDUIT TYPE AFTER THE CONDUIT COUPLING.
2. CONDUIT RISERS AND ELBOWS SHALL BE PVC COATED METALLIC CONDUIT.
3. WRAP THE CONDUIT WITH 1/2" POLYETHYLENE CLOSED CELL EXPANSION JOINT FILLER MATERIAL, DECK-O-FOAM OR APPROVED EQUAL. SEAL ALL EXPANSION JOINT FILLER MATERIAL WITH 10 MIL PVC PIPE SEALANT TAPE TO PREVENT CONCRETE PASTE FORMING FINS IN THE ANNULAR SPACE.
4. EXTEND THE EXPANSION JOINT FILLER MATERIAL A MINIMUM OF 2" BELOW THE SLAB.
5. SPACE CONDUITS WITH A MINIMUM OF 2" EDGE-TO-EDGE DISTANCE BETWEEN THE EXPANSION JOINT MATERIAL.

EM901 TYP J DIRECT BURIED OR BELOW SLAB CONDUIT RISER THROUGH FLOOR SLAB



GENERAL NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

EM902 TYP J DUCT BANK RISER TO ELECTRICAL EQUIPMENT WITHOUT A BLOCKOUT

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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DRAWN CE
CHECKED RM
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REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER ALAN CARPENTER No. 20740 ELECTRICAL STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
ELECTRICAL 10

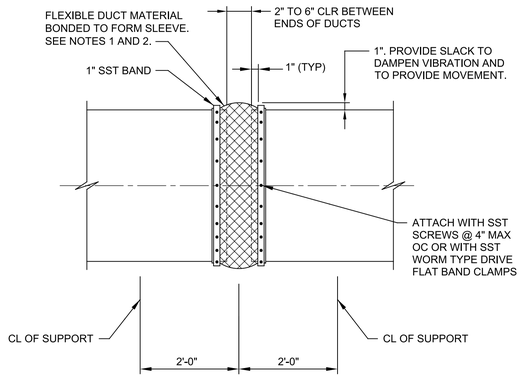
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SHEET NO. 153 OF 178

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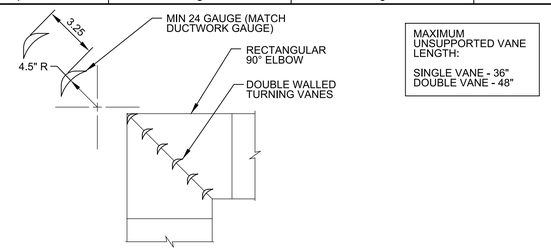


NOTES:

1. BOND LONGITUDINAL JOINT PER MANUFACTURER'S RECOMMENDATION.
2. FOR FLEXIBLE CONNECTOR TYPE FL-1 OR FL-2 ONLY.
3. FOR EXTERIOR LOCATIONS, PROVIDE SHEET METAL COVER.

HA120 TYP S — CONNECTION - FLEXIBLE FOR METAL DUCTS (FL-1 OR FL-2)

5/17/18



MAXIMUM UNSUPPORTED VANE LENGTH:

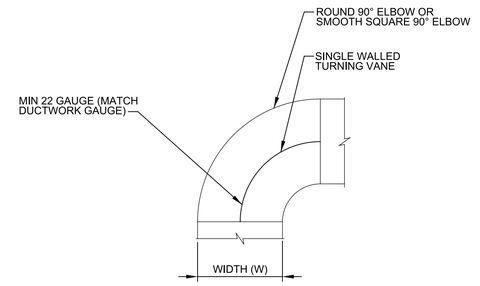
SINGLE VANE - 36"
DOUBLE VANE - 48"

NOTES:

1. INSTALL VANES IN SECTIONS OR USE TIE RODS TO LIMIT THE UNBRACED VANE LENGTH.
2. VANES SHALL BE SECURELY FASTENED TO RUNNERS.
3. ALL VANES SHALL BE SECURE AND STABLE IN INSTALLED OPERATING POSITION. IF NECESSARY, AT CERTAIN VELOCITIES OR PRESSURES WELD VANES TO RUNNERS ON APPROPRIATE INTERVALS ALONG RUNNERS.
4. OTHER VANE SIZES, SPACINGS OR CONFIGURATIONS CAN BE REVIEWED BY ENGINEER OF RECORD FOR APPROVAL.

HA320 TYP S — TURNING VANES FOR METAL DUCT

SHEET 1 OF 2 5/17/18



SINGLE WALLED TURNING VANES

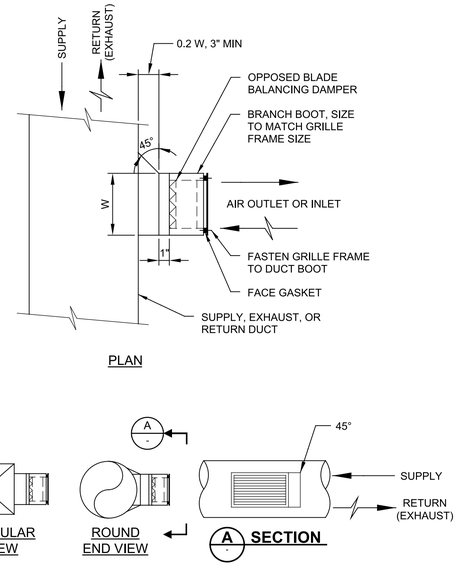
CENTERLINE R = 3W/2 UNLESS OTHERWISE SPECIFIED - IS NOT RESTRICTED TO 90° SQUARE THROAT OR SMOOTH RADIUS ELBOW.

NOTES:

1. INSTALL VANES IN SECTIONS OR USE TIE RODS TO LIMIT THE UNBRACED VANE LENGTH.
2. VANES SHALL BE SECURELY FASTENED TO RUNNERS.
3. ALL VANES SHALL BE SECURE AND STABLE IN INSTALLED OPERATING POSITION. IF NECESSARY, AT CERTAIN VELOCITIES OR PRESSURES WELD VANES TO RUNNERS ON APPROPRIATE INTERVALS ALONG RUNNERS.
4. OTHER VANE SIZES, SPACINGS OR CONFIGURATIONS CAN BE REVIEWED BY ENGINEER OF RECORD FOR APPROVAL.

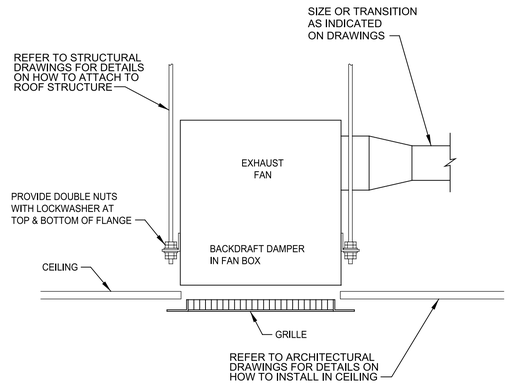
HA320 TYP S — TURNING VANES FOR METAL DUCT

SHEET 2 OF 2 5/17/18



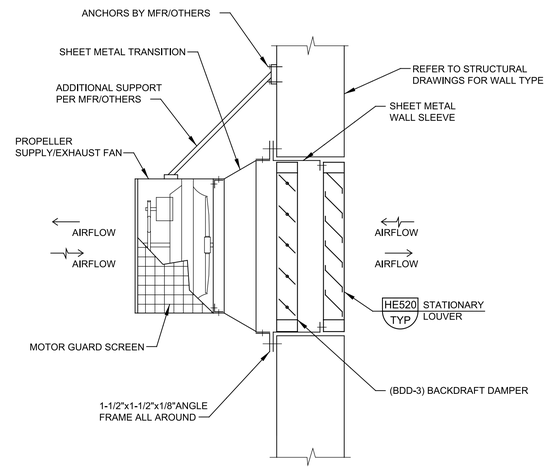
HA520 TYP S — GRILLE - SUPPLY/RETURN/EXHAUST - METAL

11/13/18



HE150 TYP S — FAN - CEILING RESTROOM EXHAUST

5/22/18

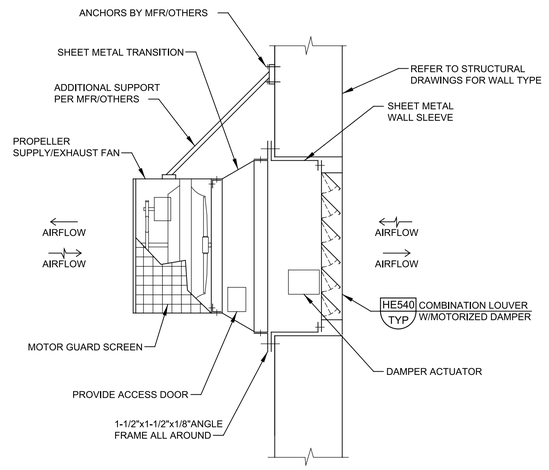


NOTES:

1. SEAL AIRTIGHT AND WATER TIGHT PER LOUVER MFR RECOMMENDATIONS.

HE166 TYP S — FAN - WALL MOUNTED PROPELLER SUPPLY/EXHAUST

SHEET 1 OF 2 5/23/18



NOTES:

1. SEAL AIRTIGHT AND WATER TIGHT PER LOUVER MFR RECOMMENDATIONS.

HE166 TYP S — FAN - WALL MOUNTED PROPELLER SUPPLY/EXHAUST

SHEET 2 OF 2 5/23/18

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED CG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHAD GREEN — No. 37915 — MECHANICAL — STATE OF CALIFORNIA

carollo®

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

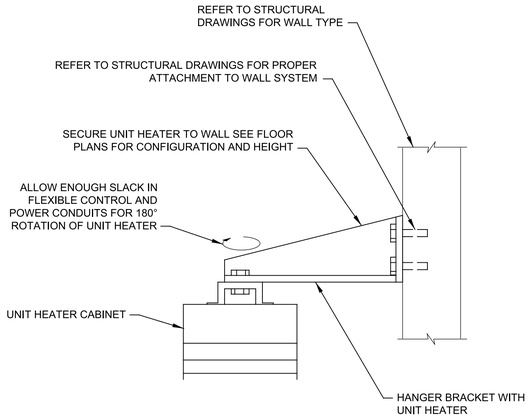
TYPICAL DETAILS

HVAC 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

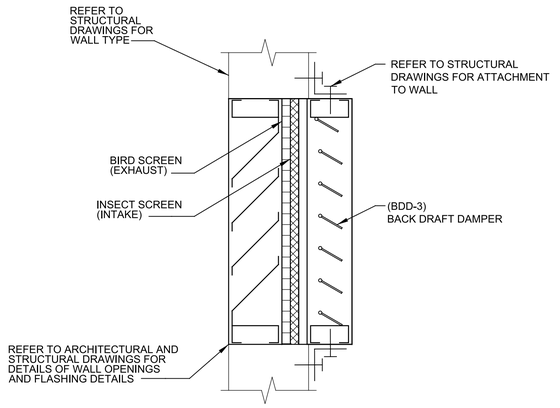
JOB NO. 11843A.10
DRAWING NO. 00TH01
SHEET NO. 154 OF 178

PROJECT NO. FILE NAME: 11843A1000TH01.dgn



HE350 TYP S — UNIT HEATER - WALL MOUNT - ELECTRIC

5/23/18

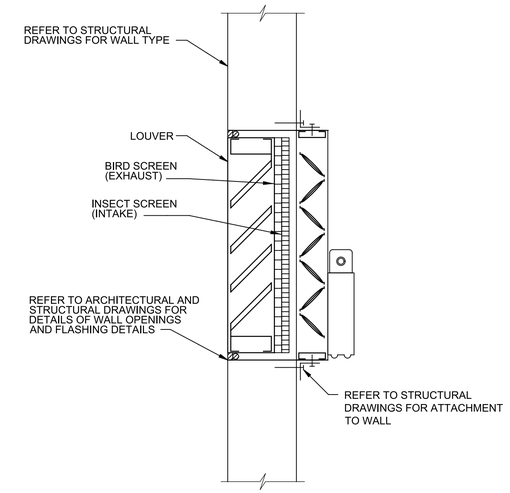


NOTES:

1. ALL FASTENERS SHALL BE STAINLESS STEEL.
2. REFER TO MANUFACTURE RECOMMENDATIONS FOR INSTALLATION.
3. COORDINATE THE SEQUENCE OF INSTALLATION OF DAMPERS AND LOUVERS WITH THE STRUCTURAL BRACING AND EXTERIOR WALL.

HE520 TYP S — LOUVER - STATIONARY - INTAKE/EXHAUST

SHEET 1 OF 2 12/28/18

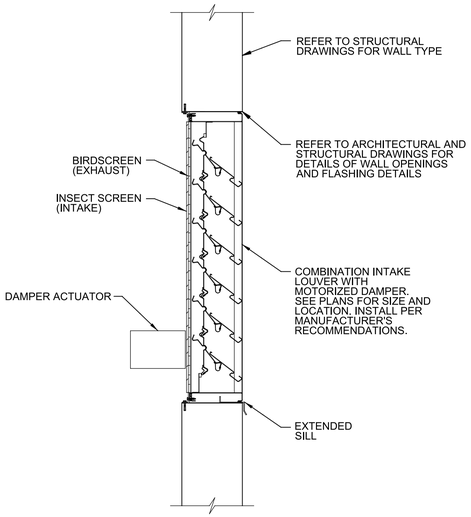


NOTES:

1. ALL FASTENERS SHALL BE STAINLESS STEEL.
2. REFER TO MANUFACTURE RECOMMENDATIONS FOR INSTALLATION.
3. COORDINATE THE SEQUENCE OF INSTALLATION OF DAMPERS AND LOUVERS WITH THE STRUCTURAL BRACING AND EXTERIOR WALL.

HE520 TYP S — LOUVER - STATIONARY - INTAKE/EXHAUST WITH MOTORIZED DAMPER MOUNTING

SHEET 2 OF 2 12/28/18

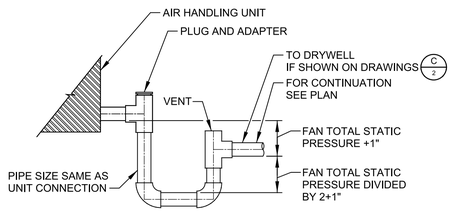


NOTES:

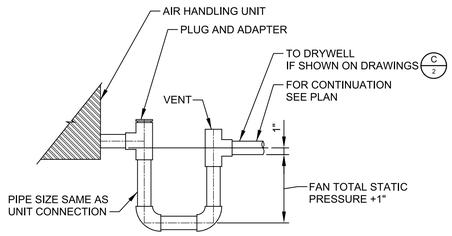
1. ALL FASTENERS SHALL BE STAINLESS STEEL.
2. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION.
3. COORDINATE THE SEQUENCE OF INSTALLATION OF DAMPERS AND LOUVERS WITH THE STRUCTURAL BRACING AND EXTERIOR WALL.

HE540 TYP S — LOUVER - OPERABLE - INTAKE/EXHAUST

6/6/18



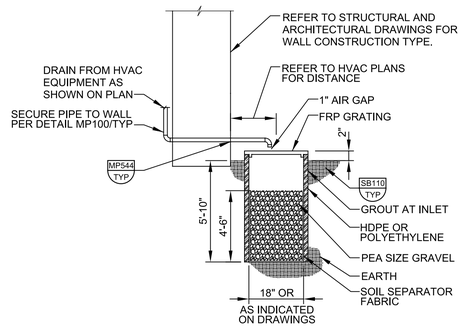
A DRAW THRU UNIT



B BLOW THRU UNIT

HE620 TYP S — PIPE CONNECTION - AC CONDENSATE

SHEET 1 OF 2 12/28/18



C DRYWELL (1)

NOTE:

1. ROUTE CONDENSATE LINE BELOW GRADE AND ENTER SIDE OF DRYWELL IF CONDENSATE PIPE IS TRIPPING HAZARD.

HE620 TYP R — PIPE CONNECTION - AC CONDENSATE

SHEET 2 OF 2 11/14/24

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED CG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHAD GREEN — No. 37915 — MECHANICAL — STATE OF CALIFORNIA

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CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

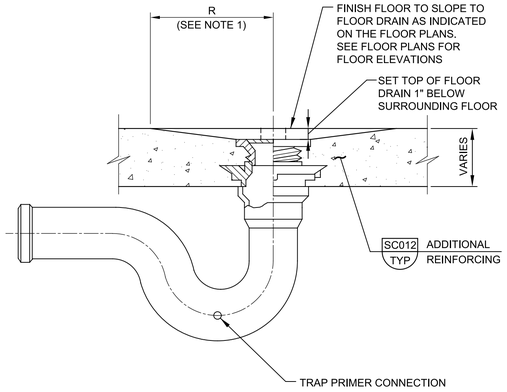
HVAC 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TH02
SHEET NO. 155 OF 178

PROJECT NO. FILE NAME: 11843A1000TH02.dgn

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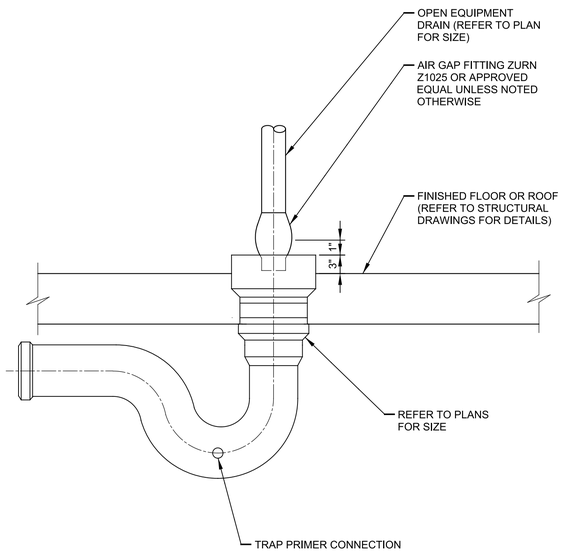


NOTE:

1. PROVIDE 12" RADIUS SLOPE TO EQUIPMENT DRAINS WHERE FLOOR DOES NOT SLOPE TO DRAIN.
2. TRAP IS REQUIRED WHEN DRAINING INTO SANITARY SEWER ONLY, UNLESS OTHERWISE INDICATED ON PLAN.

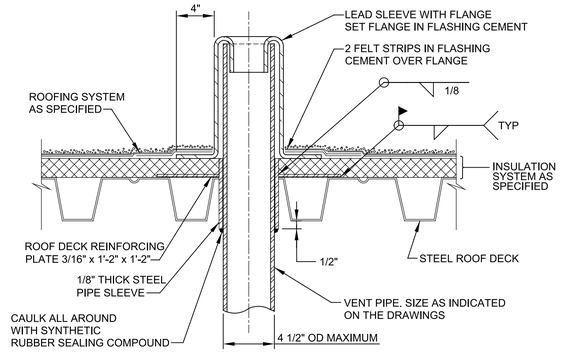
HP220 TYP R — DRAIN WITH TRAP - FLOOR

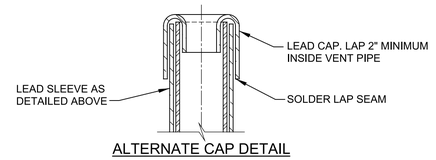
11/14/24



HP230 TYP S — DRAIN WITH TRAP - OPEN EQUIPMENT

9/12/18





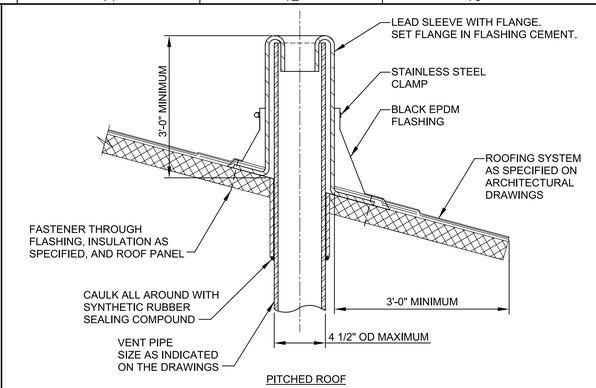
ALTERNATE CAP DETAIL

NOTES:

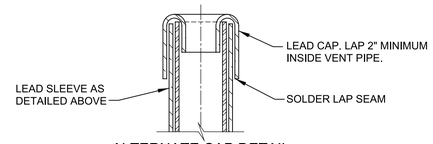
1. LOCATE PIPE BETWEEN WEBS ONLY. FOR INSTALLATIONS WHERE WEB IS CUT, THE CONSTRUCTION SHALL BE PER DETAIL SJ402/TYP WITH RAIN SKIRT.
2. SLEEVE LENGTH VARIES WITH INSULATION SYSTEM THICKNESS.
3. SLEEVE ID SHALL BE MINIMUM OF PIPE OD + 1/4".

HP318 TYP R — VENT THROUGH STEEL ROOF DECK

SHEET 1 OF 2 11/14/24



PITCHED ROOF



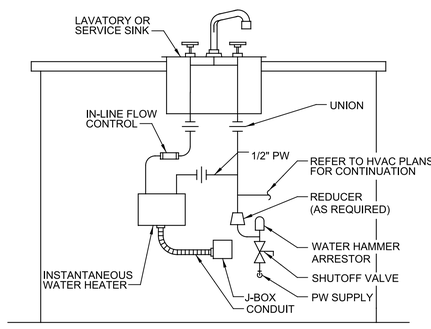
ALTERNATE CAP DETAIL

NOTES:

1. SLEEVE LENGTH VARIES WITH INSULATION SYSTEM THICKNESS.
2. SLEEVE ID SHALL BE MINIMUM OF PIPE OD + 1/4".

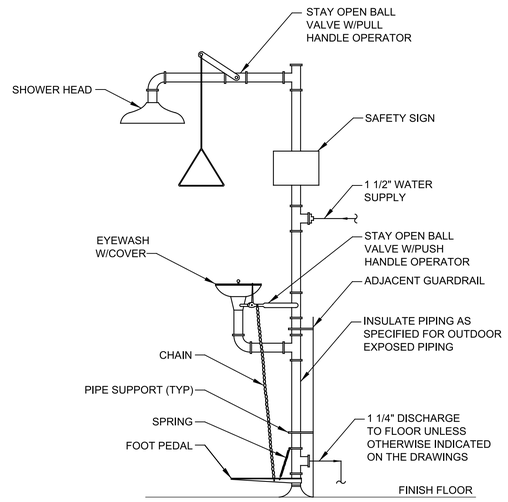
HP318 TYP S — VENT THROUGH STEEL ROOF DECK

SHEET 2 OF 2 9/29/21



HP538 TYP S — WATER HEATER - INSTANTANEOUS ELECTRIC - SINK

9/13/18



SHOWER TO BE HAWS MODEL 8300.158
WITH SP157A SCALD PROTECTION BLEED VALVE

HP610 TYP S — EMERGENCY SHOWER & EYE/FACE WASH - NON FREEZE PROTECTED

9/13/18

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED CG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHAD GREEN — No. 37915 — MECHANICAL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
HVAC 3

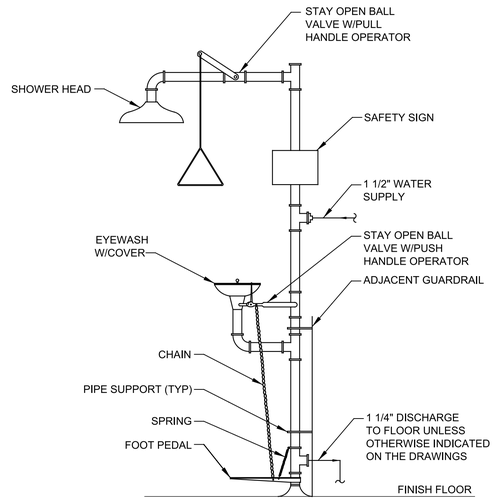
VERIFY SCALES
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWING NO. 00TH03
SHEET NO. 156 OF 178

PROJECT NO.
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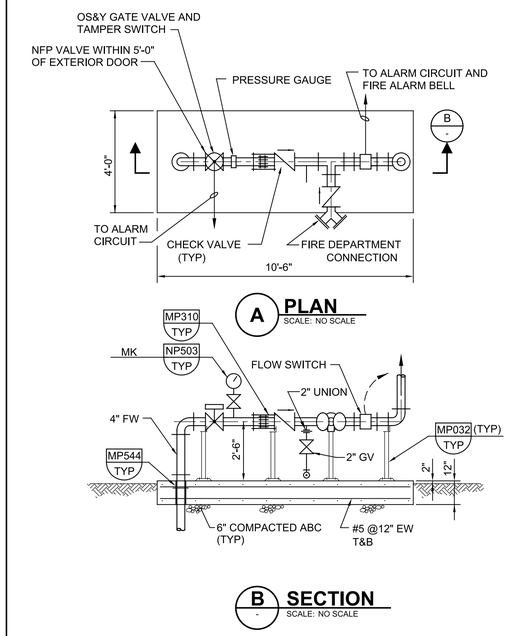
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LAST SAVED BY: DFassbinder



SHOWER TO BE HAWS MODEL 8309

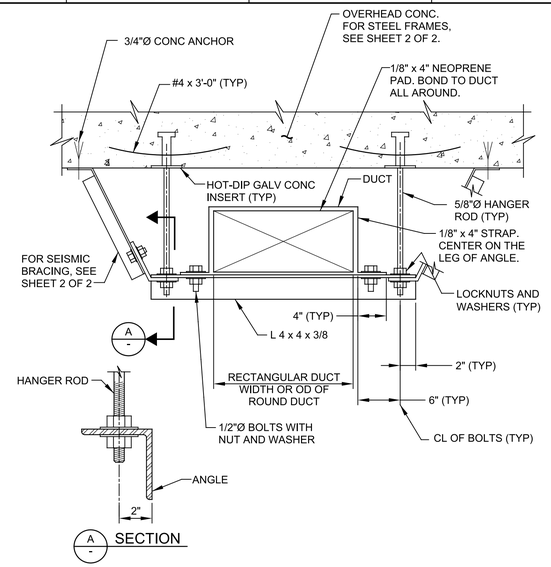
HP640 TYP S — EMERGENCY SHOWER & EYE/FACE WASH - INDOOR

2/19/21



HP710 TYP R — FIRE RISER - WET PIPE

11/14/24

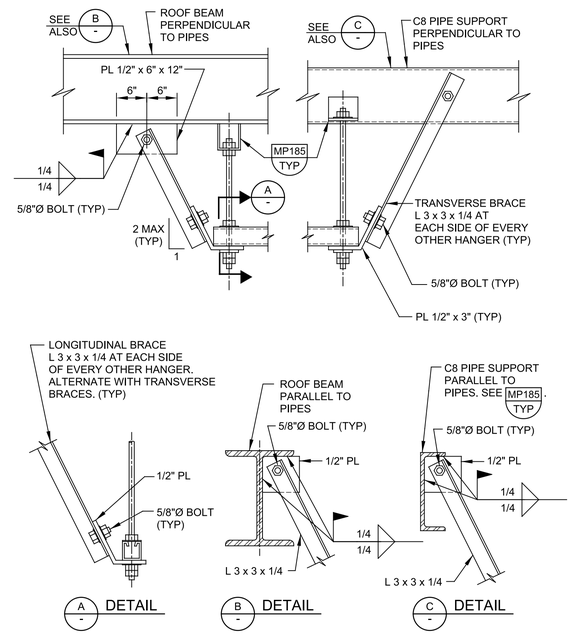


NOTES:

1. ALL METAL SHALL BE HOT-DIP GALV STEEL UNLESS OTHERWISE INDICATED ON THE DWGS.
2. SEE DRAWINGS FOR THE SIZE OF DUCT.
3. TO APPLY TO ALL RECTANGULAR DUCTS & ALL ROUND DUCTS 18" AND LARGER.

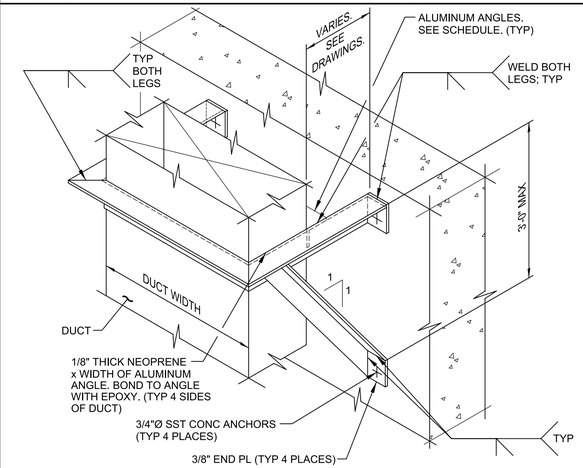
HS184 TYP S — DUCT SUPPORT FOR RECTANGULAR/ROUND DUCT - TRAPEZE FROM OVERHEAD

SHEET 1 OF 2 9/14/18



HS184 TYP R — DUCT SUPPORT FOR RECTANGULAR/ROUND DUCT - TRAPEZE FROM OVERHEAD

SHEET 2 OF 2 11/14/24



AIR DUCT HANGER AND SUPPORT SCHEDULE		
DUCT WIDTH	ANGLE SIZE	SPACING WHEN NOT INDICATED ON THE DRAWINGS
LESS THAN 18"	L 2 x 2 x 0.250	8'-0" OC MAX
18" THRU 40"	L 2 1/2 x 2 1/2 x 0.375	8'-0" OC MAX
GREATER THAN 40"	L 3 x 3 x 0.375	4'-0" OC MAX

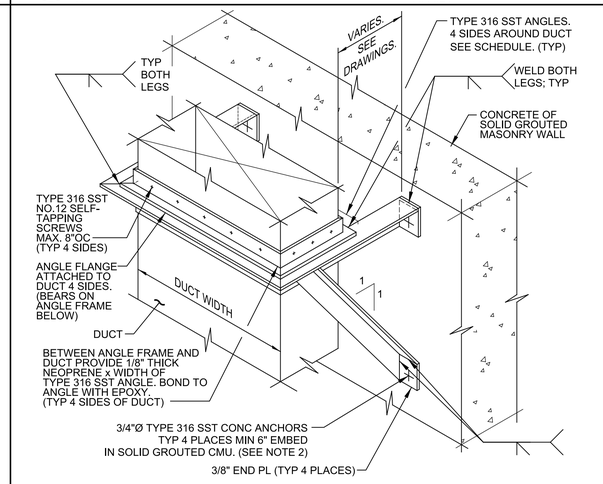
LIGHT DUTY DUCTWORK

NOTE:

1. DUCT WIDTH SHALL BE THE LONG DIMENSION OF RECTANGULAR DUCT OR THE OUTSIDE DIAMETER OF ROUND DUCT.

HS350 TYP S — DUCT SUPPORT FOR VERTICAL RECTANGULAR DUCT - WALL BRACKET OUTSIDE

SHEET 1 OF 2 9/14/18



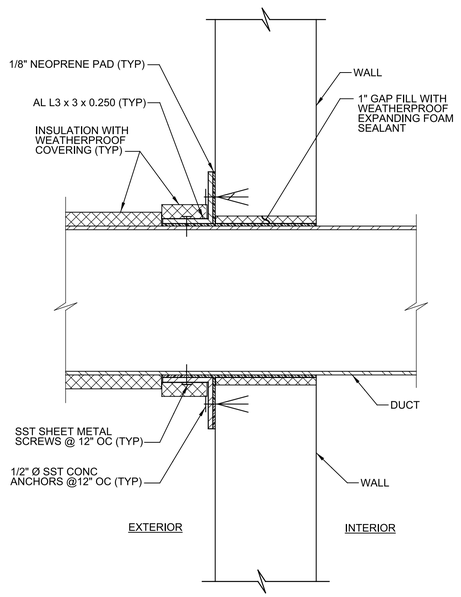
AIR DUCT HANGER AND SUPPORT SCHEDULE		
DUCT WIDTH	ANGLE SIZE	SPACING WHEN NOT INDICATED ON THE DRAWINGS
LESS THAN 18"	L 2 x 2 x 0.250	8'-0" OC MAX
18" THRU 40"	L 2 1/2 x 2 1/2 x 0.375	8'-0" OC MAX
GREATER THAN 40"	L 3 x 3 x 0.375	4'-0" OC MAX

NOTE:

1. DUCT WIDTH SHALL BE THE LONG DIMENSION OF RECTANGULAR DUCT OR THE OUTSIDE DIAMETER OF ROUND DUCT.
2. SOLID GROUTED CMU TO EXTEND MIN. 12" ALL AROUND PAST CENTERLINE OF ANCHOR.

HS350 TYP S — DUCT SUPPORT FOR VERTICAL RECTANGULAR DUCT - WALL BRACKET OUTSIDE

SHEET 2 OF 2 9/14/18



HT350 TYP S — PENETRATION-RECTANGULAR DUCT THROUGH WALL

08/22/18

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED CG
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — CHAD GREEN — No. 37915 — MECHANICAL — STATE OF CALIFORNIA

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CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

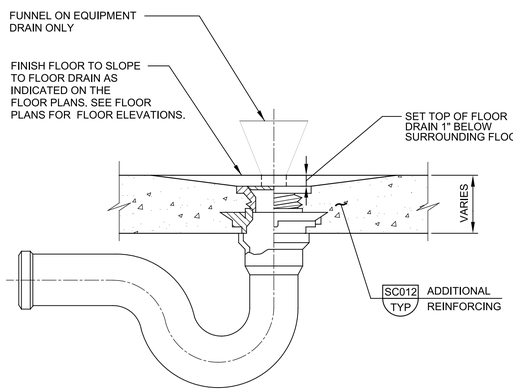
TYPICAL DETAILS

HVAC 4

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TH04
SHEET NO. 157 OF 178

PROJECT NO.
FILE NAME: 11843A1000TH04.dgn

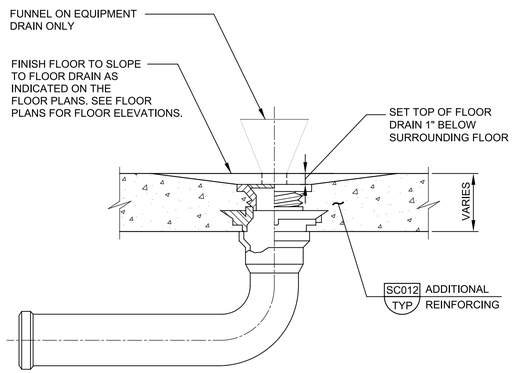


NOTE:

1. PROVIDE 12" RADIUS SLOPE TO EQUIPMENT DRAINS WHERE FLOOR DOES NOT SLOPE TO DRAIN.

MA201 TYP S — DRAIN - FLOOR OR EQUIPMENT DRAIN W/ TRAP

12/18/2023

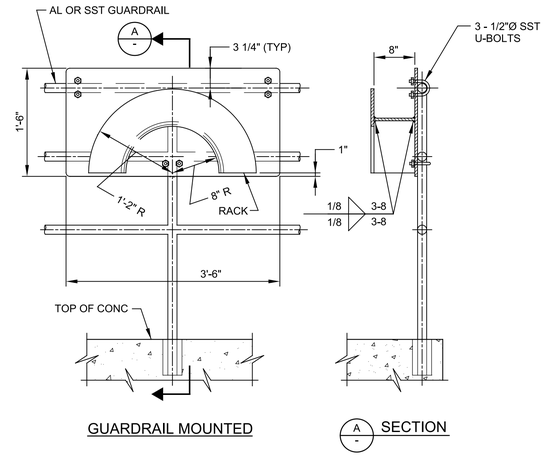


NOTE:

1. PROVIDE 12" RADIUS SLOPE TO EQUIPMENT DRAINS WHERE FLOOR DOES NOT SLOPE TO DRAIN.

MA203 TYP — DRAIN - FLOOR OR EQUIPMENT DRAIN W/O TRAP

12/18/2023

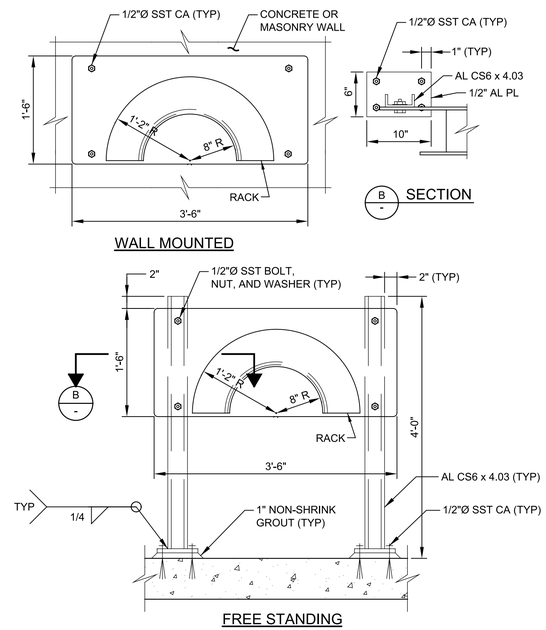


NOTES:

1. HOSE RACK SHALL BE FABRICATED FROM 3/16" ALUMINUM PLATE. ROUND ALL EDGES SMOOTH.
2. HOSE RACKS INSTALLED IN YARD LOCATIONS SHALL BE FREESTANDING. ANCHOR TO A 4'-6" LONG x 2'-0" WIDE x 12" DEEP CONCRETE PAD WITH #5@12" EW, T&B.
3. WALL MOUNTED HOSE RACKS ON MASONRY WALL SHALL BE FASTEN TO GROUTED CELLS.

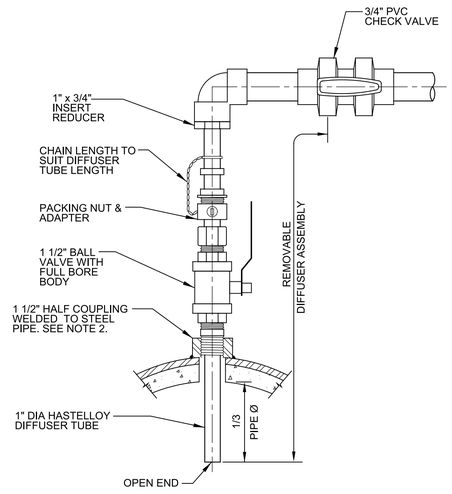
MA417 TYP S — WASHDOWN - HOSE RACK

SHEET 1 OF 2 12/01/22



MA417 TYP S — WASHDOWN - HOSE RACK

SHEET 2 OF 2 12/01/22



NOTES:

1. DIFFUSER AND DIFFUSER MATERIALS AS SPECIFIED IN SECTION 15050.
2. USE SERVICE SADDLE FOR PIPE CONNECTION FOR DUCTILE IRON PIPE.

MC777 TYP R — DIFFUSER - "STAB TUBE" AT WELDOLET

11/14/24

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CHECKED DM
DATE DECEMBER 2024

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

MECHANICAL 1

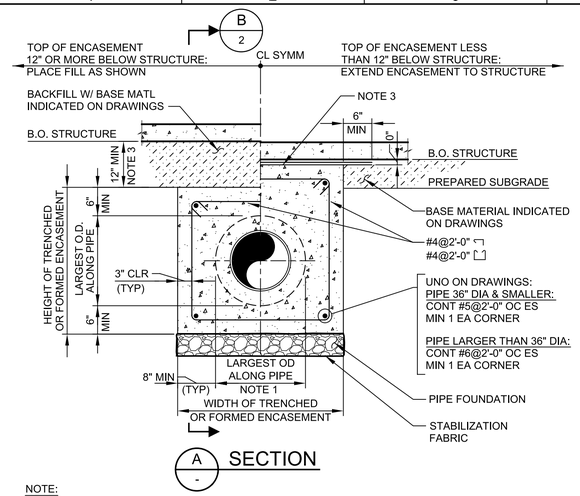
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TM01
SHEET NO. 158 OF 178

PROJECT NO.

FILE NAME: 11843A1000TM01.dgn

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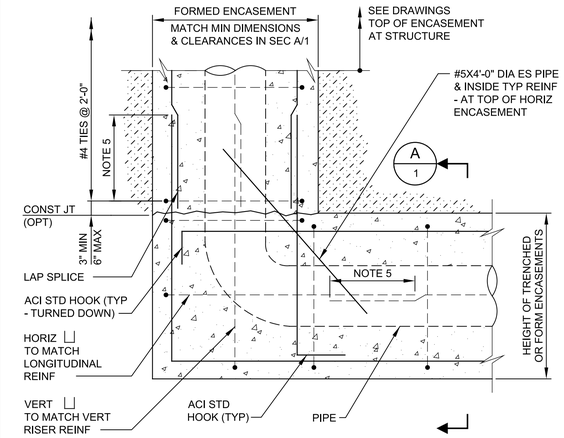
A - SECTION

NOTE:

1. PIPE MATERIAL AND PIPE JOINTS / COUPLERS AS INDICATED ON THE DRAWINGS.
2. TERMINATE CONCRETE ENCASEMENT AT A PIPE JOINT OUTSIDE OF THE STRUCTURE.
3. WHERE DISTANCE BETWEEN BOTTOM OF STRUCTURE AND TOP OF TYPICAL ENCASEMENT SECTION IS LESS THAN 12", EXTEND ENCASEMENT UPWARD TO UNDERSIDE OF SLAB. STEEL TROWEL TOP SURFACE AND SEPARATE ENCASEMENT FROM STRUCTURE WITH 2 LAYERS 6 MIL POLYETHYLENE SHEETING.
4. ENCASEMENT CONCRETE: CLASS A-NA.
5. SPLICE PERIMETER REINFORCEMENT OUTSIDE INTERSECTION OF ENCASEMENT WHERE POSSIBLE.

MP003 TYP S — PIPE ENCASEMENT - BELOW STRUCTURE

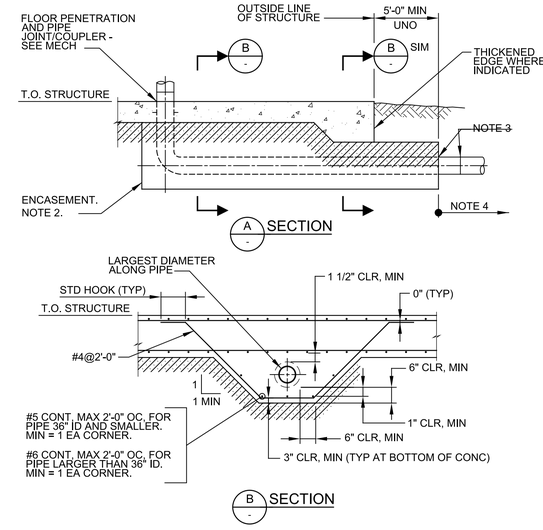
SHEET 1 OF 2 06/03/24



B - VERTICAL RISER BELOW STRUCTURE

MP003 TYP S — PIPE ENCASEMENT - BELOW STRUCTURE

SHEET 2 OF 2 06/03/24

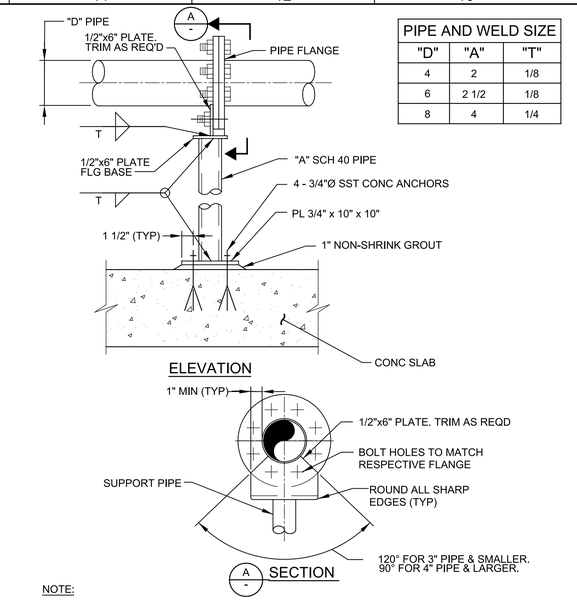


NOTES:

1. PIPE MATERIAL AND PIPE JOINTS / COUPLERS AS INDICATED ON THE DRAWINGS.
2. PROVIDE CONCRETE "CLASS" TO MATCH SLAB CONCRETE UNLESS OTHERWISE NOTED.
3. TERMINATE ENCASEMENT AT PIPE JOINT OUTSIDE STRUCTURE. SEE MECHANICAL DRAWINGS FOR PIPE JOINT DETAIL AT TERMINATION.
4. SEE CIVIL DRAWINGS FOR PIPE BEYOND ENCASEMENT.

MP018 TYP — PIPE ENCASEMENT - SHALLOW FOUNDATION - THICKENED SLAB

07/03/23



PIPE AND WELD SIZE		
"D"	"A"	"T"
4	2	1/8
6	2 1/2	1/8
8	4	1/4

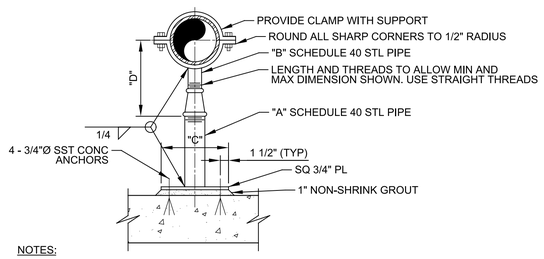
NOTE:

1. IF SUPPORT IS SUBMERGED OR LOCATED BELOW THE TOP OF WALL IN WATER BEARING STRUCTURE, ALL MATERIAL FOR SUPPORT SHALL BE STAINLESS STEEL. IN ALL OTHER AREAS, ALL MATERIAL FOR SUPPORT SHALL BE HOT-DIP GALVANIZED STEEL UNLESS OTHERWISE INDICATED ON DRAWINGS. HOT-DIP GALVANIZE AFTER FABRICATION.

MP032 TYP NS — PIPE SUPPORT - POST ON CONCRETE: FIXED HEIGHT STEEL W/ TOP CONNECTION TO PIPE FLANGE

05/31/23

ADJUSTABLE PIPE SADDLE SUPPORT SCHEDULE (INCHES)					
SIZE OF SUPPORTED PIPE **	PIPE SIZE "A"	PIPE SIZE "B"	"C"	"D"	
				MINIMUM	MAXIMUM
2 1/2 *	2 1/2	1 1/2	12	8	13
3	2 1/2	1 1/2	12	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	12	8 1/2	13 1/2
4	3	2 1/2	12	9 1/2	14
6	3	2 1/2	12	10 1/2	15 1/2
8	3	2 1/2	12	11 1/2	16 1/2
10	3	2 1/2	12	13 1/2	18 1/2
12	3	2 1/2	12	15	19 1/2
14	4	3	12	16 1/2	20 1/2
16	4	3	12	17 1/2	22 1/2
18	6	3 1/2	14	19 1/2	24
20	6	3 1/2	14	21	25 1/2
24	6	4	14	23 1/2	28 1/2
30	6	4	14	27	31 1/2
32	6	4	14	28 1/2	32 1/2
36	6	4	14	30 1/2	34 1/2

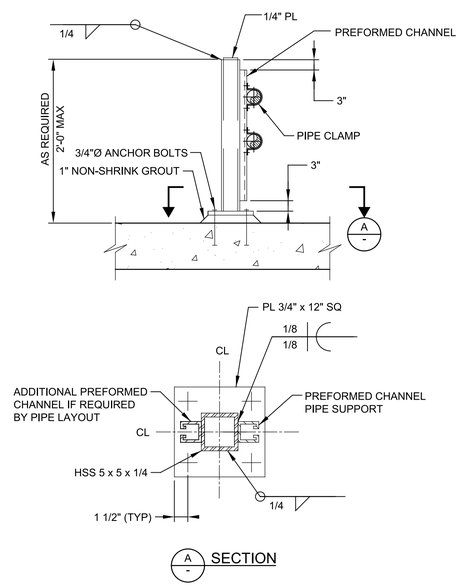


NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
2. * = USE 2 1/2" SUPPORTS FOR PIPES LESS THEN 2 1/2"Ø.
3. ** = NOMINAL PIPE SIZE.

MP034 TYP NS — PIPE SUPPORT - POST ON CONCRETE: ADJUSTABLE HEIGHT STEEL W/ TOP SADDLE

10/12/23



NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

MP042 TYP N — PIPE SUPPORT - POST ON CONCRETE: VERTICAL HSS W/ PREFORMED CHANNEL

09/13/23

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TYPICAL DETAILS

MECHANICAL 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

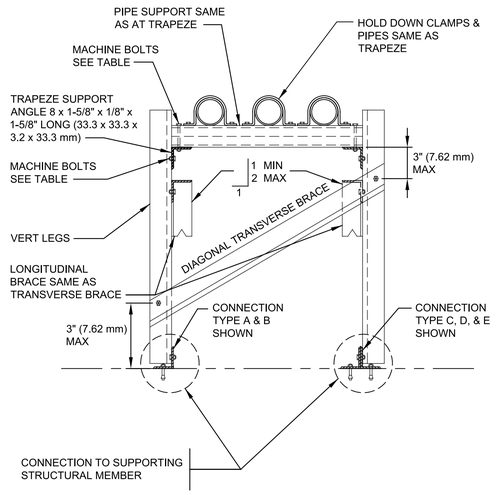
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DRAWING NO. 00TM02
SHEET NO. 159 OF 178

PROJECT NO.

FILE NAME: 11843A1000TM02.dgn

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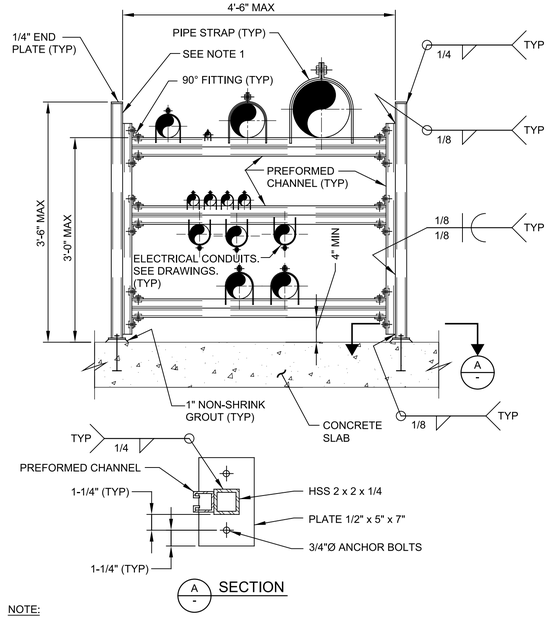
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NOTES:

1. REFER TO CHAPTER 3 FOR GENERAL REQUIREMENTS.
2. SEE TABLE 5-9, 8-9, 7-9, OR 8-9 FOR VERT. LEG & DIAGONAL BRACE.
3. FORCES DUE TO WIND LOADING ARE NOT CONSIDERED.
4. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

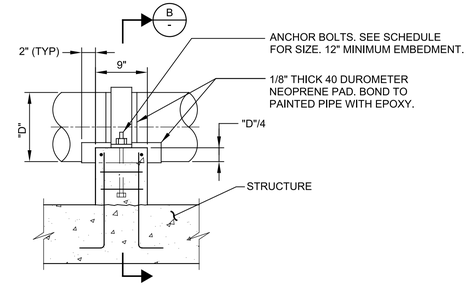
MP069 TYP N — PIPE SUPPORT - FLOOR SUPPORTED PIPES — 09/18/23



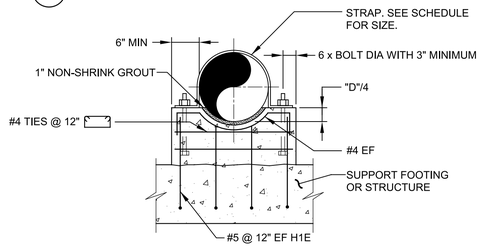
NOTE:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

MP073 TYP N — PIPE SUPPORT - FLOOR RACK: STEEL W/ PREDORMED CHANNELS — 09/18/23

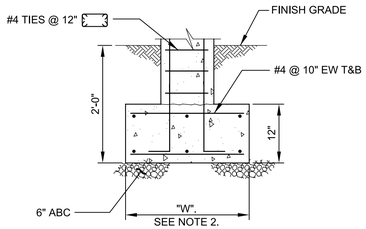


A SECTION-SUPPORT AT STRUCTURE



B SECTION

MP100 TYP N — CONCRETE PIPE SUPPORT — SHEET 1 OF 2 — 10/12/23



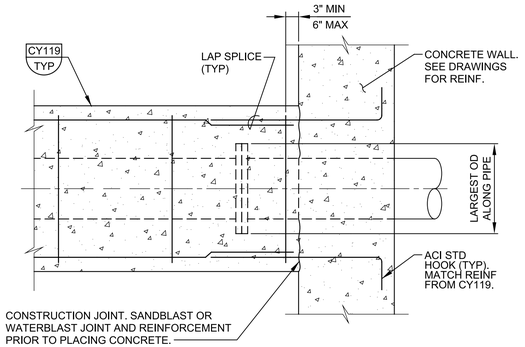
C SECTION-ISOLATED SUPPORT WITH FOOTING

SCHEDULE		
PIPE SIZE	STRAP SIZE	ANCHOR BOLT DIA
8" - 12"	FB 1/4" x 4"	1/2"
14" - 24"	FB 5/16" x 4"	5/8"
26" - 36"	FB 3/8" x 4"	3/4"

NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
2. THE WIDTH OF THE FOOTING "W" = 2'-6". THE LENGTH OF THE FOOTING = "D" + 2'-0".
3. FOR INSTALLATION ON AN EXISTING CONCRETE FLOOR, VERTICAL #5 BARS SHALL BE EPOXY BONDED WITH MINIMUM EMBED DEPTH OF 6". ROUGHEN EXISTING CONCRETE AND COAT WITH BONDING AGENT AT INTERFACE WITH NEW CONCRETE.

MP100 TYP N — CONCRETE PIPE SUPPORT — SHEET 2 OF 2 — 10/12/23

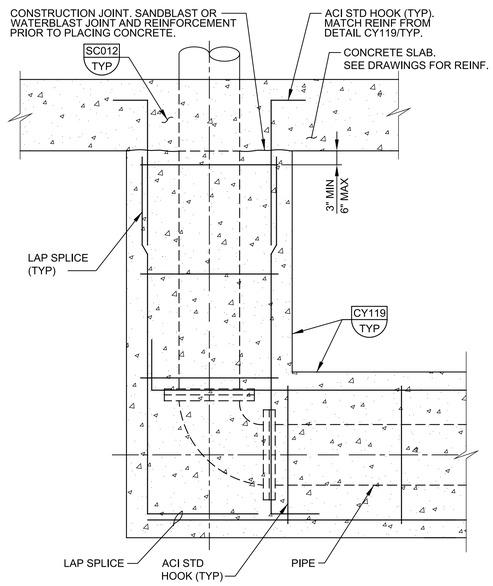


A SECTION AT WALL

NOTE:

1. TYPE OF PIPE AND TYPE OF PIPE JOINT OR COUPLER AS INDICATED ON THE DRAWINGS.

MP140 TYP NR — CONCRETE PIPE ENCASEMENT - CONNECTION AT STRUCTURE — SHEET 1 OF 2 — 11/14/24



B SECTION AT SLAB

MP140 TYP NR — CONCRETE PIPE ENCASEMENT - CONNECTION AT STRUCTURE — SHEET 2 OF 2 — 11/14/24

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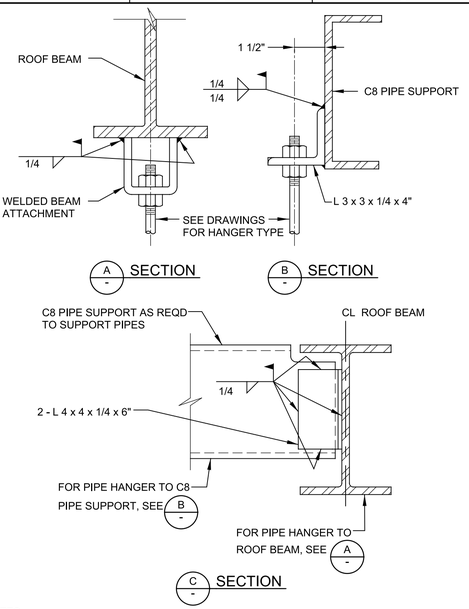
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CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
MECHANICAL 3

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TM03
SHEET NO. 160 OF 178

PROJECT NO. FILE NAME: 11843A1000TM03.dgn

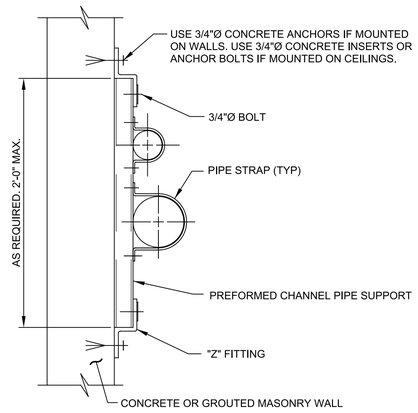


NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.

MP185 TYP — PIPE SUPPORT - OVERHEAD CONNECTIONS TO STEEL FRAMING

10/05/23

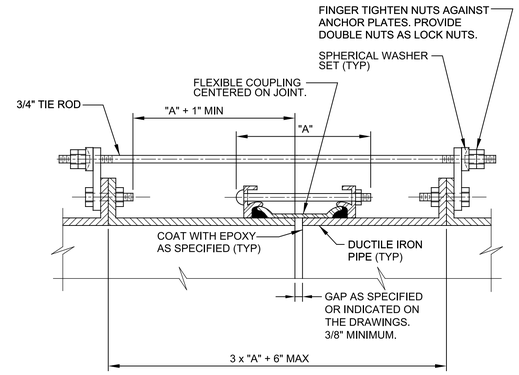


NOTES:

1. REFER TO THE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
2. SPACE PREFORMED CHANNEL PIPE SUPPORTS AT MAXIMUM 5'-0" O.C.

MP218 TYP N — PIPE SUPPORT - WALL - PREFORMED CHANNEL W/ PIPE CLIPS

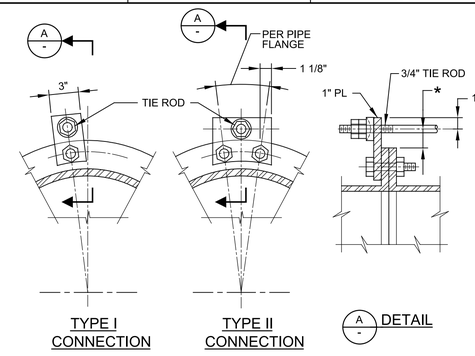
10/05/23



ROD SCHEDULE		
PIPE THRUST. SEE NOTE 2.	TYPE OF CONNECTION	NO. OF RODS
0-6,000#	I	2
6,001 - 12,000#	II	2
12,001 - 18,000#	II	3
18,001 - 24,000#	II	4
24,001 - 30,000#	II	5

MP310 TYP N — PIPE JOINT - DIP - FLEXIBLE COUPLING - RESTRAINED

SHEET 1 OF 2 9/05/23

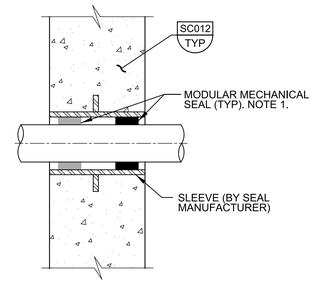


NOTES:

1. ALL EXPOSED FLEXIBLE COUPLINGS SHALL HAVE TIE RODS UNLESS SPECIFICALLY INDICATED OTHERWISE ON THE DRAWINGS.
2. PIPE THRUST SHALL BE BASED ON TEST PRESSURE.
3. PIPE THRUST = 0.7854 x D^2 x TEST PRESSURE, WHERE "D" IS PIPE OD.
4. MINIMUM TIE ROD YIELD = 48,000 PSI.
5. FOR THRUSTS GREATER THAN 30,000 POUNDS, ADD ONE 3/4 INCH DIAMETER TIE ROD FOR EVERY 6,000 POUNDS INCREASE IN THRUST.
6. ALL ROD CONNECTIONS SHALL BE TYPE II FOR THRUSTS GREATER THAN 30,000 POUNDS.
7. GRIND ALL CORNERS SMOOTH.
8. *= AS REQUIRED TO CLEAR FLEXIBLE COUPLING. 3/4" MINIMUM AND 1 1/2" MAXIMUM.

MP310 TYP N — PIPE JOINT - DIP - FLEXIBLE COUPLING - RESTRAINED

SHEET 2 OF 2 09/05/23

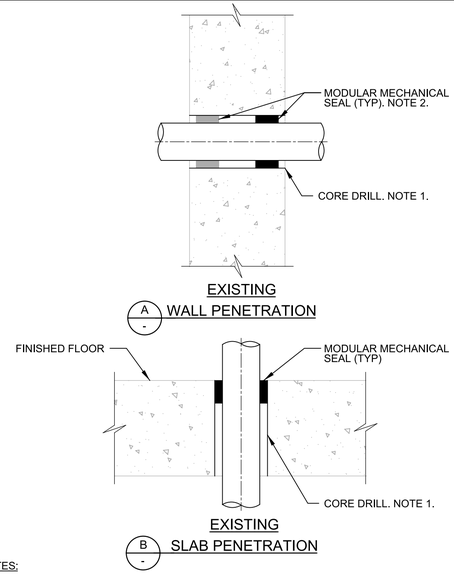


NOTES:

1. WALLS THICKER THAN 12" INSTALL MODULAR MECHANICAL SEAL AT BOTH ENDS OF WALL SLEEVE.

MP544 TYP NS — WALL PENETRATION - CAST-IN SLEEVE W/ BARRIER SEALS

SHEET 1 OF 2 09/06/23



NOTES:

1. CORE DRILL DIAMETER, PROCEDURES, AND POST -DRILLING SURFACE PREPARATION PER MODULAR MECHANICAL SEAL MANUFACTURER'S RECOMMENDATIONS FOR SPECIFIC PIPE OD.
2. WALLS 12" OR THICKER INSTALL MODULAR MECHANICAL SEAL AT BOTH ENDS OF PENETRATION.

MP544 TYP NS — WALL PENETRATION - CAST-IN SLEEVE W/ BARRIER SEALS

SHEET 2 OF 2 09/06/23

REV	DATE	BY	DESCRIPTION
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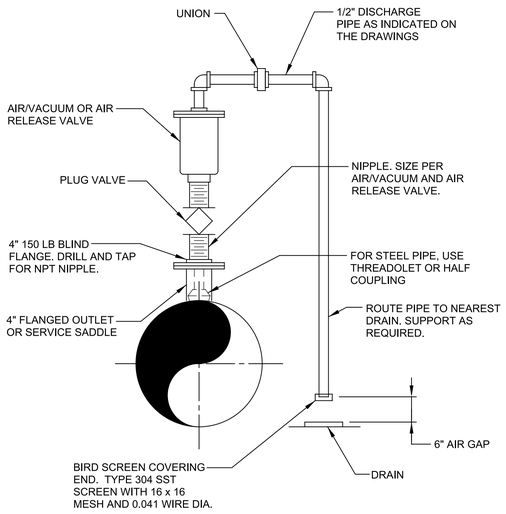
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
MECHANICAL 4

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWING NO. 00TM04
SHEET NO. 161 OF 178

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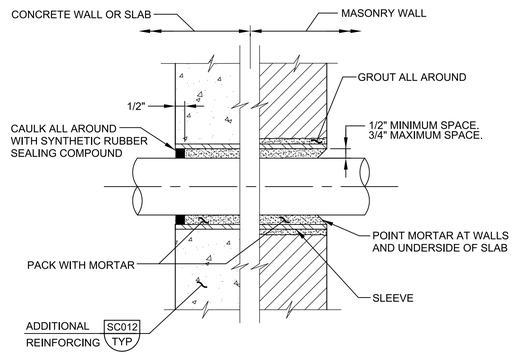


NOTES:

1. VALVE SIZE SHALL BE AS INDICATED ON THE DRAWINGS.
2. SERVICE TAP AND PLUG VALVE SHALL MATCH VALVE INLET SIZE.

MP898 TYP — PIPING - VALVE - VACUUM AND AIR RELEASE: 3" AND SMALLER VALVE

12/01/22



NOTES:

1. 6"Ø DIAMETER SLEEVES AND SMALLER SHALL BE SCHEDULE 40 STEEL PIPE OR SCHEDULE 80 PVC PIPE.
2. SLEEVES LARGER THAN 6"Ø SHALL BE 1/4" THICK STEEL PIPE.
3. STEEL SLEEVE SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
4. SLEEVES FOR ELECTRICAL CONDUIT SHALL BE SCHEDULE 80 PVC.

P302 TYP — SLEEVE INSTALLATION THROUGH DRY WALLS AND FLOOR SLABS

NR 11/14/24

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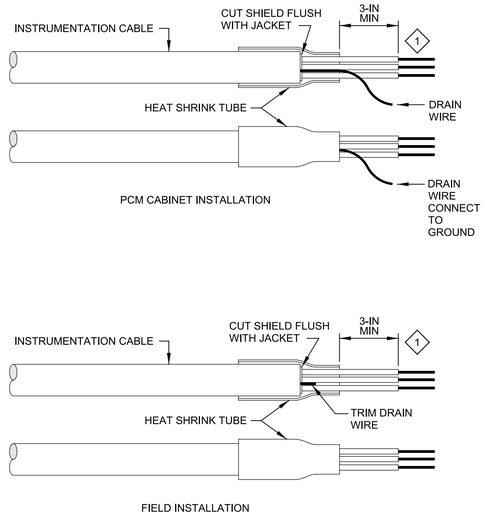
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
MECHANICAL 5

VERIFY SCALES
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DRAWING NO. 00TM05
SHEET NO. 162 OF 178

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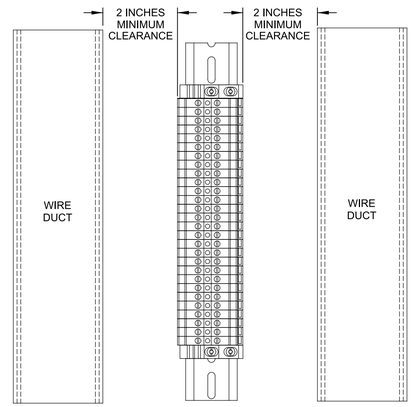
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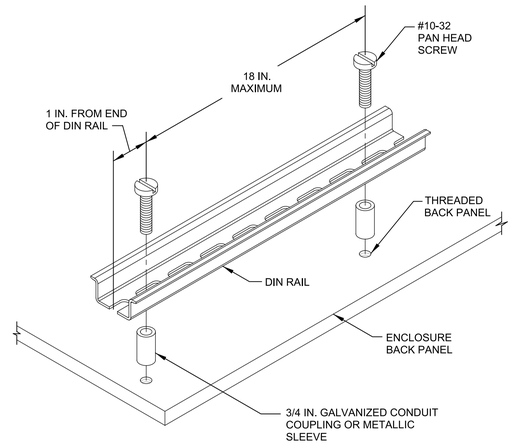
KEY NOTES:

1 SIMILAR FOR 2-CONDUCTOR SHIELDED CABLE

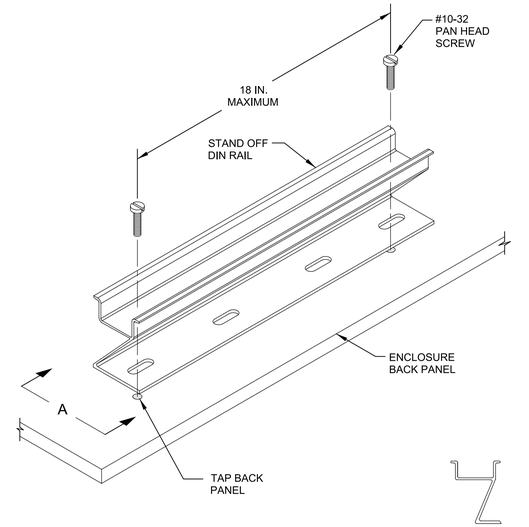
NE101 TYP S TERMINATION DETAILS
INSTRUMENTATION SHIELDED CABLE



NE102 TYP S TERMINAL BLOCK CLEARANCE

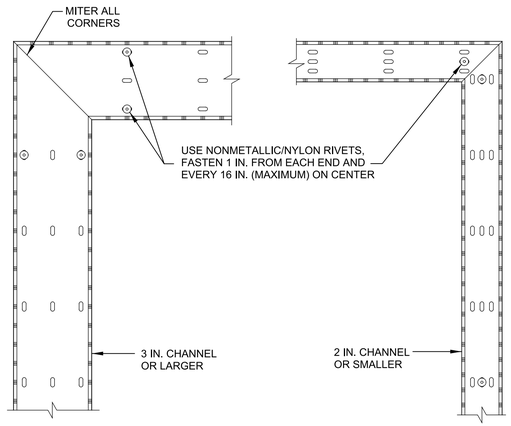


NE103 TYP S DIN RAIL MOUNTING



A - VIEW

NE104 TYP S RAISED DIN RAIL MOUNTING



NE105 TYP S PANEL WIRING DUCT MOUNTING

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED GB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER DANIEL ROBINSON No. 20405 ELECTRICAL STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

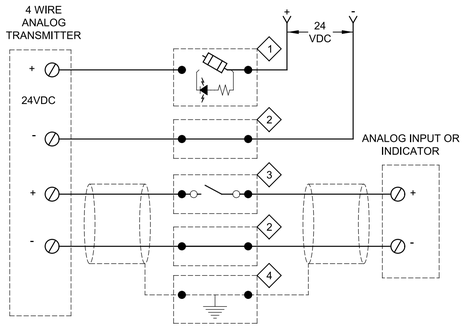
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
INSTRUMENTATION 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TN01
SHEET NO. 163 OF 178

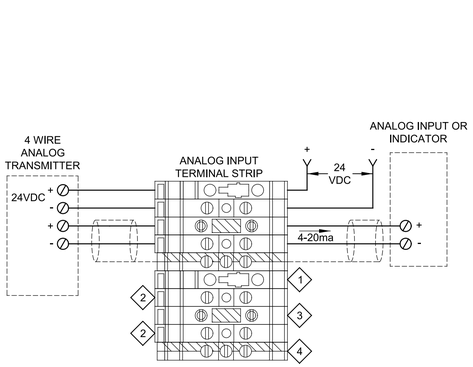
PROJECT NO.
FILE NAME: 11843A1000TN01.dgn

Plot Date: 06-DEC-2024 2:58:43 PM
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LAST SAVED BY: hgarcia



KEY NOTES:

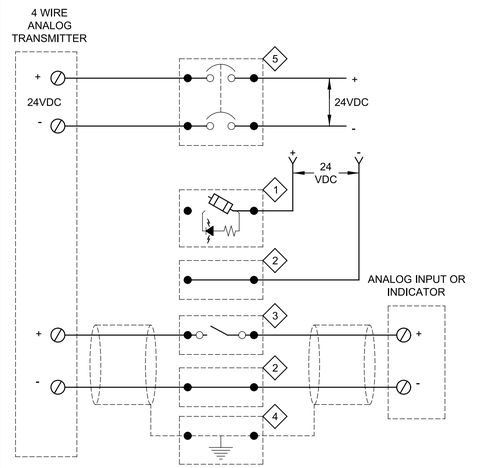
1. FUSED TERMINAL/DISCONNECT BLOCK
2. FEED THROUGH TERMINAL BLOCK
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH
4. GROUNDING TERMINAL BLOCK



NOTES:

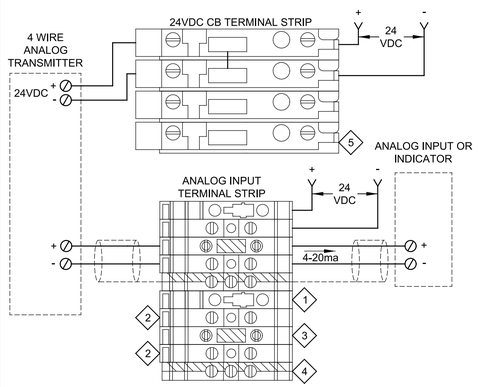
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.
2. (-)24VDC RETURNS OR COMMONS CAN'T BE PROTECTED OR HAVE A DISCONNECTING MEANS ON SYSTEMS WITH GROUNDED 24VDC POWER SUPPLIES.

FOUR WIRE TRANSMITTER WITH (GROUNDED) 24VDC POWER SUPPLY SCHEMATIC



KEY NOTES:

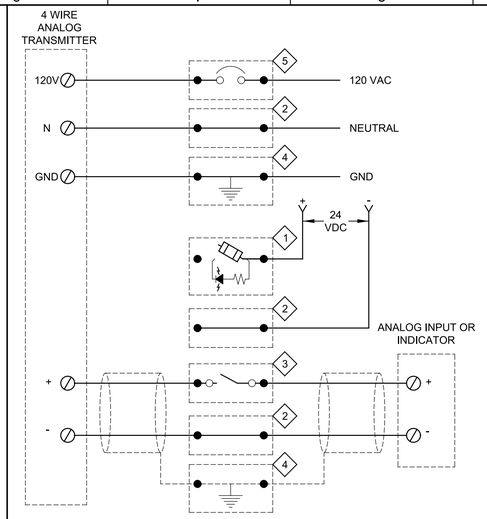
1. FUSED TERMINAL/DISCONNECT BLOCK
2. FEED THROUGH TERMINAL BLOCK
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH
4. GROUNDING TERMINAL BLOCK
5. 2-POLE 24VDC CIRCUIT BREAKER



NOTES:

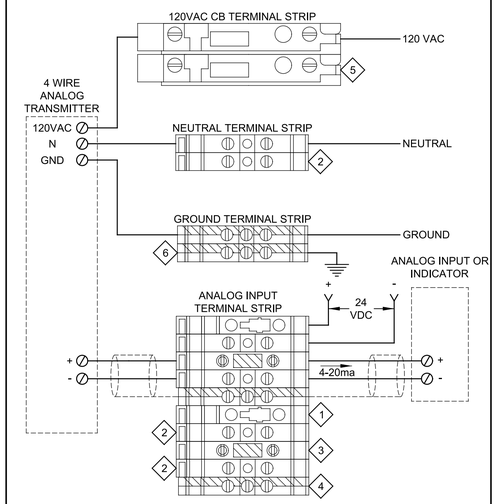
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.
2. PROVIDE (-)24VDC RETURNS WITH PROTECTION ON ALL UN-GROUNDED 24VDC POWER SUPPLIES.

FOUR WIRE TRANSMITTER WITH (UN-GROUNDED) 24VDC POWER SUPPLY SCHEMATIC



KEY NOTES:

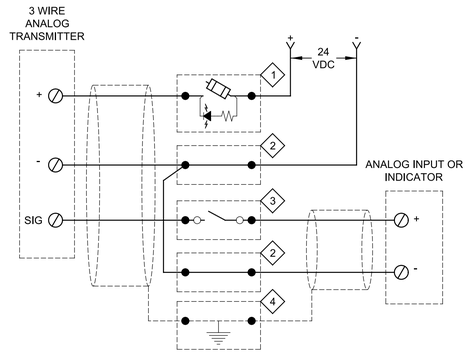
1. FUSED TERMINAL/DISCONNECT BLOCK
2. FEED THROUGH TERMINAL BLOCK
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH
4. GROUNDING TERMINAL BLOCK
5. 120VAC CIRCUIT BREAKER



NOTES:

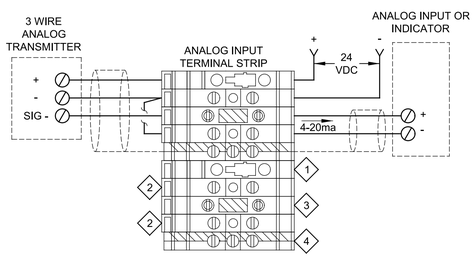
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.
2. PROVIDE 120VAC CIRCUIT BREAKER FOR EACH INSTRUMENT.

FOUR WIRE (120VAC) TRANSMITTER SCHEMATIC



KEY NOTES:

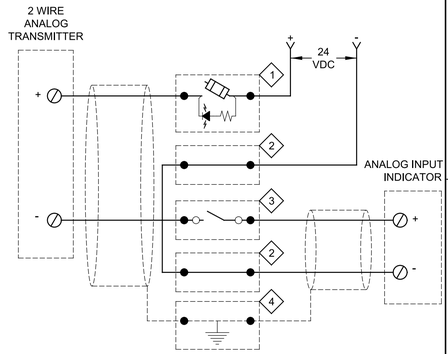
1. FUSED TERMINAL/DISCONNECT BLOCK
2. FEED THROUGH TERMINAL BLOCK
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH
4. GROUNDING TERMINAL BLOCK



NOTES:

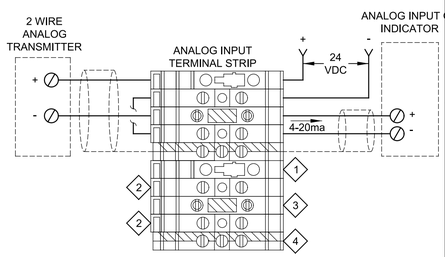
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.

24VDC THREE WIRE ANALOG TRANSMITTER SCHEMATIC



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK
2. FEED THROUGH TERMINAL BLOCK
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH
4. GROUNDING TERMINAL BLOCK



NOTES:

1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.

24VDC TWO WIRE TRANSMITTER SCHEMATIC

NE304 TYP S ANALOG INPUT TERMINAL DETAILS

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED GB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER DANIEL ROBINSON No. 20405 ELECTRICAL STATE OF CALIFORNIA

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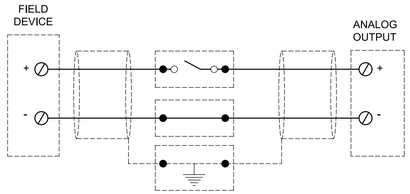
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
INSTRUMENTATION 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

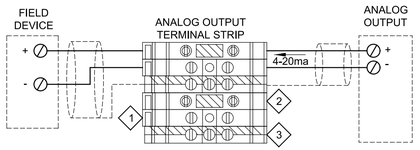
JOB NO. 11843A.10
DRAWING NO. 00TN02
SHEET NO. 164 OF 178

PROJECT NO.
FILE NAME: 11843A1000TN02.dgn



KEY NOTES:

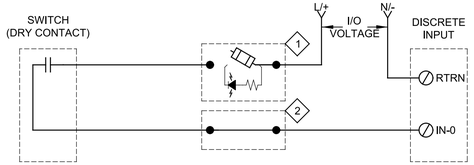
1. FEED THROUGH TERMINAL BLOCK
2. TEST BLOCK WITH KNIFE DISCONNECT SWITCH
3. GROUNDING TERMINAL BLOCK



NOTES:

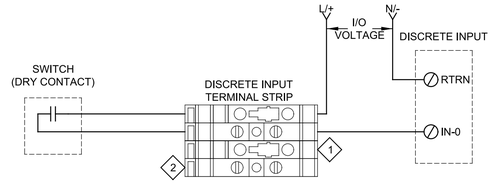
1. GROUND SHIELD AT ANALOG TERMINAL STRIP INSIDE PCM PANEL.

NE305 TYP S — ANALOG OUTPUT TERMINAL DETAILS 24VDC ANALOG OUTPUT SCHEMATIC



KEY NOTES:

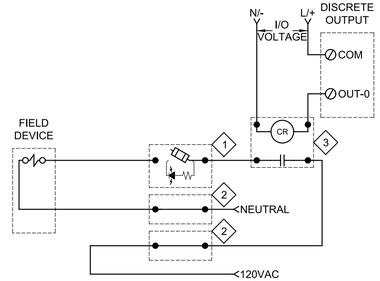
1. FUSED TERMINAL/DISCONNECT BLOCK
2. FEED THROUGH TERMINAL BLOCK



NOTES:

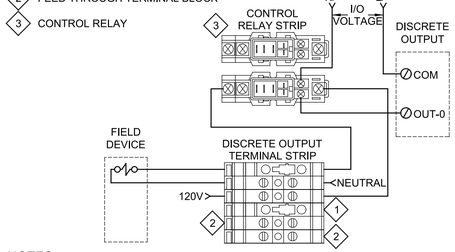
1. REFER TO SPECIFICATIONS FOR PLC DISCRETE I/O VOLTAGE.

NE306 TYP S — DISCRETE INPUT TERMINAL DETAILS (DRY CONTACT) SCHEMATIC



KEY NOTES:

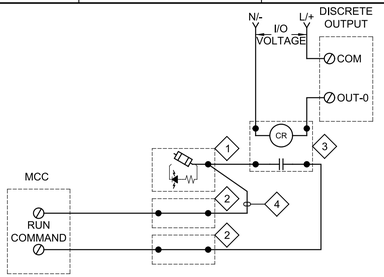
1. FUSED TERMINAL/DISCONNECT BLOCK
2. FEED THROUGH TERMINAL BLOCK
3. CONTROL RELAY



NOTES:

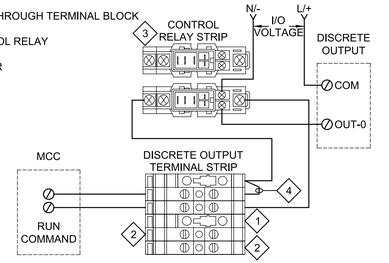
1. REFER TO SPECIFICATIONS FOR PLC DISCRETE I/O VOLTAGE.

NE307 TYP S — DISCRETE OUTPUT TERMINAL DETAILS (PANEL SOURCED) SCHEMATIC



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK
2. FEED THROUGH TERMINAL BLOCK
3. CONTROL RELAY
4. JUMPER



NOTES:

1. REFER TO SPECIFICATIONS FOR PLC DISCRETE I/O VOLTAGE.
2. USE MANUFACTURED SPADE OR PIN STYLE JUMPER. WIRE JUMPERS ARE NOT ACCEPTABLE.

NE308 TYP S — DISCRETE OUTPUT TERMINAL DETAILS (EXTERNALLY SOURCED) SCHEMATIC

DRAFT FINAL SUBMITTAL
NOT FOR CONSTRUCTION

REV	DATE	BY	DESCRIPTION

DESIGNED CE
DRAWN CE
CHECKED GB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — DANIEL ROBINSON — No. 20405 — ELECTRICAL — STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

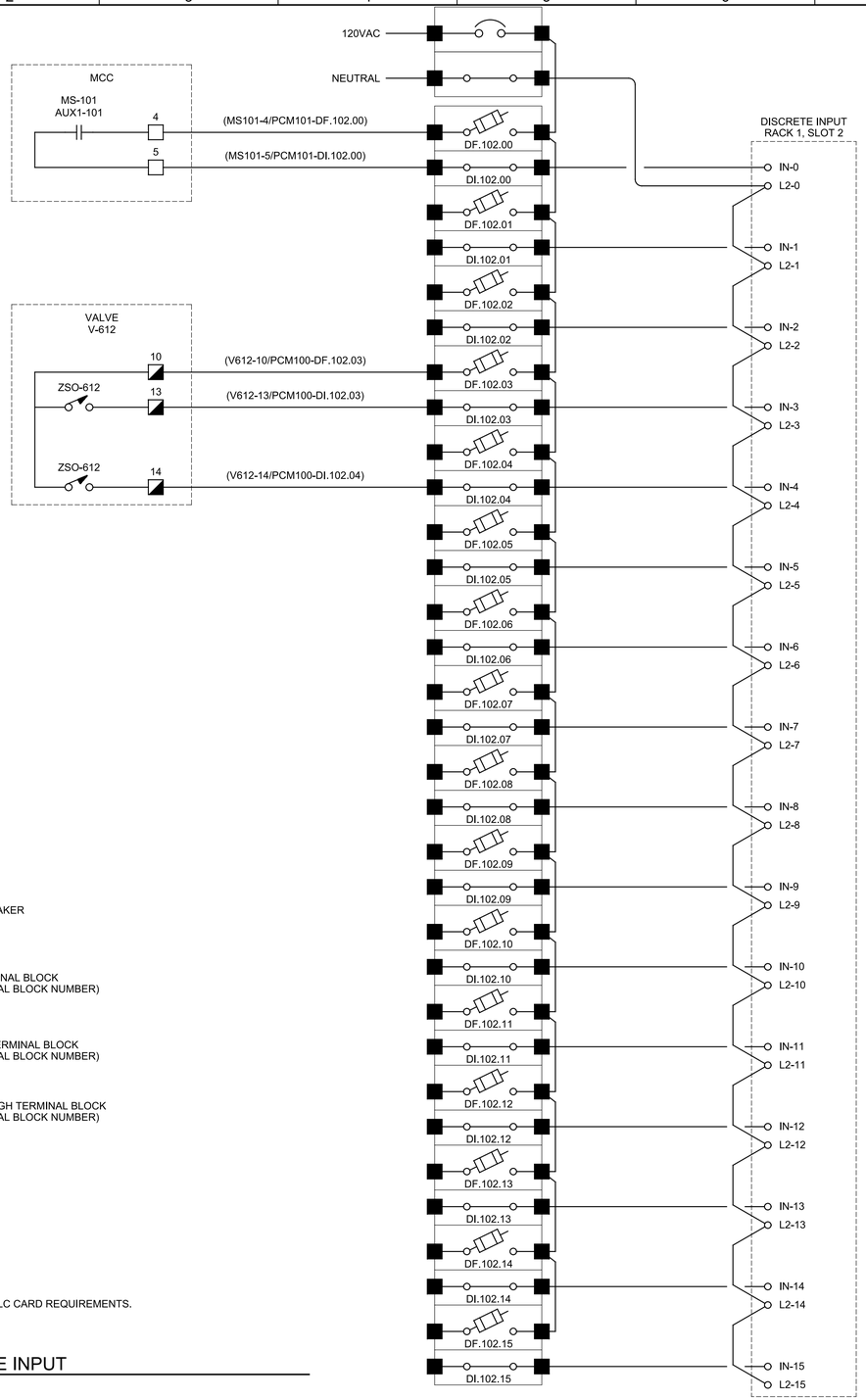
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
INSTRUMENTATION 3

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TN03
SHEET NO. 165 OF 178

PROJECT NO.
FILE NAME: 11843A1000TN03.dgn

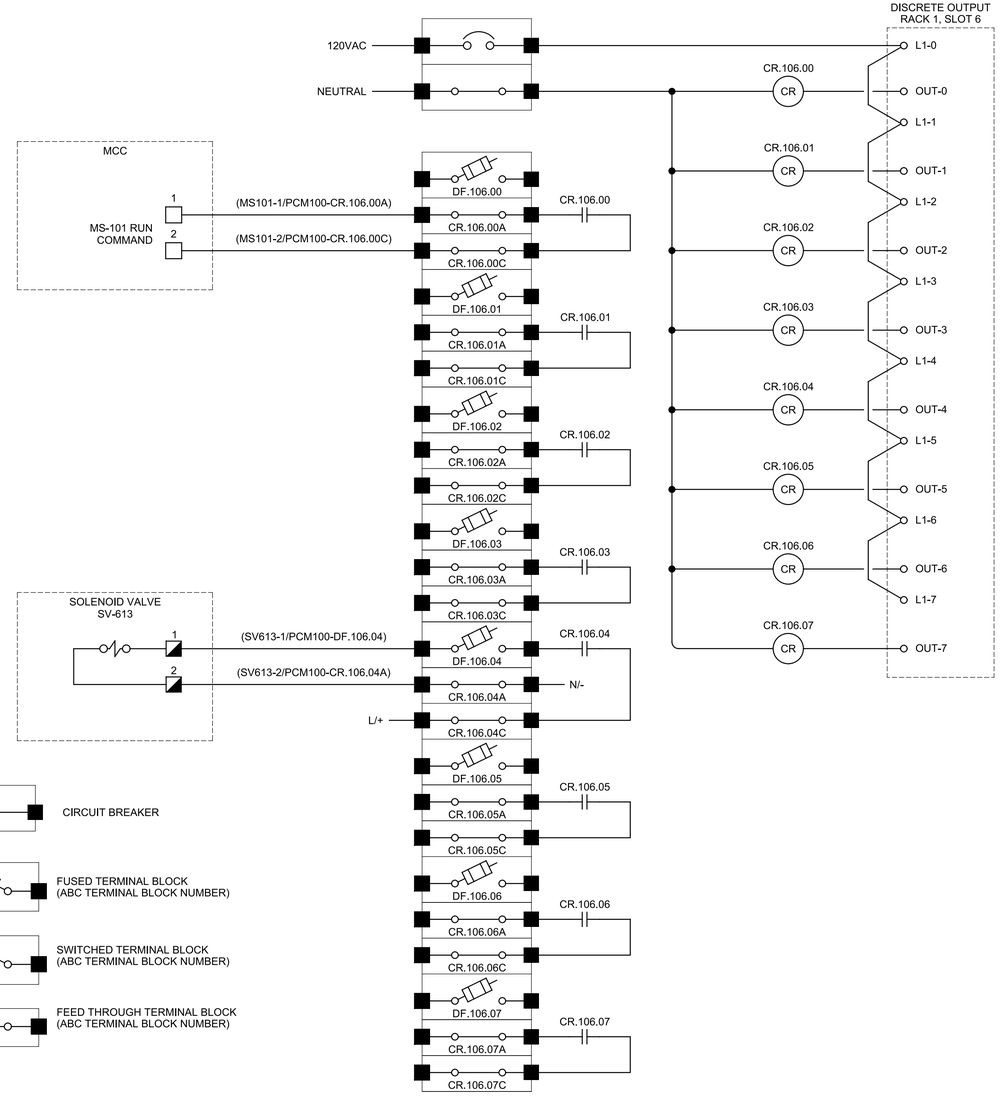
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User: svcPW
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1
LAST SAVED BY: hgarcia



NOTES:

1. REFER TO SPECIFICATIONS FOR PLC CARD REQUIREMENTS.

NE310 TYP S — TYPICAL DISCRETE INPUT WIRING DIAGRAM



NOTES:

1. REFER TO SPECIFICATIONS FOR PLC CARD REQUIREMENTS.

NE311 TYP S — TYPICAL DISCRETE OUTPUT WIRING DIAGRAM

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED GB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — DANIEL ROBINSON — No. 20405 — ELECTRICAL — STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

INSTRUMENTATION 4

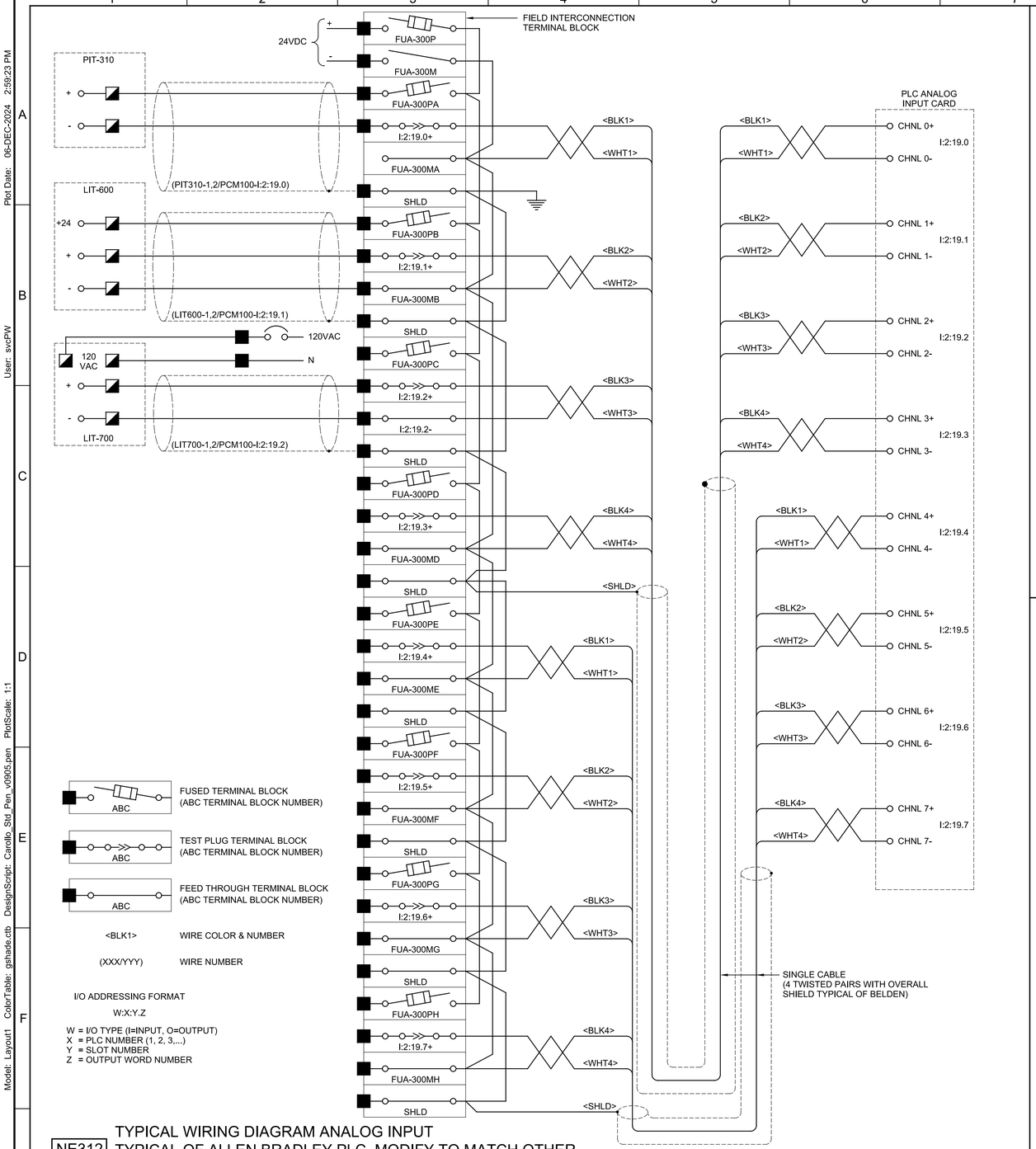
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TN04
SHEET NO. 166 OF 178

PROJECT NO.

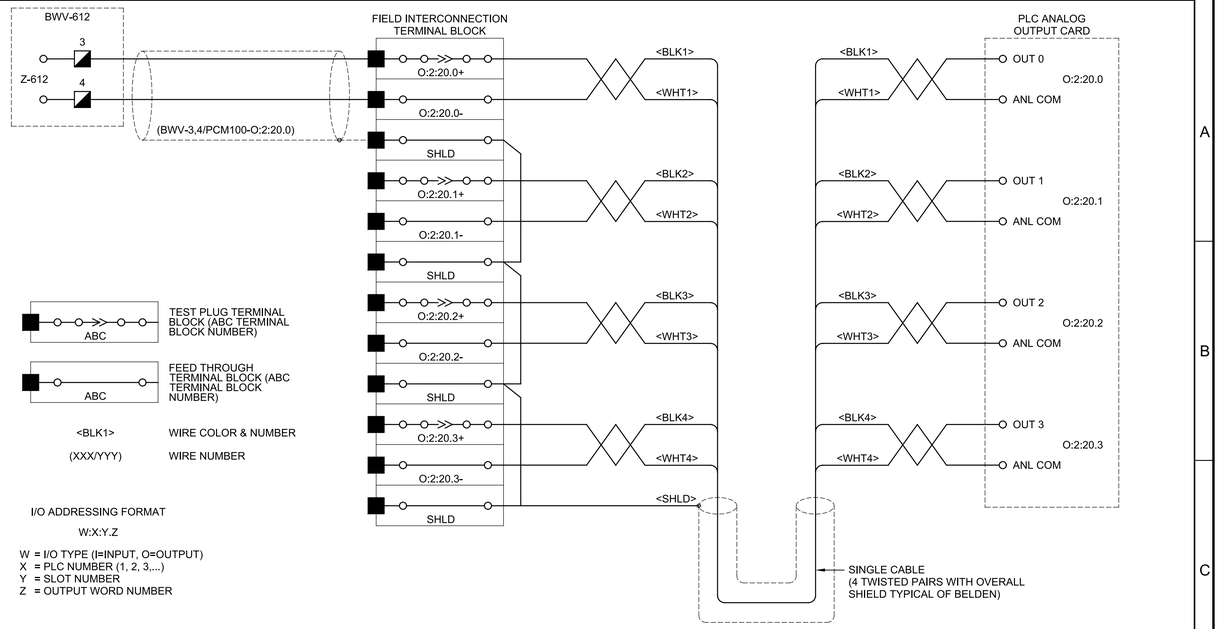
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LAST SAVED BY: hgarcia



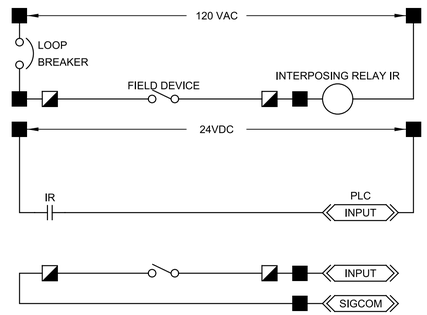
NE312 TYP S

TYPICAL WIRING DIAGRAM ANALOG INPUT
TYPICAL OF ALLEN BRADLEY PLC. MODIFY TO MATCH OTHER PLC MANUFACTURER'S I/O NUMBERING SYSTEM



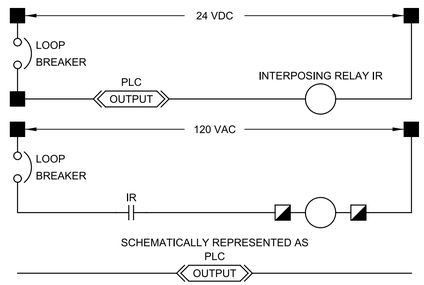
NE313 TYP S

TYPICAL WIRING DIAGRAM ANALOG OUTPUT
TYPICAL OF ALLEN BRADLEY PLC. MODIFY TO MATCH OTHER PLC MANUFACTURER'S I/O NUMBERING SYSTEM



NE314 TYP S

TYPICAL PLC 24VDC INPUT SCHEMATIC



NE315 TYP S

TYPICAL PLC 24VDC OUTPUT SCHEMATIC

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED GB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — DANIEL ROBINSON — No. 20405 — ELECTRICAL — STATE OF CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
INSTRUMENTATION 5

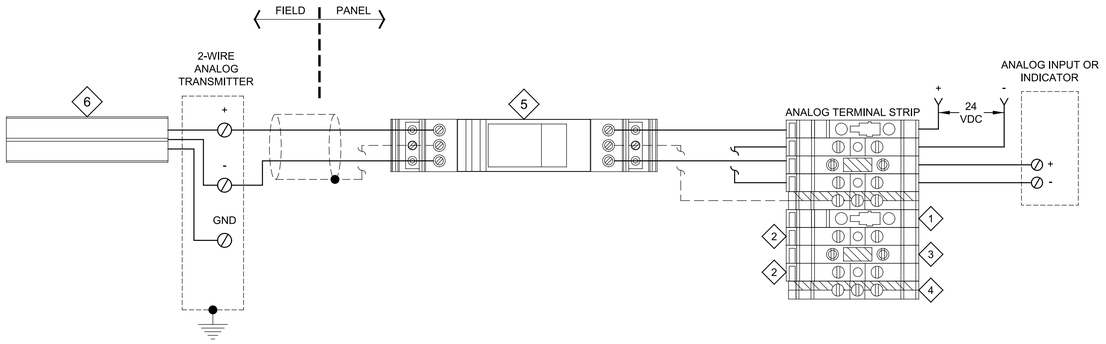
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TN05
SHEET NO. 167 OF 178

PROJECT NO.
FILE NAME: 11843A1000TN05.dgn

Plot Date: 06-DEC-2024 2:59:23 PM
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LAST SAVED BY: hgarcia

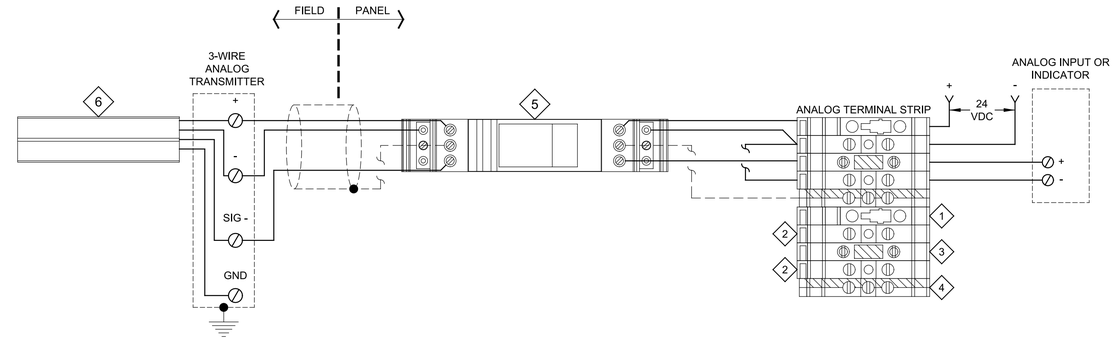
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User: svcPW
Model: Layout1 ColorTable: gshade.ctb DesignScript: Carollo_Std_Pen_v0905.pen PlotScale: 1:1
LAST SAVED BY: hgarcia



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
5. PANEL MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
6. FIELD DEVICE MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA FIELD DEVICE GROUND TERMINAL.

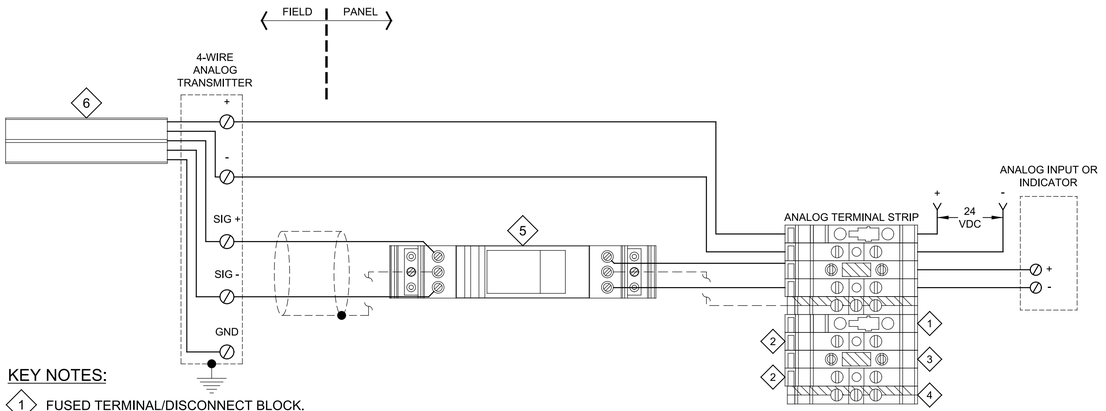
NE350 TYP S — TYPICAL SURGE PROTECTION WIRING
2-WIRE ANALOG TRANSMITTER



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
5. PANEL MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
6. FIELD DEVICE MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA FIELD DEVICE GROUND TERMINAL.

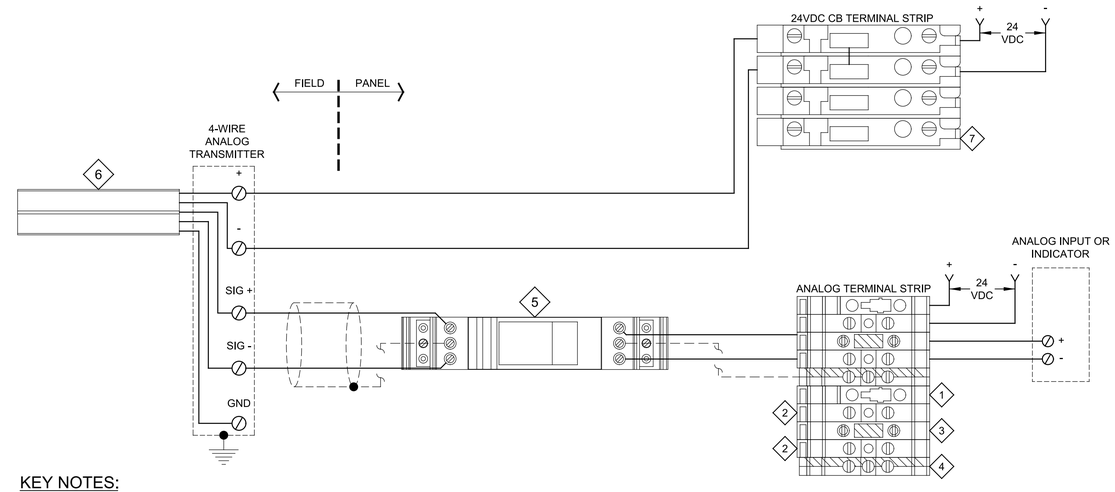
NE351 TYP S — TYPICAL SURGE PROTECTION WIRING
3-WIRE ANALOG TRANSMITTER



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
5. PANEL MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
6. FIELD DEVICE MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA FIELD DEVICE GROUND TERMINAL.

NE352 TYP S — TYPICAL SURGE PROTECTION WIRING
4-WIRE ANALOG TRANSMITTER
WITH GROUNDED 24VDC POWER SUPPLY



KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
5. PANEL MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
6. FIELD DEVICE MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA FIELD DEVICE GROUND TERMINAL.
7. 2-POLE 24VDC CIRCUIT BREAKER.

NE353 TYP S — TYPICAL SURGE PROTECTION WIRING
4-WIRE ANALOG TRANSMITTER
WITH UN-GROUNDED 24VDC POWER SUPPLY

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED GB
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — DANIEL ROBINSON — No. 20405 — ELECTRICAL — STATE OF CALIFORNIA

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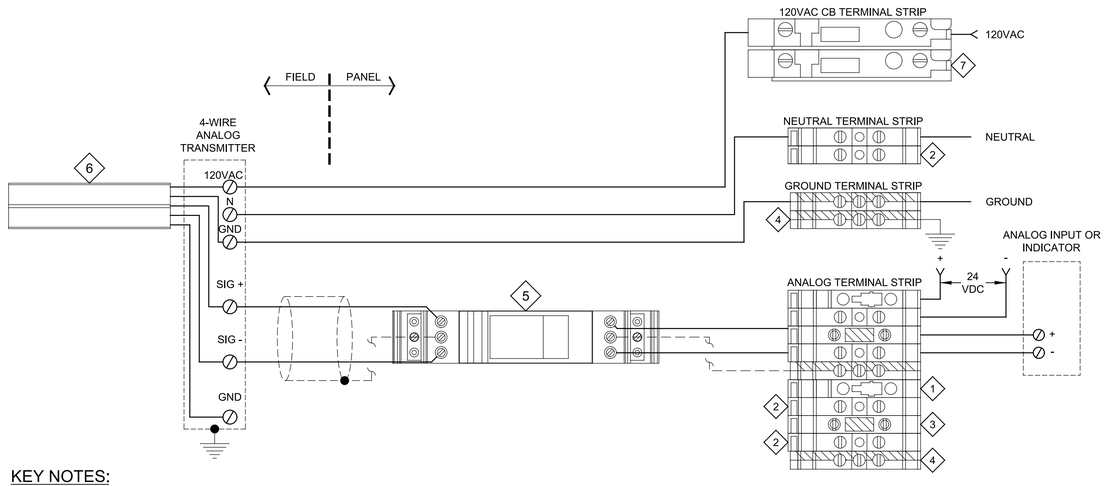
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CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
INSTRUMENTATION 6

VERIFY SCALES
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JOB NO. 11843A.10
DRAWING NO. 00TN06
SHEET NO. 168 OF 178

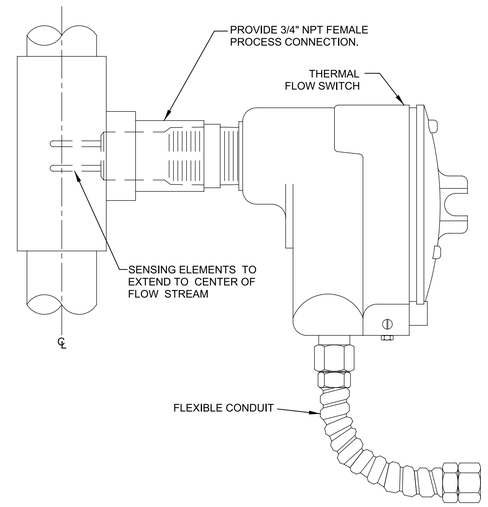
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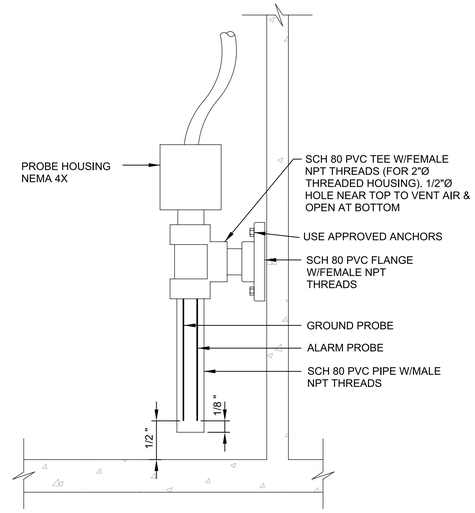
KEY NOTES:

1. FUSED TERMINAL/DISCONNECT BLOCK.
2. FEED THROUGH TERMINAL BLOCK.
3. TEST BLOCK WITH KNIFE DISCONNECT SWITCH.
4. GROUNDING TERMINAL BLOCK. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
5. PANEL MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA DIN RAIL MOUNTING FOOT.
6. FIELD DEVICE MOUNTED SURGE PROTECTIVE DEVICE. BONDED TO EQUIPMENT GROUND VIA FIELD DEVICE GROUND TERMINAL.
7. 120VAC CIRCUIT BREAKER.

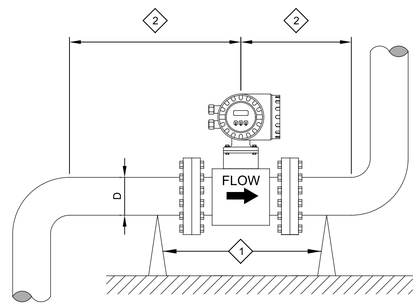
NE354 TYP S — TYPICAL SURGE PROTECTION WIRING
4-WIRE ANALOG TRANSMITTER
120VAC POWER SUPPLY



NF111 TYP S — THERMAL FLOW SWITCH MOUNTING DETAIL



NL113 TYP S — AREA FLOODED ALARM



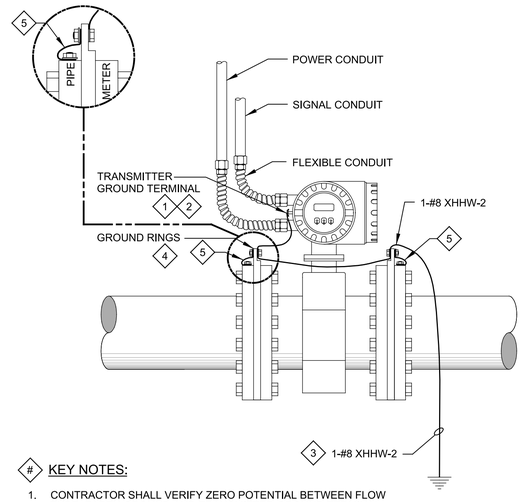
GENERAL NOTES:

1. FOLLOW MANUFACTURER'S RECOMMENDED MAXIMUM TORQUE SETTINGS. DO NOT OVER-TORQUE FLANGE BOLTS. OVERTIGHTENING THE FASTENERS WILL DEFORM SEALING FACES OR DAMAGE THE LINE.
2. ALWAYS TIGHTEN FLANGE BOLTS UNIFORMLY AND IN DIAGONALLY OPPOSITE SEQUENCE.
3. MOUNT METER SO THAT IT REMAINS FULLY FLOODED.
4. FOR METERS SPECIFIED WITH ZERO DIAMETER FEATURE, REFER TO THE MECHANICAL DRAWINGS FOR INSTALLATION.

KEY NOTES:

1. PIPE SUPPORTS BY MECHANICAL CONTRACTOR. NO SUPPORTS SHALL BE INSTALLED AT THE METER HOUSING.
2. INSTALL METER SUCH THAT THERE ARE NO PIPE BENDS FOR 5 PIPE DIAMETERS UPSTREAM AND 3 PIPE DIAMETERS DOWNSTREAM OF THE METER.

NF130 TYP S — MAGNETIC FLOWMETER MOUNTING DETAIL



KEY NOTES:

1. CONTRACTOR SHALL VERIFY ZERO POTENTIAL BETWEEN FLOW TUBE, EARTH GROUND AND TRANSMITTER GROUND TERMINAL.
2. CONNECT TRANSMITTER GROUND TERMINAL TO GROUND RINGS.
3. CONNECT METER BODY TO EARTH GROUND POTENTIAL.
4. EQUALIZE POTENTIAL VIA GROUND RINGS BETWEEN FLUID AND MAGMETER.
5. PROVIDE BONDING JUMPER ON CONDUCTIVE PIPES.

NF136 TYP S — INTEGRAL MAGNETIC FLOWMETER GROUNDING DETAIL

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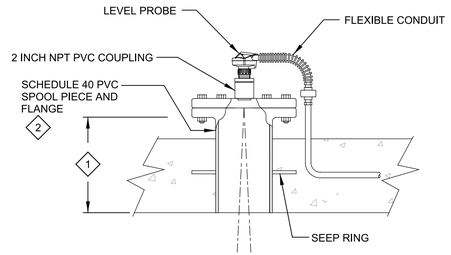
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TYPICAL DETAILS
INSTRUMENTATION 7

VERIFY SCALES
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DRAWING NO. 00TN07
SHEET NO. 169 OF 178

PROJECT NO.
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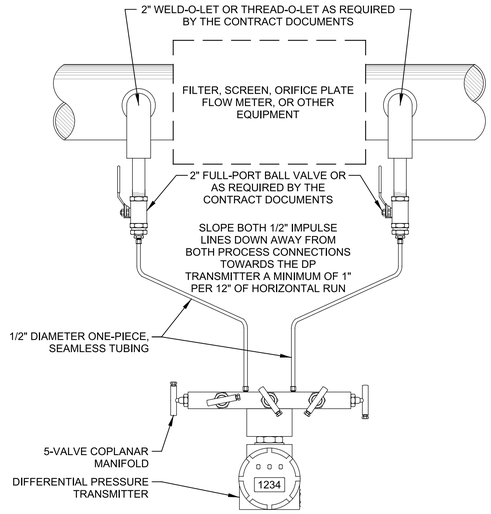
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◇# KEY NOTES:

1. MINIMUM DISTANCE BETWEEN HIGHEST POSSIBLE LEVEL, INCLUDING OVERFLOW, AND PROBE FACE SHALL BE MANUFACTURER'S BLANKING ZONE PLUS 2 INCHES.
2. MINIMUM 6 INCHES DIAMETER. INCREASE DIAMETER AS REQUIRED TO ALLOW CONE ANGLE TO CLEAR BOTTOM OF THE TANK NOZZLE.

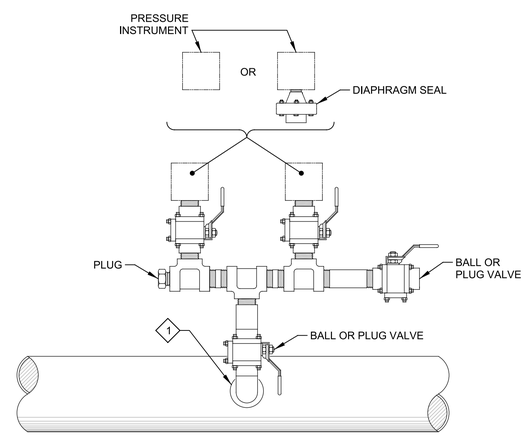
NL174 TYP S — LEVEL PROBE MOUNTING DETAIL



GENERAL NOTES:

1. INSTALL TRANSMITTER USING MANUFACTURER PROVIDED PIPE MOUNTING BRACKET ATTACHED TO AN APPROVED STRUCTURE.
2. SUPPORT 1/2" TUBING EVERY 48" MAXIMUM OR AS NEEDED.

NP189 TYP S — DIFFERENTIAL PRESSURE TRANSMITTER LIQUID OR STEAM APPLICATION



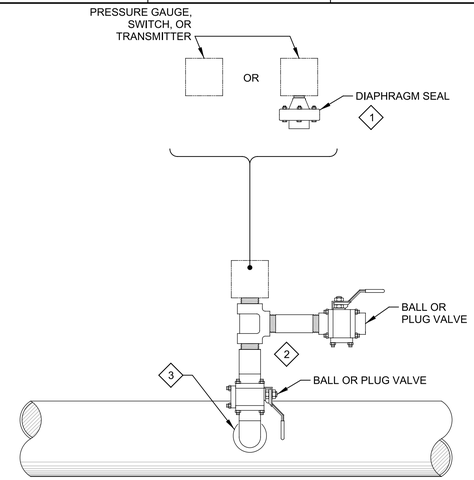
GENERAL NOTES:

1. USE THE INSTRUMENT DATA SHEETS AND INSTRUMENTATION SPECIFICATIONS TO IDENTIFY REQUIREMENTS FOR DIAPHRAGM SEALS.
2. PROVIDE INSTRUMENT ASSEMBLY WITH 1" VALVES AND PIPING, OR AS APPROVED BY ENGINEER. USE STAINLESS STEEL OR AS REQUIRED FOR COMPATIBILITY WITH PROCESS FLUID. PROVIDE FITTINGS FOR INSTRUMENT CONNECTIONS AS REQUIRED.
3. REFER TO MECHANICAL DRAWINGS FOR INSTRUMENT LOCATION AND PROCESS PIPE ORIENTATION.

◇# KEY NOTES:

1. PROVIDE SIDE-TAP PROCESS CONNECTION. THREADED TAP OR SADDLE CONNECTION FOR DUCTILE IRON PIPE. WELD-O-LET OR THREAD-O-LET FOR WELDED PIPE. TEE OR REDUCING TEE FOR NON-METALLIC PIPE AND PIPES 1" OR SMALLER.

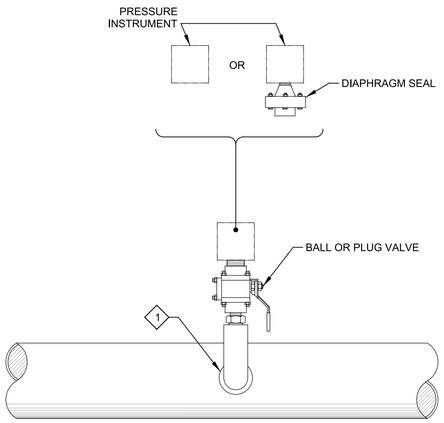
NP501 TYP S — MULTIPLE PRESSURE INSTRUMENTS MOUNTING DETAIL



◇# KEY NOTES:

1. USE THE INSTRUMENT DATA SHEETS IN DIVISION 17 OR DIVISIONS 40 SPECS TO IDENTIFY INDIVIDUAL REQUIREMENTS FOR DIAPHRAGM SEALS.
2. ALL VALVE AND PIPE MATERIAL SHALL BE COMPATIBLE WITH PROCESS FLUID.
3. THREADED TAP OR SADDLE CONNECTION FOR DUCTILE IRON PIPE. WELD-O-LET OR THREAD-O-LET FOR WELDED PIPE. TEE OR REDUCING TEE FOR NON-METALLIC PIPE.

NP502 TYP S — PRESSURE INSTRUMENT MOUNTING DETAIL



GENERAL NOTES:

1. USE THE INSTRUMENT DATA SHEETS AND INSTRUMENTATION SPECIFICATIONS TO IDENTIFY REQUIREMENTS FOR DIAPHRAGM SEALS.
2. PROVIDE INSTRUMENT ASSEMBLY WITH 1" VALVES AND PIPING, OR AS APPROVED BY ENGINEER. USE STAINLESS STEEL OR AS REQUIRED FOR COMPATIBILITY WITH WITH PROCESS FLUID. PROVIDE FITTINGS FOR INSTRUMENT CONNECTIONS AS REQUIRED.
3. REFER TO MECHANICAL DRAWINGS FOR INSTRUMENT LOCATION AND PROCESS PIPE ORIENTATION.

◇# KEY NOTES:

1. PROVIDE SIDE-TAP PROCESS CONNECTION. THREADED TAP OR SADDLE CONNECTION FOR DUCTILE IRON PIPE. WELD-O-LET OR THREAD-O-LET FOR WELDED PIPE. TEE OR REDUCING TEE FOR NON-METALLIC PIPE AND PIPES 1" OR SMALLER.

NP503 TYP S — ISOLATING PRESSURE INSTRUMENT MOUNTING DETAIL

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INSTRUMENTATION 8

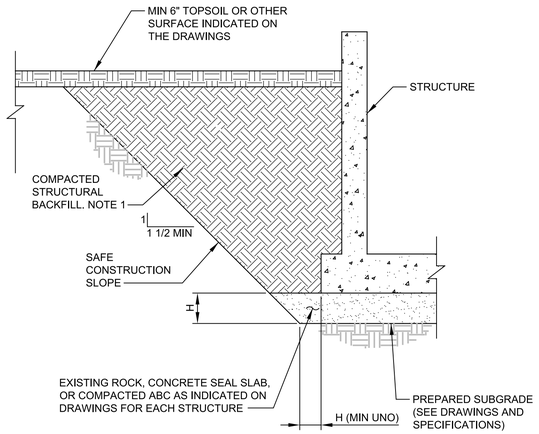
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DRAWING NO. 00TN08
SHEET NO. 170 OF 178

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NOTES:

1. SEE SPECIFICATIONS FOR ACCEPTABLE BACKFILL MATERIALS.

SB110 STRUCTURAL EXCAVATION & BACKFILL

TYP S — 12/18/2023

1. SEE DIVISION 03 SPECIFICATION FOR REQUIREMENTS FOR CONCRETE CONSTRUCTION.
2. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, MINIMUM REINFORCEMENT OF CONCRETE WALLS OR SLABS SHALL BE AS FOLLOWS. CONTACT ENGINEER FOR LOCATIONS INSIDE CONCRETE.
   10" THICK OR LESS: .....#5 @ 12" EACH WAY.
   MORE THAN 10" THICK: .....#5 @ 12" EACH WAY, EACH FACE.
3. WALL REINFORCEMENT AT CORNERS OR JUNCTIONS OF WALLS SHALL BE CONTINUOUS, LAP SPLICED, OR TERMINATED IN AN ACI STANDARD 90 DEGREE HOOK. SEE DETAIL SC310/TYP.
4. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, DOWELS BETWEEN ADJACENT CONCRETE PLACEMENTS SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCEMENT WHICH IS SPLICED TO THE DOWELS.
5. SLAB, BEAM AND COLUMN REINFORCING BARS SHALL HAVE A MINIMUM EXTENSION OR ANCHORAGE INTO SUPPORTS IN ACCORDANCE WITH ACI 318 AND ACI 350.
6. PROVIDE STIRRUP SUPPORT BARS SHALL BE TO SECURE TOP BARS AGAINST DISPLACEMENT AS REQUIRED.
7. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, CONCRETE COVER OVER #11 AND SMALLER REINFORCING BARS SHALL BE AS FOLLOWS:
   A. SLABS AND JOISTS:
      FORMED CONCRETE SURFACES AND UNFORMED TOP SURFACES FOR DRY CONDITIONS
      #7 BARS AND SMALLER.....1"
      #8 BARS AND LARGER.....1 1/2"
      FORMED CONCRETE SURFACES AND UNFORMED TOP SURFACES EXPOSED TO WEATHER, IN CONTACT WITH SOIL OR FLUIDS, OR LOCATED OVER FLUIDS.....2"
   B. BEAMS AND COLUMNS:
      FORMED CONCRETE SURFACES FOR DRY CONDITIONS:
      STIRRUPS, SPIRALS, AND TIES.....1 1/2"
      PRINCIPAL REINFORCEMENT.....2"
      FORMED CONCRETE SURFACES EXPOSED TO WEATHER, IN CONTACT WITH SOIL OR FLUIDS, OR IN BEAMS LOCATED OVER FLUIDS:
      STIRRUPS AND TIES.....2"
      PRINCIPAL REINFORCEMENT.....2 1/2"
   C. WALLS:
      FORMED CONCRETE SURFACES FOR DRY CONDITIONS:
      #7 BARS AND SMALLER.....1"
      #8 BARS AND LARGER.....1 1/2"
      FORMED CONCRETE SURFACES EXPOSED TO WEATHER, OR IN CONTACT WITH SOIL OR FLUIDS.....2"

SC001 REINFORCED CONCRETE - NOTES

TYP S — SHEET 1 OF 3 — 12/18/2023

   D. FOOTINGS AND SLABS ON GRADE:
      FORMED VERTICAL CONCRETE SURFACES.....2"
      AT UNFORMED CONCRETE SURFACES CAST AGAINST SOIL, ROCK, OR CONCRETE WORK MATS.....3"
      TOP SURFACE OF FOOTINGS AND SLABS.....SAME AS SLABS
8. WATERSTOPS:
   A. PROVIDE WATERSTOPS AT JOINTS IN SLABS AND WALLS OF LIQUID-CONTAINING STRUCTURES, AND PORTIONS OF STRUCTURES BELOW THE DESIGN GROUNDWATER LEVEL. MAKE WATERSTOPS CONTINUOUS THROUGH STRUCTURE, SPLICING WATERSTOPS IN SLABS WITH WATERSTOPS IN WALLS.
   B. END WATERSTOPS 3" BELOW TOP OF WALLS. WHERE TOP OF WALL IS COVERED BY A SLAB WITHOUT WATERSTOPS, CONTINUE WATERSTOP TO WALL/SLAB JOINT. WHERE TOP OF WALL IS COVERED BY A SLAB WITH WATERSTOPS, MAKE WATERSTOPS CONTINUOUS, SPLICING WATERSTOPS IN WALLS WITH WATERSTOPS IN SLAB.
9. CURE CONCRETE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. WHERE WATER CURING IS SPECIFIED, MEMBRANE CURING IS NOT ALLOWED.
   A. THE CONTRACTOR IS WARNED THAT WATER CURING IS DIFFICULT AT TIMES DUE TO WIND AND DRY CONDITIONS. STUDY SPECIFICATION REQUIREMENTS AND FURNISH ADEQUATE SYSTEMS TO PROVIDE WATER CURING WHERE REQUIRED.
   B. KEEP WATER CURED SURFACES VISIBLY MOIST AT ALL TIMES. FLOOD TOPS OF WALLS NOT LESS THEN 3 TIMES DAILY.
10. DO NOT PLACE BACKFILL AGAINST WALLS UNTIL:
   A. WALLS HAVE BEEN CAST TO FULL HEIGHT OF STRUCTURE AND CONCRETE HAS REACHED THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH (f'c).
   B. CONNECTING SLABS AND BEAMS HAVE BEEN CAST AND CONCRETE IN THOSE ELEMENTS HAS REACHED THE MINIMUM SPECIFIED COMPRESSIVE STRENGTH (f'c).
11. LAP SPLICES:
   A. SEE TABLE 1 OF THIS DETAIL FOR LAP SPLICE LENGTHS.
   B. WHEN MULTIPLE BARS ARE SPLICED AT THE SAME SECTION, THE "CLEAR BAR SPACING" IS DEFINED AS THE MINIMUM CLEAR DISTANCE BETWEEN THE BARS OUTSIDE THE SPLICE LENGTH MINUS ONE BAR DIAMETER.
   C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, BARS AT A LAP SPLICE SHALL BE IN CONTACT WITH EACH OTHER.
   D. "TOP BARS" ARE HORIZONTAL REINFORCEMENT AT LOCATIONS WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.
12. FORM EXPOSED CONCRETE CORNERS AND EDGES WITH 3/4" CHAMFER UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

SC001 REINFORCED CONCRETE - NOTES

TYP S — SHEET 2 OF 3 — 12/18/2023

TABLE 1: REINFORCING BAR LAP SPLICES: f'c = 4000 PSI, Fy = 60,000 PSI

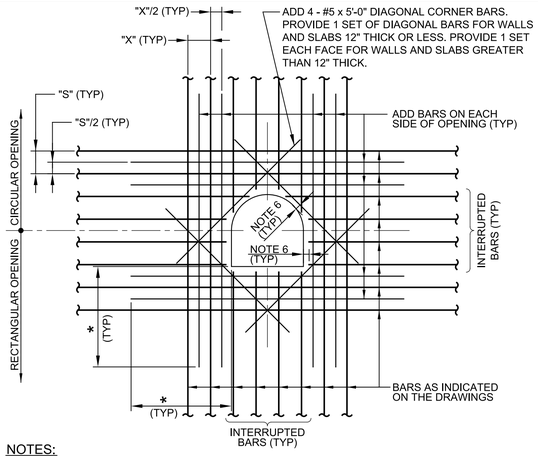
BAR SIZE	MINIMUM COVER (BAR DIA)	MINIMUM CLEAR BAR SPACING (BAR DIA)	LAP SPLICE LENGTH (INCHES)	
			TOP BARS	OTHER BARS
#4	MORE THAN 1	MORE THAN 2	32 ★	25 ★
	MORE THAN 2	MORE THAN 4	20	16
#5	MORE THAN 1	MORE THAN 2	40 ★	31 ★
	MORE THAN 2	MORE THAN 4	26	20
#6	MORE THAN 1	MORE THAN 2	48 ★	37 ★
	MORE THAN 2	MORE THAN 4	30	24
#7	MORE THAN 1	MORE THAN 2	70 ★	54 ★
	MORE THAN 2	MORE THAN 4	43	33
#8	MORE THAN 1	MORE THAN 2	81 ★	62 ★
	MORE THAN 2	MORE THAN 4	50	38
#9	MORE THAN 1	MORE THAN 2	90 ★	70 ★
	MORE THAN 2	MORE THAN 4	56	42
#10	MORE THAN 1	MORE THAN 2	104 ★	81 ★
	MORE THAN 2	MORE THAN 4	62	48
#11	MORE THAN 1	MORE THAN 2	114 ★	88 ★
	MORE THAN 2	MORE THAN 4	69	54

REINFORCING BAR LAP SPLICE TABLE NOTES:

1. TABULATED SPLICE LENGTHS ARE APPLICABLE ONLY WHEN BOTH REQUIREMENTS FOR MINIMUM COVER AND FOR MINIMUM CLEAR BAR SPACING ARE SATISFIED.
2. ★= IF THE CLEAR BAR SPACING IS LESS THAN OR EQUAL TO TWO BAR DIAMETERS, OR THE COVER IS LESS THAN OR EQUAL TO ONE BAR DIAMETER, THE LAP SPLICE LENGTH SHALL BE INCREASED BY 50 PERCENT.

SC001 REINFORCED CONCRETE - NOTES

TYP S — SHEET 3 OF 3 — 12/18/2023

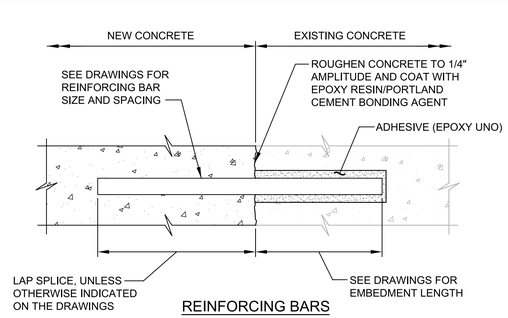


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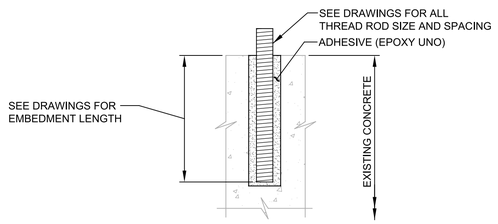
1. AREA OF ADD BARS AT EACH EDGE OF OPENING IN EACH DIRECTION SHALL BE EQUAL TO OR GREATER THAN 1/2 THE CROSS SECTIONAL AREA OF THE INTERRUPTED BARS.
2. PROVIDE STANDARD ACI HOOKS ON BARS IF STRAIGHT EXTENSION PAST THE OPENING, CANNOT BE ACHIEVED.
3. PLACE ADD BARS IN SAME PLANES AS INTERRUPTED REINFORCING.
4. PLACE #5 DIAGONAL BARS ON INSIDE OF INTERRUPTED REINFORCING.
5. * DIMENSION EQUALS OPENING DIMENSION MEASURED PERPENDICULAR TO ADD BARS PLUS LAP SPLICE LENGTH.
6. 2" CLEAR TO CONCRETE OPENINGS OR OUTSIDE FACE OF PIPES AND PIPE SLEEVES. DO NOT OVERCUT REINFORCEMENT FOR EASIER PLACEMENT OF WEEP RINGS AND FLANGES.
7. ADD BARS ARE NOT REQUIRED AT SIDES OF OPENINGS PARALLEL TO AND WITHIN 6" OF A WALL OR BEAM.

SC012 CONCRETE - REINFORCEMENT - ADDITIONAL REINF AT OPENINGS - SLABS AND WALLS

TYP S, N — 12/18/2023



REINFORCING BARS



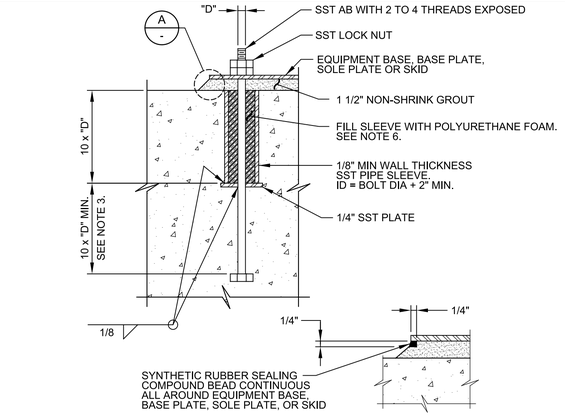
ALL-THREAD RODS

NOTE:

1. INSTALLATION OF REINFORCING BARS AND ALL THREAD RODS AS INDICATED IN THE SPECIFICATIONS.

SC040 CONCRETE REINFORCEMENT - ADHESIVE - BONDED BARS AND ALL-THREAD RODS

TYP N — 12/18/2023



A - DETAIL

NOTES:

1. "D" = DIAMETER OF ANCHOR BOLT.
2. ANCHOR BOLT DIAMETER AS INDICATED ON THE DRAWINGS. IF NOT INDICATED ON THE DRAWINGS, THE ANCHOR BOLT SIZE SHALL BE AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
3. WHERE CONCRETE SLAB OR BEAM THICKNESS WILL NOT ACCOMMODATE THE ANCHOR BOLT, PROVIDE EXTRA THICKNESS OF SLAB OR BEAM.
4. PREFABRICATED PLASTIC ANCHOR BOLT SLEEVE OPTIONAL.
5. DO NOT USE ALL THREAD RODS AS A SUBSTITUTE FOR BOLTS WITH A BOLT HEAD. SMOOTH RODS THREADED AT THE ENDS MAY BE USED IF ACCEPTABLE TO THE ENGINEER. DO NOT WELD NUTS TO THE THREADED RODS.
6. COMPLETELY REMOVE ANY POLYURETHANE FOAM FROM CONCRETE, EQUIPMENT BASE, BASE PLATE, SOLE PLATE, OR SKID, AND ANCHOR BOLTS ABOVE TOP OF CONCRETE.
7. DO NOT USE LEVELING NUTS TO SUPPORT AND LEVEL EQUIPMENT BASE, BASE PLATE, SOLE PLATE, OR SKID.

SC064 ANCHOR BOLT - SLEEVE PLUS EMBED

TYP N — 12/18/2023

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CITY OF ROSEVILLE CALIFORNIA

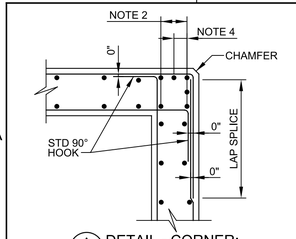
CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
STRUCTURAL 1

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

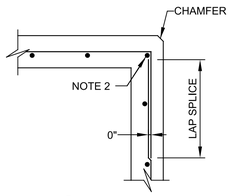
JOB NO. 11843A.10
DRAWING NO. 00TS01
SHEET NO. 171 OF 178

PROJECT NO.
FILE NAME: 11843A1000TS01.dgn

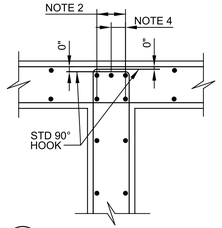
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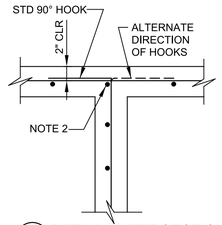
A DETAIL - CORNER: DOUBLE MAT



B DETAIL - CORNER: SINGLE MAT



C DETAIL - INTERSECTION: DOUBLE MAT



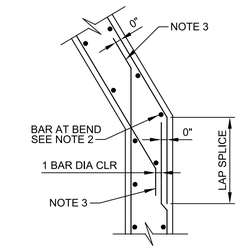
D DETAIL - INTERSECTION: SINGLE MAT

NOTES:

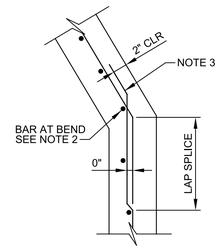
1. BAR SIZE, SPACING, AND ORIENTATION OF BAR LAYERS SHALL BE AS INDICATED ON THE DRAWINGS.
2. AT INTERSECTION, MAKE BAR SIZE THE LARGER OF BAR SIZES IN CONNECTING WALLS. PLACE BARS IN SAME LAYERS AS AT CONNECTING WALLS (TYP).
3. BAR TAILS: 12 BAR DIAMETERS PLUS 12".
4. EXTERIOR VERTICAL BARS SHALL BE PROVIDED AT A SPACING THAT DOES NOT EXCEED THE SPACING SPECIFIED ON THE DRAWINGS REGARDLESS OF THE WALL THICKNESS.

SC310 TYP N — CONCRETE - REINFORCEMENT - WALL CORNERS AND INTERSECTIONS

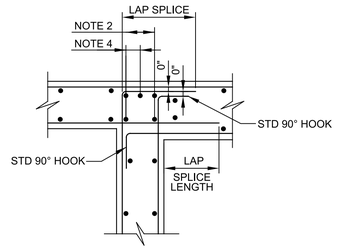
SHEET 1 OF 2 12/18/2023



E DETAIL - INTERSECTION: DOUBLE MAT



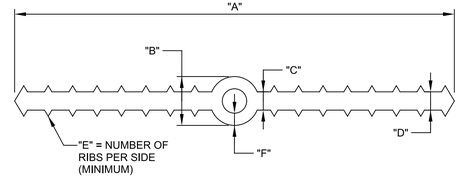
F DETAIL - INTERSECTION: SINGLE MAT



G DETAIL - INTERSECTION: CHANGE IN WALL THICKNESS

SC310 TYP N — CONCRETE - REINFORCEMENT - WALL CORNERS AND INTERSECTIONS

SHEET 2 OF 2 12/18/2023



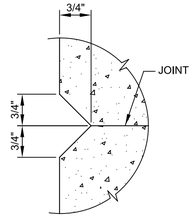
TYPE	"A"	"B"	"C"	"D"	"E"	"F"	APPLICATION
W/O CENTER BULB	6"	-	3/8"	3/8"	7	-	CONSTRUCTION AND CONTROL JOINTS
CENTER BULB	6"	7/8"	3/8"	3/8"	7	9/32"	FOR USE WITH DETAIL EM071/TYP ONLY
CENTER BULB	9"	1"	3/8"	3/8"	7	1/4"	EXPANSION JOINTS 1" AND NARROWER
CENTER BULB	9"	2"	3/8"	3/8"	7	1/4"	EXPANSION JOINTS WIDER THAN 1" AND TENSION/COMPRESSION RING BEAM AT DIGESTERS

NOTES:

1. SEE SPECIFICATIONS FOR MATERIAL REQUIREMENTS.
2. DIMENSIONS ARE MINIMUM, UNLESS OTHERWISE NOTED.

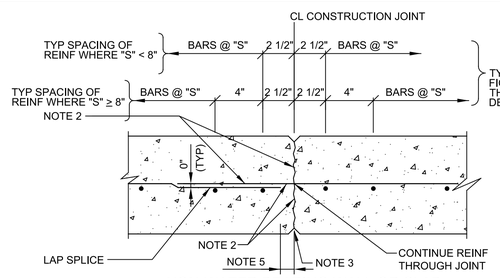
SD004 TYP — CONCRETE JOINTS - PVC WATERSTOPS - SCHEDULE

12/18/2023

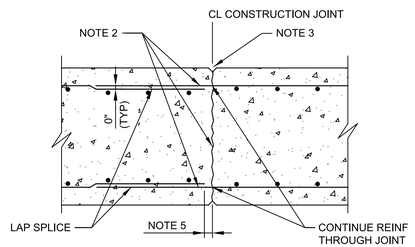


SD050 TYP N — CONCRETE JOINTS - V-GROOVE

12/18/2023



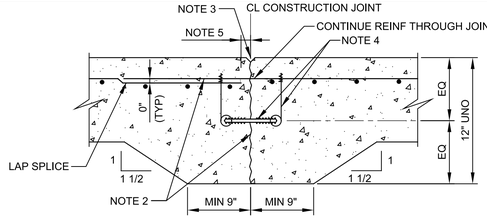
NON-WATER BEARING WALL OR SLAB
SINGLE LAYER REINFORCEMENT



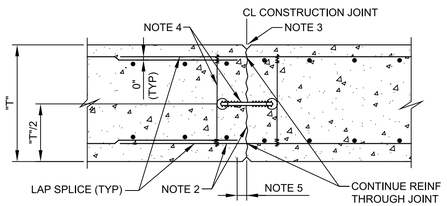
NON-WATER BEARING WALL OR SLAB
DOUBLE LAYER REINFORCEMENT

SD102 TYP N — CONCRETE JOINTS - CONSTRUCTION JOINT - WALL OR SLAB

SHEET 1 OF 2 12/18/2023



WATER BEARING SLAB LESS THAN 12" THICK



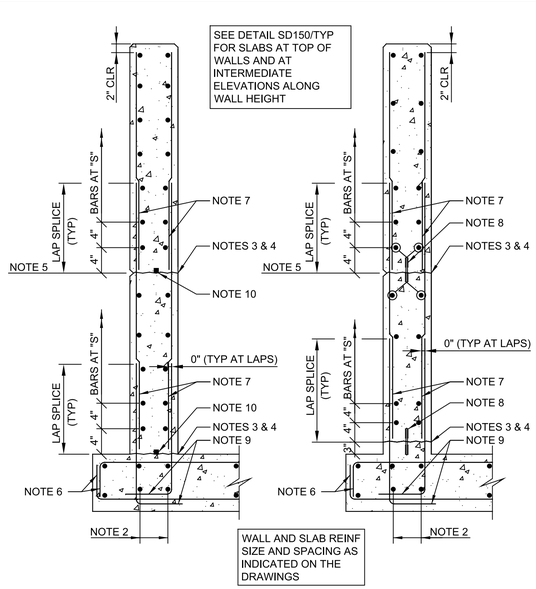
WATER BEARING SLAB OR WALL

NOTES:

1. "S" EQUALS TYPICAL BAR SPACING INDICATED ON THE DRAWINGS. "T" EQUALS SLAB OR WALL THICKNESS.
2. WATER-BLAST EXPOSED JOINT FACE AND PROJECTING REINFORCEMENT BEFORE PLACING CONCRETE.
3. JOINT EDGES:
   A. FOR WALLS AND BOTTOM OF EXPOSED SLABS: FORM EDGES WITH 1/2" CHAMFER.
   B. FOR SLABS: EDGE TOP AND ENDS WITH 1/4" RADIUS.
4. 6" WATERSTOP CENTERED ON JOINT - SEE DETAIL SD004/TYP. PROVIDE WIRE TIES MAX 2'-0" OC. HOG RINGS MAY BE USED IN LIEU OF WIRE LOOPS. THOROUGHLY CLEAN WATERSTOP BEFORE PLACING CONCRETE IN SECOND POUR.
5. STOP REINFORCING 2" CLEAR OF JOINT.

SD102 TYP S — CONCRETE JOINTS - CONSTRUCTION JOINT - WALL OR SLAB

SHEET 2 OF 2 12/18/2023



A SECTION

B SECTION - "W/ WSTP"

SD130 TYP N — CONCRETE JOINTS - CONSTRUCTION JOINT - WALLS - STARTER WALL AT PVC WATERSTOP

SHEET 1 OF 2 10/18/2024

NOTES:

1. "S" EQUALS TYPICAL BAR SPACING INDICATED ON THE DRAWINGS.
2. PLACE AND ALIGN BARS BEFORE PLACING DOWELS. BAR SIZE TO MATCH SLAB BARS.
3. WATER-BLAST JOINT FACE AND PROJECTING REINFORCEMENT BEFORE PLACING CONCRETE.
4. PLACE NEAT CEMENT GROUT OVER JOINT FACE IMMEDIATELY BEFORE PLACING CONCRETE. (SEE SPECIFICATIONS.)
5. CONSTRUCTION JOINT WHERE INDICATED ON THE DRAWINGS. WHERE WALL SURFACE IS EXPOSED TO VIEW IN THE FINISHED WORK, PROVIDE V-GROOVE PER DETAIL SD050/TYP.
6. STANDARD 90° HOOK WHERE INDICATED ON THE DRAWINGS. (ALTERNATE: PROVIDE 180° HOOK WHERE REQUIRED BY SLAB THICKNESS.)
7. DOWELS: SAME SIZE AND SPACING AS VERTICAL WALL BARS, UNLESS OTHERWISE NOTED.
8. 6" PVC WATERSTOP CENTERED VERTICALLY ON JOINT. PROVIDE WIRE TIES MAX 2'-0" OC. HOG RINGS MAY BE USED IN LIEU OF WIRE LOOPS. THOROUGHLY CLEAN WATERSTOP BEFORE PLACING CONCRETE.
9. STANDARD 90° HOOK UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
10. WHERE DRAWINGS INDICATE "W/ STRIP WSTP" PROVIDE LOW EXPANSION HYDROPHILIC WATERSTOP AT TOP SURFACE OF JOINT AND CENTERED BETWEEN VERTICAL BARS.

SD130 TYP N — CONCRETE JOINTS - CONSTRUCTION JOINT - WALLS - STARTER WALL AT PVC WATERSTOP

SHEET 2 OF 2 10/18/2024

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED KP
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — AZMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

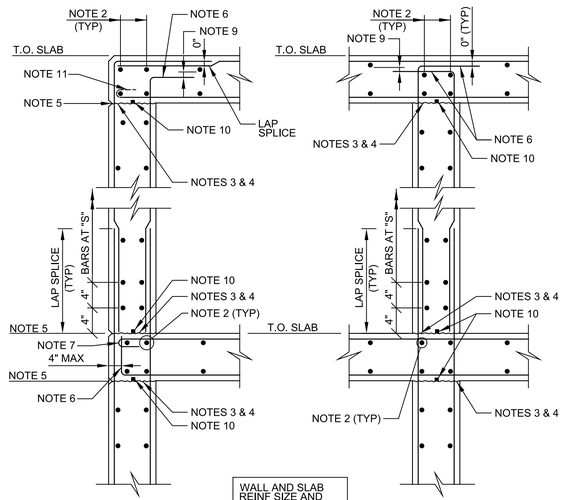
TYPICAL DETAILS

STRUCTURAL 2

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TS02
SHEET NO. 172 OF 178

PROJECT NO. FILE NAME: 11843A1000TS02.dgn



SLAB AT 1 SIDE

WALL AND SLAB REINF SIZE AND SPACING AS INDICATED ON THE DRAWINGS

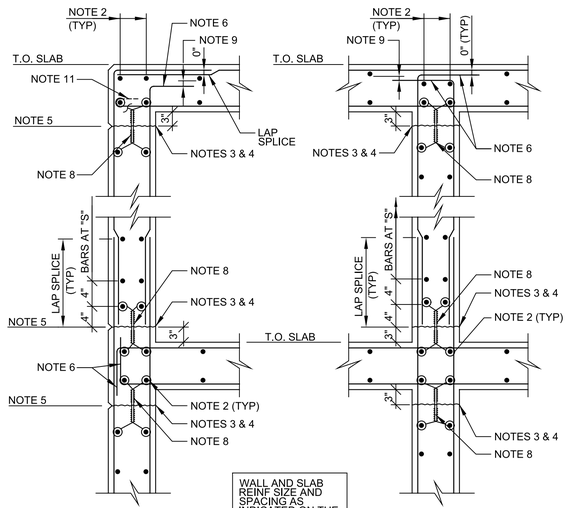
SEE DETAIL SD130/TYP FOR SLABS AT BOTTOM OF WALL

SLAB AT 2 SIDES

A - SECTION

SD150 TYP N — CONCRETE JOINTS - CONSTRUCTION JOINT - WALLS AT ELEVATED SLABS

SHEET 1 OF 3 10/18/2024



SLAB AT 1 SIDE

WALL AND SLAB REINF SIZE AND SPACING AS INDICATED ON THE DRAWINGS

SEE DETAIL SD130/TYP FOR SLABS AT BOTTOM OF WALL

SLAB AT 2 SIDES

B - SECTION - "W/ WSTP"

SD150 TYP N — CONCRETE JOINTS - CONSTRUCTION JOINT - WALLS AT ELEVATED SLABS

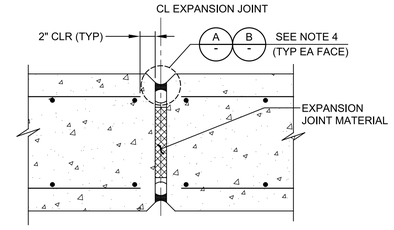
SHEET 2 OF 3 10/18/2024

NOTES:

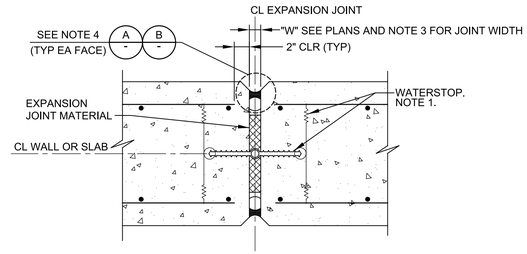
1. "S" EQUALS TYPICAL BAR SPACING INDICATED ON THE DRAWINGS.
2. AT INTERSECTION, MAKE BAR SIZE THE LARGER OF BAR SIZES IN ADJACENT SLAB OR WALL. PLACE BARS AT SAME LAYERS AS IN ADJACENT SLAB OR WALL.
3. WATER-BLAST JOINT FACE AND PROJECTING REINFORCEMENT BEFORE PLACING CONCRETE.
4. PLACE NEAT CEMENT GROUT OVER JOINT FACE IMMEDIATELY BEFORE PLACING CONCRETE. (SEE SPECIFICATIONS)
5. CONSTRUCTION JOINT WHERE INDICATED ON THE DRAWINGS. WHERE WALL SURFACE IS EXPOSED TO VIEW IN THE FINISHED WORK, PROVIDE V-GROOVE PER DETAIL SD050/TYP.
6. STANDARD 90° HOOK UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
7. STANDARD 180° HOOK (ALTERNATE: 90° HOOK ROTATED OUT OF VERTICAL PLANE IF APPROVED BY ENGINEER.)
8. 6" PVC WATERSTOP CENTERED VERTICALLY ON JOINT. PROVIDE WIRE TIES MAX 2'-0" OC. HOG RINGS MAY BE USED IN LIEU OF WIRE LOOPS. THOROUGHLY CLEAN WATERSTOP BEFORE PLACING CONCRETE.
9. 1 BAR DIAMETER CLEAR.
10. WHERE DRAWINGS INDICATE "W/ STRIP WSTP" PROVIDE LOW EXPANSION HYDROPHILIC WATERSTOP AT TOP SURFACE OF JOINT AND CENTERED BETWEEN VERTICAL BARS.
11. STANDARD 180° HOOK WHERE INDICATED ON THE DRAWINGS.

SD150 TYP N — CONCRETE JOINTS - CONSTRUCTION JOINT - WALLS AT ELEVATED SLABS

SHEET 3 OF 3 10/18/2024



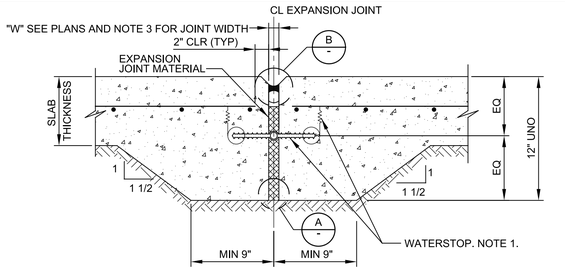
NON-WATER BEARING SLAB OR WALL



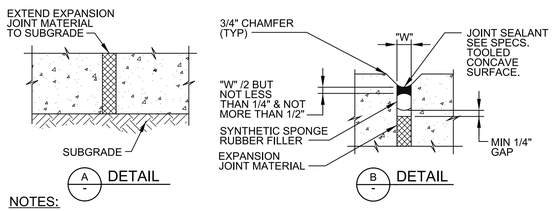
WATER BEARING SLAB OR WALL

SD382 TYP N — CONCRETE JOINTS - ISOLATION JOINT - WALL OR SLAB

SHEET 1 OF 2 12/18/2023



WATER BEARING SLAB LESS THAN 12" THICK

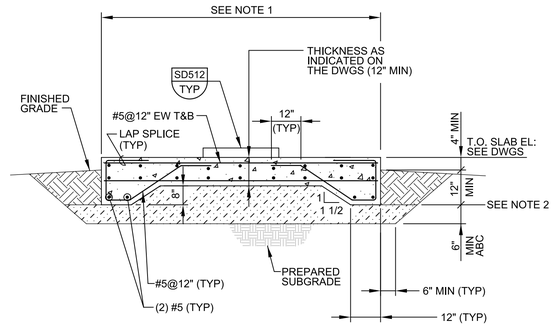


NOTES:

1. 9" WATERSTOP WITH CENTER BULB CENTERED ON JOINT - SEE DETAIL SD004/TYP. PROVIDE WIRE TIES MAX 2'-0" OC. HOG RINGS MAY BE USED IN LIEU OF WIRE LOOPS. THOROUGHLY CLEAN WATERSTOP BEFORE PLACING CONCRETE IN SECOND POUR.
2. JOINT EDGES:
   A. FOR WALLS AND BOTTOM OF EXPOSED SLABS: FORM EDGES WITH 3/4" CHAMFER.
   B. FOR SLABS: EDGE TOP AND ENDS WITH 1/4" RADIUS.
3. "W"=1" UNLESS OTHERWISE INDICATED ON PLANS. (MIN JOINT WIDTH = 3/8". MAX JOINT WIDTH = 2")
4. USE DETAIL A ONLY AT SOIL SIDE OF SLABS ON GRADE. USE DETAIL B AT ALL OTHER LOCATIONS.

SD382 TYP N — CONCRETE JOINTS - ISOLATION JOINT - WALL OR SLAB

SHEET 2 OF 2 12/18/2023



NOTES:

1. DIMENSIONS AS REQUIRED TO SUIT EQUIPMENT OR AS INDICATED ON THE DRAWINGS.
2. MAKE ELEVATION AT BOTTOM OF THICKENED EDGE UNIFORM AROUND PAD. SET ELEVATION TO PROVIDE INDICATED HEIGHT ABOVE AND DEPTH BELOW FINISHED GRADES INDICATED ON THE DRAWINGS.

SD503 TYP N — CONCRETE - EQUIPMENT SLAB

12/18/2023

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED KP
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — KAMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

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CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

STRUCTURAL 3

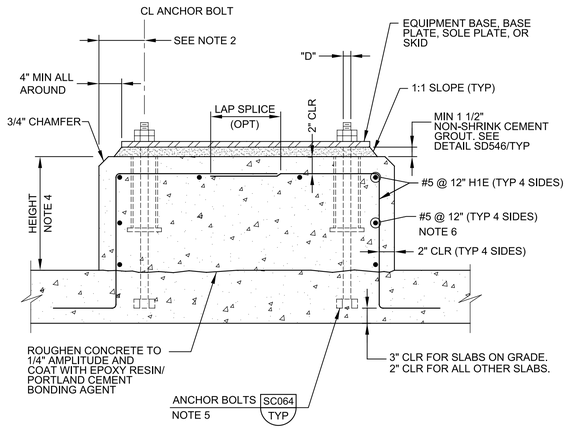
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TS03
SHEET NO. 173 OF 178

PROJECT NO.
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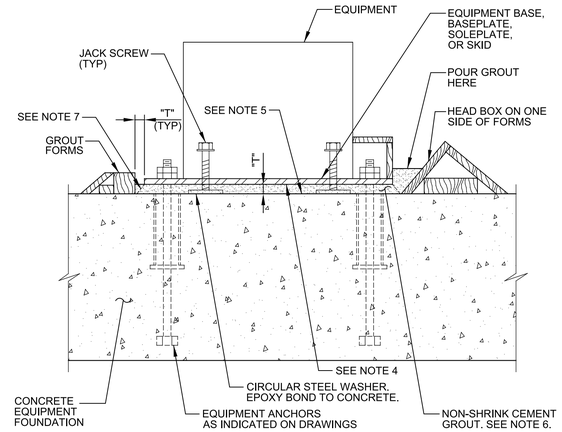


NOTES:

1. "D" = DIAMETER OF ANCHOR BOLT.
2. THE EDGE DISTANCE ON THE ANCHOR BOLTS SHALL NOT BE LESS THAN 6" OR 8 x "D".
3. PAD DIMENSIONS AND ANCHOR BOLT SIZE SHALL CONFORM TO EQUIPMENT MANUFACTURER'S REQUIREMENTS.
4. HEIGHT TO SUIT EQUIPMENT FURNISHED OR AS INDICATED ON THE DRAWINGS.
5. WHERE CONCRETE SLAB OR BEAM THICKNESS WILL NOT ACCOMMODATE THE ANCHOR BOLT, PROVIDE EXTRA THICKNESS FOR SLAB OR BEAM.
6. PROVIDE HOOPS OR CORNERS PER DETAIL SC310/TYP.

SD512 TYP — CONCRETE - EQUIPMENT BASE - DEEP ANCHORS

N 10/18/2024

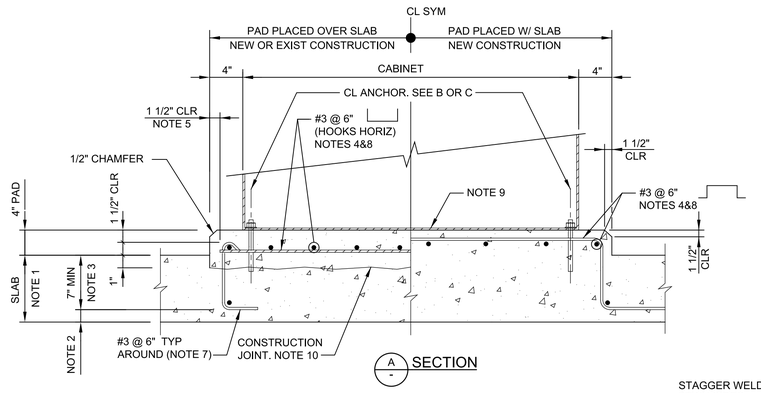


NOTES:

1. "T" = EQUALS GROUT THICKNESS INDICATED ON THE DRAWING. 1" MINIMUM GROUT THICKNESS.
2. FILL ANCHOR SLEEVES WITH POLYURETHANE FOAM BEFORE GROUTING.
3. DO NOT USE LEVELING NUTS ON EQUIPMENT ANCHORS.
4. PREPARE SURFACE OF EQUIPMENT BASES, BASE PLATES, SOLE PLATES, AND SKIDS IN CONTACT WITH GROUT PER SPECIFICATIONS.
5. PREPARE SURFACES OF CONCRETE FOUNDATION IN CONTACT WITH GROUT PER SPECIFICATIONS.
6. PLACE NON-SHRINK GROUT PER SPECIFICATIONS.
7. AFTER GROUT SETS, TRIM GROUT TO 45 DEGREE CHAMFER.

SD546 TYP — CONCRETE - EQUIPMENT GROUTING

10/18/2024



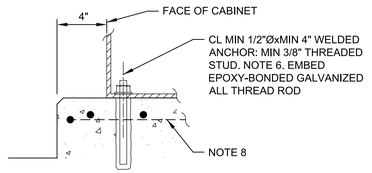
A - SECTION

NOTES:

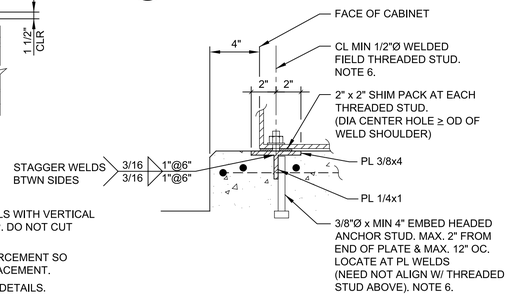
1. SEE STRUCTURAL DRAWINGS FOR THICKNESS OF SLAB BELOW PAD. SLAB REINFORCEMENT NOT SHOWN.
2. SEE SC001/ TYP FOR MIN CONCRETE COVER REQUIREMENTS.
3. CONTACT ENGINEER FOR INSTRUCTIONS WHERE EMBEDMENT IS LESS THAN DIMENSION SHOWN.
4. FOR EQUIPMENT WITH CONDUIT WINDOWS BELOW, ADJUST BAR LOCATIONS TO FIT BETWEEN WINDOWS.
5. LOCATE VERTICAL EDGE OF PAD AND VERTICAL FACE OF PERIMETER HOOK BARS USING VERTICAL 2x FORM DURING SLAB PLACEMENT.
6. HOT DIP GALVANIZE PLATE AND HEADED ANCHOR STUD ASSEMBLY. TOUCH UP GALVANIZING AFTER FIELD WELDING THREADED STUDS.
7. FOR NEW PAD ON EXIST SLAB, PROVIDE DOWELS WITH VERTICAL LEG SET IN ADHESIVE USING DETAIL SC040/TYP. DO NOT CUT EXISTING SLAB REINF.
8. POST-INSTALLED ANCHORS: POSITION REINFORCEMENT SO THAT IT WILL NOT BE CUT DURING ANCHOR PLACEMENT.
9. SEE DRAWINGS FOR REQUIRED PENETRATION DETAILS.
10. ROUGHEN CONCRETE TO ICRI CSP-7. SATURATE BONDING SURFACES AND CONCRETE 12" BEYOND FOR MINIMUM 24 HOURS. REMOVE WATER AND PREPARE CONCRETE TO "SATURATED SURFACE DRY" (SSD) CONDITION. PLACE PAD AND WATER CURE MINIMUM 7 DAYS.

SD702 TYP — CONCRETE - EQUIPMENT - ELECTRICAL HOUSEKEEPING PAD AT ELECTRICAL CABINETS

NR 11/15/24



B - POST-INSTALLED ANCHOR



C - CAST-IN-ANCHOR

1. SEE DRAWINGS FOR VERTICAL AND HORIZONTAL REINFORCING BAR SIZE AND SPACING AT EACH STRUCTURE.
2. SEE DETAIL SF220/TYP - REINFORCED MASONRY WALL, FOR REINFORCING DETAILS AT CORNERS AND OPENINGS.
3. REINFORCING LAP SPLICES:
   A. AS INDICATED IN THE FOLLOWING TABLE, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
   B. ADJACENT LAP SPLICES SHALL BE SEPARATED BY A CLEAR SPACING OF AT LEAST 3.0 INCHES STAGGER SPLICE LOCATIONS AS REQUIRED.
   C. MASONRY SIDE COVER OVER REINFORCING FOR BARS AT FACE OF WALL: 2 INCHES MINIMUM / 2-1/2 INCHES MAXIMUM.

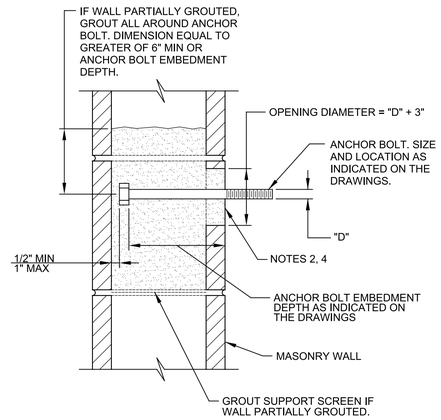
REINFORCING BAR LAP SPLICES - CMU:
f'm = 2000 PSI, Fy = 60,000 PSI

BAR SIZE	8" OR 10" CMU		12" CMU	
	BARS CENTERED IN WALL	BARS AT FACE OF WALL	BARS CENTERED IN WALL *	BARS AT FACE OF WALL
#4	18"	26"	18"	26"
#5	27"	40"	27"	40"
#6	50"	74"	50"	74"
#7	69"	101"	67"	101"
#8	108"	151"	101"	151"

* SPLICE LENGTH MAY BE FACTORED BY 0.70 WHERE ADJACENT LAP SPLICES ARE AT LEAST 6-INCHES APART.

SF002 TYP — REINFORCED MASONRY NOTES

NR 11/15/24



NOTES:

1. "D" = DIAMETER OF ANCHOR BOLT.
2. SET ANCHOR BOLTS WITH TEMPLATE. DO NOT EMBED ADJUSTMENT NUTS IN GROUT AT FACE OF MASONRY.
3. CUT MASONRY WEBS AS REQUIRED TO ALLOW MINIMUM 1/2" GROUT BETWEEN ANCHOR BOLT AND MASONRY SURFACE.
4. REMOVE EXCESS GROUT. LEAVE FINISHED SURFACE FLUSH WITH FACE OF WALL.

SF052 TYP — MASONRY - CMU - ANCHOR BOLTS - BUILT IN

N 12/18/2023

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED KP
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — AZMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

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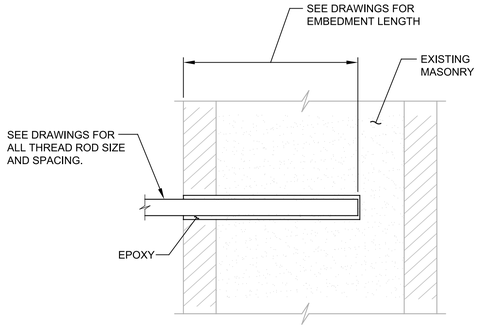
CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE
AQUIFER STORAGE AND RECOVERY WELLS PROJECT
TYPICAL DETAILS
STRUCTURAL 4

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TS04
SHEET NO. 174 OF 178

PROJECT NO.
FILE NAME: 11843A1000TS04.dgn

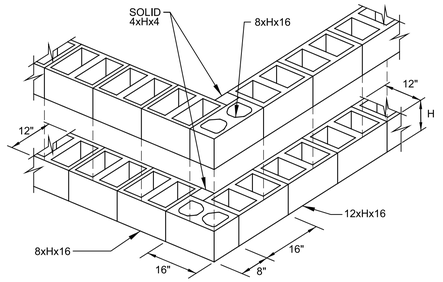


NOTE:

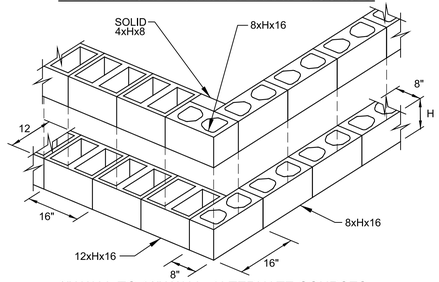
1. INSTALLATION OF AND ALL THREAD RODS AS INDICATED IN THE SPECIFICATIONS.

SF062 TYP N — MASONRY - CMU - ADHESIVE BONDED ALL-THREAD RODS AND REINFORCING BARS

12/18/2023



12" WALL TO 12" WALL: ALTERNATE COURSES



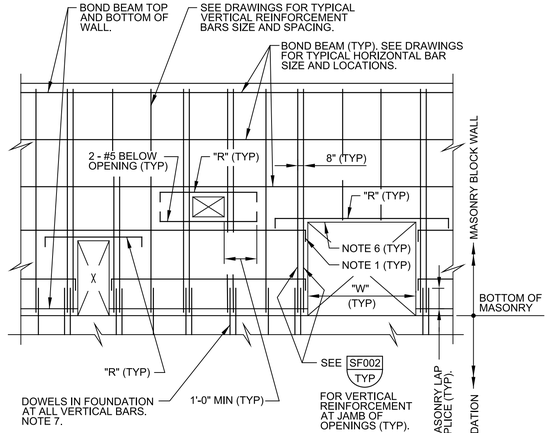
8" WALL TO 12" WALL: ALTERNATE COURSES

NOTES:

1. WALL THICKNESS AS INDICATED ON THE DRAWINGS.
2. BLOCK OR COURSE HEIGHT "H" EQUALS 8" OR 4" AS INDICATED ON THE DRAWINGS.

SF206 TYP N — MASONRY - CMU - L-CORNER AT 12" UNITS

12/18/2023



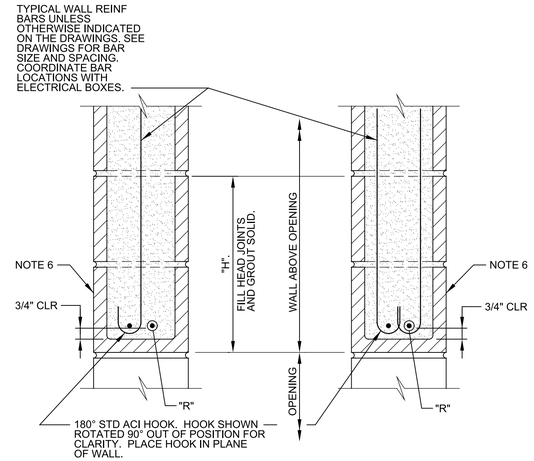
A - WALL ELEVATION

NOTES:

1. ACI STANDARD 90° HOOK ON HORIZONTAL BARS AT OPENINGS.
2. SEE DRAWINGS FOR VERTICAL AND HORIZONTAL REINFORCEMENT SIZE AND SPACING AT EACH STRUCTURE.
3. DO NOT PLACE VERTICAL CONDUITS IN CELLS WITH VERTICAL REINFORCING BARS.
4. SEE DETAIL SF230/TYP FOR BOND BEAM REINFORCEMENT AT CORNERS AND INTERSECTIONS.
5. "R" BARS: EXTEND BAR 1'-0" MINIMUM BEYOND OPENING AND PROVIDE VERTICAL HOOK AT END.
6. CHANNEL LINTEL MASONRY UNITS ACROSS OPENINGS. KNOCK-OUT BOND BEAM UNITS BEYOND OPENINGS TO 1'-0" MINIMUM.
7. EMBED DOWELS IN CONCRETE PER DETAIL SF270/TYP.

SF220 TYP R — MASONRY - CMU - ORDINARY REINF MASONRY SHEAR WALL (ORMSW)

SHEET 1 OF 2 11/15/2024



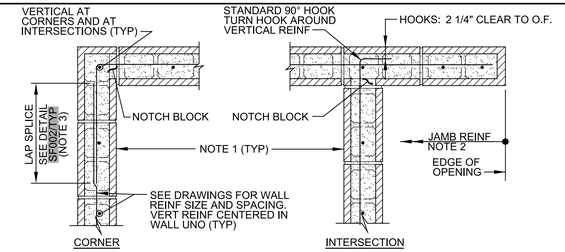
B - LINTEL AT OPENING WITH VERTICAL REINF

C - LINTEL AT OPENING WITH VERTICAL REINF EACH FACE

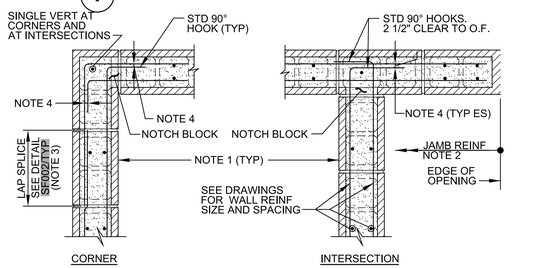
LINTEL REINFORCEMENT SCHEDULE		
"W"	"R"	"H"
LESS THAN 5'-0"	2 - #5	16"
GREATER THAN 5'-0" TO 7'-0"	2 - #6	32"
GREATER THAN 7'-0" TO 12'-0"	2 - #7	40"

SF220 TYP N — MASONRY - CMU - ORDINARY REINF MASONRY SHEAR WALL (ORMSW)

SHEET 2 OF 2 12/18/2023



A - SINGLE BAR BOND BEAM (8" OR 12" CMU)



B - DOUBLE BAR BOND BEAM (12" CMU ONLY)

NOTES:

1. CONSTRUCT BOND BEAMS IN WALL USING BOND BEAM BLOCKS.
2. SEE DETAIL SF220 - REINFORCED MASONRY WALL, FOR REINFORCEMENT AT OPENINGS AND JAMBS.
3. LOCATE LAPS BEYOND CORNERS AND HOOK EXTENSIONS.
4. CLEARANCE BETWEEN PARALLEL BARS AT HOOKS: MIN 1/2 INCH / MAX 1 INCH.

SF230 TYP N — MASONRY - CMU - ORDINARY REINF MASONRY SHEAR WALL (ORMSW) - BOND BEAMS

12/18/2023

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

STRUCTURAL 5

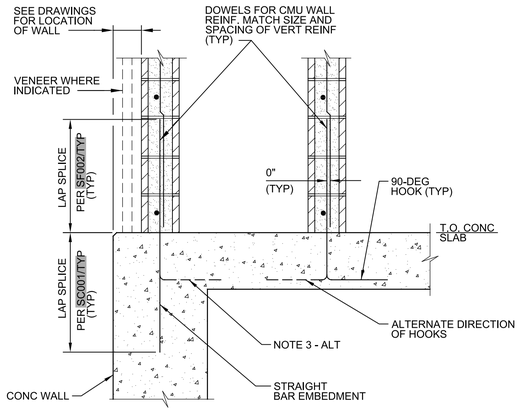
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TS05
SHEET NO. 175 OF 178

PROJECT NO.

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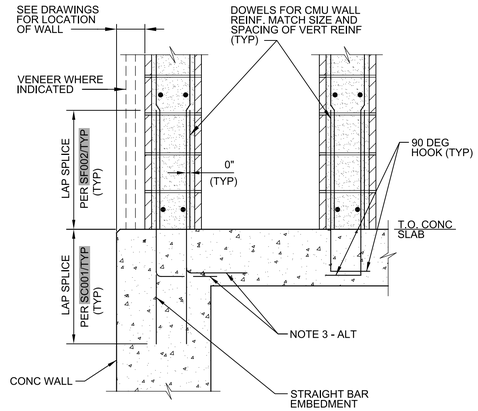
A - SECTION: 8" CMU

NOTES:

1. FOR CMU WALL REINFORCING SIZE AND SPACING, SEE PLANS.
2. VENEER IS NOT SHOWN FOR CLARITY.
3. WHERE STRAIGHT BAR EMBEDMENT IS NOT AVAILABLE, PROVIDE 90-DEGREE HOOKS. ROTATE HOOKS TO PROVIDE REQUIRED CONCRETE COVER.

SF270 TYP — MASONRY - CMU - REINFORCEMENT AT BOTTOM OF WALL - CONCRETE SUPPORT

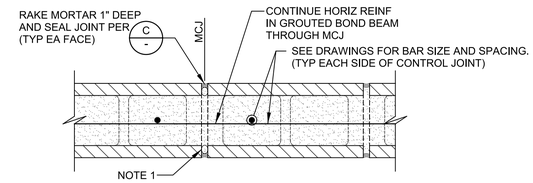
SHEET 1 OF 2 12/18/2023



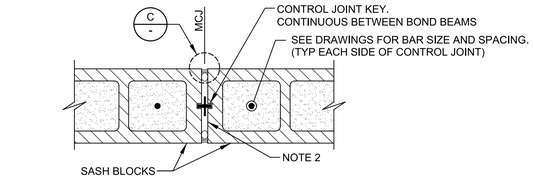
B - SECTION: 12" CMU

SF270 TYP — MASONRY - CMU - REINFORCEMENT AT BOTTOM OF WALL - CONCRETE SUPPORT

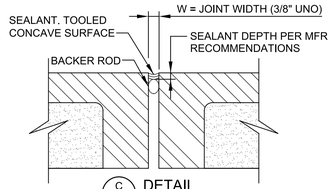
SHEET 2 OF 2 12/18/2023



A - PLAN - BOND BEAM W/SINGLE WALL REINF MAT



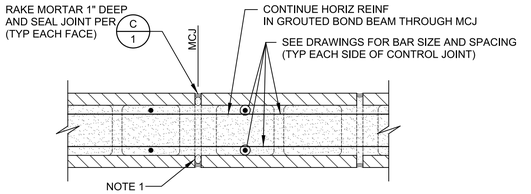
B - PLAN ABOVE OR BELOW BOND BEAM W/SINGLE WALL REINF MAT



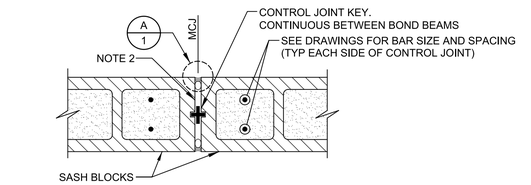
C - DETAIL

SF722 TYP N — MASONRY - CMU - MASONRY CONTROL JOINT - VERT JOINT - BOND BEAM REINF CONTINUES

SHEET 1 OF 2 12/18/2023



D - PLAN - BOND BEAM W/DOUBLE WALL REINF MAT



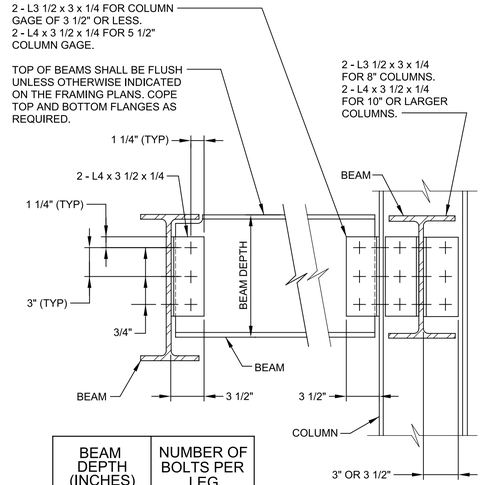
E - PLAN - ABOVE OR BELOW BOND BEAM W/DOUBLE WALL REINF MAT

NOTES:

1. INSTALL REMOVABLE FORMS TO CONFINE GROUT TO FILLED AREA OF BOND BEAMS BEYOND JOINT. AFTER GROUTING, REMOVE FORMS AND SEAL AS INDICATED.
2. OMIT GROUT IN VERTICAL JOINTS BETWEEN BOND BEAMS.

SF722 TYP N — MASONRY - CMU - MASONRY CONTROL JOINT - VERT JOINT - BOND BEAM REINF CONTINUES

SHEET 2 OF 2 12/18/2023



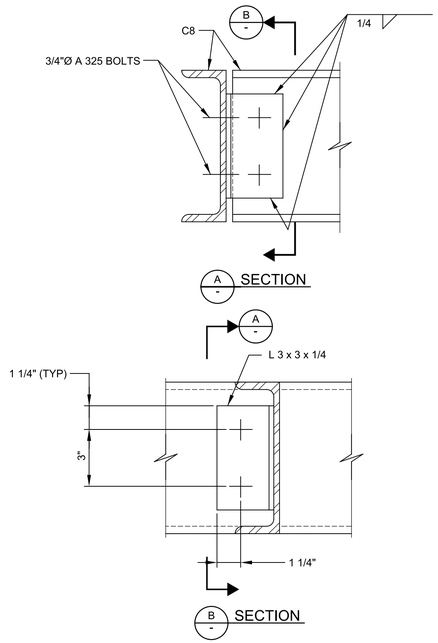
BEAM DEPTH (INCHES)	NUMBER OF BOLTS PER LEG
8 - 10	2
12 - 16	3
18 - 21	4
24 - 30	6

NOTE:

1. SCHEDULE APPLIES TO ALL BEAMS UNLESS NUMBER OF BOLTS PER LEG IS OTHERWISE INDICATED ON THE FRAMING PLAN BY ⬡.

SH505 TYP — STEEL – CONNECTION – W BM TO W BM / COL 2 ANGLES - ALL BOLTED

12/18/2023



SH678 TYP S — STEEL - CONNECTION - CHANNEL TO CHANNEL 1 ANGLE - BEAM BOLTED / SUPPORT WELDED

12/18/2023

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED KP
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — KAMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

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AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

STRUCTURAL 6

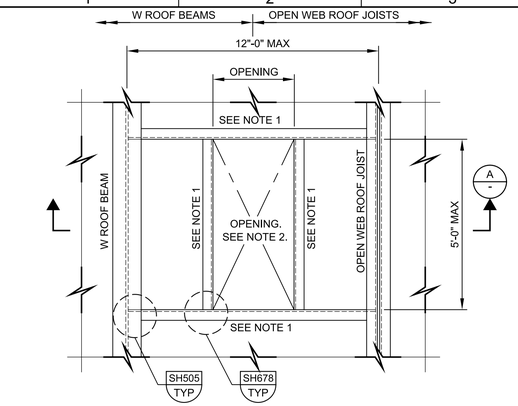
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TS06
SHEET NO. 176 OF 178

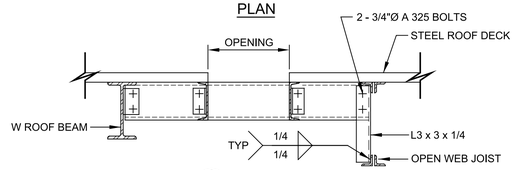
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PLAN



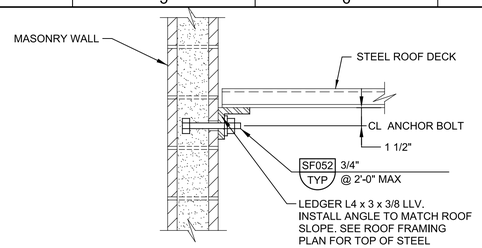
A SECTION

NOTES:

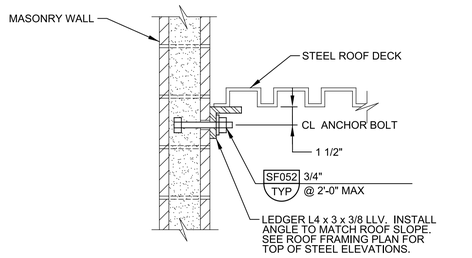
1. SEE ROOF FRAMING PLAN FOR BEAM SIZE.
2. PROVIDE OPENING SIZE TO SUIT EQUIPMENT PROVIDED.

SJ402 TYP N — STEEL FRAMING - DECK OPENING BETWEEN BEAMS OR JOISTS

12/18/2023



ROOF DECK RIBS PERPENDICULAR TO WALL



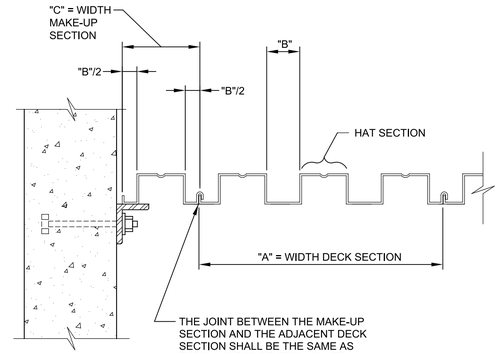
ROOF DECK RIBS PARALLEL TO WALL

NOTES:

1. FIRST ANCHOR BOLT AT EACH END OF SECTION OF ANGLE SHALL BE 6" OR LESS FROM END OF ANGLE.
2. ANGLE SHALL STOP AT EACH SIDE OF CONTROL AND EXPANSION JOINTS. GAP BETWEEN ENDS OF ANGLES SHALL EQUAL WIDTH OF JOINT.

SN550 TYP N — STEEL DECK - ROOF AT CMU WALL - DECK 1 SIDE - ANGLE BEARING

12/18/2023

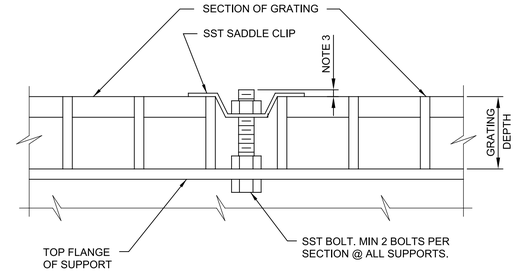


NOTES:

1. GAUGE OF MAKE-UP SECTION SHALL BE THE SAME AS THE ROOF DECK SECTION GAUGE AS INDICATED ON THE DRAWINGS. IF "C" IS GREATER THAN 2/3 "A", THE MAKE-UP SECTION SHALL CONSIST OF THREE HAT SECTIONS. TWO HAT SECTIONS ARE REQUIRED WHEN "C" IS GREATER THAN "A"/3, AND ONE HAT SECTION IS REQUIRED WHEN "C" IS LESS THAN "A"/3.
2. SEE ROOF FRAMING PLAN FOR DECK WELDING.
3. ROOFING AND INSULATION NOT SHOWN FOR CLARITY.

SN610 TYP N — STEEL DECK - ROOF DECK - MAKE-UP SECTION

12/18/2023

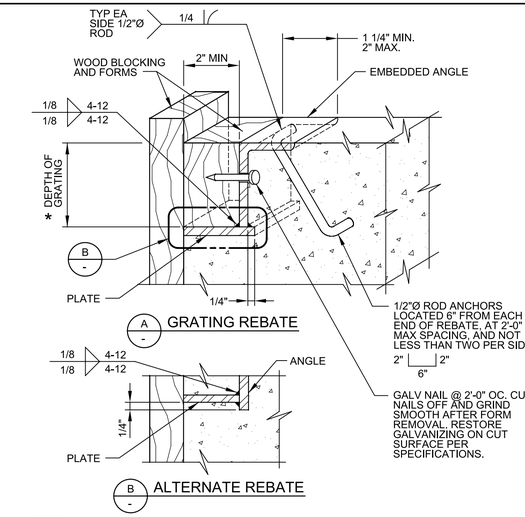


NOTES:

1. GRATING FASTENERS SHALL BE INSTALLED WHERE INDICATED ON THE DRAWINGS.
2. GRATING FASTENERS SHALL BE INSTALLED AT EACH CORNER OF EACH PANEL AND AT SPACING NOT TO EXCEED 8'-0".
3. RECESS THE GRATING CLIP WITHIN THE DEPTH OF THE GRATING TO AVOID A TRIPPING HAZARD.

SR601 TYP — GRATING - FASTENERS

12/18/2023



NOTES:

1. SEE SPECIFICATIONS FOR H-20 HEAVY DUTY HOT-DIP GALVANIZED STEEL GRATING.
2. MAKE REBATE AND/OR SEAT CONTINUOUS AROUND OPENING.
3. EMBEDDED REBATE ANGLE AND PLATE SHALL BE 1/4" MINIMUM THICKNESS.
4. HOT-DIP GALVANIZED AFTER FABRICATION.
5. * = DIMENSION AS REQUIRED BY GRATING MANUFACTURER. SEE SPECIFICATIONS.

SR609 TYP N — GRATING - GALVANIZED FOR H20 LOADS - REBATE

12/18/2023

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED KP
DATE DECEMBER 2024

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CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

STRUCTURAL 7

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

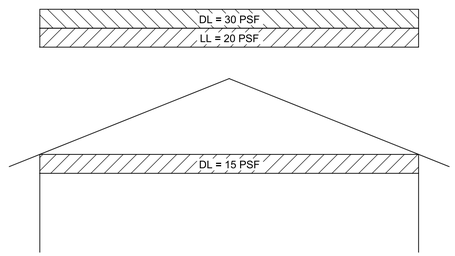
JOB NO. 11843A.10
DRAWING NO. 00TS07
SHEET NO. 177 OF 178

PROJECT NO.

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GRAVITY LOADS



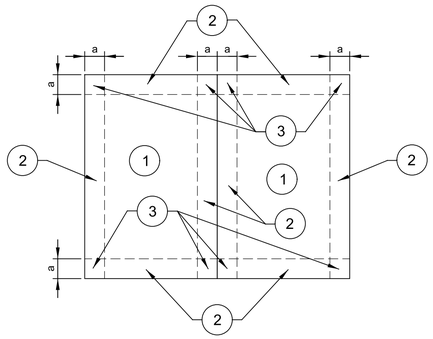
NOTES:

1. ABOVE DESIGN LOADS ARE SUPER IMPOSED LOADS.
2. TRUSS SHALL BE DESIGNED FOR WORST LOAD COMBINATIONS IN ACCORDANCE WITH THE BUILDING CODE.
3. DO NOT APPLY DEAD LOAD IN LOAD COMBINATION THAT INCLUDES WIND ROOF UPLIFT LOADS.
4. SEISMIC LOAD SHALL BE APPLIED TO BOTTOM CHORD OF TRUSS.

SR620 TYP — ROOF TRUSS LOAD

NR | SHT 1 OF 3 | 11/14/24

ROOF PLAN - WIND UPLIFT ZONE



a = 5'-0"

WIND DOWN = 10 PSF

ZONE (1) = 6 PSF (NET UPLIFT)

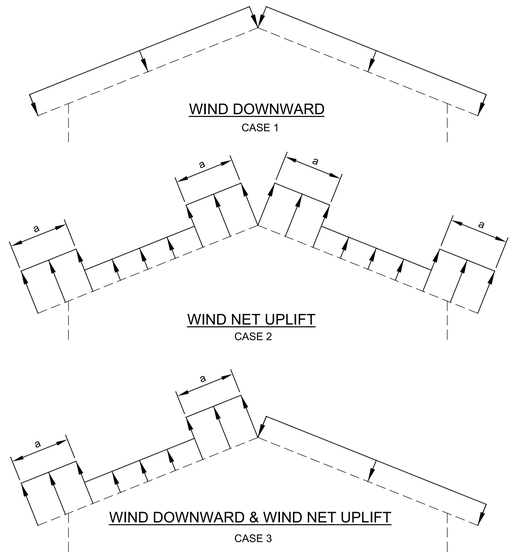
ZONE (2) = 25 PSF (NET UPLIFT)

ZONE (3) = 45 PSF (NET UPLIFT)

SR620 TYP — ROOF TRUSS LOAD

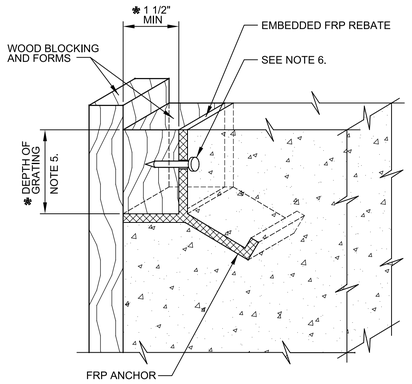
NR | SHT 2 OF 3 | 11/14/24

WIND LOAD DIAGRAMS



SR620 TYP — ROOF TRUSS LOAD

NR | SHT 3 OF 3 | 11/14/24



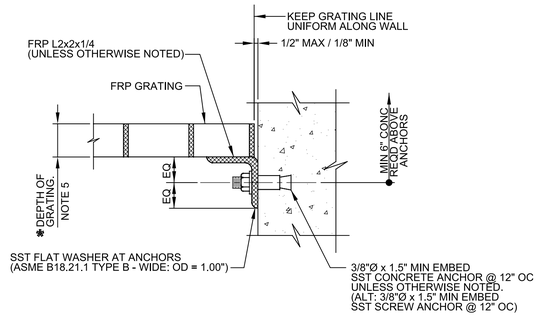
A - GRATING REBATE

NOTES:

1. SEE SPECIFICATIONS FOR FRP GRATING.
2. MAKE REBATE AND/OR SEAT CONTINUOUS AROUND OPENING.
3. EMBEDDED REBATE SHALL BE 1/4" MINIMUM THICKNESS, ALL LEGS.
4. REBATE MAY BE EXTRUDED.
5. ✱ = DIMENSION AS REQUIRED BY GRATING MANUFACTURER. SEE SPECIFICATIONS.
6. IF NAILS ARE USED FOR ATTACHMENT TO FORMWORK, PROVIDE TYPE 316 SST NAILS. CUT NAILS AND GRIND MINIMUM 1/8" BELOW SURFACE OF FRP. SEAL NAIL WITH FRP RESIN RECOMMENDED BY REBATE MANUFACTURER.

SU605 TYP — GRATING - FRP - REBATE

N | SHEET 1 OF 2 | 12/18/2023



B - GRATING SEAT

SU605 TYP — GRATING - FRP - REBATE

N | SHEET 2 OF 2 | 12/18/2023

REV	DATE	BY	DESCRIPTION
			DRAFT FINAL SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED CE
DRAWN CE
CHECKED KP
DATE DECEMBER 2024

REGISTERED PROFESSIONAL ENGINEER — AZMAN EZADDIN — No. 53219 — CIVIL — STATE OF CALIFORNIA

carollo

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS PROJECT

TYPICAL DETAILS

STRUCTURAL 8

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 11843A.10
DRAWING NO. 00TS08
SHEET NO. 178 OF 178

PROJECT NO. FILE NAME: 11843A1000TS08.dgn

Plot Date: 13-DEC-2024 3:12:11 PM
User: svcPW
PlotScale: 1:1
DesignScript: Carollo_Std_Pen_v0905.pen
ColorTable: gshade.ctb
Model: Layout1
LAST SAVED BY: DFassbinder

CONTRACT DOCUMENTS FOR

DESIGN-ASSIST CONSTRUCTION OF AQUIFER STORAGE AND RECOVERY WELLS 13 (Campus Oaks) AND 19 (Misty Wood) PROJECT

VOLUME 3A of 4:
TECHNICAL SPECIFICATIONS
DIVISIONS 01-13
RFP #08-135

INCLUDING:

Specifications for Construction

Draft Final Submittal

December 2024

2880 GATEWAY OAKS DRIVE, SUITE 300 • SACRAMENTO, CALIFORNIA 95833 • P. 916.565.4888 • F. 916.565.4880

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS
13 (Campus Oaks) AND 19 (Misty Wood) PROJECT

The Specifications contained herein have been prepared by, or under the direct supervision of the following Registered Engineers

Bid Documents and Conditions of the Contract Prepared by:
City of Roseville

Janice R. Gainey, PE
Expires 9/30/26

DRAFT DOCUMENTS
These Draft Documents are released for the purpose of information exchange review and planning only under the authority of Janice R. Gainey, December 11, 2024, California C-79928. They are not to be used for bidding, permit, or construction purposes.

Technical Specifications Prepared by:
Carollo Engineers

Michael E. Ducker, PE
Expires 9/30/26

DRAFT DOCUMENTS
These Draft Documents are released for the purpose of information exchange review and planning only under the authority of Michael E. Ducker, December 11, 2024, California C-63626. They are not to be used for bidding, permit, or construction purposes.

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS
13 (CAMPUS OAKS) AND 19 (MISTY WOOD) PROJECT

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SECTION 01140

WORK RESTRICTIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for sequencing and scheduling the Work affected by existing site and facility, work restrictions, and coordination between construction operations and plant operations.

B. Water projects:
   1. Conduct Work such that the Owner's ability to meet its customer's demands for treated drinking water shall not be impaired or reduced in terms of the required quantity or quality of treated water. Do not impair the operational capabilities of essential elements of the treatment process or reduce treatment capacity below levels sufficient to meet demands for water throughout the contract time. The quantities of and quality of treated water required are described in this Section.
   2. Conduct commissioning activities as specified in Section 01756 - Commissioning in a manner that will not impair capabilities of essential elements of the treatment process or reduce treatment capacity below levels sufficient to meet demands for water throughout the contract time. The quantities of and quality of treated water required are described in this Section.
   3. PCIS Optimization and Fine-Tuning as specified in Section 01756 - Commissioning.
   4. The status of the treatment plant shall be defined as "operational" when the plant is capable of meeting the Owner's customer's demands for treated drinking water in terms of the required quantity or quality of treated water as defined in this Section.

1.02 LIMIT OF CONSTRUCTION ACTIVITIES ON WORK SITE

A. Traffic Control:
   1. During non-work hours, unless permitted otherwise by the City in coordination with Public Works, the CONTRACTOR shall keep all lanes of traffic open and clear. All trenches shall be backfilled or covered with suitable steel plates and open to traffic.

B. No equipment, construction material, or excavated material that will interfere with traffic shall be stored on streets, sidewalks, trails, swales, drainages, or roadways at any time.

1.03 SEQUENCE OF WORK

A. The CONTRACTOR shall schedule and sequence their work to complete the Work by the specified completion date.

B. The OWNER's water distribution, recycled water, sewer collection and storm drain systems must remain accessible and operational and Contractor shall provide temporary facilities required to keep the existing plant continuously operational at all times, with scheduled shutdowns as necessary to complete the Work and with prior approval of Owner, as described herein.

C. Re-vegetation of disturbed areas shall take place as quickly as possible as work completion and weather permit, or temporary measures shall be installed and maintained at the Contractors sole expense.
   1. Revegetation at the Misty Woods well shall be in accordance with the City's Open Space Preserve Overarching Management Plan available online at https://www.roseville.ca.us/government/departments/development_services/planning/citywide_planning_documents/open_space_preserve_overarching_management_plan or as directed by the City Parks Department.
   2. Revegetation at the Campus Oaks site shall be according to a seed mix designed by the Contractor/Contractor's supplier and approved by the City.

1.04 PROJECT CONSTRAINTS

A. Maintenance of OWNER's Operations:
   1. Constraints listed herein involve limits on activities during construction. These limits relate to the critical nature of the existing water system and all other services provided by the City and its franchisees.
   2. Continuous operation of OWNER's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.
   3. Work Plan:
      a. The CONTRACTOR shall submit a detailed Work Plan and time schedule for all construction activities that will make it necessary to remove a tank, pipeline, electrical circuit, equipment, structure, road or other are replaced by temporary, new, or upgraded facilities from service, including the critical outages identified herein.
      b. The Work Plan shall, at a minimum, identify:
         1) The date and time when each activity will occur.
         2) What equipment will be present including standby equipment.
         3) What assistance will be required by OWNER's operating personnel.
         4) An emergency backup plan identifying what action will be taken if Work cannot be completed within the allotted time.
         5) What individual will be in charge of the activity.
      c. Submit Work Plan 10 working days prior to the scheduled activity.
   4. Perform Work continuously during critical connections and changeovers, and as required to prevent interruption of OWNER's operations.
   5. Shutdowns:
      a. Coordinate proposed Work with OWNER and facility operations personnel before affecting unit shutdowns. The CONTRACTOR shall provide written confirmation of the shutdown date and time five working days prior to the actual shutdown.
      b. Under no circumstances shall the CONTRACTOR cease Work at the end of a normal working day or at the end of a working week if such actions may inadvertently cause a cessation of any facility operating process, in which case, remain onsite until necessary repairs are complete.

6. Do not close lines, open valves or gates, shut down equipment, or take other action which would affect the operation of existing systems, except as specifically required by the Contract Documents and approved by the OWNER. After approval, CONTRACTOR shall proceed in the manner, action, and timing as submitted and approved.
7. Do not proceed with Work affecting a facility's operation without obtaining OWNER's advance approval of the need for and duration of such Work.

B. Relocation of Existing Facilities:
   1. During construction, it is expected that minor relocations of Work will be necessary.
   2. Provide complete relocation of existing structures and Underground Facilities, including piping, utilities, equipment, structures, electrical conduit wiring, electrical duct bank, and other necessary items.
   3. Use only new materials for relocated facility. Match materials of existing facility, unless otherwise shown or specified.
   4. Perform relocations to minimize downtime of existing facilities.
   5. Install new portions of existing facilities in their relocated position prior to removal of existing facilities, unless otherwise accepted by OWNER.

C. Hours of Work and Overtime:
   1. Normal working hours at the Construction Site shall be 7 a.m. to 5 p.m., weekdays, no work during the weekend nor during City observed holidays.
      a. Conduct Work outside normal working hours only after obtaining prior written consent and approval from the OWNER.
         1) Contractor shall request work-hour variations in writing, a minimum of 10 days prior to the start of the proposed work period.
         2) Contractor shall not rely on approval of work outside of normal working hours without prior consent of the OWNER. Approval shall be at the sole discretion of the OWNER.
      b. Contractor will develop Project Schedule assuming work during normal working hours only.
   2. All overtime Work by the CONTRACTOR necessary to conform to the requirements of this Section and related Sections shall be performed by the CONTRACTOR, at no additional cost to the OWNER and shall be performed in accordance with the Agreement. The CONTRACTOR shall make no claims for extra compensation as a result thereof.
   3. Contractor shall reimburse the City for its demonstrable additional internal and external labor and direct costs for supervising, inspecting, and providing any other City services during work conducted outside the normal working hours listed in C.1., above. In determining what effort and services are required, it will be the City’s sole determination what is required to accommodate the Contractor’s operation outside the normal working hours.

D. Site Area:
   1. See also Agreement section 5.5.1 Designated Areas.
   2. Contractor shall avoid disturbing ground and minimize disturbance to area residents whenever possible.
   3. The construction plans outline the extent of land Contractor is allowed to occupy for staging, storage, officing, parking, etc., unless otherwise approved by the City in writing.

1.05 CONSTRUCTION SEQUENCING CONSTRAINTS

A. Shutdown activities:
   1. Scheduling:
      a. Perform during normal working hours and for only specific construction sequencing constraints annotated in the project schedule and as agreed upon during Final Design.

B. Construction sequencing constraints will be developed by Design-Assist Team as necessary.

1.06 PROJECT STAFFING

A. Project superintendent (Job Superintendent, serving as resident Superintendent and Contractor's authorized representative), employed by the Contractor, shall be on-site five days per week for eight hours a day whenever construction activities are taking place.

B. When the Owner has turned the process unit over to the Contractor for construction, modification or temporary use, the Contractor is responsible for costs and procedures required to dewater and dispose of liquid, solids, etc. as required until the City has accepted the improvements for routine operation. Contractor shall provide adequate time in schedules for draining and cleanup.

1.07 METHOD OF PROCEDURE (MOP)

A. Comply with the Qualified Storm Water Pollution Prevention Plan (SWPPP) Practitioner (QSP), employed by Contractor, who must be on call to come to the site when a Rain Event Action Plan (REAP) needs to be prepared.

1.08 STORMWATER MANAGEMENT

A. CONTRACTOR responsible for stormwater management from the time the Contractor physically mobilizes to the site until the time the final stormwater BMPs are installed and the Notice of Termination is accepted by the Water Board.Submittals:
   1. Submit Baseline Schedule, as specified in Section 01321 - Schedules and with proposed MOPs.
   2. Submit the following for each shutdown:
      a. Attachment B - Method of Procedure (MOP) Form.
      b. Attachment C - Readiness Checklist.
      c. Attachment D - Safety Checklist.

1.09 OPERATIONS AND MAINTENANCE ACCESS

A. Provide safe, continuous access to process control equipment for plant operations personnel.

B. Provide access on one-hour advance notice to process control equipment for plant maintenance personnel and associated maintenance equipment.

1.10 ENVIRONMENTAL WORK RESTRICTIONS

A. Refer to Attachment F for Mitigation Monitoring and Reporting Plan (MMRP) and related requirements.

B. Misty Wood Site: Work Near Creeks, Trees, Vernal Pools:
   1. The City of Roseville has a Streambed Alteration Agreement for the Routine Maintenance Agreement for Streams and Drainage Facilities (hereinafter "RMA"), a copy of which is included as Attachment G.
   2. The RMA allows the City to conduct limited repairs, modifications or other work in environmentally sensitive areas and stipulates the requirements for notification and limitations on activities.
   3. The Contractor shall familiarize itself with the terms of the RMA and plan its work accordingly. Generally speaking, the RMA requires:
      a. Work within the stream zone (such as the drainages near the Misty Woods Well site) is restricted to periods of low stream flow and dry weather in the period of May 1 to October 15.
      b. Work near (500 feet) of certain animal habitats (such as the trees at Misty Woods well site) requires the City to retain the services of a qualified biologist to verify the presence/absence of certain species a maximum of approximately two weeks prior to the physical start of work, and that the biologist provide training to project staff prior to beginning work.
      c. The City is required to submit a Verification Request Form (VRF) documenting the biologist field work and training to the Contractor immediately prior to construction starting. Coordinate with the City project manager for a timely construction start.
      d. Contractor is encouraged to coordinate this work early; encountering species requiring special treatment could delay the work.

C. See Section 01562 - Temporary Tree and Plant Protection for tree preservation requirements.

D. See Section 01573 - Erosion and Sediment Control for related requirements.

1.11 UTILITIES

A. Provide advance notice to and utilize services of Underground Services Alert (U.S.A.) and appropriate local organizations for location and marking of underground utilities operated by utility agencies including the Owner.

B. New yard utilities were designed using existing drawings.
   1. Field verification of utilities locations was not performed during design.
   2. Services crossed or located nearby by new yard utilities may require relocation and possible shutdowns.
   3. Pipe alignments as indicated on the Drawings.

1.12 WORK BY OTHERS

A. Where proper execution of the Work depends upon work by others, inspect and promptly report discrepancies and defects.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ATTACHMENT A - METHOD OF PROCEDURE (MOP)

“METHOD OF PROCEDURE” (MOP)
Instructions and Forms

Definition and Purpose

“Method of Procedure” (MOP) is a detailed document submitted by the Contractor to request process shutdown(s), utility tie-in(s), work in areas that may risk unanticipated outages, or flow diversions to accommodate site construction activities during a project. Such activities may include (but are not limited to) new tie-ins to utilities or structures, mechanical modifications to process piping or equipment, demolition, bulkhead installation, and cleaning processes.

The MOP provides a detailed plan to the Owner and Engineer that describes specific aspects of the work including purpose, time of execution, and anticipated impacts on treatment processes. The MOP also includes contingency measures and provisions for rapid closure in the event that shutdown or work progress difficulties are encountered. Information from relevant trades associated with the requested shutdown, diversion, or tie-in is also included.

The Owner should use the information within the MOP to define operational procedures and methods to safely and successfully assist the Contractor.

MOP Process Summary

WHO	STEP	TIMING
Contractor	1. Identify MOPs needed on MOP Log and Baseline Schedule.	No later than 7 days prior to Preconstruction Scheduling Meeting
Contractor, Owner, Engineer	2. Pre-MOP Meeting.	More than 28 days prior to work
Contractor	3. Submits MOP.	No later than 28 days prior to work
Owner	4. Reviews MOP.	
Owner	5. MOP finalized.	No later than 7 days prior to work
Contractor	6. Complete Readiness Checklist.	No later than 5 days prior to work
Contractor	7. Complete Safety Checklist.	Immediately prior to commencing work
Contractor	8. Complete Work.	
Contractor	9. Update MOP Log and Progress Schedules.	Monthly

MOP Process Detail

STEP 1. Identifies MOPs needed on MOP Log and Baseline Schedule.

Contractor submits a preliminary list of anticipated project MOPs on MOP Log. MOPs identified but not limited to those shutdowns, diversions, or tie-ins described in the Contract Documents. Incorporate MOPs as tasks in Baseline Schedule. Date scheduled MOPs to coincide with the appropriate construction activities.

STEP 2. Pre-MOP Meeting.

Contractor requests a Pre-MOP Meeting with the Owner and Engineer to discuss the nature of the shutdown, diversion, or tie-in, and to gather the information necessary to complete the MOP Form. The pre-MOP meeting may be waived by the Owner or Engineer if the work is deemed to be minor.

STEP 3. Submits MOP.

Contractor completes the MOP Form and submits 3 copies for approval to the Owner's Project Manager (OPM).

STEP 4. Reviews MOP.

OPM distributes MOP Form for review by the Owner's Construction Coordinator, O&M Representative, and Engineer's Project Representative. Review MOP Form for completeness, accuracy, compliance with both the construction schedule, constraints defined in Contract Documents, and to ensure that the requested work does not negatively impact plant operations or other concurrent project activities. Additional information may be requested to better understand the nature of and method for completing the Work.

STEP 5. MOP finalized.

Once the MOP is agreed to by all parties, the MOP will be finalized by signature. Copies are distributed to the Owner, Engineer, and Contractor.

STEP 6. Complete Readiness Checklist.

Contractor verifies everything is ready for the Work.

STEP 7. Complete Safety Checklist.

Contractor ensures safety.

STEP 8. Complete Work.

Contractor completes Work.

STEP 9. Update MOP Log and Progress Schedules.

Contractor updates MOP Log (Attachment E) weekly and distributes at the regularly scheduled construction progress meetings.

ATTACHMENT B - METHOD OF PROCEDURE (MOP) FORM

METHOD OF PROCEDURE (MOP) FORM

Owner: _____ **Date:** _____

Contractor: _____ **Carollo Project No.:** _____

Project Name: _____ **Submittal No.:** _____

Submittal Title: _____ **Spec/Drawing. Ref.:** _____

MOP #:	TASK TITLE: *(Provide <10 word title)*	SUBMITTAL DATE: *(No later than 28 days prior to work)*

SCHEDULE OF WORK ACTIVITY:

START: *(Date/Time)* END: *(Date/Time)*

REQUESTOR:

PRIMARY POINT OF CONTACT:	PHONE/PAGER:
SECONDARY POINT OF CONTACT:	PHONE/PAGER:

NOTIFY: ☐	Control Room, Phone:	☐	Security, Phone:

BUILDING:	LOCATION OF WORK FLOOR/LEVEL:

DESCRIPTION OF WORK: *(Provide sufficient details on process isolation, work sequencing, and safety (i.e. control of significant hazards unique to the work) to demonstrate an understanding of the work and how it will be completed within the constraints, and its impact on the processes and facility.)*

Task Summary: _____

Processes Affected: _____

Trades Affected: _____

WORK PLAN:

Work Sequencing: _____

Process Isolation: _____

Spill Prevention Plan: _____

Contingency Plans: _____

CRITICAL EQUIPMENT / TOOLS: *(Pumps and discharge hoses with correct fittings, blind flanges and pipe plugs, no-hub fittings, properly sized electrical service components, generators, portable lighting, chlorine for potable water pipe breaks, etc.)*

☐	Acoustic Ceiling/or Walls Access	☐	Excavation Permit	☐	Lock Out/Tag Out
☐	Chemical Use Approval	☐	Fire Sprinkler Impairment	☐	Life Safety Systems
☐	Confined Space Permit	☐	Flammable Materials	☐	Roof Protocol
☐	Critical Lift Plan	☐	Flush / Discharge	☐	Work After Dark
☐	Energized Electrical Work	☐	High Pressure Test	☐	

☐	Elect. Panel Schedules	☐	Hot Work/Open Flame	☐			
EXISTING SERVICE(S) AT RISK:							
☐	Breathing Air	☐	Elect Normal	☐	Process Access	☐	Telephones
☐	Chemical Distribution	☐	Fire Protection	☐	Safety Showers	☐	UPS
☐	City Water	☐	HVAC	☐	SCADA	☐	VAX/DATA
☐	Communication	☐	Inert Gas	☐	Security	☐	
☐	Domestic Drain	☐	Instrument - Air	☐	Solvent Drain	☐	
☐	Elect-Bus Duct	☐	Life Safety System	☐	Specialty Gases	☐	
☐	Elect. Emergency	☐	Natural Gas	☐	Storm Drain	☐	
REVIEWER'S INSTRUCTIONS/COMMENTS:							
☐	PREJOB BRIEFING MUST BE COMPLETED PRIOR TO COMMENCING WORK:						

	Full Name (printed)	**Signature**	**Phone**	**Date**
Submitted By				
System Owner				
Reviewer (if needed)				
Reviewer (if needed)				
Reviewer (if needed)				
Reviewer (if needed)				

ATTACHMENT C - READINESS CHECKLIST

READINESS CHECKLIST

(5 days prior to work)

Checklist provided as a guide but is not all inclusive.

1. Confirm all parts and materials are on site: _____

2. Review work plan: _____

3. Review contingency plan: _____

ATTACHMENT D - SAFETY CHECKLIST

SAFETY CHECKLIST

(Just prior to commencing work)

Checklist provided as a guide but is not all inclusive.

1. Location awareness:
   a. Emergency exits: _____
   b. Emergency shower and eyewash: _____
   c. Telephones and phone numbers: _____
   d. Shut-off valve: _____
   e. Electrical disconnects: _____
2. Inspect work area:
   a. Take time to survey the area you are working in. Ensure that what you want to do will work. Do you have enough clearance? Is your footing secure? Do you have adequate lighting and ventilation? Are surrounding utilities out of the way for you to perform your work?
3. SDS (Safety Data Sheets):
   a. Understand the chemicals and substances in the area you are working in by reading the SDS.
4. Lockout/Tagout Procedure:
   a. Lockout/tagout energy sources before beginning work.
   b. Make sure all valves associated with the work are locked out and tagged out on each side of the penetration.
   c. Make sure the lines are depressurized.
5. Overhead work:
   a. Use appropriate personal protective equipment; i.e., safety harness, lifeline, etc.
   b. Select appropriate tie-off points; i.e., structurally adequate, not a pipe or conduit, etc.
   c. Spotter assigned and in position.
   d. Pipe rack access; i.e., check design capacity, protective decking or scaffolding in place, exposed valves or electrical switches identified and protected.
6. Safety equipment:
   a. Shepherd's hook.
   b. ARC flash protection.
   c. Fire extinguisher.
   d. Other: _____
7. Accidents:
   a. Should accidents occur, do not shut off and do not attempt to correct the situation unless you are absolutely positive that your action will correct the problem and not adversely affect other people or equipment.
8. Review process start-up documents:
   a. In the event the system is shutdown, the Control Center should have a working knowledge of the process start-up procedures in order to deal effectively with unforeseen events.
9. Evacuation procedures:
   a. Do not obstruct evacuation routes.
   b. Take time to survey the area for evacuation routes.

ATTACHMENT E - METHOD OF PROCEDURE (MOP) LOG

METHOD OF PROCEDURE (MOP) LOG
Sample

MOP Number	Task Title	Date Requested	Date Approved	Date Work Planned	Work Completed (Yes/No)
001					
002					
003					

ATTACHMENT F - MITIGATION MONITORING AND REPORTING PLAN

Appendix A
Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Timing	Verification of Compliance (Initials and Date)
Air Quality				
Mitigation Measure AQ-1: 1. Clean earth moving construction equipment with water, or sweep clean, once per day, or as necessary (e.g., when moving onsite), consistent with NPDES BMP's, local ordinances and municipal codes. Water shall be applied to control dust as needed to prevent dust impacts offsite. Operational water truck(s), shall be onsite, as required, to control fugitive dust. Construction vehicles leaving the site shall be cleaned, as needed, to prevent dust, silt, mud, and dirt from being released or tracked off-site. 2. Spread soil binders on unpaved roads and employee/equipment parking areas. Soil binders shall be non-toxic in accordance with state and local regulations. Apply approved chemical soil stabilizers, or vegetated mats, etc. according to manufacturer's specifications, to al/- Inactive construction areas (previously graded areas which remain inactive for 96 hours). 3. Minimize diesel idling time to a maximum of 10 minutes. 4. Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary diesel power generators, if feasible.	City of Roseville	City of Roseville	Prior to construction activities	
Biological Resources				
Mitigation Measure 3.6-1: If construction (including equipment staging) occurs during the breeding season for nesting birds and raptors (between February 15 and September 15), a qualified biologist shall conduct a preconstruction nesting bird and raptor survey before the onset of construction activities. The preconstruction nesting bird and raptor surveys shall be conducted within 14 days before the start of construction activities between February 15 and September 15. Surveys for raptor nests (excluding Swainson's hawk) shall extend 500 feet from the ASR well sites. In addition, a 0.25-mile windshield-level survey shall be conducted to determine whether Swainson's hawk nests occur in the vicinity. If no active nests are detected, a letter report documenting the results of the survey shall be submitted to the City and no additional mitigation is recommended as long as construction begins within 14 days of the survey and does not halt for more than 14 days.	City of Roseville	City of Roseville	Prior to construction activities	

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Timing	Verification of Compliance (Initials and Date)
Mitigation Measure 3.6-2: If Migratory Bird Treaty Act-protected birds or raptors are found to be nesting on or adjacent to the ASR well sites, a no-disturbance buffer shall be established around the nest to avoid disturbance of the nest area and to avoid take. The buffer shall be maintained around the nest area and monitored until the end of the breeding season, or until the biological monitor determines that the young have fledged and are foraging on their own or the nest is no longer active. The extent of these buffers shall be determined by the qualified biologist and shall depend on the species identified, the level of noise or construction disturbance, the line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. Generally accepted avoidance buffers are 100 feet for nesting birds and 250–500 feet for nesting raptors. A letter report documenting the rationale for the established buffer and the results of monitoring shall be submitted to the City within 14 days of the date the biologist determines that the nest is no longer active and the avoidance buffer is no longer required.	City of Roseville	City of Roseville	Prior to construction activities	
Mitigation Measure 3.6-3: Following the results of the wetland verification or determination from USACE, and before the start of construction, silt fencing followed by straw wattles or other erosion control measures shall be placed around the edge of potentially occurring seasonal wetlands on the Vencil Brown ASR well site. In addition, silt fencing shall be placed at the edge of the well footprint between the well's work area and the potentially occurring seasonal wetlands, ephemeral drainage, and riparian area on the Vencil Brown well site. Silt fencing followed by straw wattles or other erosion control measures shall be placed at the edges of the Pleasant Grove, Campus Oaks, and Misty Woods ASR well sites to prohibit construction activities in waterways and riparian areas. Trucks and other vehicles shall not be allowed to park beyond the fencing, nor shall equipment be stored beyond the fencing. No vegetation removal or ground-disturbing activities shall be permitted beyond the fencing. The fencing shall remain intact for the duration of the construction activities.	City of Roseville	City of Roseville	Prior to construction activities	

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Timing	Verification of Compliance (Initials and Date)
Hazards and Hazardous Materials				
Mitigation Measure Hazard-1: Prior to initiating ground-disturbing activities, the City shall evaluate areas where drilling would occur to evaluate the potential for historical or existing hazardous materials. This evaluation shall include visual inspections of the site for evidence of hazardous materials releases (i.e., dumping) or evidence of nearby land uses, which may indicate the use of hazardous materials or hazardous waste generation (i.e., aboveground storage tanks, placarding). ff such evidence is observed, the City shall retain a qualified consultant to evaluate the potential for hazardous materials releases at the site prior to initiating construction to determine whether these releases may constitute a potential recognized environmental condition. If such a condition is determined to exist, the City shall prepare and implement a remediation plan prepared in accordance with the applicable regulatory agency (i.e., Department of Toxic Substances Control or Regional Water Quality Control Board) prior to proceeding with construction.	City of Roseville	City of Roseville	During construction activities	
Noise				
Mitigation Measure 4.3-1: Use of Sound Attenuation Measures during Well Drilling Operations. One such method to reduce noise levels is to erect a temporary sound barrier on the sides facing residences. An example would be barriers such as noise blanket panels mounted to steel framing. Noise blanket panels can be mounted horizontally or vertically and attached to vertical steel I-beam supports. Such barriers can reduce overall noise levels by approximately 17 dB [decibels].	Construction Contractor	City of Roseville	During construction activities	
Mitigation Measure 4.3-4[1]: Prior to Well Drilling the City Will Provide Notice to All Residents Subject to Potential Noise Impacts. The notice will include information about the need for 24-hour construction during a portion of the drilling phase, and related noise, and information to contact the City with concerns. The City will work with individual residents on an as-needed basis in the event that the drilling construction causes extenuating circumstances.	Construction Contractor	City of Roseville	During construction activities	

[1] There is no Mitigation Measure 4.2-2 in the 2012 ASR Program Final EIR. Therefore, the numbering for the Noise Mitigation Measures in this Draft SEIR is reflective of those in the 2012 ASR Program Final EIR.

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Implementing Responsibility	Monitoring Responsibility	Timing	Verification of Compliance (Initials and Date)
Mitigation Measure 4.2-3: Reduce Well Pump (Operational) Noise Levels. Reduce noise levels associated with the well pump by providing a full or partial enclosure. The enclosure can take the form of a blockhouse or surrounding barrier designed to accommodate a pump motor 5-feet in height, and elevated off the ground by 18 inches. • A full enclosure with a roof would sufficiently reduce noise levels; however, ventilation openings should be located on the side of the building opposite the nearest residences. If a traditional barrier is constructed around the well site, it would need to be a minimum of 8 feet in height. • A variety of suitable sound attenuation options would be available. In order to ensure that sound levels are adequately mitigated, a qualified acoustical expert shall be consulted regarding placement, orientation, size, and density of acoustical barriers.	City of Roseville	City of Roseville	During construction activities	

ATTACHMENT G - CITY OF ROSEVILLE STREAMBED ALTERATION AGREEMENT/ROUTINE MAINTENANCE AGREEMENT

California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670-4599
916-358-2900
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

MAR 2 2 2017

Date

Rob Jensen
City of Roseville
311 Vernon Street
Roseville, CA 95678
rjensen@roseville.ca.us

Subject: Final Streambed Alteration Agreement
Notification No. 1600-2016-0099-R2
City of Roseville Routine Maintenance of Streams and Drainage Facilities

Dear Mr. Jensen:

Enclosed is the final Streambed Alteration Agreement (Agreement) for the City of Roseville Routine Maintenance of Streams and Drainage Facilities Project (Project). Before the California Department of Fish and Wildlife (Department) may issue an Agreement, it must comply with the California Environmental Quality Act (CEQA). In this case, the Department, acting as a responsible agency, filed a Notice of Determination (NOD) within five working days of signing the Agreement. The NOD was based on information contained in the Initial Study/Mitigated Negative Declaration prepared by the lead agency.

Under CEQA, the filing of an NOD triggers a 30-day statute of limitations period during which an interested party may challenge the filing agency's approval of the Project. You may begin the Project before the statute of limitations expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this matter, please contact Angela Calderaro, Senior Environmental Scientist (Specialist) at 916-358-2920 or Angela.Calderaro@wildlife.ca.gov.

Sincerely,

Tina Bartlett
Regional Manager

ec: Mark Morse, mmorse@roseville.ca.us
Angela Calderaro, Angela.Calderaro@wildlife.ca.gov
Kelley Barker, Kelley.Barker@wildlife.ca.gov
Jeff Drongesen, Jeff.Drongesen@wildlife.ca.gov

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
NORTH CENTRAL REGION
1701 NIMBUS ROAD
RANCHO CORDOVA, CA 95670

STREAMBED ALTERATION AGREEMENT
FOR ROUTINE MAINTENANCE ACTIVITIES
NOTIFICATION NO. 1600-2016-0099-R2
CREEKS WITHIN THE CITY OF ROSEVILLE

CITY OF ROSEVILLE
ROUTINE MAINTENANCE OF STREAMS AND DRAINAGE FACILITIES PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (Department) and City of Roseville (Permittee) as represented by Rob Jensen.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) Section 1602, Permittee notified the Department on 02 May 2016, that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC Section 1603, the Department has determined that the project activities could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project activities in accordance with the Agreement.

PROJECT LOCATION

The project is located within the City of Roseville (City) boundaries, covering approximately 32 square miles as well as the Amoruso Rancho Specific Plan (ARSP) area (an approved specific plan subject to annexation), collectively known as the project area.

Routine maintenance activities would take place within creeks, improved and unimproved drainage channels, detention basins and constructed water quality swales, associated riparian vegetation, and low floodplains throughout the project area (Figure 1 Project Vicinity, Figure 2 Project Location – **See Exhibit A**).

The watercourses included within this Agreement are the following creeks and their tributaries: Dry Creek, Cirby Creek, Linda Creek, Miners Ravine, Secret Ravine, False

Ravine, Antelope Creek, Pleasant Grove Creek, South Branch Pleasant Grove Creek, Pleasant Grove Creek North Branch, Pleasant Grove Creek Blue Oaks Tributary, Pleasant Grove Creek Placer Tributary, Kaseburg Creek, Kaseburg Creek Sun City Tributary One, Kaseburg Creek Sun City Tributary Two, Kaseburg Creek East Branch, Kaseburg Creek South Branch, Coyote Creek, and Highland Ravine (Figure 3 Project Area – **See Exhibit A**). In addition multiple unnamed drainage ditches, canals, drainage swales, detention basins and overland relief within the project area would undergo routine maintenance. The Permittee would also maintain the City's flood warning system and Cirby-Linda-Dry Creek flood control facilities (including flood walls, berms, bypass channels, pumps, and berms).

For the purposes of this Agreement, the limits of Department jurisdiction were developed based on aerial photography and City floodplain mapping and generally extends from the center of channel to the outer edge of riparian zones, wetland vegetation or low floodplains (whichever is larger). Jurisdictional areas included in the project area are generally mapped with green, blue or purple shading in Figure 3 Project Area **(Exhibit A)**. In specific circumstances, the boundary of Department jurisdiction may differ from mapped limits. Exact limits of Department jurisdiction will be determined on a case-by-case basis in consultation with Department during submittal of each Verification Request Form (VRF).

PROJECT DESCRIPTION

"Agreement for routine maintenance" means an Agreement that: (1) covers only multiple routine maintenance projects that the entity will complete at different time periods during the term of the Agreement; and (2) describes a procedure the entity must follow for any maintenance projects the Agreement covers.

"*Routine Maintenance Work*" means (project) work performed regularly by Permittee, within those Project Locations identified above, to maintain the functional and structural integrity of its facilities.

"Project" means one activity, or two or more interrelated activities that could or will affect similar fish and wildlife resources. Unless approved in writing by the Department, a project will occur within the same watercourse and/or its immediate tributaries and it will not exceed 30 days of duration since maintenance activities start.

"Baseline Conditions" means the ecological condition of a site at the time the Agreement was finalized. Routine maintenance work conducted once every year or two that maintains current ecological conditions (i.e., annual vegetation trimming and thinning consistent with the City's flood model) is not considered a Temporary or Permanent Impact because the vegetation typically returns within one year and therefore does not alter the habitat function from Baseline Conditions.

"Temporary Impact" means all ecological effects that change Baseline Conditions and persist for one year. Projects with temporary effects generally involve vegetation removal followed by habitat restoration or non-disturbance to allow for natural re-growth. For vegetation control, the frequency of pruning, thinning, cutting, mowing, or similar

activity is less than once every three years.

“Permanent Impact” means all effects that displace existing habitat or change Baseline Conditions that persist for greater than one year. For vegetation control, the frequency of pruning, thinning, cutting, mowing, or similar activity occurs at the same location more than once every 3 years. Removal of individual hazard trees within larger riparian communities generally shall not be considered an impact requiring mitigation as the ecological function of the community will not be significantly reduced.

MAINTENANCE WORK

The Permittee may perform the maintenance work described below without obtaining a separate Agreement from the Department, provided that the Permittee: 1) limits the work to within those areas identified in the Project Location; 2) submits a Verification Request Form (VRF) and receives Department approval prior to commencing any activity; and 3) completes the work in accordance with the terms and conditions specified herein. The City’s routine maintenance work program includes the following activities:

a. *Trail Maintenance.* The Permittee may maintain access roads and existing trails along creek corridors and at trail creek crossings. There are approximately 34 miles of paved trails in the City. In general, the existing paved trail network is used as maintenance access. Vegetation control equipment is expected to largely be comprised of herbicides, mowers, chainsaws and other hand tools, with the occasional use of a backhoe. The Permittee would remove debris, woody and herbaceous vegetation, trees which are in clear danger of falling in or across a trail/creek crossing, trim obstructing branches and downed trees, selective trimming for public safety and visibility and perform general maintenance on trail facilities such as benches, signage, pedestrian bridges, culverts, slope stabilization, erosion control, etc. Vegetation would be maintained to ensure a minimum clearance of five (*5)* feet from the edge of an improved access road, trail, and associated facilities to maintain trail safety and public access.

b. *Goat Grazing.* The Permittee may contract for goat grazing services to aid in thatch management, fuel reduction and invasive species removal tasks. This would involve a herd of approximately 500 goats and temporary low voltage electric fencing to contain the herd to a defined paddock. Herds would be left in a paddock for a period of 12 to 36 hours depending on vegetation density and the desired amount of vegetation removal and would then be moved onto the next area. In this fashion, large swaths of open space preserve within the City would be “flash grazed” once every 1 or 2 years. Approximately 1,400 acres of open space preserve would be flash grazed annually. A portion of this grazed area would be within riparian areas under Department jurisdiction. Goat grazing is typically conducted on steep slopes and other areas where access is limited. Goat grazing practices will be focused on maintaining Baseline Conditions but in in certain circumstances, areas grazed by the goats with a high risk of erosion

may be reseeded with native plants or stabilized with general storm water best management practices to manage soil erosion in critical areas such as outfalls. Goats will generally not be permitted within the bed, bank or channel of stream channels under Department jurisdiction; however, goats may be allowed to drink from streams on a case-by-case basis if approved by the Department during the VRF process. Goat grazing is necessary to maintain storm flow capacity, reduce thatch level/fire load, and control invasive species in areas where worker/equipment access would be difficult.

c. *Channel Alignment Maintenance.* At locations where improved City property and facilities are at risk, the Permittee may maintain existing channel alignments to prevent creeks and drainages from altering course during large storm events. Activities may include the strategic addition of rock slope protection armoring along the outside edge of stream meanders and in other locations where hydraulic forces are concentrated. In non-urgent locations, the channel may be densely planted with native plants in order to stabilize banks and maintain the current creek alignment. Work may also entail removal of deposited sediment within the wetted channel to prevent the bed of the channel from elevating and causing the channel to braid. Maintaining existing channel alignments may be necessary to prevent channels from undermining and destabilizing bridges, public utilities, roadways, or bike trails. Temporary and Permanent Impacts shall not exceed an area of 100 linear feet or 0.2 acres. Individual project sites with Permanent Impacts must be separated by a distance of at least 1,500 feet.

d. *Debris or Obstruction Removal.* The Permittee may remove debris, trash, rubbish, flood-deposited woody and herbaceous vegetation, downed trees, branches, and associated debris that substantially obstruct (or could obstruct) water flow, reduce channel capacity, accelerate erosion, damage concrete box culverts, metal culverts, or bridge structures. Debris removal may occur in creeks, channels, detention basins, dams, boat ramps, docks, and trails. Debris or obstruction removal may be followed by re-vegetation efforts.

e. Beaver dam removal. The Permittee may remove beaver dams and associated debris that substantially obstructs (or could obstruct) water flow, reduce channel capacity, accelerate erosion, damage concrete box culverts, metal culverts, or bridge structures. Beaver dam removal may occur by use of hand tools and heavier equipment if needed. For beaver dam removal purposes a “project” is defined as the removal of beaver dams within the same watercourse within 30 days. This does not include the installation of beaver deterrent structures that may substantially alter the bed, bank or channel within the project area.

f. *Removal, Replacement, or Repair of Facilities.* Permittee may remove or replace culverts, inlets, manholes, above and below ground utilities, or other facilities within areas of Department jurisdiction. Removal or replacement of facilities may require the trimming or removal of vegetation, displacement of sediments and/or placement of materials within creeks, channels and basins, man hole lining, flushing, vactoring (pneumatic sewer line cleaning with a vacuum truck), Closed

Circuit Television (CCTV) inspections, horizontal directional drilling, jack & bore, electric pole removal/replacement, and open trenching.

g. *Silt, Sand or Sediment Removal.* The Permittee may displace or remove (under dewatered or dry conditions) silt, sand, gravel, or sediment in the immediate vicinity (within 50 feet of natural channels and within 250 feet of un-vegetated altered channels) of natural or man-made structures and facilities, both lined and unlined, that could substantially obstruct water flow, reduce channel capacity, accelerate erosion, damage concrete box culverts, metal culverts, bridge structures or other facilities. Silt, sand and sediment removal efforts may extend further from structures if approved by the Department during the VRF process. Such structures or facilities may include outfalls, bridges, culverts, beaver dams, basins, and the invert of creeks and channels. Removal of silt, sand, or other sediments may be followed by re-vegetation efforts.

h. *Vegetation Control in Channels.* The Permittee may cut, mow, disc, or bulldoze grasses, shrubs, and woody growth to maintain the designed capacity of floodways. The Permittee may cut, trim, or remove the lower branches of large trees to facilitate site inspections and maintain channel capacity. The Permittee may remove dead trees, dying trees, and new trees less than 4-inches diameter at breast height (dbh) to maintain channel capacity and prevent erosion. Where native trees or woody riparian vegetation split into several trunks close to ground level, the dbh shall be measured for each trunk and calculated as one tree. The Permittee anticipates vegetation control equipment to largely be comprised of chainsaws, other hand tools and herbicides, with the occasional use of a backhoe. The Permittee would cut, or mow weeds, grasses, shrubs, and woody growth to the extent necessary to conduct safety inspections. The Permittee would cut, trim, or remove the lower branches of large trees to facilitate site inspections and maintain channel capacity per the City's flood model. The Permittee would remove dead or dying trees at risk of falling across a channel and impairing channel capacity. The Permittee may remove non-native vegetation to maintain channel capacity and improve native habitat. The Permittee shall not remove sensitive plant populations without Department approval. In addition, maintenance work near elderberry shrubs will be consistent with the *Biological Opinion on Service Approval of the City of Roseville Open Space Preserve Overarching Management Plan* (BO # 81420-2008-F-1958-3).

i. *Tree and Vegetation Control for Overhead Electric Infrastructure.* The Permittee may cut, trim and potentially remove trees and vegetation as necessary to maintain the safety and regulatory clearance setbacks from overhead electric lines and related infrastructure. This work is typically conducted by tree trimming crews using bucket lift trucks, chain saws other hand tools and chippers.

j. *Repair of Previous Erosion Control Work.* The Permittee may repair previous erosion control work, including, but not limited to, failed rock slope protection, sacked concrete, or gabion sections. Such work would not extend beyond 100 linear feet of the existing revetted area. In some areas these activities and other

routine maintenance activities may require fill near outfalls, bridges, culverts, basins, and the invert of creeks and channels. Types of fill materials could include riprap, soil, gravel material, or aggregate base and would come from commercial sources in the local area. The Permittee may also employ bioengineering methods where feasible to repair or enhance previously installed erosion control work. Materials would be placed with equipment such as an excavator, backhoe, dump truck, bobcat, skip loader, front loader or other small construction equipment. Exact methods, locations and volumes of erosion repair activities would be submitted to Department for final approval through the VRFs.

k. *Temporary Water Diversions.* To minimize sedimentary effects to the channels and waterways, temporary water diversions may be utilized as necessary to prevent surface water from entering maintenance work areas. Dewatering is anticipated to be necessary for work within the wetted channel of perennial stream channels during the summer low flow period. Diversion and dewatering plans specific to the individual routine maintenance activity would be submitted to Department for final approval through the VRFs.

l. *Minor Erosion Control Work.* The Permittee may slope, place earthen fill, install rocks and gabions, apply gunite, or take other necessary measures to control erosion on previously unrevetted areas. Temporary and Permanent Impacts would not exceed 100 linear feet in length or 0.2 acres (which ever area is smaller). The Permittee may use bioengineering methods where feasible to reduce creek bank erosion. Bioengineering slope stabilization areas may be larger than 100 linear feet in length or 0.2 acres if approved by the Department. Containment measures would be used to prevent deleterious material from entering state waters and avoid adverse impacts to fish and wildlife resources. For purposes of placement of rock slope protection or shot-crete application as bank erosion control, individual project sites must be separated by a distance of at least 1,500 feet.

m. *Bridge Washing, Graffiti Removal and Painting.* Permittee may clean, wash, and paint structures such as bridges within the Department's jurisdiction. Bridge washing will involve power washing the bridge to remove non-original materials such as dirt, spider webs and stains. Graffiti removal may involve power washing, applying chemical solvents, or rolling on paint over the graffiti. Bridge painting will involve power washing following by applying paint with either a roller or pneumatic spray gun. Containment measures including drop cloths and spill containment measures will be used to prevent deleterious material from entering State waters and avoid adverse impacts to fish and wildlife resources.

n. *Geotechnical Sampling and Subsurface Cultural Resource Sensitivity Testing.* Permittee may obtain core samples and conduct other minor geotechnical and/or cultural resources investigations in support of these maintenance activities, provided such work does not adversely affect fish and wildlife resources. Geotechnical investigations would involve a truck or track mounted drill rig and a crew of two or three drill operators and one geologist. The drill rig would be used

to obtain 3 or 4 inch diameter core samples in order to determine the nature of underlying sediments and bedrock to a depth determined by the onsite geologist during drilling (typically 20-80 feet). After drilling is complete, the hole will be filled with either bentonite clay (weathered volcanic ash) or mortar (low aggregate concrete) to prevent groundwater contamination. Positioning of the drill rig may require vegetation trimming to access the site. Impacts associated with site access and vegetation trimming will be quantified and included in the VRF submitted for the work. Drill rigs would be positioned over secondary containment to prevent fuel or hydraulic leaks from contaminating soils. Secondary containment will consist of visqueen or similar plastic sheeting. The edges of secondary containment will be elevated to prevent leaks from running off the plastic sheeting. Geotechnical sampling and subsurface cultural resource sensitivity testing is only included as an activity if it is directly related to routine maintenance activities covered under this Agreement.

o. *Flood Alert System.* The City's Flood Alert System is comprised of remote sensor and transmitter locations along various streams within the City that are prone to flooding. The Permittee may access and maintain the remote sensor and transmitter installations currently in operation. The Permittee may install new stream gauge equipment for monitoring stream levels and precipitation within the stream zone.

Potential Mitigation Alternatives for Permanent Impacts

The following tasks may be implemented as compensatory mitigation for Permanent Impacts associated with routine maintenance tasks. Implementation of mitigation is not subject to the VRF process but would occur consistent with the Habitat Management and Monitoring Program (HMMP) as outlined in Measure 3.2 and requires implementation of the protective measures in this Agreement.

a. *Adopt-a-Creek Program.* The Permittee may partner with nonprofits, businesses and residents to perform creek/drainage trash and invasive species removals and restoration activities through the City's Adopt-a-Creek program. Creek restoration activities may consist of trash abatement, invasive plant removal, and plantings of local native species to improve fish and wildlife habitat, protect water quality and stabilize bank erosion. Program activities may include group "volunteer cleanup/work days" or small scale individual restoration or enhancement projects (for example, "Eagle Scout" projects). Through the Adopt-a-Creek program, the Permittee will establish long-term creek adoption commitments from non-profits such as Dry Creek Conservancy, Trout Unlimited, Granite Bay Flycasters, businesses, and citizen's groups.

b. *Creek Restoration and Erosion Repair Projects.* The Permittee may restore locations with existing bank erosion or scour problems to improve riparian habitat value and water quality. Potential restoration project locations within Linda Creek, Cirby Creek, Dry Creek, Secret Ravine, and Strap Ravine are identified in **Exhibit A**. The Permittee may add new locations (with Department concurrence)

to the list of potential creek restoration and erosion repair projects. Restoration activities may involve the following steps: removal of non-native vegetation; re-grading eroded, scoured, or undercut portions of the creek to more stable and natural topography; and bio-stabilization of the restoration area to prevent future erosion. Bio-stabilization would involve installing biodegradable geotextile fabric (e.g. coconut coir erosion control blankets, fibers rolls) and native riparian vegetation to stabilize the restoration area and provide long term riparian habitat. Areas at or below the Ordinary High Water Mark (OHWM) may be stabilized with a combination of biodegradable geotextile fabric and fast growing native species. Banks and floodplains would be planted with riparian trees and shrubs typical to the region. Herbaceous understory species may be added to the restoration site above the OHWM either by installing plugs or broadcasting a seed mix. Restoration Plans will be submitted to the Department for review and approval.

c. *Invasive Species Removal.* The Permittee may remove non-native invasive vegetation to enhance existing habitats under Department jurisdiction. Invasive vegetation removal must include a maintenance and monitoring period to ensure that the site is not eroded or re-colonized by invasive species. If appropriate, sites will be revegetated by applying a native seed mix, installing container plants, or both.

d. *Conversion of Concrete-Lined Channels.* Removal of concrete lining from channels would entail removing concrete lining, restoring the channel to natural, self-sustaining topography, and revegetating the banks with site appropriate native riparian vegetation. The Permittee may undertake projects to convert existing concrete-lined channels to a more natural state to improve water quality, improve aesthetic values, or provide compensatory mitigation for Permanent Impacts associated with routine maintenance activities.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: dwarf downingia (*Downingia pusilla*), Boggs Lake hedge-hyssop (*Gratiola heterosepala*) Sanford's arrowhead (*Sagittaria sanfordii*), Legenere (*Legenere limosa*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), Conservancy fairy shrimp (*Branchinecta conservatio*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), western spadefoot (*Spea hammondii*), western pond turtle (*Emys marmorata*), steelhead - Central Valley DPS (*Oncorhynchus mykiss irideus*), Swainson's hawk (*Buteo swainsoni*), tricolored blackbird (*Agelaius tricolor*), white-tailed kite (*Elanus leucurus*), burrowing owl (*Athene cunicularia*), grasshopper sparrow (*Ammodramus savannarum*), purple martin (*Progne subis*), other migratory birds, bats, and other aquatic and terrestrial plant and wildlife species.

Identification and analysis of species impacts can be found in the City of Roseville California Environmental Quality Act *Routine Maintenance of Stream Channels and Drainage Facilities Project Initial Study/Mitigated Negative Declaration* (SCH#2016092050).

The adverse effects the project could have on the fish or wildlife resources identified above include: soil compaction or other disturbance to soil layer, temporary release of contaminants (i.e. incidental from maintenance), removal of riparian habitat, disruption to nesting birds, reptiles and other wildlife.

Approximately 3.3 acres of Permanent Impacts to vegetation are anticipated over the 12-year life of the RMA in the form of rip-rap, earthen fill, and repair of existing facilities. It is anticipated that 1.1 acres of Permanent Impacts will occur in riparian areas and 2.2 acres of Permanent Impacts will occur in stream channel or detention basin habitats that may have emergent vegetation. Approximately 14 acres of Temporary Impacts are anticipated over the 12-year life of the RMA. Approximately 8 acres of Temporary Impact will be in stream channels and detention basins in the form of sediment removal and may impact emergent vegetation. The remaining 6 acres will be in riparian areas in the form of temporary staging areas, access roads, and work areas. **Table 1** lists the summary of cumulative impacts to vegetation over the 12-year life of the project.

Table 1 – Summary of Cumulative Impacts to Vegetation

Type of Impact	Permanent Impact Total Area (acres)	Temporary Impact Total Area (acres)
Riparian	1.1	6.0
In-stream/wetland	2.2	8.0
Total	**3.3**	**14**

Maintenance activities may result in disturbance of approximately 0.67 acres and remove 4,117 cubic yards (CY) of debris and sediment annually and may result in approximately 0.27 acre and 1,434 cubic yards of fill annually.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to the Department personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement, the approved verification request form (VRF), and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify the Department if Permittee determines or learns that a provision in the Agreement might conflict

with a provision imposed on the project by another local, state, or federal agency. In that event, the Department shall work with Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that the Department personnel may enter the project site at any time to verify compliance with the Agreement.

1.5 Does Not Authorize "Take." This Agreement does not authorize "take" of any listed species. Take is defined as hunt, pursue, catch, capture or kill or attempt to hunt, pursue, catch, capture, or kill. If there is potential for take of any listed species to occur, the Operator shall consult with the Department as outlined in FGC Section 2081 and shall obtain the required State and federal threatened and endangered species permits.

1.6 Nesting Birds. This Agreement does not allow the Permittee, any employees, or agents to destroy or disturb any active bird nest (Section 3503 Fish and Game Code) or any raptor nest (Section 3503.5) at any time of the year.

1.7 Verification Request Form (VRF): The VRF is provided by the Department to the Permittee as an Exhibit to this Agreement (**Exhibit B**). The Permittee shall complete the VRF for all project submissions.

1.7.1 Submission of the VRF: The Permittee shall complete the VRF and submit (preferably by email) to R2LSA@wildlife.ca.gov and the current staff contact's email.

1.7.2 Content of the VRF: The VRF shall include supporting documents for the maintenance activity, including but not limited to: photos, updated surveys, drawings and/or maps, etc.

1.7.3 Changes to the VRF: The VRF may be administratively updated through the term of this Agreement, to reflect changes in contact information.

1.7.4 VRF Fees: Fees associated with the projects identified by each VRF shall be submitted annually to the Department (see "Fees" below).

1.7.5 Species: In any areas where species protected under the California Endangered Species Act (FGC 2080 et seq.), plants designated as rare under FGC 1908, or California Fully Protected Species (FGC 3511, 4700, 5050 and 5515) may be present, work may only occur after the area has been surveyed by a qualified biologist and it has been determined that the work can occur without the possibility of Take.

a. Any VRFs submitted to the Department for work in those areas must include a copy of the biological survey and/or methodology used to determine the absence of listed species.

1.8 Timing of Maintenance Work: Ten (10) days prior to commencing routine maintenance work, the Permittee shall complete and submit to the Department a VRF as described in Section 1.7 of the Agreement.

1.8.1 Project Delays: In the event that the Permittee delays the project start date specified in the VRF by more than ten (10) days, the Permittee shall submit a revised VRF before beginning the project.

1.8.2 Urgent Review Requested: In cases where the Permittee must expedite work based on the limited availability of work crews, the need for specialized equipment, anticipated weather conditions, and other limiting factors, the Permittee shall submit to the Department a VRF for the work a minimum of two (2) working days prior to beginning said work. The VRF shall be submitted as described in Section 1.6 of this Agreement and shall include a description of the reason why urgent review is needed.

1.9 Department Processing of the VRF

1.8.3 Receipt of VRF: Upon receipt of a VRF, the Department may acknowledge receipt of any VRF in the form of an email response to the Permittee contact person identified in the VRF; however, such acknowledgement shall not be deemed an approval by the Department that the Permittee may begin the work described in the VRF.

1.8.4 Consistency with the Agreement: Within ten (10) days of receipt, the Department shall determine if the routine maintenance work described in the VRF is covered by and consistent with this Agreement, and provide response to the Permittee.

1.8.5 Concurrence of Work: If the Department determines that the work described in the VRF is consistent with and covered by this Agreement the Permittee may begin the work described in the VRF, provided it does so in accordance with the terms and conditions in this Agreement. This may include a site visit by the Department for field confirmation.

a) Prior to the proposed start date in the VRF, complete the bottom portion of the submitted VRF, check the appropriate “Notice of Concurrence” box and return the approved VRF to the Permittee contact person identified in the VRF (and any Permittee employees on the distribution list) stating that the Permittee may proceed with the work described in the VRF; or,

b) Allow the agreed upon comment period to lapse by not responding to the VRF within the appropriate timeframe.

1.8.6 Non-Concurrence of Work: If the Department determines that the routine maintenance work described in the VRF is not covered by or consistent with this Agreement, the Department shall send by email a notice of non-concurrence to the Permittee contact person identified in the VRF and all the Permittee employees on the email distribution, in which case the Department must send the notice prior to the proposed start date in the VRF. If the Department submits a notice of non-concurrence, the Department shall specify the basis for its inconsistency determination and describe the actions the Permittee will need to take before it may begin the work.

1.9 Emergency work: This Agreement does not apply to emergency work by the Permittee. The Permittee shall complete any emergency work in accordance with FGC Section 1610, and comply with the Notification requirement in FGC Section 1610 by completing the Notification of Emergency Work form found on the Department's website at https://www.wildlife.ca.gov/Conservation/LSA/Forms and submitting it to the Department as instructed.

1.10 Maintenance work not covered by this Agreement: Maintenance work not covered by or consistent with this Agreement shall include any routine maintenance work not identified in the Project Description and outside of the Project Location as specified in this Agreement, regardless of whether the work is otherwise consistent with this Agreement. For routine maintenance work not covered by this Agreement and subject to FGC Section 1602, the Permittee shall notify the Department in accordance with that section before beginning the work. See the Department website https://www.wildlife.ca.gov/Conservation/LSA for instructions and forms for providing notification of Lake or Streambed Alteration to the Department.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

2.1 Work Period. The time period for completing earthmoving work within stream zone shall be restricted to periods of low stream flow and dry weather and shall be confined to the period of May 1 to October 15. Maintenance activities shall be timed with awareness of precipitation forecasts and likely increases in stream flow. Maintenance activities that involve earthmoving within the stream zone shall cease until all reasonable erosion control measures, inside and outside of the stream zone, have been implemented prior to all storm events. Revegetation, restoration and erosion control work is not confined to this time period.

2.2 Dry Weather Only. The work period within Department jurisdictional area shall be restricted to periods of dry weather (with less than a 30% chance of rain). All erosion control measures shall be initiated prior to all storm events. Revegetation, restoration and erosion control work is not confined to this work period. Permittee shall monitor the National Weather Service (NWS) 72-hour forecast for the project area.

2.3 Work Period Extensions. The work period may be extended based on the extent of the work remaining, on site conditions and reasonably anticipated future conditions. If the Permittee finds more time is needed to complete the authorized activity, the Permittee shall submit a written request for a work period time extension to the Department. The work period extension request shall provide the following information: 1) Describe the extent of work already completed; 2) Provide

specific detail of the activities that remain to be completed within the stream zone; and 3) Detail the actual time required to complete each of the remaining activities within the stream zone. The work period extension request should consider the effects of increased stream conditions, rain delays, increased erosion control measures, limited access due to saturated soil conditions, and limited growth of erosion control grasses due to cool weather. Photographs of the work completed and the proposed work areas are helpful in assisting the Department in its evaluation. Time extensions are issued at the discretion of the Department. The Department will have ten calendar days to approve the proposed work period extension. The Department reserves the right to require additional measures designed to protect natural resources.

Biological Resources

2.4 Designated Biologist. At **least thirty (30) days before training or pre-maintenance activity surveys are conducted**, Permittee shall submit to the Department in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). Permittee shall obtain the Department's written approval of the Designated Biologist prior to the commencement of project activities. The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of local fish and wildlife resources present in the project area.

2.5 Designated Biologist On-site with Stop work Authorization. In any areas where suitable habitat for special-status species may be present, the Permittee shall have a Designated Biologist on site during initial soil disturbing activities and shall be on call daily to ensure that Agreement conditions are being met and implemented to minimize impacts to fish and wildlife species and habitat. The Designated Biologist shall be responsible for conducting pre-maintenance surveys within the project area and monitoring the initiation of all ground- or vegetation-disturbing activities subject to this Agreement. The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with this Agreement, and/or to order any reasonable measure to avoid or minimize impacts to fish and wildlife resources. If any special-status species are found, maintenance activities shall cease and the Permittee shall notify the Department immediately if there is a threat of harm to any sensitive species, or other aquatic wildlife.

2.6 Annual Environmental Awareness Education. The Permittee shall conduct an education program for all persons employed or otherwise working on the project site prior to performing any work on-site and on an annual basis. The program shall consist of a presentation from the Designated Biologist or another Department-approved biologist that includes a discussion of the biology of the habitats and species identified in this Agreement and present in the project area. The biologist shall also include as part of the education program information about the distribution and habitat needs of any special-status species that may be present, legal protections for those species, penalties for violations and project-specific protective measures included in this Agreement. Interpretation shall be

provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work under this Agreement.

2.6.1 *Invasive Species Education Program*. Permittee shall conduct an Invasive Species Education Program for all persons working within the project site prior to the commencement of any project activities. The program shall consist of a presentation from a qualified biologist that includes a discussion of the invasive species currently present within the project site as well as those that may pose a threat to or have the potential to invade the project area. The discussion shall include a physical description of each species and information regarding their habitat preferences, local and statewide distribution, modes of dispersal, and impacts. The program shall also include a discussion of best management practices (BMPs) to be implemented in the project area to avoid the introduction and spread of invasive species into and out of individual project sites. The program shall be repeated annually until the end of the Agreement term. Copies of program materials shall be maintained at the project site for workers to reference as needed.

2.6.2 *Sign-in Sheets*. Upon completion of the education program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and submitted with the annual reports required by Measure 4.4 of this Agreement.

2.6.3 *Fact Sheets*. The Permittee shall prepare and distribute cards or fact sheets that contain the species or sensitive resource information for workers to carry while onsite.

2.7 Pre-Maintenance Inspection. The Permittee shall visually check for wildlife under parked vehicles and equipment within the maintenance area prior to moving that equipment. If sensitive species are observed, the Designated Biologist shall be contacted. If it is determined that the work site is occupied by a sensitive species, the Permittee shall not commence activities until no signs are present that the site is being used by the species or that the species is no longer present.

2.7.1 *Special-Status Species Encountered During Work*. If the Permittee encounters a special-status species within or adjacent to the project area, work shall be suspended, the Department notified, and if needed, additional conservation measures shall be developed in consultation with the Department prior to re-initiating the activity.

2.8 Leave Wildlife Unharmed. The Permittee shall allow any fish or wildlife it encounters during the course of maintenance work authorized by this Agreement to leave the work area unharmed.

2.9 Nesting Birds. To avoid impacts to nesting birds, focused surveys for bird nests shall be conducted by the Designated Biologist or Department-approved biological monitor for maintenance activities that must take place between February 1st and August 31st. The survey shall be conducted no more than five (5) days prior to the start of maintenance activities. This will include surveys of the ground, herbaceous, shrub, or canopy vegetation and structures (i.e., bridges, old buildings, etc.). The survey shall be conducted within a minimum 500-foot radius of project activities (to the degree feasible). The results of the nest survey shall be submitted to the Department before the start of work. The results of the survey shall include the following information: name of biologist(s) conducting surveys, dates of survey, total field time of survey efforts, map of survey routes, and the type of species nesting. Take of individual raptors, their nests, and eggs is currently prohibited under FGC Sections 86, 3503, 3503.5, and 3513.

2.9.1 *Bird Management and Monitoring Plan*. Before the start of maintenance activities, if nests are found during the survey, the Permittee shall prepare and submit to the Department a Bird Management and Monitoring Plan (Plan) which includes survey results and establishes the necessary buffers to avoid take of a nest pursuant to FGC sections 3503 and 3503.5. The Plan design shall be based upon site conditions, project activities, and species present or likely to be present during all maintenance activities. For active nests, a buffer or installation of appropriate barriers shall be established between the maintenance activities and the active nest so that nesting activities are not interrupted. The buffer shall be delineated and shall be in effect throughout maintenance or until the nest is no longer active. The buffer(s) shall be determined based upon the life history of the individual species, including their sensitivity to noise, vibration, ambient levels of human activity and general disturbance, the current site conditions (screening vegetation, terrain, etc.) and the various project-related activities necessary to complete work. Nests shall be monitored to ensure the efficiency of the buffers.

2.9.2 *Removal of Trees/Shrubs During Fall/Winter Months*. To avoid potential impacts to tree nesting birds, trees and shrubs designated for trimming or removal may be cut down during the time period of September 1 to January 31st, provided the Permittee has determined that no raptor or special-status birds have established nests on the vegetation proposed for removal or use the site as a rookery.

2.9.3 *Additional Surveys*. If a lapse in project-related work of fifteen (15) calendar days or longer occurs, consultation with the Department shall be required and another focused survey may be required before project work can be reinitiated.

2.10 Burrowing Owl. If suitable habitat for burrowing owl is present on and/or adjacent to project activities, the Designated Biologist will complete surveys according to the

Staff Report on Burrowing Owl Mitigation (CDFG 2012) or updated version. Surveys will be conducted on the project site and within 150 meters of areas that will be directly or indirectly impacted by the project, where feasible. Surveys shall not be conducted during inclement weather, when burrowing owls are typically less active and visible. If burrowing owls or evidence of burrowing owls (e.g., whitewash or pellets) are not observed during surveys, no additional mitigation is necessary. If the birds are present, then the area should be avoided.

2.10.1 *Biological Monitor*. If the Permittee does not conduct the surveys as outlined above, then the Designated Biologist shall conduct pre-maintenance surveys no more than three (3) days prior to the start of the work or any site preparation activities. If sign of owls is not evident, then the Designated Biologist must also be present onsite during work activities to ensure any potential burrows or perch sites where burrowing owl may be present are avoided. If it is evident that the burrows are actively being used, the Permittee shall not commence activities, but shall consult with the Department. After consultation, the Department may determine when activities can commence or if another action must be taken to minimize impacts to the species.

2.10.2 *Exclusion Plan*. If burrowing owl is present and cannot be avoided, the Permittee shall develop a Burrowing Owl Exclusion Plan (Plan) approved by the Department. The Plan shall include mitigation for the temporary and permanent loss of habitat as outlined in the Department's current Burrowing Owl staff report to include permanent protection of mitigation land, a management plan, and endowment.

2.11 Swallow Inspection. Maintenance activities on bridges shall either occur outside of the swallow nesting period (February 1st through August 31st) or frequent inspection of the bridge for nesting activity shall begin by February 1st as outlined in the *Bird Management and Monitoring Plan*. If swallows begin colonizing the bridge prior to beginning bridge work, all nest precursors (mud placed by swallows for construction of nests) shall be washed down or scraped at least once daily until swallows cease trying to construct nests. Nests may only be removed if they are less than one-third (1/3) built. If the nest is greater than one-third (1/3) built, the Designated Biologist must inspect the nest to ensure no eggs or young are present. This activity shall not result in harm or death to swallows.

2.12 Western Spadefoot Toad. Within suitable habitat and where proposed maintenance activities may impact the toad, pre-commencement surveys shall be conducted to determine the presence of the western spadefoot toad. If the species is found in the area prior to project activities, they shall be relocated to a suitable habitat area outside of the project site by the Designated Biologist with all required permits. The results of the survey shall be sent to the Department within one week of survey completion. The Designated Biologist shall provide Permittee a list of exclusion measures that the Permittee shall use to minimize risk of take or injury to

any individual animals in the vicinity of the project site. The Permittee shall ensure that these exclusion measures are in place prior to project activities.

2.13 Rare Plant Surveys. If suitable habitat is present, survey(s) for Sanford's arrowhead or other special-status plant species with the potential to be impacted by project activities shall be conducted in accordance with the Department's "*Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (revised May 8, 2000)." If any special-status plant species are present and will be affected by the project, adequate avoidance measures shall be incorporated into the project. If special-status plant species cannot be avoided, suitable species-specific mitigation must be developed in consultation with Department, which may include a combination of on-site and off-site plant preservation and compensation measures.

2.13.1 *Buffer Zones*. Department recommends that a no-disturbance buffer zone should be maintained and marked to protect any special status plant populations. The no-disturbance buffer zone should be at least 25 feet wide. For any populations that cannot be avoided and a 25-foot buffer zone maintained, a mitigation plan should be submitted to and approved by Department prior to any ground disturbing activity or heavy equipment use.

2.14 Avoidance of Vernal Pools. Project activities will not be conducted within 250 feet of vernal pools unless it is determined that project activities are consistent with the Biological Opinion on Service Approval of the City of Roseville Open Space Preserve Overarching Management Plan (BO #81420-2008-F-1958-3).

2.15 Tricolored Blackbird or California Black Rail Habitat. Areas of emergent wetland vegetation (i.e., bulrush, cattails, etc.) and thickets of thorny vegetation (i.e., blackberry, thistle, etc.) will not be removed unless it is determined by the Designated Biologist that the area is not suitable habitat for tricolored blackbird or California black rail. If it is suitable habitat, project activities may only commence if the Department determines that project activities will not adversely affect these species.

2.16 Bats. The Designated Biologist will check for evidence of bats if project activities will be located in an area that has the potential to impact bat species. If bats are found, then the Department will be notified and consulted to determine if work may be conducted in that area.

2.16.1 *Bat Protection - Bridges*. Prior to work commencing at any bridge with the potential to support bat species, the bridge shall be surveyed for bats by the Designated Biologist. If bats are found, work on the bridge and other project activities in the vicinity shall cease. Bats shall not be disturbed without specific notice to and consultation with the Department. Department reserves the right provide additional provisions to this Agreement designed to protect nesting and/or roosting bats. This

would not apply to minor bridge washing, graffiti removal, or other work that would not impact bats.

2.16.2 *Bat Protection - Culverts*. Prior to project activities related to modifying culverts the site shall be surveyed for bats by the Designated Biologist. If bats are found, there shall be no further disturbance to the culvert until the Department has been consulted. The Department reserves the right to provide additional provisions to this Agreement designed to protect nesting and/or roosting bats.

Water Diversion

2.17 Water Diversion Plan. If flowing water is present or reasonably anticipated, the Permittee shall submit with the VRF for approval a detailed water diversion and/or dewatering plan to the Department. Dewatering structures may include the use of sand bag, Port-a-dams, water bladder dams, K-rails or driven sheet metal coffer dams. The Department will review the proposed water diversion method, to approve the plan or provide the requirements for that approval. The Permittee may not commence the diversion of water without the explicit approval from the Department.

2.18 Maintain Aquatic Life. When any dam or other artificial obstruction is being constructed, maintained, or placed in operation, Permittee shall allow sufficient water at all times to pass downstream to maintain aquatic life below the dam pursuant to FGC §5937.

2.19 Clean Obstruction Only. Any temporary dam or other artificial obstruction constructed by Permittee shall only be built from materials which will cause little or no siltation.

2.20 Non-Erodible Materials. Permittee shall use only clean non erodible materials in the construction of any water diversion device. All materials used for diversion of water shall be removed from the stream following completion of instream work each year.

2.21 Extra Sandbags. Permittee shall have extra sandbags readily available to provide additional freeboard to the diversion in the event it becomes evident flows may increase due to rainy conditions. The sandbag diversion may be removed completely only if the stream bank is stable and no undue erosion will occur.

2.22 Maintain Water Quality. Permittee shall divert flow in a manner that prevents turbidity, siltation, or pollution and provides flows to downstream reaches. Flows to downstream reaches shall be provided during all times that the natural flow would have supported aquatic life. Said flows shall be sufficient quality and quantity, and of appropriate temperature to support fish and other aquatic life both above and below the diversion.

2.23 Restore Normal Flows. Permittee shall restore normal flows to the effected stream immediately upon completion of work at that location.

VEGETATION

2.24 Vegetation Removal. Removal of vegetation shall not exceed the minimum necessary to complete maintenance activities. All impact acreages shall be specified in each VRF and shall be subject to Department approval. If, over the life of the Agreement, the impacts exceed the acreages stated in **Table 1**, the Department may require additional mitigation. Removal of native vegetation shall not exceed an area of 0.05 acre per VRF project (i.e. 50-feet by 50-feet). For projects located at outfalls, culverts, bridges or similar structures, vegetation removal shall not exceed a total of 0.1 acre (0.05 acre upstream and 0.05 acre downstream of the structure). If larger areas of vegetation removal are needed, the Department will provide approval on a case-by-case basis and may require additional mitigation. When mitigation is required, it shall be implemented as described in Measure 3.1, 3.2, 3.3 or 3.4 of the Agreement.

2.24.1 Unless previously approved by the Department no native vegetation shall be removed if the vegetation meets the following criteria:

a) A trunk diameter at breast height (DBH) in excess of four (4) inches.

b) Where native trees or woody riparian vegetation split into several trunks close to ground level, the DBH shall be measured for each trunk and calculated as one tree and shall not exceed six (6) inches.

c) Riparian shrubs that grow vegetatively from underground shoots or in patches, contain 1 stem per square foot, and are greater than 50 square feet (i.e., willows).

2.25 Vegetation Control in Channels or on Banks. The Permittee may remove dead trees and dying trees to maintain channel capacity and prevent erosion. The Permittee may cut, mow or remove emergent native aquatic vegetation to the minimum degree necessary to maintain channel capacity. All vegetation control methods will be specified in the specific VRF and will be subject to Department approval on a case-by-case basis. All cleared native vegetation shall be removed out of the riparian and stream channel or chipped and evenly distributed on site. Measure 2.26 must be followed for invasive species control.

2.25.1 The Permittee may prune tree branches up to 6-feet (72-inches) above the ground. Tree pruning may be higher than 6-feet when required for utility easements or public safety. Tree pruning higher than 6-feet will be approved by CDFW on a case-by-case basis during the VRF process. When feasible, branches and limbs extending over the low flow channel shall not be pruned to avoid potential impacts to shaded riverine aquatic habitat.

2.25.2 For native trees or woody riparian vegetation split into several trunks close to ground level, the Permittee may thin this vegetation leaving a minimum of 50% of the total mass of each individual plant.

2.25.3 Where riparian shrubs grow vegetatively from underground shoots or in patches (i.e. elderberry or willow), a shrub is defined as a cluster of stems growing less than 6-feet or approximately 2-meters apart from each other. Clusters that contain 1 stem per square foot and are area greater than 50-square feet shall be trimmed no closer than 3-inches above ground level.

2.26 Invasive Plant Management Plan. Permittee shall develop an Invasive Plant Management Plan focused on controlling or eradicating existing invasive plants within the project area and preventing the introduction of new nonnative and invasive plants into the project area. The Plan shall include a list of plant species targeted for control or eradication, a description of the methods that will be used for control or eradication, a list of BMPs to prevent the introduction and spread of invasive plant species into and out of the project area, and a rapid response plan in the event that a new plant species invades the project area. The Plan shall be implemented for the duration of the project. The removal and control of invasive plants may be used as mitigation for impacts associated with the Agreement per Measure 3.1, 3.2, and 3.3. In some cases, removal of non-native vegetation that provides valuable habitat may require mitigation (i.e., a nesting tree, suitable habitat for special-status species).

2.26.1 *Herbicide Use*. All herbicides, surfactants, and other pesticides utilized within or adjacent to the Department jurisdictional areas and other sensitive aquatic habitat areas shall be registered for aquatic use by the California Department of Pesticide Regulation (CDPR).

2.26.2 *Red Sesbania*. Removal of red sesbania (*Sesbania punicea*) should be done by mechanical removal from the root. Preferably removal should occur before seed pods are present. If not, seed pods must be cleaned from the site. Move all material away from the water and bundle. Dispose all material at an approved facility. Methods may be adapted at the discretion of the Department.

Avoid/Minimize Effects of Equipment

2.27 Invasive Species. The Permittee shall conduct project activities in a manner that minimizes the risk of the introduction, transfer, and spread of aquatic, riparian, and terrestrial invasive species, including plants, animals, and microbes (e.g., algae, fungi, parasites, mussels, and bacteria), from one water body to another. All equipment (i.e, tools, vehicles, boots, etc.) shall be cleaned prior to entering the work site and/or between each use in different water bodies. Permittee shall notify the Department immediately if an invasive species not previously known to occur within the work site is discovered during work activities or annual inspections by

contacting the Department's Invasive Species Program by email at Invasives@wildlife.ca.gov.

2.28 Decontamination of Project Equipment. Permittee shall decontaminate all tools, waders and boots, and other equipment that will enter the water prior to entering the work area to avoid the introduction and transfer of organisms. Permittee shall decontaminate project gear and equipment utilizing one of three methods: drying, using a hot water soak, or freezing, as appropriate to the type of gear or equipment. For all methods, Permittee shall begin the decontamination process by thoroughly scrubbing equipment, paying close attention to small crevices such as boot laces, seams, net corners, etc., with a stiff-bristled brush to remove all organisms. To decontaminate by drying, Permittee shall allow equipment to dry thoroughly (i.e., until there is a complete absence of water), preferably in the sun, for a minimum of 48 hours. To decontaminate using a hot water soak, Permittee shall immerse equipment in 140 degrees Fahrenheit or hotter water and soak for a minimum of 5 minutes. To decontaminate by freezing, Permittee shall place equipment in a freezer 32 degrees Fahrenheit or colder for a minimum of eight (8) hours. Repeat decontamination is required only if the equipment/clothing is removed from the site, used within a different waterbody, and returned to the project site.

2.29 Decontamination Sites. Permittee shall perform decontamination of vehicles, watercraft, and other project gear and equipment in a suitable location (i.e. City Corporation Yard) where runoff can be contained and not allowed to pass into Department jurisdictional areas and other sensitive habitat areas.

2.30 No Heavy Equipment in Stream. No heavy equipment shall operate in the portion of the stream bed where flowing water is present or anticipated during the term of this Agreement.

2.31 Minimize Vehicle Parking. Vehicles may enter and exit the work area as necessary for project activities, but may not be parked overnight within ten (10) feet of the drip line of any trees; nor shall vehicles be parked where mechanical fluid leaks may potentially enter the waters of the state.

2.32 Building Material Storage. Project building material and/or construction equipment shall not be placed where materials could pass into the waters of the state or where they may cover aquatic or riparian vegetation.

2.33 Spoil sites. Spoil sites shall not be located within a stream, where spoils may be washed back into a stream, or where it may cover aquatic or riparian vegetation.

2.34 Operating Equipment and Vehicle Leaks. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat.

2.35 Stationary Equipment Leaks. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream shall be positioned over drip pans or other secondary containment. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak.

2.36 Equipment Maintenance and Fueling. No equipment maintenance or fueling shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas.

2.37 Cease Operations. If, in the opinion of the Department, conditions arise, or change in such a manner that the project may result in substantial adverse effects on fish or wildlife resources despite the protective measures in this Agreement, maintenance activities shall cease upon written or verbal request of the Department. Maintenance activities under this Agreement may not recommence until corrective measures identified by the Department are completed. The Department will notify the Permittee in writing within 10 business days following the cease operation order of the corrective actions that must be completed before maintenance activities under this Agreement can recommence.

Erosion Control/Stabilization

2.38 Best Management Practices. The Permittee shall actively implement BMPs to prevent erosion and the discharge of sediment in to streams and lakes during project activities. BMPs shall be monitored daily and repaired if necessary to ensure maximum erosion and sediment control. If used, all fiber rolls, straw waddles, and/or hay bales utilized within and adjacent to the project site shall be free of nonnative plant materials or sterile to avoid propagation of nonnative plants. Fiber rolls or erosion control mesh shall be made of loose-weave mesh that is not fused at the intersections of the weave, such as jute, or coconut (coir) fiber, or other products without welded weaves. Non-welded weaves reduce entanglement risks to wildlife by allowing animals to push through the weave, which expands when spread. **Products with plastic monofilament or cross joints in the netting that are bound/stitched (such as found in some straw wattles/fiber rolls and some erosion control blankets) which may cause entrapment of wildlife, shall not be allowed.**

2.39 Erosion Control Monitoring. Permittee or Designated Representative shall monitor erosion control measures during and after each storm event and repair and/or replace ineffective measures immediately.

2.40 Erosion Control Measures. Permittee shall utilize erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter a river, stream, or lake. Erosion control measures shall be pre-approved by the Department.

2.41 Mud, Silt and Other Pollutants. Permittee shall prevent water containing mud, silt or other pollutants from grading, aggregate washing, equipment washing, or other

activities to enter a lake or stream or to be place in locations that may be subjected to high storm flows.

2.42 Silt Laden Runoff. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. Erosion control measures, such as, silt fences, straw hay bales, gravel or rock lined ditches, water check bars, and broadcasted straw shall be used where ever silt laden water has the potential to leave the work site and enter the creek.

2.43 Maintain Sediment Barriers. Permittee shall maintain the sediment barrier(s) in good operating condition throughout the construction period and the following rainy season. Maintenance includes, but is not limited to, removal of accumulated silt and/or replacement of damaged silt fencing, coir logs, coir rolls, and/or straw bale dikes. If the sediment barrier fails to retain sediment, Permittee shall employ corrective measures, and the Department notified, immediately. Materials used in the sediment barriers shall not pose an entanglement risk to fish/wildlife.

2.44 Removal of Silt from Barriers. Permittee shall remove silt collected around the silt barriers on an as needed basis to prevent silty/turbid water from flowing around the silt barriers during storm events. Silt barriers which trap sediment shall be removed upon completion of maintenance activities and after all flowing water is cleared of turbidity in a manner that will not introduce silt to the stream. The stream shall then be restored to a clean and natural condition.

2.44.1 Removal of Barriers. The Permittee is responsible for the removal of non-biodegradable silt barriers (such as plastic silt fencing) after the disturbed areas have been stabilized with erosion control vegetation (usually after the first growing season).

2.45 Stream Materials. Rock, gravel, and/or other materials shall not be imported to, taken from or moved within the bed or banks of the stream except as otherwise addressed in this Agreement.

2.46 Seeding Requirement. Permittee shall restore all exposed/disturbed areas and access points within the work area by seeding with a mix of native regionally appropriate grasses and forbs and, if necessary, a sterile grass cover crop unless otherwise agreed upon with the Department. Seed mix shall be pre-approved by the Department.

2.47 Bank Stabilization. Permittee shall construct bank stabilization with suitable non-erodible materials that will withstand wash out. The bank stabilization material shall extend above the normal high-water mark. Only clean material such as, rock riprap that is free of trash, debris and deleterious material shall be used as bank stabilization. Asphalt shall not be considered an acceptable material.

2.48 Stabilize Exposed Areas. Permittee shall stabilize all exposed/disturbed areas within the project site to the greatest extent possible. Techniques used for

stabilization shall be pre-approved by the Department or by seeding as described in **Condition 2.46 to 2.47**. Products with plastic monofilament or cross joints in the netting that are bound/stitched (such as found in some straw wattles/fiber rolls and some erosion control blankets) which may cause entrapment of wildlife, shall not be allowed.

2.49 Minimize Turbidity and Siltation. Permittee shall take precautions to minimize turbidity/siltation during construction and post-construction periods. Precautions shall include, but are not limited to: pre-construction planning to identify site specific turbidity and siltation minimization measures and best management erosion control practices; best management erosion control practices during project activity; and settling, filtering, or otherwise treating silty and turbid water prior to discharge into a stream or storm drain.

2.50 Return Low-Flow Channel to Pre-project Conditions. If a stream channel has been altered during the operations, Permittee shall return its low-flow channel, as nearly as possible, to pre project conditions without creating a possible future bank erosion problem or a flat wide channel or sluice like area. Permittee shall return the gradient of the streambed margin to pre project grade unless such operation is part of a restoration project, in which case, the change in grade shall be approved by the Department prior to project commencement.

Debris Materials and Waste

2.51 Hazardous Materials. Debris, soil, silt, bark, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, shall not be stored where it could be washed back into the channel or where it will cover aquatic or riparian vegetation. Equipment shall be stored in areas where any possible contamination from the equipment would not flow or be washed back into the channel. All debris shall be disposed of properly. BMPs shall be employed to accomplish these requirements.

2.52 Pollution and Litter. Permittee shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws and it shall be the responsibility of Permittee to ensure compliance.

2.52.1 Permittee shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter a lake, streambed, or flowing stream or be placed in locations that may be subjected to high storm flows.

2.52.2 The Permittee or its contractors shall not dump any litter or construction debris within the riparian/stream zone. All such debris and waste shall be removed from the worksite daily and properly disposed of at an appropriate disposal site.

2.52.3 Spoil sites shall not be located within a lake, streambed, or flowing stream or locations that may be subjected to high storm flows, where spoil shall be washed back into a lake, streambed, or flowing stream where it will impact streambed habitat and aquatic or riparian vegetation.

2.52.4 Raw cement/concrete or washings thereof, asphalt, paint, or other coating material, oil or other petroleum products, or any other substances which could be hazardous to fish and wildlife resources resulting from project related activities shall be prevented from contaminating the soil and/or entering the waters of the State. These materials, placed within or where they may enter a lake, streambed, or flowing stream by Permittee or any party working under contract or with the permission of Permittee, shall be removed immediately.

2.52.5 No broken concrete, cement, debris, soil, silt, sand, bark, slash, sawdust, rubbish, or washings thereof, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 100 feet of the high water mark of any lake, streambed, or flowing stream.

2.52.6 No equipment maintenance or fueling shall be done within or near any lake, streambed, or flowing stream where petroleum products or other pollutants from the equipment may enter these areas under any flow.

3. Compensatory Measures

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each measure listed below.

3.1 Compensatory Mitigation. Permittee shall mitigate for temporary and Permanent Impacts as described below following the methodologies described in the HMMP listed in Measure 3.2 of this Agreement.

3.1.1 Temporary impacts to habitat under Department jurisdiction will be mitigated at a 0.5:1 ratio for habitat creation/restoration or 1:1 for habitat enhancements. This is in addition to onsite regeneration or restoration.

3.1.2 Permanent impacts to previously disturbed and/or armored watercourses under Department jurisdiction will be mitigated at a 1:1 ratio for habitat creation and 2:1 for habitat enhancements or purchase of mitigation credits in a Department-approved mitigation bank. Previously disturbed and/or armored watercourses include those with no woody vegetation and may either be man-made or manipulated (i.e., gunnited, rip-rap, etc.).

3.1.3 Permanent impacts to vegetated channels or undisturbed watercourses (i.e., intermittent or ephemeral drainages) will be mitigated at a 2:1 ratio for habitat creation and 3:1 for habitat enhancements or purchase of mitigation credits in a Department-approved mitigation bank.

3.1.4 Permanent impacts to riparian forest (i.e., stream with trees and/or shrubs, typically has multiple canopy layers) will be mitigated at a 6:1 ratio for habitat creation and 10:1 for habitat enhancements or purchase of mitigation credits in a Department-approved mitigation bank.

3.2 Habitat Mitigation and Monitoring Plan (HMMP). **No later than 180 days after the execution of this Agreement**, the Permittee shall submit to the Department for review and approval an HMMP that identifies potential mitigation options to be implemented if determined that mitigation will be required per **Measure 3.1** of this Agreement. At a minimum, the HMMP shall include habitat creation and/or habitat enhancements activities; and/or mitigation bank credits purchase information. The proposed mitigation should be sufficient to fully offset the permanent and Temporary Impacts specified in **Table 1**. If impacts exceed those listed in Table 1, additional mitigation should be provided. Habitat enhancement may include removal of invasive species and replacement with native riparian plantings. Habitat creation or restoration must include the expansion of riparian, wetland, or stream channel habitat.

The HMMP shall also include the following information if applicable to the mitigation option selected by the Permittee:

a. A description of the existing physical conditions of the proposed creation and/or restoration site, including water resources and habitat types, and a map that identifies the location of the site;

b. Information pertaining to the ownership and current use of the proposed site including any easements or other restrictions;

c. A plan for the preparation of the restoration site, including the removal of nonnative plant species, non-wetland/riparian plant species;

d. A local regional California native plant palette;

e. A planting plan which includes use of a local California native plant palette and describes monitoring and maintenance measures;

f. A timeline for implementation;

g. A description of how and how long the replanted vegetation will be watered;

h. A monitoring and management plan, that includes procedures to ensure that non-native plants are not introduced or allowed to sustain within the site. Monitoring and management of the restoration site shall be conducted for a

minimum of three years, or until the Department determines the success criteria have been met;

i. Overall success criteria; and

j. Contingency measures for replanting and plan re-design, in case the success criteria are not met.

3.3 Invasive Species Removal Plan. The Permittee shall develop an invasive species removal plan that will include 1) a description of the existing physical conditions of the site 2) methods of removal, and 3) monitoring and management plan that includes procedures to ensure successful removal of targeted invasive species. The Invasive Species Removal Plan may be a component of the HMMP or it may be developed for a specific project site under a VRF.

3.4 Onsite Re-vegetation and Restoration. In areas where Temporary Impacts resulting from project activities occur, Permittee shall submit a site Restoration Plan, prepared by a qualified engineer, geologist, or stream restoration specialist, to the Department for review and written approval. The Restoration Plan shall ensure recovery or enhancement of stream form, and fish and wildlife resource values. The re-vegetation plan shall include a plant palette of species to be used in re-vegetation, Re-vegetation success criteria, performance standards, monitoring and reporting programs, and corrective actions to be taken when mitigation measures do not meet the proposed targets. At least thirty (30) days prior to the commencement of the restoration activities, the Permittee shall submit the Restoration Plan to the Department for review and written approval. The Restoration Plan shall include performance standards, monitoring and reporting programs, and corrective actions to be taken when mitigation measures do not meet the proposed targets.

a. *Native Plant Materials Required*. Revegetation shall include only local plant materials native to the project area, unless otherwise approved by the Department in writing.

b. *Native Genotype*. Disturbed areas shall be revegetated with regionally appropriate native species. Species list composition should match habitat surrounding the restoration area and should be approved by CDFW prior to restoration. The preference is for disturbed areas to be revegetated only with propagules (seeds, cuttings, divisions) of locally-collected native plants. Disturbed areas shall be protected with correctly installed erosion control materials (jute, native straw, coconut fiber erosion control fabric, coir logs, or seed-free straw).

c. *Prohibited Plant Species*. Permittee shall not plant, seed or otherwise introduce invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: http://www.cal-ipc.org.

d. *Revegetation Success Criteria*. Permittee shall monitor and maintain, as necessary, all plants for three (3) years or until success criteria are met (whichever is longer) to ensure successful revegetation. Success criteria and performance standards will be included in the HMMP.

e. *Revegetation Remediation*. If revegetation survival and/or cover requirements do not meet established goals, Permittee is responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve these requirements. Replacement plants shall be monitored with the same survival and growth requirements for three (3) years after planting.

4. Reporting Measures

Permittee shall meet each reporting requirement described below. When submitting each reporting requirement, refer to Notification No. 1600-2016-0099-R2. Submit each report as instructed in Contact Information section, e-mail submittal is preferred. If the Permittee fails to provide timely status reports as required by this Agreement, the Department may suspend or revoke the Agreement.

4.1 Pre-work Notification. The Permittee shall notify the Department within two (2) working days of beginning work as approved by each VRF.

4.2 Annual Report. For each year this Agreement is valid, the Permittee shall submit to the Department by March 1st of the following year, an annual report detailing the status of the work authorized by this Agreement. The annual report shall include:

a) An accounting of the total number of routine maintenance projects undertaken by the Permittee during the prior calendar year (which should equal the total number of VRF's submitted to the Department).
b) A summary of the work completed during the previous calendar year, including the status of any required restoration (survival, percent cover, and height of both tree and shrub species, number by species of plants replaced, an overview of the re-vegetation effort, and the method used to assess these parameters shall also be included), compensatory mitigation and/or monitoring.
c) Prior to starting and upon completion of project activities as approved by each VRF, the project area shall be digitally photographed. Photographs shall be submitted to the Department as an attachment to each annual report with proper labels detailing the location, project, and whether pre- or post- maintenance activity.

The Department shall review the annual report, and may conduct onsite inspections to confirm Permittee is in compliance with the Agreement and that the measures in the Agreement continue to protect fish and wildlife resources. Annual reports will include the total area temporarily and

permanently impacted during routine maintenance for the purpose of calculating mitigation requirements and will also specify which of the mitigation alternatives has been selected to mitigate for those impacts.

4.3 Restoration Annual Monitoring. Permittee shall submit an annual monitoring report to the Department by January 1st of each year for three (3) years after completion of the restoration project. The report shall discuss the mitigation performance as it relates to the success criteria established for the restoration project. The report shall include the success of natural revegetation establishment, survival, percent cover, and height of both tree and shrub species. The number by species of plants replaced (if applicable), an overview of the revegetation effort, and the method used to assess these parameters shall also be included. The report shall include photos from designated photo stations and other relevant information including: a summary of invasive species control, methods used to remove non-native plants, and a list of wildlife observed on site. All revegetation efforts that fail within the three-year monitoring period shall be replaced by October 1st of the year it was determined to have failed.

4.4 Status Report. The Permittee shall provide a status report to the Department every four (4) years from the effective date of this Agreement, as required in FGC section 1605(g)(2). **The status report shall be delivered to the Department no later than ninety (90) days prior to the end of each four-year period** and shall include all of the following information:

a. The status of the activities covered by this Agreement, including whether the activities remain the same or have been altered by an amendment.

b. A status report with all the mitigation and restoration activities performed pursuant to conditions 3.1 and 3.3 of this Agreement.

c. An evaluation of the success or failure of the measures in the Agreement to protect fish and wildlife resources that the activity may substantially adversely affect.

d. A discussion of any factors that could increase the predicted adverse impacts on fish and wildlife resources, and a description of the resources that may be adversely affected.

e. A copy of the original Agreement.

The Department shall review the four-year status report, and may conduct onsite inspections to confirm Permittee is in compliance with the Agreement and that the measures in the Agreement continue to protect fish and wildlife resources. If the Department determines that the measures in the Agreement no longer protect the fish and wildlife resources, the Department, in consultation with the Permittee, and within 60 days of receipt of the report, shall impose one or more new measures to protect fish and wildlife resources affected by the activity. If requested to do so by the Permittee, the Department shall make available the

information upon which it determined the Agreement no longer protects the affected fish and wildlife resources.

If the Permittee disagrees with one or more of the measures, within thirty (30) days of receiving the new measures, it shall notify the Department, in writing, of the disagreement. The Permittee and the Department shall consult regarding the disagreement. The consultation shall be completed within thirty (30) days after the Department receives the Permittee's notice of disagreement. If the Department and Permittee fail to reach agreement, the Permittee may request, in writing, the appointment of a panel of arbitrators to resolve the disagreement. Per the provisions of FGC section 1603 (b), the panel of arbitrators shall be established and appointed within fourteen days of the completed consultation. The panel of arbitrators shall issue a decision within fourteen days of the date it was established.

5. FEES

The per-project fee associated with each VRF submitted to the Department under this Agreement is identified in the Department's current LSA fee schedule as a "project fee" for a Routine Maintenance Agreement. See the Department's website for a current fee schedule: https://www.wildlife.ca.gov/Conservation/LSA/Forms.

The billing cycle for routine maintenance projects associated with this Agreement, shall be based on the calendar year and will be due to the Department as follows:

5.1 For each year this Agreement is valid, the Permittee shall provide to the Department by March 1st of the following year, a lump sum payment equal to the sum of all individual per project fees for each VRF submitted to the Department during the prior year (January 1 – December 31).

5.2 If the Permittee is unable to provide a lump sum payment as described in Section 4.1 of this Agreement, the Permittee may provide ongoing payment to the Department upon completing the work as described in each VRF.

CONTACT INFORMATION

Any communication that Permittee or the Department submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or the Department specifies by written notice to the other.

The Permittee shall send all VRF submittals to the person(s) specified by the Department, electronic submission is preferred. The Department and the Permittee shall update the distribution list as needed, modify the revision date accordingly, and provide each other with a copy of the most current list. All correspondence shall include the Notification tracking number.

To Permittee:

Rob Jensen, City Manager
City of Roseville
311 Vernon Street
Roseville CA 95678
Phone: 916-774-5362
Email: rjensen@roseville.ca.us

Contact

Mark Morse, Environmental Coordinator
311 Vernon Street
Roseville CA 95678
Phone: 916-774-5499
Email: mmorse@roseville.ca.us

-OR-

Brian Castelluccio, Open Space Superintendent
Parks, Recreation and Libraries Department
311 Vernon Street
Roseville, CA 95678
Phone: (916) 746-1755
Email: BCastelluccio@roseville.ca.us

To The Department:

California Department of Fish and Wildlife
1701 Nimbus Road
Rancho Cordova, CA 95670
Attn: Lake and Streambed Alteration Program
Notification #1600-2016-0099-R2
Phone: 916-358-2885
Fax: 916-358-2912
Email: R2LSA@wildlife.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute the Department's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is the Permittee's alone.

SUSPENSION AND REVOCATION

The Department may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before the Department suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before the Department suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused the Department to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes the Department from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects the Department's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, State, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC Sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

The Department may amend the Agreement at any time during its term if the Department determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by the Department and Permittee. To request an amendment, Permittee shall submit to the Department a completed "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in the Department's current fee schedule (see California Code of Regulations, Title 14, Section 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter the Department approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to the Department a completed "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in the Department's current fee schedule (see California Code of Regulations, Title 14, Section 699.5).

EXTENSIONS

In accordance with FGC Section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to the Department a completed "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in the Department's current fee schedule (see California Code of Regulations, Title 14, Section 699.5). The Department shall process the extension request in accordance with FGC Section 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers per FGC Section 1605(f).

EFFECTIVE DATE

The Agreement becomes effective on the date of the Department's signature, which shall be: 1) after Permittee's signature; 2) after the Department complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC Section 711.4 filing fee listed at http://www.wildife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire **twelve (12) years from the date signed by the Department**, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC Section 1605(a) (2) requires.

EXHIBITS

The documents listed below are included as exhibits to the Agreement and incorporated herein by reference.

Exhibit A Figure 1 – Project Vicinity
Figure 2 – Project Location
Figure 3 – Project Area (17 pages)

Exhibit B Verification Request Form (VRF) for this Agreement

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify the Department in accordance with FGC Section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR CITY OF ROSEVILLE

Jay Panzica /for — 3/16/17

Rob Jensen
City Manager

Date

FOR DEPARTMENT OF FISH AND WILDLIFE

3/22/17

Tina Bartlett
Regional Manager

Date

Prepared by: Angela Calderaro
Senior Environmental Scientist (Specialist)

Exhibit A - Figure 1 – Project Vicinity

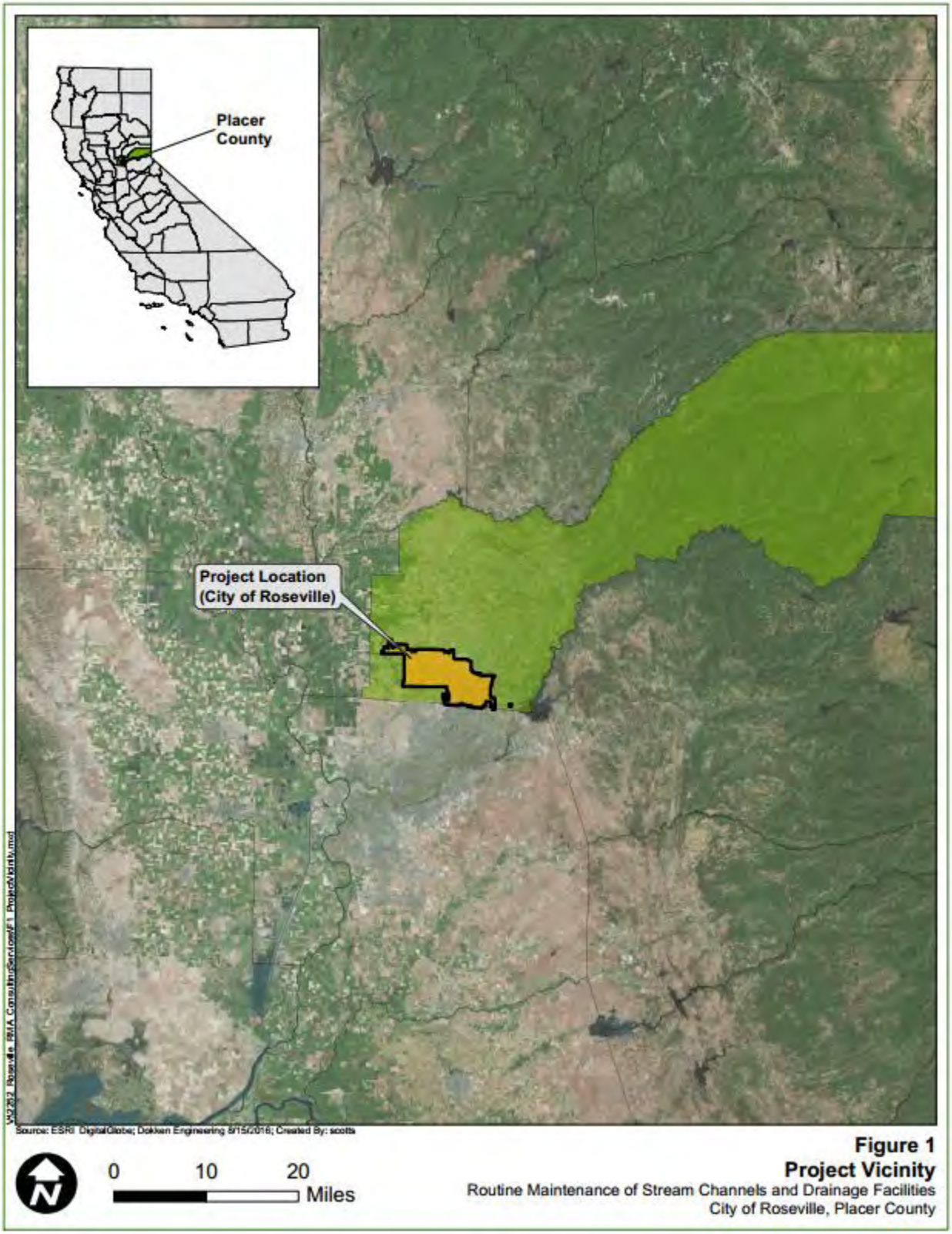


Exhibit A - Figure 2 – Project Location

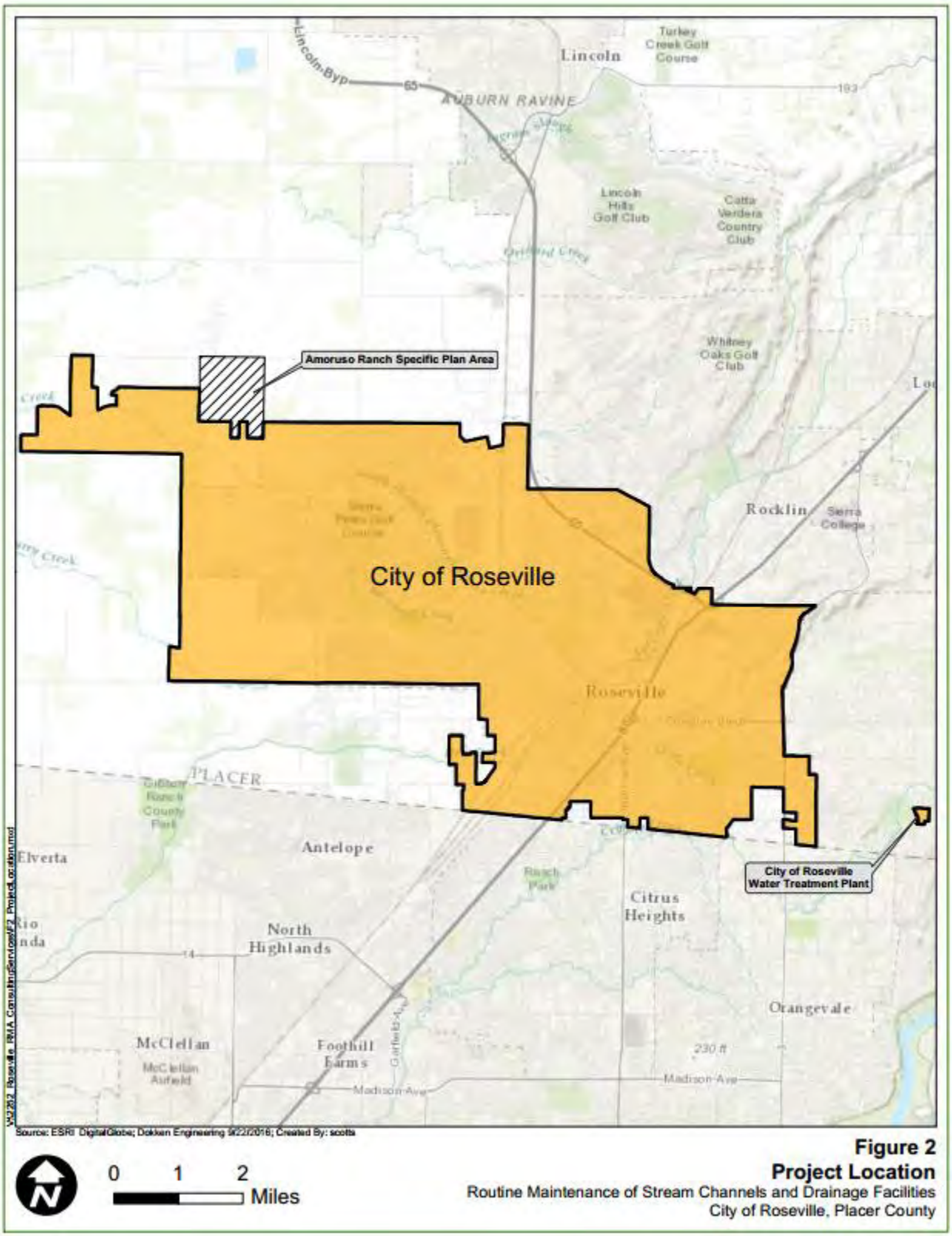
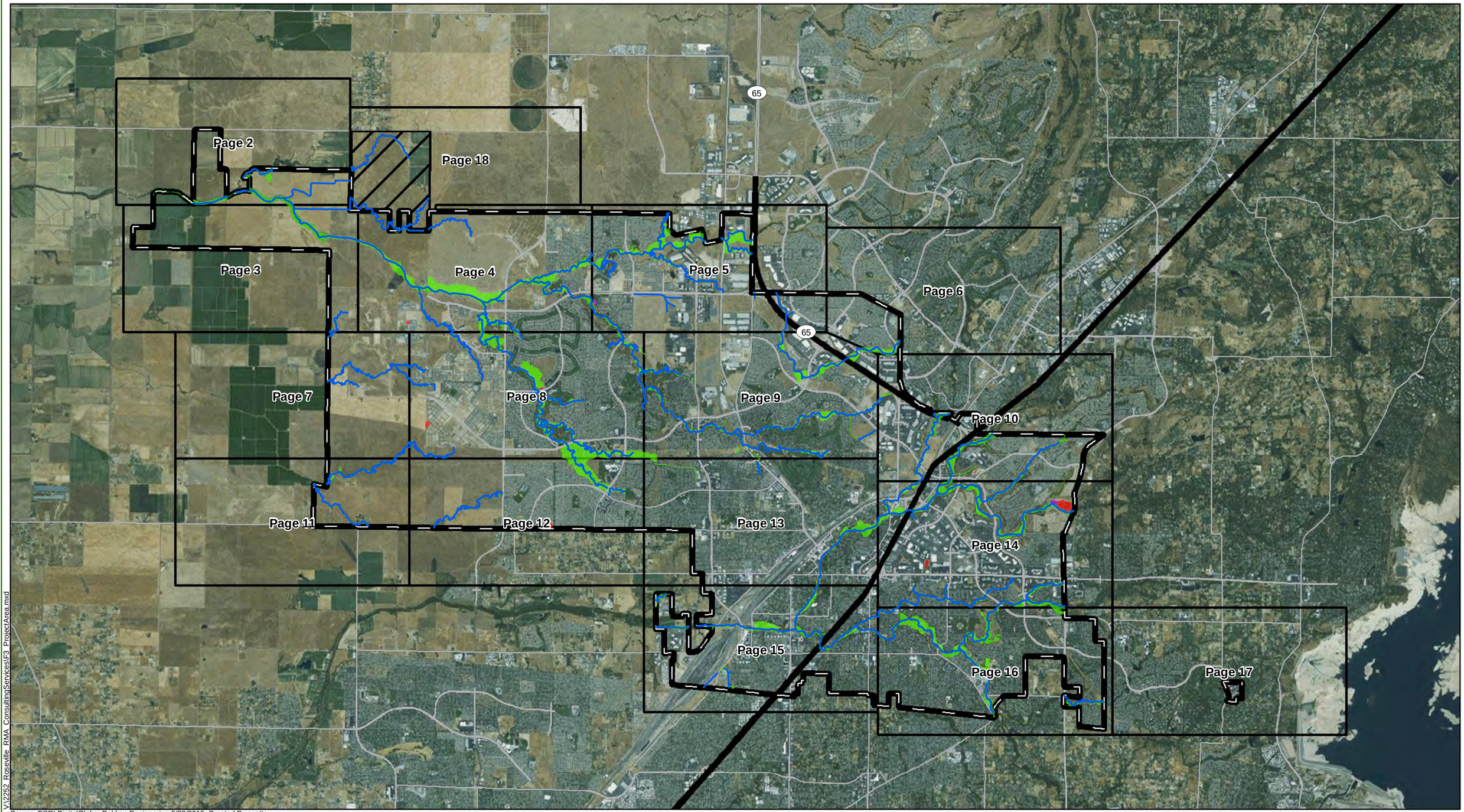


Exhibit A - Figure 3 – Project Area (18 pages)



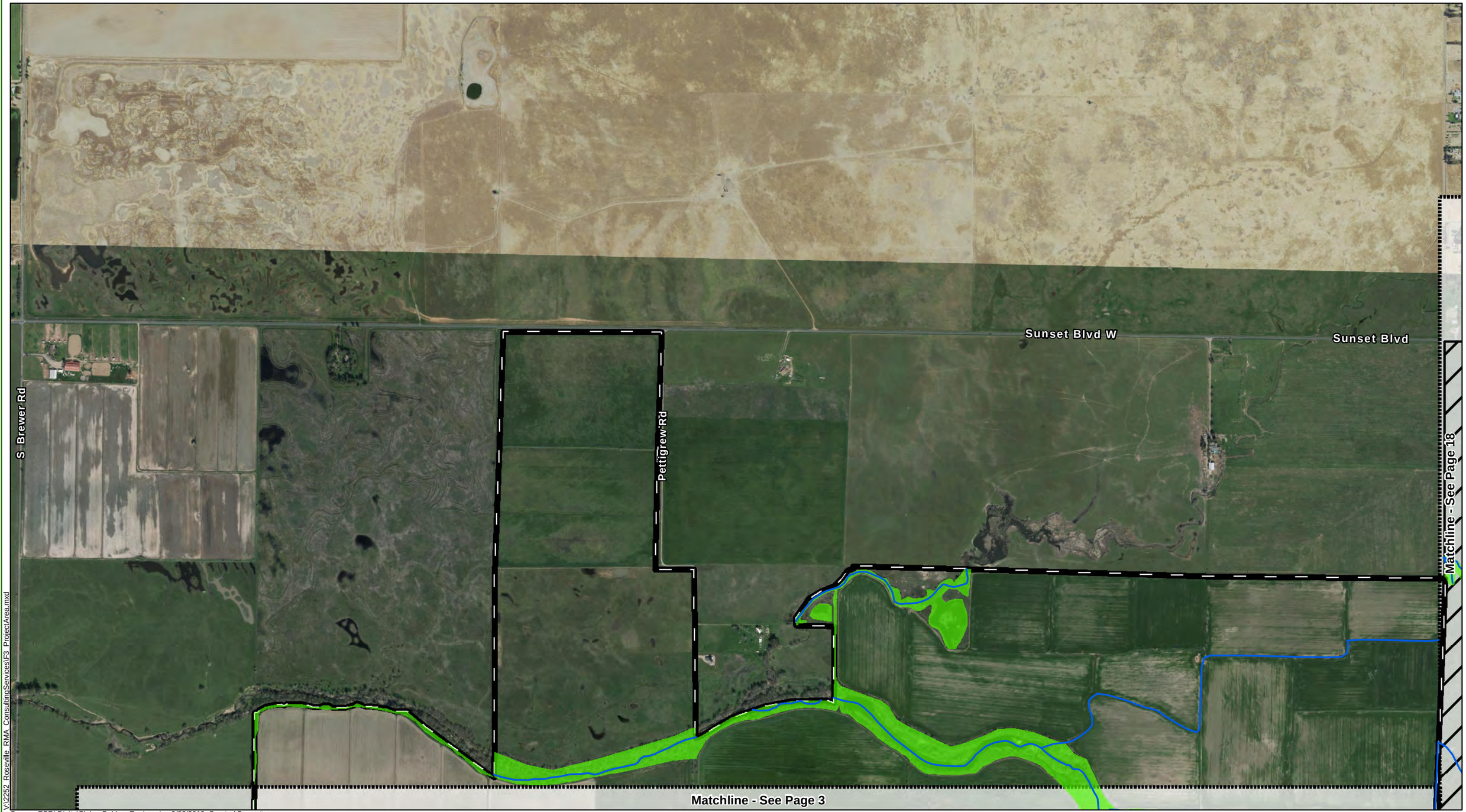
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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 6,000 12,000 18,000 24,000 Feet

City Boundary
Amoruso Ranch Specific Plan Area
Jurisdictional Creek Channel
Jurisdictional Habitat
Jurisdictional Detention Basins
Non-Jurisdictional Detention Basin
Potential Restoration Projects

FIGURE 3
Page 1 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



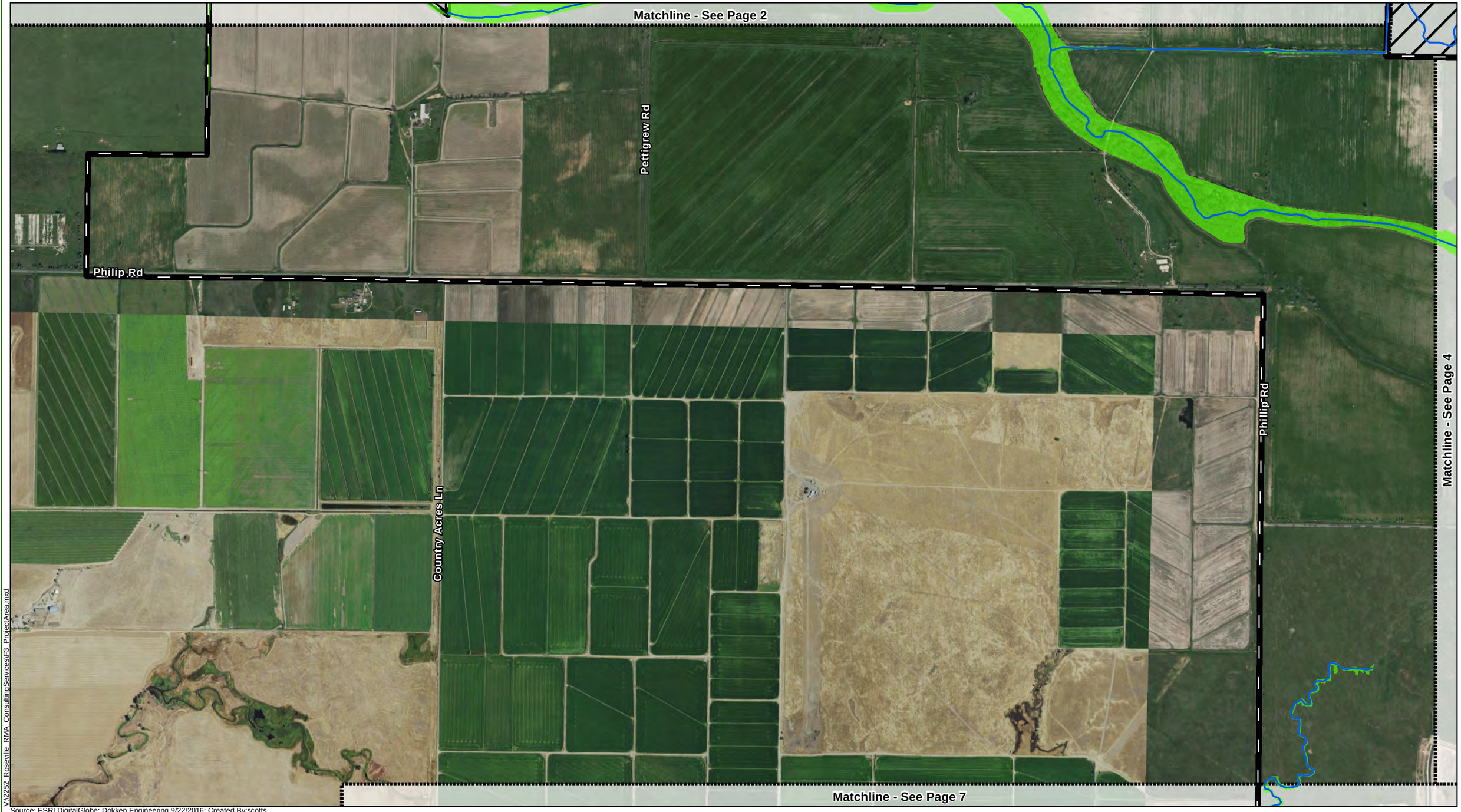
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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

- City Boundary
- Amoruso Ranch Specific Plan Area
- Jurisdictional Creek Channel
- Outfall Location
- Jurisdictional Habitat
- Jurisdictional Detention Basins
- Non-Jurisdictional Detention Basin
- Potential Restoration Projects

FIGURE 3
Page 2 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

- City Boundary
- Amoruso Ranch Specific Plan Area
- Jurisdictional Creek Channel
- Outfall Location
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- Jurisdictional Detention Basins
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FIGURE 3
Page 3 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California

Matchline - See Page 18

Matchline - See Page 3

Matchline - See Page 5

Northpark Dr

Phillip Rd

Fiddyment Rd

Blue Oaks Blvd

Stagecoach Cir

Northstar Ln

Rosestone Ln

Timberrose Way

Council Rock Rd

Del Webb Blvd

Hayride Ln

Cope Ridge Way

Buckskin Ln

Early Way

Tail Race Dr

Whistlestop Way

Curran Way

Matchline - See Page 7

Matchline - See Page 8

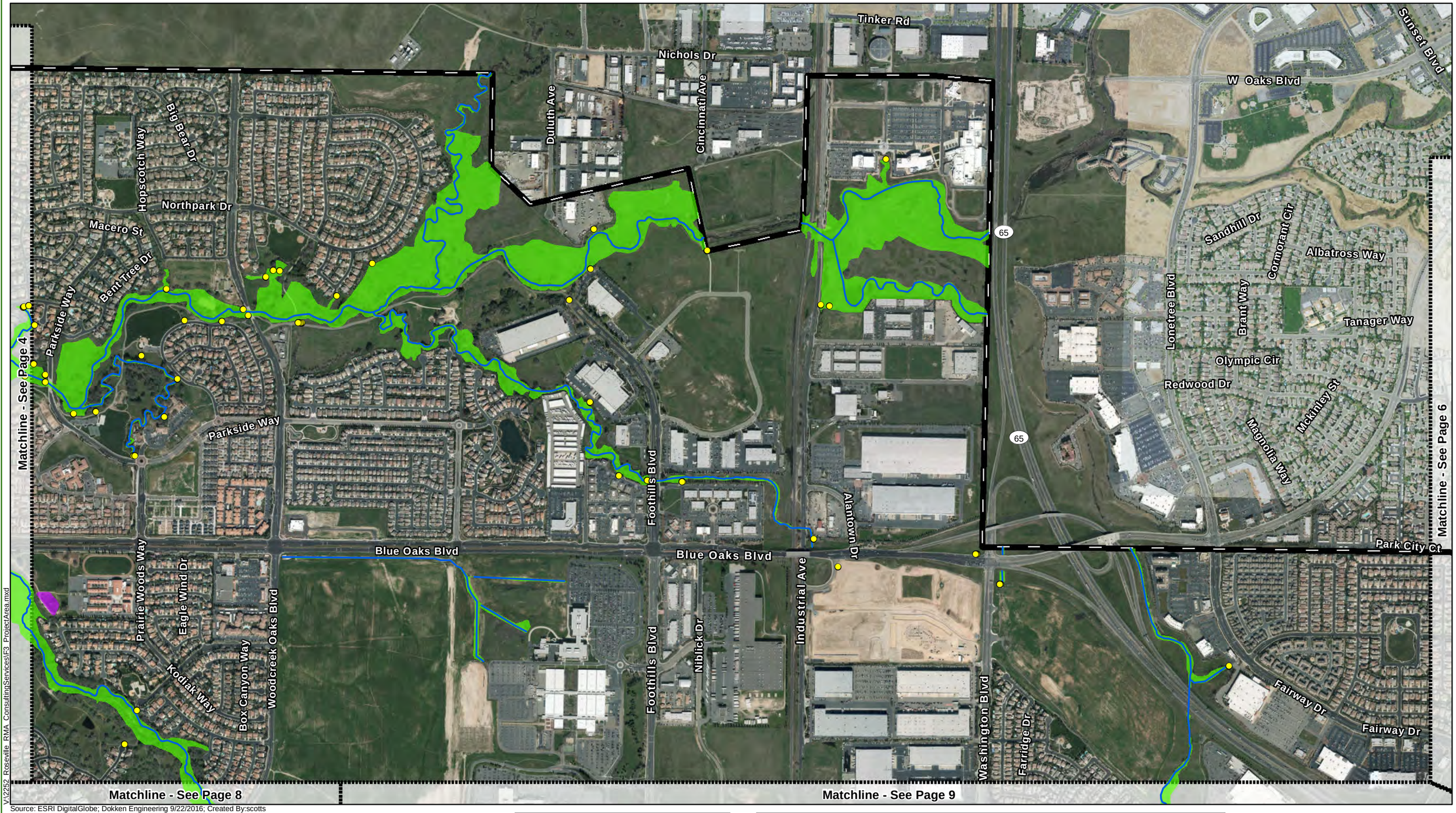
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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

City Boundary
Amoruso Ranch Specific Plan Area
Jurisdictional Creek Channel
Outfall Location
Jurisdictional Habitat
Jurisdictional Detention Basins
Non-Jurisdictional Detention Basin
Potential Restoration Projects

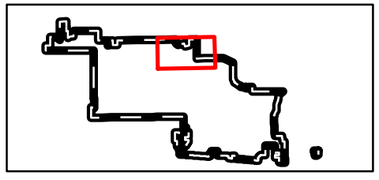
FIGURE 3
Page 4 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet



- City Boundary
- Amoruso Ranch Specific Plan Area
- Jurisdictional Creek Channel
- Outfall Location
- Jurisdictional Habitat
- Jurisdictional Detention Basins
- Non-Jurisdictional Detention Basin
- Potential Restoration Projects

FIGURE 3
Page 5 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



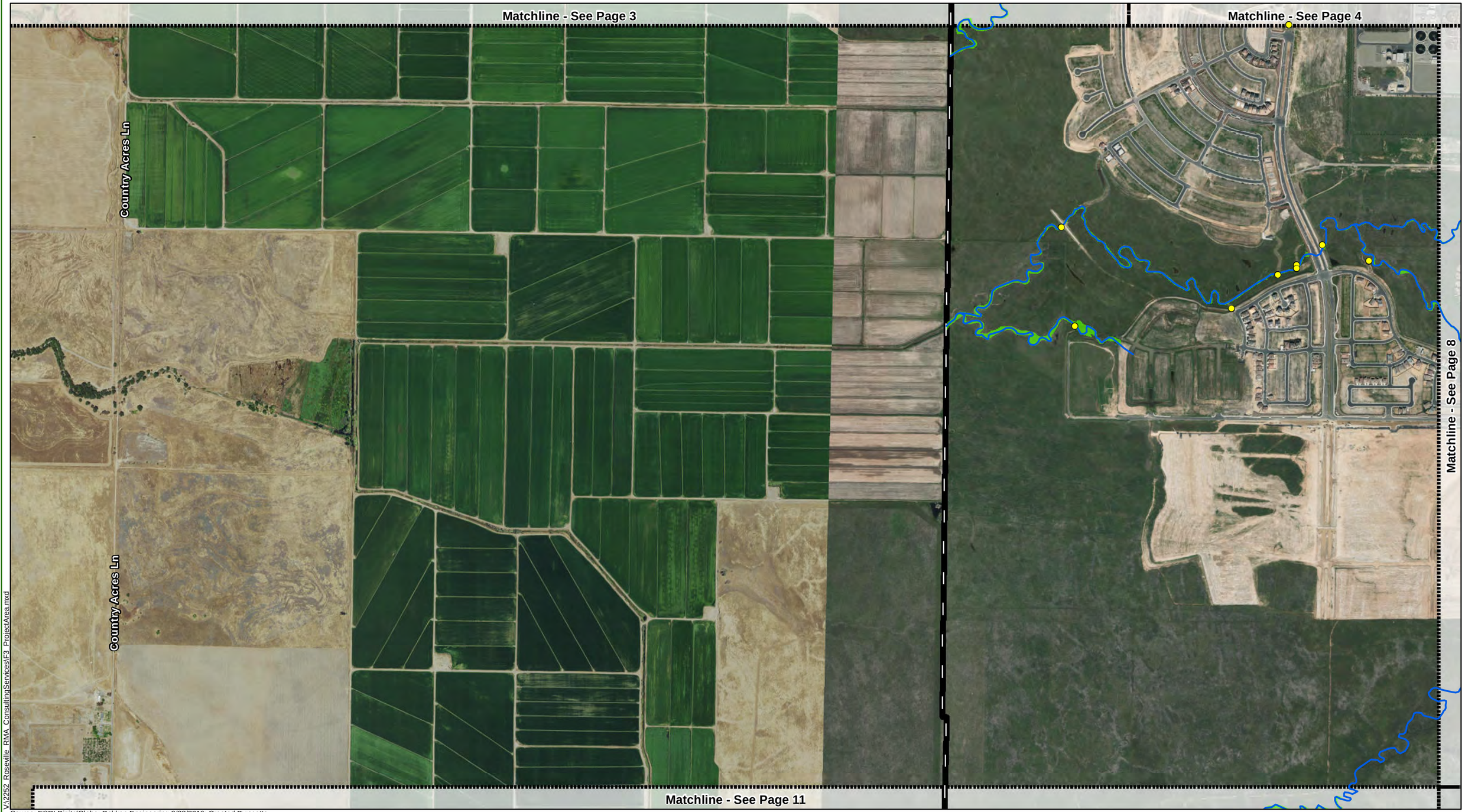
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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

- City Boundary
- Amoruso Ranch Specific Plan Area
- Jurisdictional Creek Channel
- Outfall Location
- Jurisdictional Habitat
- Jurisdictional Detention Basins
- Non-Jurisdictional Detention Basin
- Potential Restoration Projects

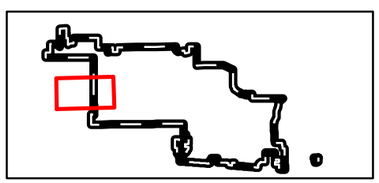
FIGURE 3
Page 6 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet



- City Boundary
- Amoruso Ranch Specific Plan Area
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- Outfall Location
- Jurisdictional Habitat
- Jurisdictional Detention Basins
- Non-Jurisdictional Detention Basin
- Potential Restoration Projects

FIGURE 3
Page 7 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California

Matchline - See Page 4

Matchline - See Page 5

Matchline - See Page 7

Matchline - See Page 9

Matchline - See Page 12

Curnan Way
Phillip Rd
Fiddyment Rd
Clearview Way
Whistlestop Way
Plum Canyon Ln
Pineschi Pl
Lost Lake Ln
Timberrose Way
Goose Meadows Way
Del Webb Blvd
Delta Breeze Ln
Delta Breeze Ct
Shadylane Way
Rose Garden Ln
Buckskin Ln
Bauser Ave
Gilleland Dr
Halesworth Dr
Horncastle Ave
Ludlow Dr
Liverpool Ln
Lyne Bay Dr
Hinckley Ct
Robinson Dr
Marblethorpe Dr
Jonquil Dr
Alyssum Way
AVE Martina
Zinnia Way
Firefly Green Ln
Dream Inn Ln
Del Webb Blvd
Savannah Ct
Red Willow Ln
AVE Camisa
Carlina Ct
AVE Alvarado
CALLE Las Casas
CALLE Campana
Woodcreek Oaks Blvd
Green Grove Ln
Sun City Blvd
Washoe Ct
Goldfield Way
Whisperlodge Way
Timberlodge Ln
Frontier Ln
Wild Oat Way
Napa Loop
Rose Creek Rd
Sylvan Glen Ln
VIA Riata
Canevari Dr
Voltaire Dr
Dickinson Dr
Michener Dr
Longfellow Cir
Fergus Dr
Sunningdale Dr
Krpan Dr
Steinbeck Dr
Ainsdale Dr
Danielle Dr
Cottage Ln
Heller Ct
Enchanted Cir
Pleasant Grove Blvd
Woodcreek Oaks Blvd

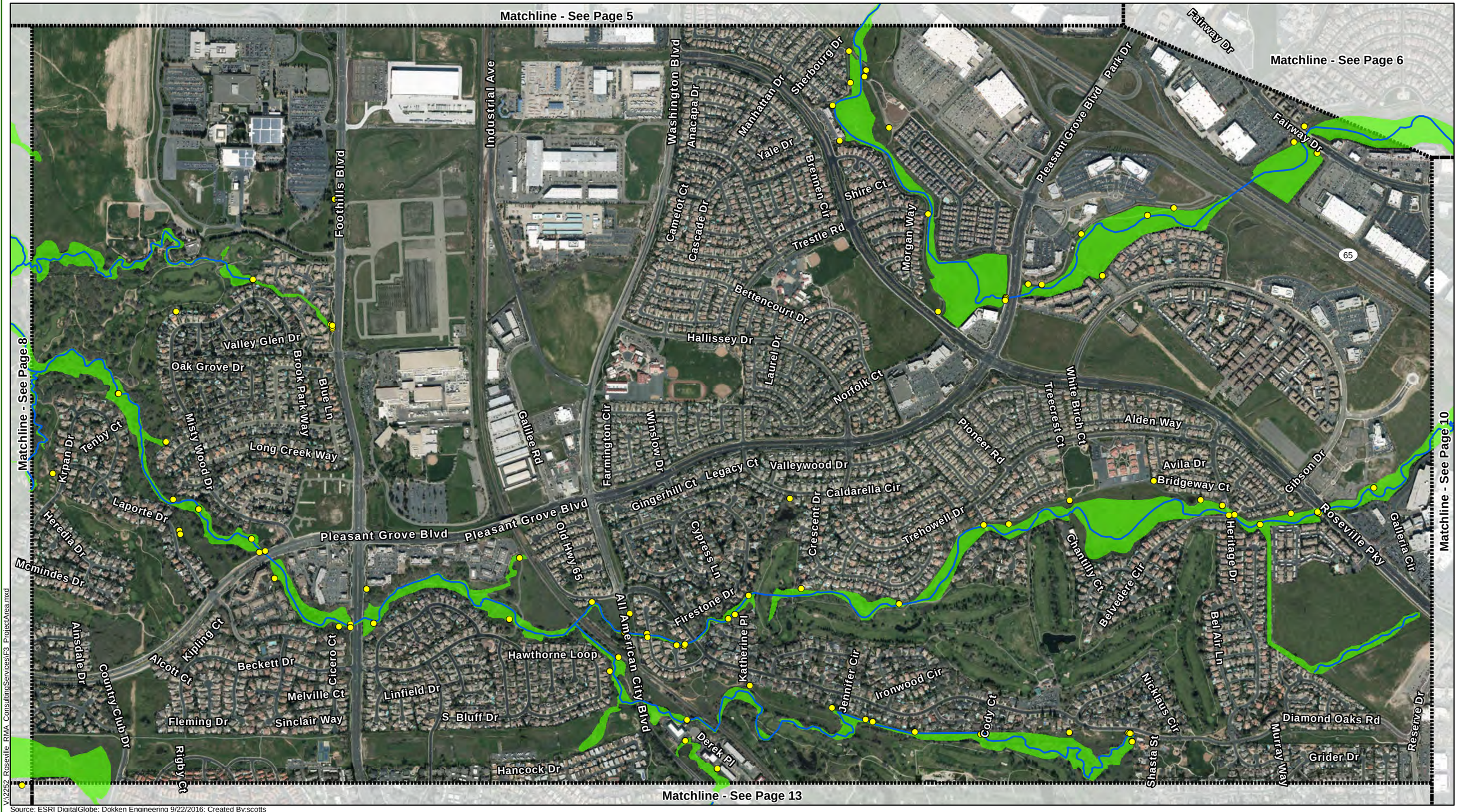
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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

City Boundary
Amoruso Ranch Specific Plan Area
Jurisdictional Creek Channel
Outfall Location
Jurisdictional Habitat
Jurisdictional Detention Basins
Non-Jurisdictional Detention Basin
Potential Restoration Projects

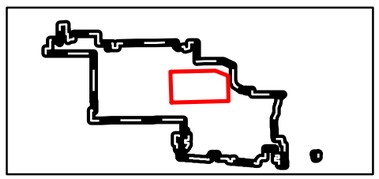
FIGURE 3
Page 8 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

V:\2252_Roseville_RMA_ConsultingServices\F3_ProjectArea.mxd

0 1,000 2,000 3,000 4,000 Feet



- City Boundary
- Amoruso Ranch Specific Plan Area
- Jurisdictional Creek Channel
- Outfall Location
- Jurisdictional Habitat
- Jurisdictional Detention Basins
- Non-Jurisdictional Detention Basin
- Potential Restoration Projects

FIGURE 3
Page 9 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California

Matchline - See Page 6

Matchline - See Page 9

Matchline - See Page 13

Matchline - See Page 14

Fairway Dr
Five Star Blvd
Stanford Ranch Rd
Onyx Dr
Inyo Ct
Lincoln Ave
Springview Dr
Bridal Veil Dr
Doheny Ct
Pinnacles Dr
S Whitney Blvd
Bryce Way
Rainier Ave
Rippling Way
Destiny Dr
Meadowdale Ct
Allan Dr
Allan Ct
Willowynd Dr
Willard Way
Sunset Blvd
Winding Ln
Ruhkala Rd
Lost Ave
Kannasto St
S Grove St
Oakridge St
China Garden Rd
Keller Ct
Evelyn Ave
Rustic Hills Dr
Aguilar Rd
Corona Cir
Foothill Rd
Greenbrae Rd
Sequoia Ct
Merrywood Dr
Woodside Dr
Cone Ct
Kingwood Cir
Hickory Way
Westwood Dr
Hemlock Way
Pacific St
Longview Dr
Echo Ridge Rd
Tenbury Ln
Scarborough Dr
Camborne Way
Tadworth Way
Sierra College Blvd
Galleria Cir
Galleria Blvd
Antelope Creek Dr
Taylor Rd
Stonehouse Ct
Roseville Pky
Roseville Pky
Roseville Pky
Galleria Blvd
E Roseville Pky
E Roseville Pky
Private Rd
Secret Ravine Dr
Hidden Valley Pl
Baywood Rd
65
80

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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

City Boundary
Amoruso Ranch Specific Plan Area
Jurisdictional Creek Channel
Outfall Location
Jurisdictional Habitat
Jurisdictional Detention Basins
Non-Jurisdictional Detention Basin
Potential Restoration Projects

FIGURE 3
Page 10 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California

Matchline - See Page 7

Country Acres Ln

Base Line Rd

Baseline Rd

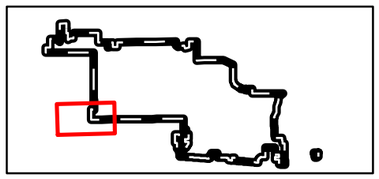
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Watt Ave

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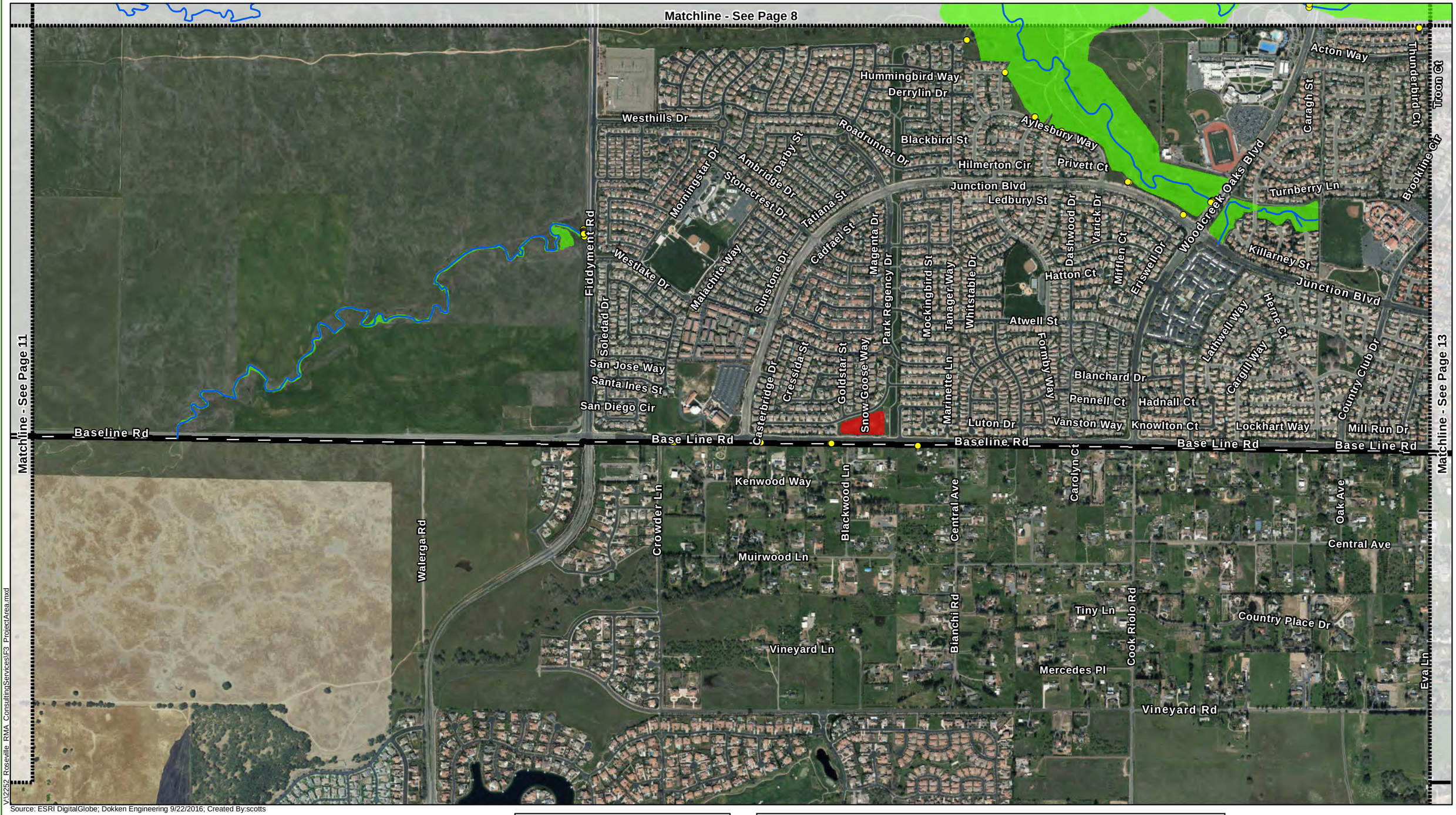
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0 1,000 2,000 3,000 4,000 Feet



- City Boundary
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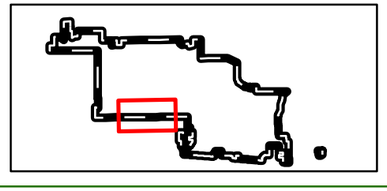
FIGURE 3
Page 11 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

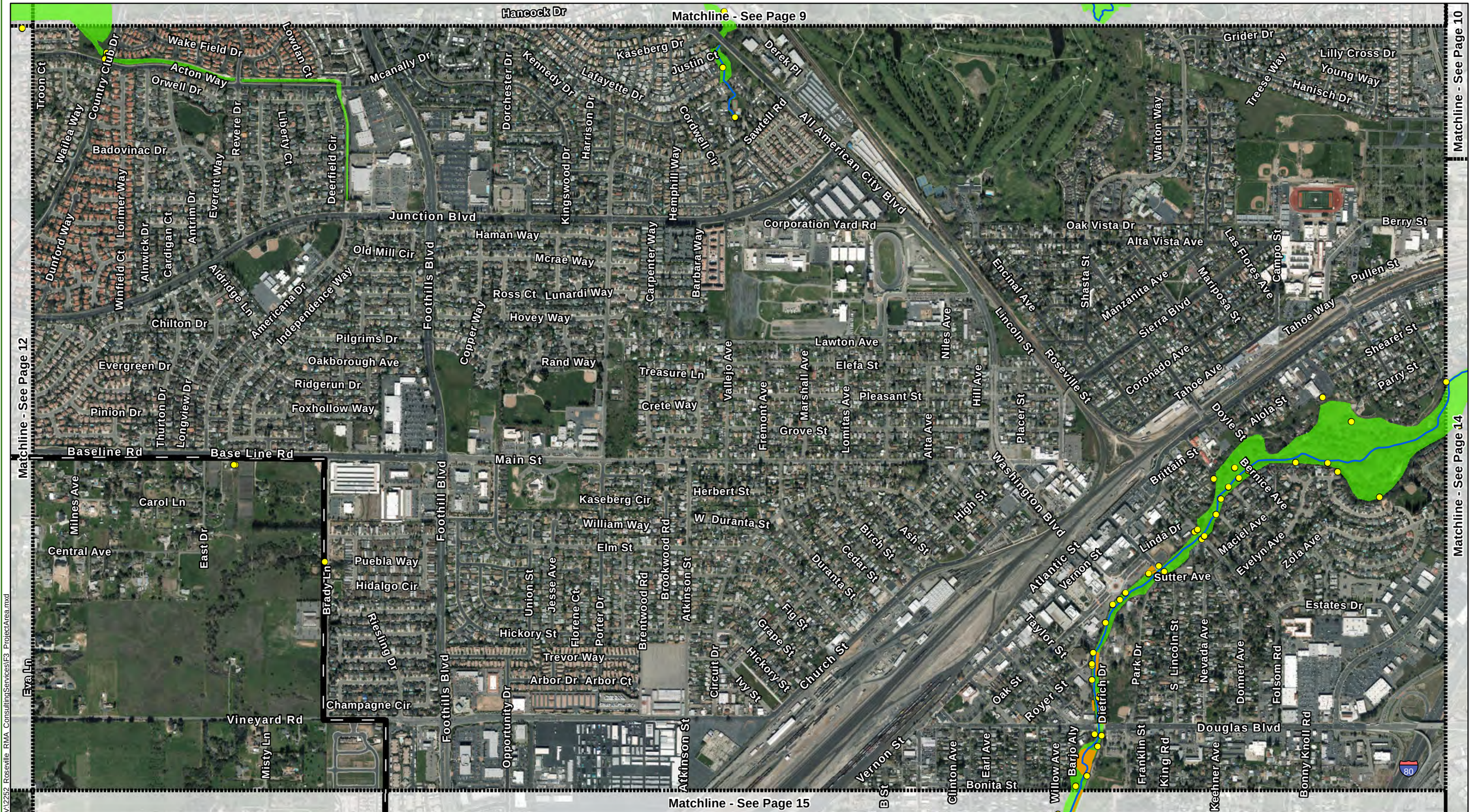
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0 1,000 2,000 3,000 4,000 Feet



- City Boundary
- Amoruso Ranch Specific Plan Area
- Jurisdictional Creek Channel
- Outfall Location
- Jurisdictional Habitat
- Jurisdictional Detention Basins
- Non-Jurisdictional Detention Basin
- Potential Restoration Projects

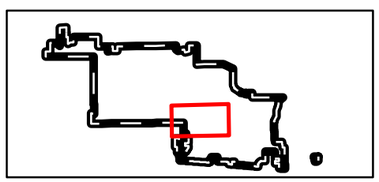
FIGURE 3
Page 12 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



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0 1,000 2,000 3,000 4,000 Feet



- City Boundary
- Amoruso Ranch Specific Plan Area
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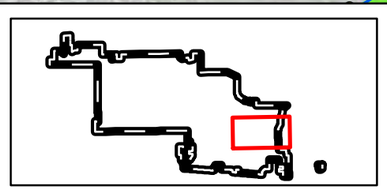
FIGURE 3
Page 13 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet



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- Jurisdictional Detention Basins
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FIGURE 3
Page 14 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California

Matchline - See Page 13
Matchline - See Page 14
Matchline - See Page 16

Frosty Pl
Bedell Ct
Bedell Ln
Booth Rd
Beatty Way
Opportunity Dr
Foothills Blvd
Atkinson St
Subway Rd
Dudley Dr
6Th St
5Th St
4Th St
3Rd St
E St
D St
C St
B St
Luana Ln
La Rue Aly
Mayfair Dr
Riverside Ave
Clinton Ave
Earl Ave
Irene Ave
Willow Ave
Bonita St
Fern St
Vine Way
Hernandez Ln
Machado Ln
Lucy Ln
Garcia Ave
Jo Anne Ln
Darling Way
Vine Ave
Maple Dr
King Rd
Keehner Ave
Camelia Ave
Melrose Ave
Hillcrest Ave
Sunset Dr
Colnar St
Azure Ct
Smith Ln
Palm Ave
Wayne Dr
Coloma Way
Audrey Way
Juanita Way
Kenroy Ln
Milan Way
Cirby Way
Tina Way
Marlin Dr
Coral Dr
Salmon Dr
Regency Ave
Sunrise Ave
Gabrielli Dr
Meadow Gate Dr
Shadow Glen Ct
Windermere Ave
Commerce Dr
Unity Ct
Vernon St
Ariene Dr
Inglis Way
Ajay Dr
Fairfield Ave
Portside Cir
Dawnridge Rd
Lyndhurst Ave
Fir Ave
Evening Way
Crestshaven Dr
Crescendo Dr
Auburn Blvd
Orlando Ave
Louis Ln
Eddie Dr
Chance Way
Livoti Ave
Whyte Ave
W Whyte Ave
Vernon Oaks Dr
Keith Dr
Langley Ave
Lazy Oak Ln
Mariposa Ave
San Simeon Dr
Reuter Ranch Rd
Kris Way
Newport Way
Nob Hill Ct
Donahue Way
Holly Hill Ct
Sun Tree Dr
Sunrise Blvd
Twin Oaks Ave
Linden Ave
Pearl Way
Jewel Way
Robie Way
Donald Way
Fair Way
Pfe Rd
Del Rd
March Rd
Antelope Oaks Ct
Neta Ln
Hilltop Cir
Hilltop Cir
Viking Pl
Castleberry Cir
Villaview Dr
Mannerly Way
Blue Springs Way
Selby Ln
Roseville Rd
Yardley Way
Lichen Dr
Hanover St
Cambria Cir
80

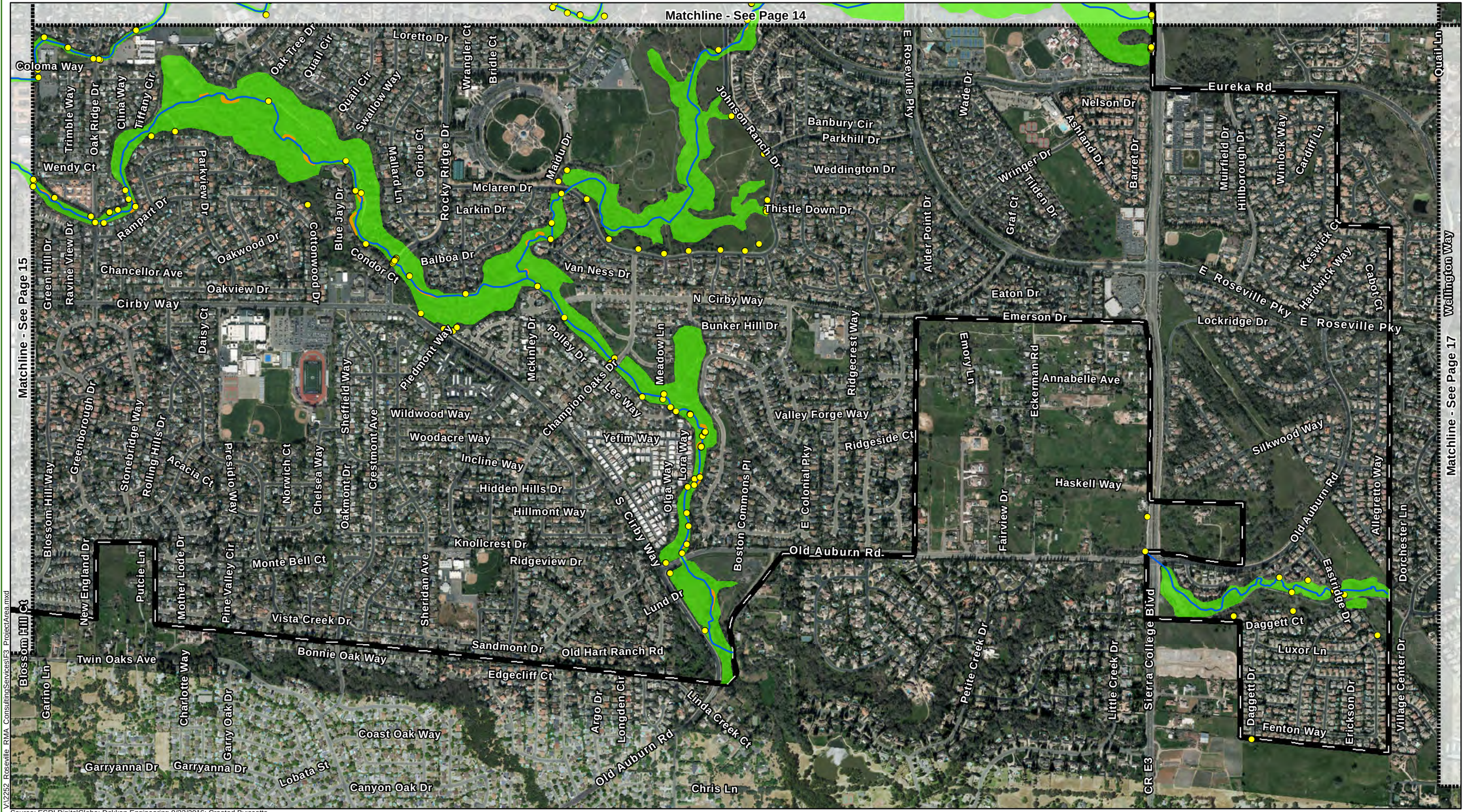
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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

City Boundary
Amoruso Ranch Specific Plan Area
Jurisdictional Creek Channel
Outfall Location
Jurisdictional Habitat
Jurisdictional Detention Basins
Non-Jurisdictional Detention Basin
Potential Restoration Projects

FIGURE 3
Page 15 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



V:\2252 Roseville RMA Consultation\Services\F3 ProjectArea.mxd

Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

- City Boundary
- Amoruso Ranch Specific Plan Area
- Jurisdictional Creek Channel
- Outfall Location
- Jurisdictional Habitat
- Jurisdictional Detention Basins
- Non-Jurisdictional Detention Basin
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FIGURE 3
Page 16 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California

Matchline - See Page 16

Quail Ln
Buddecke Pl
Farschon Pl
Carriage Dr
Quartzite Cir
Quartzite Cir
Eureka Rd
Private Rd
Benton Acre Rd
Mountain Dr
Golden Spur Dr
Risley Pl
Wagon Way
Bridle Path Ln
Fargo Ln
Palomino Ct
Providence Ln
Fallsbrook Ct
School Rd
Hill Rd
Crest Ct
Bronson Dr
Sierra Dr
Auburn Folsom Rd
Jay Ln
Ann Pl
Country Ct
Bell Dr
Muir Way
Purdy Ln
Pueblo Ct
Saddlespur Way
Barton Rd
Bayville Ct
Rolling Greens Ter
Sky View Ln
Stockhorse Ln
Grizzly Way
Wellington Way
Twin Schools Rd
Pastor Dr
Oak Creek Pl
Buckeye Ln
Chelshire Downs Rd
Elmhurst Dr
Brower Ct
Golf Club Dr
Seven Cedars Pl
Macduff Ct
Macduff Dr
Troy Way
Skye Ct
Burns Ct
Dickens Dr
Abbey Hill
Swan Lake Dr
Crocker Rd
Riviera
Bentwood Way
Brighton Ct
E Roseville Pky
Weddington Cir
Lou Ct
Edward Ct
Lou Pl
State Rec Area Rd
Oak Leaf Way
Village Center Dr
Wexford Cir
Westbury Cir
Prior Ridge
Greystone Pl
Reservoir Dr
Woodchase Dr
Lake View Dr
Park Rd
Fern Leaf Dr
Parkford Cir
Wedgewood Dr
Ellington Ct
Hopkins Ct
Granite Glen Ct
Granite Hills Dr N
Oak Hill Dr
Willey Ct
Park Rd
Hadleigh Dr

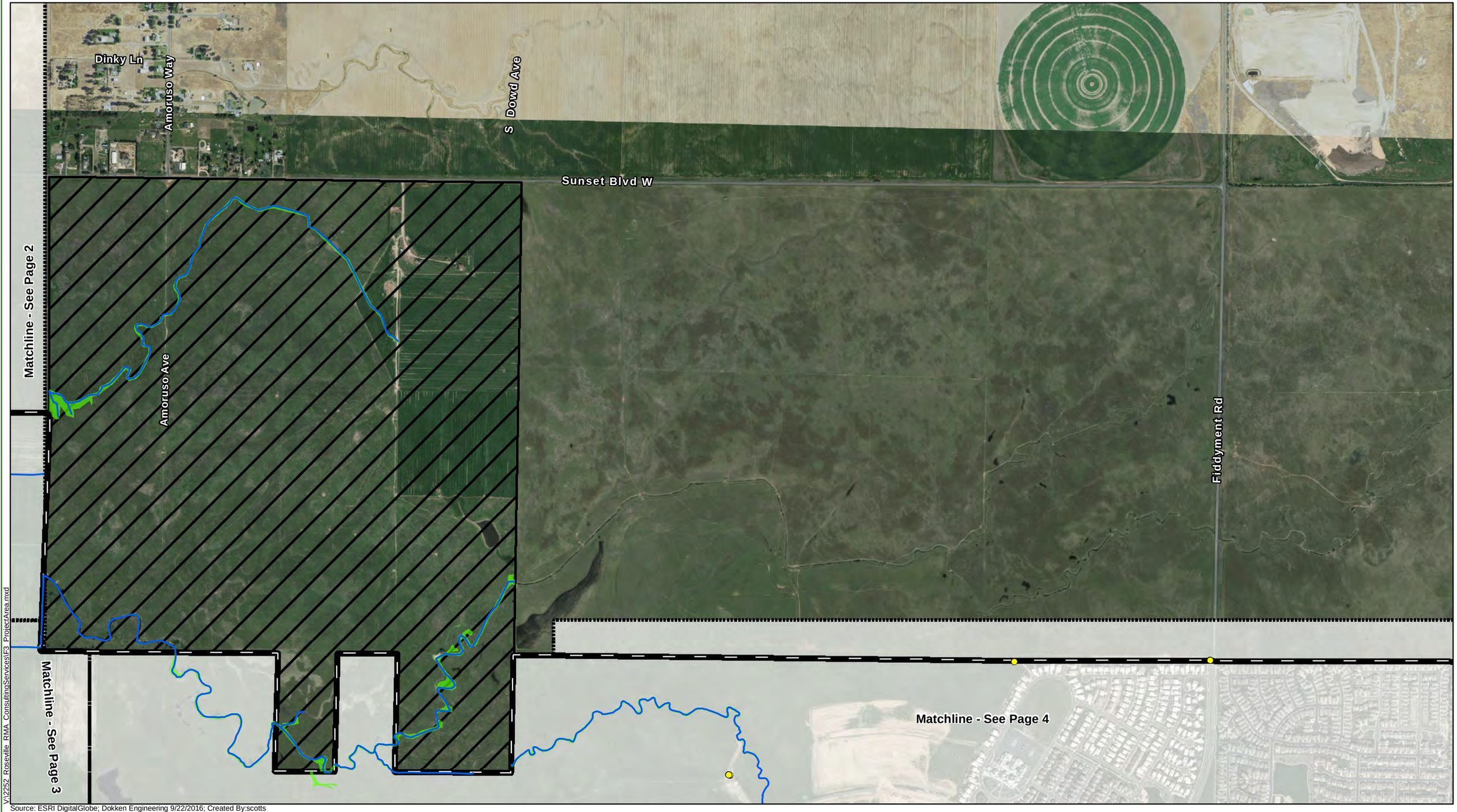
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Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

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FIGURE 3
Page 17 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California



V:\2252 Roseville RMA ConsultingServices\F3 ProjectArea.mxd

Source: ESRI DigitalGlobe; Dokken Engineering 9/22/2016; Created By:scotts

0 1,000 2,000 3,000 4,000 Feet

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FIGURE 3
Page 18 of 18
Project Area
City of Roseville RMA
City of Roseville, Placer County, California

Exhibit B - Verification Request Form (VRF)

VERIFICATION REQUEST FORM (VRF)

City of Roseville LAKE OR STREAMBED ALTERATION (LSA) AGREEMENT FOR ROUTINE MAINTENANCE #1600-2016-0099-R2	**Date of Request**: ☐ **ORIGINAL REQUEST** ☐ **REVISION NO.**

SECTION 1: INFORMATION PROVIDED BY PERMITTEE (*to be filled in by Permittee*)

Reference the LSA Agreement for processing this VRF

Contact Person: **Phone Number:**	**Cell Number:** **Email:**

☐ Routine Work 10 Day Notice
☐ Urgent – minimum 2 day notice (describe urgency below)

Comments:

Name of Watercourse:

Location or other identifier:

Project Start Date: **Project End Date:**

Authorized Maintenance Activities *(see Agreement for activity descriptions)*:

Type of Work	**Equipment**
☐ Mowing	☐ Mower
☐ Clearing Debris / Fallen Trees	☐ Masticator
☐ Beaver Dam Removal	☐ Dozer
☐ Brush/Debris Pile Burning	☐ Backhoe
☐ Selective Hand Removal of Vegetation	☐ Excavator with Blade
☐ Removal of Small Trees & Brush	☐ Tractor
☐ Spraying herbicide	☐ Boom Truck
☐ Other:	☐ Hand Tools
	☐ Other:
Routine Work Requiring Variance	
☐ Request to Work Outside RMA Dates	
☐ Other:	

Description of Proposed Maintenance Work:

Known environmental issues or other concerns:

SECTION 2: DEPARTMENT APPROVAL (*to be filled in by Department staff*)

In accordance with Conditions set forth in the LSA Agreement between the California Department of Fish and Wildlife (Department) and the Department of Water Resources (Permittee) for Routine Maintenance of the Western Pacific Interceptor Canal for the purposes of maintaining channel capacity to design criteria and to facilitate site inspections, the Permittee hereby notifies the Department of its intent to perform routine maintenance work within the channel.

Department Contact Information	**Date the Department Responded to the Permittee:**
Name:	**Phone Number:** **email:** **VRF#** **Year**

☐ **Notice of concurrence**
- ☐ Work can begin as scheduled
- ☐ Work can begin immediately

☐ **Notice of non-concurrence with comments (See Department comments below)**

Comments:

SECTION 01312

PROJECT MEETINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for conducting conferences and meetings for the purposes of addressing issues related to the Work, reviewing and coordinating progress of the Work and other matters of common interest, and includes the following:
      a. Qualifications of Meeting Participants.
      b. Basic Meeting Requirements.
      c. Pre-construction Conference.
      d. Pre-construction Safety Conference.
      e. Pre-submittal Conference.
      f. Web Based Construction Document Management Software Training.
      g. Progress Meetings.
      h. Schedule Update Meetings.
      i. Quality Control Meetings.
      j. Pre-Installation Meetings.
      k. Maintenance of Plant Operations (MOPO) Meetings.
      l. Commissioning Coordination Meetings.
      m. Instrumentation and Control Coordination Meetings.
      n. Close-out Meeting.
      o. Post Construction Meeting.

1.02 QUALIFICATIONS OF MEETING PARTICIPANTS

A. Representatives of entities participating in meetings shall be qualified and authorized to act on behalf of entity each represents.

1.03 BASIC MEETING REQUIREMENTS

A. Attendees:
   1. Meeting leader shall require attendance of parties directly affecting, or affected by, Work being discussed at the meeting.

B. Location:
   1. In location convenient for most invitees.

C. Notification:
   1. Meeting leader shall notify attendees of meeting, including an agenda, a minimum of 7 days prior to meeting.

D. Agenda:
   1. Meeting leader shall prepare copies of the agenda for participants and distribute at the meeting.

2. Minimum requirements:
    a. Meeting purpose.
    b. Review minutes of previous meeting.
    c. Safety and security.
    d. Discuss issues.
    e. Action items.
    f. Next meeting.

E. Meeting minutes:
    1. Meeting leader shall prepare draft minutes and send to attendees for comment within 7 days.
    2. Meeting leader shall incorporate comments from attendees and submit final meeting minutes to attendees within 7 days of receipt of comments.

1.04 PRE-CONSTRUCTION CONFERENCE

A. Construction manager leads the meeting.

B. Timing:
    1. Upon issuance of Notice to Proceed, or earlier when mutually agreeable.

C. Required attendees:
    1. Contractor's project manager and superintendent, Owner, Engineer, representatives of utilities, major subcontractors and others involved in performance of the Work, and others necessary to the agenda.

D. Agenda minimum requirements:
    1. Meeting purpose:
        a. To establish working understanding between parties and to discuss Construction Schedule, Shop Drawings and other Submittals, cost breakdown of major lump sum items, processing of Submittals and applications for payment, and other subjects pertinent to execution of the Work.
    2. Adequacy of distribution of Contract Documents.
    3. Distribution and discussion of list of major subcontractors and suppliers.
    4. Proposed progress schedules and critical construction sequencing.
    5. Major equipment deliveries and priorities.
    6. Project coordination.
    7. Designation of responsible personnel.
    8. Procedures and processing of:
        a. Field decisions.
        b. Proposal requests.
        c. Submittals - separate meeting.
        d. Change Orders.
        e. Request for Information/Interpretations.
        f. Applications for Payment.
        g. Record documents.
    9. Use of premises:
        a. Office, construction, and storage areas.
        b. Owner's requirements.
    10. Construction facilities, controls, and construction aids.

11. Temporary utilities.
12. Safety and first aid procedures.
13. Security procedures.
14. Housekeeping procedures.
15. Safety and security.
16. Review proposed photographer Submittal.
17. Action items.
18. Next meeting.

1.05 PRE-CONSTRUCTION SCHEDULING MEETING

A. Construction manager leads the meeting.

B. Timing:
   1. Within 7 days of Notice to Proceed, or earlier when mutually agreeable.

C. Required attendees:
   1. Contractor's project manager, superintendent, scheduler, Owner, Engineer, and others necessary to the agenda.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. To establish the format and features of the Construction Schedule.
   2. Schedule preparation.
   3. Reporting requirements.
   4. Updates and revision procedures.
   5. Schedule delay analysis procedures.
   6. Schedule methodology.
   7. Planned sequence of operations.
   8. Cost and labor loading methodology.
   9. Proposed activity coding structure as specified in Section 01321 - Schedules and Reports.
   10. Naming convention: Name schedule files with the year, month and day of the data date, revision identifier, and a description of the schedule.
      a. Example 1: 2021_07_30 rev 1 draft baseline schedule.xer.
      b. Example 2: 2021_09_30 rev 2 sep final update.xer.
   11. Action items.
   12. Next meeting.

1.06 PRE-CONSTRUCTION SAFETY CONFERENCE

A. Construction manager leads the meeting.

B. Timing:
   1. Upon issuance of Notice to Proceed, or earlier when mutually agreeable.

C. Required attendees:
   1. Contractor's project manager, safety representative, and superintendent; Owner, Engineer, representatives of utilities, major subcontractors and others involved in performance of the Work, and others necessary to the agenda.

D. Agenda minimum requirements:
    1. Meeting purpose:
        a. To establish safety procedures and identify lead participants.
    2. Review minutes of previous meeting.
    3. Safety and first aid procedures.
    4. Review of Experience Modification Rating for Contractor and each Subcontractor.
    5. Security procedures.
    6. Housekeeping procedures.
    7. Safety and security.
    8. Action items.
    9. Next meeting.

1.07 PRE-SUBMITTAL CONFERENCE

A. Construction manager leads the meeting.

B. Timing:
    1. Prior to producing any Submittals.

C. Required attendees:
    1. Contractor's project manager and superintendent, Owner, Engineer, representatives of utilities, major subcontractors, individual equipment manufacturers furnishing major pieces of equipment, and others involved in performance of the Work, and others necessary to the agenda.

D. Agenda minimum requirements:
    1. Meeting purpose:
        a. Review the entire Project, equipment, control philosophy, schedules, and Submittal requirements.
        b. Awareness of requirements by major subcontractors, major suppliers, and major equipment manufacturers.
        c. Format and procedures for Submittals.
        d. Review of the master Submittal schedule.
    2. Review equipment list.
    3. Review Submittal schedule.
    4. Format of Submittals.
    5. Procedures and processing of Submittals.
        a. Review turn-around time.
    6. Discuss specific electrical and instrumentation and controls Submittal requirements.
    7. Safety and security.
    8. Action items.
    9. Next meeting.

1.08 WEB BASED CONSTRUCTION DOCUMENT MANAGEMENT SOFTWARE TRAINING

A. Contractor can submit a written request to the Engineer to waive the training based on staff having sufficient familiarity with the software and its complete usage. Construction manager will lead the meeting.

B. Timing:
   1. Upon issuance of Notice to Proceed, or earlier when mutually agreeable.
   2. Duration minimum: 2 hours.

C. Required attendees:
   1. Mandatory attendance.
      a. Contractor's project manager.
      b. Contractor's field superintendent.
      c. Contractor's project engineer.
   2. Other attendees:
      a. Owner, Engineer, Contractor's quality control manager, Contractor's project scheduler and any other persons involved with preparing and transmitting documents.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. Train construction team on the use of the web based document management system software.
   2. Safety.
   3. General Items.
   4. Contractor functions.
   5. Owner functions.
   6. Engineer functions.
   7. Action items.

1.09 PROGRESS MEETINGS

A. Construction manager will lead the meeting.

B. Timing:
   1. Hold meetings throughout progress of the Work at maximum weekly intervals.

C. Required attendees:
   1. Owner, Engineer, Contractor, Contractor's project manager, superintendent, quality control manager, project scheduler, major subcontractors and suppliers as appropriate to the agenda topics for each meeting.
   2. Additional invitees:
      a. Owner utility companies when the Work affects their interests, and others necessary to the agenda.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. Provide the status of the Work.
   2. Review minutes of previous meeting.
   3. Safety and security.
   4. Construction schedule summary.
   5. Review of 6 weeks schedule.
      a. Contractor shall provide printed hard copies for each attendee.
   6. Review of off-site fabrication and delivery schedules.
   7. Review of Submittals schedule and status of Submittals.
   8. Request for information (RFI's) status.

9. MOP's/shutdown coordination.
10. Change order management status.
11. Maintenance of quality standards (QA/QC).
12. Field observations, problems, and conflicts.
13. Commissioning.
14. Partnering recognition status (optional).
15. General items.
16. Action items.
17. Next meeting.

1.10 SCHEDULE UPDATE MEETINGS

A. Contractor leads the meeting.

B. Timing:
   1. Hold meetings throughout progress of the Work at maximum monthly intervals.

C. Required attendees:
   1. Owner, Engineer, Contractor, Contractor's project manager, general superintendent, project scheduler, major subcontractors and suppliers as appropriate to the agenda topics for each meeting.
   2. Additional invitees:
      a. Owner utility companies when the Work affects their interests and others necessary to the agenda.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. Identify and troubleshoot scheduling issues in a collaborative environment.
      b. Provide further detail on Work status.
   2. Review minutes of previous meeting.
   3. Review Monthly Schedule, (Actual Progress and Variance).
      a. "Activities Started/Completed" this period.
      b. "Activities Started/Completed" "Variance" Baseline vs. current.
      c. "Added/Deleted Activities".
      d. "Revised Activity Descriptions".
      e. Any significant Proposed Logic Changes.
   4. Review milestone "Substantial Completion" Schedule:
      a. "Critical" Activities - "Critical Area, Float and Vital Statistics".
   5. Review "Cumulative and Monthly Costs" graph.
   6. Review "Budgeted Cost" indicating the Current Project Budgeted Cost.
   7. Safety and security.
   8. Action items.
   9. Next meeting.

1.11 PRE-INSTALLATION MEETINGS

A. Contractor leads the meeting.

B. Timing:
   1. When specified in Technical Sections or requested by Engineer, before commencing Work of specific section.

C. Required attendees:
   1. Owner, Engineer, Contractor, Contractor's project manager, general superintendent, project scheduler, major subcontractors including electrical instrumentation, and suppliers as appropriate to the agenda topics for each meeting.
   2. Additional invitees:
      a. Owner utility companies when the Work affects their interests and others necessary to the agenda.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. Review conditions of installation, preparation, and installation procedures.
      b. Review coordination with related work.
   2. Review minutes of previous meeting.
   3. Safety and security.
   4. Action items.
   5. Next meeting.

1.12 PRE-SHUTDOWN MEETINGS

A. Contractor leads the meeting.

B. Timing:
   1. Short-term and longer-term shutdowns and other tie-ins that require an Owner approved MOP require a pre-shutdown meeting at Project site at least 3 working days prior to commencing shutdown for tie-in or modification of specific plant systems.

C. Required attendees:
   1. Require attendance of parties directly affecting, or affected by shutdown, including Engineer, specific work crews, Owner's construction, operations, and maintenance staff.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. Review conditions of installation, preparation, and installation procedures.
      b. Review coordination with related work.
   2. Review minutes of previous meeting.
   3. Review accepted Construction Method of Procedure (MOP), as specified in Attachment A of Section 01140 - Work Restrictions, including conditions of shutdown, preparation, and installation procedures.
   4. Review timelines and sequences.
   5. Review responsibilities.
   6. Review dry run plan and schedule, as necessary.
   7. Review coordination with related work.
   8. Safety and security.
   9. Action items.
   10. Next meeting.

1.13 QUALITY CONTROL MEETINGS

A. Contractor leads the meeting.

B. Timing:
   1. Hold meetings throughout progress of the Work at maximum weekly intervals.

C. Required attendees:
   1. Engineer, Construction manager and staff, Contractor's quality control manager, and staff.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. Update Contractor's efforts to comply with quality requirements in the Contract Documents.
   2. Review minutes of previous meeting.
   3. Review of Work progress and schedule.
   4. Review of out-of-compliance inspection or test results.
   5. Field observations, problems, and decisions.
   6. Review of offsite fabrication and delivery schedules.
   7. Planned progress during succeeding work period.
   8. Coordination of required inspections and tests.
   9. Review 6-week schedule report with upcoming inspections and special tests.
   10. Maintenance of quality and work standards.
   11. Other business relating to Work.
   12. Safety and security.
   13. Action items.
   14. Next meeting.

1.14 COMMISSIONING COORDINATION MEETINGS

A. Contractor leads the meeting.

B. Timing:
   1. Separate commissioning coordination meetings will be scheduled as required by the Engineer.

C. Required attendees:
   1. Require attendance of parties directly affecting, or affected by process start-up and testing, including Engineer, Commissioning Coordinator, specific work crews, Owner's operations, and maintenance staff.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. Coordinate commissioning activities.
   2. Review minutes of previous meeting.
   3. Review Commissioning schedule.
   4. Review Owner Training schedule.
   5. Review test plans.
   6. Review accepted Construction Method of Procedure (MOP), as specified in Attachment A of Section 01140 - Work Restrictions.

7. Owner makes final decision for commissioning GO or NO GO.
8. Safety and security.
9. Action items.
10. Next meeting.

1.15 INSTRUMENTATION AND CONTROL COORDINATION MEETINGS

A. Meetings and conferences as specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.16 CLOSE-OUT MEETING

A. Construction manager leads the meeting.

B. Timing:
   1. After punch list items are completed.

C. Required attendees:
   1. Owner, Engineer, Contractor, Contractor's project manager, and superintendent.

D. Agenda minimum requirements:
   1. Meeting purpose:
      a. Coordinate close-out activities.
   2. Review minutes of previous meeting.
   3. Review punch list completion.
   4. Transfer of record documents.
   5. Finalize payment.
   6. Safety and security.
   7. Action items.
   8. Next meeting.

1.17 POST CONSTRUCTION MEETING

A. Construction manager leads the meeting.

B. Timing:
   1. About 11 months after date of Substantial Completion.

C. Location:
   1. Meet in Owner's office or other mutually agreed upon place.

D. Required attendees:
   1. Engineer, Contractor, appropriate manufacturers, and installers of major units of constructions, affected Subcontractors, and Owner's operations and maintenance staff.

E. Agenda minimum requirements:
   1. Meeting purpose:
      a. Review Project for compliance with the Contract Documents.
   2. Inspect the Work and draft list of items to be completed or corrected.

3. Review service and maintenance contracts and take appropriate corrective action when necessary.
4. Complete or correct defective work and may extend correction period.
5. Safety and security.
6. Action items.
7. Next meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01321

SCHEDULES AND REPORTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Schedules and reports.

1.02 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Baseline schedule: A planned and approved timetable projection that illustrates the project execution strategy, key deliverables, planned activity dates and milestones.
   2. Critical path: The longest sequence of dependent tasks in a project.
   3. Near critical path: The longest path after the critical path.
   4. Weather day: The Contractor being prevented or inhibited from performing at least 4 hours of work on the critical path due to weather conditions.

1.03 SCHEDULING FORMAT

A. Utilize critical path method (CPM) format.

B. Provide a cost and labor loaded Schedule.

C. Engineer approval of the format is required.

1.04 SCHEDULING HARDWARE AND SOFTWARE

A. Scheduling software and hardware shall be located on-site.

B. Prepare computerized schedule utilizing the most current version of Oracle Primavera P6 or Asta Powerproject.

C. Contractor and Engineer must agree on the format.

1.05 SCHEDULE PREPARATION

A. Preparation and submittal of Progress Schedule represents Contractor’s intention to execute the Work within specified time and constraints.

B. All costs associated with Schedule requirements are included in the Contract Price.

C. During preparation of the preliminary Progress Schedule, the Engineer will facilitate Contractor’s efforts by answering questions regarding sequencing issues, scheduling constraints, interface points, and dependency relationships.

D. Prepare Schedule utilizing precedence diagramming method (PDM).

E. Prepare Schedule utilizing activity durations in terms of working days.
   1. Do not exceed a 15 working day duration on activities except concrete curing, submittal review, and equipment fabrication and deliveries.
   2. Where duration of continuous work exceeds 15 working days, subdivide activities by location, stationing, or other sub-element of the Work.
   3. Coordinate holidays to be observed with the Owner and incorporate them into the Schedule as non-working days.

F. Failure to include an activity required for execution of the Work does not excuse Contractor from completing the Work and portions thereof within specified times and at price specified in Contract.
   1. Contract requirements are not waived by failure of Contractor to include required Schedule constraints, sequences, or milestones in Schedule.
   2. Contract requirements are not waived by Owner's acceptance of the Schedule. In the event of conflict between accepted Schedule and Contract requirements, terms of Contract govern at all times, unless requirements are waived in writing by the Owner.

G. Reference Schedule to working days beginning with Notice to Proceed as Contract Time as Day "1".

H. Baseline Schedule and project completion:
   1. Should Contractor submit a Baseline Schedule showing project completion more than 20 working days prior to Contract completion date, Owner may issue Change Order, at no cost to Owner, revising time of performance of Work and Contract completion date to match Contractor's Schedule completion date.
   2. Adjust accordingly any Contract milestone dates.

I. Imposed dates and hidden logic are prohibited.

J. Interim milestone dates, operational constraints:
   1. In event there are interim milestone dates and/or operational constraints set forth in Contract, show them on Schedule.
   2. Do not use zero total float constraint or mandatory finish date on such Contract requirements.

K. Contract float is for the mutual benefit of both Owner and Contractor.
   1. Changes to the Project that can be accomplished within this available period of float may be made by Owner without extending the Contract Time by utilizing float.
   2. Time extensions will not be granted nor delay damages owed until Work extends beyond currently accepted Contract completion date.
   3. Likewise, Contractor may utilize float to offset delays other than delays caused by the Owner.
   4. Mutual use of float can continue until all available float shown by Schedule has been utilized by either Owner or Contractor, or both. At that time, extensions of the Contract Time will be granted by Owner for valid Owner-caused or third

party-caused delays which affect the planned completion date and which have been properly documented and demonstrated by Contractor.

5. Non-sequestering of float: Pursuant to float sharing requirements of Contract, Schedule submittals can be rejected for use of float suppression techniques such as preferential sequencing or logic, special lead or lag logic restraints, extended activity durations, or imposed dates.

L. Resource loading and leveling:
   1. Input labor data on each schedule activity.
   2. Manpower data consists of the man-hours estimated to perform each task, categorized by trade.
   3. Provide leveled manpower requirements.
      a. Availability of the resources drive activity duration.

M. Cost loading: All schedules:
   1. Only on-site construction activities.
   2. The sum total of all cost loaded activities equal to the current value of the Contract, including change orders, at all times.

N. Schedule logic:
   1. Assembled to show order in which Contractor proposes to carry out Work, indicate restrictions of access, availability of Work areas, and availability and use of manpower, materials, and equipment.
   2. Form basis for assembly of schedule logic on the following criteria:
      a. Which activities must be completed before subsequent activities can be started?
      b. Which activities can be performed concurrently?
      c. Which activities must be started immediately following completed activities?
      d. What major facility, equipment, or manpower restrictions are required for sequencing these activities?

O. Schedule windows for Owner-furnished, Contractor-installed equipment or materials:
   1. Immediately after Award of Contract, obtain from Engineer anticipated delivery dates of Owner furnished equipment or materials.
   2. Show these dates in the Schedule in same manner indicated by the Engineer.

1.06 SCHEDULER

A. Designate, in writing within 5 calendar days after Notice of Award, the person responsible for preparation, maintenance, updating, and revision of all schedules.

B. Scheduler shall have the authority to update Schedule on behalf of the Contractor.

C. Qualifications:
   1. A minimum of 5 years verifiable experience in preparation of construction schedules for projects of similar value, size, and complexity.
   2. Knowledge of critical path method (CPM) scheduling utilizing the specified software.

D. Scheduler:
   1. Dedicated half time to this Project.
   2. Scheduler will attend all project meetings called for as specified in Section 01312 - Project Meetings.

1.07 SUBMITTAL REQUIREMENTS

A. Preliminary and Baseline Progress Schedule.

B. Preliminary and Baseline Schedule of Values.

C. Preliminary and Baseline Schedule of Submittals.

D. On a monthly basis, updated Schedules as specified.

E. Final Schedules update as specified.

F. Revised Schedules and time impact analyses as specified.

G. Submit Schedules in the media and number of copies as follows:
   1. PDF format and in other formats specified in this Section.
   2. 2 sets of CPM Schedule data electronic files in a native backed-up file format.

1.08 GANTT CHART

A. Produce a clear, legible, and accurate calendar based, time scaled, and graphical network diagram.
   1. Group activities related to the same physical areas of the Work. Produce the network diagram based upon the early start of all activities.

B. Include for each activity, the description, activity number, estimated duration in working days, total float, and all activity relationship lines.

C. Illustrate order and interdependence of activities and sequence in which Work is planned to be accomplished.
   1. Incorporate the basic concept of the precedence diagram network method to show how the start of 1 activity is dependent upon the start or completion of preceding activities and its completion restricts the start of following activities.

D. Provide Progress Schedule showing the critical path for the Project.

E. Provide report of Near Critical Path activities for the Project, when required by the Engineer.

F. Delineate the specified Contract Times and identify the planned completion of the Work as a milestone.
   1. Show the time period between the planned and Contract completion dates, if any, as an activity identified as Project float.

G. Identify system shutdown dates, system tie-in dates, specified interim completion or milestone dates and contract completion dates as milestones.

H. Include, in addition to construction activities:
   1. Submission dates and review periods for major equipment submittals, shoring submittals, and indicator pile program:
      a. Shoring reviews: Allow 2-week review period for each shoring submittal.
   2. Any activity by the Owner or the Engineer that may affect progress or required completion dates.
   3. Equipment and long-lead material deliveries over 8 weeks.
   4. Approvals required by regulatory agencies or other third parties.

I. Produce electronic network diagram on 22-inch by 34-inch sheets with grid coordinate system on the border of all sheets utilizing alpha and numeric designations.

J. Identify the execution of the following:
   1. Mobilization.
   2. All required Submittals and Submittal review times showing 30 calendar day duration for such activities and equal amount of time for resubmittal reviews.
   3. Equipment and materials procurement/fabrication/delivery.
   4. Excavation.
   5. Shoring design and submission of detailed shoring submittals. Identify submission as a milestone.
   6. Shoring review, shoring materials procurement, shoring installation, and shoring removal.
   7. Backfill and compaction.
   8. Grading, subbase, base, paving, and curb and gutters.
   9. Fencing and landscaping.
   10. Concrete, including installation of forms and reinforcement, placement of concrete, curing, stripping, finishing, and patching.
   11. Masonry.
   12. Metal fastenings, framing, structures, and fabrications.
   13. Wood structures, finish carpentry, architectural woodwork, and plastic fabrications.
   14. Waterproofing and dampproofing, insulation, roofing and flashing, and sealants.
   15. Doors and windows, including hardware and glazing.
   16. Finishes including coating and painting, flooring, ceiling, and wall covering.
   17. Process equipment, including identification of ordering lead-time, factory testing, and installation.
   18. Pumps and drives, including identification of ordering lead time, factory testing, and installation.
   19. Conveying equipment including hoists and cranes, conveyor systems, and materials handling equipment, including identification of ordering lead-time and installation.
   20. Other mechanical equipment including fans and heating, ventilating, and air conditioning equipment.
   21. Trenching, pipe laying, and trench backfill and compaction.
   22. Piping, fittings, and appurtenances, including identification of ordering and fabrication lead time, layout, installation and testing.
   23. Valves, gates, and operators, including identification of order lead-time, installation, and testing.
   24. Plumbing specialties.

25. Electric transmission, service, and distribution equipment, including identification of ordering lead-time, and factory testing.
26. Other electrical work including lighting, heating and cooling, and special systems, including identification of ordering lead-time.
27. Instrumentation and controls, including identification of ordering lead-time.
28. Preliminary testing of equipment, instrumentation, and controls.
29. Commissioning phase:
    a. Source Testing.
    b. Owner Training.
    c. Installation Verification.
    d. Functional Testing.
    e. Start-up Phase.
    f. Start-up Period.
30. Instrumentation and Controls Performance Testing.
31. Substantial completion.
32. Punch list work.
33. Demobilization.

1.09 PRELIMINARY SCHEDULE

A. Procedure:
    1. Submit proposed Preliminary Schedule within 14 calendar days after Notice to Proceed.
    2. Meet with Engineer within 7 calendar days after receipt of Preliminary Schedule to review and make necessary adjustments.
    3. Submit revised Preliminary Schedule within 5 calendar days after meeting.
    4. Update Preliminary Schedule monthly until the Baseline Schedule is accepted.

B. Format:
    1. Simplified Gannt chart.

C. Activities:
    1. Define activities to be completed in the first 90 calendar days of Work.
    2. Actualize activities performed during the first 90 days into the first monthly Schedule update.

1.10 PRELIMINARY SCHEDULE OF VALUES

A. Preliminary Schedule of Values as specified in Volume 2 of 4 of the Contract – Schedule of Values.

B. Procedure:
    1. Submit proposed Preliminary Schedule of Values within 14 calendar days after Notice to Proceed.
    2. Meet with Engineer within 7 calendar days after receipt of Preliminary Schedule of Values to review and make necessary adjustments.
    3. Submit revised Preliminary Schedule of Values within 5 calendar days after meeting.

1.11 WORK WITHIN THE FIRST 90 DAYS

A. Proceed with Work after Preliminary Schedule and Preliminary Schedule of Values have been accepted by Owner.

B. Submittal and acceptance of Preliminary Schedule and Preliminary Schedule of Values is condition precedent to making of progress payments as specified in Schedule of Values, Volume 2 of 4 - Applications for Payment and payments for mobilization costs otherwise provided for in the Contract.

1.12 SCHEDULE OF SUBMITTALS

A. Schedule of Submittals shall include Submittals required in the Contract Documents but not limited to test plans, training plans, test procedures, operation and maintenance manuals, Shop Drawings, samples, record documents, and specifically required certificates, warranties, and service agreements.

B. Preliminary Schedule of Submittals:
   1. Due date: After Preliminary Schedule has been submitted and accepted by the Owner.
   2. Format:
      a. Include Submittals anticipated in the first 90 calendar days after award of Contract using early start dates.
      b. Indicate week and month anticipated for submittal to Engineer.
      c. Indicate “Priority” Submittals where review time can impact Contractor’s schedule.
         1) “Priority” indication will not alter review times specified in Section 01330 - Submittal Procedures.
         2) Engineer will endeavor to provide early review of “Priority” Submittals where possible.
   3. Submittal of Preliminary Schedule of Submittals shall be a condition precedent to Owner making progress payments during the first 90 calendar days after award of Contract.

C. Final Schedule of Submittals:
   1. Due date: 30 days after Baseline Schedule has been submitted and accepted by Owner.
   2. Format:
      a. Include Submittals using early start dates.
      b. Include all Submittals, including those required in the Preliminary Schedule of Submittals.
      c. Indicate week and month anticipated for submittal to Engineer.
      d. Indicate “Priority” submittals where review time can impact Contractor’s schedule.
         1) “Priority” indication will not alter review times specified in Section 01330 - Submittal Procedures.
         2) Engineer will endeavor to provide early review of “Priority” Submittals where possible.
   3. Submittal of final Schedule of Submittals shall be a condition precedent to Owner making progress payments after the first 90 calendar days after Notice to Proceed.

D. Provide updated Schedule of Submittals with updated schedules if Schedule revisions change listing and timing of Submittals.

1.13 BASELINE PROGRESS SCHEDULE AND BASELINE SCHEDULE OF VALUES

A. Due date: No more than 45 calendar days after Notice to Proceed.

B. Format:
   1. Progress Schedule: Show sequence and interdependence of all activities required for complete performance of all Work, beginning with date of Notice to Proceed and concluding with date of final completion of Contract.
   2. Schedule of Values: As specified in Volume 2 of 4 of the Contract – Schedule of Values.

C. Acceptance of the Baseline Progress Schedule and Baseline Schedule of Values by the Owner is a condition precedent to making payments as specified in Volume 2 of 4 Contract - Applications for Payment after the first 90 calendar days after Notice to Proceed.

1.14 SUMMARY SCHEDULE

A. Due date: At weekly progress meetings and after each Schedule update or Schedule revision.

B. Format:
   1. Consolidate groups of activities associated with Major Items of Work shown on Baseline Schedule.
   2. Intended to give an overall indication of the Project Schedule without a large amount of detail.

1.15 COST FLOW SUMMARY

A. Due date: After Baseline Schedule has been submitted and accepted by the Owner, submit on a monthly basis as specified in Volume 2 of 4 Contract - Applications for Payment.

B. Format:
   1. Tabular and graphic report showing anticipated earnings each month of the Contract period.
   2. Base tabulation on the summation of the cost-loaded activities each month.
   3. Show planned amounts.
   4. Show actual earned amounts and anticipated remaining earnings.
   5. Spreadsheet format of all schedule activities showing cost and percentage completion during the current month for which payment is sought.

1.16 PROGRESS SCHEDULE AND UPDATED SCHEDULE OF VALUES

A. Due date: Submit on a monthly basis as specified in Volume 2 of 4 of the Contract - Applications for Payment.

B. Format: As specified in Volume 2 of 4 of the Contract – Schedule of Values.

1.17 WEEKLY SCHEDULE

A. Due date: At every weekly progress meeting.

B. Format:
   1. Contractor and Engineer must agree on the format.
   2. 6-week Schedule showing the activities completed during the previous week and the Contractor's schedule of activities for following 5 weeks.
   3. Use the logic and conform to the status of the current Progress Schedule when producing a weekly Schedule in CPM schedule or a bar chart format.
      a. In the event that the weekly Schedule no longer conforms to the current Schedule, Contractor may be required to revise the Schedule as specified in this Section.
   4. Activity designations used in the weekly Schedule must be consistent with those used in the Baseline Schedule and the monthly Schedule updates.

1.18 LABOR HISTOGRAM

A. Due date:
   1. With progress payments after Baseline Schedule has been submitted and accepted by Owner.

B. Format:
   1. Labor histogram depicting total craft manpower and craft manpower for Contractor's own labor forces and those of each subcontractor.
   2. Submit in electronic format.

1.19 EQUIPMENT SCHEDULE

A. Due date: With any progress payment after Baseline Schedule has been submitted and accepted by Owner if it includes payment for equipment.

B. Format:
   1. Tabular report listing each major piece of construction equipment to be used in performing the Work.
   2. Include major equipment for Contractor and each subcontractor.
   3. Submit electronically in Excel format with 1 paper copy.

C. Progress payments after the first 90 calendar days after Notice to Proceed will not be made until equipment schedule is provided.

1.20 COMMISSIONING SCHEDULE

A. Commissioning activities and milestones, as specified in Section 01756 - Commissioning, shall be an integral part of the overall Progress Schedule.
   1. Commissioning activities and milestones shall be extracted from the Progress Schedule to provide a separate Commissioning schedule that is submitted each time the Progress Schedule is submitted.

B. Proposed Commissioning Schedule:
   1. Schedule requirements: As specified in Section 01756 - Commissioning.

2. Submittal due date: Within 180 days after Notice to Proceed.
3. Engineer response due within 20 calendar days of receipt.
4. Contractor responsible for updating schedule and resubmitting within 10 calendar days of receipt of Engineer and Owner comments.

C. Construction Schedule can include the Commissioning Schedule after Engineer acceptance of the Proposed Commissioning Schedule.
1. Capable of extracting a stand-alone Commissioning Schedule.
2. Capable of extracting a stand-alone Owner Training Schedule.

D. Monthly update requirements:
1. Highlight percentages of completion, actual start and finish dates, and remaining durations, as applicable.
2. Include activities not previously included in the previously accepted detail work plan Commissioning Schedule.
3. Change Order required for any change to contractual dates.
4. Reviews of these Submittals by Engineer will not be construed to constitute acceptance within the time frames, durations, or sequence of work for each added activity.

1.21 PRE-CONSTRUCTION SCHEDULING MEETING

A. As specified in Section 01312 - Project Meetings.

1.22 REVIEW AND ACCEPTANCE OF SCHEDULES

A. Engineer will review preliminary Schedules, Schedule updates, Schedule revisions, and time impact analyses to ascertain compliance with specified project constraints, compliance with milestone dates, durations and sequence, accurate inter-relationships, and completeness.

B. Engineer and Owner will issue written comments following completion of review of baseline Schedules within 21 calendar days after receipt.

C. Written comments on review of Schedule updates and Schedule revisions and time impact analyses will be returned to Contractor within 14 calendar days after receipt by Engineer.

D. Revise and resubmit Schedules in accordance with Engineer’s comments within 7 calendar days after receipt of such comments or request joint meeting to resolve objections.

E. If the Engineer requests a meeting, the Contractor and all major subcontractors shall participate.
1. Revise and resubmit Schedule within 7 calendar days after meeting.

F. Use accepted Schedules for planning, organizing, and directing the Work and for reporting progress.

G. Engineer's Submittal review response:
    1. When Schedules reflects the Owner's and Contractor's agreement of project approach and sequence, Schedules will be accepted by the Owner.
    2. Engineer's Submittal review response for Schedule Submittals will be "Receipt Acknowledged - Filed for Record".
    3. Acceptance of the Schedules by the Owner is for general conformance with the Contract Documents and for the Owner's planning information and does not relieve the Contractor of sole responsibility for planning, coordinating, and executing the Work within the Contract completion dates.
        a. Omissions and errors in the accepted Schedules shall not excuse performance less than that required by the Contract Documents.
        b. Acceptance by the Owner in no way constitutes an evaluation or validation of the Contractor's plan, sequence or means, methods, and techniques of construction.

1.23 SCHEDULE UPDATES

A. Any update:
    1. Prepare update using most recent accepted version of Schedule including:
        a. Actual start dates of activities that have been started.
        b. Actual finish dates of activities that have been completed.
        c. Percentage of completion of activities that have been started but not finished.
        d. Actual dates on which milestones were achieved.
        e. Update activities by inputting percent complete figures with actual dates.
        f. Use retained logic in preparing Schedule updates.
        g. When necessary, input remaining durations for activities whose finish dates cannot be calculated accurately with a percent complete figure only.
        h. Revisions to the Schedule may be included that have been previously approved as specified.

B. Monthly updates:
    1. Submit written narrative report in conjunction with each Schedule update, including descriptions of the following:
        a. Activities added to or deleted from the Schedule are to adhere to cost and other resource loading requirements.
            1) Identify added activities in manner distinctly different from original activity designations.
        b. Changes in sequence or estimated duration of activities.
        c. Current or anticipated problems and delays affecting progress, impact of these problems and delays and measures taken to mitigate impact.
        d. Assumptions made and activities affected by incorporating change order work into the Schedule.
        e. Include a response in writing to each of the Engineer's comments or questions from the previous month's schedule review and number responses consistent with the Engineer's numbering.
    2. Submit updated Schedule and materials specified under Submittal of Progress Schedules 5 calendar days before the monthly schedule update meeting.
    3. Since monthly Schedule update is the application for progress payment required as specified in Volume 2 of 4 Contract, submittal and acceptance of

the monthly Schedule update is a condition precedent to the making of any progress payments.

C. Weekly progress meeting:
   1. Update the Schedule prior to weekly progress meeting.
      a. Identify overall progress of each major item of work in the summary schedule.
      b. If there are significant changes to the Schedule, submit a written report at the weekly progress meeting.
   2. Should monthly Schedule update show project completion earlier than current Contract completion date, show early completion time as schedule activity, identified as “Project Float”.
   3. Should monthly Schedule update show Project completion later than current Contract completion date, prepare and submit a Schedule revision.

1.24 REVISIONS TO SCHEDULES

A. Submit revised Schedules within 5 days:
   1. When delay in completion of any activity or group of activities indicates an overrun of the Contract Time or milestone dates by 20 working days or 5 percent of the remaining duration, whichever is less.
   2. When delays in Submittals, deliveries, or work stoppages are encountered making necessary the replanning or rescheduling of activities.
   3. When the Schedule does not represent the actual progress of activities.
   4. When any change to the sequence of activities, the completion date for major portions of the Work, or when changes occur which affect the critical path.
   5. When Contract modification necessitates Schedule revision, submit schedule analysis of Change Order work with cost proposal.

B. Create a separate Submittal for Schedule revisions.
   1. Comply with Schedule updates as specified in this Section.
   2. Do not submit with Schedule updates.

C. Schedule revisions will not be reflected in the Schedule until after the revision is accepted by the Owner.
   1. This includes Schedule revisions submitted for the purpose of mitigating a Contractor-caused project delay (Recovery Schedule).

1.25 ADJUSTMENT OF CONTRACT TIME OR PRICE

A. Contract Time will be adjusted only for causes specified in Contract Documents.

B. If the Contractor believes that the Owner has impacted its work such that the Project completion date will be delayed, the Contractor must submit proof, in the form of a time impact analysis demonstrating the delay to the critical path.

C. Time impact analysis:
   1. Use the accepted Schedule update that is current relative to the time frame of the delay event (change order, third party delay, or other Owner-caused delay). Represent the delay event in the Schedule by:
      a. Inserting new activities associated with the delay event into the Schedule.

b. Revising activity logic.
c. Revising activity durations.

2. If the Progress Schedule's critical path and completion date are impacted as a result of adding this delay event to the Progress Schedule, a time extension equal to the magnitude of the impact may be warranted.
3. The time impact analysis Submittal must include the following information:
   a. A fragment of the portion of the Schedule affected by the delay event.
   b. A narrative explanation of the delay issue and how it impacted the Schedule.
   c. A schedule file used to perform the time impact analysis.

D. When a delay to the Project as a whole can be avoided by revising preferential sequencing or logic and the Contractor chooses not to implement the revisions, the Contractor will be entitled to a time extension and no compensation for extended overhead.

E. Indicate clearly that the Contractor has used, in full, all project float available for the Work involved in the request, including any float that may exist between the Contractor's planned completion date and the Contract completion date.
1. Utilize the latest version of the Schedule update accepted at the time of the alleged delay, and all other relevant information, to determine the adjustment of the Contract Time.

F. Adjustment of the Contract Times will be granted only when the Contract float has been fully utilized and only when the revised date of completion of the Work has been pushed beyond the Contract completion date.
1. Adjustment of the Contract Times will be made only for the number of days that the planned completion of the work has been extended.

G. Actual delays in activities which do not affect the Critical Path Work or which do not move the Contractor's planned completion date beyond the Contract completion date will not be the basis for an adjustment to the Contract Time.

H. If completion of the project occurs within the specified Contract Time, the Contractor is not entitled to job-site or home office overhead beyond the Contractor's originally planned occupancy of the site.

I. Notify Engineer of a request for Contract Time adjustment.
1. Submit request as specified in the Contract Documents.
2. In cases where the Contractor does not submit a request for Contract Time adjustment for a specific change order, delay, or Contractor request within the specified period of time, then it is mutually agreed that the particular change order, delay, or Contractor request has no time impact on the Contract completion date and no time extension is required.

J. Engineer will, within 30 calendar days after receipt of a Contract Time adjustment, request any supporting evidence, review the facts, and advise the Contractor in writing.
1. Include the new Progress Schedule data, if accepted by the Owner, in the next monthly Schedule update.

2. When the Owner has not yet made a final determination as to the adjustment of the Contract Time, and the parties are unable to agree as to the amount of the adjustment to be reflected in the Progress Schedule, reflect that amount of time adjustment in the Progress Schedule as the Engineer may accept as appropriate for such interim purpose.
3. It is understood and agreed that any such interim acceptance by the Engineer shall not be binding and shall be made only for the purpose of continuing to schedule the Work, until such time as a final determination as to any adjustment of the Contract Time acceptable to the Engineer has been made.
4. Revise the Progress Schedule prepared thereafter in accordance with the final decision.

1.26 WEATHER DAY ALLOWANCE

A. Allowance:
   1. Include as a separate identifiable activity on the critical path, an activity labeled “Weather Day Allowance”.

B. Actual Weather Day:
   1. Insert a weather delay activity in the critical path to reflect actual weather day occurrences when weather days are experienced and accepted by the Engineer.
   2. Reduce duration of Weather Day Allowance activity as weather delays are experienced and inserted into the Schedule. Remaining weather days in the Weather Day Allowance at completion of the Project is considered float.
   3. Provide a written notice to the Engineer of the occurrence of a weather day within 2 days after the onset of such weather and describe in reasonable detail the type of weather encountered and the Work interfered with or interrupted.
      a. A Schedule update will not suffice as a written notice.
      b. Engineer will determine if the Weather Day constitutes a use of a portion of the Weather Day Allowance.
      c. After use of all the Weather Day Allowance, the Engineer will determine if the Contractor is entitled to an extension of the Contract Time due to weather conditions.

1.27 FINAL SCHEDULE

A. The final Schedule update becomes the As-Built Schedule.
   1. The As-Built Schedule reflects the exact manner in which the project was constructed by reflecting actual start and completion dates for all activities accomplished on the project.
   2. Contractor’s Project Manager and scheduler sign and certify the As-Built Schedule as being an accurate record of the way the project was actually constructed.

B. Retainage will not be released until final Schedule update is provided.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01322

WEB BASED CONSTRUCTION DOCUMENT MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for web-based construction document management.

B. The project team will use and maintain a web-based database as the primary means of communication related to the Project's correspondence, submittals, requests for information (RFIs), advisory notices, and non-compliance issues. Correspondence from the Contractor shall be sent to the Construction Manager via the PROCORE System.

C. The Construction Manager and Contractor shall utilize PROCORE's system for electronic submittal of all data and documents (unless specified otherwise by the Construction Manager) throughout the duration of the Contract. PROCORE is a web-based electronic media site that is hosted by PROCORE LLC utilizing their PROCORE web solution. PROCORE will be made available to all Contractor's project personnel. The joint use of this system is to facilitate electronic exchange of information, automation of key processes, and overall management of the Contract. PROCORE shall be the primary means of project information submission and management. When required by the Construction Manager, paper documents will also be required. In the event of discrepancy between the electronic version and paper documents, the paper documents will govern. PROCORE is a registered trademark of PROCORE LLC:
   1. Joint use of this system is to facilitate electronic exchange of information, automation of key processes, and overall management of Contract Documentation.
   2. Web based construction management software shall be the primary means of project information submission and management.

1.02 USER ACCESS LIMITATIONS

A. The Construction Manager will control the Contractor's access to PROCORE by allowing access and assigning user profiles to accepted Contractor personnel. User profiles will define levels of access into the system; determine assigned function based authorizations (determines what can be seen) and user privileges (determines what they can do).

1.03 JOINT OWNERSHIP OF DATA

A. Data entered in a collaborative mode (entered with the intent to share as determined by permissions and workflows within the web-based construction management software system) by Engineer and Contractor will be jointly owned.

1.04 AUTOMATED SYSTEM NOTIFICATION AND AUDIT LOG TRACKING

A. Review comments made (or lack thereof) by the Construction Manager and Design Consultant on Contractor-submitted documentation shall not relieve the Contractor from compliance with requirements of the Contract Documents.

B. The Contractor is responsible for managing, tracking, and documenting the Work to comply with the requirements of the Contract Documents. The Construction Manager's acceptance via automated system notifications or audit logs extends only to the face value of the submitted documentation and does not constitute validation of the Contractor's submitted information.

1.05 COMPUTER REQUIREMENTS

A. Contractor shall use computer hardware and software that meets the requirements of the web-based construction management software system as recommended by the web-based construction management software to access and utilize the web-based construction management software.

B. As recommendations are modified by the web-based construction management software, Contractor will upgrade their system(s) to meet or exceed the recommendations.
   1. Upgrading of Contractor's computer systems will not be justification for a cost or time modification to the Contract.

C. Ensure that connectivity to the web-based construction management software system is accomplished through DSL, cable, T-1, or wireless communications systems.

1.06 CONTRACTOR RESPONSIBILITY

A. The Contractor shall be Responsible for the validity of their information placed in PROCORE and for the abilities of their personnel.

B. Entry of information exchanged and transferred between the Contractor and its subcontractors and suppliers on the web-based construction management software shall be the responsibility of the Contractor.

C. Accepted users shall be knowledgeable in the use of computers, including Internet browsers, email programs, CAD drawing applications, and Adobe Portable Document Format (PDF) document distribution program.

D. Adobe PDF documents will be created through electronic conversion rather than optically scanned whenever possible. The Contractor is responsible for the training of their personnel in the use of PROCORE (outside what is provided by the Construction Manager) and the other programs indicated above as needed.

1.07 USER ACCESS ADMINISTRATION

A. Provide a list of Contractor's key PROCORE personnel for the Construction Manager's acceptance. The Construction Manager is responsible for adding and removing users from the system. The Construction Manager reserves the right to perform a security check on all potential users.

1.08 CONNECTIVITY PROBLEMS

A. PROCORE is a web-based environment and therefore subject to the inherent speed and connectivity problems of the Internet. The Contractor is responsible for its own connectivity to the Internet. PROCORE response time is dependent on the Contractor's equipment, including processor speed, Internet access speed, etc. and current traffic on the Internet. The Owner and Construction Manager will not be liable for any delays associated from the usage of PROCORE including, but not limited to slow response time, down time periods, connectivity problems, or loss of information. The Contractor will ensure that its connectivity to the PROCORE system (whether at the home office or job site) is accomplished through some form of high-speed communications with 128 kb/s as the minimum bandwidth requirements for using the system. It is recommended a faster connection be used when uploading pictures and files into the system. Under no circumstances shall the usage of PROCORE be grounds for a time extension or cost adjustment to the Contract. If there are problems that persist with the PROCORE site for more than 24 consecutive hours that prevent the electronic submission of data by the Contractor, the Contractor may submit documents in paper form to the Construction Manager until such time that the Construction Manager notifies the Contractor that the PROCORE site is operable and available for use. Construction Manager shall likewise send documents to Contractor in paper form during such disruption of the PROCORE system.

1.09 TRAINING

A. The Construction Manager has arranged for the following training to be provided to the Contractor. The Construction Manager will provide a one-hour training class to the Contractor within 10 days of NTP at a time mutually agreeable to Contractor and Construction Manager. Thereafter the Construction Manager will provide up to one hour of additional training via telephone during the project per month of the project life.

PART 2 PRODUCTS

2.01 GENERAL

A. In order to process correspondence, submittals, and RFIs, the Contractor must provide and have in place for its own use the required basic components outlined below.
   1. Hardware:
      a. A computer with internet access and sufficient capabilities to perform all project duties; a scanner at least large enough to scan 11-inch by 17-inch sheets with sufficient resolution to maintain clarity and legibility of the

document at its native size; and a color printer of sufficient size and capacity to accept incoming correspondence as described in this section.

2. Software:
    a. Adobe Acrobat 9 or higher; Microsoft's Internet Explorer v7 or higher; Microsoft Office 2010 or higher, including but not limited to Microsoft Word and Microsoft Excel.
    b. PROCORE currently supports Mozilla's Firefox v3.5 and newer, Apple's Safari v4 and newer, Google Chrome, and Microsoft's Internet Explorer v7 and v8 web browsers for accessing the application. Certain functions may not be available when using any program other than the newest version of Microsoft's Internet Explorer.
3. Facilities:
    a. The Contractor shall make its own arrangements to provide high-speed (minimum speed: download 1Mbps/upload 256Kbps) internet connection for its own use as soon as practicable.

PART 3 EXECUTION

3.01 SUMMARY

A. Items to be uploaded to PROCORE by the Construction Manager include but are not limited to: RFI responses, Submittal comments, Clarification letters, Design Clarifications, Field Orders, et al. These items will be emailed via PROCORE as attachments in PDF file format via PROCORE. These attachments may include files that need to be viewed and/or printed in color. Formal letters, stop notices, Field Orders, Progress Payment Requests, and Contract Change Orders will always include a wet- signed hard copy.

B. Items to be uploaded to PROCORE by the Constructor include but are not limited to: RFI, Submittals, Request for Clarification letters, Request for Design Clarification letters, et al. These items will be emailed via PROCORE as attachments in PDF file format via PROCORE. These attachments may include files that need to be viewed and/or printed in color. Contractor shall provide wet-signed hard copies of documents required by Contract Documents, as well as any documents requested by the Construction Manager, including but not limited to: Formal letters, Progress Payment Requests, and Contract Change Orders, et al.

3.02 PROCURE UTILIZATION

A. All project related correspondence (RFIs, submittals, etc.) originated by the Contractor or Subcontractor, Supplier, et al. shall be directed to the Construction Manager, unless otherwise indicated in the Specifications.

3.03 WEB-BASED CONSTRUCTION MANAGEMENT SOFTWARE UTILIZATION

A. Web-based construction management software shall be utilized in connection with all document and information management required by these Contract Documents.

3.04 SUBMITTALS

A. The use of the electronic communication does not waive the requirement for the provision of hard copies of all formal correspondence and submittals. The hard copies of all documents must match the electronic copies of all correspondence and submittals.

B. Submittals shall be in accordance with Section 01330 - Submittal Procedures. The provisions of Section 01330 - Submittal Procedures shall apply both to electronic copies and hard copies of submittals.

C. In addition to above, PROCORE shall be utilized in connection with submittal preparation and information management required by but not limited to Sections:
   1. Section 01321 - Schedules and Reports.
   2. Section 01330 - Submittal Procedures.

D. PROCORE will be utilized by all other Sections not listed above and as required by the Construction Manager.

E. If a submittal package has multiple items that are not directly related, each item shall be considered a separate submittal and shall be sent separately. For example, “Concrete Mix Design,” and “Concrete Curing Compound” shall be submitted as separate items to the Construction Manager.

3.05 TERMINATION IN USE

A. The Owner may request a termination of the use of PROCORE for the electronic submission of data, and alternatively the use of paper documents submitted in accordance with the Contract Documents by providing notification in writing with 10 days’ notice that it intends to discontinue use of PROCORE.

3.06 ADOBE PDF

A. All information, comments, questions, and statements shall be scanned and/or converted to the PDF file format and attached to the email via PROCORE. Items to be sent via email via PROCORE include but are not limited to large-format plan sheets (22-inch by 34-inch or larger), small-format plan sheets, pages within tabbed binders, RFIs, transmittal sheets, et al. The PDF attachments supplied to the Construction Manager shall be in a sufficient resolution to be fully legible at its native size.

B. All separate files within a given piece of correspondence shall be combined into a single PDF document (e.g., an RFI that contains a text file and two photo files shall be combined into a single PDF document prior to delivery to the Construction Manager).

3.07 LABELING FORMAT

A. The subject line of each email via PROCORE, and the file name of any attached files, shall be in accordance with Section 01330-1.3.A.2 for submittals and as directed by Construction Manager other correspondence (RFIs, Letters, Transmittals, Proposed Change Orders, et al.).

B. Label shall include the type of correspondence (i.e., RFI, etc.), a unique number, sequentially assigned for the given piece of correspondence. The Contractor will indicate the subject at the end of the numbering scheme with a description (key words) of the item. Each piece of correspondence shall be sent in a separate email via PROCORE.

3.08 ORIGINAL DOCUMENTS

A. Where possible, the Contractor will obtain the electronic document from its original source to maintain the integrity, legibility, and searchability of the document.

3.09 ORGANIZATION

A. The information included in the attachments shall be organized in a logical and thoughtful manner. Where the information originated in a tabbed format (a binder, for example), the scanned and/or converted PDF file shall be electronically bookmarked accordingly using the “bookmark” function of Adobe Acrobat 9 Std.

3.10 PRINTING

A. Except where otherwise indicated, the Contractor will receive no hard copies of the above outlined correspondence. The Contractor will be required to print for its use, in color if necessary, any record copies, field copies, sub-Contractor copies, etc., if such copies are desired.

3.11 PROJECT FORMS

A. The Contractor may use its own correspondence forms to be attached to correspondence emails via PROCORE as long as the Contractor’s forms comply with this and all submittal sections.

END OF SECTION

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements and procedures for Submittals to confirm compliance with Contract Documents.

1.02 GENERAL INSTRUCTIONS

A. Contractor is responsible to determine and verify field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and check and coordinate each item with other applicable approved Shop Drawings and Contract Document requirements.

B. Provide Submittals:
   1. That are specified or reasonably required for construction, operation, and maintenance of the Work.
   2. That demonstrate compliance with the Contract Documents.

C. Where multiple Submittals are required, provide a separate Submittal for each Specification section.
   1. In order to expedite construction, the Contractor may make more than one Submittal per Specification section, but a single Submittal may not cover more than one Specification section:
      a. The only exception to this requirement is when one Specification section covers the requirements for a component of equipment specified in another section.
      b. For example, circuit breakers are a component of switchgear. The switchgear Submittal must also contain data for the associated circuit breakers, even though they are covered in a different Specification section.

D. Prepare Submittals in the English language. Do not include information in other languages.

E. Present measurements in customary American units (feet, inches, pounds, etc.).

F. Must be clear and legible, and of sufficient size for presentation of information.

G. Page size, other than drawings:
   1. Minimum: 8-1/2 inches by 11 inches.
   2. Maximum: 11 inches by 17 inches.

H. Drawing sheet size:
   1. Maximum: 22 inches by 34 inches.
      a. Minimum plan scale: 1/8 inch equals 1 foot-0 inches.
      b. Minimum font size: 1/8-inch.
   2. 11-inch by 17-inch sheet:
      a. Minimum plan scale: 1/8 inch equals 1 foot-0 inches.
      b. Minimum font size: 1/8-inch.

I. Show dimensions, construction details, wiring diagrams, controls, manufacturers, catalog numbers, and all other pertinent details.

J. Provide Submittal information from only one manufacturer for a specified product. Submittals with multiple manufacturers for one product will be rejected without review.

1.03 SUBMITTAL ORGANIZATION

A. Organize Submittals in exactly the same order as the items are referenced, listed, and/or organized in the Specification section.

B. For Submittals that cover multiple devices used in different areas under the same Specification section, the Submittal for the individual devices must list the area where the device is used.

C. Bookmarks:
   1. Bookmarks shall match the table of contents.
   2. Bookmark each section (tab) and heading.
   3. Drawings: Bookmark at a minimum, each discipline, area designation, or appropriate division.
   4. At file opening, display all levels of bookmarks as expanded.

D. Where applicable (i.e., except for Drawings, figures, etc.), Submittal content shall be electronically searchable utilizing the PDF file as submitted.

E. Thumbnails optimized for fast web viewing.

F. Sequentially number pages within the tabbed sections:
   1. Submittals that are not fully indexed and tabbed with sequentially numbered pages, or are otherwise unacceptable, will be returned without review.

G. Attachments:
   1. Include with each Submittal a copy of the relevant Specification section.
      a. Indicate in the left margin, next to each pertinent paragraph, either compliance with a check (√) or deviation with a consecutive number (1, 2, 3).
      b. Provide a list of all numbered deviations with a clear explanation and reason for the deviation.
   2. Include with each Submittal a copy of the relevant Drawing, including relevant addendum updates.
      a. Indicate either compliance with a check (√) or deviation with a consecutive number (1, 2, 3).

b. Provide a list of all numbered deviations with a clear explanation and reason for the deviation.
c. Provide field dimensions and relationship to adjacent or critical features of the Work or materials.

H. Contractor: Prepare Submittal information in sufficient detail to show compliance with specified requirements.
1. Determine and verify quantities, field dimensions, product dimensions, specified design and performance criteria, materials, catalog numbers, and similar data.
2. Coordinate Submittal with other Submittals and with the requirements of the Contract Documents.
3. Check, verify, and revise Submittals as necessary to bring them into conformance with Contract Documents and actual field conditions.

I. Contractor: Prepare “Or Equal” Submittal information.
1. Provide standard Submittal requirements.
a. In addition, provide in sufficient detail to show reason for variance from specified product and impacts.
2. Provide reason the specified product is not being provided.
3. Explain the benefits to the Owner for accepting the “Or Equal”.
4. Itemized comparison of the proposed “Or Equal” with product specified, including a list of significant variations:
a. Design features.
b. Design dimensions.
c. Installation requirements.
d. Operations and maintenance requirements.
e. Availability of maintenance services and sources of replacement materials.
5. Reference projects where the product has been successfully used:
a. Name and address of project.
b. Year of installation.
c. Year placed in operation.
d. Name of product installed.
e. Point of contact: Name and phone number.
6. Define impacts:
a. Impacts to other contracts.
b. Impacts to other work or products.
7. Contractor represents the following:
a. Contractor bears the burden of proof of the equivalency of the proposed “Or Equal”.
b. Proposed “Or Equal” is equal or superior to the specified product.
c. Contractor will provide the warranties or bonds that would be provided on the specified product on the proposed “Or Equal”, unless the Owner requires a Special Warranty.
d. Contractor will coordinate installation of accepted “Or Equal” into the Work and will be responsible for the costs to make changes as required to the Work.
e. Contractor waives rights to claim additional costs caused by proposed “Or Equal” which may subsequently become apparent.

J. Contractor: Prepare substitution Submittal information.
    1. Provide standard Submittal requirements.
        a. In addition, provide in sufficient detail to show reason for variance from specified product and impacts.
    2. Provide reason the specified product is not being provided.
    3. Explain the benefits to the Owner for accepting the substitution.
    4. Itemized comparison of the proposed substitution with product specified, including a list of significant variations:
        a. Design features.
        b. Design dimensions.
        c. Installation requirements.
        d. Operations and maintenance requirements.
        e. Availability of maintenance services and sources of replacement materials.
    5. Reference projects where the product has been successfully used:
        a. Name and address of project.
        b. Year of installation.
        c. Year placed in operation.
        d. Name of product installed.
        e. Point of contact: Name and phone number.
    6. Define impacts:
        a. Impacts to Contract Price.
            1) Required license fees or royalties.
            2) Do not include costs under separate contracts.
            3) Do not include Engineer’s costs for redesign or revision of Contract Documents.
        b. Impacts to Contract Time.
        c. Impacts to Contract Scope.
        d. Impacts to other contracts.
        e. Impacts to other work or products.
    7. Contractor represents the following:
        a. Contractor shall pay associated costs for the Engineer to evaluate the substitution.
        b. Contractor bears the burden of proof of the equivalency of the proposed substitution.
        c. Proposed substitution does not change the design intent and will have equal performance to the specified product.
        d. Proposed substitution is equal or superior to the specified product.
        e. Contractor will provide the warranties or bonds that would be provided on the specified product on the proposed substitution, unless the Owner requires a Special Warranty.
        f. Contractor will coordinate installation of accepted substitution into the Work and will be responsible for the costs to make changes as required to the Work.
        g. Contractor waives rights to claim additional costs caused by proposed substitution which may subsequently become apparent.

1.04 SUBMITTAL IDENTIFICATION NUMBERING

A. Number each Submittal using the format defined in the table below:

	Spec Section Number	Dash	Initial Submittal - Sequential Number	Decimal Point	Subsequent Submittal Revisions Sequential Number
Example 1 Description	*Cast-In-Place Concrete*		*8th initial Submittal*		
	03300	-	0008		
Example 2 Description	*Cast-In-Place Concrete*		*8th initial Submittal*		*First revision to the 8th initial Submittal*
	03300	-	0008	.	1

1.05 SUBMITTALS IN ELECTRONIC MEDIA FORMAT

A. General: Provide all information in PC-compatible format using Windows® operating system as utilized by the Owner and Engineer.

B. Text: Provide text documents and manufacturer's literature in Portable Document Format (PDF).

C. Graphics: Provide graphic Submittals (Drawings, diagrams, figures, etc.) utilizing Portable Document Format (PDF).

D. Submit in the format provided in Attachment A - Contractor Submittal Transmittal Form.

1.06 SUBMITTAL PROCEDURE

A. Engineer: Review Submittal and provide response:
   1. Review description:
      a. Engineer will be entitled to rely upon the accuracy or completeness of designs, calculations, or certifications made by licensed professionals accompanying a particular Submittal whether or not a stamp or seal is required by Contract Documents or Laws and Regulations.
      b. Engineer's review of Submittals shall not release the Contractor from the Contractor's responsibility for performance of requirements of Contract Documents. Neither shall the Engineer's review release the Contractor from fulfilling purpose of installation nor from the Contractor's liability to replace defective Work.
      c. Engineer's review of Shop Drawings, samples, or test procedures will be only for conformance with design concepts and for compliance with information given in Contract Documents.
      d. Engineer's review does not extend to:
         1) Accuracy of dimensions, quantities, or performance of equipment and systems designed by the Contractor.

2) Contractor's means, methods, techniques, sequences, or procedures, except when specified, indicated on the Drawings, or required by Contract Documents.
3) Safety precautions or programs related to safety which shall remain the sole responsibility of the Contractor.

e. Engineer can Approve or Not Approve any exception at their sole discretion.

2. Review timeframe:
   a. Except as may be provided in technical Specifications, a Submittal will be returned within 10 calendar days.
   b. When a Submittal cannot be returned within the specified period, Engineer will, within a reasonable time after receipt of the Submittal, give notice of the date by which that Submittal will be returned.
   c. Engineer's acceptance of progress schedule containing Submittal review times less than those specified or agreed to in writing by the Engineer will not constitute Engineer's acceptance of review times.
   d. Critical Submittals:
      1) Contractor will notify Engineer in writing that timely review of a Submittal is critical to the progress of Work.
3. Schedule delays:
   a. No adjustment of Contract Times or Contract Price will be allowed due to Engineer's review of Submittals unless all of the following criteria are met:
      1) Engineer has failed to review and return first submission within the agreed upon time frame.
      2) Contractor demonstrates that delay in progress of Work is directly attributable to the Engineer's failure to return Submittal within time indicated and accepted by the Engineer.
4. Review response will be returned to the Contractor with one of the following dispositions:
   a. Approved:
      1) No Exceptions:
         a) There are no notations or comments on the Submittal and the Contractor may release the equipment for production.
      2) Make Corrections Noted - See Comments:
         a) Contractor may proceed with the Work, however, all notations and comments must be incorporated into the final product.
         b) Resubmittal not required.
      3) Make Corrections Noted - Confirm:
         a) Contractor may proceed with the Work, however, all notations and comments must be incorporated into the final product.
         b) Submit confirmation specifically addressing each notation or comment to the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the confirmation.
   b. Not Approved:
      1) Correct and Resubmit:
         a) Contractor may not proceed with the Work described in the Submittal.
         b) Contractor assumes responsibility for proceeding without approval.

c) Resubmittal of complete Submittal package is required within 30 calendar days of the date of the Engineer's Submittal review response.

2) Rejected - See Remarks:
   a) Contractor may not proceed with the Work described in the Submittal.
   b) Submittal does not meet the intent of the Contract Documents. Resubmittal of complete Submittal package is required with materials, equipment, methods, etc., that meet the requirements of the Contract Documents.

c. Receipt Acknowledged:
   1) Filed for Record:
      a) This is used in acknowledging receipt of informational Submittals that address means and methods of construction such as schedules and work plans, conformance test reports, health and safety plans, etc.
   2) With Comments - Resubmit:
      a) This is used in acknowledging receipt of informational Submittals that address means and methods of construction such as schedules and work plans, conformance test reports, health and safety plans, etc. Feedback regarding missing information, conflicting information, or other information that makes it incomplete can be made with comments.

B. Contractor: Prepare resubmittal, if applicable:
   1. Clearly identify each correction or change made. Provide page references to the changed information within the resubmittal.
   2. Include a response in writing to each of the Engineer's comments or questions for Submittal packages that are resubmitted in the order that the comments or questions were presented from the first and subsequent Submittals and numbered consistent with the Engineer's numbering.
      a. Acceptable responses to the Engineer's comments are listed below:
         1) "Incorporated" - Engineer's comment or change is accepted and appropriate changes are made.
         2) "Response" - Engineer's comment not incorporated. Explain why comment is not accepted or requested change is not made. Explain how requirement will be satisfied in lieu of comment or change requested by the Engineer.
      b. Reviews and resubmittals:
         1) Contractor shall provide resubmittals which include responses to all Submittal review comments separately and at a level of detail commensurate with each comment.
         2) Contractor responses shall indicate how the Contractor resolved the issue pertaining to each review comment.
            a) Responses such as "acknowledged" or "noted" are not acceptable.
         3) Resubmittals which do not comply with this requirement may be rejected and returned without review.
         4) Contractor shall be allowed no extensions of any kind to any part of their contract due to the rejection of non-compliant Submittals.

5) Submittal review comments not addressed by the Contractor in resubmittals shall continue to apply whether restated or not in subsequent reviews until adequately addressed by the Contractor to the satisfaction of the reviewing and approving authority.

c. Any resubmittal that does not contain responses to the Engineer's previous comments shall be returned for revision and resubmittal. No further review by the Engineer will be performed until a response for previous comments has been received.

3. Resubmittal timeframe:
   a. Contractor shall provide resubmittal within 15 days.
   b. When a resubmittal cannot be returned within the specified period, Contractor shall notify the Engineer in writing.
4. Review costs:
   a. Costs incurred by the Owner as a result of additional reviews of a particular Submittal after the second time it has been reviewed shall be borne by the Contractor.
   b. Reimbursement to the Owner will be made by deducting such costs from the Contractor's subsequent progress payments.

1.07 PRODUCT DATA

A. Edit Submittals so that the Submittal specifically applies to only the product furnished.

B. Neatly cross out all extraneous text, options, models, etc., that do not apply to the product being furnished so that the information remaining is only applicable to the product being furnished.

1.08 SHOP DRAWINGS

A. Contractor to field verify elevation, coordinates, and pipe material for pipe tie-in to pipeline or structure prior to the preparation of Shop Drawings.

B. Indicate project-designated equipment tag numbers for Submittal of devices, equipment, and assemblies.

1.09 SAMPLES

A. Details:
   1. Submit labeled samples.
   2. Samples will not be returned.
   3. Provide number of sample Submittals as below:
      a. Total: 2 minimum.
         1) Owner: 1.
         2) Engineer: 1.
         3) Contractor: None.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ATTACHMENT A - CONTRACTOR SUBMITTAL TRANSMITTAL FORM

CONTRACTOR SUBMITTAL TRANSMITTAL FORM

Owner:	Click here to enter text.	**Date:**	MM/DD/YYYY
Contractor:	Click here to enter text.	**Project No.:**	XXXXX.XX
Project Name:	Click here to enter text.	**Submittal Number:**	000
Submittal Title:	Click here to enter text.		
To:	Click here to enter text.		
From:	Click here to enter text.	Click here to enter text.	
	Click here to enter text.	Click here to enter text.	

Specification No. and Subject of Submittal/Equipment Supplier			
Spec ##:	Spec ##.	**Subject:**	Click here to enter text.
Authored By:	Click here to enter text.	**Date Submitted:**	XX/XX/XXXX

Submittal Certification		
Check Either (A) or (B):		
☐	(A)	We have verified that the equipment or material contained in this Submittal meets all the requirements specified in the project manual or shown on the Contract Drawings with no exceptions.
☐	(B)	We have verified that the equipment or material contained in this Submittal meets all the requirements specified in the project manual or shown on the Contract Drawings, except for the deviations listed.
Certification Statement: By this Submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved Shop Drawings and all Contract requirements.		
General Contractor's Reviewer's Signature:		
Printed Name:		

PM/CM Office Use	
Date Received GC to PM/CM:	
Date Received PM/CM to Reviewer:	
Date Received Reviewer to PM/CM:	
Date Sent PM/CM to GC:	

SECTION 01340

PHOTOGRAPHIC AND VIDEOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for photographs and videos.

B. The purpose of the photographs and videos is to document the condition of the facilities prior to the Contractor beginning work at the Project site, the progress of the Work, and the Project site after Substantial Completion of the Work.

C. The scope of the photographic and videographic documentation shall be the sole responsibility of the Contractor but shall be acceptable to the Engineer.

1.02 SUBMITTALS

A. Photographer qualifications.

B. Pre-construction photographs and videos: Submit prior to beginning work at the Project site or prior to the Preconstruction Conference specified in Section 01312 - Project Meetings, whichever occurs earlier.

C. Construction photographs and videos: Submit with each application for payment.

D. Post-construction photographs and videos: Submit with project closeout documents as specified in Section 01770 - Closeout Procedures.

1.03 PHOTOGRAPHER

A. Photographer qualified and equipped to photograph either interior or exterior exposures, with lenses ranging from wide angle to telephoto.

B. Submit example work of previous photographs and video recording meeting the requirements of this Section.
   1. Provide to Engineer no later than the pre-construction conference.
   2. Provide photographs used for site examination.
   3. Provide video of site examination.
   4. Provide samples that used same camera and lighting equipment proposed for the Work.
   5. Engineer will review work examples to determine if the quality of the images is acceptable.
   6. Contractor is responsible for modifications to equipment and/or inspection procedures to achieve report material of acceptable quality.
   7. Do not commence Work prior to approval of the material by the Engineer.
   8. Once accepted, the standard report material shall serve as a standard for the remaining work.

1.04 KEY PLAN

A. Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph.

B. Include the same label information as the corresponding set of photographs.

1.05 PHOTOGRAPHS

A. Provide prints of each photograph for each area of Work.

B. Provide a digital copy of each photograph for each area of Work.
   1. Monthly: Indexed digital flash drive.
   2. Project record documents:
      a. Catalog and index prints in chronological sequence.
      b. Include typed table of contents.

1.06 PRE-CONSTRUCTION PHOTOGRAPHS AND VIDEOS

A. Provide photographs and video of the condition entire site including each area of Work prior to the start of Work.
   1. Areas to be photographed and videoed shall include the site of the Work and all existing facilities, either on or adjoining the Project site, including the interior of existing structures that could be damaged as a result of the Contractor's Work.
   2. Include general condition, structures, vegetation, staging, storing, working, parking areas and excavation areas.

1.07 CONSTRUCTION PHOTOGRAPHS AND VIDEOS

A. Provide photographs and videos of construction in each area of Work throughout progress of Work including a key plan designating where each photograph was taken.

B. Take site and interior photographs and videos from differing directions of building demolition, pre-excavation, footing excavation, soil testing, utility crossings, installation of bypass piping, excavation of access pits, installation of lining system in pipes, rehabilitation of manholes, building modifications, utilities, electrical and instrumentation modifications, and other applicable activities indicating relative progress of the work.

C. Take photos a maximum of 7 calendar days prior to Submittal.

1.08 POST-CONSTRUCTION PHOTOGRAPHS AND VIDEOS

A. Provide photographs of the entire site including each area of Work at the completion of Work.
   1. Include general condition, structures, vegetation, staging, storing, working, parking areas and excavation areas.
   2. Take photos and video from same points in same direction as pre-construction examination.

B. Submittal of photos and videos is a condition of final payment.

PART 2 PRODUCTS

2.01 MEDIA

A. Paper media:
   1. Commercial grade, glossy surface, acid-free photographic paper.
   2. Submit 3 prints of each photographic view within 7 days of taking photographs.
   3. Format:
      a. Ground photos: Color, matte finish, 8-1/2-inch by 11-inch size, mounted on soft card stock.
      b. Aerial photos: Color, matte finish, 11-inch by 17-inch size, mounted on soft card stock.
      c. Mount each print in a separate, archival type, non-glare, 3-hole punched protector.
   4. Identification: On photograph, provide the following information:
      a. Name of project.
      b. Date stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
      c. Description of vantage point, indicating location and direction by compass point.
   5. Provide a suitably sized 3-ring binder for each set of prints.
      a. Furnish binders in sufficient quantities to hold entire set of prints taken for the duration of the Contract.
      b. Label binder spine and front with project name.

B. Digital media:
   1. Flash drive compatible with current Microsoft Windows.
   2. Provide photos as individual, indexed JPG files with the following characteristics:
      a. Compression shall be set to preserve quality over file size.
      b. Highest resolution JPG images shall be submitted. Resizing to a smaller size when high resolution JPGs are available shall not be permitted.
      c. JPG image resolution shall be 5 megapixels at 2,400 by 1,800 or higher.
      d. Images shall have rectangular, clean images. Artistic borders, beveling, drop shadows, etc., are not permitted.
   3. Identification: On photograph, provide the following information:
      a. Name of project.
      b. Date stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
      c. Description of vantage point, indicating location and direction by compass point.

C. Videos:
   1. Video quality shall be 720p HD or greater in MPG, AVCHD, AVI, or MP4 format.
   2. Digital color video format.
   3. Provide audio portion of the composite video sufficiently free from electrical interference and background noise to provide complete intelligibility of oral report.
   4. Identification: On each copy provide a label with the following information:
      a. Name of project.
      b. Date video was recorded.
   5. Submit 1 copy of each video within 7 days of recording.

6. Display continuous running time.
7. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01357

DELEGATED DESIGN PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Delegated Design procedures.

1.02 GENERAL

A. Refer to the Contract RFP in Volume 2 for additional delegated design requirements.

B. Delegated Design - Professional design services assigned to the Contractor by express delegation in the Contract Documents. Work is “Delegated Design” where the Technical Sections require the Contractor to provide professional design services and to submit signed and sealed documents from a registered Professional Engineer.

C. Contractor’s Professional Engineer - The design professional retained by the Contractor to perform Delegated Design.

D. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents.
   1. Requirements of Delegated Design component as specified in the Technical Section and as indicated on the Drawings.
   2. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that the Contractor must furnish to the Engineer with respect to the Delegated Design.

E. Contractor shall cause such Delegated Design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal shall appear on Drawings, calculations, Specifications, certifications, and Submittals prepared by such design professional.
   1. Contractor shall not be responsible for the adequacy of performance or design criteria specified by the Owner or Engineer.
   2. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.
   3. Such design professional shall issue certifications of design required by Laws and Regulations.
   4. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by the Contractor, a Subcontractor, or others for submittal to the Engineer, then such Shop Drawing or other Submittal shall bear the written approval of Contractor’s design professional when submitted by the Contractor to the Engineer.

F. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under Delegated Design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

G. Engineer's review, approval, and other determinations regarding design drawings, calculations, Specifications, certifications, and other Submittals furnished by Contractor pursuant to a Delegated Design will be only for the following limited purposes:
   1. Confirming that Submittal is in conformance with the performance and design criteria specified in the Contract Documents.

1.03 CONTRACTOR'S PROFESSIONAL ENGINEER

A. Contractor or Subcontractor shall retain a licensed Professional Engineer to perform Delegated Design.

B. Qualifications:
   1. Holding a current license to perform the specified design in the same jurisdiction as the Project site.
   2. Experienced in designing similar systems of similar complexity.

C. Insurance:
   1. Provide Contractor's Professional Engineer's Professional Liability Insurance as specified in the Agreement and Contract RFP in Volumes 1 and 2.

D. Responsibilities:
   1. Review and design in accordance with system performance and design criteria stated in the Contract Documents.
      a. Prepare written requests for clarifications or interpretations of performance or design criteria for submittal to the Engineer by the Contractor.
   2. Sign and seal design reports, calculations, design drawings and specifications, and other design Submittals for the Delegated Design Work.
   3. Review and submit written approval of Submittals related to the Delegated Design Work.
   4. Design modifications to the Delegated Design Work as required.
   5. Visit the Site, as required, to verify that installation of the Delegated Design Work is in conformance with the Delegated Design Drawings and Specifications.
   6. Submit through Contractor to Engineer written, signed, and sealed certification that the installed Delegated Design Work complies with Contractor's Professional Engineer's design.

1.04 SUBMITTALS

A. Prior to the start of Delegated Design:
   1. Contractor's Professional Engineer's qualifications:
      a. Experience for the Delegated Design.
      b. Evidence of Professional Engineering license.
   2. Contractor's Professional Engineer Professional Liability Insurance certificate.

B. Delegated Design:
   1. Product data:
      a. Details related to the Delegated Design as specified in Technical Sections to completely describe the system.
   2. Design documents with signature and seal from the Contractor's Professional Engineer.
      a. Design documents include but are not limited to Drawings, calculations, Specifications, inspection reports, and certifications.
   3. Lists and schedules:
      a. Prepare and submit lists or schedules of items where Delegated Design is required by the Contract Documents.
      b. Group items by location in the Work.
         1) When "Area Numbers" are indicated on the Contract Drawings, group lists in accordance with those "areas."
         2) For work without area numbers, group using logical divisions acceptable to the Engineer.
         3) Group items within each "area" as follows:
            a) Systems.
            b) Components.
            c) Supports.
            d) Anchorage.
            e) Bracing.

C. Construction services:
   1. Contractor's Professional Engineer's comments on Submittals.
   2. Other construction documents, as required.

1.05 ENGINEER RESPONSE TO DELEGATED DESIGN SUBMITTALS

A. Engineer response will be either of the following:
   1. Approved. Make Corrections Noted - See Comments:
      a. Contractor may proceed with the Work; however, all notations and comments must be incorporated into the final product.
      b. Review was for the limited purpose of determining that the document was stamped by a Professional Engineer and that such design is generally consistent with and will not negatively affect the design concept presented in the Contract Documents.
   2. Rejected - See Remarks:
      a. Contractor may not proceed with the Work described in the Submittal.
      b. Submittal does not meet the intent of the Contract Documents.
      c. Resubmittal of complete Submittal package is required with materials, equipment, methods, etc., that meet the requirements of the Contract Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01410

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Regulatory authorities and codes.

1.02 AUTHORITIES HAVING JURISDICTION (AHJ)

A. Also referred to as the permitting agency.

B. Building Department: City of Roseville.

C. Fire Department: City of Roseville.

1.03 APPLICABLE CODES

A. Products in contact with drinking water:
   1. Materials in contact with drinking waters: In accordance with NSF 61 and NSF 372.
      a. Certification by an independent ANSI accredited third party, including, but not limited to, NSF International, as being lead free.
   2. Materials in contact with drinking waters: In accordance with California Health and Safety Code, Section 116875.

B. California Code of Regulations (CCR), California Building Standards Code, CCR Title 24:
   1. Building code:
      a. California Building Code (CBC), Title 24, Part 2 – 2019.
   2. Electrical code:
      a. California Electrical Code (CEC), Title 24, Part 3 – 2019.
   3. Mechanical code:
      a. California Mechanical Code (CMC), Title 24, Part 4 – 2019.
   4. Plumbing code:
      a. California Plumbing Code (CPC), Title 24, Part 5 – 2019.
   5. Energy code:
      a. California Energy Code (CEC), Title 24, Part 6 – 2019.
   6. Historical building code:
      a. California Historical Building Code (CHBC), Title 24, Part 8 – 2019.
   7. Fire code:
      a. California Fire Code (CFC), Title 24, Part 9 – 2019.
   8. Existing building code:
      a. California Existing Building Code (CEBC), Title 24, Part 10 – 2019.
   9. Green building standards code:
      a. California Green Building Standards Code (CALGreen), Title 24, Part 11 – 2019.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01450

QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Quality control and control of installation.
   2. Tolerances.
   3. References.
   4. Mock-up requirements.
   5. Authority and duties of Owner's representative or inspector.
   6. Sampling and testing.
   7. Testing and inspection services.
   8. Contractor's responsibilities.

1.02 QUALITY CONTROL AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform Work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

H. When specified, products will be tested and inspected either at point of origin or at Work site:
   1. Notify Engineer in writing well in advance of when products will be ready for testing and inspection at point of origin.
   2. Do not construe that satisfactory tests and inspections at point of origin is final acceptance of products. Satisfactory tests or inspections at point of origin do not preclude retesting or re-inspection at Work site.

I. Do not ship products which require testing and inspection at point of origin prior to testing and inspection.

1.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. When Manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.04 REFERENCES

A. ASTM International (ASTM):
   1. E329 - Standard for Agencies Engaged in Construction Inspection, Testing or Special Inspection.

B. National Institute of Standards and Technology (NIST).

1.05 PRODUCT REQUIREMENTS

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

1.06 MOCK-UP REQUIREMENTS

A. Tests will be performed under provisions identified in this Section and identified in respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be comparison standard for remaining Work.

D. Where mock-up has been accepted by Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Engineer.

1.07 AUTHORITY AND DUTIES OF OWNER'S REPRESENTATIVE OR INSPECTOR

A. Owner’s Project Representative employed or retained by Owner is authorized to inspect the Work.

B. Inspections may extend to entire or part of the Work and to preparation, fabrication, and manufacture of products for the Work.

C. Deficiencies or defects in the Work which have been observed will be called to Contractor's attention.

D. Inspector will not:
   1. Alter or waive provisions of Contract Documents.
   2. Inspect Contractor's means, methods, techniques, sequences, or procedures for construction.
   3. Accept portions of the Work, issue instructions contrary to intent of Contract Documents, or act as foreman for Contractor. Supervise, control, or direct Contractor's safety precautions or programs; or inspect for safety conditions on Work site, or of persons thereon, whether Contractor's employees or others.

E. Inspector will:
   1. Conduct on-site observations of the Work in progress to assist Engineer in determining when the Work is, in general, proceeding in accordance with Contract Documents.
   2. Report to Engineer whenever Inspector believes that Work is faulty, defective, does not conform to Contract Documents, or has been damaged; or whenever there is defective material or equipment; or whenever Inspector believes the Work should be uncovered for observation or requires special procedures.

1.08 SAMPLING AND TESTING

A. General:
   1. Prior to delivery and incorporation in the Work, submit listing of sources of materials, when specified in sections where materials are specified.
   2. When specified in sections where products are specified:
      a. Submit sufficient quantities of representative samples of character and quality required of materials to be used in the Work for testing or examination.
      b. Test materials in accordance with standards of national technical organizations.

B. Sampling:
   1. Furnish specimens of materials when requested.
   2. Do not use materials which are required to be tested until testing indicates satisfactory compliance with specified requirements.
   3. Specimens of materials will be taken for testing whenever necessary to determine quality of material.
   4. Assist Engineer in preparation of test specimens at site of work, such as soil samples and concrete test cylinders.

1.09 TESTING AND INSPECTION SERVICES

A. Contractor will employ and pay for specified services of an independent firm to perform Contractor quality control testing as required in the technical specifications for various work and materials.

B. Owner will employ and pay for specified services of an “Owner’s independent testing firm” certified to perform testing and inspection as required in the technical specifications for various work and materials or stipulated in Section 01455 - Regulatory Quality Assurance to confirm Contractor’s compliance with Contract Documents.

C. The Owner’s independent testing firm will perform tests, inspections and other services specified in individual specification sections and as required by Owner and requested by the Engineer.

D. The qualifications of laboratory that will perform the testing, contracted by the Owner or by the Contractor, shall be as follows:
   1. Has authorization to operate in the state where the project is located.
   2. Meets “Recommended Requirements for Independent Laboratory Qualification,” published by American Council of Independent Laboratories.
   3. Meets requirements of ASTM E329.
   4. Laboratory Staff: Maintain full time specialist on staff to review services.
   5. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to NIST or accepted values of natural physical constants.
   6. Will submit copy of report of inspection of facilities made by Materials Reference Laboratory of NIST during most recent tour of inspection, with memorandum of remedies of deficiencies reported by inspection.

E. Testing, inspections, and source quality control may occur on or off project site. Perform off-site testing inspections and source quality control as required by Engineer or Owner.

F. Contractor shall cooperate with Owner’s independent testing firm, furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
   1. Notify Engineer and Owner’s independent testing firm 48 hours prior to expected time for operations requiring testing.
   2. Make arrangements with Owner’s independent testing firm and pay for additional samples and tests required for Contractor’s use.

G. Limitations of authority of testing Laboratory: Owner’s independent testing firm or Laboratory is not authorized to:
   1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency or laboratory may not approve or accept any portion of the Work.
   3. Agency or laboratory may not assume duties of Contractor.
   4. Agency or laboratory has no authority to stop the Work.

H. Testing and employment of an Owner’s independent testing firm or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

I. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same Owner’s independent testing firm on instructions by Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

J. The Owner's independent testing firm responsibilities will include:
   1. Test samples of mixes submitted by Contractor.
   2. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
   3. Perform specified sampling and testing of products in accordance with specified standards.
   4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
   6. Perform additional tests required by Engineer.
   7. Attend preconstruction meetings and progress meetings when requested.

K. Owner's independent testing firm shall do the following:
   1. Test reports shall include at least the following information:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in Project.
      g. Type of inspection or test.
      h. Date of test.
      i. Certified test results stamped and signed by a registered Engineer in the state where the project is located.
      j. Summary of conformance with Contract Documents.
      k. When requested by Engineer, the Owner's independent testing firm will provide interpretation of test results.

1.10 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with Owner's independent testing firm or laboratory personnel and provide access to construction and manufacturing operations.

B. Secure and deliver to Owner's independent testing firm or laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.

C. Provide to Owner's independent testing firm or laboratory and Engineer preliminary mix design proposed to be used for concrete, and other materials mixes which require control by testing laboratory.

D. Submit product test reports electronically.

E. Furnish incidental labor and facilities:
   1. To provide access to construction to be tested.
   2. To obtain and handle samples at Work site or at source of product to be tested.
   3. To facilitate inspections and tests.
   4. For storage and curing of test samples.

F. Notify Owner's independent testing firm or laboratory 48 hours in advance of when observations, inspections and testing is needed for laboratory to schedule and perform in accordance with their notice of response time.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01455

REGULATORY QUALITY ASSURANCE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Project regulatory requirements for quality assurance that includes Special Inspections, Special Certification, and Structural Observation.

B. Special Certification and Special Inspections in this Section are in addition to the requirements specified in Section 01450 - Quality Control, and in the individual Sections.

1.02 REFERENCES

A. American Concrete Institute (ACI):
   1. 318 - Building Code Requirements for Structural Concrete.
   2. 530 - Building Code Requirements for Masonry Structures.
   3. 530.1 - Specification for Masonry Structures.

B. American Institute of Steel Construction (AISC):
   1. 360 - Specification for Structural Steel Buildings.

C. American Society of Civil Engineers (ASCE):
   1. 7 - Minimum Design Loads for Buildings and Other Structures.

D. American Welding Society (AWS):
   1. D1.3 - Structural Welding Code - Sheet Steel.
   2. D1.4 - Structural Welding Code - Reinforcing Steel.

E. ASTM International (ASTM):
   1. A706 - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
   2. C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   3. C172 - Standard Practice for Sampling Freshly Mixed Concrete.
   4. C1611 - Standard Test Method for Slump Flow of Self-Consolidating Concrete.

F. Building Code:
   1. As specified in Section 01410 - Regulatory Requirements.

G. The Masonry Society (TMS):
   1. 402 - Building Code for Masonry Structures.
   2. 602 - Specifications for Masonry Structures.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Special Certification: Certification for designated seismic systems that demonstrates compliance with performance requirements.
   2. Special Inspection: Inspection of the materials, installation, fabrication, erection, or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and referenced standards.
   3. Special Inspection, Continuous: The full-time observation of work requiring Special Inspection by an approved special inspector who is present in the area where the work is being performed.
   4. Special Inspection, Periodic: The part-time, or intermittent observation of work requiring Special Inspection by an approved special inspector who is present in the area where the work is being performed and at the completion of the work.
   5. Structural Observation: The visual observation of the structural system by a registered design professional for general conformance to the approved construction documents at significant construction stages and at completion of the structural system.

1.04 SUBMITTALS

A. Submit Special Certifications for designated seismic systems.

B. Schedule and coordinate the submittal of Special Inspection reports and test results prepared by others.

1.05 APPROVED FABRICATORS

A. Structural steel fabricators shall be approved as required herein. Shops shall be those listed by ICBO/ICC, AISC, COLA, or other nationally-recognized agencies. Approved fabricator certificates and shop inspection test results shall be submitted for approval as part of the shop drawing submittal process per CBC Section 1704.2.5.2.

1.06 SPECIAL INSPECTION

A. Owner will employ 1 or more special inspectors who will provide Special Inspections during construction.

B. Special inspector(s) shall be qualified for inspection of the particular type of materials or operations requiring Special Inspection.

C. Testing laboratory: Testing that is required to satisfy the requirements of Special Inspection will be performed by the Owner’s testing laboratory as specified in Section 01450 - Quality Control.

D. Duties of special inspector:
   1. General: Required duties of the special inspector(s) shall be as described in the Building Code.

2. Reporting: Special inspector(s) shall provide reports of each inspection to the Contractor. Contractor shall distribute copies of inspection reports to the Owner.
    a. Reports shall, at a minimum, include the following items:
        1) Date and time of inspection, and name(s) of individual(s) performing the inspection.
        2) Structures and areas of the structure where work or testing was observed.
        3) Discrepancies between the requirements of the Contract Documents and the work or testing observed.
        4) Other areas of deficiency in the Work.

E. Special Inspections shall not be construed as fulfilling the requirements for Structural Observation.

F. Owner or special inspector are responsible to select materials for Special Inspection.
    1. Contractor shall not select materials for Special Inspection.

1.07 SPECIAL CERTIFICATION

A. Provide equipment that meets the special certification requirements of the Building Code.

B. Designated seismic systems shall be subject to the testing and qualification requirements of the regulatory Building Code, and shall require Special Certification as set forth in ASCE 7:
    1. Mechanical equipment that is assigned an importance factor of 1.50 as specified in Section 01850 - Design Criteria.
    2. All electrical equipment.

C. Special certification requirements for designated seismic systems:
    1. Submittals shall include certification that the equipment is seismically qualified. Certifications are subject to review and acceptance by Owner.
    2. Certifications may be at least one of the following in accordance with ASCE 7:
        a. Analysis.
        b. Testing.
        c. Experience data.

1.08 STRUCTURAL OBSERVATION

A. Owner will employ 1 or more registered design professionals to provide Structural Observation(s) during construction.
    1. Registered design professional will be a civil or structural engineer currently licensed as such in the state where the project is located and regularly engaged in structural design equivalent to or similar to that indicated on the Drawings.

B. Structural Observations shall not be construed as fulfilling the requirements for Special Inspections.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SPECIAL INSPECTIONS

A. Owner will provide Special Inspection of the following types of work as described in the Building Code wherever such work occurs, unless otherwise specified.
   1. Attachment A - Concrete - Special Inspection Schedule.
   2. Attachment B - Architectural, Mechanical, and Electrical Components - Special Inspection Schedule.
   3. Attachment C - Masonry Special Inspection Schedule - “Level C".
   4. Attachment D - Soils - Special Inspection Schedule.
   5. Attachment E - Structural Steel Welding - Special Inspection Schedule.

3.02 SPECIAL CERTIFICATION

A. Special inspector shall examine the designated seismic system(s) and determine whether the designated system components, including anchorage, are consistent with the evidence of compliance submitted for Special Certification.

3.03 STRUCTURAL OBSERVATION

A. The following work requires Structural Observation in accordance with the Building Code.
   1. All structures in all areas:
      a. Foundations.
      b. Elevated slabs.

3.04 SCHEDULE

A. Contractor shall allow time necessary for Special Inspections and Structural Observation specified in this Section.

B. Sufficient notice shall be given so that the Special Inspections and Structural Observations can be performed. Contractor shall Allow time for individuals performing special inspection and structural observation to travel to the site.

3.05 PROCEDURE

A. Special inspector will immediately notify the Engineer of any corrections required and follow notification with appropriate documentation.

B. Contractor shall not proceed until the work is satisfactory to the Engineer.

END OF SECTION

ATTACHMENT A - CONCRETE - SPECIAL INSPECTION SCHEDULE

CONCRETE - SPECIAL INSPECTION SCHEDULE
(Includes: Cast-in-place, precast, prestressed, precast-prestressed, and shotcrete.)

Verification and Inspection	Reference Standard	Frequency of Inspection[1] (During Task Listed)	
		Continuous	Periodic
1. Inspect reinforcement, including prestressing tendons, and verify placement.	ACI 318 Building Code		●
2. Reinforcing bar welding:			
a. Verify weldability of reinforcing bars other than ASTM A706;	AWS D1.4 ACI 318		●
b. Inspect single-pass fillet welds, maximum 5/16 inch; and	AWS D1.4 ACI 318		●
c. Inspect all other welds.	AWS D1.4 ACI 318	●	
3. Inspect anchors cast in concrete.	ACI 318		●
4. Inspect anchors post-installed in hardened concrete members:			
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	ACI 318	●	
b. Mechanical anchors and adhesive anchors not defined in 4.a.	ACI 318		●
5. Verify use of required design mix.	ACI 318 Building Code		●
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	ASTM C172 ASTM C31 ACI 318 Building Code	●	
7. Inspect concrete and shotcrete placement for proper application techniques.	ACI 318 Building Code	●	
8. Verify maintenance of specified curing temperature and techniques.	ACI 318 Building Code		●
9. Inspect prestressed concrete for:			
a. Application of prestressing forces; and	ACI 318	●	
b. Grouting of bonded prestressing tendons.	ACI 318	●	
10. Inspect erection of precast concrete members.	ACI 318		●
11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	ACI 318		●

Verification and Inspection	Reference Standard	Frequency of Inspection[1] (During Task Listed)	
		Continuous	Periodic
12. Inspect formwork for shape, location and dimensions of the concrete member being formed.	ACI 318		●

Notes:

(1) "●" represents a required inspection activity for the project where it occurs.

ATTACHMENT B - ARCHITECTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS - SPECIAL INSPECTION SCHEDULE

ARCHITECTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS - SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Reference Standard 2022 CBC	Frequency of Inspection[1] (During Task Listed)	
		Continuous	Periodic
1. Architectural components:			
a. Cladding - exterior, weighing more than 5 psf: Erection and fastening.	Building Code		●
b. Exterior insulation and finish system (EIFS):	Building Code		
c. Non-bearing walls - exterior: Erection and fastening.	Building Code		●
d. Non-bearing walls - interior, weighing more than 15 psf.	Building Code		●
e. Veneer, exterior and interior, weighing more than 5 psf: Erection and fastening.	Building Code		●
f. Access floors: Erection and anchorage.	Building Code		●
g. Suspended ceiling system: Bracing.			●
h. Storage racks - 8 feet or greater in height: Anchorage.	Building Code		●
i. Skylight: Verification of safety compliance and labeling and installation.	Building Code		●
2. Plumbing, mechanical, and electrical components:			
a. Anchorage of electrical equipment for emergency and standby power systems.	Building Code		●
b. Anchorage of other electrical and mechanical equipment over 400 lb. on floors or roofs.	Building Code		●
c. Installation and anchorage of pipelines carrying hazardous chemicals and their associated mechanical units.	Building Code		●
d. Installation and anchorage of pipelines greater than 8 inches in diameter.			●
e. Installation and anchorage of ductwork designed to carry hazardous materials.	Building Code		●
f. Installation and anchorage of ductwork greater than 6 sf in cross section.			●
g. Installation and anchorage of vibration isolation systems where Contract Documents require nominal clearance of 1/4 inch or less between the equipment support frame and its support/restraint.	Building Code		●

Verification and Inspection	Reference Standard 2022 CBC	Frequency of Inspection[1] (During Task Listed)	
		Continuous	Periodic
h. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic fire sprinkler systems are installed.	Building Code		●
3. Fire-resistance elements:			
a. Sprayed fire-resistant coatings:	Building Code		
b. Mastic and intumescent coatings:	Building Code		
c. Fire-resistant penetrations and joint systems:	Building Code		
4. Smoke control systems;	Building Code		

Notes:

(1) "●" represents a required inspection activity for the project where it occurs.

ATTACHMENT C- MASONRY SPECIAL INSPECTION SCHEDULE - “LEVEL C”

MASONRY SPECIAL INSPECTION SCHEDULE - "LEVEL C"

MINIMUM TESTS

Verification of Slump flow and Visual Stability Index (VSI) as delivered to the project site as determined by ASTM C1611 for self-consolidating grout.

Verification of proportions of materials in premixed or pre-blended mortar and grout as delivered to the project site.

Verification of f'_m in accordance with Specification Section 04220 - Concrete Unit Masonry prior to construction.

MINIMUM SPECIAL INSPECTION - LEVEL C			
Verification and Inspection	**Reference Standard**	**Frequency of Inspection(1) (During Task Listed)**	
		Continuous	**Periodic**
1. Verify compliance with the approved submittals.	TMS 602/ACI 530.1		●
2. As masonry construction begins, verify that the following are in compliance:			
a. Proportions of site-prepared mortar.	TMS 602/ACI 530.1		●
b. Placement of masonry units and construction of mortar joints.	TMS 602/ACI 530.1		●
c. Placement of reinforcement, connectors, and anchors.	TMS 602/ACI 530.1 TMS 402/ACI 530	●	
a. Reinforcing bar couplers and terminators.	ICC-ES Evaluation Report	●	
3. Prior to grouting, verify that the following are in compliance:			
a. Placement of masonry units and construction of mortar joints.	TMS 602/ACI 530.1		●
b. Grout space.	TMS 602/ACI 530.1	●	
c. Grade, type, and size of reinforcement and anchor bolts.	TMS 602/ACI 530.1 TMS 402/ACI 530		●
d. Placement of reinforcement, connectors, and anchors.	TMS 602/ACI 530.1 TMS 402/ACI 530	●	
4. Verify during construction:			
a. Size and location of structural elements:	TMS 602/ACI 530.1		●
b. Type, size, and location of anchors, including details of anchorage of masonry to structural members, frames, or other construction.	TMS 402/ACI 530	●	
c. Welding of reinforcement.	TMS 402/ACI 530	●	

MINIMUM SPECIAL INSPECTION - LEVEL C			
Verification and Inspection	**Reference Standard**	**Frequency of Inspection(1) (During Task Listed)**	
		Continuous	**Periodic**
d. Preparation, construction, and protection of masonry during cold weather (temperature below 40 degrees F) or hot weather (temperature above 90 degrees F).	TMS 602/ACI 530.1		●
5. Observe preparation of grout specimens, mortar specimens, and/or prisms.	TMS 602/ACI 530.1	●	
Notes:			
(1) "●" represents a required inspection activity for the project where it occurs.			

ATTACHMENT D - SOILS - SPECIAL INSPECTION SCHEDULE

SOILS - SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Reference Standard 2022 CBC	Frequency of Inspection[1] (During Task Listed)	
		Continuous	Periodic
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Building Code		●
2. Verify excavations are extended to proper depth and have reached proper material.	Building Code		●
3. Perform classification and testing of fill and backfill materials.	Building Code		●
4. Verify use of proper materials, densities, and lift thicknesses during placement and compaction of fill and backfill.	Building Code	●	
5. Prior to placement of fill, observe subgrade and verify that site has been prepared properly.	Building Code		●

Notes:

(1) "●" represents a required inspection activity for the project where it occurs.

ATTACHMENT E - STRUCTURAL STEEL WELDING - SPECIAL INSPECTION SCHEDULE

STRUCTURAL STEEL WELDING - SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Reference Standard	Frequency of Inspection[1] (During Task Listed)	
		Continuous	Periodic
Inspection Tasks Prior to Welding	AISC 360		
1. Welding procedure specifications (WPSs) available.		●	
2. Manufacturer certifications for welding consumables available.		●	
3. Material identification (type/grade).			●
4. Welder identification system.			●
5. Fit-up groove welds (including joint geometry): • Joint preparation. • Dimensions (alignment, root opening, root face, bevel). • Cleanliness (condition of steel surfaces). • Tacking (tack weld quality and location). • Backing type and fit (if applicable).			●
6. Configuration and finish of access holes.			●
7. Fit-up of fillet welds: • Dimensions (alignment, gaps at root). • Cleanliness (condition of steel surfaces). • Tacking (tack weld quality and location).			●
8. Check welding equipment.			●
Inspection Tasks During Welding	AISC 360		
9. Use of qualified welders.			●
10. Control and handling of welding consumables: • Packaging. • Exposure control.			●
11. No welding over cracked tack welds.			●
12. Environmental conditions: • Wind speed within limits. • Precipitation and temperature.			●
13. WPS followed: • Settings on welding equipment. • Travel speed. • Selected welding materials. • Shielding gas type/flow rate. • Preheat applied. • Interpass temperature maintained (min/max). • Proper position (F, V, H, OH).			●

Verification and Inspection	Reference Standard	Frequency of Inspection[1] (During Task Listed)	
		Continuous	Periodic
14. Welding techniques: • Interpass and final cleaning. • Each pass within profile limitations. • Each pass meets quality requirements.			●
Inspection Tasks After Welding	AISC 360		
15. Welds cleaned.			●
16. Size, length, and location of welds.		●	
17. Welds meet visual acceptance criteria: • Crack prohibition. • Weld/base-metal fusion. • Crater cross section. • Weld profiles. • Weld size. • Undercut. • Porosity.		●	
18. Arc strikes.		●	
19. k-area.		●	
20. Backing removed and weld tabs removed (if required).		●	
21. Repair activities.		●	
22. Document acceptance or rejection of welded joint or member.		●	
Notes: (1) "●" represents a required inspection activity for the project where it occurs.			

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Furnishing, maintaining, and removing construction facilities and temporary controls, including temporary utilities, construction aids, barriers and enclosures, security, access roads, temporary controls, project sign, field offices and sheds, and removal after construction.

1.02 REFERENCE

A. American National Standards Institute (ANSI).

B. Occupational Safety and Health Administration (OSHA).

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

1.04 TEMPORARY UTILITIES

A. Temporary electrical power:
   1. Arrange with local utility to provide adequate temporary electrical service.
   2. Provide and maintain adequate jobsite power distribution facilities conforming to applicable Laws and Regulations.
   3. Provide, maintain, and pay for electric power for performance of the Work.

B. Temporary electrical lighting:
   1. In work areas, provide temporary lighting sufficient to maintain lighting levels during working hours not less than lighting levels required by OSHA and state agency which administers OSHA regulations where Project is located.
   2. When available, permanent lighting facilities may be used in lieu of temporary facilities:
      a. Prior to Substantial Completion of the Work, replace bulbs, lamps, or tubes used by Contractor for lighting.

C. Temporary heating, cooling, and ventilating:
   1. Heat and ventilate work areas to protect the Work from damage by freezing, high temperatures, weather, and to provide safe environment for workers.
   2. Permanent heating system may be utilized when sufficiently completed to allow safe operation.

D. Temporary water:
   1. Pay for and construct facilities necessary to furnish potable water for human consumption and non-potable water for use during construction.

2. Remove temporary piping and connections and restore affected portions of the facility to original condition before Substantial Completion.
3. Pay for water used for construction prior to Substantial Completion.

E. Temporary sanitary facilities:
1. Provide suitable and adequate sanitary facilities that are in compliance with applicable Laws and Regulations.
2. Existing facility use is not allowed.
3. At completion of the Work, remove sanitary facilities and leave site in neat and sanitary condition.

F. Temporary fire protection:
1. Provide sufficient number of fire extinguishers of type and capacity required to protect the Work and ancillary facilities.

G. First aid: Post first aid facilities and information posters conforming to requirements of OSHA and other applicable Laws and Regulations in readily accessible locations.

H. Utilities in existing facilities: As specified in Section 01140 - Work Restrictions.

I. Temporary piping for interim recharge:
1. Submit layout drawings showing proposed routing of piping, including proposed pipe support and pipe restraint locations.
2. Submit product data for piping, fittings, appurtenances, restraints, supports, and other components of the temporary piping system.
3. Submit information at least 28 days prior to when each temporary piping system is scheduled to be installed and allow 14 days for review and comment.

1.05 CONSTRUCTION AIDS

A. Provide railings, kick plates, enclosures, safety devices, and controls required by Laws and Regulations and as required for adequate protection of life and property.

B. Use construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities of ample size and capacity to adequately support and move loads.

C. Design temporary supports with adequate safety factor to ensure adequate load bearing capability:
1. When requested, submit design calculations by professional registered engineer prior to application of loads.
2. Submitted design calculations are for information and record purposes only.

D. Accident prevention:
1. Exercise precautions throughout construction for protection of persons and property.
2. Observe safety provisions of applicable Laws and Regulations.
3. Guard machinery and equipment and eliminate other hazards.

4. Make reports required by authorities having jurisdiction, and permit safety inspections of the Work.
5. Before commencing construction work, take necessary action to comply with provisions for safety and accident prevention.

E. Barricades:
1. Place barriers at ends of excavations and along excavations to warn pedestrian and vehicular traffic of excavations.
2. Provide barriers with flashing lights after dark.
3. Keep barriers in place until excavations are entirely backfilled and compacted.
4. Barricade excavations to prevent persons from entering excavated areas in streets, roadways, parking lots, treatment plants, or other public or private areas.

F. Warning devices and barricades: Adequately identify and guard hazardous areas and conditions by visual warning devices and, where necessary, physical barriers:
1. Provide devices in accordance with minimum requirements of OSHA and State agency which administers OSHA regulations where Project is located.

G. Hazards in public right-of-way:
1. Comply with local jurisdiction standards and requirements for right-of-way barricades and other safety devices.
2. Mark at reasonable intervals, trenches, and other continuous excavations in public right-of-way, running parallel to general flow of traffic, with traffic cones, barricades, or other suitable visual markers during daylight hours:
   a. During hours of darkness, provide markers with torches, flashers, or other adequate lights.
3. At intersections or for pits and similar excavations, where traffic may reasonably be expected to approach head on, protect excavations by continuous barricades:
   a. During hours of darkness, provide warning lights at close intervals.

H. Hazards in protected areas: Mark or guard excavations in areas from which public is excluded, in manner appropriate for hazard.

I. Above grade protection: On multi-level structures, provide safety protection that meets requirements of OSHA and State agency which administers OSHA regulations where Project is located.

J. Protect existing structures, trees, shrubs, and other items to be preserved on Project site from injury, damage, or destruction by vehicles, equipment, worker or other agents with substantial barricades or other devices commensurate with hazards.

K. Fences:
1. Enclose site of the Work with fence adequate to protect the Work against acts of theft, violence, and vandalism.
2. When entire or part of site is to be permanently fenced, permanent fence may be built to serve for both permanent and temporary protection of the work site, provided that damaged or defaced fencing is replaced prior to Substantial Completion.

3. Protect temporary and permanent openings and close openings in existing fences to prevent intrusion by unauthorized persons.
    a. Bear responsibility for protection of plant and material on site of the Work when openings in existing fences are not closed.
4. During night hours, weekends, holidays, and other times when no work is performed at site, provide temporary closures or enlist services of security guards to protect temporary openings.
5. Fence temporary openings when openings are no longer necessary.

1.06 SECURITY

A. Make adequate provision for protection of the work area against fire, theft, and vandalism, and for protection of public against exposure to injury.

1.07 ACCESS ROADS

A. General:
    1. Build and maintain access roads to and on site of the Work to provide for delivery of material and for access to existing and operating plant facilities on site.
    2. Build and maintain dust free roads which are suitable for travel at 20 miles per hour.

B. Off-site access roads:
    1. Build and maintain graded earth roads.
    2. Build roads only in public right-of-way or easements obtained by Owner.
    3. Obtain rights-of-way or easements when electing to build along other alignment.

C. On-site access roads:
    1. Maintain access roads to storage areas and other areas to which frequent access is required.
    2. Maintain similar roads to existing facilities on site of the Work to provide access for maintenance and operation.
    3. Protect buried vulnerable utilities under temporary roads with steel plates, wood planking, or bridges.
    4. Maintain on-site access roads free of mud.
    5. Provide controls to prevent vehicles leaving the site from tracking mud off the site onto the public right-of-way.

1.08 TEMPORARY CONTROLS

A. Dust control:
    1. Prevent dust nuisance caused by operations, unpaved roads, excavation, backfilling, demolition, or other activities.
    2. Control dust by sprinkling with water, use of dust palliatives, modification of operations, or other means acceptable to agencies having jurisdiction.

B. Noise control:
    1. Comply with noise and work hours regulations by local jurisdiction.

2. In or near inhabited areas, particularly residential, perform operations in manner to minimize noise.
3. In residential areas, take special measures to suppress noise during night hours.

C. Mud control:
1. Prevent mud nuisance caused by construction operations, unpaved roads, excavation, backfilling, demolition, or other activities.

1.09 PROJECT SIGN

A. Provide and maintain Project identification sign at each well site consisting of painted 8-foot wide by 4-foot high exterior grade plywood and minimum 10-foot long, 4 by 4 lumber posts, set in ground at least 3 feet, with exhibit lettering by professional sign painter using no more than 5 sign colors:
1. List at least the title of the Project, and names of the Owner, Engineer, Construction Manager and Contractor.
2. Identify Contractor's, Engineer's, and Construction Manager's names in upper right-hand corner underneath the bid number.

B. On third and fourth lines of printing, paint appropriate dollar amounts.

C. Erect Project identification sign where directed by Engineer within 14 days after the issuance of the Notice to Proceed.

D. Replace or repair the project sign if it is damaged or covered with graffiti within 2 working days of observation or notification of damage or graffiti.

1.10 CONTRACTOR FIELD OFFICES AND SHEDS

A. Maintain on Project Site weather tight space in which to keep copies of Contract Documents, progress schedule, shop drawings, and other relevant documents.

B. Provide field office with adequate space to examine documents and provide lighting and telephone service in that space.

1.11 REMOVAL

A. Remove temporary facilities and controls before inspection for Substantial Completion or when directed.

B. Clean and repair damage caused by installation or use of temporary facilities.

C. Remove underground installations to minimum depth of 24 inches and grade to match surrounding conditions.

D. Restore existing facilities used during construction to specified or original condition.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01550

TRAFFIC CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Traffic control requirements to keep streets and traffic ways open for the passage of vehicles and pedestrians during the construction period.

1.02 SUBMITTALS

A. Approved and signed copies of:
   1. Encroachment permit.
   2. Right-of-way occupancy permit.
   3. Traffic control plan (TCP).
   4. Notification plan.

1.03 AUTHORITIES HAVING JURISDICTION (AHJ)

A. Authorities Having Jurisdiction (AHJ) as specified in Section 01410 - Regulatory Requirements.

B. AHJ traffic control requirements supersede the requirements of this Section.

C. Comply with AHJ traffic control requirements.

1.04 MEASUREMENT AND PAYMENT

A. Contractor is responsible for costs associated with permits, plans, implementation, and maintenance as specified in the Agreement and Contract RFP in Volumes 1 and 2.

1.05 ENCROACHMENT PERMIT

A. Obtain Encroachment Permit approved by the AHJ.

1.06 RIGHTS-OF-WAY OCCUPANCY PERMIT

A. Obtain Rights-of-Way Occupancy Permit approved by the AHJ.

1.07 TRAFFIC CONTROL PLAN (TCP)

A. Approval of the TCP by the AHJ shall in no way relieve the Contractor of the responsibility for traffic and safety requirements.

B. Include labor, material, equipment, tools, and services used in the regulation of construction traffic to and from the Project Site, as well as public vehicular and pedestrian traffic within the Project limits.

C. Provide a TCP for each phase or segment of the construction meeting the requirements of the AHJ and as specified in this Section.
   1. Each TCP shall be considered separately.

D. Obtain TCP approved by the AHJ.

E. TCP constraints:
   1. Access to local streets and residences shall be maintained at all times, except as noted.
      a. Turn lanes are not considered as travel lanes.
      b. Provide 1 travel lane that is 12 feet wide in each direction at all times.
      c. The table below describes the traffic control restrictions.

Traffic Control Lane Closure Special Requirements		
Street Name	**Days/Hours**	**Minimum Lanes to Remain Open**
Pleasant Grove Blvd.	All times	two lanes in each direction shall remain open at all times (see note 1).
Painted Desert Dr.	All times	one lane shall remain open at all times (see note 1).
Notes: (1) The roadway shall be open at all times.		

F. Submit approved TCP to the Engineer within 48 hours of approval by the AHJ. Changes to the TCP:
   1. If, during the execution of the Work, the Contractor determines that the traffic control is not functioning as intended, submit revised TCP to the AHJ for approval.
   2. Submit revised approved TCP to the Engineer within 48 hours of completing a change.

G. Provide for the protection of the traveling public, pedestrians, and workers within the area covered by the limits of construction, at all times when the area is affected by construction facilities or activities, including the following:
   1. Public traffic access.
   2. Business access.
   3. Private property access.
      a. Warn, control, protect, and expedite vehicular and pedestrian traffic through the private property.
   4. Driveway access.
   5. Pedestrian access.
   6. Bus stop access.
      a. Provide bus stop closure schedule (BSCS) attached to the TCP.
      b. BSCS shall identify specific durations and times of day for proposed bus stop closures.
      c. Closures are not to exceed 2 consecutive bus stops at a time or 1,000 feet at a time.

d. During construction, coordinate with the AHJ regarding specific dates of bus stop closures.
    1) Inform the Owner of coordination details.
7. Sanitation (trash) truck access.
8. Bike access.
    a. Maintain safe bike facilities through the work zone and associated traffic control layouts.
    b. Provide alternative bike facilities or designated detour routes when necessitated by temporary removal of existing bike lanes.
9. Emergency vehicle access.
    a. Maintain access for emergency vehicles at all times.
10. School zones and safe routes to school.
    a. When a designated safe route to school is encroached upon by a construction work zone or the AHJ identifies a need for students to be assisted in the safe crossing through the work zone, provide a qualified crossing guard approved by the AHJ.
        1) Crossing guard shall be present for the full duration of time that children are likely to be present, as determined by the AHJ.
        2) Contractor is responsible for fees associated with the use of crossing guards.
11. Protection from excavations.
12. Limit access to work sites.

1.08 NOTIFICATION PLAN

A. Submit Notification Plan to the Engineer for approval.

B. Define who will notify, how they will notify, and when they will notify.
    1. Notify affected emergency agencies, residences, and businesses within the area of current work 15 days prior to start of operations.
    2. Notify the AHJ for any traffic control or work areas affecting traffic signals, public bus routes, or bus stops at a minimum of 72 hours prior to any the work.

C. Notify the Engineer 15 days prior to start of construction.

D. Notify the AHJ a minimum of 2 working days prior to the anticipated beginning of construction.
    1. Emergency services, such as police and fire.
    2. Other services, such as bus service, mail, and garbage collection.

E. Residential areas:
    1. Notify adjacent residents as applicable at least 4 days prior to restricting driveway access or starting any work, using “door knob type” notices approved by the Engineer.
        a. Describe the impending work.
        b. Identify dates and stages of work.
    2. Give special consideration to multi-family residential complexes and other high-density uses.

F. Vehicular traffic: Define placement of the following:
   1. Project signs.
      a. Locate as indicated on the Drawings.
   2. Text message boards.
      a. Locate as indicated on the Drawings.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01562

TEMPORARY TREE AND PLANT PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Tree and plant protection.

1.02 REFERENCES

A. American National Standards Institute (ANSI):
   1. A300 - For Tree Care Operations - Tree, Shrub, and Other Woody Plant Maintenance Standard Practices (Pruning).

B. American Society of Consulting Arborists (ASCA).

C. International Society of Arboriculture (ISA).

D. City of Roseville Municipal Code.

1.03 MEASUREMENT AND PAYMENT

A. Payment for tree protection, including tree pruning or tree removal, shall be paid as a lump sum basis that shall include all items specified in this Section unless payment is specified otherwise in this Section.

1.04 SUBMITTALS

A. As specified in Section 01330 - Submittal Procedures.

B. Tree Permit Application per City of Roseville Municipal Code, Chapter 19.66, which includes but is not limited to:
   1. Arborist's Report.
   2. Site Plan Map.
   3. Utility Trenching Pathway Plan.

C. Certification of a Registered Consulting Arborist (designated ASCA or ISA) to review and approve temporary protection measures for trees indicated to remain.

D. Protection Zone Exhibit indicating intended location of tree protection fencing.

E. Tree maintenance plan: Arborist recommendations for care of trees, both during construction and after work is completed.

1.05 PROJECT CONDITIONS

A. The CONTRACTOR shall acquire an approved Tree Permit from the City of Roseville for any regulated activity within the protected zone of a protected tree

where the encroachment exceeds 20 percent of the protected zone, or as required by project construction. Refer to the Attachment A - City of Roseville Municipal Code, Chapter 19.66 for details and exemptions where a Tree Permit is not needed.

B. Preserve and protect existing trees and plants to remain from foliage, branch, trunk, or root damage that could result from construction operations.

C. Prevent damage including, but not limited to, the following:
   1. Trunk damage from equipment operations, material storage, or from nailing or bolting.
   2. Trunk and branch damage caused by ropes or guy wires.
   3. Root or soil contamination from spilled solvents, gasoline, paint, lime slurry, and other noxious materials.

1.06 QUALITY ASSURANCE

A. Arborist qualifications: Certified by ISA.

B. Pre-construction conference: To establish schedule and procedures for tree protection.

C. Pre-construction documentation: To establish pre-construction condition of existing tree to remain that might be misconstrued as damage caused by construction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pruning paint: Black latex, water-based paint, free of all petroleum products.

B. Tree protection fencing: As indicated on the Drawings.
   1. Provide continuous fencing between posts, pulled taut prior to securing to posts, and firmly attached to the posts with a minimum of 4 wire ties.
   2. Orange, plastic mesh fencing:
      a. Fencing minimum height: 4 feet.
      b. “t” bar posts:
         1) Minimum height: 5 feet.
         2) Installed 7 feet on centers or as required to maintain vertical fence.
   3. Chain-link fencing:
      a. Galvanized-steel fencing fabricated from minimum 2-inch opening, 0.148-inch-diameter wire chain-link fabric.
      b. Fencing minimum height: 60-inches high.
      c. Pipe posts:
         1) Minimum outside diameter (OD) line posts: 2-3/8-inch OD.
         2) Minimum outside diameter (OD) corner and pull posts: 2-7/8-inch OD.
         3) Top tension wire minimum diameter: 0.177-inch diameter.
         4) Bottom tension wire minimum diameter: 0.177-inch-diameter.
         5) Accessories: Tie wires, hog ring ties, and other accessories for a complete fence system.

PART 3 EXECUTION

3.01 PROTECTION OF EXISTING TREES AND SHRUBS

A. Refer to Attachment A - City of Roseville Municipal Code, Chapter 19.66.

B. Site preparation work and/or construction work shall not begin in any area where tree preservation measures have not been completed and approved.

C. Tree protection zone: Install temporary fencing outside the edge of the protected zone or drip line of the tree to be protected from construction damage.
   1. Install fencing with a radius of the largest diameter of the tree's drip line plus one foot, unless otherwise indicated by Consulting Arborist.
   2. Protect tree and shrub root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials.
   3. Protect root systems from flooding, eroding, or excessive wetting.
   4. Do not store construction materials, equipment, debris, or other material within the drip line of remaining trees.
   5. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems.
   6. Designate limited areas as concrete washout areas away from root zones.

D. Install tree protection fencing around each tree to be preserved as indicated in the tree treatment schedule and on the tree protection plan.
   1. Each tree to be preserved shall be protected with a tree protection fence. Install tree protection fencing prior to site work or construction activity.
   2. Place signs on the fence around each individual protected tree as specified in Attachment A - City of Roseville Municipal Code, Chapter 19.66.
   3. Immediately repair damage to tree fences occurring during the progress of the work at no additional cost to Owner.
   4. Workers shall be clearly instructed to exercise caution in performance of work near trees being preserved.

E. Pruning of trees:
   1. Prune trees in accordance with the ANSI A300 for tree pruning.
      a. City shall have the first right to conduct the pruning required by the Contractor for prosecution of the Work.
      b. Otherwise, pruning shall be completed by professional arborists who have received training in proper pruning techniques.
   2. Make cuts sufficiently close to the parent limb or trunk without cutting into the branch collar or leaving a protruding stub, so that closure can readily start under normal conditions.
      a. All lateral cuts shall be made to a lateral that is least 1/3 the diameter of the parent limb.
      b. Clean cuts shall be made at all times.

3. Prune trees in a manner that will not destroy or alter the natural shape and character of the tree.
    a. Apply black latex paint to fresh wounds on Oak (Quercus) species immediately after each cut is made.
4. Crown cleaning prune designated trees shall include selective removal of dead, diseased, and/or broken limbs.

3.02 EXCAVATION

A. Refer to Attachment A - City of Roseville Municipal Code, Chapter 19.66.

B. Do not excavate within drip line of protected trees.

C. Within drip line of trees, hand clear to minimize damage to root systems.

3.03 TREE REPAIR AND REPLACEMENT

A. Refer to Attachment A - City of Roseville Municipal Code, Chapter 19.66.

B. Promptly treat damaged trunks, limbs, and roots according to written instructions of Consulting Arborist.

3.04 DISPOSAL OF FENCING MATERIALS

A. Promptly remove protective fencing upon completion of construction activities.

END OF SECTION

ATTACHMENT A - CITY OF ROSEVILLE MUNICIPAL CODE, CHAPTER 19.66

CHAPTER 19.66
TREE PRESERVATION

§ 19.66.010. Purpose.

A. Roseville's native vegetation consists of valley grasslands with scattered native oaks and oak and riparian woodlands. Trees in the City enhance the natural scenic beauty, sustain long-term potential increase in property values, maintain original ecology, provide tempering of extreme temperatures, reduce soil erosion and increase the oxygen output of the area needed to combat air pollution.

B. For these reasons, the Council finds that, in order to promote the public health, safety and general welfare of the City of Roseville while at the same time recognizing individual rights to develop private property, it is necessary to enact regulations controlling the removal of and preservation of trees within the City and to reforest our urban environment.

(Ord. 5428 § 1, 2014)

§ 19.66.020. Definitions.

Administrative tree permit. A Tree Permit issued by the Manager that is not associated with a separate discretionary entitlement.

Arborist. An individual certified as an arborist by the International Society of Arboriculture (ISA).

Arborist, city. An arborist employed by or chosen and retained by the City to review, evaluate and prepare reports and requests to remove and/or relocate protected trees. In performing the duties and responsibilities, the City arborist may conduct field inspections independently or in the company of City employees and/or other arborists.

Arborist report. A report prepared by an arborist containing specific information on the location, condition, potential impacts of development, recommended actions and mitigation measures regarding one or more trees on an individual lot or project site.

Certification letter. A concluding statement by an arborist stating that work that was performed was observed by an arborist and complies with the conditions of the discretionary project, the arborist report, the Tree Permit and this Zoning Ordinance.

Cutting. The detaching or separating of any limb, branch or root from a tree.

Dead tree. A tree that does not contain any live tissue (i.e., green leaves or live limbs).

Deadwood. Limbs or branches that contain no green leaves or live limbs.

Deadwooding. The act of removing deadwood. (Not a regulated activity when performed by or under the direct supervision of a certified arborist.)

Developer. Any person conducting any regulated activity within the protected zone of a protected tree.

Diameter at breast height (DBH). The diameter of a tree measured at four and one-half feet above ground level on the high side of the tree. The diameter may be calculated by use of the following formula: DBH = circumference at breast height/3.142.

Dripline. The outermost edge of a tree's canopy prior to any cutting. When depicted on a map, the

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dripline will appear as an irregular shaped circle that follows the contour of the tree's branches as seen from overhead.

Encroachment. Any regulated activity conducted within the protected zone of a protected tree.

Grading. Any removal or deposit of soil or earth material.

Irrigation. Transfer of water to a site by artificial means.

Native oak tree. Any tree of the genus Quercus and species lobata (valley oak), douglasii (blue oak), wislizenii (interior live oak) or hybrids thereof.

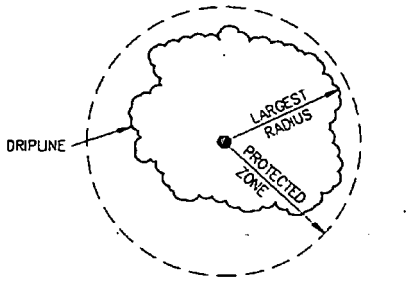
Native ground surface fabric. The layer of topsoil, humus, and vegetation that comprises the native ground surface.

Preconstruction phase. The time between the approval of a discretionary project and the site planning meeting.

Protected Public tree. Any protected tree with one-half or more of its trunk or canopy on or above public land.

Protected tree. Native oak tree equal to or greater than six inches diameter at breast height (DBH) measured as a total of a single trunk or multiple trunks.

Protected zone. A circle equal to the largest radius of a protected tree's dripline plus one foot. The radius is measured from the trunk at the base of the tree to the greatest extent of the tree's dripline.



PROTECTED ZONE = LARGEST DRIPLINE RADIUS PLUS ONE FOOT

Regulated activities. Any activity done within the protected zone of a native oak tree, (with the exception of routine maintenance performed by or under the direct supervision of a certified arborist) which would adversely impact the health of a native oak tree, including, but not limited to, cutting, grading, irrigating and trenching.

Removal. The physical removal of a tree or substantially all of a tree.

Routine maintenance. Actions taken for the continued health of a protected tree including, but not limited to, deadwooding, mowing grass close to a tree, and application of insecticides in conformance with standards established by the International Society of Arboriculture or the National Association of Arborists.

Site planning meeting. An on-site meeting with the developer and the developer's contractors, superintendent, and engineers; utility providers; the arborist; and City representatives to delineate

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special procedures, limits of work, lines of authority and special conditions or procedures not specifically covered by this chapter.

Tree permit. An authorization to conduct specific work or regulated activities within the protected zone of a protected tree.

Utility trenching pathway plan. A plan approved by the Planning Manager setting forth the location of utility trenches in the vicinity of protected trees.
(Ord. 5428 § 1, 2014)

§ 19.66.030. Tree Permits.

A. **Permit Required.** No person shall conduct any regulated activities within the protected zone of any protected tree; or harm, destroy, kill or remove any protected tree unless authorized by a Tree Permit or as provided in subsection C.

B. **Type of Permit.**

1. **Administrative Tree Permit.** An Administrative Tree Permit is required for any regulated activity affecting one or more protected trees, when the regulated activity is not associated with a discretionary project, does not include the removal of a protected tree, and the requested encroachment does not exceed 20 percent of the protected zone of any individual protected tree.

2. **Tree Permit.** A Tree Permit is required for any regulated activity within the protected zone of a protected tree where the encroachment exceeds 20 percent of the protected zone, or where the regulated activity is related to a discretionary project. In addition, a Tree Permit is required for the removal of any protected tree, unless otherwise exempted by this chapter.

C. **Exemptions.** A Tree Permit is not required for the removal of a protected tree under the following circumstances:

1. Trees damaged by thunderstorm, windstorm, flood, earthquake, fire or other natural cause and determined by a peace officer, fire fighter, public utility official, civil defense official or City code enforcement officer, acting in his or her official capacity, to present a danger to persons or property. Upon discovery of a condition justifying removal, the officer or official making the determination shall immediately provide written notification of the condition and action taken to the Planning Manager.

2. When removal is determined to be necessary by fire department personnel actively engaged in fighting a fire.

3. When compliance would interfere with activities of a public utility necessary to comply with applicable safety regulations and/or necessary to repair or avoid the interruptions of services provided by such a utility. Unless there is an imminent threat to the public health, safety or welfare, the Planning Manager shall be notified prior to the removal by a public utility of a protected tree.

4. The Planning Manager may allow removal of a protected tree which has been certified by an arborist to be a dead tree. An arborist-certified dead tree may be removed without

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any replacement or mitigation requirements.

5. A protected tree located on property developed with a single-family or two-family dwelling which has been granted occupancy.

6. When a protected living tree presents a hazard to health and safety or structures due to its structural condition and location, the tree may be removed without any replacement or mitigation requirements. The hazardous condition of the tree must be determined by an arborist. The Planning Manager must review the arborist's determination and consider the location of the protected tree prior to approving removal.

(Ord. 5428 § 1, 2014)

§ 19.66.040. Tree Permit application processing.

A. **Application Filing.** Applications for Tree Permits not associated with discretionary projects shall be filed with the Planning Division. Applications for Tree Permits for regulated activities associated with a discretionary project shall be included as part of the land use permit and/or subdivision application for the discretionary project. All Tree Permit applications shall use the forms provided by the Planning Division, and shall include an arborist's report as specified by Section 19.66.050, and a site plan with information as deemed necessary by the Planning Manager. The application shall also be accompanied by any application fee required by the City Council.

B. **Site Plan Map.** The requirement for a site plan map may be waived by the Planning Manager if the permit is for removal of dead trees or hazardous trees. A site plan map shall include the following information:

1. **Physical Characteristics.** The site plan map shall accurately portray the following existing and proposed features:

a. Property lines.

b. Streets, access easements and/or public or private driveways and other paved areas.

c. Existing and proposed buildings or structures, including eaves and other architectural features.

d. Setbacks of all buildings and structures from property lines.

e. Parking and other paved areas.

f. Land uses on parcel (existing and proposed as applicable).

g. Proposed grading and construction - including utilities, if available.

h. Existing and proposed grades.

i. Location of chimney(s).

2. **Tree Locations.** All protected trees located on the property must be depicted on the site plan map. Additionally, the site plan map shall indicate the exact location of the base and dripline for all protected trees within the project areas. A survey of the exact

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location(s) of the protected tree(s) trunks both horizontally and vertically shall be conducted by a professional engineer or a licensed land surveyor. The tree number(s) shall be shown on both the site plan and grading plan. The base elevation of each protected tree shall be shown on the grading plan.

3. **Protected Zone of Protected Tree(s).** The exact location of the protected zone of a protected tree is crucial in order to evaluate any impacts resulting from construction. Consequently, rough approximations will not be acceptable. In certain cases, it may be possible to physically stake the surveyed corner of building(s) or related improvements in the field in order to assess the potential impacts upon the trees.

C. **Application Evaluation Criteria.** The following criteria shall be used to support the finding identified in Section 19.78.060(F) for action on a Tree Permit requested to allow removal of native oak tree(s) or to encroach within the protected zone of any native oak tree(s):

1. **General.**

a. The proposed building's gross floor area in relation to the "usable" size of the site and the amount of usable space on the parcel which does not require the removal of protected trees;

b. Design features in comparison with other existing or approved building developments in the same vicinity and zone which have or had protected trees on the parcel;

c. Factors that are unique to the proposed property such as topographic constraints, lot configuration and other physical limitations;

d. The overall health and structural condition of the potentially impacted protected trees;

e. The approximate age of the protected tree compared with the average life span for that species;

f. The number of healthy protected trees that a given parcel of land will support, with and without the proposed development;

g. The effect of removal on soil stability/erosion, particularly near water courses or on steep slopes;

h. Whether or not there are any alternatives that would allow for the preservation of the protected tree; and

i. Any other information the approving body finds pertinent to the decision, including, if necessary, information obtained at a public hearing.

2. **For Removal.**

a. Age of the protected tree with regard to whether or not removal of the protected tree would encourage healthier, more vigorous growth of younger similar trees in the area;

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b. The number of existing protected trees in the area and the effect of removal upon public health, safety and general welfare of the area;

c. The potential for the protected tree to be a public nuisance or interfere with utility service, as well as its proximity to existing structures; and

d. Present and future shade potential with regard to solar heating and cooling.

3. **For Encroachment.** Whether or not the degree of encroachment is likely to result in the subsequent decline of the affected protected tree or create a future risk to public safety or pose a hazard to adjacent structures.

D. **Discretionary Project.** Any non-ministerial development project that must be approved by either the City Council, Planning Commission, or the Design Committee. Discretionary projects include, but are not limited to, Conditional Use Permits, parcel maps, rezones, Design Review Permits, subdivision maps, or variances.

E. **Limitation on Approved Activities.** Tree Permits shall not be issued for temporary parking or storing of vehicles, trailers, equipment, construction materials or temporary structures within the protected zone of a protected tree.

F. **Permit Time Limits.** An approved Tree Permit shall be valid for a period of six months from the date of issuance. An extension of time may be granted for a period not to exceed an additional six months. Tree Permits associated with discretionary projects shall be valid only as long as the approval for the discretionary project is valid.

G. **Subsequent Permits.** After all Tree Permit conditions have been complied with and occupancy has been granted or a notice of completion filed for a project involving a Tree Permit, the Tree Permit conditions shall be deemed satisfied. Any future work around the trees is subject to a new Tree Permit and pursuant to the criteria of Section 19.66.030.

(Ord. 5428 § 1, 2014)

§ 19.66.050. Arborist’s report.

The arborist’s report required by Section 19.66.040 shall be prepared in accordance with this section.

A. **Minimum Information.** The arborist’s report shall include the following information:

1. Identification of each protected tree by number;

2. Botanical name of tree(s) by tree number;

3. Common name of tree(s) by tree number;

4. Location of tree(s) by tree number;

5. Diameter at breast height (DBH) by tree number;

6. Height by tree number (optional);

7. Dripline radius by tree number (measure longest radius);

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8. Condition by tree number; and

9. Recommendations for each protected tree by number.

B. **Determination of a Tree's Condition.** The information on tree condition in the report shall be developed as follows:

1. **Rating System.** The condition of each tree is to be considered when determining a tree's rating according to the following categories: excellent (it is rare that a tree qualifies in this category); good; fair to good; fair; fair to poor; or poor.

2. **Factors to Be Considered.** At least the following factors shall be considered in light of a tree's life expectancy under existing and planned conditions when determining a tree's rating:

a. The condition and environment of the tree's root crown (also roots, if applicable).

b. The condition of the trunk, including decay, injury callusing or presence of fungus sporophores.

c. The condition of the limbs, including strength of crotches, amount of deadwood, hollow areas, and whether there is excessive weight borne by the limbs.

d. The condition and growth rate history of the twigs, including pest damage and diseases.

e. Leaf appearance, including abnormal size and density as well as pest and disease damage.

f. The dripline environment, including evidence of grade changes and presence of water courses or ponding.

3. **Formulation of Tree Condition.** Using an averaging of the above factors together with the arborist's best judgment, the tree shall then be described using the above rating categories. It is important to rate the tree's structural condition separately from the tree's vigor condition if they are different. Root crown, trunk and limb ratings relate most to structure, while twigs and foliage, including growth rate, relate most to vigor. The structure of the root crown-trunk area is of primary importance and takes precedence over any other factor. This information should not be considered to be a formula but simply a guideline to help describe a tree's condition.

C. **Arborist's Recommendations.** The arborist's recommendations shall be developed in compliance with the following:

1. **Recommendations by Tree Number.** Based upon the conditions and findings, recommendations should be made that logically follow the report conditions. For instance, if weak crotches are reported, cabling may be a logical recommendation to include in the report. These recommended mitigation measures should be spelled out and in some cases may even improve the tree's condition ratings.

2. **General Recommendations.** Specific and general preservation measures to be taken

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for each tree not being removed. The specific recommendations must consider the impacts from the activities proposed.

(Ord. 5428 § 1, 2014)

§ 19.66.060. Standard policies and procedures for approved work.

Great care must be exercised when work is conducted upon or around protected trees. The purpose of this section is to define procedures necessary to protect the health of the affected protected trees. The policies and procedures described in this section apply to all encroachments into the protected zone of protected trees. All Tree Permits shall be deemed to incorporate the provisions of this chapter except as the Tree Permit may otherwise specifically provide.

A. **Trenching Procedure.** Trenching within the protected zone of a protected tree, when permitted, may only be conducted with hand tools or as otherwise directed by an arborist, in order to avoid root injury.

B. **Cutting Roots.**

1. Minor roots less than one inch in diameter may be cut, but damaged roots shall be traced back and cleanly cut behind any split, cracked or damaged area.

2. Major roots over one inch in diameter may not be cut without approval of an arborist. Depending upon the type of improvement being proposed, bridging techniques or a new site design may need to be employed to protect the root and the tree.

C. **Ground Surface Fabric.** If any native ground surface fabric within the protected zone must be removed for any reason, it shall be replaced within 48 hours.

D. **Irrigation Systems.** An independent low-flow drip irrigation system may be used for establishing drought-tolerant plants within the protected zone of a protected tree. Irrigation shall be gradually reduced and discontinued after a two-year period.

E. **Plant Materials Under Oaks.** Planting live material under native oak trees is generally discouraged, and it will not be permitted within six feet of the trunk of a native oak tree with a diameter at breast height (DBH) of 18 inches or less, or within 10 feet of the trunk of a native oak tree with a DBH of more than 18 inches. Only drought tolerant plants will be permitted within the protected zone of native oak trees.

F. **Protective Fencing.**

1. **Type of Fencing.** A minimum five-foot high chain link or substitute fence approved by the Manager shall be installed at the outermost edge of the protected zone of each protected tree or groups of protected trees. Exceptions to this policy may occur in cases where protected trees are located on slopes that will not be graded. However, approval must be obtained from the Planning Division to omit fences in any area of the project.

2. **Fence Installation.** The fences shall be installed in accordance with the approved fencing plan prior to the commencement of any grading operations or such other time as determined by the review body. The developer shall call the Planning Division for an inspection of the fencing prior to grading operations.

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3. **Signing.** Signs shall be installed on the fence in four equidistant locations around each individual protected tree. The size of each sign must be a minimum of two feet by two feet and must contain the following language:

   "WARNING, THIS FENCE SHALL NOT BE REMOVED OR RELOCATED WITHOUT WRITTEN AUTHORIZATION FROM THE ROSEVILLE PLANNING DIVISION."

   Signs placed on fencing around a grove of protected trees shall be placed at approximately 50-foot intervals.

4. **Fence Maintenance.** Once approval has been obtained, the fences shall remain in place throughout the entire construction period and shall not be removed, relocated, taken down, or otherwise modified in whole or in part without prior written authorization from the Planning Division.

G. **Performance Guarantee.** A minimum $10,000.00 deposit (or greater, if deemed necessary by the Approving Authority) shall be posted and maintained to insure the preservation of protected trees during construction. The deposit shall be posted in a form approved by the City Attorney prior to any grading, delivery of materials, or movement of heavy equipment onto the site, or issuance of any permits. Each violation of any Tree Permit condition regarding tree preservation shall result in forfeiture of a portion or the entirety of the deposit, at the discretion of the Approving Authority, provided that such determinations may be appealed as provided by Chapter 19.80.

H. **Retaining Walls and Root Protection.** Where a Tree Permit has been approved for construction of a retaining wall(s) within the protected zone of a protected tree, the developer will be required to provide for immediate protection of exposed roots from moisture loss during the time prior to completion of the wall. The retaining wall shall be constructed within 72 hours after completion of grading.

I. **Preservation Devices.** If required, preservation devices such as aeration systems, oak tree wells, drains, special foundation systems, special paving and cabling systems must be installed per approved plans and certified by the project arborist.

J. **Grading.**

1. Every effort should be made to avoid cut and/or fill slopes within or in the vicinity of the protected zone of any protected tree.

2. No grade changes are permitted which would cause water to drain to the area within twice the longest radius of the protected zone of any protected tree.

3. No grade changes are permitted which would result in the ground being lowered on all sides of the tree.

K. **Chimney Locations.** A chimney for wood burning fireplaces or stoves shall not be located within the canopy of the tree or in such a location that sparks emitted from the chimney may damage a tree.

L. **Certification Letters.** Certification letters are required for all regulated activities within the

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protected zone of protected trees, attesting that all work was conducted in accordance with the appropriate permits and the requirements of this chapter. The project arborist will be required to submit a certification letter to the Planning Division within five working days of completing any regulated activity.

M. **On-Site Information.** The following information must be continuously maintained on-site while any construction activity is ongoing for a project requiring a Tree Permit:

1. Arborist's report and all modifications;
2. Tree location map with a copy of the tree fencing plan;
3. Tree Permit conditions of approval and compliance verification and inspection checklist;
4. Approved, stamped construction plans;
5. Tree preservation guidelines; and
6. Approved planting and irrigation drawings.

N. **Information on Standard Policies and Procedures.** The developer shall be responsible for informing all contractors, subcontractors and persons who will be performing work around protected trees, of the standard policies and procedures for working around trees and conditions of approval for the project's Tree Permit. The developer shall provide all such information in writing.

O. **Utility Trenching Pathway Plan.** As a condition of the Tree Permit, the developer will be required to submit a utility trenching pathway plan for approval concurrent with approval of the project improvement or civil plans.

1. **Contents.** The trenching pathway plan shall depict all of the following systems: storm drains, sewers, easements, water mains, area drains, and underground utilities. The trenching pathway plan must show all lateral lines serving buildings. To be completely effective, the trenching pathway plan must include the surveyed locations of all protected trees on the project as well as an accurate plotting of the protected zone of each protected tree.
2. **Standards for Plan.** The trenching pathway plan should be developed considering the following general guidelines:
    a. The trenching pathway plan must be developed to avoid encroaching into the protected zone of any protected tree.
    b. Where it is impossible to avoid encroachment, the design must minimize the extent of such encroachment. Encroachments and mitigation measures must be addressed in a supplemental arborist's report.

P. **Final Certification of Tree Work.** All of the tree preservation measures required by the conditions of the discretionary project approval, the arborist's report and the Tree Permit, as applicable shall be completed and certified by the project arborist prior to issuance of an

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occupancy permit.
(Ord. 5428 § 1, 2014)

§ 19.66.070. Oak tree planting and replacement program.

The Approving Authority may condition any Tree Permit involving removal of a protected tree upon the replacement of trees in kind. The replacement requirement shall be calculated based upon an inch for an inch replacement of the DBH of the removed tree(s) where a 15-gallon tree will replace one inch DBH of the removed tree; a 24-inch box tree will replace two inches, and a 36-inch box tree will replace three inches. The replacement trees shall have a combined diameter equivalent not less than the total diameter of the tree(s) removed. A minimum of 50 percent of the replacement requirement shall be met by native oaks. Up to 50 percent may be met by non-native species. The Approving Authority may approve a replacement program using one of the following four methods or any combination of the four methods. The preferred alternative is on-site replacement.

A. **Replacement Trees.** Replacement trees may be planted on-site or in other areas where maintenance and irrigation are provided to ensure survival of the trees.

B. **Relocation of Trees.** In certain cases, the City may consider the relocation of native oak trees from one area in a project to another. Credit shall be given for relocation on the same basis as replacement. The guidelines and limitations for relocation are as follows:

1. The tree(s) being recommended for relocation must be approved by the Approving Authority whose decision will be based upon factors relating to health, type, size, time of year and proposed location.

2. The relocation of a tree shall be conditioned to require a secured five-year replacement agreement for the tree with security provided by the developer in a form satisfactory to the City Attorney. If at the end of five years the tree is deemed by an arborist to be in a substantially similar condition to that prior to the transplanting, the agreement will be terminated. If the tree dies during the five-year period, it shall be replaced as required by this section.

C. **Revegetation Requirements.** The Approving Authority may, instead of requiring replacement trees, require implementation of a revegetation plan. The developer shall enter into a written agreement with the City obligating the developer to comply with the requirements of the revegetation plan. A performance security or bond for 150 percent of the cost of the revegetation plan shall be required to insure that the agreement is fulfilled. The Approving Authority shall approve the proposed plan. The revegetation program shall propagate native oak trees from seed using currently accepted methods. A revegetation program shall identify the seed source of the trees to be propagated, the location of the plots, the methods to be used to ensure success of the revegetation program, an annual reporting requirement, and the criteria to be used to measure the success of the plan. A revegetation program shall not be considered complete until the trees to be propagated have reached one-half inch in diameter or the revegetation plan demonstrates the need for alternative success criteria and achieves mitigation on an inch for inch basis as approved by the Planning Commission.

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D. **In-Lieu Mitigation Fee.** The Approving Authority may determine that the remedies described above are not feasible or desirable and may require instead payment of a cash contribution based upon the cost of purchasing, planting, irrigating and maintaining the required number of 15-gallon trees. The cost of purchasing, planting, irrigating and maintaining a 15-gallon oak tree shall be set by City Council resolution. The cash contribution shall be deposited into one or both of the following funds as determined by the Planning Manager:

1. **Native Oak Tree Propagation Fund.** This fund shall be used to propagate, purchase, plant, protect and maintain native oak trees. Uses of the fund include, but are not limited to, purchasing property to plant or protect native oak trees, propagating native oak trees from seed or container stock and maintaining existing and replacement native oak trees.

2. **Non-Native Tree Fund.** This fund shall be used to purchase, plant, irrigate and maintain non-native trees within Roseville. Uses of the fund include, but are not limited to, purchasing and propagating non-native trees from seed or container stock and maintaining existing and replacement non-native trees.

(Ord. 5428 § 1, 2014)

§ 19.66.080. Violations and enforcement.

A. **Penalty.** Violation of this chapter shall be punishable as a misdemeanor or an infraction in the discretion of the City Attorney.

B. **Administrative Remedies.**

1. **Administrative Enforcement.**

a. In addition to any other penalties allowed by this Code, the Manager may issue a citation or citations upon finding that a violation of this Code and/or a violation of the conditions of approval of a permit issued pursuant to this Code has occurred. The citation shall be issued in accordance with Chapter 2.50 (Administrative Citations) of the Roseville Municipal Code.

b. If, upon review of a report prepared by a certified arborist and/or the City arborist, the Manager determines that damage to a native oak tree or trees has resulted due to violation of this Code, the Manager shall forward the matter to the Planning Commission for determination of the appropriate remedial action and/or restitution.

c. Whenever any construction work or other regulated activity is being performed contrary to and/or in violation of the provisions of this chapter or the conditions of a Tree Permit, the Manager may issue a written notice to the responsible party to stop work on the project on which the violation has occurred or upon the property where the native oak trees are located. The notice shall state the nature of the violation and the risk to the trees. No work shall be allowed to continue and no subsequent permits shall be issued until the violation has been rectified.

2. **Planning Commission Enforcement—Remediation and Restitution.**

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a. In addition to any other penalties allowed by this Code, in cases where a native oak tree or multiple native oak trees are damaged, killed, removed or damaged to the point where their long term survival cannot be assured, due to violation of this Code, the Planning Commission may require remediation and/or restitution. Any person or entity who commits, allows, causes, maintains or assists in any violation of any provision of this chapter or who damages, kills, or removes any tree in violation of this chapter, or assists another in doing so, may be required to provide remediation and/or restitution to the City.

b. The remediation amount for a damaged tree or trees shall be as determined by the Planning Commission and shall be the amount recommended by a certified arborist and/or the City arborist upon inspection of the tree(s) and development of a detailed course of remediation designed to repair the damage and ensure the long term survival of the tree(s), in order to assure the recovery of the tree(s).

c. The restitution amount for a removed, killed or damaged tree or trees, where the damage is to the extent that the tree's long term survival cannot be assured, shall be as determined by the Planning Commission and shall be calculated at triple the rate stated in Section 19.66.070(D).

3. A remediation or restitution requirement may be appealed to the City Council as provided in Chapter 19.80.

4. In addition to any other penalties allowed by this title, the Planning Commission may recommend revocation of a permit per the provisions of Chapter 19.88.

(Ord. 5428 § 1, 2014)

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SECTION 01573

EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Installation of erosion and sediment control filter fabric fences.
   2. Triangular filter fabric fences.
   3. Straw bale fences and brush berms used during construction and prior to final development of site.

B. Purpose of control fences is to contain pollutants from overland flow.
   1. Control fences are not for use in channelized flow areas.

1.02 UNIT PRICES

A. Measure and pay for filter fabric fence by linear foot of completed and accepted filter fabric fence installed around construction site. Limits of construction site are indicated on the Drawings.

B. Measure and pay for triangular filter fabric fence by linear feet of completed and accepted triangular filter fabric fence between limits of beginning and ending of wooden stakes.

C. Measure and pay for straw bale barrier by linear feet of completed and accepted straw bale barrier.

D. Measure and pay for brush berm by linear feet of completed and accepted brush berm.

1.03 SUBMITTALS

A. Manufacturer's catalog sheets and other product data on geotextile fabric.

1.04 REFERENCES

A. ASTM International (ASTM):
   1. D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3).
   2. D4355 - Standard Test Method for Deterioration of Geotextiles from Exposure to Light, Moisture and Heat in a Xenon-Arc Type Apparatus.
   3. D4491- Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
   4. D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
   5. D4833 - Standard Test Method for Index Puncture Resistance of Geomembranes, and Related Products.

6. D5665- Standard Specification for Thermoplastic Fabrics Used in Cold-Applied Roofing and Waterproofing.
7. D6459 - Standard Test Method for Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Hillslopes from Rainfall-Induced Erosion.
8. D6475 - Standard Test Method for Measuring Mass per Unit Area of Erosion Control Blankets.
9. D6525 - Standard Test Method for Measuring Nominal Thickness of Rolled Erosion Control Products.
10. D6567 - Standard Test Method for Measuring the Light Penetration of a Rolled Erosion Control Product (RECP).
11. D6818 - Standard Test Method for Ultimate Tensile Properties of Rolled Erosion Control Products.

1.05 QUALITY ASSURANCE FOR EROSION CONTROL BLANKETS

A. Product shall be manufactured in accordance to a documented Quality Control Program. At a minimum, the following procedures and documentation shall be provided:
   1. Manufacturing Quality Control Program Manual.
   2. First piece inspection of products produced to assure component materials and finished product tolerances are within manufacturer specifications.
   3. Additional inspections for product conformance shall be conducted during the run after the first piece inspection.
   4. Every roll shall be visually inspected.
   5. Moisture content of straw and coconut fibers measured upon receipt.
   6. At a minimum, every third roll shall be weighed to ensure conformance of manufacturer's specifications.
   7. Each individual erosion control blanket shall be inspected prior to packaging for conformance to manufacturing specifications.

1.06 PERFORMANCE REQUIREMENTS FOR EROSION CONTROL BLANKETS

A. Erosion control blanket shall provide a temporary, biodegradable cover material to reduce slope and enhance vegetation. Erosion control blanket performance capabilities shall be in accordance with ASTM D6459, "Determination of Erosion Control Blanket (ECB) Performance in Protecting Hillslopes from Rainfall-Induced Erosion."

PART 2 PRODUCTS

2.01 FILTER FABRIC

A. Provide woven or nonwoven geotextile filter fabric made of either polypropylene, polyethylene, ethylene, or polyamide material.

B. Geotextile fabric:
   1. Grab strength of 100 pounds per square inch in any principal direction in accordance with ASTM D4632.

2. Puncture strength exceeding 115 pounds per square inch in accordance with ASTM D4833.
3. Equivalent opening size between 50 and 140 for soils with more than 15 percent by weight passing No. 200 sieve and between 20 and 50 for soil with less than 15 percent by weight passing No. 200 sieve.
4. Maximum water flow rate of 40 gallons per minute per square feet in accordance with ASTM D4491.

C. Filter fabric material shall contain ultraviolet inhibitors and stabilizers to provide expected usable life comparable to anticipated construction period.
1. Ultraviolet stability shall exceed 70 percent after 500 hours of exposure in accordance with ASTM D4355.

D. Manufacturers: The following or equal:
1. Mirafi, Inc.

2.02 EROSION CONTROL BLANKETS

A. Manufacturers: One of the following, or equal:
1. American Excelsior Co., AEC Premier Straw/Coconut™ Blankets.
2. Proper Geotextile Systems.

B. Product requirements:
1. Furnished in rolls and wrapped with suitable material to protect against moisture intrusion and extended ultraviolet exposure prior to placement.
2. Consistent thickness with fibers distributed evenly over the entire area of the blanket.
3. Free of defects and voids that would interfere with proper installation or impair performance.

C. Materials:
1. Blend of 70 percent straw and 30 percent coconut fibers.
   a. Straw fibers shall consist of straw with 75 percent of fibers greater than 4 inches in length, and certified weed seed free.
   b. Product shall be 100 percent biodegradable.
   c. Blended fibers shall be evenly distributed throughout the entire area of the blanket.
   d. Top and bottom of each blanket is covered with biodegradable jute netting.
2. Blanket performance requirements:
   a. C factor: 0.15.
   b. Shear stress: 2.0 lb/ft^2.
   c. Velocity: 8.5 feet per second.
   d. Functional longevity: Less than 24 months.
3. Material characteristics:
   a. Width: 8.0 feet.
   b. Length: 112.5 feet.
   c. Area: 100.0 yard^2.
   d. Weight: 50.0 pounds.
   e. Mass per unit area: 0.50 lv/yd^2.
   f. Net openings: 0.5 inch by 1.0 inch.
   g. Minimum index values:

Index Property	Test Method	Value
Thickness	ASTM D6525	0.331 in (8.41 mm)
Light Penetration	ASTM D6567	5.8 percent
Mass per Unit Area	ASTM D6475	0.81 lb/yd^2 (437 g/m^2)
MD-Tensile Strength Max.	ASTM D6818	321.6 lb/ft (4.69 kN/m)
TD-Tensile Strength Max.	ASTM D6818	159.6 lb/ft (2.33 kN/m)
MD-Elongation	ASTM D6818	4.1 percent
TD-Elongation	ASTM D6818	4.8 percent
Water Absorption	ASTM D5665	382 percent

D. Staples:
   1. 100 percent biodegradable with a U-shaped top.
   2. Minimum 4 inch biodegradable staple for cohesive soils and 6 inches for non-cohesive soils.

PART 3 EXECUTION

3.01 PREPARATION AND INSTALLATION

A. Provide erosion and sediment control systems at locations as indicated on the Drawings.
   1. Construct in accordance with requirements as indicated on the Drawings and of type indicated as specified in this Section.

B. No clearing, grubbing or rough cutting permitted until erosion and sediment control systems are in place, other than site work specifically directed by Project Manager to allow soil testing and surveying.

C. Maintain existing erosion and sediment control systems located within Project site until acceptance of Project or until directed by Project Manager to remove and discard existing system.

D. Regularly inspect and repair or replace damaged components of erosion and sediment control systems as specified in this Section.
   1. Unless otherwise directed, maintain erosion and sediment control systems until Project area stabilization is accepted by the Authority.
   2. Remove erosion and sediment control systems promptly when directed by Project Manager.
   3. Discard removed materials off site.

E. Remove and dispose sediment deposits at designated spoil site for Project.
   1. If a Project spoil site is not indicated on the Drawings, dispose of sediment off site at location not in or adjacent to stream or floodplain.
   2. Assume responsibility for off-site disposal.
   3. Spread sediment evenly throughout site, compacted and stabilized.

4. Prevent sediment from flushing into a stream or drainage way.
5. If sediment has been contaminated, dispose of in accordance with existing federal, state, and local rules and regulations.

F. Unless otherwise indicated, compact embankments, excavations, and trenches by mechanically blading, tamping, and rolling soil in maximum of 8-inch layers.
1. Compaction density shall be at a minimum of 90 percent Standard Proctor ASTM D698 density.
2. Make at least 1 test per 500 cubic yards of embankment.

G. Prohibit equipment and vehicles from maneuvering on areas outside of dedicated rights-of-way and easements for construction.
1. Immediately repair damage caused by construction traffic to erosion and sediment control.

H. Conduct construction operations under this Contract in conformance with erosion control practices described in the Agreement and Contract RFP in Volumes 1 and 2.

3.02 GENERAL CONSTRUCTION METHODS

A. Provide erosion and sedimentation control systems as indicated on the Drawings.
1. Install erosion and sedimentation control systems in manner that surface runoff shall percolate through system in sheet flow fashion and allow retention and accumulation of sediment.

B. Inspect erosion and sedimentation control systems after each rainfall, daily during periods of prolonged rainfall, and at minimum once each week.
1. Repair or replace damaged sections immediately.
2. Remove sediment deposits when silt reaches depth 1/3 height of fence or 6 inches, whichever is less.

3.03 SITE PREPARATION FOR EROSION CONTROL BLANKETS

A. Before placing erosion control blanket, certify that the subgrade has been properly compacted, graded smooth, has no depressions, voids, soft or uncompacted areas, is free from obstructions such as tree roots, protruding stones or other foreign matter, and is seeded and fertilized according to Project specifications.
1. Contractor shall not proceed until unsatisfactory conditions have been remedied.
2. By beginning construction, Contractor signifies that the proceeding work is in conformance with this Section.

B. Fine grade the subgrade by hand dressing where necessary to remove local deviations.

C. No vehicular traffic shall be permitted directly on the erosion control blanket.

D. Slope installation.
1. Erosion control blanket shall be installed as directed by Owner's representative in accordance with manufacturer's Installation Guidelines,

Staple Pattern Guides, and CAD details. The extent of erosion control blanket shall be as indicated on the Drawings.

2. Erosion control blanket shall be oriented in vertical strips and anchored with staples, as identified in the Staple Pattern Guide.
    a. Adjacent strips shall be overlapped to allow for installation of a common row of staples that anchor through the nettings of both blankets.
    b. Horizontal joints between erosion control blankets shall be sufficiently overlapped with the uphill end on top for a common row of staples so that the staples anchor through the nettings of both blankets.
3. Where exposed to overland sheet flow, a trench shall be located at the uphill termination erosion control blanket shall be stapled to the bottom of the trench.
    a. Trench shall be backfilled and compacted.
    b. Where feasible, the uphill end of the blanket shall be extended 3 feet over the crest of the slope.

3.04 FILTER FABRIC FENCE CONSTRUCTION METHODS

A. Attach filter fabric to 1-inch by 2-inch wooden stakes or driven steel rods spaced a maximum of 3 feet apart and embedded minimum of 8 inches or deeper to hold fence in place.
    1. If filter fabric is factory preassembled with support netting, then maximum spacing allowable is 8 feet.
    2. Install anchoring stakes or rods at slight angle toward source of anticipated runoff.
    3. Contractor is responsible for providing adequate fence anchoring appropriate for the varying soil and rock conditions at the well sites.

B. Trench in toe of filter fabric fence with spade or mechanical trencher so that downward face of trench is flat and perpendicular to direction of flow.
    1. V-trench configuration as indicated on the Drawings may also be used.
    2. Lay filter fabric along edges of trench.
    3. Backfill and compact trench.

C. Filter fabric fence shall have a minimum height of 18 inches and a maximum height of 36 inches above natural ground.

D. Provide filter fabric in continuous rolls and cut to length of fence to minimize use of joints.
    1. When joints are necessary, splice fabric together only at support post with minimum 6-inch overlap and seal securely.

3.05 TRIANGULAR FILTER FABRIC FENCE CONSTRUCTION METHODS

A. Attach filter fabric to fence structure fashioned from 6 gauge, 6-inch by 6-inch wire mesh, 18 inches on each side as indicated on the Drawings.
    1. Fabric cover and skirt should be continuous wrapping of fabric.
    2. Skirt should form continuous extension of fabric on upstream side of fence.

B. Secure triangular fabric filter fence in place using one of the following methods:
    1. Toe-in skirt 6 inches with mechanically compacted material.

2. Weight down skirt with continuous layer of 3-inch to 5-inch graded rock.
3. Trench-in entire structure 4 inches.

C. If provided, anchor triangular fabric filter fence structure and skirt securely in place using 6-inch wire staples on 2-foot centers on both edges and on skirt, or staked using 18-inch by 3/8-inch diameter re-bar with tee ends.

D. Lap over fabric filter material by 6 inches to cover segment joints.
1. Fasten joints with galvanized shoat rings.

3.06 STRAW BALE FENCE CONSTRUCTION METHODS

A. Bound bales with either wire, nylon or polypropylene rope tied across hay bales.
1. Do not use jute or cotton bindings.

B. Place bales in row with ends tightly abutting adjacent bales.
1. Place bales with bindings parallel to ground surface.

C. Embed bale in soil a minimum of 4 inches.

D. Securely anchor bales in place by 3/8-inch rebar stakes driven through bales a minimum of 18 inches into ground.
1. Angle first stake in each bale toward previously laid bale to force bales together.

E. Fill gaps between bales with straw to prevent water from escaping between bales.
1. Wedge carefully in order not to separate bales.

F. Replace with new straw bale fence every 2 months.

3.07 BRUSH BERM CONSTRUCTION METHODS

A. Construct brush berm along contour lines by hand placing method.
1. Do not use machine placement of brush berm.

B. Use woody brush and branches having diameter less than 2 inches with 6 inches overlap.
1. Avoid incorporation of annual weeds and soil into brush berm.

C. Use minimum height of 18 inches measured from top of existing ground at upslope toe to top of berm.
1. Top width shall be 24 inches minimum and side slopes shall be 2:1 or flatter.

D. Embed brush berm into soil a minimum of 4 inches and anchor using either wire, nylon or polypropylene rope across berm with a minimum tension of 50 pounds.
1. Tie rope securely to 18-inch x 3/8-inch diameter rebar stakes driven into ground on 4-foot centers on both sides of berm.

END OF SECTION

SECTION 01601

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for products.

1.02 TERMINOLOGY

A. The words and terms listed below, are not defined terms that require initial capital letters, but, when this Section is referenced in other Specifications, have the indicated meaning.
   1. Manufacturer's Certificate of Source Testing:
      a. Form used to confirm that the applicable source tests have been performed and the results conform to the Contract Documents. Form template is provided at the end of this Section.
   2. Manufacturer's instructions:
      a. Stipulations, directions, and/or recommendations issued by the manufacturer of the product addressing handling, storage, installation, protection, erection, and/or application of the product.
   3. Product data:
      a. Information about the product, typically found in the manufacturer's catalogs specifications or other resources, including data sheets, bulletins, and brochures.
   4. Source Quality Control:
      a. Testing and inspections at the location of fabrication or assembly.
         1) Includes factory acceptance testing (FAT), factory testing, and Source Testing.
      b. Test reports, including the following information:
         1) Test description.
         2) List of equipment used.
         3) Name of the person conducting the test.
         4) Date and time the test was conducted.
         5) Ambient temperature and weather conditions.
         6) Raw data collected.
         7) Calculated results.
         8) Clear statement if the test passed or failed the requirements stated in the Contract Documents.
         9) Signature of the person responsible for the test.
   5. Special tools:
      a. Special wrenches, gauges, circuit setters, and other similar devices required for the proper operation or maintenance of a system that would not normally be in the Owner's tool kit and that have been specifically made for use on a product for assembly, disassembly, repair, or maintenance.

1.03 QUALITY CONTROL

A. Manufacturer shall provide a permanent quality control department and laboratory facility capable of performing inspections and testing as required by the Contract Documents.
   1. Material testing, inspection procedures, and manufacturing process are subject to inspection by the Engineer.
   2. Notify the Engineer in writing of the manufacturing start date, not less than 14 days prior to the start, of the manufacturer of project pipe.
   3. Perform manufacturer's tests and inspections required by the referenced standards and as specified in this Section, including the following:
      a. Calibration within last 12 months for equipment such as scales, measuring devices and calibration tools used in the manufacturing of pipe as required by ISO 9001.
         1) Each device used in the manufacturer of pipe is required to have a tag recording date of last calibration.
         2) Provide calibration certificate.
         3) Devices are subject to inspection by the Engineer.
   4. Provide Manufacturer's Certificate of Source Testing.

1.04 SERVICES OF MANUFACTURER'S REPRESENTATIVES

A. Qualifications of manufacturer's representative include the following:
   1. Authorized representative of the manufacturer, factory trained and experienced in the technical applications and installation of respective products with full authority by the product manufacturer to issue the certifications required of the manufacturer.
   2. Competent, experienced technical representative of the product manufacturer for installation.
   3. Additional qualifications may be specified in the Technical Sections.
   4. No substitute representatives will be allowed until written approval by the Owner and Engineer has been obtained.

B. Completion of manufacturer on-site services: Engineer approval required.
   1. Manufacturer's representative will advise aspects of installation, including, but not limited to:
      a. Handling.
      b. Storing.
      c. Cleaning and inspecting.
      d. Coating and lining repairs.
      e. Tapping.
      f. General construction methods.

C. Manufacturer is responsible for determining the time required to perform the specified services.
   1. No additional costs associated with performing the required services will be approved.
   2. Manufacturer required to schedule services in accordance with the Contractor's Project schedule, up to and including making multiple trips to the Project Site when there are separate milestones associated with installation of each occurrence of the manufacturer's product.

D. Manufacturer's on-site services include the following:
   1. Assistance during construction.
   2. Provide 1 copy of daily manufacturer's representative's field notes and data to the Engineer.
   3. Other requirements as specified in the Contract Documents.

1.05 GENERAL TEST REQUIREMENTS

A. Testing prerequisites:
   1. Prior to testing, verify equipment protective devices and safety devices have been installed, calibrated, and tested.

B. Test Plan requirements:
   1. As specified in this Section and the Technical Sections.
   2. Prepared by the Contractor as a result of discussions and planning emerging from regularly conducted meetings for test planning.
   3. Define the following for each test:
      a. Purpose of the test.
      b. Identification of each item of equipment/system, including system designation, location, tag number, control loop identifier, etc.
      c. Description of the pass/fail criteria that will be used.
      d. Listing of pertinent reference documents (Contract Documents or industry standards applicable to the testing).
      e. Credentials of test personnel.
      f. Test equipment:
         1) Product data.
         2) Appropriate calibration records.
         3) Drawings or photographs of test stands and/or test apparatus.
      g. Duration: Determine test durations with the Owner's input.
      h. Detailed step-by-step test procedures.
         1) Setup.
         2) Level of detail shall be sufficient for any witness with a rudimentary technical aptitude to be able to follow the steps and develop confidence that the tests were being performed as planned.
         3) Include all steps in the procedures.
         4) Define temporary systems (pumps, piping, etc.), shutdown requirements for existing systems.
         5) Furnish labor, power, tools, equipment, instruments, and services required for and incidental to completing testing activities.
      i. Test forms: Include, but not limited to, the following information:
         1) Name of product to be tested.
         2) Test date.
         3) Names of persons conducting the test.
         4) Names of persons witnessing the test, where applicable.
         5) Test data.
         6) Applicable Project requirements.
         7) Check offs for each completed test or test step.
         8) Place for signature of person conducting tests and for the witnessing person, as applicable.

C. Submit Test Plan.
   1. Submit forms as specified in the Technical Sections.
   2. Submit a copy of the Test Plan at least 21 days before any scheduled test date.
   3. Engineer approval of Test Plan required prior to beginning testing.

D. Request proposed test dates.
   1. Notify the Engineer of the scheduled tests a minimum of 15 days before the date of the test.

E. Implement approved Test Plans.
   1. Demonstrate the product performance meets the requirements stated in the Contract Documents.
      a. When the product fails to meet the specified requirements, perform additional, more detailed, testing to determine the cause, correct, repair, or replace the causative components and repeat the testing that revealed the deficiency.

F. Submit Test Report.

1.06 SOURCE TESTING

A. As specified in Section 01450 - Quality Control.

B. Also referred to as factory testing or factory acceptance testing (FAT).

C. Source Test Plan:
   1. As specified in this Section and other Technical Sections.
   2. Purpose: Test products for proper performance at point of manufacture or assembly as specified in the Technical Sections.
   3. Source Testing requirements as specified in Technical Sections.
      a. Non-witnessed:
         1) Provide completed Attachment A - Manufacturer’s Certificate of Source Testing.
      b. Witnessed:
         1) 2 Owner’s representatives and 2 Engineer’s representatives present during testing, unless otherwise specified.
         2) Provide completed Attachment A - Manufacturer’s Certificate of Source Testing.
   4. Duration: Define.
   5. Contractor is responsible for providing fuel, chemicals, and other consumables needed for Source Testing.

D. Contractor is responsible for witness trip costs associated with the Owner’s and Engineer’s representatives.
   1. Include costs for at least the following:
      a. Transportation:
         1) Travel on commercial airline to and from Site, including related fees.
         2) Rental car to and from airport, hotel, and test site, including related fees.

b. Hotel/meals:
    1) Hotel costs at a facility with an American Automobile Association 4-star rating or higher equivalent for single occupancy room per person per day.
    2) Meal allowance based on government per diem guidelines per location.
c. Witness labor costs:
    1) The greater of $200 per hour or $1,600 per day.

2. If the Source Test is not ready when the witnesses arrive or if the Source Test fails, the witnesses will return home with the Contractor responsible for costs associated with the trip, including costs described above.
    a. Contractor is responsible for rescheduling the Source Test and witnesses' costs associated with the second trip, including costs described above.
    b. Contractor is responsible for witnesses' costs associated with retests, including costs described above.

1.07 INSTALLATION VERIFICATION

A. Installation Verification plan:
1. Confirm piping:
    a. Has been properly installed, adjusted, and aligned.
    b. Is free of any stresses imposed by connecting piping or anchor bolts.
    c. Is able to be operated as necessary for Functional Testing.
2. Field test backfill, welded joints, alignment and grade, and pipeline pressure as specified in the Technical Sections.
3. Duration: Define.
4. Coordinate Installation Verification with restrictions and requirements as specified in Section 01140 - Work Restrictions.

1.08 FUNCTIONAL TESTING

A. Functional Test Plan:
1. Purpose: Test piping system to verify conformance with the Contract Documents.
2. Duration: Define.
3. Perform testing in the presence of the Engineer.
4. Contractor is responsible for providing fuel, chemicals, and other consumables needed.
5. Coordinate Functional Testing with restrictions and requirements as specified in Section 01140 - Work Restrictions.

1.09 SHIPMENT

A. Prepare products for shipment by:
1. Tagging or marking to match the Shop Drawings or Contract Documents.
2. Including complete packing lists and bills of material with each shipment.
3. Packaging products to facilitate handling and protection against damage during transit, handling, and storage.
4. Securely attach special instructions for proper field handling, storage, and installation before packaging and shipment.

B. Transport products by methods that avoid product damage.

C. Deliver products in undamaged condition in the manufacturer's unopened packaging.

1.10 DELIVERY AND HANDLING

A. Handle products in accordance with the manufacturer's instructions.

B. Deliver products in undamaged condition in the manufacturer's unopened packaging.

C. Provide construction equipment and personnel to handle products by methods in accordance with the manufacturer's instructions.

D. Upon delivery, promptly inspect shipments:
   1. Verify compliance with the Contract Documents, correct quantities, and undamaged condition of products.
   2. Acceptance of shipment does not constitute final acceptance of products.

1.11 STORAGE

A. Immediately store and protect products until installed in the Work.

B. Store products with seals and legible labels intact.

C. Protect painted or coated surfaces against impact, abrasion, discoloration, and damage.

D. Storage of spare parts, maintenance products, special tools.
   1. Immediately store in accordance with the manufacturer's instructions.
   2. Store spare parts, maintenance products, and special tools in an enclosed, weather-proof, and lighted facility during the construction period.
   3. Protect parts subject to deterioration, such as ferrous metal items and electrical components with appropriate lubricants, desiccants, or hermetic sealing.
   4. Store large items individually:
      a. Weight: Greater than 50 pounds.
      b. Size: Greater than 24-inches wide by 18-inches high by 36-inches long.
      c. Clearly labeled:
         1) Equipment tag number.
         2) Equipment manufacturer.
         3) Subassembly component, if appropriate.
   5. Store smaller items in spare parts boxes:
      a. Weight: Less than 50 pounds.
      b. Size: Less than 24-inches wide by 18-inches high by 36-inches long.
      c. Clearly labeled:
         1) Equipment tag number.
         2) Equipment manufacturer.
         3) Subassembly component, if appropriate.
   6. Spare parts and special tools box:
      a. Box material: Waterproof, corrosion resistant.
      b. Hinged cover with locking hasp:
         1) Inventory list taped to underside of cover.

2) Clearly labeled:
   a) “Spare Parts and/or Special Tools”.
   b) Equipment tag number.
   c) Equipment manufacturer.
   d) Subassembly component, if appropriate.

E. Exterior storage of fabricated products:
   1. Place on aboveground supports that allow for drainage.
   2. Cover products subject to deterioration with impervious sheet covering.
   3. Provide ventilation to prevent condensation under covering.

F. Store moisture sensitive products in watertight enclosures.

G. Store loose granular materials on solid surfaces in well-drained area.
   1. Prevent materials mixing with foreign matter.
   2. Provide access for inspection.

H. When needed and approved by the Engineer, offsite storage location shall be within 10 miles of the Project Site.
   1. Provide proof of insurance coverage for products stored offsite.

I. Payment will not be made for products improperly stored or stored without providing the Engineer with the manufacturer’s instructions for storage.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide products by the same manufacturer when units are of similar nature, unless otherwise specified.

B. Provide like parts of duplicate units that are interchangeable.

C. Provide equipment or products that have not been in service prior to delivery, except as required by tests.

D. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
   1. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.

E. Provide products produced by manufacturers regularly engaged in the production of these products.

F. Provide products that bear approvals and labels as specified such as Factory Mutual (FM), Underwriters Laboratory (UL), or National Sanitation Foundation (NSF International) that are acceptable to the Authority Having Jurisdiction.

2.02 MATERIAL

A. Dissimilar metals:
   1. Separate contacting surfaces with dielectric material.
   2. Neoprene, bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators, washers, petrolatum tape, or other materials as specified.
   3. Dielectric coatings can be used to separate dissimilar metal couples from surrounding environment if isolation of metals is not possible, with approval of the Engineer.

B. Edge grinding:
   1. Sharp projections of cut or sheared edges of ferrous metals which are not to be welded shall be ground to a radius required to ensure satisfactory paint adherence and mitigate any safety hazard.
   2. A surface profile will need to be re-established for coating adherence based on coating manufacturer's profile requirements.

C. Use anti-galling compound on threads of stainless steel fasteners during factory assembly.

D. Provide anti-galling compound with stainless steel fasteners shipped for field assembly.

E. Aluminum in contact with concrete or masonry: Apply epoxy mastic as specified in Section 09960 - High-Performance Coatings, coating system EPX-M-5.

2.03 PRODUCT SELECTION

A. When products are specified without named manufacturers, provide products that meet or exceed the Specifications.

B. When products are specified with names of manufacturers but no model numbers or catalog designations, provide products by one of the named manufacturers that meet or exceed specifications.

C. When products are specified with names of manufacturers and model numbers or catalog designations, provide products with model numbers or catalog designations by one of the named manufacturers.

D. When products are specified with names of manufacturers, but with brand or trade names, model numbers, or catalog designations by one manufacturer only, provide:
   1. Products specified by brand or trade name, model number, or catalog designation.
   2. Products by another named manufacturer proven, in accordance with requirements for an "or equal", including the Engineer's approval, to meet or exceed quality, appearance and performance of specified brand or trade name, model number, or catalog designation.

E. When products are specified with only one manufacturer followed by “or equal,” provide:
   1. Products meeting or exceeding specifications by specified manufacturer.
   2. Engineer deemed “or equal” evidenced by an approved Shop Drawing or other written communication.

F. When products are specified by naming 2 or more manufacturers with 1 manufacturer as a “Basis of Design”:
   1. Any of the named manufacturers can be submitted.
   2. If the product submitted is not by the named “Basis of Design” product and requires a change in the scope (dimensions, configuration, physical properties, etc.), schedule (longer lead time), or budget, the Contractor must submit a substitution request.

PART 3 EXECUTION

3.01 INSTALLATION

A. Inspect equipment or products prior to installation.

B. Repaint or recoat damaged painted or coated surfaces after installation.

C. Use anti-galling compound on stainless steel threads used for field assembly.

3.02 PROTECTION AFTER INSTALLATION

A. Provide coverings as necessary to protect installed products from damage due to traffic and subsequent construction operations.
   1. Remove covering when no longer needed.
   2. Replace corroded, damaged, or deteriorated products before acceptance of the Project.

END OF SECTION

ATTACHMENT A - MANUFACTURER'S CERTIFICATE OF SOURCE TESTING

MANUFACTURER'S CERTIFICATE OF SOURCE TESTING

OWNER _____ EQPT/SYSTEM _____

PROJECT NAME _____ EQPT TAG NO. _____

PROJECT NO. _____ EQPT SERIAL NO. _____

SPECIFICATION NO. _____

SPECIFICATION TITLE _____

Comments: _____

_____

_____

_____

_____

I hereby certify Source Testing has been performed on the above-referenced product as defined in the Contract Documents, and the results conform to the Contract Document requirements. Testing data is attached.

Date of Execution: _____

Manufacturer: _____

Manufacturer's Authorized Representative Name *(print)*: _____

_____

(Authorized Signature)

If applicable, Witness Name *(print)*: _____

_____

(Witness Signature)

SECTION 01722

FIELD ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Field engineering to establish lines and grades for the Work.

1.02 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Qualifications of the professional land surveyor or licensed civil engineer with the authority to provide land surveying in California that will be performing the field engineering.

C. Pre-Excavation Report.

1.03 PRE-EXCAVATION REPORT

A. Prior to the start of the Work, create a report confirming the verification of the following data:
   1. Site elevation.
   2. Existing structures, including, but not limited to, buildings, manholes (sanitary, storm, electrical, and other), drainage inlets:
      a. Location coordinates.
      b. Top of wall elevation and coordinates.
      c. Floor elevations.
      d. Invert elevations.
   3. Existing utilities as specified in Section 02280 - Subsurface Utility Engineering.
   4. Proposed building corners, tank, and equipment locations.
   5. Verify existing electrical, instrumentation, and phone utilities.

B. Incorporate information from Pre-Excavation Report into the Record Drawings.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SURVEY REFERENCE POINTS

A. Basic reference line, a beginning point on basic reference line, points with referenced coordinates, and a benchmark will be provided by the Owner.

B. From these reference points, establish other control and reference points as required to properly lay out the Work.

C. Locate and protect control points prior to starting site work, and preserve permanent reference points during construction:
   1. Make no changes or relocations without prior written notice.
   2. Replace Project control point, when lost or destroyed, in accordance with original survey control.

D. Set monuments for principal control points and protect them from being disturbed and displaced:
   1. Re-establish disturbed monuments.
   2. When disturbed, postpone parts of the Work that are governed by disturbed monuments until such monuments are re-established.

3.02 PROJECT SITE SURVEY REQUIREMENTS

A. Establish minimum of 2 permanent benchmarks on site referenced to data established by survey control points.

B. Record permanent benchmark locations with horizontal and vertical data on Project Record Documents.

C. Perform verifications and checking in accordance with industry standard surveying practice.

D. Maintain complete, accurate log of control points and survey.

E. Affix civil engineer's or professional land surveyor's signature and license number to Record Drawings to certify accuracy of information shown.

3.03 CONSTRUCTION STAKES, LINES, AND GRADES

A. Execute the Work in accordance with the lines and grades indicated.

B. Make distances and measurements on horizontal planes, except elevations and structural dimensions.

3.04 QUALITY CONTROL

A. Accuracy of stakes, alignments, and grades may be checked randomly by the Engineer:
   1. Notice of when checking will be conducted will be given.
   2. When notice of checking is given, postpone parts of the Work affected by stakes, alignments, or grades to be checked until checked.
   3. Engineer's check does not substitute or complement required field quality control procedures.

3.05 RECORD DOCUMENTS

A. Prepare and submit Record Documents as specified in Section 01770 - Closeout Procedures.

END OF SECTION

SECTION 01734

WORK WITHIN PUBLIC RIGHT-OF-WAY

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for maintenance, support, protection, relocation, reconstruction and adjusting-to-grade, restoration, construction of temporary and new facilities, and abandonment of existing utilities affected by construction work within the public right-of-way.

1.02 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Trenching:
      a. Open trench:
         1) General: Includes excavation, pipe laying, backfilling, and pavement replacement.
      b. Any excavated areas shall be considered as “open trench” until all pavement replacement has been made, or until all trenches outside of pavement replacement areas have been backfilled and compacted in accordance with these Contract Documents.
   2. Utility:
      a. For the purpose of this Section, utility means any public or private service, such as electric light and power systems; gas distribution systems; telephone, telegraph, cable television and other communication services; water distribution; storm drain and sanitary sewer services; police and fire communication systems; street lighting and traffic signs and signals; parking meters; and steam distribution systems.

1.03 SUBMITTALS

A. Traffic control plan: Submit detailed traffic control plan for acceptance by jurisdictional agency.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Trenching:
   1. Except where otherwise specified, indicated on the Drawings, or accepted in writing by the Engineer, the maximum length of open trench, where construction is in any stage of completion, shall not exceed the linear footage as set forth below. Descriptions under following area designations are general

in nature and may be amended in writing by the Engineer due to particular or peculiar field conditions:

a. Business district areas - maximum 100 linear feet: Store front areas.
b. Commercial areas - maximum 400 linear feet: Industrial, shopping centers, churches, schools, hotels, motels, markets, gas stations, government and private office buildings, hospitals, fire and police stations, and nursing homes.
c. Residential areas - maximum 1 block or 600 linear feet, whichever is the least: Single and multi-family residences, apartments, and condominiums.
d. Undeveloped areas - maximum 1,000 linear feet: Parks, golf courses, farms, undeveloped subdivided land.

2. Completely backfill trenches across streets and install temporary or permanent pavement as soon as possible after pipe laying.

B. Site conditions:

1. Use substantial steel plates with adequate trench bracing to bridge across trenches at street and alley crossings, commercial driveways, and residential driveways where trench backfill and temporary patch have not been completed during regular working hours.
2. Provide safe and convenient passage for pedestrians.
3. Maintain access to fire stations, fire hydrant, and hospitals at all times.
4. Provide traffic control devices, barricades, and signage as required by the regulating agency.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01756

COMMISSIONING

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PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Commissioning.

1.02 DEFINITIONS

A. Commissioning: The process of planning for, testing of, and start-up of systems, subsystems, equipment, components, and devices of the Work to demonstrate, through documented verification, that the Work has successfully met the Contract Documents. It includes training the Owner's staff on operation and maintenance of the installed Work.

B. Commissioning Phases: The activities of commissioning are grouped into the phases defined in the following table.
   1. Table 1 - Commissioning Phases.

TABLE 1 - COMMISSIONING PHASES		
Planning Phase	**Testing and Training Phase**	**Start-Up Phase**
Draft Test Plans	Source Testing: • Documentation	Start-Up: • Documentation • Owner Training
	Installation Verification: • Documentation • Owner Training	
	Functional Testing: • Documentation • Owner Training	

   2. Attachment A provides Commissioning Flowcharts.

C. Component: A part of a system that does not have an electrical connection or internal electronics. Examples: Piping and pressure gauges.

D. Device: A part of a system that has electrical connections or internal electronics. Examples: Level transmitter or pressure transmitter.

E. Electrical Energization Plan: A plan to manage how and when power is applied to electrical equipment.

F. Equipment: A factory or field assembled apparatus that performs an identifiable function. Examples: Pumps, motors, VFDs, MCCs.

G. Functional Testing: Testing performed on a completed subsystem or system to demonstrate that the system meets the specified requirements. Example systems: Backwash system, dewatering system.

H. Installation Verification: Testing to demonstrate that equipment or system and associated components or devices have been properly installed. Example equipment: Pumps, meters, and blowers with associated piping.

I. Manufacturer's Certificate of Functional Compliance: The form completed by the manufacturer to confirm that testing of the installed equipment or system has been performed and the results conform to the specified performance. The form is provided in Attachment D provided at the end of this Section.

J. Manufacturer's Certificate of Installation Verification: The form completed by the manufacturer to confirm that the equipment or system is installed in conformance with the Contract. The form is provided in Attachment C at the end of this Section.

K. Manufacturer's Certificate of Source Testing: The form completed by the manufacturer to confirm that the specified source tests have been performed and the results conform to the specified requirements. The form is provided in Attachment B at the end of this Section.

L. Owner Training: The Owner's staff is trained by the Contractor, with assistance from manufacturer, to operate and maintain the completed Work. This is sometimes referred to as Vendor Specific Training.

M. Process Stream: A series of liquid or solids flow processes that are designed to improve the water quality to meet regulatory permit requirements.

N. Source Testing: Test equipment or products for performance at point of manufacture or assembly for the requirements specified in the Contract Documents. Also referred to as factory testing and factory acceptance testing (FAT).

O. Start-Up: Operating the Work with process water to verify the Work meets the Contract Documents.

P. Start-Up Phase: The phase when Start-Up occurs.

Q. Subsystem: A grouping of equipment, components, and devices that is a part of a larger system and that perform a single definable function. Examples: Sand filters, filter backwash.

R. System: A grouping of equipment, components, and devices that perform a single definable function. If a system is a part of a larger system, it is referred to as a subsystem.
   1. Examples: Flocculation and sedimentation, filtration.

S. System Testing: Testing of a completed system for an extended time period. Examples: Headworks, filtration.

T. Water Management Plan: A plan to manage the test water used for commissioning from source to disposal. The test water may be clean water, potable water, non-potable water, or process water (e.g., raw water, plant water, sludge). The plan demonstrates how water will be produced, conveyed, treated, disposed of as directed by the plant manager, and/or recycled.

1.03 SUBMITTALS

A. Project Commissioning:
   1. Commissioning Coordinator's qualifications.
      a. Submit to Engineer no later than 30 days after Notice to Proceed.
      b. Describe previous similar experience on similar projects with a list of references, including phone numbers.
      c. Provide names and qualifications of commissioning assistants, if applicable.
   2. Schedules:
      a. Commissioning Schedule containing all commissioning activities.
      b. Owner Training Schedule.
   3. Test Plans:
      a. Submit draft Test Plan outlined in the Planning Phase, unless specified otherwise.
         1) Engineer approval of draft Test Plans required for successful completion of Planning Phase.
      b. Submit final Test Plan a minimum of 30 calendar days prior to testing, or as directed by the City.
      c. Engineer approval of final Test Plan required prior to start of testing.
   4. Test Reports:
      a. Submit draft Test Reports outline in the Planning Phase, unless specified otherwise.
         1) Engineer approval of draft Test Reports outline required for successful completion of Planning Phase.
      b. Submit final Test Report a maximum of 30 calendar days after testing.

B. Technical Sections Commissioning:
   1. Manufacturer's representative's qualifications.
      a. Submit to Engineer no later than 30 days in advance of required services.
      b. Representative's name, phone, and e-mail address:
         1) May use 2 representatives: 1 for field testing and 1 for Owner Training.
         2) Provide resume stating instructor's technical expertise and instructional technology skills and experience.
   2. Test Plans:
      a. Submit draft Test Plan outlined in the Planning Phase, unless specified otherwise.
         1) Engineer approval of draft Test Plans required for successful completion of Planning Phase.
      b. Submit final Test Plan a minimum of 30 calendar days prior to testing, or as directed by the City.
      c. Engineer approval of final Test Plan required prior to start of testing.
   3. Test Reports:
      a. Submit draft Test Reports outline in the Planning Phase, unless specified otherwise.
         1) Engineer approval of draft Test Reports outline required for successful completion of Planning Phase.
      b. Submit final Test Report a maximum of 30 calendar days after testing.
   4. Manufacturer's representatives field notes and data.

5. Owner Training:
    a. Prior to the training session:
        1) Training instructor qualifications.
        2) Training course materials: Due 30 calendar days prior to initial training session.
            a) If Owner requires, Continuing Education Units (CEUs), submit training materials to state regulatory agency in sufficient time to obtain approval for training prior to the training.
            b) Drafts of training agenda, lesson plan, presentation, handouts, and list of audio-visual aids.
            c) Format: 1 electronic copy in the format specified by the Owner.
    b. Post training session:
        1) Training course materials: Due 14 calendar days after class completion.
            a) Recordings.
            b) Class attendance sheet.
            c) Final version of training agenda, final lesson plan, presentation, handouts, and audio-visual aids.
            d) Format: 1 electronic copy in the format specified by the Owner.
        2) Provide materials for all sessions of the class in a single transmittal.
        3) If the Owner requires training CEUs, issue training CEU certificates approved by the state regulatory agency to Owner's staff who successfully completed the training.

1.04 COMMISSIONING COORDINATOR (CC)

A. Responsibilities include the following:
    1. Full-time dedicated person with no other project responsibilities or part-time, as approved by the City.
    2. Become thoroughly familiar with Contract Commissioning requirements.
    3. Provide the primary interface with Engineer and Owner for Commissioning efforts.
    4. Lead Commissioning efforts - all phases and tasks.
    5. Coordinate training efforts.
    6. Meetings:
        a. CC is responsible for setting Commissioning coordination meeting dates and times, as well as preparing the agendas and meeting minutes.
        b. CC shall conduct Commissioning progress meetings throughout construction, to plan, scope, coordinate, and schedule future activities, resolve problems, etc.
        c. Frequency: Monthly minimum. Increase frequency as needed based on complexity and quantity of Commissioning activities.

1.05 MANUFACTURER'S REPRESENTATIVES

A. Qualifications: As specified below and in the Technical Sections:
    1. For Installation and Functional Testing:
        a. Factory trained and experienced in the technical applications, installation, operation, and maintenance of respective equipment/system with full authority by the equipment/system manufacturer to issue the certifications required of the manufacturer.

2. Training instructor qualifications:
    a. Provide resume stating instructor's technical preparation and instructional technology skills and experience.
    b. If CEUs are required, the operator training instructors must comply with state regulatory.
    c. Knowledgeable in the equipment/system for which they are training.
    d. Experienced in conducting classes.
    e. Sales representatives are not qualified instructors unless they possess the detailed operating and maintenance knowledge required for proper class instruction.
3. Representatives to be approved by Owner and Engineer.
4. No substitute representatives without written approval by Owner and Engineer.

B. Duties:
1. Determine if additional time and/or trips (beyond those specified in the Technical Sections) is required to perform the specified services.
2. Coordinate services in accordance with the Contractor's Project schedule, up to and including making multiple trips to the Project Site when there are separate milestones associated with installation of each occurrence of manufacturer's equipment.
3. Perform on-site services as specified in the Technical Sections.
4. Provide daily copies of manufacturer's representatives field notes and data to Contractor.

1.06 PLANNING PHASE

A. Overview of Planning Phase:
1. Define approach and timing for Commissioning.
2. Obtain Engineer approval of draft Test Plans.

B. Test Plans.
1. Define approach and timing for:
    a. Testing and Training Phases.
        1) Major systems, with separate plans for each system.
    b. Start-Up Phase.
2. Centralized Commissioning database:
    a. Provide system to manage information, as approved by the City.
        1) Detailed steps.
        2) Dependencies and other relationships of steps.
    b. Update the database within 24 hours of task completion.
3. Source Test (Factory Acceptance Test) and Functional Test Plans:
    a. As specified in this Section and other Technical Sections.
    b. Based on approved Shop Drawings.
    c. Prepared by the Contractor.
    d. Include the following items for each test:
        1) Purpose of the test.
        2) Identification of each item of equipment/system to be tested, including system designation, location, tag number, control loop identifier, etc.
        3) Description of the pass/fail criteria that will be used.

4) Listing of pertinent reference documents (Contract and industry standards or sections applicable to the testing).
a) Credentials of test personnel.
5) Test equipment:
a) Include Product Data for the test equipment.
b) Appropriate calibration records.
(1) Drawings or photographs of test stands and/or test apparatus.
6) Duration: Determine test durations with Owner's input.
7) Detailed step-by-step test procedures.
a) Level of detail shall be sufficient for the witness to follow the steps.

e. Define for Functional Testing:
1) Required temporary systems (pumps, piping, etc.).
2) Shutdown requirements for existing systems.

f. Furnish labor, power, tools, equipment, instruments, and services required for and incidental to testing activities.

4. Test forms minimum requirements:
a. Name of product to be tested.
b. Test date.
c. Names of persons conducting the test.
d. Names of persons witnessing the test, where applicable.
e. Test data.
f. Applicable project requirements as specified in the Technical Sections.
g. Check offs for each completed test or test step.
h. Place for signature of person conducting tests and for the witnessing person, as applicable.

5. Owner responsibilities:
a. Owner will schedule staff within the constraints of their workloads.
1) Those who will participate in this test have existing full-time work assignments, and testing is an additional assigned work task, therefore, scheduling is imperative.
2) Treatment facilities are typically operated on an around-the-clock basis and are staffed in work shifts.
1) Maximum hours per day available for commissioning activities: 4, unless otherwise stated by the City.
2) Days available for commissioning activities: Monday to Thursday.
3) Scheduling coordination with the CC.

6. CC is responsible for the following:
a. Coordinate schedule with the Owner's personnel and manufacturer's representatives (instructors).

C. Test Reports:
1. Minimum requirements:
a. Title.
b. Abstract.
c. Equipment.
d. Procedures.
e. Results.
1) Complete disclosure of the calculation methodologies.
f. Conclusions.

g. Signature by an authorized party.
h. Appendices.
1) Completed test forms signed by witnesses.

2. Water Management Plan:
a. Requirements:
1) Demonstrate how water will be produced, conveyed, treated, recycled, and or disposed until testing verifies specified requirements.

3. Commissioning Schedule:
a. Content:
1) Comply with Attachment G - Functional Testing Requirements and provide activities organized by system and subsystem.
2) Include:
a) Source Testing when required.
b) Functional Testing.
c) Owner Training.
3) Comply with Attachment F - Commissioning Roles and Responsibilities Matrix.
b. Procedures:
1) Submit Commissioning Schedule as specified in Section 01321 - Schedules and Reports.

1.07 TESTING AND TRAINING PHASE

A. Overview of Testing and Training Phase:
1. General:
a. Contractor tests the Work to verify it meets the Contract requirements.
b. Contractor trains the Owner to operate and maintain the Work.
2. Contractor responsibilities:
a. Furnish labor, tools, equipment, instruments, and services required for and incidental to completing Commissioning activities in accordance with the approved Commissioning Plans.
3. Owner responsibilities:
a. Furnish labor, power, chemicals, and services required for and incidental to completing Commissioning activities in accordance with the approved Commissioning Plans.
b. Owner provided services, equipment, and/or materials to be as specified in the Scope of Work in the Contract RFP in Volume 2, Article 2.

B. Source Testing:
1. As specified in the Technical Section.
2. Source Test Plan:
a. Engineer approval of Source Test Plan required prior to testing.
3. Witnessed in person:
a. As specified in the Technical Section.
4. Virtual witness testing:
a. As specified in the Technical Sections.
5. If the Source Test is not ready on the scheduled date or if the Source Test fails:
a. Contractor is responsible for associated costs:
1) First test costs that are non-refundable, if applicable.
2) Repeat test costs:
a) Trip costs, if applicable.

b) Virtual witness costs, if applicable.

6. Source Testing is complete after successful testing, submittal of test report, and Manufacturer's Certificate of Source Testing.
7. Engineer approval of Source Testing Report is required.

C. Installation Verification:
   1. Overview:
      a. Verifying the installation of equipment to be in accordance with Manufacturer's Instructions.
   2. Prerequisite:
      a. Engineer approval of Source Testing Report.
   3. Perform checks:
      a. Structural anchorage check.
      b. Electrical energization check.
         1) As specified in the flowchart shown in Attachment A.
      c. Health and safety check.
   4. Submit Manufacturer's Certificate of Installation Verification.
   5. Engineer approval of Manufacturer's Certificate of Installation Verification is required.

D. Functional Testing:
   1. Overview:
      a. Testing the function of a system or subsystem.
   2. Prerequisites:
      a. Engineer approval of Manufacturer's Certificate of Installation Verification.
      b. Engineer approval of Functional Test Plan required prior to testing.
      c. Draft Operations and Maintenance Manual as specified in Section 01782 - Operations and Maintenance Manual.
      d. Completed pipe, valve, and gate labeling of system or subsystem.
         1) As specified in Section 15076 - Pipe Identification prior to the start of Functional Testing.
   3. Witnessed.
   4. Discipline checks:
      a. Verify support systems function properly, such as seal water, pipes, valves, etc.
      b. As specified in the individual Technical Sections.
   5. Consecutive Day Test:
      a. Operate the Work as specified in Attachment G - Functional Testing Requirements and as specified in the individual Technical Sections.
         1) Successful completion of subsystem testing required prior to system testing.
      b. Failure response time:
         1) Be equipped and ready to provide emergency repairs, adjustments, and corrections to comply with the "Significant Interruption Duration" requirements as specified in Attachment G - Functional Testing Requirements.
      c. Duration:
         1) As specified in Attachment G - Functional Testing Requirements.

2) Restart the consecutive day test when the system performance failures exceed the “Significant Interruption Duration” time period specified in Attachment G - Functional Testing Requirements.
a) Individual equipment/system failures that are corrected within the “Significant Interruption Duration” time specified in Attachment G - Functional Testing Requirements shall not require the consecutive day test to be restarted unless the failure recurs.
b) Engineer has the authority to reject the consecutive day test if individual equipment/system failures are repetitive.

6. Instrumentation and controls tests.
   a. Loop Validation Tests.
   b. Complete End-to-End Testing (CEET):
      1) Signal are tested from the field device through the PLC program, the network, and all the way to the operator’s HMI graphic screens.
7. Restore to condition prior to testing:
   a. Dewater and clean sumps.
   b. Dewater process units, where required by test plan.
8. Submit Manufacturer’s Certificate of Functional Compliance.
9. Engineer approval of Manufacturer’s Certificate of Functional Compliance is required.

E. Documentation:
   1. Provide records generated during Commissioning Phase of Project, including, but not limited to:
      a. Training documentation.
      b. Manufacturer’s Certificate of Source Testing.
      c. Manufacturer’s Certificate of Installation Verification.
      d. Manufacturer’s Certificate of Functionality Compliance.
      e. Daily logs of equipment/system testing identifying tests conducted and outcome.
      f. Test forms and documentation.
      g. Functional Testing results.
      h. Logs of time spent by manufacturer’s representatives performing services on the job site.
      i. Equipment lubrication records.
      j. Electrical phase, voltage, and amperage measurements.
      k. Insulation resistance measurements.
      l. Bearing temperature measurements.
      m. Data sheets of control loop testing, including testing and calibration of instrumentation devices and setpoints.
      n. Provide: 1 electronic copy in format specified by Owner.
      o. Store the data within 24 hours of the test or document creation in the project system.
      p. Due date: Within 14 calendar days of Substantial Completion.
   2. Engineer approval of documentation is required.

F. Owner Training:
   1. Train Owner’s staff on the operation and maintenance of the equipment/system.
      a. Provide Owner staff with state regulatory agency approved training CEUs.

2. Train on each topic of the approved Operation and Maintenance Manual.
    a. Include classroom instruction and field demonstration with all necessary tools and test equipment.
3. Training tailored to the skills and job classifications of the staff attending the classes (e.g., plant superintendent, treatment plant operator, maintenance technician, electrician, etc.).
4. Training outcomes:
    a. Owner's staff can safely operate, maintain, and repair the equipment/systems provided as recommended by the manufacturer.
5. Training plan:
    a. CC shall meet with Engineer and Owner's designated training coordinator to develop list of personnel to be trained and to establish expected training outcomes and objectives at least 60 calendar days prior to commissioning of equipment/system, or as specified by the City.
    b. Coordinate and arrange for manufacturer's representatives to provide both classroom-based learning and field (hands-on) training, based on training module content and stated learning objectives.
    c. Conduct classroom training at location designated by Owner.
    d. Scope and sequence:
        1) Plan and schedule training in the correct sequence to provide prerequisite knowledge and skills to trainees.
            a) Describe recommended procedures to check/test equipment/system following a corrective maintenance repair.
        2) If multiple classes are needed to meet the training objectives, they shall be included in the training plan.
6. Owner Training Schedule:
    a. Schedule Owner's staff training within the constraints of their workloads.
        1) Those who will participate in this training have existing full-time work assignments, and training is an additional assigned work task, therefore, scheduling is imperative.
        2) Owner staff work schedules regularly shift, as treatment facilities are typically operated on an around-the-clock basis.
        3) Maximum training hours per week: 25.
        4) Days available for training:
            a) Monday to Thursday.
    b. Training scheduling coordination:
        1) CC is responsible for the following:
            a) Coordinate schedule for training periods with the Owner's personnel and manufacturer's representatives (instructors).
        2) Complete Owner Training no sooner than 15 calendar days prior to Functional Testing of each system.
    c. Class logistics:
        1) Delivery time minimum: 2 hours.
        2) Delivery time maximum: 4 hours.
        3) Class agenda:
            a) Refreshment break: One 10-minute break.
            b) Meal break: One 45-minute break, unless otherwise specified.
            c) Schedule refreshment breaks and meal breaks to meet the class needs and Owner work rules.

4) Schedule specific sessions:
    a) Minimum of 30 days in advance to allow Owner staffing arrangements to take place.
    b) At the times requested by the Owner, within the period 7 a.m. to 7 p.m. Monday through Friday.
        (1) Times scheduled will be at Owner's discretion.
    c) Owner approval and confirmation required for session schedules.
    d) Provide minimum of 2 sessions for each class unless otherwise noted.
        (1) The purpose of having multiple sessions on each class is to accommodate the attendance of as many Owner personnel working different shifts as possible.
    e) A maximum of 1 session per day for each class.

d. Number of students:
    1) Estimated class size maximum: 5-10 staff.
    2) Engineer will confirm the headcount 1 week prior to the class so that the instructor can provide the correct number of training aids for students.

7. Submittals:
    a. Unless stated otherwise by the City, submit Training Plan Schedule 30 calendar days before the first scheduled training session, including, but not limited to, lesson plans, participant materials, instructor's resumes, and training delivery schedules.
    b. Submit training documentation, including the following:
        1) Training plan:
            a) Training modules.
            b) Scope and sequence statement.
            c) Contact information for manufacturer's instructors. including name, phone, and e-mail address.
            d) Instructor qualifications.
        2) Training program schedule:
            a) Format: Bar chart:
                (1) Include in the Project Progress Schedule.
            b) Contents:
                (1) Training modules and classes.
8. Lesson plans:
    a. Divide training into discrete modules appropriate for the equipment and trades.
    b. State performance-based learning objectives in terms of what the trainees will be able to do at the end of the lesson.
    c. Define student conditions of performance and criteria for evaluating instructional success.
    d. Minimum requirements:
        1) Hands-on demonstrations planned for the instructions.
        2) Cross-reference training aids.
        3) Planned training strategies such as whiteboard work, instructor questions, and discussion points or other planned classroom or field strategies.
        4) Attach handouts cross-referenced by section or topic in the lesson plan.
        5) Indicate duration of outlined training segments.

e. Provide instruction lesson plans for each trade:
    1) Detailed component description:
        a) Identify each component function and describe in detail.
        b) Identify equipment's mechanical, electrical, and electronic components and features.
        c) Where applicable, group relative components into subsystems.
        d) Identify and describe in detail equipment safety features, permissive and controls interlocks.
    2) Equipment operation:
        a) Describe equipment's operating (process) function and system theory.
        b) Describe equipment's fundamental operating principles and dynamics.
        c) Identify support equipment associated with the operation of subject equipment.
        d) Detail the relationship of each piece of equipment or component to the subsystems, systems, and process.
        e) Cite hazards associated with the operations, exposure to chemicals associated with the component, or the waste stream handled by the component.
        f) Specify appropriate safety precautions, equipment, and procedures to eliminate, reduce, or overcome hazards.
    3) Define Preventative Maintenance (PM) inspection procedures required on equipment in operation, spot potential trouble symptoms (anticipate breakdowns), and forecast maintenance requirements (predictive maintenance).
        a) Review preventive maintenance frequency and task analysis table.
    4) Define equipment Corrective Maintenance (CM) troubleshooting:
        a) Describe recommended equipment preparation requirements as they relate to specific craft problems.
        b) Identify and describe the use of any special tools required for maintenance of the equipment as they relate to specific craft problems.
        c) Provide component specific troubleshooting checklists as they relate to specific craft problems.
        d) Describe component removal/installation and disassembly/assembly procedures for specific craft repairs.
        e) Perform at least 2 hands-on demonstrations of common corrective maintenance repairs.
    5) Describe recommended measuring instruments and procedures, and provide instruction on interpreting alignment measurements, as appropriate.

9. Training instruction format:
    a. Training for operations personnel shall be provided separately from the maintenance personnel.
        1) Training for maintenance personnel shall be further subdivided into the following 4 trade groups.
            a) Mechanical maintenance.
            b) Electrical maintenance.
            c) Instrumentation and controls maintenance.

d) Process Controls Network (PCN) maintenance.

b. Instructors shall apply adult education best practices, emphasizing learner participation and activity.
c. Lecturing should be less than 30 percent of class time.
d. Training delivery may include problem solving, question/answer, hands-on instruction, practice, evaluation/feedback tools, and lecture to support training objectives.
e. Conduct hands-on instruction according to the following descriptions:
    1) Present hands-on demonstrations of at least the following tasks:
        a) Proper start-up, shutdown, and normal and alternative operating strategies.
        b) Common corrective maintenance repairs for each group.
        c) Recommended procedures to check/test equipment/system following a corrective maintenance repair.
        d) Preventative maintenance points.
        e) Calibration, if applicable.
    2) Use tools and equipment provided by manufacturer to conduct the demonstrations.
        a) Submit requests for supplemental assistance and facilities with the Contractor's proposed lesson plans.
    3) Contractor remains responsible for equipment disassembly or assembly during hands-on training situations involving equipment disassembly or assembly by Owner's personnel.
f. Training aids:
    1) Instructors shall provide needed audio-visual devices such equipment (televisions, video recorder/player, computer, projectors, screens, easels, etc.), models, charts, etc., for each class.
    2) Instructor to confirm with Engineer in advance of each class that the classroom will be appropriate for the types of audiovisual equipment to be employed.

10. Training sessions:
    a. Provide training sessions for equipment/system as specified in the individual equipment/system section.
    b. Include the following information in the agenda:
        1) Instructor name.
        2) Listing of subjects to be discussed.
        3) Time estimated for each subject.
        4) Allocation of time for Owner staff to ask questions and discuss the subject matter.
        5) List of documentation to be used or provided to support training.
    c. Owner may request that particular subjects be emphasized, and the agenda be adjusted to accommodate these requests.
    d. Digitally record audio and video of each training session.
        1) Include classroom and field instruction with question and answering periods.
        2) Engineer approval required for producer of video materials from one of the following options:
            a) Qualified, professional video production company or individual.
        3) Record in digital format and recording shall become property of the Owner with exclusive rights.
            a) No video recording agreements will be entered into by the Owner.

4) Media:
a) Video quality shall be 720p HD or greater in MPG, AVCHD, AVI, or MP4 format.
b) Digital color video format.
c) Provide audio portion of the composite CD sufficiently free from electrical interference and background noise to provide complete intelligibility of oral report.
d) Identification: On each copy provide a label with the following information:
(1) Name of training.
(2) Date video was recorded.
e) Display continuous running time.
f) At start of each video recording, record training class name, date, and instructor's name.
g) Provide audio quality that is not degraded during the recording of the field sessions due to background noise, space, distance or other factors.
5) Contractor shall provide a written release from all claims to the recorded training material produced, if required.

e. Distribute copies of the agenda to each student at the beginning of each training class.
f. Trainees will keep training materials and documentation after the session.
g. Distribute Training Evaluation Form following each training session.
1) Training Evaluation Form is included in this Section.
2) Return completed Training Evaluation Forms to Owner's designated training coordinator immediately after session is completed.
3) Revise training sessions judged "Unsatisfactory" by a majority of attendees.
a) Conduct training sessions again until a satisfactory rating is achieved.

11. Engineer approval of Owner Training is required.

1.08 START-UP PHASE

A. Overview of Start-Up Phase:
1. General:
a. Confirm reliability requirements.

B. Start-Up Period:
1. Contractor responsibilities:
a. Support Owner to operate the Work.
2. Owner responsibilities:
a. Owner to operate the Work.
b. Owner-provided services, equipment, and/or materials to be as specified in the Scope of Work in the Contract RFP in Volume 2, Article 2.
c. Furnish labor, power, chemicals, tools, equipment, instruments, and services required for and incidental to completing commissioning activities in accordance with the approved Commissioning Plans.
3. Prerequisites:
a. Engineer approval of Testing and Training Phase.
4. Witnessed.

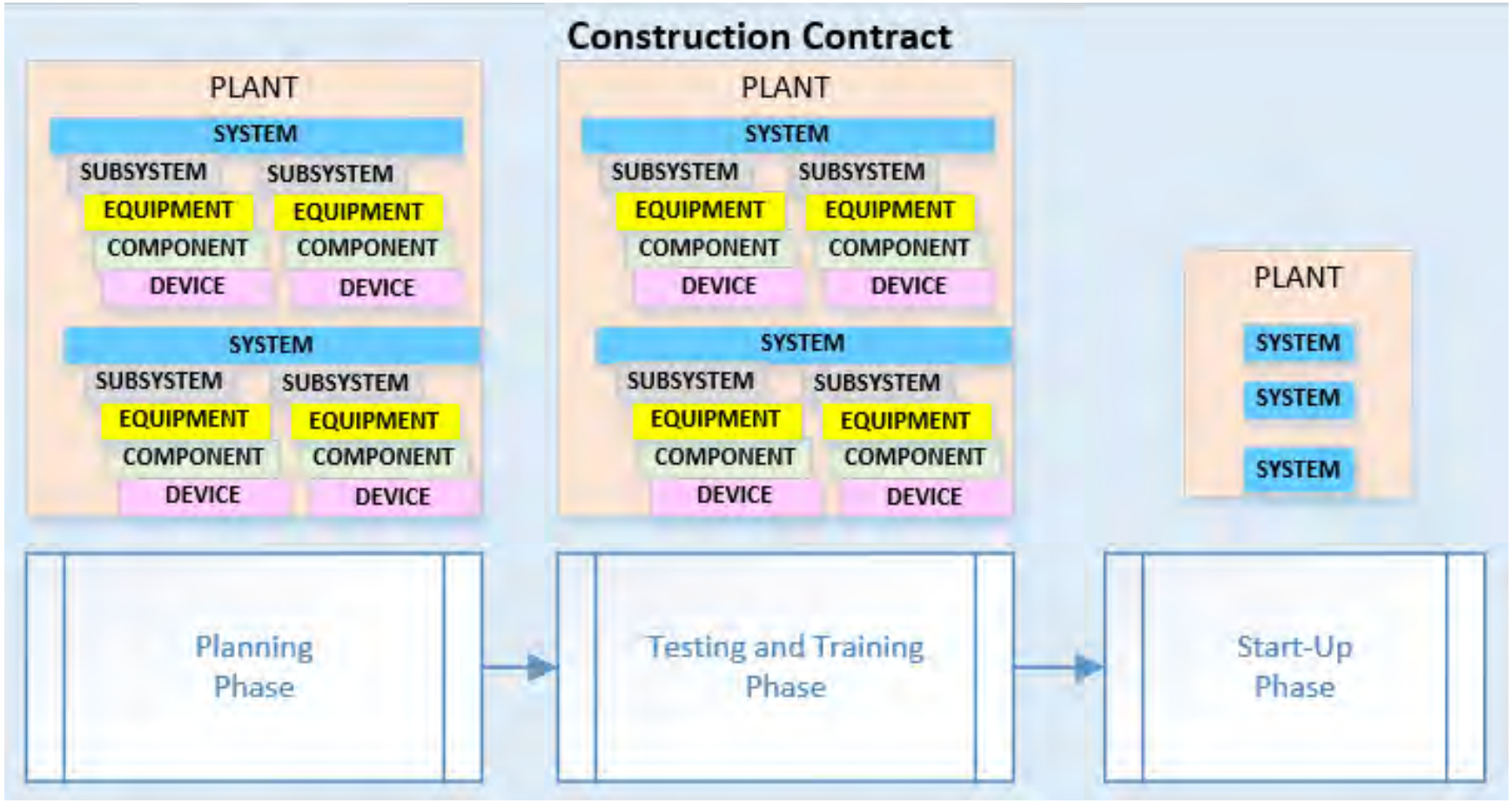
5. Duration: 3 days per well site.
6. Engineer approval of Start-Up Period is required to achieve substantial completion.

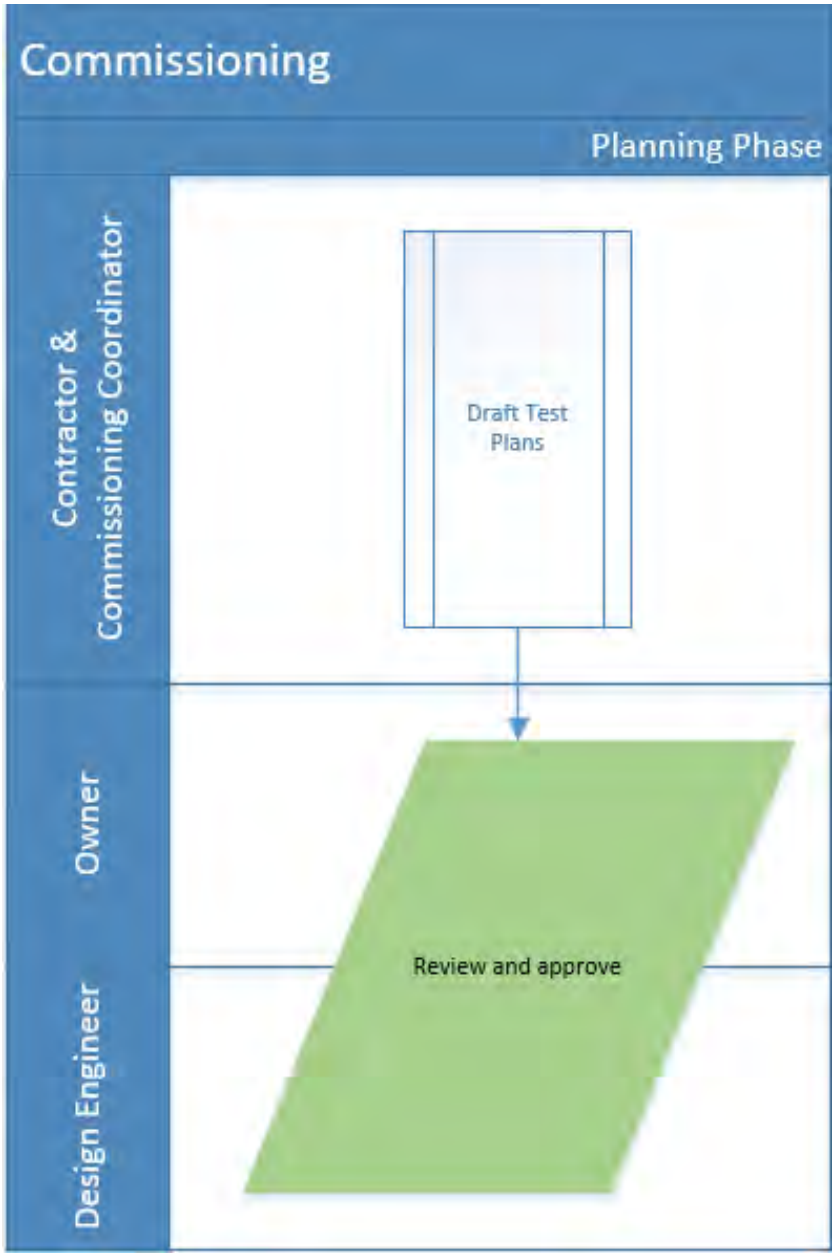
PART 2 PRODUCTS (NOT USED)

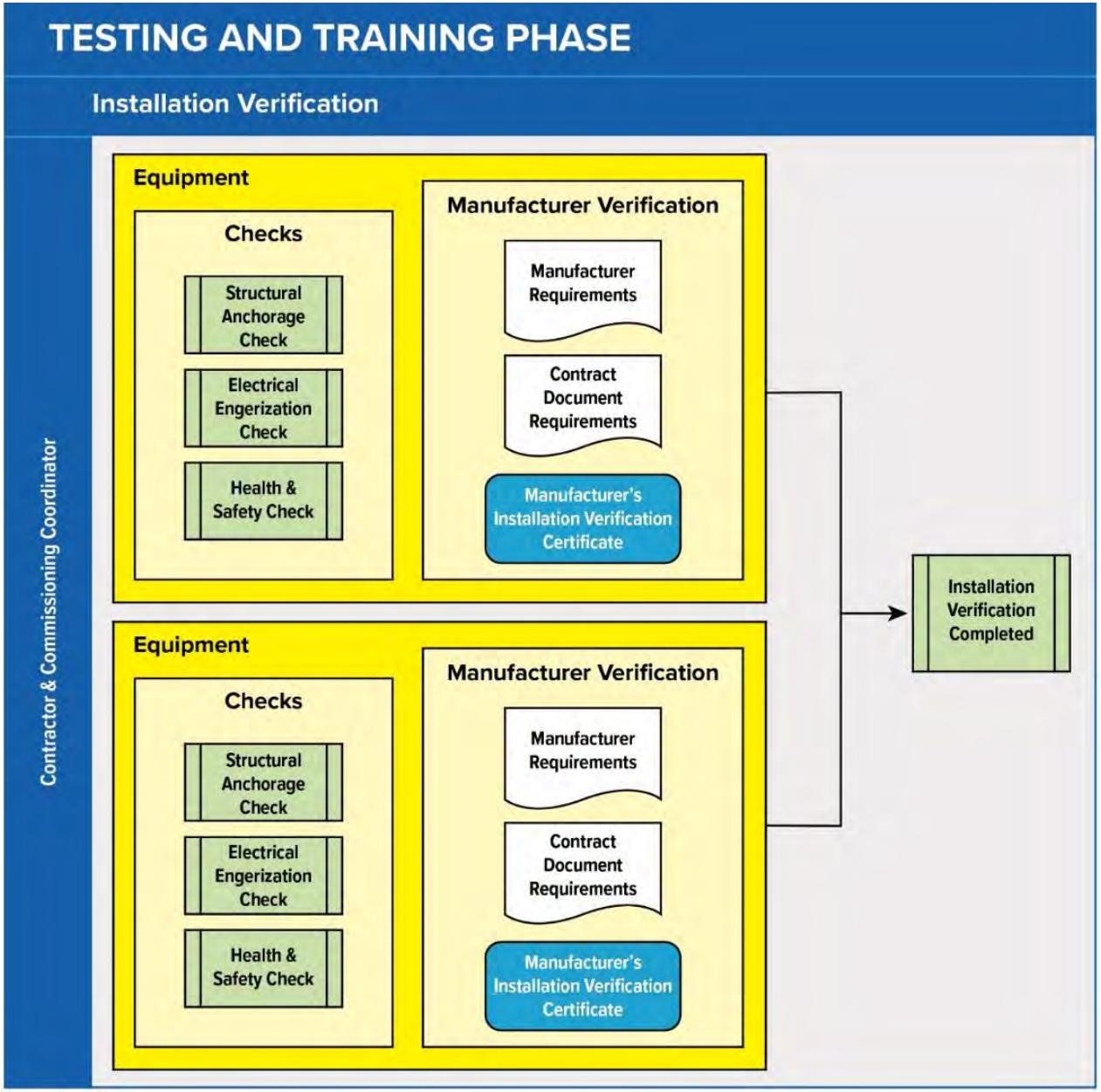
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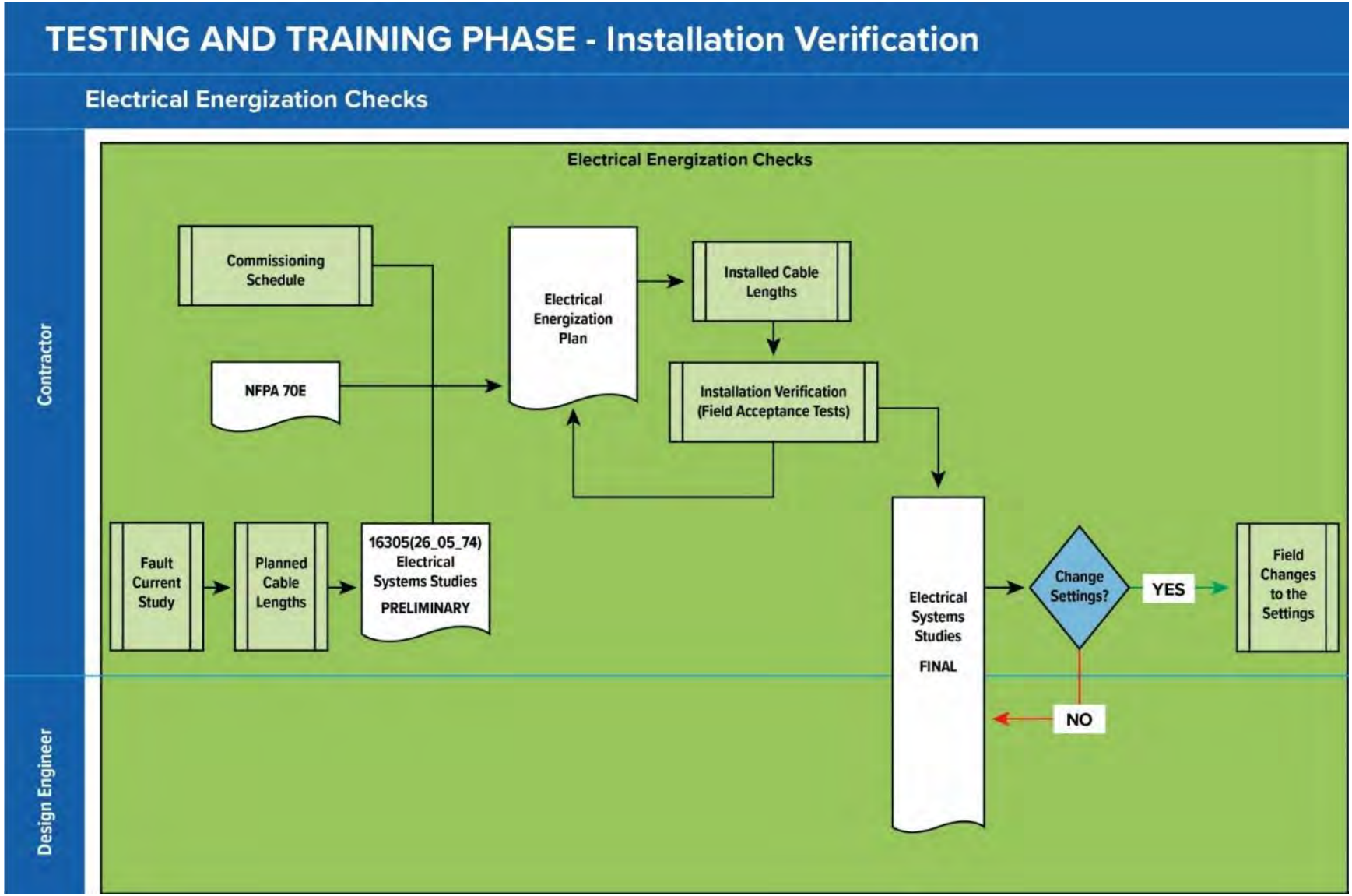
END OF SECTION

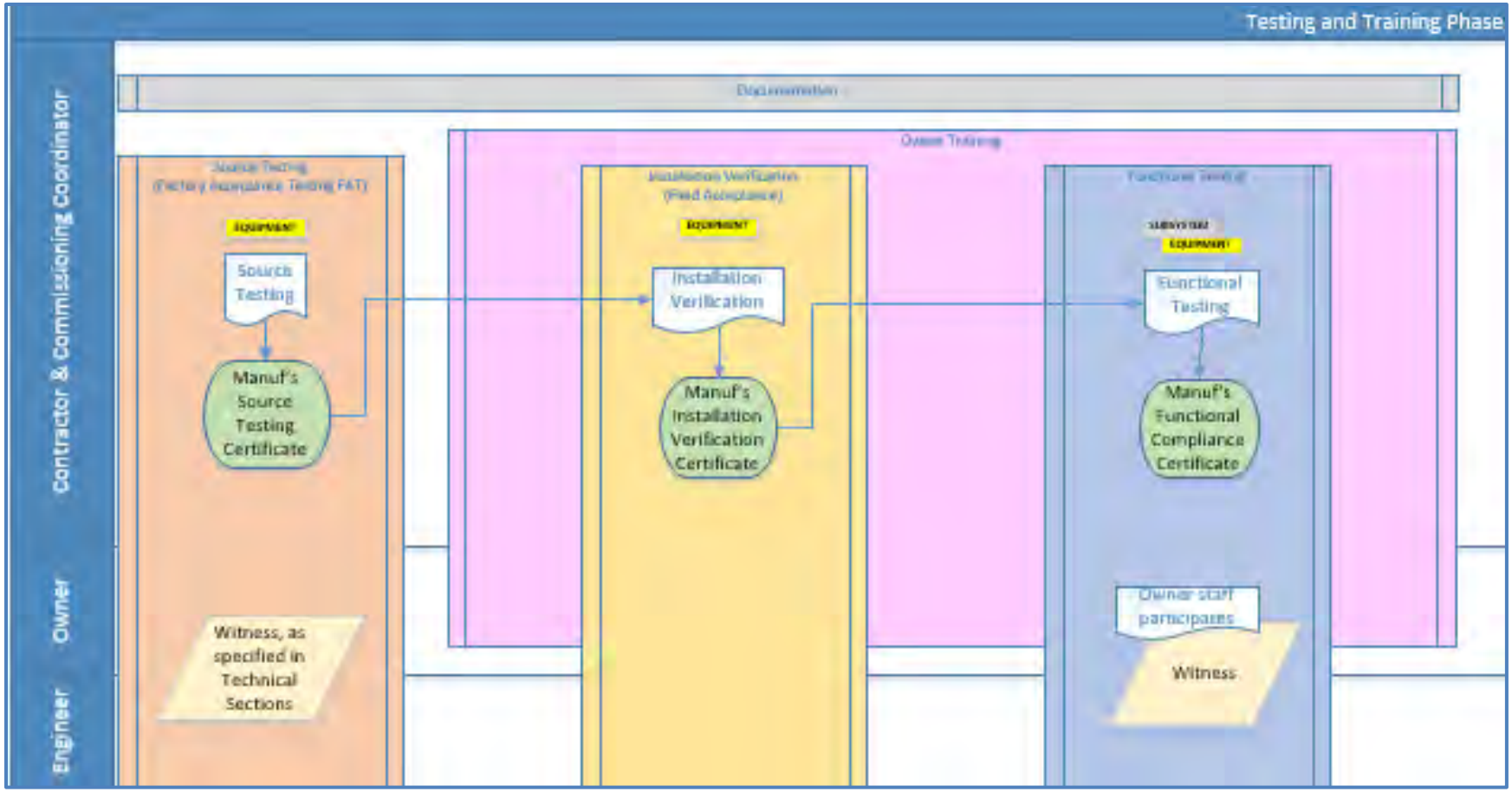
ATTACHMENT A - COMMISSIONING FLOWCHARTS

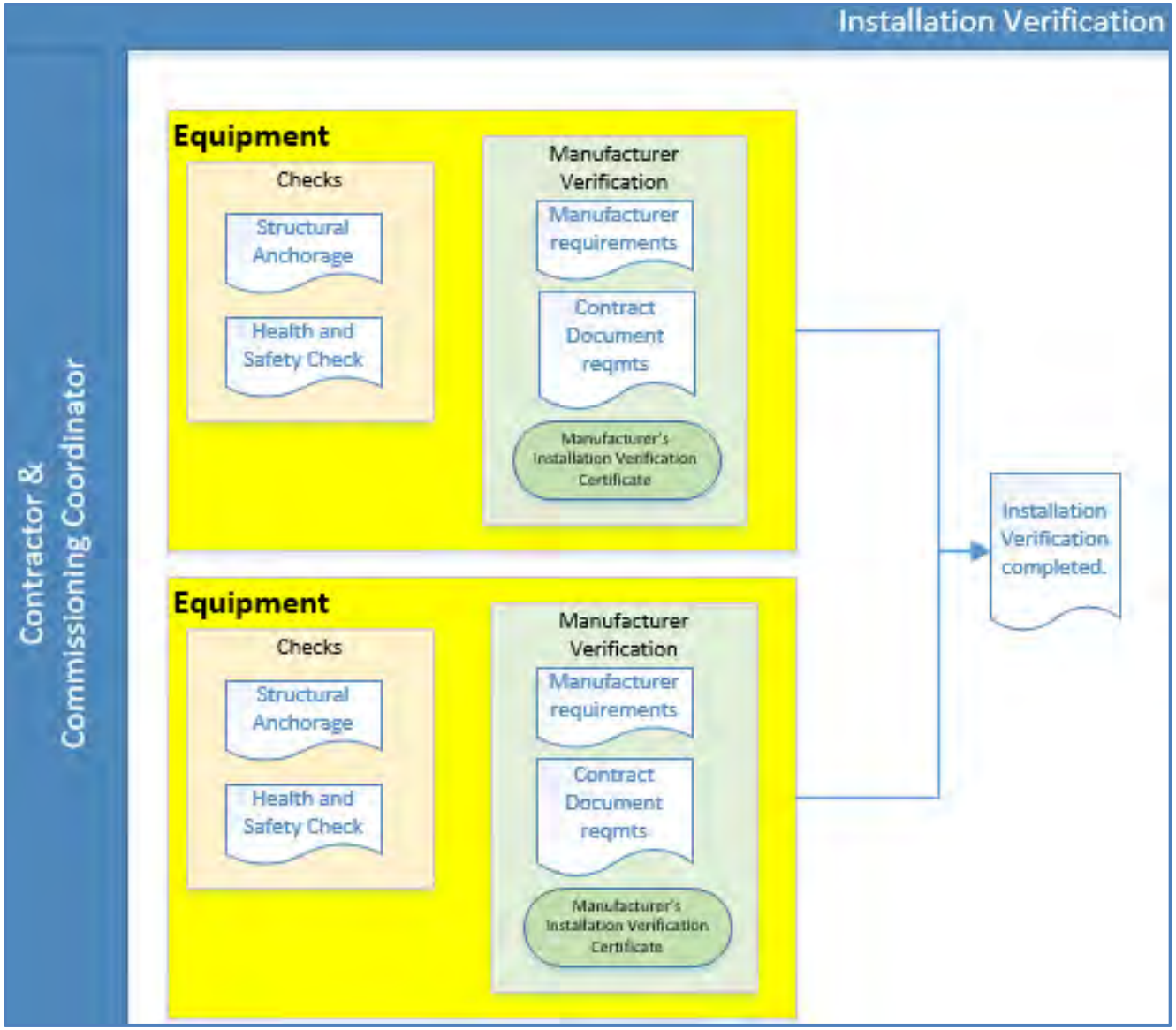

Construction Contract
PLANT
SYSTEM
SUBSYSTEM
SUBSYSTEM
EQUIPMENT
EQUIPMENT
COMPONENT
COMPONENT
DEVICE
DEVICE
SYSTEM
SUBSYSTEM
SUBSYSTEM
EQUIPMENT
EQUIPMENT
COMPONENT
COMPONENT
DEVICE
DEVICE
PLANT
SYSTEM
SUBSYSTEM
SUBSYSTEM
EQUIPMENT
EQUIPMENT
COMPONENT
COMPONENT
DEVICE
DEVICE
SYSTEM
SUBSYSTEM
SUBSYSTEM
EQUIPMENT
EQUIPMENT
COMPONENT
COMPONENT
DEVICE
DEVICE
PLANT
SYSTEM
SYSTEM
SYSTEM
Planning Phase
Testing and Training Phase
Start-Up Phase

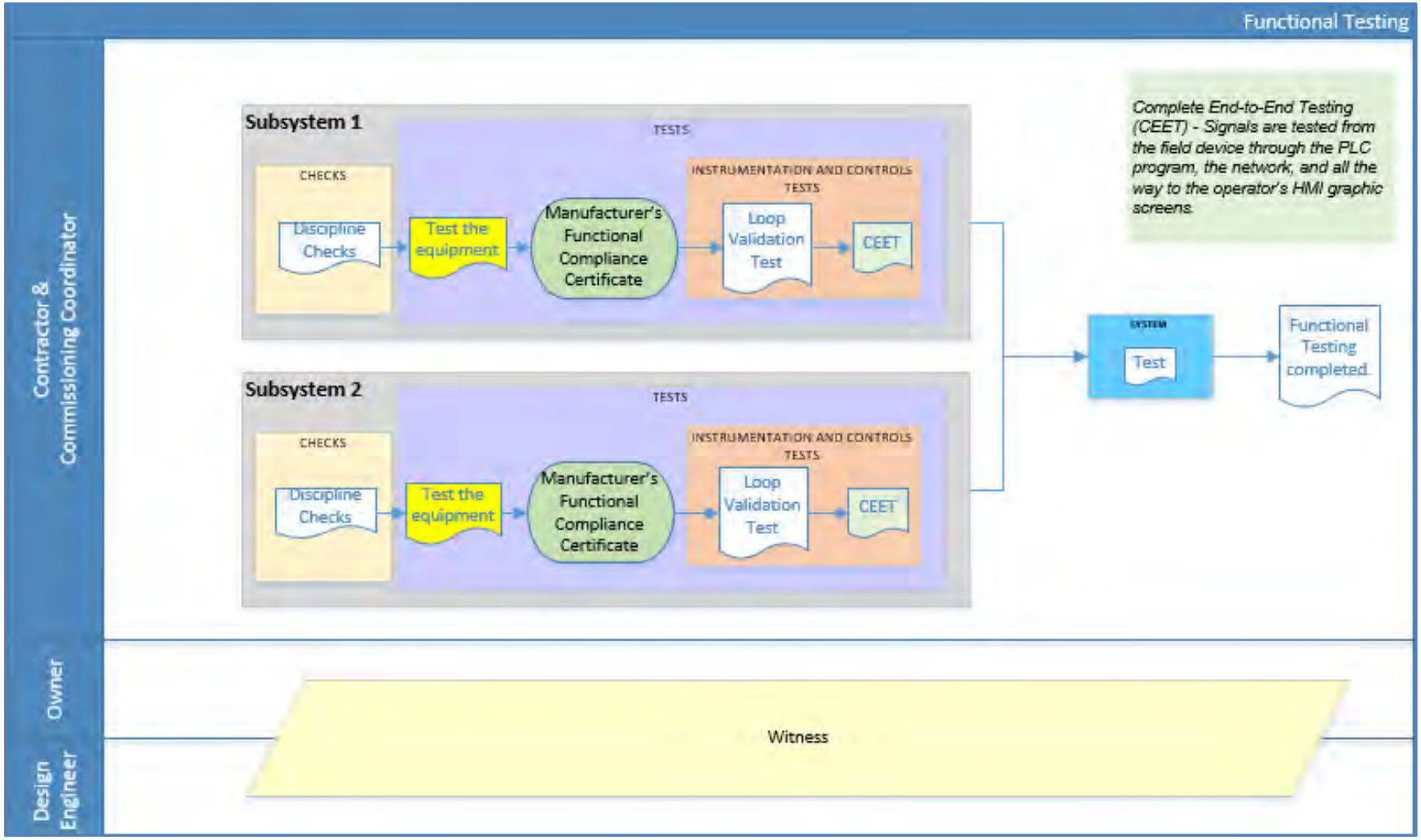

Commissioning
Planning Phase
Contractor & Commissioning Coordinator
Draft Test Plans
Owner
Design Engineer
Review and approve

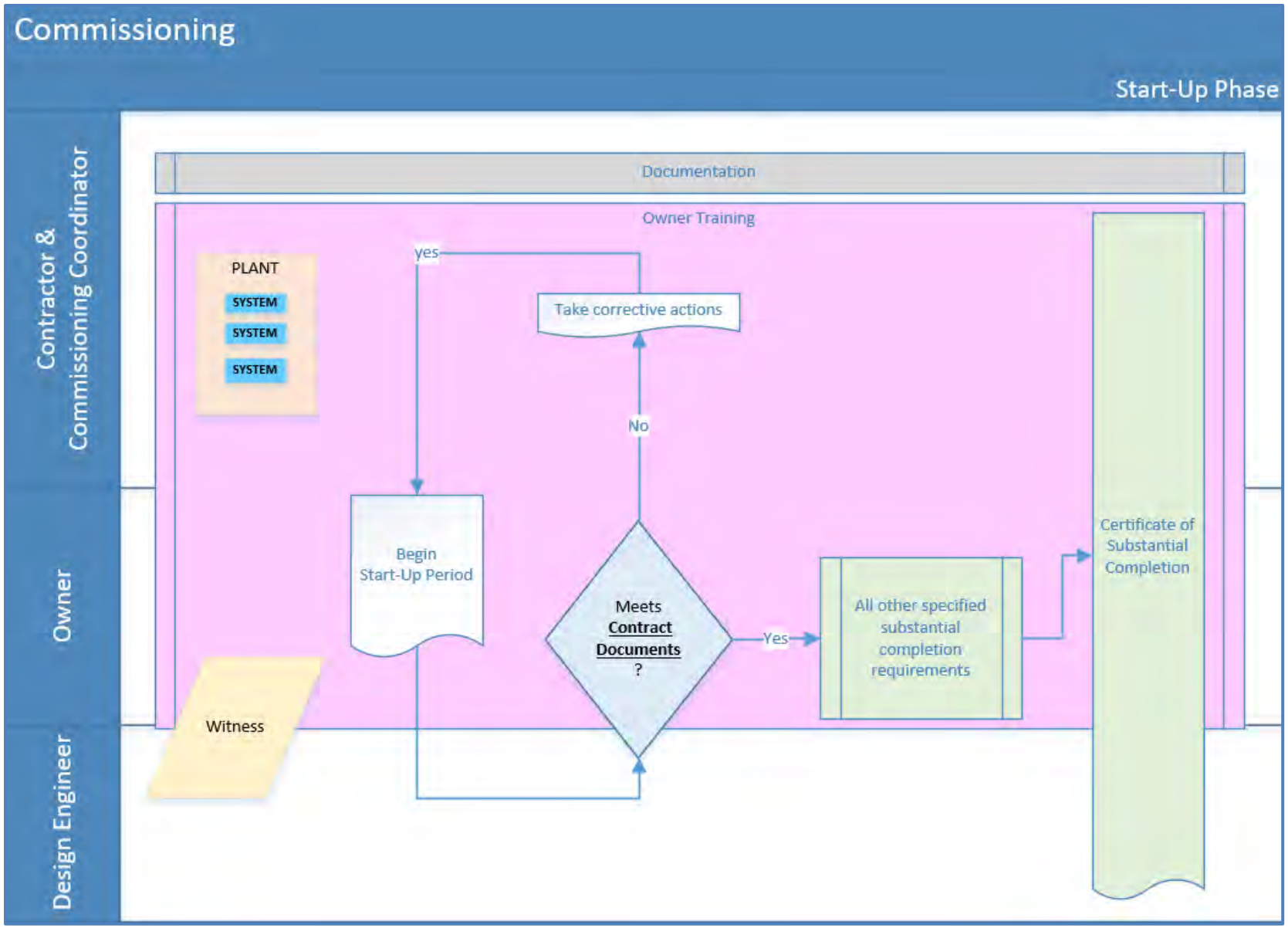

TESTING AND TRAINING PHASE
Installation Verification
Contractor & Commissioning Coordinator
Equipment
Checks
Structural Anchorage Check
Electrical Engerization Check
Health & Safety Check
Manufacturer Verification
Manufacturer Requirements
Contract Document Requirements
Manufacturer's Installation Verification Certificate
Equipment
Checks
Structural Anchorage Check
Electrical Engerization Check
Health & Safety Check
Manufacturer Verification
Manufacturer Requirements
Contract Document Requirements
Manufacturer's Installation Verification Certificate
Installation Verification Completed


TESTING AND TRAINING PHASE - Installation Verification
Electrical Energization Checks
Contractor
Design Engineer
Electrical Energization Checks
Commissioning Schedule
NFPA 70E
Electrical Energization Plan
Installed Cable Lengths
Installation Verification (Field Acceptance Tests)
Fault Current Study
Planned Cable Lengths
16305(26_05_74) Electrical Systems Studies PRELIMINARY
Electrical Systems Studies FINAL
Change Settings?
YES
NO
Field Changes to the Settings


Testing and Training Phase
Contractor & Commissioning Coordinator
Owner
Engineer
Documentation
Owner Training
Source Testing
(Factory Acceptance Testing FAT)
Source Testing
Manuf's Source Testing Certificate
Witness, as specified in Technical Sections
Installation Verification
(Field Acceptance)
Installation Verification
Manuf's Installation Verification Certificate
Functional Testing
Manuf's Functional Compliance Certificate
Owner staff participates
Witness


Installation Verification
Contractor & Commissioning Coordinator
Equipment
Checks
Structural Anchorage
Health and Safety Check
Manufacturer Verification
Manufacturer requirements
Contract Document reqmts
Manufacturer's Installation Verification Certificate
Equipment
Checks
Structural Anchorage
Health and Safety Check
Manufacturer Verification
Manufacturer requirements
Contract Document reqmts
Manufacturer's Installation Verification Certificate
Installation Verification completed.


Functional Testing
Contractor & Commissioning Coordinator
Subsystem 1
TESTS
CHECKS
Discipline Checks
Test the equipment
Manufacturer's Functional Compliance Certificate
INSTRUMENTATION AND CONTROLS TESTS
Loop Validation Test
CEET
Subsystem 2
TESTS
CHECKS
Discipline Checks
Test the equipment
Manufacturer's Functional Compliance Certificate
INSTRUMENTATION AND CONTROLS TESTS
Loop Validation Test
CEET
Complete End-to-End Testing (CEET) - Signals are tested from the field device through the PLC program, the network, and all the way to the operator's HMI graphic screens.
Test
Functional Testing completed
Owner
Witness
Design Engineer


Commissioning
Start-Up Phase
Contractor & Commissioning Coordinator
Owner
Design Engineer
Documentation
Owner Training
PLANT
SYSTEM
SYSTEM
SYSTEM
yes
Take corrective actions
No
Begin Start-Up Period
Meets Contract Documents ?
Yes
All other specified substantial completion requirements
Certificate of Substantial Completion
Witness

ATTACHMENT B - MANUFACTURER'S CERTIFICATE OF SOURCE TESTING

MANUFACTURER'S CERTIFICATE OF SOURCE TESTING

OWNER _____ EQPT/SYSTEM _____

PROJECT NAME _____ EQPT TAG NO. _____

PROJECT NO. _____ EQPT SERIAL NO. _____

SPECIFICATION NO. _____

SPECIFICATION TITLE _____

Comments: _____

_____

_____

_____

_____

I hereby certify Source Testing has been performed on the above-referenced equipment/system as defined in the Contract, and results conform to the Contract Document requirements. Testing data is attached.

Date of Execution: _____, 20 _____

Manufacturer: _____

Manufacturer's Authorized Representative Name *(print)*: _____

_____

(Authorized Signature)

If applicable, Witness Name *(print)*: _____

_____

(Witness Signature)

ATTACHMENT C - MANUFACTURER'S CERTIFICATE OF INSTALLATION VERIFICATION

MANUFACTURER'S CERTIFICATE OF INSTALLATION VERIFICATION

OWNER _____ EQPT/SYSTEM _____

PROJECT NAME _____ EQPT TAG NO. _____

PROJECT NO. _____ EQPT SERIAL NO. _____

SPECIFICATION NO. _____

SPECIFICATION TITLE _____

I hereby certify the installation of the above-referenced equipment/system as defined in the Contract Documents.

NOTES:

1. Attach written certification report prepared by and signed by the electrical and/or instrumentation subcontractor.

Comments: _____

_____

I, the undersigned manufacturer's representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate this equipment/system, and (iii) authorized to make recommendations required to ensure that the equipment/system furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: _____

Manufacturer: _____

Manufacturer's Authorized Representative Name *(print)*: _____

By Manufacturer's Authorized Representative: _____

(Authorized Signature)

ATTACHMENT D - MANUFACTURER'S CERTIFICATE OF FUNCTIONAL COMPLIANCE

MANUFACTURER'S CERTIFICATE OF FUNCTIONAL COMPLIANCE

OWNER _____ EQPT/SYSTEM _____

PROJECT NAME _____ EQPT TAG NO. _____

PROJECT NO. _____ EQPT SERIAL NO. _____

SPECIFICATION NO. _____

SPECIFICATION TITLE _____

I hereby certify the Functional Testing of the above-referenced equipment/system as defined in the Contract Documents.

NOTES:

1. Attach test results with collected data and test report.
2. Attach written certification report prepared by and signed by the electrical and/or instrumentation subcontractor.

Comments: _____

_____

I, the undersigned manufacturer's representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate this equipment/system, and (iii) authorized to make recommendations required to ensure that the equipment/system furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: _____

Manufacturer: _____

Manufacturer's Authorized Representative Name *(print)*: _____

By Manufacturer's Authorized Representative: _____

(Authorized Signature)

WITNESSES:

By Owner's Authorized Representative: _____

(Authorized Signature)

By Engineer's Authorized Representative: _____

(Authorized Signature)

ATTACHMENT E - TRAINING EVALUATION FORM

TRAINING EVALUATION FORM

EQUIPMENT/SYSTEM ITEM: _____

VENDOR/MANUFACTURER: _____

DATE: _____ NAME OF REPRESENTATIVE: _____

1.	Was representative prepared?	Acceptable	Unacceptable	or	N/A
2.	Was an overview description presented?	Acceptable	Unacceptable	or	N/A
3.	Were specific details presented for system components?	Acceptable	Unacceptable	or	N/A
4.	Were alarm and shutdown conditions clearly presented?	Acceptable	Unacceptable	or	N/A
5.	Were step-by-step procedures for starting, stopping, and troubleshooting presented?	Acceptable	Unacceptable	or	N/A
6.	Were routine/preventative maintenance items clearly identified?	Acceptable	Unacceptable	or	N/A
7.	Was the lubrication schedule (if any) discussed?	Acceptable	Unacceptable	or	N/A
8.	Was the representative able to answer all questions?	Acceptable	Unacceptable	or	N/A
9.	Did the representative agree to research and answer unanswered questions?	Acceptable	Unacceptable	or	N/A
10.	Comments: _____				
11.	Overall Rating	Satisfactory	Unsatisfactory		

Note:

Sessions judged “Unsatisfactory” by a majority of attendees shall be revised and conducted again until a satisfactory rating is achieved.

ATTACHMENT F - COMMISSIONING ROLES AND RESPONSIBILITIES MATRIX

COMMISSIONING ROLES AND RESPONSIBILITIES MATRIX

NO.	TASK	OWNER	CONTRACTOR	ENGINEER
Testing and Training Phase				
Source Testing				
	Source Testing	Witnessed as specified in the Technical Sections.	Lead	Witnessed as specified in the Technical Sections. Review
	Manufacturer's Certificate of Source Testing	No Action	Lead	Review
Installation Verification				
	Structural Anchorage Check	Witness	Lead	Review
	Health and Safety Check	Witness	Lead	Review
	Manufacturer Requirements Verification	No Action	Lead	Review
	Contract Documents Verification	No Action	Lead	Review
	Manufacturer's Certificate of Installation Verification	No Action	Lead	Review
Functional Testing				
	Checks	Witness	Lead	Witness, Review
	Tests	Witness	Lead	Witness, Review
	Manufacturer's Certificate of Functional Compliance	No Action	Lead	Witness, Review
System Testing				
	System Testing	Witness	Lead	Witness, Review
Start-Up Phase				
	Start-Up	Lead	Support	Witness, Review

Legend:

Lead: Primarily responsible for organization, coordination, and execution of task work product or result.
Support: Assist the lead with organization, coordination, and execution of task work product or result.
Witness: Observe and document completion of task work product or result.
No Action: Limited or no involvement.
Review: Approve for compliance with Contract Documents or reject.

ATTACHMENT G - FUNCTIONAL TESTING REQUIREMENTS

FUNCTIONAL TESTING REQUIREMENTS

System	Subsystem	Consecutive Day Test Duration (Days)	Significant Interruption Duration (Hours)	Test Liquid	System Operated By
ASR Facility		4	2	Finished Water	Owner
	Pumps				
	Variable Frequency Drive(s)				
	Valves				

A. Schedule delays:
   1. Changes in the dates for Source Testing less than 30 days of the date provided in the latest approved Commissioning Schedule are considered delays.
   2. Contractor is responsible for associated costs resulting from delays:
      a. In person and/or virtual witnessing.
      b. Travel costs and witness labor costs.

B. Repeat test costs:
   1. Contractor is responsible for associated costs for repeat testing:
      a. In person and/or virtual witnessing.
      b. Travel costs and witness labor costs.

SECTION 01757

DISINFECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Cleaning and disinfection requirements for new and existing facilities affected by the Work.

1.02 REFERENCES

A. American Water Works Association (AWWA):
   1. C651 - Disinfecting Water Mains.
   2. C652 - Disinfection of Water Storage Facilities.
   3. C653 - Disinfection of Water Treatment Plants.
   4. C655 - Field Dechlorination.

B. U.S. Environmental Protection Agency (EPA):
   1. Method 524.2 Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry.
   2. Safe Drinking Water Act (SDWA).

1.03 SUBMITTALS

A. Disinfection test plan, detailing the procedure to be utilized to disinfect the facilities, including:
   1. Method and locations of disinfectant application.
   2. Locations of sampling points.
   3. Method of flushing and location of flushing ports (as appropriate for method of chlorination).
   4. Method of dechlorination (as appropriate for method of chlorination).
   5. Disposal location for chlorinated water (as appropriate for method of chlorination).

B. Disinfection reports, including the following:
   1. Date issued.
   2. Project name and location.
   3. Treatment subcontractor’s name, address, and phone number.
   4. Type and form of disinfectant used.
   5. Time and date of disinfectant injection start.
   6. Time and date of disinfectant injection completion.
   7. Test locations.
   8. Initial and 24-hour disinfectant residuals in milligrams per liter for each outlet tested.
   9. Time and date of flushing start.

10. Time and date of flushing completion.
11. Disinfectant residual after flushing in milligrams per liter for each outlet tested.

C. Bacteriological reports, including the following:
1. Date issued.
2. Project name and location.
3. Laboratory name, certification number, address, and phone number.
4. Time and date of water sample collection.
5. Name of person collecting samples.
6. Test locations.
7. Time and date of laboratory test start.
8. Coliform bacteria test results for each outlet tested.
9. Certification that water conforms or fails to conform to bacterial standards of the SDWA.
10. Bacteriologist's signature and bacteriological laboratory's evidence of certification.

D. Required permits, including, but not limited to, permit clearance.
1. Coordinate with the Owner and Engineer to obtain any necessary signatures.

1.04 QUALITY ASSURANCE

A. Bacteriological and physical chemistry laboratory: Certified by the state in which the Project is located.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect chlorine and bacteriological samples against damage and contamination.

B. Maintain caution labels on hazardous materials.

C. Maintain storage room dry and with temperatures as uniform as possible between 60 degrees Fahrenheit and 80 degrees Fahrenheit.

1.06 PROTECTION

A. Provide necessary signs, barricades, and notices to prevent persons from accidentally consuming water or disturbing system being treated.

PART 2 PRODUCTS

2.01 MATERIALS

A. Disinfectant: Free chlorine in liquid, powder, tablet, or gas form in accordance with AWWA C653.

B. Dechlorination agent: Sulfur dioxide, sodium bisulfate, sodium sulfite, or sodium thiosulfate, in accordance with AWWA C655.

PART 3 EXECUTION

3.01 DISINFECTION OF WATER FACILITIES

A. Perform disinfection in accordance with AWWA C653 and as specified in this Section.

B. Complete hydrostatic/leakage tests prior to disinfection.

C. Clean newly constructed and/or modified facilities, such as pipes and channels, in accordance with AWWA C653 and the following:
   1. Remove debris and material not associated with the structure or process prior to disinfection.
   2. Clean wall, floor, ceiling, and attached surfaces by use of high-pressure water jet, sweeping, scrubbing, or equally effective means.
   3. Remove water, paint flakes, sediment, dirt, and foreign material accumulated during cleaning.
   4. Remove by flushing or other means, soil and debris from water pipes and channels in accordance with AWWA C651.
   5. Protect surfaces from adverse environmental exposure between the preliminary cleaning and the disinfection stages.

D. Prior to chlorination, clean newly constructed and/or modified facilities to be disinfected in accordance with AWWA C651, C652, or C653, as applicable.

E. Provide necessary blind flanges, hoses, sample taps, or any other appurtenances that may be required to clean and disinfect the piping and wetted surfaces.

F. System treatment:
   1. Start disinfection when conditions are satisfactory.
   2. Perform disinfection of water lines and structures in accordance with AWWA C651, C652, and C653, and as specified in this Section.
   3. Starting at the outlet closest to water source, bleed water from each outlet until water produces odor of disinfectant. Repeat process at each outlet throughout the system.
   4. Test for disinfectant residual at each of the following locations and other locations in accordance with the submitted disinfection test plan:
      a. Ends of piping runs.
      b. Remote outlets.
      c. Tanks.
      d. At least 2 outlets on each building floor where directed.
      e. Drain lines.
   5. Maintain disinfectant in system for appropriate 6-hour or 24-hour interval in accordance with AWWA C652.
   6. When disinfectant residual is less than 10 milligrams per liter after 24 hours, repeat system treatment.

7. Stainless steel piping:
    a. Modify procedures for disinfection of stainless steel piping and appurtenances as necessary to avoid causing corrosion, pitting, or attack of stainless steel materials.
        1) Take steps to eliminate chlorinated water trapped in crevices and under gaskets through the following procedures:
            a) Pressurize stainless steel piping systems so that gaskets and O-rings are seated before introducing chlorinated water into the system.
            b) Flush to displace a minimum of 3 pipe volumes at the conclusion of the disinfection procedure.
    b. Use the continuous-feed method to fill the stainless steel piping system with the minimum chlorine concentration required to provide a 10 milligrams per liter residual after 24 hours of contact time in accordance with AWWA C651.

3.02 SURFACES TO BE DISINFECTED

A. Disinfect the following:
    1. Piping systems that are used to convey water, solutions, or chemicals to potable water facilities.

3.03 REPAIRS OR CONNECTIONS TO EXISTING LINES

A. Perform disinfection in accordance with AWWA C651 and as specified in this Section.

B. Clean and sterilize the interior surfaces of new piping, fittings, equipment, and appurtenances to be installed in an existing potable water system or connected to an existing system.

C. Clean and sterilize the existing pipe or facilities for a minimum distance of 3 pipe diameters back from the ends of the pipe. Plug the ends of the line when work is not being performed on the pipe.

D. Perform sterilization by swabbing each item with a concentrated chlorine solution.
    1. Each piece is to be disinfected prior to being assembled for installation in the existing pipe.
    2. Disinfect each piece just prior to assembly to help prevent recontamination.
    3. Plug the ends of the assembly until a new item is to be added to the assembly.
    4. Store disinfected materials on blocks to prevent contact with the ground.

3.04 FLUSHING

A. Remove disinfection water from the facilities as appropriate for the type of disinfectant and method used for disinfection.

B. Flush facilities with potable water containing no more disinfectant residual than the active distribution system or 1 milligram per liter, whichever is greater, as appropriate for method of chlorination.

C. Continue flushing until water at designated flushing ports contains disinfectant residual equal to concentration specified above.

3.05 DISPOSAL OF CHLORINATED WATER

A. Dispose in accordance with AWWA C655 and as specified in this Section.

B. Dispose of chlorinated water in accordance with the submitted disinfection test plan and applicable requirements of federal, state, county, and city having jurisdiction over disposal of hazardous wastes in the location of the Project and disposal site.

C. Chlorinated water may only be disposed of in a sanitary sewer system with the written permission of the Owner. If allowed, discharge the chlorinated water at a low rate so it does not surcharge the sewer line.

3.06 BACTERIOLOGICAL TEST

A. Instruct bacteriological laboratory to collect water samples no sooner than 24 hours after start of disinfection of each facility.

B. Collect bacteriological quality samples at each of the following locations and other locations in accordance with the submitted disinfection test plan and Standard Methods for the Examination of Water and Wastewater:
   1. Where water enters system.
   2. Inlet piping.
   3. Ends of piping runs.
   4. Drain lines.
   5. Remote outlets.
   6. Tanks.
   7. At least 2 outlets on each building floor.

C. Analyze water samples in accordance with Standard Methods for Examination of Water and Wastewater.

D. When bacteriological test proves water quality to be unacceptable, repeat disinfection treatment process until water meets quality standards for disinfection.

END OF SECTION

SECTION 01770

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Contract closeout requirements.

1.02 REFERENCES

A. American Water Works Association (AWWA).

1.03 FINAL CLEANING

A. Perform final cleaning prior to inspections for Substantial Completion.

B. Employ skilled workers who are experienced in cleaning operations.

C. Use cleaning materials which are recommended by manufacturers of surfaces to be cleaned.

D. Prevent scratching, discoloring, and otherwise damaging surfaces being cleaned.

E. Clean roofs, gutters, downspouts, and drainage systems.

F. Broom clean exterior paved surfaces and rake clean other surfaces of site work:
   1. Police yards and grounds to keep clean.

G. Remove dust, cobwebs, and traces of insects and dirt.

H. Clean grease, mastic, adhesives, dust, dirt, stains, fingerprints, paint, blemishes, sealants, plaster, concrete, and other foreign materials from sight-exposed surfaces, and fixtures and equipment.

I. Remove non-permanent protection and labels.

J. Polish waxed woodwork and finish hardware.

K. Wash tile.

L. Wax and buff hard floors, as applicable.

M. Wash and polish glass, inside and outside.

N. Wash and shine mirrors.

O. Polish glossy surfaces to clear shine.

P. Vacuum carpeted and soft surfaces.

Q. Clean permanent filters and replace disposable filters when heating, ventilation, and air conditioning units were operated during construction.

R. Clean ducts, blowers, and coils when units were operated without filters during construction.

S. Clean light fixtures and replace burned-out or dim lamps.

T. Probes, elements, sample lines, transmitters, tubing, and enclosures have been cleaned and are in like-new condition.

1.04 WASTE DISPOSAL

A. Arrange for and dispose of surplus materials, waste products, and debris off-site:
   1. Prior to making disposal on private property, obtain written permission from the Owner of such property.

B. Do not fill ditches, washes, or drainage ways which may create drainage problems.

C. Do not create unsightly or unsanitary nuisances during disposal operations.

D. Maintain disposal site in safe condition and good appearance.

E. Complete leveling and cleanup prior to final completion of the Work.

1.05 TOUCH-UP AND REPAIR

A. Touch-up or repair finished surfaces on structures, equipment, fixtures, and installations that have been damaged prior to inspection for Substantial Completion.

B. Refinish or replace entire surfaces which cannot be touched-up or repaired satisfactorily.

1.06 FINAL CLEANING AND DISINFECTION OF SYSTEMS OF PLANT FACILITIES

A. Clean channels, pipe, basins, reservoirs, and tanks before running of 7-day test, or before facility goes on stream when 7-day test is not required.

B. Wash, wherever practicable, or broom sweep channels, pipe, basins, reservoirs, and tanks.

C. Disinfect filter basins, reservoirs, clear wells, tanks, channels, and piping intended to carry potable water as follows or in accordance with AWWA Standards.

D. Provide ample sampling outlets in pipe for testing.

E. Fill pipe and other plant facilities with chlorine solution of sufficient strength to retain residual of not less than 10 parts per million at end of 24 hours.

F. When reservoirs and basins are too large to be economically disinfected by filling with chlorine solution, spray reservoirs and basins with solution containing 100 parts per million of chlorine.

G. After disinfection, rinse entire potable water system with potable water sufficient to reduce chlorine residual to not more than 0.6 parts per million throughout system before system is put into service.

1.07 FINAL CLEANING AND DISINFECTION OF SYSTEMS OF POTABLE WATER MAINS

A. Clean interior of pipe and fittings.

B. When pipe contains dirt that cannot be removed by flushing, swab pipe interiors with solution containing not less than 500 parts per million of chlorine until clean.

C. Flush 12-inch diameter and smaller pipe as thoroughly as available water sources will permit.

D. Fill pipe with chlorine solution of sufficient strength to provide 10 parts per million chlorine residual at end of 24 hours.

E. Flush pipes with potable water until chlorine residual is less than 0.6 parts per million before pipes are put into service.

1.08 CLOSEOUT DOCUMENTS

A. Submit the following before Substantial Completion:
   1. Punch list of items to be completed or corrected with the request for issuance of Substantial Completion.
   2. Evidence of Compliance with Requirements of Governing Authorities.
   3. Project Record Documents.
   4. Approved Operation and Maintenance Manuals.
   5. Approved Warranties and Bonds.
   6. Keys and Keying Schedule.
   7. Completed Contract requirements for Commissioning and process Start-Up.

B. Submit the following before final completion of the Work and at least 7 days prior to submitting Application for Final Payment:
   1. Punch list items have been completed and the Engineer and Owner are satisfied that all deficiencies are corrected.
   2. Evidence of Payment and Release of Liens or Stop Payment Notices as outlined in Conditions of the Contract.
   3. Release of claims as outlined in Conditions of the Contract.
   4. Submit certification of insurance for products and completed operations, as specified in the General Conditions.
   5. Final statement of accounting.
   6. Submit Final (As-Built) Schedule as specified in Section 01321 - Schedules and Reports.

1.09 PROJECT RECORD DOCUMENTS

A. Maintain at the Project Site, available to the Owner and Engineer, 1 copy of the Contract Documents, Shop Drawings, and other Submittals in good order:
   1. Mark and record field changes and detailed information contained in Submittals and Change Orders.
   2. Record actual depths, horizontal and vertical location of underground pipes, duct banks, and other buried utilities. Reference dimensions to permanent surface features.
   3. Identify specific details of pipe connections, location of existing buried features located during excavation, and the final locations of piping, equipment, electrical conduits, manholes, and pull boxes.
   4. Identify location of spare conduits including beginning, ending, and routing through pull boxes and manholes. Record spare conductors, including number and size, within spare conduits and filled conduits.
   5. Provide schedules, lists, layout drawings, and wiring diagrams.
   6. Make annotations in electronic format. in accordance with the following color code:

Additions:	Red
Deletions:	Green
Comments	Blue
Dimensions:	Graphite

B. Maintain documents separate from those used for construction:
   1. Label documents “RECORD DOCUMENTS.”

C. Keep documents current:
   1. Record required information at the time the material and equipment is installed and before permanently concealing.
   2. Engineer will review Record Documents weekly to ascertain that changes have been recorded.

D. Affix civil engineer’s or professional land surveyor’s signature and registration number to Record Drawings to certify accuracy of information shown.

E. Deliver Record Documents with transmittal letter containing date, Project title, Contractor’s name and address, list of documents, and signature of the Contractor.

F. Record Documents will be reviewed monthly to determine the percent complete for the monthly pay application.

G. Updated Record Documents are a condition for the Engineer’s recommendation for progress payment.

H. Final Schedule Submittal as specified in Section 01321 - Schedules and Reports.

1.10 MAINTENANCE SERVICE

A. As specified in Technical Specifications.

1.11 SUBSTANTIAL COMPLETION

A. Obtain Certificate of Substantial Completion.

1.12 FINAL COMPLETION

A. When Contractor considers the Work is complete, submit written certification that:
   1. Work has been completed in accordance with the Contract Documents.
   2. Punch list items have been completed or corrected.
   3. Work is ready for final inspection.

B. Engineer will make an inspection to verify the status of completion with reasonable promptness.

C. Should the Engineer consider that the Work is incomplete or defective:
   1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective Work.
   2. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to the Engineer that the Work is complete.
   3. Engineer shall re-inspect the Work.

1.13 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the Engineer at least 7 days prior to final Application for Payment.

B. Statement shall reflect all adjustments to the Contract amount.
   1. The original Contract amount.
   2. Additions and deductions resulting from:
      a. Change Orders.
      b. Units installed and unit prices.
      c. Set-offs for uncorrected or incomplete Work.
      d. Set-offs for liquidated damages.
      e. Set-offs for reinspection payments.
      f. Extended engineering and/or inspection services and inspection overtime.
      g. Excessive Shop Drawings review cost by the Engineer.
      h. Other adjustments.
   3. Total Contract amount, as adjusted.
   4. Previous payments.
   5. Remaining payment due.

C. Engineer will prepare a final Change Order reflecting approved adjustments to the Contract amount which were not previously made by Change Orders.

1.14 FINAL APPLICATION FOR PAYMENT

A. Submit the final Application for Payment reflecting the agreed upon information provided in the final statement of accounting.

PART 2 PRODUCTS

2.01 SPARE PARTS

A. Owner may request advanced delivery of spare parts, maintenance products, and special tools.
   1. Deduct the delivered items from the inventory list and provide transmittal documentation.

B. Prior to Substantial Completion, arrange to deliver spare parts, maintenance products, and special tools to Owner at a location on site chosen by the Owner.
   1. Provide an itemized list of spare parts and special tools that matches the identification tag attached to each item.

C. Owner and Engineer will review the inventory and the itemized list to confirm it is complete and in good condition prior to signing for acceptance, as specified in the Agreement and Contract RFP in Volumes 1 and 2.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01782

OPERATION AND MAINTENANCE MANUALS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Preparation and submittal of manual with requirements to operate and maintain the equipment.

1.02 PREPARATION

A. General requirements:
   1. Provide dimensions in English units.
   2. Assemble material, where possible, in the same order within each volume.
   3. Reduce drawings and diagrams to 8 1/2 by 11-inch size, if possible unless otherwise specified.
   4. Complete forms on computer, handwriting not acceptable.
   5. Delete items or options not provided in the supplied equipment or system.
   6. Provide package control system annotated ladder logic for PLC, if applicable.

B. Hard copy requirements:
   1. Binders: 3-ring with rigid covers.
      a. Break into separate binders as needed to accommodate large size.
   2. Utilize numbered tab sheets to organize information.
   3. Provide original and clear text on reproducible non-colored paper, 8 1/2 by 11-inch size, 24 pound paper.
   4. Drawings larger than 8 1/2 by 11 inch:
      a. Fold drawings separately and place in envelope bound into the manual.
      b. Label each drawing envelope on the outside regarding contents.

C. Electronic requirements:
   1. File format:
      a. Entire manual in PDF format.
         1) Include text and drawing information.
         2) Provide a single PDF file even if the hard copy version is broken into separate binders due to being large.
         3) Create PDF from the native format of the document (Microsoft Word, graphics programs, drawing programs, etc.).
            a) If material is not available in native format and only available in paper format, remove smudges, fingerprints, and other extraneous marks before scanning to PDF format.
            b) Hard copy record drawing requirements:
               (1) Provide a single multipage PDF file of each set of the scanned drawings.
               (2) Page 1 shall be the cover of the drawing set.

c) At file opening, display the entire cover.
(1) Scan drawings at 200 to 300 dots per inch (DPI), black and white, Group IV Compression, unless otherwise specified.
(2) Scan drawings with photos in the background at 400 dots per inch (DPI), black and white, Group IV Compression.
4) Pagination and appearance to match hard copy.
5) Searchable.
6) Scanned images are not acceptable.
7) Bookmarks:
a) Bookmarks shall match the table of contents.
b) Bookmark each section (tab) and heading.
c) Drawings: Bookmark at a minimum, each discipline, area designation, or appropriate division.
d) At file opening, display all levels of bookmarks as expanded.
8) Thumbnails optimized for fast web viewing.
b. Drawing requirements:
1) Provide additional copy of drawings in most current version of AutoCAD format.
2) Drawings shall have a white background.
3) Drawing shapes shall not degrade when closely zoomed.
4) Screening effects intended to de-emphasize detail in a drawing must be preserved.
5) Delete items or options not provided in the supplied equipment or system.
2. Media:
a. USB flash drive.
b. Secure File Transfer Protocol (SFTP).
3. Label media with the following information:
a. Operation and Maintenance Manual.
b. Equipment name.
c. Specification Section Number.
d. Equipment tag number.
e. Owner's name.
f. Project number and name.
g. Date.
4. If multiple submittals are made together, each submittal must have its own subdirectory that is named and numbered based on the submittal number.

1.03 CONTENTS

A. Table of Contents: General description of information provided within each tab section.

B. Complete Attachment A - Equipment Summary Form.

C. Description of system and components.

D. Description of equipment function, normal operating characteristics, and limiting conditions.

E. On-line resources.

F. Telephone resources.

G. Approved submittals.
   1. Markup with any field changes.
   2. Final programming.

H. Start-up procedures: Recommendations for installation, adjustment, calibration, and troubleshooting.

I. Operating procedures:
   1. Step-by-step instructions including but not limited to the following:
      a. Safety precautions and applicable Safety Data Sheets.
      b. Guidelines.
      c. Other information as needed for safe system operation and maintenance.

J. Preventative maintenance procedures:
   1. Recommended steps and schedules for maintaining equipment.
   2. Troubleshooting.

K. Lubrication information: Required lubricants and lubrication schedules.

L. Overhaul instructions: Directions for disassembly, inspection, repair, and reassembly of the equipment; safety precautions; and recommended tolerances, critical bolt torques, and special tools that are required.

M. Manufacturer's technical reference manuals.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ATTACHMENT A - EQUIPMENT SUMMARY FORM

EQUIPMENT SUMMARY FORM

1. EQUIPMENT ITEM_____

2. MANUFACTURER_____

3. EQUIPMENT TAG NUMBER(S)_____

4. LOCATION OF EQUIPMENT_____

5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS)_____

_____

_____

_____

6. NAMEPLATE DATA -
   - Horsepower_____
   - Amperage_____
   - Voltage_____
   - Service Factor (S.F.)_____
   - Speed_____
   - ENC Type_____
   - Capacity_____
   - Other_____

7. MANUFACTURER'S LOCAL REPRESENTATIVE

   Name_____

   Address_____

   Telephone Number_____

8. MAINTENANCE REQUIREMENTS:

Maintenance Operation	Frequency	Lubricant (if applicable)	Comments
(List each operation required. Refer to specific information in Manufacturer's Manual, if applicable)	(List required frequency of each maintenance operation)	(Refer by symbol to lubricant list as required)	

9. LUBRICANT LIST:

Reference Symbol	Conoco Phillips	Exxon/Mobil	BP/Amoco	Other (List)
(Symbols used in Item 7 above)	(List equivalent lubricants, as distributed by each manufacturer for the specific use recommended)			

10. SPARE PARTS (recommendations)_____

_____

11. COMMENTS_____

12. GENERAL INFORMATION:

Date Accepted*: _____

Expected Life*: _____

Project Name & Number: _____

Design Engineer: _____

13. WARRANTY:

Start Date: _____

Expiration Date: _____

Prorated: _____

SECTION 01783

WARRANTIES AND BONDS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Warranty and bonds requirements.

1.02 SUBMITTALS

A. For each item of material or equipment furnished under the Contract:
   1. Submit manufacturer's warranty prior to fabrication and shipment of the item from the manufacturer's facility.
   2. Submit manufacturer's special warranty when specified.

B. Provide consolidated warranties and bonds within 15 calendar days of Substantial Completion.
   1. Contents:
      a. Organize warranty and bond documents:
         1) Include Table of Contents organized by Specification Section number and the name of the product or work item.
      b. Include each required warranty and bond in proper form, with full information, certified by manufacturer as required, and properly executed by Contractor, or subcontractor, supplier, or manufacturer.
      c. Provide name, address, phone number, and point of contact of manufacturer, supplier, and installer, as applicable.
   2. Hardcopy format:
      a. Submit 2 copies.
      b. Assemble in 3 D-side ring binders with durable cover.
      c. Identify each binder on the front and spine with typed or printed title "Warranties and Bonds"; Project Name or Title, and the Name Address and Telephone Number of the Contractor.
   3. Electronic copy in PDF format:
      a. Submit 1 copy.

1.03 OWNER'S RIGHTS

A. Owner reserves the right to reject warranties.

B. Owner reserves the right to refuse to accept Work for the project if the required warranties have not been provided.

1.04 RELATIONSHIP TO GENERAL WARRANTY AND CORRECTION PERIOD

A. Warranties specified for materials and equipment shall be in addition to, and run concurrent with, both Contractor's general warranty and the correction period requirements.

B. Disclaimers and limitations in specific materials and equipment warranties do not limit Contractor’s general warranty, nor does such affect or limit Contractor’s performance obligations under the correction period.

1.05 MANUFACTURER’S 1 YEAR WARRANTY MINIMUM REQUIREMENTS

A. Written warranty issued by item’s manufacturer.

B. Project-specific information, properly executed by product manufacturer, and expressly states that its provisions are for the benefit of the Contractor.

C. Covers all costs associated with the correction of the defect, including, but not limited to, removal of defective parts, new parts, labor, and shipping.

D. Provides a timely response to correct the defect.
   1. Manufacturer shall provide, in a timely fashion, temporary equipment as necessary to replace warranted items requiring repair or replacement, when warranted items are in use and are critical to the treatment process, as defined by Owner.

E. Warranty commence running on the date of substantial completion.
   1. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit warranty within 10 calendar days after acceptance, listing date of acceptance as beginning of warranty period.

F. Duration of warranty: 1 year.

1.06 MANUFACTURER’S SPECIAL WARRANTY

A. Manufacturer’s special warranty is a written warranty published by the manufacturer which includes the requirements as specified in the Technical Section.
   1. Project-specific information and requirements.
   2. Properly executed by product manufacturer.
   3. Expressly states that its provisions are for the benefit of the Contractor or Owner.
   4. Manufacturer’s special warranties commence on the date that the associated item is certified by Engineer as substantially complete.

B. This equipment has been classified as critical. Provide a 2-year duration special warranty, as specified in Technical Specifications:
   1. Section 11242 - Liquid Chemical Double Diaphragm Metering Pumps.
   2. Section 11249 - Packaged Fluoride System.
   3. Section 11313 - Vertical Turbine Pumps.
   4. Section 16222 - Low Voltage Motors up to 500 Horsepower.

5. Section 16265 - Reduced Harmonic Variable Frequency Drives.
6. Section 16444 - Low Voltage Motor Control Centers.

C. This equipment has been classified as critical with a minimum 5-year warranty, as specified in Technical Specifications:
   1. Section 15739 - VRF Heat Pumps.

1.07 WARRANTY WORK

A. Contractor's responsibilities:
   1. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the product, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with Contractor.

B. Replacement cost:
   1. Upon determination that work covered by warranty has failed, replace or rebuild the work to an acceptable condition complying with requirement of the Contract Documents.
      a. Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether Owner has benefited from the use of the work through a portion of its anticipated useful service life.

C. Related damages and losses:
   1. When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.

D. Owner's recourse:
   1. Written warranties are in addition to implied warranties, and shall not limit the duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitation on time in which Owner can enforce such other duties, obligations, rights, or remedies.

E. Reinstatement of warranty:
   1. When work covered by a warranty has failed and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement.
      a. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

1.08 IMPLIED WARRANTIES

A. Warranty of title and intellectual rights:
   1. Except as may be otherwise indicated in the Contract Documents, implied warranty of title required by Laws and Regulations is applicable to the Work and to materials and equipment incorporated therein.
   2. Provisions on intellectual rights, including patent fees and royalties, are in the General Conditions, as may be modified by the Supplementary Conditions.

B. Implied warranties: Duration in accordance with Laws and Regulations.

1.09 BONDS

A. Equipment bond and other bond requirements as specified in the Technical Sections.

B. Bonds commence running on the date of substantial completion.
   1. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit warranty within 10 calendar days after acceptance, listing date of acceptance as beginning of bond period.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01850

DESIGN CRITERIA

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Design criteria for use in the selection of equipment and appurtenances specified in Technical Sections of these Specifications and indicated on the Drawings.
   2. Criteria for design of systems, components and equipment fabricated off site and shipped to the Work for installation.
   3. Criteria for design of anchors to connect equipment and appurtenances to supports and structures.

B. The criteria in this Section apply throughout the Work, unless additional criteria, or more restrictive criteria, are indicated.
   1. Additional criteria and requirements relevant to specific locations, specific materials, and specific equipment are indicated on the Drawings, and in the Technical Sections.

1.02 REFERENCES

A. American Society of Civil Engineers (ASCE):
   1. 7-16 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures. (ASCE 7).

B. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE):
   1. ASHRAE Fundamentals Handbook.

C. International Code Council (ICC):
   1. International Energy Conservation Code (IECC).
   2. International Plumbing Code (IPC).

D. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA):
   1. Seismic Restraint Manual: Guidelines for Mechanical Systems, 3rd edition 2008.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA - SITE INFORMATION

Table: Site Locations and Elevations				
	Coordinates[1]		Site Elevation[1]	Design Groundwater Elevation[1]
Site Name	Latitude	Longitude	(feet)	(feet)
Misty Wood ASR Well (Well 19)	38.7715°	-121.3185°	120 to 137	95 to 100[2]
Campus Oaks Well (Well 13)	38.7917°	-121.3219°	128 to 131	19 to 67

Notes:

(1) Approximate, NAVD88.
(2) Perched groundwater has been observed 6 feet below the ground surface, approximately at elevation 124 in January 2023.Approximate.

2.02 DESIGN CRITERIA - REGULATORY REQUIREMENTS

A. Requirements of authorities having jurisdiction over the Project are included in Section 01410 - Regulatory Requirements.

2.03 DESIGN CRITERIA - OPERATING ENVIRONMENT

A. Drawings and Technical Sections include additional criteria and requirements relevant to specific locations, materials, and equipment.

B. Outdoor conditions:
   1. IECC: Climate Zone 3B.
   2. ASHRAE site climatic data location: Sacramento McClellan, CA, USA.
   3. Temperature criteria: As specified in the following Table: Design Temperatures - Outdoor Criteria in Accordance with ASHRAE Fundamentals Handbook.

Table: Design Temperatures - Outdoor Criteria in Accordance with ASHRAE Fundamentals Handbook	
Condition	**Criteria**
Hottest Month DB Range:	114 degrees Fahrenheit.
Winter:	At or above this temperature 99.6 percent of the time: 31.7 degrees Fahrenheit dry-bulb.
Summer:	At or above this temperature 0.4 percent of the time: 101.8 degrees Fahrenheit dry-bulb.

   4. Rainfall intensity:
      a. Reference: International Plumbing Code (IPC):
         1) 1.5 inches per hour (100-year, 1-hour rainfall).

C. Indoor conditions:
   1. HVAC:
      a. As specified in Section 15936 - Instrumentation and Control Devices for HVAC.

2.04 DESIGN CRITERIA - STRUCTURAL

A. General:
   1. Criteria for structural design of:
      a. Equipment at locations subject to seismic events.
      b. Equipment exposed to outdoor environments.
      c. Equipment supports and bracing, and anchorage of such items to building and non-building structures.
      d. Structures provided for the Work through Delegated Design.
      e. Manufactured and prefabricated structures, and anchorage of such structures to foundations or other supporting elements.
   2. Structural design criteria used by the Engineer of record and required by the building code to be indicated on the Drawings are included on the Contract Drawing titled “General Structural Notes.”

B. Structure risk category:
   1. Develop design loads and provide detailing in accordance with the provisions of ASCE 7 and the building code specified in Section 01410 - Regulatory Requirements, based on the Structure Risk Category indicated in Table: Project Structures - Risk Category and Seismic Design Information.

C. Seismic loads:
   1. Structures - General:
      a. Seismic Design Category (SDC): As indicated in the following Table: Project Structures - Risk Category and Seismic Design Information.

Table: Project Structures - Risk Category and Seismic Design Information

Description: Water Treatment Facility

Area	Description	Risk Category	Site Class	S_{DS}	S_{D1}	Seismic Design Category(1)
	Misty Wood ASR Well (Well 19)	III	D	0.43	0.32	C
	Campus Oaks Well (Well 13)	III	D	0.43	0.32	C

Notes:

(1) Seismic Design Category for Delegated Design, and for seismic certification of electrical and mechanical equipment as required by ASCE 7.

      b. Structure response modification coefficient, R:
         1) In accordance with ASCE 7 and the requirements of the Technical Sections.
   2. Structures - Tanks and vessels.
      a. Includes: Tank structures, tank supports, and anchorage to structures or foundations.
      b. Liquid storage structures (e.g., basins and tanks).
         1) Include impulsive and convective (“sloshing”) effects.

2) Component response modification factor - impulsive effects, Ri: In accordance with ASCE 7, Table 15.4-2.
3) Component response modification factor - convective effects, Rc = 1.0.

c. Dry material storage structures (e.g., silos, hoppers):
1) Include effects of stored materials.
2) Component response modification factor - impulsive effects, Ri: In accordance with ASCE 7, Table 15.4-2.

3. Non-structural components - General:
a. Includes:
1) Mechanical and electrical equipment; anchorage of equipment to structures or supports; design of supports; and anchorage of supports to structures or foundations.
2) Distribution systems associated with mechanical and electrical equipment such as piping, ductwork, conduits, cable trays, raceways, bus ducts, and similar items; anchorage of such systems to supports and structures; and bracing or such systems.

b. Seismic design requirements for non-structural components are based on the Seismic Design Category (SDC) of the structure or facility where the equipment is installed.

c. Design components, component anchorage, and component connections to piping and utilities in accordance with the requirements of ASCE 7, Table 13.2-1.

d. Component amplification factor (ap), response factor (Rp), and overstrength factor for anchorage to concrete (Ωo):
1) Mechanical and electrical components and systems: In accordance with ASCE 7, Table 13.6-1, unless otherwise indicated in the Technical Sections for these items.
2) Architectural components and systems: In accordance with ASCE 7, Table 13.6-1, unless otherwise indicated in the Technical Sections for these items.

e. Component importance factor, I_p:
1) In accordance with the following Table: Component Importance Factor for Seismic Design, I_p.
2) For items not listed in Table: Component Importance Factor for Seismic Design, I_p, designate importance factor in accordance with the provisions of ASCE 7, Chapter 13, and submit to the Engineer for review prior to developing calculations and details related to that component.

Table: Component Importance Factor for Seismic Design, I_p

Structure Seismic Design Category	Components	I_p
All	Electrical: Items and distribution system components specified in Division 16 - Electrical.	1.5
All	Process Control and Instrumentation Systems: Components and distribution systems specified in Division 17 - Instrumentation and Controls.	1.5

Table: Component Importance Factor for Seismic Design, I_p		
Structure Seismic Design Category	**Components**	**I_p**
All	Fire protection: Components and distribution systems specified in Section 10520 - Fire Protection Specialties.	1.5
All	Conveyance and distribution systems and supports for toxic, highly toxic, hazardous, or explosive substances as specified in Divisions 6 through 15.	1.5
All	Equipment and components specified in Divisions 11 through 15, except HVAC and plumbing components listed below.	1.5
All	Plumbing equipment specified in the following Sections: 15400 - Plumbing Systems 15430 - Emergency Eye/Face Wash and Shower Equipment	1.0
All	HVAC equipment specified in the following Sections: 15739 - VRF Heat Pumps 15762 - Heating Units 15830 - Fans	1.0
All	Other equipment not listed above.	1.0

4. Non-structural components: HVAC ductwork.
    a. Component importance factor, I_p: Determine in accordance with ASCE 7, Section 15.4.1.1.
    b. Seismic design category:
        1) See Table: Component Importance Factor for Seismic Design, I_p (preceding).
    c. SMACNA seismic hazard level.
        1) Seismic hazard level for design of heating, ventilating, and air conditioning ductwork in accordance with SMACNA Seismic Restraint Manual:
            a) SMACNA Seismic hazard level = D.

D. Wind loads:
1. Design structures and non-structural components that are exposed to wind to withstand design wind loads.
    a. Reduction of wind loads based on shielding effects of surrounding structures or components is not allowed.
    b. Design for wind loading is not required for non-structural components and for non-building structures located inside enclosed buildings.
2. Design parameters:
    a. Basic wind speed:
        1) 100 miles per hour (33 feet, 3 second gust).
    b. Exposure category: C.
    c. Topographic factor, Kzt: 1.0.
    d. Wind pressure for design of “components and cladding”.
        1) “Components and cladding” includes doors, windows, siding panels, skylights, parapets, and similar architectural elements.

2) Minimum wind pressure for components and cladding, strength level:
   a) Wall elements: Minimum 16 pounds per square foot, pressure or vacuum.
   b) Roof elements: Minimum 16 pounds per square foot, pressure or vacuum.
   c) For “allowable stress level” pressures, multiply strength level pressures by 0.625.

E. Rainfall loads:
   1. Determine rainfall loads using rainfall intensity specified in this Section, and including effects of exposed surface slope, height above surface to discharge elevation, and deflection of ponded surfaces.

F. Operational loads:
   1. Loads may include equipment vibration, torque, thermal effects, effects of internal contents (weight and sloshing), surge or “water hammer,” and other load conditions.
   2. Design for loads indicated by the equipment manufacturer.
   3. Design for loads indicated in the Technical Sections for equipment and appurtenances.

G. Serviceability considerations: ASCE 7-16:
   1. Deflection, unless otherwise indicated on the Drawings, or specified:
      a. Beam deflection as fraction of span:
         1) Walkways and platforms: Total load = L/240; live load = L/360.
         2) Equipment supports: L/450.

PART 3 EXECUTION

3.01 GENERAL

A. Design approach and criteria in accordance with:
   1. Regulatory requirements, including but not limited to the building code specified in Section 01410 - Regulatory Requirements.
   2. Reference standards and project-specific design criteria listed in this Section.
   3. Specific requirements for individual elements and components of the Work as specified in subsequent Technical Sections.

B. In the event of conflicts between design criteria, contact Engineer for interpretation.

C. Where Owner-Delegated Design is required by the Specifications, prepare and submit designs as specified in Section 01357 - Delegated Design Procedures.

3.02 DELEGATED DESIGN

A. Where Delegated Design is required by the Technical Sections, prepare and submit designs as specified in Section 01357 - Delegated Design Procedures.

B. Calculations:
    1. Where submittal of calculations is required:
        a. Provide complete calculations, including sketches to illustrate the design concepts being evaluated, and details to fully describe proposed construction.
    2. Requirements for seismic design calculations will be waived for the following:
        a. Furniture and storage racks 6 feet in height or less.
        b. Moveable equipment.
        c. Mechanical and electrical equipment and components located in structures designated as Seismic Design Category A or B.
        d. Mechanical and electrical equipment and components located in structures designated as Seismic Design Category C and where the component importance factor, I_p, is equal to 1.0.
    3. Requirements for wind design calculations will be waived for the following:
        a. Equipment and components located inside structures, and away from the effects of wind loads.

C. Shop Drawings:
    1. Describing components and manufacturer's requirements for connections.
        a. Include details for connections of components to structures and supports.
        b. Include details for anchoring bracing to structures where required.

3.03 DESIGN - ANCHORS FOR EQUIPMENT, COMPONENTS, AND BRACING

A. General:
    1. Engineer's approval of anchor designs is required before placement of construction that supports or provides bracing for anchored equipment and components.
        a. Prepare anchor designs after Engineer's approval of the products and layout, and before placement of concrete or masonry that supports them.
    2. Adjust equipment pad sizes and add additional anchor confinement reinforcing to provide required strength at anchorage points between equipment and pad, and between pad and structure.
    3. Supports and bracing:
        a. Design and install braces and anchors to transfer forces from equipment and components to the lateral force resisting system of the surrounding structure.
        b. Anchor and brace piping, ductwork, and electrical distribution components so that lateral or vertical displacement does not result in damage to or failure of essential architectural, mechanical, or electrical equipment.
            1) Provide supplementary framing where required to transfer forces.
            2) Detail and locate braces and anchors to minimize differential movements between components and structure.

B. Preparation:
    1. Obtain manufacturer's information:
        a. Weight and dimensions of components.
        b. Layout and location of anchors that connect to equipment base plates, sole plates, skids, or pads.
        c. Sizes of holes for anchors that will be provided in equipment bases or support frames.

C. Analysis and design:
    1. Perform and submit calculations to determine anchor designs at locations where equipment and equipment supports are connected to the supporting structure.
        a. Indicate number, size, type, and material for anchors.
    2. In determining forces at locations where equipment is anchored to structures, include effects of:
        a. Equipment self-weight and operating weight.
        b. Location of equipment center of mass.
        c. Forces from equipment operation including, but not limited to:
            1) Effects of internal contents including weight and sloshing.
            2) Effects of thrust, surge, and water hammer where specified.
            3) Equipment reactions and operating torque.
            4) Equipment vibration.
            5) Thermal effects from equipment and from distribution systems connected to the equipment (piping, ducts, and electrical).
            6) Other load or displacement inducing conditions.
        d. Forces on equipment from loads specified in this Section.
            1) Include effects of wind, snow, and icing loads where applicable.
            2) Design for load combinations indicated in ASCE 7, unless otherwise specified or indicated on the Drawings.
            3) Seismic and wind loads: For equipment and tanks with weight that varies based on the volume of contained material, determine anchor forces to accommodate the full range of filled, partially filled, and empty conditions.
    3. Determine forces and overturning moments at equipment supports and at locations where supports are anchored to structures.
        a. Indicate shear force and associated axial force at each anchor.
    4. Do not use friction to resist sliding resulting from seismic or wind forces.
        a. Resist sliding only by direct application of sliding loads to fasteners as bearing, shear, tension, or compression forces.
    5. Using combined shears and axial forces at each anchor, design anchors and anchor groups for ductile failure.
        a. Ductile failure: Anchor yield before failure of base material, typically concrete or masonry, at the anchor.
    6. Anchor selection:
        a. Provide anchors type indicated on the Drawings.
        b. Where anchors are not specifically indicated on the Drawings, select in accordance with the following:
            1) Anchors that resist seismic and wind forces:
                a) Cast-in-place forged hex-head anchor bolt.
            2) Anchors loaded in sustained tension:
                a) Cast-in-place forged hex-head anchor bolt.
            3) Anchors for reciprocating, vibrating, and rotating equipment:
                a) Cast-in-place forged hex-head anchor bolt.
        c. Do not use post-installed anchors, mechanical or adhesive, unless:
            1) Post-installed anchors are indicated on the Drawings.
            2) Post-installed are approved by the Engineer prior to placement of the surrounding concrete or masonry.

d. Anchor diameter:
    1) Select diameter so that hole in base plate is not greater than 125 percent of the nominal diameter of the anchor, nor greater than the diameter of the anchor plus 1/4 inch.

7. Determine number, size, layout, and minimum effective embedment for anchors.
    a. Layout includes anchor spacing and required distance(s) from anchor to edge(s) of supporting concrete or masonry.
    b. Anchors in concrete: Design based on minimum specified 28-day compressive strength, f'c, as follows, unless otherwise indicated on the Drawings for the Work area:
        1) Concrete placed for this Work: f'c = 4,000 pounds per square inch.
    c. Anchors in masonry: Design based on minimum specified compressive strength, f'm, as follows, unless otherwise indicated on the Drawings for the Work area:
        1) Concrete masonry placed for this Work: f'm = 1,500 pounds per square inch.
8. Prepare Drawings showing construction details of anchor designs.
9. Submit design calculations and Drawings prior to placement of anchors, and of the structural elements to which they will connect.

END OF SECTION

SECTION 02050

SOILS AND AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Material requirements for soils and aggregates.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. T 11 - Standard Method of Test for Materials Finer than 75µm (No. 200) Sieve in Mineral Aggregates by Washing.
   2. T 27 - Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.
   3. T 89 - Standard Method of Test for Determining the Liquid Limit of Soils.
   4. T 90 - Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.
   5. T 96 - Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
   6. T 104 - Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.
   7. TP 95 - Standard Method of Test for Surface.

B. ASTM International (ASTM):
   1. C117 - Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.
   2. C131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
   3. C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   4. C535 - Standard Test Method for Resistance to Degradation of Larger-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
   5. D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
   6. D2844 - Standard Test Method for Resistance R-Value and Expansion Pressure of Compacted Soils.
   7. D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
   8. D4829 - Standard Test Method for Expansion Index of Soils.
   9. D5821 - Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate.

C. California State Transportation Agency, Department of Transportation (CALTRANS):
   1. (Standard Specifications).

2. California Test Methods (CTM):
    a. California Test 205 - Method of Test for Determining Crushed Particles.
    b. California Test 211 - Method of Test for Abrasion of Coarse Aggregate by Use of the Los Angeles Abrasion Testing Machine.
    c. California Test 217 - Method of Test for Sand Equivalent.
    d. California Test 229 - Method of Test for Durability Index.
    e. California Test 301 - Method of Test for Determining the Resistance "R" Value of Treated and Untreated Bases, Subbases, and Basement Soils by the Stabilometer.

1.03 SUBMITTALS

A. Product data:
    1. Material source.
    2. Gradation.
    3. Testing data.

B. Quality control for aggregate base course:
    1. Test reports: As required by Sections of Standard Specifications.
    2. Certificates of compliance: Certificates As required by Sections of Standard Specifications.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Storage and protection: Protect from segregation and excessive moisture during delivery, storage, and handling.

B. Comply with Standard Specifications storage requirements, if applicable.

PART 2 PRODUCTS

2.01 MATERIALS - GENERAL

A. Provide material having maximum particle size not exceeding 4 inches and that is free of trash, lumber, debris, leaves, grass, roots, stumps, and other organic matter.

B. Materials derived from processing demolished or removed asphalt concrete are not acceptable.

C. Comply with soil and aggregate material requirements in the Standard Specifications, unless specified otherwise.

2.02 NATIVE MATERIAL

A. Native soil-select:
    1. Sound earthen material.
    2. Sum of plasticity index when tested in accordance with ASTM D4318 and the percent of material by weight passing a No. 200 sieve shall not exceed 23 when tested in accordance with ASTM C136.
    3. Organic content not be greater than 3 percent by volume.

4. Corrosion resistance requirements:
    a. Resistivity minimum (wet aggregates): 5,000 ohm-cm.
    b. pH: 5.0 to 12.0.
    c. Chlorides maximum: 100 parts per million.
    d. Sulfates maximum: 200 parts per million.

2.03 AGGREGATE BASE COURSE

Material requirements:

1. Class 2, 3/4-inch maximum aggregate size, free from organic matter and other deleterious substances, and of such nature that aggregate can be compacted readily under watering and rolling to form a firm, stable base.
2. Aggregate base course for structures:
    a. Consist of crushed or fragmented particles.
    b. Coarse aggregate material retained in No. 4 sieve shall consist of material of which at least 25 percent by weight shall be crushed particles when tested in accordance with California Test 205.
3. Aggregate shall not be treated with lime, cement, or other chemical material.
4. Durability index: Not less than 35 when tested in accordance with California Test 229.
5. Aggregate grading and sand equivalent tests shall be performed to represent not more than 500 cubic yards or 1 day's production of material, whichever is smaller.
6. Sand equivalent: Not less than 25 when tested in accordance with California Test 217.
7. Resistance (R-value): Not less than 78 when tested in accordance with California Test 301.
8. Conforms to size and grade within the following limits when tested in accordance with ASTM C117 and ASTM C136:

Sieve Sizes (Square Openings)	**Percent by Weight Passing Sieve**
1 inch	100
3/4 inch	90 - 100
No. 4	35 - 60
No. 30	10 - 30
No. 200	2 - 9

2.04 GRAVEL

A. Material requirements:
    1. Consists of hard, durable particles of stone or gravel; or crushed to the specified sizes and gradations; and free from organic matter, lumps or balls of clay, and other deleterious matter.
    2. Crush or waste coarse material and add or waste fine material in order to meet the specified gradations.
    3. Fraction of material passing No. 40 sieve: Material having plasticity index not greater than 5 when tested in accordance with ASTM D4318.

4. Durability: Percentage of wear not greater than 40 percent when tested in accordance with California Test 211.
5. Conforms to sizes and grade within the following limits when tested in accordance with ASTM C117 and ASTM C136:

Sieve Size (Square Openings)	Percent by Weight Passing Sieve		
	Type A	Type B	Type C
2 inch	100	--	--
1-1/2 inch	95 - 100	100	--
3/4 inch	35 - 60	55 - 85	100
3/8 inch	15 - 40	35 - 65	50 - 100
No. 4	0 - 25	20 - 35	30 - 45
No. 30	--	5 - 15	10 - 20
No. 200	0 - 5	2 - 9	2 - 9

2.05 DRAIN ROCK

A. Material requirements:
   1. Durability index: Percentage of wear not greater than 40 percent when tested in accordance with California Test 229.
   2. Consists of hard, durable particles of stone or gravel; screened or crushed to specified size and gradation; and free from organic matter, lumps or balls of clay, or other deleterious matter.
   3. Crush or waste coarse material and waste fine material as required to meet gradation requirements.
   4. Conforms to size and grade within the following limits when tested in accordance with ASTM C117 and ASTM C136:

Sieve Size (Square Openings)	Percent by Weight Passing Sieve
2 inch	100
1-1/2 inch	95 - 100
3/4 inch	50 - 100
3/8 inch	15 - 55
No. 200	0 - 2

2.06 CLASS 2 PERMEABLE FILL

A. Material requirements:
   1. Durability index: Percentage of wear not greater than 40 percent when tested in accordance with California Test 229.

2.07 IMPORTED FILL

A. Material requirements: Refer to native soil-select.
   1. Free of contaminants: CONTRACTOR shall sample soil for common contaminants derived from petroleum products.

2.08 SAND

A. Clean, coarse, natural sand.

B. Non-plastic when tested in accordance with ASTM D4318.

C. Conforms to size and grade within the following limits when tested in accordance with ASTM C117 and ASTM C136:

Sieve Size (Square Openings)	Percent by Weight Passing Sieve
1/2 inch	100
No. 200	0 - 20

2.09 STABILIZATION MATERIAL

A. Durability: Percentage of wear not greater than 40 percent when tested in accordance with California Test 211.

B. Consists of clean, hard, durable particles of crushed rock or gravel; screened or crushed to the specified sizes and gradations; and free of any detrimental quantity of soft, friable, thin, elongated, or laminated pieces, disintegrated material, organic matter, oil, alkali, or other deleterious substance.

C. Shall be free of slaking or decomposition under the action of alternate wetting and drying.

D. The portion of material retained on the 3/8-inch sieve shall contain at least 50 percent of particles having 3 or more fractured faces.
   1. Not over 5 percent shall be pieces that show no such faces resulting from crushing. Of that portion which passes the 3/8-inch sieve but is retained on the No. 4 sieve, not more than 10 percent shall be pieces that show no faces resulting from crushing.

E. Conforms to size and grade within the following limits when tested in accordance with ASTM C117 and ASTM C136:

Sieve Size (Square Openings)	Percent by Weight Passing Sieve
1 inch	100
3/4 inch	90 - 100

Sieve Size (Square Openings)	Percent by Weight Passing Sieve
No. 4	0 - 10
No. 200	0 - 2

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 02084

PRECAST DRAINAGE STRUCTURES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Onsite utility structures:
      a. Precast drainage inlets.
      b. Standpipes for irrigation or drainage pipes.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. Standard Specifications for Highway Bridges.

B. ASTM International (ASTM):
   1. C361 - Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.
   2. C478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.
   3. C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
   4. C858 - Standard Specification for Underground Precast Concrete Utility Structures.

1.03 SUBMITTALS

A. Shop Drawings: Submit for precast utility structures.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Precast drainage inlets:
   1. Construct precast concrete drainage inlets in accordance with the size, shape, form, details, and at locations indicated on the Drawings and specified.
   2. Base design and manufacture to A-16 (HS 20-44) loading in accordance with ASTM C857.
   3. In accordance with ASTM C858.
   4. Construct precast drainage inlets of Class A concrete as specified in Section 03300 - Cast-in-Place Concrete to form and dimensions indicated on the Drawings.

B. Appurtenances and details for precast structures:
   1. Seal joints with precast concrete joint sealant.

2. Piping penetrations:
    a. Manufacturers: The following or equal:
        1) Kor-N-Seal, rubber gasket boots with steel clamps.
3. Piping connections to the precast structures shall be as indicated on the Drawings.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Performance requirements:
    1. Appurtenances shall be watertight and free from infiltration or exfiltration.

2.03 ACCESSORIES

A. Precast drainage inlets:
    1. Covers: As indicated on the Drawings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Standpipes for irrigation or drainage pipes:
    1. Excavation and backfill: As specified in Section 02318 - Trenching.

B. Precast drainage inlets:
    1. Excavation and backfill: As specified in Section 02318 - Trenching.

END OF SECTION

SECTION 02200

SITE CLEARING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Clearing, grubbing, and stripping project site.

1.02 DEFINITIONS

A. Clearing: Consists of removal of natural obstructions and existing foundations, buildings, fences, lumber, walls, stumps, brush, weeds, rubbish, trees, boulders, utility lines, and any other items which interferes with construction operations or are designated for removal.

B. Grubbing: Consists of the removal and disposal of wood or root matter below the ground surface remaining after clearing and includes stumps, trunks, roots, or root systems greater than 1 inch in diameter or thickness to a depth of 6 inches below the ground surface.

C. Stripping: Includes the removal and disposal of all organic sod, topsoil, grass and grass roots, and other objectionable material remaining after clearing and grubbing from the areas designated to be stripped. The depth of stripping is estimated to be 6 inches, but the required depth of stripping will be determined by the Engineer.

1.03 QUALITY ASSURANCE

A. Regulatory requirements: Verify and comply with applicable regulations regarding those governing noise, dust, nuisance, drainage and runoff, fire protection, and disposal.

B. Pre-construction conference: Meet with Engineer to discuss order and method of work.

1.04 SEQUENCING AND SCHEDULING

A. Clearing and grubbing: Perform clearing and grubbing in advance of grading operations.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions: Examine site and verify existing conditions for beginning work.

3.02 PREPARATION

A. Protect existing improvements from damage by site preparation work.

3.03 INSTALLATION

A. Clearing:
   1. Clear areas where construction is to be performed and other areas as indicated on the Drawings, or specified in this Section, of fences, lumber, walls, stumps, brush, roots, weeds, trees, shrubs, rubbish, and other objectionable material of any kind which, if left in place, would interfere with proper performance or completion of the work, would impair its subsequent use, or form obstructions.
   2. Do not incorporate organic material from clearing and grubbing operations in fills and backfills.
   3. Contractor's temporary construction facilities: Fill or remove pits, fill, and other earthwork required for erection of facilities, upon completion of the work, and level to meet existing contours of adjacent ground.

B. Grubbing:
   1. From excavated areas: Grub stumps, roots, and other obstructions 3 inches or over in diameter to depth of not less than 18 inches below finish grade.
   2. Backfill and compact cavities left below subgrade elevation by removal of stumps or roots to density of adjacent undisturbed soil.

C. Stripping:
   1. Remove soil material containing sod, grass, or other vegetation to depth of 6 inches from areas to receive fill or pavement and from area within 5 feet outside foundation walls.
   2. Deposit stripped material in accordance with following requirements:
      a. At locations acceptable to Engineer and Owner.
      b. Use accepted material in top 6 inches of areas to be used for future planting.
   3. Replace topsoil where indicated on the Drawings.

D. Material reuse and recycling:
   1. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until project completion.
   2. Contractor shall provide Engineer with list of local markets and salvage sites for reuse of clearing debris.

END OF SECTION

SECTION 02240

DEWATERING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Installation and maintenance of dewatering systems.
   2. Disposal of water entering excavation or other parts of the work.

1.02 REFERENCES

A. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

1.03 SUBMITTALS

A. Dewatering plan:
   1. Dewatering design analysis.
   2. Required permits.
   3. Arrangement, location, and depths of dewatering system components.
   4. Type and sizes of filters.
   5. Identify proposed alignment, support, and protection for discharge pipe. Identify location of discharge and provide details for that location. For pipes discharging to manholes, provide details of pipe entry at manhole.

B. Well construction logs. Include:
   1. Descriptions of actual materials encountered, categorized in accordance with an accepted standard.
   2. Construction details.
   3. Well development procedures and results.
   4. Deviations from original design.

C. Qualifications:
   1. Dewatering contractor.
   2. Dewatering design engineer.
   3. Testing laboratory.

1.04 QUALITY ASSURANCE

A. Dewatering plan and dewatering system analysis:
   1. Prepared by a qualified Civil Engineer, licensed in the state where the Project is located.
      a. The dewatering design engineer shall have at least 8 years of experience in designing similar systems.

B. Dewatering Contractor shall have at least 8 years of experience in installing similar systems.

C. Testing laboratory shall meet discharge permit testing laboratory qualifications.

D. Regulatory requirements:
   1. Obtain required water discharge permits.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Design requirements:
   1. Keep excavations reasonably free from water. Draw down static groundwater level to minimum of 3 feet below anticipated bottom of excavations before the excavation reaches bottom elevation.
   2. Dewatering design analysis. Include the following:
      a. Evaluation of anticipated subsurface conditions.
      b. Required well spacing.
      c. Diameter of wells.
      d. Depth to screen, screen height, and mesh size.
      e. Backfill and filter pack.
      f. Pump size.
      g. Drawdown duration.
      h. Drawdown and steady state flow rates.
      i. Plans for de-silting of groundwater before discharge.
      j. Anticipated area influenced by dewatering system and potential impacts to adjacent structures, existing and proposed. Mitigation measures needed to prevent any expected settlements. Contingency plan for restoring nearby structures if settlement is observed as result of dewatering operations.
      k. Expected settlements.
   3. Include water drawdown curves in dewatering calculations.
   4. Coordinate dewatering design with excavation and shoring design. Excavation and shoring design shall consider changes in groundwater conditions and associated earth pressures.
   5. Do not place concrete or masonry foundations or concrete slabs in water. Do not allow water to rise over these elements until concrete or mortar has set for at least 24 hours.
   6. Maintain operation of dewatering system until complete structure -- including walls, slabs, beams, struts, and other structural elements -- has been constructed; concrete has attained its specified compressive strength; and backfill has been completed to finished grade.
   7. Provide standby power to ensure continuous dewatering in case of power failure.

B. Dewatering shored excavations:
   1. Dewater from within shoring.
   2. Use impermeable shoring system to minimize lowering of groundwater outside shoring.

3. Extend impermeable shoring below bottom of excavation sufficient amount to:
   a. Minimize lowering of groundwater outside shoring.
   b. Prevent unstable excavation due to piping and heave.
4. To minimize settlement outside shoring due to dewatering, do not lower groundwater outside shoring more than 1 foot. Provide groundwater recharge if required to maintain this groundwater elevation outside of shoring.
5. Provide monitoring wells located outside shoring for monitoring groundwater elevation.

C. Obtain written permission from Engineer before locating wells, well points, or drain lines for dewatering within the limits of a structure's foundation.

D. Locate dewatering facilities where they will not interfere with utilities and construction work to be performed by others.

E. Discharge:
1. Discharge water to locations as identified by the City of Roseville. Discharge to manholes or storm drain inlets will not be permitted.

PART 3 EXECUTION

3.01 INSTALLATION

A. The responsibility for conducting the dewatering operation in a manner which will protect adjacent structures and facilities rests solely with Contractor.

B. During construction, provide and maintain ample means and devices to promptly remove and properly dispose of water entering excavation or other parts of the work, whether water is surface water or underground water.

C. Keep excavations reasonably free of water.

D. Make provisions to maintain continuous dewatering:
1. Provide standby power to maintain dewatering during power outages and interruptions.
2. Provide 24-hour monitoring by personnel skilled in operation and maintenance of the system, and capable of providing or obtaining work required to maintain system operation.

E. Intercept and divert precipitation and surface water away from excavations. Use dikes, curb walls, ditches, pipes, sumps, or other means acceptable to Engineer.

F. Disposal of water:
1. Dispose of water from the work in suitable manner without damage to adjacent property.
2. Do not drain water into work built or under construction.

3. Properly dispose of discharge water in accordance with Federal, State, and local requirements and permits and in such manner that it will not be a menace to public health or safety.
4. For discharge of water into holding tanks or infiltration ponds, include a means of overflow protection that is acceptable to Engineer.

G. Wells, well points, and drain lines for dewatering:
1. Provide after receiving Engineer's written acceptance.
2. Fill dewatering wells, pipes, and French drains to be left in place within structure foundation limits with Class “C” concrete as specified in Section 03300 - Cast-in-Place Concrete or grout as specified in Section 03600 - Grouting.

3.02 CONSTRUCTION

A. Prior to release of groundwater to its static level: Confirm that:
1. All groundwater pressure relief devices for structure are fully operational.
2. Construction of structure is complete and concrete has reached its specified compressive strength.
3. Backfill of structure is complete.

B. Control release of groundwater to its static level to prevent disturbance of natural foundation soils or compacted backfills and fills and to prevent flotation or movement of structures, pipelines, or other facilities.

3.03 FIELD QUALITY CONTROL

A. Monitoring wells:
1. Record groundwater levels at least once a week. Submit readings to Engineer within 1 week.

END OF SECTION

SECTION 02260

EXCAVATION SUPPORT AND PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Designing, providing, maintaining, and removing excavation support and protection.

1.02 REFERENCES

A. American Society of Civil Engineers (ASCE):
   1. Guidelines of Engineering Practice for Braced and Tied-Back Excavations.

B. California Code of Regulations (CCR):
   1. Title 8 - Industrial Relations:
      a. Division 1. Department of Industrial Relations.
         1) Chapter 4. Division of Industrial Safety.
            a) Subchapter 4. Construction Safety Orders.
               (1) Article 6. Excavations.

C. Department of the Navy Naval Facilities Engineering Command (NAVFAC):
   1. Design Manual 7.2 - Foundations and Earth Structures.
   2. Design Manual 7.3 - Soil Dynamics and Special Design Aspects.

D. State of California Department of Transportation (Caltrans):
   1. Caltrans California Trenching and Shoring Manual.

E. United States Steel Corporation (USS):
   1. Steel Sheet Piling Design Manual.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. General engineering design practice: In area of the Project, performed in accordance with recent engineering literature on subject of shoring and stability of excavations.
   2. Shoring: A temporary structural system designed to support vertical faces, or nearly vertical faces, of soil or rock for purposes of excavation. Shoring includes cantilevered sheet piling, internally braced sheet piling, slurry walls, soldier piles and lagging, and other similar shoring systems. Sloping of the soil is not shoring.
   3. Support levels: Level of tiebacks, wales, rakers, bottom of excavation, and other types of support.

1.04 SUBMITTALS

A. Shop Drawings and calculations:
   1. Calculations for different load, support, and other conditions that occur during the sequence of installation of shoring, construction of facilities protected by shoring, and sequence of removal of shoring.
   2. Sketches showing the condition at various stages of installation and removal of shoring.
   3. Show on plan shoring, structures, pipelines, and other improvements located near shoring.
   4. When utilities penetrate shoring, show location of penetrations on elevation of sides of shoring.
   5. Show details for ground support and sealing around utility penetrations.
   6. Indicate method used for installing driven shoring.

B. Detailed sequence of installation and removal of shoring:
   1. Consider effects of ground settlement in sequence of installation and removal of shoring.

C. Provide sketches showing conditions at various stages in sequence of installation and removal of shoring.

D. Furnish Submittals for excavation support and protection as complete package and include items required in this Section:
   1. Incomplete Submittals will not be reviewed and will be returned for resubmittal as a complete package.

E. Furnish dewatering Submittals as specified in Section 02240 - Dewatering with Submittals for excavation support and protection.

1.05 SEQUENCING

A. Do not begin construction of any shoring or excavation operations until:
   1. Submittals for shoring and dewatering have been accepted.
   2. Materials necessary for installation are on site.

B. Furnish Submittals a minimum of 45 days prior to scheduled date to begin excavation work.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Where general engineering design practice is specified, provide Drawings and calculations that are performed and signed by civil or structural engineer registered in the state where the Project is located:
   1. Clearly disclose assumptions made, criteria followed, and stress values used for materials being used in design calculations.
   2. Submit list of references acceptable to the Engineer that substantiate appropriateness of design assumptions, criteria, and stress values.

B. Design requirements:
    1. General:
        a. In accordance with requirements in CCR, Title 8, Chapter 4, Subchapter 4, Article 6 for trench excavations 5 feet or more in depth and for trenches less than 5 feet in depth when there is potential for cave-in.
            1) Where such designs vary from excavation support standards set forth in CCR, Title 8, Chapter 4, Subchapter 4, Article 6, submit design calculations pursuant to general engineering design practice.
            2) Provide means for safe and stable excavations that are not less effective than required in CCR, Title 8, Chapter 4, Subchapter 4, Article 6.
            3) The preceding requirements do not apply to trench excavation support in accordance with standards set forth CCR, Title 8, Chapter 4, Subchapter 4, Article 6.
        b. Dewatering:
            1) Dewater soil inside shoring as specified in Section 02240 - Dewatering.
            2) Do not lower groundwater outside of shoring more than 1 foot.
            3) Recharge groundwater outside shoring to limit groundwater draw down outside of shoring to amount specified above.
        c. When electing to design with material stresses for temporary construction higher than allowable stresses prescribed in building code as specified in Section 01410 - Regulatory Requirements, increase in such stresses shall not exceed 10 percent of value of prescribed stresses.
        d. Minimum safety factor used for design shall not be less than 1.5.
        e. Calculated minimum depth of penetration of shoring below bottom of excavation shall be increased not less than 30 percent if full value of allowable passive pressure is used in design.
        f. Maximum height of cantilever shoring above bottom of excavation shall not exceed 15 feet. Use braced shoring when height of shoring above bottom of excavation exceeds 15 feet.
        g. Location of point of fixity for shoring shall not be less than half calculated minimum embedment depth below bottom of excavation.
        h. Generally acceptable references for design of shoring and excavations are as follows:
            1) ASCE Guidelines of Engineering Practice for Braced and Tied-Back Excavations.
            2) Caltrans California Trenching and Shoring Manual.
            3) NAVFAC Design Manual 7.2.
            4) NAVFAC Design Manual 7.3.
            5) USS Steel Sheet Piling Design Manual.
    2. Set inside face of shoring back from structure not less than greater of following:
        a. 5 feet from face of wall.
        b. 2 foot-6 inches from edge of foundation.
        c. Depth of excavation below bottom of foundation.

C. Performance requirements:
    1. General:
        a. Support faces of excavations and protect structures and improvements in vicinity of excavations from damage and loss of function due to settlement

or movement of soils, alterations in ground water level caused by such excavations, and related operations.

b. Specified provisions:
    1) Complement, but do not substitute or diminish, obligations of the Contractor for furnishing of safe place of work pursuant to provisions of the Occupational Safety and Health Act of 1970 and its subsequent amendments and regulations and for protection of work, structures, and other improvements.
    2) Represent minimum requirement for:
        a) Number and types of means needed to maintain soil stability.
        b) Strength of such required means.
        c) Methods and frequency of maintenance and observation of means used for maintaining soil stability.

2. Provide safe and stable excavations by means of sheeting, shoring, bracing, sloping, and other means and procedures, such as draining and recharging groundwater and routing and disposing of surface runoff, required to maintain stability of soils and rock.
3. Provide support for trench excavations for protection of workers from hazard of caving ground.
4. Provide shoring:
    a. Where, as result of excavation work and analysis performed pursuant to general engineering design practice, as defined in this Section:
        1) Excavated face or surrounding soil mass may be subject to slides, caving, or other types of failures.
        2) Stability and integrity of structures and other improvements may be compromised by settlement or movement of soils, or changes in soil load on structures and other improvements.
    b. For trenches 5 feet and deeper.
    c. For trenches less than 5 feet in depth, when there is potential for cave-in.
5. For safe and stable excavations, use appropriate design, construction, and maintenance procedures to minimize settlement of supported ground and to prevent damage to structures and other improvements, including:
    a. Using stiff shoring systems.
    b. Following appropriate construction sequence.
    c. Using shoring system that is tight enough to prevent soil loss through the shoring.
    d. Using shoring system that extends far enough below bottom of excavation to prevent piping, heave, or flow of soil under shoring.
    e. Design for safety factor of not less than 1.50.
    f. Providing surface runoff routing and discharge away from excavations.
    g. Where dewatering inside shoring is necessary, recharge groundwater outside shoring as necessary to prevent settlement in area surrounding shored excavation.
    h. Where sheet piling is used, use interlocking type sheets:
        1) Sheet piles shall be continuous and driven in interlock.
        2) If bottom of the excavation is located below the water table, use “ball and socket” or “thumb and finger” type interlock.
    i. Not applying shoring loads to existing structures and other improvements.

j. Not changing existing soil loading on existing structures and other improvements.
k. Provide welded steel packing between soil retaining members such as sheet piles and wales and similar members when gap exceeds 1/2 inch before wales are loaded.

PART 3 EXECUTION

3.01 CONSTRUCTION

A. Installation of shoring:
1. Install means for providing safe and stable excavations as indicated in Submittals.

B. Removal of shoring:
1. Except for concrete encased soldier piles, slurry walls, and similar shoring systems, remove shoring by completion of the Work.
2. Select shoring system and method of removal, which will minimize soil that sticks to shoring from creating voids and causing settlement.
3. To prevent settlement caused by pulling shoring, fill voids with pressure injected grout:
   a. Inject grout starting at bottom of void and progressively fill void to grade.
   b. Minimize length of shoring removed ahead of grouting operation and limit time void is left ungrouted to prevent void from closing up before being grouted.
4. Pressure preservative treated wood lagging may be left in place if acceptable to the Engineer.

C. Maintenance:
1. Where loss of soil occurs, plug gap in shoring and replace lost soil with fill material acceptable to the Engineer.
2. Where measurements and observations indicate possibility of failure or excessive movement of excavation support, determined in accordance with general engineering design practice, take appropriate action immediately.

END OF SECTION

SECTION 02280

SUBSURFACE UTILITY ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Requirements for subsurface utility engineering (SUE) as part of the Work for new pipelines.

1.02 REFERENCES

A. American Society of Civil Engineers (ASCE):
   1. 38-02 Standard Guideline for the Collection and Depiction of Existing and Subsurface Utility Data.

1.03 DEFINITIONS

A. General: Definitions used in this Section are in accordance with ASCE 38-02.

1.04 REQUIREMENTS

A. Existing utilities indicated on the Drawings are approximate only and are provided based on the best information.

B. Existing utilities are shown for the convenience of Contractor only.
   1. It is the Contractor's responsibility to field verify the vertical and horizontal location of all utilities including those not indicated or incorrectly indicated on the Drawings.

C. Contractor is responsible to review all geotechnical reports, record drawings, and Contract Documents.

D. Coordinate with utility locator, such as CALL BEFORE YOU DIG, and other affected entities when they have jurisdiction over the project site.

E. Contractor is responsible for protecting all utilities encountered.
   1. Before any excavation, follow requirements of Section 01140 - Work Restrictions.
   2. If a conflict exists between what is indicated on the Drawings and what exists in the field, Contractor shall notify Engineer immediately.

F. Where scheduled, provide subsurface utility engineering services by a Civil Engineer registered in California in accordance with ASCE 38-02.

G. Requirements: The SUE shall entail the following at a minimum:
   1. Review of existing record drawings.
   2. Geophysical methods such as ground-penetrating radar.
   3. Soft excavation to locate known utilities along the proposed pipeline alignment.

4. Open trench excavation to locate unknown utilities along the proposed pipeline alignment.
5. Utilization of field survey by a Professional Land Survey licensed in for determination of vertical and horizontal locations.

1.05 QUALIFICATIONS

A. General: Contractor shall utilize the services of a qualified subconsultant for SUE services with minimum qualifications that include but are not limited to:
   1. Minimum of 5 years of SUE experience in California where providing vertical and horizontal locations of utilities in accordance with ASCE 38-02 utility quality level A was required.
   2. Completion of 5 SUE projects of equal or greater magnitude within the past 5 years.

1.06 SUBMITTALS

A. Shop drawings:
   1. Contractor shall submit all SUE information as follows:
      a. Plan drawings that clearly illustrate vertical and horizontal location of known and unknown utilities.
         1) Horizontal location shall include northing and easting coordinates.
      b. Identifies size and material and service for known utilities.
      c. Identify size and material for unknown utilities.
   2. Review of shop drawings and calculations by Engineer and Owner are for record only.
   3. Drawings shall be performed, stamped, and endorsed by a Civil Engineer registered in California.
   4. Field survey information shall be performed, stamped, and endorsed by a Surveyor registered in California.

B. Detailed sequence of SUE:
   1. Submit a schedule for all SUE events that shows start, end, and intermediate milestones.
   2. Provide sketches showing the conditions at various stages in the sequence of SUE.

C. Submit submittals for stability of excavations as a complete package and include all items required in this Section.
   1. Incomplete submittals will not be reviewed and will be returned for resubmittal as a complete package.

1.07 SEQUENCING AND SCHEDULING

A. Coordinate all Work with restrictions provided in Section 01140 - Work Restrictions.

B. Do not begin Work until submittals have been accepted by Engineer and until equipment and materials necessary for installation are on site.

C. Submit submittals a minimum of 30 days prior to the scheduled date to begin excavation work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUE SCHEDULE

A. Provide SUE services for the following pipelines and utilities at both the Campus Oaks and Misty Wood Project sites.

Description	Reference Drawings
16-inch PW	13&19C02
12 & 18-inch SD	
Recycled Water (size unknown)	
2-inch PW at meter and valve box	
8-inch SS	

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Loosening, excavating, filling, grading, borrow, hauling, preparing subgrade, compacting in final location, wetting and drying, and operations pertaining to Site grading for buildings, basins, reservoirs, boxes, roads, and other facilities.
   2. Backfilling and compacting under and around structures.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. Standard Specifications for Highway Bridges.

B. ASTM International (ASTM):
   1. D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).
   2. D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Backfill adjacent to structure: Backfill within volume bounded by the exterior surfaces of structure, the surface of undisturbed soil in the excavation around structure, and finish grade around structure.
   2. Embankments: Dikes, levees, berms, and similar facilities.
   3. Excavation: Consists of loosening, removing, loading, transporting, depositing, and compacting in final location, wet and dry materials, necessary to be removed for purposes of construction of structures, ditches, grading, roads, and such other purposes as are indicated on the Drawings.

1.04 SUBMITTALS

A. Copy of Property Owner’s Agreement allowing placement of surplus soil material on their property.

B. Testing lab: Submit the Contractor’s proposed testing laboratory capabilities and equipment.

C. Test reports:
   1. Submit certified test reports of tests specified to be performed by the Contractor.
   2. Sign and seal test reports by a registered Geotechnical Engineer.

1.05 QUALITY ASSURANCE

A. Initial compaction demonstration:
   1. Adequacy of compaction equipment and procedures: Demonstrate adequacy of compaction equipment and procedures before exceeding any of following amounts of earthwork quantities:
      a. 50 cubic yards of backfill adjacent to structures.
      b. 100 cubic yards of embankment work.
      c. 100 cubic yards of fill.
      d. 50 cubic yards of roadway base material.
      e. 100 cubic yards of road fill.
   2. Compaction sequence requirements: Until specified degree of compaction on previously specified amounts of earthwork is achieved, do not perform additional earthwork of the same kind.
   3. After satisfactory conclusion of initial compaction demonstration and at any time during construction, provide confirmation tests as specified under the Field Quality Control article.

B. Perform Work related to this Section in accordance with the approved Stormwater Pollution Prevention Plan (SWPPP).

1.06 SEQUENCING AND SCHEDULING

A. Schedule earthwork operations to meet requirements specified in this Section for excavation and uses of excavated material.

B. If necessary, stockpile excavated material in order to use it at specified locations.

C. Excavation, backfilling, and filling: Perform excavation, backfilling, and filling during construction in manner and sequence that provides drainage at all times.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Performance requirements:
   1. Where mud or other soft or unstable material is encountered, remove such material and refill space with stabilization material. Wrap stabilization material with stabilization fabric.
   2. Obtain acceptable import material from other sources if surplus obtained within the Project Site does not conform to specified requirements or are not sufficient in quantity.
   3. No extra compensation will be made for hauling of fill materials nor for water required for compaction.

2.02 MATERIALS

A. Water for compacting: Use water from source acceptable to the Engineer.

B. Soil and rock materials:
   1. General:
      a. Provide aggregate base course, Class 2 permeable, controlled low-strength material, drain rock, gravel, native soil-select material, sand, and stabilization material where specified or indicated on the Drawings.
      b. If suitable surplus materials are available, obtain native material and select material from cut sections or excavations or imported materials.
   2. Aggregate base course materials: As specified in Section 02050 - Soils and Aggregates for Earthwork.
   3. Class 2 permeable: As specified in Section 02050 - Soils and Aggregates for Earthwork.
   4. Drain rock: As specified in Section 02050 - Soils and Aggregates for Earthwork.
   5. Gravel: As specified in Section 02050 - Soils and Aggregates for Earthwork.
   6. Native soil-select material: As specified in Section 02050 - Soils and Aggregates for Earthwork.
   7. Sand: As specified in Section 02050 - Soils and Aggregates for Earthwork.
   8. Stabilization material: As specified in Section 02050 - Soils and Aggregates for Earthwork.

C. Controlled low-strength material: As specified in Section 02312 - Controlled Low Strength Materials (CLSM).

D. Geotextile fabrics:
   1. Filter: As specified in Section 02620 - Filter Fabric.
   2. Stabilization: As specified in Section 02621 - Stabilization Fabric.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions:
   1. Character and quantity of material:
      a. Verify character and quantity of rock, gravel, sand, silt, water, and other inorganic or organic materials to be encountered in Work to be performed.
      b. Determine gradation, shrinkage, and swelling of soil, and suitability of material for use intended in Work to be performed.
      c. Determine quantity of material, and cost thereof, required for construction of backfills, cuts, embankments, excavations, fills, and roadway fills, whether from on-site excavations or imported materials. Include in cost of Work to be performed.
      d. Include wasting of excess material, if required, in the cost of Work to be performed.

3.02 PREPARATION

A. Backfills:
   1. After clearing and excavation are completed, scarify entire areas that underlie backfills or structures to a depth of 6 inches and until surface is free of ruts, hummocks, and other features that would prevent uniform compaction by equipment to be used.
   2. Recompact scarified areas to density specified before placing backfill material or concrete.
   3. Do not place backfill against walls until:
      a. Walls have been cast full height of structure and concrete has reached the specified strength.
      b. Connecting slabs and beams have been cast, and concrete has reached the specified strength.
   4. Prior to backfilling:
      a. Remove forms.
      b. Clean trash and debris from the excavation site.
   5. After inspection of foundation, walls, and pipes, place backfill symmetrically around structures to prevent eccentric loading of structures.

B. Embankments:
   1. After clearing is completed, scarify entire areas that underlie embankments to a depth of 6 inches and until surface is free of ruts, hummocks, and other features that would prevent uniform compaction by equipment to be used.
   2. Recompact scarified areas to density specified for embankments before placing of embankment material.

C. Fills:
   1. After clearing is completed, scarify entire areas that underlie fill sections or structures to a depth of 10 inches and until surface is free of ruts, hummocks, and other features that would prevent uniform compaction by equipment to be used.
   2. Recompact scarified areas to density specified for compacted fills before placing of fill material or concrete.

D. Roadway fills:
   1. After clearing is completed, scarify entire areas that underlie roadway fills to a depth of 6 inches and until surface is free of ruts, hummocks, and other features that would prevent uniform compaction by equipment to be used.
   2. Recompact scarified areas to density specified for roadway fills before placing of roadway fill material.

E. Sloped surfaces for fill or foundations:
   1. Foundations for fill having slopes in excess of 1 vertical to 4 horizontal:
      a. Bench or terrace to adequately key existing ground and fill built thereon.
   2. Slopes of original hillsides and old fills: Bench minimum of 10 feet horizontally as fill is placed.

3. Provision of new benches:
    a. Start new bench wherever vertical cut of next lower bench intersects existing grade.
    b. Recompact material thus cut out along with new embankment material at no additional cost to the Owner.

3.03 INSTALLATION

A. General:
1. Dispose of excavated materials that are not required or are unsuitable for fill and backfill in lawful manner.
2. Dispose of surplus material on private property only when written permission agreement is furnished by the owner of the property. Submit copies of such agreements.
3. Rocks, broken concrete, or other solid materials larger than 4 inches in greatest dimension: Remove from the Project Site at no additional cost to the Owner.
4. Stabilization of subgrade: Provide materials used, or perform Work required, to stabilize subgrade so it can withstand loads that may be placed upon it by the Contractor's equipment.

B. Borrow area: There is no borrow area on the Project Site.
1. Where material is required, import material from source located off Project Site selected by the Contractor and subject to acceptance by the Engineer.
2. There will be no additional cost to the Owner for use of imported material.

C. Compaction:
1. Provide specified compaction for backfills, cuts, embankments, fills, roadway fills, and other earthwork.
2. Perform confirmation tests to verify and confirm that Work has complied, and is complying at all times, with compaction requirements specified in this Section for initial compaction demonstration and field quality control testing.
3. In-place density of compacted backfills, cuts, embankments, fills, and roadway fills determined in accordance with ASTM D6938.
4. Maximum density, laboratory compaction: Soil maximum density and optimum water content when tested in accordance with ASTM D1557.
5. To prevent damage to structures due to backfilling operations, place backfill with equipment that does not exceed AASHTO Standard Specifications for Highway Bridges, H-20 vehicle loading, within a distance from the face of the structure of not less than 1/2 the depth of backfill.
    a. Depth of backfill is the distance between the level being compacted and the bottom of the excavation. Outside this distance, heavier compaction equipment may be used.
6. Compact to percentage of maximum density as follows:
    a. Backfill adjacent to structures: 90 percent.
    b. Backfilling voids: 90 percent.
    c. Other areas: 90 percent.
    d. Under present and future structures: 95 percent.
    e. Under roadways, parking and storage areas, curbs, and sidewalks: 95 percent.
    f. Upper 6 inches of cuts: 90 percent.
    g. Fills: 90 percent.

D. Dewatering: As specified in Section 02240 - Dewatering.

E. Excavation:
   1. Blasting: Not permitted.
   2. Excavations for trenching: As specified in Section 02318 - Trenching.
   3. Excavations for structures:
      a. Provide excavations conforming to the dimensions and elevations indicated on the Drawings for each structure.
      b. After clearing is complete, excavate for the structure, down to the elevation indicated on the Drawings. Unless directed by the Engineer, do not carry excavations below elevation indicated on the Drawings.
      c. Where soil is encountered having unsuitable bearing value, the Engineer may direct in writing that excavation be carried to elevations below those indicated on the Drawings.
      d. Where excavations are made below elevations indicated on the Drawings, adjust elevations of excavations in accordance with the following requirements:
         1) Under slabs: Restore to proper elevation in accordance with procedure specified for backfill in this Section.
         2) Under footings: Restore to the proper elevation using one of the following:
            a) Aggregate base course.
            b) Controlled low-strength material.
      e. Excavation width:
         1) Extend excavations at least 2 feet clear from walls and foundations of structures to allow for placing and removal of forms, installation of services, and inspection.
         2) Do not undercut slopes.
      f. Difficulty of excavation: No extra compensation will be made for removal of rock or any other material due to difficulty of excavation.
   4. Excavation of ditches and gutters:
      a. Cut ditches and gutters accurately to cross sections and grades indicated on the Drawings.
      b. Take care not to excavate ditches and gutters below grades indicated on the Drawings.
      c. Backfill excessive ditch and gutter excavations to grade with suitable material acceptable to the Engineer.
      d. Do not deposit any material within 3 feet of edge of ditch unless otherwise indicated on the Drawings.
   5. Necessary over excavation:
      a. Where it becomes necessary to excavate beyond normal lines of excavation in order to remove boulders or other interfering objects, backfill voids remaining after removal as specified in backfilling of voids below, or as acceptable to the Engineer.
      b. Backfill voids with material acceptable to the Engineer:
         1) With acceptance of the Engineer, backfill with one of the following:
            a) Aggregate base course.
            b) Controlled low-strength material.

F. Materials for backfills, embankments, fills, and roadway fills:
   1. General:
      a. Obtain import material from other sources if surplus materials from cuts and excavations obtained from within the Project Site do not conform to specified requirements or are not sufficient in quantity for construction of Project.
   2. Backfills:
      a. Backfill adjacent to structures, slabs, or walls: Native soil-select material or imported material meeting the requirements of native soil-select unless otherwise specified or indicated on the Drawings.
      b. Backfill material under concrete structures: Aggregate base course material, except in areas where controlled low-strength material or concrete encasement are indicated on the Drawings.
      c. Extend backfill in any area under concrete structures from undisturbed soil or rock to the bottom aggregate base course material layer.
   3. Embankments:
      a. Native material or imported material meeting the requirements of native soil-select unless otherwise specified or indicated on the Drawings.
   4. Fills:
      a. Native soil-select material or imported material meeting the requirements of native soil-select unless otherwise specified or indicated on the Drawings.
      b. Extend fill in any area under concrete structures from undisturbed soil or rock to the bottom aggregate base course material layer.
   5. Roadway fills: One of the following, unless otherwise specified or indicated on the Drawings:
      a. Aggregate base course material.
      b. Native soil-select material or imported material meeting the requirements of native soil-select.

G. Placement:
   1. General:
      a. Lines and grades:
         1) Construct backfills, embankments, fills, and road fills, at locations and to lines and grades indicated on the Drawings.
         2) Overbuild permanent fill slopes by at least 1 foot and then cut to final grade to provide adequate compaction of the remaining fill.
   2. Backfills:
      a. Place loose material in successive layers that do not exceed 8 inches in depth after compaction.
      b. Bring each layer to a moisture content between optimum moisture content and 2 percent above optimum moisture content before compacting.
      c. Defective compacted backfills: Remove and recompact.
   3. Fills:
      a. Place loose material in successive layers that do not exceed 8 inches in depth after compaction.
      b. Bring each layer to a moisture content between optimum moisture content and 2 percent above optimum moisture content before compacting.
      c. Defective compacted fills: Remove and recompact.

4. Embankments:
    a. Place loose material in successive layers that do not exceed 8 inches in depth after compaction.
    b. Bring each layer to a moisture content between optimum moisture content and 3 percent above optimum moisture content before compacting.
    c. Defective compacted embankments: Remove and recompact.
5. Roadway fills:
    a. Place loose material in successive layers that do not exceed 8 inches in depth after compaction.
    b. Bring each layer to a moisture content between optimum moisture content and 3 percent above optimum moisture content before compacting.
    c. Defective compacted roadway fills: Remove and recompact.

3.04 FIELD QUALITY CONTROL

A. Confirmation tests:
    1. Contractor's responsibilities:
        a. Adequacy of compaction equipment and procedures:
            1) Demonstrate adequacy of compaction equipment and procedures.
            2) At each test location include tests for each type or class of backfill from bedding to finish grade.
        b. Compaction sequence requirements:
            1) Do not perform additional earthwork of the same kind until specified degree of compaction has been demonstrated.
        c. Cost of confirmation tests: Paid for by the Contractor.
        d. Qualifications of the Contractor's testing laboratory: Acceptable to the Engineer.
        e. Copies of confirmation test reports: Submit promptly to the Engineer.
    2. Frequency of confirmation testing:
        a. Maximum dry density versus moisture:
            1) When soil, moisture conditions, or means of compaction change. Confirmation testing to be required at the Engineer or Owner's discretion.
        b. Cost of confirmation tests:
            1) Paid for by the Contractor.
        c. Qualifications of the Contractor's testing laboratory:
            1) Perform confirmation testing by soils testing laboratory acceptable to the Engineer. Copies of confirmation test reports: Submit promptly to the Engineer.

B. Tolerances:
    1. Finish grading of backfills, cuts, embankments, fills, and roadway fills:
        a. Perform fine grading under concrete structures such that finish surfaces are never above the grade or cross section indicated on the Drawings and are never more than 0.10 feet below.
        b. Provide finish surface for areas outside of structures that are within 0.10 feet of grade or cross section indicated on the Drawings.
    2. Unlined channels and basins:
        a. In both cut and fill, and levee and access road side slopes in cut: Vertical tolerance of none above and 3 inches below grade indicated on the Drawings on bottom and side slopes.

b. On top surface of levee and access road in both cut and fill, and levee and access road side slopes in fill: Vertical tolerance of none below and 3 inches above grade indicated on the Drawings.

3. Areas which are not under structures, concrete, asphalt, roads, pavements, sidewalks, dikes, and similar facilities:
   a. Provide finish graded surfaces of either undisturbed soil, or cohesive material not less than 6 inches deep.
   b. Intent of proceeding is to avoid sandy or gravelly areas.
4. Finish grading of surfaces:
   a. Reasonably smooth, compacted, and free from irregular surface changes.
   b. Provide degree of finish that is ordinarily obtainable from blade grader operations, except as otherwise specified.
   c. Uniformly grade areas that are not under concrete.
   d. Finish ditches and gutters so that they drain readily.

C. Compliance tests:
   1. Frequency of testing: Periodic compliance tests will be made by the Engineer to verify that compaction is meeting requirements previously specified.

3.05 ADJUSTING

A. Finish grades of excavations, backfills, and fills:
   1. Repair and reestablish grades to required elevations and slopes due to any settlement or erosion that may occur from action of the elements or any other cause prior to final acceptance.

3.06 PROTECTION

A. Finish grades of backfills, cuts, excavations, and fills:
   1. Protect newly graded areas from erosion and deterioration by action of the elements.

B. Ditches and gutters:
   1. Maintain ditches and gutters free from detrimental quantities of debris that might inhibit drainage until final acceptance.

END OF SECTION

SECTION 02312

CONTROLLED LOW STRENGTH MATERIAL (CLSM)

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Controlled low strength material (CLSM), also known as "flowable fill."

1.02 REFERENCES

A. American Concrete Institute (ACI):
   1. 229R - Report on Controlled Low-Strength Materials.
   2. 301 - Specifications for Structural Concrete.

B. ASTM International (ASTM):
   1. C33 - Standard Specification for Concrete Aggregates.
   2. C94 - Standard Specification for Ready Mix Concrete.
   3. C143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
   4. C150 - Standard Specification for Portland Cement.
   5. C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
   6. C403 - Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
   7. C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
   8. D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3(2,700 kN-m/m^3)).
   9. D4832 - Standard Test Method of Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
   10. D5971 - Standard Practice for Sampling Freshly Mixed Controlled Low Strength Material.
   11. D6023 - Standard Test Method for Density (Unit Weight), Yield, Cement Content, and Air Content (Gravimetric) of Controlled Low-Strength Material.

1.03 SUBMITTALS

A. Product data: Submit data completely describing materials in the mix and demonstrating compliance with the requirements of this Section.
   1. Cement: Mill tests. Indicate alkali content representative of each shipment.
   2. Fly ash: Identify source and type of fly ash.
   3. Water: Identify source and quality if not from a municipal treatment source.
   4. Admixtures: Manufacturer’s product data indicating suitability for use in CLSM mixes and recommended dosage rates.
   5. Aggregate:
      a. Submit source, type, and sieve analyses.
      b. Resubmit at any time there is a significant change in grading of materials.

B. Mix design:
   1. Submit full details, including mix design calculations for mix proposed for use.
   2. Trial batch test data:
      a. Submit data for each test cylinder.
      b. Submit data that identifies mix and slump for each test cylinder.

1.04 DELIVERY, STORAGE AND HANDLING

A. Store or stockpile cement, fly ash, and aggregate in accordance with ACI 301.

B. Store admixtures in accordance with the manufacturer's recommendations.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Mixture of portland cement, water, pozzolan, fine aggregate and admixtures, proportioned in accordance with the recommendations of ACI 229 to produce a homogeneous mixture that is flowable, that will readily work into corners and angles; that will not segregate in the plastic state; and that is self-compacting at the time of placement without the use of mechanical vibration.

B. Performance requirements:
   1. Air content, total calculated in accordance with ASTM D6023: Not less than 8.0 percent, nor greater than 12.0 percent.
   2. Compressive strength, measured in accordance with ASTM D4832 at 28 days: Not less than 50 pounds per square inch, nor greater than 150 pounds per square inch.
   3. Wet density: Not greater than 132 pounds per cubic foot.
   4. Slump, measured in accordance with ASTM C143 at the point of placement: Greater than 9 inches and that allows CLSM to flow freely and to be self-compacting during placement.

2.02 MATERIALS

A. Cement:
   1. Portland cement in accordance with ASTM C150, Type I or Type II.
   2. Having total alkali content not more than 0.60 percent.

B. Fly ash: Class C or Class F fly ash in accordance with ASTM C618.

C. Water:
   1. Potable water: Clean and free from oil and deleterious amounts of alkali, acid, organic matter, or other substances.

D. Admixtures: Products of a single manufacturer, specifically manufactured or recommended by that manufacturer for use in CLSM.
   1. Air entraining admixture: In accordance with ASTM C260.

E. Aggregate:
   1. Non-expansive, non-reactive, inert natural sand conforming to the following requirements:
      a. Not more than 12 percent passing a No. 200 sieve.
      b. No plastic fines present.
      c. Including pea gravel no larger than 3/8 inch.

2.03 MIXES

A. See System Description for performance requirements of the plastic and hardened mix.

2.04 SOURCE QUALITY CONTROL

A. Trial batch:
   1. After mix design has been accepted by Engineer, have trial batch of the accepted mix design prepared by testing laboratory acceptable to Engineer.
   2. Prepare trial batches using the specific cement, fly ash, admixtures, aggregates, and water proposed for the Work.
   3. Prepare trial batch with quantity sufficient to determine slump, workability, and consistency; and to provide test cylinders as indicated in this Section.

B. Trial batch testing:
   1. Determine slump in accordance with ASTM C143, with the following modifications:
      a. Do not rod the concrete material.
      b. Place material in slump cone in one semi-continuous filling operation, slightly overfill, tap lightly, strike off, and then measure and record slump.
   2. Prepare and test trial batch specimens in accordance with ASTM D4832, with the following modifications:
      a. Provide cylindrical test specimens, each 6-inches in diameter by 12-inch high.
      b. Provide a minimum of 8 cylinders for testing of each trial batch.
      c. Fill the molds to overflowing and tap sides lightly to settle the mix.
      d. Do not rod the mix for consolidation in the cylinder.
      e. Strike off the excess material.
   3. Place test cylinders in a moist curing room. Exercise caution in moving and transporting the cylinders since they are fragile and will withstand only minimal bumping, banging, or jolting without damage.
   4. Do not remove the test cylinder from mold until that cylinder is to be capped and tested.
      a. Perform the capping carefully to prevent premature fractures.
      b. Do not perform initial compression test until the cylinders reach a minimum age of 3 days.
   5. Provide compressive strength tests:
      a. Test 4 test cylinders at 7 days after casting, and another 4 cylinders at 28 days after casting.
      b. The compression strength of the 4 test cylinders tested at 28 days shall be equal to or greater than the minimum required compression strength, but shall not exceed maximum compression strength.

C. If the trial batch tests do not meet the Specifications for strength or density, revise and re-submit the mix design, prepare additional trial batch(es), and complete additional trial batch tests. Repeat until an acceptable trial batch is that conforms to the Specifications is produced.
   1. All the trial batches and acceptability of materials shall be paid by the Contractor.
   2. After acceptance, do not change the mix design without submitting a new mix design, trail batches, and test information.

PART 3 EXECUTION

3.01 PREPARATION

A. Do not place CLSM until preparation and condition of surfaces receiving the fill have been observed and accepted by the Engineer.

B. Remove debris foreign matter, and standing or running water from excavations and areas receiving CLSM before placement.

3.02 INSTALLATION

A. Pipes and trenches.
   1. Install cellular concrete as indicated on the Drawings and specified.
   2. Where CLSM is placed around and over pipes, secure pipes in place, or place CLSM in lifts to prevent pipe flotation.
   3. Where CLSM is placed in long, open trenches, confine material using bulkheads of sandbags, earth dams, or stiffer concrete at open ends of placement.

B. Soil preparation:
   1. Prior to placement of CLSM, prepare underlying soils as follows:
      a. Scarify surface to a depth of 8 inches.
      b. Adjust moisture content to or slightly above the optimum in accordance with ASTM D1557.
      c. Re-compact scarified surface to a minimum of 95 percent relative density in accordance with ASTM D1557.

3.03 MEASURING, BATCHING, MIXING AND TRANSPORTING

A. Measure, batch, mix and transport CLSM in accordance with the requirements of ASTM C94 and this Section.

B. Mix until there is uniform distribution of materials.

C. Discharge mixer completely prior to recharging.

D. After trial batch testing and mix acceptance, maintain slump during construction within plus or minus 1 inch of the design slump.

3.04 PLACING

A. Place controlled low strength material by method that preserves the quality of the material in terms of compressive strength and density.

B. Maintain fluid properties of the mix during placement.
   1. At point of placement, provide material that flows easily around, beneath, or through walls, pipes, conduits, or other structures.
   2. Do not place CLSM that has partially hardened or that has been contaminated by foreign materials.
   3. Handle and place CLSM using methods that minimize segregation of the mix.
   4. Deposit mix as near its final position as possible to avoid segregation due to rehandling or flowing.
   5. Contain and confine mix while it is fluid. Design containment structures and bracing at walls and forms to withstand lateral pressures of wet mix.

C. Lifts:
   1. Limit lift heights of CLSM placed against structures and other facilities that could be damaged due to the pressure from the CLSM, to the lesser of 3 feet or the lift height indicated on the Drawings.
   2. Do not place another lift of CLSM until the last lift of CLSM has set and gained sufficient strength to prevent additional lateral load against the forms or structure due to the weight of the next lift of CLSM.

D. Water conditions:
   1. Do not place CLSM in standing or flowing water.
   2. Do not permit water to flow over the surface of freshly placed or un-hardened CLSM.
   3. Do not submerge CLSM in water within 24 hours after placement.

E. Manage CLSM bleed water.
   1. Grade top surface of CLSM to drain away from the fill.
   2. Provide side containment that permits bleed water to drain to a contained management area away from the fill.

3.05 CURING AND PROTECTION

A. Curing:
   1. Prior to and during curing, install barriers to prevent equipment or personnel from falling into or becoming entrapped in CLSM.

B. Protect CLSM from:
   1. Damage from the elements.
   2. Damage of any nature during surrounding construction operations.
   3. Freezing: Do not use salt, manure, or other chemicals to provide protection from cold temperatures

3.06 FIELD QUALITY CONTROL

A. Provide quality control over the Work of this Section as specified in Section 01450 - Quality Control and as specified in this Section.

B. General:
   1. Engineer inspection and acceptance required prior to placement.
   2. Make provisions for and furnish all material for the test specimens, and provide manual assistance to assist the Owner's Testing Laboratory in preparing said specimens.

3.07 FIELD QUALITY ASSURANCE

A. Provide quality control over the work of this Section as specified in Section 01450 - Quality Control.

B. Field inspections:
   1. Engineer shall provide on-site inspection for the Work of this Section.
   2. Advise Engineer of readiness to proceed at least 24 hours prior to each placement of CLSM.
   3. Required inspections:
      a. Engineer will observe the prepared areas. Do not place CLSM until Engineer has observed and accepted preparations.
   4. Record of inspections.

C. Field sampling and testing:
   1. During construction, Contractor shall provide sampling and testing to determine whether the CLSM, as produced and placed, complies with the requirements specified.
   2. Sample CLSM for testing in accordance with ASTM D5971.
   3. Required tests:
      a. Air content: Prepare sample and test in accordance with ASTM D6023.
      b. Compressive strength: Prepare and test cylinder specimens in accordance with ASTM D4832.
         1) Prepare 6-inch diameter by 12-inch high specimens for testing.
            a) Provide one set of specimens for each 150 cubic yards of CLSM placed, but not less than 1 set for each half day's placement.
            b) Prepare and test not less than 3 cylinders for each set.
            c) Place CLSM in the molds in accordance with ASTM D4832. Do not rod or otherwise consolidate the material in the mold.
            d) In accordance with ASTM D4832 recommendations for displacing bleed water at the top of the molds and refilling the molds before covering with a lid. Do not use air-tight lids.
         2) Place the cylinders in a safe location away from construction activities.
            a) Protect cylinders from bumping and impact.
            b) Maintain temperature surrounding cylinders between 60 and 80 degrees Fahrenheit until delivery to the laboratory for testing.
            c) After the first day, surround molds with a high humidity environment by covering with wet burlap, or equivalent highly absorptive material. Maintain saturation of the cover. Do not sprinkle water directly on the cylinders.

3) After 4 days, place the cylinders in a protective container for transport to the laboratory for testing.
    a) Exercise caution in moving and transporting the cylinders since they are fragile and will withstand only minimal bumping, banging, or jolting without damage.
    b) Transport container may be a box with a Styrofoam or similar lining that will limit jarring and bumping of the cylinders.
4) Upon receipt at the testing laboratory, place test cylinders in a moist curing room until dates for testing.
5) Do not remove test cylinders from molds until the day that cylinders is to be capped and tested.
6) Cap and test for compressive strength in accordance with ASTM D4832.
    a) Do not perform initial compression test until the cylinders reach an age of at least 4 days.
    b) Test 1 cylinder at 7 days and 2 at 28 days.
7) Compressive strength of the cylinders tested at 28 days shall be equal to or greater than the minimum required compression strength, but shall not exceed maximum compression strength specified.

3.08 NON-CONFORMING WORK

A. When testing or observation indicates CLSM with properties outside the specified and accepted range, Engineer will issue instructions regarding disposition of nonconforming materials.

B. Engineer may:
    1. Reject CLSM represented by those test specimens and require its removal and replacement.
    2. Require modification of the mix design to provide CLSM with the properties specified.

C. Make such modifications at no additional expense to the Owner and with no adjustment to the schedule.

END OF SECTION

SECTION 02318

TRENCHING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Trench excavation and trench backfill for pipelines, manholes, vaults, and appurtenances.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).
   2. D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Backfill: Material placed in trench above the pipe embedment zone.
   2. Bedding: Material placed under, around, and over pipes or ducts in trenches.
   3. Fine grading: Bedding material placed directly below pipes or ducts to provide support at the bottom of the trench and to bring those elements to required grades and elevations.
   4. Flexible pipe: Includes steel, ductile iron, thermoplastics such as polyvinyl chloride (PVC) and high-density polyethylene (HDPE), thermosetting plastics such as fiberglass-reinforced polymer (FRP), bar-wrapped concrete cylinder pipe, and corrugated steel pipes.
   5. Haunch zone: Material placed below and beside the pipe up to the pipe springline.
   6. Lift: A layer of soil or aggregate material, measured before compaction.
   7. Maximum density, Field Compaction: Soil density and water content when tested in accordance with ASTM D6938.
   8. Maximum density, Laboratory Compaction: Soil maximum density and optimum water content when tested in accordance with ASTM D1557.
   9. Pavement section: Includes pavement plus underlying courses such as base course and subgrade.
   10. Pipe embedment zone: Includes bedding, fine grading, and haunch zone.
   11. Pipe foundation: Material placed at the bottom of trench to provide support.
   12. Pipe foundation: Stabilization material placed at the bottom of trench to provide support when the trench bottom is not firm, dry or uniform.

13. Pipe springline: A horizontal reference line located at mid-height, or halfway point, of a circular conduit, pipe, or tunnel. It is the maximum horizontal dimension or diameter of a circular conduit, pipe, or tunnel.
14. Rigid pipe: Includes reinforced non-cylinder concrete, reinforced concrete cylinder, prestressed concrete cylinder, vitrified clay, polymer concrete, cast iron, asbestos cement, and cast-in-place pipes.

1.04 SUBMITTALS

A. As specified in Section 01330 - Submittal Procedures.

B. Product data on soils and aggregates.
   1. Material source.
   2. Gradation.
   3. Test data to demonstrate compliance with requirements as specified in this Section.

C. Samples:
   1. Provide 50-pound sample of materials when requested by the Engineer.

D. Confirmation testing:
   1. Certification of Contractor's testing laboratory.
   2. Record copy report for tests performed by Contractor's testing laboratory.

PART 2 PRODUCTS

2.01 MATERIALS

A. As specified in Section 02050 - Soils and Aggregates for Earthwork.

B. Class C concrete: As specified in Section 03300 - Cast-in-Place Concrete.

C. Controlled low-strength material: As specified in Section 02312 - Controlled Low Strength Material (CLSM).

PART 3 EXECUTION

3.01 PREPARATION

A. Stabilize excavations as specified in Section 02260 - Excavation Support and Protection.

B. Perform subsurface utility engineering (SUE) for utility locating and verification prior to any excavation work and as specified in Section 02280 - Subsurface Utility Engineering.

3.02 DEWATERING

A. As specified in Section 02240 - Dewatering.

3.03 TRENCH EXCAVATION

A. Excavate bottom of trench to depth indicated on the Drawings.

B. Areas of new fill or embankment:
   1. Prior to laying pipes or electrical service, place fill and compact as specified to not less than 2 feet above top of pipe, conduit, or duct bank.
   2. Excavate through fill for pipe trench.

C. Trench widths as specified in the following table:

Buried Pipe or Accessory	Minimum Trench Width	Maximum Trench Width
Nominal Pipe Diameter: 4-inch to 24-inch	OD + 18 inches	OD + 24 inches
Nominal Pipe Diameter: Greater than 24-inch	OD + 24 inches	OD + 36 inches
Manholes, vaults, valves, or other accessories	12 inches between outer surface and trench side or shoring	Not applicable

D. Potable water pipe and appurtenances:
   1. Lay in trenches separate from those used for sewers and recycled water.
   2. Unless otherwise specified or indicated on the Drawings, lay in trenches having cover of not less than 3 feet below surface of ground located at distance of not less than 10 feet clear horizontally from any parallel sewer and 1 foot clear vertically above any parallel sewer.

3.04 TRENCH BACKFILL - GENERAL

A. Trench area terminology and locations as indicated on the Drawings.

B. Place material, except CLSM and concrete, in maximum 6-inch lifts, measured before compaction.

C. Backfilling of manhole excavation: Conform to backfilling requirements for trenches as specified in this Section.

3.05 PIPE FOUNDATION

A. Provide trench bottom with firm, dry, uniform bearing surface at the grade indicated on the Drawings.

B. Excess excavation below elevation indicated on the Drawings will require installation of pipe foundation material to bring the trench bottom back to the elevation indicated on the Drawings at no additional cost to the Owner.
   1. Materials and placement:

C. If bottom of trench excavation consists of soil:
   1. Scarify bottom of trench to a depth of 6 inches below the grade indicated on the Drawings.

2. Materials and placement:
    a. Recompact scarified material to 95 percent of maximum density.

D. If bottom of trench excavation consists of rock or any material that, by reason of its hardness, cannot be excavated to provide uniform bearing surface:
    1. Remove such rock or other material to a depth of not less than 4 inches below pipe embedment zone.
    2. Materials:
        a. CLSM.
        b. Class C concrete.

E. If bottom of trench excavation consists of mud or other soft unstable material:
    1. Remove such unacceptable material to a depth of not less than 18 inches below pipe embedment zone.

3.06 PIPE EMBEDMENT ZONE

A. Pipe displacement:
    1. Take necessary precautions in placement and compaction of bedding material to prevent displacement of piping.
    2. In event there is movement or floating of the piping, re-excavate, re-lay, and backfill the pipe.

B. Fine grading:
    1. Place 6 inches of approved haunch zone bedding material from the trench bottom to the bottom of the pipe or duct to provide support at the bottom of the trench and to bring those elements to required line and grade.

C. Depressions for joints or couplings:
    1. Excavate holes in the fine grading material at the bottom of the trench.
    2. Provide holes of sufficient width to provide ample room for grouting, banding, or welding as necessary for making joints and to ensure that pipe rests upon prepared trench bottom and not supported by any portion of the joint.

D. Rigid pipe:
    1. Pipe embedment zone: Below pipe springline:
        a. Materials and placement:
            1) Aggregate base course compacted to 95 percent maximum dry density.
    2. Pipe embedment zone: Above pipe springline:
        a. Compacted to a depth above pipe: 12-inch minimum.
        b. Materials and placement:
            1) Aggregate base course compacted to 95 percent maximum dry density.

E. Flexible pipe:
    1. Pipe embedment zone:
        a. Compacted to a depth above pipe: 12-inch minimum.
        b. Materials and placement:
            1) Aggregate base course compacted to 95 percent maximum dry density.

2) CLSM. Place gravel bags to support and set pipe to line and grade prior to CLSM placement. Place CLSM in lifts as necessary to prevent floatation.
3) Sand: clean, washed and well-graded (100 percent passing #4 sieve and <10 percent passing 100 sieve).

3.07 BACKFILL

A. Trenches:
   1. Materials and placement:
      a. Native soil - select compacted to 90 percent maximum dry density.
      b. Imported fill compacted to 90 percent maximum dry density.
      c. Aggregate base course compacted to 90 percent maximum dry density.
      d. CLSM.

B. Trenches in rock:
   1. Backfill to top of rock.
      a. Materials and placement:
         1) CLSM.
         2) Class C concrete.
   2. Backfill from top of rock to grade, if applicable:
      a. Materials and placement:
         1) Aggregate base course compacted to 90 percent of maximum density.

C. Trenches below or within 5 feet of the outside perimeter of structures:
   1. Backfill to underside of aggregate base course below structure.
   2. Materials and placement:
      a. Aggregate base course compacted to 95 percent of maximum density.
      b. CLSM.

D. Trenches in roadways and paved areas:
   1. Backfill trench to underside of pavement.
   2. Materials and placement:
      a. Trench backfill with final 12-inch below road base course compacted to 95 percent of maximum density.
      b. Aggregate base course compacted to 95 percent of maximum density.
      c. CLSM.

E. Trenches in areas outside the improved section of roadways or in open country:
   1. Backfill to underside of topsoil layer.
   2. Materials and placement:
      a. Native soil, native soil - select, imported material, or aggregate base course compacted to 90 percent of maximum density.

F. Trenches under existing intersecting pipes, duct banks, or conduits larger than 3 inches in diameter:
   1. Backfill from above top of new pipe embedment zone to springline of intersecting pipe or conduit.
      a. Extend backfill at least 2 feet on either side of intersecting pipe or conduit to ensure backfill material remains in place while other backfill is being placed.
      b. Materials and placement:
         1) CLSM, unless otherwise indicated on the Drawings.
   2. Backfill remainder of trench:
      a. Materials and placement:
         1) CLSM.
         2) Class C concrete.

3.08 EXCESS MATERIAL

A. Remove excess excavated material from the Project site as specified in Section 02300 - Earthwork.

3.09 FIELD QUALITY CONTROL

A. Provide field quality control for the Work as specified in Section 01450 - Quality Control.

B. Confirmation tests: As specified in Section 02300 - Earthwork.
   1. Minimum frequency of confirmation testing:
      a. At each test location include tests for each type or class of backfill from bedding to finished grade.
      b. For trenches: 1 location every 100 linear feet.

C. Compliance tests:
   1. Make periodic compliance tests to verify that compaction is meeting requirements as specified in this Section.
   2. Perform remedial work if compaction test fails to meet specified requirements using one of the following methods:
      a. Remove and replace backfill at the proper density.
      b. Other means acceptable to the Engineer.
   3. Retesting:
      a. Costs of retesting: Contractor is responsible for the costs of retesting required to confirm and verify that remedial work has brought compaction within specified requirements.
      b. Contractor’s confirmation tests during performance of remedial work:
         1) Performance: Perform tests in manner acceptable to the Engineer.
         2) Frequency: Double amount specified for initial confirmation tests.

D. Piping system testing:
   1. As specified in Section 15956 - Piping Systems Testing.

END OF SECTION

SECTION 02581

PRECAST ELECTRICAL HANDHOLES AND ELECTRICAL MANHOLES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Precast Portland cement concrete handholes and accessories.

B. Alternates:
   1. Contractor may propose to construct cast-in-place structures in lieu of the precast structures specified.
      a. Obtain the Engineer's acceptance of this alternative before submitting, providing, or installing.
      b. Submit full information on design and detailing of proposed alternatives, including design details and drawings of the same types required by this Section for precast structures.

1.02 REFERENCES

A. American Association of State Highway Transportation Officials (AASHTO):
   1. Standard Specifications for Highway Bridges.

B. American Concrete Institute (ACI):
   1. 318 - Building Code Requirements for Structural Concrete and Commentary.

C. ASTM International (ASTM):
   1. A48 - Standard Specification for Gray Iron Castings.
   2. C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
   3. C858 - Standard Specification for Underground Precast Concrete Utility Structures.
   4. C891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures.
   5. C1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
   6. C1037 - Standard Practice for Inspection of Underground Precast Concrete Utility Structures.

D. Code of Federal Regulations (CFR):
   1. Title 29, Chapter XVII, Part 1910 - Occupational Safety and Health Standards (OSHA).

E. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

F. National Precast Concrete Association (NPCA).

G. Society of Cable Telecommunications Engineers (SCTE):
   1. 77 - Specification for Underground Enclosure Integrity.

H. Underwriters Laboratories (UL).

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Handhole: An enclosure for use in underground systems that has been sized and detailed to allow personnel to reach into, but not enter, the enclosure to install, operate, or maintain equipment or wiring or both. (Reference: NEC, Article 100.)
      a. As used in this Section, handhole will refer to a precast electrical handhole.
   2. Manhole: An enclosure for use in underground systems that has been sized and detailed to allow personnel to enter the enclosure to install, operate, or maintain equipment or wiring or both.
      a. As used in this Section, manhole will refer to a precast electrical manhole.
   3. Portland cement concrete: A composite material consisting of a Portland cement binder, water, admixtures, and a combination of fine and coarse mineral aggregates.
      a. Abbreviated PCC as in PCC HANDHOLE or PCC MANHOLE.
   4. Precast concrete: A concrete fabrication designed by a qualified engineer and subsequently fabricated at a qualified fabrication site, which is usually located some distance from the site where the fabrication will be installed.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data: Manufacturer’s catalog data, details, and warranties for the following items.
   1. Portland cement concrete handholes and manholes:
      a. Materials of construction.
      b. Joint details and joint-sealing materials.
      c. Data for hatches or covers and rings.
      d. Preformed channels and accessories for cable racking.
      e. Drain and sump details, including removable covers.
      f. Pulling iron details.

C. Shop Drawings:
   1. Portland cement concrete handholes and manholes:
      a. Shop drawings for each structure shall bear the seal and signature of a professional engineer licensed in the state where the structures will be installed.
      b. Dimensioned and “to-scale” plans, sections, and details for each structure, including:
         1) Layout plan for that structure.

2) Sizes, locations, and vertical positions of duct bank windows and knockout panels.
3) Locations and details for access openings, pulling irons, embedded cable supports and racks, and sumps.
4) Details of structural reinforcement showing bar size and spacing; true position of reinforcement in structural members with clear concrete cover at both inside and outside faces; location, bar size, and spacing of added reinforcement around openings; and other details relevant to design and fabrication of the structure.
5) Details of joints between adjacent precast sections, including provisions for overlap and for placement of sealants.

D. Design data:
1. Portland cement concrete handholes and manholes:
a. Structural calculations:
1) Submit complete structural calculations for each structure.
2) Provide calculations bearing the seal and signature of a professional engineer licensed in the state where the structures will be installed.
b. Manufacturer's statement of materials used for fabrication and construction, in accordance with ASTM C858, for record. Include the following:
1) Concrete mix design: For each concrete mix design to be used for the structures, include data describing:
a) Source and type of cement.
b) Sources, grading, and specific gravities of aggregates.
c) Aggregate reactivity data.
d) Concrete mix proportions and design strength.
e) Type, name, and dosage of admixtures included in the concrete mix.
2) Reinforcing steel: Mill certificates.

E. Test reports:
1. Portland cement concrete handholes and manholes:
a. Fabricator's tests for compressive strength of concrete used in structures, made in accordance with recommendations of ASTM C858.

F. Certificates:
1. Portland cement concrete handholes and manholes:
a. Manufacturer's current plant certification under NPCA for the structures to be supplied.
1) Certification shall be current and in-effect at the time structures are manufactured.
b. Manufacturer's certification that handholes and manholes are in accordance with the requirements of ASTM C858.

G. Manufacturer's instructions:
1. Instructions for handling and setting structures in place.
2. Portland cement concrete handholes and manholes:
a. Instructions for operation and maintenance of hatches.

H. Manufacturer's field reports:
    1. Portland cement concrete handholes and manholes:
        a. Manufacturer's inspection reports in accordance with ASTM C1037.

I. Closeout documents:
    1. Project record documents:
        a. Portland cement concrete handholes and manholes:
            1) Final, revised plans and details of as-constructed precast handholes and manholes if requested for record by the Engineer.
    2. Warranties:
        a. Manufacturer's standard warranty for:
            1) Portland cement concrete handholes and manholes and accessories.

1.05 QUALITY ASSURANCE

A. Qualifications:
    1. Designer:
        a. Portland cement concrete handholes and manholes:
            1) Professional engineer qualified in the design of concrete structures and holding a current license in the state where the structures will be installed.
    2. Manufacturer:
        a. Portland cement concrete handholes and manholes:
            1) Holding current NPCA plant certification for the products produced.
            2) Demonstrating at least 5 years of experience in the design, production, and installation of products of the type required for this Work.
            3) Capable of providing structural designs prepared by a professional engineer licensed in the state where the structures will be installed.
            4) Providing inspection during fabrication and handling in accordance with the requirements of ASTM C1037.
    3. Installer:
        a. Capable of providing equipment of adequate capacity and mobility to handle and set units with proper bearing on the subgrade and without damage to the unit.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Packing, shipping, handling, and unloading:
    1. Package and brace structures to avoid damage during shipping and handling.
    2. Furnish crane or forklift for unloading and setting of Portland cement concrete handholes and manholes.

B. Acceptance at Site:
    1. Structures delivered to the Site with cracks, damage, and damaged or missing accessories shall be removed from the Site and replaced at no additional cost to the Owner.

C. Storage and protection:
    1. Store handholes and manholes and their appurtenances in areas protected from damage due to weather and Site operations.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 SEQUENCING

A. Coordinate installation of precast electrical handholes and manholes with duct banks specified in Section 16133 - Duct Banks.

1.09 WARRANTY

A. Provide manufacturer's standard warranty for precast handhole and manhole structures and accessories.

1.10 SYSTEM START-UP

A. As specified in Section 16050 - Common Work Results for Electrical.

PART 2 PRODUCTS

2.01 GENERAL

A. Design, fabricate, and install precast electrical handholes and precast electrical manholes of the size and type indicated on the Drawings and specified.
   1. Construction of cast-in-place concrete electrical structures, including handholes and manholes, are specified in other Sections.

2.02 MANUFACTURED UNITS - PORTLAND CEMENT CONCRETE HANDHOLES AND MANHOLES

A. General:
   1. Provide Portland cement concrete handholes and manholes configured and designed as indicated on the Drawings and specified.
   2. In accordance with ASTM C858, unless otherwise noted.
      a. Concrete: Provide units with minimum specified compressive strength (f'c) of 5000 pounds per square inch and using Type II cement.

B. Manufacturers: One of the following or equal:
   1. Jensen Precast.
   2. Oldcastle Precast.

C. Components:
   1. Floor:
      a. Construct floors as a monolith.
      b. Where sump or low-point drain is included, slope floor to that point.
   2. Roof, walls, and base:
      a. Designed and rated to support vehicle and pedestrian loads at the spans indicated.
      b. See the "Electrical Handhole and Manhole Schedule" indicated on the Drawings for required load rating by structure location.

3. Floor access doors:
    a. Handholes: Aluminum plate hinged floor access door (hatch) as specified in Section 08320 - Floor Access Doors.
        1) Load rating:
            a) “Heavy Duty” for covers at locations designated for “Roadway” loads.
            b) “Medium Duty” or stronger for covers at locations designated for “Sidewalk” loads.
        2) Minimum access door size not less than 36 inches square, unless otherwise indicated on the Drawings.
        3) Provide bearing surface with pre-installed continuous elastomeric gasket to minimize water infiltration at lid.
        4) Provide skid-resistant lid with cast-in or machined-in grid pattern and the word “ELECTRICAL” in block letters at least 1.5 inches high.
    b. Manholes: Cast iron frame and cover:
        1) Manhole rings and covers: As specified in Section 05500 - Metal Fabrications.

D. Accessories:
1. Provide accessories as indicated on the Drawings and specified.
2. Materials at duct bank penetrations:
    a. Joint filler as specified in Section 03150 - Concrete Accessories.
    b. Backer rod and sealant as specified in Section 07900 - Joint Sealants.
3. Pulling irons:
    a. Provide non-corroding cable pulling irons located for use with each current duct bank location and additional irons for use with duct banks that may be installed through future knockout panels.
    b. Pulling irons may not be located on the floor.
    c. Where pulling irons are installed on the wall, any pockets surrounding the irons shall have bottom surfaces sloped to drain.
    d. Secure pulling eyes to structure reinforcement.
4. Cable racks and racking hardware:
    a. Materials: as specified in Section 16070 - Hangers and Supports.
    b. Embedded slots: Maximum depth of 1.5 inches.
5. Sumps and drains:
    a. Fiberglass or HDPE fabrications, including removable lids to prevent tripping hazards.

E. Fabrication:
1. Embeds:
    a. Install embedded items with provisions for drainage to remove dripping or standing water, and to minimize corrosion.
        1) Pulling irons may not be placed on the floor or in pockets that will collect water.
        2) Detail bottom of cable rack channels to provide a downward sloping “sill” at the bottom of each vertical channel, so that the channel slot drains toward the floor.

b. Concrete cover:
    1) Provide minimum 0.75-inch clear concrete cover between embeds and surrounding reinforcement.
    2) Provide minimum 1.25-inch clear concrete cover between embed and exterior face of wall.

F. Tests and inspections:
    1. Test and inspect structures in accordance with ASTM C858 and ASTM C1037.

2.03 DESIGN AND PERFORMANCE CRITERIA

A. General requirements:
    1. As specified in Section 16050 - Common Work Results for Electrical for general requirements for electrical work.
    2. Provide structures of the sizes and shapes indicated on the Drawings, with layouts, dimensions, and details as indicated on the Drawings and as specified.
    3. In accordance with the requirements of:
        a. NEC.
        b. Project regulatory requirements as specified in Section 01410 - Regulatory Requirements.

B. Portland cement concrete handholes and manholes:
    1. Load resistance of boxes and covers.
    2. Design requirements: Loads on structures:
        a. In accordance with ASTM C857, except as modified in this Section.
        b. Loads at the ground surface:
            1) See the “Electrical Handhole and Manhole Schedule” indicated on the Drawings for minimum surface loading requirements at each structure. Loads are designated as “sidewalk,” or ”roadway”.
            2) Vehicle and pedestrian loadings in the following paragraphs need not be additive; however, structures designated for “roadway” loading shall also support “sidewalk” loads.
            3) “Sidewalk”: Load from regular pedestrian traffic with considerations for occasional non-deliberate vehicular traffic:
                a) Designation “A-0.3” in ASTM C857 Table 1 (300-psf uniform load).
            4) ”Roadway”: Load from heavy, frequently repeated vehicle traffic:
                a) Designation “A-16” in ASTM C857 Table 1 (AASHTO HS20-44).
        c. Lateral earth pressure loads:
            1) Determine in accordance with the following requirements. Include effects of groundwater and seismic accelerations on lateral earth pressures.
                a) Equivalent lateral pressure: 80 pounds per square foot per foot of depth (triangular distribution).
                b) Surface surcharge load:
                    (1) Backfill-induced live load surcharge of 100 pounds per square foot (rectangular distribution).
                    (2) In accordance with ASTM C857 Vehicle Load Designation “A-16” for “Roadway” or “A-0.3” for “Sidewalk” where such

surcharge exceeds backfill loads described in the preceding paragraph.

c) Groundwater effects:
   (1) Include effects from groundwater and soils saturated by flooding using design elevations specified in Section 01850 - Design Criteria.
   (2) Use a passive lateral pressure of 300 pounds per cubic foot (pcf), which is determined from the equivalent fluid pressure.

d) Seismic design:
   (1) As specified in Section 01850 - Design Criteria.
   (2) On opposite sides of the structure that are perpendicular to the direction of acceleration, include equivalent lateral pressure (inverted fluid pressure distribution), beginning with a pressure of 0 at the base of the structure, and increasing at a rate of 400 pounds per square foot of rise toward the ground surface.
   (3) Apply seismic effects as additive force on side where the soil mass is being accelerated toward the structure, and as subtractive force on the opposite side where the soil mass is being accelerated away from the structure.

d. Groundwater and flood loads - buoyancy effects:
   1) As specified in Section 01850 - Design Criteria, for design groundwater and design flood elevations.
   2) Buoyancy: For groundwater and flood conditions, provide factor of safety against flotation of at least 1.20.
      a) If the weight of soil overlying footing projections on the structure is considered to resist flotation, use a buoyant unit weight of soil equal to not more than 30 pounds per cubic foot.
      b) Concrete fill may be provided in the bottom section of precast Portland cement concrete structures to add weight. Submit proposed details.

e. Soil-bearing pressure at base:
   1) Maximum 2,500 pounds per square foot total pressure on prepared subgrade soils.

f. Lifting and handling loads:
   1) Make provision in the design for the effects of loads or stresses that may be imposed on structures during fabrication, transportation, or erection.

g. Load combinations:
   1) Design structures to sustain the specified loads individually or in combination.

3. Design requirements: Structural analysis, design, and detailing:
   a. General:
      1) Analyze and design structures, including the effects of 2-way action (“plate action”) and of load transfer around current and future openings.
      2) Where structures include panels designed for future removal (“knockout panels”), design structures for loads and stresses with any combination of any or all such panels in place or removed.

b. Precast Portland cement concrete handholes and manholes:
    1) Design structures in accordance with the requirements of ACI 318 and this Section.
    2) Provide reinforcement at areas subject to tensile stress when loaded with the specified loads and combinations thereof.
    3) Provide temperature and shrinkage reinforcement to equal or exceed ACI 318 requirements in concrete sections.
    4) Provide minimum clear concrete cover over reinforcement at both interior and exterior faces of members in accordance with the following:
        a) Handholes: 1.25 inches.
        b) Manholes: 2 inches.
    5) Reinforcement details:
        a) Walls: For structures with wall thickness of 8 inches or less, locate a single mat of reinforcement at the center of the wall.
        b) Slabs: For structures with slab thickness of 7 inches or less, locate a single mat of reinforcement at the center of the slab.
        c) Structures with wall or slab thicknesses exceeding these limits shall have a reinforcement at each face of the member.
    6) Joints:
        a) Provide structures with watertight joints between sections and detailed to minimize water infiltration at duct bank and conduit penetrations.
        b) Provide structures with non-skid, shiplap, or tongue and groove joints between sections.

4. Design requirements: Materials:
    a. Portland cement concrete handholes and manholes:
        1) In accordance with ASTM C858 except as modified in this Section.

PART 3 EXECUTION

3.01 GENERAL

A. Furnish and install precast electrical handholes and manholes as indicated on the Drawings and specified.

B. Install additional handholes and manholes required so installation procedures will be in accordance with the cable manufacturer's pulling tension requirements.
    1. Include proposed locations and details of such additional handholes and manholes with the Submittals under this Section.

3.02 PREPARATION

A. Design:
    1. Prepare detailed and scalable layouts for each manhole structure showing locations of conduit or duct bank penetrations, clearances, locations, and sizes of access openings and major accessories.

B. Protection:
   1. Where handhole and manhole structures are installed adjacent to existing site structures or utilities, provide excavation support or other protection as required to maintain those facilities in service and to prevent damage to both existing and new facilities.

C. Site preparation:
   1. Excavate and prepare exposed subgrade as indicated on the Drawings and as specified.
   2. Install and compact foundation layer as indicated on the Drawings and specified.
   3. Level foundation materials so that structures will be set plumb, and duct banks will be at proper grade and alignment.
      a. Install with uniform bearing on foundation materials.
      b. Wedging or blocking of base sections for leveling over the foundation materials will not be permitted.

3.03 INSTALLATION

A. General:
   1. Protect handholes and manholes from displacement, flooding, or flotation.

B. Portland cement concrete handholes and manholes:
   1. Install structures in accordance with ASTM C891 and as specified in this Section.
      a. In the event of conflicts, the more restrictive provisions shall apply.
   2. Clean and prime joints between adjacent precast sections.
      a. Install sealing compound between sections and provide watertight joints.
   3. Set covers and hatches at elevations indicated on the Drawings.
      a. Securely attach frames to top of precast structures and grade adjustment rings.
   4. Penetrations:
      a. Holes for duct banks and other penetrations may not be cut into precast handholes and manholes unless they are located at designated locations shown on the Shop Drawings or at knockout panels cast into the structure during manufacturing.
      b. Carefully remove concrete from knockout panel areas with saws.
         1) Ensure that break-back does not extend beyond the designated limits of the knockout panel.
      c. Coat any reinforcement cut or exposed during removal of knockout panel sections with minimum 2 coats of high solids epoxy as specified in Section 09960 - High-Performance Coatings.
         1) Apply epoxy coating applied over and at least 1 inch past the perimeter of the reinforcement.
   5. Install duct banks and conduit penetrations in accordance with the penetration details indicated on the Drawings.
   6. Fill holes that were provided for handling or other temporary purposes with non-shrink cement grout using procedures as specified in Section 03300 - Cast-in-Place Concrete, unless otherwise detailed by the manufacturer.
   7. Backfill handholes and manholes as indicated on the Drawings and as specified in Section 02300 - Earthwork.

C. Site tolerances:
   1. Set electrical handholes and manholes plumb and true at locations indicated on the Drawings.
   2. Tolerances on placing:
      a. Horizontal location: Within 1 inch.
      b. Vertical elevation: Within 1/2 inch.
      c. Plumb: Within 1/8 inch over 10 feet.

3.04 REPAIR/RESTORATION

A. Repair cracks or blemishes in concrete as described in Section 03300 - Cast-in-Place Concrete.

3.05 ADJUSTING

A. After final grading is complete, adjust access covers to grade.

3.06 CLEANING

A. Before installation of cables in any duct banks and handholes or manholes, remove concrete spoil, forms, debris, silt, dust, and other foreign material.

3.07 SCHEDULES

A. See Drawings for the “Electrical Handhole and Manhole Schedule”.

END OF SECTION

SECTION 02620

FILTER FABRIC

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Nonwoven filter fabric.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
   2. D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
   3. D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
   4. D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
   5. D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
   6. D5261 - Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
   7. D6241 - Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.

1.03 DEFINITIONS

A. Filter Fabric: Nonwoven geotextile fabric manufactured from polypropylene fibers.

1.04 SUBMITTALS

A. Product data.

B. Samples.

C. Quality control submittals:
   1. Certificates of Compliance.
   2. Manufacturer's Instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Storage and protection:
   1. Furnish filter fabric in protective covers capable of protecting the fabric from ultraviolet rays, abrasion, and water.

1.06 PROJECT CONDITIONS

A. Take field measurements to determine the lengths and dimensions of the surfaces to receive the fabric.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. One of the following or equal:
   1. Propex, Geotex 401.
   2. Ten Cate Geosynthetics, Mirafi 140N.

2.02 MATERIAL REQUIREMENTS

A. Physical properties: Meet the following minimum requirements:

Property (1)	Test Method	Unit	Requirements(1)
Minimum Weight	ASTM D5261	oz	4.0
Grab Tensile Strength	ASTM D4632	lbs	100
Grab Elongation	ASTM D4632	%	50
Trapezoid Tear Strength	ASTM D4533	lbs	50
CBR Puncture Resistance	ASTM D6241	lbs	300
UV Resistance (strength retained at 500 hrs)	ASTM D4355	%	70
Apparent Opening Size (AOS)	ASTM D4751	US sieve	70
Permittivity	ASTM D4491	sec^{-1}	1.7
Flow Rate	ASTM D4491	gpm/ft^2	130
(1) Minimum average roll values.			

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions: Verify that conditions are satisfactory for the installation of filter fabric.

3.02 PREPARATION

A. Surface preparation:
   1. During grading operations, take care not to disturb the subgrade.
   2. This may require use of lightweight dozers for low strength soils such as saturated, cohesionless, or low cohesion soils.

B. Prior to placement of fabric: Prepare surface to smooth condition free of debris, depressions, or obstructions that may damage the fabric.

3.03 INSTALLATION

A. Follow manufacturer's installation instructions and as complimented in this Section.

B. Place the filter fabric smoothly without folds or wrinkles.

C. Use special care when placing the filter in contact with the soil so that no void spaces occur between the filter and the prepared surface.

D. Overlap the parallel rolls and ends of rolls a minimum of 24 inches and not less than manufacturer's instructions.

E. Do not drag filter fabric across subgrade.

F. Make overlaps at ends of rolls in the direction of the aggregate placement with the previous roll on top.

G. Use lightweight dozers if necessary. Do not allow equipment directly on filter fabric.

3.04 FIELD QUALITY CONTROL

A. Inspection:
   1. Before covering, the condition of the fabric will be observed by the Engineer to determine that no holes or rips exist in the fabric.
   2. Repair all holes and rips by placing a new layer of fabric extending beyond the defect in all directions a distance equal to the minimum overlap required for adjacent rolls.

END OF SECTION

SECTION 02621

STABILIZATION FABRIC

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Woven stabilization fabric used for subgrade enhancement.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. D4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
   2. D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
   3. D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
   4. D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
   5. D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
   6. D6241 - Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.

1.03 DEFINITIONS

A. Stabilization Fabric: Woven geotextile fabric manufactured from polypropylene yarns.

1.04 SUBMITTALS

A. Product data.

B. Samples.

C. Quality control submittals:
   1. Certificates of Compliance.
   2. Manufacturer's Installation Instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Storage and protection:
   1. Furnish stabilization fabric in protective covers capable of protecting the fabric from ultraviolet rays, abrasion, and water.

1.06 PROJECT CONDITIONS

A. Field measurements:
   1. Take field measurements to determine the exact lengths and dimensions of the surfaces to receive the fabric.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. One of the following or equal:
   1. Propex, Geotex 200ST.
   2. Ten Cate Geosynthetics, Mirafi 500X.

2.02 MATERIAL REQUIREMENTS

A. Physical properties: Meet the following minimum requirements:

Property (1)	Test Method	Unit	Requirements(1)
Grab Tensile Strength	ASTM D4632	lbs	200
Grab Elongation	ASTM D4632	%	15
Trapezoid Tear Strength	ASTM D4533	lbs	75
CBR Puncture Resistance	ASTM D6241	lbs	700
UV Resistance (strength retained at 500 hrs)	ASTM D4355	%	70
Apparent Opening Size (AOS)	ASTM D4751	US sieve	40
Permittivity	ASTM D4491	sec^{-1}	0.05
Flow Rate	ASTM D4491	gpm/ft^2	4
(1) Minimum average roll values.			

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions: Verify that conditions are satisfactory for the installation of stabilization fabric.

3.02 PREPARATION

A. Surface preparation: During grading operations, take care not to disturb the subgrade. This may require use of lightweight dozers for low strength soils such as saturated, cohesionless, or low cohesion soils.

B. Prior to placement of fabric: Prepare surface to smooth condition free of debris, depressions, or obstructions that may damage the fabric.

3.03 INSTALLATION

A. Follow manufacturer's installation instructions and as complimented in this Section.

B. Place the stabilization fabric smoothly without folds or wrinkles.

C. Use special care when placing the stabilization fabric in contact with the soil so that no void spaces occur between the stabilization fabric and the prepared surface.

D. Overlap the parallel rolls and ends of rolls a minimum of 24 inches and not less than recommended by manufacturer.

E. Do not drag stabilization fabric across subgrade.

F. Make overlaps at ends of rolls in the direction of the aggregate placement with the previous roll on top.

G. Use lightweight dozers, if necessary. Do not allow equipment directly on stabilization fabric.

3.04 FIELD QUALITY CONTROL

A. Inspection: Before covering, the condition of the fabric will be observed by the Engineer to determine that no holes or rips exist in the fabric. Repair all holes or rips by placing a new layer of fabric extending beyond the defect in all directions, a distance equal to the minimum overlap required for adjacent rolls.

END OF SECTION

SECTION 02742A

ASPHALTIC CONCRETE PAVING (CA)

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Asphalt pavement on prepared subgrade or aggregate base course to lines, grades, and compacted thickness as indicated on the Drawings.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. T 209 - Standard Method of Test for Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures.

B. Caltrans Standard Test Methods:
   1. California Test 304 - Preparation of Bituminous Mixtures for Testing.
   2. California Test 362 - Determining Asphalt Content in Bituminous Mixtures by Vacuum Extraction.
   3. California Test 375 - Determining the In-Place Density and Relative Compaction of AC Pavement.
   4. California Test 382 - Determining Asphalt Content in Bituminous Mixtures (Ignition Oven Method).

C. State of California Department of Transportation Standard Specifications, latest edition (Caltrans Standard Specifications):
   1. Section 37 - Bituminous Seals.
   2. Section 39 - Asphalt Concrete.
   3. Section 92 - Asphalt Binders.
   4. Section 94 - Asphaltic Emulsions.
   5. Section 96 - Geosynthetics.

1.03 SUBMITTALS

A. Job mix formula.

B. Shop Drawings.

C. Product data:
   1. Asphalt binder.
   2. Asphalt aggregate.
   3. Pavement reinforcing fabric.
   4. Tack coat application rate calculations.

D. Quality control Submittals:
   1. Test results.

2. Certificate of Compliance.
3. Certificate of Competence.

E. Equipment list.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Asphalt pavement delivery:
1. Transport the mixture from the mixing plant to the point of use in vehicles having tight bodies previously cleaned of foreign materials.
2. Treat bodies as necessary to prevent material from sticking to the bodies.
3. Cover each load with canvas or other suitable material of sufficient size and thickness to protect the asphalt mixture from the weather.

1.05 PROJECT CONDITIONS

A. Environmental requirements:
1. Asphalt concrete:
a. Place asphalt concrete only when surface is dry, and when atmospheric temperature in the shade is 40 degrees Fahrenheit and rising, or above 50 degrees Fahrenheit if falling.
b. Do not place asphalt concrete when weather is foggy or rainy, when base on which material is to be placed is in wet or frozen conditions, or when, in the opinion of the Engineer, weather conditions will prevent proper handling, finishing, or compaction of the mixtures.
2. Prime coat:
a. Do not apply prime coat when atmospheric temperature is below 60 degrees Fahrenheit.
b. Apply prime coat only when base course is dry or contains moisture not in excess of that which will permit uniform distribution and desired penetration.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. This Work shall consist of furnishing and mixing aggregate and asphalt binder at a central mixing plant, spreading and compaction of the mixture as specified and as indicated on the Drawings.

B. In general, asphalt concrete and asphalt concrete base shall be in accordance with to Section 39 “Asphalt Concrete,” and applicable referenced sections of the Caltrans Standard Specifications:
1. Where conflicts exist, this Specification shall govern.

2.02 ASPHALT PAVEMENT MATERIALS

A. Asphalts:
   1. Asphalt binder: Steam-refined paving asphalt, PG 64-10, in accordance with Section 92-1.02B “Performance Grades Asphalt Binders” of the Caltrans Standard Specifications.
   2. Tack coat: Asphaltic emulsion, Grade SSA1, in accordance with Section 94 of the Caltrans Standard Specifications.

B. Asphalt aggregate:
   1. Aggregate shall be in accordance with Section 39-2.02B(4)(b) of the Caltrans Standard Specifications for Type A HMA grading:
      a. For pavement placed in multiple lifts:
         1) Aggregate for the final lift (surface layer) shall be 1/2-inch maximum, medium.
         2) Aggregate for other lifts/layers shall be 3/4-inch maximum, medium.
      b. For pavements placed in a single lift:
         1) Aggregate shall be 1/2-inch maximum, medium.
   2. Use of reclaimed asphalt pavement (RAP) in asphalt concrete and asphalt concrete base is prohibited.

C. Asphalt pavement shall be produced in a batch mixing plant, a continuous pugmill mixing plant, or dryer-drum mixing plant:
   1. Proportioning shall be in accordance with Section 39-2.01B(8)(a) of the Caltrans Standard Specifications.
   2. Mixing shall be in accordance with Section 39-2.01B(8)(a) of the Caltrans Standard Specifications.

2.03 AGGREGATE BASE COURSE

A. As specified in Section 02050 - Soils and Aggregates for Earthwork.

B. Placed at the following locations:
   1. At locations indicated on the Drawings.
   2. Asphalt pavement.

C. Compacted thickness shall be as indicated on the Drawings

2.04 EQUIPMENT

A. Spreading and compacting equipment:
   1. Spreading equipment shall be in accordance with Section 39-2.01C(2) and applicable referenced sections of the Caltrans Standard Specifications:
      a. Only in areas inaccessible to the machine, by approval of the Engineer, will hand spreading be permitted.
   2. Compaction equipment shall be in accordance with Section 39-2.01C(2) and applicable referenced sections of the Caltrans Standard Specifications.

2.05 SOURCE QUALITY CONTROL

A. Engineer will perform sampling and tests of materials in accordance with California Test Method Number 304 and California Test Method Number 362 or 382, as applicable. Samples will be taken from materials as delivered to the site.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions: Verify surfaces and site conditions are ready to receive work. If unsatisfactory conditions exist, do not commence installation until such conditions have been corrected. Beginning application means acceptance of existing conditions.

3.02 PREPARATION

A. Protection:
   1. Protect concrete pavements and walks, curbs and bases, and other improvements adjacent to the operations with suitable materials.
   2. Building and other surfaces shall be covered with paper or other protection, when required.
   3. Repair any damage caused by the Contractor's employees or operations to the satisfaction of the Engineer at no additional cost to the Owner.

B. Subgrade preparation:
   1. Immediately prior to applying tack coat, or immediately prior to placing the asphalt pavement when tack coat is not required, the subgrade to receive asphalt pavement shall be in accordance with the compaction requirement and elevation tolerances specified for the material involved and shall be cleaned to remove any loose or extraneous material.
   2. If the asphalt pavement is to be placed on an existing base or pavement that was not constructed as part of the contract, clean the surface by sweeping, flushing, or other means to remove loose particles of paving, dirt, and other extraneous material immediately before applying the tack coat.

3.03 TACK COAT

A. Tack coat:
   1. A tack coat of asphaltic emulsion shall be applied to vertical surfaces of existing pavement, curbs, gutters, and construction joints in the surfacing against which additional material is to be placed, or as otherwise specified in this Section.
   2. Applied in 1 application at a rate according to Section 39-2.01A(3)(j) and residual rate requirements according to the mix design and application.

3.04 ASPHALT PAVEMENT

A. Placing materials in a windrow, then picking it up and placing it in the asphalt paver with loading equipment, will be permitted provided that:
   1. Asphalt paver is of such design that the material will fall into a hopper that has a movable bottom conveyor to feed and screed.
   2. Loader is constructed and operated so that substantially of the material deposited into windrows is picked up and deposited into the paving machine.
   3. Windrow is deposited only so far in advance of the paver to provide for continuous operation of the paver and not so far as to allow the temperature of the asphalt pavement in the windrow to fall below 260 degrees Fahrenheit.

B. Unless lower temperatures are directed by the Engineer, asphalt concrete shall be spread, and the first coverage of initial or breakdown compaction shall be complete before the surface temperature of the mixture drops below 250 degrees Fahrenheit.
   1. Breakdown and intermediate compaction shall be completed before the surface temperature drops below 190 degrees Fahrenheit.
   2. Compaction shall be completed before the surface temperature drops below 150 degrees Fahrenheit.

C. Spread and compacted in the number of layers and of the thicknesses indicated in the following table:
   1. Thickness tolerance of within 0.1 inch is allowed for asphalt concrete.
   2. Total thickness tolerance of within 0.2 inches is allowed for asphalt concrete base.

Total Thickness Indicated on Drawings(1)	Number of Lifts	Top Layer Thickness (inches)		Next Lower Layer Thickness (inches)		Other Lower Layer Thicknesses (inches)	
		Min.	Max.	Min.	Max.	Min.	Max.
3 inches(2)	2	1-1/4	1-1/2	1-1/4	1-1/2	-----	-----
3-1/4 to 4-3/4 inches	2	1-3/4	2-1/4	1-3/4	3	-----	-----

Notes:

(1) When pavement-reinforcing fabric is shown to be placed between layers of asphalt pavement, the thickness of asphalt pavement above the pavement-reinforcing fabric shall be considered to be the "Total Thickness Indicated on the Drawings" for the purpose of spreading and compacting the asphalt pavement above the pavement-reinforcing fabric.

(2) If approved by the Engineer, 1 lift of 3 inches may be placed.

(3) At least 2 layers shall be placed if the total thickness is less than 5 inches. At least 3 layers shall be placed if the total thickness is more than 5 inches, and less than 10-1/2 inches. At least 4 layers shall be placed if the total thickness is greater than 10-1/2 inches.

D. A layer shall not be placed over another layer which exceeds 3 inches in compacted thickness until the temperature of the layer which exceeds 3 inches in compacted thickness is less than 160 degrees Fahrenheit at mid depth.

E. If the temperature of any layer drops below 140 degrees Fahrenheit, or if directed by the Engineer, apply tack coat before placing next layer.

F. Unless otherwise indicated on the Drawings, asphalt mixtures shall not be handled, spread, or windrowed in a manner that will stain the finished surface of any pavement or other improvements.

G. Completed mixture shall be deposited on the prepared subgrade at a uniform quantity per linear foot, as necessary to provide the required compacted thickness without resorting to spotting, picking up, or otherwise shifting the mixture.

H. Spreading:
   1. All layers of asphalt pavement shall be spread with an asphalt paver and shall be in accordance with Section 39-2.01C and applicable referenced sections of the Caltrans Standard Specifications.
   2. At locations where the asphalt pavement is to be placed over areas inaccessible to spreading and rolling equipment, layers of asphalt pavement shall be distributed directly out of the back of the dump truck and spread by hand:
      a. Asphalt pavement spread by hand shall be compacted thoroughly to the required lines, grades, and cross-sections by means of pneumatic tampers, or by other methods that will produce the same degree of compaction as pneumatic tampers.

I. Compaction:
   1. Compaction of asphalt pavement shall be in accordance with Section 39-2.01C, and applicable referenced sections of the Caltrans Standard Specifications.
   2. Percent of maximum theoretical density for each layer of asphalt pavement shall be 91 to 97 percent. Theoretical maximum density to be determined using AASHTO T 209 and Caltrans Standard Specifications Section 39.

J. Segregation shall be avoided, and the surfacing shall be free of pockets of coarse or fine material. Asphalt pavement containing hardened lumps shall not be used:
   1. In areas inaccessible to paving and compacting equipment where spreading is done by hand, minimize the amount of segregation.

K. Location of longitudinal joints in the top layer will be determined by the Engineer and shall not adversely affect the quality of the finished product.

L. At locations, or as directed by the Engineer, the asphalt concrete shall be square and at least 1-inch thick when conforming to existing surfacing. Tapering or feathering is not allowed.

3.05 FIELD QUALITY CONTROL

A. Control the quality of Work and shall provide adequate testing to ensure compliance with these Specifications:
   1. Type and size of the samples shall be suitable to determine conformance with stability, density, thickness, and other specified requirements.
      a. Use an approved power saw or core drill for cutting samples.
      b. Furnish tools, labor, and materials for cutting samples, testing, and replacing the pavement where samples were removed.

c. Take a minimum of 1 sample for every 4,000 square feet of asphalt pavement placed.

2. Where open graded friction course is to be placed, core samples shall be taken prior to friction course placement.

B. Asphalt pavement shall match the grades indicated on the Drawings and shall be completely free from unintended hollows and high spots:

1. After completion of paving work, paving shall be flooded with water.
   a. Any ponding that results in standing water greater than 3/4 inch in depth shall be ringed with chalk.
   b. Such hollows shall be corrected by removing and replacing the asphalt concrete.
   c. Asphalt concrete patch shall be square and at least 1-inch thick when conforming to existing surfacing.
   d. Tapering or feathering is not allowed.

C. Perform in-place density and compaction tests of the completed pavement in accordance with California Test Method Number 375, to determine compliance with the specified requirements. Submit test results to Engineer for approval.

D. Cracks, settling of surface, improper drainage, improper compaction, and sloppy connection to previously laid surfaces will be construed as improper workmanship and will not be accepted.

3.06 MAINTENANCE OF PAVEMENT

A. Upon completion of final rolling, traffic shall not be permitted on the finished pavement for at least 6 hours, or until the asphalt pavement has cooled sufficiently to withstand traffic without being deformed.

3.07 WORKMANSHIP AND WARRANTY

A. Provide written warranty against defects in materials or workmanship for a period of not less than 1 year upon completion of Work.

END OF SECTION

SECTION 02762

PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Pavement marking requirements for striping, text, and graphics; traffic signs.

1.02 SUBMITTALS

A. Product data.

B. Manufacturer's instructions.

1.03 QUALITY ASSURANCE

A. Applicator qualifications: Minimum 5 years of experience of applying traffic markings with satisfactory performance record.

B. Regulatory requirements: Comply with applicable requirements of governmental agencies having jurisdiction, including airborne emissions and industrial waste disposal requirements.

1.04 PROJECT CONDITIONS

A. Apply pavement marking paint when:
   1. Pavement is clean and thoroughly dry.
   2. Ambient temperature is above 40 degrees Fahrenheit.
   3. Precipitation is not expected within 12 hours of completion of application.

PART 2 PRODUCTS

2.01 PAVEMENT MARKING PAINT

A. Manufacturers: One of the following or equal:
   1. Dunn-Edwards Corp.
   2. Glidden Co.
   3. Sherwin Williams Co.

B. Materials:
   1. Pavement marking paint, latex based: One of the following or equal:
      a. Dunn-Edwards: No. W 801, Vin-L-Stripe, epoxy-modified acrylic-latex based paint.
      b. Glidden: 63240 Series, UltraHide Latex Traffic Paint.
      c. Sherwin Williams: Set fast acrylic water borne traffic marking paint.

2. Masonry conditioner: The following or equal:
    a. Sherwin Williams: B46WZ1000, Masonry Conditioner.
3. Colors:
    a. Text: White.
    b. Parking dividers: White.
    c. No parking zone markings: Yellow.
    d. No parking curb: Red.
    e. Handicap zone markings: Blue and white.
        1) Blue paint: Match color No. 15090 in Federal Standard 595A as specified in Section 2-1720 of California Administrative Code Title 24 Handicap Regulations.
    f. Accessible parking dividers and accessible route: Yellow.
    g. Directional arrows: White.
    h. Driving lane dividers: White.

2.02 TRAFFIC SIGNS

A. Manufacturers: One of the following or equal:
    1. Seton Name Plate Co.
    2. Emedco.

B. Material, shapes, and graphics: Post mounted baked enamel on steel sheet, reflectorized to show the same shape and color both day and night, with mounting holes, in accordance with the Uniform Traffic Control Devices manual. Fasten sign to post with stainless steel bolts.

PART 3 EXECUTION

3.01 PREPARATION

A. Remove dirt, oil, grease, and other materials which may affect paint adhesion.

B. Apply masonry conditioner on weathered or sandblasted surfaces, brick, or stucco.

3.02 APPLICATION

A. Apply paint at package consistency whenever possible. Thin paint as little as possible.

B. Apply paint with specifically designed and manufactured equipment for pavement marking. Provide:
    1. Uniform straight edges without overspray.
    2. 4 inch wide lines, unless indicated otherwise.
    3. Hatching in handicap parking areas.

C. Provide striping between parking stalls as indicated on the Drawings:
    1. Identify parking spaces with text as indicated on the Drawings:
        a. Compact spaces: COMPACT.
        b. Carpool spaces: CARPOOL.
        c. Motorcycle spaces: MOTORCYCLE.

d. Visitor spaces: VISITOR.
e. Clean Air Vehicle spaces: CLEAN AIR VEHICLE.
    1) Lettering shall be at least 8 inches high.

D. Apply paint to obtain thickness recommended by paint manufacturer.

E. Paint traffic control markings, including striping, directional arrows, cross walks and lettering, and handicap striping and symbols as indicated on the Drawings and in accordance with local governing agency's standards. Use stencils for arrows, lettering, and symbols.

F. Apply 700 square inch international handicap symbol on pavement surface where indicated on the Drawings:
    1. On asphalt surfaces, paint blue symbol on white square.
    2. On concrete surfaces, paint white symbol on blue square.

G. Install traffic signs where indicated on the Drawings. Set post in concrete to depth to resist sign damage from wind speed of 100 miles per hour.

END OF SECTION

SECTION 02772

CONCRETE CURBS, GUTTERS, AND SIDEWALKS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Concrete curbs, gutters, sidewalks, driveways, access ramps, and alley intersections.

1.02 SUBMITTALS

A. Product data: Submit data completely describing products.

B. Samples: Submit samples when requested.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Performance requirements: Construct various types of concrete curb, gutter, sidewalk, driveways and alley intersections to dimensions and details indicated on the Drawings.

2.02 MATERIALS

A. Concrete: Class A, as specified in Section 03300 - Cast-In-Place Concrete.

B. Curb finishing mortar: 1 part Portland cement to 2 parts sand.

C. Form release material: Light oil or other releasing agent of type which does not discolor concrete or interfere with the application of finishing mortar to curb tops and faces.

D. Joint materials:
   1. Expansion: As specified in Section 03150 - Concrete Accessories.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions:
   1. Verify field conditions, including subgrade condition and interferences, before beginning construction.

3.02 PREPARATION

A. Surface preparation:
   1. Subgrade:
      a. Construct and compact true to grades and lines indicated on the Drawings and requirements as specified Section 02050 - Soils and Aggregates for Earthwork.
      b. Remove soft or unsuitable material to depth of not less than 6 inches below subgrade elevation and replace with satisfactory material.
   2. Forms and subgrade: Water immediately in advance of placing concrete.

3.03 INSTALLATION

A. Special techniques:
   1. Contractor's option:
      a. Construct concrete curbs and gutters by conventional use of forms, or by means of curb and gutter machine when acceptable to the Engineer.
      b. When use of machines designed specifically for work of this Section are accepted by the Engineer, results must be equal to or better than those produced by use of forms.
      c. Applicable requirements of construction that apply to use of forms also apply to use of machines.
      d. Discontinue use of machines when results are not satisfactory to the Engineer.

B. Forms:
   1. Carefully set to line and grade and securely stake in position forms conforming to dimensions of items to be constructed.
   2. Thoroughly clean prior to each use and coat with form releasing material.

C. Expansion and weakened-plane joints:
   1. Expansion joints:
      a. Construct vertically, and at right angles to centerline of street and match joints in adjacent pavement or sidewalks.
      b. Constructed at radius points, driveways, alley entrances, and at adjoining structures.
      c. Fill joints with expansion joint filler material.
   2. Weakened-plane joints:
      a. Construct as indicated on the Drawings.
      b. Match joint locations and details in adjacent curbs, gutters, and sidewalks.

D. Concrete:
   1. Placing:
      a. Thoroughly spade concrete away from forms so that no rock pockets exist next to forms and so that no coarse aggregate will show when forms are removed.
   2. Compacting:
      a. Compact by mechanical vibrators accepted by the Engineer.
      b. Continue tamping or vibrating until mortar flushes to surface and coarse aggregate is below concrete surface.

3. Form removal:
    a. Front form faces: Do not remove before concrete has taken initial set and has sufficient strength to carry its own weight.
    b. Gutter and rear forms: Do not remove until concrete has hardened sufficiently to prevent damage to edges. Take special care to prevent damage.
4. Finishing and curing: Comply with requirements as specified in Section 03366 - Concrete Finishes, except as modified here:
    a. As soon as curb face forms are stripped, apply finishing mortar to the top and face of curb and trowel to a smooth, even finish. Finish with fine haired broom in direction of work.
    b. Where curb is installed without integral gutter, extend finish 2 inches below grade.
    c. Edge concrete at expansion joints to 1/4-inch radius.
    d. Flow lines of gutters shall be troweled smooth 4 inches out from curb face for integral curb and gutter and 4 inches on both sides of flowline for gutters without curbs.
    e. Sidewalks and ramps: Broom finish.

E. Backfilling:
1. Unless otherwise specified, backfill behind curbs, gutters, or sidewalks with soil native to area and to lines and grades indicated on the Drawings.

3.04 FIELD QUALITY CONTROL

A. Tests:
1. Curbs and gutters:
    a. Test face, top, back, and flow line with 10 foot straightedge or curve template longitudinally along surface.
    b. Correct deviations in excess of 1/4 inch.
2. Gutters:
    a. Frequency of testing: When required by the Engineer, where gutters have slope of 0.8 foot per 100 feet or less, or where unusual or special conditions cast doubt on capability of gutters to drain.
    b. Test method: Establish flow in length of gutter to be tested by supplying water from hydrant, tank truck, or other source.
    c. Required results:
        1) 1 hour after supply of water is shut off, inspect gutter for evidence of ponding or improper shape.
        2) In event water is found ponded in gutter to depth greater than 1/2 inch, or on adjacent asphalt pavement, correct defect or defects in manner acceptable to the Engineer without additional cost to the Contract.

3.05 ADJUSTING

A. Repair portions of concrete damaged while stripping forms or, when damage is severe, replace such work at no additional cost to the Contract. Evidence of repairs shall not be noticeable in the finished product.

B. Remove and replace sections of work deficient in depth or not conforming to requirements indicated on the Drawings and specified in the Specifications at no

additional cost to the Contract. Removal and replacement shall be the complete section between 2 joints.

END OF SECTION

SECTION 02820

FENCES AND GATES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Fence, framework, fabric, and accessories.
   2. Excavation for post bases and concrete foundation for posts.
   3. Manual gates and related hardware.
   4. Gate operators.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. A121 - Standard Specification for Metallic-Coated Carbon Steel Barbed Wire.
   2. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   3. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   4. A385 - Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip).
   5. A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
   6. A702 - Standard Specification for Steel Fence Posts and Assemblies, Hot-Wrought.
   7. F626 - Standard Specification for Fence Fittings.
   8. F668 - Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric.
   9. F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework.
   10. F1184 - Standard Specification for Industrial and Commercial Horizontal Slide Gates.
   11. F2200 - Standard Specification for Automated Vehicular Gate Construction.

B. State of California Department of Transportation (Caltrans).

C. Underwriters Laboratories, Inc. (UL):
   1. 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.03 SUBMITTALS

A. Product data: Submit data completely describing products.

B. Shop drawings:
   1. Remote and automatic gates: Submit drawings showing connection details indicating methods and means of mounting, attaching, and installing fence, operators and locks to gates, including wiring diagrams.

C. Quality control submittals:
   1. Certificates of compliance: Provide certification that materials conform to referenced specifications.
   2. Qualifications: Provide installer's references and list of local references.
   3. Manufacturer's instructions: Provide for gate operator equipment.

D. Contract closeout submittals:
   1. Operation and maintenance manuals: Provide for electrical and mechanical equipment.

1.04 QUALITY ASSURANCE

A. Pre-installation conference: Participate in conference, if required.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Storage and handling: Unload, store, and protect materials such that they are not damaged.

1.06 PROJECT CONDITIONS

A. Field measurements:
   1. Verify actual field distances so that CMU column and post spacing can be made uniform.
   2. Verify and coordinate gate opening and column distances for driveway.

1.07 SEQUENCING AND SCHEDULING

A. Fences and gates: May be constructed at any time after earthwork, pipe work, and structures to which fence is related has been completed, but prior to erosion control application.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Design requirements:
   1. Gates shall be designed and constructed to withstand wind loads per the requirements of Section 01850 - Design Criteria.

B. Performance requirements:
   1. Gate operator controls:
      a. In addition to standard controls furnished with gate operators, make provisions for and provide terminal connection points for controls indicated on the Drawings and clearly indicated such connection points on operator control terminal board.
      b. Operational sequence: Provide sequence as specified in Section 17100 - Control Strategies and 17101A - Specific Control Strategies.

2.02 SPECIAL GATES AND ACCESSORIES

A. Ornamental iron rolling gates:
   1. One of the following or equal:
      a. Capitol Steel Products.
   2. Material: Black iron, galvanized.
   3. Pickets:
      a. 3/4 inch by 3/4 inch tubing.
      b. Clear space between tubing for gate and section(s) of fence covered when the gate is in the open position shall be no greater than 2-1/4 inches in accordance with UL 325 and ASTM F2200.
   4. Rail frames: 1-1/2 inch by 1-1/2 inches tubing.

B. Tracking channel: Provide each channel with stop permanently attached at rear of channel:
   1. Roller guide: Steel guide capable of being cast into roadway.
   2. Posts for gate and track support: 3 inches by 3 inches tubing.
   3. Roller wheels:
      a. Front: Minimum wheel diameter 4 inch with maximum 1.5 inch opening between bottom of gate and top of track.
      b. Rear: Same as front wheel.

C. Coatings:
   1. Galvanized repair paint: 2 component, moisture-cured, zinc-rich urethane primer, minimum solids by volume of 83 percent plus or minus 2 percent.
      a. Manufacturers: One of the following or equal:
         1) Tnemec, 90-97.
         2) Devoe: Catha-Coat 313.

2.03 MANUFACTURED UNITS

A. Rolling gates:
   1. Provide controls for each gate motor operator such that operator can be controlled by either of 2 manually operated switches located where indicated on the Drawings:
      a. Also provide control for motor operator such that gate can be controlled by either of 2 key-operated switch stations.
      b. Provide gooseneck-mounting stands for switch station and key such stations alike.
   2. Provide 1 push-button switch station located inside gate.

B. Outside gate operator stands for plant entry gates.

2.04 EQUIPMENT

A. Rolling gates:
   1. Gate operator equipment:
      a. Manufacturers: One of the following or equal:
         1) DKS Doorking, Series 9200.
      b. Select operator based on final weight of the gate and manufacturer recommendations.

c. Provide a minimum factor of safety of 1.5 in sizing gate operator power.
d. Entry card reader and keypad station:
    1) Provide a single card reader and keypad that is pedestal-mounted by the exterior of the gate according to City standards.
    2) Knox model 3502 keyed entry:
        a) Include stay-open feature for emergency services.
        b) Install on same pedestal as the card reader.
    3) Located as indicated on the Drawings.
e. Exit push button:
    1) Provide an exit push button mounted on the gate operator equipment.
    2) Locate to avoid tampering, as indicated on the Drawings.
f. Provide gooseneck-mounting stands for the card reader and keypad station.
g. Provide a sliding type electric operator unit built into a compact enclosure mounted on heavy steel base.
    1) Provide weatherproof enclosure.
    2) Electric operator and all ancillary equipment (including sensors) must be hardwired. Battery-powered systems are unacceptable.
h. Peripheral and accessory equipment:
    1) Safety/Exit loops.
    2) Safety loops on both exterior and interior of gate.
    3) Single safety/exit loop on the interior of the gate.
    4) Install according to manufacturer's recommendations.
    5) Install loops prior to paving.
i. Electric operator unit:
    1) In accordance with UL 325. At a minimum, provide entrapment protection device type A (inherent entrapment protection system) and B1 (non-contact sensor).
    2) Provide unit consisting of right angle gear head instantly reversing motor and magnetic brake, safety disc clutch, chain driven geared type automatic limit switch, magnetic reversing starter with overload protection, open and close adjustable limit switches, and emergency release for operation during power failure.
    3) Provide unit that is prewired and ready to be connected to power and control sources.
    4) Provide operators capable of operating on nominal 480-volt, 3 phase, 60 hertz power supply. Battery-powered systems are unacceptable.
    5) Size motor to be capable of moving the weight of the gate. Provide a minimum factor of safety of 1.5 in sizing operator power.
j. Gear head motor:
    1) Provide locking mechanical drive disconnect inside facility to allow gate to be manually opened.
    2) Provide motor that is built as 1 unit with 1 stage of reduction.
    3) Provide reduction stage consisting of carefully machine cut carburized worm and SAE 65 bronze worm gear.
    4) Bearings: Provide anti-friction bearings complying with following:
        a) On motor shaft: Highest quality ball bearings.
        b) On slow speed shafts: Tapered roller bearings.

5) Gears and bearings: Operate in bath of oil:
   a) Prevent leakage of oil by providing double type oil seals around motor shaft and countershaft.
   b) Provide magnetic drum type brake with its easily adjustable feature built onto jackshaft for positive gate control.

k. Automatic limit switch:
   1) Provide automatic limit switch designed to stop gates in fully open or closed positions that is precision built gear type driven by chain drive from jackshaft of operator.
   2) Provide limit switch chain drive so located that any safety friction disc clutch slippage or manual operation of gate shall not cause mistiming of operator mechanism.

l. Operation:
   1) Move gate by use of highest quality roller chain and heavy brackets attached to gates.
   2) Provide simple releasing feature that is designed to operate in case of power failure.
   3) Provide chain that is driven from dependable safety friction disc clutch on gear head motor's countershaft.
   4) Provide safety clutch designed to protect personnel and equipment in case gate comes to contact with obstruction.
   5) Operating speed:
      a) Provide operators having operating speed of not less than 60 feet per minute nor more than 90 feet per minute.
   6) In addition to standard controls furnished with gate operators, make provisions for and provide terminal connection points for controls indicated on the Drawings and clearly indicated such connection points on operator control terminal board.
   7) Operational sequence: Provide sequence as specified in Section 17100 - Control Strategies and 17101A - Specific Control Strategies.

B. Pedestrian Gate:
   1. Magnetic door sensor with a card reader-operated lock, as indicated on the Drawings.

C. Post mounted gate locks: Provide locks that:
   1. Are electrically operated, post mounted type, and capable of positively locking gates to latch post.
   2. Include manual key lock for disconnect in event of power failure.
   3. Are designed to operate on 120 volts alternating current and that are suitable for outdoor use.
   4. Manufacturers: The following or equal:
      a. Stanley Vemco, Number 420-141 for slide gate.

2.05 FABRICATION

A. Shop finishing:
   1. Galvanizing: For items not fabricated of galvanized materials hot-dip galvanize products after fabrication in accordance with following as applicable:
      a. ASTM A123.

b. ASTM A153.
c. ASTM A385.

2. Mark galvanized products with name of galvanize, applicable ASTM designation, and weight of zinc coating.
3. Galvanize fabricated items complete, or in largest practicable sections.
4. Provide galvanizing at rate of 2.0 ounces per square foot, minimum.
5. Hardware:
   a. Padlocks: Cadmium plated.
   b. Chain: Galvanized.

B. Finish schedule:
   1. Ferrous metal:
      a. Typical: Clean, then hot-dip galvanize in accordance with galvanizing standards.

C. Field finish touch-up painting:
   1. Galvanized repair paint: Apply paint having minimum dry film thickness of 2.0 to 3.5 mils.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions: Verify field conditions prior to construction.

3.02 PREPARATION

A. Surface preparation:
   1. Before locating fence posts grade ground to permit grade of fence to remain constant over any local elevations or depressions in ground line.

3.03 INSTALLATION

A. Rolling gates:
   1. Provide gates that are motor operated where indicated on the Drawings:
      a. Motor operator controls:
         1) Install manually operated switches where indicated on the Drawings.
         2) Install switch station stands where indicated on the Drawings.

3.04 FIELD QUALITY CONTROL

A. Manufacturer's field service:
   1. Manufacturer shall check and test powered gates and accessories before acceptance.
   2. Test gate operator through 10 full cycles and adjust operation without binding, scraping, or uneven motion.
   3. Test limit switches for proper “at rest” gate position.

3.05 ADJUSTING

A. Adjust gate travel, stops, and operator position to meet field conditions.

3.06 CLEANING

A. Clean up surplus dirt, concrete, and other waste material and dress grade up upon completion of the work.

3.07 PROTECTION

A. Protect installed gates against damage and, if damaged, repair prior to final acceptance.

END OF SECTION

SECTION 03055

ADHESIVE-BONDED REINFORCING BARS AND ALL THREAD RODS IN CONCRETE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Bonding reinforcing bars and all thread rods in concrete using adhesives.

1.02 REFERENCES

A. American Concrete Institute (ACI).
   1. 355.4 - Qualification of Post-Installed Adhesive Anchors in Concrete and Commentary.

B. American National Standards Institute (ANSI):
   1. Standard B212.15 - Carbide Tipped Masonry Drills and Blanks for Carbide Tipped Masonry Drills.

C. ASTM international (ASTM):
   1. C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

D. Concrete Reinforcing Steel Institute (CRSI).

E. ICC Evaluation Service, Inc. (ICC-ES):
   1. AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements.

F. NSF International (NSF):
   1. 61 - Drinking Water System Components - Health Effects.

G. Society for Protective Coatings (SSPC):
   1. SP-1 - Solvent Cleaning.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Evaluation Service Report (ESR): Report prepared by ICC-ES, or other testing agency acceptable to Engineer and to the Building Official, that documents testing and review of a product to confirm that it complies with the requirements of designated ICC-ES Acceptance Criteria, and to document its acceptance for use under the building code specified in Section 01410 - Regulatory Requirements.

1.04 SUBMITTALS

A. Product data: Technical data for adhesives, including:
   1. Manufacturer's printed installation instructions (MPII).
   2. Independent laboratory test results indicating allowable loads in tension and shear for concrete of the types included in this Work, with load modification factors for temperature, spacing, edge distance, and other installation variables.
   3. Handling and storage instructions.
   4. Evidence of current listing under NSF-61 for use in contact with potable water.

B. Quality control Submittals:
   1. Special inspection: Detailed step-by-step instructions for the special inspection procedures required by the building code specified in Section 01410 - Regulatory Requirements.
   2. For each adhesive to be used, Evaluation Report confirming that the product complies with the requirements of AC308 for both un-cracked and cracked concrete and for use in Seismic Design Categories A through F.
   3. Installer qualifications:
      a. Submit evidence of successful completion of adhesive manufacturer's installation training program.
      b. Submit evidence of current certification for installation of inclined and overhead anchors under sustained tension loading.

C. Inspection and testing reports:
   1. Inspections: Field quality control: Reports of inspections and tests.
      a. Inspections: Field quality assurance: Reports of special inspections and tests.

1.05 QUALITY ASSURANCE

A. Qualifications:
   1. Installation requirements:
      a. Have available at the site, and install anchors in accordance with, the adhesive manufacturer's printed installation instructions.
   2. Installer qualifications:
      a. Demonstrating successful completion of adhesive manufacturer's on-site training program for installation of adhesive-bonded anchors.
      b. Holding current certification for installation of adhesive-bonded anchors by a qualified organization acceptable to the Engineer and to the Building Official.
         1) Organizations/certification programs deemed to be qualified are:
            a) ACI-CRSI Adhesive Anchor Installer Certification Program.
            b) Adhesive anchor manufacturer's certification program, subject to acceptance by the Engineer and the Building Official.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store and protect products as follows, unless more restrictive requirements are recommended by the manufacturer:
   1. Store adhesives and adhesive components on pallets or shelving in a covered-storage area protected from weather.

2. Control temperature to maintain storage within manufacturer's recommended temperature range.
    a. If products have been stored at temperatures outside manufacturer's recommended range, test by methods acceptable to the Engineer to confirm acceptability before installing in the Work.
3. Dispose of products that have passed their expiration date.

1.07 PROJECT CONDITIONS

A. As specified in Section 01850 - Design Criteria.

B. Seismic Design Category (SDC) for structures: As specified in Section 01850 - Design Criteria.

PART 2 PRODUCTS

2.01 GENERAL

A. Like items of materials: Use end products of one manufacturer in order to achieve structural compatibility and singular responsibility.

B. Adhesives shall have a current Evaluation Report documenting testing and compliance with the requirements of ACI 355.4 and ICC-ES AC308 for use with un-cracked concrete and with cracked concrete in the Seismic Design Category specified.

C. Bond reinforcing bars and all thread rods in concrete using epoxy adhesive unless other adhesives specified are specifically indicated on the Drawings or approved in writing by the Engineer.

D. For locations where adhesive will be in direct contact with potable water in the finished work, provide documentation of testing and listing under NSF-61. Testing shall be by a nationally recognized agency acceptable to the Engineer.

2.02 EPOXY ADHESIVE

A. Materials:
1. Meeting the physical requirements of ASTM C881, Type IV, Grade 3, Class B or C depending on site conditions.
2. 2-component, 100 percent solids, insensitive to moisture.
3. Cure temperature, pot life, and workability: Compatible with intended use and environmental conditions.

B. Packaging:
1. Disposable, self-contained cartridge system furnished in side-by-side cartridges designed to fit into a manually or pneumatically operated caulking

gun, and with resin and hardener components isolated until mixing through manufacturer's static mixing nozzle.
    a. Nozzle designed to dispense components in the proper ratio and to thoroughly blend the components for injection from the nozzle directly into prepared hole.
    b. Provide nozzle extensions as required to allow full-depth insertion and filing from the bottom of the hole.
2. Container markings: Include manufacturer's name, product name, batch number, mix ratio by volume, product expiration date, ANSI hazard classification, and appropriate ANSI handling precautions.

C. Manufacturers: One of the following or equal:
1. Hilti, Inc., HIT-RE 500-V3.
2. Simpson Strong-Tie Co., Inc., SET-XP.

2.03 ACRYLIC AND HYBRID ADHESIVE

A. Materials:
1. 2-component, high-solids, acrylic-based or hybrid acrylic and epoxy-based adhesive.
2. Approved by the manufacturer for installation at substrate temperatures of 0 degrees Fahrenheit and above.

B. Packaging:
1. Disposable, self-contained cartridge system furnished in side-by-side cartridges designed to fit into a manually or pneumatically operated caulking gun, and with resin and hardener components isolated until mixing through manufacturer's static mixing nozzle. Nozzle designed to dispense components in the proper ratio and to thoroughly blend the components for injection from the nozzle directly into prepared hole.
2. Container markings: Include manufacturer's name, product name, batch number, mix ratio by volume, product expiration date, ANSI hazard classification, and appropriate ANSI handling precautions.

C. Manufacturers: One of the following or equal:
1. Hilti, Inc., HIT-HY-200.
2. Simpson Strong-Tie Co., Inc., AT-XP.

2.04 ALL THREAD RODS

A. Materials: As specified in Section 05120 - Structural Steel Framing for rods, nuts, and washers.

2.05 REINFORCING BARS

A. As specified in Section 03200 - Concrete Reinforcing.

PART 3 EXECUTION

3.01 GENERAL

A. Execution of this work is restricted to installers who have personally completed the adhesive manufacturer's on-site training for the products to be installed, and who are personally certified through a qualified certification program described under Quality Assurance and accepted by the Engineer and the Building Official.
   1. Do not install holes or adhesive until training is complete.

B. Perform work in strict compliance with the accepted MPII and the following instructions. Where the accepted MPII and the instructions conflict, the MPII shall prevail.

C. Install reinforcing bars and all thread rods to embedment depth, and at spacing and locations indicated on the Drawings.
   1. If embedment depth is not indicated, contact the Engineer for requirements.
   2. Do not install adhesive-bonded all thread rods or reinforcing bars in upwardly inclined or overhead applications unless accepted in advance by the Engineer.

3.02 PREPARATION

A. Do not begin installation of adhesive bonded anchors until:
   1. Concrete has achieved an age of at least 21 days after placement.
   2. On-site training in installation of adhesive bonded anchors by manufacturer's technical representative is complete. Do not drill holes in concrete or install adhesive and embeds in holes.

B. Review manufacturer's printed installation instructions (MPII) and "Conditions of Use" stipulated in the Evaluation Report before beginning work.
   1. Bring to the attention of the adhesive manufacturer's technical representative any discrepancies between these documents and resolve before proceeding with installation.

C. Install adhesive bonded anchors in full compliance with manufacturer's printed installation instructions using personnel who have successfully completed manufacturer's on-site training for products to be used and who hold certifications specified in this Section.

D. Confirm that adhesive and substrate receiving adhesive are within manufacturer's recommended range for temperature and moisture conditions and will remain so during the curing time for the product.

3.03 HOLE SIZING AND INSTALLATION

A. Drilling holes:
   1. Determine location of reinforcing bars or other obstructions with a nondestructive indicator device, and mark locations with construction crayon on the surface of the concrete.
   2. Do not damage or cut existing reinforcing bars, electrical conduits, or other items embedded in the existing concrete without prior acceptance by the Engineer.

B. Hole drilling equipment:
   1. Electric or pneumatic rotary impact type with medium or light impact.
      a. Installation of anchors in cored holes is not permitted.
      b. Set drill to “rotation only” mode, or to “rotation plus hammer” mode in accordance with the manufacturer’s installation instructions and the requirements of the Evaluation Report.
      c. Where edge distances are less than 2 inches and “rotation plus hammer” mode is permitted, use lighter impact equipment to prevent micro-cracking and concrete spalling during the drilling process.
   2. Drill bits: Carbide-tipped in accordance with ANSI B212-15 unless otherwise recommended by the manufacturer or required as a “condition of use” in the Evaluation Report.
      a. Hollow drill bits with flushing air systems are preferred. Air supplied to hollow drill bits shall be free of oil, water, or other contaminants that will reduce bond.

C. Hole diameter: As recommended in the manufacturer’s installation instructions and the Evaluation Report.

D. Hole depth: As recommended in the manufacturer’s installation instructions to provide minimum effective embedment indicated on the Drawings.

E. Obstructions in drill path:
   1. If an existing reinforcing bar or other obstruction is hit while drilling a hole, unless otherwise accepted by the Engineer, stop drilling. Prepare and fill the hole with dry-pack mortar. Relocate the hole to miss the obstruction and drill another hole to the required depth.
      a. Obtain Engineer’s acceptance of distance between abandoned and relocated holes before proceeding with the relocation.
      b. Allow dry-pack mortar to cure to a strength equal to that of the surrounding concrete before resuming drilling in the area.
      c. Epoxy grout may be substituted for dry-pack mortar when accepted by the Engineer.
   2. Avoid drilling an excessive number of holes in an area of a structural member, which would excessively weaken the member and endanger the stability of the structure.
   3. When existing reinforcing steel is encountered during drilling and when specifically accepted by the Engineer, enlarge the hole by 1/8 inch, core

through the existing reinforcing steel at the larger diameter, and resume drilling at original hole diameter using pneumatic rotary impact drill.

4. Bent bar reinforcing bars: Where edge distances are critical and interference with existing reinforcing steel is likely, if acceptable to the Engineer, drill hole at 10-degree (or less) angle from axis of reinforcing bar or all thread rod being installed.

F. Cleaning holes:
   1. Insert air nozzle to bottom of hole and blow out loose dust.
      a. Use compressed air that is free of oil, water, or other contaminants that will reduce bond.
      b. Provide minimum air pressure of 90 pounds per square inch for not less than 4 seconds.
   2. Using a stiff bristle brush with diameter that provides contact around the full perimeter of the hole, vigorously brush hole to dislodge compacted drilling dust.
      a. Insert brush to the bottom of the hole and withdraw using a simultaneous twisting motion.
      b. Repeat at least 4 times.
   3. Repeat the preceding steps as required to remove drilling dust or other material that will reduce bond, and in the number of cycles required by the MPII and the Evaluation Report.
   4. Leave prepared holes clean and dry.
   5. Protect prepared and cleaned holes from contamination and moisture until adhesive is installed.
   6. Re-clean and dry previously prepared holes if, in the opinion of the Engineer, the hole has become contaminated after initial cleaning.

3.04 INSTALLATION OF ADHESIVE AND INSERTS

A. Clean and prepare inserts reinforcing bars and all thread rods:
   1. Prepare embedded length of reinforcing bars and all thread rods by cleaning to bare metal. Inserts shall be free of oil, grease, paint, dirt, mill scale, rust, or other coatings that will reduce bond.
   2. Solvent clean prepared reinforcing bars and all thread rods over the embedment length in accordance with SSPC SP-1. Provide an oil and grease free surface for bonding of adhesive to steel.

B. Fill holes with adhesive:
   1. Starting at the bottom of the hole, fill hole with adhesive inserting the reinforcing bar or all thread rod.
   2. Fill hole as nozzle is withdrawn without creating air voids.
   3. Unless otherwise indicated on the Drawings, fill hole with sufficient adhesive so that excess adhesive is extruded out of the hole when the reinforcing bar or all thread rod is inserted.
   4. Where necessary, seal hole at surface of concrete to prevent loss of adhesive during curing.

C. Installing reinforcing bars and all thread rods.
   1. Unless otherwise indicated on the Drawings, install bars and rods perpendicular to the concrete surface.

2. Insert reinforcing bars and all thread rods into adhesive in accordance with manufacturer's recommended procedures.
3. Confirm that insert has reached the designated embedment in the concrete, and that adhesive completely surrounds the embedded portion.
4. Securely brace bars and all thread rods in place to prevent displacement while the adhesive cures. Bars and rods displaced during curing will be considered damaged and replacement will be required.
5. Clean excess adhesive from the mouth of the hole.

D. Curing and loading.
1. Provide and maintain curing conditions recommended by the adhesive manufacturer for the period required to fully cure the adhesive at the temperature of the concrete.
2. Do not disturb or load bonded embeds until manufacturer's recommended cure time, based on temperature of the concrete, has elapsed.

3.05 POST-INSTALLATION ACTIVITIES

A. Do not bend bars or all thread rods after bonding to the concrete, unless accepted in advance by the Engineer.

B. Attachments to all thread rods:
1. After assemblies to be connected are placed, install nuts and washers for threaded rods as indicated on the Drawings.
2. Draw nuts down tight, using practices specified for "snug tight" installation of bolts in steel to steel connections.

3.06 FIELD QUALITY CONTROL

A. Provide field quality control over the Work of this Section as specified in Section 01450 - Quality Control.

B. Do not allow work described in this Section to be performed by individuals who do not hold the specified certifications and who have not completed the specified job site training.

C. Manufacturer's services:
1. Before beginning installation, furnish adhesive manufacturer's technical representative to conduct on-site training in proper storage and handling of adhesive, drilling and cleaning of holes, and preparation and installation of reinforcing bars and all thread rods.
a. Provide notice of scheduled training to the Engineer and to special inspector(s) not less than 10 working days before training occurs. Engineer and special inspector may attend training sessions.
2. Submit record, signed by the manufacturer's technical representative, listing Contractor's personnel who completed the training. Only qualified personnel who have completed manufacturer's on-site training shall perform installations.

D. Field inspections and testing:
   1. Hole drilling and preparation.
   2. Results: Submit records of inspections and testing to the Engineer by electronic copies within 24 hours after completion.

3.07 FIELD QUALITY ASSURANCE

A. Provide field quality assurance over the Work of this Section as specified in Section 01450 - Quality Control.

B. Special inspections, special tests, and structural observation:
   1. Provide as specified in Section 01455 - Regulatory Quality Assurance.
   2. Frequency of inspections:
      a. Unless otherwise indicated on the Drawings or in this Section, provide periodic special inspection as required by the Evaluation Report for the product installed.
      b. Provide continuous inspection for the initial installation of each type and size of adhesive bonded reinforcing bar and all thread rod. Subsequent installations of the same anchor may be installed with periodic inspection as defined in subsequent paragraphs.
      c. Provide continuous inspection of drilling, cleaning and bonding activities for bars and rods installed in horizontal and upwardly inclined positions.
   3. Preparation:
      a. Review Drawings and Specifications for the Work to be observed.
      b. Review adhesive manufacturer's MPII and recommended installation procedures.
      c. Review Evaluation Report "Conditions of Use" and "Special Inspection" requirements.
   4. Inspection: Periodic:
      a. Initial inspection. Provide an initial inspection for each combination of concrete and reinforcing bar strength or concrete strength and all thread rod material being installed. During initial inspection, observe the following for compliance with the installation requirements.
         1) Concrete: Class (minimum specified compressive strength) and thickness.
         2) Environment: Temperature conditions at work area, and moisture conditions of concrete and drilled hole.
         3) Holes: Locations, spacing, and edge distances; verification of drill bit compliance with requirements; cleaning equipment and procedures; cleanliness of hole. Before adhesive is placed, confirm that depth and preparation of holes conforms to the requirements of the Contract Documents, the MPII, and the "Conditions of Use" listed in the Evaluation Report.
         4) Adhesive: Product manufacturer and name; lot number and expiration date; temperature of product at installation; installation procedure. Note initial set times observed during installation.
         5) Reinforcing bars and all thread rods: Material diameter and length; steel grade and/or strength; cleaning and preparation; cleanliness at insertion; minimum effective embedment provided.

b. Subsequent inspections: Subsequent installations of the same reinforcing bars or all thread rods may be performed without the presence of the special inspector, provided that:
    1) There is no change in personnel performing the installation, the general strength and characteristics of the concrete receiving the inserts, or the reinforcing bars and all thread rods being used.
    2) For ongoing installations, the special inspector visits the site at least once per day during each day of installation to observe the work for compliance with material requirements and installation procedures.

5. Inspection: Continuous.
    a. Make observations as described under “Inspection - Periodic, Initial Inspection” during drilling, cleaning, and bonding activities for all bars and rods installed.
6. Records of inspections:
    a. Provide a written record of each inspection using forms acceptable to the Engineer and to the Building Official.
    b. Submit electronic copies of inspection reports to the Engineer within 24 hours after completion of inspection.

END OF SECTION

SECTION 03071

EPOXIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Epoxy.
   2. Epoxy gel.
   3. Epoxy bonding agent.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C881 - Standard Specification for Epoxy-Resin-Base Systems for Concrete.
   2. C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.
   3. D638 - Standard Test Method for Tensile Properties of Plastics.
   4. D695 - Standard Test Method for Compressive Properties of Rigid Plastics.

B. NSF International (NSF):
   1. 61 - Drinking Water System Components - Health Effects.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: Submit manufacturer's data completely describing epoxy materials:
   1. Submit evidence of conformance to ASTM C881. Include manufacturer's designations of Type, Grade, Class, and Color.
   2. Submit documentation that materials meet or exceed the specified strength and performance characteristics. Indicate test methods and test results.
   3. Submit documentation confirming listing under NSF 61.

C. Quality control Submittals:
   1. Manufacturer's installation instructions.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Performance requirements:
   1. Provide epoxy materials that are new.
   2. Store and use products within limitations in accordance with the manufacturer.
   3. Perform and conduct Work of this Section in a neat, orderly manner.

2.02 MATERIALS

A. General:
   1. Moisture tolerant, water-insensitive, two-component epoxy resin adhesive material containing 100 percent solids, and meeting or exceeding the performance properties specified when tested in accordance with the standards specified.
   2. Listed under NSF 61 for use in direct contact with potable water.

B. Epoxy: Low viscosity product in accordance with ASTM C881; Types I, II, and IV; Grade 1; Class C , except as modified in this Section.
   1. Manufacturers: One of the following, or equal:
      a. Dayton Superior, Unitex Pro-Poxy 100.
      b. Master Builders Solutions/Sika, MasterInject 1380.
      c. Sika Corporation, Sikadur 35 Hi-Mod LV.
   2. Required properties:

Table 1. Material Properties - Epoxy

Property	Test Method	Required Results ("neat")
Tensile Strength (7-day)	ASTM D638	7,000 pounds per square inch, minimum.
Compressive Yield Strength (7-day)	ASTM D695	10,000 pounds per square inch, minimum.
Bond Strength (harded concrete to harded concrete after 2-day cure)	ASTM C882	1,000 pounds per square inch, minimum. Concrete failure before failure of epoxy.
Viscosity (mixed)		250 to 550 centipoise

Notes:

(1) Testing results are for materials installed and cured at a temperature between 72 and 78 degrees Fahrenheit for 7 days, unless otherwise noted.

C. Epoxy gel: Non-sagging product in accordance with ASTM C881, Types I and IV, Grade 3, Class C.
   1. Manufacturers: One of the following, or equal:
      a. Dayton Superior, Sure Anchor J50.
      b. Master Builders Solutions/Sika, MasterEmaco ADH 327.
      c. Sika Corp., Sikadur 31, Hi-Mod Gel.
   2. Required properties:

Table 2. Material Properties - Epoxy Gel

Property	Test Method	Required Results ("neat")
Tensile Strength (7-day)	ASTM D638	2,000 pounds per square inch, minimum.
Compressive Yield Strength (7-day)	ASTM D695	8,000 pounds per square inch, minimum.
Bond Strength (14-day)	ASTM C882	1,500 pounds per square inch, minimum.

Notes:

(1) Testing results are for materials installed and cured at a temperature between 72 and 78 degrees Fahrenheit for 7 days, unless otherwise noted.

D. Epoxy bonding agent: Non-sagging product in accordance with ASTM C881, Type II, Grade 2, Class C.
   1. Manufacturers: One of the following, or equal:
      a. Dayton Superior, Sure Bond J58.
      b. Master Builders Solutions/Sika, MasterEmaco ADH 326.
      c. Sika Chemical Corp., Sikadur 32 Hi-Mod LPL.
   2. Required properties:

Table 3. Material Properties - Epoxy Bonding Agent

Property	Test Method	Required Results
Tensile Strength (7-day)	ASTM D638	3,300 pounds per square inch, minimum.
Compressive Yield Strength (7-day)	ASTM D695	8,300 pounds per square inch, minimum.
Bond Strength (14-days)	ASTM C882	1,800 pounds per square inch, minimum. Concrete failure before failure of epoxy bonding agent.
Pot Life	-	Minimum 90 minutes at 73 degrees Fahrenheit.

Notes:

(1) Testing results are for materials installed and cured at a temperature between 72 and 78 degrees Fahrenheit for 7 days, unless otherwise noted.

   3. If increased contact time is required for concrete placement, epoxy resin/Portland cement bonding agent, as specified in Section 03072 - Epoxy Resin/Portland Cement Bonding Agent, may be used instead of epoxy bonding agent.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install and cure epoxy materials in accordance with the manufacturer's installation instructions.

B. Epoxy:
   1. Apply in accordance with the manufacturer's installation instructions.

C. Epoxy gel:
   1. Apply in accordance with the manufacturer's installation instructions.
   2. Use for vertical or overhead work, or where high viscosity epoxy is required.
   3. Epoxy gel used for vertical or overhead work may be used for horizontal work.

D. Epoxy bonding agent:
   1. Apply in accordance with the manufacturer's installation instructions.
   2. Will not be required for filling form tie holes or for normal finishing and patching of similar sized small defects.

END OF SECTION

SECTION 03072

EPOXY RESIN/PORTLAND CEMENT BONDING AGENT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Epoxy resin/portland cement bonding agent.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens).
   2. C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars.
   3. C496 - Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens.
   4. C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.

B. Federal Highway Administration (FHWA):
   1. FHWA-RD-86-193 - Highway Concrete Pavement Technology Development and Testing Volume V: Field Evaluation of SHRP C9206 Test Sites (Bridge Deck Overlays).

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sika Corp., Sika Armatec 110.

B. Substitutions: The use of other than the specified product will be considered, providing the Contractor requests its use in writing to the Engineer. This request shall be accompanied by:
   1. A certificate of compliance from an approved independent testing laboratory that the proposed substitute product meets or exceeds specified performance criteria, tested in accordance with the specified test standards.
   2. Documented proof that the proposed substitute product has a 1-year proven record of performance of bonding portland cement mortar/concrete to hardened portland cement mortar/concrete, confirmed by actual field tests and 5 successful installations that the Engineer can investigate.

2.02 MATERIALS

A. Epoxy resin/portland cement adhesive:
   1. Component "A" shall be an epoxy resin/water emulsion containing suitable viscosity control agents. It shall not contain butyl glycidyl ether.

2. Component "B" shall be primarily a water solution of a polyamine.
3. Component "C" shall be a blend of selected portland cements and sands.
4. The material shall not contain asbestos.

2.03 DESIGN AND PERFORMANCE CRITERIA

A. Properties of the mixed epoxy resin/portland cement adhesive:
   1. Pot life: 75 to 105 minutes.
   2. Contact time: 24 hours.
   3. Color: Dark gray.

B. Properties of the cured epoxy resin/portland cement adhesive:
   1. Compressive strength in accordance with ASTM C109:
      a. 3 day: 4,500 pounds per square-inch minimum.
      b. 7 days: 6,500 pounds per square-inch minimum.
      c. 28 days: 8,500 pounds per square-inch minimum.
   2. Splitting tensile strength in accordance with ASTM C496:
      a. 28 days: 600 pounds per square-inch minimum.
   3. Flexural strength:
      a. 1,100 pounds per square-inch minimum in accordance with ASTM C348.
   4. Bond strength in accordance with ASTM C882 modified at 14 days:
      a. 0 hours open time: 2,800 pounds per square-inch minimum.
      b. 24 hours open time: 2,600 pounds per square-inch minimum.
   5. The epoxy resin/portland cement adhesive shall not produce a vapor barrier.
   6. Material must be proven to prevent corrosion of reinforcing steel when tested under the procedures as set forth by the FHWA Program Report Number FHWA-RD-86-193. Proof shall be in the form of an independent testing laboratory corrosion report showing prevention of corrosion of the reinforcing steel.

PART 3 EXECUTION

3.01 INSTALLATION

A. Mixing the epoxy resin: Shake contents of Component "A" and Component "B." Empty all of both components into a clean, dry mixing pail. Mix thoroughly for 30 seconds with a jiffy paddle on a low-speed with 400 to 600 revolutions per minute drill. Slowly add the entire contents of Component "C" while continuing to mix for a minimum of 3 minutes and until uniform with no lumps. Mix only the quantity that can be applied within its pot life.

B. Placement procedure:
   1. Apply to prepared surface with stiff-bristle brush, broom, or "hopper-type" spray equipment:
      a. For hand applications: Place fresh plastic concrete/mortar while the bonding bridge adhesive is wet or dry, up to 24 hours.
      b. For machine applications: Allow the bonding bridge adhesive to dry for 12 hours minimum.

C. Adhere to all limitations and cautions for the epoxy resin/portland cement adhesive in the manufacturer's current printed literature.

3.02 CLEANING

A. Leave finished work and work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

END OF SECTION

SECTION 03102

CONCRETE FORMWORK

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Concrete formwork.

1.02 REFERENCES

A. American Concrete Institute (ACI):
   1. 117 - Specifications for Tolerances for Concrete Construction and Materials and Commentary.

B. NSF International (NSF):
   1. 61 - Drinking Water System Components - Health Effects.

C. Underwriters Laboratories (UL).

1.03 SUBMITTALS

A. Information on proposed forming system:
   1. Submit in such detail as the Engineer may require to assure themselves that intent of the Specifications can be complied with by use of proposed system.
   2. Alternate combinations of plywood thickness and stud spacing may be submitted.

B. Form release agent: NSF 61 certification prepared by NSF, Underwriters Laboratories (UL) or other similar nationally recognized testing laboratory acceptable to the Engineer.

1.04 QUALITY ASSURANCE

A. Qualifications of formwork manufacturers: Use only forming systems by manufacturers having a minimum of 5 years of experience, except as otherwise specified, or accepted in writing by the Engineer.

B. Regulatory requirements: Install Work of this Section in accordance with local, state, and federal regulations.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Design requirements:
   1. Concrete forms, falsework, and shoring in accordance with local, state, and federal regulations.
   2. Forms and ties to withstand concrete pressures without bulging, spreading, or lifting of forms.

B. Performance requirements:
   1. Construct forms so that finished concrete conforms to shapes, lines, grades, and dimensions indicated on the Drawings.
   2. It is intended that surface of concrete after stripping presents smooth, hard, and dense finish that requires minimum amount of finishing.
   3. Provide sufficient number of forms so that the Work may be performed rapidly and present uniform appearance in form patterns and finish.
   4. Use forms that are clean and free from dirt, concrete, and other debris.
      a. Coat with form release agent if required, prior to use or reuse.

2.02 MANUFACTURED UNITS

A. Forms: Built-up plywood:
   1. May be substituted for prefabricated forming system subject to following minimum requirements:
      a. Size and material:
         1) Use full size 4-foot by 8-foot plywood sheets, except where smaller pieces are able to cover entire area.
         2) Sheet construction: 5-ply plywood sheets, 3/4-inch nominal, made with 100 percent waterproof adhesive, and having finish surface that is coated or overlaid with surface which is impervious to water and alkaline calcium and sodium hydroxide of cement.
      b. Wales: Minimum 2-inch by 4-inch lumber.
      c. Studding and wales: Contain no loose knots and be free of warps, cups, and bows.

B. Forms: Steel or steel-framed:
   1. Steel forms:
      a. Rigidly constructed and capable of being braced for minimum deflection of finish surface.
      b. Capable of providing finish surfaces that are flat without bows, cups, or dents.
   2. Steel-framed plywood forms:
      a. Provide forms that are rigidly constructed and capable of being braced.
      b. Plywood paneling: 5-ply, 5/8-inch nominal or 3/4-inch nominal, made with 100 percent waterproof adhesive, and having finish surface that is coated or overlaid with surface which is impervious to water and alkaline calcium and sodium hydroxide of cement.

C. Form release agent.
   1. Effective, non-staining, bond-breaking coating compatible with form surfaces and concrete mixes used.
   2. Certified for conformance to NSF 61 and leaving no taste or odor on the concrete surface.

D. Form ties:
   1. General:
      a. Provide form ties for forming system selected that are manufactured by a recognized manufacturer of concrete forming equipment.
      b. Do not use wire ties or wood spreaders of any form.
      c. Provide ties of type that accurately tie, lock, and spread forms.
      d. Provide form ties of such design that when forms are removed, they locate no metal or other material within 1-1/2 inches of the surface of the concrete.
      e. Do not allow holes in forms for ties to allow leakage during placement of concrete.
   2. Cone-snap ties:
      a. Shall form a cone shaped depression in the concrete with minimum diameter of 1 inch at the surface of the concrete and minimum depth of 1-1/2 inches.
      b. Provide neoprene waterseal washer that is located near the center of the concrete.
   3. Taper ties:
      a. Neoprene plugs for taper tie holes: Size so that after they are driven, plugs are located in center third of wall thickness.

E. Incidentals:
   1. External angles:
      a. Where not otherwise indicated on the Drawings, provide with 3/4-inch bevel, formed by utilizing true dimensioned wood or solid plastic chamfer strip on walkways, slabs, walls, beams, columns, and openings.
      b. Provide 1/4-inch bevel formed by utilizing true dimensioned wood or solid plastic chamfer strip on walkways, walls, and slabs at expansion, and construction joints.
   2. Keyways: Steel, plastic, or lumber treated with form release agent.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site verification of conditions:
   1. Do not place concrete until forms have been checked for alignment, level, and strength, and mechanical and electrical inserts or other embedded items for correct location.

3.02 INSTALLATION

A. Forms: Built-up plywood:
   1. Studding:
      a. Spaced at 16 inches or 24 inches on center.
      b. Closer spacing may be required depending upon strength requirements of the forms, in order to prevent any bulging surfaces on faces of finished concrete work.
      c. Install studs perpendicular to grain of exterior plys of plywood sheets.
   2. Wales: Double lumber material with minimum size as specified in this Section.
   3. Number of form reuses: Depends upon durability of surface coating or overlay used, and ability to maintain forms in condition such that they are capable of producing flat, smooth, hard, dense finish on concrete when stripped.

B. Forms: Steel or steel-framed:
   1. Steel forms:
      a. Adequately brace forms for minimum deflection of finish surface.
   2. Steel-framed plywood forms:
      a. Rigidly construct and brace with joints fitting closely and smoothly.
      b. Number of form reuses: Depends upon durability of surface coating or overlay used.
   3. Built-up plywood forms: As specified in this Section, may be used in conjunction with steel forms or steel-framed plywood forms for special forming conditions such as corbels and forming around items which will project through forms.

C. Form bracing and alignment:
   1. Line and grade: Limit deviations to tolerances which will permit proper installation of structural embedded items or mechanical and electrical equipment and piping.
   2. Formwork:
      a. Securely brace, support, tie down, or otherwise hold in place to prevent movement.
      b. Make adequate provisions for uplift pressure, lateral pressure on forms, and deflection of forms.
   3. When second lift is placed on hardened concrete: Take special precautions in formwork at top of old lift and bottom of new lift to prevent:
      a. Spreading and vertical or horizontal displacement of forms.
      b. Grout “bleeding” on finish concrete surfaces.
   4. Pipe stubs, anchor bolts, and other embedded items: Set in forms where required.
   5. Cracks, openings, or offsets at joints in formwork: Close those that are 1/16 inch or larger by tightening forms or by filling with acceptable crack filler.

D. Forms: Incidentals:
   1. Keyways: Construct as indicated on the Drawings.
   2. Reentrant angles: May be left square.
   3. Level strips: Install at top of wall concrete placements to maintain true line at horizontal construction joints.
   4. Inserts:
      a. Encase pipes, anchor bolts, steps, reglets, castings, and other inserts, as indicated on the Drawings or as required, in concrete.

5. Pipe and conduit penetrations:
    a. Install pipe and conduit in structures as indicated on the Drawings and seal with materials as specified in Section 07900 - Joint Sealants.

E. Form release agent:
    1. Apply in accordance with the manufacturer's instructions.

F. Form ties:
    1. Cone-snap ties: Tie forms together at not more than 2-foot centers vertically and horizontally.

3.03 FORM REMOVAL

A. General:
    1. Keep forms in place, as specified in the following paragraphs, to provide curing and to protect concrete surfaces and edges from damage.
    2. Immediately after forms are removed, carefully examine concrete surfaces, and repair any irregularities in surfaces and finishes as specified.

B. Form removal:
    1. Do not remove forms from concrete which has been placed when outside ambient air temperature is below 50 degrees Fahrenheit until the following conditions are satisfied:
        a. Concrete has sufficient strength to allow form removal without damage to surfaces.
        b. At least 48 hours have elapsed since the end of concrete placement.
        c. Provisions are in place to maintain moisture for curing concrete, and temperature at or above the required minimum curing temperature specified.
    2. Vertical forms:
        a. Retain in place for a minimum of 24 hours after concrete is placed.
        b. If concrete has sufficient strength and hardness to resist surface or other damage after 24 hours, forms may be removed.
    3. Other forms supporting concrete, and shoring: Retain in place as follows:
        a. Formed sides of footings: 24 hours minimum.
        b. Formed vertical sides of beams, girders, and similar members: 48 hours minimum.
        c. Forms below slabs, beams, and girders: Until concrete strength reaches specified strength f'c or until shoring is installed.
            1) Shoring for slabs, beams, and girders: Shore until concrete strength reaches minimum specified 28-day compressive strength.

3.04 SURFACE REPAIRS AND FINISHING

A. Immediately after forms are removed, carefully examine concrete surfaces, and repair any irregularities in surfaces and finishes as specified in Section 03300 - Cast-in-Place Concrete.

B. Form ties: Fill tie holes as follows:
    1. Remove form ties from surfaces.
    2. Roughen cone shaped tie holes by heavy sandblasting before repair.

3. Dry pack cone shaped tie holes with dry-pack mortar as specified in Section 03600 - Grouting.
4. Taper ties:
    a. After forms and taper ties are removed from wall, plug tie holes with neoprene plug as follows:
        1) Heavy sandblast and then clean tie holes.
        2) After cleaning, drive neoprene plug into each of taper tie holes with steel rod. Final location of neoprene plug shall be in center third of wall thickness. Bond neoprene plug to concrete with epoxy.
        3) Locate steel rod in cylindrical recess and against middle of plug during driving.
            a) At no time are plugs to be driven on flat area outside cylindrical recess.
    b. Dry-pack of taper tie holes:
        1) After installing plugs in tie holes, coat tie hole surface with epoxy bonding agent and fill with dry-pack mortar as specified in Section 03600 - Grouting.
            a) Place dry-pack mortar in holes in layers with thickness not exceeding tie hole diameter and heavily compact each layer.
            b) Dry-pack the outside of the hole no sooner than 7 days after the inside of the hole has been dry packed.
            c) Wall surfaces in area of dry-packed tie holes: On the water side of water containing structures and the outside of below grade walls:
                (1) Cover with minimum of 10 mils of epoxy gel.
                (2) Provide epoxy gel coating on wall surfaces that extend minimum of 2 inches past dry-pack mortar filled tie holes.
                (3) Provide finish surfaces that are free from sand streaks or other voids.

3.05 TOLERANCES:

A. Finished concrete shall conform to shapes, lines, grades, and dimensions indicated on the Drawings.

B. Construct Work within the tolerances in accordance with ACI 117, except as modified in the following paragraphs or as indicated on the Drawings.
1. General:
    a. At certain locations in the Work, tolerances required for equipment placement and operation may be more restrictive than the general tolerance requirements of this Section.
    b. Confirm equipment manufacturers' required tolerances for location and operation of equipment that will be installed, and construct concrete to satisfy those requirements.
2. Slabs:
    a. Slope: Uniformly sloped to drain when slope is indicated on the Drawings.
    b. Slabs indicated to be level: Have maximum vertical deviation of 1/8 inch in 10-foot horizontal length without any apparent changes in grade.
3. Circular tank walls:
    a. Contractor may deviate from finish line indicated on the Drawings by use of forms with chord lengths not to exceed 2 feet.

4. Inserts and embedments:
    a. Set to tolerances required for proper installation and operation of equipment or systems to which insert pertains.
    b. Maximum tolerances: As follows:

Item	Tolerance
Sleeves and inserts	Plus 1/8 inch; minus 1/8 inch.
Anchor bolts:	
Projected ends	Plus 1/4 inch; minus 0.0 inch.
Axial alignment	Not more than 2 degrees off the axis indicated on the Drawings.
Setting location	Plus 1/16 inch; minus 1/16 inch.
All embedments	Minimum 1 inch clearance from reinforcing steel.

    c. Securing embedded items in formwork by wiring or welding to reinforcement is not permitted.

C. Remove and replace Work that does not conform to required tolerances. Procedures and products employed in and resulting from such re-work shall be acceptable to the Engineer.

END OF SECTION

SECTION 03150

CONCRETE ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Waterstops.
   2. Joint fillers.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. D570 - Standard Test Method for Water Absorption of Plastics.
   2. D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
   3. D638 - Standard Test Method for Tensile Properties of Plastics.
   4. D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
   5. D747 - Standard Test Method for Apparent Bending Modulus of Plastics by Means of a Cantilever Beam.
   6. D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
   7. D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
   8. D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
   9. D2240 - Standard Test Method for Rubber Property - Durometer Hardness.

B. American National Standards Institute (ANSI):
   1. A135.4 - Basic Hardboard.

C. U.S. Army Corps of Engineers (USACE):
   1. CRD-C-572, Specification for Polyvinyl Chloride Waterstop.

1.03 SUBMITTALS

A. Product data:
   1. Polyvinyl chloride waterstops: Complete physical characteristics.
   2. Preformed expansion joint material: Sufficient information on each type of material for review to determine conformance of material to requirements specified.

B. Samples:
   1. Polyvinyl chloride waterstop.

C. Laboratory test reports: Indicating that average properties of polyvinyl chloride waterstops material and finish conform to requirements specified in this Section.

D. Quality control submittals:
   1. Certificates of Compliance:
      a. Written certificates that polyvinyl chloride waterstops supplied on this Project meet or exceed physical property in accordance with USACE CRD-C-572 and the requirements of this Section.
   2. Manufacturer's instructions: For materials specified in this Section that are specified to be installed with such instructions.

1.04 QUALITY ASSURANCE

A. Mock-ups:
   1. Welding demonstration:
      a. Demonstrate ability to weld acceptable joints in polyvinyl chloride waterstops before installing waterstop in forms.

B. Field joints:
   1. Polyvinyl chloride waterstops field joints: Free of misalignment, bubbles, inadequate bond, porosity, cracks, offsets, and other defects which would reduce the potential resistance of material to water pressure at any point. Replace defective joints. Remove faulty material from site and disposed of by Contractor at its own expense.

C. Inspections:
   1. Quality of welded joints will be subject to acceptance of Engineer.
   2. Polyvinyl chloride waterstop: Following defects represent partial list that will be grounds for rejection:
      a. Offsets at joints greater than 1/16 inch or 15 percent of the material thickness, at any point, whichever is less.
      b. Exterior crack at joint due to incomplete bond, which is deeper than 1/16 inch or 15 percent of material thickness, at any point, whichever is less.
      c. Any combination of offset or crack that will result in net reduction in cross section of waterstop in excess of 1/16 inch or 15 percent of material thickness, at any point, whichever is less.
      d. Misalignment of joint that will result in misalignment of waterstop in excess of 1/2 inch in 10 feet.
      e. Porosity in welded joint as evidenced by visual inspection.
      f. Bubbles or inadequate bonding.

PART 2 PRODUCTS

2.01 JOINT FILLERS

A. General:
   1. Use specific type in applications as indicated on the Drawings.
   2. Do not use scrap or recycled materials to manufacture joint fillers.

B. Hardboard:
   1. 1/8-inch minimum thickness.
   2. In accordance with ANSI A135.4 Class 2.

C. Preformed expansion joint materials:
   1. Bituminous fiber expansion joint material:
      a. Properties:
         1) Thickness: To match joint width indicated on the Drawings.
         2) Asphalt-impregnated fiber in accordance with ASTM D1751.
      b. Manufacturers: One of the following or equal:
         1) Durajoint.
         2) W.R. Meadows, SealTight Fibre Expansion Joint.
   2. Synthetic sponge rubber expansion joint material:
      a. Properties:
         1) Thickness: As recommended for width indicated on the Drawings.
         2) Material in accordance with ASTM D1752, Type I.
      b. Manufacturers: One of the following or equal:
         1) Williams Products Inc., Everlastic 1300.
         2) W.R. Meadows, SealTight Sponge Rubber.

2.02 WATERSTOPS

A. Waterstops - polyvinyl chloride (PVC):
   1. Manufactured from prime virgin polyvinyl chloride plastic compound containing the plasticizers, resins, stabilizers, and other materials necessary to meet the requirements as specified in this Section.
   2. Manufacturers: One of the following or equal:
      a. Vinylex Corp.
      b. Sika Corp., Greenstreak PVC Waterstop.
   3. Type: Ribbed waterstop:
      a. Construction joints: 6-inch wide ribbed type.
      b. Expansion joint for wall penetrations for concrete encased electrical duct banks: 6-inch ribbed type with hollow center bulb.
      c. Expansion joints: 9-inch wide ribbed type with hollow center bulb.
      d. Dumbbell-type waterstop will not be allowed unless otherwise specified or indicated on the Drawings.
      e. No scrap or reclaimed material shall be used.
   4. Properties as indicated in the following table:

Physical Characteristics	Test Method	Required Results
Specific Gravity	ASTM D792	Not less than 1.3.
Hardness	ASTM D2240	70 to 90 Type A15 Shore durometer.
Tensile Strength	ASTM D638	Not less than 2,000 pounds per square inch.
Ultimate Elongation	ASTM D638	Not less than 300 percent.

Physical Characteristics	Test Method	Required Results
Alkali Extraction	CRD-C-572	Change in weight after 7 days: Between minus 0.1 percent and plus 0.25 percent. Change in hardness after 7 days: Not more than plus 5 points.
Low Temperature Brittle Point	ASTM D746	No sign of cracking or chipping at -35 degrees Fahrenheit.
Water Absorption	ASTM D570	Not more than 0.15 percent after 24 hours.
Accelerated Extraction Test	CRD-C-572	Tensile strength: Not less than 1,600 pounds per square inch. Elongation: Not less than 280 percent.
Stiffness in Flexure	ASTM D747	Not less than 600 pounds per square inch.
Tear Resistance	ASTM D624	Not less than 225 pounds per inch.
Thickness	-	3/8 inch.
Center Bulb		
6-inch Waterstops	-	7/8 inch or 1-inch nominal outside diameter.
9-inch Waterstops	-	For expansion joints 1 inch and narrower: 1-inch nominal outside diameter. For expansion joints wider than 1 inch: 2-inch nominal outside diameter.
Allowable Tolerances		
Width	-	Plus or minus 3/16 inch.
Thickness	-	Plus or minus 1/32 inch.

PART 3 EXECUTION

3.01 INSTALLATION

A. Waterstops:
   1. General:
      a. Store waterstops so as to permit free circulation of air around waterstop material and prevent direct exposure to sunlight.
      b. Install waterstops in concrete joints where indicated on the Drawings.
      c. Carry waterstops in walls into lower slabs and join to waterstops in slabs with appropriate types of fittings.
      d. In waterbearing structures: Provide all joints with waterstops, whether indicated on the Drawings or not.
      e. Provide waterstops that are continuous.
      f. Set waterstops accurately to position and line as indicated on the Drawings.

g. Hold and securely fix edges in position at intervals of not more than 24 inches so that they do not move during placing of concrete.
h. Position the waterstop so that symmetrical halves of waterstop are equally divided between concrete pours. Center axis of waterstop shall be coincident with centerline of the joint.
i. Do not drive nails, screws, or other fasteners through waterstops in vicinity of construction joints.
j. Use wires at not more than 24 inches on centers near outer edge of waterstop to tie waterstops into position.
k. Special clips may be used in lieu of wires, at Contractor's option.
l. Terminate waterstops 3 inches from top of finish surfaces of walls and slabs unless otherwise specified or indicated on the Drawings.
m. When any waterstop is installed in concrete on one side of joint, while the other half or portion of the waterstop remains exposed to the atmosphere for more than 2 days, take suitable precautions to shade and protect exposed waterstop from direct rays of sunlight during entire exposure and until exposed portion is embedded in concrete.
n. When placing concrete at waterstops in slabs, lift edge of waterstop while placing concrete below the waterstop. Manually force waterstop against and into concrete, and then cover waterstop with fresh concrete.

2. Polyvinyl chloride waterstop:
   a. Install waterstops so that joints are watertight.
   b. Weld joints such as unions, crosses, ells, and tees, with thermostatically controlled equipment recommended by waterstop manufacturer:
      1) Do not damage material by heat sealing.
      2) Make joints by overlapping, then simultaneously cut ends of sections to be spliced so they will form smooth even joint. Heat cut ends with splicing tool until the plastic melts. Press 2 ends together until plastic cools.
      3) Maintain continuity of waterstop ribs and tubular center axis.
      4) The splices shall have tensile strength of not less than 60 percent of unspliced materials tensile strength.
   c. Butt joints of ends of 2 identical waterstop sections may be made while material is in forms.
   d. Manufacturer shall factory prefabricate joints for crosses and tees.
   e. Split-type waterstops will not be permitted except where specifically indicated on the Drawings.

B. Joints:
   1. Construct construction and expansion joints as indicated on the Drawings.
   2. Preformed expansion joint material: Fasten expansion joint strips to concrete, masonry, or forms with adhesive. No nailing will be permitted, nor shall expansion joint strips be placed without fastening.

C. Hardboard:
   1. When indicated on the Drawings, face surface of joint filler with hardboard.

2. Other facing materials may be used provided they furnish equivalent protection and material is acceptable to Engineer.
3. Hold hardboards in place with nails, waterproof adhesive, or other means acceptable to Engineer.

END OF SECTION

SECTION 03200

CONCRETE REINFORCING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Reinforcing bars.
      a. Carbon steel.
   2. Thread bars.
   3. Bar supports.
   4. Tie wires.
   5. Welded wire fabric.

1.02 REFERENCES

A. American Concrete Institute (ACI):
   1. 318 - Building Code Requirements for Structural Concrete and Commentary.
   2. SP-66 - ACI Detailing Manual.

B. American Iron and Steel Institute (AISI).

C. American Welding Society (AWS):
   1. D1.4 - Structural Welding Code - Reinforcing Steel.

D. ASTM International (ASTM):
   1. A493 - Standard Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging.
   2. A615 - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
   3. A706 - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
   4. A1064 - Standard Specification of Carbon-Steel wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

E. Concrete Reinforcing Steel Institute (CRSI):
   1. Manual of Standard Practice.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Architectural concrete: Concrete surfaces that will be exposed to view in the finished work.
      a. Additionally, for purposes of this Section, includes:
         1) Concrete surfaces that are designated to receive paints or coatings.

2) Exposed concrete in open basins, channels, and similar liquid containing structures: Surfaces shall be considered exposed to view if located above a line 2 feet below the normal operating water surface elevation in that structure.

2. Bars: Reinforcement or reinforcing bars as specified in this Section.
3. Evaluation Report: Report prepared by ICC-ES, or by other testing agency acceptable to the Engineer and to the Building Official, that documents testing and review of a product to confirm that it complies with the requirements of designated ICC-ES Acceptance Criteria, and its acceptance for use under the Building Code specified in Section 01410 - Regulatory Requirements.
4. Give away bars: Reinforcing bars that are not required by the Contract Documents but are installed by the Contractor to provide support for the required reinforcing bars.
5. Wire supports: Metal reinforcing supports constructed of steel wire as specified. Includes individual high chairs, continuous high chairs, bolsters and other similar configurations and shapes.

1.04 SUBMITTALS

A. General:
   1. Submit in accordance with Section 01330 - Submittal Procedures.
   2. Changes to reinforcement in Contract Documents:
      a. Indicate in a separate letter submitted with Shop Drawings any changes to reinforcement indicated on the Drawings or specified.
      b. Such changes will not be acceptable unless the Engineer has accepted them in writing.

B. Product data:
   1. Bar supports:
      a. Wire bar supports:
         1) Schedule of support materials to be provided and locations of use.
      b. Precast concrete bar supports (“dobies”):
         1) Manufacturer's data indicating compression strength of concrete and confirming dimensions and thickness(es). height(s) to be provided for each location where used.

C. Shop Drawings:
   1. Reinforcement Shop Drawings:
      a. Submit Drawings showing bending and placement of reinforcement required by the Contract Documents.
      b. Provide CAD generated Shop Drawings.
      c. Clearly indicate structures or portions of structures covered by each Submittal.
         1) Submit reinforcement Shop Drawings for each structure as a complete package. Submittals addressing only a portion of a structure will be rejected and returned without review, unless such presentation is accepted by the Engineer in advance.
      d. Shop Drawings shall conform to the recommendations of the CRSI Manual of Standard Practice and be in accordance with ACI SP-66.
      e. Use the same bar identification marks on bending detail Drawings, placement Drawings, and shipping tags.

f. Submittals consisting solely of reinforcing bar schedules, without accompanying placement Drawings, will not be accepted unless accepted under prior written agreement with the Engineer.

2. Reinforcement placement Drawings:
   a. Clearly show placement of each bar listed in the bill of materials, including additional reinforcement at corners and openings, and other reinforcement required by details in the Contract Documents.
   b. Clearly identify locations of reinforcement with coatings (e.g., galvanized or epoxy) and with yield strength other than ASTM A615, Grade 60.
   c. Show anchor bolt locations based on anchor bolt templates for approved equipment.
   d. Show splice locations.
3. Reinforcement fabrication Drawings:
   a. If bend types or nomenclature differs from that recommended in the CRSI Manual of Standard Practice, provide details showing bend types and dimensional designations.
   b. Clearly identify reinforcement with coatings and with yield strength other than ASTM A615, Grade 60.

D. Samples (when requested by the Engineer):
1. Bar supports/wire reinforcement supports: Samples of each type of chair and bolster proposed for use. Submit with letter stating where each type will be used.
2. Precast concrete bar supports: Samples of each type of precast support proposed for use. Submit with letter stating where each will be used.

E. Test reports:
1. Certified copy of mill test for each steel used. Show physical properties and chemical analysis.
   a. Mill test reports may be submitted as record documents at the time the reinforcement from that heat of steel is shipped to the site.
   b. In such cases, submit certificates under the Shop Drawing Submittal number with the letter “R” (for record date) appended to the end (e.g., if the reinforcement was submitted as 03200-002-1, deliver the associated mill certificate as Submittal 03200-002-1R).

F. Special procedures:
1. Welding procedures in accordance with AWS D1.4 for reinforcement to be field welded.
   a. Procedures qualification record.

G. Qualifications statements:
1. Welder qualifications.

H. Closeout documents:
1. Field quality control and inspection reports.
2. Field quality assurance special inspection and testing reports.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Packing and shipping:
1. Deliver bars bundled and tagged with identifying tags.

B. Acceptance at site:
   1. Reinforcing bars: Deliver reinforcing bars lacking grade identification marks with letter containing manufacturer's guarantee of grade.

1.06 SEQUENCING AND SCHEDULING

A. Bar supports:
   1. Do not place concrete until samples and product data for bar supports have been accepted by the Engineer.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Drawings contain notes describing the size and spacing of reinforcement and its placement, details of reinforcement at wall corners and intersections, and details of extra reinforcement around openings in concrete, and other related information.

2.02 MATERIALS

A. Reinforcing bars:
   1. Provide reinforcement of the grades and quality specified, fabricated from new stock, free from excessive rust or scale, and free from unintended bends or other defects affecting its usefulness.
   2. ASTM A615 Grade 60 deformed bars, including the following requirements:
      a. Actual yield strength based on mil tests of reinforcement provided shall not exceed the minimum yield strength specified in this Section by more than 18,000 pounds per square inch.
      b. Ratio of actual ultimate tensile strength to actual tensile yield strength shall not be less than 1.25.
   3. Reinforcing bars designated or required to be welded:
      a. Low-alloy, ASTM A706 Grade 60, deformed bars.
      b. ASTM A615 Grade 60 deformed bars may be used in lieu of ASTM A706 Grade 60 if the following requirements are satisfied:
         1) Welding procedures in accordance with AWS D1.4 are submitted to the Engineer.
         2) The specific location for proposed substitution is acceptable to the Engineer.

B. Bar supports:
   1. Wire supports:
      a. All stainless steel bar supports:
         1) Conforming to CRSI Manual of Standard Practice recommendations for types and details, but custom fabricated entirely from stainless steel wire in accordance with ASTM A493, AISI Type 316.
      b. Stainless steel protected bar supports:
         1) Conforming to CRSI Manual of Standard Practice Class 2, Type B, and consisting of bright basic wire support fabricated from cold-drawn carbon steel wire with stainless steel ends attached at the bottom of each leg.

2) Stainless steel wire ends shall be in accordance with ASTM A493, AISI Type 316 and shall extend at least 3/4 inch inward from the formed surface of the concrete.

c. Bright basic wire bar supports.
1) Conforming to CRSI Manual if Standard Practice, Class 3.

2. Plastic supports:
a. Manufacturers: The following or equal:
1) Aztec Concrete Accessories.

3. Deformed steel reinforcing bar supports:
a. Fabricated of materials and to CRSI details recommended for typical reinforcement embedded in concrete and bent to dimensions required to provide specified clearances and concrete cover.

4. Precast concrete bar supports (“dobies”):
a. Pre-manufactured, precast concrete blocks with cast-in annealed steel wires, 16-gauge or heavier.
b. Compression strength of concrete: Equal to or exceeding the compression strength of the surrounding concrete.
c. Block dimensions:
1) Height to provide specified concrete cover.
2) Footprint not less than 3 inches by 3 inches, and adequate to support the weight of the reinforcement and maintain specified concrete cover without settling into the underlying surface.

C. Tie wires:
1. General use: Black annealed steel wire, 16-gauge or heavier.

D. Welded wire fabric reinforcement:
1. Material:
a. Carbon steel in accordance with ASTM A1064.
b. Provide welded wire reinforcement in flat sheet form. Rolled wire fabric is not permitted.

2. Fabric may be used in place of reinforcing bars if accepted by the Engineer:
a. Provide welded wire fabric having cross-sectional area per linear foot not less than the cross-sectional area per linear foot of reinforcing bars indicated on the Drawings.

2.03 FABRICATION

A. Shop fabrication and assembly:
1. Cut and bend bars in accordance with provisions of ACI 318 and the CRSI Manual of Standard Practice.
2. Bend bars cold. Use bending collars to develop the recommended bend radius.
3. Provide bars free from defects and kinks and from bends not indicated on the Drawings.
4. Circumferential and radiused reinforcement: Roll to the radius required for its location in the structure before installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions:
   1. Reinforcing bars and welded wire reinforcement:
      a. Verify that reinforcement is new stock, free from rust scale, loose mill scale, excessive rust, dirt, oil, and other coatings that will adversely affect bonding capacity when placed in the Work.
   2. Welded wire fabric:
      a. Verify that sheets are not curled or kinked before or after installation.

3.02 PREPARATION

A. Surface preparation:
   1. Reinforcing bars - uncoated:
      a. Clean reinforcement of concrete, dirt, oil, and other coatings that will adversely affect bond before embedding bars in subsequent concrete placements.
      b. Thin coating of red rust resulting from short exposure will not be considered objectionable. Thoroughly clean bars having rust scale, loose mill scale, or thick rust coat.
      c. Partially embedded reinforcement: Remove concrete or other deleterious coatings from dowels and other projecting bars by wire brushing or sandblasting before bars are embedded in subsequent concrete placements.

3.03 INSTALLATION

A. Reinforcing bars: General:
   1. Field-cutting of reinforcing bars is not permitted.

Table 1. Reinforcement Placing Tolerances

Member	Tolerance on Reinforcement Location(1)	Tolerance on Minimum Concrete Cover(1,2)
Slabs, beams, walls and columns except as noted below:		
10 inches thick and less	± 3/8 inch	- 3/8 inch
More than 10 inches thick	± 1/2 inch	- 1/2 inch
Formed soffits	As noted above	- 1/4 inch
Longitudinal location of bends and ends of reinforcement:		
Conditions not listed below	± 2 inches	- 1/2 inch
At discontinuous ends of brackets and corbels	± 1/2 inch	- 1/4 inch
At discontinuous ends of other members	± 1 inch	- 1/2 inch

Notes:
(1) ± indicates “plus or minus;” - indicates “minus;” + indicates “plus.”
(2) Tolerance on cover is limited as noted but decrease in cover shall not exceed one third of the minimum cover indicated on the Drawings.

2. Field-bending of reinforcing bars, including straightening and rebending, is not permitted.

B. Placing reinforcing bars:
   1. Accurately place bars to meet position and cover requirements indicated on the Drawings and specified. Secure bars in position.
   2. Tolerances for placement and minimum concrete cover: As listed in Table 1.
   3. Spacing between bars:
      a. Minimum clear spacing between bars in a layer:
         1) As indicated on the Drawings, but not less than the larger of 1.5 times the bar diameter or 1-1/2 inches.
      b. Minimum clear spacing between bars in 2 or more parallel layers:
         1) Place bars in upper layers directly above bars in lower layers.
         2) Minimum spacing between layers: As indicated on the Drawings, but not less than the larger of 1.5 times the bar diameter or 1-1/2 inches.
      c. Limits on minimum clear spacing between bars also applies to the clear spacing between a lap splice and the adjacent bars and/or lap splices.
   4. Lap splices for bars:
      a. Lap splice locations and lap splice lengths: As indicated on the Drawings. Where lap lengths are not indicated, provide in accordance with ACI 318.
      b. Unless otherwise specifically indicated on the Drawings (and noted as “non-contact lap splice”), install bars at lap splices in contact with each other and fasten together with tie wire.
      c. Where bars are to be lap spliced at concrete joints, ensure that bars project from the first concrete placement a length equal to or greater than minimum lap splice length indicated on the Drawings.
      d. Stagger lap splices where indicated on the Drawings.
      e. Where lap splice lengths are not indicated on the Drawings, provide lap splice lengths in accordance with ACI 318.

C. Reinforcing supports:
   1. Provide supports of sufficient numbers, sizes, and locations to maintain concrete cover, to prevent sagging and shifting, and to support loads during construction without displacement and without gouging or indentation into forming surfaces.
      a. Quantities and locations of supports shall not be less than those indicated in ACI SP-66 and the CRSI Manual of Standard Practice.
   2. Do not use brick, concrete masonry units, concrete spalls, rocks, wood, or similar materials for supporting reinforcement.
   3. Do not use “give away bars” that have less cover than that required by the Contract Documents. Do not adjust the location of reinforcement required by the Contract Documents to provide cover for give away bars.
   4. Provide bar supports of height required to maintain the clear concrete cover indicated on the Drawings.
   5. Provide bar supports at formed vertical faces to maintain the clear concrete cover indicated on the Drawings.
   6. Schedule of reinforcement support materials: Provide bar supports as indicated in Table 2.

Table 2. Reinforcement Support Materials		
Case	**Location**	**Material**
a.	Concrete placed over earth and concrete seal slabs (“mud mats”)	Precast concrete bar supports
b.	Concrete placed against forms and exposed to water or wastewater process liquids (whether or not such concrete received additional linings or coatings)	All stainless steel bar supports.
c.	Concrete placed against forms and exposed to earth, weather, frequent washdown, or groundwater in the finished work	All stainless steel bar supports.
d.	Concrete placed against forms and exposed to interior equipment/piping areas in the finished work	All stainless steel bar supports.
e.	Between mats of reinforcement, and fully embedded within a concrete member	Bright basic wire bars supports, or deformed steel reinforcing bars.

D. Tying of reinforcing:
   1. Fasten reinforcement securely in place with wire ties.
   2. Tie reinforcement at spacings sufficient to prevent shifting.
      a. Provide at least 3 ties in each bar length. (Does not apply to dowel lap splices or to bars shorter than 4 feet, unless necessary for rigidity).
   3. Tie slab bars at every intersection around perimeter of slab.
   4. Tie wall bars and slab bar intersections other than around perimeter at not less than every fourth intersection, but at not more than the spacing indicated in Table 3:

Table 3. Maximum Spacing of Tie Wires for Reinforcement		
Bar Size	**Slab Bar Spacing (inches)**	**Wall Bar Spacing (inches)**
Bars Number 5 and Smaller	60	48
Bars Number 6 through Number 9	96	60
Bars Number 10 and Number 11	120	96

   5. After tying:
      a. Bend ends of wires inward towards the center of the concrete section. Minimum concrete cover for tie wires shall be the same as cover requirements for reinforcement.
      b. Remove tie wire clippings from inside forms before placing concrete.

E. Welded wire fabric reinforcement:
   1. Install only where indicated on the Drawings or accepted in advance by the Engineer.
   2. Install necessary tie wires, spacing chairs, and supports to keep welded wire fabric at its designated position in the concrete section while concrete is being placed.
   3. Straighten welded wire fabric to make sheets flat in the Work.

4. Do not allow wire fabric to drape between supports unless such a configuration is specifically indicated on the Drawings.
    a. If fabric is displaced during placement of concrete, make provisions to restore it to the designated location using methods acceptable to the Engineer.
5. Bend welded wire fabric as indicated on the Drawings or required to fit Work.
6. Lap splice welded wire fabric as indicated on the Drawings.
    a. If lap splice length is not indicated, splice in accordance with ACI 318, but not less than 1 1/2 courses of fabric or 8 inches minimum. Tie laps at ends and at not more than 12 inches on center.

F. Welding reinforcing bars:
1. Weld only where indicated on the Drawings or where acceptance is received from the Engineer prior to welding.
2. Perform welding in accordance with AWS D1.4 and welding procedures accepted by the Engineer.
    a. Conform to requirements for minimum preheat and interpass temperatures.
3. Submit:
    a. Welding procedures specification.
    b. Procedures qualification record.
    c. Welder qualification test record.
4. Do not tack weld reinforcing bars except where specifically indicated on the Drawings.

3.04 FIELD QUALITY CONTROL

A. Provide quality control for the Work of this Section as specified in Section 01450 - Quality Control.

B. Field inspections and testing:
1. Submit records of inspections and testing to the Engineer in electronic format within 24 hours after completion.

3.05 FIELD QUALITY ASSURANCE

A. Provide quality assurance as specified in Section 01450 - Quality Control.

B. Special inspections and tests:
1. Provide as specified in Section 01455 - Regulatory Quality Assurance.
2. Frequency of inspections:
    a. Unless otherwise indicated on the Drawings or in this Section, provide periodic special inspection as required by the Building Code specified in Section 01410 - Regulatory Requirements.
3. Preparation:
    a. Review Drawings and Specification for the Work to be observed.
    b. Review approved Submittals and Shop Drawings.
4. Inspections: Special inspection shall include, but is not limited to, the following items:
    a. Reinforcement: General:
        1) Type (material) and location of reinforcement supports.
        2) Bar material/steel grade and bar size.

3) Location, placement, and spacing of bars.
4) Clear concrete cover over reinforcement.
5) Lap splice: Location and lap length. Bars within tolerances for contact (unless non-contact splice is indicated on the Drawings).
6) Bar hooks and development lengths embedded within concrete sections as indicated on the Drawings.
7) Reinforcement tired in position and tie wire legs turned inward toward the center of the concrete section.

b. Reinforcement: Welding:
1) Inspector qualification and inspections shall be in accordance with the requirements of AWS D1.4.
2) Provide periodic inspection for:
a) Weldability of reinforcement other than ASTM A706.
b) Single pass fillet welds with thickness less than or equal to 5/16 inch.
3) Provide continuous inspection for:
a) Other welds.
b) Welds at mechanical reinforcing bar couplers and end anchors.
4) In addition to visual inspection, Owner may inspect reinforcing bar welds by other methods, including radiographic inspection.

5. Records of inspections:
a. Provide a written record of each inspection using forms acceptable to the Engineer and to the Building Official.
b. Submit electronic copies of inspection reports to the Engineer within 24 hours after completion of inspections.

3.06 NON-CONFORMING WORK

A. Before placing concrete, adjust or remove and re-install reinforcement to conform to the requirements of the Contract Documents.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

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ATTACHMENT D - CONCRETE PLACEMENT CHECKLIST

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Cast-in-place concrete.

B. The requirements of this Section require advance planning for preparation and testing of trial batches. Review the mix design and testing requirements carefully, and schedule preparations and testing with sufficient time to complete tests, to obtain the Engineer's review of mixes and testing results, and to complete revisions and re-testing if required.

1.02 REFERENCES

A. American Concrete Institute (ACI):
   1. CODE-318 - Building Code Requirements for Structural Concrete and Commentary.
   2. CODE-350 - Code Requirements for Environmental Engineering Concrete Structures and Commentary.
   3. PRC-212.3 - Report on Chemical Admixtures for Concrete.
   4. PRC-302.1 - Guide to Concrete Floor and Slab Construction.
   5. PRC-305 - Guide to Hot Weather Concreting.
   6. PRC-306 - Guide to Cold Weather Concreting.

B. ASTM International (ASTM):
   1. C29 - Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate.
   2. C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   3. C33 - Standard Specification for Concrete Aggregates.
   4. C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   5. C40 - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
   6. C42 - Standard Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
   7. C88 - Standard Test Method of Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
   8. C94 - Standard Specification for Ready-Mixed Concrete.
   9. C114 - Standard Test Methods for Chemical Analysis of Hydraulic Cement.
   10. C117 - Standard Test Method for Materials Finer that 75-m (No. 200) Sieve in Mineral Aggregates by Washing.
   11. C123 - Standard Test Method for Lightweight Particles in Aggregate.
   12. C131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
   13. C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   14. C138 - Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

15. C142 - Standard Test Method for Clay Lumps and Friable Particles in Aggregate.
16. C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete.
17. C150 - Standard Specification for Portland Cement.
18. C156 - Standard Test Method for Water Loss from a Mortar Specimen Through Liquid Membrane-Forming Curing Compounds for Concrete.
19. C157 - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete.
20. C171 - Standard Specifications for Sheet Materials for Curing Concrete.
21. C172 - Standard Practice for Sampling Freshly Mixed Concrete.
22. C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
23. C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
24. C293 - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading).
25. C295 - Standard Guide to Petrographic Examination of Aggregates for Concrete.
26. C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
27. C311 - Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete.
28. C494 - Standard Specification for Chemical Admixtures for Concrete.
29. C595 - Standard Specification for Blended Hydraulic Cements.
30. C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
31. C702 - Standard Practice for Reducing Samples of Aggregate to Testing Size.
32. C856 - Standard Practice for Petrographic Examination of Hardened Concrete.
33. C989 - Standard Specification for Slag Cement for Use in Concrete and Mortars.
34. C1064 - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
35. C1218 - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
36. C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
37. C1260 - Standard Test Method of Potential Alkali Reactivity of Aggregates (Mortar Bar Method).
38. C1293 - Standard Test Method for Determination of Length Change of Concrete due to Alkali-Silica Reaction.
39. C1567 - Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method).
40. C1602 - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
41. C1778 - Standard Guide for Reducing the Risk of Deleterious Alkali-Aggregate Reaction in Concrete.
42. D75 - Standard Practice for Sampling Aggregates.
43. D2103 - Standard Specification for Polyethylene Film and Sheeting.
44. D3665 - Standard Practice for Random Sampling of Construction Materials.
45. D4791 - Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

C. National Ready-Mixed Concrete Association (NRMCA).

D. NSF International (NSF):
   1. 61 - Drinking Water System Components - Health Effects.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Alkali: The sum of sodium oxide and potassium oxide calculated as sodium oxide.
   2. Alkali load: Amount of alkalies contributed by the Portland cement in a concrete mixture, expressed in pounds per cubic yard (lb/yd^3) and calculated by multiplying the Portland cement content of the concrete in lb/yd^3 by the alkali content of the Portland cement, or the Portland cement portion of a blended cement, divided by 100.
   3. Architectural concrete: Concrete surfaces that will be exposed to view in the finished work.
      a. For purposes of this Section, includes only those surfaces that receive paint or coatings.
      b. Exposed concrete surfaces in open basins, channels, and similar liquid containing structures: Surfaces will be considered exposed to view if located above the water line as defined in Section 03366 - Concrete Finishes.
      c. Exterior concrete surfaces with portions above and below grade: Surface will be considered exposed to view of located above the grade line as defined in Section 03366 - Concrete Finishes.
   4. Average daily temperature: Calculated by summing hourly measurements of air temperature in the shade at the face of the concrete and dividing that sum by 24. In calculating the sum of the temperatures recorded, any measurement less than 50 degrees Fahrenheit shall be recorded as 0 degrees Fahrenheit and included in the sum.
   5. Cementitious materials: Portland cement and supplementary cementitious materials.
   6. Class of concrete: Refers to a mix with characteristics, proportions, and constituents (including a specific combination of admixtures) as specified in this Section.
      a. Any change in the source or characteristics of constituent materials, in the proportions of materials, or in the admixtures included in a mix shall be considered as creating a new and separate class of concrete.
      b. Any mix to be placed by pumping shall be considered as creating a new and separate class of concrete.
   7. Cold weather: Includes one or more of the following conditions:
      a. Current air temperature is 45 degrees Fahrenheit and falling.
      b. Air temperature during the first 24 hours after placement is expected to fall into the range of 45 degrees Fahrenheit to 40 degrees Fahrenheit.
      c. A period when, for more than 3 consecutive days, the following conditions exist:
         1) The average daily air temperature drops below 40 degrees Fahrenheit.

2) The air temperature is not greater than 50 degrees Fahrenheit for more than one-half of any consecutive 24-hour period.

8. Cold weather concreting: Operations for placing, finishing, curing, and protecting concrete during cold weather.
9. Green concrete: Concrete that has not yet achieved 100 percent of the minimum specified compressive strength, f'c, for that mix.
10. Hairline crack: Crack with a crack width of less than 4 thousandths of an inch (0.004 inches).
11. Hot weather: Any combination of ambient temperature, concrete temperature, relative humidity, wind speed, and solar radiation intensity that creates conditions that will evaporate water from a free concrete surface at a rate equal to or greater than 0.2 pounds per square foot per hour as determined by the Menzel Formula and nomograph published in ACI PRC-305 and in this Section, Attachment A - Menzel Formula and Nomograph.
12. Hot weather concreting: Operations for placing, finishing, curing, and protecting concrete during hot weather.
13. Paste content: The total concrete volume minus the volume of aggregate, expressed as a percentage of total volume. Paste volume includes volume of cementitious materials, water, air, admixtures materials, and any fibers.
14. Supplemental cementitious material: Inorganic material such as fly ash, natural pozzolans, silica fume, or slag cement that reacts pozzolanically or hydraulically.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Concrete mix designs.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. General:
   1. Data for concrete mixes and mix constituents supplied to the Work shall be coordinated through a single supplier.
   2. A maximum of 2 mix designs will be reviewed by the Engineer for each class of concrete required.
      a. Review of additional mix designs shall be at the expense of the Contractor.

C. Product data:
   1. Submit data completely describing products and demonstrating compliance with the requirements of this Section.
   2. Data for all products in the mix for each class of concrete shall be submitted concurrently with that mix design.
   3. Where products conforming to NSF 61 are required, submit evidence of testing and listing under NSF 61 for use in direct contact with potable water. Testing and listing shall be by a nationally recognized agency acceptable to the Engineer.
   4. Admixtures:

a. For each admixture included in concrete mixes, submit manufacturer's product data demonstrating compliance with standards specified.
b. If air entraining admixture requires test method other than ASTM C173 to accurately determine air content, make special note of requirements in Submittal.

5. Curing compound: Submit complete data on proposed compound.

D. Delegated Design Submittals:
1. Concrete mix designs:
a. Submit full details, including mix design calculations and plots, for concrete mixes proposed for use for each class of concrete.
b. Include mix design calculations of proportions by both weight and volume.
c. Determine and include the alkali load of the proposed mix.
d. Include information on correction of batching for varying moisture contents of fine aggregate.
e. Submit source quality test records with mix design Submittal.
f. Provide calculations demonstrating that the mixes proposed provide the required average compression strength of concrete (f'cr) based on source quality test records.
g. For each Class A mix design submitted, plot the mix design Attachment B - Coarseness Factor Chart and submit.
h. For each Class A mix design submitted, plot the combined aggregate gradation on the chart Attachment C - Combined Aggregate Gradation Chart and submit.

E. Concrete mixes - Trial batches:
1. Drying shrinkage test results.
a. Submit results of testing.
2. Compression strength test results.
a. Submit results of testing. Provide data for each cylinder tested.
b. Submit data indicating trial batch mix designator, slump, and specimen number for each test cylinder.
c. Submit test specimens from compression strength tests for trial batches.
1) Using indelible marker, clearly label each cylinder with concrete class, trail batch number, and specimen number.
3. If there is any change in suppliers or in quality of concrete mix constituents, submit new test data.

F. Test reports:
1. Dated not more than 24 months prior to the date of Submittal.
2. Aggregate:
a. Submit certified copies of commercial laboratory tests proposed for use in concrete.
b. Sieve analyses:
1) During construction, submit sieve analyses of coarse, fine, and combined aggregates used any time there is a change in supplier, or a significant change in the character and/or grading of materials, and when requested by the Engineer.
c. Aggregates - coarse:
1) Physical properties:
a) Sieve analysis.

b) Percentage of particles having flat and/or elongated characteristics.
c) Abrasion loss.
d) Soundness.

2) Deleterious substances:
a) Clay lumps and friable particles content.
b) Materials finer than No. 200 sieve (percentage).
c) Shale and chert content.
d) Coal and lignite content.

3) Alkali reactivity.

4) Deleterious substances:
a) Clay lumps and friable particles content.
b) Chert and shale content.
c) Coal and lignite content.
d) Materials finer than No. 200 sieve.

5) Alkali reactivity.

d. Aggregates - Fine:
1) Physical properties:
a) Sieve analysis and fineness modulus.
b) Soundness.

2) Deleterious substances:
a) Clay lumps and friable particles (percentage).
b) Materials finer than No. 200 sieve (percentage).
c) Coal and lignite (percentage).
d) Shale and chert.
e) Organic impurities (“Color” as determined by ASTM C40).

3) Alkali reactivity.

e. Aggregates - Combined:
1) Test combined gradation for the following sieve sizes: 1.5 inches, 1 inch, 3/4 inch, 1/2 inch, 3/8 inch, No. 4, No. 8, No. 16, No. 30, No. 100, No. 200.
2) Bulk density in accordance with ASTM C29.
3) Void content in accordance with ASTM C29.
4) Submit at:
a) Initial mixture design Submittal.
b) Intervals of not more than 4 weeks.
c) Any time there is a change in character or grading of constituent materials.
d) When requested by the Engineer.

3. Cement:
a. Mill tests, including alkali content measured as equivalent alkalies, for each shipment of cement included in the Work.
1) During construction, submit mill certificates for cement being used at intervals of not more than 90 days, any time there is a change in supplier or a significant change in the character of the materials, and when requested by the Engineer.

4. Supplemental cementitious material:
a. Fly ash: Identify source and provide testing results to demonstrate compliance with requirements of ASTM C618 and this Section.

1) Include the Supplier's report certifying the total alkali content of the material, expressed as equivalent percentage of sodium oxide (Na_2Oe).

b. Slag cement: Identify source and provide testing results to demonstrate compliance with requirements of ASTM C989 and this Section.

c. Silica fume: Identify source and provide testing results to demonstrate compliance with requirements of ASTM C1240 and this Section.

G. Certificates:

1. Current NRMCA certification for all plants and trucks that will be used to supply concrete.

H. Source Quality Control Submittals:

1. Truck batch tickets for each load of concrete delivered to the site, whether accepted or rejected.
2. Concrete supplier's quality control plan. Include the following elements, at a minimum:
   a. Names and qualifications of key quality control personnel:
      1) Quality control manager.
      2) Testing and inspection personnel.
   b. Names and qualifications of testing laboratories:
      1) Each laboratory shall hold current accreditation from the AASHTO Accreditation Program, or other accreditation program acceptable to the Engineer, for each test performed.
   c. Example forms for: Inspection reports, certificates of compliance, and test results.
   d. Quality control procedures: Method and frequency of performing each procedure, including inspections and materials testing. At a minimum, the plan shall include:
      1) Daily testing of aggregate gradation.
      2) Monthly testing of cement quality.
      3) Monthly testing of fly ash quality.
   e. Procedures to control quality characteristics, including standard procedures to address properties outside the specified operating limits, and example reports to document non-conformances and corrective actions taken. Include procedure for notifying the Contractor and Engineer of non-conformances.
   f. Procedures for verifying that:
      1) Materials are properly stored during concrete batching operations.
      2) Batch plants have the ability to maintain concrete consistency during periods of extreme heat and of low temperatures.
      3) Admixtures are dispensed in the correct dosages within the accuracy requirements specified.
      4) Delivery trucks have a valid NRMCA certification card.
   g. Procedures for verifying that weighmaster certificate for each load of concrete shows:
      1) Cement and supplementary materials are from sources designated in the approved Submittals.
      2) Concrete as-batched complies with the constituent weights designated in the approved Submittals.
      3) Corrections for aggregate moisture are being correctly applied.

4) Any mix water withheld from the batch.

h. Procedures for visually inspecting concrete during discharge.

I. Field Quality Control Submittals:
1. Contractor's notifications of readiness for concrete placement.
2. Contractor's reports of field quality control testing.
a. Include with each report the concrete batch ticket number and identification numbers for associated cylinders used for compressive strength testing.
b. Testing results for slump, temperature, unit weight, and air entrainment.
c. Testing results for compressive strength at 7 and 28 days, and for any compressive strength tests after 28 days.
d. Note on batch ticket the amount of water that was withheld and the maximum amount that can be added on site as "Max add water." Record on the batch ticket the volume of water actually added at site.
e. Note on the batch ticket the concrete mix classification as defined in Table 3 of this Section.

J. Special procedure Submittals:
1. Sequence of concrete placing:
a. Submit proposed sequence of placing concrete showing proposed beginning and ending of individual placements. Submittal shall include plans sections and details to address all pours.
2. Cold weather concreting plan.
3. Hot weather concreting plan.
4. Repair of defective concrete: Submit mix design for repair materials to be used.

1.06 QUALITY ASSURANCE

A. Pre-installation meetings:
1. Schedule and conduct pre-installation meeting at least 10 days prior to batching and placing of concrete.
a. Provide additional meetings if necessary, to discuss specific concrete Submittals, mixes, or placing and curing conditions.
b. Notify the Engineer of location and time of each conference.
2. Required attendees:
a. Contractor, including Contractor's superintendent and key personnel.
b. Concrete supplier.
c. Technical representative(s) of supplier(s) of concrete admixtures.
d. Subcontractor(s) providing pumping, placing, finishing, and curing.
e. Subcontractor(s) providing embedded items (structural embedded plates, electrical conduit).
f. Sampling and testing personnel.
g. Engineer.
h. On-site inspectors representing the Engineer.
i. Other persons deemed by the Engineer and the Contractor to be critical to the quality and efficiency of the Work.
3. Agenda:
a. Review of requirements of Drawings and Specifications.
b. Project and product safety requirements.
c. Discussion of points of interface and coordination between various trades or products to be used in the Work.

d. Contractor's schedule for cast-in-place concrete work.
e. Mix designs, mix tests, and Submittals.
f. Admixture types, dosing, performance, requirements for monitoring, and limits on dosing or re-dosing at the site.
g. Placement and consolidation methods, techniques, and equipment and the effects of those methods on form pressures.
h. Slump and limits on placing time or conditions to maintain placeability.
    1) Field adjustment of slump and air content.
i. Procedures for finishing, curing, and retention of moisture during these operations.
j. Procedures and protection for hot and cold weather conditions.
k. Requirements and coordination for inspections.
    1) Responsibility for test specimen curing and storage.
    2) Distribution of test reports.
l. Other Specification requirements requiring coordination between parties to the Work.

4. Prepare and submit minutes of the pre-installation meeting as specified in Section 01312 - Project Meetings.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Packing and shipping:
1. Deliver, store, and handle concrete materials in a manner that prevents damage and inclusion of foreign substances.
2. Deliver and store packaged materials in original containers until ready for use.
3. Deliver aggregate to mixing site and handle in such manner that variations in moisture content will not interfere with steady production of concrete of specified degree of uniformity and slump.
4. For Class M concrete:
    a. Store coarse and fine aggregate in covered area. Shade aggregates to prevent heating by direct sunlight.
    b. Store cementitious materials in covered, shaded silos to prevent heating by direct sunlight.

B. Acceptance at site:
1. Reject material containers or materials showing evidence of water or other damage.
2. Concrete mixes: Do not accept or incorporate into the Work concrete mixes that do not comply with the specified requirements for water content, slump, temperature, and air content.

1.08 PROJECT CONDITIONS

A. Cold weather concreting: During periods of cold weather as defined in this Section, implement cold weather concreting procedures in this Section.

B. Hot weather concreting: During periods of hot weather as defined in this Section, implement hot weather concreting procedures in this Section.

1.09 SEQUENCING AND SCHEDULING

A. Schedule placing of concrete in a manner that completes all placing operations from one construction, contraction, or expansion joint to another construction, contraction, or expansion joint.

B. Joints at each end of the placement shall be as indicated on the Drawings, or as identified and accepted in advance by the Engineer.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide concrete with a homogeneous mixture, that, when hardened, will have required strength, watertightness, and durability.

B. Provide a workable, low-shrinkage concrete mix that maximizes aggregate content and minimizes paste content.

C. Performance requirements:
   1. General:
      a. Except as otherwise specified, provide concrete composed of Portland cement, supplemental cementitious materials, aggregate, admixtures and water, proportioned and mixed to produce a plastic, workable mixture in accordance with requirements of this Section, and suitable to specific conditions of placement.
      b. Proportion aggregates to produce a gradation of aggregate that combines fine and coarse aggregate in well-graded proportions that maximizes the aggregate content and minimizes the paste content of the mix. Gradation should maximize long-term durability and strength of the concrete mixture.
      c. Durability requirements will be deemed to be satisfied when:
         1) Mixture is proportioned with a well-graded combined aggregate.
         2) Specified water-cement ratio is satisfied.
         3) Concrete contains the specified range of air content.
         4) Maximum specified paste content is satisfied.
      d. Proportion materials in a manner that will secure the lowest cement content, water-cementious materials ratio, and paste volume that is consistent with good workability that provides a plastic and cohesive mixture, and that provides a slump that is within the specified range.
      e. Construction and expansion joints have been positioned in structures as indicated on the Drawings, and curing methods have been specified, for purpose of to reduce the number and size of cracks, resulting from normal expansion and contraction expected from the concrete mixes specified.
      f. Remove and replace, or repair as specified in this Section, non-conforming work and surfaces with cracks, voids and honeycombs, or surface wetness.
   2. Workmanship and methods: Provide concrete work, including detailing of reinforcing, conforming with best standard practices and as set forth in ACI CODE-318, and ACI CODE-350.

2.02 MATERIALS - GENERAL

A. Water and ice:
   1. Water for concrete mixes, for washing aggregate, and for curing concrete: Clean and free from oil and deleterious amounts of alkali, acid, organic matter, or other substances from a municipal potable water source.
   2. Water from non-potable sources shall comply with the limits of ACI CODE-350, Table 3.4.3.5. Water from non-potable sources shall comply with the optional chemical limits of ASTM C1602.
   3. Do not use water from concrete production operations, or combined water from concrete production operations as defined in ASTM C1602.

2.03 MATERIALS - CONCRETE MIX CONSTITUENTS

A. Water and ice:
   1. As specified in the preceding paragraphs.

B. Cementitious materials:
   1. Portland cement:
      a. In accordance with ASTM C150.
         1) Type II.
      b. Single source: To provide uniformity of appearance, for each structure use only one source, type, and brand of Portland cement for walls and slabs that will be exposed in the finished work.
         1) Confirm adequate supply of cement over duration of project before making trial batches or beginning concrete placements.
      c. Cement for finishing: Provide cement from the same source and of the same type as concrete to be finished or repaired.
      d. In accordance with NSF 61.

C. Supplementary cementitious materials:
   1. Fly ash:
      a. Class C or Class F fly ash in accordance with the requirements of ASTM C618, except as modified in this Section.
         1) Class C may be used in concrete made with Type II Portland cement.
         2) Class F required if used in concrete mixes containing aggregates classified as potentially reactive based on ASTM C1293 or ASTM C1260.
            a) CaO content: Less than 18 percent.
      b. Loss on ignition: Not exceeding 3 percent.
      c. In accordance with NSF 61.
      d. Replace Portland cement at ratio of 1.0 pound fly ash for each pound of cement, up to minimum and maximum replacement as specified in “Requirements for Mix Proportioning.”
   2. Slag cement:
      a. Grade 80, 100, or 120 in accordance with ASTM C989, except as modified below:
         1) Fineness: Amount retained on a No. 325 sieve: 20 percent maximum.
         2) Total alkalies Na2O + 0.658 K2O:
            a) Minimum: 0.60 percent.

b) Maximum: 0.90 percent.
b. In accordance with NSF 61.

3. Silica fume:
   a. Provide silica fume in accordance with ASTM C1240, except as modified below:
      1) Moisture content: 3 percent maximum.
      2) Loss on ignition: 6 percent maximum.
      3) Reactivity with cement alkalies: 80 percent minimum.
      4) Sulfate resistance: Maximum 0.10 percent expansion at 6 months.
   b. In accordance with NSF 61.

D. Admixtures:
   1. General:
      a. Do not include admixtures, other than those specified, unless written acceptance has been obtained from the Engineer during Submittal of mix designs.
      b. Compatible with concrete constituents and with other admixtures.
         1) All admixtures in a given mix shall be products of the same manufacturer to ensure compatibility.
         2) Manufacturers: One of the following or equal.
            a) Euclid Chemical.
            b) GCP Applied Technologies (formerly W.R. Grace).
            c) Master Builders Solutions/Sika.
            d) Sika Corp.
      c. Tested and listed under NSF 61 for use in direct contact with potable water.
      d. Do not use admixtures containing chlorides, calculated as chloride ion, in excess of 0.5 percent by weight of cement.
      e. Use in accordance with manufacturer's recommendations. Add each admixture to concrete mix separately.
      f. Admixtures used shall be the same products used in concrete trial batches, or the same products used in concrete represented by submitted field test records.
   2. Air entraining admixture (AEA):
      a. In accordance with ASTM C260 and dosed to provide entrained air percentages specified in this Section.
      b. Provides entrained air as bubbles, evenly dispersed at the time of placement and during curing.
   3. Water reducing admixture (WRA):
      a. May be used at the Contractor's option.
      b. Conforming to ASTM C494, Type A (water-reducing).
         1) ASTM C494, Type D (water-reducing and retarding) may be used during periods of hot weather with prior acceptance by the Engineer.
      c. Not containing air-entraining agents.
      d. Liquid form before adding to the concrete mix.
   4. High-range water reducing admixtures ("super-plasticizers") (HRWR):
      a. Not permitted without acceptance by the Engineer.
   5. Shrinkage reducing admixture (SRA):
      a. May be used at the Contractor's option.
         1) Provide shrinkage reducing admixture in sufficient dosage so as to produce shrinkage within the limits specified.

b. Not containing expansive agents.
c. In accordance with ASTM C494, Type S (specific performance).
d. One of the following or equal:
1) Euclid Chemical: Eucon SRA Series.
2) GCP Applied Technologies: Eclipse Series.
3) Master Builders Solutions/Sika: SRA Series.

6. Set-controlling admixtures:
a. Shall not be used without prior acceptance from the Engineer.

E. Coloring admixtures:
1. Conduit encasement coloring agent:
a. Red color concrete used for encasement of electrical ducts, conduits, and similar type items.
b. Manufacturers: One of the following or equal:
1) Davis Co., #100 Utility Red.
2) Euclid Chemical Co., Increte Division, “Colorcrete Brick Red”.
3) I. Reiss Co., Inc., equivalent product.
c. Conduit encasement concrete: Mix into each cubic yard of concrete 10 pounds of coloring agent.

F. Aggregate:
1. General:
a. Provide concrete aggregates that are sound, graded as specified, and free of deleterious material in excess of allowable amounts specified.
b. Provide aggregates to produce in place concrete with unit weight as follows:
1) Normal weight concrete: Not less than 140 pounds per cubic foot.
c. Do not use aggregate made from recycled materials such as crushed and screened hydraulic-cement concrete, brick, and other construction materials.
d. Do not use aggregate recycled from fresh concrete returned to the batching facility.
e. In accordance with NSF 61.
2. Alkali-silica reactivity:
a. Provide aggregate classified as aggregate-reactivity class of R0 in accordance with ASTM C1778 with expansion not greater than 0.10 percent at 14 days when tested in accordance with ASTM C1260, and not greater than 0.04 percent at 1 year when tested in accordance with ASTM C1293.
3. Fine aggregate:
a. Material graded such that 95 to 100 percent of material passes the No. 4 (4.75 mm) sieve, when sampled in accordance with ASTM D75 and D3665, and tested in accordance with ASTM C136.
b. Provide fine aggregate consisting of clean, natural sand, or sand prepared from crushed stone or crushed gravel.
c. In accordance with ASTM C33 requirements for grading, deleterious substances, soundness, and alkali reactivity, except as modified in the following paragraphs:
1) Grading: For sieve sizes listed in ASTM C33 for fine aggregate, not more than 45 percent passing any sieve and retained on the next consecutive sieve.

2) Deleterious substances: Not in excess of the percentages by weight specified in Table 1 of this Section.

Table 1: Fine Aggregate, Limits on Deleterious Substances		
Item	**Test Method**	**Percent (maximum)**
Materials finer than No. 200 sieve(2)	ASTM C117	3.00(2)
Clay lumps and friable particles	ASTM C142	1.00
Lightweight particles (SG < 2.40)	ASTM C123	1.00
• Chert or shale(1)	ASTM C295	1.00(1)
Coal and lignite	ASTM C123	0.50

Notes:

(1) ASTM C123 tests for particles in the sample having a specific gravity less than 2.40. ASTM C295 is used to identify which of those lightweight particles are chert, shale, or coal and lignite. If testing under ASTM C123 indicates a combined percentage of lightweight particles (sum of shale, chert, coal and lignite) not greater than 1.00, testing under ASTM C295 will not be required.

(2) For manufactured sand, if material finer than the No. 200 sieve consists of crusher dust and the aggregate is essentially free of clay or shale, maximum percentage may be increased to 5.0 percent.

3) Organic impurities: Free of injurious amounts of organic matter and producing a supernatant liquid with color not darker than “standard color” when tested in accordance with ASTM C40.

4) Soundness: In accordance with requirements of ASTM C33 when tested in accordance with ASTM C88 using sodium sulfite solution.

4. Coarse aggregate:
   a. Materials graded such that not more than 10 percent of material passes the 3/8-inch sieve, when sampled in accordance with ASTM D75 and D3665 and tested in accordance with ASTM C136.
   b. Consisting of gravel, crushed gravel, crushed stone, or a combination of these materials having clean, hard, durable particles free from calcareous coatings, organic matter, or other deleterious substances.
   c. Conforming to the requirements of ASTM C33, Class 4S for physical properties, deleterious substances, and alkali reactivity, except as modified in the following paragraphs:
      1) Grading:
         a) Size number as specified in ASTM C33, and as indicated in Table 3 of this Section, except as otherwise specified or accepted by the Engineer.
         b) Weights of flat or elongated particles (particles having a length greater than 3 times average width or thickness) not exceeding 15 percent when tested in accordance with ASTM D4791.
      2) Deleterious substances: Not in excess of the percentages by weight specified in Table 2 of this Section and having total of all deleterious substances exceeding 2 percent.

Table 2: Coarse Aggregate, Limits on Impurities		
Item	**Test Method**	**Percent (maximum)**
Clay lumps and friable particles	ASTM C142	0.50
Lightweight particles (SG < 2.40)	ASTM C123	1.25
• Chert or shale(1)	ASTM C295	1.00(1)
Materials finer than No. 200 sieve	ASTM C117	0.50(2)
Coal and lignite	ASTM C123	0.25

Notes:

(1) ASTM C123 tests for particles in the sample having a specific gravity less than 2.40. ASTM C295 is used to identify which of those lightweight particles are chert, shale, or coal and lignite. If testing under ASTM C123 indicates a combined percentage (sum of shale, chert, coal and lignite) not greater than 1.25, testing under ASTM C295 will not be required.

(2) When material finer than No. 200 sieve consists of crusher dust, maximum percentage may be increased to 1.00 percent. When mix design complies with provisions of ASTM C33, Table 4, footnote C, the maximum percentage may be increased in accordance with the equation in footnote C, up to a maximum of 1.5 percent.

3) Abrasion loss: Loss not greater than 45 percent after 500 revolutions when tested in accordance with ASTM C131.
4) Soundness: Loss not greater than 10 percent when tested in accordance with ASTM C88 using sodium sulfate solution.

2.04 MATERIALS FOR PLACING, CURING AND FINISHING

A. General:
   1. Materials shall be compatible with concrete and with other materials.
   2. Materials for placing, curing and finishing concrete that will be in contact with potable water:
      a. Non-toxic and shall not impart taste or odor to the water.
      b. Listed under NSF 61 for use in contact with potable water.

B. Cement grout:
   1. Use: For spreading over surface of construction and cold joints in concrete before placing additional concrete above those joints.
   2. As specified in Section 03600 - Grouting.

C. Concrete sealer:
   1. As specified in Section 03366 - Concrete Finishes.
   2. Not for use in water-containment structures.

D. Evaporation retardant:
   1. Tested and listed under NSF 61 for use direct contact with potable water.
   2. Use: For mitigating surface moisture evaporation from freshly placed concrete during rapid drying conditions. Placed after screeding.
   3. Waterborne, monomolecular, spray-applied compound, with fugitive dye to indicate coverage.
   4. Manufacturers: One of the following or equal:
      a. Euclid Chemical Co., Eucobar.
      b. Master Builders Solutions/Sika, MasterKure ER 50.

E. Nonslip abrasive:
   1. Aluminum oxide abrasive size 8/16, having structure of hard aggregate that is, homogenous, nonglazing, rustproof, and unaffected by freezing, moisture, or cleaning compounds.
   2. Manufacturers: One of the following or equal:
      a. Abrasive Materials, Inc.
      b. Exolon Co.
      c. “Non-Slip Aggregate”, Euclid Chemical Co.

F. Plastic membrane for curing:
   1. Polyethylene film: In accordance with ASTM C171.
   2. Properties:
      a. Color: White.
      b. Thickness: Nominal thickness of polyethylene film shall not be less than 0.0040 inches when measured in accordance with ASTM D2103. Thickness of polyethylene film at any point shall not be less than 0.0030 inches.
      c. Loss of moisture: Not exceeding 0.055 grams per square centimeter of surface when tested in accordance with ASTM C156.

G. Sprayed membrane curing compound:
   1. Tested and listed under NSF 61 for use direct contact with potable water.
   2. Combination curing and sealing products (“cure and seal”) will not be permitted.
   3. Properties:
      a. Clear type with fugitive dye conforming with ASTM C309, Type 1D and containing no wax, paraffin, or oils.
      b. For concrete placed or cured during hot weather, curing compound shall be as specified, except that:
         1) It shall include a white, reflective fugitive dye.
         2) Moisture loss during a 72-hour period shall not exceed 9 pounds per cubic yard when tested in accordance with ASTM C156.

H. Surface-applied sealing system:
   1. Tested and listed under NSF 61 for use direct contact with potable water.
   2. Manufacturers: One of the following or equal:
      a. Euclid Chemical Co., Vandex Super.
      b. Kryton International, Inc., Krystol T1.
      c. Xypex Chemical Corp., Xypex Concentrate.
   3. Where surface-applied sealing system is placed over concrete containing permeability reducing admixture for concrete exposed to hydrostatic conditions (PRAH), provide products of same manufacturer providing the admixture.

2.05 EQUIPMENT

A. General:
   1. Provide adequate equipment and facilities for accurate measurement and control of materials and for readily changing proportions of material into mixers.

B. Batching equipment, or batch plant.
   1. Capable of controlling delivery of all material to mixer within 1 percent by weight of individual material.

C. Mixing equipment:
   1. Mixers may be of stationary plant, paver, or truck mixer type, as appropriate to the Work.
   2. Capable of combining aggregates, water, and cementitious materials, and admixtures within specified time into a thoroughly mixed and uniform mass, and of discharging the mixture without segregation.
      a. Maintain concrete mixing equipment in good working order, and operate at loads, speeds, and timing recommended by manufacturer or as specified.
      b. Proportion cementitious materials and aggregate by weight.
   3. If bulk cementitious materials are used, weigh them on separate visible scale which will accurately register scale load at any stage of weighing operation from zero to full capacity.
   4. Prevent cementitious materials from coming into contact with aggregate or with water until materials are in mixer ready for complete mixing with all mixing water.
   5. Procedure of mixing cementitious materials with sand or with sand and coarse aggregate for delivery to the Project Site, for final mixing and addition of mixing water will not be permitted.
   6. Retempering of concrete will not be permitted.
   7. Discharge entire batch before recharging.
   8. Volume of mixed material per batch: Not to exceed manufacturer's rated capacity of mixer.
   9. Equip each mixer with device for accurately measuring and indicating quantity of water entering concrete, and operating mechanism such that leakage will not occur when valves are closed.
   10. Equip each mixer with device for automatically measuring, indicating, and controlling time required for mixing:
      a. Interlock device to prevent discharge of concrete from mixer before expiration of mixing period.
   11. Transit-mixed concrete:
      a. Mix and deliver in accordance with ASTM C94.
      b. Total elapsed time between addition of water at batch plant and discharging completed mix.
      c. Not to exceed 90 minutes.
      d. Elapsed time at Project Site shall not exceed 30 minutes.
      e. Under conditions contributing to quick setting, total elapsed time permitted may be reduced by the Engineer.
      f. Equip each truck mixer with device interlocked to prevent discharge of concrete from drum before required number of turns and furnish device that is capable of counting number of revolutions of drum.
   12. Continuously revolve drum after it is once started until it has completely discharged its batch:
      a. Do not add water until drum has started revolving.
      b. Right is reserved to increase required minimum number of revolutions or to decrease designated maximum number of revolutions allowed, if necessary, to obtain satisfactory mixing. Contractor will not be entitled to additional compensation because of such increase or decrease.

D. Other types of mixers: For other types of mixers, mixing shall be as follows:
   1. Mix concrete until there is uniform distribution of materials, and discharge mixer completely before recharging.
   2. Neither speed nor volume loading of mixer shall exceed manufacturer's recommendations.
   3. Continue mixing for minimum of 1-1/2 minutes after all materials are in drum, and for batches larger than 1 cubic yard increase minimum mixing time 15 seconds for each additional cubic yard or fraction thereof.

2.06 CONCRETE MIXES

A. General:
   1. Develop and provide mix designs for each concrete class listed in Table 3 of this Section.
   2. Select and proportion mixes and document properties using one of the 2 methods that follow. Procedures and requirements for use of each alternative are specified in subsequent paragraphs of this Section.
      a. Field experience method.
      b. Trial batch method.
   3. Organize and submit mix designs with data on all constituent materials and products for that mix for the Engineer's review.
   4. Do not place concrete until the mix design for that concrete class has been accepted by the Engineer.
   5. After acceptance, do not modify accepted mixes or provide new mixes without the Engineer's prior review and acceptance of the proposed alternative.
      a. Exception: At all times, adjust batching of water to compensate for free moisture content of the fine aggregate used.
      b. For any change to approved mixes, the Engineer may require new trial batching and testing program as specified in this Section before acceptance and use.
      c. For any change to approved mixes, make modifications within limits set forth in this Section.
      d. If there is change in source or quality of any constituent of the concrete class or mix, the revised mix will be considered a new class of concrete and shall require full re-submittal of all data describing mix constituents, design, and testing.
   6. Material sampling, mix designs, trial batch preparation and testing, modifications to mix designs, and any re-testing required to satisfy the requirements of this Section or to obtain satisfactory performance shall be at the Contractor's expense and shall not be considered cause for delay.

B. Measurements of materials:
   1. Measure materials by weighing, except as otherwise specified or where other methods are specifically authorized in writing by the Engineer.
   2. Furnish apparatus for weighing aggregates and cementitious materials that is suitably designed and constructed for this purpose.
   3. Accuracy of weighing devices: Furnish devices that have capability of providing successive quantities of individual material that can be measured to within 1 percent of desired amount of that material.
   4. Measuring or weighing devices: Subject to review by the Engineer. Shall bear valid seal of the Sealer of Weights and Measures having jurisdiction.

5. Weighing cementitious materials:
    a. Weigh cementitious materials separately.
    b. Cement in unbroken standard packages (sacks): Need not be weighed.
    c. Weigh bulk cementitious materials and fractional packages.
6. Measure mixing water by volume or by weight.

C. Requirements for mix proportioning:
1. Develop and provide mixes that:
    a. Can be readily worked into corners and angles of forms and around reinforcement, without excessive vibration, and without permitting materials to segregate or free water to collect on surface.
    b. Prevent unnecessary or haphazard changes in the consistency of the concrete supplied.
2. Constituent materials:
    a. Provide concrete mixes composed of Portland cement, blended aggregates, admixtures and water.
        1) Admixtures required for each concrete class are indicated in Table 3 of this Section. Admixtures not specifically required by that table for a specific concrete class are optional and may be included at the discretion of the Contractor based on the Contractor's planned means and methods of construction.
    b. In no case shall returned fresh concrete or its constituents be incorporated into concrete batched for the Work.
3. Minimum specified compressive strength:
    a. Minimum specified compressive strength is designated at 28 days, unless otherwise indicated in Table 3 of this Section.
    b. For locations where the placed concrete is adequately protected and is not subjected to loads for an extended period during construction, the Contractor may request that the period for achieving the minimum specified compressive strength be extended to 56 days. If accepted by the Engineer, provide mixes that achieve at least 75 percent of their minimum specified compressive strength after 28 days.
4. Proportions and consistency:
    a. Ratio of water to cementitious materials, and cementitious materials content:
        1) Conform to maximum and minimum cementitious material content requirements specified in Table 3 of this Section.
        2) Cementitious materials content: Consisting of Portland cement as indicated in Table 3 of this Section, plus supplemental cementitious materials if aggregate testing indicates potentially reactive aggregates:
            a) Fly ash content:
                (1) Minimum: 15 percent of the total weight of cementitious materials.
                (2) Maximum: 25 percent of the total weight of cementitious materials.
            b) Slag cement content:
                (1) Minimum: 20 percent of the total weight of cementitious materials.
                (2) Maximum: 30 percent of the total weight of cementitious materials.

c) Silica fume content:
(1) Minimum: 4 percent of the total weight of cementitious materials.
(2) Maximum: 10 percent of the total weight of cementitious materials.

b. Aggregate size and content:
1) Blend aggregates to produce an optimized gradation that combines well-graded coarse, intermediate, and fine aggregates in proportions that maximize the aggregate content of the mix, and that minimize the cement paste content of the mix.
a) Percentage of individual fractions of the combined aggregate gradation retained on individual sieve sizes: Within the range shown in Attachment C - Combined Aggregate Gradation Chart ("Tarantula Curve").
b) Sum of the percentages of individual fractions retained on the No. 8, No. 16, and No. 30 sieves: Greater than 20 percent.
c) Sum of the percentages of individual fractions retained on the No. 30, No. 50, No. 100, and No. 200 sieves: Within the range of 25 percent to 40 percent.

c. Determine bulk density and void content of the combined gradation of aggregates in accordance with ASTM C29. Results for combined aggregates shall not be the summation of results of testing of the individual gradations.
1) Sample the combined aggregate from a flowing aggregate stream or conveyor in accordance with ASTM D75. Take care to ensure that the sample is representative of the proportions of the combined aggregate of the proposed mix.
2) Reduce sample of combined aggregate to test sample size in accordance with ASTM C702, Method A - mechanical splitter or Method B - quartering.
3) Perform bulk density test of combined aggregate in accordance with ASTM C29, Procedure A - rodding.
4) Determine void content of the combined aggregate in accordance with ASTM C29, Procedure A - rodding. Specific gravity of the combined aggregate shall be determined in accordance with ASTM C136.

d. Paste content: Limited to the following:
1) Class A mixes without air entrainment: Maximum 28 percent measured by volume.
2) Class A mixes with air entrainment: Maximum 28 percent measured by volume plus the target air content.
3) Paste content shall be limited to 175 percent of the void content of the combined aggregate gradation determined by ASTM C29.

e. Total water content:
1) Not exceeding the water to cementitious material ratio specified in Table 3 of this Section.

f. Coarseness/workability (Shilstone Method):
1) Proportion mixes to fall into the "Optimal" zone (Zone II) when plotted on the Coarseness Factor Chart ("Coarseness Factor" versus "Workability Factor") included as Attachment B - Coarseness Factor

Chart to this Section. Provide plot for each Class A mix to be used in the Work.

2) Coarseness factor (CF) for each mix shall be calculated as the percent of the combined aggregate gradation retained on the 3/8-inch sieve, divided by the percent of the combined aggregate gradation retained on the No. 8 sieve, multiplied by 100, or:

$$CF = \frac{(\%\text{ retained on 3/8 in sieve})}{(\%\text{ retained on No. 8 sieve})} \times 100$$

3) Workability factor (WF) for each mix shall be the percent of the combined aggregate gradation retained on the No. 8 sieve, adjusted for cement content in the mix.
   a) Determine volume of total cementitious material in the mix.
   b) For each 94 pounds of cement content above 564 pounds per cubic yard, increase workability factor by 2.5 units.
   c) For each 94 pounds of cement below 564 pounds per cubic yard, decrease workability factor by 2.5 units.
   d) Proportion adjustment factor by linear interpolation for each fraction of 94 pounds above or below the 564 pound basis.
   e) Example:
      650 pounds per cubic yard = 564 pounds + 86 pounds.
      Adjustment = (86 lb / 94 lb) x 2.5 = + 2.28.

D. Concrete classes for use in the Work:
   1. Provide concrete classes listed in Table 3 of this Section.
   2. Provide normal weight concrete, having minimum weight of 140 pounds per cubic foot, unless otherwise noted.
   3. Pumped concrete:
      a. Provide pumped concrete that complies with all requirements of this Section.
      b. Mixes placed by pumping shall be considered a sub-class of each concrete class listed in Table 3 of this Section. Prepare and submit a separate mix design for each mix to be placed by pumping.
   4. Class PM concrete: In addition to the requirements of Table 3 of this Section, conform to the following:
      a. Minimum 28 day flexural strength: 650 psi when tested in accordance with ASTM C293.
      b. Cementitious materials content: 75 percent Portland cement plus 25 percent Class F fly ash (by weight).
      c. Aggregate:
         1) Minimum 55 percent coarse aggregate conforming to ASTM C33 size number 357 or size number 467.
         2) Substitute ASTM C33 size number 57, or size number 67 if mechanical paving equipment is not used.

Table 3: Concrete Classes									
Concrete Class[1]	**Minimum Specified Compressive Strength at 28 days, f'c [2] (pounds per square inch)**	**Ratio of water to cementitious materials[3] (minimum - maximum).**	**Cementitious Materials Content (pounds per cubic yard of concrete by weight)[4]**	**Cement Type**	**Maximum Chloride Content (percent by weight of cement)**	**Maximum Size of Coarse Aggregate (ASTM C33)**	**Air Entrainment (percent), (n/a: not applicable)**	**Admixtures required[4,5,6]**	**Slump Range (inches)**
A	4,000	0.40 to 0.42	535 to 575	ASTM C150, Type II(MH)	0.30	#57	6±1.5	AEA WRA	2 to 4
A-NA	4,000	0.40 to 0.45	535 to 575	ASTM C150, Type II(MH)	0.30	#57	n/a	WRA	2 to 4
C	2,500	0.62 max.	423 min.	ASTM C150, Type II(MH)	No limit	#57	6±1.5	AEA WRA	3 to 6
CE	3,000	0.62 max.	423 min.	ASTM C150, Type II(MH)	No limit	#8	5±1.5	AEA WRA	3 to 6
PM	5,000	0.40	535 to 575	ASTM C150, Type II(MH)	0.15	#57	5±1.5	AEA WRA	3 to 6

Notes:

(1) Sub classes within major concrete classes are designated as follows:
NA: Without air entrainment.

(2) At locations where concrete will not be subjected to load from other elements of the structure or from the Contractor's placing and/or backfilling operations, maximum time period for achievement of specified compressive strength may be extended to 56 days when accepted by the Engineer.

(3) W/C Ratio = Ratio of water to cementitious materials by weight. Include weight of admixtures in the water content of the mix when the quantity of the admixtures exceeds 10 ounces per 100 pounds of cement.

(4) Admixtures are designated as follows:
AEA: Air entraining admixture.
HRWR: High-range water-reducing admixture.
PRAH: Permeability-reducing admixture for concrete exposed to hydrostatic conditions.
SFR: Synthetic fiber reinforcement.
SRA: Shrinkage-reducing admixture.
WRA: Water-reducing admixture.

E. Install concrete classes in accordance with the following requirements, unless otherwise indicated on the Drawings.
   1. Class A concrete: Structural concrete.
      a. Use at all locations unless other Classes are specified or indicated on the Drawings.
   2. Class A-NA concrete: Structural concrete without air entrainment.
      a. May be used in lieu of Class A at indoor slabs (not subject to freezing and thawing) where inclusion of an air-entraining admixture makes it difficult to achieve the specified concrete finish.

3. Class C concrete: Miscellaneous concrete fill and encasement.
    a. May be used for fill for unauthorized excavation, for thrust blocks and ground anchors for piping, for bedding of pipe, and where indicated on the Drawings.
4. Class CE concrete: Use for electrical conduit encasements.
5. Class PM concrete: Use for concrete pavement, cart paths, curbs, gutters, and sidewalks.

F. Concrete mix design documented by field experience:
    1. Mix design:
        a. Prepare preliminary mix design for each concrete class. Submit mix design with product and testing data for materials to be used in the mix for the Engineer's review.
    2. Historical records for similar mix.
        a. Determinations of similarity of materials and proportions between historical and proposed mixes shall be by the Engineer, and that shall be final.
        b. Historical record - Materials:
            1) Submit with each mix design the following data for a previously-supplied concrete mix similar to that proposed for this Work.
            2) Records demonstrating that the previously supplied mix included similar materials and proportions as those of the proposed mix.
                a) Documentation that the same concrete supplier will provide both mixes.
                b) Documentation that the materials used was from the same suppliers and had essentially the same properties, demonstrated by test data, as those proposed.
                c) Documentation that proportions of materials in the record mix are essentially the same as those proposed and that the specified compressive strength of the record mix is within 1,000 pounds per square inch of that required by this Section.
                d) Concrete supplier's statement describing any changes made to production of the record mix during the time period reported.
                e) Concrete supplier's statement that preparation and quality control procedures for the record mix were essentially the same as those to be employed for this Work.
        c. Historical record - Testing:
            1) Submit with each record mix, corresponding test data for slump, compressive strength (with relationships for rate of strength gain between testing ages), and drying shrinkage.
            2) Only records satisfying the following requirements will be accepted.
                a) All tests were conducted within a period of 1 year preceding the date of the Submittal.
                b) All tests were conducted over a period including not less than 45 days.
                c) Record of compressive strength testing includes at least 30 tests for slump and 28-day compressive strength.
                d) Record of compressive strength tests is consecutive. In other words, it includes all tests conducted on the subject mix within the 1-year time period described above (not just selected tests during that period).

e) Submit concrete supplier's sworn statement confirming that all tests for the record mix have been reported.
f) Tests for drying shrinkage are described in subsequent paragraphs of this Section for "concrete mix design documented by trial batch preparation and testing".
g) Provide supplementary testing if requested by the Engineer.

d. For mixes determined to be similar and to have an acceptable test history, acceptance criteria shall be as follows:
1) Acceptance criteria:
a) Slump: All tests within limits specified for record mix.
b) Compressive strength: Average compression strength for tests, as determined by ACI CODE-350 not less than minimum required average strength.
c) Drying shrinkage: Within limits stated in subsequent paragraphs of this Section for "concrete mix design documented by trial batch preparation and testing".

G. Concrete mix design documented by trial batch preparation and testing:
1. Mix design and trial batches:
a. Prepare preliminary mix design for each concrete class. Submit mix design with product and testing data for each combination of materials and proportions to be used for the Engineer's review.
1) Determine water content of the mix based on curves showing the relation between water-cementitious materials ratio and the 7- and 28-day compressive strength of the concrete.
2) Determine each curve using 4 or more points, each representing the average compressive strength value of at least 3 specimens tested at each age.
b. After materials and proposed mix designs have been accepted by the Engineer, have trial batches for each concrete mix design prepared by the Contractor's testing laboratory.
1) Prepare trial batches using the cementitious materials, aggregates, and admixtures proposed to be used for the Work.
2) Provide batches of sufficient quantity to determine slump, workability, consistency, and finishing characteristics, and to provide sufficient specimens for testing.
c. For each trial batch, make and test specimens to determine and report slump, compressive strength (with relationships for rate of strength gain between testing ages), and drying shrinkage.
1) If trial batches do not produce concrete conforming to the specified requirements for slump, strength, workability, consistency, drying shrinkage, restrained shrinkage, and finishing, change mix proportions and, if necessary, sources of materials.
2) Make additional trial batches and perform additional tests until a batch that conforms to requirements of this Section is produced.
2. Testing - Slump:
a. Determine slump in accordance with ASTM C143.
b. Acceptance criterion: Slump within range specified.
3. Testing - Compressive strength:
a. Prepare 4-inch diameter by 8-inch long cylinders in accordance with ASTM C31 for tests specified in this Section.

b. Determine average compressive strength:
    1) Test at least 12 cylinders from each trial batch for compressive strength in accordance with ASTM C39.
    2) Test 4 cylinders at 7 days, another 4 at 28 days, and another 4 at 56 days.
    3) Calculate average compression strength for 7 day tests, for 28 day tests, and for 56 day tests.
    4) Calculate ratios for:
        a) Average 7 day strength to average 28 day strength.
        b) Average 28 day strength to average 56 day strength.
c. Determine the required average compressive strength for each mix, f'cr, as described in the following paragraphs:
    1) Calculate required average compressive strength (f'cr) based on the minimum specified 28-day compressive strength, f'c, plus a standard deviation determined from the test history available for that mix.
    2) Determine f'cr as specified in ACI CODE-350, except as modified in the following paragraphs:
        a) Where 15 or more 28-day compressive strength tests are available, calculate standard deviation as described in the preceding paragraphs for "concrete mix design documented by field experience". Add this standard deviation to the specified minimum compressive strength to determine the required average compressive strength (f'cr) for the mix.
        b) Where fewer than 15 compressive strength tests at 28 days are available, determine minimum required compressive strength, (f'cr) from Table 4 of this Section.

Table 4: Required Average Compressive Strength, Fewer than 15 Tests Available

Minimum Specified Compressive Strength, f'c (pounds per square inch)	Required Average Compressive Strength, f'cr (pounds per square inch)
Less than 3,000	f'c + 1,000
3,000 to 5,000	f'c + 1,200
Over 5,000	f'c + 1,400

d. Acceptance criterion: Average compressive strength of the 4 cylinders tested at 28 days, or of the 4 cylinders tested at 56 days when permitted by the Engineer, shall equal or exceed the required average compression strength, f'cr for that concrete mix design.

4. Testing - Chloride content:
    a. Submit test results showing that the concrete mix contains water-soluble chloride ion content contributed from the constituents including water, aggregates, cementitious materials, and admixtures is less than the limit specified in Table 3 of this Section. Test shall be performed in accordance with ASTM C1218 at age between 28 and 42 days.
5. Testing - Drying shrinkage - Prism specimens:
    a. Class A (including A, A-NA, A-SP, and A-NA-SP) and Class PM: From trial batch for each mix, prepare 10 drying shrinkage specimens in accordance with ASTM C157 Divide specimens into 2 groups of

5 specimens each: 1 group including shrinkage-reducing admixture, and 1 group without shrinkage-reducing admixture.

b. Prepare, cure, and test both groups in accordance with ASTM C157, except as modified in the following paragraphs.
    1) Remove drying shrinkage specimens from molds at age of 23 hours, plus or minus 1 hour, after trial batching.
        a) Immediately place them in lime-saturated water maintained at 73 degrees Fahrenheit, plus or minus 3 degrees, for at least 30 minutes.
        b) Remove specimens from the water and wipe with a damp cloth.
        c) Measure to nearest 0.0001 inch to determine original length.
        d) Record measurements and re-submerge specimens in lime-saturated water at 73 degrees Fahrenheit, plus or minus 3 degrees, for moist curing.
    2) Maintain submerged curing conditions at 73 degrees Fahrenheit, plus or minus 3 degrees, for 7 days. 7 days after batching, remove specimens from water and repeat measuring procedures.
    3) Immediately store specimens in a humidity controlled room maintained at 73 degrees Fahrenheit, plus or minus 3 degrees, and at 50 percent relative humidity plus or minus 4 percent for remainder of the test.
    4) At periods of 14, 21, 28, and 56 days after batching, remove specimens from curing room and repeat measurements.
c. Drying shrinkage test report:
    1) Report measurements of all specimens at 1, 7, 14, 21, 28, and 56 days after batching.
    2) Using measured length at 7 days as base length for drying shrinkage, calculate the following for each measuring period:
        a) Drying shrinkage of each specimen. Determine as difference between the 7-day base length and measured length for each period.
        b) Average of these differences. If drying shrinkage of any specimen departs from the average of the measurements for each period by more than 0.0004 inch, disregard results obtained from that specimen.
        c) Percentage of drying shrinkage from batching to date of measurement.
d. Drying shrinkage acceptance criteria:
    1) Average shrinkage of trial batch concrete specimen group at 28 days after batching, when measured and cured as indicated, shall not exceed 0.035 percent.
e. Mixes accepted by the Engineer:
    1) Retain drying shrinkage test specimens. Bag in re-sealable plastic bags and submit to the Engineer.
    2) Indicate trial batch identifier, specimen number, and date of final measurements on each specimen bag.

2.07 SOURCE QUALITY CONTROL

A. Sample and test materials in accordance with the following requirements:
   1. Sampling, testing, and reporting frequency:
      a. In preparation for mix design submittals and trial batch tests.
      b. Whenever there is a change in source of the material, or a significant change in the characteristics or quality of materials from the same source.
      c. For each 10,000 cubic yards of concrete mix produced.
      d. At intervals not exceeding 90 calendar days, unless otherwise specified in the following paragraphs.
   2. Supplemental cementitious materials.
      a. Sample and test fly ash in accordance with ASTM C311.
      b. Sample and test slag cement in accordance with ASTM C989.
      c. Sample and test silica fume in accordance with ASTM C1240.
   3. Aggregate:
      a. Sample combined aggregate in accordance with ASTM D75 and D3665, and test for gradation in accordance with ASTM C136.
      b. At least once every 30 days, and when requested by the Engineer.
      c. Submit test results.
   4. Cementitious materials:
      a. Sample and test cementitious materials and provide mill certificates demonstrating compliance with ASTM C150 and additional requirements of this Section.
         1) Determine alkali content by method set forth in ASTM C114.
      b. At least once every 90 days, and when requested by the Engineer.
      c. Submit test results.

B. Batch materials in accordance with the following requirements:
   1. Concrete batch weights: Control and adjust so as to secure maximum yield, and at all times maintain proportions of concrete mix within specified limits.
   2. Aggregates:
      a. Obtain aggregate from a source capable of providing uniform quality, moisture content, and grading during any single day's operation.
      b. Furnish satisfactory means at batching plant for checking moisture content of fine aggregate for each batch.
   3. Admixtures:
      a. Batch solutions using mechanical batcher capable of accurate measurement.
      b. Air entraining admixture: Add to batch in portion of the mixing water, unless otherwise recommended by the admixture manufacturer.

PART 3 EXECUTION

3.01 PREPARATION

A. Prepare and submit mix designs for each concrete class indicated in Table 3 of this Section.

B. Submit proposed sequence of concrete placements. After acceptance, adhere to proposed sequence of placing concrete, except when specific changes are requested by the Contractor and accepted by the Engineer.
   1. Use construction methods and sequence work to allow concrete placement to reach adequate strength and to be constructed with required support to prevent overstress of the concrete structure during construction.

C. Make provisions for monitoring weather conditions:
   1. Install an outdoor weather station capable of measuring and recording ambient temperature, wind speed, and humidity. Furnish instruments accurate to within 2 degrees Fahrenheit, 5 percent relative humidity, and 1 mile per hour wind speed.
   2. Monitor the weather forecast beginning at least 48 hours prior to any concrete placement and make provisions for cold weather concreting or hot weather concreting if those conditions exist or are forecast to exist during the period of placement, finishing, and curing.
      a. Record temperature, relative humidity, and wind speeds for each placement beginning at least 24 hours before scheduled delivery of concrete.

D. Place no concrete without the Engineer's prior acceptance of conditions.

E. Notify the Engineer in writing that preparations are complete and ready for placement of concrete. Such notification shall indicate readiness - not just intention - to place concrete for the designated portion of the Work.
   1. Submit notification to the Engineer on forms provided by or acceptable to the Engineer and bearing the signature of the Contractor's superintendent.
      a. Sample form is included at the end of this Section, see Attachment B - Coarseness Factor Chart.
   2. Submittal of notification will be the Contractor's certification that preparations are complete and in accordance with the Contract Drawings and Specifications.
   3. Provide notification for the Engineer to make final observations at the locations of concrete placements not less than 24 hours before commencing placement of concrete.

3.02 CONCRETE JOINTS

A. Locations of joints are indicated on the Drawings.
   1. In order to preserve strength and watertightness of structures, make no other joints, except as authorized by the Engineer.
   2. Construct joints where indicated, and as indicated on the Drawings.
   3. Where joint locations are not indicated on the Drawings, submit the Contractor's proposed locations for the Engineer's review and acceptance. Provide construction joints in slabs and walls at intervals not greater than 35 feet.

B. Time between placements of adjacent concrete separated by joints.
   1. Provide not less than 3 days (72 hours) between placement of adjacent sections for the following:
      a. Slabs.
      b. Walls.

2. Provide not less than 7 days (168 hours) between placement of the lower and upper pours for the following:
    a. Walls over slabs.
    b. Slabs over walls.
    c. Slabs keyed into the sides of walls.

C. Edges of joints:
    1. Provide joints have edges detailed as indicated on the Drawings.
    2. Protect wall and slab surfaces at edges from concrete splatter. Thoroughly clean adjacent surfaces after completion of each placement.

D. Joint construction:
    1. Preparation of forms:
        a. Provide cleanout holes at base of each wall and column for inspection and cleaning.
        b. Wash forms and adjacent joint surfaces of sawdust, chips, and other debris after forms are built, and immediately before concrete or grout placement.
        c. Should formwork confine sawdust, chips, or other loose matter in such manner that it is impossible to remove them by flushing with water, use a vacuum cleaner for their removal and then flush cleaned surfaces with water.
    2. Before placing concrete against previously placed concrete, thoroughly clean the prior placement of laitance, grease, oil, mud, dirt, curing compounds, mortar droppings, or other objectionable matter by means of pressure washing.
    3. Provide and install waterstops, expansion joint material, and other similar materials as indicated on the Drawings and as specified.
        a. Take special care to ensure that waterstops are secured in proper position.
        b. Take special care to ensure that concrete is well consolidated around and against waterstops during placement.
    4. Horizontal joints:
        a. As initial placement over cold joints, thoroughly spread bed of cement grout as specified in Section 03600 - Grouting.
            1) Thickness: Not less than 1/2 inch or more than 1 inch.
        b. For wall placements above planned cold joints, placement of cement grout will not be required for locations where the wall mix includes high-range water-reducing admixture (“superplasticizers”), and the Contractor can demonstrate dense concrete joints without voids or honeycomb after the forms are removed.

3.03 MEASURING AND BATCHING MATERIALS

A. Measurements of materials:
    1. Proportion and measure cementitious materials and aggregates by weight.
        a. Weigh cementitious materials separately.
        b. If bulk cementitious materials are used, weigh them on separate visible scale that will accurately register scale load at any stage of weighing operation from zero to full capacity.
        c. Cement in unbroken standard packages (sacks) need not be weighed.
    2. Mixing water: Measure by volume or by weight.
    3. Other mix constituents: Measure by weight, except as otherwise specified or accepted by the Engineer.

4. Weighing and measuring devices:
    a. Use equipment designed and constructed specifically for that purpose.
    b. Furnish devices capable of weighing successive quantities of individual material measured to within 1 percent of desired weight of that material.
    c. Bearing valid seal of the department of weights and measures for the authority having jurisdiction over the Work.
5. Measurements and measuring devices:
    a. Subject to review by the Engineer.

B. Batching:
1. Admixtures shall be added at the concrete batch plant.
2. Addition of admixtures in the field is permitted only with prior acceptance by the Engineer, and only when the following conditions are satisfied:
    a. Dosage and mixing is personally overseen by concrete supplier's trained technologist.
    b. Adequate mixing is provided after addition.
    c. Maximum time to placement of concrete remains 90 minutes after water added to mix - not 90 minutes after any field additions/adjustments.
    d. Slump at discharge after additions/modifications conforms to the requirements of Table 3 of this Section.

3.04 MIXING AND TRANSPORTING

A. Machine mixing:
1. Prevent cementitious materials from coming into contact with aggregate or with water until materials are in mixer and ready for complete mixing with all mixing water.
2. Procedure of mixing cementitious materials with sand, or with sand and coarse aggregate, for delivery to the Project Site for final mixing and addition of mixing water is not permitted.
3. Remixing of concrete that has started to take its initial set ("retempering")is not permitted.
4. Discharge entire batch before recharging.
5. Volume of mixed material per batch: Not exceeding manufacturer's rated capacity of mixer.

B. Transit-mixed concrete:
1. Mix and deliver in accordance with ASTM C94, except as modified in this Section.
2. Total elapsed time between addition of water at batch plant and discharging completed mix:
    a. Not to exceed 90 minutes or 300 revolutions of the mixing drum.
    b. Under conditions contributing to rapid setting, total elapsed time permitted may be reduced by the Engineer.
3. Temperature - minimum and maximum allowable during mixing and transporting:
    a. Minimum: 50 degrees Fahrenheit.
    b. Maximum: 90 degrees Fahrenheit.

4. Continuously revolve drum after it is started until it has completely discharged its batch.
    a. Do not add water until drum has started revolving.
    b. Engineer reserves the right to increase required minimum number of revolutions or to decrease designated maximum number of revolutions allowed, if necessary, to obtain satisfactory mixing. Contractor will not be entitled to additional compensation because of such increase or decrease.

C. Concrete delivery:
1. Furnish to the Engineer a delivery ticket for each batch of ready mixed concrete within 24 hours after delivery. Include the following information on each ticket:
    a. Time of day concrete was batched, and time of day that discharge from the truck is complete.
    b. Printed record of the individual weight of each of the following constituents in the batch: Fine aggregate, coarse aggregate, cement, pozzolan, and water.
    c. Concrete class as defined in Table 3 of this Section.
    d. Type, brand, and quantity of each admixture in the batch.
    e. Total volume of water allowed in the mix, volume of mixing water added at the batch plant, volume of mixing water withheld from the mix during batching, and total volume of any water added to the mix after leaving the batch plant.
        1) In no case shall volume of mixing water withheld result in a water/cementitious materials ratio less than the minimum values specified in Table 3 of this Section.
    f. Number of revolutions of transit truck at arrival on site, and total number of revolutions when discharge is complete.
    g. Volume of concrete delivered in the batch.
    h. Numerical sequence of the batch delivered for that placement.
2. Additional water may only be added to the mix when the following conditions are fully satisfied:
    a. Batch ticket showing total volume of water already added and maximum volume of water that may be added is available for the Engineer's observation before any additional water is added.
    b. Total volume of water in the mix after the addition will be less than the maximum allowable volume of water indicated on the ticket.
    c. Full concrete load is still within the truck's mixing drum, and truck has not begun to discharge the load. Under no conditions shall water be added in the field to a partial truckload of concrete.
    d. Volume of water added, and time of addition are clearly marked for record on the batch ticket delivered to the Engineer.
3. Addition of admixtures in the field is permitted only with prior approval by the Engineer, and when the following conditions are satisfied:
    a. Dosage and mixing is personally overseen by the concrete supplier's trained technologist and the admixtures supplier's representative.
    b. Adequate mixing time is provided after addition of admixtures.
    c. Maximum time to placement of concrete remains 90 minutes after water is added to the mix - not 90 minutes after any field additions/adjustments.
    d. Slump at discharge after additions/modifications conforms to the requirements of Table 3 of this Section.

D. Conveying concrete:
   1. Convey concrete from mixer to location of final deposit by methods that prevent separation or loss of materials.
   2. Use equipment for chutes, pumps, and conveying of concrete of such size and design as to ensure practically continuous flow of concrete, from delivery to the point of placement, without separation of materials.
   3. Design and use chutes and devices for conveying and depositing concrete that direct concrete vertically downward when discharged from chute or conveying device.
   4. Keep equipment for conveying concrete thoroughly clean by washing and scraping upon completion of any day's placement.

3.05 PLACING AND CONSOLIDATING

A. Preparation:
   1. Obtain the Engineer's acceptance of completed preparations before placing concrete.
      a. Notify the Engineer in writing that all preparations are complete and ready for placement of concrete. Such indication shall indicate readiness, not just intention, to place concrete for the designated portion of the Work.
      b. Submit completed Attachment D - Contractor's Concrete Placement Checklist Form.
   2. Confirm completeness of the following before notification of readiness is given to the Engineer:
      a. Place forms, reinforcement, screeds, anchors, ties, and inserts in final position.
      b. Reinforcement is secure and properly fastened in its correct position.
      c. Loose form ties at construction joints have been retightened.
      d. Dowels, bucks, sleeves, hangers, pipes, conduits, anchor bolts, and any other fixtures required to be embedded in concrete have been placed and adequately anchored.
      e. Forms have been cleaned of debris and form release agents are applied as specified.
   3. Preparation for placement of footings and slabs on grade:
      a. Do not place concrete on ground or compacted fill until subgrade is in moist condition acceptable to the Engineer.
      b. If necessary, sprinkle subgrade with water not less than 6 or more than 20 hours in advance of placing concrete.
      c. If subgrade surface becomes dry prior to actual placing of concrete, sprinkle again, without forming pools of water.
      d. Do not place concrete if subgrade is muddy or soft.
   4. Keep sufficient protective coverings on hand at all times for protection of concrete during and after placement.
      a. Protect concrete placed before rain to prevent water from coming in contact with such concrete.
      b. Protect concrete placed before winds to prevent excessive drying or embedment of debris in the finished surfaces.

B. Concrete placement:
   1. Do not place concrete:
      a. With slump outside the limits specified in Table 3 of this Section.

b. In which initial set has occurred, or that has been retempered.
c. During rainstorms or high velocity winds.

2. Deposit concrete at or near its final position to avoid segregation caused by rehandling or flowing.
   a. Do not deposit concrete in large quantities in one place, and then work material along forms with vibrator or by other methods.
3. Do not drop concrete freely into place from height greater than 5 feet. Use tremies for placing concrete where drop is over 5 feet.
4. Place concrete on slopes starting from bottom of slope and working upward.
5. Place concrete in horizontal lifts not exceeding 24 inches in depth and bring up evenly in all parts of forms.
6. After concrete placement begins, continue in a continuous operation without significant interruption until the end of the placement. Plan and implement precautions to prevent any delay, between layers or adjacent volumes, from exceeding 20 minutes.
7. If concrete is to be placed over previously placed concrete and more than 20 minutes has elapsed, spread layer of cement grout over surface before placing additional concrete. Provide grout layer thickness of not less than 1/2 inch or more than 1 inch.
8. Placement of concrete for slabs, beams, or walkways:
   a. If cast monolithically over walls or columns, do not commence until concrete in walls or columns has been allowed to set and shrink.
   b. Allow set time of not less than 1 hour for shrinkage.
      1) During waiting time, keep top surface of concrete moist, but not wet.
      2) Do not permit water to pond or stand on the surface.
      3) Do not coat surface with evaporation retarders or curing agents.
   c. Start placement above wall or column with layer of cement grout as described in the preceding paragraph.

C. Consolidating concrete:
1. Consolidate concrete with aid of acceptable mechanical vibrators.
2. Thoroughly consolidate concrete around reinforcement, pipes, or other shapes built into the Work.
3. Provide sufficiently intense vibration to cause concrete to flow and settle readily into place and to visibly affect concrete over radius of at least 18 inches.
4. Vibrators:
   a. Keep sufficient vibrators on hand at all times to vibrate concrete as placed.
   b. In addition to vibrators in actual use while concrete is being placed, have on hand a minimum of 1 spare vibrator in operable condition.
   c. Do not place concrete until it has been confirmed that all vibrating equipment, including spares, are in operable condition.
5. Place concrete solidly against forms and concrete surfaces, leaving no voids or honeycomb.
6. Make concrete solid, compact, and smooth. If for any reason surfaces or interiors have voids or are in any way defective, repair such concrete in manner acceptable to the Engineer.
7. Do not over-vibrate so as to produce segregation.

3.06 FINISHING CONCRETE

A. Provide concrete finishes in accordance with Section 03366 - Concrete Finishes, unless otherwise indicated on the Drawings.

B. Liquid evaporation retardant:
   1. Under conditions that result in rapid evaporation of moisture from the surface of the concrete, coat the surface of the concrete with a liquid evaporation retardant immediately after screeding.
   2. Conditions that result in rapid evaporation of moisture are defined as any combination of ambient temperature, concrete temperature, relative humidity, wind speed, and solar radiation intensity that creates conditions that will evaporate water from a free concrete surface at a rate equal to or greater than 0.1 pounds per square foot per hour as determined by the Menzel Formula and nomograph published in ACI PRC-305 and included as Attachment A - Menzel Formula and Nomograph to this Section.
   3. Apply evaporation retardant again after each finishing operation as necessary to prevent drying shrinkage cracks.
   4. Do not work evaporation retardant into the surface of the concrete.
   5. Do not use evaporation retardant as finishing aid (to rehydrate surface a creamy state for finishing).

C. Concrete sealer:
   1. Floors and slabs to receive concrete sealer: See Room Finish Schedule on the Drawings, and Section 03366 - Concrete Finishes.

3.07 CURING

A. Cure concrete by methods specified in this Section.

B. Cure period: Keep concrete continuously moist and at an average daily temperature of at least 50 degrees Fahrenheit for a minimum of 7 days after placement.
   1. If hourly temperatures at any surface of a concrete placement drop below 50 degrees Fahrenheit during the curing period, count the period below 50 degrees Fahrenheit as zero degrees, and extend the curing time to compensate.

C. Schedule of curing methods:
   1. Cure the following concrete surfaces using water curing, or plastic membrane curing.
      a. Floor surfaces of water containment structures.
      b. Surfaces where additional concrete will be placed over or against the surface, including concrete joints.
      c. Surfaces where grout or other toppings will be placed over the surface.
      d. Slabs scheduled to receive concrete sealer, or other bonded or adhered architectural finishes.
      e. Formed surfaces scheduled to receive coatings, paint, adhered masonry, cementitious materials, or other similar finishes, and where formwork is removed within the specified cure period after concrete placement.
      f. Horizontal concrete surfaces at tops of walls.

2. Cure the following concrete surfaces by water curing, plastic membrane curing, or sprayed curing membrane. Selection of methods shall be at the Contractor's option.
    a. Surfaces not listed in the preceding paragraph.

D. Water curing:
    1. Keep surfaces of concrete constantly and visibly wet, day and night, for not less than the specified cure period.
        a. Each day forms remain in place will be counted as 1 day of water curing.
        b. Do not loosen form ties during period when concrete is cured by leaving forms in place. No further curing credit will be allowed for forms remaining in place after contact has been broken between concrete surface and forms.
    2. Begin water curing as soon as concrete attains initial set.
    3. Maintain a wet surface by ponding, continuous sprinkling, covering with saturated burlap, or otherwise saturating the surface by means acceptable to the Engineer.
        a. Flood top of walls with water at least 3 times per day and keep surfaces moist at all times during the curing period.
        b. Provide plastic sheet material over surfaces if required to maintain a wet surface during arid or windy conditions. See plastic membrane curing requirements for additional details.
    4. Use water having a temperature within 20 degrees Fahrenheit of the temperature of concrete, and not lower than the minimum temperature allowed for the concrete surface during curing.

E. Plastic membrane curing:
    1. Install plastic membrane as soon as concrete is finished and can support limited pedestrian traffic without damage.
    2. Cover entire surface of finished concrete with membrane.
    3. Anchor membrane to prevent uplift from wind or air trapped below the sheet.
    4. Fully seal joints and edges to provide full seal around perimeter.
    5. Keep concrete under plastic membrane moist, regularly monitoring surfaces and adding supplemental moisture if necessary. Add water as specified for water curing.

F. Sprayed membrane curing compound:
    1. Apply curing compound to concrete surface after repairing and patching, and within 1 hour after forms are removed.
        a. If more than 1 hour elapses after removal of forms, do not use membrane curing compound. Instead, provide water curing for not less than the specified cure period.
        b. Do not remove sprayed membrane curing compound from concrete before the end of the specified cure period.
        c. When application of curing compound at concrete joints is accepted by the Engineer, take care to apply curing compound to all surfaces along full profile of joints.
    2. Apply curing compound by mechanical, power operated sprayer with mechanical agitator that will uniformly mix all pigment and compound.
        a. Apply curing compound in at least 2 coats.

b. Apply each coat in direction turned 90 degrees from application direction of the preceding coat.
c. Apply curing compound in sufficient quantity so that concrete has uniform appearance and its natural color is effectively and completely concealed immediately after spraying.
d. Continue to coat and recoat surfaces until specified coverage is achieved and until coating film remains on concrete surfaces.

3. Thickness and coverage of curing compound:
   a. Provide curing compound having film thickness that can be scraped from surfaces at any and all points after drying for at least 24 hours.
   b. Contractor is cautioned that method of applying curing compound specified in this Section may require more curing compound than normally suggested by manufacturer of curing compound and is more than is customary in the trade. Apply amounts specified in this Section, regardless of manufacturer's recommendations or customary practice.
4. If the Contractor desires to use a curing compound other than specified product, coat sample areas of concrete wall with proposed curing compound, and also coat similar adjacent area with the specified compound in the manner specified, for comparison:
   a. If proposed sample is not equal or better, in the opinion of the Engineer, the proposed substitution will not be allowed.
5. Removal of curing compound.
   a. After curing period is complete, remove curing compound placed on surfaces that will receive additional concrete, including all concrete joint surfaces, by heavy sandblasting or by other means acceptable to the Engineer. Complete removal and cleanup prior to placing any new concrete against the surface.
   b. Where additional finishes will be applied over concrete surfaces, unless otherwise recommended by the manufacturer of the finish to be applied, remove curing compound by sandblasting. Provide blasting as necessary to fully remove curing compound.
6. Prior to final acceptance of the Work, remove, by sandblasting or by other method acceptable to the Engineer, any curing compound on surfaces exposed to process water or exposed to view, so that only natural color of finished concrete is visible and uniform over the entire surface.

3.08 PROTECTION

A. General:
   1. Keep forms in place, as specified in Section 03102 - Concrete Formwork, to provide curing and to protect concrete surfaces and edges from damage.
   2. Immediately after forms are removed, carefully examine concrete surfaces, and repair any irregularities in surfaces and finishes as specified.

B. Loading of concrete members:
   1. Placement of loads on or against green concrete is not permitted.
   2. Do not place soil against walls, or fill over the top of concrete until conditions designated in the following paragraphs are satisfied:
      a. Walls have been cast to their full height in the structure and have achieved their minimum specified 28-day compressive strength.

b. Connecting slabs and beams that brace the walls are in place, are complete, and (in the case of concrete) have achieved their minimum specified 28-day compressive strength.

3.09 HOT WEATHER CONCRETING

A. Implement hot weather concrete procedures during periods of hot weather as defined in this Section.
   1. Comply with the recommendations of ACI PRC-305 and this Section.

B. If placements during hot weather are expected, and when requested by the Engineer, prepare a hot weather concreting plan.
   1. Maintain at least 1 copy on site.
   2. Provide plan for review if requested by the Engineer.
      a. Include procedures for batching, delivery, placement, curing, protection, and monitoring and recording the temperature of the concrete and the surrounding environment.
      b. Describe procedures to be implemented in the event of abrupt changes in weather conditions, or in the event of equipment failure.
      c. Review hot weather concreting plan during pre-construction meeting. Make provisions to address any concerns expressed by the Engineer before beginning concrete placements.

C. Preparation:
   1. Do not place concrete against forms, reinforcement, or embedments with a surface temperature greater than 120 degrees Fahrenheit.
      a. If necessary, to maintain maximum concrete temperature during placing, cool forms and reinforcement to temperature below 90 degrees Fahrenheit using water or shades.
      b. Do not allow water to puddle in forms or placement areas.
   2. Moisten forms or subgrade to maintain a saturated surface without standing water or soft spots.
   3. Provide windbreaks, shades, fog spray, sprinkling, wet cover, or other means required to protect concrete from premature loss of moisture and rapid temperature gain.

D. Batching and delivery:
   1. Retarding admixtures will not be permitted.
   2. Temperature of concrete delivered for placement shall not exceed 90 degrees Fahrenheit.
      a. Maintain uniform temperature in the mix below this level during batching, delivery, placing, and consolidation.
      b. Temperature of mix, even if below the maximum allowable temperature specified, shall be maintained at a level to avoid loss of slump, flash setting, or cold joints in placements.
   3. If necessary:
      a. Mix water may be chilled or replaced with ice to maintain mix temperature. Where mix water is replaced with ice, provide replacement at a 1-to-1 ratio by weight.
      b. Shade transit mixed concrete trucks, or cool mixing outside of container with water to control temperature of concrete.

E. Placing and finishing:
   1. Place and finish concrete promptly. Place so that vertical lift lines will not be visible in exposed concrete surfaces.
   2. Provide plastic sheeting, fog nozzles, shades, or other means to reduce concrete temperature and protect from moisture loss.

F. Protection and curing:
   1. Furnish and locate maximum/minimum temperature recording thermometers in sufficient numbers to confirm concrete temperatures over full area and edges of concrete.
   2. Flatwork: Protect and cure using water curing methods as specified in this Section.
      a. Water curing:
         1) Keep concrete continuously wet and make provisions for runoff.
         2) For sprinkling or soaker hoses, maintain temperature of water as close as possible to the temperature of the concrete to minimize effects of thermal shock.
   3. Formed surfaces: Protect and cure using forms left in place or membrane curing methods as specified in this Section.
      a. Cover forms and keep continuously moist for at least 24 hours after placement.
      b. Loosen forms as soon as this can be accomplished without damaging the concrete.
      c. Maintain continuously moist surfaces by fogging or spraying with water, or by application of curing compound as specified.

3.10 FIELD QUALITY CONTROL BY CONTRACTOR

A. Provide quality control over the Work of this Section as required by Section 01450 - Quality Control.

B. Field tests:
   1. During progress of construction, provide testing to determine whether the concrete, as being produced, complies with requirements specified.
   2. Sampling and testing shall be performed by the Contractor’s testing laboratory. See Section 01455 - Regulatory Quality Assurance - Special Tests and Inspections for requirements.
      a. Cooperate in testing by allowing free access to the Work for testing laboratory to sample and test materials.
      b. Provide full access for the Engineer to observe concrete sampling and testing at any time.
      c. Contractor is responsible for providing care of and curing conditions for test specimens in accordance with ASTM C31 until specimens are collected by testing laboratory.
      d. Provide 4 firmly braced, insulated, heated, closed wooden curing boxes, each sized to hold 10 specimens. Include cold weather temperature and hot weather temperature control thermostat for initial curing and storage from time of fabrication through shipment to the Owner’s testing laboratory.
   3. Testing shall include:
      a. Sampling of concrete in accordance with ASTM C172.

b. Temperature of concrete at delivery in accordance with the requirements of ASTM C1064 and as specified in this Section.
c. Slump of concrete using slump cone in accordance with requirements of ASTM C143. Test slump at the following intervals:
    1) At the beginning of each placement.
    2) As often as necessary to keep slump within the specified range, but not less than every 6th truck.
    3) When requested to do so by the Engineer.
    4) Observe concrete during slump test for signs of segregation.
        a) Observe concrete to see if mortar or moisture flows from slumped concrete.
        b) Reject concrete if mortar or moisture flows out of mix.
d. Unit weight of concrete in accordance with ASTM C138.
e. Air entrainment in accordance with ASTM C173. Test air content at the following intervals:
    1) At beginning of each placement.
    2) As often as necessary to keep entrained air within specified range, but not less than every 6th truck.
    3) When requested to do so by the Engineer.
    4) Test air entrainment in concrete in accordance with ASTM C173. If air entraining admixtures used for the Work require alternate testing procedures, advise the independent testing laboratory well in advance of the dates of testing, and confirm that appropriate equipment and personnel are provided for the test.
    5) Make air test at point of delivery (discharge from mixer). For pumped concrete, make air tests at point of delivery and at point where expelled after pumping for placement.
f. Compressive strength in accordance with ASTM C39. Required number of cylinders is as follows:
    1) Not less than 6 cylinder specimens, 4 inches in diameter by 8 inches long, will be tested for each 150 cubic yards of each class of concrete, with minimum of 6 specimens for each class of concrete placed; not less than 6 specimens for each half day's placement; and not less than 2 sets of 6 specimens for each structure.
    2) 1 cylinder will be broken at 7 days, 1 at 14 days, and 3 at 28 days. 6th cylinder may be used to evaluate strength after 28 days if requested by the Engineer.
    3) Retain and store "6th cylinders" (tested and untested) at testing laboratory until 56 days. Break "6th cylinder" when directed by the Engineer.
g. Provide full access for the Engineer to observe concrete sampling and testing at any time.

C. Test completed liquid containment structures for watertightness.

3.11 FIELD QUALITY CONTROL BY OWNER

A. As specified in Section 01450 - Quality Control.

B. Special tests and inspections: As specified in Section 01455 - Regulatory Quality Assurance.

C. Field inspections:
   1. Observe construction for conformance to the Contract Documents and the accepted submittals.
   2. Records of inspections:
      a. Provide a record of each inspection.
      b. Submit copies to the Contractor upon request.

D. Field tests:
   1. Engineer may request, at any time, additional testing to confirm materials being delivered and placed conform to the requirements of the Contract Documents.
      a. If such additional testing shows that the material do not conform to the specified requirements, the Contractor shall pay the cost of these tests.
      b. If such additional testing shows that the materials do conform to the specified requirements, the Owner will pay the cost of these tests.

3.12 NON-CONFORMING WORK

A. Remove and replace or repair non-conforming and defective work.
   1. Provide repairs having strength equal to or greater than specified concrete for areas involved.
   2. Provide replacement or repair of non-conforming work by means acceptable to the Engineer and at no additional cost to the Owner.
   3. Project schedule will not be extended based on work to address non-conforming concrete.

B. Concrete not conforming to the specified requirements for properties of plastic concrete: Remove from the site and replace with conforming materials at no additional cost to the Owner.
   1. Temperature: Do not use concrete having a temperature above or below the limits specified in this Section.
   2. Slump: Do not place concrete that does not conform to requirements for slump.
   3. Air entrainment: Do not use concrete that does not conform to requirements for percentage of entrained air.

C. Concrete not conforming to the specified requirements for compressive strength:
   1. Concrete is expected to reach a compressive strength equal to or greater than the minimum specified compressive strength f'c in Table 3 of this Section.
   2. Strength of concrete will be considered acceptable if the following conditions are satisfied.
      a. Averages of all sets of 3 consecutive strength test results is greater than or equal to the specified compressive strength f'c.
      b. No individual strength test (average of 3 cylinders) falls below the strength specified in Table 6 of this Section.
      c. Where relationships between 7-day and 28-day compressive strength, or between 28-day and 56-day compressive strength, have been provided as part of the mix design submittals:
         1) 7-day strength may be considered as an indication of 28-day strength provided effects of temperature and humidity between 7 days and 28 days are taken into account.

2) 28-day strength may be considered as indication of 56-day strength provided effects of temperature and humidity between 28 days and 56 days are taken into account.

Table 6: Strength Compliance Requirements	
Minimum Specified Compressive Strength, f'c (pounds per square inch)	**Lower Bound of an Individual Compressive Strength Test (pounds per square inch)**
Less than 5,000	f'c - 500
Over 5,000	f'c - (0.10 x f'c)

3. Non-compliant strength tests.
   a. Mark non-compliant strength test reports to highlight the non-complying results, and immediately forward copies to all parties on the test report distribution list.
   b. Initial treatment may consist of additional curing of affected portion(s) followed by not less than 3 cores at each affected area, taken in accordance with ASTM C42 and ACI CODE-318. Obtain the Engineer's acceptance of proposed coring locations before proceeding with that work.
   c. Submit report of compressive strength testing for the Engineer's review.
   d. If requested by the Engineer, provide additional cores, and obtain petrographic testing in accordance with ASTM C856. Submit results for the Engineer's review.
   e. If additional curing does not bring the average strength of 3 cores taken in affected area to at least specified compressive strength f'c, designate such concrete in affected area will be considered defective.
   f. Engineer may require the Contractor to strengthen defective concrete by means of additional concrete, additional reinforcing steel, or replacement of defective concrete, all at the Contractor's expense.

D. Concrete sections or surfaces with honeycombing and voids:
   1. Provide repairs having surface appearance and finish consistent with that of the surrounding work and acceptable to the Engineer.
   2. Do not patch, repair, or cover defective Work without prior inspection by the Engineer.
   3. Preparation of concrete for repair:
      a. Make no repair until the Engineer has accepted methods for preparing surfaces and for making and curing repairs.
      b. Chip out and key-in imperfections in the Work to make them ready for repair.
      c. Coat bonding surfaces and edges of repair area with one of the following bonding agents as accepted by the Engineer.
         1) Epoxy bonding agent as specified in Section 03071 - Epoxies.
         2) Epoxy resin/Portland cement bonding agent as specified in Section 03072 - Epoxy Resin/Portland Cement Bonding Agent.
   4. Methods of repair:
      a. Dry pack mortar method:
         1) Use for holes having depth nearly equal to or greater than least surface dimension of hole, for cone-bolt holes, and for narrow slots cut for repair.

2) Smooth holes: Clean and roughen by heavy sandblasting before repair.
3) Install dry-pack mortar as specified in Section 03600 - Grouting.

b. Cement mortar method:
1) Use for holes too wide to dry pack and too shallow for concrete replacement; and for comparatively shallow depressions, large or small, that extend no deeper than nearest surface reinforcement.
2) Install cement mortar as specified in Section 03600 - Grouting.

c. Concrete replacement:
1) Use when holes extend entirely through the concrete section or when holes are more than 1 square foot in area and extend halfway or more through the section.
2) Form, place, consolidate, and cure concrete of same mix as the surrounding work.

E. Leaking construction joints and cracks in concrete walls and slabs:
1. Repair cracks that develop in walls or slabs, and repair cracks that show any signs of leakage until all leakage is stopped.
2. Pressure inject visible cracks in the following areas, other than hairline cracks and crazing, with repair products and methods acceptable to the Engineer.
a. Floors and walls of water bearing structures.
b. Walls and overhead slabs of passageways and occupied spaces where the opposite face of the member is exposed to weather or may be washed down and where the opposite face does not receive a separate waterproofing membrane.
c. Other items not specified to receive separate waterproofing membrane including slabs over water channels, wet wells, reservoirs, and other similar surfaces.
3. Continue pressure injection of cracks as specified until structure is watertight and remains watertight for not less than 1 year after date of Substantial Completion or date of final repair, whichever occurs later in time.

F. Leaking expansion joints in concrete walls or slabs that include waterstops:
1. Repair any signs of leakage until all leakage is stopped.
2. Pressure inject visible leaks with hydrophilic polyurethane foam resin.
3. Continue pressure injection along joints lines as specified until structure is watertight and remains watertight for not less than 1 year after date of Substantial Completion or date of final repair, whichever occurs later in time.

G. Walls and slabs at overhead channels that leak or sweat because of porosity or cracks too small for successful pressure injection with epoxy.
1. Seal on water or weather side by coating using surface-applied sealing system as specified in this Section.
2. Apply as recommended by manufacturer published instructions. Where concrete continues to sweat or leak, apply additional coats of surface-applied sealing system until the sweating or leaks stop.
3. Continue application of surface-applied sealing system until structure is watertight and remains watertight for not less than 1 year after date of Substantial Completion, or date of final repair, whichever occurs later in time.

END OF SECTION

ATTACHMENT A - MENZEL FORMULA AND NOMOGRAPH

MENZEL FORMULA AND NOMOGRAPH

Source: ACI PRC-305

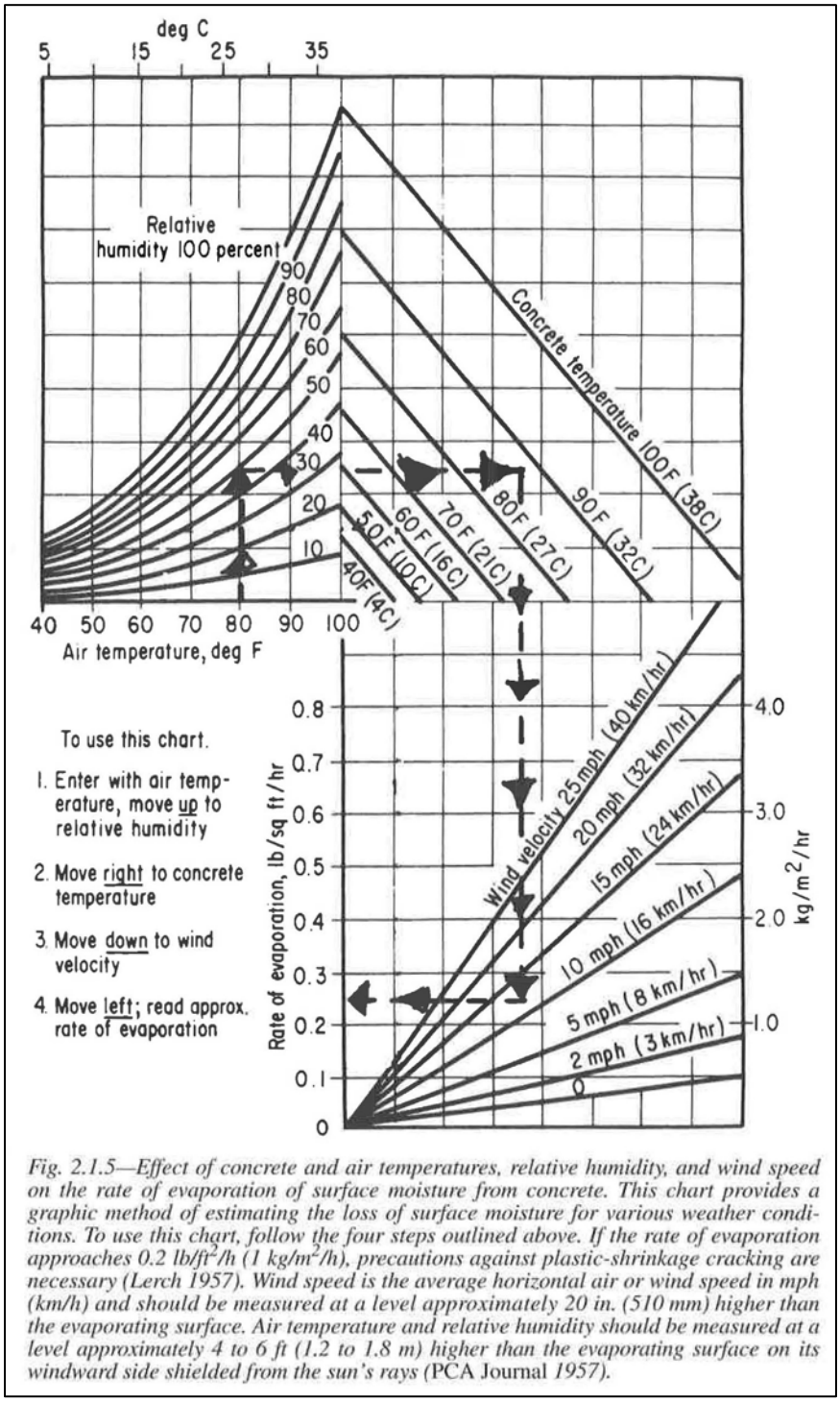


*Fig. 2.1.5—Effect of concrete and air temperatures, relative humidity, and wind speed on the rate of evaporation of surface moisture from concrete. This chart provides a graphic method of estimating the loss of surface moisture for various weather conditions. To use this chart, follow the four steps outlined above. If the rate of evaporation approaches 0.2 lb/ft^2/h (1 kg/m^2/h), precautions against plastic-shrinkage cracking are necessary (Lerch 1957). Wind speed is the average horizontal air or wind speed in mph (km/h) and should be measured at a level approximately 20 in. (510 mm) higher than the evaporating surface. Air temperature and relative humidity should be measured at a level approximately 4 to 6 ft (1.2 to 1.8 m) higher than the evaporating surface on its windward side shielded from the sun's rays (*PCA Journal *1957).*

ATTACHMENT B - COARSENESS FACTOR CHART

COARSENESS FACTOR CHART

Source: ACI PRC-302.1-15, Figure 8.9.2.2.

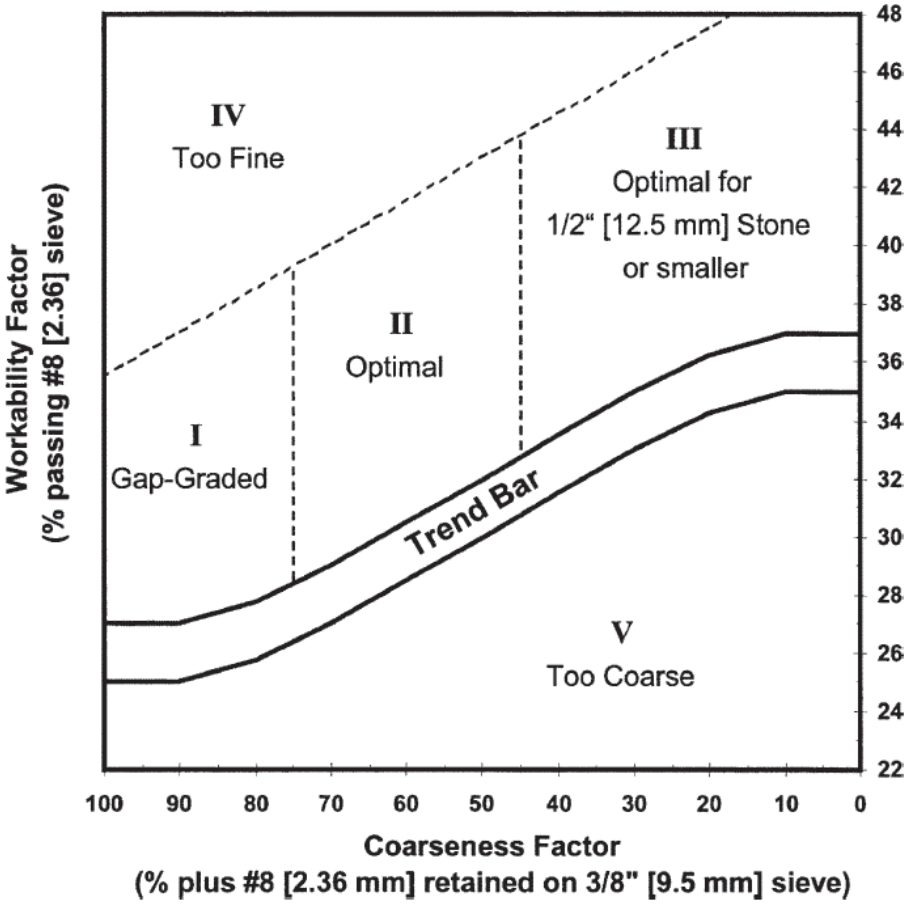
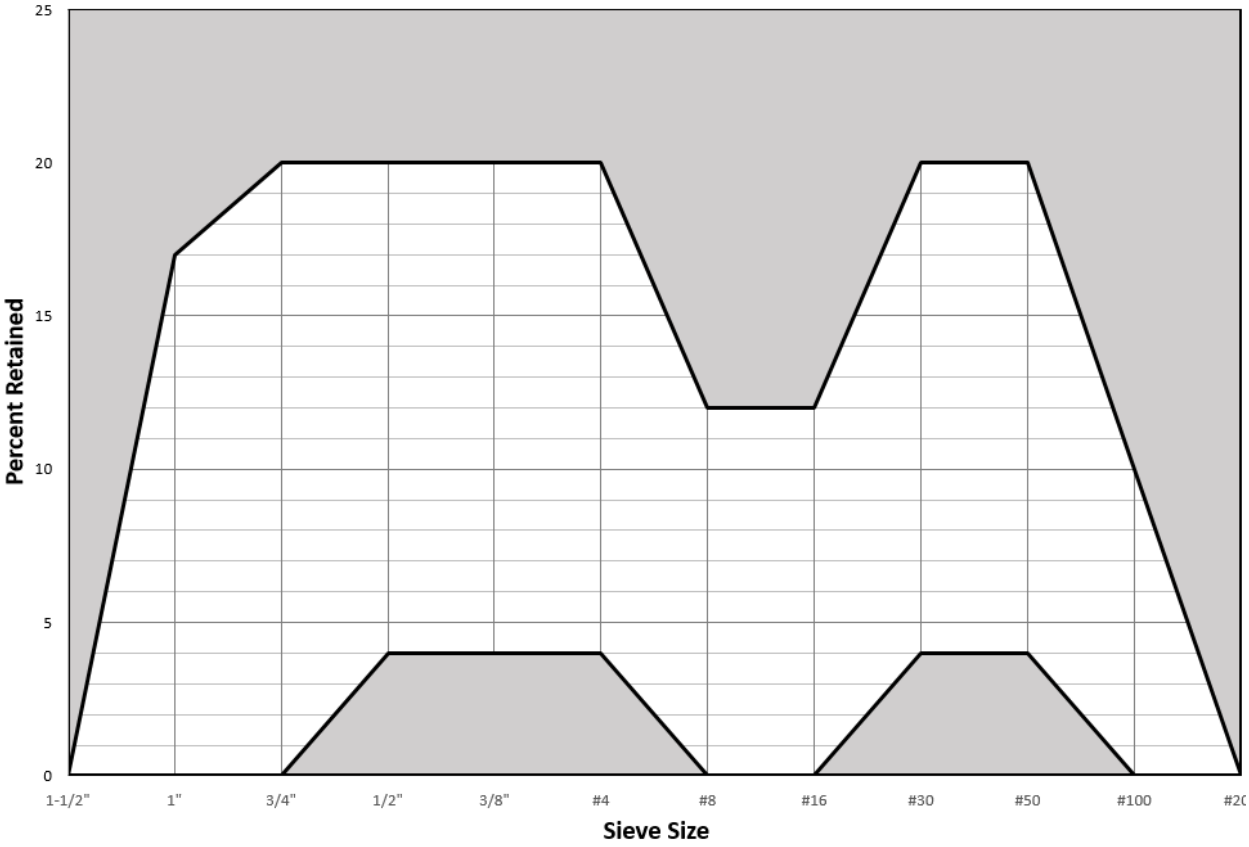


Fig. 8.9.2.2—Coarseness factor chart for evaluating potential performance of mixture.

ATTACHMENT C - COMBINED AGGREGATE GRADATION CHART

COMBINED AGGREGATE GRADATION CHART



ATTACHMENT D - CONCRETE PLACEMENT CHECKLIST

CONCRETE PLACEMENT CHECKLIST

Project: _____ Class of Concrete: _____

Project No: _____ Test Cylinders Taken? Yes: _____ No: _____

Preparation Slab	Contractor	N/A
Compaction Subgrade		
Filter Fabric/Drain Rock-ABC/Separator Fabric		
Drain Rock, Pea Gravel & Void Form		
Starter Wall Forms		
Reinforcing Steel		
Screeds		

Embedded Items	Contractor	N/A
A. Anchor Bolts		
B. Water Stop		
C. Rebar		
D. Electrical		
E. Plumbing Rough-in		
F. Mechanical		
G. HVAC		

Concrete Placement Equip.	Contractor	N/A
A. Crane		
B. Buckets		
C. Hoppers		
D. Vibrators		
E. Elephant trunks		
F. Floodlights		
G. Pump Truck		

Building Department Notification	
Date:	Time:

Prep Wall Concrete	Contractor	N/A
Access To Work		
Ladders Secured		
Clean up and Washed Out		
Reinforcing Steel		

Forms	Contractor	N/A
A. Alignment & Grade		
B. Scaffolding		
C. Sleeves & Wall Castings		
D. Embedded Items		
E. Electrical		
F. Plumbing Rough-in		
G. Piping		

Record of Curing Conditions During Placement	
Start:	Finish:
Date:	
Time:	
Weather:	
Temperature:	
Comments:	

Location of Placement _____

The Contractor certifies the above-proposed concrete placement is prepared as indicated and is in accord with the Contract Drawings and Specifications. The Contractor requests permission to begin placement of concrete on the date of _____ at _____. The estimated number of yards is _____. The estimated duration of the placement is _____.

By: _____
Contractor

Released for placement by: _____
Engineer

SECTION 03366

CONCRETE FINISHES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Concrete finishes.

1.02 REFERENCES

A. American Concrete Institute (ACI):
   1. 117-10 - Specification for Tolerances for Concrete Construction and Materials and Commentary.

B. International Concrete Repair institute (ICRI):
   1. Guideline No. 301.2: Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Architectural concrete:
      a. Concrete surfaces that will be exposed to view in the finished work.
         1) For purposes of this Section, includes exposed concrete surfaces that are designated to receive paint or coatings.
         2) Exposed concrete in open basins, channels, and similar liquid-containing structures: Surfaces will be considered exposed to view if located above the water line as defined in this Section.
   2. Grade line: A reference line that separates surfaces considered to be above grade from those considered to be below grade. Located 12 inches below finished grades at the perimeter of the structure.
   3. Water line: A reference line that separates surfaces considered to be above the water level (and visible in the finished work) from those considered to be below the water level (and not visible in the finished work). For each water-bearing cell of a structure, defined as a line located 2 feet below the normal operating water level in that cell.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. Finishing personnel:
      a. Use qualified flatwork finishers.
      b. Finishing supervisor must have at least 5 years of experience finishing concrete.

B. Mockups:
    1. Construct mockup panels showing finishing of formed surfaces for review by the Engineer.
        a. Construct mockup panels demonstrating concrete finishes for vertical surfaces:
            1) Construct mockup panels for F4 and F5 finishes and tie-hole repairs for review by the Engineer.
    2. Construct mockup slabs showing finishing of unformed surfaces for review by the Engineer.
        a. Construct mockup slabs demonstrating concrete finishes for horizontal surfaces:
            1) Construct mockup slabs for S1, S2, S4, and S5 finishes.
    3. Include the following elements in mockup panels and slabs.
        a. Concrete joints:
            1) Horizontal and vertical joints of the types included in the Work.
        b. Concrete repairs:
            1) Repairs using materials and procedures proposed for the Work.
    4. Construct mockup panels and slabs at beginning of project for review by the Engineer.
    5. Panels and portions thereof accepted by the Engineer will serve as the standard of quality and workmanship for the Work.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Packing and shipping:
    1. Deliver and store packaged materials in original containers until ready for use.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials for mortar:
    1. As specified in Section 03300 - Cast-in-Place Concrete, unless otherwise noted.
    2. Where finished surfaces will be visible in the finished work, use same cement used for concrete batches in that area. Add white cement if required to obtain color match between base concrete and finishing mortars.

2.02 MIXES

A. Cement mortar:
    1. As specified in Section 03600 - Grouting.

B. Dry-pack mortar:
    1. As specified in Section 03600 - Grouting.

C. Mortar mix for F4 finish (“F4 Mortar”):
    1. Consisting of 1 part cement and 1-1/2 parts of fine sand passing Number 100 screen. Mix with enough water and emulsified bonding agent to have consistency of thick cream.

D. Mortar mix for F5 finish ("F5 Mortar"):
   1. Consisting of 1 part cement to 1-1/2 parts of sand passing Number 16 screen.

2.03 EVAPORATION RETARDANT

A. As specified in Section 03300 - Cast-in-Place Concrete.

2.04 NON-SLIP ABRASIVE

A. Type: Aluminum oxide abrasive of size 8/16, having structure of hard aggregate. Homogeneous, non-glazing, rust-proof, and unaffected by freezing, moisture, and cleaning compounds.

B. Manufacturers: One of the following, or equal:
   1. Abrasive Materials Incorporated, Hillsdale MI.
   2. Exolon Company, Tonawanda NY.

2.05 CONCRETE SEALERS

A. Floor sealer and dust-proofer:
   1. Non-membrane forming, breathable, non-yellowing, penetrating sealer designed to densify and seal a cured concrete surface.
   2. Low odor, VOC content of 0 grams per liter, and stable when exposed to ultraviolet radiation from sunlight.
   3. Manufacturers: One of the following, or equal:
      a. Dayton Superior: Day-Chem Sure Hard Densifier (J-17).
      b. Euclid Chemical Company: Euco Diamond Hard.
      c. L&M Construction Chemicals: Seal Hard.
      d. W.R. Meadows: Liqui-Hard.

PART 3 EXECUTION

3.01 CONCRETE FINISHING - FORMED SURFACES

A. Scope:
   1. Finish formed surfaces with one of the finishes specified in the following paragraphs and as indicated in the Schedule of Concrete Finishes in this Section.
   2. Formed surfaces are those surfaces that the plastic concrete is placed against a temporary containment surface that will be removed after the concrete sets and takes its final form.

B. General:
   1. Provide setting and curing time from casting of concrete to removal of forms as specified in Section 03300 - Cast-in-Place Concrete.
   2. Provide curing after removal of forms as specified in Section 03300 - Cast-in-Place Concrete.
   3. Materials and mixes for finishes.
      a. Cement: Add white cement to mortars and grouts used for finishing if required to match color of repairs to surrounding surfaces.

4. Grinding:
    a. Grinding of architectural concrete is not permitted, unless demonstrated on the sample panel and accepted in advance by the Engineer.
    b. Where grinding of concrete surfaces is permitted:
        1) Perform grinding using an iron-free wheel, such as an aluminum oxide wheel, to avoid entrapment of particles that produce rust stains.
        2) At locations where plastic-protected reinforcing bar supports are used, limit grinding to a maximum depth of 1/16 inch.

C. F1 finish: “Rough Form Finish”:
1. Repair defective work.
2. Remove fins and other projections larger than 1 inch.
3. Fill tie holes using dry-pack mortar.
4. After removal of any curing compounds, fill depressions larger than 1 1/2-inch wide or 1/2-inch deep using dry-pack mortar.
5. Leave surface with texture imparted by forms.
6. Surface irregularity: Not exceeding a 1-inch gap when measured over the length of a 5-foot straightedge.

D. F2 finish: “Form Finish”:
1. Repair defective work.
2. Remove fins and other projections larger than 1/4 inch.
3. Fill tie holes using dry-pack mortar.
4. Fill depressions.
    a. Fill after removal of any curing compounds.
    b. Fill depressions larger than 3/4 inch in width or 1/2 inch in depth using cement mortar.
    c. Fill larger voids and depressions, use dry-pack mortar.
5. Leave surfaces with texture imparted by forms.
6. Surface irregularity: Not exceeding a 1/4-inch gap when measured over the length of a 5-foot straightedge.

E. F3 finish: “Smooth Form Finish”:
1. Repair defective work.
2. Repair rough or irregular surface finishes resulting from failure of form release agent or other form conditions and provide a smooth, uniform surface appearance.
3. Remove fins: Grind offsets, projections, and rough spots larger than 1/8 inch.
4. Fill tie holes using dry pack mortar.
5. Fill depressions:
    a. Fill after removal of any curing compounds.
    b. Fill depressions 1/2 inch and larger in depth or 3/4 inch in width using cement mortar.
    c. For larger depressions, fill using dry pack mortar.
6. Top coat tie holes and filled depressions with cement mortar to provide uniform appearance.
7. Leave surfaces with texture that is generally smooth and uniform in appearance.
8. Surface irregularity: Not exceeding a 1/8 inch gap when measured over the length of a 5-foot straightedge.

F. F4 finish: “Rubbed Finish”:
   1. As specified for F3 finish, except prepare surfaces and fill depressions 1/16 inch or larger in depth or width as follows.
   2. Fill depressions.
      a. “Brush-off” sandblast surfaces to expose all depressions and voids near the surface of the concrete.
      b. Thoroughly wet surfaces and begin filling depressions while surfaces are still damp.
      c. Use clean burlap, sponge rubber floats, or trowels to rub plastic F4 mortar over the entire surface to be finished. Fill pits, holes, and depressions.
      d. Wipe surfaces clean. Do not leave any mortar on the surface, except that within the depressions.
      e. Cure: Moist cure surfaces.

G. F5 finish: “Stoned Finish”:
   1. As specified for F3 finish, except add stoned finish as follows.
   2. Fill depressions:
      a. Wet surfaces thoroughly with brush.
      b. Rub wetted surfaces with a hard wood float dipped in water containing 2 pounds of Portland cement per gallon of water.
      c. Rub surfaces until form marks and projections are removed.
      d. Using a brush, spread plastic grindings from the rubbing operation uniformly over the surface. Work the material in to fill pits and small voids.
      e. Cure: Moist cure brushed surfaces for at least 72 hours.
   3. Finish surfaces:
      a. After curing, obtain final finish by rubbing with a No. 50 grit carborundum stone.
      b. Continue rubbing until entire surface has a smooth texture and is uniform in color.
      c. Cure: Continue curing for remainder of specified time.
   4. Note: If surfaces have become too hard to finish as specified in the preceding paragraphs, the following alternative procedure may be used:
      a. Sandblast and wash related surfaces exposed to view, whether finished or not.
      b. While surfaces are still damp, rub surface with mortar mix for F5 finish.
      c. Finish by rubbing mortared surface with No. 60 grit carborundum stone. Add F5 mortar until surface is evenly filled without excess mortar. Continue stoning until surface is hard.
      d. Moist cure surface for 72 hours.
      e. After curing, make surface smooth in texture and uniform in color by rubbing with a No. 50 or No. 60 grit carborundum stone.
      f. Continue curing until 7-day curing period is complete.

3.02 CONCRETE FINISHING - UNFORMED SURFACES

A. Scope:
   1. Finish unformed surfaces with one of the finishes specified in the following paragraphs and as indicated in the Schedule of Concrete Finishes in this Section.
   2. Unformed surfaces are those surfaces that are not cast against a temporary containment and the specified finish is achieved by tooling.

B. General:
    1. Concrete placement:
        a. Place concrete at a rate that allows spreading, straight-edging, and initial floating before bleed water appears.
            1) Consider characteristics of concrete mixes used, including potential for accelerating or retarding effects of admixtures, fly ash, and temperatures, on plans for and scheduling of placement and finishing.
        b. Place, consolidate, strike-off, and screed concrete level to bring surfaces to required planes and lines. Eliminate high and low spots.
        c. Strike tops of walls and similar surfaces smooth and finish as specified to a texture consistent with that of adjacent formed surfaces.
        d. After screeding, apply evaporation retardant to concrete surface if weather conditions will result in rapid evaporation of moisture from the surface of the concrete. Do not work evaporation retardant into the surface of the concrete.
    2. Floating and re-straightening:
        a. Float concrete to compact and consolidate the surface.
        b. Initial floating:
            1) Provide initial floating immediately after screeding.
            2) Perform by hand using a wide bull float, darby, or highway straightedge.
            3) Complete before excess moisture or bleed water is present on the surface.
        c. Wait for concrete to stiffen and for the bleed water to stop rising and dissipate before proceeding with edging, hand-tooled jointing, and second floating.
        d. After initial floating, apply evaporation retardant to concrete surface if weather conditions will result in rapid evaporation of moisture from the surface of the concrete. Do not work evaporation retardant into the surface of the concrete.
        e. Second floating:
            1) Do not commence until bleed water has dissipated and concrete has stiffened enough to support weight of finishers and finishing equipment.
            2) May be by hand, or, if accepted by the Engineer, may be done using a bladed power float equipped with float shoes, or a power disk float.
            3) Float surfaces to a true, even plane, with no coarse aggregate visible.
            4) Evaporation retardant may not be applied after second floating.
        f. Flatness:
            1) Specified tolerances for flatness may require re-straightening of the surface between first and second floating operations and before steel troweling. Re-straighten concrete as required.
            2) Modify power equipment with alternate float shoes or other equipment if required to achieve specified flatness.
    3. Troweling: Where finishes require troweling, conform to the following requirements:
        a. After surface moisture from floating has disappeared, steel trowel to a smooth, hard, dense concrete surface.
        b. Provide at least 2 trowelings.
            1) Avoid excessive troweling.
            2) Use smaller trowels for successive troweling.

3) Make each successive troweling perpendicular to the previous pass.
c. Do not add dry cement or additional water to the surface during troweling.
d. In lieu of hand steel troweling, a power machine for finishing concrete may be used if accepted by the Engineer.
1) Do not use power machine if concrete has not attained the set necessary to permit finishing without introduction of high and low spots into the concrete surface.
2) Use equipment in full compliance with the manufacturer's recommendations.
3) Use smaller blades or higher pressure for each successive troweling.
4) Hand trowel areas of the concrete not accessible to power equipment.
5) Tolerances for flatness specified may require re-straightening of the surface during finishing. Modify power equipment with alternate shoes or other equipment if required to achieve these requirements.
e. Finishing with a fresno trowel or finishing to a "fresno finish" is not allowed.
4. Finishing tolerances:
a. Slabs sloped to drain: Finish surfaces to adequately drain toward designated points or lines, regardless of tolerances specified.

C. S1 finish: "Scratch Finish":
1. Place, consolidate, and screed concrete level.
2. Provide initial floating of concrete.
3. Provide surface conforming to the "Conventional" floor flatness tolerance requirements of ACI 117 using the manual straightedge method (maximum 1/2-inch gap in 10 feet at 90 percent of locations; maximum 3/4-inch gap at any location), unless otherwise indicated.
4. Before final set, roughen the surface with rakes.
a. For sloped surfaces, rake grooves in the direction of drainage.
b. Provide roughness equivalent to CSP 6 surface as designated by ICRI Guideline 310.2.
5. Pressure wash surface to remove laitance before placing grout or toppings.

D. S2 finish: "Floated Finish":
1. Place, consolidate, and screed concrete to required elevations and slopes.
2. Provide initial and second floatings of concrete. Float to a uniform texture.
3. Provide surface conforming to the "Flat" floor flatness tolerance requirements of ACI 117 using the manual straightedge method (maximum 1/4-inch gap in 10 feet at 90 percent of locations; maximum 3/8-inch gap at any location), unless otherwise indicated.
4. Remove laitance and leave surface clean.

E. S3 finish: "Steel Trowel Finish":
1. Place, consolidate, and screed concrete to required elevations and slopes.
2. Provide S2 Floated Finish.
3. Provide 2 trowelings:
4. Provide finish conforming to the "Flat" floor flatness tolerance requirements of ACI 117 (maximum 1/4-inch gap in 10 feet), unless otherwise indicated.

F. S4 finish: "Steel Trowel Finish - Free of Trowel Marks":
1. Finish as specified for S3 Steel Trowel Finish, except that final troweling shall remove all trowel marks from the slab surface.

G. S5 finish: “Broomed Finish”:
   1. Finish as specified for S2 Floated Finish, except modify as follows.
   2. Finish surface by drawing a fine-hair broom lightly across the freshly floated surface.
      a. Provide resulting roughness for a non-skid surface. Finishing and roughness is subject to review and acceptance by the Engineer.
      b. Direction of brooming:
         1) General:
            a) In same direction of and parallel to expansion joints.
            b) Perpendicular to primary direction of traffic.
         2) For sloped slabs, parallel to the direction of drainage.
         3) For round roof slabs, in the radial direction.

H. S6 finish: “Non-Slip Abrasive Finish”:
   1. Place, consolidate, and screed concrete to required elevations and slopes.
   2. Provide initial floating of surface.
   3. Prepare and apply abrasive as recommended by the manufacturer.
      a. Apply using a shake screen or other accepted method to ensure even coverage without segregation of the abrasive.
      b. Install abrasive at a rate of 25 pounds for each 100 square feet of surface area.
   4. After concrete has hardened enough to support the weight of a person, and unless otherwise indicated by the abrasive manufacturer, apply approximately 2/3 of the abrasive material required for coverage.
   5. Finish as specified for S2 Floated Finish, except that re-floating is not required.
   6. Apply remaining abrasive material at right angles to the first application and in locations necessary to provide the minimum specified thickness.
   7. Immediately after the second application, re-float the surface to embed abrasive.
   8. Finish as specified for S2 Steel Trowel Finish. Trowel abrasive into the surface, properly exposing material to produce a non-slip finish.

I. Concrete sealer:
   1. See Room Finish Schedule Drawings for locations of floors and slabs receiving concrete sealer finish.
   2. Apply sealer in accordance with manufacturer’s instructions.

3.03 FIELD QUALITY CONTROL

A. Provide field quality control for the Work of this Section as specified in Section 01450 - Quality Control.

B. Field quality control by Contractor:
   1. Field inspections and testing:
      a. Submit records of inspections and testing to Engineer within 24 hours after completion.
   2. Manufacturer's services.
      a. Non-slip abrasive finish. Before beginning installation, conduct pre-installation meeting with manufacturer's technical representative to review product use and installation requirements.

C. Field quality control by Owner:
    1. Special inspections, special tests, and structural observation:
        a. Not required.
    2. Field inspections:
        a. Observe construction for conformance to the Contract Documents and the accepted Submittals.
        b. Provide record of each inspection. Submit copies to Engineer upon request.

3.04 NON-CONFORMING WORK

A. Unsatisfactory finishes that have hardened will require removal, grinding, topping, or other correction acceptable to the Engineer.

B. Re-work or refinish unsatisfactory finishes at no additional cost to the Owner.

C. See Section 03300 - Cast-In-Place Concrete for requirements.

3.05 SCHEDULE OF CONCRETE FINISHES

A. Formed surfaces: See Table 03366-A.

B. Unformed surfaces: See Table 03366-B.

Table 03366-A: Concrete Finishes - Formed Surfaces					
	Elements	**Location**	**Surface Exposure**	**Finish**	**Notes**
EXTERIOR SURFACES	Walls Columns Slab edges	Wet structure:	Above grade or water line:		
			- Exposed to view	F4	
			- Covered	F2	1a
			Below grade or water line:		
			- No coating	F1	
			- Bituminous coating	F2	
			- Waterproofing	F3	
		Dry structure:	Above grade line:		
			- Exposed to view	F4	
			- Covered	F2	1a
			Below grade line:		
			- No coating	F1	
			- Bituminous coating	F2	
			- Waterproofing	F3	
INTERIOR SURFACES	Walls Columns Slab edges	Wet structure:	Open basin:		
			- Above water line	F4	
			- Below water line	F3	
			Covered basin		
			- Above water line	F3	
			- Below water line	F3	
		Dry structure:	Exposed to view	F4	
			Covered	F2	1b
	Overhead slabs and beams	Wet structure:	Open basin	F3	1c, 1d
			Covered basin	F2	1d
		Dry structure:	Exposed	F3	1c, 1d
			Covered by ceiling	F1	1d

Notes:

(1a) Coverings include additional surfaces applied over the concrete, such as veneer, stucco, plaster, etc.

(1b) Coverings include additional surfaces applied over the concrete, such as veneer, stucco, plaster, furring strips with drywall, etc.

(1c) Applies to overhead surfaces visible from normal pedestrian travel routes.

(1d) At overhead slabs and beams, patch tie holes on sides of members.

Table 03366-B: Concrete Finishes - Unformed Surfaces					
	Element	**Location**	**Exposure**	**Finish**	**Notes**
EXTERIOR SURFACES	Footings	Extensions	Exposed	S3	
			Covered by soil	S2	
	Slabs and beams - exposed	Walking or possible walking paths	Tops of treatment structures	S5	2a, 2b, 2g
			Stairs & landings	S5	
		Roofs	Exposed	S5	
			Covered by roofing	S2	
	Slabs and beams - submerged	Unless otherwise noted	All	S3	2g
	Walls, Corbels	Top of wall or corbel	All	S3	One troweling
	Sidewalks	All		S5	
	Equipment Slabs	All		S5	
INTERIOR SURFACES	Floor slabs, includes flat and sloping surfaces	Wet structure	Exposed		
			- Basins & channels	S3	
			Covered		
			- To receive basin bottom grout	S1	2e
			- To receive concrete fill	S1	2f
		Dry structure	Exposed		
			- Pipe galleries	S4	2c
			- Stairs & landings	S4	2d
			- Shops & garages	S4	
			- Equipment rooms	S4	
			Covered		
			- Tile on mortar bed	S2	
			- Resilient flooring	S3	
			- Carpet	S3	

Notes:
(2a) Includes slabs covering tanks, basins, channels and similar structures.
(2b) Includes tops of walls or beams that serve as walkways.
(2c) In galleries with slabs subject to wetting, provide broom finish (S5) where indicated on the Drawings.
(2f) Finish for concrete fill: See Floor slab, wet structure, exposed basins and channels.
(2g) Slabs include flat and sloping surfaces.

C. Finish concrete surfaces in accordance with Finish Schedule indicated on the Drawings.

END OF SECTION

SECTION 03600

GROUTING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Cement grout.
   2. Cement mortar.
   3. Dry-pack mortar.
   4. Epoxy grout.
   5. Grout.
   6. Non-shrink epoxy grout.
   7. Non-shrink grout.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (using 2-inch cube specimens).
   2. C230 - Standard Specification for Flow Table for Use in Tests of Hydraulic Cement.
   3. C531 - Standard Test Method for Liner Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
   4. C579 - Standard Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacings and Polymer Concretes.
   5. C939 - Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method).
   6. C942 - Standard Test Method for Compressive Strength of Grouts for Preplaced-Aggregate Concrete in the Laboratory.
   7. C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink).
   8. C1181 - Standard Test Methods for Compressive Creep of Chemical-Resistant Polymer Machinery Grouts.

B. International Concrete Repair Institute (ICRI):
   1. 310.2R - Selecting and specifying Concrete Surface Preparations for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

1.03 SUBMITTALS

A. Cement grout:
   1. Mix design.
   2. Material Submittals.

B. Cement mortar:
   1. Mix design.
   2. Material Submittals.

C. Non-shrink epoxy grout:
   1. Manufacturer's literature.

D. Non-shrink grout:
   1. Manufacturer's literature.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to jobsite in their original, unopened packages or containers, clearly labeled with manufacturer's product identification and printed instructions.

B. Store materials in cool dry place and in accordance with manufacturer's recommendations.

C. Handle materials in accordance with the manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Non-shrink epoxy grout:
   1. Manufacturers: One of the following, or equal:
      a. Five Star Products, Inc., Five Star DP Epoxy Grout.
      b. L&M Construction Chemicals, Inc., EPOGROUT.
      c. Master Builder Solutions/Sika, MasterFlow 648.
   2. Non-shrink epoxy grout shall be 100 percent solid, premeasured, prepackaged system containing 2-component thermosetting epoxy resin and inert aggregate.
   3. Maintain flowable consistency for at least 45 minutes at 70 degrees Fahrenheit.
   4. Shrinkage or expansion: Less than 0.0006 inches per inch when tested in accordance with ASTM C531.
   5. Minimum compressive strength: 10,000 pounds per square inch at 24 hours and 14,000 pounds per square inch at 7 days when tested in accordance with ASTM C579, Method B.
   6. Compressive creep: Not exceed 0.0037 inches/per inch when tested under 400 pounds per square inch constant load at 140 degrees Fahrenheit in accordance with ASTM C1181.
   7. Coefficient of thermal expansion: Not exceed 0.000018 inches per inch per degree Fahrenheit when tested in accordance with ASTM C531, Method B.

B. Non-shrink grout:
   1. Manufacturers: One of the following, or equal:
      a. Five Star Products, Inc., Five Star Grout.
      b. L&M Construction Chemicals, Inc., CRYSTEX.
      c. Master Builder Solutions/Sika, MasterFlow 928.
   2. In accordance with ASTM C1107.
   3. Preportioned and prepackaged cement-based mixture.

4. Contain no metallic particles such as aluminum powder and no metallic aggregate such as iron filings.
5. Require only addition of potable water.
6. Water for pre-soaking, mixing, and curing: Potable water.
7. Free from emergence of mixing water from within or presence of water on its surface.
8. Remain at minimum flowable consistency for at least 45 minutes after mixing at 45 degrees Fahrenheit to 90 degrees Fahrenheit when tested in accordance with ASTM C230.
    a. If at fluid consistency, verify consistency in accordance with ASTM C939.
9. Dimensional stability (height change):
    a. In accordance with ASTM C1107, volume-adjusting Grade B or C at 45 degrees Fahrenheit to 90 degrees Fahrenheit.
    b. Have 90 percent or greater bearing area under bases.
10. Have minimum compressive strengths at 45 degrees Fahrenheit to 90 degrees Fahrenheit in accordance with ASTM C1107 for various periods from time of placement, including 5,000 pounds per square inch at 28 days when tested in accordance with ASTM C109 as modified by ASTM C1107.

2.02 MIXES

A. Cement grout:
    1. Use same sand-to-cementitious materials ratio for cement grout mix that is used for concrete mix.
    2. Use same materials for cement grout that are used for concrete.
    3. Use water-to-cementitious materials ratio that is no more than that specified for concrete.
    4. For spreading over surfaces of construction or cold joints.

B. Cement mortar:
    1. Use same sand-to-cementitious materials ratio for cement mortar mix that is used for concrete mix.
    2. Use same materials for cement mortar that are used for concrete.
    3. Use water-to-cementitious materials ratio that is no more than that specified for concrete being repaired.
    4. At exposed concrete surfaces not to be painted or submerged in water: Use sufficient white cement to make color of finished patch match that of surrounding concrete.

C. Dry-pack mortar:
    1. Proportions by weight: 1 part Portland cement to 2 parts concrete sand.
        a. Portland cement: As specified in Section 03300 - Cast-in-Place Concrete.
        b. Concrete sand: As specified in Section 03300 - Cast-in-Place Concrete.

D. Epoxy grout:
    1. Consist of mixture of epoxy or epoxy gel and sand.
        a. Epoxy: As specified in Section 03071 - Epoxies.
        b. Epoxy gel: As specified in Section 03071 - Epoxies.
        c. Sand: Clean, bagged, graded, and kiln-dried silica sand.

2. Proportioning:
    a. For horizontal work: Consist of mixture of 1 part epoxy with not more than 2 parts sand.
    b. For vertical or overhead work: Consist of 1 part epoxy gel with not more than 2 parts sand.

E. Grout:
    1. Mix in proportions by weight: 1 part Portland cement to 4 parts concrete sand.
        a. Portland cement: As specified in Section 03300 - Cast-in-Place Concrete.
        b. Concrete sand: As specified in Section 03300 - Cast-in-Place Concrete.

F. Non-shrink epoxy grout:
    1. Mix in accordance with manufacturer's installation instructions.

G. Non-shrink grout:
    1. Mix in accordance with manufacturer's installation instructions such that resulting mix has flowable consistency and is suitable for placing by pouring.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect concrete surfaces to receive grout or mortar and verify that they are free of ice, frost, dirt, grease, oil, curing compounds, paints, impregnations, and loose material or foreign matter likely to reduce bond or performance of grout or mortar.

3.02 PREPARATION

A. Surface preparation for grouting other baseplates:
    1. Remove grease, oil, dirt, dust, curing compounds, laitance, and other deleterious materials that may affect bond to concrete and bottoms of baseplates.
    2. Roughen concrete surfaces in contact with grout to ICRI CSP-6 surface profile or rougher.
        a. Remove loose or broken concrete.
    3. Metal surfaces in contact with grout: Grit blast to white metal surface.

3.03 INSTALLATION

A. Mixing:
    1. Cement grout:
        a. Use mortar mixer with moving paddles.
        b. Pre-wet mixer and empty out excess water before beginning mixing.
    2. Cement mortar:
        a. Use mortar mixer with moving paddles.
        b. Pre-wet mixer and empty out excess water before beginning mixing.
    3. Dry-patch mortar:
        a. Use only enough water so that resulting mortar will crumble to touch after being formed into ball by hand.

4. Non-shrink epoxy grout:
    a. Keep temperature of non-shrink epoxy grout from exceeding manufacturer's recommendations.
5. Non-shrink grout:
    a. May be drypacked, flowed, or pumped into place. Do not overwork grout.
    b. Do not retemper by adding more water after grout stiffens.

B. Placement:
1. Cement grout:
    a. Exercise care in placing cement grout because it is required to furnish structural strength, impermeable water seal, or both.
    b. Do not use cement grout that has not been placed within 30 minutes after mixing.
2. Cement mortar:
    a. Use mortar mixer with moving paddles.
    b. Pre-wet mixer and empty out excess water before beginning mixing.
3. Epoxy grouts:
    a. Wet surfaces with epoxy for horizontal work or epoxy gel for vertical or overhead work prior to placing epoxy grout.
4. Non-shrink epoxy grout:
    a. Mix in complete units. Do not vary ratio of components or add solvent to change consistency of mix.
    b. Pour hardener into resin and mix for at least 1 minute and until mixture is uniform in color. Pour epoxy into mortar mixer wheelbarrow and add aggregate. Mix until aggregate is uniformly wetted. Over mixing will cause air entrapment in mix.
5. Non-shrink grout:
    a. Add non-shrink cement grout to premeasured amount of water that does not exceed the manufacturer's maximum recommended water content.
    b. Mix in accordance with manufacturer's instructions to uniform consistency.

C. Curing:
1. Cement based grouts and mortars:
    a. Keep continuously wet for minimum of 7 days. Use wet burlap, soaker hose, sun shading, ponding, and in extreme conditions, combination of methods.
    b. Maintain above 40 degrees Fahrenheit until it has attained compressive strength of 3,000 pounds per square inch, or above 70 degrees Fahrenheit for minimum of 24 hours to avoid damage from subsequent freezing.
2. Epoxy based grouts:
    a. Cure grouts in accordance with manufacturers' recommendations.
        1) Do not water cure epoxy grouts.
    b. Do not allow any surface in contact with epoxy grout to fall below 50 degrees Fahrenheit for minimum of 48 hours after placement.

D. Grouting equipment bases, baseplates, soleplates, and skids: As specified in Section 15050 - Common Work Results for Mechanical Equipment.

E. Grouting other baseplates:
1. General:
    a. Use non-shrink grout as specified in this Section.

b. Baseplate grouting shall take place from 1 side of baseplate to other in continuous flow of grout to avoid trapping air in grout.
c. Maintain hydrostatic head pressure by keeping level of grout in headbox above bottom of baseplate. Fill headbox to maximum level and work grout down.
d. Vibrate, rod, or chain non-shrink grout to facilitate grout flow, consolidate grout, and remove trapped air.

2. Forms and headboxes:
a. Build forms using material with adequate strength to withstand placement of grouts.
b. Use forms that are rigid and liquidtight. Caulk cracks and joints with elastomeric sealant.
c. Line forms with polyethylene for easy grout release. Coating forms with 2 coats of heavy-duty paste wax is also acceptable.
d. Headbox shall be 4 to 6 inches higher than baseplate and shall be located on 1 side of baseplate.
e. After grout sets, remove forms and trim back grout at 45 degree angle from bottom edges of baseplate.

3.04 FIELD QUALITY CONTROL

A. Non-shrink epoxy grout:
1. Test for 24-hour compressive strength in accordance with ASTM C579, Method B.

B. Non-shrink grout:
1. Test for 24-hour compressive strength in accordance with ASTM C942.

END OF SECTION

SECTION 04055

ADHESIVE BONDING REINFORCING BARS AND ALL THREAD RODS IN MASONRY

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Bonding reinforcing bars and all thread rods in masonry using injectable, 2-component adhesive.

1.02 REFERENCES

A. American National Standards Institute (ANSI):
   1. B212.15 - Cutting Tools - Carbide-Tipped Masonry Drills and Blanks for Carbide-Tipped Masonry Drills.

B. ICC Evaluation Service, Inc. (ICC-ES):
   1. AC58 - Acceptance Criteria for Adhesive Anchors in Masonry Elements.

C. Society for Protective Coatings (SSPC):
   1. Surface Preparation Standards (SP).
      a. SP-1 - Solvent Cleaning.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Evaluation Report: Prepared by ICC-ES, or by other testing agency acceptable to the Engineer and to the Authority Having Jurisdiction, that documents testing and review of the adhesive product to confirm that it conforms to the requirements of ICC-ES AC58.

1.04 SUBMITTALS

A. Product data: Furnish technical data for adhesives, including:
   1. Independent testing laboratory results indicating allowable loads in tension and shear for masonry walls of the types included in the Work, with load modification factors for temperature, spacing, edge distance, and other installation variables.
   2. Handling and storage instructions.
   3. Installation instructions.

B. Quality Control Submittals:
   1. Special inspection: Detailed instructions for special inspection to comply with the building code specified in Section 01410 - Regulatory Requirements and as required by the Evaluation Report for each product.
   2. Evaluation Report confirming that the product complies with the requirements of ICC-ES AC58.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store and protect as follows, unless the manufacturer has more stringent requirements:
   1. Store adhesive components on pallets or shelving in a covered-storage area protected from weather.
   2. Control temperature to maintain storage within the manufacturer's recommended temperature range.
      a. If products are stored at temperatures outside the manufacturer's recommended range, test components prior to use by methods acceptable to the Engineer to determine if the products still meet specified requirements.
   3. Dispose of products that have passed their expiration date.

1.06 PROJECT CONDITIONS

A. As specified in Section 01850 - Design Criteria.

B. Seismic design category (SDC) for structures: As specified in Section 01850 - Design Criteria.

PART 2 PRODUCTS

2.01 GENERAL

A. Like items of materials: Use end products of one manufacturer to achieve structural compatibility and single-source responsibility.

2.02 ADHESIVE FOR SELF-CONTAINED CARTRIDGE SYSTEM

A. Shall have a current Evaluation Report demonstrating compliance with the requirements of ICC-ES AC58.

B. Materials:
   1. 2-component structural adhesive, insensitive to moisture, and gray in color.
   2. Cure temperature, pot life, and workability: Compatible with intended use and environmental conditions.

C. Packaging:
   1. Furnished in disposable, side-by-side cartridges with resin and hardener components isolated until mixing through manufacturer's static mixing nozzle.
      a. Nozzle designed to thoroughly blend the components, in the proper mixing ratio, for injection from the nozzle directly into prepared hole.
      b. Provide nozzle extensions as required to allow full-depth insertion and filling from the bottom of the hole.
   2. Container markings: Include manufacturer's name, product name, batch number, mix ratio by volume, product expiration date, ANSI hazard classification, and appropriate ANSI handling precautions.

D. For installation in solid masonry and solid-grouted masonry (concrete or brick):
   1. Manufacturers: One of the following or equal:
      a. Hilti, Inc., HY-270 Adhesive Anchor System.
      b. Simpson Strong-Tie Co., Inc., ET-HP Anchoring Adhesive.
      c. USP Structural Connectors, CIA-GEL 7000 Masonry Epoxy Adhesive.

E. For installation in un-grouted and partially-grouted masonry (concrete or brick) and in masonry containing voids or holes (concrete or brick):
   1. Manufacturers: The following or equal:
      a. Hilti, Inc., HY-270 Adhesive Anchor System.
         1) Provide manufacturer's plastic mesh sleeve for bonding reinforcing bar(s) or all thread rod(s) of the size and embedment indicated on the Drawings.

2.03 ALL THREAD RODS

A. Materials: As specified in Section 05120 - Structural Steel Framing.

2.04 REINFORCING BARS

A. As specified in Section 04090 - Masonry Accessories.

PART 3 EXECUTION

3.01 GENERAL

A. Unless otherwise required for "Conditions of Use" in the Evaluation Report submitted, prepare and install holes, adhesive, and inserts (all thread rods or reinforcing bars) in accordance with the manufacturer's recommendations and this Section.
   1. In the event of conflicts, the more restrictive provisions shall govern.

B. Do not install adhesive-bonded all thread rods or reinforcing bars in upwardly inclined and overhead applications.

3.02 PREPARATION

A. Prior to completing the manufacturer's on-site training specified in this Section, do not:
   1. Drill holes for reinforcing bars or all thread rods.
   2. Mix or install adhesive in holes.

B. Review the manufacturer's installation instructions and "Conditions of Use" stipulated in the Evaluation Report before beginning Work.

C. Confirm that adhesive and substrate receiving adhesive are within the manufacturer's recommended temperature range and will remain so during the cure time for the product.

3.03 HOLE LAYOUT AND INSTALLATION

A. Drilling holes:
   1. Determine location of reinforcing bars or other obstructions with a non-destructive indicator device. Mark locations with on the surface of the masonry using removable construction crayon, or other method acceptable to the Engineer.
   2. Do not damage or cut existing reinforcing bars, electrical conduits, or other items embedded in the masonry without prior acceptance by the Engineer.

B. Hole drilling equipment:
   1. Electric or pneumatic rotary impact type.
      a. Set drill to “rotation only” mode, or to “rotation plus hammer” mode in accordance with the manufacturer’s installation instructions and the requirements of the Evaluation Report.
   2. Where edge distances are less than 2 inches and “rotation plus hammer” mode is permitted, use lighter impact equipment to prevent micro-cracking and spalling from drilling.
   3. Drill bits: Carbide-tipped in accordance with ANSI B212-15.
   4. Hollow drill bits with flushing air systems are preferred. Air supplied to hollow drill bits shall be free of oil, water, or other contaminants that will reduce bond.

C. Hole diameter: As recommend in the manufacturer’s installation instructions and the Evaluation Report.

D. Hole depth: As recommended by the manufacturer’s installation instructions to provide minimum effective embedment indicated on the Drawings.

E. Obstructions in drill path:
   1. If an existing reinforcing bar or other obstruction is hit while drilling hole, stop drilling and fill the hole with dry-pack mortar. Relocate the hole to miss the obstruction and drill to the required depth.
      a. Allow dry-pack mortar to cure to strength equal to that of the surrounding masonry before resuming drilling in that area.
      b. Epoxy grout may be substituted for dry-pack mortar when acceptable to the Engineer.
   2. Avoid drilling an excessive number of adjacent holes that would weaken the structural member and endanger the stability of the structure. Obtain the Engineer’s acceptance of distance between abandoned and relocated holes.
   3. When existing reinforcing steel is encountered during drilling and when acceptable to the Engineer, enlarge the hole by 1/8 inch, core through the existing reinforcing steel at the larger diameter, and resume drilling at original hole diameter.
   4. Bent bar reinforcing bars: Where edge distances are critical and interference with existing reinforcing steel is likely, and if acceptable to the Engineer, drill hole at 10 degree angle (or less) from axis of reinforcing bar or all thread rod being installed.

F. Cleaning holes:
   1. Insert air nozzle to bottom of hole and blow out loose dust.
      a. Use compressed air that is free of oil, water, or other contaminants.

b. Provide minimum air pressure of 90 pounds per square inch for not less than 4 seconds.

2. Using a stiff bristle brush of diameter that provides contact around the full perimeter of the hole, vigorously brush the hole to dislodge compacted drilling dust.
   a. Insert brush to the bottom of the hole and withdraw using a simultaneous twisting motion.
   b. Repeat at least 4 times.
3. Repeat the preceding steps as required to remove drilling dust or other material that will reduce bond, and as required by the manufacturer and the Evaluation Report.
4. Leave prepared hole clean and dry.

3.04 INSTALLATION OF ADHESIVE AND INSERTS

A. Clean and prepare inserts:
   1. Prepare embedded length of reinforcing bars and all thread rods by cleaning to bare metal. Inserts shall be free of oil, grease, paint, dirt, mill scale, rust, or other coatings that will reduce bond.
   2. Solvent-clean prepared reinforcing bars and all thread rods over their embedment length in accordance with SSPC SP-1. Provide an oil and grease-free surface for bonding of adhesive to steel.

B. Fill holes with adhesive:
   1. Solid or solid-grouted masonry:
      a. Only when dry. Do no fill with adhesive when the hole is filled with water or damp except with written authorization by the Engineer.
      b. Starting at the bottom of the hole: Before inserting the reinforcing bar or all thread rod.
      c. Without creating air voids as nozzle is withdrawn.
      d. Fill with sufficient adhesive so that excess is extruded out of the hole when the reinforcing bar or all thread rod is inserted into the hole.
      e. Where metal or plastic screens are required for use in masonry (units with hollow cells or holes, and multi-wythe brick walls), fill screen with adhesive and insert into hole in accordance with the manufacturer's recommendations.
   2. Masonry with holes or un-grouted cells:
      a. Provide manufacturer's mesh screen tubes (steel or plastic mesh), fill with adhesive, and install in compliance with the manufacturer's instructions.

C. Install reinforcing bars and all thread rods:
   1. Install to depth, spacing, and locations as indicated on the Drawings.
   2. Insert into hole in accordance with the manufacturer's recommended procedures. Confirm that insert has reached the designated embedment in the hole and that adhesive completely surrounds the embedded portion.
   3. Clean excess adhesive from the mouth of the hole.

D. Curing and loading:
   1. Provide curing conditions recommended by the adhesive manufacturer for the period required to fully cure the adhesive at the actual temperature of the masonry.
   2. Do not disturb or load anchors until the manufacturer's recommended cure time has elapsed.

3.05 FIELD QUALITY CONTROL

A. As specified in Section 01450 - Quality Control.

B. Manufacturers' services:
   1. Before beginning installation, furnish adhesive manufacturer's representative to conduct on-site training in proper storage and handling of adhesive, drilling and cleaning of holes, and preparation and installation of reinforcing bars and all thread rods.
      a. Provide notice of training to the Engineer and special inspector not less than 10 working days before training occurs. Engineer and special inspector may attend training sessions.
   2. Submit record, signed by the Engineer, listing the Contractor's personnel who completed the training. Only qualified personnel who have completed the manufacturer's on-site training shall perform installations.
   3. Do not install holes or adhesive until training is complete.

3.06 FIELD QUALITY ASSURANCE

A. Engineer will provide on-site inspection and field quality assurance.

B. Special inspection:
   1. As specified in Section 01455 - Regulatory Quality Assurance.
   2. Unless otherwise indicated on the Drawings or in this Section, provide periodic special inspection as required by the "Conditions of Use" in the Evaluation Report for the product installed.
      a. Provide continuous inspection of placement of adhesive and insertion of reinforcing bars and all thread rods into adhesive.
   3. Provide a written record of each inspection using form acceptable to the Engineer and the Authority Having Jurisdiction.
   4. Preparation:
      a. Review Drawings and Specifications for the Work being observed.
      b. Review the adhesive manufacturer's recommended installation and evaluation report's special inspection procedures.
   5. Provide an initial inspection by for each combination of masonry type and reinforcing bar or all thread rod being installed.
      a. During initial inspection, observe the following for compliance with installation requirements. Furnish report of inspection that includes the following items:
         1) Masonry construction: Type and thickness; whether fully or partially grouted; locations and types of voids and holes in units.
         2) Environment: Temperature and moisture conditions of masonry base material and work area.

3) Holes: Locations, spacing, edge distances; verification of drill bit compliance with ANSI B212.15; cleaning equipment and procedures; cleanliness of hole.
    a) Before placing adhesive, confirm that depth and preparation of holes conforms to requirements of the Contract Documents, installation recommendations of the manufacturer, and "Conditions of Use" specified in the Evaluation Report.
4) Adhesive: Product manufacturer and name; lot number and expiration date; temperature of product at installation; installation procedures. Note initial set times observed during installation.
5) Embedded reinforcing bars and all thread rods: Material diameter and length; steel grade and/or strength; cleaning and preparation; cleanliness at insertion; minimum effective embedment.

6. Subsequent installations of the same reinforcing bars or threaded rods in the same masonry may be performed without the presence of the special inspector, provided that:
    a. There is no change in the personnel performing the installation, the type or details of the masonry receiving the insert, the adhesive or the reinforcing bars and all thread rods being used. Changes in any of these items shall require a new initial inspection.
    b. For ongoing installations over a period of time, the special inspector visits the Site at least once per day during each day of installation to observe the Work for compliance with material requirements and installation procedures.

C. Special testing:
1. Proof test reinforcing bars and all thread rods before installing production work:
    a. Owner's independent testing firm will proof test all thread rods in tension after curing:
        1) Test locations will be at the laboratory's discretion, unless otherwise directed by the Engineer, subject to the following minimum requirements:
            a) For each reinforcing bar type and anchor, perform a minimum of 5 proof tests.
            b) Proof test each reinforcing bar type and anchor to 133 percent of its design value.
    b. Tests shall be tension tests using test loads indicated in Table A.
    c. Report results of proof testing to the Engineer within 5 days after testing.
        1) Should any reinforcing bar or all thread rod fail to meet these criteria, notify the Engineer immediately. Test additional reinforcing as directed by the Engineer.
2. Production testing for reinforcing bars and all thread rods:
    a. Owner's independent testing firm will provide quality control testing program for reinforcing bars and anchors bonded into masonry using adhesive.
    b. Test locations and frequency will be at the laboratory's discretion, unless otherwise directed by the Engineer, subject to the following minimum requirements:
        1) Perform at least the minimum percentage of quality control tests specified in Table A for each reinforcing bar type.

2) Test a minimum of 5 reinforcing bars for each reinforcing bar type and anchor.
3) Perform tests at different locations and conditions to obtain a representative sample for each reinforcing bar type.

Table A - Testing Schedule							
	Insert			Testing			Notes
Group	Size	Spacing	Embed Depth	Load (kips)	Frequency (% of installations)	No. of proof tests	Reference Section or Detail on the Drawings, and other comments

c. Tests shall be tension tests:
   1) Test loads in Table A may be modified by the Engineer based on the results of proof test load tests.
   2) Maintain quality control test load for a minimum of 5 minutes.
d. There shall be no loosening or movement of the reinforcing bar out of the hole and no cracking or spalling of the masonry in which the reinforcing bar is set.
e. For reinforcing bar failing to meet these criteria, increase quantity of quality control testing of similar reinforcing bars by 100 percent. If other failures occur during additional testing, test all similar reinforcing bars.

3. Contractor shall be responsible for the following:
   a. Replacement of failed reinforcing bars, as directed by the Engineer at no additional cost.
   b. Payment for increased quality control testing and reinforcing bar replacement caused by reinforcing bar failure.
   c. Repair of the surface of the masonry, by means acceptable to the Engineer at no additional cost, if damage results from failed load test.

END OF SECTION

SECTION 04090

MASONRY ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Reinforcing bars.
   2. Wall tie screws.

1.02 REFERENCES

A. American Welding Society (AWS):
   1. D1.4 - Structural Welding Code - Reinforcing Steel.

B. ASTM International (ASTM):
   1. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   2. A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
   3. A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
   4. A951 - Standard Specification for Masonry Joint Reinforcement.
   5. A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
   6. C549 - Standard Specification for Perlite Loose Fill Insulation.
   7. D2000 - Standard Classification System for Rubber Products in Automotive Applications.
   8. D2287 - Standard Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures and the Agreement and Contract RFP in Volumes 1 and 2.

B. Reinforcing bars:
   1. Changes to reinforcing steel Contract Drawing requirements:
      a. Indicate in separate letter submitted with Shop Drawings any changes of requirements indicated on the Drawings for reinforcing steel.
      b. Such changes will not be acceptable unless the Engineer has accepted such changes in writing.
      c. Reinforcement detail drawings:
         1) Review of reinforcement Shop Drawings by the Engineer will be limited to general compliance with the Contract Documents.
      d. Welding procedures.

C. Product data.

1.04 DELIVERY, STORAGE, AND HANDLING

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

B. Packing and shipping:
   1. Deliver bars bundled and tagged with identifying tags.

PART 2 PRODUCTS

2.01 GENERAL

A. Drawings contain notes concerning amount of reinforcement and placing, details of reinforcement at wall corners and intersections, and details of extra reinforcement around openings in masonry.

2.02 MANUFACTURED UNITS

A. Anchor bolts:
   1. Cast-in/built-in steel anchors: As specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.
      a. Includes anchor bolts, anchor rods, deformed bar anchors, and welded studs.
   2. Post-installed steel anchors: As specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.
      a. Includes concrete anchors for concrete masonry, and screw anchors for concrete masonry.

B. Reinforcing bars:
   1. Deformed bars in accordance with ASTM A615, Grade 60.
   2. Provide reinforcing steel that is of quality specified, free from excessive rust or scale or any defects affecting its usefulness.

C. Sheet metal ties: Minimum 22 gauge corrosion resistant corrugated sheet metal, minimum 7/8-inch wide by 7-inches long, pre-punched for wire ties to wire joint reinforcement.

D. Wall tie screws.

2.03 FABRICATION

A. Reinforcing bars:
   1. Cut and bend bars in accordance with the building code specified in Section 01410 - Regulatory Requirements.
   2. Bend bars cold.
   3. Provide bars free from defects, kinks and from bends not indicated on the Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Reinforcing bars:
   1. Verify that bars are new stock free from rust scale, loose mill scale, excessive rust, dirt, oil, and other coatings which adversely affect bonding capacity when placed in the Work.

3.02 PREPARATION

A. Reinforcing bars:
   1. Thoroughly clean any bars that have rust scale, loose mill scale, or thick rust coat.
      a. Thin coating of red rust resulting from short exposure will not be considered objectionable.
   2. Remove concrete or other deleterious coatings from dowels and other projecting bars by wire brushing or sandblasting before bars are embedded in subsequent masonry placement.

3.03 INSTALLATION

A. Reinforcing bars:
   1. No field bending of bars will be allowed.
   2. Welding:
      a. Weld reinforcing bars where indicated on the Drawings or acceptable to the Engineer.
      b. Perform welding in accordance with AWS D1.4.
      c. Do not tack weld reinforcing bars.

B. Placing reinforcing bars:
   1. Accurately place bars and adequately secure them in position.
   2. Overlap bars at splices as indicated on the Drawings or specified.
   3. If not indicated on the Drawings, lap splice bars in masonry in accordance with the building code specified in Section 01410 - Regulatory Requirements.

END OF SECTION

SECTION 04100

MORTAR AND MASONRY GROUT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Mortar and grout for masonry construction.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C144 - Standard Specification for Aggregate for Masonry Mortar.
   2. C150 - Standard Specification for Portland Cement.
   3. C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
   4. C270 - Standard Specification for Mortar for Unit Masonry.
   5. C404 - Standard Specification for Aggregates for Masonry Grout.
   6. C476 - Standard Specification for Grout for Masonry.
   7. C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
   8. C1019 - Standard Test Method for Sampling and Testing Grout.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Alkali: Sum of sodium oxide and potassium oxide calculated as sodium oxide.

1.04 SUBMITTALS

A. Product data.

B. Shop Drawings.

C. Mortar color samples.

D. Design mixes for mortar and grout.

E. Test reports:
   1. Mortar Strength Test Results.
   2. Grout Strength Test Results.

1.05 QUALITY ASSURANCE

A. Materials for mortar and grout: Do not change source of materials which will affect the appearance of finished work after the work has started unless acceptable to the Engineer.

1.06 PROJECT CONDITIONS

A. Environmental requirements:
   1. Cold weather requirements:
      a. Cold weather construction: In accordance with the building code as specified in Section 01410 - Regulatory Requirements.
      b. Provide adequate equipment for heating mortar and grout materials when air temperature is below 40 degrees Fahrenheit.
         1) Temperatures of separate materials, including water, shall not exceed 140 degrees Fahrenheit when placed in mixer.
         2) Maintain mortar temperature on boards above freezing.
   2. Hot weather requirements:
      a. Wet mortar board before loading and cover mortar to retard drying when not being used.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Compressive strength:
   1. Mortar: Minimum 1,800 pounds per square inch at 28 days.
   2. Grout: Minimum 2,000 pounds per square inch at 28 days.

B. Mortar color:
   1. As selected by Owner.

2.02 MATERIALS

A. Portland cement:
   1. Type II, low alkali, containing maximum 0.6 percent total alkali in accordance with ASTM C150.

B. Hydrated lime:
   1. Type S in accordance with ASTM C207.

C. Aggregate for mortar:
   1. Fine aggregate: Sand in accordance with ASTM C144.

D. Aggregate for grout:
   1. Fine aggregate: Size Number 2 in accordance with ASTM C404.
   2. Coarse aggregate: Size Number 8 in accordance with ASTM C404.

E. Admixtures:
   1. Mortar color admixture:
      a. Containing maximum 15 percent lime proof, inorganic compounds, unless recommended otherwise by manufacturer.
      b. Maximum 3 percent carbon black by weight of cement.
      c. Factory blend for full color saturation of mortar joint.
      d. Packaging for unitized jobsite mixing at ratio of 1 unit of color per sack of Portland cement.

2. Grout admixture:
    a. Manufacturers: The following or equal:
        1) Sika Corp., Sika Grout Aid, Type II.
3. Mortar water repellent admixture:
    a. Manufacturers: One of the following, or equal:
        1) Master Builder Solutions/Sika, MasterPel 240MA.
        2) Sika Corp., Sikaproof A.
        3) W.R. Grace, Dry Block Mortar.
4. Other admixtures:
    a. Prohibited, unless accepted by the Engineer.

F. Water: Clean, clear, potable, free of oil, soluble salts, chemicals, and other deleterious substances.

G. Other materials:
    1. Prohibited, unless acceptable to the Engineer.

2.03 MIXES

A. Mortar mix:
    1. Portland cement-lime mortar.
    2. Mortar mix proportions by volume: As indicated in the following table:

Mortar Type	Parts by Volume of Portland Cement	Parts by Volume of Hydrated Lime	Aggregate Measured in a Damp Loose Condition
S	1	Greater than 1/4 to 1/2	Not less than 2-1/4 and not more than 3 times the sum of the separate volumes of cementitious materials
N	1	Greater than 1/2 to 1-1/4	Not less than 2-1/4 and not more than 3 times the sum of the separate volumes of cementitious materials

    3. Mortar mixing:
        a. Mix on jobsite in accordance with ASTM C270.
        b. Mix in mechanical mixer and only in quantities needed for immediate use.
        c. Mix for minimum 3 minutes, and maximum of 5 minutes after materials have been added to mixer.
    4. Measurement by volume: Measurement of constituents shall be accomplished by the use of a container of known capacity.
    5. Water shall be mixed with the dry ingredients in sufficient amount to provide a workable mixture which will adhere to the vertical surfaces of masonry units.
        a. Use no mortar which has been standing for more than 1 hour after being mixed.
    6. Whenever 90 minutes has elapsed since last batch was mixed, completely empty mixer drum of materials and wash down before placing next batch of materials.

B. Grout mix:
1. Grout mix proportions by volume: As indicated in the following table:

Type of Grout	Parts by Volume of Portland Cement	Parts by Volume of Hydrated Lime	Aggregate Measured in a Damp Loose Condition	
			Fine Aggregate	Coarse Aggregate
Fine grout	1	0-1/10	2-1/4 to 3 times the sum of the volumes of the cementitious materials	-
Coarse grout	1	0-1/10	2-1/4 to 3 times the sum of the volumes of the cementitious materials	1 to 2 times the sum of the volumes of the cementitious materials

2. Grout mixing:
   a. Mix on jobsite or in a transit mix in accordance with ASTM C476.
   b. Slump: 8 to 11 inches, unless otherwise accepted by the Engineer.
   c. Use within 90 minutes after addition of mixing water.
   d. Mix for minimum of 5 minutes after ingredients are added and until uniform mix is attained. Grout shall have sufficient water added to produce pouring consistency without segregation.
3. Use coarse grout for hollow cell masonry units with minimum 4-inch cell dimensions in both horizontal directions.
   a. Calculate cell dimension for this criterion by subtracting diameter(s) of any horizontal reinforcement crossing the cell from clear cell dimensions of the masonry unit.
4. Use coarse grout for collar joints horizontal dimension of 2 inches or more.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Testing of grout and mortar:
1. During progress of construction, the Owner will have tests made to determine whether the grout and mortar, as being produced, complies with Specifications.
2. Compressive strength test for grout: In accordance with ASTM C1019.
3. Owner's Representative will make and deliver test specimens to the laboratory and testing expense will be borne by the Owner.
4. Required number of tests:
   a. At least 2 test specimens of grout and mortar will be made per week.
5. Do not use grout and mortar that does not meet specification.
   a. Remove such mortar and grout from Project site.
6. Make provisions for and furnish grout and mortar for test specimens and provide manual assistance to the Engineer in preparing test specimens.
7. Assume responsibility for care of and providing proper curing conditions for test specimens.

3.02 ADJUSTING

A. Repair of defective masonry:
   1. Remove and replace or repair defective work.
   2. Do not patch, repair, or cover defective work without inspection by the Engineer.
   3. Provide repairs having strength equal to or greater than specified strength for areas involved.

END OF SECTION

SECTION 04220

CONCRETE UNIT MASONRY

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Concrete masonry units and accessories.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C90 - Standard Specification for Loadbearing Concrete Masonry Units.
   2. C140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
   3. C426 - Standard Test Method for Linear Drying Shrinkage of Concrete Masonry Units.

B. The Masonry Society (TMS):
   1. 602 - Specification for Masonry Structures.

1.03 TERMINOLOGY

A. The words and terms listed below, are not defined terms that require initial capital letters, but, when used in this Section have the indicated meaning.
   1. Grout lift height: The height of grout placed in a single continuous operation within the grout pour height.
   2. Grout pour height: Entire height of the masonry to be grouted prior to the construction of additional masonry.
   3. Mortar smears: Mortar paste smeared across the permanent masonry construction during construction and absorbed into the masonry pores.
   4. Mortar splash: Mortar dropped splashed onto the permanent masonry construction at the base of the wall or off the scaffolding.
   5. Mortar stains: Mortar paste left after mortar tags are removed.
   6. Mortar tag: Excess mortar between masonry units worked out of the joints during tooling or striking.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Submit manufacturer’s product data for split face block.
   2. Submit manufacturer’s product data for proposed cleaning agent.

C. Shop Drawings:
   1. Include elevations of each wall indicating type and layout of units, including type of mortar joints, bond pattern, reinforcing steel, connecting dowels, joint reinforcement, grouted cells, and control joints.

D. Samples: Include samples of stretcher units in sufficient quantity to illustrate color range.

E. Test reports:
   1. Compressive strength.
   2. Linear shrinkage.
   3. Moisture content as a percentage of total absorption.
   4. Total absorption.
   5. Unit weight.

F. Manufacturer's instructions:
   1. Submit printed or written recommendations from the masonry unit manufacturer of the cleaning procedures and cleaning agents appropriate for each type of masonry unit included in the Work.

G. Quality assurance Submittals:
   1. If requested by the Engineer, submit a record of the installer's evidence of qualifications.
   2. If requested by the Engineer, submit a record of the masonry cleaner's evidence of qualifications.

1.05 QUALITY ASSURANCE

A. Qualifications:
   1. Installer:
      a. Mason shall hold an appropriate contractor's license in the state where the Work will be constructed.
      b. Mason shall have not less than 5 years' experience and completed a minimum of 20 projects, at least 5 of which included the type of masonry units specified for this Work.
   2. Masonry cleaner qualifications:
      a. Shall have not less than 5 years' experience and completed a minimum of 20 projects, and at least 5 of which included the type of masonry units specified for this Work.

B. Mockup:
   1. A minimum 2 weeks to starting construction of masonry, construct minimum 4 foot inches by 4 foot inches square mockup.
      a. Mockup shall be constructed by the mason who will be performing the Work.
   2. Intended for use as the project standard of workmanship, construction, quality, appearance, and material selection.
   3. Use accepted materials containing each different kind and color of concrete masonry units to illustrate wall design.
   4. Constructed by the mason who will be performing the Work.

5. Cleaned with the exact equipment, products, and methods submitted and cleaned by the individual who will perform the Work.
6. When accepted, mockup will be standard of comparison for remainder of masonry work.
    a. May be accepted by the Engineer with exceptions that will not be accepted in the final construction.
        1) In such cases, those areas of the mockup not accepted will be clearly identified by the Engineer.
7. When not accepted by the Engineer, construct another mockup.
8. Upon completion of the Project, dispose of mockups in legal manner at offsite location.

C. Pre-installation conference: Conduct as specified in Section 01312 - Project Meetings.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Transport and handle concrete masonry units as required to prevent discoloration, chipping, and breakage.

B. Store masonry units off the ground in a dry location, covered and protected from absorbing moisture.
1. Locate storage piles, stacks, and bins to protect materials from heavy traffic.
2. If masonry units are delivered in shrink-wrapped packaging and condensation develops, remove shrink-wrap packaging.

C. Remove masonry units that are chipped, cracked, and otherwise defective from jobsite upon discovery.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Cold weather requirements:
1. Provide adequate equipment for constructing and protecting masonry when air temperature is:
    a. Below 40 degrees Fahrenheit as follows:
        1) Remove frozen snow and ice from surfaces to receive masonry.
        2) Do not use masonry units having visible snow or ice on the surface or containing frozen moisture.
        3) Do not lay masonry units that have a temperature of 20 degrees Fahrenheit or below.
    b. 32 degrees Fahrenheit to 40 degrees Fahrenheit:
        1) As required above and as follows:
            a) Heat aggregates and/or mix water to provide mortar between 40 degrees Fahrenheit and 120 degrees Fahrenheit.
            b) Heat aggregates and/or mix water to provide grout between 32 degrees Fahrenheit and 120 degrees Fahrenheit.
            c) Do not heat any constituents above 140 degrees Fahrenheit.
            d) Protect newly constructed masonry work by covering surfaces with a weatherproof covering for 48 hours after completion.

c. 25 degrees Fahrenheit to 32 degrees Fahrenheit:
    1) As required above and as follows:
        a) Furnish mortar at point of use above 32 degrees Fahrenheit until immediately prior to incorporation into the Work.
        b) Heat aggregates and/or mix water to provide grout between 70 degrees Fahrenheit and 120 degrees Fahrenheit until immediately prior to incorporation into the Work.
        c) Protect newly constructed masonry work by covering surfaces with a weatherproof covering for 48 hours after completion.
d. 20 degrees Fahrenheit to 25 degrees Fahrenheit:
    1) As required above and as follows:
        a) Heat masonry units and adjoining completed Work to a minimum temperature of 40 degrees Fahrenheit.
        b) Use enclosures or wind breaks when wind speeds exceed 15 mph.
        c) Heat masonry to a minimum of 40 degrees Fahrenheit and maintain prior to grouting.
        d) Protect newly constructed masonry work by covering surfaces with weatherproof, insulating concrete blankets for 48 hours after completion.
e. Below 20 degrees Fahrenheit:
    1) As required above and as follows:
        a) Provide an auxiliary heated enclosure that maintains the ambient air temperature above 32 degrees Fahrenheit.
            (1) Heat shall not vent combustion products into the enclosure.
            (2) Maintain specified temperature for a minimum 48 hours after completion of masonry work.

B. Hot weather requirements:
    1. Provide adequate equipment for constructing and protecting masonry as follows:
        a. When the air temperature exceeds 90 degrees Fahrenheit with a wind speed greater than 8 mph, or when the air temperature exceeds 100 degrees Fahrenheit:
            1) Maintain sand for mortar and grout in damp, loose piles. Shade material stockpiles and mixing equipment from direct sunlight.
            2) Provide mortar and grout below 120 degrees Fahrenheit.
            3) Flush mixer and mortar containers with cool water before use.
            4) Wet mortarboard before loading and cover mortar to retard drying when not being used.
            5) Do not spread mortar beds more than 48 inches ahead of placing masonry units.
            6) Place masonry units within 1 minute of spreading mortar.
            7) Use mortar within 1 hour of initial mixing.
            8) Protect masonry from drying by frequently fogging or sprinkling so walls will always be visibly damp for minimum 3 days.

b. When the air temperature exceeds 105 degrees Fahrenheit with a wind speed greater than 8 mph, or when the air temperature exceeds 115 degrees Fahrenheit:
    1) As required above and as follows:
        a) Use water less than 70 degrees Fahrenheit to batch mortar and grout. Ice is permitted to precool the mix water but must be fully melted before adding to other constituents.

1.08 SEQUENCING AND SCHEDULING

A. Order concrete masonry units well before start of installation to ensure adequate time for manufacturing and minimum 28 days for curing and drying before start of installation. Protect from weather after curing period to avoid moisture increase.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Hollow load bearing concrete masonry units:
    1. Density classification: Normal weight in accordance with ASTM C90, with minimum net area compressive strength as follows:
        a. Average of 3 units: 2,000 pounds per square inch.
        b. Any individual unit: 1,800 pounds per square inch.
    2. Surface texture: Precision (smooth face) and split face.
    3. Color: Integral.
    4. Typical size: 8-inches wide by 8-inches high by 16-inches long, unless otherwise indicated on the Drawings, or other sizes as needed to minimize cutting.
    5. Special sizes and shapes: As required for window and door openings, bond beams, piers, lintels, control joints, and other special applications to minimize cutting.

B. Anchor bolts: As specified in Section 05120 - Structural Steel Framing.

C. Steel reinforcement: As specified in Section 04090 - Masonry Accessories.

PART 3 EXECUTION

3.01 PREPARATION

A. Protection:
    1. Protect adjacent construction with appropriate means from mortar droppings and other effects of laying of concrete masonry units.

B. Surface preparation:
    1. Thoroughly clean foundations of laitance, grease, oil, mud, dirt, mortar droppings, and other matter that will reduce bond.

2. Examine foundation to confirm it is constructed within tolerance for masonry Work. Confirm dowels are installed in correct locations and with proper projection for the required lap splice before beginning laying masonry units.
3. Place sand, straw, sawdust or other similar material on the floor around the base of walls to protect floors and walls.

3.02 INSTALLATION

A. General:
   1. Standard level of quality: Furnish conventional quality work having no more than 5 percent of the units in the completed Work exhibiting one or more of the following defects:
      a. Chips larger than 1 inch in any direction.
      b. Cracks wider than 0.02 inch and longer than 25 percent of the nominal height of the unit.
      c. Completed Work shall not show chips, cracks, or other imperfections when viewed from a distance of 20 feet under diffused lighting.

B. Temporary forms and shores:
   1. Where required, construct forms to the shapes indicated on the Drawings:
      a. Construct forms sufficiently rigid to prevent deflection which may result in cracking or other damage to supported masonry and sufficiently tight to prevent leakage of mortar and grout.
      b. Do not remove supporting forms or shores until the supported masonry has acquired sufficient strength to support safely its weight and any construction loads to which it may be subjected.
         1) Wait at least 24 hours after grouting masonry columns or walls before applying uniform loads.
   2. Wait at least 72 hours before applying concentrated loads.

C. Laying of masonry units - General:
   1. Lay concrete masonry units dry. Units having wet surfaces over 50 percent or more of its surface area may not be placed. Wet surfaces are distinguished from damp surfaces as those which do not darken when additional water is applied.
   2. Lay units in uniform and true courses, level, plumb, and without projections or offset of adjacent units.
   3. Lay units to preserve unobstructed vertical continuity of cells to be filled with grout or insulation.
   4. When possible, use full units of the proper size in lieu of cut units. Cut units as required to form chases, openings, for anchorage, and for other appurtenances.
      a. Cut and fit units with power-driven carborundum or diamond disc blade saw.
   5. Align vertical cells to be filled with grout to maintain clear, unobstructed continuous vertical cell measuring not less than 2.5 inches by 3 inches.
   6. Lay concrete masonry units in running bond pattern, unless otherwise indicated on the Drawings.
   7. Where practical, protect completed Work from mortar splash by placing thin plastic sheeting around the base of walls.

D. Mortar joints:
   1. Make joints straight, clean, smooth, and uniform in thickness. Bond shall be plumb throughout.
   2. Make vertical and horizontal joints 3/8-inch thick.
   3. Place mortar with full coverage of joints at webs of all cells and face shells.
      a. Ensure full mortar coverage of joints on webs of cells that will be grouted solid, and face shells.
   4. Butter vertical head joints for thickness equal to face shell thickness of units, and shove joints tightly together so that mortar bonds to both masonry units.
   5. Solidly fill joints from face of units to inside face of cells.
   6. Where fresh masonry joins totally or partially set masonry, clean and roughen set masonry before laying new units.
   7. Lay units to avoid formation of cracks when units are placed.
   8. Keep cells of units as free of mortar as possible as masonry wall height increases.
   9. When positions of units shift after mortar has stiffened, bond is broken, or cracks are formed, relay units in new mortar.
   10. Tool exposed joints, slightly concave. Strike concealed joints flush.

E. Wire joint reinforcement:
   1. Lap splice longitudinal wire joint reinforcement minimum 40 wire diameters, but not less than 6 inches.
   2. Place longitudinal wires in approximate centers of mortar beds with minimum 5/8-inch mortar cover on exposed faces.
   3. Provide intersecting masonry walls with prefabricated wire joint reinforcement tees.
   4. Rake intersecting joints 1/2 inch and caulk joints.
   5. Remove mortar, mortar droppings, debris, and other obstructions and materials from inside of cell walls.

F. Bond beams:
   1. Starting courses at bottom of walls shall be bond beams.
   2. Place horizontal reinforcement and solidly grout bond beam units in place.
   3. Provide wire mesh at openings in bottom of bond beams to support grout where walls are not grouted solid.

G. Masonry control joints:
   1. Provide in masonry walls at locations indicated on the Drawings.
   2. Make full height and continuous in appearance.
   3. Run bond beams and bond beam reinforcing bars continuously through control joints.
   4. Insert control joint filler in joints as wall is constructed.
   5. Apply sealant as specified in Section 07900 - Joint Sealants.

H. Openings and lintels:
   1. Place horizontal reinforcement in fully grouted bond beam units.
   2. Use lintel block units where underside of lintel will be exposed.
   3. Provide minimum of 8-inch bearing at each end of lintel.
   4. Embed reinforcing bars minimum 24 inches or 48-bar diameters, whichever is longer, into wall past edges of openings or as indicated on the Drawings:
      a. At corners, provide 90-degree bend with equivalent total embedment.

I. Embedments:
   1. Steel door frames:
      a. Anchor and fully grout jambs and head of steel doorframes connected to concrete unit masonry.
      b. Fill frames with grout as each 2 feet of concrete unit masonry is laid.
   2. Bearing plates:
      a. Provide minimum of 12 inches of grouted concrete unit masonry below steel bearing plates and beams bearing on masonry walls.
   3. Anchor bolts:
      a. Hold in place with template during grouting to ensure precise alignment.
      b. Do not cut or ream members being anchored or use other means to accommodate misaligned anchor bolts in roof deck support angles.
   4. Enclosures:
      a. Where concrete masonry units enclose conduit, pipes, stacks, ducts, and similar items, construct chases, cavities, and similar spaces as required, whether or not such spaces are indicated on the Drawings.
      b. Point openings around flush mounted electrical outlet boxes with mortar, including flush joints above boxes.
      c. Do not cover enclosures until inspected and when appropriate, tested.
   5. Conduits and electrical boxes:
      a. See Drawings for details of conduit installation in masonry.
   6. Other embedded items:
      a. Build in wall plugs, accessories, flashings, pipe sleeves, and other items required to be built-in as the masonry work progresses.
   7. Miscellaneous:
      a. Build in required items, such as anchors, flashings, sleeves, frames, structural steel, lintels, anchor bolts, and metal fabrications, as required for complete installation.

J. Daily cleaning:
   1. Remove mortar tags and smears daily with a non-metallic tool.
      a. Removed after they initially set but shall not be permitted to remain more than 24 hours.
   2. Turn scaffold planks over at the end of the workday to avoid mortar splashes from wet weather.
      a. Cover tops of walls at the end of the workday and other work stoppages to prevent entry of water into the partially completed masonry.
   3. Seal cleanouts after inspection and before grouting.

K. Grouting and reinforcement:
   1. Where horizontal and vertical bars are spliced, the lap splice length shall be in accordance with TMS 602 and as indicated on the Drawings.
   2. Hold vertical reinforcing bars in position at top and bottom and at intervals not exceeding 200-bar diameters.
      a. Use steel wire bar positioners to position bars.
      b. Tie reinforcing bars to dowels with wire ties.
   3. Obtain acceptance of reinforcement placement before grouting.
      a. Grouting:
         1) Grout pour height shall be limited to a maximum of 5.33 feet, unless the Contractor submits sufficient evidence to the Engineer for review

and acceptance that the requirements of TMS 602 as it relates to grout pour height can be met.
2) Grout lift height shall be limited to a maximum of 5.33 feet, unless the Contractor submits sufficient evidence to the Engineer for review and acceptance that the requirements of TMS 602 as it relates to grout lift height can be met.
3) Slushing with mortar will not be permitted.
4) Allow hollow unit masonry to cure at least 24 hours prior to grouting.
5) Each lift shall be allowed to set for 10 minutes after initial consolidation of grout before successive lift is placed.
6) Full height of each section of wall shall be grouted in 1 day.

4. Placement:
   a. Use a hand bucket, concrete hopper, or grout pump.
   b. Do not pump grout through aluminum tubes.
   c. Operate pumps to produce a continuous stream of grout without air pockets.
   d. Upon completion of each day's pumping, eject grout from pipeline without contamination or segregation of the grout. Remove from Site and dispose. Do not incorporate into masonry work.
   e. Place grout so as to completely fill the grout spaces without segregation of the aggregates.
   f. Remove grout spills immediately by hand washing with a bucket and brush.
   g. Fill spaces and cells solidly with grout.
   h. Grout in cells shall have full contact with surface of concrete footings.
   i. Time constraints:
      1) When grouting stops for 1 hour or longer, form horizontal construction joints by stopping grout placement 1-1/2 inches below top of uppermost unit containing grout.
      2) Place grout in final position within 1-1/2 hours after mixing. Place grout so as to completely fill the grout spaces without segregation of the aggregates.
   j. Consolidation:
      1) Do not insert vibrators into lower grout placements that are in a semi-solidified state.
      2) After placement, consolidate grout using mechanical immersion vibrators designed for consolidating grout.
      3) Maintain at least 1 spare vibrator at the Site at all times.
      4) Apply vibrators at uniformly spaced points not further apart than the visible effectiveness of the machine.
      5) Limit duration of vibration to time necessary to produce satisfactory consolidation without causing segregation.

3.03 TOLERANCES

A. Masonry tolerances: Lay masonry plumb, true to line, and with courses level. Keep bond pattern plumb throughout. Lay masonry within the following tolerances:
   1. Maximum variation from the plumb in the lines and surfaces of columns, walls, and in the flutes and surfaces of fluted or split faced blocks:
      a. In adjacent masonry units: 1/8 inch.
      b. In 10 feet: 1/4 inch.

c. In any story or 20 feet maximum: 3/8 inch.
d. In 40 feet or more: 1/2 inch.

2. Maximum variations from the level or grades indicated on the Drawings for exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines:
   a. In any bay or 10-feet maximum: 1/4 inch.
   b. In 40 feet or more: 1/2 inch.
3. Maximum variations of the linear building lines from established position in plan and related portion of columns, walls, and partitions:
   a. In any bay or 20-feet maximum: 1/2 inch.
   b. In 40 feet or more: 3/4 inch.
4. Maximum variation of top surface of bearing walls from level:
   a. In any bay or 20-feet maximum: 1/4 inch.
   b. In 40 feet or more: 1/2 inch.
5. Maximum variation in cross sectional dimensions of columns and in thickness of walls:
   a. Minus: 1/4 inch.
   b. Plus: 1/2 inch.
6. Mortar bed joint thickness between masonry courses:
   a. Plus or minus: 1/8 inch.

3.04 FINAL CLEANING

A. General:
1. Patch exposed concrete masonry units at completion of the Work and in such manner that patching will be indistinguishable from similar surroundings and adjoining construction.
2. Final cleaning shall be performed within 7 to 14 days after construction of masonry work.
3. Protect adjacent materials and equipment that may be damaged by cleaning.
4. Pre-wet masonry before applying cleaning agent but do not saturate masonry.
5. Remove mortar stains, smears, and splash, efflorescence, and grout stains on exposed surfaces with the submitted cleaning agent as directed by the masonry unit manufacturer's recommendations.
6. Do not use muriatic acid as cleaning agent.
7. Cleaning agents shall be applied when the masonry surface and air temperatures are at least 50 degrees Fahrenheit.
   a. Dilute cleaning agents in accordance with the manufacturer's recommendations.
   b. Do not allow cleaning agents to dry on the masonry.
8. Clean wall from the top to the bottom, without overlapping areas being cleaned for consistency.
9. If pressure cleaning equipment is used, the following limitations shall be observed:
   a. Apply cleaning agent to pre-wetted wall with low pressure (less than 50 pounds per square inch).
   b. Use a 25-degree to 50-degree flared-tip nozzle (not a pointed tip).
   c. Maintain a consistent distance from the spray nozzle to the masonry surface no closer than 12 inches.
      1) Masonry cleaner shall use a combination of pressure, nozzle, and distance from tip to masonry that does not damage the masonry surface.

10. Rinse cleaning agents off the wall with potable water.
11. Dispose of debris, refuse, and surplus material offsite legally.

3.05 FIELD QUALITY CONTROL

A. Site tests:
   1. Owner will have tests performed by an independent laboratory.
   2. Have minimum 3 concrete masonry units of each type proposed for Project tested in accordance with ASTM C90, C140, and C426 to verify conformance to Specifications.
   3. Tests shall include compressive strength, linear shrinkage, moisture content as percent of total absorption, total absorption, and unit weight.

B. Special inspection:
   1. As specified in Section 01455 - Regulatory Quality Assurance.
   2. Owner will employ a qualified masonry special inspector for continuous special inspection of the masonry work.
      a. Acceptance by a state or municipality having a program of examining and certifying masonry inspectors will be considered adequate qualifications.
      b. Masonry inspector shall be at the Site during masonry construction and perform the following duties:
         1) Review Drawings and Specifications and meet with the Contractor to discuss requirements before Work commences.
         2) Before masonry work commences, the Contractor and the Contractor's Quality Control Representative shall attend meeting with the Engineer to review the requirements for surveillance and quality control of the masonry work.
         3) Check brand and type of cement, lime (if used), and source of sand.
         4) Verify that foundation is clean, rough, and ready to receive units.
         5) Check reinforcing steel dowels for correct location, straightness, proper alignment, spacing, size, and length.
         6) Observe field proportioning of mortar. Visually check aggregate to determine uniformity of grading, cleanliness, and moisture.
         7) Verify that joints are full of mortar and kept tight during Work.
            a) Inspect grout cells to verify that fins will not interfere with grouting.
            b) Verify that masons keep grout cells clean of mortar droppings and inspect to determine compliance.
         8) Continuously observe placing of grout.
         9) Perform or supervise performance of required sampling and testing.
   3. Keep complete record of inspections. Report daily to the Building Official, Contractor's Quality Control Representative, Engineer, and Owner the progress of the masonry inspection.

3.06 PROTECTION

A. Provide temporary protection for exposed masonry corners subject to damage.

B. Bracing:
   1. Unless wall is adequately supported by permanent supporting elements so wall will not overturn or collapse, adequately brace masonry walls over 8 feet in height to prevent overturning and to prevent collapse.
   2. Keep bracing in place until permanent supporting elements of structure are in place.

C. Limited access zone:
   1. Establish prior to start of masonry wall construction.
   2. Zone shall be immediately adjacent to wall and equal to height of wall to be constructed plus 4 feet by entire length of wall on unscaffolded side of wall.
   3. Limit access zone to workers actively engaged in constructing wall. Do not permit other persons to enter zone.
   4. Keep zone in place until wall is adequately supported or braced by permanent supporting elements to prevent overturning and collapse.

END OF SECTION

SECTION 04221

BRICK MASONRY

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Brick masonry units.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C62 - Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale).
   2. C67 - Standard Test Methods of Sampling and Testing Brick and Structural Clay Tile.
   3. C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
   4. C652 - Standard specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale).

1.03 SUBMITTALS

A. Product data.

B. Shop drawings: Include elevations of each wall indicating type and layout of units.

C. Samples: Include samples of stretcher units in sufficient quantity to illustrate color range.

D. Test reports.

1.04 QUALITY ASSURANCE

A. Continuous inspection:
   1. Employ a qualified masonry inspector for continuous inspection of the masonry work.
      a. Acceptance by a state or municipality having a program of examining and certifying masonry inspectors will be considered adequate qualifications.
      b. The masonry inspector shall be at the site during all masonry construction and perform the following duties:
         1) Review drawings and specifications and meet with the Contractor to discuss requirements before work commences.
         2) Before masonry work commences, Contractor and the Contractor's Quality Control Representative shall attend meeting with Engineer to review the requirements for surveillance and quality control of the masonry work.
         3) Check brand and type of cement, lime (if used), and source of sand.

4) Ensure that foundation is clean, rough, and ready to receive units.
5) Check reinforcing steel dowels for straightness, proper alignment, spacing, size, and length.
6) Observe field proportioning of mortar. Visually check aggregate to determine uniformity of grading, cleanliness, and moisture.
7) Ensure that joints are full of mortar and kept tight during work.
    a) Inspect grout cells to ensure that fins will not interfere with grouting.
    b) Ensure that masons keep grout cells clean of mortar droppings and inspect to determine compliance.
8) Continuously observe placing of grout.
9) Perform or supervise performance of required sampling and testing.

2. Keep complete record of inspections. Report daily to the Contractor's Quality Control Representative the progress of the masonry inspection.

B. Mock-up:
1. Prior to starting construction of masonry, construct minimum 4-foot square mock-up.
2. Use accepted materials, containing each different kind and color of brick masonry units to illustrate wall design.
3. When not accepted, construct another mock-up.
4. When accepted, mock-up will be standard of comparison for remainder of masonry work.
5. Upon completion of Project, dispose of mock-ups in legal manner at offsite location.

C. Pre-installation conference: Conduct as specified in Section 01312 - Project Meetings.

D. Masonry prism testing: Perform masonry prism testing in accordance with 2022 CBC.

E. A letter of certification from the supplier of the materials used to verify in accordance with building code, shall be provided at the time of, or prior to, delivery of the materials to the jobsite.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Transport and handle brick masonry units as required to prevent discoloration, chipping, and breakage.

B. Locate storage piles, stacks, and bins to protect materials from heavy traffic.

C. Remove chipped, cracked, and otherwise defective units from jobsite upon discovery.

1.06 PROJECT CONDITIONS

A. Cold weather requirements:
   1. In accordance with the building code as specified in Section 01410 - Regulatory Requirements.
   2. Provide adequate equipment for heating masonry materials when air temperature is below 40 degrees Fahrenheit.

B. Hot weather requirements:
   1. When ambient air temperature exceeds 100 degrees Fahrenheit, or when ambient air temperature exceeds 90 degrees Fahrenheit and wind velocity is greater than 8 miles per hour, implement hot weather protection procedures.
   2. Wet mortarboard before loading and cover mortar to retard drying when not being used.
   3. Do not spread mortar beds more than 48 inches ahead of placing masonry units.
   4. Place masonry units within 1 minute of spreading mortar.

1.07 SEQUENCING AND SCHEDULING

A. Order brick masonry units (8 weeks minimum) well before start of installation to ensure adequate time for manufacturing.

PART 2 PRODUCTS

2.01 HOLLOW LOAD BEARING BRICK MASONRY UNITS

A. Manufacturers: One of the following or equal:
   1. Interstate Brick Co.
   2. General Shale Brick Co.

B. Type: ASTM C652, Grade SW, Type HBS with minimum compressive strength of 2,500 pounds per square inch.

C. Surface texture: To be selected by Engineer from manufacturer’s full range of available textures.

D. Colors:
   1. Soldier coursing: soldier coursing over windows and doors to be contrasting color as selected by Engineer from standard colors.

E. Size: 8 inches wide, by 4 inches high, by 12 inches long, unless otherwise indicated on the Drawings.

F. Coursing: 4 inches wide, by 8 inches high, by 8 inches deep.

G. Special sizes and shapes: As required for window and door soldier coursing and custom sills where indicated; bond beams, piers, lintels, control joints, and other special applications to minimize cutting.

PART 3 EXECUTION

3.01 PREPARATION

A. Protect adjacent construction with appropriate means from mortar droppings and other effects of laying of brick masonry units.

B. Thoroughly clean foundations of laitance, grease, oil, mud, dirt, mortar droppings, and other objectionable matter.

3.02 BRICK MASONRY UNITS

A. Provide custom level of quality in accordance with ASTM C62 and C 216.

B. Lay masonry units damp. (Wet bricks with fine spray about 4 hours prior to their use).

C. Lay units in uniform and true courses, level, plumb, and without projections or offset of adjacent units.

D. Lay units to preserve unobstructed vertical continuity of cells to be filled with grout or insulation.

E. Align vertical cells to be filled with grout to maintain clear, unobstructed continuous vertical cell measuring not less than 2 by 3 inches.

F. Place mortar with full coverage of joints at webs of all cells and face shells.

G. Butter vertical head joints for thickness equal to face shell thickness of units, and shove joints tightly together so that mortar bonds to both masonry units.

H. Solidly fill joints from face of units to inside face of cells.

I. Lay units to desired height with joints of uniform thickness.

J. Bond shall be plumb throughout.

K. Lay units to avoid formation of cracks when units are placed. Keep cells of units as free of mortar as possible as masonry wall height increases.

L. Lay masonry plumb, true to line, with courses level. Keep bond pattern plumb throughout. Lay masonry within the following tolerances:
   1. Maximum variation from the plumb in the lines and surfaces of columns, walls, and in the flutes and surfaces of fluted or split faced blocks:
      a. In adjacent masonry units: 1/8 inch.
      b. In 10 feet: 1/4 inch.
      c. In any story or 20 feet maximum: 3/8 inch.
      d. In 40 feet or more: 1/2 inch.
   2. Maximum variations from the plumb for external corners, expansion joints, and other conspicuous lines:
      a. In any story or 20 feet maximum: 1/4 inch.
      b. In 40 Feet or More: 1/2 inch.

3. Maximum variations form the level or grades indicated on the Drawings for exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines:
    a. In any bay or 20 feet maximum: 1/4 inch.
    b. In 40 feet or more: 1/2 inch.
4. Maximum variations of the linear building lines from established position in plan and related portion of columns, walls, and partitions:
    a. In any bay or 20 feet maximum: 1/2 inch.
    b. In 40 feet or more: 3/4 inch.
5. Maximum variation in cross sectional dimensions of columns and in thickness of walls:
    a. Minus: 1/4 inch.
    b. Plus: 1/2 inch.
6. When positions of units shift after mortar has stiffened, bond is broken, or cracks are formed, relay units in new mortar.

M. Remove mortar, mortar droppings, debris, and other obstructions and materials from inside of cell walls.

N. Seal cleanouts after inspection and before grouting or placing insulation.

3.03 LOOSE FILL INSULATION

A. Fill all brick masonry unit cells solidly with grout.

B. Place in lifts of 4 feet maximum when filling brick masonry unit cells.

C. Do not lay units more than 4 feet vertically ahead of units filled with loose insulation.

D. Ensure that no insulation gets into cells which are to be filled with grout.

3.04 MORTAR JOINTS

A. Make joints straight, clean, smooth, and uniform in thickness.

B. Pointing: Tool exposed joints, slightly concave. Strike concealed joints flush.

C. Joint thickness: Make vertical and horizontal joints 3/8-inch thick.

D. Where fresh masonry joins totally or partially set masonry, clean and roughen set masonry before laying new units.

3.05 BOND PATTERN

A. Lay brick masonry units in running bond pattern, unless otherwise indicated on the Drawings.

3.06 GROUTING AND REINFORCEMENT

A. Where horizontal and vertical bars are spliced and adjacent lap splices are separated by more than 3 inches, the lap splice length shall be 72 bar diameters.

B. Where adjacent lap splices are separated by 3 inches or less, the lap splice length shall be increased by 1.3 times or the lap splices shall be staggered at least 24 bar diameters with no increase in length.

C. Hold vertical reinforcing bars in position at top and bottom and at intervals not exceeding 200 bar diameters. Use steel wire bar positioners to position bars and tie reinforcing bars to dowels with wire ties.

D. Obtain acceptance of reinforcement placement before grouting.

E. Fill all spaces and cells solidly with grout.

F. Low-lift grouting:
   1. Hollow unit masonry to be grouted by the low lift method shall be constructed and grouted in lifts not exceeding 4 feet.
      a. Double wythe masonry which will be grouted by the low-lift method shall be constructed and grouted in lifts not exceeding 8 inches.
      b. Slushing with mortar will not be permitted.

G. High-lift grouting:
   1. If grouting is accomplished by the high-lift method, double wythe masonry shall be allowed to cure at least 72 hours and hollow unit masonry shall be allowed to cure at least 24 hours before grouting.
   2. In double wythe construction, vertical grout barriers shall be built across the grout space to the height of the grout lift.
   3. Grout barriers shall not be spaced more than 30 feet apart.
      a. Grout shall be placed in lifts not to exceed 5 feet in depth.
   4. Each lift shall be allowed to set for 10 minutes after initial consolidation of grout before successive lift is placed.
   5. The full height of each section of wall shall be grouted in 1 day.

H. Grout in cells shall have full contact with surface of concrete footings.

I. When grouting stops for 1 hour or longer, form horizontal construction joints by stopping grout placement 1-1/2 inches below top of uppermost unit containing grout.

J. After placement, consolidate grout using mechanical immersion vibrators designed for consolidating grout.

K. Placement:
   1. Use a hand bucket, concrete hopper, or grout pump.
   2. Place grout in final position within 1-1/2 hours after mixing.
   3. Place grout so as to completely fill the grout spaces without segregation of the aggregates.
   4. Do not insert vibrators into lower grout placements that are in a semi-solidified state.

3.07 BOND BEAMS

A. Place horizontal reinforcement and solidly grout bond beam units in place.

B. Provide wire mesh at openings in bottom of bond beams to support grout where walls are not grouted solid.

3.08 CUTTING BRICK MASONRY UNITS

A. When possible, use full units of the proper size in-lieu of cut units. Cut units as required to form chases, openings, for anchorage, and for other appurtenances.

B. Cut and fit units with power-driven carborundum or diamond disc blade saw.

3.09 CONTROL JOINTS

A. Provide in masonry walls where indicated on the Drawings.

B. Make full height and continuous in appearance.

C. Run bond beams and bond beam-reinforcing bars continuously through control joints.

D. Insert control joint filler in joints as wall is constructed.

E. Apply sealant as specified in Section 07900 - Joint Sealants.

3.10 OPENINGS AND LINTELS

A. Place horizontal reinforcement in fully grouted bond beam units.

B. Use lintel block units where underside of lintel will be exposed.

C. Provide minimum of 8-inch bearing at each end of lintel.

D. Embed reinforcing bars minimum 24 inches or 40 bar diameters, whichever is longer, into wall past edges of openings or as indicated on the Drawings:
   1. At corners, provide 90-degree bend with equivalent total embedment.

3.11 STEEL DOOR FRAMES

A. Anchor and fully grout jambs and head of steel doorframes connected to brick unit masonry.

B. Fill frames with grout as each 2 feet of brick unit masonry is laid.

3.12 BEARING PLATES

A. Provide minimum of 12 inches of grouted brick unit masonry below steel bearing plates and beams bearing on masonry walls.

3.13 ANCHOR BOLTS

A. Hold anchor bolts in place with template during grouting to ensure precise alignment.

B. Do not cut or ream members being anchored or use other means to accommodate misaligned anchor bolts in roof deck support angles.

C. Provide minimum 6-inch wide grouted brick unit masonry entirely around anchor bolts and other attachment devices.

3.14 ENCLOSURES

A. Where brick masonry units enclose conduit, pipes, stacks, ducts, and similar items, construct chases, cavities, and similar spaces as required, whether or not such spaces are indicated on the Drawings.

B. Point openings around flush mounted electrical outlet boxes with mortar, including flush joints above boxes.

C. Do not cover enclosures until inspected and when appropriate, tested.

3.15 OTHER EMBEDDED ITEMS

A. Build in wall plugs, accessories, flashings, pipe sleeves, and other items required to be built-in as the masonry work progresses.

3.16 PATCHING

A. Patch exposed brick masonry units at completion of the Work and in such manner that patching will be indistinguishable from similar surroundings and adjoining construction.

3.17 WATER CURING

A. Protect brick masonry units from drying too rapidly by frequently fogging or sprinkling for minimum 3 days.

3.18 MISCELLANEOUS

A. Build in required items such as anchors, flashings, sleeves, frames, structural steel, lintels, anchor bolts, and metal fabrications as required for complete installation.

3.19 WATER REPELLENT

A. Apply water repellent as specified in Section 07190 - Water Repellents.

3.20 FIELD QUALITY CONTROL

A. Have minimum 3 masonry units of each type proposed for Project tested in accordance with ASTM C67 to verify conformance to specifications.

B. Tests shall include compressive strength, linear shrinkage, total absorption, moisture content as percent of total absorption, and unit weight.

C. Employ and pay acceptable independent testing laboratory to perform testing.

3.21 CLEANING

A. Exercise extreme care to prevent mortar splotches.

B. Do not attach construction supports to masonry walls.

C. Wash off brick scum and grout spills before scum and grout set.

D. Remove grout stains from walls.

E. Clean exposed masonry. Remove scaffolding and equipment. Dispose of debris, refuse, and surplus material offsite legally.

F. Correct efflorescence on exposed surfaces with commercially-prepared cleaning solution acceptable to masonry unit manufacturer:
   1. Apply cleaning solution in accordance with cleaning solution manufacturer's printed instructions.
   2. Do not use muriatic acid as cleaning solution.
   3. Do not use sandblast cleaning equipment.

3.22 FORMS AND SHORES

A. Where required, construct forms to the shapes indicated on the Drawings:
   1. Construct forms sufficiently rigid to prevent deflection which may result in cracking or other damage to supported masonry and sufficiently tight to prevent leakage of mortar and grout.
   2. Do not remove supporting forms or shores until the supported masonry has acquired sufficient strength to support safely its weight and any construction loads to which it may be subjected:
      a. Wait at least 16 hours after grouting masonry columns or walls before applying uniform loads.
      b. Wait at least 64 hours before applying concentrated loads.

3.23 PROTECTION

A. Provide temporary protection for exposed masonry corners subject to damage.

B. Bracing:
   1. Adequately brace masonry walls over 8 feet in height to prevent overturning and to prevent collapse unless wall is adequately supported by permanent supporting elements so wall will not overturn or collapse.
   2. Keep bracing in place until permanent supporting elements of structure are in place.

C. Limited access zone:
   1. Establish limited access zone prior to start of masonry wall construction.
   2. Zone shall be immediately adjacent to wall and equal to height of wall to be constructed plus 4 feet by entire length of wall on unscaffolded side of wall.

3. Limit access to zone to workers actively engaged in constructing wall. Do not permit other persons to enter zone.
4. Keep zone in place until wall is adequately supported or braced by permanent supporting elements to prevent overturning and collapse.

3.24 GROUTING EQUIPMENT

A. Grout pumps:
   1. Do not pump grout through aluminum tubes.
   2. Operate pumps to produce a continuous stream of grout without air pockets.
   3. Upon completion of each day's pumping, eject grout from pipeline without contamination or segregation of the grout:
      a. Remove waste materials and debris from the equipment.
      b. Dispose of waste materials, debris, and all flushing water outside the masonry.

B. Vibrators:
   1. Internal vibrators shall maintain a speed of not less than 5,000 impulses per minute when submerged in the grout.
   2. Maintain at least 1 spare vibrator, at the site at all times.
   3. Apply vibrators at uniformly spaced points no further apart than the visible effectiveness of the machine.
   4. Limit duration of vibration to time necessary to produce satisfactory consolidation without causing segregation.

3.25 EFFLORESCENCE TESTS

A. Perform efflorescence tests on mortar which will be exposed to weathering. Tests shall be scheduled far enough in advance of starting masonry work to permit retesting if necessary.

END OF SECTION

SECTION 05120

STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Structural steel shapes and plate.
   2. Fasteners and structural hardware:
      a. All thread rods.
      b. High-strength bolts.
   3. Welding.
   4. Bolting.

1.02 REFERENCES

A. American Institute of Steel Construction (AISC):
   1. 303 - Code of Standard Practice for Steel Buildings and Bridges.
   2. 360 - Specification for Structural Steel Buildings.

B. American Iron and Steel Institute (AISI):
   1. Steel and stainless steel alloys (“types”) as indicated.

C. American Welding Society (AWS):
   1. A5.1 - Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding.
   2. A5.17 - Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding.
   3. A5.20 - Specification for Carbon Steel Electrodes for Flux Cored Arc Welding.
   4. D1.1 - Structural Welding Code - Steel.
   5. D1.6 - Structural Welding Code - Stainless Steel.

D. ASTM International (ASTM):
   1. A6 - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
   2. A36 - Standard Specification for Carbon Structural Steel.
   3. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   4. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   5. A194 - Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
   6. A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
   7. A276 - Standard Specification for Stainless Steel Bars and Shapes.

8. A380 - Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
9. A489 - Standard Specification for Carbon Steel Lifting Eyes.
10. A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
11. A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
12. A563 - Standard Specification for Carbon and Alloy Steel Nuts.
13. A992 - Standard Specification for Structural Steel Shapes.
14. B695 – Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
15. F436 - Standard Specification for Hardened Steel Washers.
16. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
17. F594 - Standard Specification for Stainless Steel Nuts.
18. F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners.
19. F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105 ksi Yield Strength.
20. F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.
21. F3125 - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi and 150 ksi Minimum Tensile Strength.

E. Research Council on Structural Connections (RCSC):
1. Specification for Structural Joints Using High-Strength Bolts (RCSC Specification).

1.03 DEFINITIONS

A. Snugtight: At bolted joints, the tightness attained with a few impacts of an impact wrench, or by the full effort of an ironworker using a spud wrench to bring the connected plies into firm contact.

B. Stainless steel related terms:
1. Descaling: Removal of heavy, tightly adherent oxide films resulting from hot-forming, heat-treatment, welding, and other high-temperature operations.
2. Pickling: Chemical descaling of stainless steel using aqueous solutions of nitric and hydrofluoric acid, or various proprietary formulations as specified.
3. Passivation: Chemical treatment of stainless steel with a mild oxidant for the purpose of enhancing the spontaneous formation of the steel’s protective passive film.

1.04 SUBMITTALS

A. Product data:
1. Welding electrodes for field welds: Electrode manufacturer's data.
2. Compressible-washer-type direct tension indicators: Manufacturer’s detailed installation instructions including:
a. Requirements for type and frequency of pre-installation verification.

b. Requirements for coordination with regular washers.
c. Instructions for assembling and tightening the joint so that work progresses from the most rigid part until the connected plies are in firm contact.

3. Stainless steel: Fabricator name and qualifications, member dimensions and structural section properties, and specifications and procedures used for pickling and passivating members.

B. Shop drawings:
1. Fabrication and erection drawings.

C. Quality control submittals:
1. Welding procedure specifications (WPS) in accordance with AWS D1.1 and D1.6.
a. Submit WPS for each type of welded joint used, whether prequalified or qualified by testing.
1) State electrode manufacturer and specific electrodes used.
2) Indicate required AWS qualification for joint.
b. Submit WPS with shop drawings that indicate those welds.
c. Submit Procedure Qualification Record (PQR) in accordance with AWS D1.1 and D1.6 for welding procedures qualified by testing.
2. Welder qualifications: For each welding process and position:
a. Welder's qualification certificates.
b. Contractor's statement that certificate will be "in effect" at the time(s) welding will be performed based on the "Period of Effectiveness" provisions of AWS D1.1 and D1.6.
3. Steel fabricator's AISC certification.

D. Test reports:
1. Certified copies of mill tests and analyses made in accordance with applicable ASTM standards, or reports from a recognized commercial laboratory, including chemical and tensile properties of each shipment of structural steel or part thereof having common properties.

1.05 QUALITY ASSURANCE

A. Certification:
1. Steel fabricators shall be certified by the AISC or other certification acceptable to the Engineer and the building official having jurisdiction.

B. Welding:
1. Perform welding of structural metals in accordance with AWS D1.1 and D1.6 using welders who have current AWS qualification certificate for the process, position, and joint configuration to be welded.
2. Make Welding Procedure Specifications available at the locations where welding is performed.
3. Notify Engineer at least 24 hours before starting shop or field welding.
4. Engineer may check materials, equipment, and qualifications of welders.
5. Remove welders performing unsatisfactory Work, or require requalification.
6. Engineer may use gamma ray, magnetic particle, dye penetrant, trepanning, or other aids to visual inspection to examine any part of welds or all welds.

7. Contractor shall bear costs of retests on defective welds.
8. Contractor shall also bear costs in connection with qualifying welders.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Packing and shipping: Deliver structural steel free from mill scale, rust, and pitting.

B. Storage and protection: Until erection and painting, protect from weather items not galvanized or protected by a shop coat of paint.

PART 2 PRODUCTS

2.01 MATERIALS

A. Unless otherwise specified or indicated on the Drawings, materials shall conform to the following:

2.02 FASTENERS AND STRUCTURAL HARDWARE

A. General:
   1. Materials: Of domestic manufacture.
   2. Where fasteners and hardware are specified to be galvanized, hot-dip galvanize in accordance with ASTM A153 or ASTM F2329, unless otherwise specified.

B. All thread rods:
   1. Carbon steel:
      a. In accordance with ASTM A36 unless otherwise indicated on the Drawings.
      b. High strength all thread rods: In accordance with ASTM F1554, Grade 55.
      c. Nuts: ASTM A194.
      d. Washers: ASTM F436.
   2. Galvanized carbon steel:
      a. In accordance with ASTM A36 unless otherwise indicated on the Drawings, and hot dip galvanized in accordance with ASTM A153.
      b. High strength galvanized all thread rods: In accordance with ASTM F1554, Grade 55, and galvanized in accordance with ASTM F2329.
      c. Nuts: ASTM A194, hot-dip galvanized in accordance with ASTM A153.
      d. Washers: ASTM F436, hot-dip galvanized in accordance with ASTM A153.
   3. Stainless steel:
      a. Units descaled, pickled, and passivated as specified in “Fabrication” in this Section.
      b. Threaded rods and nuts to be the products of a single manufacturer/fabricator to ensure proper fit without galling. Ship all thread rods with properly fitting nuts attached.
      c. Alloy Type 304 or Type 316 as indicated on the Drawings.
      d. Type 304:
         1) Rod: ASTM F593, Group 1, Condition CW, coarse threads.

2) Nuts: ASTM F594. Match alloy of rod (group and UNS designation).
3) Washers: Type 304 stainless steel.

e. Type 316:
1) Rod: ASTM F593, Group 2, Condition CW, coarse threads.
2) Nuts: ASTM F594. Match alloy of rod (group and UNS designation).
3) Washers: Type 316 stainless steel.

C. Anchor bolts, anchor rods, and post-installed steel anchors: As indicated on the Drawings and as specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.

D. High-strength bolts:
1. Provide high-strength bolt assembly, with nuts, hardened flat washers, and compressible-washer-type direct tension indicators.
2. Carbon steel - Uncoated:
a. Bolts: Plain heavy hex structural bolts in accordance with ASTM F3125, Grade A325, Type 1.
b. Nuts: Heavy hex nuts in accordance with ASTM A563, Grade C.
c. Washers:
1) Adjacent to normal, oversized, and short-slotted holes: Circular, square or rectangular beveled, clipped, or extra thick washers in accordance with ASTM F436, Type 1. Flat circular washers unless otherwise indicated on the Drawings.
2) Adjacent to long slotted holes: Fabricated from 5/16-inch thick plate conforming to ASTM A36.
d. Load indicator devices: At slip critical connections, provide one of the following devices at each bolt:
1) Compressible washer type direct tension indicators (“DTI”): In accordance with ASTM F959, Type 325-1.
2) Twist-off type tension-control bolt assemblies: ASTM F3125, Grade F1852.
3. Carbon steel - Galvanized:
a. Bolt and nut assemblies fabricated, galvanized, tested for rotational capacity, and shipped accordance with the provisions ASTM F3125, Grade A325and the RCSC Specification.
b. Bolts, nuts, and washers: Hot-dip galvanized in accordance with ASTM F2329.
c. Bolts: Plain heavy hex structural bolts in accordance with ASTM F3125, Grade A325, Type 1 and galvanized as specified.
d. Nuts: Heavy hex nuts in accordance with ASTM A563, Grade DH, galvanized as specified, and lubricated in accordance with ASTM A563, Supplementary Requirement S1 to minimize galling.
e. Washers:
1) Adjacent to normal, oversized, and short-slotted holes: Circular, square or rectangular beveled, clipped, or extra thick washers in accordance with ASTM F436, Type 1 and galvanized as specified. Flat circular washers unless otherwise indicated on the Drawings.
2) Adjacent to long slotted holes: 5/16-inch thick plate washer fabricated from steel conforming to ASTM A36, and galvanized in accordance with ASTM A123.

f. Load indicator devices: At slip critical connections, provide one of the following devices at each bolt:
   1) Compressible washer type direct tension indicators (“DTI”): In accordance with ASTM F959, Type 325-1, with mechanically deposited zinc coating conforming to ASTM B695, Class 55.
   2) Twist-off type tension-control bolt assemblies: ASTM F3125, Grade F1852 with mechanically deposited zinc coating conforming to ASTM B695, Class 55.

E. Stainless steel bolts (for use in stainless steel structures):
   1. General:
      a. Bolts and nuts shall be the products of a single manufacturer/fabricator to ensure proper fit without galling.
      b. Units descaled, pickled and passivated as specified in “Fabrication."
   2. Alloy: Type 304 or Type 316 to match alloy of structural members being connected.
   3. Type 304:
      a. Bolts: ASTM F593, Group 1, Condition CW, coarse threads.
      b. Nuts: ASTM F594. Match alloy (group and UNS designation) and threads of bolts.
      c. Washers: Type 304 stainless steel.
   4. Type 316:
      a. Bolts: ASTM F593, Group 2, Condition CW, coarse threads.
      b. Nuts: ASTM F594. Match alloy (group and UNS designation) and threads of bolts.
      c. Washers: Type 316 stainless steel.

2.03 ISOLATING SLEEVES AND WASHERS

A. As indicated on the Drawings and as specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.

2.04 GALVANIZED SURFACE REPAIR

A. Manufacturers: The following or equal:
   1. Jelt, Galvinox.

2.05 THREAD COATING

A. Manufacturers: One of the following or equal:
   1. Bostik, Never-Seez.
   2. Oil Research, Inc., WLR No. 111.

2.06 SUPPLEMENTARY PARTS

A. Furnish as required for complete structural steel erection, whether or not such parts and Work are specified or indicated on the Drawings.

2.07 FABRICATION

A. Shop assembly:
   1. Fabricate structural steel in accordance with AISC 360 and AISC 303 unless otherwise specified or modified by applicable regulatory requirements.
   2. Where anchors, connections, or other details of structural steel are not specifically indicated on the Drawings or specified, their material, size and form shall be equivalent in quality and workmanship to items specified.
   3. Round off sharp and hazardous projections and grind smooth.
   4. Take measurements necessary to properly fit work in the field. Take responsibility for and be governed by the measurements and proper working out of all the details.
   5. Take responsibility for correct fitting of metalwork.
   6. Welded connections:
      a. Comply with AWS requirements for the metals to be welded.
      b. Weld only in accordance with approved Welding Procedure Specifications.
      c. Keep Welding Procedure Specifications readily available for welders and inspectors during fabrication processes.

B. Stainless steel shapes and assemblies:
   1. For structural members such as W shapes, S shapes, channels, angles, and similar rolled shapes not available in quantity, size, and type of stainless steel specified or indicated on the Drawings:
      a. Fabricate shapes using laser-fused, full penetration welds between pieces of plate to attain same or higher section modulus and moment of inertia as that of members indicated on the Drawings.
      b. Fabricate shapes from dual grade stainless steel.
      c. Fabricate beams and channels to ASTM A6 tolerances.
      d. Manufacturers: The following or equal:
         1) Stainless Structural, LLC.
   2. Cleaning and passivation:
      a. Following shop fabrication of stainless steel members and bolts, clean and passivate fabrications at point of manufacture.
      b. Finish requirements: Remove free iron, heat tint oxides, weld scale and other impurities, and obtain a bright passive finished surface with no etching, pitting, frosting, or discoloration.
      c. Provide quality control testing to verify effectiveness of cleaning agents and procedures and to confirm that finished surfaces are clean and passivated.
         1) Conduct sample runs using test specimens with proposed cleaning agents and procedures as required to avoid adverse effects on surface finishes and base materials.
      d. Pre-clean, chemically de-scale (“pickle”), passivate, and final-clean fabrications in accordance with the requirements of ASTM A380.
         1) If degreasing is required before cleaning (pickling) to remove scale or iron oxide, cleaning with citric acid treatments is permissible; however, such treatments shall be followed inorganic cleaners.
         2) Pickle and passivate stainless steel using a nitric acid solution in accordance with ASTM A380, Annex A2, Table A2.1, Part II.

3) Pickling by citric acid treatment or sulfuric acid treatment is not considered to satisfy the requirements of this Section.

e. Inspect after cleaning using methods specified for “gross inspection” in ASTM A380.

f. Improperly or poorly cleaned and passivated materials shall not be shipped and will not be accepted at the site.

C. Galvanized carbon steel:

1. Where galvanizing is required, hot-dip structural steel after fabrication in accordance with ASTM A123.
2. Do not electro-galvanize or mechanically-galvanize unless specified or accepted by Engineer.
3. Re-straighten galvanized items that bend or twist during galvanizing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions: Examine Work in place to verify that it is satisfactory to receive the Work of this Section. If unsatisfactory conditions exist, do not begin this Work until such conditions have been corrected.

3.02 ERECTION

A. General:

1. Fabricate structural and foundry items to true dimensions without warp or twist.
2. Form welded closures neatly, and grind off smooth where weld material interferes with fit or is unsightly.
3. Install structural items accurately and securely, true to level, plumb, in correct alignment and grade, with all parts bearing or fitting structure or equipment for which intended.
4. Do not shift out of alignment, re-drill, re-shape, or force fit fabricated items.
5. Place anchor bolts or other anchoring devices accurately and make surfaces that bear against structural items smooth and level.
6. Rigidly support and brace structural items needing special alignment to preserve straight, level, even, and smooth lines. Keep structural items braced until concrete, grout, or dry pack mortar has hardened for 48 hours minimum.
7. Erect structural steel in accordance with AISC 303 unless otherwise specified or modified by applicable regulatory requirements.
8. Where anchors, connections, and other details of structural steel erection are not specifically indicated on the Drawings or specified, form, locate, and attach with equivalent in quality and workmanship to items specified.
9. Round off sharp or hazardous projections and grind smooth.
10. Paint or coat steel items as specified in Sections 09910 - Painting and 09960 - High-Performance Coatings.

B. Stainless steel. Take all necessary precautions to avoid iron contamination of stainless steel during delivery, storage, and handling.

1. Segregate stainless steel from iron.

2. Tools and handling devices.
    a. Do not use iron tools clamps, chokes, working surfaces, or brushes when fabricating, handling, and erecting stainless steel.
    b. Do not use tools that have been contaminated by contact with iron.
    c. Use stainless steel, polymer coated, or wood tools and handling equipment. Do not use tools that have been contaminated by contact with iron or steel.

C. Welding: General:
1. Make welds full penetration type, unless otherwise indicated on the Drawings.
2. Remove backing bars and weld tabs after completion of weld. Repair defective welds observed after removal of backing bars and weld tabs.

D. Welding: Carbon steel:
1. General: In accordance with AWS D1.1:
    a. Weld ASTM A36 and A992 structural steel, and ASTM A500 and A501 structural tubing with electrodes in accordance with AWS A5.1, using E70XX electrodes; AWS A5.17, using F7X-EXXX electrodes; or AWS A5.20, using E7XT-X electrodes.
    b. Field repair cut or otherwise damaged galvanized surfaces to equivalent original condition using a galvanized surface repair.

E. Welding - stainless steel:
1. General: In accordance with AWS D1.6.

F. Interface with other products:
1. Where steel members and fasteners come in contact with dissimilar metals (aluminum, stainless steel, etc.), separate or isolate the dissimilar metals with isolating sleeves and washers as specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.

G. Fasteners: General:
1. Install bolts to project 2 threads minimum, but 1/2 inch maximum beyond nut.
2. Anchor bolts and anchor rods: Install as specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.
    a. Unless otherwise specified, tighten nuts on anchor bolts and anchor rods specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry to the "snugtight" condition.
3. All thread rods in drilled holes bonded to concrete with adhesive: Install as specified in Section 03055 - Adhesive-Bonded Reinforcing Bars and All Thread Rods in Concrete.
4. All thread rods in drilled holes bonded to masonry with adhesive: Install as specified in Section 04055 - Adhesive Bonding Reinforcing Bars and All Thread Rods in Masonry.

H. Fasteners: High-strength carbon steel bolts:
1. Connections with high-strength bolts shall in accordance with RCSC Specification for Structural Joints Using High-Strength Bolts.
2. Provide slip-critical joints at bolted connections.

3. Joints: Slip-critical.
    a. Confirm that faying surfaces at connections are free of dirt and other foreign material, have been blast cleaned, and are free of coatings and inadvertent overspray in accordance with RCSC Specification.
    b. Furnish hardened flat washers in accordance with ASTM F436:
        1) On outer plies with slotted holes.
        2) When 1 or more plies of the connected material has a yield strength less than 40 ksi.
        3) Under element, nut, or bolt head, turned in tightening.
    c. Install tension indicator washers, placed in accordance with ASTM F959 Figure X1, to confirm adequate tightening of bolts.
    d. Tighten bolts to full pretension.

I. Fasteners: Stainless steel bolts:
    2. Connections shall be snugtight joints unless otherwise indicated on the Drawings.
    3. Prior to installing nuts, coat threads of stainless steel fasteners with thread coating to prevent galling of threads.
    4. Rotate nuts using a slow, smooth action without interruptions. Avoid over-tightening.

3.03 FIELD QUALITY CONTROL

A. Provide quality control as specified in Section 01450 - Quality Control.

3.04 FIELD QUALITY ASSURANCE

A. Provide quality assurance as specified in Section 01450 - Quality Control.

B. Special inspections, special tests, and structural observation:
    1. Provide as specified in Section 01455 - Regulatory Quality Assurance.

END OF SECTION

SECTION 05190

MECHANICAL ANCHORING AND FASTENING TO CONCRETE AND MASONRY

PART 1 GENERAL

1.01 SUMMARY

A. Section includes requirements for:
   1. Cast-in anchors and fasteners.
   2. Post-installed steel anchors and fasteners.
   3. Appurtenances for anchoring and fastening.

1.02 REFERENCES

A. American Concrete Institute (ACI):
   1. 355.2 - Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary.

B. American National Standards Institute (ANSI):
   1. B212.15 - Cutting Tools - Carbide-tipped Masonry Drills and Blanks for Carbide-tipped Masonry Drills.

C. American Welding Society (AWS):
   1. D1.1 - Structural Welding Code - Steel.
   2. D1.6 - Structural Welding Code - Stainless Steel.

D. ASTM International (ASTM):
   1. A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   2. A108 - Standard Specification for Steel Bars, Carbon and Alloy, Cold Finished.
   3. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   4. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   5. A240 - Standard Specification for Chromium and Chromium Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
   6. A380 - Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
   7. B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
   8. B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
   9. E488 - Standard Test Methods for Strength of Anchors in Concrete Elements.
   10. F436 - Standard Specification for Hardened Steel Washers.
   11. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
   12. F594 - Standard Specification for Stainless Steel Nuts.

13. F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55 and 105-ksi Yield Strength.
14. F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

E. International Code Council Evaluation Service, Inc. (ICC-ES):
1. AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
1. Built-in anchor: Headed bolt or assembly installed in position before filling surrounding masonry units with grout.
2. Cast-in anchor: Headed bolt or assembly installed in position before placing plastic concrete around.
3. Overhead installations: Fasteners installed on overhead surfaces where the longitudinal axis of the fastener is more than 45 degrees above a horizontal line so the fastener resists sustained tension loads.
4. Passivation: Chemical treatment of stainless steel with a mild oxidant for the purpose of enhancing the spontaneous formation of the steel's protective passive film.
5. Post-installed anchor: Fastener or assembly installed in hardened concrete or finished masonry construction, typically by drilling into the structure and inserting a steel anchor assembly.
6. Terms relating to structures or building environments as used with reference to anchors and fasteners:
    a. Corrosive locations: Describes interior and exterior locations as follows:
        1) Locations used for delivery, storage, transfer, or containment (including spill containment) of chemicals used for plant treatment processes.
        2) Exterior and interior locations at the following treatment structures:
            a) Water treatment facilities: Liquids stream:
                (1) Misty Woods ASR Well.
                (2) College Lake ASR Well.
    b. Wet and moist locations: Describes locations, other than "corrosive locations," that are submerged, are immediately above liquid containment structures, or are subject to frequent wetting, splashing, or wash down. Includes:
        1) Exterior portions of buildings and structures.
        2) Liquid-containing structures:
            a) Locations at and below the maximum operating liquid surface elevation.
            b) Locations above the maximum operating liquid surface elevation and:
                (1) Below the top of the walls containing the liquid.
                (2) At the inside faces and underside surfaces of a structure enclosing or spanning over the liquid (including walls, roofs, slabs, beams, or walkways enclosing the open top of the structure).

3) Liquid handling equipment:
   a) Bases of pumps and other equipment that handles liquids.
4) Indoor locations exposed to moisture, splashing, or routine wash down during normal operations, including floors with slopes toward drains or gutters.
5) Other locations indicated on the Drawings.

c. Other locations:
1) Interior dry areas where the surfaces are not exposed to moisture or humidity in excess of typical local environmental conditions.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Calculations.

1.05 SUBMITTALS

A. General:
1. Submit as specified in Section 01330 - Submittal Procedures and the Agreement and Contract RFP in Volumes 1 and 2.

B. Product data:
1. Cast-in anchors:
   a. Manufacturer's data including catalog cuts showing anchor sizes and configuration, materials, and finishes.
2. Post-installed anchors:
   a. For each anchor type, manufacturer's data including catalog cuts showing anchor sizes and construction, materials and finishes, and load ratings.

C. Delegated Design Submittals:
1. When requesting product substitutions for post installed anchors, submit calculations, indicating the diameter, effective embedment depth and spacing of the proposed anchors, and demonstrating that the substituted product will provide load resistance that is equal to or greater than that provided by the anchors listed in this Section.

D. Samples:
1. Samples of each type of anchor, including representative diameters and lengths, if requested by the Engineer.

E. Certificates:
1. Cast-in anchors:
   a. Mill certificates for steel anchors that will be supplied to the site.
2. Post-installed anchors:
   a. Manufacturer's statement or certified test reports demonstrating that anchors that will be supplied to the site comply with the materials properties specified.

F. Test reports:
    1. Post-installed anchors: For each anchor type used for the Work:
        a. Current ICC-ES Report (ESR) demonstrating:
            1) Acceptance of that anchor for use under the building code specified in Section 01410 - Regulatory Requirements.
            2) That testing of the concrete anchor included the simulated seismic tension and shear tests of AC193, and that the anchor is accepted for use in Seismic Design Categories C, D, E, or F, and with cracked concrete.

G. Manufacturer's instructions:
    1. Requirements for storage and handling.
    2. Recommended installation procedures including details on drilling, hole size (diameter and depth), hole cleaning and preparation procedures, anchor insertion, and anchor tightening.
    3. Requirements for inspection or observation during installation.

H. Qualification statements:
    1. Post-installed anchors: Installer qualifications:
        a. Submit list of personnel performing installations. Include letter of training from manufacturer indicating date of manufacturer's training for each installer.

1.06 QUALITY ASSURANCE

A. Qualifications:
    1. Post installed anchors shall be in accordance with building code specified in Section 01410 - Regulatory Requirements.

B. Special inspection:
    1. Provide special inspection of post-installed anchors as specified in Section 01455 - Regulatory Quality Assurance and this Section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

B. Deliver post-installed anchors in manufacturer's standard packaging with labels visible and intact. Include manufacturer's installation instructions.

C. Handle and store anchors and fasteners in accordance with manufacturer's recommendations and as required to prevent damage.

D. Protect anchors from weather and moisture until installation.

1.08 PROJECT CONDITIONS

A. As specified in Section 01850 - Design Criteria.

B. Seismic Design Category (SDC) for structures is indicated on the Drawings.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. General:
   1. Furnish threaded fasteners with flat washers and hex nuts fabricated from materials corresponding to the material used for threaded portion of the anchor.
      a. Cast-in anchors: Provide flat washers and nuts as listed in the ASTM standard for the anchor materials specified.
      b. Post-installed anchors: Provide flat washers and nuts supplied for that product by the manufacturer of each anchor.
   2. Size of anchors and fasteners, including diameter and length or minimum effective embedment depth: As indicated on the Drawings or as specified in this Section. In the event of conflicts, contact the Engineer for clarification.
   3. Where anchors and connections are not specifically indicated on the Drawings or specified, their material, size and form shall be equivalent in quality and workmanship to items specified.

B. Materials:
   1. Provide and install anchors of materials as specified in this Section.

2.02 CAST-IN ANCHORS AND FASTENERS

A. Anchor bolts:
   1. Straight steel rod having one end with an integrally forged head, and one threaded end. Embedded into concrete with the headed end cast into concrete at the effective embedment depth indicated on the Drawings or specified, and with the threaded end left to project clear of concrete face as required for the connection to be made.
   2. Furnish anchor bolts with heavy hex forged head or equivalent acceptable to the Engineer.
      a. Rods or bars with angle bend for embedment in concrete (i.e., “L” or “J” shaped anchor bolts) are not permitted in the Work.
   3. Materials:
      a. Ship anchor bolts with properly fitting nuts attached.
      b. Type 316 stainless steel:
         1) Surfaces descaled, pickled, and passivated in accordance with ASTM A380.
         2) Bolts: ASTM F593, Group 2, Condition CW, coarse threads.
         3) Nuts: ASTM F594. Match alloy (group and UNS designation) and threads of bolts.
         4) Washers: Type 316 stainless steel.
      c. Type 304 stainless steel:
         1) Surfaces descaled, pickled, and passivated in accordance with ASTM A380.
         2) Bolts: ASTM F593, Group 1, Condition CW, coarse threads.
         3) Nuts: ASTM F594. Match alloy (group and UNS designation) and threads of bolts.
         4) Washers: Type 304 stainless steel.

d. Stainless steel: Type 316:
    1) Surfaces descaled, pickled, and passivated in accordance with ASTM A380.
    2) Rod: ASTM F593, Group 2, Condition CW, coarse threads.
    3) Nuts: ASTM F594. Match alloy (group and UNS designation) and threads of rods.
    4) Washers: Type 316 stainless steel.
    5) Plates (embedded): ASTM A240.
e. Stainless steel: Type 304:
    1) Surfaces descaled, pickled, and passivated in accordance with ASTM A380.
    2) Rod: ASTM F593, Group 1, Condition CW, coarse threads.
    3) Nuts: ASTM F594. Match alloy (group and UNS designation) and threads or rods.
    4) Washers: Type 304 stainless steel.
    5) Plates (embedded): ASTM A240.

2.03 POST-INSTALLED ANCHORS AND FASTENERS - ADHESIVE

A. Epoxy bonding of reinforcing bars, all thread rods, and threaded inserts in concrete: As specified in Section 03055 - Adhesive-Bonded Reinforcing Bars and All Thread Rods in Concrete.

B. Epoxy bonding of reinforcing bars, all thread rods, and threaded inserts in masonry: As specified in Section 04055 - Adhesive Bonding Reinforcing Bars and All Thread Rods in Masonry.

2.04 POST-INSTALLED ANCHORS AND FASTENERS - MECHANICAL

A. General:
    1. Post-installed anchors shall hold a current ICC Evaluation Service Report demonstrating acceptance for use under the building code specified in Section 01410 - Regulatory Requirements.
        a. Acceptance report shall indicate acceptance of the product for use under the following conditions:
            1) In regions of concrete where cracking has occurred or may occur.
            2) To resist short-term loads due to wind forces.
            3) To resist short-term loading due to seismic forces for the Seismic Design Category of the structure where the product will be used.

B. Concrete anchors:
    1. Post-installed anchor assembly consisting of a threaded stud and a surrounding wedge expansion sleeve that is forced outward by torquing the center stud to transfer loads from the stud to the concrete through bearing, friction, or both. Sometimes referred to as “expansion anchors” or “wedge anchors.”
        a. Do not use slug-in, lead cinch, and similar systems relying on deformation of lead alloy or similar materials to develop holding power.
    2. Concrete expansion bolts for anchorage to concrete:
        a. Shall have a current ICC-ES Report demonstrating that the anchors have been tested and qualified for performance in both cracked and un-cracked concrete, and for short-term loading due to wind and seismic forces for

Seismic Design Categories A through F in accordance with ACI 355.2 and with ICC-ES AC193 (including all mandatory tests and optional tests for seismic tension and shear in cracked concrete).

b. Performance in the current ICC-ES Report shall be “Category 1” as defined in ACI 355.2.

c. Manufacturers: One of the following:
   1) DEWALT/Powers, PowerStud.
   2) Hilti, Kwik Bolt TZ2 Wedge Anchor.
   3) Simpson Strong-Tie, Strong-Bolt 2 Wedge Anchor.

d. Materials. Integrally threaded stud, wedge, washer, and nut:
   1) Stainless steel: Type 316.
      a) Type 304 stainless steel acceptable for use at wet and moist locations when accepted in writing by the Engineer.
   2) Galvanized: Carbon steel, zinc plated in accordance with ASTM B633, minimum 5 microns (Fe/Zn 5).

3. Concrete anchors for anchorage to concrete masonry (fully grouted cells):
   a. Shall have a current ICC-ES Report demonstrating that the anchors have been tested and qualified in accordance with ICC-ES AC01, including all mandatory tests and optional seismic tests.
   b. Manufacturers: One of the following or equal:
      1) DEWALT/Powers, Power-Stud+ SD1.
      2) Hilti, Kwik TZ2 Wedge Anchor.
      3) Simpson Strong-Tie, Strong-Bolt 2 Wedge Anchor.
   c. Materials. Integrally threaded stud, wedge, washer, and nut:
      1) Stainless steel: Type 316.
         a) Type 304 stainless steel acceptable for use at wet and moist locations when accepted in writing by the Engineer.

2.05 APPURTENANCES FOR ANCHORING AND FASTENING

A. Anchor bolt sleeves:
   1. Having inside diameter approximately 2 inches greater than bolt diameter and minimum 10-bolt diameters long.
   2. Plastic sleeves:
      a. High-density polyethylene, corrugated sleeve, threaded to provide adjustment of location on the anchor bolt.
      b. Manufacturers: The following or equal:
         1) Portland Bolt & Manufacturing Co.

B. Isolating sleeves and washers:
   1. Manufacturers: One of the following or equal:
      a. Allied Corrosion Industries.
      b. Central Plastics Co.
   2. Sleeves: Mylar, 1/32-inch thick, 4,000 volts per mil dielectric strength, of proper size to fit bolts and extending half way into both steel washers.
   3. One sleeve required for each bolt.
   4. Washers: Inside diameter of washers shall fit over the isolating sleeve, and both the steel and isolating washers shall have the same inside diameter and outside diameter.
      a. Proper size to fit bolts.
      b. Two 1/8-inch thick steel washers for each bolt.

c. G3 Phenolic: 2 insulating washers are required for each bolt:
    1) Thickness: 1/8 inch.
    2) Base material: Glass.
    3) Resin: Phenolic.
    4) Water absorption: 2 percent.
    5) Hardness (Rockwell): 100.
    6) Dielectric strength: 450 volts per mil.
    7) Compression strength: 50,000 pounds per square inch.
    8) Tensile strength: 20,000 pounds per square inch.
    9) Maximum operating temperature: 350 degrees Fahrenheit.

C. Coating for repair of galvanized surfaces:
    1. Manufacturers: The following or equal:
        a. Jelt, Galvinox.

D. Thread coating: For use with threaded stainless steel fasteners:
    1. Manufacturers: One of the following or equal:
        a. Bostik, Never-Seez.
        b. Oil Research, Inc., WLR No. 111.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine Work in place to verify that it is satisfactory to receive the Work of this Section. If unsatisfactory conditions exist, do not begin this Work until such conditions have been corrected.

3.02 INSTALLATION - GENERAL

A. Where anchors and fasteners are not specifically indicated on the Drawings or specified, make attachments with materials specified in this Section.

B. Substitution of anchor types:
    1. Post-installed anchors may not be used as an alternative to cast-in/built-in anchors at locations where the latter are indicated on the Drawings.
    2. Cast-in/built-in anchors may be used as an alternative to post-installed mechanical anchors at locations where the latter are indicated on the Drawings.

C. Protect products from damage during installation. Protect threads and threaded ends.

D. Accurately locate and position anchors and fasteners:
    1. Unless otherwise indicated on the Drawings, install anchors perpendicular to the surfaces from which they project.
    2. Install anchors so that at least 2 threads, but not more than 1/2 inch of threaded rod, projects past the top nut.

E. Interface with other products:
   1. Where steel anchors come in contact with dissimilar metals (aluminum, stainless steel, etc.), use stainless steel anchors and separate or isolate dissimilar metals using isolating sleeves and washers.
   2. Prior to installing nuts, coat threads of stainless steel fasteners with thread coating to prevent galling of threads.

3.03 INSTALLATION - CAST-IN ANCHORS

A. General:
   1. Accurately locate cast-in and built-in anchors.
      a. Provide anchor setting templates to locate anchor bolts and anchor rods. Secure templates to formwork.
      b. Brace or tie off embedments as necessary to prevent displacement during placement of plastic concrete or of surrounding masonry construction.
      c. Position and tie cast-in and built-in anchors in place before beginning placement of concrete or grout. Do not “stab” anchors into plastic concrete, mortar, or grout.
      d. Do not allow cast-in anchors to touch reinforcing steel. Where cast-in anchors are within 1/4 inch of reinforcing steel, isolate the metals by wrapping the anchors with a minimum of 4 wraps of 10-mil polyvinyl chloride tape in area adjacent to reinforcing steel.
   2. For anchoring at machinery bases subject to vibration, use 2 nuts, with 1 serving as a locknut.
   3. Where anchor bolts or anchor rods are indicated on the Drawings as being for future use, thoroughly coat exposed surfaces that project from concrete or masonry with non-oxidizing wax. Turn nuts down full length of the threads, and neatly wrap the exposed thread and nut with a minimum of 4 wraps of 10-mil waterproof polyvinyl tape.

B. Anchor bolts:
   1. Minimum effective embedment: 10-bolt diameters, unless a longer embedment is indicated on the Drawings.
   2. Where indicated on the Drawings, set anchor bolts in plastic, galvanized steel or stainless steel sleeves to allow for adjustment.

3.04 [INSTALLATION - POST-INSTALLED ADHESIVE ANCHORS

A. Epoxy and acrylic adhesive bonding of reinforcing bars, all thread rods, and internally threaded inserts in concrete: As specified in Section 03055 - Adhesive-Bonded Reinforcing Bars and All Thread Rods in Concrete.

B. Epoxy and acrylic adhesive bonding of reinforcing bars, all thread rods, and internally threaded inserts in masonry: As specified in Section 04055 - Adhesive Bonding Reinforcing Bars and All Thread Rods in Masonry.

3.05 INSTALLATION - POST-INSTALLED MECHANICAL ANCHORS

A. General:
   1. Install anchors in accordance with the manufacturer’s instructions, ACI 355.2, the anchor’s ICC-ES Report. Where conflict exists between the ICC-ES Report

and the requirements specified in this Section, the requirements of the ICC-ES Report shall control.
2. Where anchor manufacturer recommends the use of special tools and/or specific drill bits for installation, provide and use such tools.
3. After anchors have been positioned and inserted into concrete or masonry, do not:
    a. Remove and reuse/reinstall anchors.
    b. Loosen or remove bolts or studs.

B. Holes drilled into concrete and masonry:
1. Do not drill holes in concrete or masonry until the material has achieved its minimum specified compression strength (f'c or f'm).
2. Accurately locate holes:
    a. Before drilling holes, use a reinforcing bar locator to identify the position of reinforcing steel, conduit, and other embedded items within a 6-inch radius of each proposed hole.
    b. If the hole depth exceeds the range of detection for the rebar locator, the Engineer may require radiographs of the area designated for investigation before drilling commences.
3. Exercise care to avoid damaging existing reinforcement and other items embedded in concrete and masonry.
    a. If embedments are encountered during drilling, immediately stop work and notify the Engineer. Await the Engineer's instructions before proceeding.
4. Unless otherwise indicated on the Drawings, drill holes perpendicular to the concrete surface into which they are placed.
5. Drill using anchor manufacturer's recommended equipment and procedures:
    a. Unless otherwise recommended by the manufacturer, drill in accordance with the following:
        1) Drilling equipment: Electric or pneumatic rotary type with light or medium impact. Where edge distances are less than 2 inches, use lighter impact equipment to prevent micro-cracking and concrete spalling during drilling process.
        2) Drill bits: Carbide-tipped in accordance with ANSI B212.15. Hollow drills with flushing air systems are preferred.
6. Drill holes at manufacturer's recommended diameter and to depth required to provide the effective embedment indicated.
7. Clean and prepare holes as recommended by the manufacturer and as required by the ICC-ES Report for that anchor.
    a. Unless otherwise recommended by anchor manufacturer, remove dust and debris using brushes and clean compressed air.
    b. Repeat cleaning process as required by the manufacturer's installation instructions.
    c. When cleaning holes for stainless steel anchors, use only stainless steel or non-metallic brushes.

C. Insert and tighten (or torque) anchors in compliance with the manufacturer's installation instructions.
1. Once anchor is tightened (torque), do not attempt to loosen or remove its bolt or stud.

D. Concrete anchors: Minimum effective embedment lengths unless otherwise indicated on the Drawings:

Concrete Anchors			
	Minimum Effective Embedment Length		Minimum Member Thickness
Nominal Diameter	In Concrete	In Grouted Masonry	
3/8 inch	2 1/2 inch	2 5/8 inch	8 inch
1/2 inch	3 1/2 inch	3 1/2 inch	8 inch
5/8 inch	4 1/2 inch	4 1/2 inch	10 inch
3/4 inch	5 inch	5 1/4 inch	12 inch

E. Flush shell anchors:
   1. Not permitted in the Work.
   2. If equipment manufacturer's installation instructions recommend the use of flush shell anchors, contact the Engineer for instructions before proceeding.

F. Sleeve anchors:
   1. Minimum effective embedment lengths unless otherwise indicated on the Drawings:

Sleeve Anchors			
	Minimum Effective Embedment Length		Minimum Member Thickness
Nominal Diameter	In Concrete	In Grouted Masonry	
M8 (1/2 inch)	70 mm (2 3/4 inch)	Not accepted	100 mm (8 inch)
M10 (5/8 inch)	76 mm (3 inch)	Not accepted	250 mm (10 inch)
M12 (3/4 inch)	80 mm (3 1/4 inch)	Not accepted	300 mm (12 inch)

   2. Install with the sleeve fully engaged in the base material.

G. Screw anchors:
   1. Minimum effective embedment lengths unless otherwise indicated on the Drawings:

Screw Anchors			
	Minimum Effective Embedment Length		Minimum Member Thickness
Nominal Diameter	In Concrete	In Grouted Masonry	
3/8 inch	2 1/2 inch	3 1/4 inch	8 inch
1/2 inch	3 1/4 inch	4 1/2 inch	8 inch
5/8 inch	4 inch	5 inch	10 inch
3/4 inch	5 1/2 inch	6 1/4 inch	12 inch

   2. Install using equipment and methods recommended by the manufacturer. Continue driving into hole until the washer head is flush against the item being fastened.

H. Undercut concrete anchors:
   1. Minimum effective embedment lengths unless otherwise indicated on the Drawings:

Undercut Anchors			
Nominal Diameter (bolt)	**Minimum Effective Embedment Length**		**Minimum Member Thickness**(1)
	In Concrete	**In Grouted Masonry**	
M10 (3/8 inch)	100 mm (4 inch)	Not accepted	200 mm (8 inch)
M12 (1/2 inch)	125 mm (5 inch)	Not accepted	350 mm (14 inch)
M16 (5/8 inch)	190 mm (7 1/2 inch)	Not accepted	460 mm (18 inch)
M20 (7/8 inch)	250 mm (10 inch)	Not accepted	510 mm (20 inch)

Notes:
(1) Thickness indicated is for pre-set units. If through-set units are accepted, obtain minimum member thickness requirements from the Engineer.

   2. Installations of undercut anchors shall not be allowed where edge distances are less than 12 times the nominal diameter of the anchor stud.
   3. Undercut bottom of hole using cutting tools manufactured for this purpose by the manufacturer of the undercut anchors being placed.

3.06 FIELD QUALITY CONTROL

A. Provide quality control over the Work of this Section as specified in Section 01450 - Quality Control.
   1. Expenses associated with Work described by the following paragraphs shall be paid by the Contractor.

B. Post-installed anchors:
   1. Review anchor manufacturer's installation instructions and requirements of the Evaluation Service Report (hereafter referred to as "installation documents") for each anchor type and material.
   2. Observe hole-drilling and cleaning operations for conformance with the installation documents.
   3. Certify in writing that the depth and location of anchor holes, and the torque applied for setting the anchors conforms to the requirements of the installation documents.

3.07 FIELD QUALITY ASSURANCE

A. Engineer will provide on-site observation and field quality assurance for the Work of this Section.
   1. Expenses associated with work described by the following paragraphs shall be paid by the Owner.

B. Field inspections and special inspections:
   1. Required inspections: Observe construction for conformance to the approved Contract Documents, the accepted Submittals, and the manufacturer's installation instructions for the products used.

2. Record of inspections:
    a. Maintain record of each inspection.
    b. Submit copies to the Engineer upon request.
3. Statement of special inspections: At the end of the project, prepare and submit to the Engineer and the authority having jurisdiction inspector's statement that the Work was constructed in general conformance with the approved Contract Documents, and that deficiencies observed during construction were resolved.

C. Special inspections: Anchors cast into concrete and built into masonry.
1. Provide special inspection during positioning of anchors and placement of concrete or masonry (including mortar and grout) around the following anchors:
    a. Anchor bolts.
2. During placement, provide continuous special inspection at each anchor location to verify that the following elements of the installation conform to the requirements of the Contract Documents.
    a. Anchor:
        1) Type and dimensions.
        2) Material: Galvanized steel, Type 304 stainless steel or Type 316 stainless steel, as specified in this Section or indicated on the Drawings.
        3) Positioning: Spacing, edge distances, effective embedment, and projection beyond the surface of the construction.
        4) Reinforcement at anchor: Presence, positioning, and size of additional reinforcement at anchors indicated on the Drawings.
3. Following hardening and curing of the concrete or masonry surrounding the anchors, provide periodic special inspection to observe and confirm the following:
    a. Base material (concrete or grouted masonry):
        1) Solid and dense concrete or grouted masonry material within required distances surrounding anchor.
        2) Material encapsulating embedment is dense and well-consolidated.

D. Special inspections: Post-installed mechanical anchors placed in hardened concrete and in grouted masonry.
1. Provide special inspection during installation of the following anchors:
    a. Concrete anchors.
2. Unless otherwise noted, provide periodic special inspection during positioning, drilling, placing, and torquing of anchors.
    a. Provide continuous special inspection for post-installed anchors in "overhead installations" as defined in this Section.
3. Requirements for periodic special inspection:
    a. Verify items listed in the following paragraphs for conformance to the requirements of the Contract Documents and the Evaluation Report for the anchor being used. Observe the initial installation of each type and size of anchor, and subsequent installation of the same anchor at intervals of not more than 4 hours.
        1) Any change in the anchors used, in the personnel performing the installation, or in procedures used to install a given type of anchor shall require a new "initial inspection."
    b. Substrate: Concrete or masonry surfaces receiving the anchor are sound and of a condition that will develop the anchor's rated strength.

c. Anchor:
    1) Manufacturer, type, and dimensions (diameter and length).
    2) Material (galvanized, Type 304 stainless steel, or Type 316 stainless steel).
d. Hole:
    1) Positioning: Spacing and edge distances.
    2) Drill bit type and diameter.
    3) Diameter, and depth.
    4) Hole cleaned in accordance with the manufacturer's required procedures. Confirm multiple repetitions of cleaning when recommended by the manufacturer.
    5) Anchor's minimum effective embedment.
    6) Anchor tightening/installation torque.

4. Requirements for continuous special inspection:
    a. Special inspector shall observe all aspects of anchor installation, except that holes may be drilled in their absence provided that they confirm the use of acceptable drill bits before drilling, and later confirms the diameter, depth, and cleaning of drilled holes.

E. Field tests:
1. Engineer may, at any time, request testing to confirm that materials being delivered and installed conform to the requirements of the Specifications.
    a. If such additional testing shows that the materials do not conform to the specified requirements, the Contractor shall pay the costs of these tests.
    b. If such additional testing shows that the materials do conform to the specified requirements, the Owner shall pay the costs of these tests.

3.08 NON-CONFORMING WORK

A. Remove misaligned or non-performing anchors.

B. Fill empty anchor holes and repair failed anchor locations as specified in Section 03366 - Concrete Finishes using high-strength, non-shrink, non-metallic grout.

C. If more than 10 percent of all tested anchors of a given diameter and type fail to achieve their specified torque or proof load, the Engineer will provide directions for required modifications. Make such modifications, up to and including replacement of all anchors, at no additional cost to the Owner.

3.09 SCHEDULES

A. Stainless steel: Provide and install stainless steel anchors at the following locations:
1. "Corrosive locations" as defined in this Section: Type 316 stainless steel.
2. "Wet and moist locations" as defined in this Section: Type 316 stainless steel.
3. "Other locations:"
    a. For connecting steel members to concrete or masonry: Type 304 stainless steel.
    b. For connecting aluminum members to concrete or masonry.

c. For connecting fiber-reinforced plastic (FRP) members to concrete or masonry.

4. At locations indicated on the Drawings.

B. Provide and install anchor materials as scheduled in the following table.

Required Anchoring Materials by Location			
Location/Exposure		**Materials**	**Notes**
1.	**Anchors into concrete and grouted masonry for attachment of carbon steel, including structural steel and other steel fabrications:**		
a.	Interior dry areas	Carbon steel - galvanized	
b.	Locations with galvanized steel structures or fabrications	Stainless steel - Type 304 or 316	1
c.	Exterior and interior wet and moist locations	Stainless steel - Type 316	1
d.	Corrosive locations	Stainless steel - Type 316	1
2.	**Anchors into concrete and grouted masonry for attachment of aluminum, stainless steel, or fiber-reinforced plastic (FRP) shapes and fabrications:**		
a.	Interior dry areas	Stainless steel - Type 304 or 316	1
b.	Exterior and interior wet and moist locations	Stainless steel - Type 316	1
c.	Corrosive locations	Stainless steel - Type 316	1
3.	**Anchors for attaching equipment and its appurtenances:**		
a.	All locations	Stainless steel - Type 316 (unless Type 304 is specifically indicated in the specifications for the equipment.)	1

Notes:

(1) Where anchors are in contact with a metal that differs from that of the anchor, provide isolation sleeves and washers.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Aluminum grating stair tread.
   2. Aluminum stair nosing.
   3. Cast iron stop plank grooves.
   4. Concrete inserts.
   5. Handrails and guardrails.
   6. Ladders.
   7. Manhole frames and covers.
   8. Manhole steps.
   9. Metal gratings.
   10. Metal tread plate.
   11. Preformed channel pipe supports.
   12. Stairs.
   13. Miscellaneous metals.
   14. Associated accessories to the above items.

1.02 REFERENCES

A. Aluminum Association (AA):
   1. DAF-45: Designations from Start to Finish.
      a. M12-C22-A41.

B. American Association of State Highway and Transportation Officials (AASHTO):
   1. Standard Specifications for Highway Bridges.

C. ASTM International (ASTM):
   1. A36 - Standard Specification for Carbon Structural Steel.
   2. A48 - Standard Specification for Gray Iron Castings.
   3. A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless.
   4. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   5. A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels for General Applications.
   6. A276 - Standard Specification for Stainless Steel Bars and Shapes.
   7. A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
   8. A380 - Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
   9. A489 - Standard Specification for Carbon Steel Lifting Eyes.

10. A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
11. A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
12. A635 - Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements for.
13. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
14. A992 - Standard Specification for Structural Steel Shapes.
15. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
16. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
17. B308 - Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.
18. B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
19. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
20. F3125 - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi and 150 ksi Minimum Tensile Strength.

D. American Welding Society (AWS):
   1. A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

E. National Association of Architectural Metal Manufacturers (NAAMM):
   1. Metal Finishes Manual.

F. Occupational Safety and Health Administration (OSHA).

1.03 DEFINITIONS

A. Passivation: Removal of exogenous iron or iron compounds from the surface of a stainless steel by means of chemical dissolution resulting from treatment with an acid solution that removes the surface contamination but does not significantly affect the stainless steel itself.

1.04 SUBMITTALS

A. Product Data:
   1. Aluminum grating stair tread.
   2. Aluminum stair nosing.
   3. Cast iron stop plank grooves.
   4. Handrails and guardrails.
   5. Manhole frames and covers.
   6. Manhole steps.
   7. Metal grating.

B. Shop drawings:
   1. Handrails and guardrails:
      a. Including details on connection attachments, gates, kick plates, ladders, and angles.
      b. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
      c. Include erection drawings, elevations, and details where applicable.
      d. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Ladders.
   3. Metal grating.
   4. Metal tread plate.
   5. Stairs.
   6. Miscellaneous metals.

C. Samples:
   1. Guardrails with specified finishes.

D. Quality control submittals:
   1. Design data.
   2. Test reports:
      a. Guardrails: 3 copies of certified tests performed by an independent testing laboratory certifying that guardrails meet current State and OSHA strength requirements.
      b. Gratings:
         1) Grating manufacturers' calculations showing that gratings will meet specified design load, stress, and deflection requirements for each size grating for each span.
         2) Reports of tests performed.
      c. Planks:
         1) Plank manufacturers' calculations showing that planks will meet specified load-bearing and deflection requirements for each size plank for each span.
         2) Reports of tests performed.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Unless otherwise specified or indicated on the Drawings, structural and miscellaneous metals in accordance with the standards of the ASTM, including the following:

Item	ASTM Standard No.	Class, Grade Type or Alloy No.
Cast Iron		
Cast Iron	A48	Class 40B
Steel		
Galvanized sheet iron or steel	A653	Coating G90
Coil (plate)	A635	--
Structural plate, bars, rolled shapes, and miscellaneous items (except W shapes).	A36	--
Rolled W shapes	A992	Grade 50
Standard bolts, nuts, and washers	A307	--
High strength bolts, nuts, and hardened flat washers	F3125, Grade A325	--
Eyebolts	A489	Type 1
Tubing, cold-formed	A500	--
Tubing, hot-formed	A501	--
Steel pipe	A53	Grade B
Stainless Steel		
Plate, sheet, and strip	A240	Type 304* or 316**
Bars and shapes	A276	Type 304* or 316**
Bolts (Type 304)	F593	Group 1 Condition CW
Bolts (Type 316)	F593	Group 2 Condition CW
Aluminum		
Flashing sheet aluminum	B209	Alloy 5005-H14, 0.032 inches minimum thickness
Structural sheet aluminum-	B209	Alloy 6061-T6
Structural aluminum	B209 B308	Alloy 6061-T6
Extruded aluminum	B221	Alloy 6063-T42
* Use Type 304L if material will be welded. ** Use Type 316L if material will be welded.		

1. Stainless steels are designated by type or series defined by ASTM.
2. Where stainless steel is welded, use low-carbon stainless steel.

2.02 MANUFACTURED UNITS

A. Aluminum grating stair tread:
   1. Manufacturers: One of the following or equal:
      a. Harsco Industrial IKG, Aluminum Grating Stair Tread with Mebac® nosing.
      b. McNichols Co., Type A-Standard with Corrugated Angle Nosing.
   2. Material: Welded aluminum grating tread with non-slip nosing and integral end plates for bolt on attachment to stair stringers.
   3. Size:
      a. Tread width: To equal tread spacing plus 1 inch minimum.
      b. Tread length: Length to suit stringer-to-stringer dimension on the Drawings.
      c. Depth: 1-3/4 inches.
   4. Bolts: Type 316 stainless steel.

B. Aluminum stair nosing:
   1. Manufacturers: One of the following or equal:
      a. Wooster Products, Inc., Type 101 Nosing.
      b. American Safety Tread Co., Inc., Style 801 Nosing.
   2. Material: Cast aluminum abrasive nosings with aluminum oxide granules integrally cast into metal, forming permanent, nonslip, long-wearing surface.
   3. For installation in cast-in-place stairs.
   4. Configuration: 4 inches wide, fabricated with integrally cast stainless steel anchors at approximately 12-inch centers. Length to extend within 3 inches of stair edge on each side.

C. Cast iron stop plank grooves:
   1. Manufacturers: One of the following or equal:
      a. Neenah Foundry Co., R-7500 Series, Type A.
      b. McKinley Iron Works, Type L.
   2. Size: 2-inch wide groove opening by 1-1/2 inch deep, unless otherwise indicated on the Drawings.
   3. Recess groove with the cast iron surface of the groove set flush with the concrete surface.

D. Concrete inserts:
   1. Concrete inserts for supporting pipe and other applications are specified in Section 15061 - Pipe Supports.

E. Handrails and guardrails:
   1. General:
      a. Design and fabricate assemblies to conform to current local, State, and OSHA standards and requirements.
      b. Coordinate layout of assemblies and post spacings to avoid conflicts with equipment and equipment operators:
         1) Indicate on the shop drawings locations of such equipment.
         2) Highlight locations where railings cannot be made continuous, and obtain Engineer’s directions on how to proceed before fabricating or installing railings.

2. Aluminum handrails and guardrails (nonwelded pipe):
    a. Rails, posts, and fitting-assembly spacers:
        1) In accordance with ASTM B429, 6005, 6063 or 6105, minimum Schedule 40, extruded aluminum pipe of minimum 1.89-inch outside diameter and 0.14-inch wall thickness.
    b. Kick plates: 6061 or 6105 aluminum alloy.
    c. Fastenings and fasteners: As recommended or furnished by the manufacturer.
    d. Other parts: 6063 extruded aluminum, or F214 or F514.0 aluminum castings:
        1) Fabrications: In accordance with ASTM B209 or ASTM B221 extruded bars:
            a) Bases: 6061 or 6063 extruded aluminum alloy.
        2) Plug screws or blind rivets: Type 305 stainless steel.
            a) Other parts: Type 300 series stainless steel.
    e. Finish of aluminum components:
        1) Anodized finish, 0.7 mil thick, applied to exposed surfaces after cutting. Aluminum Association Specification M12-C22-A41, mechanical finish non specular as fabricated, chemical finish-medium matte, anodic coating-clear Class I Architectural.
        2) Pretreat aluminum for cleaning and removing markings before anodizing.
    f. Fabrication and assembly:
        1) Fabricate posts in single, unspliced pipe length.
        2) Perform without welding.
        3) Do not epoxy bond the parts.
        4) Maximum clear opening between assembled railing components as indicated on the Drawings.
    g. Manufacturers: One of the following or equal:
        1) Moultrie Manufacturing Co., Wesrail.
        2) Golden Railings, Riveted System.
        3) Craneveyor Corp. Enerco Metals, C-V Rail.
3. Steel pipe handrails and guardrails:
    a. Schedule 40 black steel pipe with minimum 1.9-inch outside diameter, or larger where indicated on the Drawings.
    b. Fabricate posts in single, unspliced pipe length.
    c. Kick plates: Galvanized steel.
    d. Attachment devices: Provide clip angles and other fasteners necessary for securing handrails and guardrails to other construction as indicated on the Drawings.
    e. Continuously weld joints and grind smooth.
    f. Bend rails to profile indicated on the Drawings**,** without sharp bends or flat spots. Rails shall be round after bending.
    g. Neatly weld intersection of rails and posts, and grind surfaces smooth.
4. Fastenings and fasteners: As recommended or furnished by guardrail manufacturer for use with this system.

F. Ladders:
    1. General:
        a. Type: Safety type conforming to local, State, and OSHA standards as minimum. Furnish guards for ladder wells.

b. Size: 18 inches wide between side rails of length, size, shape, detail, and location indicated on the Drawings.

2. Aluminum ladders:
   a. Materials: 6063-T5 aluminum alloy.
   b. Rungs:
      1) 1-inch minimum solid square bar with 1/8-inch grooves in top and deeply serrated on all sides.
      2) Capable of withstanding 1,000 pound load without failure.
   c. Side rails: Minimum 4-inch by 1/2-inch flat bars.
   d. Finish of aluminum components:
      1) Anodized finish, 0.7 mil thick, applied to exposed surfaces after cutting. Aluminum Association Specification M12-C22-A41, mechanical finish non specular as fabricated, chemical finish-medium matte, anodic coating-clear Class I Architectural.
      2) Pretreat aluminum for cleaning and removing markings before anodizing.
   e. Fabrication:
      1) Welded construction, of size, shape, location, and details indicated on the Drawings.
      2) For ladders over 20 feet high, furnish standard ladder cages or fall prevention system designed in accordance with State and OSHA requirements.
   f. Fall prevention system: Include but not limit to railing, brackets, clamps, 2 sleeves, and 2 belts, satisfying OSHA safe climbing requirements:
      1) Manufacturers: One of the following or equal:
         a) North Consumer Products, Saf-T-Climb.
         b) Swager Communications, Climbers Buddy System.

G. Manhole frames and covers:
   1. Material: Gray iron castings, in accordance with ASTM A48, Class 30-B.
   2. Type: Heavy-duty traffic type, with combined minimum set weight of 265 pounds.
   3. Machine horizontal and vertical bearing surfaces to fit neatly, with easily removable cover bearing firmly in frame without rocking.
   4. Frame:
      a. Bottom flange type.
      b. Approximately 4-1/2 inches frame height.
      c. Dimensions as indicated on the Drawings.
         1) Minimum inside clear dimension may not be smaller than nominal diameter minus 2 inches.
   5. Cover:
      a. Skid-resistant grid pattern design stamped with name of utility service provided by manhole, such as "ELECTRICAL," "SEWER," "TELEPHONE," or "WATER."
      b. Solid type without ventilation holes.
   6. Finish: Unpainted.

H. Manhole steps:
   1. Type 316 stainless steel, of size, shape, and spacing indicated on the Drawings.

I. Metal gratings:
   1. General:
      a. Fabricate grating to cover areas indicated on the Drawings.
      b. Unless otherwise indicated on the Drawings, grating over an opening shall cover entire opening.
      c. Make cutouts in grating where required for equipment access or protrusion, including valve operators or stems, and gate frames.
      d. Band ends of grating and edges of cutouts in grating:
         1) End banding: 1/4 inch less than height of grating, with top of grating and top edge of banding flush.
         2) Cutout banding: Full-height of grating.
         3) Use banding of same material as grating.
         4) Panel layout: Enable installation and subsequent removal of grating around protrusions or piping.
         5) Openings 6 inches and larger: Lay out grating panels with edges of 2 adjacent panels located on centerline of opening.
         6) Openings smaller than 6 inches: Locate opening at edge of single panel.
         7) Where an area requires more than 1 grating section to cover area, clamp adjacent grating sections together at 1/4-points with fasteners acceptable to Engineer.
         8) Fabricate steel grating sections in units weighing not more than 50 pounds each.
         9) Fabricate aluminum grating sections in units of weighing not more than 50 pounds each.
         10) Gaps between adjacent grating sections shall not be more than the clear spacing between bearing bars.
      e. When requested by Engineer, test 1 section of each size grating for each span length involved on the job under full load:
         1) Furnish a suitable dial gauge for measuring deflections.
      f. Grating shall be aluminum, unless otherwise specified or indicated on the Drawings.
   2. Aluminum grating:
      a. Material for gratings, shelf angles, and rebates: 6061-T6 or 6063-T6 aluminum alloy, except crossbars may be 6063-T5 aluminum alloy.
      b. Shelf angle concrete anchors: Type 304 or Type 316 stainless steel.
      c. Grating rebate rod anchors: 6061-T6 or 6063-T6 aluminum alloy.
      d. Bar size and spacing: As determined by manufacturer to enable grating to support design load.
      e. Design live load: A minimum of 100 pounds per square foot uniform live load on entire grating area, but not less than the live load indicated on the Drawings for the area where grating is located.
      f. Maximum fiber stress for design load: 12,000 pounds per square inch.
      g. Maximum deflection due to design load: 1/240 of grating clear span.
      h. Maximum spacing of main grating bars: 1-1/8 inches clear between bars.
      i. Minimum grating height: 1-1/2 inches.
      j. Manufacturers: The following or equal:
         1) Harsco Industrial IKG, Swaged Aluminum I-Bar with striated finish.
   3. Aluminum grating planks:
      a. Materials: Meet requirements previously specified for aluminum grating.

b. Fabrication:
1) Meet requirements previously specified for aluminum grating.
c. Have unpunched surface with cross hatched anti-skid surface.
d. Minimum weight of 3-1/4 pounds per square foot.
e. Provide 1 inch diameter hole with smooth edges at each end for each plank.
f. Furnish planks in 2 foot widths.
g. Manufacturers: The following or equal:
1) Harsco Industrial IKG, Heavy Duty Aluminum Plank Grating HD-P.
h. Planks shall not lock with adjacent planks allowing the removal of individual planks without disturbing the adjacent planks.

4. Steel gratings:
a. Hot-dip galvanized in accordance with ASTM A123.
b. Bar size and spacing: As determined by the manufacturer to support design load.
c. Design live load: A minimum of 100 pounds per square foot uniform live load on the entire area of the grating area, but not less than the live load indicated on the Drawings for the area where the grating is located.
d. Maximum fiber stress for design load: 18,000 pounds per square inch.
e. Maximum deflection under design load: 1/240 of grating clear span.
f. Bar spacing: Maximum of 1-1/8 inches clear between bars.
g. Manufacturers: The following or equal:
1) Harsco Industrial IKG, IKG Weldforged.

5. Heavy-duty steel grating:
a. Heavy-duty type, fabricated from structural steel and designed in accordance with AASHTO Standard Specifications for Highway Bridges, using H-20 loading.
b. Hot-dip galvanized after fabrication in accordance with ASTM A123.
c. Manufacturers: One of the following or equal:
1) Reliance Steel Products Co., Heavy-Duty Steel Grating.
2) Seidelhuber Metal Products, Inc., equivalent product.

J. Metal tread plate:
1. Plate having a raised figured pattern on 1 surface to provide improved traction.

K. Preformed channel pipe supports:
1. Preformed channel pipe supports for pipe supports and other applications are specified in Section 15062 - Preformed Channel Pipe Support System.

L. Stairs:
1. Aluminum stairs:
a. Stringers: 6061-T6 aluminum alloy.
b. Stair treads:
1) Aluminum of same type specified under Aluminum Grating.
2) Of sizes indicated on the Drawings, and 1-3/4 inch minimum depth with cast abrasive type safety nosings.
c. Handrails and guardrails: Aluminum pipe specified under Aluminum Handrails and Guardrails (Nonwelded Pipe).
d. Fasteners: Type 304 or Type 316 stainless steel.
2. Steel stairs:
a. Ships ladders shall conform to local, State, and OSHA as minimum.

b. Stringers: Structural steel channels or plates.
c. Treads: Open type attached to stringers with support angles and clips. Manufacturers: One of the following or equal:
    1) Harsco Industrial IKG, "Welded Tread" with Algrip® nosing.
d. Railings: Steel pipe, sized as indicated on the Drawings.
e. Anchors: Welded or bolted brackets designed for support and anchorage at top and bottom.
f. Finish: Prime paint finish for interior locations.

M. Miscellaneous aluminum:
1. Fabricate aluminum products, not covered separately in this Section, in accordance with the best practices of the trade and field assemble by riveting or bolting.
2. Do not weld or flame cut.

N. Miscellaneous cast iron:
1. General:
    a. Tough, gray iron, free from cracks, holes, swells, and cold shuts.
    b. Quality such that hammer blow will produce indentation on rectangular edge of casting without flaking metal.
    c. Before leaving the foundry, clean castings and apply 16-mil dry film thickness coating of coal-tar epoxy, unless otherwise specified or indicated on the Drawings.

O. Miscellaneous stainless steel:
1. Provide miscellaneous stainless steel items not specified in this Section as indicated on the Drawings or specified elsewhere.
    a. Fabricate and install in accordance with the best practices of the trade.
2. Cleaning and passivation:
    a. Following shop fabrication of stainless steel members, clean and passivate fabrications.
    b. Finish requirements: Remove free iron, heat tint oxides, weld scale and other impurities, and obtain a passive finished surface.
    c. Provide quality control testing to verify effectiveness of cleaning agents and procedures and to confirm that finished surfaces are clean and passivated.
        1) Conduct sample runs using test specimens with proposed cleaning agents and procedures as required to avoid adverse effects on surface finishes and base materials.
    d. Pre-clean, chemically descale (pickle), and final clean fabrications in accordance with the requirements of ASTM A380 to remove deposited contaminants before shipping.
        1) Passivation by citric acid treatment is not allowed.
            a) If degreasing is required before cleaning to remove scale or iron oxide, cleaning (pickling) treatments with citric acid are permissible; however, these treatments shall be followed by inorganic cleaners such as nitric-hydrofluoric acid.
        2) Provide acid descaling (pickling) in accordance with Table A1.1 of Annex A1 of ASTM A380.
        3) After pickling, final cleaning of stainless steel shall conform to Part II of Table A2.1 of Annex A2 of ASTM A380.

e. After cleaning, inspect using methods specified for “gross inspection” in ASTM A380.
f. Improperly or poorly cleaned and passivated materials shall not be shipped and will not be accepted at the job site.

P. Miscellaneous structural steel:
1. Provide miscellaneous steel items not specified in this Section as indicated on the Drawings or specified elsewhere.
a. Fabricate and install in accordance with the best practices of the trade.

Q. Isolating sleeves and washers:
1. As indicated on the Drawings and as specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions:
1. Examine work in place to verify that it is satisfactory to receive the work of this Section.
2. If unsatisfactory conditions exist, do not begin this work until such conditions have been corrected.

3.02 INSTALLATION

A. General:
1. Install products as indicated on the Drawings, and in accordance with shop drawings and manufacturer's printed instructions, as applicable except where specified otherwise.
2. Interface between materials:
a. Dissimilar metals: Where steel comes in contact with dissimilar metals (aluminum, stainless steel, etc.), separate or isolate the dissimilar metals.
1) Make application so that the isolating or protective barrier is not visible in the completed construction.
2) Isolating sleeves and washers: As specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.
b. Aluminum in contact with concrete or masonry: Coat aluminum surfaces as specified in Section 09960 - High Performance Coatings.
c. Aluminum in contact with concrete or masonry.

B. Aluminum stair nosing:
1. Install stair nosings on treads of concrete stairs, including top tread on upper concrete slab.
2. Omit stair nosings where concrete is submerged.
3. Cast stair nosings in fresh concrete, flush with tread and riser faces. Install nosing in center of step.

C. Cast iron stop plank grooves:
   1. Recess stop plank grooves with cast iron surfaces of groove set flush with concrete surface.

D. Handrails and guardrails:
   1. General:
      a. Fasten pipe rails to fittings with Series 300 stainless steel pop rivets or flush set screws.
      b. Make pipe cuts clean and straight, free of burrs and nicks, and square and accurate for minimum joint-gap.
      c. Drill and countersink holes to proper size, as required for a tight flush fit of screws and other component parts.
      d. Space attachment brackets as indicated in the manufacturer's instructions.
   2. Aluminum pipe handrails and guardrails:
      a. During construction, keep exterior surfaces of handrails and guardrails covered with minimum 0.4 millimeters of heat shrink polyethylene film.
      b. Do not remove protective film before handrails and guardrails have been accepted by Engineer nor before other work in proximity of handrails and guardrails has been completed.
      c. Discontinue handrails and guardrails at lighting fixtures.
      d. Provide 1/8-inch diameter weep hole at base of each post.
      e. Space posts as indicated on the Drawings.
      f. Anchor posts into concrete by grouting posts into formed holes in concrete, into stainless steel sleeves cast in concrete; or bracket mount to face of concrete surfaces as specified and indicated on the Drawings.
      g. Space rails as indicated on the Drawings.
      h. Make adequate provision for expansion and contraction of kick plates and rails.
         1) Make provisions for removable sections where indicated on the Drawings.
      i. Make lower rails a single, unspliced length between posts, or continuous.
      j. Make top rails continuous whenever possible, and attach single, unspliced lengths to 3 posts minimum.
      k. Draw up fasteners tight with hand wrench or screw driver.
      l. Space attachment brackets as indicated on shop drawings or in manufacturer's installation instructions.
      m. Completed installation shall have handrails and railings rigid and free of play at joints and attachments.
      n. Protect handrail and guardrail finish from scratches, gouges, dents, stains, and other damage.
      o. Replace damaged or disfigured handrails and guardrails with new.
      p. Shortly before final acceptance of the work, and after removal of protective polyethylene film, clean handrails and guardrails with mild detergent or with soap and water.
         1) After cleaning, thoroughly rinse handrails and guardrails and wipe with soft cloth.
      q. Erect guardrail straight, level, plumb, and true to the positions as indicated on the Drawings. Correct deviations from true line of grade, which are visible to the eye.

3. Steel pipe handrail and guardrail:
    a. Anchor posts into concrete by grouting posts into galvanized steel sleeves embedded in concrete as indicated on the Drawings.
        1) Do not cut reinforcing bars in concrete.
        2) Where required to fasten guardrail to other construction, fasten as indicated on the Drawings.
4. Guardrail gates:
    a. Install gate to be a vertical plane with the guardrail when in the closed position.
    b. Install hinges so that each gate can swing 180 degrees from the closed position to the fully open position.
    c. Install so that the gates swing to the walkway side of the guardrail only.
        1) Install gate stops on the stationary railing posts to prohibit gates from swinging in the wrong direction.
    d. Install gate frames, hinges, stops, and latches in conformance with OSHA minimum strength requirements.

E. Ladders:
1. Secure to supporting surface with bent plate clips providing minimum 8 inches between supporting surface and center of rungs.
2. Where exit from ladder is forward over top rung, extend side rails 3 feet 3 inches minimum above landing, and return the rails with a radius bend to the landing.
3. Where exit from ladder is to side, extend ladder 5 feet 6 inches minimum above landing and rigidly secure at top.
4. Erect rail straight, level, plumb, and true to position indicated on the Drawings:
    a. Correct deviations from true line or grade which are visible to the eye.

F. Manhole frames and covers:
1. Installation: As recommended by Manufacturer.

G. Manhole steps:
1. Space as indicated on the Drawings.

H. Metal gratings:
1. General:
    a. Allow 1/8-inch maximum clearance between ends of grating and inside face of vertical leg of shelf angles.
    b. Horizontal bearing leg of shelf angles shall be 2 inches minimum.
    c. Install aluminum plate or angles where necessary to fill openings at changes in elevation and at openings between equipment and grating.
    d. Install angle stops at ends of grating.
    e. Installed grating shall not slide out of rebate or off support.
    f. Weld stops in place, unless otherwise specified or indicated on the Drawings.
    g. Top surfaces of grating sections adjacent to each other shall lie in same plane.
2. Aluminum grating:
    a. Aluminum grating: Support on aluminum shelf angles or rebates.
3. Aluminum grating planks:
    a. Support and install planks as specified for aluminum grating.

4. Steel grating:
    a. Support on hot-dip galvanized structural steel shelf angles or rebates.
5. Heavy-duty steel grating:
    a. Support on hot-dip galvanized structural steel rebates embedded and anchored in concrete.
    b. Use for roadways, traffic areas, and where indicated on the Drawings.

I. Stairs:
1. General:
    a. Install guard railings around stair wells as indicated on the Drawings or specified.

J. Stainless Steel:
1. Welding:
    a. Passivate field-welded surfaces:
        1) Provide cleaning, pickling and passivating as specified in this Section.
        2) Clean using Derustit Stainless Steel Cleaner, or equal.

END OF SECTION

SECTION 06072

PRESERVATIVE PRESSURE TREATED WOOD

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Preservative pressure treatment of wood for protection against decay and termites, including:
      a. Girders closer than 12 inches to exposed ground.
      b. Framing, including wood sheathing, that rests on exterior foundation walls less than 8 inches from exposed earth.
      c. Girder ends entering exterior masonry or concrete walls with less than 1/2-inch clear space on the top, sides, and end.
      d. Wood subject to alternate wet and dry cycles.

1.02 REFERENCES

A. American Wood Protection Association (AWPA):
   1. C1 - All Timber Products - Preservative Treatment by Pressure Processes.
   2. C2 - Lumber, Timber, Bridge Ties, and Mine Ties - Preservative Treatment by Pressure Processes.
   3. C9 - Plywood - Preservative Treatment by Pressure Processes.
   4. M4 - Standard for the Care of Pressure-Treated Wood.
   5. P5 - Standard for Waterborne Preservatives.

B. Federal Specifications (FS):
   1. TT-W-571 - Wood Preservation: Treating Practices.

1.03 SUBMITTALS

A. Product data: Include identification of preservative properties, method of treatment, and expected service life.

B. ICC Evaluation Service, Inc., Evaluation Report meeting AC78-Acceptance Criteria for Copper-Quaternary Wood Preservative Treatment Systems.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Keep materials dry during delivery and storage. Protect materials against exposure to weather and from contact with damp or wet surfaces.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Preservative treatment materials:
   1. One of the following or equal:
      a. Chemical Specialties, Inc.
      b. Osmose, Inc.

2.02 PRESERVATIVE TREATMENT MATERIALS

A. Arsenic and chromium free ammonium copper quaternary (ACQ) preservative produced in accordance with ACQ Preserve Standard ACQ - 94 and in accordance with AWPA P5:
   1. Waterborne, nonstaining, nonblooming; free from crystals, flame-supporting residue, and properties detrimental to subsequent finishes when applied.

B. Cut members to shape or size prior to pressure treating whenever possible.

C. Apply preservative treatment in accordance with AWPA C1 and C2 to achieve penetration of minimum 1/4 inch with retainage of minimum treatment material in accordance with AWPA C2 for service conditions.

D. When pressure treated wood is cut, apply minimum of 2 saturating coats of same preservative as used in original pressure treatment on cut surface.

2.03 PRESERVATIVE TREATMENT

A. Shop pressure treat wood materials in accordance with FS TT-W-571.

B. Shop pressure treat materials requiring preservative treatment in closed cylinder in accordance with AWPA C2 for lumber and AWPA C9 for plywood. Retention of ACQ shall be as follows:
   1. For wood subject to alternate wet-dry cycles: 0.25 pounds per cubic foot.
   2. For wood in contact with concrete or masonry: 0.25 pounds per cubic foot.
   3. For wood within 18-inches of the ground: 0.25 pounds per cubic foot.
   4. For wood in constant contact with ground or water: 0.40 per cubic foot.

C. Redry wood to maximum moisture content of 19 percent.

PART 3 EXECUTION

3.01 SITE TREATMENT OF WOOD MATERIALS

A. Apply preservative treatment in accordance with the manufacturer’s instructions. Redry to 19 percent moisture content.

B. Treat site-sawn ends in accordance with AWPA M4. Allow preservative to cure prior to placing members.

C. Redry wood to maximum 19 percent moisture content.

D. Allow preservative to cure prior to placing members.

3.02 INSTALLATION

A. Install wood in accordance with related work.

B. Discard treated wood which might impair quality of carpentry.

C. Do not rip or mill fire retardant treated lumber. Permit end cuts and drilling of holes adjoining cuts only.

END OF SECTION

SECTION 06074

FIRE RETARDANT TREATED WOOD

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Fire retardant treated treatment for wood framing, decking, sheathing, and miscellaneous wood.

1.02 REFERENCES

A. American Wood Protection Association (AWPA):
   1. C20 - Structural Lumber-Fire Retardant Treatment by Pressure Processes.
   2. C27 - Plywood-Fire Retardant Treatment by Pressure Processes.

B. ASTM International (ASTM):
   1. D3201 -Standard Test Method of Hygroscopic Properties of Fire Retardant Wood and Wood Base Products.
   2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. Federal Specifications (FS):
   1. MIL-L-19140E - Lumber and Plywood, Fire Retardant Treated.

D. National Fire Protection Association (NFPA):
   1. 255 - Standard Test Method for Surface Burning Characteristics of Building Materials.

E. Underwriters Laboratories, Inc. (UL):
   1. 723 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 SUBMITTALS

A. Product data: Include National Evaluation Service Report discussing fire-retardant, strength, corrosion, and hygroscopic properties.

B. Manufacturer’s installation instructions.

1.04 QUALITY ASSURANCE

A. Employ services of treatment plant which is currently licensed by the manufacturer of treatment material.

B. Carbon steel, galvanized steel, aluminum, copper, and red brass in contact with fire retardant treated wood shall not corrode more than 1 mil per year when tested in accordance with FS MIL-L-19140E.

C. Fire performance and strength properties of fire retardant treated wood shall be recognized by issuance of National Evaluation Service Report.

D. Fire-retardant treatment shall provide UL FR-S Classification.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Keep materials dry during delivery and storage. Protect materials against exposure to weather and from contact with damp or wet surfaces.

PART 2 PRODUCTS

2.01 MATERIALS

A. Type: Dricon, registered for use as wood preservative by the U.S. Environmental Protection Agency, and free of halogens, sulfates, ammonium phosphate, and formaldehyde.

B. Manufacturers: The following or equal:
   1. Koppers Co., or Koppers Co.'s licensed producer.

2.02 FIRE RETARDANT TREATMENT

A. Treat wood in accordance with instructions of the fire retardant treatment materials manufacturer and AWPA C20 for structural lumber or AWPA C27 for plywood.

B. After treatment, kiln dry lumber to maximum moisture content of 19 percent and plywood to maximum moisture content of 15 percent so that fire retardant treated wood has equilibrium moisture content of not more than 25 percent when tested in accordance with ASTM D3201 procedures at 95 percent relative humidity and 80 degrees Fahrenheit.

C. Stamp fire-retardant lumber and plywood with UL FR-S rating stamp certifying 25 or less flame spread and smoke developed value, when tested in accordance with UL 723, ASTM E84, or NFPA 255.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install wood in accordance with related work.

B. Discard treated wood which might impair quality of carpentry.

C. Do not rip or mill fire retardant treated lumber. Permit end cuts and drilling of holes adjoining cuts only.

END OF SECTION

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Carpentry normally not exposed to view, related metal items, and connectors.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series).
   2. B18.6.1 - Wood Screws (Inch Series).

B. American Softwood Lumber Standard (ASLS):
   1. PS 20 -Softwood Lumber, Product Standard.

C. ASTM International (ASTM):
   1. D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
   2. F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

D. California Redwood Association (CRA):
   1. Redwood Inspection Service (RIS).
   2. Standard Specification for Grades of California Redwood Lumber.

E. U.S. Department of Commerce (DOC):
   1. Voluntary Product Standard PS 1-07 - Structural Plywood.

F. West Coast Lumber Inspection Bureau (WCLIB):
   1. Standard No. 17 - Grading Rules for West Coast Lumber.

G. Western Wood Products Association (WWPA):
   1. Western Lumber Grading Rules.

1.03 SUBMITTALS

A. Shop Drawings.

B. Product data.

1.04 QUALITY ASSURANCE

A. Grade lumber in accordance with the following:
   1. Douglas fir and larch lumber:
      a. WCLIB grading rules.

b. WWPA grading rules.
c. ASLS PS 20.

2. Redwood lumber: CRA and RIS grading rules.

B. Stamp each piece of lumber with grade, species, and size.

C. Identify each panel of softwood plywood with appropriate APA grade-trademark. Plywood shall be in accordance with DOC PS 1-07.

D. Grade lumber 2 inches, 3 inches, and 4 inches thick in accordance with ASLS PS 20. Identify with grade name and species only without reference to paragraph numbers.

E. Grade lumber 6 inches and larger under provisions of the WWPA.
1. Identify with grade, species, and size.
2. Equivalent members graded by WCLIB will be accepted unless specifically excluded.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Cover products for protection from damage and moisture.

B. Stack lumber to permit good air drying. Position separators at each layer and between soil and first layer.

PART 2 PRODUCTS

2.01 WOOD

A. Minimum lumber grade requirements for framing and sheathing:

Classification	Nominal Size	Species and Minimum Grade
Studs	2 by 3, 2 by 4	DF-L Number 2 or construction
	2 by 6, 2 by 8	DF-L Number 2
Roof Joists	2 by 6 through 2 by 14	DF-L Number 2
Floor Joists and Planking	2 by 6 through 2 by 14	DF-L Number 2
Headers, Beams, and Stringers	4 by 4 through 4 by 14	DF-L Number 1
	6 by 6 through 6 by 14	DF-L Number 1 (WWPA 70-11)
Posts and Timbers	6 by 6 and larger	DF-L Number 1
Boards	1 by	DF-L Construction
Framing Lumber	All sizes	DF-L Number 2
Blocking and Bridging	2 by 3 through 2 by 14	DF-L Number 3
Miscellaneous	All sizes	DF-L Number 2
DF-L = Douglas fir - Larch (North) Grouping		

B. Species shall be as specified, or any combination of species allowed by grading rules.

C. Lumber 4 inches thick and less: Seasoned or kiln-dried with maximum 19 percent moisture.

D. Lumber thicker than 4 inches: Seasoned to minimize warping and twisting.

E. Lumber surfaces: Surfaced on four sides (S4S) unless otherwise specified or indicated on the Drawings.

F. Lumber shall be free of bow, warp, or twist. Pieces with serious defects will be discarded regardless of grading.

G. Sills, cants, and nailers for fascia for roofing: Preservative pressure-treated Number 2 or better Douglas fir.

H. Roof nailers: Use preservative pressure-treated Number 2 or better Douglas fir nailers for gravel stops at edges of roof and at roof expansion joints. Match thickness of nailers and roof insulation.

I. Wood in contact with concrete or masonry: Pressure treated as specified in Section 06072 - Preservative Pressure Treated Wood.

J. Fire-retardant treatment: As specified in Section 06074 - Fire Retardant Treated Wood.

2.02 PLYWOOD

A. Structural plywood: DOC PS 1-09.

B. Plywood with edges or surfaces permanently exposed to weather: Exterior type with exterior type glue, Grade A-C.

C. Plywood roof sheathing: Exterior type with exterior type glue, of thickness and grade as indicated on the Drawings.

D. Plywood sheathing exposed at overhangs: Exterior type plywood with exterior type glue, Grade A-C or better.

E. Miscellaneous plywood: Exterior type plywood of thickness indicated on the Drawings, Grade A-C, or as otherwise indicated on the Drawings.

F. Plywood for roof diaphragms and shear walls: As indicated on the Drawings.

2.03 ROUGH HARDWARE

A. Fasteners:
   1. Nails: ASTM F1667, common wire nails or spikes with full head.
   2. Bolts, nuts, and studs: ASME B18.2.1, hot-dip galvanized.

3. Washers: Hot-dip galvanized square or round steel plate washers, or malleable iron washers with following dimensions:
   a. Hot-dip galvanized square steel washers:

Bolt Diameter	Washer Dimensions
1/2 inch	2-1/2 by 2-1/2 by 1/4 inches
5/8 inch	2-1/2 by 2-1/2 by 1/4 inches
3/4 inch	2-3/4 by 2-3/4 by 5/16 inches
7/8 inch	3-1/4 by 3-1/4 by 5/16 inches
1 inch	3-3/4 by 3-3/4 by 3/8 inches

   b. Hot-dip galvanized round steel washers:

Bolt Diameter	Washer Dimensions
1/2 inch	2-1/2 inch diameter by 1/4 inch
5/8 inch	2-3/4 inch diameter by 1/4 inch
3/4 inch	3 inch diameter by 5/16 inch
7/8 inch	3-1/2 inch diameter by 3/8 inch
1 inch	4 inch diameter by 7/16 inch

   c. Round malleable iron washers:

Bolt Diameter	Washer Dimensions
1/2 inch	2-1/2 inch diameter by 1/4 inch
5/8 inch	2-3/4 inch diameter by 5/16 inch
3/4 inch	3 inch diameter by 7/16 inch
7/8 inch	3-1/2 inch diameter by 7/16 inch
1 inch	4 inch diameter by 1/2 inch

4. Lag screws: ASME B18.2.1, hot-dip galvanized.
5. Wood screws: ASME B18.6.1.
6. Nails, screws, bolts, plates, and other fasteners exposed to weather or on building exteriors shall be hot-dip galvanized or of Series 300 stainless steel.
7. Anchor bolts, concrete anchors, flush shells, and powder actuated fasteners: As specified in Section 05120 - Structural Steel Framing.
8. Sheet metal connectors:
   a. Manufacturers: One of the following or equal:
      1) Simpson Strong-Tie Co., Inc.
      2) USP Structural Connectors.
   b. Material: Sheet steel, hot-dip galvanized after fabrication.
   c. Model numbers: As indicated on the Drawings.
   d. Nails, typical: Common, hot-dip galvanized.
   e. Nails, joist hanger: Special, hot-dip galvanized, providing full building code as specified in Section 01410 - Regulatory Requirements, lateral load resistance values for common nails.

B. Miscellaneous hardware:
   1. Clamps, expansion screws, anchors, and plates: Standard products of established manufacturers of proper size and strength to adequately fasten, support, and maintain members in place.
   2. Hardware exposed to weather or on building exteriors: Hot-dip galvanized.

C. Building paper: ASTM D226, unperforated, No. 15 unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are satisfactory for installation of products as specified in the Agreement and Contract RFP in Volumes 1 and 2.

3.02 GENERAL

A. Notch, cope, and miter meeting members so meeting members have full bearing without overcutting or undercutting.

B. Accurately cut, fit, and frame lumber.

3.03 SILLS AND PLATES

A. Install 2 layers of building paper under sills and members fasten to concrete or masonry.

B. Secure sills to foundation as indicated on the Drawings. When not indicated on the Drawings, anchor sills with 1/2-inch diameter hot-dip galvanized anchor bolts at 4-foot centers and within a minimum of 6 inches from each end of each member.

C. Set plates on top of masonry and concrete walls level and in same plane.

D. Anchor plates to masonry or concrete with anchor bolts of size and spacing indicated on the Drawings. Install anchor bolt within 6 inches of member ends.

E. Use cement grout, when necessary, to ensure full bedding and leveling of plates.

3.04 WALLS

A. Erect walls plumb and true to line.

B. Frame walls and partitions with studs of sizes and spacing indicated on the Drawings and at not greater than 16 inches on center.

C. Provide double studs at openings and triple studs at corners.

D. Provide double plates at top of wall studs, arranging to form continuous horizontal ties. Splice individual plates and stagger ends of double plates.

E. Provide two 2-by-6 lintels for openings up to 48 inches and two 2-by-8 lintels for openings from 48 inches to 72 inches.

F. Frame openings for large pipes and ducts and for receiving recessed work in partitions without cutting structural members.

G. Place nailing blocks and backing necessary for attachment of ground, trim, fixtures, and miscellaneous items. Cut, fur, and install backing required for plumbing and heating pipes, fixtures, and electrical work.

H. Provide fire retardant pressure-treated wood within metal-framed partitions and furring.

I. Provide blocking for attaching paneling, trim, and similar items to framing.

J. Do not cut wood beams or joists and plates in bearing walls for passage of pipes.

K. Coordinate requirements for sleepers for mechanical equipment and curb openings with work of other Sections for locations and sizes.

L. Firestopping:
   1. Where required by governing codes, install continuous row of fire stop blocking in stud walls and partitions at ceilings and floor levels and at maximum 10 feet spacing. Form complete and effective separation for entire width of wall or partition.
   2. Use fire stop blocking with minimum 2 inches nominal thickness and same width as studs.
   3. Fill openings in firestops with other firestopping materials specified in Section 07840 - Firestopping.

3.05 ROUGH HARDWARE

A. Provide nailing as indicated on the Drawings or in accordance with Fastening Schedule specified in building code, as specified in Section 01410 - Regulatory Requirements, whichever is more stringent. Do not use box and sinker nails.

B. Install bolts and other fastenings as indicated on the Drawings or in accordance with building code as specified in Section 01410 - Regulatory Requirements, whichever is more stringent.

C. Prebore nail holes where required to avoid splitting of wood members. Remove and replace split pieces.

D. Prebore holes for screws and lag screws, then screw into place. When wood screws and lag screws are defective because they have been driven into place with hammer, replace wood members involved with new members.

E. Drill holes for bolts 1/32-inch larger than bolt shank unless otherwise indicated on the Drawings.

F. Perform final bolting after structural members have been properly aligned.

G. Place washers under heads of bolts and nuts and heads of lag screws bearing on wood. Align exposed bolts.

H. Power nailing will be permitted where nails are as specified and provided installation does not mar or damage wood members.
   1. Nails shall have full head.
   2. Do not overdrive nails.

I. Drive nail heads for plywood diaphragms flush with plywood surface. Where nails have been overdriven in plywood panel, remove and replace plywood, nails, and damaged supporting members.
   1. Use common nails unless otherwise indicated on the Drawings.

END OF SECTION

SECTION 06174

SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Wood trusses, including bridging, temporary and permanent bracing, associated components, and accessories.

1.02 REFERENCES

A. American Forest and Paper Association (AF&PA):
   1. National Design Specification for Wood Construction.

B. ASTM International (ASTM):
   1. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.

C. Truss Plate Institute (TPI):
   1. National Design Standard for Metal Plate Connected Wood Truss Construction.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Shop Drawings: For each type and size truss, include:
   1. Species and grades of lumber used.
   2. Design loadings.
   3. Design calculations for trusses and connections.
   4. Pitch, span, and spacing of trusses.
   5. Metal plate connectors, gauges, sizes, and name of manufacturer.
   6. Bearing and anchorage details.
   7. Truss supports.
   8. Camber.
   9. Permanent bracing and bridging.
   10. Details of field splice connections of subcomponents.

C. Product data.

D. Handling and erection instructions.

E. Design data.

F. Certificates.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Manufacturer of wood trusses for minimum 5 years with satisfactory performance record.

B. Lumber shall bear grade mark stamp of recognized grading association or licensed lumber inspection agency.

C. Fabricate trusses and other roof structural components in properly equipped manufacturing facility of permanent nature.

D. Employ only experienced workmen, using precision cutting and truss fabricating equipment, under direct supervision of qualified foreman.

E. Fabricate trusses under strict rules of inspection and quality control.

F. Erector qualifications: Erector of wood trusses on minimum 5 projects of similar scope as the Project with satisfactory performance record.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Handle fabricated trusses and subassemblies with care so trusses are not subject to damage.

B. When trusses are stockpiled or stored prior to erection, set trusses in vertical positions, resting upon temporary bearing supports and braced so trusses will not be subject to unusual bending or tip over.

C. Provide means for adequate distribution of concentrated loads so carrying capacity of trusses are not exceeded.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Design and fabricate wood trusses in accordance with:
   1. AF&PA - National Design Specification for Wood Construction.
   2. TPI - National Design Standard for Metal Plate Connected Wood Truss Construction.

2.02 LUMBER

A. Species and grades: In accordance with stress ratings for species and grades in grading rules of appropriate lumber association or as listed in referenced quality assurance standards, unless otherwise indicated on the Drawings.

B. Moisture content: Within limits as stipulated in quality assurance standards, but not exceeding 19 percent or less than 7 percent at time of fabrication.

C. Nominal sizes: As indicated on the Drawings.

2.03 LIGHT METAL PLATE CONNECTORS

A. Connector plate shall have series of nail-like projections.

B. Practically parallel side throughout their length.

C. No offsets, except at ends. Ends shaped to blunt points or wedges.

D. Lengths not less than 5 times their greater width.

E. Form which permits projections to separate rather than to cut wood fibers in accordance with accepted nailing techniques.

F. Minimum 20 gauge, ASTM A653, Grade 33, sheet steel, hot-dip galvanized in accordance with ASTM A653, G60 coating designation.

G. Yield strength: Minimum 33,000 pounds per square inch.

H. Ultimate tensile strength: Minimum 48,000 pounds per square inch.

I. Corrosion-resistant coating: Minimum 1.25 ounces per square foot.

J. Stamp manufacturer's name on each plate connector.

2.04 FIELD CONNECTIONS

A. One of the following, as required for trusses:
   1. Nail-on splice plates.
   2. Plates bolted connections with steel side.

2.05 TRUSS FABRICATION

A. Cut truss members accurately to length, angle, and true to line to ensure tight joints for finished truss.

B. Brush apply 2 coats of wood preservative on members in contact with sheet metal and cementitious materials.
   1. Protect sawn ends.

C. Place truss members jigs with members tightly clamped in place until.
   1. For trusses fabricated using 2x members: Plate connectors have been pressed into lumber simultaneously on both sides of joints.

D. Do not allow open joints which depend on stiffness of metal connector plates to transmit stresses of improperly fitted joints.

E. Build camber into trusses, as indicated on the Drawings, by properly positioning members in fabrication jigs.

F. Permanently stamp each truss with name and address of truss fabricator.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are satisfactory for erection of products as specified in the Agreement and Contract RFP in Volumes 1 and 2.

3.02 PREPARATION

A. Where field assembly of truss subcomponents is necessary, make approved connections.

3.03 ERECTION

A. Set and secure wood trusses level, plumb, and in correct locations.

B. Install erection bracing to hold trusses true and plumb and in safe condition until permanent truss bracing and bridging can be solidly fastened in place.

C. Keep horizontal bending of trusses to minimum.

D. Ensure truss ends have sufficient bearing area.

E. Install permanent bracing and bridging, and permanently fasten components before application of live loads.

F. Connect continuous lines of 2x minimum bridging to trusses at chord members during erection stage. Provide 1 line along top and 1 line along bottom chord.

G. Erect trusses with top and bottom chords in true vertical alignment.

H. Align top chords of trusses parallel to each other and straight with no point in plane on top chords more than 3/8 inch out of true horizontal line.

I. Do not cut or alter truss members.

END OF SECTION

SECTION 06611

FIBERGLASS REINFORCED PLASTIC FABRICATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Fiberglass reinforced plastic fabrications including:
      a. Grating.

1.02 REFERENCES

A. American Water Works Association (AWWA):
   1. F 102 - Matched-Die-Molded, Fiberglass-Reinforced Plastic Weir Plates, Scum Baffles, and Mounting Brackets.

B. ASTM International (ASTM):
   1. D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
   2. D638 - Standard Test Method for Tensile Properties of Plastics.
   3. D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
   4. D2583 - Standard Test Method for Indentation of Hardness of Rigid Plastics by Means of a Barcol Impressor.
   5. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. United States Department of Agriculture (USDA).

D. United States Department of the Interior:
   1. Bureau of Reclamation (USBR):
      a. ISO 9826 - Water Measurement Manual, Measurement of Liquid Flow in Open Channel.

1.03 SUBMITTALS

A. Submit general arrangement and fabrication drawings, calculations, and elements of the design for grating and stairs.

B. Product Data.

C. Manufacture's Installation Instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Parshall flume liner: Provide temporary bracing for liner to ensure maintenance of dimensions during shipment. Maintain bracing in place for installation.

PART 2 PRODUCTS

2.01 PLATES

A. Accessories:
   1. Washers: Of same material as weirs, with surfaces smooth, free of voids, and without dry spots and crazes.
   2. Assembly hardware: Concrete anchors as specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.

2.02 GRATING AND STAIR TREADS

A. Manufacturers: One of the following or equal:
   1. Fibergrate Composite Structures, Safe-T-Span.
   2. Strongwell, Duradek.

B. Materials:
   1. Core: Unidirectionally aligned glass fibers.
   2. Mat: Submit standard corrosion liner.
   3. Veil: Submit standard corrosion liner.
   4. Ultraviolet stabilizer: Added to the exterior surfaces in the type and amount recommended by the resin manufacturer.
   5. Resin: Fire retardant premium vinyl ester, antimony trioxide or pentoxide added to meet Class I flame spread rating of ASTM E84 and self-extinguishing requirements of ASTM D635.
   6. Manufacturers: One of the following or equal:
      a. Dow Derakane 530.
      b. Ashland Hetron 992.
      c. Interplastic VE 8400.
      d. Reichhold Dion VER 9300FR.
   7. Color: Grey or as indicated on the Drawings.
   8. Anti-slip coating: Permanently bonded grit of selected color.

C. Design criteria and chemical exposure:
   1. Deflection and concentrated load: Maximum 0.15 inch at span of 48 inches under concentrated load of 250 pounds.
   2. Deflection and uniform distributed load: Capable of carrying uniform distributed load of 100 pounds per square foot on simple span of 43 inches without deflecting more than 0.25 inches.
   3. Weight: Maximum 2.3 pounds per square foot for 2-inch high grating with open area of minimum 50 percent.
   4. Suitability: Use stairs and grating suitable for use in environments containing chlorine and sulfuric acid solutions at the temperatures and concentrations specified for the application.

D. Components:
   1. Bearing bars: I-bars, depth as indicated on the Drawings, I-bars spaced at 1-3/16 inch on center.
   2. Cross bars: 3/8-inch diameter spaced at 6 inches on center.
   3. Hold downs, connectors, and accessories: As recommended by grating manufacturer.

E. Fabrication:
   1. Produce grating bearing and cross bars by pultrusion process. Do not use hand lay-up construction methods.
   2. Coat ends of grating with resin.
   3. Fabricate single sections for each span. Do not clamp 2 or more grating sections together within spans.
   4. Type 316 stainless steel plates and angles at openings:
      a. Install 5/8-inch thick plate or angle where required to fill openings at changes in elevation and at openings between equipment and grating.
      b. Install angle stops at ends of grating to prevent grating from sliding.
   5. Maximum 1/8-inch clearance allowed between ends of grating and inside face of vertical leg of support angles.

F. Cutouts:
   1. Provide where required for equipment access or penetrations, including valve operators, stems, and gate frames.
   2. Seal cut edges with resin.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are satisfactory for installation of products as specified in the Agreement and Contract RFP in Volumes 1 and 2.

3.02 ERECTION AND INSTALLATION, GENERAL

A. Install products where indicated on the Drawings in accordance with manufacturer's printed instructions.

END OF SECTION

SECTION 07190

WATER REPELLENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Water repellent for concrete masonry**.**

1.02 REFERENCES

A. International Union of Testing and Research Laboratories for Materials and Structures:
   1. RILEM Test Method No. 11.4 - Measurement of Water Absorption Under Low Pressure.

B. South Coast Air Quality Management District (SCAQMD):
   1. Rule 1168 - Adhesive and Sealant Applications.

1.03 DEFINITIONS

A. Water repellent: Resistance to penetration of water from rainfall.

1.04 SUBMITTALS

A. Product data.

B. Samples: Water repellent applied on 8-inch by 8-inch substrates to receive water repellent, marked with application date and application rate.

C. Manufacturer's application instructions.

1.05 QUALITY ASSURANCE

A. Manufacturer qualifications: Manufacturer of water repellents for minimum of 5 years with satisfactory performance record.

B. Applicator qualifications: Trained, approved, and accepted by water repellent manufacturer.

C. Spray personnel qualifications: Minimum 2 years of experience spraying exotic coatings.

D. Regulatory requirements: Comply with volatile organic compound regulations.

E. Mock-ups:
   1. Apply water repellent on 8-foot by 8-foot mock-up walls. Use same equipment and procedures that will be used in applying material on walls.

2. Test mock-up for water penetration 30 days after applying water repellent in accordance with field quality control.
3. When accepted by the Engineer, mock-up walls will be standard for walls.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original containers with seals unbroken and labeled with manufacturer's batch number.

B. Store materials in original, unopened containers in compliance with manufacturer's printed instructions.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Sealants in compliance with SCAQMD Rule 1168.

B. Apply water repellent under temperature and relative humidity conditions before, during, and after application in accordance with manufacturer's instructions.

C. Allow surfaces to dry for minimum 5 days after rains.

1.08 PROJECT CONDITIONS

A. Make proper material allowance based upon substrate material and surface configuration when determining quantities of material.

1.09 WARRANTY

A. Warrant to furnish and apply water repellent on walls that experience water penetration because of failure of water repellent for minimum 5 years.

1.10 MAINTENANCE

A. Extra materials: Deliver water repellent in manufacturer's original unopened containers to Owner that equals minimum 1 percent of material supplied.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Water repellent sealer:
   1. One of the following or equal:
      a. Rainguard Products.
      b. ProSoCo, Inc.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Performance requirements: Surfaces with water repellent shall be uniform in color with unaltered texture.

2.03 MATERIALS

A. Water repellent sealer for concrete and concrete masonry: Silane/siloxane; volatile organic compound compliant; free of silicone oils, paraffin wax, or urethanes.
   1. Manufacturers: The following or equal:
      a. Rainguard, Blok-Lok™.

B. Anti-graffiti coating:
   1. Manufacturers: The following or equal:
   2. Rainguard, REGULAR.

2.04 EQUIPMENT

A. Spray equipment: High-volume, low-pressure, airless, with maximum 60 pounds per square inch pressure:
   1. Pump: Non-atomizing, able to flow material on walls at minimum 1 to 1-1/2 gallons per minute.
   2. Orifice size for concrete, slump block, exposed concrete aggregate, and cement plaster: 0.060 to 0.110 inches.
   3. Orifice size for brick, clay brick tile, brick veneer, stone, and wood: 0.060 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Carefully inspect installed construction. Verify that construction is ready for repellent application.

B. Require manufacturer's representative to verify that water repellent may be installed.

3.02 PREPARATION

A. Allow concrete or masonry walls to cure at least 30 days before applying water repellent.

B. Clean wall surfaces of soil, mud, efflorescence, or other detrimental materials.

C. Tuck-point or caulk cracks, other than hairline cracks.

D. Route out defective mortar joints, point with mortar and tool.

E. Moisture content: Apply water repellent sealer when moisture content of substrate is 15 percent or less.

F. Test substrate surfaces for moisture content with "Electronic Moisture Register - Model B." Take 1 reading for each 200 square feet of wall area and tabulate results.

3.03 APPLICATION ON CONCRETE, AND CONCRETE MASONRY

A. Apply water repellent in accordance with manufacturer's printed instructions.

B. Apply flood coat using low-pressure spray equipment.

C. Start at top of wall and work down using overlapping horizontal passes.

D. Hold spray head 8 to 10 inches from surface so saturation coat runs freely down wall 6 to 10 inches below point of application on most substrates.

E. Spray by traveling horizontally to ensure uniform coverage.

F. Overlap each following pass by centering spray head on bottom line of the previous pass.

G. Trigger gun off at end of each pass to avoid applying excessive amount of material. Do not over apply.

H. Avoid application in hot or windy weather as premature drying can cause whitish residue on walls.

3.04 FIELD QUALITY CONTROL

A. 20 days after application, test water repellent on CMU surfaces using RILEM Test Method No. 11.4:
   1. Contractor shall perform a 20-minute RILEM baseline test on dry untreated CMU units of each type to receive water repellent. Test results (water loss in milliliter) shall be compared to CMU units in walls after water repellent application.
   2. On water repellant coated CMU, a RILEM tube test resulting in 5 milliliter or less after 20 minutes is necessary to qualify for 5-year warranty.

B. Notify the Engineer and manufacturer at least 72 hours in advance of test.

C. Where tested wall areas fail to pass RILEM tube test, apply additional coat of water repellent on entire wall from corner to corner.

D. Test all locations where directed by the Engineer.

3.05 CLEANING

A. Concrete, concrete masonry, and exposed concrete aggregate: Clean drips, runs, and overspray residue while still wet, using detergent and water. Clean application and spray equipment with detergent and water immediately following use.

B. Clean application and spray equipment according to the manufacturer's recommendations.

C. Remove excess materials, equipment, and debris incidental to water repellent application upon completion.

3.06 PROTECTION

A. During application, protect water repellent treated and adjacent surfaces from damage.

B. Protect glass, aluminum, and other surfaces from overspray.

C. Protect concrete sidewalks from runoff. Soak with water immediately prior to application on adjacent walls.

D. Repair damaged areas promptly.

END OF SECTION

SECTION 07220

ROOF AND DECK INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Roof and deck insulation and associated accessories.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   2. D41- Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
   3. D312 - Standard Specification for Asphalt Used in Roofing.

B. National Roofing Contractors Association (NRCA).

C. Underwriters Laboratories, Inc. (UL).

1.03 SUBMITTALS

A. Product data.

B. Samples: Include 6-inch square samples of each type and thickness of insulation required.

C. State thickness and R-value of insulation to be provided at each building.

D. Manufacturer's installation instructions: Include the following:
   1. Indicate special environmental conditions required for installation.
   2. Indicate adhesive recommendations.
   3. Indicate fastener recommendations and attachment pattern to meet specified requirements.
   4. Indicate installation techniques.

E. Certificates:
   1. Certify that products meet or exceed specified requirements.
   2. Certify that insulation is approved by manufacturer for use with specified roofing materials.

F. Manufacturer's field reports.

G. Warranty.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Manufacturer of proposed product for minimum 5 years with satisfactory performance record.

B. Installer qualifications:
   1. Manufacturer-approved installer of products similar to specified products on minimum 5 projects of similar scope as Project with satisfactory performance record.
   2. Committed to complying with manufacturer's specifications and NRCA recommendations.
   3. Committed to assuming undivided responsibility for roof insulation, roofing membrane and sheet metal flashing, and trim associated with roofing.

C. Product compatibility: Provide roofing manufacturer approved roof insulation.

D. Pre-installation conference: Conduct as specified in Section 01312 - Project Meetings.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products in accordance with manufacturer's instructions.

B. Label asphalt containers with certification of full compliance with requirements of ASTM D312, Table 1, and indicating equiviscous temperature, finished flowing temperature, and flash point.

C. Store roof system materials on pallets or dunnage at least 4 inches above ground and suitably covered to protect from weather.

1.06 SEQUENCING AND SCHEDULING

A. Apply no more insulation than can be completely covered with roofing membrane on the same day.

B. When installation of insulation and roof membrane cannot be completed within same day, install temporary water cutoffs at end of day's work and remove cutoffs prior to resumption of work.

1.07 WARRANTY

A. Manufacturer's warranty: Minimum 10 years to correct defective roofing materials, including installation.

B. Roofer's warranty: Minimum 2 years to correct defective workmanship.

PART 2 PRODUCTS

2.01 MATERIALS

A. Synthetic roofing underlayment:
   1. Self-adhering underlayment for protection from wind, rain, water, snow, and ice damns.
   2. Manufacturers: The following or equal:
      a. Roofing Corp., equivalent product.

B. Composite roof insulation:
   1. Closed cell polyisocyanurate foam core bonded to universal fiberglass reinforced facers.
   2. Utilizing environmentally compliant blowing agent.
   3. Manufacturers: One of the following or equal:
      a. GAF, Energyguard Ultra Polyiso Insulation 20.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that deck is properly graded to outlets.

B. Verify that deck surfaces are clean, dry, and where required, coated with primer.

3.02 FIELD QUALITY CONTROL

A. Roof insulation which becomes wet or damaged shall be removed and replaced with solid, dry insulation, unless installer provides written acceptance of the damaged insulation from the roofing manufacturer, whose warranty shall cover the system.

B. Inspections: Roof membrane manufacturer, whose warranty shall cover complete roof assembly, shall provide supervision and inspection necessary to secure warranty.

END OF SECTION

SECTION 07415

STANDING SEAM SHEET METAL ROOFING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Preformed metal roofing, fascia, and associated accessories.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. B32 - Standard Specification for Solder Metal.
   3. D2626 - Standard Specification for Asphalt-Saturated and Coated Organic Felt Base Sheet Used in Roofing.

B. NSF International (NSF).

1.03 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Provide delegated design for the following:
   1. Roofing sheet material thickness.
   2. Connection of roofing sheets to support/hold-down clips.
   3. Strength, details, and locations of roofing support/hold-down clips.
   4. Connection of roofing support/hold-down clips to supporting structural elements.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Shop drawings: Include thicknesses and dimensions of parts, fastening and anchoring methods, details and locations of seams, joints, and other provisions for thermal movement. Show plans and elevations at minimum scale of 1/4 inch to 1 foot, and details at minimum scale of 3 inches to 1 foot.

C. Product data: Include standard color and finish options.

D. Samples: Include 8-inch square samples of color and finish on specified substrate.

E. Manufacturer's installation instructions.

F. Certificates.

G. Manufacturer's approval of installer and shop drawings.

H. Maintenance data.

I. Warranty.

1.05 QUALITY ASSURANCE

A. Installer qualifications: Manufacturer-approved installer of products similar to specified products on minimum 5 projects of similar scope as Project with satisfactory performance record.

B. Exposed sheet metal material used for roofing including roofing panels, flashings, closures, and other trim shall be product of 1 manufacturer.

C. Other materials shall be products approved or recommended by roofing system manufacturer.

D. Deliver, store, and handle products in accordance with manufacturer's recommendations.

1.06 WARRANTY

A. Roofing: Warrant to maintain roof, including flashings, in watertight condition and to maintain finish free from change in color or physical deterioration for minimum 5 years limited to ordinary wear and tear by elements or defects due to faulty materials and workmanship.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Regulatory requirements:
   1. Comply with the building code specified in Section 01410 - Regulatory Requirements.

B. Design and detailing:
   1. Design to withstand the following loads, and additional loads indicated on the Drawings.
      a. Dead loads.
      b. Live loads: Minimum 20 pounds per square foot.
         1) Reductions in uniform live load based on tributary area are not allowed.
      c. Load specified in Section 01850 - Design Criteria.
         1) Seismic load.
         2) Wind load.
   2. Load combinations: As required by the building code.
   3. Roofing system shall be suitable for wet reservoir environment.

2.02 MANUFACTURERS

A. Preformed metal roofing:
   1. One of the following or equal:
      a. IMSA Building Products.
      b. Metal Sales Manufacturing Corp.
      c. Berridge Manufacturing Co.

2.03 PREFORMED METAL ROOFING

A. Batten type, sheet steel roofing system including:
   1. Fascia, flashing, and sealants.

B. Batten spacing: 16 inches on center.

2.04 EXPOSED COMPONENTS

A. Sheet steel:
   1. ASTM A653, G90 minimum coating designation, minimum 22 gauge.

B. Finish: PVDF Kynar 500.

C. Surfaces must be prepared in accordance with coating manufacturer's recommendations.
   1. Color: As selected by Owner from manufacturer's standard colors.

2.05 ACCESSORIES

A. Underlayment: ASTM D2626, asphalt-saturated and coated organic felt, minimum 28 pounds.

B. Hold-down clips: Stainless steel of type that will allow thermal movement of roof panels.

C. Closures: System manufacturer's standard neoprene blocks shaped to fit roof metal profile.

D. Fasteners:
   1. Nails, screws, rivets, and other fasteners: Stainless steel or alloy appropriate to roofing metal.
   2. Nails: Ringed or twisted shank type, of lengths required.
   3. Screws: Stainless steel pan head wood or sheet metal screws for use with hold-down clips.

E. Sealant: As specified in Section 07900 - Joint Sealants, unless recommended otherwise by panel manufacturer.

2.06 FABRICATION

A. Panels:
   1. Fabricate with upturned edges to form standing seam joints with minimum 1-1/2-inch high edges.
   2. Fabricate to extend from eaves to ridge in a single length, with no end laps.

B. Battens: Approximately 1-1/2 inches square, and evenly spaced approximately 16 inches on center.

C. Ridge, hips, eaves, rakes, fascia, coping, and other exposed flashings: Form of sheet steel matching roofing to provide weathertight roofing system.

D. Form sheets, battens, strips, cleats, valleys, ridges, edge treatments, integral flashings, gutters, downspouts, and other components to profiles indicated on the Drawings and required for permanent leakproof construction.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions at structure where roofing will be installed.

B. Verify that substrate is firm, dry, and free of foreign materials.

3.02 PREPARATION

A. Clean and repair adjoining surfaces when necessary for proper installation of preformed metal roofing panels.

3.03 UNDERLAYMENT

A. Apply single-ply of underlayment, lapped shingle fashion, with Kraft paper side up, 3-inch head laps and 6-inch side laps, and cover with slip sheet similarly lapped.

B. Hold underlayment in place with minimum number of fasteners.

C. Install no more underlayment than can be covered by metal roofing in a single day.

3.04 ROOFING

A. Install roofing in accordance with manufacturer's recommendations.

B. Lay out pattern to place batten seams equidistant from corners and aligned with seams on other side of hip or ridge.

C. Start installation from eaves.

D. Secure roofing panels in place with concealed clips and fasteners.
   1. Exposed fasteners through roof panels, batten covers, and flashings shall not be used.

E. Locate clips in joints within 6 inches of panel ends.

F. At eaves, cut upturned edges and bend panel down to form fascia.

G. At intersections of roof slope with ridge and hips, turn up edges of roof panels 1 inch.

H. Form cross seams with 3/4-inch fold-under on lower end and 2-inch fold-over on upper end.

I. Slit folds in cross seams at each corner 1 inch in from batten to form tab.

J. Hook hold-down cleats, fold on lower end of panel into fold on upper end of underlaying panel.

K. Exposed batten ends to have neoprene closures or watertight cap.

L. Form valleys of sheets not exceeding 10 feet in length.

M. Lap joints 6 inches in direction of drainage.

N. Extend valley sheet minimum of 6 inches under roofing sheets.

O. At valley, double fold valley and roofing sheets and secure with cleats spaced 18 inches on center.

P. Install ridge and hip covers securely in place using Z closer clips and fasteners.

Q. Seal joints where necessary for watertightness.

R. Completed roof shall be watertight.

S. Exposed surfaces shall be free of dents, scratches, abrasions, stains, and other visible defects.

END OF SECTION

SECTION 07722

ROOF HATCHES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Roof hatches.

1.02 REFERENCES

A. American National Standards Institute (ANSI).

1.03 SUBMITTALS

A. Product data: Indicate general construction, configurations, and jointing methods.

B. Shop drawings: Show locations, sizes, fastening methods, and installation details.

C. Manufacturer's Installation Instructions.

1.04 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

B. Special warranty:
   1. Duration: 5 years warranty on product defects.

PART 2 PRODUCTS

2.01 ROOF HATCHES

A. Manufacturers: One of the following or equal:
   1. The Bilco Co.

2.02 BI-FOLD DOUBLE LEAF FOR EQUIPMENT ACCESS

A. Size:
   1. Equipment access applications:
      a. Nominal size: 84 inches by 84 inches.
      b. Cover opening angle: 90 degrees.

B. Cover and curb:
   1. Material:
      a. Exterior surface and curb material:
         1) Minimum 14-gauge aluminum.
      b. Interior surface material:
         1) Minimum 18-gauge aluminum liner.

2) Fully covering cover insulation.

2. Cover:
   a. Corners:
      1) 3-inch beaded flange and welded.
      2) Weathertight corners.
   b. Insulation:
      1) Nominal 1-inch thick fiberglass.
3. Curb:
   a. Height: Minimum 12 inches.
   b. Insulation: 1-inch thick fiberboard on outside.
   c. Flange: Minimum 3-1/2-inch with holes for fasteners, and welded, weathertight corners.
4. Curb and roofing interface:
   a. Metal roofing:
      1) Conform to configuration of roofing with self-draining feature to prevent water damming between ribs of roof panels, and welded, weathertight corners.

C. Finish:
   1. Aluminum hatches: Mill finish.

D. Hardware:
   1. Heavy pintle hinges.
   2. Compression spring operators enclosed in telescopic tubes.
   3. Positive snap latch with turn handles, both inside and outside.
   4. Padlock hasps, both inside and outside.
   5. Gasket:
      a. EPDM rubber gasket adhered to the liner.
   6. Automatic hold-open arm with red vinyl grip handle capable of 1-hand release.
   7. Enclosed 2-point spring latch as recommended by manufacturer.

E. Latch hardware:
   1. Hardware including latch assembly, inside and outside padlock hasps, arm guide bracket, lifting mechanism bracket, hinges, hinge pins, hold open arm, lock strike casting, springs, spring tubes, shoe castings, and fasteners.
   2. Type 316 stainless steel.

PART 3 EXECUTION

3.01 INSTALLATION

A. Hatch quantities and locations shall be as indicated on the Drawings.

B. Install roof hatches in accordance with manufacturer's instructions.
   1. Coordinate with installation of roofing system and related flashing.
   2. Provide weathertight installation.

C. Paint hatch as specified in Section 09960 - High-Performance Coatings.

END OF SECTION

SECTION 07840

FIRESTOPPING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: The requirements for providing firestopping.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. E814 - Standard Test Methods for Fire Tests of Penetration Firestops Systems.

B. International Conference of Building Officials (ICBO).

C. Underwriters Laboratories, Inc. (UL).

1.03 SUBMITTALS

A. Product data: Submit manufacturer's data and installation instructions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Firestopping:
   1. Intumescent material capable of expanding up to 8 to 10 times when exposed to temperatures over 250 degrees Fahrenheit.
   2. Product shall be UL classified and have ICBO approved fire resistance rating up to 3 hours in accordance with ASTM E814.

PART 3 EXECUTION

3.01 INSTALLATION

A. Fill and seal holes or voids in fire rated floors and walls including pipes penetrating between buildings with acceptable firestopping material in accordance with manufacturer's instructions:
   1. Penetrations shall be free of dirt and debris.
   2. Dam penetrations, if required, with an acceptable material.

B. Apply firestopping material to the penetration using a caulking gun, putty knife, or other normal trade tools:
   1. Provide minimum 1/2-inch caulk or putty for 2-hour fire rating with metal pipe.
   2. Provide minimum 1-inch caulk or putty for 3-hour rating with metal or insulated metal pipe.

C. Normal curing time is 7 days; however, seal shall be immediately functional, providing cold smoke, water, and fire seal.

D. Remove damming materials if necessary after cure.

3.02 CLEANING

A. Clean surrounding areas after installation in compliance with manufacturer's instructions.

END OF SECTION

SECTION 07900

JOINT SEALANTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Acrylic-Latex sealant.
   2. Precast concrete joint sealant.
   3. Silicone sealant.
   4. Synthetic rubber sealing compound.
   5. Synthetic sponge rubber filler.
   6. Related materials.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. M198 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

B. ASTM International (ASTM):
   1. C920 - Standard Specification for Elastomeric Joint Sealants.
   2. C990 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
   3. C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
   4. C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.
   5. D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
   6. D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer.

1.03 SUBMITTALS

A. Product data.

B. Samples, include color selections.

C. Manufacturer's Installation Instructions.

D. Warranty.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Manufacturer of proposed product for minimum 5 years with satisfactory performance record.

B. Installer qualifications: Manufacturer approved installer of products similar to specified products on minimum 5 projects of similar scope as Project with satisfactory performance record.

1.05 PROJECT/SITE CONDITIONS

A. Environmental requirements: Do not apply sealant on wet or frosty surfaces or when surface temperature is higher than 100 degrees Fahrenheit or lower than recommended by the manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products in accordance with manufacturer's recommendations.

B. Code date packages. Do not use material older than manufacturer’s published shelf life. Store materials at temperatures lower than 80 degrees Fahrenheit. Condition materials in accordance with manufacturer’s instructions prior to installation.

1.07 SEQUENCING AND SCHEDULING

A. Caulk joints prior to painting.

1.08 WARRANTY

A. Warrant to correct defective products for minimum 1 year in accordance with manufacturer's standard warranty.

PART 2 PRODUCTS

2.01 SEALANTS

A. General:
   1. Provide colors matching materials being sealed.
   2. Where compound is not exposed to view in finished work, provide manufacturer's color which has best performance.
   3. Nonsagging sealant for vertical and overhead horizontal joints.
   4. Sealants for horizontal joints: Self-leveling pedestrian/traffic grade.
   5. Joint cleaner, primer, bond breaker: As recommended by sealant manufacturer.
   6. Sealant backer rod and/or compressible filler made from closed cell polyethylene, polyethylene jacketed polyurethane foam, or other flexible, nonabsorbent, non-bituminous material recommended by sealant manufacturer to:
      a. Control joint depth.
      b. Break bond of sealant at bottom of joint.
      c. Provide proper shape of sealant bead.
      d. Serve as expansion joint filler.

2.02 ACRYLIC-LATEX SEALANT

A. Permanently flexible, nonstaining, and nonbleeding latex modified acrylic sealant compound, colors as selected by Engineer from manufacturer's standard options:
   1. Manufacturers: One of the following or equal:
      a. Tremco, Tremflex 834.
      b. Pecora Corp., Number AC-20.
      c. Sonneborn, Sonolac.

2.03 PRECAST CONCRETE JOINT SEALANT

A. Preformed, cold-applied, ready-to-use, flexible joint sealant in accordance with ASTM C990 and AASHTO M 198:
   1. Manufacturers: One of the following or equal.
      a. Henry Corp., Ram-Nek.
      b. Concrete Sealants Division, ConSeal.

2.04 SILICONE SEALANT

A. ASTM C920, Type S, Grade NS, Class 25, single component silicone sealant:
   1. Manufacturers: One of the following or equal:
      a. Tremco, Proglaze.
      b. Pecora Corp., Number 864.
      c. Dow Corning, Number 795.
      d. General Electric, Number 1200 Series.

2.05 SYNTHETIC RUBBER SEALING COMPOUND

A. Manufacturer: One of the following or equal:
   1. Sika Corporation, Sikaflex 2c NS or SL.
   2. Sika Corporation, Sikaflex 2c NS EZ Mix.
   3. Pacific Polymers, Elastothane 227R.

B. Material: In accordance with ASTM C920 Type M, Grade P (pourable), Class 25 and Type M, Grade NS (non-sag), Class 25; multi-part polyurethane; able to cure at room temperature to firm, highly resilient polymer; able to perform satisfactory when continuously submerged in water or sewage and exposed to direct sunlight in dry condition; with the following properties determined at 75 degrees Fahrenheit and 50 percent relative humidity:
   1. Base: Polyurethane rubber.
   2. Application time: Minimum 2 hours.
   3. Cure time: Maximum 3 days.
   4. Tack free time: Maximum 24 hours.
   5. Ultimate hardness: Non-sag 25, Pourable/SL 40, within 5 Shore A.
   6. Tensile strength: Non-sag 95 pounds per square inch minimum and self-leveling minimum 170 pounds per square inch when tested in accordance with ASTM D412.
   7. Ultimate elongation: Minimum 340 percent when tested in accordance with ASTM D412.

8. Tear resistance: Non-sag 45 pounds per inch minimum and self-leveling minimum 85 pounds per inch when tested in accordance with ASTM D624, Die C.
9. Service temperature range: Minus 25 degrees to 158 degrees Fahrenheit.

C. Color: Gray to match concrete, unless indicated on the Drawings.

2.06 SYNTHETIC SPONGE RUBBER FILLER

A. Closed-cell expanded sponge rubber manufactured from synthetic polymer neoprene base, or resilient polyethylene foam backer rod. In accordance with ASTM C1330, Type C:
1. Manufacturers: The following or equal:
a. Presstite, No. 750.3 Ropax Rod Stock.

B. Characteristics:
1. Suitable for application intended.
2. Strength: As necessary for supporting sealing compound during application.
3. Resiliency: Resistance to environmental conditions of installation.
4. Bonding: No bonding to the sealing compound.
5. Structure: Cellular, prevents absorption of water.
6. Compatibility with other materials in joint and acceptance by manufacturer of sealing compound.
7. Size: Minimum 25 percent greater than nominal joint width.

2.07 RELATED MATERIALS

A. Primer: Nonstaining type, recommended by sealant manufacturer to suit application.

B. Joint cleaner: Noncorrosive, nonstaining, compatible with joint forming materials and as recommended by sealant manufacturer.

C. Bond breaker tape: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify acceptability of joint dimensions, physical, and environmental conditions.

B. Verify that surfaces are dry, clean, and free of dirt, grease, curing compound, and other residue which might interfere with adhesion of sealants.

3.02 PREPARATION

A. Allow concrete to cure thoroughly before caulking.

B. Synthetic sponge rubber filler:
   1. Prepare surfaces designated to receive filler in accordance with manufacturer's installation instructions.
   2. Do not stretch filler beyond its normal length during installation.

C. Caulking:
   1. Verify that surfaces are dry, clean, and free of dirt, grease, curing compounds, and other residue that might interfere with adhesion of sealant.
   2. Concrete, masonry, wood, and steel surfaces: Clean and prime in accordance with manufacturer's instructions prior to caulking.

D. Synthetic rubber sealing compound:
   1. Ensure surfaces to which synthetic rubber must bond are dry and free of dust, dirt, and other foreign residue.
   2. Heavy sandblasted caulking groove to sound surface, and prime with manufacturer's recommended primer for particular surface.

E. For sidewalks, pavements, and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to depth equal to 75 percent of joint width, but neither more than 5/8 inches deep nor less than 3/8 inches deep.

F. For normal moving building joints sealed with elastomeric sealants not subject to traffic, fill joints to depth equal to 50 percent of joint width, but neither more than 1/2 inch deep nor less than 1/4 inch deep.

G. For joints sealed with acrylic-latex sealants, fill joints to depth in range of 75 percent to 125 percent of joint width.

H. Use joint filler to achieve required joint depths, to allow sealants to perform properly.

I. Prepare surfaces and install synthetic sponge rubber filler in accordance with manufacturer's recommendations.

J. Do not stretch filler beyond normal length during installation.

K. Apply bond breaker when recommended by joint sealer manufacturer.

3.03 INSTALLATION

A. Synthetic sponge rubber filler: Install filler in accordance with manufacturer's installation instructions.

B. Caulking, joints, and sealing:
   1. Construct expansion, contraction, and construction joints as indicated on the Drawings.
   2. Install pipe and conduit in structures as indicated on the Drawings.
   3. Caulk doors, windows, louvers, and other items installed in or over concrete openings inside and out.

4. Use synthetic rubber sealing compound for caulking where indicated on the Drawings or as specified, except for masonry construction and where specified otherwise.
5. Complete caulking prior to painting.
6. Verify that concrete is thoroughly cured prior to caulking.
7. When filler compressible material is used, use untreated type.
8. Apply caulking with pneumatic caulking gun.
9. Use nozzles of proper shape and size for application intended.
10. Maintain continuous bond between caulking and sides of joint to eliminate gaps, bubbles, or voids and fill joint in continuous operation without layering of compound.
11. Employ experienced applicators to caulk joints and seams in neat workmanlike manner.
12. To hasten curing of compound when used on wide joints subject to movement, apply heat with infrared lamps or other convenient means.
13. Apply synthetic rubber sealing compound with pneumatic caulking tool or other acceptable method.

3.04 CLEANING

A. Clean surfaces adjacent to sealant as work progresses.

B. Remove excess uncured sealant by soaking and scrubbing with sealant cleaning solvent.

C. Remove excess cured sealant by sanding with Number 80 grit sandpaper.

D. Leave finished work in neat, clean condition.

3.05 SCHEDULE

A. Acrylic latex:
   1. Use where indicated on the Drawings.
   2. Interior joints with movement less than 7.5 percent and not subject to wet conditions.

B. Silicone:
   1. Use where indicated on the Drawings.
   2. Joints and recesses formed where window, door, louver and vent frames, and sill adjoin masonry, concrete, stucco, or metal surfaces.
   3. Door threshold bedding.
   4. Moist or wet locations, including joints around plumbing fixtures.
   5. Stainless steel doors and frames, including joints between applied stops and frames, and around anchor bolts.
   6. Plenum joints.

C. Synthetic rubber sealing compound, non-sag Type II:
   1. Use where indicated on the Drawings.
   2. Water-bearing and earth-bearing concrete structures.
   3. Joints in masonry, concrete vertical surfaces, and metal-faced panels in vertical surfaces.

4. Joints between sheet metal flashing and trim.
5. Joints between sheet metal flashing and trim, and vertical wall surfaces.
6. Small voids between materials requiring filling for weathertight performance in vertical surfaces.
7. Perimeters of frames of doors, windows, louvers, and other openings where bonding is critical to airtight performance.
8. Expansion and control joints in masonry vertical surfaces.

D. Synthetic rubber sealing compound, self-leveling Type I:
1. Use where indicated on the Drawings.
2. Expansion and control joints in masonry, concrete horizontal surfaces, and metal panels in horizontal surfaces.
3. Small voids between materials requiring filling for weathertight performance in horizontal surfaces.
4. Pavement joints.
5. Perimeters of frames of doors, windows, louvers, and other openings in horizontal surfaces where bonding is critical to airtight performance.

3.06 FIELD QUALITY CONTROL

A. Adhesion testing:
1. Perform adhesion tests in accordance with ASTM C1521 per the following criteria:
a. Water bearing structures: 1 test per every 1,000 LF of joint sealed.
b. Exterior precast concrete wall panels: 1 test per every 2,000 LF of joint sealed.
c. Chemical containment areas: 1 test per every 1,000 LF of joint sealed.
d. Building expansion joints: 1 test per every 500 LF of joint sealed.
e. All other type of joints except butt glazing joints: 1 test per every 3,000 LF of joint sealed.
f. Manufacturer's authorized factory representative provide written recommendations for remedial measures on failing tests.

END OF SECTION

SECTION 08110

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Steel Fire Resistive Rated and Non-Fire Resistive Rated:
   1. Doors.
   2. Door frames.

1.02 REFERENCES

A. American National Standards Institute (ANSI):
   1. A250.6 - Hardware on Steel Doors (Reinforcement Application).
   2. A250.8 - Recommended Specification for Standard Steel Doors and Frames.

B. ASTM International (ASTM):
   1. A653 - Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2. A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
   3. A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy With Improved Formability, Solution Hardened, and Bake Hardenable.
   4. A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy With Improved Formability, and Ultra-High Strength.

C. National Association of Architectural Metal Manufacturers (NAAMM)/Hollow Metal Manufacturers Association (HMMA):
   1. HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames.

D. National Fire Protection Association (NFPA):
   1. 80 - Standard for Fire Doors and Other Opening Protectives.
   2. 252 - Standard Methods of Fire Tests of Door Assemblies.

E. Steel Door Institute (SDI):
   1. SDI-111 - Recommended Details for Standard Steel Doors, Frame, Accessories and Related Components.
   2. SDI-117 - Manufacturing Tolerances Standard Steel Doors and Frames.

F. Underwriters' Laboratories, Inc., (UL):
   1. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
   2. UL 102 - Sustainability Assessment for Swinging Door Leafs.

1.03 SUBMITTALS

A. Product data.

B. Shop drawings: Show the following with references to the Engineer's door marks and hardware groups:
   1. Location of door and frame types.
   2. Details of fabrication, including core construction, glass lights, louvers, weatherstripping, and factory finish for each door.
   3. Cutouts and reinforcements for hardware.
   4. Methods of installation and anchorage to adjacent construction.

C. Certificates documenting:
   1. Fire-rated units have been successfully tested as specified in this Section.

D. Manufacturer's instructions: Submit manufacturer's installation instructions.

E. Pre-Submittal Conference:
   1. Conduct conference in compliance with requirements in Section 01312 - Project Meetings with attendance by representatives of supplier and installer.
   2. Contractor to review proper methods and procedures for installing hollow metal doors and frames.

1.04 QUALITY ASSURANCE

A. Testing agency qualifications: Approved by ultimate enforcing authority for the Project; regularly engaged in inspection of materials and workmanship at factory.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Before delivery, identify type and size of each door and frame in such a way that markings will not damage finish.

B. Preassemble doorframes in shop and deliver to Project site with spreader bar at sill or tie them in pairs to form box.

C. Protect doors and frames with resilient packaging sealed with heat shrunk plastic. Break seal on-site to permit ventilation.

D. Protect doors and frames during shipment and storage to prevent warping, bending, and corrosion.

1.06 SEQUENCING AND SCHEDULING

A. Ensure timely delivery of reviewed hardware schedule and hardware templates such that no delay occurs in the work of the Contract.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sheet steel: ASTM A1008, commercial quality, level, cold rolled steel, or ASTM A1011, hot rolled, pickled and oil rolled steel. Galvanize by hot-dip process with zinc-coating in accordance with ASTM A924 or with ASTM A653 and the coating designation A60 or G60.

B. Clips, bolts, screws, and rivets: sized as recommended by manufacturer.

C. Primer: Rust- inhibitive epoxy primer compatible with high-solids epoxy finish coating system as specified in Section 09960 - High-Performance Coatings.

D. Touch-up materials: Primer as recommended by manufacturer.

E. Door hardware: As specified in Section 08710 - Door Hardware.

F. Grout: As specified in Section 04220 - Concrete Unit Masonry.

2.02 DOOR AND FRAME TYPES

A. Interior and Exterior doors: ANSI 250.8, Grade III, Model 3, or NAAMM HMMA 810 Type A and NAAMM HMMA 861, flush steel rib-stiffened, minimum 16-gauge face sheets.

B. Interior and Exterior frames: ANSI 250.8 or NAAMM HMMA 861, fully welded frames HMMA 861, except minimum 14-gauge sizes and shapes as indicated on the Drawings.

2.03 FABRICATION OF FRAMES

A. Galvanize all frames installed in exterior openings.

B. Frames: Sheet steel, integral type, welded continuous to full depth of frames with minimum 5/8-inch deep stops, unless otherwise indicated on the Drawings.

C. Hardware reinforcements: Fabricate according to SDI A250.6 with reinforcing plates from same material as door face sheets.

D. Jamb Anchors: As required for adjacent wall construction, minimum 3 per jamb, unless otherwise indicated on the Drawings.

E. Floor anchors: Fixed type, except where adjustable anchors are indicated on the Drawings, 1 per jamb, with minimum 2 holes for anchorage. Where floor fill occurs, terminate bottom of frames at indicated finished floor level and support by adjustable extension clips resting on and anchored to structural slabs.

F. Anchors at masonry: Adjustable strap and stirrup, minimum 16-gauge corrugated or perforated steel at maximum of 30 inches on center and extending minimum 8 inches into masonry.

G. Anchors at previously placed concrete: Countersink machine screws through the frame into expansion devices spaced at maximum 30 inches on center.

H. Masonry angle stiffeners: Factory welded into heads of frames for installation in openings more than 48 inches wide.

2.04 FABRICATION OF DOORS

A. Galvanize all doors installed in exterior openings.

B. Reinforce face sheets with steel rib stiffeners, spaced at maximum 6 inches apart, and securely attached to face sheets by spot welds at maximum 5 inches on center.

C. Fill voids between face sheets and stiffeners with fiberglass insulation having a minimum density of 0.8 pounds per cubic foot.

D. Edges: Full weld without visible joints. Bevel striking edge 1/8 inch in 2 inches.

E. Door cores:
   1. Stiffeners: Vertical steel ribs formed from minimum 22-gauge plain sheet steel, spaced at maximum 6 inches apart and securely attached to face sheets by spot welds at maximum 5 inches on center.
   2. Core fillers: Insulation, minimum 0.60 pound density noncombustible type, installed in spaces between stiffeners for full height of door; labeled door core material shall conform to requirements of labeling authority.

F. Tops and bottoms of doors: Close with continuous recess steel channel of minimum 16-gauge, extending full width of door and spot welded to both faces.

G. Tops and bottoms of exterior doors: Flush closing channels welded to make tops and bottoms waterproof with weep holes for escape of moisture.

H. Hardware reinforcements: Fabricate according to SDI A250.6 with reinforcing plates from same material as door face sheets.

I. Astragals:
   1. Install on active leaf of double doors in accordance with UL listing requirements for fire resistive ratings as indicated on the Drawings, and for exterior pairs of doors.
   2. Do not install on doors swinging in pairs with rating of 90 minutes or less in means of egress where both leaves are required to provide building code required exiting widths.
   3. Do not provide astragal cutouts for hardware operations.

J. Astragal clearances for fire resistive rated doors:
   1. Door bottoms at doors designated to receive non-combustible threshold: Not to exceed 3/8 inch between threshold and door bottom.
   2. Door bottoms where there is no threshold: Maximum clearance between door and floor not to exceed 1/2 inch.

3. Door bottoms at doors designated to receive combustible floor coverings: Not to exceed 1/2 inch between floor covering and door bottom.
4. Clearance between door and frame and between meeting edges of pairs of doors: Not to exceed 1/8 inch.

K. Astragal clearances for non-fire resistive rated doors: Same as fire resistive rated doors, unless otherwise indicated on the Drawings.

2.05 FABRICATION OF FIRE RATED DOORS AND FRAMES

A. Fabricate to meet requirements of the building code as specified in Section 01410 - Regulatory Requirements, UL 10C, UL 102, and NFPA 252, except hose stream test shall not be required for opposite swing double egress exit doors and for doors of fire endurance rating of less than 45 minutes with or without approved glass lights.

B. Temperature rise requirements of doors at exit enclosures and exit passageways: Maximum transmitted temperature end point of less than 450 degrees Fahrenheit above ambient at end of 30 minutes when tested in accordance with the building code as specified in Section 01410 - Regulatory Requirements.

C. Apply approved testing agency labels on fire rated doors and frames.

D. Fabricate oversized fire rated doors in accordance with requirements for ratings indicated on the Drawings.

2.06 ACCESSORIES

A. Silencers:
1. Drill single leaf doorframe jamb stops for minimum 3 silencers.
2. Drill double-leaf doorframe head stops for minimum 2 silencers.
3. Do not drill doorframes for silencers when weatherstripping is to be installed.

2.07 FINISHING

A. Thoroughly clean surfaces of oil, grease, and other impurities; touch-up abraded galvanizing; and chemically etch.

B. Fill irregularities and sand smooth finish surface. Apply 1 coat of manufacturer's standard rust inhibitive baked-on primer.

C. Finish painting: High solids epoxy polyurethane system:
1. Interior and Exterior doors and interior doors in corrosive environments: As specified in Section 09960 - High-Performance Coatings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine reviewed hardware schedules and verify proper coordination of hardware and doors and frames.

B. Examine opening locations and verify the following:
   1. Correctness of dimensions, backing, or support conditions.
   2. Absence of defects that would adversely affect frame or door installation.

3.02 INSTALLATION

A. Install doors and frames in accordance with approved shop drawings and manufacturer's instructions.

B. Frames:
   1. Set accurately in position, plumb, align, and attach securely to structure.
   2. Set in place before construction of adjacent masonry or framed walls.
   3. Anchor frames to previously placed concrete.
   4. Set frames before removing spreader bars.
   5. Fully grout frames in masonry as the Work progresses.
   6. Grout frames at concrete through keyways provided at head and jambs.

C. Doors:
   1. Install at correct openings, ensure smooth swing and proper closure with frame.

D. Fire resistive frames and doors:
   1. Install to conform to NFPA 80 for fire resistive rated class as indicated on the Drawings.

E. Door hardware:
   1. Install in accordance with Section 08710 - Door Hardware.
   2. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

F. Separate or isolate dissimilar metals with neoprene gaskets, sleeves, and washers, or with coatings acceptable to the Engineer.

3.03 TOLERANCES

A. Manufacturing and installation tolerances: As indicated on the Drawings or in conformance to SDI 117 as minimum.

3.04 ADJUSTING AND CLEANING

A. Prime coat touch-up: Immediately after installation, sand smooth and touch-up rust areas, and other areas where primer has been damaged, with prime touch-up paint.

B. Make adjustments as required for correct, proper, and free function and smooth operation without binding of hardware or doors and frames.

C. Protect doors and frames from damage to surface or profile.

END OF SECTION

SECTION 08320

FLOOR ACCESS DOORS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Non-fire-rated floor access doors.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. Standard Specifications for Highway Bridges.

B. Occupational Safety and Health Administration (OSHA):
   1. 29 CFR 1910-Occupational Safety and Health Standards.

1.03 SUBMITTALS

A. Product data.

B. Shop drawings that include the following:
   1. Floor access door installation recommendations.
   2. Locations of floor access doors.
   3. Door size and configuration.
   4. Live load capacity.
   5. Materials of construction and finishes provided.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Identify type and size of each floor access door in way not to damage finish prior to delivery.

B. Deliver products only after proper facilities are available.

C. Deliver and store packaged products in original containers with seals unbroken and labels intact until time of use.

D. Handle carefully to prevent damage and store on clean concrete surface or raised platform in safe, dry area.
   1. Do not dump onto ground.

E. Protect floor access doors during shipment and storage to prevent warping, bending, and corrosion.

1.05 WARRANTY

A. Provide manufacturer’s warranty against defects in material and workmanship for a period of 5 years.

1.06 MAINTENANCE

A. Deliver 2 keys for each cylinder lock to Owner.

PART 2 PRODUCTS

2.01 LIGHT-DUTY FLOOR ACCESS DOORS

A. Manufacturers: One of the following or equal:
   1. The Bilco Co., Floor Doors Model K or KD (double leaf).
   2. Babcock Davis Associates, Inc., Model BFDNA-SAL or BFDNA-DAL (double leaf).

B. Style: Single leaf or double leaf as indicated on the Drawings, aluminum, capable of withstanding minimum live load of 150 pounds per square foot, and designed to open to 90 degrees and lock automatically in that position.

C. Door leaf: 1/4-inch aluminum diamond-pattern plate reinforced with aluminum stiffeners as required for specified live load.

D. Frame: 1/4-inch extruded aluminum with built-in neoprene cushion and with strap anchors bolted to exterior.

E. Hardware:
   1. Hinges: Cast steel hinges bolted to underside door leaf that pivot on torsion bars that counterbalance door for ease of operation.
   2. Lock: Snap lock with removable handle mounted on door leaf.
   3. Grip handle: Provide vinyl grip handle designed to release cover for closing.
   4. Operating mechanism: Automatic hold-open arm.

2.02 MEDIUM-DUTY FLOOR ACCESS DOORS

A. Manufacturers: One of the following or equal:
   1. The Bilco Co., Model J or JD (double leaf).
   2. Babcock Davis Associates, Inc., Model BFDDP-SAL or BFDDP-DAL (double leaf).

B. Style: Single leaf or double leaf as indicated on the Drawings, aluminum, capable of withstanding minimum live load of 300 pounds per square foot, channel frame, with drainage couplings.

C. Door leaf: Minimum 1/4-inch, diamond-pattern plate reinforced with stiffeners as required to meet specified live load.

D. Frame: 1/4-inch channel with anchor flange around perimeter.

E. Hardware:
   1. Hinges: Each leaf equipped with a minimum of 2 heavy forged-brass hinges with stainless steel pins.
   2. Lock: Snap lock with removable handle mounted on door leaf.

3. Grip handle: Provide vinyl grip handle designed to release cover for closing.
4. Operating mechanism: Spring operators designed for ease of operation and automatic hold-open arm with release handle.
5. Drainage assembly: Provide 1-1/2-inch drainage coupling located in corner of the channel frame.

2.03 HEAVY-DUTY OFF-STREET FLOOR ACCESS DOORS

A. Manufacturers: One of the following or equal:
   1. The Bilco Co., Model JH-20 or JDH-20 (double leaf).
   2. Babcock Davis Associates, Inc., Model BFDDH-SAL or BFDDH-DAL (double leaf).

B. Style: Single leaf or double leaf as indicated on the Drawings, aluminum, capable of withstanding minimum Standard Specifications for Highway Bridges, H-20 wheel load with a maximum deflection of 1/150 of the span, live load channel frame, with drainage couplings.

C. Door leaf: Minimum 1/4-inch, diamond-pattern plate reinforced with stiffeners as required to meet specified live load.

D. Frame: 1/4-inch channel with anchor flange around perimeter.

E. Hardware:
   1. Hinges: Each leaf equipped with a minimum of 2 heavy forged-brass hinges with stainless steel pins.
   2. Lock: Snap lock with removable handle mounted on door leaf.
   3. Grip handle: Provide vinyl grip handle designed to release cover for closing.
   4. Operating mechanism: Spring operators designed for ease of operation and automatic hold-open arm with release handle.
   5. Drainage assembly: Provide 1-1/2-inch drainage coupling located in corner of the channel frame.

2.04 FINISHES

A. Floor access door finishes:
   1. Aluminum: Manufacturer's standard mill finish.
   2. Aluminum in contact with dissimilar metals and concrete: Manufacturer's standard bituminous coating.
   3. Steel: Manufacturer's standard red oxide primer.

B. Hardware finishes:
   1. Provide optional Type 316 stainless steel hardware throughout, including parts of the latch and lifting mechanism assemblies, hold-open arms, and all brackets, hinges, pins, and fasteners.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine construction to receive floor access door and verify correctness of dimensions and other supporting or adjoining conditions.

3.02 PREPARATION

A. Coordinate details with other work supporting, adjoining, or requiring floor access doors.

B. Verify dimensions and profiles for each opening.

C. Verify that location will serve portion of work to which access is required.
   1. Where proposed functional location conflicts with other work, notify the Engineer before installation.

D. Apply coating to aluminum surfaces that will be in contact with dissimilar metals or concrete when there is none.

3.03 INSTALLATION

A. Install floor access doors in accordance with manufacturer's instructions.

B. Ensure correct types and adequate sizes at proper locations.

C. Securely attach frames to supporting work and ensure doors, frames, and hardware operate smoothly and are free from warp, twist, and distortion.

D. Attach drain pipe to coupling provided.
   1. Unless noted or indicated on the Drawings, provide 1-inch PVC (Sch. 80) drain line for access door.
   2. Provide necessary fittings to connect and route at least 5 feet away from door and vault perimeter.
   3. Terminate drain line 1 foot below final grade with 3 cubic feet of drain rock beneath the termination point of the drain line.

3.04 ADJUSTING

A. Adjust doors, frames, and hardware to operate smoothly, freely, and properly without binding.

3.05 CLEANING

A. Thoroughly clean surfaces of grease, oil, or other impurities; touch up abraded prime coat where applicable.

END OF SECTION

SECTION 08332

OVERHEAD COILING DOOR

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Manual overhead insulated rolling doors.

1.02 REFERENCES

A. ASTM International:
   1. A123 - Standard specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   2. A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
   3. A666 - Standard specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
   4. A924 - Standard Specification for General Requirements of Steel Sheet, Metallic-Coated by the Hot-Dip Process (Referenced by ASTM A653).

1.03 QUALITY ASSURANCE

A. Regulatory requirements:
   1. Wind loading as specified in Section 01850 - Design Criteria.
   2. Seismic requirements for door anchorage and support systems as specified in Section 01850 - Design Criteria.

B. Qualifications:
   1. Manufacturer Qualifications: ISO 9001:2015 registered and a minimum of five years experience in producing doors of the type specified.
   2. Installer Qualifications: Manufacturer's approval.

C. Design Requirements:
   1. Air Infiltration to Comply With:
      a. ASHRAE® (American Society of Heating, Refrigeration, and Air-Conditioning Engineers) Standard 90.1-2007, 2010, and 2013 requirements of less than .3 CFM/FT2.
   2. Wind Loading:
      a. Supply doors to withstand design wind loads in accordance with the Structural Drawings.
   3. Cycle Life:
      a. Design doors of standard construction for normal use of up to 20 cycles per day maximum, and an overall maximum of 50,000 operating cycles for the life of the door.
   4. Seismic Performance:
      a. Provide manufacturer’s seismic calculations confirming ASCE7-10.

5. Insulated Door Slat Material Requirements:
    a. Flame Spread Index of 0 and a Smoke Developed Index of 10 as tested per ASTM E84.
    b. Sound Transmission Class (STC) rating up to 30 for the curtain and up to 22 for the entire assembly. If an STC of 32 is desired, additional options are required. All configurations are evaluated per ASTM E90 and based on testing a complete, operable assembly.
    c. Minimum R-value of 8.0 (U-value of 0.125) as calculated using the ASHRAE Handbook of Fundamentals.
    d. Insulation to be CFC Free with an Ozone Depletion Potential (ODP) rating of zero.
6. Safety:
    a. Chain operated doors shall be designed so that the door immediately stops upward or downward travel and is maintained in a stationary position when the hand chain is released by user.

1.04 SUBMITTALS

A. Product data:
    1. General: Submit data completely describing products, including rough-in diagrams.

B. Shop drawings:
    1. Drawings showing complete installation details, required clearances, relation to building structure, complete electrical rough-in requirements required for installation of motor operators for doors and for connection of such doors to fire alarm system, referenced to the door mark number.
    2. Show location and size of access doors required to perform maintenance on doors and auxiliary equipment.

C. Samples: Submit samples of finishes for finish selection.

D. Quality control submittals:
    1. Manufacturer's instructions:
        a. Installation instructions for each type and size of door, including manufacturer's data, operating instructions, and maintenance data.
        b. Furnish installer copy of diagrams and installation instructions.
        c. Provide manufacturer ISO 9001:2015 registration.
        d. Provide manufacturer and installer qualifications - see below.
        e. Provide manufacturer's installation instruction.

E. Contract closeout submittals:
    1. Project record documents:
        a. Operation and maintenance data: Provide manufacturer's operation and maintenance data for each different type of door specified, complete with manufacturer's list of recommended spare parts and their prices, electrical schematic diagrams, and name and address of nearest maintenance organization approved by door manufacturer.
        b. Certificate stating that installed materials comply with this specification.
        c. Warranty: Provide manufacturer's standard warranty.

1.05 DELIVERY STORAGE AND HANDLING

A. Packing, shipping, and storage: Protect doors during shipment and storage to prevent warping, bending, and corrosion.

B. Deliver materials only after proper facilities are available: Provide clean dry surfaces or platform as required and protect from deterioration and foreign matter.

1.06 PROJECT CONDITIONS

A. Field measurements: Field verify all opening dimensions and clearances prior to fabricating doors. Fitting doors to openings is the responsibility of the Contractor.

1.07 SEQUENCING AND SCHEDULING

A. Inserts and anchorages: Furnish inserts and anchoring devices which must be set into concrete or built into masonry. Provide setting drawings, templates, and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay to the Contract.

1.08 WARRANTY

A. Standard Warranty: Two years from date of shipment against defects in material and workmanship.

B. Maintenance: Submit for owner's consideration and acceptance of a maintenance service agreement for installed products.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Design requirements:
   1. Compatibility with space and service requirements:
      a. Doors and equipment items provided shall be compatible with space limitations specified and indicated on the Drawings.
      b. Make modifications to doors and equipment items necessary to conform with space limitations or with utility services specified for rough-in.
      c. Provide items complete including all necessary ancillary equipment as may be required for complete and trouble-free operation.
   2. Maintenance requirements: For ease of maintenance, provide overhead coiling doors complying with following requirements:
      a. Provide each door assembly as complete unit produced or supplied by a single manufacturer, including frames, sections, brackets, operating mechanisms, hardware, except hardware items specified in Section 08710 - Door Hardware, and all necessary accessories for installation of complete in openings indicated.
      b. Unless otherwise specified, all doors of particular type throughout the entire project shall be as manufactured or supplied by a single manufacturer.

2.02 MANUFACTURED UNITS

A. Manufacturers: One of the following or equal:
   1. The Cookson Co., Inc.
   2. Clopay Building Products.

2.03 PRODUCT INFORMATION

A. Model: ESD30.

2.04 MATERIALS

A. Curtain: Air infiltration rate of less than .3 CFM/FT2, as tested per ASTM E283 validated by an independent testing agency. Test report required.
   1. Fabrication:
      a. Slat Material: No. 6F, (Listed Exterior/Interior):
         1) Galvanized Steel/Galvanized Steel: Manufacturer recommended gauge based on performance requirements. Minimum 18/24 gauge, Grade 40, ASTM A 653 galvanized steel zinc coating.
      b. Insulation: 7/8 inch (22 mm) foamed-in-place, closed cell urethane.
      c. Total Slat Thickness: 15/16 inch (24 mm).
      d. Flame Spread Index of 0 and a Smoke Developed Index of 10 as tested per ASTM E84.
      e. R-value: 8.0.
      f. STC Rating: Sound Transmission Class (STC) rating up to 30 for the curtain and up to 22 for the entire assembly. If an STC of 32 is desired, additional options are required. All configurations are evaluated per ASTM E90 and based on testing a complete, operable assembly.
   2. Exterior Slat Finish:
      a. SpectraShield® Coating System (Color Selected by Architect):
         1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat.
         2) Zirconium treatment followed by baked-on polyester powder coat, with color as selected by Architect from manufacturer's standard color range, over 180 colors; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.
   3. Interior Slat Finish:
      a. SpectraShield® Coating System (Color Selected by Architect):
         1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat.
         2) Zirconium treatment followed by baked-on polyester powder coat, with color as selected by Architect from manufacturer's standard color range, over 180 colors; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.

B. Endlocks: Fabricate interlocking sections with high strength galvanized cast iron endlocks on alternate slats each secured with two 1/4-inch (6.35 mm) rivets. Provide windlocks as required to meet specified wind load.
   1. Galvanized cast iron: Required if above 21-foot-5-inch width (DBG - Distance Between Guides).

C. Bottom Bar:
   1. Configuration:
      a. Insulated Bottom Bar: Reinforced extruded aluminum interior face with full depth insulation and exterior skin slat to match curtain material and gauge. Minimum 4 inches tall by 1-1/16-inch thickness.
   2. Finish:
      a. Exterior: Match slats.
      b. Interior: Powder coat to match slats.
   3. Air Infiltration Certification Label: Must be affixed to bottom bar.

D. Guides:
   1. Fabrication:
      Thermal break required. Minimum 3/16 inch (4.76 mm) structural steel angles. Provide windlock bars of same material when windlocks are required to meet specified wind load. Top of inner and outer guide angles to be flared outwards to form bellmouth for smooth entry of curtain into guides. Provide removable guide stoppers to prevent over travel of curtain and bottom bar. Top 16-1/2-inch (419.10 mm) of coil side guide angles to be removable for ease of curtain installation and as needed for future curtain service.
   2. Finish:
      a. SpectraShield® Coating System (Color Selected by Architect): Zirconium treatment followed by baked-on polyester powder coat, color as selected by Architect from manufacturer's standard color range, over 180 colors; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.

E. Counterbalance Shaft Assembly:
   1. Barrel: Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot (2.5 mm per meter) of width.
   2. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of door to ensure that maximum effort to operate will not exceed 25 pounds (110 N). Provide wheel for applying and adjusting spring torque.

F. Brackets: Fabricate from minimum 3/16 inch (5 mm) steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures.
   1. Finish:
      a. SpectraShield® Coating System (Color Selected by Architect): Zirconium treatment followed by baked-on polyester powder coat, color as selected by Architect from manufacturer's standard color range, over 180 colors; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.

G. Hood: Minimum 24 gauge galvanized steel with reinforced top and bottom edges. Provide minimum 1/4 inch (6.35 mm) steel intermediate support brackets as required to prevent excessive sag.
   1. Finish:
      a. SpectraShield® Coating System (Color Selected by Architect):
         1) ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked-on base coat and gray baked-on polyester finish coat.
         2) Zirconium treatment followed by baked-on polyester powder coat, with color as selected by Architect from manufacturer's standard color range, over 180 colors; minimum 2.5 mils (0.065 mm) cured film thickness; ASTM D-3363 pencil hardness: H or better.

H. Weatherstripping:
   1. Bottom Bar:
      a. Manually Operated Doors: Replaceable, bulb-style, compressible EDPM gasket extending into guides.
   2. Guides: Replaceable vinyl strip on guides sealing against both sides of curtain.
   3. Lintel Seal: Double brush seal with EPDM sandwiched between the two brush seals at door header to impede air flow.
   4. Hood: Neoprene/rayon baffle to impede air flow above coil.

2.05 OPERATION

A. Manual ControlGard Chain Hoist: Provide chain hoist operator with endless steel chain, chain pocket wheel and guard, geared reduction unit, and chain keeper secured to guide. Chain hoist to include integral brake mechanism that will immediately stop upward or downward travel and maintain the door in a stationary position when the hand chain is released by the user.

2.06 ACCESSORIES

A. Locking:
   1. Padlockable chain keeper on guide. (Manual Chain operated.)

B. Trim Package: Minimum 16 gauge powder coated steel to match guides.

C. Strip Door Bracket: Assembly integral to coiling door to hang strip door on interior of building. Contact factory for sizes greater than 12 feet-0 inches by 12 feet-0 inches. Powder coated finish to match coiling door.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions: Examine openings to receive overhead coiling doors and verify:
   1. Dimensions and correctness of backing or support conditions.
   2. Absence of defects that would adversely affect installation.

B. Do not start the work until unsatisfactory conditions are corrected.

C. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings.

D. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.

E. Commencement of work by installer is acceptance of substrate.

3.02 INSTALLATION

A. General: Install door and operating equipment with necessary hardware, anchors, inserts, hangers and supports in strict accordance with manufacturer's installation instructions, unless specifically otherwise indicated on the Drawings.

B. Install assemblies plumb, square, and level at their proper elevations and in their proper planes.

C. Securely anchor assemblies to interior face of openings, in manner that provides full opening clearance, perfectly aligned and adjusted for smooth operation.

D. Interface with other products: Separate or isolate dissimilar metals with neoprene gaskets, sleeves, or washers, or with an acceptable coating.

3.03 ADJUSTING

A. Following completion of installation, including related work by others, lubricate, test, and adjust doors for ease of operation, free from warp, twist, or distortion.

B. Verify that door assemblies are securely anchored to structure, guides are perfectly aligned, and doors are adjusted for smooth operation.

C. Upon completion of installation, ensure doors are free from warp, twist, or distortion and are lubricated and properly adjusted to operate freely.

3.04 CLEANING

A. Clean surfaces soiled by work as recommended by manufacturer.

B. Remove surplus materials and debris from the site.

C. Replace any damaged or otherwise disfigured doors with new prior to final acceptance.

3.05 DEMONSTRATION

A. Provide Owner's maintenance employees with a minimum of 8 hours of maintenance instruction.

3.06 PROTECTION

A. Protect installed doors from damage until final acceptance.

END OF SECTION

SECTION 08710

DOOR HARDWARE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Door hardware.

1.02 REFERENCES

A. Builders Hardware Manufacturers Association (BHMA):
   1. A156.1 - Butts and Hinges.156.2 - Bored and Preassembled Locks and Latches.
   2. A156.3 - Exit Devices.
   3. A156.4 - Door Controls.
   4. A156.13 - Mortise Locks and Latches.
   5. A156.14 - Sliding and Folding Door Hardware.
   6. A156.16 - Auxiliary Hardware.
   7. A156.18 - Materials and Finishes.
   8. A156.23 - Electromagnetic Locks.
   9. A156.26 - Continuous Hinges.
   10. A156.31 - Electric Strikes and Frame Mounted Actuators.
   11. A156.36 - Auxiliary Locks.

B. International Building Code (ICC):
   1. A117.1 - Accessible and Usable Buildings and Facilities.

C. National Fire Protection Association (NFPA):
   1. 80 - Fire Doors and Windows.
   2. 105 - Installation of Smoke Door Assemblies.
   3. 252 – Standard Methods of Fire Tests of Door Assemblies.

D. Underwriters Laboratories, Inc. (UL):
   1. 10C - Positive Pressure Fire Tests of Door Assemblies.
   2. 1784 - Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives.

1.03 SUBMITTALS

A. Product data:
   1. Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
   2. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

B. Hardware schedule:
   1. Include references to Engineer's hardware group number, door type designations, locations, other pertinent data, and manufacturer names or suitable abbreviation opposite items scheduled.

C. Samples: Include for each different type and manufacturer for review of finish.

D. Construction key distribution list: Submit upon Owner's request.

E. Templates:
   1. Furnish hardware templates to fabricators of doors, frames, and other work to be factory-prepared for hardware.
   2. Check shop drawings of other work to confirm that adequate hardware backing is available.

F. Project record documents: Include corrected hardware schedule.

G. Operating and Maintenance Manuals:
   1. Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation.
   2. As specified in Section 01782 - Operation and Maintenance Manuals.

1.04 REGULATORY REQUIREMENTS

A. Provide hardware for fire-resistive rated openings that complies with UL and listed by UL.

B. Provide State Fire Marshall approved fire-rated cross-corridor assemblies and panic devices.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver hardware where directed in unopened packages with items packed separately, complete and ready for installation with necessary fittings, trim, fasteners, and accessories.

B. Provide packages bearing the manufacturers' labels with each item or group of items identified according to the accepted hardware schedule.

1.06 QUALITY ASSURANCE

A. Certified products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

B. Installer qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Door hardware supplier qualifications:
   1. Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project.
   2. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity.
   3. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

D. Source limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
   1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

F. Pre-submittal conference:
   1. Conduct coordination conference in compliance with requirements in Section 01312 - Project Meetings with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
   2. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products.
   3. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
   4. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
   5. Review sequence of operation narratives for each unique access controlled opening.
   6. Review and finalize construction schedule and verify availability of materials.
   7. Review the required inspecting, testing, commissioning, and demonstration procedures.

1.07 MAINTENANCE

A. Require lockset manufacturers to deliver permanent removable cylinder cores and keys and minimum 2 extractor keys to Owner directly.

1.08 SCHEDULING AND SEQUENCING

A. Upon receipt of accepted hardware schedule, coordinate accepted hardware schedule, templates, reinforcing units, and template instructions to door and frame sections.

B. Restrict distribution of construction keys to superintendents and foremen. Maintain record of persons who have received keys on construction distribution list.

1.09 MAINTENANCE TOOLS AND INSTRUCTIONS

A. Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.10 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.
   1. Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
      a. Structural failures including excessive deflection, cracking, or breakage.
      b. Faulty operation of the hardware.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
      d. Electrical component defects and failures within the systems operation.

B. Special warranty:
   1. Duration for electromechanical door hardware: 2 years.
   2. Duration for standard duty cylindrical (bored) locks and latches: 5 years.
   3. Duration for exit hardware: 5 years.
   4. Duration for mortise locks and latches: 10 years.
   5. Duration for manual overhead door closer bodies: 10 years.
   6. Duration for heavy duty floor closers: 10 years.

PART 2 PRODUCTS

2.01 GENERAL

A. Door hardware includes, but is not necessarily limited to, the following:
   1. Mechanical door hardware.
   2. Electromechanical door hardware.
   3. Automatic operators.
   4. Cylinders.

2.02 FASTENERS

A. Types:
   1. To concrete, marble, or masonry: Machine screws and flush shells.
   2. To wood: Wood screws.
   3. On gypsum board or plaster: Screws of sufficient length to provide solid connection to framing or backing behind gypsum board or plaster.
   4. To mineral and hollow core doors: Hex bolts.
   5. Of exit devices to doors: Thru-bolts, unless otherwise specified.

B. Screws exposed: Phillips-head type, full-threaded screws, not combination type.

C. Sizes: Suitable for heavy use.

D. Finish: Stainless steel, unless otherwise required to match material and hardware finish.

2.03 HANGING DEVICES

A. Hinges: BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
   1. Quantity: Provide the following hinge quantity:
      a. 2 Hinges: For doors with heights up to 60 inches.
      b. 3 Hinges: For doors with heights 61 to 90 inches.
      c. 4 Hinges: For doors with heights 91 to 120 inches.
      d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
      e. Hinge size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
         a. Widths up to 3 feet 0 inches: 4-1/2 inches standard or heavy weight as specified.
         b. Sizes from 3 feet 1inch to 4 feet 0 inched: 5inches standard or heavy weight as specified.
      f. Hinge weight and base material: Unless otherwise indicated, provide the following:
         a. Exterior doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
         b. Interior doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
      g. Hinge options: Comply with the following:
         a. Non-removable pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
      h. Manufacturers: The following or equal:
         a. Ives (IV).
   2. Power transfer devices:
      a. Door hardware security is specified in Section 16752 - Security.
      b. Electrified quick connect continuous geared transfer hinges:
         a) Provide electrified transfer continuous geared hinges with a 12 inch removable service panel cutout accessible without de-mounting door from the frame.
         b) Furnish with Molex™ standardized plug connectors with sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets.
         c) Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies.
         d) Wire nut connections are not acceptable.
         e) Manufacturers: The following or equal:
            (1) Ives (IV) – TWP-CON Option.

2.04 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
   1. Manufacturers: One of the following or equal:
      a. Corbin Russwin Hardware (RU) – ML2000 Series.
      b. Sargent Manufacturing (SA) – 8200 Series.
      c. Schlage (SC) – L9000 Series.

B. Cylindrical Locksets, Grade 1 (Heavy Duty): BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed.
   1. Furnish with solid cast levers, standard 2-3/4 inch backset, and 1/2 inch (3/4 inch at rated paired openings) throw brass or stainless steel latch bolt.
   2. Locks are to be non-handed and fully field reversible.
   3. Manufacturers: One of the following or equal:
      a. Corbin Russwin Hardware (RU) - CL3300 Series.
      b. Sargent Manufacturing (SA) - 10 Line.
      c. Schlage (SC) - ND Series.
      d. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows unless otherwise specified.

2.05 ELECTROMECHANICAL LOCKING DEVICES

A. Electromechanical Mortise locksets, Grade 1 (heavy duty): Subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below.
   1. Electrified Lock Options:
      a. Where indicated in the Hardware Sets, provide electrified options including: Outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling.
      b. Support end-of-line resistors contained within the lock case.
      c. Unless otherwise indicated, provide electrified locksets standard as fail secure.
   2. Energy efficient design:
      a. Provide lock bodies which have a holding current draw of 15mA maximum and can operate on either 12 or 24 volts.
      b. Locks are to be field configurable for fail safe or fail secure operation.
   3. Manufacturers: One of the following or equal:
      a. Schlage (SC) - L9000 EU Series.
      b. Corbin Russwin Hardware (RU) - ML20900 Series.
      c. Sargent Manufacturing (SA) - 8200 Series.

2.06 CONSTRUCTION KEYING

A. Type: Removable core system.

2.07 CLOSERS

A. Manufacturers:
   1. Features:
      a. Heavy-duty.
      b. Non-handed and non-sized.
      c. Adjustable spring power from size 1 through 4.
      d. Hold open feature where specified.
   2. One of the following or equal:
      a. LCN, Model 4040XP Series.

B. Type: Full rack and pinion type with steel spring and non-gumming, non-freezing hydraulic fluid.

C. Controls: Separate set for regulating sweep speed, latch speed, backcheck and backcheck positioning, or where schedules, spring power.

D. Sizes: As recommended by accepted manufacturer.

E. Covers: Plastic, capable of being spray painted to match adjacent hardware finishes, unless otherwise specified.

F. Narrow frame provisions: Drop plates.

G. Effort to operate: As follows:
   1. Exterior: Maximum 8-1/2 pounds.
   2. Interior: Maximum 5 pounds.
   3. Fire-resistive rated doors: Maximum 15 pounds.

H. Adjust closers in accordance with manufacturer's directions for size of door.

2.08 EXIT DEVICES

A. Lever design:
   1. Manufacturers: The following or equal:
      a. Von Duprin, Lever Model 06.

B. Rim device, non-fire resistive rated:
   1. Manufacturers: One of the following or equal:
      a. Von Duprin Inc., Model Series 98.
      b. Sargent Essex Ind., Model Series 8800.

C. Rim device, fire-resistive rated:
   1. Manufacturers: One of the following or equal:
      a. Von Duprin Inc., Model Series 98-F.
      b. Sargent Essex Ind., Model Series 12-8800.

D. Material: As scheduled.

E. Non-contact magnetic door switches are specified in Section 16752 - Security.

2.09 MISCELLANEOUS DOOR HARDWARE

A. Flush bolts and surface bolts:
   1. BHMA A156.3 and A156.16, Grade 1, certified.
      a. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately 6 feet from the floor.
      b. Furnish dust proof strikes for bottom bolts.
      c. Surface bolts to be minimum 8 inches in length, UL listed for labeled fire doors, and UL listed for windstorm components where applicable.
      d. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
      e. Manufacturers: One of the following or equal:
         a. Ives (IV).
         b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
         c. Trimco (TC).

B. Kick plates:
   1. As scheduled, 0.050-inch thick, beveled edges, 10 inches high, 1-1/2 inches narrower than single doors, 1 inch narrower than leaf of door pairs.
   2. Manufacturers: One of the following or equal:
      a. Ives.
      b. Trimco.

C. Architectural seals:
   1. General:
      a. Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets.
      b. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated.
      c. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
   2. Smoke labeled gasketing:
      a. Assemblies in accordance with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing in accordance with UL 1784.
      b. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
   3. Fire labeled gasketing:
      a. Assemblies in accordance with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing in accordance with UL 10C.
      b. Provide intumescent seals as indicated to meet UL 10C, and NFPA 252.
   4. Manufacturers: One of the following or equal:
      a. National Guard Products (NG).
      b. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
      c. Zero (ZE).

D. Thresholds:
   1. As scheduled, extruded aluminum, maximum 1/2-inch high, maximum slope of 1 foot in 2 feet.
   2. Manufacturers: One of the following or equal:
      a. National Guard Products Inc.
      b. Pemko Mfg. Co.

E. Dustproof strike:
   1. As scheduled.
   2. Manufacturers: One of the following or equal:
      a. Ives.
      b. Trimco.

F. Coordinator with filler bar:
   1. As scheduled, non-handed, series type length as required for door sizes indicated, complete with filer lengths as required, with mounting brackets and carry bars when required for proper operation; steel with manufacturer's standard prime finish capable of receiving painted finish.
   2. Manufacturers: One of the following or equal:
      a. Glynn-Johnson Coordinators, Model COR Series.
      b. Ives, Door Co-Ordinator, Model 900 Series.

G. Door bottoms:
   1. As scheduled, extruded aluminum with vinyl insert, surface mounted, length equal to door width minus 2 inches, automatic, recessed in bottom of door.
   2. Manufacturers: One of the following or equal:
      a. Pemko.
      b. Reese.

H. Astragals:
   1. As specified in Section 08110 - Hollow Metal Doors.

I. Silencers:
   1. As scheduled, pneumatic gray rubber.
   2. Manufacturers: One of the following or equal:
      a. Trimco.
      b. Ives.
      c. Rockwood.

2.10 FINISHES

A. Brass and bronze: BHMA A156.18 626 (US26D), satin chrome.

B. Steel: BHMA A156.18 652 (US26D), satin chrome.

C. Stainless steel: BHMA A156.18 630 (US32D), satin stainless steel.

D. Aluminum: BHMA A156.18 628 (US28).

E. Plastic closer covers: Spray paint to match typical door hardware finish.

F. Metal closer covers: Plate covers to match typical door hardware finish.

G. Electromagnetic hold open devices: Manufacturer's standard brushed zinc finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect doors and door frames for damage or defects and examine hardware for compatibility with receiving conditions and suitable to intended use.

B. Verify that required wall backing has been installed.

3.02 INSTALLATION

A. Install finish hardware in accordance with manufacturer's templates and instructions.
   1. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
   2. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: Hanging devices; locking devices; closing devices; and seals.

B. Accurately and properly fit hardware.

C. Securely fasten fixed parts for smooth, trouble-free, non-binding operation.

D. Fit faces of mortise parts snug and flush.

E. Ensure that operating parts move freely and smoothly without binding, sticking, or excessive clearance.

F. Mounting heights:
   1. Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
   2. Standard steel doors and frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
   3. Wood doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
   4. Where indicated to comply with accessibility requirements, in accordance with ICC A117.1 "Accessibility Guidelines for Buildings and Facilities."
   5. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

G. Retrofitting:
   1. Install door hardware to comply with manufacturer's published templates and written instructions.

2. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Section 09960 - High-Performance Coatings.
3. Do not install surface-mounted items until finishes have been completed on substrates involved.

H. Protection:
1. Protect door hardware from damage or marring of finish during construction, use strippable coatings, removable tapes, or other acceptable means.
2. Ensure door hardware displays no evidence of finish paint after final building cleanup with exception of prime-coated door hardware installed for finish painting.

I. Latch guard and dead bolts: Install so that bolts automatically engage in keeper, whether activated by closer or by manual pressure.

J. Closers:
1. Mount on opposite sides of corridors or vestibules, except at exterior doors.
2. Mount for 180-degree swing wherever possible.
3. Mount with drop plates at narrow top rail doors.
4. Adjust to operate noiselessly and evenly.
5. Have closer manufacturer regulate closers prior to final acceptance of project.

K. Kick plates: Screw on push side of doors, unless otherwise indicated on the Drawings.

L. Gasketing: Mount to provide complete contact between door and frame, finished floor, or both; and weathertight enclosure.

M. Thresholds:
1. Install immediately before inspection for Substantial Completion or protect from heavy traffic damage during construction.
2. Cope to fit door frame profile and drill to suit required flush bolts and panic bolts.
3. Unless indicated on the Drawings to be set in grout, set in double bead of sealant, tightly fit at jambs, and make waterproof.
4. Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Section 07900 - Joint Sealants.
5. Fasten to concrete slab with 5/16-inch stainless steel flat head countersunk machine screws and concrete anchors at 8-inch centers.

N. Silencers:
1. Insert into predrilled holes in frames.

O. Storage:
1. Provide a secure lock up for hardware delivered to the project but not yet installed.
2. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.03 DOOR HARDWARE SETS

A. They are a guideline only and should not be considered a detailed hardware schedule.

B. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

C. Quantities listed are for each pair of doors, or for each single door.

D. The Supplier is responsible for handing and sizing all products.

E. Where multiple options for a piece of hardware are given in a single line item, the Supplier shall provide the appropriate application for the opening.

F. Provide a list of Manufacturer's Abbreviations.

3.04 CONSTRUCTION KEYING

A. Insert construction cores in cylinders of exterior doors, and doors requiring security and access for workman, unless otherwise directed by the Engineer.

3.05 ADJUSTING

A. Examine hardware in place for complete and proper installation. Lubricate bearing surfaces for proper function.

B. Replace, rework or otherwise correct defective door hardware, including incorrect hand or function.

3.06 CLEANING

A. Remove protective materials and devices and thoroughly clean exposed surfaces of hardware.

B. Check for surface damage prior to final cleaning for acceptance of project.

3.07 HARDWARE SCHEDULE

A. While the Hardware Schedule is intended to cover all doors and other moveable parts of the building and establish a type and standard of quality, it shall be the specific duty and responsibility of the finish hardware supplier to examine the Drawings and Specifications and furnish proper hardware for all openings.

3.08 HARDWARE GROUPS

A. Door hardware security is specified in Section 16752 - Security.

B. Campus Oaks ASR Well (13):
   1. HW-1: Door 101-3, 104-2:
      3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630 Ives
      1 EA Hinge 5BB1 X 4.5 X 4.5 X NRP X TW4 630 Ives

1 EA Exit Device 9847L X E996L(FS-24VDC)(#06) X 338 X 385A X 3-0 Lever US26D/US32D/Active VO
1 EA Exit Device 9847EO X 338 X 385A X 3-0 Exit OnlyUS32D/Inactive VO
1 EA Cylinder – Rim 20-057 626 SCH
1 EA Closer 4040XP X EDA X SRTAL LCN
1 SET Weatherstripping 319CS AS PE
1 EA Door Bottom 430CRL AV PE
1 EA Threshold 274X4AFG X MS&ES10 PE
1 EA Drip Cap 346C PE
1 EA Astragal 309 APK PE
1 EA Coordinator – as recommended by manufacturer IVES

2. HW-2: Doors 103-1:
   3 EA Hinge 5BB1 4.5 X 4.5 X NRP 630 Ives
   1 EA Hinge 5BB1 X 4.5 X 4.5 X NRP X TW4 630 Ives
   1 EA Exit Device 9847L X E996L(FS-24VDC)(#06) X 338 X 385A X 3-0 Lever US26D VO1 EA Cylinder – Rim 20-057 SCH
   1 EA Closer WS445 US26D LCN
   1 SET Weatherstripping 319CS PE
   1 EA Door Bottom 430CRL PE
   1 EA Threshold 274X4AFG X MS&ES10 PE
   1 EA Drip Cap 346C PE

3. HW-3: Doors 104-1:
   3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630US26D Ives 1 EA Exit Device 98L X 996L-M US26D VO
   1 EA Cylinder – Rim 20-057 SCH
   1 EA Closer WS445 US26D LCN
   1 SET Silencers 1229A Grey TR

4. HW-4: Doors 102-1:
   3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630US26D Ives 1 EA Lockset ND94PD 626 SC
   1 EA Closer WS445 US26D LCN
   1 SET Silencers 1229A Grey TR

5. HW-5: Doors 103-2 (UL 2-HR):
   3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630US26D Ives 1 EA Lockset ND94PD 626 SC
   1 EA Closer WS445 US26D LCN
   1 SET Silencers1229A Grey TR

C. Misty Wood ASR Well (19):
   1. HW-1: Door 103-3:
      3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630 Ives
      1 EA Hinge 5BB1 X 4.5 X 4.5 X NRP X TW4 630 Ives
      1 EA Exit Device 9847L X E996L(FS-24VDC)(#06) X 338 X 385A X 3-0 Lever US26D/US32D/Active VO
      1 EA Exit Device 9847EO X 338 X 385A X 3-0 Exit Only US32D/Inactive VO

1 EA Cylinder – Rim 20-057 SCH
1 EA Closer 4040XP X EDA X SRT AL LCN
1 SET Weatherstripping 319CS PE
1 EA Door Bottom 430CRL PE
1 EA Threshold 274X4AFG X MS&ES10 PE
1 EA Drip Cap 309 APK PE
1 EA Coordinator – as recommended by manufacturer IVES

2. HW-2: Doors 101-3, 104-2:
   3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630US26D Ives
   1 EA Hinge 5BB1 X 4.5 X 4.5 X NRP X TW4 630 Ives
   1 EA Exit Device 9847L X E996L(FS-24VDC)(#06) X 338 X 385A X 3-0 Lever US26D VO1 EA Exit Device 9847EO X 338 X 385A X 3-0 Exit Only US32D
   1 EA Cylinder – Rim 20-057 SCH
   1 EA Closer WS445 US26D LCN
   1 SET Weatherstripping 319CS PE
   1 EA Door Bottom 430CRL PE
   1 EA Threshold 274X4AFG X MS&ES10 PE
   1 EA Astragal 357 C 600 PE
   1 EA Drip Cap 346C PE

3. HW-3: Doors 104-1:
   3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630US26D Ives 1 EA Exit Device 98L X 996L-M US26D VO
   1 EA Closer WS445 US26D LCN
   1 SET Silencers 1229A Grey TR

4. HW-4: Doors 102-1:
   3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630US26D Ives 1 EA Lockset ND94PD 626 SC
   1 EA Closer WS445 US26D LCN
   1 SET Silencers 1229A Grey TR

5. HW-5: Doors 103-1 (UL 2-HR):
   3 EA Hinge 5BB1 X4.5 X 4.5 X NRP 630US26D Ives 1 EA Lockset ND94PD 626 SC
   1 EA Closer WS445 US26D LCN
   1 SET Silencers1229A Grey TR

END OF SECTION

SECTION 08910

LOUVERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. A variety of stationary, operable, and combination louvers. Also, includes stationary door louvers.

1.02 REFERENCES

A. Air Movement and Control Association International, Inc. (AMCA):
   1. 500-L - Laboratory Methods of Testing Louvers for Rating.
   2. 500-D - Laboratory Methods of Testing Dampers for Rating.
   3. 511 - Certified Ratings Program - Product Rating Manual for Air Control Devices.

B. ASTM International (ASTM):
   1. D4385 - Standard Practice for Classifying Visual Defects in Thermosetting Reinforced Plastic Pultruded Products.

C. Testing Application Standard (TAS):
   1. 100A - Standard Test Procedure for Wind and Wind Driven Rain Resistance and/or Increased Windspeed Resistance of Soffit Ventilation Strip and Continuous or Intermittent Ventilation System Installed.

D. Underwriters Laboratories, Inc. (UL).

1.03 TERMINOLOGY

A. The words and terms listed below, are not defined terms that require initial capital letters, but, when used in this Section have the indicated meaning.
   1. Drainable-blade louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

1.04 SUBMITTALS

A. As specified in Section 15500 - Common Work Results for HVAC.

1.05 QUALITY ASSURANCE

A. Provide louvers with the following, unless otherwise specified:
   1. AMCA certification and rating in accordance with AMCA 511 for air performance and water penetration.

PART 2 PRODUCTS

2.01 GENERAL

A. Louver types: As indicated on the Drawings.
   1. Identify louvers with a letter L followed by a number referring to a louver type in this Section.
   2. Identify individual louver size and airflow rates.

B. Accessories:
   1. Provide installation clips and flanged or jamb-mounting styles suitable for the mounting locations.
   2. As indicated on the Drawings.
   3. Provide extended sills for louvers indicated as installed recessed from the exterior wall surface.
   4. Provide stainless steel fasteners unless noted otherwise.
   5. Corrosion protection.
   6. Provide gravity damper for outside air intake and exhaust louvers, unless noted otherwise.

C. Protective coatings for aluminum in contact with concrete or masonry:
   1. Manufacturers: One of the following or equal:
      a. Koppers Co., Inc.
      b. Porter Coatings.
      c. Tarmastic 100.

2.02 DESIGN AND PERFORMANCE REQUIREMENTS

A. Performance: In accordance with AMCA 511 when tested in accordance with AMCA 500.

B. Designed for 20 pounds per square foot wind load.

C. Provide instrumentation and controls to meet the equipment operating requirements as specified in Section 15936 - Instrumentation and Control Devices for HVAC.

D. Louvers for severe windstorm applications:
   1. Shall resist the cyclic pressures, static pressures, and missile impact loads in accordance with:
      a. Applicable building codes as specified in Section 01410 - Regulatory Requirements.
   2. Shall resist wind driven rain in accordance with:
      a. TAS 100A:
         1) Louvers shall not require the use of a manual damper to meet the certification requirements.

2.03 STATIONARY ACOUSTICAL LOUVERS, TYPE L-3

A. Manufacturers: One of the following or equal:
   1. Airolite Co, Model T9112.

2. Greenheck, Model AFJ-120.
3. Ruskin Co., Model ACL1245.

B. Requirements:
1. Type: Stationary acoustical louver with louver depth as indicated on the Drawings.
2. Material: Minimum 0.080-inch thick extruded or formed aluminum for frame and blades.
3. Frame: 12-inch deep formed aluminum frame with 0.100-inch nominal wall thickness.
4. Blades: 0.080-inch formed aluminum exterior surface; blades positioned at 45 degree angle and spaced approximately 6 inches center to center.
5. Screens: 3/4-inch mesh by 0.051-inch aluminum or stainless steel bird screen with removable frame.
6. Pressure drop: Maximum 0.13-inch water column pressure drop at 1,000 feet per minute free area velocity for intake louvers.
7. Free area: Minimum 13 percent.
8. Finish: Mill.
9. Acoustical performance: Attenuation at least as follows for the depth of louver indicated:

	Attenuation (dB)			
Frequency (Hertz)	**4-inch Depth**	**6-inch Depth**	**8-inch Depth**	**12-inch Depth**
125	11	8	11	8
250	9	9	11	14
500	11	12	13	17
1,000	15	16	19	22
2,000	17	20	21	21
4,000	16	18	20	21
8,000	16	18	23	20

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect areas to receive louvers.
1. Notify the architect of conditions that would adversely affect the installation or subsequent utilization of the louvers.
2. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. Clean opening thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install louvers at locations indicated on the Drawings and in accordance with manufacturer's instructions.

B. As specified in Section 15500 - Common Work Results for HVAC.

3.04 FIELD QUALITY CONTROL

A. Test equipment performance and balance equipment as specified in Section 15954 - Testing, Adjusting, and Balancing for HVAC.

END OF SECTION

SECTION 09250

GYPSUM BOARD

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Gypsum board and associated accessories.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C475 - Standard Specification for Joint compounds and Joint Tape for Finishing Gypsum Board.
   2. C514 - Standard Specification for Nails for the Application of Gypsum Wallboard.
   3. C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard in Wood Framing.
   4. C840 - Standard Specification for Application and Finishing of Gypsum Board.
   5. C919 - Standard Practice for Use of Sealants in Acoustical Applications.
   6. C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Based to Wood Studs or Steel Studs.
   7. C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
   8. C1396 - Standard Specification for Gypsum Board.
   9. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. Gypsum Association:
   1. GA 216 - Application and Finishing of Gypsum Board.

C. Underwriters Laboratories, Inc. (UL).

1.03 SUBMITTALS

A. Product Data: Include manufacturer's instructions for sealing openings, penetrations, and cut edges of water-resistant gypsum board.

B. Samples: Include texture samples on minimum 6 inch square specified materials.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Provide gypsum board products from single manufacturer or from manufacturers recommended by manufacturer of gypsum board.

B. Regulatory requirements: When indicated, provide UL listed and labeled fire-rated components or by other recognized rating service.

C. Pre-installation conference: Convene with affected entities to review coordination and sequencing of construction to ensure that everything that will be concealed by gypsum board has been installed, and that chases, openings, supplementary framing and blocking have been completed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store gypsum board under cover, stacked flat, off floor.

B. Store adhesives in dry place, protected against freezing.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Maintain uniform room temperature between 55 and 70 degrees Fahrenheit in cold weather during application of wallboard and joint treatment until joint treatment is completely dry or building is occupied.

B. Provide adequate ventilation.

PART 2 PRODUCTS

2.01 GYPSUM BOARD

A. Regular board:
   1. ASTM C1396; 5/8 inches thick; tapered edge; Type X where required for fire rating.

B. Moisture resistant board:
   1. ASTM C1396; 5/8 inches thick; tapered edge; Type X where required for fire rating.

2.02 ACCESSORIES

A. Square corner bead reinforcement:
   1. Manufacturers: One of the following or equal:
      a. USG, Dur-A-Bead.
      b. Gold Bond National Gypsum Co., Wallboard corner bead with 1-1/4 inch flanges.

B. Metal casing bead:
   1. Manufacturers: One of the following or equal:
      a. USG, No. 200A Metal Trim.
      b. Gold Bond National Gypsum Co., No. 100 wall board casing.

C. Control joints:
   1. Manufacturers: One of the following or equal:
      a. USF, No. 093.
      b. Gold Bond National Gypsum Co., 0.093 zinc control joint.

2.03 FASTENERS

A. Screws for wood framing: ASTM C1002, Type W, minimum 1-1/4 inches.

B. Nails: ASTM C514; minimum 1-1/4 inch long, 12-1/2 gauge, 1/4 inch diameter head.

2.04 LAMINATING ADHESIVES

A. Gypsum board to metal framing:
   1. Manufacturers: One of the following or equal:
      a. USG, Durabond® 200 or 300.
      b. Gold Bond National Gypsum Co., Sta-Smooth setting type compound.

2.05 FINISHING MATERIALS

A. Moisture or water resistant sealant:
   1. Manufacturers: One of the following or equal:
      a. USG, Sheetrock W/R Sealant.
      b. Gold Bond National Gypsum Co.

B. Joint compound and tape: ASTM C475:
   1. Manufacturers: One of the following or equal:
      a. USG, Sheetrock joint system consisting of Sheetrock Reinforcement Tape and Sheetrock All Purpose Ready Mixed Compound for embedding, fill, and finishing.
      b. Gold Bond National Gypsum Co., Sta-Smooth HS tape and Sta-Smooth joint compound.

C. Texturing compound for walls:
   1. Manufacturers: One of the following or equal:
      a. USG, Spray Texture Finish.
      b. Gold Bond National Gypsum Co., Perfect Spray EM, orange peel finish.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install gypsum board systems in accordance with ASTM C840 and GA 216.

3.02 GYPSUM BOARD INSTALLATION ON WALLS

A. Cut gypsum wallboard by scoring and breaking or by sawing, working from face side.

B. Use boards of maximum practical length to minimize end joints.

C. Apply board with long dimension at right angles to framing or furring members with ends on studs. Attach upper boards first.

D. Bring boards into contact with each other but do not force into place.

E. Do not place butt ends against tapered edges.

F. Stagger end joints. Locate joint on opposite sides of partition on different studs.

G. Do not align joints with edges of openings, except for control joints. Cut board neatly to fit around openings. Locate joints at least 8 inches from openings. Center vertical end joints above openings.

H. Extend board to within 1/4 inch of floor.

I. Install fasteners proceeding from center portion of gypsum board toward edges and ends.

J. On non-fire rated walls, screw board to framing at maximum 12 inches on center in field of board at bearings and along abutting edges. Nail board to framing at maximum 8 inches on center in field at bearings and along edges.

K. On fire rated walls, nail or screw board to framing at maximum 8 inches on center in field of board at bearings and along edges, unless indicated otherwise by UL assembly requirements.

L. Drive fasteners home with maximum 1/32 inch dimple in wall surface. Avoid breaking face paper of wallboard. Remove improperly driven nails.

M. Thoroughly seal openings, penetrations and cut edges of water-resistant wallboard in accordance with manufacturer's recommendations.

N. Double stud partitions:
   1. Install strips of gypsum board 12 inches wide and of length to span partition depth by screwing to webs of opposing studs.
   2. Space strips approximately 42 inches on center.

O. Double layer partitions:
   1. Install first layer vertically then second layer horizontally.
   2. Stagger joints between layers and on opposite sides as far as is practical.

P. Sound control partitions:
   1. Apply full running beads of acoustical sealant at perimeter of sound control partitions.
   2. Apply acoustical sealant with air operated equipment.
   3. Inspect joints to receive sealant to be sure they are clean, dry and free of dust, dirt and other foreign matter.
   4. Seal around light boxes, outlets, and switches, with continuous bead of sealant.
   5. Remove excess of sealant or smears as construction progresses.

Q. Perimeter relief where non-load bearing gypsum board partitions abut structural decks or ceilings or vertical structural elements:
   1. Allow not less than 1/4 inch, nor more than 1/2 inch gap between gypsum board and structure.

2. Finish edges of board face layer with metal casing bead and caulk space between casing bead and structure with continuous sealant bead.
3. Attach board to studs not less than 1/2 inch below bottom edge of ceiling track flanges and to first stud adjacent to vertical tracks. Do not attach boards directly to tracks.

3.03 GYPSUM BOARD INSTALLATION ON FRAMED OR FURRED CEILINGS

A. Apply board with long dimension at right angles to framing or furring members with abutting ends and edges occurring over flanges.

B. Use board to maximum practical length to minimize end joints.

C. Cut gypsum board neatly to fit around openings.

D. Neatly fit a stagger end joints.

E. Nail field of boards at bearing, and along abutting edges at maximum 7 inches on center. Drive nails up to form slight dimple in board.

F. Screw field of boards, at bearings, and along abutting edges at maximum of 8 inches on center.

3.04 INSTALLATION OF CASING AND CORNER BEADS

A. Install casing beads wherever board terminates against dissimilar materials or where edges of board are exposed. Provide:
1. Type with face flange to receive joint compound except where semi-finishing is indicated.
2. L-type trim where gypsum board is tightly abutted to other construction.
3. Special kerf-type where other construction is kerfed to receive long leg of L-type trim.
4. U-type trim where edge is exposed, revealed, gasketed, or sealant filled, including expansion joints.

B. Install metal corner bead reinforcement at outside corners.

C. Where board partitions intersect masonry walls:
1. Provide control joints no less than 1/4 inch nor more than 3/8 inch wide between board and masonry.
2. Finish exposed edges of board with square-nose metal casing bead and caulk space between casing bead and masonry with continuous sealant.

D. Secure corner beads with same fasteners used for applying wallboard, spaced 8 inches maximum apart on each flange of bead with nails opposite.

3.05 INSTALLATION OF CONTROL JOINTS

A. Discontinue gypsum board at control joints.

B. In ceiling construction, discontinue gypsum board and framing at control joints.

C. In partitions, discontinue gypsum board and install framing studs on each side of control joints.

D. Position control joints to intersect light fixtures, air diffusers, door openings and other areas of stress concentration.

E. Isolate gypsum board construction at following locations:
   1. Where partitions or ceilings of dissimilar construction meet and remain in same plane.
   2. Where wings of "L," "U," and "T" shaped ceiling areas are joined.
   3. When expansion or control joints occur in base building construction.

F. Space control joints at following maximum distances:
   1. Partitions: 30 feet in either direction.
   2. Interior ceilings with perimeter relief: 50 feet in either direction.
   3. Interior ceilings without perimeter relief: 30 feet in either direction.
   4. Exterior ceilings: 30 feet in either direction.

G. Extend control joints to ceiling from both corners of door frames where control joints are required.

H. Cut end joints square, align to provide neat fit.

I. Staple control joint to board at maximum 6 inches on center in each flange.

3.06 JOINT COMPOUND

A. Mix joint and topping compound in accordance with instructions on package.

B. Apply thin layer of joint compound uniformly approximately 4 inches wide over each joint.

C. Center tape over joint and embed into compound, leaving sufficient joint compound under tape to provide proper bond.

D. Reinforce wall angles and inside corner angles with tape folded to conform to angle and embedded into compound.

E. Apply skim coat of compound immediately after embedding tape.

F. After compound is thoroughly dry, cover tape with coat of joint compound or topping compound. Spread over tape and approximately 3 inches beyond edges of tape. Feathered out edge.

G. After compound is thoroughly dry, cover tape with coat of joint compound or topping compound. Spread over tape and approximately 3 inches beyond edges of previous coat. Feathered out edge.

H. Coat inside corners with minimum of one coat of joint compound or topping compound with edges feathered out.

I. Apply 3 coats of compound to nail and screw head dimples.

J. Conceal flanges of wallboard corner beads with minimum of 2 coats of compound:
   1. Apply joint compound for first coat.
   2. Apply joint compound or topping compound for second coat.
      a. Feathered out second coat approximately 9 inches on both sides of exposed metal nose of corner bead.

K. Clean excess compound from board surface.

L. Sand coats as necessary after each application of compound has dried.
   1. Leave board uniformly smooth ready to receive texturing, to extent that after painting, board shows no distinguishable difference in appearance between taped and untapped surfaces.

3.07 TEXTURING

A. Verify that gypsum board surfaces have been primed in accordance with Section 09910 - Painting.

B. Clean surfaces of dust, dirt, and oil before application.

C. Mix and apply specified materials in accordance with manufacturer's recommendation to produce texture similar to accepted sample.

D. Apply orange peel, texture to interior walls.

E. Remove texture droppings or overspray from adjacent completed construction.

3.08 TOLERANCES

A. Offsets between planes of board faces: Maximum 1/16 inch.

B. Flatness: Maximum 1/8 inch in 96 inches.

C. Variation from plumb: Maximum 1/8 inch in 96 inches.

END OF SECTION

SECTION 09523

ACOUSTICAL PANELS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Acoustical panels and accessories:
   1. Acoustical wall and ceiling panels.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C514 - Standard Specification for Nails for the Application of Gypsum Board.
   2. C645 - Standard Specification for Nonstructural Steel Framing Members.
   3. C1002 - Standard Specification for Application and Finishing of Gypsum Board.
   4. E1264 - Standard Classification for Acoustical Ceiling Products.

1.03 SUBMITTALS

A. Product data: Include sound absorption data, cutting and fabrication, and installation details for panel systems.

B. Shop drawings: Include panel layout and mounting details:
   1. Indicate panel layout; show locations of mechanical grills, lighting, access panels, sprinkler heads, and other items affecting ceiling installation.

C. Test reports: Results of sound absorption coefficient testing by independent acoustical laboratory.

D. Manufacturer's installation instructions: Including installation instructions for suspended grid system and adhesives.

E. Samples:
   1. Submit full range of manufacturer's standard colors for color selection.
   2. Submit 12 inches square samples for each type and size acoustical unit required.
   3. Submit sample of installation system: 1 full unit.

1.04 SITE CONDITIONS

A. Deliver panels when building is closed in and in cold seasons, heated.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Performance requirements: Noise Reduction Coefficient (NRC) of minimum 85, minimum sound absorption coefficient of 2 by 8 foot panels mounted on 1-1/2 inch furring with insulation at following octave band center frequencies:
   1. 125 hertz: 0.24.
   2. 250 hertz: 0.57.
   3. 500 hertz: 1.17.
   4. 1,000 hertz: 0.87.
   5. 2,000 hertz: 0.93.
   6. 4,000 hertz: 0.87.

2.02 PERFORATED ACOUSTICAL METAL WALL PANELS

A. Manufacturer: One of the following or equal:
   1. Eckel Industries, Inc., Eckoustic Functional Panels.

B. Metal facing: 0.032 inches minimum; coated aluminum, ribbed to provide impact resistance.

C. Perforation ratio: Not less than 23 percent.

D. Panel size: 30 by 96 inches.

E. Absorber:
   1. Fiberglass or mineral wool wrapped in heat-sealed polyethylene sheet for indoor applications.
   2. Polyethylene thickness 1.5 mils.
   3. Perforation ratio 10 percent within 2 percent both sides.
   4. Blanket; semi rigid, not less than 2 inch, density of approximately 1.5 pounds per cubic foot.

F. Perforated metal facing shall be furred out on metals channels by 2 inches.

G. Mounting brackets: Minimum 4; Type 316 stainless steel.

H. Adsorption factors:

Frequency Band	125	250	500	1000	2000	4000	NRC
Wall Panel	0.34	1.11	1.48	1.15	0.74	0.56	1.10
	.031	.085	1.43	1.49	1.41	1.50	1.30

PART 3 EXECUTION

3.01 INSTALLATION

A. Install acoustical panels in accordance with manufacturer's instructions.

B. Anchor furring to concrete or masonry walls securely.
   1. Anchor horizontally at 12 inches above floor, at 24 inches on center, at ceiling, and vertically at ends.

C. Install insulation between furring.
   1. Hold insulation in place until installation of panels.

D. Place panels vertically on walls, perpendicular to direction of furring, with maximum 1/16-inch space between panels.

E. Paint nail or screw head white.
   1. Nail or screw panels to furring in manufacturer's recommended pattern.
   2. Countersink nails or screws 1/16 inch.

F. Do not cover columns and beams with panels.
   1. Hold panels back 2 inches from columns.

G. When panels require field cutting, make sharp and perpendicular cuts using jigs.

H. Make neat cutouts for pipes, supports, and other projections from wall.
   1. Install metal trim around perimeter of panels.
   2. Fasten trim to edge furring with aluminum nails.
   3. Miter corners.

3.02 SCHEDULE

A. Install wall panels as scheduled below:

Location	Coverage		
	Wall Panels	**Ceiling Panels**	**Total Treated Area**
ASR Well Building – Pump Room	90 percent of walls shown on plans	80 percent	TBD on as-built conditions
Notes: (1) Installation of acoustical panels is included as an allowance item.			

END OF SECTION

SECTION 09910

PAINTING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Field applied paints and coatings for normal exposures.
   2. Painting Accessories.

1.02 DEFINITIONS

A. Paints: Manufacturer's best ready-mixed coatings, except when field catalyzed, with fully ground pigments having soft paste consistency and capable of being readily and uniformly dispersed to complete homogeneous mixture, having good flowing and brushing properties, and capable of drying or curing free of streaks or sags.

B. Volatile Organic Compound (VOC): Content of air polluting hydrocarbons in uncured coating product measured in units of grams per liter or pounds per gallon.

1.03 SUBMITTALS

A. General: Submit as specified in Section 01330 - Submittal Procedures.

B. Shop drawings: Include schedule of where and for what use coating materials are proposed in accordance with requirements for Product Data.

C. Product data: Include description of physical properties of coatings including solids content and ingredient analysis, VOC content, temperature resistance, typical exposures and limitations, and manufacturer's standard color chips.

D. Samples: Include 8-inch square draw-downs or brush-outs of topcoat finish when requested. Identify each sample as to finish, formula, color name and number and sheen name and gloss units.

E. Manufacturer's instructions: Submit in accordance with requirements for Product Data. Include:
   1. Special requirements for transportation and storage.
   2. Mixing instructions.
   3. Shelf life.
   4. Pot life of material.
   5. Precautions for applications free of defects.
   6. Surface preparation.
   7. Method of application.
   8. Recommended number of coats.
   9. Recommended thickness of each coat.
   10. Recommended total thickness.

11. Drying time of each coat, including prime coat.
12. Required prime coat.
13. Compatible and non-compatible prime coats.
14. Recommended thinners, when recommended.
15. Limits of ambient conditions during and after application.
16. Time allowed between coats.
17. Required protection from sun, wind, and other conditions.
18. Touch-up requirements and limitations.

F. Submit notarized certificate that:
   1. All paints and coatings to be used on this project comply with the State of California Air Resources Board Rule 1113 VOC Regulations effective as of January 1, 2004.
   2. All paints and coatings to be used on this project comply with the VOC regulations of the State of California Air Management District in which the coatings will be used, effective January 1, 2004.

1.04 QUALITY ASSURANCE

A. Products: First line or best grade.

B. Materials for each paint system: By single manufacturer.

C. Applicator qualifications: Applicator of products similar to specified products with minimum 3 years of experience.

D. Regulatory requirements: Comply with by using paints that do not exceed governing agency's VOC limits or do not contain lead.

E. Field samples:
   1. Paint 1 complete surface of each color scheme to show colors, finish texture, materials, and workmanship.
   2. Obtain approval before painting other surfaces.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products as specified in the Agreement and Contract RFP in Volumes 1 and 2.

B. Remove unspecified and unapproved paints from Project site immediately.

C. Deliver containers with labels identifying:
   1. Manufacturer's name.
   2. Brand name.
   3. Product type.
   4. Batch number.
   5. Date of manufacturer.
   6. Expiration date or shelf life.
   7. Color.
   8. Mixing and reducing instructions.

D. Store coatings in well-ventilated facility that provides protection from the sun weather, and fire hazards.
   1. Maintain ambient storage temperature between 45 and 90 degrees Fahrenheit, unless otherwise recommended by the manufacturer.

E. Take precautions to prevent fire and spontaneous combustion.

1.06 ENVIRONMENTAL CONDITIONS

A. Surface moisture contents: Do not paint surfaces that exceed manufacturer specified moisture contents, or when not specified by the manufacturer, the following moisture contents:
   1. Plaster and gypsum wallboard: 12 percent.
   2. Masonry, concrete and concrete block: 12 percent.
   3. Interior located wood: 15 percent.
   4. Concrete floors: 7 percent.

B. Do not paint or coat:
   1. Under dusty conditions.
   2. When light on surfaces measures less than 15 foot-candles.
   3. When ambient or surface temperature is less than 50 degrees Fahrenheit or unless manufacturer allow a lower temperature.
   4. When relative humidity is higher than 85 percent, unless manufacturer allows a higher relative humidity.
   5. When surface temperature is less than 5 degrees Fahrenheit above dew point.
   6. When surface temperature exceeds the manufacturer's recommendation.
   7. When ambient temperature exceeds 90 degrees Fahrenheit, unless manufacturer allows a higher temperature.
   8. Apply clear finishes at minimum 65 degrees Fahrenheit.

C. Provide fans, heating devices, or other means recommended by coating manufacturer to prevent formation of condensate or dew on surface of substrate, coating between coats and within curing time following application of last coat.

D. Provide adequate continuous ventilation and sufficient heating facilities to maintain minimum 50 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes.

1.07 PROTECTION

A. Protect adjacent surfaces from paint and damage. Repair damage resulting from inadequate or unsuitable protection.

B. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.

C. Place cotton waste, cloths, and material that may constitute fire hazard in closed metal containers and remove daily from site.

D. Remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations.
   1. Carefully store, clean and replace on completion of painting in each area.
   2. Do not use solvent or degreasers to clean hardware that may remove permanent lacquer finish.

1.08 EXTRA MATERIALS

A. Extra materials: Deliver as specified in Section 01770 - Closeout Procedures. Include minimum 1 gallon of each type and color of coating applied:
   1. When manufacturer packages material in gallon cans, deliver unopened labeled cans as comes from factory.
   2. When manufacturer does not package material in gallon cans, deliver material in new gallon containers, properly sealed and identified with typed labels indicating brand, type, and color.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Paints: One of the following or equal:
   1. Carboline: Carboline.
   2. PPG Paints/PMC.
   3. Rustoleum: Rustoleum Corp.
   4. S/W: Sherwin-Williams Co.
   5. Tnemec: Tnemec Co.

B. Submit requests for substitutions as specified in the Agreement and Contract RFP in Volumes 1 and 2:
   1. Include certified ingredient analyses.
   2. Provide colors that match specified colors.

2.02 PRETREATMENT, PRIMERS, AND PRIMER-SEALERS

A. Aluminum primer:
   1. Manufacturers: One of following or equal:
      a. Carboline Co.: Carbocrylic 120.
      b. PPG: Pitt-Tech® Plus 4020 PF Interior/Exterior Primer/Finish, 4020PF.
      c. Sherwin-Williams Co.: DTM Wash Primer.

B. Concrete masonry filler/primer:
   1. Manufacturers: One of following or equal:
      a. Carboline Co.: Sanitile 100.
      b. PPG: Perma-Crete® Interior/Exterior Block & Masonry Surfacer/Filler, 4-100XI.
      c. Sherwin-Williams Co.: HD Block Filler, B42W46.
      d. Tnemec:
         1) Series 130, Envirofill.
         2) Series 180, Tneme-crete.

C. Concrete, porous, filler/primer:
   1. Manufacturers: One of following or equal:
      a. Carboline Co.: Sanitile 100.
      b. PPG: Perma-Crete® Interior/Exterior Block & Masonry Surfacer/Filler, 4-100XI.
      c. Sherwin-Williams Co.: HD Block Filler, B42W46.
      d. Tnemec:
         1) Series 130, Envirofill.
         2) Series 180, Tneme-crete.

D. Concrete, smooth, filler/primer:
   1. Manufacturers: One of following or equal:
      a. Carboline Co.: Sanitile 100.
      b. Carboline Co.: Carbocrylic 120.
      c. PPG:
         1) Perma-Crete® Interior/Exterior Block & Masonry Surfacer/Filler, 4-100XI.
         2) Seal Grip® Hydrosealer Exterior Bonding Primer/Sealer, 17-6001.
      d. Sherwin-Williams Co.:
         1) HD Block Filler, B42W46.
         2) Epoxy Masonry Tilt Primer White B42WW49.
      e. Tnemec: Series 180, Tneme-Crete.

E. Ferrous metal primer:
   1. Manufacturers: One of following or equal:
      a. Carboline Co.: Carboguard 890.
      b. PPG: PITT-GUARD® Rapid-Coat Direct-to-Rust Epoxy Mastic Coating, 95-245 Series.
      c. Sherwin-Williams Co.: Macropoxy 646.
      d. Tnemec: Series 104.

F. Galvanized metal surface pretreatment materials:
   1. Manufacturers: One of following or equal:
      a. Carboline Co.: Surface Cleaner 3.
      b. PPG: Duraprep® Concentrated Degreaser, Prep125.

G. Galvanized metal surface primer:
   1. Manufacturers: One of following or equal:
      a. Carboline Co.: Carboguard 890.
      b. PPG: PITT-GUARD® Rapid-Coat Direct-to-Rust Epoxy Mastic Coating, 95-245 Series Sherwin-Williams Co.: Macropoxy 646.
      c. Tnemec: Series 104.

2.03 PAINTS, INTERIOR EXPOSURE

A. Latex, flat:
   1. Manufacturers: One of following or equal:
      a. Carboline Co.: Carbocrylic 3359MC flat.
      b. PPG:
         1) Speedhide® Zero Interior Flat, 6-5110 Series.

2) Ultralast Interior Matte, 13-210 Series.
c. Sherwin-Williams Co.: Promar 200, B30W200.

B. Latex, semi-gloss:
1. Manufacturers: One of following or equal:
a. Carboline Co.: Carbocrylic 3359MC.
b. PPG:
1) Speedhide® Zero Interior Semi-Gloss, 6-5510 Series.
2) Copper Armor Interior Latex Paint + Primer Semi-Gloss, 29-1510.
c. Sherwin-Williams Co.: Promar 200, B77W3402D.

C. Acrylic, semi-gloss:
1. Manufacturers: One of following or equal:
a. Carboline Co.: Carbocrylic 3359MC.
b. PPG:
1) Speedhide® Zero Interior Semi-Gloss, 6-5510 Series.
2) Copper Armor Interior Latex Paint + Primer Semi-Gloss, 29-1510.
c. Sherwin-Williams Co.: Promar 200, B77W3402D.
d. Tnemec: Series 1029, Enduratone.

2.04 PAINTS, EXTERIOR EXPOSURE

A. Latex, flat:
1. Manufacturers: One of following or equal:
a. Carboline Co.: Carbocrylic 3359MC flat.
b. PPG:
1) Speedhide® Exterior Flat, 6-6510XI.
c. Sherwin-Williams Co.: A-100, Flat Exterior Latex A6-100.
d. Tnemec: 1028 Enduratone.

B. Alkyd, gloss:
1. Manufacturers: One of following or equal:
a. PPG:
1) 7-Line Interior/Exterior Industrial Gloss Oil, 7-282 Series.
2) Break-Through! 250 Interior/Exterior Gloss, V70-6102500.
b. Sherwin-Williams Co.:
1) Industrial Enamel, B54Z-100.
2) Water based Industrial Enamel B53W311.

C. Acrylic latex, semi-gloss:
1. Manufacturers: One of following or equal:
a. Carboline Co.: Carbocrylic 3359MC flat.
b. PPG:
1) Speedhide® Exterior Semi-Gloss, 6-901XI.Sherwin-Williams Co.: A-100, Flat Exterior Latex A6-100.
c. Tnemec: 1028 Enduratone.

PART 3 EXECUTION

3.01 INSPECTION

A. Thoroughly examine surfaces scheduled to be painted before starting work.

B. Start painting when unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

A. Prepare surfaces in accordance with paint manufacturer's instructions or when none, the following:
   1. Aluminum:
      a. Remove surface contamination by steam, high-pressure water, or degreasers.
      b. Abrade surface by abrasive blasting, power tool cleaning or hand tool cleaning.
      c. Apply etching primer.
   2. Reinforced concrete panels:
      a. Remove dirt, powdery residue, and foreign matter.
      b. Paint immediately; both sides when applicable.
   3. Canvas and cotton insulation coverings: Remove dirt, grease, and oil.
   4. Concrete floors:
      a. Remove contamination, abrasive blast or acid etch and rinse with clear water.
      b. Ensure required acid-alkali balance is achieved. Allow to dry thoroughly.
   5. Copper for paint finish:
      a. Remove contamination by steam, high-pressure water, or degreasers.
      b. Abrade surface by abrasive blasting, power tool cleaning or hand tool cleaning.
      c. Apply vinyl etch primer.
   6. Copper for oxidized finish:
      a. Remove contamination.
      b. Apply oxidizing solution of copper acetate and ammonium chloride in acetic acid.
      c. Rub on repeatedly for correct effect.
      d. Once attained rinse surfaces well with clear water and allow to dry.
   7. Gypsum wallboard:
      a. Remove contamination and prime to show defects.
      b. Repair and prime defects.
   8. Galvanized surfaces:
      a. Remove surface contamination and oils and wash with degreasers.
      b. Apply coat of etching type primer.
   9. Zinc coated surfaces: Remove surface contamination and oils and prepare for priming in accordance with metal manufacturer's recommendations.
   10. Concrete and concrete masonry:
      a. Remove dirt, loose mortar, scale, powder, and other foreign matter.
      b. Remove oil and grease with solution of tri-sodium phosphate.
      c. Remove stains caused by weathering of corroding metals with solution of sodium metasilicate.
      d. Rinse well and allow to thoroughly dry.

e. Spot prime exposed metal with alkyd primer.

11. Plaster:
    a. Fill hairline cracks, small holes, and imperfections with patching plaster.
    b. Smooth off to match adjacent surfaces.
    c. Wash and neutralize high alkali surfaces where they occur.
12. Unprimed steel and iron: Remove grease, rust, scale, dirt, and dust by wire brushing, sandblasting or other necessary method.
13. Shop primed steel:
    a. Sand and scrape to remove loose primer and rust.
    b. Feather out edges to make touch-up patches inconspicuous.
    c. Clean surfaces.
    d. Prime bare steel surfaces.
14. Wood and millwork:
    a. Sandpaper to smooth even surface.
    b. Wipe off dust and grit prior to priming.
    c. Spot coat knots, pitch streaks, and sappy sections with sealer.
    d. Fill nail holes and cracks after primer has dried and sand between coats.
15. Exterior wood siding:
    a. Remove dust, grit, and foreign matter.
    b. Seal knots, pitch streak, and sappy sections.
    c. Fill nail holes with exterior caulking compound after prime coat has been applied.
16. Mildew:
    a. Remove by scrubbing with solution of tri-sodium phosphate and chlorine bleach.
    b. Rinse with clean water and allow surface to dry completely.
17. Glue laminated woods:
    a. Remove grease and dirt.
    b. Wash down surfaces with degreasers.

3.03 APPLICATION

A. Apply each coat at proper consistency.

B. Tint each coat of paint slightly darker than preceding coat.

C. Sand lightly between coats to achieve required finish.

D. Do not apply finishes on surfaces that are not sufficiently dry.

E. Allow each coat of finish to dry before following coat is applied, unless directed otherwise by manufacturer.

F. Where clear finishes are required ensure tint fillers match wood.
    1. Work fillers well into grain before set.
    2. Wipe excess from surface.

G. Backprime exterior woodwork, which is to receive paint finish, with exterior primer paint.

H. Backprime interior woodwork, which is to receive paint or enamel finish, with enamel undercoat paint.

I. Backprime interior and exterior woodwork, which is to receive stain or varnish finish, with gloss varnish reduced 25 percent with mineral spirits.

J. Prime top and bottom edges of wood and metal doors with enamel undercoat when they are to be painted.

K. Prime top and bottom edges of wood doors with gloss varnish when they are to receive stain or clear finish.

3.04 MECHANICAL AND ELECTRICAL EQUIPMENT

A. Identify equipment, ducting, piping, and conduit in accordance with Related Sections.

B. Remove grilles, covers, and access panels for mechanical and electrical system from location and paint separately.

C. Finish paint primed equipment with color selected by the Engineer.

D. Prime and paint insulated and bare pipes, conduits, boxes, insulated and bare ducts, hangers, brackets, collars, and supports, except where items are plated or covered with prefinished coating.

E. Replace identification markings on mechanical or electrical equipment when painted over or spattered.

F. Paint interior surfaces of air ducts, convector, and baseboard heating cabinets that are visible through grilles and louvers with 1 coat of flat black paint, to limit of sight line.

G. Paint dampers exposed immediately behind louvers, grilles, convector, and baseboard cabinets to match face panels.

H. Paint exposed conduit and electrical equipment occurring in finished areas with color and texture to match adjacent surfaces.

I. Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.

J. Color code equipment, piping, conduit, exposed ductwork, and apply color banding and identification, such as flow arrows, naming and numbering, in accordance with the Contract Documents.

3.05 SURFACES NOT REQUIRING FINISHING

A. Stainless steel, brass, bronze, copper, Monel®, chromium, anodized aluminum: Specially finished articles such as porcelain enamel, plastic coated fabrics, and baked enamel.

B. Finished products such as ceramic tile, windows, glass, brick, resilient flooring, acoustical tiles, board and metal tees; other architectural features, such as finish hardware, furnished in aluminum, bronze or plated ferrous metal, prefinished panels, or other items that are installed prefinished.

C. Items completely finished at factory, such as preformed metal roof and wall panels, aluminum frames, toilet compartments, sound control panels, acoustical tiles, shower compartments, folding partition, and flagpole.

3.06 CLEANING

A. As work proceeds and upon completion, promptly remove paint where spilled, splashed, or spattered.

B. During progress of work, keep premises free from unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Upon completion of work, leave premises neat and clean.

3.07 INTERIOR PAINT SCHEDULE

A. Aluminum: 2 coats of following finish paints over specified primer:
   1. Acrylic, semi-gloss:
      a. Surfaces not scheduled otherwise.

B. Concrete masonry: 2 coats of following finish paints over block filler:
   1. Latex, flat:
      a. Surfaces not scheduled otherwise.
   2. Latex, semi-gloss:
      a. Walls.

C. Concrete, porous: 2 coats of following finish paints over block filler:
   1. Latex, flat:
      a. Surfaces not scheduled otherwise.

D. Concrete, smooth: 2 coats of following finish paints over specified sealer:
   1. Latex, flat:
      a. Surfaces not scheduled otherwise.

E. Gypsum board: 2 coats of following finish paints:
   1. Latex, flat:
      a. Ceilings.
   2. Latex, semi-gloss:
      a. Walls and partitions.

F. Metal, galvanized: 2 coats of following finish paints over specified primer:
   1. **Acrylic, semi-gloss:**
      a. **Surfaces not scheduled otherwise.**

G. Metal, interior doors and frames, galvanized: 2 coats of following finish paints over specified primer:
    1. Acrylic, semi-gloss:
        a. Surfaces not scheduled otherwise.

H. Metal, non-galvanized ferrous: 2 coats of following finish paints over specified primer:
    1. Acrylic, semi-gloss:
        a. Surfaces not scheduled otherwise.

I. Metal, interior doors and frames, non-galvanized ferrous: 2 coats of following finish paints over specified primer:
    1. Acrylic, semi-gloss:
        a. Surfaces not scheduled otherwise.

3.08 EXTERIOR PAINT SCHEDULE

A. Aluminum: 2 coats of following finish paints over specified primer:
    1. Acrylic, semi-gloss:
        a. Surfaces not scheduled otherwise.

B. Concrete masonry: 2 coats of following finish paints over specified block filler:
    1. Latex, flat:
        a. Surface not scheduled otherwise.

C. Concrete, smooth: 2 coats of following finish paints over specified primer:
    1. Latex, flat:
        a. Surface not scheduled otherwise.

D. Gypsum board: 2 coats of following finish paints:
    1. Latex, flat:
        a. Ceiling - Surface not scheduled otherwise.

E. Walls - Surface not scheduled otherwise. Metal, ferrous: Following finish coat over specified primer:
    1. Acrylic, semi-gloss:
        a. Surface not scheduled otherwise.

F. Metal, galvanized: 2 coats of following finish paints over pretreatment and specified primer:
    1. Acrylic, semi-gloss:
        a. Surface not scheduled otherwise.

END OF SECTION

SECTION 09960

HIGH-PERFORMANCE COATINGS

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ATTACHMENT A - SCHEDULE OF SURFACES TO BE COATED

ATTACHMENT B - COATING DETAIL SHEETS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Coatings, including coating systems, surface preparation, application requirements, and quality control requirements.

1.02 REFERENCES

A. Abbreviations:
   1. CMU - Concrete masonry units.
   2. CSA - Coating system applicator. Specialty subcontractor retained by the Contractor to install the coating systems specified in this Section.
   3. CSM - Coating system manufacturer.
   4. CTR - Coating system manufacturer's technical representative.
   5. DFT - Dry-film thickness. Thickness of cured film, usually expressed in mils (0.001 inch).
   6. VOC - Volatile organic compound. Portion of the coating that is a compound of carbon, is photochemically reactive, and evaporates during drying or curing; expressed in grams per liter (g/l) or pounds per gallon (lb/gal). VOC is determined by EPA Method 24.
   7. WFT - Wet film thickness. Coating thickness as measured immediately after application. Usually expressed in mils (0.001 inch).

B. Standards:
   1. ASTM International (ASTM):
      a. D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
      b. D2200 - Standard Practice for Use of Pictorial Surface Preparation Standards and Guides for Painting Steel Surfaces.
      c. D3359 - Standard Test Methods for Rating Adhesion by Tape Test.
      d. D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
      e. D4262 - Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces.
      f. D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
      g. D4285 - Standard Test Method for Indicating Oil or Water in Compressed Air.
      h. D4414 - Standard Practice for Measurement of Wet Film Thickness by Notch Gages.
      i. D4417 - Standard Test Methods for Field Measurement of Surface Profile of Blast-Cleaned Steel.
      j. D4541 - Standard Test Methods for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
      k. D4787 - Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates.
      l. D5162 - Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates.

m. D7234 - Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
n. E337 - Standard Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures).
o. F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
p. F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-situ Probes.

2. International Concrete Repair Institute (ICRI):
   a. 310.2 - Guideline for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
3. NACE International (NACE):
   a. SP0178 - Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service.
   b. SP0188 - Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.
4. National Association of Pipe Fabricators (NAPF):
   a. 500-03 - Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings.
5. NSF International (NSF):
   a. 61 - Drinking Water System Components - Health Effects.
6. Occupational Safety and Health Administration (OSHA).
7. Society of Protective Coatings (SSPC):
   a. Glossary - SSPC Protective Coatings Glossary.
   b. Guide 6 - Guide for Containing Surface Preparation Debris Generated during Paint Removal Operations.
   c. PA 1 - Shop, Field, and Maintenance Painting of Steel.
   d. PA 2 - Procedure for Determining Conformance to Dry Coating Thickness Requirements.
   e. PA 9 - Measurement of Dry Coating Thickness Using Ultrasonic Gages.
   f. QP 1 - Standard Procedure for Evaluating the Qualifications of Industrial/Marine Painting Contractors.
   g. SP 1 - Solvent Cleaning.
   h. SP 3 - Power Tool Cleaning.
   i. SP 5 - White Metal Blast Cleaning.
   j. SP 10 - Near-White Metal Blast Cleaning.
   k. SP 11 - Power Tools Cleaning to Bare Metal.
   l. SP 13 - Surface Preparation of Concrete.
   m. SP 16 - Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.
   n. SP COM - Surface Preparation Commentary.
   o. SP VIS 1 - Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning.
   p. SP WJ-1 - Waterjet Cleaning of Metals—Clean to Bare Substrate.
   q. SP WJ-2 - Waterjet Cleaning of Metals—Very Thorough Cleaning.
   r. SP WJ-3 - Waterjet Cleaning of Metals—Thorough Cleaning.
   s. SP WJ-4 - Waterjet Cleaning of Metals—Light Cleaning.

1.03 TERMINOLOGY

A. Definitions used in this Section are in accordance with definitions referenced in ASTM D16, ASTM D3960, and SSPC Glossary of Definitions.

B. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Abrasive: Material used for blast cleaning, such as sand, grit, or shot.
   2. Abrasive Blast Cleaning: Cleaning/surface preparation by abrasive propelled at high speed.
   3. Anchor Pattern: Profile or texture of prepared surface(s).
   4. Biogenic Sulfide Corrosion: Corrosion caused by sulfuric acid formed when *Thiobacillus* bacteria metabolizes hydrogen sulfide.
   5. Bug Holes: Small cavities resulting when air bubbles are entrapped in the surface of formed concrete during placement and consolidation.
   6. Coating/Paint/Lining Thickness: Total thickness of primer, intermediate, and/or finish coats after drying or curing.
   7. Dew point: Temperature a given air/water vapor mixture starts to condense.
   8. Dry to Recoat: Time interval between material application and its ability to receive the next coat.
   9. Dry to Touch: Time interval between material application and its ability to tolerate a light touch without coating damage.
   10. Drying Time: Time interval between application and material curing.
   11. Exposed Surface: Any indoor or outdoor surface not buried or encased.
   12. Feather Edging: Reducing coating thickness at its edge to blend with existing surrounding coating.
   13. Feathering: Tapering off a wet edge with a comparatively dry brush.
   14. Ferrous: Cast iron, ductile iron, wrought iron, and all steel alloys except stainless steel.
   15. Field Coat: Application of a surface coating system at the work site.
   16. Finish Coat: Final coat in a paint system, including texture, color, smoothness of surface, and other properties affecting appearance.
   17. Hold Point: A defined point, specified in this Section, at which work shall be halted for inspection.
   18. Holiday: A discontinuity, skip, void, or pinhole in coating or coating system film that exposes the substrate.
   19. Honeycomb: Segregated and porous surface of hardened concrete due to insufficient consolidation.
   20. Hydroblast: High or ultra-high-pressure water jet surface preparation.
   21. Immersed/Immersion: A service condition in which substrate is submerged, is immediately above liquids, or is subject to frequent wetting, splashing, or washdown.
   22. Incompatibility: One coating’s inability to overlay another coating or surface as evidenced by bleeding, poor bonding, or lifting of old coating; inability of a coating to bond to a substrate.
   23. Laitance: A thin, weak, brittle layer of cement and aggregate fines on a concrete surface.
   24. Mil: 0.001 inch.
   25. Overspray: Dry spray, particularly paint bonded to an unintended surface.
   26. Pinhole: A small diameter discontinuity in a coating or coating system film, created by offgassing from a void in a concrete or masonry substrate causing

a void between coats or exposing the substrate. Usually caused by coating application while temperature is rising.

27. Pot Life: Time interval after components are mixed and coating can be satisfactorily applied.
28. Prime Coat: First full paint coat applied to a surface when using a multicoat system. Primers adhere to a new substrate, protect the substrate, and promote adhesion of subsequent coats of paint. The prime coat on metal surfaces is the first full coat and does not include solvent wash, grease emulsifiers, or other pretreatment applications.
29. Resurfacer/Resurfacing Material: A layer of cementitious and/or resin-based material used to fill or otherwise restore surface continuity to worn or damaged concrete surfaces.
30. Shelf Life: Maximum storage time a material may be stored without losing its usefulness.
31. Shop Coat: 1 or more coats applied in an off-site shop or plant before shipment to work site where field or finishing coat(s) are applied.
32. Spreading Rate: Area covered by a unit volume of paint at a specific thickness.
33. Stripe Coat: A separate brush coat of paint applied to all weld seams, pits, nuts/bolts/washers, and edges. This coat shall not be applied until previous coats have cured. Once applied, the coat shall be allowed to cure before subsequent coats are applied.
34. System: Protective film with 1 or more coats applied in a predetermined order, including surface preparation and quality control requirements.
35. Thick Film Coating System: A coating system applied with a minimum dry film thickness of 25 mils.
36. Tie Coat: An intermediate coat that bonds different types of paint material, improving succeeding coat adhesion.
37. Touch-Up Painting: Application of paint on previously painted surfaces to repair marks, scratches, and deteriorated or damaged areas to restore the appearance and performance of the coating.
38. Water Blast: An alternative to air abrasive blast cleaning that can be used with or without abrasive injection. Water cleaning at pressures up to 5,000 pounds per square inch is called low-pressure water cleaning or power washing. High-pressure water cleaning uses water pressures between 5,000 and 10,000 pounds per square inch. Water jetting is water blasting with added abrasive at pressures between 10,000 and 25,000 pounds per square inch. Ultra-high-pressure water jetting is water blasting at pressures above 25,000 pounds per square inch.
39. Weld Splatter: Beads of non-structural weld metal that adhere to the surrounding surface, removed as part of surface preparation.

1.04 SUBMITTALS

A. As specified in Section 01330 - Submittal Procedures, submit the following:
   1. Schedule of proposed coating materials.
   2. Schedule of surfaces to be coated with each coating material.
   3. Dehumidification and heating plan.
   4. Product data:
      a. Physical properties of coatings, including the following:
         1) Solids content.
         2) Ingredient analysis.

3) VOC content.
4) Temperature resistance.
5) Typical exposures and limitations.
6) Manufacturer's standard color chips.

b. Compliance with regulatory requirements:
1) VOC limitations.
2) Lead compounds and polychlorinated biphenyls.
3) Abrasives and abrasive blast cleaning techniques and disposal.
4) Methods for tenting blasting areas and methods to protect existing equipment from dust and debris.
5) NSF certification of coatings for potable water supply systems.

c. CSM's current printed recommendations and product datasheets for coating systems, including:
1) Surface preparation recommendations.
2) Primer type.
3) Maximum dry and wet-mil thickness per coat and number of coats.
a) Coating coverage worksheets.
4) Minimum and maximum curing time between coats, including atmospheric conditions for each.
5) Curing time before submergence in liquid.
6) Thinner to be used for each coating.
7) Ventilation requirements.
8) Minimum and maximum atmospheric conditions during which the paint shall be applied.
9) Allowable application methods.
10) Maximum allowable substrate moisture content.
11) Maximum shelf life.
12) Requirements for transportation and storage.
13) Mixing instructions.
14) Shelf life.
15) Material Pot life.
16) Precautions for applications free of defects.
17) Method of application.
18) Drying time of each coat, including prime coat.
19) Compatible prime coats.
20) Limits of ambient conditions during and after application.
21) Required protection from sun, wind, and other conditions.
22) Touch-up requirements and limitations.
23) Minimum adhesion of each system submitted in accordance with ASTM D4541 and ASTM D7234.

d. Samples: Include 8-inch square drawdowns or brushouts of topcoat finish when requested. Identify each sample as to finish, formula, color name and number, sheen name, and gloss units.

e. Affidavits signed by an officer of the CSM’s corporation attesting to full compliance of each coating system component with current federal, state, and local air pollution control regulations and requirements.

f. List of cleaning and thinner solutions allowed by the CSMs.

g. Storage requirements, including temperature, humidity, and ventilation for Coating System Materials as recommended by the CSMs.

h. Thick film coating systems (greater than 25 mils):
    1) CSM's detailed written instructions for coating system treatment and graphic details for coating system terminations in coated structures, including pipe penetrations, metal embedments, gate frames, and other terminations encountered.
    2) Include detail treatment for coating system at concrete joints.
    3) Manufacturer's Representative's (CTR) Field Reports.

5. Quality assurance Submittals:
    a. Quality assurance plan.
    b. Qualifications of CSA, including:
        1) List of Similar Projects.
            a) Name and address of project.
            b) Year of installation.
            c) Year placed in operation.
            d) Point of contact: Name and phone number.
        2) Provide a minimum of 5 project references, each including contact name, address, and telephone number where similar coating work has been performed by their company in the past 5 years.
    c. CSA Reports:
        1) Written daily quality control inspection reports.
    d. CTR Reports:
        1) Reports on visits to project site to view and approve surface preparation of structures to be coated.
        2) Reports on visits to project site to observe and approve coating application procedures.
        3) Reports on visits to coating plants to observe and approve surface preparation and coating application on shop-coated items.

1.05 QUALITY ASSURANCE

A. CSA qualifications:
    1. Minimum of 5 years of experience applying specified type or types of coatings under conditions similar to those of the Work:
        a. Provide qualifications of applicator and references listing 5 similar projects completed in the past 5 years.
    2. SSPC-QP 1 certified.
    3. Manufacturer-approved applicator when manufacturer has approved applicator program or when required in these specifications.

B. CTR qualifications:
    1. Certification, one of the following:
        a. NACE Level 2 or 3 Certified Coating Inspector.
        b. SSPC Level 3 Protective Coatings Inspector.
    2. Minimum of 5 years of experience evaluating application of manufacturer's coatings under conditions similar to those of the Work:
        a. Provide CTR qualifications and references listing 5 similar projects completed in the past 5 years.

C. Regulatory requirements: Comply with governing agencies' regulations by using coatings in accordance with to their VOC limits.
   1. Lead-based coatings are not permitted.
   2. Do not use coal-tar epoxy in contact with drinking water or exposed to ultraviolet radiation.

D. Pre-installation conference: Conduct as specified in Section 01312 - Project Meetings.
   1. Coordinate Hold Point schedule.

E. Field samples:
   1. Prepare and coat a minimum 100-square-foot area of each system between corners or limits such as control or construction joints.
   2. Approved field sample may be part of the Work.

F. Obtain approval before coating other surfaces. Use products by same manufacturer for prime coats, intermediate coats, and finish coats on same surface, unless specified otherwise.

G. CSM services:
   1. CSA shall arrange for CTR to attend pre-installation conferences.
   2. Visit the project site periodically to consult on and inspect specified surface preparation and application Hold Points.
   3. Visit coating plants to observe and approve surface preparation procedures and coating application of items to be shop primed and coated.
   4. CTR shall provide written inspection reports.

H. Quality control requirements:
   1. Contractor shall be responsible for the workmanship and quality of the coating system installation.
      a. Inspections by Owner, Engineer, CSA, or CTR will not relieve or limit Contractor's responsibilities.
   2. In accordance with this specification's requirements and the standards referenced in this Section. Changes in the coating system application requirements will be allowed only with the Engineer's written acceptance.
   3. Specially trained crews with experience applying the specified coating system coating are required for:
      a. Coating application using plural component spray equipment or other specialty equipment.
      b. Coating with specialty linings for severe service conditions, including floor coatings, and with linings for corrosive headspaces or secondary containment areas.
   4. CTR shall specially train personnel for coating systems as specified in Attachment B - Coating Detail Sheets.
      a. CSM shall approve personnel in writing applying the coating system.
   5. Do not use contaminated, outdated, diluted materials, and/or materials from previously opened containers.
   6. Identify inspection access points used by Owner's or Engineer's personnel.
   7. Provide ventilation, ingress, egress, or other means as necessary for Owner's or Engineer's personnel to safely access the work areas.

8. Conduct and continually inspect work so the coating system is installed as specified. CSM shall provide written directions to correct coating work not in accordance with the specifications or is otherwise unacceptable.
9. Provide written daily reports summarizing test data, work progress, surfaces covered, ambient conditions, quality control inspection test findings, and other information pertinent to the coating system application.
    a. Determine relative humidity in accordance with ASTM E337. Confirm other conditions, such as proper protective measures for surfaces not to be coated and safety requirements for personnel.
        1) Measure daily at shift's beginning and end and at intervals not to exceed 4 hours during the shift.
        2) Determine the acceptability of weather and/or environmental conditions within the structure in accordance with the CSM's requirements.
    b. Monitoring surface preparation: Spot check cleanliness, surface profile, and surface pH testing at least 3 times daily. Check each surface at least once. In accordance with:
        1) ASTM D4262.
        2) ASTM D4263.
        3) ASTM D4417.
        4) ICRI 310.2 requirements.
        5) SSPC Surface Preparation Standards.
    c. Confirm that compressed air used for surface preparation or blow-down cleaning is free of oil and moisture.
    d. Monitor surface preparation daily at shift's beginning and end and at intervals not to exceed 4 hours during the shift.
    e. Do not apply coatings when environmental conditions are outside of the CSM's published limits.
    f. Monitoring coatings application: Continuously inspect, measure, and record the wet film thickness and general film quality (visual inspection) for runs, sags, pinholes, holidays, etc., during coating.
        1) Perform WFT measurements in accordance with ASTM D4414.
    g. Post cure evaluation: Measure and inspect the overall dry film thickness on all surfaces.
        1) Conduct a DFT survey and perform adhesion testing, holiday detection, or cure testing as required in this Section and/or the CSM’s written instructions.
        2) Perform applicable tests in accordance with ASTM D4541, ASTM D4787, ASTM D5162, ASTM D7234, SSPC-PA 1, SSPC-PA 2, SSPC-PA 9, and other pertinent standards and recommended practices.

I. Inspection at Hold Points:
    1. Conduct inspections at Hold Points during the coating system application and record the results.
    2. Coordinate Hold Points with the Engineer so the Engineer can observe Contractor’s inspections on a scheduled basis.
    3. Provide the Engineer a minimum of 24 hours of notice before conducting Hold Point Inspections.

4. Hold Points shall be as follows:
    a. Conditions before surface preparation: Before starting surface preparation, observe, record, and confirm that oil, grease, and/or soluble salts are gone from the surface.
    b. Post surface preparation: After completing surface preparation, measure and inspect for cleanliness and proper surface profile as specified in this Section and in the CSM’s written instructions.
    c. Coatings application: At the beginning of any coating system application, measure, record, and confirm acceptability of surface and ambient air temperature and humidity. Inspect applicator's equipment for serviceability and suitability for coatings application.
    d. Post application inspection: Identify defects in application work on all surfaces, including pinholes, holidays, excessive runs or sags, inadequate or excessive film thickness, and other problems.
    e. Follow-up corrective actions and final inspection: Measure and re-inspect corrective coating work performed to repair defects at prior Hold Points and repeat until the surface condition is acceptable. Conduct final visual inspection with follow-up tests, such as holiday detection, adhesion tests, and DFT surveys.
    f. Coatings application: At the beginning of coating system application, measure, record, and confirm acceptability of surface and ambient air temperature and humidity. Inspect applicator's equipment for serviceability and suitability for coatings application.
        1) Observe conditions during the pre-application meeting.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products as specified in the Agreement and Contract RFP in Volumes 1 and 2.

B. Immediately remove unspecified and unapproved coatings from Project site.

C. Deliver new labeled, unopened containers:
    1. Do not deliver materials after manufacturer's expiration date or over 12 months from manufacturing date, whichever is more stringent. Store materials in well-ventilated enclosed structures and protect from weather and excessive heat or cold in accordance with the CSM’s recommendations.
        a. Store flammable materials in accordance with federal, state, and local requirements.
        b. Store rags and cleanup materials appropriately to prevent fire and spontaneous combustion.
    2. Store and dispose of hazardous waste in accordance with federal, state, and local requirements. This requirement specifically applies to waste solvents and coatings.
    3. Container labels shall show the following:
        a. Brand name or product title.
        b. CSM's batch number.
        c. CSM's manufacture date.
        d. CSM's name.
        e. Generic material type.
        f. Application and mixing instructions.

g. Hazardous material identification label.
h. Shelf life expiration date.
i. Color.
j. Mixing and reducing instructions.

4. Clearly mark containers to indicate safety hazards associated with the use of or exposure to materials.

1.07 PROJECT CONDITIONS

A. Apply coatings to dry surfaces.
1. Surface moisture: Comply with manufacturer's requirements or as specified in this Section.
a. Plaster and gypsum wallboard: 12 percent.
b. Masonry and concrete block: 12 percent.
c. Interior located wood: 15 percent.
d. Concrete floors: Moisture vapor transmission rate of no more than 3.0 pounds per 1,000 square feet per 24 hours in accordance with ASTM F1869 or relative humidity no greater than 80 percent if tested in accordance with ASTM F2170 unless the CSM's recommendations are more restrictive.
e. Concrete structures: Negative results from Plastic Sheet Test in accordance with ASTM D4263, and maximum of 80 percent relative humidity in accordance with ASTM F2170.

B. Do not apply coatings when the following conditions exist. If such conditions exist, provide containment, covers, environmental controls, and other necessary measures.
1. During rainy, misty, or damp weather, or to surfaces with frost or condensation.
2. When the surface temperature is below 10 degrees Fahrenheit above the dew point.
3. When ambient or surface temperature:
a. Is less than 55 degrees Fahrenheit unless manufacturer allows a lower temperature.
b. Is less than 65 degrees Fahrenheit for clear finishes unless manufacturer allows a lower temperature.
c. Exceeds 90 degrees Fahrenheit unless manufacturer allows a higher temperature.
d. Exceeds manufacturer's recommendation.
4. When relative humidity is higher than 85 percent.
5. Under dusty or adverse environmental conditions.
6. When light on surfaces measures less than 15 foot-candles.
7. When wind speed exceeds 15 miles per hour.

C. Apply coating only under evaporation conditions rather than condensation.
1. Use dehumidification equipment, fans, and/or heaters inside enclosed areas to maintain required atmospheric and surface temperature requirements for proper coating application and cure.
2. Measure and record relative humidity and air and surface temperatures at the start and end of each shift to confirm proper humidity and temperature levels inside the work area.
a. Submit test results.

D. Continuously ventilate, dehumidify, and heat enclosed spaces with high humidity during surface preparation, coating application, and curing.
   1. Maintain minimum air temperature of 55 degrees Fahrenheit and 10 degrees Fahrenheit above the dew point.
   2. Maintain dew point of at least 10 degrees Fahrenheit less than the temperature of the coldest part of the structure where work is performed.
   3. Reduce dew point temperature in conditioned space by at least 10 degrees Fahrenheit within 20 minutes.
   4. Seal work areas and maintain positive pressure per dehumidification equipment supplier's recommendations.
   5. Maintain these conditions before, during, and after application to ensure proper adhesion and cure of coatings for no less than:
      a. Entire curing period.
      b. 8 hours after coating.

E. Systems:
   1. Site electrical power availability as specified in Section 01500 - Temporary Facilities and Controls.
   2. Internal combustion engine generators may be used.
      a. Obtain required permits and provide air pollution and noise control devices on equipment as required by permitting agencies require.
      b. Comply with state, federal, and local fire and explosion protection measures when locating and operating generator.
      c. Locate engine generator outside hazardous classified areas in accordance with NFPA 820.
      d. Provide daily fuel service for generator for duration of use.
   3. Dehumidification:
      a. Provide desiccant or refrigeration drying.
      b. Use only desiccant types with a rotary desiccant wheel capable of continuous operation.
      c. Liquid, granular, or loose lithium chloride drying systems are not acceptable.
   4. Heating:
      a. Use electric, indirect combustion, or steam coil.
      b. Direct-fired combustion heaters are not acceptable heat sources during abrasive blasting, coating application, or coating cure.
   5. Filters:
      a. Use a filtration system for dust removal designed to not interfere with dehumidification equipment’s ability to control dew point and relative humidity inside the reservoir.
      b. Do not allow air from the working area or dust filtration equipment to recirculate through thein dehumidifier during coating application or when solvent vapors are present.
   6. Design and Submittals:
      a. Prepare and submit dehumidification and heating plan, including all equipment and operating procedures.
      b. Suppliers of services and equipment shall have at least 3 years of experience in similar applications.

F. Provide containment and ventilation system components in accordance with SSPC-Guide 6, Level 3 and as required for hazardous materials.

1.08 MAINTENANCE

A. Provide table of products applied organized by surface type. List coating manufacturer, color, color formulation, distributor name, telephone number, and address.

B. Provide extra materials:
   1. Minimum 1 gallon of each type and color of coating applied or provide additional quantities if specified in the Contract Documents:
      a. Deliver unopened factory-labeled cans when manufacturer packages material in gallon cans.
      b. Deliver material in new gallon containers, properly sealed and identified with permanently affixed, durable, printed labels indicating brand, type, and color, when manufacturer does not package material in gallon cans, deliver.

1.09 CTR RESPONSIBILITIES

A. General:
   1. Attend pre-installation conference.
   2. Perform onsite application training.
   3. Periodically inspect coating system application.

B. Coating system installation training:
   1. Provide a minimum of 8 hours of classroom and off-site training for application personnel and supervisory personnel in one of the following ways:
      a. Train a minimum of 2 supervisory personnel and 2 application personnel.
      b. Submit a letter from the CSM stating that CSM approves the supervisory and application personnel, listed by name and responsibility, and no additional training is required.
   2. CTR can train up to 14 application personnel and 3 supervisory personnel at a time.
   3. Minimum training requirements:
      a. Explain in detail the mixing, application, curing, and termination requirements.
      b. Provide hands-on demonstration of coating system mixing.
      c. Explain in detail the ambient condition requirements for temperature and humidity.
      d. Explain in detail the surface preparation requirements.
      e. Explain in detail the re-coat times, cure times, and related ambient condition requirements.
      f. Write a letter stating that training was satisfactorily completed by the personnel, listed by name and responsibility.
   4. Provide special training as specified in the Coating Detail Sheets.

C. Coating system inspection:
   1. CTR inspection is in addition to the CSA's inspection as specified in this Section.
   2. Be on-site to oversee:
      a. Coating application at least once a week.
      b. End of surface preparation.
      c. During coating application.

d. Post-cure inspection.

3. Routinely inspect and verify in writing that application personnel have successfully performed surface preparation, filler/surfacer application, coating system application, and Quality Control Inspection in accordance with this Section and to warrantable quality.
4. Perform the following activities to confirm conformance with the specifications:
   a. Inspect ambient conditions during coating system installation at Hold Points for conformance with the specified requirements.
   b. Inspect each coated surface type and coating system applied to verify the following:
      1) Cleanliness.
      2) Surface pH for concrete substrates.
      3) Confirm surface preparation of substrates where coating system will terminate or will be applied for conformance to the specified application criteria.
   c. Verify surface profile of substrates by completing the following:
      1) Inspect preparation and application of coating detail treatment at terminations, transitions, metal embedments in concrete, and joints and cracks in substrates.
      2) Inspect application of filler/surfacer materials for concrete and masonry substrates.
      3) Verify proper mixing of coating materials.
      4) Inspect application of primers and finish coats, including wet and dry film thickness.
      5) Inspect coating systems for proper cure times and conditions.
   d. Review adhesion testing of cured coating systems.
   e. Review coating system continuity testing.
   f. Inspect and record representative-localized repairs.
   g. Conduct final review of completed coating system installation.
   h. Prepare and submit site visit reports after each site visit to document that the coating work is in accordance with the CSM's Recommendations.

D. Final report:
   1. Prepare a final report, after coating work ends, summarizing each day's test data, observations, drawings, and photographs.
      a. Include substrate conditions, ambient conditions, and application procedures observed during the CTR's site visits.
      b. Include a statement that completed work was performed in accordance with the requirements of the CSM's recommendations.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Coating materials shall be formulated for environments encountered in water and wastewater treatment processes.

B. Coating materials that come in contact with water distributed as potable water shall be certified in accordance with NSF 61.

2.02 MATERIALS

A. General:
   1. Product requirements: As specified in the Agreement and Contract RFP in Volumes 1 and 2.

2.03 COATING SYSTEMS IDENTIFICATION

A. Naming conventions: Coating Systems Identifications contain the elements defined in Table 1.

Table 1. Coating System Identification Elements

First Element	**-**	**Second Element**	**-**	**Third Element**	**-**	**Fourth Element (optional)**
3 or 4 alpha characters		1-3 alpha characters		1 number		3 or 4 alpha characters
Coating Type		Substrate		System Number		Additional Substrate or Special Condition
Example: EPX	-	C	-	6	-	BSC

1. First element identifies the coating type using the following abbreviations:
   a. ACR: Acrylic.
   b. CTE: Coal tar epoxy.
   c. ELA: Elastomeric acrylic.
   d. EPU: Epoxy-polyurethane.
   e. EPX: Epoxy.
   f. POL: Polyurethane.
   g. SIL: Silicone.
   h. SILX: Siloxane or silane.
   i. VE: Vinyl ester.
2. Second element identifies the substrate using the following abbreviations:
   a. C: Concrete or masonry.
   b. F: Concrete flooring.
   c. FRP: Fiber-reinforced plastic.
   d. GM: Galvanized metal.
   e. M: Metal.
   f. PVC: Polyvinyl chloride, chlorinated polyvinyl chloride.
3. Third element identifies the sequential system number.
   a. For example, EPX-C-2 is the second standard epoxy coating system for concrete substrates.
4. Fourth element is optional and identifies the additional substrate or special condition with the following abbreviations:
   a. PWS: Potable water service applications (NSF-61 approved).
   b. BSC: Biogenic sulfide corrosion-resistant applications in wastewater.
   c. BG: Below grade or buried.
   d. OZ: Organic zinc primer, epoxy polyurethane system.
   e. SC: Secondary containment.

2.04 PRODUCTS FOR COATING SYSTEMS

A. Products: As specified in Attachment B - Coating Detail Sheets.

B. Cleaning solvents:
   1. Requirements for solvent wash, solvent wipe, or cleaner used, including, but not limited to, those used for surface preparation in accordance with SSPC-SP 1:
      a. Emulsifying type.
      b. Containing no phosphates.
      c. Biodegradable.
      d. Does not damage zinc.
      e. Compatible with the specified primer.
      f. Complying with applicable air-quality control board requirements.
   2. Use clean white cloths and clean fluids in solvent cleaning.

PART 3 EXECUTION

3.01 GENERAL PROTECTION REQUIREMENTS

A. Protect adjacent coated surfaces from coatings and damage associated with coating work. Repair damage resulting from inadequate or unsuitable protection.

B. Use drop cloths and other coverings to protect adjacent surfaces not to be coated against spatter and droppings.

C. Mask off surfaces of items not to be coated or remove items from area.

D. Furnish and deploy sufficient drop cloths, shields, and protective equipment to prevent spray or droppings from fouling surfaces not being coated and, in particular, surfaces within storage and preparation areas.

E. Place coating waste, cloths, and material that may pose a fire hazard in closed metal containers and remove daily from site.

F. Remove electrical plates, surface hardware, fittings, and fasteners before coating application.
   1. Carefully store, clean, and replace items after completing coating in each area.
   2. Do not use solvent or degreasers to clean hardware that may remove permanent lacquer finishes.

G. Erect and maintain protective enclosures in accordance with SSPC-Guide 6.

H. Protect the following surfaces from abrasive blasting by masking or by other means:
   1. Threaded portions of valve and gate stems, grease fittings, and identification plates.
   2. Machined surfaces for sliding contact.
   3. Surfaces to be assembled against gaskets.
   4. Surfaces of shafting where sprockets will be fit.
   5. Surfaces of shafting where bearings will be fit.
   6. Machined bronze surfaces, including slide gates.
   7. Cadmium-plated items, except cadmium-plated, zinc-plated, or sherardized fasteners used to assemble equipment requiring abrasive blasting.
   8. Galvanized items, unless scheduled to be coated.

I. Protect installed equipment, mechanical drives, and adjacent coated equipment from abrasive blasting to prevent damage caused by spent abrasive blast media, dust, or dirt entering such equipment.

J. Schedule cleaning and coating to keep dust and spray from the cleaning process from falling on wet, newly coated surfaces.
   1. Whenever possible, coordinate with other trades and complete surface preparation and coating work before installing hardware, hardware accessories, nameplates, data tags, electrical fixtures, and similar uncoated items that will be in contact with coated surfaces. Mask machined surfaces, sprinkler heads, and other small items that will not be coated.
   2. After completing coating, reinstall removed items.
   3. Disconnect and move equipment adjacent to walls to clean and coat equipment and walls. Replace and reconnect equipment after coating.

3.02 GENERAL SURFACE PREPARATION REQUIREMENTS

A. Prepare surfaces in accordance with CSM's instructions unless more stringent requirements are specified in this Section.

B. Coating detail sheets in Attachment B - Coating Detail Sheets include additional surface preparation requirements.

C. Follow more stringent requirement if information conflicts.

D. Where required by the Owner’s representative, a NACE International certified coatings inspector, provided by the Engineer, will inspect and approve surfaces to be coated before applying a coating.
   1. CSA shall coordinate coating inspections.
      a. Identify coating inspection Hold Points during the pre-installation conference.
      b. Provide at least 2 days' notice before inspection.
   2. Correct surface defects identified by the inspector at no additional cost to the Owner.

3.03 MECHANICAL AND ELECTRICAL EQUIPMENT PREPARATION

A. Identify equipment, ducting, piping, and conduit as specified in Section 15050 - Common Work Results for Mechanical Equipment, Section 15076 - Pipe Identification, and Section 16075 - Identification for Electrical Systems.

B. Remove grilles, covers, and access panels for mechanical and electrical system and coat separately.

C. Prepare and finish coat equipment primed by the manufacturer using specified intermediate and top coats, as applicable, and color selected by the Owner.

D. Prepare, prime, and coat both insulated and bare pipes, conduits, boxes, insulated and bare ducts, hangers, brackets, collars, and supports, except where items are covered with material not requiring coating, or with a prefinished coating.

E. Replace identification markings on mechanical or electrical equipment when coated over or spattered.

F. Prepare and coat interior surfaces of air ducts and convector and baseboard heating cabinets visible through grilles and louvers with 1 coat of flat black paint to limit of sight line.

G. Prepare and coat dampers exposed immediately behind louvers, grilles, and convector and baseboard heating cabinets to match face panels.

H. Prepare and coat exposed conduit and appurtenances occurring in finished areas with color and texture to match adjacent surfaces.

I. Prepare and coat sides' front, back, and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.

J. Color code equipment, piping, conduit, and exposed ductwork and apply color banding and identification, such as flow arrows, naming, and numbering, in accordance with the Contract Documents.

3.04 CLEANING OF NEW AND PREVIOUSLY COATED OR NEW SURFACES

A. Utilize cleaning agent to remove soluble salts, such as chlorides, from concrete and metal surfaces:
   1. Cleaning agent: Biodegradable non-flammable and containing no VOC.
   2. Manufacturers: The following or equal:
      a. CHLOR*RID International, Inc.
         1) Complete soluble salt removal with steam or warm water cleaning.
   3. Steam clean and degrease surfaces to be coated to remove oils and grease.
   4. Clean surfaces with decontamination agent in conjunction with abrasive blast cleaning, steam cleaning, high-pressure washing, or hand washing, as approved by the CTR and the Engineer.
   5. Test cleaned surfaces to ensure removal of soluble salts. Carry out additional cleaning as needed.
   6. Complete final surface preparation before applying new coating system in strict accordance with CSM's printed instructions.

3.05 BLAST CLEANING

A. Surface preparation requirements:
   1. Do not reuse spent blast abrasive.
   2. Ensure that filter compressed air used for blast cleaning is free of condensed water and oil.
      a. Clean moisture traps at least once every 4 hours or more frequently, as required, to prevent moisture from entering the abrasive blasting equipment air supply.
      b. Check blast air for moisture and oil after each cleaning in accordance with ASTM D4285.
   3. Install oil separators just downstream of compressor discharge valves and at the discharge point of blast pot discharges. Check separators on the same frequency as the moisture traps.

4. Keep regulators, gauges, filters, and separators on compressor air lines to blasting nozzles operational at all times.
5. Install an air dryer or desiccant filter drying unit to dry the compressed air before blast pot connections. Use and maintain the dryer throughout surface preparation work.
6. Use a venturi-type, or other high velocity-type, abrasive blast nozzles supplied with at least 100 pounds per square inch gauge air pressure at the nozzle and enough volume to obtain appropriate blast cleaning production rates and surface cleanliness.
7. Provide airborne particulate evacuation and filtering that meets OSHA safety standards. Maintain optimal visibility both to clean and provide the specified surface profile and to allow inspection of the substrate during surface preparation work.
8. If prepared and cleaned metallic substrates become contaminated between final surface preparation work and coating system application, or if the prepared substrate darkens or changes color, re-clean by water blasting, or abrasive blast cleaning as appropriate until the specified degree of cleanliness is restored.

B. Water jetting or water blasting:
1. Use water jetting or water blasting for recoating or relining where an adequate surface profile exists.
2. Perform water jetting or water blasting in accordance with SSPC-SP 13 and SSPC-WJ-1, WJ-2, WJ-3, WJ-4.

3.06 PREPARATION REQUIREMENTS FOR CONCRETE SURFACES

A. Cure for at least 28 days before coating.

B. Remove degraded concrete using abrasive blast cleaning or high or ultra-high-pressure water jetting, chipping, or other abrading tools until achieving a sound, clean substrate. Remove bruised or cracked concrete.

C. Prepare substrate cracks and areas requiring resurfacing; perform detail treatment, including, but not limited to, terminating edges in accordance with the CSM's recommendations, and as indicated on the Drawings.
1. Prepare concrete surfaces in accordance with SSPC-SP 13.

D. Prepare concrete surfaces in accordance with SSPC-SP 13.
1. Inspect concrete surfaces to select appropriate surface preparation method to provide a suitable substrate for the specified coating system.
2. Use blast cleaning or other means to expose the complete perimeter of air voids or bug holes. Do not leave shelled over, hidden air voids beneath the exposed concrete surface.
3. Repair concrete defects and physical damage.
4. Clean concrete surfaces of dust, mortar, formwork, fins, loose concrete particles, form release materials, oil, and grease.
5. Fill voids to provide surface as specified in Section 03366 - Concrete Finishes.

E. Provide clean substrate visually free of calcium sulfate, loose, coarse, or fine aggregate, laitance, loose hydrated cement paste, and otherwise harmful substances.
   1. Confirm concrete surface minimum pH of 9.0 with surface pH testing.
   2. If after surface preparation the surface pH remains below 9.0, perform additional water blasting, cleaning, or abrasive blast cleaning until additional pH testing indicates an acceptable pH level.

F. Prepare concrete surface for coating in accordance with SSPC-SP 13.
   1. Provide ICRI 310.2 minimum No. 3 concrete surface profile (CSP) or as specified on Coating Detail Sheets.
   2. Evaluate profile of the prepared concrete using ICRI 310.2 surface profile replicas.

G. Blast clean cementitious repair mortars or grouts to the same profile and degree of cleanliness requirements required for concrete substrates.

H. Blast clean polymer-based surfacers or waterborne modified cementitious surfaces only if they have exceeded the CSM's recommended recoat time.

I. Vacuum concrete surfaces before coating application, leaving a dust free, sound concrete substrate.
   1. Thoroughly clean concrete surfaces to be coated to remove loose dirt and spent abrasive.
   2. Remove debris produced by blast cleaning from the structures to be coated, and legally dispose of it off-site.

J. Test moisture content of concrete to be coated:
   1. Conduct ASTM D4263 plastic sheet test at least once for every 500 square feet of surface area to be coated.
      a. Any moisture on plastic sheet after test period constitutes a non-acceptable test, and the concrete must be dried further.
   2. Conduct ASTM F1869 test at least once for every 1,000 square feet of concrete floor surface area to be coated.
   3. Conduct ASTM F2170 one relative humidity moisture test at least once for each 500 square feet of non-floor concrete surface area where the opposite side is exposed to soil or water.
      a. Waterproof surfaces exposed to soil or water.
   4. Comply with specified minimum moisture content and CSM’s written recommendations for moisture vapor transmission rates or relative humidity values.

K. Masonry surfaces:
   1. Cure for at least 28 days before coating.
   2. Prepare masonry surfaces to remove chalk, laitance, loose dirt, dried mortar splatter, dust, peeling, or loose existing coatings, or otherwise deleterious substances to leave a clean, sound substrate.
   3. Wash and scrub masonry surfaces with clear water. Do not use muriatic acid.
   4. Seal or fill masonry surfaces with a sealer or block filler compatible with the specified primer after cleaning.

5. Confirm that masonry surfaces are dry before coating application.
    a. If using pressure washing or low-pressure water blast cleaning for preparation, allow the masonry to dry for at least 5 days under dry weather conditions or until the minimum ambient temperature is 70 degrees Fahrenheit before coating.

3.07 GENERAL PREPARATION REQUIREMENTS FOR METALLIC SURFACES

A. Remove rust, scale, and welding slag and spatter.
    1. Remove and grind smooth excessive weld material and weld spatter on metal surfaces before blast cleaning in accordance with NACE SP0178, Appendix C, Level C.
    2. Grind sharp edges on metal substrate to approximately 1/16-inch radius before abrasive blast cleaning.

B. Prepare metallic surfaces in accordance with applicable portions of surface preparation specifications of the SSPC specified for each coating system.
    1. Remove grease and oil in accordance with SSPC-SP 1.
    2. Use solvent as recommended by the CSM.
    3. Measure profile depth of the surface to be coated in accordance with Method C of ASTM D4417. Select blast particle size and gradation to produce the specified surface profile.
    4. Constantly monitor and maintain ambient environmental conditions to ensure cleanliness and that no “rust back” occurs before coating material application.

C. Prepare metallic surfaces by blast cleaning in accordance with SSPC-VIS 1 (ASTM D2200). Prepare abrasive blast representative areas for the Owner's representative to inspect on the first day of cleaning.

D. Unless otherwise specified, the requirements for blast cleaning steel, ductile iron, and stainless steel substrates are as follows:
    1. Ferrous metal surfaces not to be submerged: Abrasive blast in accordance with SSPC-SP 10 unless blasting may damage adjacent surfaces, is prohibited, or is specified otherwise. Where abrasive blasting is not possible, clean surfaces to bare metal with power tools in accordance with SSPC-SP 11.
    2. Ferrous metal surfaces to be submerged: Abrasive blast in accordance with SSPC-SP 5, unless specified otherwise, to clean and provide roughened surface profile with a depth between 2 and 4 mils.
    3. Remove traces of grit, dust, dirt, rust scale, friable material, loose corrosion products, or embedded abrasive from substrate before coating application.
    4. When abrasive blasted surfaces rust or discolor before coating, abrasive blast clean surfaces again.

E. Field preparation of shop-primed surfaces:
    1. Smooth welds and prominences with power tools before applying field-applied coatings.
    2. Clean and dry shop-primed ferrous metal surfaces and fabricated assemblies before applying field coats.

3. Prepare shop epoxy primed surfaces with light abrasive blasting or abrading and then vacuum before applying finish coats.
    a. Follow CSM instructions for surface preparation when the primer recoat limit has been exceeded.
4. Non-immersion service: Clean in accordance with SSPC-SP 2 (Hand Tool Cleaning) or SSPC-SP 3 (Power Tool Cleaning) and uniformly roughen.
5. Immersion, BSC, and SC service: Remove shop primer in accordance with SSPC-SP 5 (Near-White Blast Cleaning).

F. Damaged shop primer or rust bleeding:
1. Ferrous metals: Clean in accordance with SSPC-SP 1 (Solvent Cleaning) and spot blast in accordance with SSPC-SP 10 (Near-White Metal Blast Cleaning) to achieve a uniform surface profile between 2.0 and 2.5 mils before recoating.
2. Reject galvanized steel with rust bleeding.

G. Damaged coating: Repair by abrasive blast cleaning surfaces as specified for the coating system; feather to a smooth transition before touching up.

3.08 PREPARATION REQUIREMENTS BY SURFACE TYPE

A. Galvanized steel and non-ferrous metal surfaces:
1. Degrease or solvent clean (SSPC-SP 1) to remove oily residue.
2. Abrasive blast clean in accordance with SSPC-SP 16.
    a. If abrasive blast cannot be performed, abrade in accordance with SSPC-SP 3 (Power Tool Cleaning).
3. Apply metal pretreatment within 24 hours before coating galvanized surfaces that cannot be thoroughly abraded, such as bolts, nuts, or preformed channels.
4. Test surface for contaminants using copper sulfate solution.

B. Stainless-steel surfaces:
1. Abrasive blast clean in accordance with SSPC-SP 16 to leave a clean, uniform appearance with surface profile between 1.5 and 2.5 mils.

C. Ductile iron pipe and fittings to be lined or coated: Abrasive blast clean in accordance with NAPF 500-03.

D. Sherardized, aluminum, copper, and bronze surfaces:
1. Abrasive blast clean in accordance with SSPC-SP 16.
2. Prepare in accordance with CSM's instructions.

E. Cadmium-plated, zinc-plated, or sherardized fasteners:
1. Abrasive blast in the same manner as uncoated metal when assembling equipment designated for abrasive blasting.

F. PVC and FRP surfaces:
1. Lightly sand surfaces to be coated.
    a. Sand to remove gloss and establish uniform surface profile.
2. Vacuum to remove loose dust, dirt, and other materials.
3. Solvent clean with clean white rags and allow solvent to evaporate completely before applying coating materials.

3.09 APPLICATION REQUIREMENTS

A. Apply coatings in accordance with manufacturer's instructions.

B. Empty aboveground piping to be coated of contents when applying coatings.

C. Mechanical equipment shop primed by the manufacturer.
   1. Pumps and valves: Shop coat with manufacturer's highest quality coating system meeting the project specifications.
      a. Provide CTR shop coating reports.
   2. Non-immersed equipment: Touch up shop primer, and coat in the field with specified coating system after installation.
      a. If project requires equipment removal and reinstallation, complete touch-up coating after final installation.
   3. Immersed equipment not shop coated: Remove shop primer before surface preparation and field apply coating.

D. Verify surface preparation immediately before applying coating in accordance with SSPC-SP COM and the SSPC visual standard for the specified surface preparation method.

E. Allow surfaces to dry, except where coating manufacturer requires surface wetting before coating.

F. Wash coat and prime sherardized, aluminum, copper, and bronze surfaces, or prime with manufacturer's recommended special primer.

G. Do not apply coatings to a surface until it has been prepared as specified.

H. Use equipment designed to apply materials specified.
   1. Use compressors with moisture traps and filters that remove water and oils from the air.
      a. Perform a paper blotter test at the Engineer's request to verify air is sufficiently free of oil and moisture. Do not allow the amount of oil and moisture to exceed CSM-recommended amount.
   2. Equip spray equipment with properly sized mechanical agitators, pressure gauges, pressure regulators, and spray nozzles.

I. Where 2 or more coats are required, tint prime coat intermediate coats as necessary to distinguish each coating and to help indicate coverage.
   1. Do not use color additives with chromium, lead or lead compounds that hydrogen sulfide, other corrosive gases, might destroy or alter. Apply the specified number of coats.

J. Apply coating by brush, roller, trowel, or spray unless a specific application method is required by coating manufacturer's instructions or these Specifications.
   1. Apply primer or first coat by brush to power tool cleaned ferrous surfaces.
   2. Brush or spray-apply coats for blast-cleaned ferrous surfaces and subsequent coats for non-blast cleaned ferrous surfaces.
   3. After prime coat dries, mark, repair, and retest pinholes and holidays before intermediate or top coats are applied.

K. Spray application:
    1. With a brush, stripe coat edges, welds, corners, nuts, bolts, and difficult-to-reach areas, as necessary, before spray application to ensure specified coating thickness along edges.
    2. When using spray application, apply each coat to thickness no greater than recommended in coating manufacturer's instructions.
    3. Use airless spray method unless air spray method is required by CSM's instruction or these Specifications.
    4. Conduct spray coating under controlled conditions. Protect adjacent construction and property from coating mist, fumes, or overspray.

L. Lightly sand and thoroughly clean surfaces to receive high-gloss finishes unless CSM instructs otherwise.

M. Remove dust on coatings between coats.

N. Shop and field coats:
    1. Prime coat: Shop-apply or field-apply prime coats as specified. Use shop-applied primer compatible with the specified field coating system and apply at the minimum dry film thickness recommended by the finish coat CSM.
        a. Provide datasheets identifying the shop primer to on-site coating application personnel.
        b. Perform adhesion tests on the shop primer.
        c. Remove and recoat damaged, deteriorated, and poorly applied shop coatings.
        d. If shop primer coat meets this Section's requirements, spot prime exposed metal of shop-primed surfaces before spray applying primer over the entire surface.
    2. Field coats: Apply field coats with 1 or more prime coats and finish coats to build up coating to dry film thickness specified for the coating system.
        a. Do not apply finish coats until other work in the area is complete and previous coats are inspected.
    3. Adhesion confirmation: Perform adhesion tests after proper coating cure in accordance with ASTM D3359. Demonstrate that:
        a. Prime coat adheres to the substrate.
        b. Coatings adhere to the prime and intermediate coats.
            1) Coating 5 mils or more DFT: Achieve adhesion test result of 5A on immersed surfaces and 4A or better on other surfaces.
            2) Coating less than 5 mils DFT: Achieve adhesion test results of 5B on immersed surfaces and 4B or better on other surfaces.

O. Brush, roll, trowel, or spray and back roll coats for concrete and masonry.

P. Plural component coating application:
    1. Premix contents of component drums if required by the CSM each day.
    2. Before starting application:
        a. Verify gauges are working properly.
        b. Complete ratio checks.
        c. Sample the mix on plastic sheeting to ensure set time is appropriate and complete.
        d. Label and retain spray samples. Submit to Engineer when requested.

Q. Drying and recoating:
   1. Provide fans, heating devices, or other means to prevent condensate or dew on substrate surface or between coats and during curing after applying the last coat.
   2. Allow each coat to cure or dry thoroughly, in accordance with if required in CSM's printed instructions, before recoating.
   3. Use CSM's printed instructions and the requirements specified in this Section to determine minimum required drying time.
      a. Do not allow excessive drying time or exposure, which may impair bond between coats.
      b. Recoat coatings within time limits recommended by CSM.
      c. If time limits are exceeded, abrasive blast clean and de-gloss clean before applying another coat.
   4. If limitations on time between abrasive blasting and coating are not met before attaching components to surfaces that cannot be abrasive blasted, coat components before attachment.
   5. Ensure primer and intermediate coats of coating are unscarred and completely integral when applying each succeeding coat.
   6. Touch up suction spots between coats and apply additional coats where required to produce finished surface of solid, even color, free of defects.
   7. Leave no holidays. Repair holidays in accordance with the requirements on pertinent Coating Detail Sheets or as recommended by the CSM.
   8. Sand and feather into a smooth transition and recoat scratched, contaminated, or otherwise damaged coating surfaces so repairs are invisible to the naked eye.

R. Workmanship:
   1. Ensure that coated surfaces are free from runs, drips, ridges, waves, laps, and brush marks. Coats shall be applied to produce a smooth, even film of uniform thickness completely coating corners and crevices.
   2. Coat surfaces without drops, overspray, dry spray, excessive runs, ridges, waves, holidays, laps, or brush marks.
   3. Remove splatter and droppings after coating work is completed.
   4. Evenly apply each coat of material and sharply cut to a line created with masking tape or other suitable materials.
   5. Avoid over spraying or spattering paint on surfaces not to be coated. Protect glass, hardware, floors, roofs, vehicles, and other adjacent areas and installations by taping, drop cloths, or other suitable measures.
   6. When coating complex steel shapes, stripe coat welds, edges of structural steel shapes, metal cut-outs, pits in steel surfaces, or rough surfaces with the primer before overall coating system application.
      a. Brush apply stripe coat to ensure proper coverage.
      b. Do not stripe coat with spray or roller.
   7. Ensure that finish coat, including repairs, has a uniform color and gloss.

S. Coating properties, mixing, and thinning:
   1. Thin prime coat and apply as recommended by the CSM. Thinned coating must comply with prevailing air pollution control regulations.
   2. If maximum recoat time is exceeded, prepare surface with solvent washing, light abrasive blasting, or other procedures in accordance with CSM's instructions.

3. Allow adequate drying time between coats as instructed by the CSM, adjusted as necessary for the site conditions.
4. Ensure that coatings, when applied, provide a satisfactory film and a smooth even surface. Lightly sand glossy undercoats to provide a surface suitable for proper application and adhesion of subsequent coats. Thoroughly stir and strain coating materials during application and maintain uniform consistency.
5. Mix coatings with 2 or more components in accordance with CSM's instructions.
6. Where necessary to suit conditions of the surface, temperature, weather, and method of application, thin the coating in accordance with CSM's recommendations.
    a. Ensure that volatile organic content (VOC) of the thinned coating complies with prevailing air pollution control regulations.
    b. Thin coatings to only what is necessary to obtain proper application characteristics.
    c. Use a thinner recommended by the CSM.

T. Film thickness and continuity:
1. Apply coating to the specified thicknesses.
    a. Apply additional coats when necessary to achieve specified thicknesses, especially at edges and corners.
2. Verify WFT of the coating system first coat and after applying each subsequent coat.
3. Do not allow the minimum thickness at any point to deviate more than 25 percent from the required average.
4. Do not allow the surface area covered per gallon of coating for various types of surfaces to exceed those recommended by the CSM.
    a. Provide coating coverage worksheets listing the maximum and minimum coverage for each unit volume of coating for concrete surfaces.
5. Apply additional coats to achieve the specified dry film thickness if brush or roller application methods cannot achieve the specified film thicknesses per coat.

U. Protecting coated surfaces:
1. Do not handle, work on, or otherwise disturb coated items until the coating is completely dry and hard.
2. After installation, recoat shop-coated surfaces with specified coating system as necessary to match surrounding surfaces, and to coordinate with the specified color identification requirements.

V. Special requirements:
1. Before erection, apply all but the final finish coat to interior surfaces of roof plates, roof rafters and supports, pipe hangers, piping in contact with hangers, and contact surfaces inaccessible after assembly. Apply final coat after erection.
2. Coat structural slip-critical connections and high strength bolts and nuts after erection.
3. Areas damaged during erection:
    a. Prepare surface for spot repairs as specified for the coating system.
    b. Recoat with prime coat before applying subsequent coats.
    c. Touch up surfaces after installation.
    d. Clean and dry surfaces to be coated at time of application.

4. Coat underside of equipment bases and supports not galvanized with at least 2 coats of primer specified before setting the equipment in place.
5. Coat aluminum in contact with concrete.

3.10 APPLICATION REQUIREMENTS FOR CONCRETE COATING SYSTEMS

A. Apply filler/surfacer as recommended by CSM to fill bug holes and air voids in concrete or block texture in CMU, leaving a uniformly filled surface that does not produce blowholes or outgassing causing the coating system to pinhole.
   1. Allow filler/surfacers to cure sufficiently before applying prime coat as required by the CSM. Use the CSM-recommended drying time between coats.

B. Apply surfacer or filler and let dry before coating application.
   1. Use the drying time between filler/surfacer and coating system specified by the CSM for the site conditions.
      a. Let concrete substrate dry before applying filler/surfacers or coating system materials.
   2. If the maximum recoat time is exceeded, prepare surfaces by solvent washing, light abrasive blasting, and other procedures in accordance with CSM's instructions.
   3. Apply a complete parge coat of the specified filler/surfacer material over the entire substrate before applying the coating system.
      a. Scrub filler/surfacer into the substrate to completely fill open air voids and bug holes.
      b. Completely cover the substrate, unless otherwise specified, above such filled voids by 1/8 inch of thickness.
      c. Provide relatively flat, uniformly even surface before coating application.
   4. Secondary containment: Place surfacer or filler 1/16-inch thick above concrete plane to create a monolithic surface free of pinholes.
      a. Floor surfaces: Broadcast with aggregate to create a non-slip surface texture.
      b. Remove excess aggregates and apply base coat to encapsulate embedded non-slip aggregate.

C. Concrete substrate temperatures:
   1. Apply filler/surfacers and the coating system when temperatures are falling, typically late afternoon or evening.
      a. Do not coat concrete with rising concrete substrate surface temperatures or substrates in direct sunlight, to minimize outgassing from the substrate and formation of pinholes, and/or blistering.
   2. Should bubbles, pinholes, or other discontinuities form in the applied coating system material, they shall be repaired.
      a. Should discontinuities develop in the filler/surfacer material or in the first coat of the coating material, repair them before the next coat.
      b. When discontinuities occur, open the air void behind or beneath the discontinuities and completely fill with specified coating material. Then, abrade the coated area around the discontinuities repair reapply coating over that area.

D. Perform application detail work in accordance with these Specifications, the CSM’s current written recommendations, and Drawings, whichever is stricter.

E. Concrete coating systems application requirements:
   1. Concrete coating minimum dry film thickness excludes parge coat, block filler, and sealer.

3.11 COATING SYSTEM SCHEDULE

A. Attachment A - Schedule of Surfaces to be Coated specifies surfaces to be coated in the field with the coating systems required.

3.12 SURFACES NOT REQUIRING COATING

A. Stainless steel piping, valves, pipe supports, instrument sunshades.

B. Sliding surfaces on expansion joints, motor and pump shafts, machined surfaces at bearings and seals, grease fittings, etc.

C. Galvanized structural steel framing, galvanized roof decking, galvanized pipe supports.

D. Copper and brass pipe, fittings, valves, etc.

E. Bronze valves, bearings, bushings, and fasteners.

F. Corrosion resistant special alloys: Inconel, Alloy 20, Hastelloy, etc.

G. Exterior concrete.

H. Plastic surfaces except coat PVC, CPVC, and other plastic piping system exposed to sunlight.

I. Buried piping that is encased in concrete or cement mortar.

3.13 QUALITY CONTROL

A. Owner-provided inspection or inspection by others does not limit the Contractor's or CSA's responsibilities for quality workmanship or quality control as specified or as required by the CSM's instructions. Owner inspection is in addition to any inspection required of the Contractor.

B. Owner may perform, or contract with an inspection agency to perform, quality control inspection and testing of the coating work covered by this Section. These inspections may include the following:
   1. Inspect materials upon receipt to ensure that the CSM supplied them.
   2. Verify that specified storage conditions for the coating system materials, solvents, and abrasives are provided.
   3. Inspect and record findings for substrate cleanliness.
   4. Inspect and record pH of concrete and metal substrates.
   5. Inspect and record substrate profile (anchor pattern).
   6. Measure and record ambient air and substrate temperature.
   7. Measure and record relative humidity.
   8. Check for substrate moisture in concrete.

9. Verify that mixing of coating system materials is in accordance with CSM's instructions.
10. Inspect, confirm, and record that coating system materials' "pot life" is not exceeded during installation. Inspect to verify that recoat limitations for coating materials are not exceeded.
11. Perform adhesion testing.
12. Measure and record the coating system's thickness.
13. Verify proper curing of the coating system in accordance with the CSM's instructions.
14. Holiday or continuity testing in accordance with NACE SP0188 for coatings that will be immersed or exposed to aggressively corrosive conditions.

C. Perform holiday testing in accordance with NACE SP0188 to identify holidays or pinholes needing repair for coating over 100 percent of surfaces:
   1. Coated steel that will be immersed or exposed to aggressively corrosive conditions.
   2. Coated concrete.
   3. Perform holiday tests after proper application and coating system cure.

3.14 CORRECTIVE MEASURES

A. Repair pinholes or holidays identified by Holiday Testing as follows:
   1. Remove the coating system with a grinder or other suitable power tool.
   2. Remove coating system at pinholes and holidays at least 2 inches diameter around the defect back to expose substrate.
   3. Concrete voids: Chip back to expose entire cavity in all directions.
      a. Completely fill void with approved filler/surfacer material using a putty knife or other suitable tool and strike off. Cure in accordance with CSM's recommendations.
   4. Aggressively abrade or sand the intact coating system surface at least 3 inches beyond the removal area in all directions to produce a uniform 6- to 8-mil profile in the intact coating system.
   5. Vacuum the prepared area to remove dust, dirt, etc., leaving clean, sound surfaces.
   6. Tape to mask the periphery of the prepared intact coating area to prevent coating repair application onto the prepared area.
   7. Apply the coating system with enough coats to achieve the specified finish coat thickness over the defect and coating removal area. Feather the coating onto the abraded coated surfaces around the removal area to avoid a lip and to achieve a neat repair outline.
   8. Follow curing time between coats as specified by CSM for the site conditions. Solvent wash and abrasive blast in accordance with CSM's instructions if the maximum recoat time is exceeded.
   9. Apply coating at specified dry film thickness.

3.15 CLEANUP

A. Remove surplus materials, protective coverings, and accumulated rubbish after completing coating. Thoroughly clean surfaces and repair overspray or other coating-related damage.

3.16 FINAL INSPECTION

A. Conduct final inspection of coating system work to determine whether it meets specifications requirements.

B. Conduct subsequent final inspection with the Engineer to ensure Work is in accordance with Contract Documents requirements.

C. Mark any rework required.
   1. Re-clean and repair, as specified, at no additional cost to the Owner.

END OF SECTION

ATTACHMENT A - SCHEDULE OF SURFACES TO BE COATED

APPENDIX A
Schedule of Surfaces to be Coated

A. The following schedule is incomplete. Coat unlisted surfaces with same coating system as similar listed surfaces. Contact Engineer for clarification.

EPU-M-1	Metals, exterior, non-immersed
EPX-C-2-PWS	Concrete subfill (top surface) in filter vessel.
CTE-C-1	Concrete encased metal pipe

Notes:

1: Non-immersed ferrous metal surfaces include:
- a. Doors, doorframes, ventilators, louvers, grilles, exposed sheet metal, and flashing.
- b. Pipe, valves, pipe hangers, supports and saddles, conduit, cable tray hangers, and supports.
- c. Motors and motor accessory equipment.
- d. Drive gear, drive housing, coupling housings, and miscellaneous gear drive equipment.
- e. Valve and gate operators and stands.
- f. Structural steel.
- g. Crane and hoist rails.
- h. Exterior of tanks and other containment vessels.
- i. Mechanical equipment supports, drive units, and accessories.
- j. Bare electrical equipment: boxes, exposed conduit, and accessories.
- k. Pumps not submerged.
- l. Other miscellaneous metals.

2: Immersed ferrous metal surfaces include:
- a. Interior surfaces of ferrous metal tanks.
- b. Field priming of ferrous metal surfaces with defective shop-prime coat; including non-submerged service.
- c. Bell rings, underside of manhole covers and frames.
- d. Sump pumps, including underside of base plates and submerged suction and discharge piping.
- e. Exterior of submerged piping and valves other than stainless steel or PVC piping.
- f. Submerged pipe supports and hangers.
- g. Stem guides.
- h. Other submerged iron and steel metal unless specified otherwise.

ATTACHMENT B - COATING DETAIL SHEETS

Appendix B			
Coating Detail Sheet			
Coating System	EPU-M-1		
Coating Material	Two coats epoxy with polyurethane finish coat		
Substrate	Metal		
Products: One of the following or equal:	Primer	Intermediate Coat	Finish Coat
Carboline	Carboguard 890	Carboguard 890	Carbothane 134 VOC
International Paint	Devran 224V	Devran 224V	Devthane 379H
PPG	Amerlock 2VOC	Amerlock 2VOC	Amershield VOC
Sherwin Williams	Macropoxy 646 100	Macropoxy 646 100	Hi Solids Polyurethane 250
Tnemec	Series 69	Series 69	Series 1095
Service Condition	Interior or Exterior, subject to direct sunlight. Non-immersion.		
Surface Preparation			
General	Prepare surfaces as specified in this Section and as follows.		
Ferrous Metal	Bare surfaces: SSPC-SP10, Near-White Blast Cleaning. Shop primed surfaces: SSPC-SP2, Hand Tool Cleaning or SSPC-SP3, Power Tool Cleaning. Damaged primer or rust: SSPC-SP10, Near White Blast Cleaning and spot prime.		
Nonferrous Metal	SSPC-SP16, Brush Blast Cleaning.		
Galvanized Metal	SSPC-SP16, Brush Blast Cleaning. Test for surface contaminants.		
Surface profile			
Ferrous Metal	2.5 to 3.0 mils		
Nonferrous Metal	1.5 to 2.0 mils		
Galvanized Metal	1.5 to 2.0 mils		
System Thickness (Dry Film)			
Total	10 to 13 mils		
Primer	4 to 5 mils		
Intermediate Coat	4 to 5 mils		
Finish Coat	2 to 3 mils		
Application			
Special CTR Training	Not required.		

Appendix B			
Coating Detail Sheet			
Coating System	EPX-C-2-PWS		
Coating Material	Epoxy		
Substrate	Concrete		
Products: One of the following or equal:	Primer	Intermediate Coat	Finish Coat
Carboline	891VOC	891VOC	891VOC
International Paint	Bar-Rust 233H	Bar-Rust 233H	Bar-Rust 233H
PPG	Amerlock 2	Amerlock 2	Amerlock 2
Sherwin Williams	Macropoxy 646PW	Macropoxy 646PW	Macropoxy 646PW
Tnemec	Series V140F	Series V140F	Series V140F
Service Condition	Interior potable water tanks and reservoirs.		
Surface Preparation			
General	Prepare surfaces as specified in this Section and as follows.		
Concrete	Cure at least 28 days and dry to the CSM's recommended moisture content. Remove loose concrete and laitance from surfaces, and repair voids and cracks as specified in this Section.		
Existing Coated Concrete	Remove all existing coating to a sound substrate or intact, well-adhered coating. Abrade all surfaces to achieve required surface profile and vacuum to remove all loose dirt, paint chips, and dirt.		
Surface profile			
Concrete	ICRI CSP 3.		
Existing Coated Concrete	ICRI CSP 3.		
System Thickness (Dry Film)			
Total	15 mils		
Primer	One coat at CSM's recommended dry film thickness.		
Intermediate and Finish Coats	Each coat at CSM's recommended DFT to specified system thickness.		
Application			
Special CTR Training	Not Required.		

Appendix B			
Coating Detail Sheet			
Coating System	CTE-C-1		
Coating Material	Coal Tar Epoxy		
Substrate	Concrete		
Products: One of the following or equal:	Primer	Intermediate Coat	Finish Coat
Carboline	No product specified	No product specified	No product specified
International Paint	None applied	Devtar 5A-HS	Devtar 5A-HS
PPG	None applied	Amercoat 78HB	Amercoat 78HB
Sherwin Williams	None applied	TarGuard	TarGuard
Tnemec	No product specified	No product specified	No product specified
Service Condition	Below grade in contact with soil.		
Surface Preparation			
General	Prepare surfaces as specified in this Section and as follows.		
Surface profile			
Concrete	ICRI CSP 3.		
Existing Coated Concrete	ICRI CSP 3.		
System Thickness (Dry Film)			
Total	16 mils		
Primer	4 to 6 mils		
Intermediate Coat	4 to 6 mils		
Finish Coat	4 to 6 mils		
Application			
General	Fill all bugholes with a filler/surfacer compatible with the coating.		
Special CTR Training	Not Required.		

SECTION 10400

SIGNAGE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Plastic and metal signs for building and site use.

1.02 REFERENCES

A. American National Standards Institute (ANSI):
   1. Z535.1 - Safety Colors.
   2. Z535.2 - Environmental and Facility Safety Signs.

B. National Fire Protection Association (NFPA):
   1. 704 - Standard System for the Identification of the Hazards of Materials for Emergency Response.

C. Occupational Safety and Health Administration (OSHA).

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer’s data indicating sign type, style, and color.

C. Shop Drawings:
   1. Include lists of sign types, sizes, text, colors, and locations.

D. Samples: Include actual materials.

E. Manufacturer’s installation instructions.

1.04 QUALITY ASSURANCE

A. Regulatory requirements: Provide signage in accordance with Americans with Disabilities Act as published in the Federal Register, Volume 56, No. 144, Friday, July 26, 1991.

PART 2 PRODUCTS

2.01 ROOM AND AREA SIGNS

A. Manufacturers:
   1. One of the following or equal:
      a. Andco Industries Corp., equivalent product.
      b. Best Manufacturing Sign Systems, System 900013.
      c. Vomar Products, Inc., equivalent product.

B. Attachment:
   1. Vinyl tape, self-adhering.

C. Lettering:
   1. Helvetica medium, 3/4 inch high.

D. Materials:
   1. Interior use:
      a. Plastic 1/8-inch thick raised letters.
   2. Exterior use:
      a. Fiberglass 1/4 inch thick with high gloss finish, raised letters, blasted from single piece of fiberglass for integral letter and background.
      b. No adhesive as mechanical fastening of letters shall be allowed.

E. Colors:
   1. As selected by the Engineer from the manufacturer's standard colors.

F. See Attachment A - Room and Area Signage Schedule for specific sign size, location, text, pictogram, and quantity.

2.02 SAFETY SIGNS

A. General:
   1. Colors: In accordance with ANSI Z535.1.
   2. Design: In accordance with ANSI Z535.2.
   3. 40-mil thick aluminum with baked enamel finish.
   4. Fasteners: Round head stainless steel bolts or screws.

B. Manufacturers: One of the following or equal:
   1. Emedco.
   2. Seton Name Plate Co., Special Wording.

C. Danger signs:
   1. Background: White.
   2. Heading: White lettering on red oval with white border in black rectangular panel.
   3. Message: Black lettering on white.
   4. Size: As scheduled.

D. Caution signs:
   1. Background: Yellow.

2. Heading: Yellow lettering on black rectangular panel.
3. Message: Black lettering on yellow.
4. Size: As scheduled.

E. Safety instruction signs:
1. Background: White.
2. Heading: White lettering on green rectangular panel.
3. Message: Black lettering.
4. Size: As scheduled.

F. Warning signs:
1. Background: Orange.
2. Heading: Black lettering on orange diamond in black rectangular panel.
3. Message: Flack lettering on orange.
4. Size: As scheduled.

G. Notice information signs:
1. Background: White.
2. Heading: White lettering on blue rectangular panel.
3. Message: Black lettering.
4. Size: As scheduled.

H. See Attachment B - Safety Signage Schedule for specific sign size, location, text, and quantity.

2.03 HAZARD MATERIAL SIGNS

A. Manufacturers: One of the following or equal:
1. Emedco.
2. Seton Name Plate Co.

B. Requirements:
1. In accordance with NFPA 704.
2. 40-mil thick aluminum with baked enamel finish panels, letters, and symbols with pressure sensitive adhesive.
3. Sizes as required for viewing distances, letters and symbols in accordance with Attachment C - Hazard Material Signage.

PART 3 EXECUTION

3.01 PREPARATION

A. Protect adjacent surfaces which may be damaged by installation of signs.

B. Prepare substrates in accordance with the sign manufacturer’s instructions.

C. Remove scale, dirt, grease, and other contaminates from substrates.

3.02 INSTALLATION

A. Install signs in accordance with the sign manufacturer's instructions.

B. Fasten signs securely in level, plumb, and true to plane positions.

C. Install signs where indicated on the Drawings or as indicated in the Attachments.

END OF SECTION

ATTACHMENT A - ROOM AND AREA SIGNAGE SCHEDULE

ROOM AND AREA SCHEDULE

A. Room Numbers:
   1. Location: On wall outside room adjacent to latch side of doors or when not enough space on latch side, on nearest adjacent wall.
   2. Height: 60 inches above floor to center of sign.
   3. Size: 6 inches square.
   4. Colors: As selected by the Engineer.
   5. Text: Room number as indicated on the Drawings.

B. Room Names:
   1. Location: On wall outside room adjacent to latch side of doors or when not enough space on latch side, on nearest adjacent wall.
   2. Height: 60 inches above floor to center or sign.
   3. Size: 6 inches square.
   4. Colors: As selected by the Engineer.
   5. Text: Signage describing room function as indicated on the Drawings.

C. Toilet Doors:
   1. Location: On wall outside room adjacent to latch side of doors or when not enough space on latch side, on nearest adjacent wall.
   2. Height: 60 inches above floor to center of sign.
   3. Size: 6 inches wide by 8 inches high.
   4. Colors: As selected by the Engineer.
   5. Pictogram: International symbol for men or women to suit application.
   6. Text: Braille characters and MEN or WOMEN as appropriate.

ATTACHMENT B - SAFETY SIGNAGE SCHEDULE

SAFETY SIGNAGE SCHEDULE

A. NON-POTABLE WATER:
   1. Location: At non-potable water hose valves.
   2. Height: As directed by Engineer.
   3. Size: 10 inches wide by 7 inches high.
   4. Heading: DANGER
   5. Wording: NON-POTABLE WATER
      DO NOT DRINK

B. HIGH PRESSURE HOSE VALVES:
   1. Location: At designated hose valves.
   2. Height: As directed by Engineer.
   3. Size: 10 inches by 14 inches.
   4. Heading: DANGER
   5. Wording: HIGH PRESSURE

C. REMOTELY CONTROLLED AUTOMATIC EQUIPMENT:
   1. Location: On front and back of equipment that starts automatically by remote control.
   2. Height: As directed by Engineer.
   3. Size: 10 inches by 14 inches.
   4. Heading: DANGER
   5. Wording: THIS EQUIPMENT STARTS AUTOMATICALLY
      BY REMOTE CONTROL

D. HIGH VOLTAGE WARNING:
   1. Location: On front and back of equipment, adjacent to doors to rooms containing devices that operate at 600 volts or greater.
   2. Height: As directed by Engineer.
   3. Size: 10 inches by 14 inches.
   4. Heading: DANGER
   5. Wording: HIGH VOLTAGE
      KEEP OUT

E. NO SMOKING WITHIN 25 FEET OF BUILDING ENTRY:
   1. Location: As indicated on the Drawings.
   2. Height: Pole mounted with top of sign at 5 feet above grade.
   3. Size: 14 inches wide by 10 inches high.
   4. Heading: NOTICE
   5. Wording: NO SMOKING WITHIN 25 FEET OF BUILDING.
   6. Pictogram: International “No Smoking” symbol.

F. NO PARKING:
   1. Location: As indicated on the Drawings.
   2. Height: In accordance with local regulations.
   3. Size: In accordance with local regulations.
   4. Wording: In accordance with local regulations.
   5. Pictogram: In accordance with local regulations.

ATTACHMENT C - HAZARD MATERIAL SIGNAGE

HAZARD MATERIAL SIGNAGE

A. HAZARD SIGNAL FOR SODIUM HYPOCHLORITE 12 PERCENT:
   1. Location: At entrances to locations where stored and on storage tanks.
   2. Height: As directed Engineer.
   3. View Distance: As directed Engineer.
   4. Health: 3
   5. Flammability: 0
   6. Reactivity: 0
   7. Special: COR

SECTION 10520

FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Fire extinguishers.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. E814-11a - Standard Test Method for Fire Tests of Penetration Firestop Systems.

B. National Fire Protection Association (NFPA):
   1. 10 - Standard for Portable Fire Extinguishers.

C. Underwriters Laboratories, Inc. (UL):
   1. 711 - Rating and Fire Testing of Fire Extinguishers.

1.03 SUBMITTALS

A. Product data.
   1. Extinguishers: Materials description for fire extinguishers; include ratings and classifications.
   2. Installation instructions for each product specified.

B. Shop drawings:
   1. Small-scale plans showing locations of individual fire extinguishers.
   2. Schedule showing each type of extinguisher to ensure proper fit and function.
   3. Indicate installation procedures and accessories required for a complete installation.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Minimum 5 years with satisfactory performance record.

1.05 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. The following or equal:
   1. Activar Construction Products Group – JL Industries.

2.02 FIRE EXTINGUISHERS

A. Multi-purpose chemical type:
   1. Extinguisher unit containing a fluidized and siliconized mono ammonium phosphate powder; nonconductive and nontoxic.
   2. Construction: Heavy duty steel cylinder with metal valve and siphon tube, o-ring seal, replaceable valve stem seal, visual pressure gage, pull pin and upright squeeze grip.
   3. Finish: Factory powder-coated: Red.
   4. UL Effectiveness Rating in accordance with UL 711: Class A, B, and C fires.
   5. UL Rating in accordance with UL 711: 4A-80BC.
   6. Drawing will use the symbol FE for “Fire Extinguisher”.

B. Regular dry chemical type:
   1. Extinguisher unit containing Halotron™.
   2. Size minimum: 11 pounds.
   3. Construction: Heavy duty steel cylinder with metal valve and siphon tube, o-ring seal, replaceable valve stem seal, visual pressure gage, pull pin, and upright squeeze grip.
   4. Finish: Factory powder-coated; Red.
   5. UL Effectiveness Rating in accordance with UL 711: Class B and C fires.
   6. UL Rating in accordance with UL 711: 2A-10BC.
   7. Drawing will use the symbol EFE for “Electrical Fire Extinguisher”.

2.03 WALL BRACKETS

A. Type: Standard as manufactured by fire extinguisher manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance NFPA 10, Standard for Portable Fire Extinguishers.

3.02 LOCATIONS

A. Install fire extinguisher type, FE and EFE, as indicated on the Drawings.

B. Install fire extinguisher wall brackets as indicated on the Drawings.

END OF SECTION

SECTION 10810

TOILET ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Toilet accessories.

1.02 REFERENCES

A. Americans with Disabilities Act (ADA).

B. ASTM International (ASTM):
   1. A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

C. California Code of Regulation (CCR):
   1. Title 24 - Building Standards Code.

1.03 SUBMITTALS

A. Shop drawings: Include schedule of proposed products.

B. Product data: Include dimensions gauge, profiles, materials, fabrication details, manufacturer's installation instructions including setting drawings where cutouts are required, templates, substrate preparation instructions and directions for preparing cutouts for installation of accessories.

C. Special samples:
   1. Include 1 of each accessory type.
   2. Special samples acceptable to Engineer may be installed in the Work.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Manufacturer of proposed products for minimum 5 years with satisfactory performance record of minimum 5 years.

B. Installer qualifications:
   1. Manufacturer-approved installer of products similar to specified products on minimum 5 projects with satisfactory performance record.
   2. Furnish toilet accessories by 1 manufacturer, unless scheduled otherwise.

C. Requirements of regulatory agencies: In accordance with ADA, and CCR Title 24, Part 2, for provisions for the physically handicapped; materials and installation.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Maintain protective coatings or coverings on units until installation is complete.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Toilet accessories: One of following or equal:
   1. American Specialties, Inc., Division of ASI Group Bobrick Washroom Equipment, Inc.
   2. GAMCO, Division of Bobrick Washroom Equipment, Inc.

2.02 MATERIALS

A. Stainless steel: ASTM A240, Type 304 or 316; minimum 28 gauge.

2.03 TOILET ACCESSORIES

A. Accessory model numbers indicated below are from the Bobrick Equipment, Inc., line of products.

B. Types:
   1. Grab bars: B6806 (concealed fasteners), sizes and shapes indicated, with appropriate anchors.
   2. Mirror with 3/4- by 3/4-inch frame: B-293 1830.
   3. Paper towel dispenser/waste receptacle, surface mounted, plastic liner: B-3949.
   4. Soap dispenser, counter mounted, liquid soap: B-8111, with 40 fluid ounce polyethylene container.
   5. Toilet paper holder, double, surface mounted: B-686.

C. Fasteners: Concealed or tamperproof, sized to suit application.

2.04 FABRICATION

A. Weld and grind smooth joints of fabricated components.

B. Form exposed surfaces from single sheet of stock, free of joints.

C. Form surfaces flat without distortion.
   1. Maintain flat surfaces without scratches or joints.

D. Shop assemble components and package complete with anchors and fittings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are satisfactory for the installation of accessory items.

B. Verify that supports and reinforcements are in place and proper for accessory installation.

C. Do not begin installation until conditions are satisfactory.
   1. Beginning installation means acceptance of existing conditions.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site at the appropriate time for building-in.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install units plumb and level.
   1. Firmly anchor accessories.

C. Install grab bar connectors or support angles between studs securely enough to withstand horizontal pull of 300 pounds.

D. Accurately position grab bar connector assemblies and tighten to support angles before application of wall finish.
   1. After completion of wall surface, secure concealed mounting plate to connector assembly with stainless steel machine screws.

E. Use through-bolted connection for grab bars on toilet compartments.

3.04 ADJUSTING

A. Adjust accessories for proper operation and verify that mechanisms operate smoothly.

B. Replace damaged or defective products with good products.

END OF SECTION

SECTION 11242

LIQUID CHEMICAL DOUBLE DIAPHRAGM METERING PUMPS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Skid Mounted positive displacement double diaphragm pumps complete with drives, controls, and features specified and scheduled in this Section.

B. Tag numbers: As specified in Pump Schedule.

1.02 REFERENCES

A. National Electrical Manufacturer's Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 Volts Maximum).

B. NSF International (NSF):
   1. 61 - Drinking Water System Components - Health Effects.

1.03 DEFINITIONS

A. NEMA:
   1. Type 4X enclosure in accordance with NEMA 250.

1.04 SYSTEM DESCRIPTION

A. General: Provide skid mounted positive displacement, double diaphragm type chemical metering pumps; accessories, and other items required for a complete and operational system. Each chemical metering pump system shall include, but not be limited to, the following items, which shall be supplied by the chemical metering pump manufacturer.
   1. Pumps.
   2. Motors.
   3. Variable speed drives.
   4. Pressure Switches and gauges with diaphragm seals and block/bleed valves.
   5. Flowmeters.
   6. Calibration columns.
   7. Junction boxes.

B. Fluid characteristics:
   1. Sodium hypochlorite:
      a. Dry chemical formula: NaOCl.
      b. Solution concentration: 0.8 percent by weight.
      c. Solution pH: 13.
      d. Solution specific gravity: 1.02.

C. Design requirements:
   1. Pumped liquid shall be contained within pump wet end housing and shall not directly contact any metallic drive components.
   2. Pumps:
      a. Capable of being run dry without damaging effects to pump.
      b. Maximum pressure rating of 140 pounds per square inch.
      c. Maximum suction lift of 23 feet of water.
      d. No loss motion, low pulsation, low velocity output not requiring a pulsation dampener.
      e. Output adjustment range shall be from 0.05 to 100 percent in 0.1 percent increments. 2,000:1.
   3. Pump performance characteristics: As specified in Pump Schedule in this Section.
   4. Motor characteristics: As specified in this Section and in Section 16222 - Low Voltage Motors up to 500 Horsepower.
   5. Variable speed drive characteristics: As specified in this Section.

D. Performance requirements:
   1. Systems shall deliver the pressures and volumes listed for their respective services in the Pump Schedule in this Section.

E. Product requirements as specified in the Agreement and Contract RFP in Volumes 1 and 2 and 15050 - Common Work Results for Mechanical Equipment.

1.05 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15050 - Common Work Results for Mechanical Equipment.
   1. Current NSF 61 Certification for components to be in contact with associated chemical or potable water.
   2. Provide data showing chemical compatibility and history of service with the associated chemical for materials in the system.

C. Shop drawings: As specified in Section 15050 - Common Work Results for Mechanical Equipment.
   1. Dimensions, including materials of construction, size, weight, and performance data.
   2. Drawings: Provide electrical and instrumentation drawings showing coordination with electrical control devices operating in conjunction with the associated feed system.
   3. Dimensioned inlet and outlet connections.
   4. Provide data showing chemical compatibility and history of service with the associated chemical for materials in the system.

D. Calculations: As specified in Section 15050 - Common Work Results for Mechanical Equipment.
   1. For each pump type, submit calibration charts and tables relating flow rate to speed.

2. Submit calculations for each metering pump showing the suitability of each pump for the suction and discharge conditions of each application point. Pump manufacturer shall recommend and size an accumulator to be piped to the suction side of each metering pump, when required based on calculations.
3. Calibration curves for each pump relating speed to flow rate shall be supplied.
    a. Capacity control shall be 0 to 100 percent with delivery repeatable within plus or minus 0.1 percent accuracy over entire range.

E. Vendor operation and maintenance manuals: As specified in Section 01782 - Operation and Maintenance Manuals.

F. Commissioning submittals:
1. Provide Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
    a. Manufacturer's statement that the materials of construction are compatible with the pumped fluid.
2. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

G. Chemical feed pumps:
1. For each pump type furnish data including head and capacity.
2. Calibration curves.
3. Electrical and control drawings.

H. Control panel shop drawings:
1. Control panel views showing equipment arrangement, doors, equipment layout inside the panel and dimensional information.
2. Internal interconnecting wiring diagrams showing terminal strips and all external devices connected to the panel, design submittal for loop and schematic diagrams.
3. ISA standard Loop Drawings for analog and discrete signals.
4. Complete schematic and diagrams including terminal block and wire identification numbers and device location symbols consistent with the Contract Documents.
5. Panel bill of material with detailed description of components and equipment data sheets.
6. Field cable numbers and terminations.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Packing, shipping, handling and unloading:
1. Pack for shipping and outdoor storage at the project site for up to 6 months. Apply temporary corrosion protective coatings to unpainted components and pack components to protect from the elements.
2. Ship pump and drive completely assembled.

1.07 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.
1. Provide a 2-year duration special warranty.

PART 2 PRODUCTS

2.01 GENERAL

A. A single pump manufacturer shall furnish and coordinate all drives and pump components specified in this Section, including motors, gears, couplings, supports, and other specified accessories and appurtenances to ensure compatibility and integrity of the individual components.

B. The manufacturer of the pumps shall have sole-source responsibility for furnishing the complete assemblies and meeting the specified performance requirements.

2.02 PUMPS

A. Pump manufacturer: One of the following or equal:
   1. Blue-White, model MD3.

B. Type: Duplex chemical proportioning pumps of the double diaphragm no loss motion type, skid-mounted.

C. Features:
   1. The pumphead shall be manufactured from natural PVDF material.
   2. The diaphragm shall be manufactured from a single layer of natural PVDF material. Laminated diaphragms shall not be used.
   3. The inlet and outlet pump head valve housings shall be manufactured from natural PVDF material.
   4. The dual pump head inlet valve housings and outlet valve housings shall be connected by a PVDF manifold pipe.
   5. The pump inlet (suction) adapter and the outlet (discharge) adapters may be installed in the field on either the left or right side of the pump.
   6. The inlet and outlet adapters shall be available for 1/2-inch male NPT.
   7. There shall be four check valve cartridge assemblies per pump head, two located in the inlet valve assembly and two located in the outlet valve assembly. Each cartridge check valve assembly shall contain a ceramic ball, static seal O-ring and ball seat O-ring. O-ring ball seats shall be manufactured from T/FEP elastomer material. Static adapter fitting seals shall be manufactured from FKM elastomer material.
   8. The pump head front shall be covered with a 316 Stainless Steel metal pressure support plate.
   9. The pump head shall be positively secured to the pump housing with 8 each 10-32 stainless steel socket head screws and washers.

D. Materials:
   1. All materials of construction must be suitable for constant contact with the chemical solution to be pumped and take into account current potable water practices.
      a. Sodium Hypochlorite:
         1) All wetted parts shall be suitable for use with 0.8 percent sodium hypochlorite solution.

2) All other non-specified materials are to be manufacturer's standard for continuous service with a 0.8 percent sodium hypochlorite solution.

2. Brass or bronze components are not acceptable for contact with sodium hypochlorite.
3. Material Standards:
   a. Cast Aluminum: ASTM A.
   b. Galvanized Steel: ASTM A123.
   c. Stainless Steel: AISI 316.
   d. Carbon Steel: ASTM A570 or A611.
   e. Viton: ASTM D2000.

E. Accessories: As indicated on the Drawings, pump skids shall be equipped with:
   1. Calibration column in common suction piping.
   2. Pressure relief valve in discharge piping.
   3. Flowmeter in common discharge piping.
   4. Pressure gauge and pressure switch with diaphragm seal and block/bleed valves in the common discharge piping.

F. Source quality control:
   1. Tests and inspections:
      a. As specified in Sections 01756 - Commissioning and 15050 - Common Work Results for Mechanical Equipment.
      b. As scheduled in this Section.
   2. Verification of performance.

2.03 DRIVE

A. Rating: Continuous 24-hour operation, 40 degrees Celsius ambient.

B. Supply: 120 volt, 60 Hertz, 1 phase.

C. Enclosure: NEMA 4X.

D. Housing: Cast aluminum or cast aluminum alloy with pre-treatment and exterior grade corrosion resistant polyester powder coat.

E. Pumps must meet the following minimum requirements for operator interface functionality and control panel:
   1. Provide control system with equipment protective devices for safe operation in a local control panel and with remote inputs and outputs and control devices as indicated on the P&ID Drawings to:
      a. Provide control functions as specified in Section 17101A - Specific Control Strategies.
   2. Backlit graphical LCD capable of up to four lines of text with up to 16 characters per line to display pump speed, running status, flow rate, and programming instructions.
   3. Keypad for start, stop, speed increment, speed decrement, forward/reverse direction, rapid prime, and programming.
   4. Menu driven on screen programming of manual or auto control, flow and remote signal calibration, and general programming.

5. Programmable "Auto Restart" feature to resume pump status in the event of power outage interruption.
6. Programmable "Keypad Lock" to allow operator lockout of all keys except emergency start/stop.
7. Programmable "Maximum Speed" to allow operator to set the maximum speed of the pump within 0.1-190 revolutions per minute (rpm).
8. Leak detection indication and reset options.

F. Supply auto control features to meet the following minimum functionality requirements for use with the SCADA system. All control signal features must be located internally to the pump.
   1. Remote Inputs:
      a. RUN Command from PLC.
      b. Speed control: Analog 4-20 mA from PLC.
   2. Remote outputs:
      a. Form C Dry Contacts rated for 2A at 120 VAC for the following signals:
         1) RUNNING status.
         2) REMOTE status.
         3) FAIL status.
      b. Speed Feedback: Analog 4-20 mA signal to PLC.

G. Drive motor:
   1. Brushless DC motor with integral gearbox and tachometer feedback.
   2. Speed Control Range of 2,000:1.
   3. Horsepower to meet continuous duty at maximum pump speed and pressure requirements.
   4. Circuitry complete with temperature and load compensation and protection.
   5. Mounting: Drive shall be self-supporting and shall not require anchoring.

2.04 SKID-MOUNTED SYSTEM

A. When identified on the drawings, double diaphragm pump shall be supplied as a single skid system and the frame shall be constructed of lightweight, permanently welded polypropylene or polyethylene with drip tray and back wall for mounting of piping and accessories.

B. 316 stainless steel skid mounting pads shall be provided which can be positioned to enable floor mounting of the skid. Each mounting pad shall be secured to 2 mounting holes in the skid structure by 18-8 stainless steel hardware.

C. 316 stainless steel pump mounting brackets with four mounting slots shall be provided which can be positioned to enable wall mounting of the skid. Pump mounting brackets shall be secured to the skid structure by 18-8 stainless steel hardware.

D. Custom engineered universal mounting brackets shall secure each of the ball valves to the skid structure. Valve mounting brackets shall match valve material. Valve mounting brackets shall be secured to pre-cut slots in the skid structure by 18-8 stainless steel hardware.

E. Piping: Piping shall be minimum 1/2-inch diameter schedule 80 CPVC and shall be assembled using the appropriate CPVC cement (IPS Weld-On 724).
   1. Unions shall be solvent weld schedule 80 CPVC.
   2. Seals will be specified as Viton.
   3. All pipe supports on skid shall include cushion strips by Anvil No. AS 3792 or equal.

F. Valves:
   1. Vented ball valves shall be used unless otherwise noted.
   2. Suction and discharge piping drain valves shall be provided.
   3. Check valves shall be located in the discharge side of the piping system at the pump injection point to prevent the back flow of fluid through the system.

G. Pressure relief valves:
   1. Pressure relief valves shall be located in the discharge side of the piping system to prevent excessive pressure in the system. Discharge shall be returned to the bulk storage tank(s).
   2. Manufacturers: Asahi, Griffco Valve Inc., ChemLine Plastics, or equal.
   3. Materials:
      a. Lower body, seat, ball guide, and ball: CPVC.
      b. Diaphragm: PTFE faced EPDM.
      c. Seat gasket: Viton™.
      d. Adjusting bolt, locknut, control spring, and fasteners: Stainless steel.
      e. End connections: Flanged or socket weld.
   4. In-line design, size as indicated on the Drawings and required by this Section. Valves shall be suitable for the service flow and pressure specified in this Section.
   5. The pump supplier shall provide all pressure relief valves associated with the chemical system.
   6. Set pressures shall be factory set at the levels scheduled in this Section. Valve settings shall be externally adjustable from 0 to 75 pounds per square inch.
   7. Provide 3-port configuration for all pressure relief valves where piping back to a tank or connection to drain piping is indicated on the Drawings.

H. Pump connections shall be flexible tubing rated for 200 psi maximum continuous duty and terminated compression to pipe fittings. All connection shall be compression or solvent welded. Threaded connections are prohibited.

I. A calibration cylinder shall be located in the inlet side of the system to permit metering pump output volume calibration.
   1. Valves shall permit the cylinder to be filled by gravity.
   2. The cylinder shall be clear PVC with PVC end caps, or alternative as recommended by the manufacturer for the intended service.
   3. An outlet vent shall be provided with 1/2-inch threaded FNPT PVC connection.

J. An in-line magnetic flow meter mounted on the pumps common discharge line shall be supplied. The wetted parts shall be constructed of PVDF and PEEK materials. The meter shall include a fully configurable 4-20 mA output. An integral meter mounted backlit 3.5-inch LCD display shall be included.

K. Pump-Skid Enclosure:
    1. Furnish and install chemical metering pumps, suction/discharge lines and accessories mounted on a non-metallic floor mounted skid as indicated on the Drawings.
    2. All materials must be compatible with the pumped liquid.

2.05 NAMEPLATES

A. Each pump, gearbox, and motor shall have, securely affixed in a conspicuous location, a stainless steel nameplate with raised letters providing the manufacturer's model, serial number, rating, range, speed and other pertinent data.

2.06 ACCESSORIES

A. Additional accessories required for the system but not required to be supplied by the pump manufacturer include:
    1. Diaphragm seals as specified in Section 17404 - Pressure/Vacuum Measurement: Diaphragm and Annular Seals, except as modified in this Section:
        a. Materials shall be compatible with the pumped liquid at the specified concentration and suitable for outdoor use and exposure.
        b. Shutoff valve shall be provided.
    2. Flowmeters as specified in Section 17302 - Flow Measurement: Magnetic Flowmeters.
    3. Pressure switches as specified in Section 17403 - Pressure/Vacuum Measurement: Switches.
    4. Pressure gauges as specified in Section 17404 - Pressure/Vacuum Measurement: Gauges.
    5. Isolation valves as specified in Section 15117 - Specialty Valves that details Diaphragm Valves for calibration column and suction and discharge piping as indicated on the Drawings.

B. Provide stainless steel tag for all devices with tag number as shown on the Drawings.

2.07 SPARE PARTS AND SPECIAL TOOLS

A. Spare parts:
    1. 1 complete spare parts kit for each pump provided.
    2. 1 spare parts kit for each size and type of pressure relief and backpressure valves.
    3. An initial supply of all oils, greases, and lubricants required to start operations. Supply an amount of these materials equivalent to 1 year of continuous operation for each system.

PART 3 EXECUTION

3.01 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services:
   1. Provide certificates:
      a. Manufacturer's Certificate of Source Testing.
      b. Manufacturer's Certificate of Installation and Functionality Compliance.
   2. Manufacturer's Representative onsite requirements:
      a. Installation: 1 trip, 5 day minimum.
      b. Functional Testing: 2 trips, 2 days minimum each.
   3. Training:
      a. Maintenance: 4 hours per session, 2 sessions.
      b. Operation: 2 hours per session, 2 sessions.
   4. Process operational period:
      a. As required by Owner or Contractor.

C. Source testing: As specified in Pump Schedule.

D. Functional testing: As specified in Pump Schedule.

3.02 SCHEDULES

A. Pumps:

	Misty Wood	**Campus Oaks**
Tag Number	**WD33-PUMP-36211, WD33-PUMP-36221**	**WD33-PUMP-30211, WD33-PUMP-30221**
Feed Point	Well Pump Discharge	Well Pump Discharge
Service	12.5% Sodium Hypochlorite	12.5% Sodium Hypochlorite
Pump Type	Double Diaphragm	Double Diaphragm
Number of Pumps	2 pumps, 1 skid	2 pumps, 1 skid
1st Named Manufacturer's Model	Blue-White	Blue-White
	MD1	MD1
Pump Characteristics:		
Design Conditions		
Rated Flow, (gallons per hour)	0.001 - 8.5	0.001 - 8.5
Maximum Flow, (gallons per hour)	4.4	4.1
Minimum Flow, (gallons per hour)	0.65	0.6
Maximum Pump strokes	125	125
Maximum Discharge Pressure (psi)	110	110
Relief Valve Setting (psig)	120	120
Driver Characteristics:		
Minimum Driver Horsepower	1/4	1/4
Maximum Driver Speed, (rpm)	190	190

	Misty Wood	Campus Oaks
Tag Number	**WD33-PUMP-36211, WD33-PUMP-36221**	**WD33-PUMP-30211, WD33-PUMP-30221**
Voltage/Phases/Hertz	120 volt, 60 Hertz, 1 phase	120 volt, 60 Hertz, 1 phase
NEMA Enclosure Type	NEMA 4X	NEMA 4X
Source Testing:		
Test Witnessing	Not Witnessed	Not Witnessed
Performance Test level	1	1
Vibration Test Level	None	None
Noise Test Level	None	None
Functional Testing		
Performance Test level	1	1
Vibration Test Level	None	None
Noise Test Level	None	None

B. Calibration columns:

Tag Number	Service	Graduation Volume (ml)	Graduation Scale (ml)
PMP-0110 PMP-0120	12.5% Sodium Hypochlorite	500	10

1. The volume of the calibration column should equal 100 percent of the volume delivered by the pump at maximum capacity for a period of 30 to 60 seconds.

END OF SECTION

SECTION 11249

PACKAGED FLUORIDE SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Requirements for complete and operational dry chemical feed and dilution system.

1.02 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15050 - Common Work Results for Mechanical Equipment.
   1. List of materials, list of equipment, including a complete list of parts and supplies with current unit prices and sources of supply.
      a. List of parts recommended by the manufacturer to be replaced after 1 and 3 years of service.
   2. Detailed specifications and shop drawings with both isometric and orthogonal views of the proposed installation, including dimensions, weights, and complete parts list.

C. Hydraulic characteristics of the mixer.

D. Shop drawings: As specified in Section 15050 - Common Work Results for Mechanical Equipment:
   1. Detailed specifications and drawings containing complete piping and flow diagrams of the proposed installation, including dimensions, weights.
      a. Drawing shall show proposed anchorage of equipment and appurtenances and equipment relationship to other parts of the work including clearances for installation.
   2. Wiring, control schematics, and control logic diagrams for electrical and control components furnished.

E. Calculations: As specified in Section 15050 - Common Work Results for Mechanical Equipment.

F. Vendor operation and maintenance manuals: As specified in Section 01782 - Operation and Maintenance Manuals.

G. Commissioning submittals:
   1. Provide Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
   2. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.03 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds. System shall be covered by a 2-year warranty against defects in materials and workmanship. Warranty period shall commence after on-site acceptance of equipment by Owner. In addition, system shall be subject to the following provisions:
   1. If Owner is dissatisfied with system performance within 30 days of start-up by manufacturer's authorized representative, system may be returned for full refund, provided system has received reasonable use and care.
   2. If Owner and manufacturer's authorized representative determine, at time of start-up, that the system is improperly sized for the application, or if another system by the same manufacturer would be more suitable for any reason, the system will be exchanged at no penalty. Owner will be charged or credited only the difference between the original and replacement systems, plus costs of shipping and handling. Owner will not be billed for restocking the original system, nor for the second visit by the representative to start up the replacement.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. The following or equal:
   1. Prominent, Fluoride Upflow Saturator System.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. General: Provide integrated equipment package capable of automatically metering, diluting, and blending chemical with water.

B. Design requirements:
   1. Two chemical feed systems will be required, one for each well site. The chemical feed system is a sodium fluoride (NaF) make-up and storage system. The solution tank and chemical feed system described are intended to form a single integrated system. The following services will be available to the chemical feed system:
      a. Electrical power: 120 volt, 60 hertz, 1 phase.
      b. Softened water: 5 gallons per minute at 30 pounds per square inch minimum.
   2. The system shall be designed for feeding up to 1.5 mg/L of fluoride to a maximum water well flow rate of 2,700 gpm for Misty Woods well and 2,500 for Campus Oaks well at a pressure of 90 psig.
   3. The saturator tank, solution tank, metering pump, water feed system, control panel, and related components shall be mounted within the secondary containment. The complete unit shall fit in the location indicated on the Drawings.

2.03 MATERIALS

A. Materials and components shall be compatible with the chemical service and complaint with NSF/ANSI 61.
   1. Chemical Service: Sodium Fluoride.
      a. Concentration: 4 percent.
      b. Specific Gravity: 1.165.
      c. pH: 11.5-13.0.

B. All wetted components shall be non-metallic to prevent corrosion.

2.04 COMPONENTS

A. Saturator Tank:
   1. Material: Linear polyethylene.
   2. Capacity: 55 gallons.
   3. Tank Lid: Hinged type.
   4. The tank shall be designed to hold 300 pounds of sodium fluoride.

B. Distribution Header:
   1. The water shall be distributed through the bottom of the tank using a PVC distribution header with perforated lateral pipes.
   2. The saturator shall be of the automatic up-flow type, providing a distribution header at the bottom of a tank, allowing water to flow up through a layer of granular sodium fluoride to provide a saturated solution of approximately 4 percent NaF.

C. Sodium Fluoride Solution Tank:
   1. Material: Linear polyethylene.
   2. Capacity: 70 gallons.
   3. Tank shall be equipped with a radar based level sensor, model ProMinent DulcoLevel for automatic control of the saturator operation.

D. Sodium Fluoride Metering Pump:
   1. Manufacturer: One of the following or equal:
      a. Prominent, Sigma 1 Series.
   2. Characteristics: Chemical proportioning simplex pumps of the positive displacement, non-loss motion design, mechanical diaphragm type.
   3. Repeatability: Plus or minus 2 percent of full scale at constant hydraulic conditions.

Quantity (each)	Max. Strokes/ min	Capacity/pump (min/max gph)	Max. Press. (psig)	Power Supply	Input Signal
1 pump	172	0.139/13.9	145	120 VAC	4-20A

   4. Pump gearbox drive:
      a. Pump gear box shall be constructed of steel, nodular iron or cast aluminum and be water resistant and suitable for outdoor installation. Pump and gear box housing shall be sealed in an outer plastic housing.
      b. Gear box shall be oil bath lubricated.

c. Identify each pump with a corrosion resistant nameplate, securely affixed in a conspicuous location. Nameplate information to include pump tag number, equipment model number, flow capacity, output pressure and electrical data.
d. All fasteners shall be Type 316 stainless steel.

5. Drive and motor:
   a. Type: Each chemical metering pump shall be 120 VAC motor-driven through a flexible coupling or direct connected to the pump if manufacturer's standard. Pumps and motors shall be mounted on floor mountable base plates:
      1) Couplers: Manufacturers: One of the following or equal:
         a) Dodge, Para-flex.
         b) Falk, Type WA.
   b. Each pump shall be equipped with an integral variable speed drive (VSD). The VSD shall be a VFD-AC variable speed drive. The drive shall be suitable for continuous heavy-duty service and shall be suitable for controlling the motor to be furnished.
   c. Stroke length control shall be adjustable manually by means of a stroke length knob, in increments of 1 percent, from 0 to 100 percent of stroke length. Stroke length shall be determined by a sensor within the stroke adjustment knob that provides accurate feedback to the electronics of the pump for calibration and LCD display of stroke length. The digital display and optional analog output will calculate, display, and transmit the flow of the pump based on pump speed and stroke length settings.
   d. Stroke frequency control shall be done with an integral VFD and stepper motor pump controller. For the integral controller, the first 1/3 of the frequency in strokes per minute will operate with the stepper motor and frequencies greater than 1/3 of the maximum will operate with the internal VFD. In manual mode, stroke frequency control shall be manually adjusted by the touch keypad, with the set stroke rate displayed on the pump's LCD. In external mode, the pump shall be capable of receiving a 4-20 mA input via an optional external control cable. The metering pump shall be capable of remote ON-OFF operation using the PAUSE function via a voltage-free contact relay through an optional control cable.
   e. The drive shall have 100:1 constant torque speed range.
   f. The drive shall respond automatically to a remote set point speed signal (4-20 mA). The drive shall provide a 4-20 mA speed signal output proportional to pump output for remote indication. The speed signal output shall be measured independently of the remote set point speed signal. The drive shall also receive a remote start/stop signal (discrete dry contact) and provide discrete signals (discrete dry contact) for pump, failure alarm, diaphragm leak alarm, speed indication, and run indication. The manufacturer shall furnish required additional components for the drive to function as described herein and shown on the Drawings.
   g. The motor shall have TEFC enclosure with horsepower of not less than the minimum specified rating.
   h. The motor and VFD drive supplier shall carefully review the intended application of the variable speed drive and certify in writing that sizes provided are adequate for continuous or intermittent operations (whichever is the most severe operating condition).

6. Liquid end:
    a. Pumps with flat composite mechanically activated diaphragms shall be Teflon faced, fiber reinforced and bonded to an elastomeric support with a steel backing plate.
    b. The liquid end shall be sealed by means of an O-ring of material, if required, compatible with listed chemical solutions.
    c. The liquid end shall have either single ball or cartridge type check valves. Check valves shall compression seal to the pump head and pipe connections via an O-ring seal.
    d. A secondary diaphragm shall seal the liquid end completely from the gear box and drive unit, preventing cross contamination.
    e. The liquid end of each metering pump shall be fitted with a leak detection system to detect early stage diaphragm failure. The detection system shall be an electro optical sensor, mounted on the liquid end in a NEMA 4X enclosure. Upon actuation, the leak detector shall STOP the pump, light a locally visible LED, and sound a remote alarm.

E. Water Feed System:
    1. The incoming water line shall be supplied with a manual shutoff valve, water feed solenoid valve, flow control needle valve, filter, and backflow/anti-siphon valve.
    2. Water Flowmeter/Totalizer: Sensor shall be Signet Model 3-2000-21 with Signet Model 3-9900-1 flow transmitter.

F. Solution Tank Mixer:
    1. A mixer shall be provided and mounted onto the solution tank for mixing the chemical and water into a solution.
    2. The mixer operation shall be controlled by level switches in the solution tank and by an adjustable timer.
    3. Impeller and shaft material shall be 316 stainless steel.
    4. The mixer shall be driven by a 1,500 revolutions per minute, 1/20 horsepower, 115 volt, 60 hertz, single-phase TEFC electric motor.

G. Secondary Containment:
    1. The entire system shall be housed in a single piece structure made of polypropylene.
    2. The structure shall also serve as a secondary containment unit.
    3. Containment structure will have a high level switch to detect a breach event that is captured in the unit. The level switch will activate an alarm at the control panel.
    4. Containment structure shall be anchored with 316SS anchor bolts.
    5. Provide leak detection device within containment.

H. Supports:
    1. Design and provide equipment supports for the entire unit to withstand the seismic loads. The design seismic loads are specified in Section 01850 - Design Criteria.

I. Controls:
    1. Provide controls, indicator lights, and switches at a local control panel as specified in Sections 17100 - Control Strategies and 17101A - Specific Control

Strategies, or shown on instrumentation drawings, and as specified in Section 17710 - Control Systems: Panels, Enclosures, and Panel Components.

2.05 ACCESSORIES

A. Backpressure Valves:
   1. Adjustable pressure range of 0 to 150 psi.
   2. Materials shall be compatible with the associated chemical and concentration.
   3. Pressure Setpoint: Externally adjustable without removing valve from piping system. Set valve to open at half the pump discharge pressure at operating point, or as indicated on the Drawings.
   4. Manufacturer: One of the following or equal:
      a. Plast-O-Matic.
      b. Griffco.

B. Pressure relief valves:
   1. In-line design, valves shall be suitable for the service flow and pressure specified in this Section.
   2. The pump supplier shall provide all pressure relief valves associated with the chemical system.
   3. Materials shall be compatible with the associated chemical and concentration.
   4. Set pressures shall be factory set at the levels scheduled in this Section. Valve settings shall be externally adjustable from 0 to 75 pounds per square inch.
   5. Provide 3-port configuration for all pressure relief valves where piping back to a tank or connection to drain piping is indicated on the Drawings.
   6. Manufacturer: One of the following or equal:
      a. Plast-O-Matic.
      b. Griffco.

C. Flow Monitor:
   1. Type III Metering Monitor located on the pump discharge piping.
   2. Materials: PVDF/FPM.
   3. Manufacturer: One of the following or equal:
      a. Prominent.

D. Additional accessories:
   1. Additional accessories required for the system but not required to be supplied by the pump manufacturer include:
      a. Diaphragm seals as specified in Section 17401 - Pressure/Vacuum Measurement: Diaphragm and Annular Seals, except as modified in this Section:
         1) Materials shall be compatible with the pumped liquid at the specified concentration and suitable for outdoor use and exposure.
      b. Pressure switches as specified in Section 17403 - Pressure/Vacuum Measurement: Switches.
      c. Pressure gauges as specified in Section 17404 - Pressure/Vacuum Measurement: Gauges.
      d. Isolation valves as specified in Section 15111 - Ball Valves for suction and discharge piping as indicated on the Drawings.

2.06 WATER SOFTENER

A. Designed for 125 psig and in accordance with ASME code.

B. Rust-resistant and corrosion-resistant.

C. Mineral tank: Steel and lined with 0.006-inch to 0.008 inch high quality phenolic epoxy.

D. Brine System: The combination salt storage and brine production tank shall be 50 pound capacity and manufactured of corrosion resistant plastic.

E. The brine float assembly shall allow for adjustable salt settings and shall provide for a shutoff to the brine refill. The brine tank shall include a safety overflow connection to be plumbed to drain.

F. Valves and other parts which come into contact with water made of copper, with plastic, EPDM or Monel internal parts.

G. Permanent type, high capacity mineral resin bed, and high capacity resin.

H. Down flow of water during softening.

I. Automatic cycling:
   1. Controlled by a pair of sensors detecting the need for regeneration.
   2. Upflow of water on regenerating cycle.
   3. Automatic bypass to provide full supply of water at outlets during regenerating cycle.

J. Design with the following characteristics:
   1. Ability to handle water hardness indicated by water quality data provided by Engineer or Owner.
   2. Provide 8 gph of continuous softened water up to a peak flow rate of 12 gph.

K. Electrical controls: 120 volt, 60 hertz electrical service.

L. Manufacturers:
   1. Kinetico, Model S650XP.

M. Warranty:
   1. Special warranty:
      a. Duration: Provide 2-year special warranty.

PART 3 EXECUTION

3.01 INSTALLATION

A. Field finishes:
   1. Protect motors.

2. Clean equipment and prepare shop primer.
3. Apply field primer and coating systems in the field as specified in Section 09960 - High-Performance Coatings requirements.

B. Contractor to flush out potable water line until water discharged from line is clear and free of debris, before conducting disinfection of the line as specified in Section 01757 - Disinfection.

C. Identification of the health, flammability, and reactivity of hazardous materials shall be affixed to each chemical storage drum, as specified in Section 10400 - Signage.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services:
1. Provide certificates:
   a. Manufacturer's Certificate of Source Testing.
   b. Manufacturer's Certificate of Installation and Functionality Compliance.
2. Manufacturer's Representative onsite requirements:
   a. Installation: 1 trip, 2 day minimum.
   b. Functional Testing: 1 trip, 2 day minimum each.
3. Training:
   a. Electrical maintenance: 4 hours per session, 2 sessions.
   b. Mechanical maintenance: 4 hours per session, 2 sessions.
   c. Operation: 2 hours per session, 2 sessions.
4. Process operational period.
   a. As required by Owner or Contractor.

C. Source testing:
1. Test as specified in Section 15958 - Mechanical Equipment Testing.
2. Fluoride System:
   a. Test witnessing: Not witnessed.
   b. Conduct Level 1 General Equipment Performance Test.
   c. Conduct Level 1 Vibration Test.
   d. Conduct Level 1 Noise Test.
3. Electrical Instrumentation and Controls:
   a. Test witnessing: Not witnessed.
   b. Conduct testing as specified in Section 17950 - Commissioning for Instrumentation and Controls.

D. Functional testing:
1. Functional testing of the entire system to be conducted following installation and cleaning of the units.
2. Fluoride System:
   a. Test witnessing: Witnessed.
   b. Conduct Level 2 General Equipment Performance Test.
   c. Conduct Level 2 Vibration Test.
   d. Conduct Level 2 Noise Test.
3. Electrical Instrumentation and Controls:
   a. Test witnessing: Witnessed.

b. Conduct testing as specified in Section 17950 - Commissioning for Instrumentation and Controls.
c. Manufacturer's representative shall provide a calibration check.

END OF SECTION

SECTION 11309

PACKAGED GRINDER PUMP STATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Grinder pump stations associated with odor control drain with features specified in this Section.

B. Tag Numbers: The following pumps shall be included as part of a single package grinder pump:
   1. Misty Woods:
      a. WD30-PUMP-28102.
      b. WD30-PUMP-28103.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. A48 - Standard Specification for Gray Iron Castings.
   2. A108 - Standard Specification for Steel Bars, Carbon and Alloy, Cold-Finished.
   3. A276 - Standard Specification for Stainless Steel Bars and Shapes.
   4. A582 - Standard Specification for Free-Machining Stainless Steel Bars.
   5. A743 - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
   6. B148 - Standard Specification for Aluminum-Bronze Sand Castings.
   7. B505 - Standard Specification for Copper Alloy Continuous Castings.
   8. B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
   9. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
   10. F594 - Standard Specification for Stainless Steel Nuts.

B. Hydraulic Institute (HI):
   1. 1.1-1.5 - Centrifugal Pumps - Nomenclature, Definitions, Application, and Operation.
   2. 1.6 - Centrifugal Pump Tests.
   3. 9.1-9.5 - Pumps - General Guidelines for Types, Definitions, Application, and Sound Measurement.

C. National Electrical Code (NEC).

D. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1000 V Maximum).

E. Underwriters Laboratories, Inc. (UL):
   1. 508 - Standard for Industrial Control Equipment.
   2. 508A - Standard for Industrial Control Panels.

3. 698A - Standard for Industrial Control Panels Relating to Hazardous (Classified) Locations.
4. 1283 - Standard for Electromagnetic Interference Filters.
5. 1449 - Surge Protective Devices.

1.03 DEFINITIONS

A. Pump head (Total Dynamic Head, TDH), flow capacity, pump efficiency, net positive suction head available (NPSHa), and net positive suction head required (NPSHr): As defined in HI 1.1-1.5, 1.6 and 9.1-9.5 and as modified in the Specifications.

B. Suction head: Gauge pressure available at pump intake flange or bell in feet of fluid above atmospheric; average when using multiple suction pressure taps, regardless of variation in individual taps.

C. Tolerances: In accordance with HI 1.1-1.5, 1.6 and 9.1-9.5, unless specified more restrictively.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Submit as specified in Section 15050 - Common Work Results for Mechanical Equipment.

C. Submit design calculations signed by a registered structural engineer for concrete ballast to prevent flotation.

1.05 TOOLS AND SPARE PARTS

A. The grinder pump station manufacturer shall furnish all special tools and appliances necessary to adjust the equipment and appurtenances.

B. The following spare parts shall be furnished:
   1. One grinder pump.

1.06 QUALITY ASSURANCE

A. Manufacturer qualifications: Manufacturer of pumps similar to specified pumps as evidenced by references to minimum 5 installations of the same model and drive configuration in operation under similar conditions of head, flow, and speed for minimum 5 years.

B. Provide pumps and pump stations in this Section from the same manufacturer.

C. Pump station manufacturer:
   1. Furnish and coordinate sump, barrel/can, grinder pumps, driver, drive, and pump components as specified below.
   2. Design station bedding and backfill and anti-floatation ballast.
   3. Provide written installation and check out requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 15050 - Common Work Results for Mechanical Equipment.

1.08 PROJECT CONDITIONS

A. Environmental requirements: As specified in Section 15050 - Common Work Results for Mechanical Equipment.

1.09 SEQUENCING AND SCHEDULING

A. Coordinate work with work sequence and constraints.

1.10 WARRANTY

A. Grinder pump station manufacturer shall provide a part(s) and labor warranty on the complete station and accessories, including, but not limited to, panel and redundant check valve, for a period of 24 months after notice of Owner's acceptance.

1.11 MAINTENANCE

A. Special tools: Deliver 1 set for every furnished pump type and size needed to assemble and disassemble pump system.

B. Spare parts: Deliver the following as specified in the Agreement and Contract RFP in Volumes 1 and 2:
   1. Sump seal gaskets or o-rings.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Grinder pump station: The equipment specified shall be a product of a company experienced in the design and manufacture of grinder pumps stations for specific use in low-pressure sewage systems. Manufacturer shall provide a reference and contact list from 3 of its grinder pump station installations of the same size.
   1. Manufacturers: One of the following or equal:
      a. E/One Sewer Systems, W-Series Fiberglass Duplex or equal.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Furnish complete factory-built and tested grinder pump station(s) consisting of grinder pump(s) mounted in a basin constructed of fiberglass or high density polyethylene (HDPE), electrical quick disconnect (NEMA 6), pump removal system, shut-off valve, anti-siphon valve, and check valve assembled within the basin, electrical alarm/disconnect panel, and all necessary internal wiring and controls. Include design and supply of soil backfill and base and concrete ballast to prevent floatation.

2.03 COMPONENT MATERIALS

A. General: When materials are referenced in this Section, the compositions shall be the UNS Alloys, Types, or Grades in this Article unless specified or scheduled otherwise.

B. Cast irons:
   1. Cast Iron: ASTM A48, Class 35 B minimum.
   2. Nickel Cast Iron: ASTM A48, Class 35 minimum with 3 percent nickel added.

C. Carbon steels:
   1. Structural steel: As specified in Section 05120 - Structural Steel Framing.
   2. Steel shafts: ASTM A108, Grade or UNS Alloy as specified or scheduled.

D. Stainless steels:
   1. Castings: ASTM A743, Grade as specified or scheduled.
   2. Shafts and shapes: ASTM A276 or ASTM A582, Type or UNS Alloy as specified or scheduled.
   3. Fasteners: ASTM F593 or ASTM F594, type or grade as specified.

E. Copper alloys:
   1. Bronze: ASTM B505 or ASTM B584, UNS Alloy C83600.
   2. Zincless Bronze: ASTM B505 or ASTM B584, leaded tin bronze, UNS Alloy C92700.
   3. Aluminum bronze: ASTM B148, ASTM B505 or ASTM B584, UNS Alloy C95200.

2.04 PUMP

A. Type: Custom designed, integral, vertical rotor, motor driven, solids handling, and progressive cavity pump.

B. Pump station capacity: Duplex pump installation, each pump shall be rated for design at 11 gallons per minute at 40 pounds per square inch, gauge, discharge pressure.

C. Seal: Single mechanical seal with stationary ceramic seat and carbon rotating surface, held in position by stainless steel spring.

D. Rotor: Through-hardened, polished, precipitation hardened stainless steel.

E. Stator: Ethylene-propylene synthetic elastomer.

F. Materials: Suitable for wastewater service with resistance to abrasion, grease, water and detergent, dilute laboratory chemicals, and wear.

G. Check valve: Pump discharge shall be equipped with a gravity operated, flapper type check valve. Check valve shall provide a full port passage when opened and the pressure loss across the check valve shall be no more than 6 inches water column at maximum flow.

2.05 GRINDER

A. Type: Placed immediately below pumping elements, direct driven by a single 1-piece stainless steel motor shaft, rotating type with stationary hardened and ground stainless steel shredding ring, with 2 hardened series 400 stainless steel cutter bars.

B. Assembly: Dynamically balanced to operate without excessive noise or vibration over the entire operating range.

C. Impeller: Securely fastened to the pump motor shaft.

D. Inlet shroud: 5-inch minimum diameter.

E. Average inlet velocity: Maximum flow velocity of 4 feet per second.

F. Rotational speed: Impeller mechanism maximum speed of 3,600 revolutions per minute.

2.06 MOTOR

A. Horsepower: Minimum 1 horsepower.

B. Speed: 1,725 revolutions per minute.

C. Volts/phase/frequency: 240 Volts per single phase per 60 hertz.

D. UL listed for the application.

2.07 TANK AND INTEGRAL ACCESSWAY

A. Tank construction: Rotationally molded high density polyethylene, nominal thickness of 1/2-inch, all seams thermally welded and leak tested, capable of withstanding pressure exerted by saturated soil loading at maximum burial depth as indicated on the Drawings. All station components shall function normally when subject to maximum external soil and hydrostatic pressure.

B. Tank capacity: 275 gallons.

C. Accessway: Integral extension of wet well assembly with a lockable cover with minimum 30-inch diameter.

D. Accessway construction: Facilitate field adjustment of station height in increments of no more than 4 inches without the use of adhesives or sealants requiring cure time.

E. Discharge piping: Constructed of 304 stainless steel, termination outside the accessway bulkhead with stainless steel 1-1/4-inch female NPT fitting. Discharge piping shall include a stainless steel ball valve.

F. Disconnect: Accessway shall include a NEMA 6 quick disconnect for all power and control functions.

G. Vent: Accessway shall include a 2-inch PVC vent.

H. Penetrations: All necessary penetrations shall be molded and factory sealed.

I. Design bedding and backfill quantities and locations.

J. Ballast: Design and provide cast-in-place concrete to ensure that grinder pump station does not become dislodged.

2.08 INSTRUMENTATION

A. Liquid level shall be monitored by an integral air-bell level sensor connected to a pressure switch.

B. High level sensing shall be monitored by a separate air-bell sensor and pressure switch.

2.09 PACKAGE CONTROL SYSTEM

A. General:
   1. This Section summarizes key control system components for vendor control panels (VCP).
      a. Referenced sections can be obtained from the Contractor for complete control system requirements.
   2. Provide instruments and other components performing similar functions of the same type, model, or class, and from one manufacturer.
      a. Coordinate with Contractor to align make and model with Contractor-furnished equipment.
   3. VCP shall be completely preprogrammed, prewired, and factory tested for proper operation prior to shipment.
      a. Additional testing requirements as specified in Section 17950 - Commissioning for Instrumentation and Controls.
   4. Provide necessary control hardware, software, and components as required for a fully functional and operational installation.
   5. Design and size panels.
      a. Design panels to fit in the space as indicated on the Drawings.
         1) Panel Tags:
            a) WD37-VCPX-36901.

B. Panels, Enclosures, and Panel Components:
   1. Manufacturers: One of the following or equal:
      a. nVent/Hoffman.
      b. Saginaw Control & Engineering.
   2. Provide components and equipment with UL 508 listing.
   3. Provide control panels with UL 508A labeled.
   4. Provide fuses for equipment that is not UL listed or recognized.
   5. Provide intrinsically safe circuits and equipment in accordance with UL 698A.
   6. Provide control panel power circuits in accordance with the panel power wiring diagram included with the contract documents.
      a. Design devices and instruments to fail in a safe condition.
   7. Accept 240 VAC power source:

a. Terminate incoming power feed on main circuit breaker as specified in Section 16412 - Low Voltage Molded Case Circuit Breakers.
b. Properly rate incoming circuit breaker for the available fault current as calculated as specified in Section 16305 - Electrical System Studies.
c. Provide a buck boost transformer from the same manufacturer with ratings as indicated on the drawings.
d. Derive additional voltages as required by the application.

8. Conform panel enclosure rating to the area classifications as specified in Section 16050 - Common Work Results for Electrical.
9. Panel shall be rated as follows, unless otherwise specified:
   a. Indoor panels:
      1) Electrical/control rooms: NEMA 12, powder coated mild steel.
      2) Process floor: NEMA 4X.
         a) Non-Corrosive Areas: Type 316 stainless steel.
         b) Corrosive Areas: Polycarbonate or fiberglass reinforced polyester (FRP).
10. Provide each control panel door with a continuous steel hinge, 3-point latching mechanism and locking handle with rollers on the ends of the latch rods.
    a. Connect latch rods to a common door handle, hold doors securely, and form a compressed seal between door and gasket, at the top, side, and bottom.
11. Perform and submit thermal management calculations for each control panel.
    a. Provide heating, cooling, and dehumidifying devices in order to maintain instrumentation and control devices within their rated operational temperature range.
12. Pad lockable flange mounted disconnect switch to disconnect power from panel.
    a. Interlock with the panel door.
13. Provide nonmetallic ducts for routing and organization of conductors and cables.

2.10 CONTROL REQUIREMENTS

A. Pilot devices:
   1. Controls:
      a. Alarm silence pushbutton.
      b. Redundant pump start.
      c. Push-to-run switch.
   2. Lights:
      a. Alarms:
         1) Wet well high level: shall remain on until wet well liquid level drops below the "off" setting.
   3. Audio:
      a. Alarms:
         1) Wet well high level.

B. Monitoring and control:
   1. Dry contact rating: 24 VDC @ 6 A.
   2. Analog signal type: 4-20 mA.

3. VCP Outputs:
    a. Alarms:
        1) Wet well high level.

PART 3 EXECUTION

3.01 INSTALLATION

A. Do not drop, roll, or lay the pump station on its side.

B. Install pump station in a traffic rated manhole with minimum 6-inch clearance between manhole and pump station tank. Backfill annular space with concrete, CLSM, or similar material to prevent flotation.

C. Install pump station so that 1 to 4 inches of accessway, below the bottom of the lid, extends above the finished grade line. The finished grade shall slope away from the unit.

D. Provide bedding material under each unit as recommended by the manufacturer and meeting the requirements indicated on the Drawings.

E. A concrete anti-flotation collar, sized according to the manufacturer's instructions shall be required and shall be poured in place around the sump. Each grinder pump station shall have a minimum of 3 lifting eyes for loading and unloading purposes.

F. Unit shall be leveled, and filled with water, to the bottom of the inlet, to help prevent the unit from shifting while the concrete is being poured.
    1. Concrete must be manually vibrated to ensure there are no voids.
    2. If it is necessary to pour the concrete to a level higher than the inlet piping, an 8-inch sleeve is required over the inlet prior to the concrete being poured.
    3. Follow the manufacturer's written installation instructions.

G. Alarm/disconnect panel shall be furnished, installed, and wired to the grinder pump station by Contractor.

H. Contractor shall mount the alarm panel where indicated on the Drawings and as per national and local codes. Install all electrical and conduit between the panel and the pump station.

3.02 FACTORY TEST

A. Each grinder pump shall be submerged and operated for 5 minutes (minimum).
    1. Included in this procedure shall be the testing of all ancillary components such as, the anti-siphon valve, check valve, discharge line, level sensors, and each unit's dedicated controls.
    2. All factory tests shall incorporate each of the above listed items.
    3. Actual appurtenances and controls which will be installed in the field shall be particular to the tested pump only.

4. Certified test results shall be available upon request showing the operation of each grinder pump at 2 different points on its curve, with the maximum pressure no less than 40 pounds per square inch.
5. Engineer reserves the right to inspect such testing procedures with representatives of Owner, at the facility 21 days' notice shall be given prior to testing the pumps.

3.03 START-UP AND FIELD TESTING

A. Manufacturer shall provide the services of a qualified factory trained technician who shall inspect the placement and wiring of each station, perform field tests as specified in this Section, and instruct Owner's personnel in the operation and maintenance of the equipment before the stations are accepted by the Owner. Technician shall be onsite for a minimum of 8 hours, exclusive of travel time, to perform start-up and testing.

B. All equipment and materials necessary to perform testing shall be the responsibility of Contractor.

C. Upon completion of the installation, the authorized factory technician will perform the following test on each station:
   1. Make certain the discharge shut-off valve is fully open. This valve must not be closed when the pump is operating.
   2. Turn on the alarm power circuit.
   3. Fill the wet well with water to a depth sufficient to verify the high level alarm is operating. Shut off water.
   4. Turn on pump power circuit.
      a. Initiate operation to verify automatic "on/off" controls are operative.
      b. Pump should immediately turn on.
      c. Within 3 minutes the pump will turn off.
   5. Test remote alarm to PLC.

D. Upon completion of the start-up and testing, manufacturer shall submit to Engineer the start-up authorization form describing the results of the tests performed for each grinder pump station. Final acceptance of the system will not occur until authorization forms have been received for each pump station installed.

END OF SECTION

SECTION 11313

VERTICAL TURBINE PUMPS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Vertical turbine pumps with radial, mixed flow, or axial (propeller) type impellers and drivers as scheduled.

1.02 REFERENCES

A. American Bearing Manufacturers Association (ABMA):
   1. 9 - Load Ratings and Fatigue Life for Ball Bearings.
   2. 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. American Society of Mechanical Engineers (ASME):
   1. B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, and 250.
   2. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through 24.

C. American Water Works Association (AWWA):
   1. C205 - Standard for Cement-Mortar Protective Lining and Coating for Steel Water Pipe, 4-Inch (100 mm) and Larger-Shop Applied.

D. ASTM International (ASTM):
   1. A 48 - Standard Specification for Gray Iron Castings.
   2. A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   3. A 108 - Standard Specification for Steel Bars, Carbon and Alloy, Cold-Finished.
   4. A 276 - Standard Specification for Stainless Steel Bars and Shapes.
   5. A 278 - Standard Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 650 degrees Fahrenheit (350 degrees Celsius).
   6. A 283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
   7. A 516 - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate-and Lower-Temperature Service.
   8. A 582 - Standard Specification for Free-Machining Stainless Steel Bars.
   9. A 743 - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
   10. B 148 - Standard Specification for Aluminum Bronze Sand Castings.
   11. B 505 - Standard Specification for Copper Alloy Continuous Castings.
   12. B 584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
   13. F 593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
   14. F 594 - Standard Specification for Stainless Steel Nuts.

E. Hydraulic Institute (HI):
   1. 2.1-2.2 - Vertical Pumps for Nomenclature and Definitions.
   2. 2.3 - Vertical Pumps for Design and Application.
   3. 2.4 - Vertical Pumps for Installation Operation and Maintenance.
   4. 2.6 - Vertical Pump Tests.
   5. 9.1-9.5 - Pumps - General Guidelines for Types, Definitions, Application, and Sound Measurement and Decontamination.

F. International Standards Organization (ISO):
   1. ISO 9001 Certified.

1.03 DEFINITIONS

A. Pump head (total dynamic head, TDH), flow capacity, pump efficiency, net positive suction head available (NPSHa), and net positive suction head required (NPSHr): As defined in HI 2.1-2.2, 2.3, 2.6, and 9.1-9.5 and as modified in the Specifications. The pump head and efficiency are evaluated at the outlet of the discharge head and include the net losses in the pump column and discharge.

B. Flow, head, efficiency, and motor horsepower specified in this Section are minimums unless stated otherwise.

C. Suction head: Gauge pressure available at pump intake flange or bell in feet of fluid above atmospheric.

D. Tolerances: This Section and related sections contain tolerances that may be more stringent than Hydraulic Institute Standard tolerances. Where tolerances are not mentioned, Hydraulic Institute Standards 2.1-2.2, 2.3, 2.4, and 9.1-9.5 shall apply.

1.04 SYSTEM DESCRIPTION

A. Components: Pump, driver, motors, and drive arrangements as specified or as scheduled with shafts, columns, barrels, intermediate bearings, seals or packing, couplings, base plates, guards, supports, anchor bolts, necessary valves, gauges, taps, lifting eyes, stands, and other items as required for a complete and operational system.

B. Design requirements:
   1. Pump performance characteristics:
      a. As specified in the Pump Schedule.
      b. Performance tolerances shall be the same as the test tolerances specified in Section 15958 - Mechanical Equipment Testing.
      c. Pump curve shall be continuously rising throughout the design conditions listed in the pump schedule.
   2. Motor characteristics: As specified in the Pump Schedule.

1.05 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Torsional analysis: Submit as specified in Section 15050 - Common Work Results for Mechanical Equipment when scheduled.

C. Pump test report showing testing conformance to listed standards for the Engineer Of Record for review and approval prior to shipment.

1.06 QUALITY ASSURANCE

A. General: As specified in Section 15050 - Common Work Results for Mechanical Equipment.

B. Provide pumps specified in this Section from same manufacturer. Require pump manufacturer to furnish and coordinate pump, driver, drive, and pump components including barrel/can as scheduled and to provide written installation and checkout requirements.

C. Pump manufacturer must be ISO 9001 certified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 15050 - Common Work Results for Mechanical Equipment.

1.08 PROJECT CONDITIONS

A. Environmental requirements: As specified in Section 01850 - Design Criteria.

1.09 SEQUENCING AND SCHEDULING

A. Coordinate work with restrictions as specified in the Agreement and Contract RFP in Volumes 1 and 2.

1.10 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.
   1. Provide a 2-year duration special warranty.

1.11 MAINTENANCE

A. Special tools: Deliver 1 set for each furnished pump type and size needed to assemble and disassemble pump system.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. One of the following or equal:
   1. National Pump Company: model as scheduled.

2. Flowserve; similar to model as scheduled.
3. Peerless Pump; similar to scheduled model.
4. Sulzer/Johnston Pumps; similar to scheduled model.
5. Weir/Floway; similar to scheduled model.

2.02 MATERIALS

A. General: Materials in the Pump Schedule shall be the type and grade as specified in this Section, and shall be in conformance with all applicable ASTM Standard specifications.

2.03 GENERAL PUMP CONSTRUCTION

A. Type: Industrial, heavy duty, vertical turbine, centrifugal type pumps meeting performance requirements and features as scheduled and as specified.

B. Discharge Head: Custom fabricated discharge head with NEMA C-Face motor mount, pressure rated base flange, and pressure rated discharge flange fabricated from Type 316L stainless steel in conformance with ASTM A 312. Provide access to the pump shaft seal and coupling through the center section of the discharge head, with hinged guard, and NPT drain connections, and welded lifting lugs on either side of the head to facilitate crane removal. All components shall be fabricated from Type 316 SST.

C. Discharge flange: ASME B16.1 or B16.5 drilled; rated for 1.5 times the pump shutoff head at 120 degrees Fahrenheit.

D. Discharge head base flange: ASME B16.1 or B16.5 drilled; rated for 1.5 times the pump shutoff head at 120 degrees Fahrenheit. Provided NPT threaded taps on both sides of flange for downhole control valve hydraulic fittings and trickle flow connections as shown on the drawings.

E. Discharge nozzles: Provide 1/2-inch NPT taps for pressure gauges; install nipple and gauge with block valve. Additional ports are required for the nitrogen lines for the down hole control valve as well as the trickle flow and pre lube as shown on the mechanical drawings.

F. Bearings:
   1. Design driver/motor bearings to support the line shaft assembly and rated for ABMA L_{10} life of 40,000 hours at Design Rated Point flow and head in accordance with ABMA 9 or ABMA 11.
   2. Design motor to withstand continuous duty full load thrust and momentary upthrust that may occur during pump on/off or other operations.

G. Fasteners: Provide Type 316 stainless steel fasteners in accordance with ASTM F 593 or ASTM F 594.

2.04 PUMP SUCTION ASSEMBLY

A. Pump suction assembly: Provide suction bell. Provide anti-vortex baffles, foot valve, and strainer when scheduled.

B. Design suction bells and provide strainers and anti-vortex baffles to minimize solids plugging and vortexing. Screens to have a flow area at least 4 times the suction pipe area.

C. Materials:
   1. Pump suction bell: As scheduled.
   2. Anti-vortex baffles: Same material as scheduled for pump suction bell.
   3. Pump suction bell bearing: As scheduled.
   4. Pump suction strainer: When strainer scheduled, provide Type 316 stainless steel.

2.05 PUMP IMPELLER BOWL ASSEMBLIES

A. Pump impeller assembly:
   1. Type: As scheduled.
   2. Maximum number of vanes: As scheduled.
   3. Number of stages: As scheduled.
   4. Required balance: In conformance with the Hydraulic Institute Standards.
   5. Method of securing impellers to shafts: Keyed and secured by a bronze nut locked in place or locked by other methods acceptable to the Engineer. Provide any special tools required for removal and installation of pump impellers.
   6. Provisions for adjustment of axial clearance: Make such adjustment through use of motor adjusting nut or adjustable coupling.
   7. Impeller thrust: When appropriate for the specified impeller type, provide hydraulically balanced impeller to minimize down thrust.

B. Intermediate and discharge impeller cases:
   1. Material: As scheduled.
   2. Attached with bolting.

C. Pump impeller bowl bearings: Provide bearing for each impeller; material as scheduled.

D. Diffusion vanes: Provide vanes cast into bowl.

E. Suction bowl bearings:
   1. Provide bronze sleeved bearings with self-contained lubrication system filled with graphite type non-soluble grease when grease lubrication scheduled; provide bearing with sand cap.
   2. When service is potable water, provide non-toxic grease approved by the Food and Drug Administration for use in potable water.

F. Design with smooth water passages to reduce clogging by stringy or fibrous materials on impellers or shafting.

G. Design replaceable wear rings for both the bowl and impeller on each impeller bowl.

H. Design capable of passing solids with a sphere size as scheduled or larger.

2.06 LINE SHAFTS

A. Provide line shaft type and lubrication type as scheduled and as specified in this Section.

B. Open line shaft, product lubricated:
   1. Shaft and couplings:
      a. Provide keyed shaft type mechanical couplings with key or set screw locking of shaft couplings.
      b. Shaft threaded connections are allowed. Threads shall be cleaned before assembly.
   2. Bearings and bearing retainers: Provide bearings and retainers spaced as scheduled, but not to exceed 10 feet; provide at least 1 bearing for each line shaft length; provide grease fitting for top bearing extended to outside any guards when grease lubrication specified.
   3. Provide shaft centralizers as directed by pump manufacturer.
   4. Materials:
      a. Shaft and couplings: As scheduled; where hard faced steel shaft is specified, hard face at sleeve bearings to 550 Brinell minimum.
      b. Bearings and bearing retainers: As scheduled.

C. Strength: Able to withstand minimum 1.5 times maximum operating torque and other loads.

D. Sleeves: Provide shafting with hardened sleeves where shafts pass through bearings or stuffing boxes as scheduled; Brinell 550 or higher for hardened shaft; when the specified mechanical seals cannot be installed on a hardened shaft, hardened shafts are not required in the area of the mechanical seal.

E. Design pump line shafting in interchangeable lengths as scheduled, but not to exceed 10 feet; shaft lengths to match scheduled pump column lengths.

F. Coupling strength: Design driver to pump line shaft coupling of sufficient length and strength to maintain line shaft alignment.

G. Adjustment:
   1. Design a means to adjust shaft position to adjust impeller position.
   2. For motor driven units with solid shaft motors, design driver to pump line shaft coupling to allow adjustment of the impeller position.
   3. For motor driven units with hollow shafts, an adjusting nut may be provided at the top of the motor shaft.

H. Spacer coupling: When mechanical seals are scheduled, provide an adjustable spacer coupling to allow removal of the seal without driver removal.

2.07 PUMP COLUMN PIPE

A. Pump column pipe: Thickness and material as scheduled.

B. For each ASR well pump: Provide a suction pipe assembly which shall be connected to the coupled inlet of the pump bowl assembly. Each suction pipe assembly shall consist of a downhole control valve, and downhole inline check (foot) valve as described in the Valve Schedule on the mechanical drawings; an inlet cone

strainer shall be provided on the inlet side of the check valve as shown on the detail on the mechanical. Provide the hydraulic control lines to the downhole valve as per the manufacturer's instructions and as shown on the mechanical drawings.

C. Head connection: Design with flanged and bolted connection to discharge head.

D. Design Working Pressure: Design to withstand a design working pressure not less than 1.20 times the maximum shutoff total dynamic head with the maximum diameter impeller at the maximum operating speed plus the maximum suction static head.

E. Pressure test: Design to withstand a 5 minute hydrostatic test pressure not less than 1.5 times the design working pressure; perform test at source.

F. Lengths and connections: Design with maximum 10 foot length, or less if scheduled, interchangeable column sections with flanged or threaded with registered fit screwed connections as scheduled.

G. Diameter: Design column inside diameter for no more than 2 feet of fluid friction loss per 100 feet of column length.

H. Design of the column pipe to the pump column discharge head assembly is custom and shall be constructed as shown on the drawings.

2.08 PUMP DISCHARGE HEAD ASSEMBLY

A. Design the fabricated discharge head for pressure-rated base connection to the top of wellhead casing fittings shown on the drawings. The top of the wellhead casing is a custom casing that includes the annular recharge connection as shown on the drawings.

B. Design the discharge vertical to horizontal flow transition as a smooth pipe elbow or from a minimum of 3 pipe pieces mitered to form the elbow.

C. Design discharge head to mate with the driver as scheduled.

D. Head and base plate construction: Sufficient strength, weight, and thickness to provide accurate alignment, prevent excessive deflection and support the drive motor.

E. Stuffing box and seal:
   1. Design the discharge head with a stuffing box to accommodate packing or mechanical seals as scheduled.
   2. Packing: When packing scheduled, provide stuffing box arranged for packing (sized for bronze lantern ring and 6 packing rings minimum); provide hollow shaft motor with top adjusting nut.
   3. Mechanical seal: When scheduled, provide stuffing box suitable for the specified seal and provide a solid shaft or hollow shaft motor with spacer coupling, as scheduled.
   4. Drain: Provide drain, minimum 3/4 inch size, for pump stuffing box leakage, together with drain line to the pump can or wet well or to nearest equipment drain as shown on the Drawings.

F. Discharge vent: Provide 3/4 inch NPT threaded high point vent on discharge; install pipe nipple with threaded gate valves in vent.

G. Materials: As scheduled.

H. Pump discharge head base flange connection to top of wellhead flange connection shall be rated for a minimum operating pressure of 150 psi.

2.09 EQUIPMENT GUARDS

A. Provide equipment safety guards as specified in Section 15050 - Common Work Results for Mechanical Equipment.

B. Shop fabricate pump discharge head per Section 05120 - Structural Steel and Section 05500 - Metal Fabrications.

2.10 DRIVERS

A. Horsepower:
   1. As scheduled.
   2. Listed driver horsepower is the minimum to be supplied.
      a. Increase driver horsepower if required to prevent driver overload while operating at any point of the supplied pump operating head-flow curve including runout.
      b. When scheduled driver is a motor, increase motor horsepower if required to prevent operation in the service factor.
      c. Make all structural, mechanical, and electrical changes required to accommodate increased horsepower.

B. Motors: Provide motors as specified in Section 16222 - Low Voltage Motors up to 500 Horsepower, and as specified in this Section:
   1. RPM: As scheduled.
   2. Enclosure: As scheduled.
   3. Electrical characteristics: As scheduled.
   4. Efficiency, service factor, insulation, and other motor characteristics: As specified in Section 16222 - Low Voltage Motors up to 500 Horsepower.
   5. Motor accessories: As specified in Section 16222 - Low Voltage Motors up to 500 Horsepower, and in this Section.
   6. Coordinate motors with the variable frequency drive manufacturer to ensure compatibility between the motor and variable frequency drive.

C. Other drivers: As scheduled and as specified in sections listed in the Schedule.

D. Non-reverse ratchets: When scheduled, provide driver with non-reverse ratchets or pin mechanism to prevent reverse rotation of the pump and driver during recharge operations for the ASR well pumps.

2.11 SUPPORTS

A. Strength: Design pump discharge head and driver (motor or engine) supports to withstand a minimum of 1.5 times the maximum imposed operating loads or the imposed seismic loads, whichever is greater.

B. Resonant frequency: Design supports in conjunction with the pump, shafting, drivers, bearings, and other components to avoid natural resonant frequencies, either torsional, radial, or axial as specified in Section 15958 - Mechanical Equipment Testing.

C. Coordinate pump and drive system supports with the foundation designs as shown on the Drawings.

2.12 FINISHES

A. Prepare surfaces and apply protective coatings as specified in Section 09960 - High-Performance Coatings.

2.13 SOURCE QUALITY CONTROL

A. Witnessing: Source or factory testing shall be witnessed by the Engineer or Owner when scheduled; provide advanced notice of source testing as specified in Section 15958 - Mechanical Equipment Testing.
   1. Provide a test report showing testing conformance to listed standards for the Engineer Of Record for review and approval prior to shipment.

B. Equipment performance test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

C. Vibration test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

D. Noise test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

E. Motor factory tests: Test as specified in Section 16222 - Low Voltage Motors up to 500 Horsepower.

F. Hydrostatic pressure tests: As specified for components in this Section.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions and as specified in Section 15050 - Common Work Results for Mechanical Equipment.

B. Install pump discharge head per Section 05120 - Structural Steel and Section 05500 - Metal Fabrications.

3.02 FIELD QUALITY CONTROL

A. Witnessing: All field-testing shall be witnessed by the Engineer; provide advanced notice of field-testing as specified in Section 15958 - Mechanical Equipment Testing.

B. Inspection and checkout: As specified in Sections 15958 - Mechanical Equipment Testing.

C. Equipment performance test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

D. Vibration test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

E. Noise test: Test level as scheduled; test as specified in Section 15958 - Mechanical Equipment Testing.

F. Operational testing: As specified in Section 01756 - Commissioning.

G. Provide quality control as specified in Section 01450 - Quality Control.

3.03 MANUFACTURER'S FIELD SERVICES

A. Require manufacturer to inspect system before initial start-up and certify that system has been correctly installed and prepared for start-up as specified in this Section and in Sections 15958 - Mechanical Equipment Testing.

B. Training: As specified in Section 01756 - Commissioning.

3.04 PUMP SCHEDULE

Tag Numbers	**WD34-PUMP-30101**	**WD34-PUMP-36101**
Site Location	**Campus Oaks**	**Misty Woods**
General Characteristics:		
Service	ASR Well Pump Well-13	ASR Well Pump Well-19
Quantity	1	1
First Named Manufacturer's Model Number	TBD	TBD
Maximum Noise, dBA at 3 feet	85	85
Torsional Analysis	Required	Required
Minimum Pumped Fluid Degrees Fahrenheit	60	60
Normal Pumped Fluid Degrees Fahrenheit	70	70
Maximum Pumped Fluid Degrees Fahrenheit	85	85
Pump Characteristics:		
Minimum Number of Stages	3	3
Impeller Type	Enclosed	Enclosed
Pump Impeller Bowl Bearing Lubrication	Pumped Liquid	Pumped Liquid

Tag Numbers	WD34-PUMP-30101	WD34-PUMP-36101
Site Location	**Campus Oaks**	**Misty Woods**
Suction Bowl Bearing Lubrication	Pumped Liquid	Pumped Liquid
Suction Strainer	Type 316 SST	Type 316 SST
Line Shaft Type	Open	Open
Minimum Line Shaft Bearing Spacing, Feet	10	10
Line Shaft Lubrication	Pumped Liquid	Pumped Liquid
Discharge Shaft Seal Type	Single Mechanical	Single Mechanical
Pump Column	12-inch 304 SST	12-inch 304 SST
Pump Column Connection Type	Nitronic 60 threaded Coupling	Nitronic 60 Threaded Coupling
Column Flange Fasteners	Type 18-8 or 304 SST Hex Bolt Sets	Type 18-8 or 304 SST Hex Bolt Sets
Maximum Column Section Lengths, Feet	10	10
Minimum Overall Length of Column Pipe, Shafting and Appurtenances	245.1-ft (Note 3)	201.5-ft (Note 3)
Shaft Coupling Type	Threaded Coupler	Threaded Coupler
Speed Control	Variable Frequency Drive	Variable Frequency Drive
Maximum Pump rpm	1,800	1,800
Minimum Pump rpm	1,300	1,300
Rated Design Point (at 95% of Maximum Revolutions per Minute): (See Note 1)		
Flow, gpm	2,200	2,700
Head, feet	522	462
Minimum Efficiency, Percent	82	82
Other Conditions: (See Note 1)		
Shut Off Head, Feet (maximum)	TBD	TBD
Maximum NPSHr at Specified Flow, Feet	TBD	TBD
Minimum NPSHa at Specified Flow, Feet	TBD	TBD
Minimum Suction Static Head, Feet	Min 30-foot Submergence	Min 40-foot Submergence
Pump Materials:		
Suction Nozzle or Bell	Vesconite H/L	Vesconite H/L
Suction Bell Bearing	Vesconite H/L	Vesconite H/L

Tag Numbers	WD34-PUMP-30101	WD34-PUMP-36101
Site Location	**Campus Oaks**	**Misty Woods**
Bowl and Suction Cases	Vesconite H/L	Vesconite H/L
Impeller	Bronze	Bronze
Impeller Bearing	Vesconite H/L	Vesconite H/L Rubber
Impeller Shaft Key	316 SST	316 SST
Head Shaft	ASTM 276 Type 416 SST	ASTM 276 Type 416 SST
Impeller Shaft	ASTM 276 Type 416 SST	ASTM 276 Type 416 SST
Line Shaft and Coupling	ASTM 276 Type 416 SST	ASTM 276 Type 416 SST
Line Shaft Bearings	Vesconite	Vesconite
Shaft Sleeve	Hardened	Hardened
Column Material and Thickness, Inch or Schedule	304 SST	304 SST
Fabricated Discharge Head/Driver Stand (Note 4)	316 SST with 18-inch base, 12-inch discharge flange (Verify Flanged or welded Base and DIA with mechanical drawings)	316 SST with 18-inch base, 12-inch discharge flange (Verify Flanged or welded Base and DIA with mechanical drawings)
Fabricated Discharge Head Base Flange Connections (Note 5)	(2) 1/4-inch NPT nipples (for downhole control valve (1) 1 1/4-inch NPT nipple for trickle flow	(2) 1/4-inch NPT nipples (for downhole control valve (1) 1 1/4-inch NPT nipple for trickle flow
Discharge Head Bearing	Vesconite	Vesconite
Discharge Stuffing Box	316 SST	316 SST
<u>Driver Characteristics</u>:		
Driver Type	Motor	Motor
Drive Arrangement	Vertical, Coupled Non-Reverse Ratchet (Note 2)	Vertical, Coupled Non-Reverse Ratchet (Note 2)
Non-Reverse Ratchets	Required	Required
Minimum Driver Horsepower	450	450
Maximum Driver rpm	1,800	1,800

Tag Numbers	WD34-PUMP-30101	WD34-PUMP-36101
Site Location	**Campus Oaks**	**Misty Woods**
Motor Characteristics (when motor is driver type):		
Inverter Duty Rated	Yes	Yes
Motor Voltage/Phases/Hertz	460/3/60	460/3/60
Enclosure Type	TEFC	TEFC
Motor Shaft Type	Hollow	Hollow
Source Quality Control Testing:		
Test Witnessing	Not Witnessed	Not Witnessed
Performance Test Level	1	1
Vibration Test Level	1	1
Noise Test Level	1	1
Field Quality Control Testing:		
Performance Test Level	1	1
Vibration Test Level	1	1
Noise Test Level	1	1

END OF SECTION

SECTION 13208

POLYETHYLENE TANKS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Polyethylene storage tanks made from crosslinked polyethylene resin.

1.02 REFERENCES

A. American Concrete Institute (ACI):
   1. 318 - Building Code and Commentary.

B. American Society for Mechanical Engineers (ASME):
   1. B16.4 - Gray Iron Threaded Fittings.
   2. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through 24.

C. ASTM International (ASTM):
   1. D638 - Standard Test Method for Tensile Properties of Plastics.
   2. D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
   3. D1505 - Standard Test Method for Density of Plastics by the Density-Gradient Technique.
   4. D1525 - Standard Test Method for Vicat Softening Temperature of Plastics.
   5. D1693 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.
   6. D1998 - Standard Specification for Polyethylene Upright Storage Tanks.
   7. D2837 - Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products.

D. National Fire Protection Association (NFPA):
   1. 30 - Flammable and Combustible Liquid Code.

E. National Electrical Manufacturer's Association (NEMA).

F. Occupational Safety and Health Administration (OSHA):
   1. 29 CRF Part 1910 - Occupational Safety and Health Standards.

G. NSF/ANSI Standard 61 – Drinking Water System Components.

1.03 SUBMITTALS

A. Fabrication drawings for each tank including:
   1. Dimensions.
   2. Tank wall thickness.
   3. Materials of construction.

4. Tank fittings.
5. Tank appurtenances.
6. Tank restraint system.
7. Tank resin and hoop stress data.

B. Chemical compatibility sheet to include:
1. Chemical to be stored.
2. Percentage of chemical.
3. Temperature of chemical.

C. Engineering design calculations of restraint and anchoring system signed by a civil or structural engineer registered in the state where the project is located.

D. Installation instructions.

E. Warranty.

F. Certification to certify that each tank is suitable for the specified chemical service, no degradation within warranty period, including tank fittings and gasket material.

G. Proof of qualification: Provide lists of installation and contact information with same type of application and chemical used.

H. Color charts for proposed coating systems.

1.04 WARRANTY

A. Manufacturer warranty against defects:
1. Tank: 5 years full warranty. Prorated warranties are not acceptable.
2. Heat tracing system if scheduled: 10 years.

1.05 QUALITY ASSURANCE

A. Qualification of manufacturer: Manufacturer with experienced personnel, physical facilities, and management capacity sufficient to produce custom-made rotationally molded polyethylene tanks of the size, exposure, and chemical services specified for minimum 5 years with satisfactory performance record.

PART 2 PRODUCTS

2.01 SCOPE OF SUPPLIES

A. Provide all materials, labor, equipment, and hardware to provide all polyethylene storage tanks with specified fittings and accessories, seismic and wind load restraint systems, anchor bolts, and flange flexible connectors for complete installation in the positions and orientations indicated on the Drawings.

2.02 MANUFACTURERS

A. One of the following or equal:
1. Poly Processing Co.

2.03 DESIGN AND PERFORMANCE CRITERIA

A. Tanks: As scheduled.

B. Tank wall thickness: Calculated in accordance with ASTM D1998 using design specific gravity as scheduled. Note that design specific gravity may be higher than specific gravity of tank contents.

C. Design requirements:
   1. The minimum required wall thickness of the cylindrical shell at any fluid level shall be determined by the following equation, but shall not be less than 0.187 inches thick:

      T = P x O.D./2 SD = 0.433 x S.G. x H x O.D./2 SD
      T = wall thickness, in.
      SD = hydrostatic design stress, psi
      P = pressure (.433 x S.G. x H), psi
      H = fluid head, ft.
      S.G. = specific gravity, g/cm^3
      O.D. = outside diameter, in.

D. The hydrostatic design stress shall be determined by multiplying the hydrostatic design basis, determined by ASTM D2837 using rotationally molded samples, with a service factor selected for the application.
   1. The hydrostatic design stress is 600 pounds per square inch at 73 degrees Fahrenheit for Type I and Type II materials.
   2. The tank shall have a stratiform (tapered wall thickness) wall.

E. The hydrostatic design stress shall be derated for service above 100 degrees Fahrenheit and for mechanical loading of the tank.

F. The minimum design specific gravity shall be 1.9.

G. The minimum required wall thickness for the cylinder straight shell must be sufficient to support its own weight in an upright position without any external support.
   1. Flat areas shall be provided to allow locating large fittings on the cylinder straight shell.

H. The top head must be integrally molded with the cylinder shell.
   1. The minimum thickness of the top head shall be equal to the top of the straight wall.
   2. The top head of tanks with 2,000 or more gallons of capacity shall be designed to provide a minimum of 1,300 square inches of flat area for fitting locations.

I. Tanks with 2,000 or more gallons of capacity shall have a minimum of 3 lifting lugs integrally molded into the top head.
   1. The lifting lugs shall be designed to allow erection of an empty tank.

J. The tank shall be designed to provide a minimum of 4 tie-down lugs integrally molded into the top head.
    1. The tie-down lugs shall be designed to allow tank retention in wind and seismic loading situations without tank damage.

K. Tank shell thickness:
    1. In accordance with ASTM D1998, Section 6.1.
    2. Design tank wall thickness for liquid with specific gravity as specified.
    3. Provide adequate thickness at all fittings and connection points for mounting of fittings to the tank without damage to the tank or causing excessive deflection.
    4. Maximum allowable hoop stress used in tank wall thickness calculations per ASTM D1998 shall be based on test data in accordance with ASTM D2837.

L. Seismic and wind load restraint system:
    1. Seismic design criteria: As specified in Section 01850 - Design Criteria.
    2. Wind design criteria: As specified in Section 01850 - Design Criteria.
    3. Consist of Type 316 stainless steel angles or brackets equally spaced around the tank perimeter anchored into the concrete tie down cable.
    4. If the restraint system includes the use of tensioning and adjustment devices, such as turnbuckles, provide easy adjustment of the cables at the time of construction and as required in the future.
        a. Hardware shall be provided to attach cables to anchored brackets at the base of the tank.
    5. The tank shall be designed to provide a minimum of 4 tie-down lugs integrally molded into the top head.
        a. The tie-down lugs shall be designed to allow tank retention in wind and seismic loading situations without tank damage.
        b. Anchor bolts shall be provided by the Contractor per the instructions and the base plates for the system.

2.04 TANK MATERIALS

A. High-density crosslinked polyethylene (XLPE).

B. Resin:
    1. Manufacturers: One of the following or equal:
        a. PAXON, grade 7204 resin for crosslinkable polyethylene.

C. The material used shall be virgin polyethylene resin as compounded and certified by the manufacturer.
    1. Tanks shall be made from crosslinked polyethylene resin as manufactured by ExxonMobil Chemical, or resin of equal physical and chemical properties.
    2. Resin choice would be based on the specific application, chemical to be stored and concentration.

D. Ultraviolet stabilizer:
    1. The polyethylene resin material shall contain a minimum of a UV 8 stabilizer as compounded by the resin manufacturer.
    2. Pigments may be added but shall not exceed 0.25 percent (dry blended) of the total weight.

E. Free of holes, blisters, crazing, cracking, delamination, undispersed raw materials, and any sign of contamination from foreign matter.
   1. The finished tank wall shall be free of visual defects such as foreign inclusions, air bubbles, pinholes, pimples, crazing, cracking, and delaminations.
   2. All cut edges where openings are cut into the tanks shall be trimmed smooth.

F. Resin shall meet or exceed the following properties:
   1. Mechanical Properties of Type 1 of Tank Material: Current XLPE Resin:

Property	ASTM	Value
Density (Resin)	D1505	0.938-0.946 g/cc
Tensile (Yield Stress 2-inch/min)	D638	3,000 psi
Elongation at Break (2-inch/min.)	D638	>300 percent
ESCR (100 percent Igepal, Cond. A, F50)	D1693	>1000 hours
ESCR (10 percent Igepal, Cond. A, F50)	D1693	>1000 hours
Vicat Softening Temperature,	D1525	250
Flexural Modulus	D790	100,000 psi

G. Gel test:
   1. Inner portion of tank wall:
      a. Not less than 65 percent.
      b. ASTM D1998 requirements.
   2. Entire wall thickness: Not less than 80 percent.

H. Restraint system:
   1. Metal components, including anchor bolts:
      a. Type 304 stainless steel.
      b. The Anchor bolts shall be supplied by the tank manufacturer.
      c. The drawings and calculations for the seismic system shall be submitted for review.
   2. Concrete anchors or flush shells shall not be used.

2.05 FITTINGS

A. Terminate in socket, threaded, or flanged connections:
   1. Flanges: 150 pound ASME B 16.5.
   2. Double flanged CPVC bolted fittings with encapsulated stainless steel or Hastelloy bolts.
   3. Threaded connections: ASME B 16.4.

B. Fittings at upper tank sidewall or top:
   1. Compression threaded type, long shank, polyvinyl chloride flanged fittings with deep cut threads (not injection molded thread) and with dual wide nuts.
   2. The bulkhead fittings shall be constructed of PVC, PP, or other specified material.
   3. Gaskets shall be a minimum of 1/4 inch thickness and constructed of 60-70 durometer Viton™ or other specified material.

C. Fittings on tank top:
   1. Bosses molded into the tank.
   2. Fittings shall be vertical.
   3. The top head shall be integrally molded with the cylinder shell.
   4. The minimum thickness of the top head shall be equal to the top of the straight wall.
   5. The top head of tanks with 2,000 or more gallons of capacity shall be designed to provide a minimum of 1,300 square inches of flat area for fitting locations.

D. Flanged outlet drain fitting in the lower tank sidewall: Integrally molded into the bottom knuckle of the tank to allow full drainage of tank contents.

E. Fittings and appurtenances for each tank:
   1. Sodium Hypochlorite Tank:
      a. 1 minimum 2-inch flanged inlet nozzle entering the tank in the top.
      b. 1 minimum 2-inch full outlet/drain nozzle, integrally molded with tank wall.
      c. One 3-inch flanged overflow nozzle.
      d. One 4-inch flanged roof nozzle for mounting of tank level sensor.
         1) Provide a 4-inch diameter, 6-inch spool piece with a 4-inch flange to accommodate a non-contact ultrasonic level transducer.
      e. One 4-inch flanged roof vent.
      f. One 18 inch flanged type or molded screw type manway lid on top of the tank.
      g. Manway shall be sealed and shall be constructed of the same material as tank.
      h. The bolts shall be Hastelloy.
      i. The gaskets shall be per tank manufacturer recommendation for the chemical stored.
   2. Provide flanged flexible connectors for each of the following fittings:
      a. Sodium Hypochlorite Tank:
         1) The flanged 2 inch inlet nozzle on each tank.
         2) The flanged 2 inch outlet/drain nozzle on each tank.
         3) The flanged 4 inch roof vent on the tank.
            a) Wetted materials shall be selected by the tank manufacturer or vendor for the chemical service.
            b) Provide all mounting hardware and supports.
         4) Manufacturers: One of the following or equal:
            a) Red Valve, Redflex expansion joints with 3 arches.
            b) Snyder, Flexmaster.
            c) Proco, 445 BD.

2.06 ACCESSORIES

A. Finish coating:
   1. Waterproof and ultraviolet light resistant.
   2. Acrylic enamel or latex mastic.
   3. 2 coats.
   4. Minimum dry film thickness: 5 mil.
   5. Color: Selected by Engineer.

B. Level gauge:
   1. Provide each tank with:
      a. Level gauge shall be a magnetic flap type or "reverse float type" made of 2 inch polyvinyl chloride or PVDF stilling well tube.
      b. Float.
      c. Polypropylene rope.
      d. Clear polyvinyl chloride sight tube.
   2. Materials: Suitable for the specified chemical service for the individual tanks.
   3. Tank level staff gauge:
      a. Resistant to abrasion and corrosion.
      b. Mounted on the tank adjacent to the indicator.
      c. Calibrated in nominal 100 gallon increments.

C. Tank vents:
   1. Each tank shall be properly vented for the type of material and flow rates expected.
   2. Vents must comply with OSHA Part 1910 normal venting for atmospheric tanks or other accepted standard, or shall be as large as the filling or withdrawal connection, whichever is larger but in no case less than 2 inches nominal inside diameter with screening.

D. Leak Detection:
   1. The leak detector unit shall consist of a proximity sensor, a welded 2 inch fpt connection, a 2 inch bung plug with a 3/4 in strain relief, and an indicator box. The sensor is placed in the interstitial space between the primary and secondary tanks approximately 1 inch above the tank bottom. The indicator box shall be NEMA 4 rated and factory pre-wired for 110 VAC power. All connections shall be labeled to prevent errors in field installation. The indicator box will show a green light when power is on and the sensor is not detecting a liquid. The light is a push to test light allowing the operator to test for power outage or malfunction.

E. Internal fill/down pipes:
   1. Internal down pipes shall be prepared per the customer approved drawings and specifications. All internal down pipes shall be supported at 5 foot maximum intervals with a support structure welded to the inside of the primary tank. The support design may utilize a PVDF clamp. All internal down pipes shall be constructed of CPVC.

2.07 TANK FABRICATION

A. Rotationally molded construction in accordance with ASTM D1998.

B. Provide for each tank the following shop finishing:
   1. Shipping label identifying:
      a. Tank tag number.
      b. Chemical service.
   2. Coating:
      a. Coat each tank and appurtenances after installation as specified in Section 09960 - High-Performance Coatings.
      b. Color: Selected by the Engineer.

3. Permanent labels:
    a. Identification label.
    b. NFPA label specifically coded for the tank contents in accordance with NFPA 30.
    c. Paint or affix label onto the tank wall to be clearly visible from outside the tank enclosure.

2.08 TESTING

A. Each tank shall be leak tested by the manufacturer prior to shipment by filling with clean water for a period of at least 4 hours with all fittings installed and blinded.
    1. There shall be no measurable drop in liquid surface.
    2. Any leaks shall be noted and repaired and the tank shall be re-tested for an additional 4 hours minimum.
        a. Reason for leak and method of repair shall be recorded and submitted to the Engineer.
    3. Any defects or leaks that have not been adequately repaired will be cause for rejection of the tank.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
    1. Transportation, handling, storage of the tanks, and installation shall be in accordance with the manufacturer's printed instructions.
    2. Repair any damage to tank components or the insulation due to transportation or installation.
    3. Install piping to tank with sufficient flexibility to allow tank movement of 1 inch in any direction without damage to piping.

B. All tank fitting attachments shall be equipped with flexible couplers or other movement provisions provided by the tank customer.
    1. The tank will deflect based upon tank loading, chemical temperature and storage time duration.
    2. Tank piping flexible couplers shall be designed to allow 4 percent design movement.
    3. Movement shall be considered to occur both outward in tank radius and downward in fitting elevation from the neutral tank fitting placement.

C. For tanks with drain connections that result in flanges extending below the bottom of the tank, coordinate concrete work to provide either a blockout in the main concrete pad or raise tank on a shorter, separate pad to provide clearance between flange and pad.

3.02 FIELD QUALITY CONTROL

A. Manufacturer's field service:
    1. Inspect the installed tanks for proper installation.
    2. Instruct Owner's personnel on operations and maintenance of the tanks.

3.03 SCHEDULE

A. Tank Schedule as follows:

Tag Number	
Service	Sodium Hypochlorite at 12.5 percent solution
Chemical pH	3.5
Chemical Specific Gravity	1.33
Tank Design Specific Gravity	1.9
Number of Tanks	2
Usable Capacity, each	1,000 gallons
Type of Tank	Cross-linked polyethylene (XLPE) with medium density liner
General Design	Flat bottom, dished top, double wall
Installation	Vertical
Diameter (feet)	6 feet-5 inches
Height (feet)	7 feet-1 inch

B. Tank Fitting locations shall be as shown on the drawings.

END OF SECTION

SECTION 13447

ELECTRIC ACTUATORS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Electric motor-driven actuators for valves and gates.

B. Equipment tag numbers:
   1. As scheduled.

1.02 REFERENCES

A. American Water Works Association (AWWA):
   1. C504 - Standard for Rubber-Seated Butterfly Valves.
   2. C542 - Standard for Electric Motor Actuators for Valves and Slide Gates.

B. International Organization for Standardization (ISO):
   1. 12944 - Paints and Varnishes.

C. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures and Section 15050 - Common Work Results for Mechanical Equipment.

B. Provide a complete list/schedule of actuators being provided with their associated tag names, as indicated on the Drawings and/or Specifications, service process area and the size of the valve they are actuating.

C. Product data:
   1. Electrical ratings:
      a. Voltage and number of phases.
      b. Starting and running current.
      c. Voltage levels and source for control and status.
   2. Description of integral control interface.
   3. Remote control station components (If applicable).
   4. Environmental ratings, including NEMA enclosure rating and submergence capabilities.
   5. Gear ratios for both manual and motorized actuation.
   6. Opening and closing directions.
   7. Electric motor data.
   8. Allowable starts per hour.
   9. List of included options and accessories.

10. Full travel times.
11. Gearbox data, including gear ratio, and gearbox efficiency.

D. Shop Drawings:
   1. Wiring diagrams:
      a. Include options and expansion cards furnished with each actuator.
   2. Dimensioned drawings of each valve and actuator combination.
   3. Dimensioned drawings of each valve gearbox.

E. Calculations:
   1. Operating torque.
   2. Maximum torque calculations for seating and unseating.
   3. Maximum operating torque at starting and normal operation.
   4. Indicate factor of safety for all torque calculations.

F. Signed by Professional Engineer registered in the State of California. Installation instructions:
   1. Detail the complete installation of the equipment, including rigging, moving, and setting into place.
   2. Provide manufacturer's installation instructions.

G. Quality Control Submittals:
   1. Manufacturer's representative qualifications.
   2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
   3. Manufacturer's Certificate of Installation as specified in Section 01756 - Commissioning.
   4. Manufacturer's Certificate of Functional Compliance as specified in Section 01756 - Commissioning.

H. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

I. Operation and maintenance manuals:
   1. As specified in Section 01782 - Operation and Maintenance Manuals.
   2. Include a list of configurable parameters and the final values for each.
   3. Include a troubleshooting chart covering the complete valve and controls/electrical power systems, showing description of trouble, probable cause, and suggested remedy.

1.04 DELIVERY, STORAGE, AND HANDLING

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2, Section 15050 - Common Work Results for Mechanical, and the manufacturer's instructions.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 MAINTENANCE

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

B. Spare parts:
   1. Provide the following (minimum 10 percent of total number of actuators of each model type furnished, but not less than 1 for each model of actuator furnished):
      a. Stem nut.
      b. Worm shaft subassembly.
      c. Drive sleeve subassembly.
      d. Complete actuator seal kit.
      e. Actuator gearbox oil (sufficient quantity to fill 4 gearboxes).
      f. Encoder.
      g. Control module.
   2. Provide 1 spare motor for each size motor furnished.

C. Setting tool:
   1. If required for setting or configuring the actuator, provide a handheld setting tool. Furnish 1 setting tool for every 10 actuators.
      a. Capable of communicating with PC-based configuration software and transferring the following in either direction between the computer and programmer and setting tool, and between the setting tool and actuator.
      b. Actuator configurations:
         1) Capable of storing up to 10 different configurations.
      c. Diagnostic data:
         Capable of storing 4 complete sets of diagnostic data.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Lines 4 inches and larger:
   1. One of the following, or equal:
      a. Limitorque Corp.:
         1) Accutronix MX for multi-turn applications.
         2) Accutronix QX quarter-turn applications.
      b. Rotork Controls Inc. IQ3 Range:
         1) IQ for multi-turn applications.
         2) IQT for quarter-turn applications.

2.02 MATERIALS

A. Enclosures:
   1. Constructed of materials suitable for the environment where the actuator will be installed.
   2. Stainless steel external fasteners.

3. Provide O-ring seals for each of the following areas:
    a. Between the terminal compartment and the internal electrical elements.
    b. Between the mechanical and electrical portions to protect from the ingress of oil, and to protect the mechanical components of oil from dust and moisture when the electrical terminal is open.
4. Ratings
    a. As scheduled and specified:
    b. NEMA Type 6P: Double sealed and IP68 rated for prolonged submergence.
    c. XP: Factory Mutal (FM) approved for Class I, Division 1 and Division 2 locations.

B. Coatings:
1. Material requirements:
    a. Factory prime and coat with an ISO 12944 classification coating of C5M (Marine, offshore estuaries with high salinity) coating with 15 year durability.
    b. Touch-up damaged coatings with manufacturer provided coating repair kit.
2. Application requirements:
    a. Painting shall commence within 4 hours of blast cleaning.
    b. Each paint coat within the system is to be applied in accordance with the paint manufacturer's instructions.
    c. Paint thickness shall be checked for each coat on each actuator.
3. Qualification requirements:
    a. Operators shall be experienced and proficient in surface preparation and coating application techniques.
    b. Personnel shall have relevant knowledge of health and safety hazard, use of protective equipment, coating materials, mixing and thinning coatings, coating pot life, surface requirements, etc.
    c. Personnel carrying out inspection or verification shall be certified as NACE coating inspector or equivalent such as ICorr.

2.03 CHARACTERISTICS FOR ACTUATORS ON LINES 4 INCHES AND LARGER

A. Provide actuators complete and operable with all components and accessories required for operation.

B. Power supply:
1. Voltage and phases as indicated in the Motorized Actuator Schedule on the Drawings.
2. Valve or gate motion independent of power supply phase rotation.
3. Provide an internal backup power source or mechanical indicator to maintain settings and track valve position when main power is off.
4. Actuators shall incorporate major components such as the motor, starter, local controls, terminals, etc., housed within a self-contained, sealed enclosure.

C. Size actuator to move gates or valves from full open to closed position within the time indicated in the Motorized Actuator Schedule on the Drawings:
1. If an operating time is not indicated on the Motorized Actuator Schedule, size the actuator to move gates or valves at minimum 12 inches per minute under maximum load. Measure rate of closure for valves at maximum diameter of disc, plug, or ball.
2. Size actuators so that gear boxes are not required where possible.

D. Control interface:
    1. Configuration:
        a. Provide a non-intrusive, non-contacting interface for configuring input and output settings, control values, ranges, torque switch settings, valve positions switch settings, and options.
            1) Configurable from a handheld configuring tool or input devices on the actuator.
    2. Local interface, integral to actuator:
        a. Non-intrusive, non-contacting selector switches:
            1) LOCAL-STOP-REMOTE:
                a) Motor actuator operation is prevented with the switch in STOP.
            2) OPEN-CLOSE:
                a) Controls the valve when LOCAL-STOP-REMOTE is in LOCAL.
                b) Spring return to center.
                c) Configurable between maintained (actuator runs until end of travel, high torque, or a LOCAL-STOP-REMOTE is switched to STOP) and momentary (actuator stops when lever is released).
        b. Local display:
            1) Valve fully open and fully closed indicators.
            2) Numerical display showing actual valve or gate position in percent of travel.
    3. Remote control station - (VCP):
        a. For actuators located more than 5 feet above finished floor/grade or where indicated on the Drawings in the Schedule.
            1) NEMA rating to match those to the associated Actuator Schedule.
                a) Where the rating is not listed, use NEMA Type 4X enclosures for non-hazardous areas, and explosion-proof (XP) Class I Division 1 for hazardous areas.
                b) Pilot devices shall be 30 millimeters and pilot lights shall be illuminated by LEDs.
            2) LOCAL-STOP-REMOTE selector switch.
            3) LOCAL mode control devices:
                a) Operate valve when LOCAL-STOP-REMOTE integral to actuator is in REMOTE and LOCAL-STOP-REMOTE on remote control station is in LOCAL.
                b) OPEN-STOP-CLOSE maintained switch or OPEN, STOP, and CLOSE pushbuttons where Maintained operation is indicated in the Actuator Schedule.
                c) OPEN-CLOSE spring-return switch or OPEN and CLOSE pushbuttons where momentary operation is indicated in the Actuator Schedule on the Drawings.
            4) Pilots' lights to indicate valve position:
                a) Fully open.
                b) Fully closed.
    4. Control inputs:
        a. Capable of using discrete 120 VAC rated control inputs when using a remote control station and a discrete 24 VDC rated control inputs when there is not remote control station.
        b. Controls the valve when LOCAL-STOP-REMOTE is in REMOTE.
        c. Isolated inputs capable of operating from external control voltage source or internal power supply.

d. Provide the following inputs:
    1) OPEN.
    2) CLOSE.
    3) STOP.
e. OPEN and CLOSE inputs configurable between maintained (actuator runs until end of travel, high torque, or a STOP input) and momentary (actuator stops when command is removed).

5. Status outputs:
    a. Monitor relay output: Dry contact, normally closed, opens when actuator is not in REMOTE or in the event of any internal fault or alarm condition.
    b. Dry contact outputs configured for the functions indicated on the Drawings. Provide the following outputs for all actuators:
        1) Fully closed.
        2) Fully open.
        3) LOCAL-STOP-REMOTE in REMOTE position.
    c. Output contacts rated for 5 amps, 120 VAC, and 24 VDC.
6. Analog input:
    a. Provide a 4 to 20 mA analog input for analog modulating valves when indicated on the Drawings.
    b. Modulate valve to maintain position based on analog input value.
    c. Maximum input impedance 250 ohms.
7. Analog output:
    a. Provide an isolated 4 to 20 mA analog output when indicated on the Drawings.
        1) Loop power sourced from the actuator power supply.
        2) Capable of driving into a load up to 500 ohms.
        3) Output proportional to process value(s) indicated on the Drawings.
        4) Valve or gate position.
        5) Operating torque.

E. Features:
1. Time delay on reversal: Incorporate time delay between stopping actuator and starting in opposite direction to limit excessive current, torque, and heating from instantaneous reversal.
2. Data logging:
    a. Store diagnostic data and reference data.
    b. Time-stamped historical operating data, including number of operations.
    c. Torque profiles showing actual torque at each valve position through the operating range.
        1) Store reference data (recorded during commissioning) and data from last operation.
3. Provide display of logged data on the actuator, or provisions to download to a personal computer.

F. Components:
1. Motors:
    a. Specifically designed for valve actuator service with high starting torque, totally enclosed non-ventilated construction.

b. Torque ratings equal to or greater than that required for valve seating and dynamic torques with a 25 percent factor of safety.
    1) Design requirements for rubber-seated AWWA butterfly valves:
        a) Design actuators for maximum gate or valve operating torque, in accordance with and using safety factors required in AWWA C504 and AWWA C542.
            (1) Valve actuator torque requirement for open-close service: Not less than the required valve-seating and dynamic torques under design operating conditions in accordance with AWWA C504.
            (2) Valve actuator torque requirement for modulating service: Not less than twice the required valve dynamic torque under design operating conditions in accordance with AWWA C504.
    2) Design requirements for slide gates, gate valves, knife gate valves, globe valves, and diaphragm valves:
        a) Design valves and actuators for maximum operating torque, in accordance with and using safety factors required in AWWA C542.
        b) Design for the maximum torque and thrust running load over the full cycle.
        c) Maximum torque or thrust rating: Actuator stall torque or maximum thrust output shall not exceed the torque or thrust capability of the valve or gate, as determined by the valve or gate manufacturer.
c. Capable of being removed and replaced without draining the actuator gear case.
d. Motor bearings shall be amply proportioned of the anti-friction type and permanently lubricated.
e. Rated for operating under the following conditions without exceeding temperature limits with ambient temperature of 40 degrees Celsius.
    1) Continuous operation for 15 minutes or twice the open-to-close operating time (whichever is greater) at normal operating torque or 33 percent of maximum torque (whichever is greater).
    2) 60 starts per hour for open/close service or 1,200 starts per hour for modulating service.
f. Provide the following motor protection features:
    1) Jammed valve (no valve motion detected through a time delay).
    2) High motor temperature (sensed by an embedded thermostats).
    3) High torque.
    4) Single phasing protection.

G. Position sensing:
    1. Electronic and adjustable using a solid-state encoder wheel.
        a. Mechanical limit switches and potentiometers are not acceptable.
    2. Capable of retaining position and monitoring valve or gate motion when valve is manually actuated and when main power is not present.
    3. Valve range and position switch outputs field adjustable.

H. Torque sensing:
    1. Torque shutdown setting: 40 percent to 100 percent rated torque:
        a. Adjustable in 1 percent increments.
    2. Torque display: 0 to 100 percent-rated torque.
    3. Capable of interrupting control circuit during both opening and closing and when valve torque overload occurs.
    4. Electrical or electronic torque sensing:
        a. Extrapolating torque from mechanically measured motor speed is not acceptable due to response time.
    5. Independent of variations in frequency, voltage, or temperature.
    6. Actuator shall store actual operational torque curves for retrieval by plant maintenance staff.
    7. Provide a temporary inhibit of the torque sensing system during unseating or during starting in mid-travel against high inertia loads.
    8. Provide visible verification of torque switch status without any housing disassembly.

I. Manual actuators:
    1. Hand wheel for manual operation.
        a. Maximum 80-pound pull on rim when operating gate or valve under maximum load.
        b. Provide pull chain when motorized actuator is located more than 6 feet above floor surface.
            1) Chain shall be of sufficient length to reach approximately 4 feet above the operating level.
            2) Where the chain obstructs an aisle or walkway, provide holdback or other means to ensure chain does not create a nuisance or hazard to operating personnel.
            3) Provide Type 316 stainless steel.
    2. Declutch lever: Padlockable, capable of mechanically disengaging motor and related gearing and freeing hand wheel for manual operation.

J. Gearing: Hardened alloy steel spur or helical gears and self-locking, alloy bronze worm gear set.
    1. Accurately cut to ensure minimum backlash.

K. Bearings:
    1. Anti-friction bearing with caged balls or rollers throughout.
    2. Sealed-for-life type thrust bearings housed in a separate thrust base.

L. Drive bushing:
    1. Easily detachable for machining to suit the valve stem or gearbox input shaft.
    2. Positioned in a detachable base of the actuator.

M. Lubrication:
    1. Provide totally enclosed actuator gearing with oil or grease filled gear case suitable for operation at any angle.
    2. Actuators requiring special or exotic lubricants are not acceptable.

2.04 SOURCE QUALITY CONTROL

A. Source Testing:
   1. Design and performance test reports in accordance with AWWA C542.
   2. Test each actuator with a simulated load.
      a. Simulate a typical valve load.
   3. Furnish test reports and the Manufacturer's Certificate of Source Testing.

PART 3 EXECUTION

3.01 INSTALLATION

A. As specified in Section 15050 - Common Work Results for Mechanical Equipment.

B. Install the equipment in accordance with the manufacturer's instructions.

C. Position visual indicators so that they are most easily visible.

D. Installation Verification:
   1. Furnish Manufacturer's Certificate of Installation Verification.

3.02 FIELD QUALITY CONTROL

A. As specified in Section 01756 - Commissioning, Section 15958 - Mechanical Equipment Testing, and this Section.

B. Functional Testing:
   1. Installed actuator:
      a. Test witnessing: Witnessed.
      b. Conduct Level 2 General Equipment Performance Tests.
      c. Conduct Level 2 Vibration Tests.
      d. Conduct Level 2 Noise Tests.
   2. Electrical Instrumentation and Controls:
      a. Test witnessing: Witnessed.
      b. Conduct testing as specified in Section 17950 - Commissioning for Instrumentation and Controls.
   3. Furnish test reports and the Manufacturer's Certificate of Functional Compliance.

C. Manufacturer's Representative on-site requirements:
      a. Installation: 2 trips, 2-day minimum each.
      b. Functional testing: 2 trips, 2-day minimum each.

3.03 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.
   1. Number of sessions: 2.
      a. Operations: 2 hours per session.
      b. Maintenance: 4 hours per session.

3.04 INTELLIGENT ACTUATOR SCHEDULE

A. Provide actuators indicated on the Drawings:
   1. Major process actuators are listed in the Intelligent Actuator Schedule indicated on the Drawings.

END OF SECTION

CONTRACT DOCUMENTS FOR

DESIGN-ASSIST CONSTRUCTION OF AQUIFER STORAGE AND RECOVERY WELLS 13 (Campus Oaks) AND 19 (Misty Wood) PROJECT

VOLUME 3B of 4:
TECHNICAL SPECIFICATIONS
DIVISIONS 15-17
RFP #08-135

INCLUDING:

Specifications for Construction

Draft Final Submittal

December 2024

2880 GATEWAY OAKS DRIVE, SUITE 300 • SACRAMENTO, CALIFORNIA 95833 • P. 916.565.4888 • F. 916.565.4880

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS
13 (Campus Oaks) AND 19 (Misty Wood) PROJECT

The Specifications contained herein have been prepared by, or under the direct supervision of the following Registered Engineers

Bid Documents and Conditions of the Contract Prepared by:
City of Roseville

Janice R. Gainey, PE
Expires 9/30/26

DRAFT DOCUMENTS
These Draft Documents are released for the purpose of information exchange review and planning only under the authority of Janice R. Gainey, December 11, 2024, California C-79928. They are not to be used for bidding, permit, or construction purposes.

Technical Specifications Prepared by:
Carollo Engineers

Michael E. Ducker, PE
Expires 9/30/26

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These Draft Documents are released for the purpose of information exchange review and planning only under the authority of Michael E. Ducker, December 11, 2024, California C-63626. They are not to be used for bidding, permit, or construction purposes.

CITY OF ROSEVILLE

AQUIFER STORAGE AND RECOVERY WELLS
13 (CAMPUS OAKS) AND 19 (MISTY WOOD) PROJECT

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SECTION 15050

COMMON WORK RESULTS FOR MECHANICAL EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Mechanical equipment requirements for:
      a. Basic design and performance criteria.
      b. Prescriptive requirements for common components.
      c. Installation requirements.

1.02 REFERENCES

A. American Bearing Manufacturers Association (ABMA):
   1. 9 - Load Ratings and Fatigue Life for Ball Bearings.
   2. 11 - Load Ratings and Fatigue Life for Roller Bearings.

B. American Gear Manufacturers Association (AGMA) Standards.

C. American Petroleum Institute (API):
   1. 682 - Pumps—Shaft Sealing Systems for Centrifugal and Rotary Pumps.

D. ASTM International (ASTM):
   1. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   2. A194 - Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
   3. A320 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for Low-Temperature Service.
   4. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
   5. F594 - Standard Specification for Stainless Steel Nuts.

E. Hydraulic Institute (HI):
   1. 9.6.8 - Guideline for Dynamics of Pumping Machinery.

F. International Concrete Repair Institute (ICRI):
   1. Guideline No. 310.2R, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

G. International Organization for Standardization (ISO):
   1. 21940 - Mechanical Vibration - Rotor Balancing - Part 1: Introduction.

H. National Electrical Manufacturers Association (NEMA):
   1. MG-1 - Motors and Generators.

I. Society for Protective Coatings (SSPC):
    1. SP-1-Solvent Cleaning.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
    1. Definitions used in this specification and equipment Submittals for terms related to rotor-dynamic pumps shall be in accordance with HI 9.6.8, Appendix A, as clarified below.
    2. These definitions shall be applied to equipment other than pumps, unless otherwise specified in Technical Sections.
    3. Resonant frequency:
        a. Frequency of a periodic excitation force that is close to the natural frequencies of an object. Also known as critical frequency, critical speed, or resonant speed.
        b. An undamped resonant frequency within the separation margin is always considered harmful under Level 1 analysis.
        c. A resonant frequency that occurs within a separation margin of 15 percent above or below the operating speed range and has a log decrement greater than +0.3 is considered harmful under Level 2 and Level 3 analysis.
    4. Rotordynamic analysis level:
        a. Level of detail required for rotordynamic analysis is indicated in the Technical Sections schedules as None (no analysis required), Analysis Level 1, Analysis Level 2, or Analysis Level 3, which correlate to increasing levels of required detailed equipment design analysis. Analysis Levels 1, 2, and 3 are based on HI 9.6.8.
        b. Where these specifications differ from HI the more stringent shall apply.
    5. Separation margin:
        a. Span of operating speeds within which interference between excitation orders and resonant frequencies indicate the possibility of harmful vibrations.
        b. Separation margin for a specific application extends 15 percent above and 15 percent below the span of operating speed required for the specified performance conditions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Roof coordination.
    1. Show roof penetrations for mechanical equipment on roof drawing Submittal and include mechanical equipment information:
        a. Type.
        b. Size.
        c. Location.
        d. Configuration of penetration and the surround.
        e. Weight.
        f. Anchoring and support details.

1.05 SUBMITTALS

A. Items in this Section are components of equipment or systems specified in other Sections.
   1. Include data for this Section's components with the equipment or system Submittal.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. General:
   1. Equipment manufacturer's responsibility extends to selection and mounting of gear drive units, motors or other prime movers, accessories, and auxiliaries to provide a complete, operable unit.
   2. Manufacturer shall analyze rubber-bearing vertical-column pumps and equipment identified as non-reversing in the Technical Sections for reverse rotation and provide non reversing motor ratchets.
   3. Equipment that prevents reverse rotation shall be capable of both:
      a. Handling 150 percent of the maximum torque at maximum operating speed.
      b. 150 percent of torque that will be generated in reverse direction due to equipment shutoff head as calculated by the manufacturer.
   4. Motor shall be designed to run safely in the reverse direction at up to 140 percent times the reverse runaway speed under shutoff head conditions.

B. Rotordynamic analysis and vibration testing:
   1. Submit information for the rotordynamic analysis level specified for each piece of equipment as shown in the Technical Sections prior to manufacture of the equipment.
   2. Rotordynamic analysis shall be performed on "like-new" and "as-worn" conditions, representing conditions when first installed and conditions when parts wear to the manufacturer's maximum allowable operating tolerances.
      a. Conditions assumed for the "as-worn" condition shall be 2 times the "like-new" tolerances unless specified otherwise.
   3. Rotordynamic analysis criteria:
      a. Torsional excitation forcing function magnitudes shall be no less than 1 percent of the maximum transmitted torque at given speed.
      b. Motor mass elastic information in accordance with NEMA MG-1 shall be obtained from the original equipment manufacturer and included in the analysis. Motors shall be precision balanced to ISO 21940 Grade G2.5.
      c. Bearings:
         1) At maximum bearing loads an L-10 life of 100,000 hours in accordance with ABMA 9-11 to be proven.
   4. Submit factory and field testing requirements as specified in the Technical Sections and specified in Section 15958 - Mechanical Equipment Testing after manufacture and installation respectively.

5. Repair, replace, and modify equipment exhibiting vibration performance that does not meet criteria specified in this Section at no additional cost to the Owner.
    a. Acceptable remedies include adjustments to equipment component geometry, materials, energy absorbing couplings, etc.
    b. Locking out speed interval(s) within equipment specified operating range is unacceptable.
6. Vibration analysis expert:
    a. Provide when specified in the equipment Technical Sections.
        1) Must be a 3rd party, unaffiliated with the equipment vendor or Contractor.
    b. Analysis shall be provided by one of the following or equal:
        1) Engineering Dynamics Inc. (EDI, Texas).
        2) Mechanical Solutions, Inc. (MSI, New Jersey).
    c. Analysis shall be:
        1) Stamped by a registered professional mechanical engineer.
        2) Verified in-situ by the vibration analysis expert, including certification that installation conforms to field conditions assumed in the reports.
        3) Verified in-situ by the vibration analysis expert, including witness of at least 1 field vibration test, and certification that vibration measurements corroborate the rotordynamic analysis.
        4) Supplemented with additional field investigation and analysis should conditions during field vibration testing activity indicate non-compliance with these specifications; supplemental field investigation and analysis shall indicate remedies to comply with the specifications and shall be stamped by a registered professional mechanical engineer.
7. Rotordynamic Analysis Level 1:
    a. Before the equipment is released for manufacture it shall be determined that the equipment/motor structures do not have any harmful resonant frequencies in the lateral and torsional modes. Representative analysis results for identical equipment may be submitted.
    b. Calculate rotor lateral and torsional and equipment structural components' lateral frequencies with a spreadsheet calculation or finite element analysis software.
        1) Equipment structure lateral frequency shall include the motor.
        2) Speed changing drive systems (belt, gear) effects on rotational inertia and stiffness shall be incorporated.
    c. Determine the equipment system components (rotor and structure) resonant frequencies.
    d. An intersection of an equipment component resonant frequency with the 1x run speed excitation order that occurs within separation margin is unacceptable.
8. Rotordynamic Analysis Level 2:
    a. Before the equipment and motor are released for manufacture it shall be determined that the equipment/motor structures do not have any harmful critical speeds in the lateral and torsional modes.
    b. Calculate rotor lateral and torsional and structure lateral frequencies with finite element analysis software.
        1) Equipment structure lateral frequency shall include the motor.

2) Speed changing drive systems (belt, gear) effects on rotational inertia and stiffness shall be incorporated.
3) Rotational inertia of water within the impeller, in the wet well, and inside the equipment structure, e.g., the column of a vertical pump, shall be included in the calculation at both the high level and low level conditions.

c. Potentially harmful critical speeds shall be investigated further with a forced, damped analysis to determine component stresses do not exceed material properties.

d. Forced damped analysis:
1) Forced lateral analysis shall include forcing function magnitudes at least 10 percent of rotor disc weight at each disc position and hydraulic imbalance at 5 operating conditions spaced equally over the equipment operating range. If synchronous motors are used ensure that the rotor analysis includes startup, shutdown, and motor control transients.
2) Forced torsional analysis shall include not less than 1 percent of the maximum permitted torque at any given speed. Damping shall be 1 percent of critical at all shaft elements.
3) Equipment rotor total stress (steady-state and alternating torque components plus lateral-bending stresses) shall not exceed:
a) Constant torque: Total stress limited to 30 percent of the material fatigue limit and to a maximum of 18 percent of ultimate tensile strength.
b) Variable torque (including variable speed equipment): Total stress limited to 50 percent of the material fatigue limit and to a maximum of 4 percent of the material ultimate tensile strength.
c) Submit documentation of material fatigue limit.

e. Report Submittals:
1) Confirmation of compliance with this Section, or detailed exceptions taken.
2) Software used for analysis.
3) Results with interpretation.
4) Preparer’s professional engineering stamp and seal.
5) Input data, including component properties, materials and connectivity to other components.
6) Schematic diagram of model mode shapes, nodes and elements.
7) Bearing stiffness and damping properties, impeller/diffuser interaction coefficients, and seal dynamic properties.
8) Campbell diagrams showing the system natural frequencies, excitation orders, and operating speed range for both lateral and torsional analysis.
a) Include equipment operating range; excitation lines at 1x, 2x run speed, and vane pass (or equivalent); and critical speeds associated with equipment system components, including the rotor, each major equipment structural component and the motor.
9) Forced, damped analysis indicating acceptable material stress limits are maintained at interference points shown on the Campbell diagram.

9. Rotordynamic Analysis Level 3:
    a. Before the equipment and motor are released for manufacture it shall be determined that the equipment/motor structures do not have any harmful critical speeds in the lateral and torsional modes.
    b. Calculate rotor lateral and torsional and structure lateral frequencies with finite element analysis software.
        1) Equipment structure lateral frequency shall include the motor.
        2) Speed changing drive systems (belt, gear) effects on rotational inertia and stiffness shall be incorporated.
        3) Rotational inertia of water within the impeller, in the wet well, and inside the equipment structure, e.g., the column of a vertical pump, shall be included in the calculation at both the high level and low level conditions.
    c. Potentially harmful critical speeds shall be investigated further with a forced, damped analysis to determine component stresses do not exceed material properties.
    d. Forced damped analysis:
        1) Forced lateral analysis shall include forcing function magnitudes at least 10 percent of rotor disc weight at each disc position and hydraulic imbalance at 5 operating conditions spaced equally over the equipment operating range. If synchronous motors are used ensure that the rotor analysis includes startup, shutdown, and motor control transients.
        2) Forced torsional analysis shall include 1 percent of the maximum permitted torque at any given speed. Damping shall be 1 percent of critical at all shaft elements.
        3) Equipment rotor total stress (steady-state and alternating torque components plus lateral-bending stresses) shall not exceed:
            a) Constant torque: Total stress limited to 30 percent of the material fatigue limit and to a maximum of 18 percent of ultimate tensile strength.
            b) Variable torque (including variable speed equipment): Total stress limited to 50 percent of the material fatigue limit and to a maximum of 4 percent of the material ultimate tensile strength.
            c) Submit documentation of material fatigue limit.
    e. Report Submittals:
        1) Report 1: Executive Summary, including:
            a) Confirmation of compliance with this Section, or detailed exceptions taken.
            b) Software used for analysis.
            c) Results with interpretation.
            d) Preparer’s professional engineering stamp and seal.
            e) Campbell diagrams showing the system natural frequencies, excitation orders, and operating speed range for both lateral and torsional analysis.
                (1) Include equipment operating range; excitation lines at 1x, 2x run speed, vane pass (or equivalent), line- and twice-line frequency, motor-pole frequency, torsional harmonics from reciprocating drivers (including up to 6 times operating speed), control pulse frequencies induced by variable frequency drives (VFDs) (with certification from VFD

manufacturer of frequencies up to 24 times motor running speed), any torque harmonic greater than 1 percent of steady torque at primary excitation, and synchronous motor requirements; and critical speeds associated with equipment system components, including the rotor and each major equipment structural component.

f) Report 1 shall not include detailed analysis elements listed for Submittal under Report 2 below, Submittal of full analysis details in Report 1 is unacceptable.

g) Following Submittal of Report 1, submit Report 2: Detailed Analysis, including responses to comments made on Report 1: Rotor-dynamic Executive Summary.

2) Report 2: Rotor-dynamic detailed analysis, including:

a) Input data, including component properties, materials and connectivity to other components.

b) Schematic diagram of model mode shapes, nodes and elements.

c) Bearing stiffness and damping properties, impeller/diffuser interaction coefficients, and seal dynamic properties.

d) Forced, damped analysis indicating acceptable material stress limits are maintained at interference points shown on the Campbell diagram.

e) Synchronous motor information, including time-integration study results showing transient peak stresses at startup, shutdown and motor control transient events. Provide tomographic diagrams, including root and keyway stress concentration locations and the corresponding speeds that result in reported peak stresses.

2.02 POWER TRANSMISSION SYSTEMS

A. V-belts, sheaves, shaft couplings, chains, sprockets, mechanical variable-speed drives, VFDs, gear reducers, open and enclosed gearing, clutches, brakes, intermediate shafting, intermediate bearings, and U-joints:

1. Rated for 24 hour-a-day continuous service, or for intermittent service with frequent stops-and-starts, whichever is most severe.
2. Sized with a service factor of 1.5 or greater:
   a. Apply service factor to nameplate horsepower and torque of prime source of power and not to actual equipment loading.
   b. Apply service factors in accordance with AGMA, or as specified in the Technical Sections.

2.03 BEARINGS

A. Oil or grease lubricated, ball or roller antifriction type, of standard manufacture.

1. Design lubrication system based on the equipment location to operate in the temperatures as specified in Section 01850 - Design Criteria.
   a. To safely start after being shut off for 24 hours and operate safely:
      1) Suitable for the outdoor winter temperature as specified in Section 01850 - Design Criteria.

B. Oil-lubricated:
   1. Provide either pressure lubricating system or separate oil reservoir splash-type system as specified in the Technical Section.
   2. Design system to safely absorb heat energy generated in bearings when equipment is operating in the following conditions:
      a. With the highest load and the temperature 15 degrees Fahrenheit above the outdoor summer temperature as specified in Section 01850 - Design Criteria.

C. Grease lubricated, except those specified to be factory sealed:
   1. Fit with easily accessible grease supply, flush, drain, and relief fittings.
   2. Lubrication lines and fittings:
      a. Lines: Minimum 1/4-inch diameter stainless steel tubing.
      b. Multiple fitting assemblies: Mount fittings together in easily accessible location.
      c. Use standard hydraulic-type grease supply fittings:
         1) Manufacturers: One of the following or equal:
            a) Alemite.
            b) Zerk.

D. Ratings: In accordance with ABMA 9 or ABMA 11 L10 life for bearings rating life of not less than 50,000 hours.

2.04 BELT DRIVES

A. Sheaves:
   1. Separately mounted on bushings by means of at least 3 pull-up bolts or cap tightening screws.
   2. When 2 sheave sizes are specified, provide separate belts sized for each set of sheaves.
   3. Statically balanced for all; dynamically balanced for sheaves that operate at a peripheral speed of more than 5,500 feet per minute.
   4. Key bushings to drive shaft.

B. Belts:
   1. Anti-static type when explosion-proof equipment or environment is specified.
   2. When spare belts are specified, furnish 1 spare belt for every different type and size of belt-driven unit:
      a. Where 2 or more belts are involved, furnish matched sets.
      b. Identify as to equipment, design, horsepower, speed, length, sheave size, and use.
      c. Package in boxes labeled with identification of contents.

C. Manufacturers: One of the following or equal:
   1. Dodge, Dyna-V belts with matching Dyna-V sheaves and Taper-Lock bushings.
   2. T.B. Woods, Ultra-V belts with matching Sure-Grip sheaves and Sure-Grip bushings.

2.05 FLANGED PIPING CONNECTIONS

A. Unless specified otherwise in the Technical Sections or indicated on the Drawings, provide flat face flanges.

2.06 ASSEMBLY FASTENERS

A. General service: Stainless steel, Type 316:
   1. Bolts: In accordance with ASTM F593, Alloy Group 2.
   2. Nuts: In accordance with ASTM F594, Alloy Group 2.
   3. Washers: Alloy group matching bolts and nuts.

B. High-temperature service or high-pressure service: Stainless steel, Type 316:
   1. Bolts: In accordance with ASTM A193, Grade B8M, Class 1, heavy hex.
   2. Nuts: In accordance with ASTM A194, Grade 8, heavy hex.
   3. Washers: Alloy group matching bolts and nuts.

C. Low-temperature service: Stainless steel, Type 316:
   1. Bolts: In accordance with ASTM A320, Grade B8M, Class 1, heavy hex.
   2. Nuts: In accordance with ASTM A194, Grade B8M, heavy hex.
   3. Washers: Alloy group matching bolts and nuts.

2.07 GUARDS AT HIGH-TEMPERATURE SURFACES

A. Exposed surfaces having an external surface temperature of 120 degrees Fahrenheit or higher and located within 7 feet, measured vertically from floor or working level, or within 15 inches measured horizontally from stairways, ramps, or fixed ladders.

B. Cover with a thermal insulating material unless otherwise guarded against contact.
   1. Insulation thickness such that the insulation exterior temperature is below 120 degrees Fahrenheit.
   2. Insulation Type 3 and cover Type 5 as specified in Section 15082 - Piping Insulation.

2.08 GUARDS AT MOVING COMPONENTS

A. On rotating components that are within 7.5 vertical feet of an operating floor or platform.

B. Allow visual inspection of moving parts without removal.

C. Allow access to lubrication fittings.

D. Easily removable for maintenance.

E. Prevent entrance of rain or dripping water for outdoor locations.

F. Size belt and sheave guards to allow for installation of sheaves 15 percent larger and addition of 1 belt.

G. Materials:
    1. Sheet metal: Carbon steel, 12-gauge minimum thickness, hot-dip galvanized after fabrication.
    2. Fasteners: Type 316 stainless steel.

2.09 SHOP FINISHES

A. Manufacturer's standard primer and finish coatings.
    1. Primer only if field coatings are to be applied.

2.10 GEAR MOTORS

A. Parallel shaft drives: Helical gearing.

B. Right-angle drives: Worm gearing.

C. Manufacturers: One of the following or equal:
    1. Baldor Electric Company.
    2. Bodine Electric Company.

2.11 GEAR REDUCTION UNITS

A. Design and performance criteria:
    1. Gear type:
        a. Helical or herringbone.
    2. AGMA Class II service:
        a. Use more severe service condition when such is recommended by unit's manufacturer.
    3. Cast-iron housing with gears running in oil.
    4. Anti-friction bearings.
    5. Thermal horsepower rating based on maximum horsepower rating of prime mover, not actual load.

2.12 MOUNTING AND LIFTING PROVISIONS FOR EQUIPMENT

A. Equipment bases and base plates:
    1. Provide equipment bases with machined support pads, dowels for alignment for mating of adjacent items, openings for electrical conduits, and openings to facilitate grouting.
    2. Provide jacking screws in bases and supports for equipment and for equipment weighing 500 pounds or more.
    3. Materials:
        a. Match equipment material or steel.
        b. Coating: Match equipment.

B. Steel support frames:
    1. Carbon steel:
        a. At exterior locations and at interior wet or moist locations, provide continuous welds on both sides to close seams and edges between steel members.
        b. Grind closure welds smooth.

C. Lifting lugs or eyes:
    1. Equipment units weighing 50 pounds or more:
        a. Provide with lifting lugs or eyes to allow removal with lifting device.

2.13 NAMEPLATES

A. Fastened to equipment at factory in an accessible and visible location.

B. Metal engraved or stamped with text, holes drilled or punched for fasteners.

C. Material: Aluminum or stainless steel.

D. Fasteners: Number 4 or larger oval head stainless steel screws or drive pins.

E. Text:
    1. Manufacturer's name, equipment model number, equipment serial number, and identification tag number.
    2. Additional items indicated in the Technical Sections.
    3. Indicate the following additional information as applicable:
        a. Maximum and normal rotating speed.
        b. Service class in accordance with applicable standards.
    4. Include for pumps:
        a. Rated total dynamic head in feet of fluid.
        b. Rated flow in gallons per minute.
        c. Impeller, gear, screw, diaphragm, or piston size.
    5. Include for motors:
        a. Drive speed.
        b. Motor horsepower with rated capacity.
    6. Include for gear reduction units:
        a. AGMA class of service.
        b. Service factor.
        c. Input and output speeds.

2.14 PUMP SHAFT COUPLINGS

A. General:
    1. Type and ratings: Non-lubricated designed for not less than 50,000 hours of operating life.
    2. Sizes: Provide as recommended by manufacturer for specific application, considering horsepower, speed of rotation, balance, and type of service.
    3. Suitable for an ambient temperature range between -40 degrees to +200 degrees Fahrenheit.

B. Close-couplings for electric-motor-driven equipment:
    1. Manufacturers: One of the following or equal:
        a. Lovejoy.
        b. T.B. Woods.
    2. Provide flexible couplings designed to accommodate angular misalignment, parallel misalignment, and end float.
    3. Manufacture flexible component of coupling from synthetic rubber or urethane.

4. Provide service factor of 2.5 for electric motor drives and 3.5 for engine drives.
5. Do not allow metal-to-metal contact between driver and driven equipment.

C. Flexible couplings for direct connected electric-motor-driven equipment:
1. Manufacturers: One of the following or equal:
a. Rexnord.
b. T.B. Woods.
2. Provide flexible couplings designed to accommodate shock loading, vibration, and shaft misalignment or offset.
3. Provide flexible connecting element of rubber and reinforcement fibers.
4. Provide service factor of 2.0.
5. Connect stub shafts through collars or round flanges, firmly keyed to their shafts with neoprene cylinders held to individual flanges by through pins.

D. Spacer couplings:
1. Where cartridge-type mechanical seals or non-split seals are specified, provide a spacer-type coupling of sufficient length to remove the seal without disturbing the driver or driven equipment.

2.15 PUMP SEAL CHAMBER AND SEALS

A. Seal chamber (stuffing box):
1. Large enough to retrofit with double mechanical seal.

B. Seal types: Based on the following and as specified in the Technical Section:
1. Type 1: Packing:
a. Provide when specified in the Technical Section for wastewater, non-potable water, and sludge applications:
1) Asbestos free.
2) PTFE (Teflon™) free.
3) Braided graphite.
4) Manufacturers: One of the following or equal:
a) Chesterton, 1400.
b) John Crane.
b. Provide when specified for drinking water service:
1) Asbestos free.
2) Material: Braided PTFE (Teflon™).
3) Manufacturers: One of the following or equal:
a) Chesterton, 1725.
b) John Crane.
c. Design:
1) Packing gland to allow adjustment and repacking without dismantling pump, except to open up stuffing box.
2) Seal chamber (stuffing box) large enough to retrofit with double mechanical seal.
3) Manufacturers: One of the following or equal:
a) Chesterton, 1725.
b) John Crane.
2. Type 2: Mechanical seal, flushing, cartridge, single O-ring.
a. Manufacturers: One of the following or equal:
1) Chesterton, S10.

2) John Crane, 5610 Series.

3. Type 3: Mechanical seal, flushing, cartridge, double O-ring:
   a. Manufacturers: One of the following or equal:
      1) Chesterton, S20.
      2) John Crane, 5620 Series.
4. Type 4: Mechanical seal, flushing, cartridge, double split-ring:
   a. Manufacturers: One of the following or equal:
      1) Chesterton, S20.
      2) John Crane, 5620 Series.
5. Type 5: Mechanical seal, flushing, cartridge, single split-ring:
   a. Manufacturers: One of the following or equal:
      1) Chesterton, 442.
      2) John Crane, 5860.
6. Type 6: Mechanical seal, flushless, cartridge, single split-ring:
   a. Manufacturers: One of the following or equal:
      1) Chesterton, 156.
      2) John Crane, 3740 Series.

C. Mechanical seals, Types 2 to 6:
   1. Balanced hydraulically.
   2. Spring:
      a. Stationary, out of pumping fluid.
      b. Material as specified in the Technical Section. Hastelloy C; Type Elgiloy or 17-7 PH stainless steel for split seals.
   3. O-ring: Viton™ 747.
   4. Gland: Type 316L stainless steel.
   5. Set screws: Type 316L stainless steel.
   6. Faces: Reaction bonded, silicon carbide/carbon.
   7. Minimum differential pressures in either direction: 300 pounds per square inch gauge.
      a. Manufacturers: One of the following or equal:
         1) Chesterton, 1400.
         2) John Crane, equivalent product.
   8. Drinking water service:
      a. Asbestos free.
      b. Material: Braided PTFE (Teflon™).
      c. Manufacturers: One of the following or equal:
         1) Chesterton, 1725.
         2) John Crane, equivalent product.

D. Flushing system:
   1. Provide flushing connections:
      a. 3/4-inch size.
      b. Provide API 682 seal water plan arrangement as specified in the Technical Section:
         1) Plan 11 - Product stream seal water from discharge thru seal.
         2) Plan 13 - Product stream seal water through seal to suction.
         3) Plan 23 - Closed loop seal water with cooler and pumping ring.
         4) Plan 32 - Production seal water discharged to product stream.
         5) Plan 54 - Production seal water excluded from product stream.

2.16 SAFETY SIGNS

A. Material, sign size, and text: As specified in Section 10400 - Signage.

2.17 SHIPPING

A. Prior to shipment of equipment:
   1. Bearings (and similar items):
      a. Pack separately or provide other protection during transport.
      b. Greased and lubricated.
   2. Gear boxes:
      a. Oil filled or sprayed with rust preventive protective coating.
   3. Fasteners:
      a. Inspect for proper torques and tightness.

PART 3 EXECUTION

3.01 PRE-INSTALLATION

A. Field measurements:
   1. Prior to Shop Drawings preparation, take measurements and verify dimensions indicated on the Drawings.
   2. Ensure equipment and ancillary appurtenances fit within available space.

B. Sequencing and scheduling:
   1. Coordinate details of equipment with other related parts of the Work, including verification that structures, piping, wiring, and equipment components are compatible.
   2. Equipment anchoring: Obtain anchoring material and setting drawings from equipment manufacturers in adequate time for templates to be constructed and anchors to be cast-in-place.

3.02 LUBRICATION LINES AND FITTINGS

A. Support and protect lines from source to point of use.

B. Fittings:
   1. Bring fittings to outside of equipment in manner such that they are readily accessible from outside without necessity of removing covers, plates, housings, or guards.
   2. Mount fittings together wherever possible using factory-mounted multiple fitting assemblies securely mounted, parallel with equipment lines, and protected from damage.
   3. For underwater bearings: Bring fittings above water surface and mount on edge of structure above.

3.03 ALIGNMENT OF DRIVERS AND EQUIPMENT

A. Where drive motors or other drivers are connected to driven equipment by flexible coupling, disconnect coupling halves and align driver and equipment after driven equipment has been leveled on its foundation.

B. Comply with procedures of appropriate HI, AGMA standards, alignment tolerances of equipment manufacturers and the following requirements to bring components into angular and parallel alignment:
   1. Maximum total coupling offset (not the per-plane offset): Not to exceed 0.5 mils per inch of coupling length for spacer couplings based on coupling length (not dial separation).
   2. Utilize jacking screws, wedges, or shims as recommended by the equipment manufacturer and as specified in the equipment sections.

C. Use reverse-indicator arrangement dial-type or laser-type alignment indicators:
   1. Mount on the driver/coupling flange and equipment/coupling flange.
   2. Alignment instrumentation accuracy shall be sufficient to read angular and radial misalignment at 10 percent or less of the manufacturer's recommended acceptable misalignment.

D. Alignment and calculations shall include measurement and allowance for thermal growth, spacer coupling length, indicator separation, and axial spacing tolerances of the coupling.

E. When alignment satisfies most stringent tolerance of system components, grout between base and foundation.
   1. Allow minimum 48 hours for grout to harden.
   2. After grout hardens, remove jacking screws, tighten anchor bolts and other connections, and recheck alignment.
   3. Correct alignment as required.

3.04 EQUIPMENT SUPPORT AND ANCHORING TO STRUCTURES

A. Anchor equipment to structures as indicated on the Drawings and as specified.

B. Obtain final anchor bolt layouts for equipment prior to:
   1. Detailing reinforcement for equipment pads.
   2. Preparation of Shop Drawings for metal structures supporting equipment.

C. Anchor bolt templates:
   1. Provide templates as specified in the Technical Sections.
   2. Use final anchor bolt layout to construct templates for setting anchor bolts.
   3. Make templates:
      a. Rigid, and non-deformable during use.
      b. With longitudinal axes of anchors parallel.
      c. With longitudinal axes of anchors perpendicular to surface supporting the equipment.
   4. Templates may be reused for multiple locations of the same equipment only if:
      a. Templates are in "like-new" condition prior to each reuse.

b. Anchor layout has not been deformed or damaged by previous installation, removal, or handling of templates.

5. Sequence:
   a. Set and support templates prior construction of structures surrounding anchors.
   b. Position anchors in templates to provide designated embedment in supporting structure, with required projection for installation of grout, base plates, and hardware for tightening.
   c. Construct concrete or masonry around anchors using methods that preserve required anchor positions and alignment, and clearances to edges of supports or structures.

D. Anchor adjustment sleeves:
   1. Use of adjustment sleeves around anchors:
      a. Is at the option of the Contractor.
      b. Does not relieve the Contractor of obligation to construct and use templates for setting of anchors.
      c. May required increased anchor embedment length to develop the strength of the anchor in the embedded length below the adjustment sleeve.
   2. Submittal requirements for anchor adjustment sleeves:
      a. Provide within sufficient time for Engineer approval and not less than 10 working days before setting those items.
      b. Proposed locations of sleeves.
      c. Details and dimensions of sleeves.
      d. Sleeve materials of construction, and coatings.
      e. Information on sleeve filler material and means of filler removal.
      f. Type, details, and dimensions of anchor bolts or anchor rods to be used with sleeves.
      g. Calculations showing development of anchor load capacity below the bottom of the sleeve.
      h. Plan for removal of sleeve fillers, if any.
      i. Plan for placement and consolidation of flowable grout inside sleeves and to a level equal to top of concrete slab or equipment pad surrounding the sleeve.

3.05 GROUTING UNDER EQUIPMENT BASES, BASE PLATES, SOLE PLATES, AND SKIDS

A. General:
   1. Comply with the equipment manufacturer’s installation instructions, including:
      a. Tolerances for level.
      b. Tolerances for vertical and horizontal alignment.
      c. Requirements or recommendations for grouting spaces and grout installation.
      d. Recommendations for tightening of equipment anchors after grout has cured.
   2. Install equipment over grout as indicated on the Drawings or specified only after:
      a. Equipment is leveled and in proper alignment.
      b. Piping connections are complete and in alignment with no strain transmitted to equipment.

3. Install flowable grout, as specified in Section 03600 - Grouting, placed with forms and head boxes.
    a. Use flowable, non-shrink grout.
    b. Use flowable, non-shrink epoxy grout, only where indicated on the Drawings, where specified in Technical Sections, or when approved in advance by the Engineer.
    c. Grouting with dry-pack materials is not permitted.

B. Prepare equipment bases, base plates, soleplates, and skids for grouting:
    1. Concrete equipment bases:
        a. Roughen surface in accordance with ICRI, Guideline No. 310.2R, Surface Preparation Profiles CSP-3 and CSP-4.
        b. Clean roughened concrete surfaces.
    2. Base plates, soleplates, and skids:
        a. Clean surfaces in accordance with SSPC-SP-1-Solvent Cleaning, to remove dirt, dust, oil, grease, paint, and other material.

C. Level equipment for grouting:
    1. Use removable jack screws, or removable steel wedges and shims to support and level equipment bases, base plates, sole plates, and skids.
        a. Do not use leveling nuts placed on equipment anchors to support or level equipment bases, base plates, sole plates, and skids.
    2. Removable jack screws:
        a. Provide number, size, and locations of jack screws required to support and level equipment in accordance with the manufacturer’s recommendations.
        b. Drill and tap equipment base plates, sole plates, and skids for jack screws.
        c. Support jack screws on circular steel plates that have been epoxy bonded to the equipment foundation.
            1) Provide plates fabricated from Type 316 stainless steel where edges of support plates will have grout side cover of 3 inches or less in the finished Work.
        d. Make provision for removal of jack screws after grouting:
            1) Prevent grout from bonding to jack screws by wrapping jack screw threads that will be in contact with grout with multiple layers of tape or other material acceptable to the Engineer.
        e. Place and cure grout.
        f. After grout is placed and cured:
            1) Remove jack screws and material used to prevent grout from bonding to jack screws.
            2) Provide jack screws to the Owner for future use.
            3) Fill jack screw holes with grout.
            4) Cure grout as specified.
    3. Removable steel wedges and shims:
        a. Use for equipment bases, base plates, sole plates, and skids where it is not practical to use jack screws.
        b. Provide number, size, and locations of wedges and shims required to support and level equipment in accordance with the manufacturer’s recommendations.

c. Make provision for removal of wedges and shims after grouting:
    1) Prevent grout from bonding to wedges and shims by wrapping wedges and shims that contact grout with multiple layers of tape or other material acceptable to the Engineer.
    2) Locate and orient wedges and shims to allow for removal after grouting, and to facilitate placement of grout in the remaining voids.
d. Place and cure grout.
e. After grout is placed and cured:
    1) Remove wedges and shims, and material used to prevent grout from bonding to them.
    2) Fill jack screw holes with grout.
    3) Cure grout as specified.

D. Construct grout forms:
1. Provide forms:
    a. Rigid with adequate strength to withstand placement of grout.
    b. With surfaces that will produce a smooth, uniform finish for grout edges exposed in the finished Work.
    c. That allow grout to flow horizontally beyond the perimeter of the equipment base plate a distance not less than the thickness of the grout, and not less than 1 inch.
2. Install forms:
    a. Seal form cracks and joints with elastomeric sealant to make form watertight.
    b. Line form surfaces in contact with grout with polyethylene film, or coat with 2 coats of heavy-duty paste wax.
3. Construct grout “head box” over entire length of one side of form.
    a. Make head box height sufficient to force grout to flow under full dimensions of equipment base and to the surrounding form faces.

E. Pre-grouting procedures:
1. Concrete surfaces receiving flowable, non-shrink grout:
    a. Saturate concrete surface in contact with grout and concrete surfaces extending not less than at least 6 inches beyond limits of grout with clean water for a minimum of 24 hours prior to grouting.
    b. Just prior to grout placement, remove standing water using clean rags or oil-free compressed air. Provide saturated surface dry (SSD) concrete for grout placement.
2. Concrete surfaces receiving flowable, non-shrink epoxy grout:
    a. Do not saturate concrete prior to grout placement.

F. Grout placement and curing:
1. Place and cure grout as specified in Section 03600 - Grouting and in this Section.
2. Grouting:
    a. Keep level of grout in head box above bottom of equipment bases, base plates, sole plates, and skids always to drive flow under base.
    b. Maintain continuous grout flow from head box to opposite sides of forms without trapping air or forming voids.
    c. Vibrate, rod, or chain grout to facilitate grout flow, to consolidate grout, and to remove entrapped air.

3. After grout sets, remove forms and trim grout edges at 45-degree angle from bottom edge of equipment bases, base plates, sole plates, and skids.
4. Cure grout as specified in Section 03600 - Grouting.

G. After grout is cured:
1. Remove jack screws or wedges and shims, and material used to prevent grout from bonding to leveling devices.
2. Fill pockets from removed leveling devices with grout.
3. Cure filled voids as specified in Section 03600 - Grouting.
4. Tighten equipment anchors in accordance with the equipment manufacturer's requirements.

3.06 FIELD FINISHES

A. When touchup or repair is required, apply primer and coating systems as recommended by the equipment manufacturer.

END OF SECTION

SECTION 15052

COMMON WORK RESULTS FOR GENERAL PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Basic materials and methods for metallic and plastic piping systems.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B1.1 - Unified Inch Screw Threads (UN, UNR, and UNJ Thread Forms).
   2. B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series).
   3. B18.2.2 - Nuts for General Applications: Machine Screw Nuts; and Hex, Square, Hex Flange, and Coupling Nuts (Inch Series).
   4. PCC-1 - Pressure Boundary Bolted Flange Joint Assembly.

B. American Water Work Association (AWWA):
   1. C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
   2. C110 - Ductile-Iron and Gray-Iron Fittings.
   3. C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
   4. C115 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
   5. C151 - Ductile-Iron Pipe, Centrifugally Cast.

C. ASTM International (ASTM):
   1. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   2. A194 - Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
   3. A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
   4. A563 - Standard Specification for Carbon and Alloy Steel Nuts.
   5. B88 - Standard Specification for Seamless Copper Water Tube.
   6. D395 - Standard Test Methods for Rubber Property—Compression Set.
   7. D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
   8. D573 - Standard Test Method for Rubber—Deterioration in an Air Oven.
   9. D1149 - Standard Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment.
   10. D1330 - Standard Specification for Rubber Sheet Gaskets.
   11. D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing and Fittings.
   12. F37 - Standard Test Methods for Sealability of Gasket Materials.

13. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
14. F594 - Standard Specification for Stainless Steel Nuts.
15. F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements of Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

D. California Health and Safety Code.

E. NSF International (NSF):
1. 61 - Drinking Water System Components - Health Effects.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
1. Buried pipes: Pipes that are buried in the soil with or without a concrete pipe encasement.
2. Exposed pipe: Pipes that are located above ground, or located inside a structure, supported by a structure, or cast into a concrete structure.
3. Pipes adjacent to a wet wall: Pipe centerline within 10 inches of the wet wall.
4. Underground pipes: Buried pipes - see 1. above.
5. Underwater pipes: Pipes below the top of walls in basins or tanks containing water.
6. Wet wall: A wall with water on at least one side.

PART 2 PRODUCTS

2.01 GENERAL

A. Materials as specified in the Agreement and Contract RFP in Volumes 1 and 2 including special requirements for materials in contact with drinking water.

B. Coatings and linings requirements stated in the Pipe Schedule, as modified in the individual pipe Technical Sections, and as specified in Section 09960 - High-Performance Coatings.

2.02 LINK TYPE SEALS

A. Characteristics:
1. Modular mechanical type, consisting of interlocking neoprene or synthetic rubber links shaped to continuously fill the annular space between the pipe and wall opening.
2. Links to form a continuous rubber belt around the pipe.
3. Provide a nylon polymer pressure plate with Type 316 stainless steel hardware. Isolate pressure plate from contact with wall sleeve.
4. Hardware to be Type 316 stainless steel.
a. Provide anti-galling lubricant for threads.

B. One of the following or equal:
   1. Link-Seal.
   2. Pipe Linx.

2.03 FLANGE BOLTS AND NUTS

A. General:
   1. Washer: Provide for each nut.
      a. Shall be of the same material as the nut.
   2. Nuts: Heavy hex-head.
   3. Cut and finish flange bolts to project:
      a. Face of the bolt shall exceed face of nut by 1/8-inch minimum.
      b. A maximum of 1/4 inch beyond outside face of nut after assembly.
   4. Tap holes for cap screws or stud bolts when used.
   5. Lubricant for stainless steel bolts and nuts:
      a. Chloride-free.
      b. Manufacturers: One of the following or equal:
         1) Huskey, FG-1800 Anti-Seize.
         2) Weicon, Anti-Seize High-Tech.

B. Ductile iron pipe:
   1. On exposed pipes with pressures equal to or less than 150 pounds per square inch gauge (psig):
      a. Bolts: In accordance with ASTM A307, Grade B.
      b. Nuts: In accordance with ASTM A563, Grade A.
      c. Bolts and nuts: Hot-dip galvanized in accordance with ASTM F2329.
   2. On exposed pipes with pressures greater than 150 psig:
      a. Bolts: In accordance with ASTM A193, Grade B7.
      b. Nuts: In accordance with ASTM A194, Grade 2H.
      c. Bolts and nuts: Hot-dip galvanized in accordance with ASTM F2329.
   3. On underwater pipes and pipes adjacent to wet walls:
      a. Bolts: In accordance with ASTM A193, Grade B8M.
      b. Nuts: In accordance with ASTM A194, Grade 8M.

2.04 MECHANICAL JOINTS BOLTS AND NUTS

A. Bolts, including T-bolts:
   1. High strength low alloy steel in accordance with AWWA C111.
      a. Fluoropolymer coated.
   2. Type 316 stainless steel in accordance with ASTM F593.

B. Heavy hex nuts:
   1. High strength low alloy steel in accordance with AWWA C111.
      a. Fluoropolymer coated.
   2. Type 316 stainless steel in accordance with ASTM F594.

2.05 GASKETS

A. General.
   1. Gaskets shall be suitable for the specific fluids, pressure, and temperature conditions.
   2. Capable of being applied on surface of piping with cavities to provide for an improved seal with the internal piping pressure.

B. Gaskets for flanged joints in ductile iron and steel piping for sewage service:
   1. Suitable for pressures equal to and less than 200 pounds per square inch gauge, temperatures equal to and less than 250 degrees Fahrenheit, and raw sewage service.
   2. Gasket Material:
      a. SBR or neoprene elastomer with minimum Shore A hardness value of 70.
      b. Reinforcement: Cloth or synthetic fiber.
      c. Thickness: Minimum 3/32-inch thick for less than 10-inch pipe; minimum 1/8-inch thick for 10 inch and larger pipe.
   3. Manufacturers: One of the following or equal:
      a. Pipe less than 48 inches in diameter:
         1) Garlock, Style 7797.
         2) John Crane, similar product.
      b. Pipe 48 inches in diameter and larger:
         1) Garlock, Style 3760.
         2) John Crane, similar product.

C. Gaskets for flanged joints in ductile iron or steel water piping:
   1. Suitable for hot or cold water, pressures equal to and less than 150 pounds per square inch gauge, and temperatures equal to and less than 160 degrees Fahrenheit.
   2. Material:
      a. SBR or neoprene elastomer, compressed, with non-asbestos fiber reinforcement.
   3. Manufacturers: One of the following or equal:
      a. Garlock, Bluegard 3300.
      a. John Crane, similar product.

D. Gaskets for flanged joints in ductile iron drinking water piping in accordance meeting NSF 61 requirements:
   1. Suitable for hot or cold water, pressures equal to or less than 150 pounds per square inch gauge, and temperatures equal to or less than 160 degrees Fahrenheit.
   2. Material:
      a. EPDM material with 80 Shore A durometer rating.
   3. Manufacturers: One of the following or equal:
      a. Garlock, 98206.
      b. John Crane, similar product.

E. Gaskets for mechanical joints in ductile iron drinking water piping in accordance with NSF 61 requirements:
   1. In accordance with AWWA C110, C111, and C115.

2. Material: Vulcanized styrene butadiene copolymer (SBR).
    a. Temperature range: 20 to 150 degrees Fahrenheit.
    b. Operating pressure: 250 psi.
    c. Durometer, Shore A (within 5): 75.
    d. ASTM D412 tensile strength: 1,500 psi.
    e. ASTM D412 elongation: 150 percent.
    f. ASTM D395 B, compression set, 25 percent deflection, maximum percentage 22 hours at 158 degrees Fahrenheit: 20.
    g. ASTM D573 minimum aging: 60 percent.
    h. ASTM D1149 resistance to surface ozone: No cracking.
3. Manufacturers: One of the following or equal:
    a. American Cast Iron Pipe Co.
    b. EBAA Iron, Inc.
    c. Star Pipe Products.

F. Gaskets for integrally restrained push-on joints in ductile iron drinking water piping in accordance with NSF 61 requirements:
1. In accordance with AWWA C110, C111, and C115.
2. Material: Vulcanized styrene butadiene copolymer (SBR).
    a. Temperature range: 20 to 150 degrees Fahrenheit.
    b. Operating pressure: 250 psi.
    c. Durometer, Shore A:
        1) Main body: 50 to 65.
        2) Harder portion (if used): 80 to 85.
    d. ASTM D412 tensile strength:
        1) Main body: 2,000 psi.
        2) Harder portion (if used): 1,200 psi.
    e. ASTM D412 elongation:
        1) Main body: 300 percent.
        2) Harder portion (if used): 125 percent.
    f. ASTM D395 B, compression set, 25 percent deflection, maximum percentage 22 hours at 158 degrees Fahrenheit: 20.
    g. ASTM D573 minimum aging: 60 percent.
    h. ASTM D1149 resistance to surface ozone: No cracking.
3. Manufacturers: One of the following or equal:
    a. American Cast Iron Pipe Co, Fast-grip gasket.
    b. U.S. Pipe, Field Lok 350 Gaskets.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
1. Piping drawings:
    a. Except in details, piping is indicated diagrammatically. Not every offset and fitting, or structural difficulty that may be encountered has been indicated on the Drawings. Sizes and locations are indicated on the Drawings.

b. Perform minor modifications to piping alignment where necessary to avoid structural, mechanical, or other type of obstructions that cannot be removed or changed.
    1) Modifications are intended to be of minor scope, not involving a change to the design concept or a change to the Contract Price or Contract Times.

2. Piping alternatives:
    a. Provide piping as specified in this Section, unless indicated on the Drawings or specified otherwise.
    b. Alternative pipe ratings:
        1) Piping with greater pressure rating than specified may be substituted in lieu of specified piping without changes to the Contract Price.
        2) Piping of different material may not be substituted in lieu of specified piping.
    c. Valves in piping sections: Capable of withstanding specified test pressures for piping sections and fabricated with ends to fit piping.
    d. Grooved joints: Use couplings, flange adapters, and fittings of the same manufacturer.
        1) Manufacturer's factory trained representative:
            a) Provide on-site training for the Contractor's field personnel.
            b) Periodically visit the jobsite to verify the Contractor is following best recommended practices.
        2) Distributor's representative is not considered qualified to conduct the training or jobsite visits.
    e. Flanged joints: Where one of the joining flanges is raised face type, provide a matching raised face type flange for the other joining flange.
3. Unless otherwise indicated on the Drawings, piping at pipe joints, fittings, couplings, and equipment shall be installed without rotation, angular deflection, vertical offset, or horizontal offset.

B. Wall and slab penetrations:
1. Provide sleeves for piping penetrations through aboveground masonry and concrete walls, floors, ceilings, roofs, unless specified or otherwise indicated on the Drawings.
2. For piping 1 inch in nominal diameter and larger, provide sleeves with minimum inside diameters of 1 inch plus outside diameter of piping. For piping smaller than 1 inch in nominal diameter, provide sleeve of minimum twice the outside diameter of piping.
    a. Arrange sleeves and adjacent joints so piping can be pulled out of sleeves and replaced without disturbing the structure.
    b. Cut ends of sleeves flush with surfaces of concrete, masonry, or plaster.
    c. Conceal ends of sleeves with escutcheons where piping runs through floors, walls, or ceilings of finished spaces within buildings.
    d. Seal spaces between pipes and sleeves with link-type seals when not otherwise specified or indicated on the Drawings.
    e. Seal openings around piping running through interior walls and floors of chlorine rooms and chlorine storage rooms gastight with synthetic rubber sealing compound.
3. Provide flexibility in piping connecting to structures to accommodate movement due to soil settlement and earthquakes. Provide flexibility using details indicated on the Drawings.

4. Core drilled openings:
    a. Do not damage or cut existing reinforcing bars, electrical conduits, or other items embedded in the existing concrete without acceptance by the Engineer.
    b. Determine location of reinforcing bars or other obstructions with a non-destructive indicator device.
    c. Remove dust and debris from hole using compressed air.

C. Exposed piping:
1. Install in straight runs parallel to the axes of structures, unless otherwise indicated on the Drawings.
    a. Install piping runs plumb and level, unless otherwise indicated on the Drawings.
        1) Slope plumbing drain piping with a minimum of 1/4 inch per foot downward in the direction of flow.
2. Install after installing equipment and after piping and fitting locations have been determined.
3. Support piping: As specified in Section 15061 - Pipe Supports:
    a. Do not transfer pipe loads and strain to equipment.
4. In addition to the joints indicated on the Drawings, provide unions, flexible couplings, flanged joints, flanged coupling adapters, and other types of joints or means which are compatible with and suitable for the piping system, and necessary to allow ready assembly and disassembly of the piping.
5. Assemble piping without distortion or stresses caused by misalignment:
    a. Match and properly orient flanges, unions, flexible couplings, and other connections.
    b. Do not subject piping to bending or other undue stresses when fitting piping.
    c. Do not correct defective orientation or alignment by distorting flanged joints or subjecting flange bolts to bending or other undue stresses.
    d. Flange bolts, union halves, flexible connectors, and other connection elements shall slip freely into place.
    e. Alter piping assembly to fit when proper fit is not obtained.
    f. Install eccentric reducers or increasers with the top horizontal for pump suction piping.

D. Buried piping:
1. Bury piping with minimum 3-foot cover without air traps, unless otherwise indicated on the Drawings.
2. Where 2 similar services run parallel to each other, piping for such services may be laid in the same trench.
    a. Lay piping with sufficient room for assembly and disassembly of joints, for thrust blocks, for other structures, and to meet separation requirements of public health authorities having jurisdiction.
3. Laying piping:
    a. In finished trenches free from water or debris. Begin at the lowest point with bell ends up slope.
    b. Place piping with top or bottom markings with markings in proper position.
    c. On an unyielding foundation with uniform bearing under the full length of barrels.

d. Where joints require external grouting, banding, or pointing, provide space under and immediately in front of the bell end of each section laid with sufficient shape and size for grouting, banding, or pointing of joints.
e. At the end of each day's construction, plug open ends of piping temporarily to prevent entrance of debris or animals.

4. Concrete encase buried pipe installed under concrete slabs or structures.

E. Venting piping under pressure:
1. Lay piping under pressure flat or at a continuous slope without air traps, unless otherwise indicated on the Drawings.
2. Install plug valves as air bleeder cocks at high points in piping.
a. Provide 1-inch plug valves for water lines and 2-inch plug valves for sewage and sludge lines, unless otherwise indicated on the Drawings.
3. Provide additional pipe taps with plug cocks and riser pipes along piping as required for venting during initial filling, disinfecting, and sampling.
4. Before piping is placed into service, close plug valves and install plugs. Protect plugs and plug valves from corrosion as specified in Section 09960 - High-Performance Coatings.

F. Restraining buried piping:
2. At valves and at fittings where piping changes direction, changes size, and at ends:
a. When piping is underground, use concrete thrust blocks, mechanical restraints, or push-on restraints.
b. Determine thrust forces by multiplying the nominal cross-sectional area of the piping by the design test pressure of the piping.
3. Provide restraints with ample size to withstand thrust forces resulting from test pressures:
a. During testing, provide suitable temporary restraints where piping does not require permanent restraints.
4. Place concrete thrust blocks against undisturbed soil.
5. Place concrete so piping joints, fittings, and other appurtenances are accessible for assembly and disassembly.
6. Provide underground mechanical restraints where specified in Piping Schedule in the Drawings.

G. Restraining above ground piping:
1. At valves and fittings where piping changes direction, changes size, and at ends:
a. When piping is aboveground or underwater, use mechanical or structural restraints.
b. Determine thrust forces by multiplying the nominal cross-sectional area of the piping by the design test pressure of the piping.
2. Provide restraints with ample size to withstand thrust forces resulting from test pressures:
c. During testing, provide suitable temporary restraints where piping does not require permanent restraints.

H. Connections to existing piping:
    1. Expose existing piping to which connections are to be made with sufficient time to permit, where necessary, field adjustments in line, grade, or fittings:
        a. Protect domestic water/potable water supplies from contamination:
            1) Make connections between domestic water supply and other water systems in accordance with requirements of public health authorities.
            2) Provide devices approved by the owner of the domestic water supply system to prevent flow from other sources into the domestic supply system.
    2. Make connections to existing piping and valves after sections of new piping to be connected have been tested and found satisfactory.
    3. Provide sleeves, flanges, nipples, couplings, adapters, and other fittings needed to install or attach new fittings to existing piping and to make connections to existing piping.
    4. For flanged connections, provide stainless steel bolts with isolation bushings and washers, and full-face flange gaskets.

I. Connections between ferrous and nonferrous metals:
    1. Connect ferrous and nonferrous metal piping, tubing, and fittings with dielectric couplings especially designed for the prevention of chemical reactions between dissimilar metals.
    2. Nonferrous metals include aluminum, copper, and copper alloys.

J. Flanged connections between dissimilar metals such as ductile iron pipe and steel pipe:
    1. Provide stainless steel bolts with isolation bushings and washers, and full-face flange gaskets.

3.02 CLEANING

A. Piping cleaning:
    1. Upon completion of installation, clean piping interior of foreign matter and debris.
    2. Perform special cleaning when required by the Contract Documents.

B. Chlorine piping:
    1. General:
        a. Coordinate with the Owner and attend a pre-cleaning meeting with the Owner before cleaning chlorine piping.
        b. Work with the Owner during cleaning and conform to plant operational and shut down constraints.
        c. Clean chlorine piping in accordance with the requirements of the Chlorine Institute-Pamphlet 6 and meet the following requirements.
    2. Steel piping:
        a. Dry chlorine gas or liquid chlorine piping:
            1) Do not put water into any of the chlorine gas or liquid piping.
            2) Blow chlorine piping clean of loose debris with compressed air at 4,000 fpm.
            3) Clean chlorine piping by pulling clean cloths saturated with an approved solvent through piping:
                a) Do not use hydrocarbons or alcohols that may react with chlorine.

b) Use solvents in accordance with the manufacturer's safety recommendations to avoid serious physiological effects.
c) Remove dirt and debris of any nature from the chlorine lines.

4) Disassemble and clean valves and equipment that have oil residues before installation.
5) Dry piping immediately before effecting final connections for service.
a) Keep piping sealed to prevent moisture from entering chlorine piping.
b) Supply compressors, air dryers, and dew point testing equipment necessary to dry and test for dryness the new chlorination system piping.
6) Drying procedure:
a) Pass dry commercial-grade nitrogen gas that has a dew point of -40 degrees Fahrenheit or less through the piping until exhausted air at three engineer-approved locations has a dew point of -40 degrees Fahrenheit.
b) Confirm dew point with a hygrometer.
c) Re-dry the chlorine piping system in the event subsequent work opens any part of the system to the atmosphere.

3. PVC piping:
a. Cleaning chlorine gas vacuum piping:
1) Blow pipe clean of loose debris with instrument-grade clean and dry compressed air.
2) Ensure that pipe is open and not valved off at the end of the section to be cleaned so that pipe does not become pressurized.
3) Do not pressurize PVC with compressed air.
4) Do not flush chlorine gas vacuum piping with water.
b. Cleaning chlorine solution piping:
1) Flush with potable water to clear loose debris.

C. Conduct pressure and leak test, as specified.

D. As indicated on the Drawings.

END OF SECTION

SECTION 15057

FUSION BONDED EPOXY LINING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Fusion bonded epoxy lining for steel or ductile iron pipe and fittings.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. D1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimen by Tension Loading (Metal-to-Metal).
   2. G8 - Standard Test Methods for Cathodic Disbonding of Pipeline Coatings.

B. American Water Works Association (AWWA):
   1. C116 - Standard for Protective Fusion-Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings.
   2. C213 - Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines.

C. Society for Protective Coatings (SSPC):
   1. SP 7 – Brush-Off Blast Cleaning.
   2. SP 10 - Near-White Blast Cleaning.

1.03 SUBMITTALS

A. Product data.

B. Test reports: Include manufacturer's certification that lining passed tests.

C. Manufacturer's application instructions.

PART 2 PRODUCTS

2.01 EPOXY RESIN POWDER

A. Manufacturer: One of the following or equal:
   1. 3M.
   2. Morton Thiokol.

B. Material: Thermosetting, fusion bonded dry powder epoxy, 100 percent solids, with following performance characteristics when applied:
   1. Cathodic disbondment resistance: Average maximum 48 millimeters when tested in accordance with ASTM G8.
   2. Adhesion shear resistance: Minimum 4,700 pounds per square inches when tested in accordance with ASTM D1002.

2.02 FABRICATION

A. Blast clean fitting interior surfaces of pipe and fittings in accordance with SSPC-SP 7 or SSPC-SP 10.

B. Apply epoxy resin powder to blasted surfaces by either fluidized bed method or electrostatic coating method in accordance with manufacturer's instructions and AWWA C116 or AWWA C213.

C. Fuse lining to piping in accordance with manufacturer's instructions and AWWA C116 or AWWA C213.

D. Pipe and fittings: Minimum lining thickness: 16-mil.

E. Valve: Lining thickness: 10 to 12-mils, except that:
   1. Lining thickness in grooves for gaskets: 5-mil.
   2. Do not coat seat grooves in valves with bonded seat.

2.03 SOURCE QUALITY CONTROL

A. Test lining with either 100 volt per mil thickness holiday detectors or low voltage wet sponge holiday detectors.

B. Reject pipe and fitting with linings that contain pinholes, discontinuities or other defects.

C. Lining thickness: Measured with a non-destructive magnetic type thickness gauge.

D. Verify lining integrity with a wet sponge-testing unit operating at approximately 60 volts, or as recommended by the lining manufacturer.

E. Consider tests successful when lining thickness meets specified requirements and when no pinholes are found.

F. Correct defective lining disclosed by unsuccessful tests, and repeat test.

G. Repair pinholes with liquid epoxy recommended by manufacturer of the epoxy used for lining.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install pipe and fitting as specified in Section 15052 - Common Work Results for General Piping.

END OF SECTION

SECTION 15061

PIPE SUPPORTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Supports for pipe, fittings, valves, and appurtenances.

B. Contractor shall be responsible for the design of pipe supports.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   2. A380 - Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
   3. A967 - Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts.

B. Manufacturers Standardization Society (MSS):
   1. SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Design features.
   2. Load capacities.
   3. Material designations by UNS alloy number or ASTM Specification and Grade.
   4. Data needed to verify compliance with the Specifications.
   5. Catalog data.
   6. Clearly mark submittal information to show specific items, materials, and accessories or options being furnished.

C. Submit sealed and signed calculations for all pipe supports. Calculations shall meet the requirements as specified in Section 01850 - Design Criteria.
   1. Calculations and other information to substantiate supports and anchors shall meet minimum design strength as specified in Section 01850 - Design Criteria.

1.04 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

2.02 MATERIALS

A. General:
   1. Hot dip galvanized:
      a. Fabricate as specified in Section 05500 - Metal Fabrications.
      b. Hot dip after fabrication of support in accordance with ASTM A123.
      c. Repair galvanized surface as specified in Section 05500 - Metal Fabrications.
   2. Stainless steel:
      a. Fabricate as specified in Section 05500 - Metal Fabrications.
      b. Finish requirements: Remove free iron, heat tint oxides, weld scale, and other impurities, and obtain a passive finished surface.
      c. At the shop, perform pickling and passivation on all surfaces inside and out in accordance with ASTM A380 or ASTM A967.
      d. Field welding is prohibited unless specifically allowed by the Owner. All field welds shall be passivated.

B. Outdoor areas: Areas exposed to the natural outdoor environment:
   1. Hot Dip Galvanized.

C. Indoor areas: Areas exposed to an indoor environment including galleries and tunnels:
   1. Hot Dip Galvanized and coated.

D. Chemical containment areas and chemical piping:
   1. Fiberglass reinforced plastic, unless otherwise noted.

E. Fasteners:
   1. As specified in Section 05500 - Metal Fabrications.

2.03 PIPE SUPPORTS

A. Hanger rods: Sized to match suspended pipe hanger, or as indicated on the Drawings:
   1. Manufacturers: One of the following or equal:
      a. For stainless steel piping:
         1) Bergen-Power, Figure 133.
         2) Nibco-Tolco, Figure 103.
      b. For all other piping, unless indicated on the Drawings:
         1) Anvil International, Figure 140.
         2) Bergen-Power, Figure 133.
         3) Cooper B-Line Systems, Inc., Figure B3205.

B. Hanger rods, continuously threaded: Sized to match suspended pipe hanger, or as indicated on the Drawings:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) Bergen-Power, Figure 94.
            2) FM Stainless Fasteners.
        b. For steel and ductile iron piping:
            1) Anvil International, Figure 146.
            2) Bergen-Power, Figure 94.

C. Eye bolts:
    1. For stainless steel piping:
        a. Type 316 stainless steel, welded and rated equal to full load capacity of rod.
    2. For all other piping, unless indicated on the Drawings:
        a. Welded and rated equal to full load capacity of rod.

D. Welded eyebolt rod:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) FM Stainless Fasteners.
            2) Nibco-Tolco, Figure 101.
        b. For all other piping, unless indicated on the Drawings:
            1) Anvil International, Figure 278.
            2) Bergen-Power, Figure 93.
            3) Cooper B-Line Systems, Inc., Figure B3210.

E. Adjustable ring hangers: MSS SP-58, Type 7 or Type 9 (system dependent):
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) Bergen-Power, Figure 100SS.
            2) Nibco-Tolco, Figure 1C.I.
        b. For all other piping, unless indicated on the Drawings:
            1) Anvil International, Figure 69.
            2) Cooper B-Line Systems, Inc., Figure B3172.

F. Adjustable clevis hangers: MSS SP-58, Type 1:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) Cooper B-Line Systems, Inc., Figure B3100 or B3102.
            2) FM Stainless Fasteners, Figure 60.
        b. For all other piping, unless indicated on the Drawings:
            1) Anvil International, Figure 260 or Figure 590.
            2) Bergen-Power, Figure 100.
            3) Cooper B-Line Systems, Inc., Figure B3100 or B3102.

G. Adjustable clevis hangers for insulated pipe: Oversize:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) Nibco-Tolco, Figure 1A.

b. For all other piping, unless indicated on the Drawings:
1) Anvil International, Figure 300.
2) Bergen-Power, Figure 100EL.
3) Cooper B-Line Systems, Inc. Figure B3108.

H. Single rod hangers for steam pipe: MSS SP-58, Type 43; malleable iron or steel yoke and roller hangers; swivel to allow rotation of yoke on rod:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping:
1) Cooper B-Line Systems, Inc., Figure B3110.
2) FM Fasteners, Figure 81.
3) Nibco-Tolco, Figure 324.
b. For all other piping, unless indicated on the Drawings:
1) Anvil International, Figure 181.
2) Cooper B-Line Systems, Inc., Figure B3110.

I. Double rod hangers for steam pipe: MSS SP-58, Type 41:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping:
1) FM Stainless Fasteners, Figure 71.
b. For all other piping, unless indicated on the Drawings:
1) Anvil International, Figure 171.
2) Cooper B-Line Systems, Inc., Figure B3114.

J. Brackets: MSS SP-58, Type 32 with back plate; rated for 1,500 pounds:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping:
1) Cooper B-Line Systems, Inc., Figure B3066.
2) FM Stainless Fasteners, Figure 98.
3) Nibco-Tolco, Figure 30M.
b. For all other piping, unless indicated on the Drawings:
1) Anvil International, Figure 195.
2) Cooper B-Line Systems, Inc., Figure B3066.

K. Brackets, heavy duty: MSS SP-58, Type 33 with back plate; rated for 3,000 pounds:
1. Manufacturers: One of the following or equal:
a. Anvil International, Figure 199.
b. Cooper B-Line Systems, Inc., Figure B3067.

L. Standard U-bolt: MSS SP-58, Type 24:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping:
1) Cooper B-Line Systems, Inc., Figure B3188.
2) FM Stainless Fasteners, Figure 37.
3) Nibco-Tolco, Figure 110.
b. For all other piping, unless indicated on the Drawings:
1) Anvil International, Figure 137.
2) Bergen-Power, Figure 283.
3) Cooper B-Line Systems, Inc., Figure B3188.

M. Riser clamps: MSS SP-58, Type 8:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) Cooper B-Line Systems, Inc., Figure B3373.
            2) FM Stainless Fasteners, Figure 61.
        b. For all other piping, unless indicated on the Drawings:
            1) Anvil International, Figure 261.
            2) Bergen-Power, Figure 126.
            3) Cooper B-Line Systems, Inc., Figure B3373.

N. Pipe clamps: MSS SP-58, Type 4:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) Cooper B-Line Systems, Inc., Figure 3140.
            2) Nibco-Tolco, Figure 4.
        b. For all other piping, unless indicated on the Drawings:
            1) Anvil International, Figure 212.
            2) Bergen-Power, Figure 175.
            3) Cooper B-Line Systems, Inc., Figure B3140.

O. Adjustable offset pipe clamp:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) Cooper B-Line Systems, Inc., Figure B3149.
            2) FM Stainless Fasteners, Figure 63.
            3) Nibco-Tolco, Figure 4.
        b. For all other piping, unless indicated on the Drawings:
            1) Anvil International, Figure 100.
            2) Cooper B-Line Systems, Inc., Figure B3149.

P. Offset pipe clamp:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) Cooper B-Line Systems, Inc., Figure 3148.
            2) Nibco-Tolco, Figure 8.
        b. For all other piping, unless indicated on the Drawings:
            1) Anvil International, Figure 103.
            2) Cooper B-Line Systems, Inc., Figure B3148.

Q. Floor stand or stanchion saddles: MSS SP-58, Type 37. Provided with U-bolt hold down yokes:
    1. Manufacturers: One of the following or equal:
        a. For stainless steel piping:
            1) FM Stainless Fasteners, Figure 59.
            2) Nibco-Tolco, Figure 318.
        b. For all other piping, unless indicated on the Drawings:
            1) Anvil International, Figure 259.
            2) Bergen-Power, Figure 125.
            3) Cooper B-Line Systems, Inc., Figure B3090.
        c. Threaded pipe stand support stanchion. Match pipe support material:
            1) Anvil International, Figure 63T.

2) Bergen-Power, Figure 138.
3) Cooper B-Line Systems Inc., Figure B3088ST.

R. Spring hangers:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping:
1) Bergen-Power, Figure 920.
b. For all other piping, unless indicated on the Drawings:
1) Anvil International, Figure B-268, Type G.
2) Bergen-Power, Figure 920.

S. One hole pipe clamps:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping: Engineer knows of no product.
b. For all other piping:
1) Anvil International, Figure 126.
2) Carpenter & Paterson, Figure 237S.

T. Welded beam attachment: MSS SP-58, Type 22:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping:
1) Cooper B-Line Systems, Inc., Figure 3083.
2) Nibco-Tolco, Figure 304.
b. For all other piping, unless indicated on the Drawings:
1) Anvil International, Figure 66.
2) Bergen-Power, Figure 113A or 113B.
3) Cooper B-Line Systems, Inc., Figure B3083.

U. Heavy pipe clamp: MSS SP-58, Type 4:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping:
1) Nibco-Tolco, Figure 4H.
b. For all other piping, unless otherwise indicated on the Drawings:
1) Anvil International, Figure 216.
2) Bergen-Power, Figure 298.

V. PTFE pipe slide assembly: MSS SP-58, Type 35 with lateral and vertical restraint:
1. Manufacturers: One of the following or equal:
a. For stainless steel piping:
1) Nibco-Tolco, Figure 426.
b. For all other piping, unless indicated on the Drawings:
1) Anvil International, Figure 257, Type 3.
2) Cooper B-Line Systems, Inc., Figure B3893.

W. Anchor bolts, concrete anchors, concrete inserts, powder-actuated fasteners, and sleeve anchors: As specified in Section 05120 - Structural Steel Framing.

2.04 THERMAL PIPE HANGER SHIELD

A. Provided at hanger, support, and guide locations on pipe requiring insulation.

B. Consist of an insulation layer encircling the entire circumference of the pipe and a steel jacket encircling the insulation layer.

C. Same thickness as the piping system insulation specified in Section 15082 - Piping Insulation.

D. Standard shield shall be used for hot systems and the vapor barrier shield shall be used for cold systems.

E. Stainless steel band clamps shall be used where specified to protect against slippage between the pipe wall and the thermal shield.

F. Standard shield:
   1. Insulation:
      a. Hydrous calcium silicate, high density, waterproof.
      b. Compressive strength: 100 pounds per square inch average.
      c. Flexural strength: 75 pounds per square inch average.
      d. K factor: 0.38 at 100 degrees Fahrenheit mean.
      e. Temperature range: 20 degrees Fahrenheit to 500 degrees Fahrenheit.
   2. Steel jacket:
      a. Jacket shall be galvanized steel.
      b. Gauge shall be the manufacturer's standard supplied for the given pipe size.
   3. Connection:
      a. Shield shall have butt connection to pipe insulation.
      b. Steel jacket and insulation ends shall be flush.

G. Vapor barrier shield:
   1. Insulation:
      a. Hydrous calcium silicate, high density, waterproof.
      b. Compressive strength: 100 pounds per square inch average.
      c. Flexural strength: 75 pounds per square inch average.
      d. K factor: 0.38 at 100 degrees Fahrenheit mean.
      e. Temperature range: 20 degrees Fahrenheit to 500 degrees Fahrenheit.
   2. Steel jacket:
      a. Jacket shall be of galvanized steel.
      b. Gauge shall be the manufacturer's standard supplied for the given pipe size.
   3. Connection:
      a. Shield shall have butt connection to pipe insulation.

H. Insulation shall extend 1 inch each side of steel jacket for vapor tight connection to the pipe insulation vapor barrier.

PART 3 EXECUTION

3.01 INSTALLATION

A. Support, suspend, or anchor exposed pipe, fittings, valves, and appurtenances to prevent sagging, overstressing, or movement of piping; and to prevent thrusts or loads on or against connected pumps, blowers, and other equipment.

B. Field verify support location, orientation, and configuration to eliminate interferences prior to fabrication of supports.

C. Carefully determine locations of inserts. Anchor to formwork prior to placing concrete.

D. Use flush shells only where indicated on the Drawings.

E. Do not use anchors relying on deformation of lead alloy.

F. Do not use powder-actuated fasteners for securing metallic conduit or steel pipe larger than 1 inch to concrete, masonry, or wood.

G. Suspend pipe hangers from hanger rods and secure with double nuts.

H. Install continuously threaded hanger rods only where indicated on the Drawings.

I. Use adjustable ring hangers or adjustable clevis hangers for 4-inch and smaller diameter pipe.

J. Use adjustable clevis hangers for pipe larger than 4 inches in diameter.

K. Secure pipes with double nutted U-bolts or suspend pipes from hanger rods and hangers.
   1. For stainless steel piping, use stainless steel U-bolts.
   2. For all other piping, use galvanized U-bolts.

L. Support spacing:
   1. Support 2-inch and smaller piping on horizontal and vertical runs at maximum 5 feet on center, unless otherwise specified.
   2. Support larger than 2-inch piping on horizontal and vertical runs at maximum 10 feet on center, unless otherwise specified.
   3. Support exposed polyvinyl chloride and other plastic pipes at maximum 5 feet on center, regardless of size.
   4. Support tubing, PVC pipe 1-inch and smaller, copper pipe and tubing, fiber-reinforced plastic pipe or duct, and rubber hose and tubing at intervals close enough to prevent sagging greater than 1/4-inch between supports.
   5. Do not suspend or support valves, pipe and fittings from another pipe or conduit.

M. Install supports at:
   1. Any change in direction.
   2. Both sides of flexible pipe connections.
   3. Base of risers.
   4. Floor penetrations.

5. Connections to pumps, blowers, and other equipment.
6. Valves and appurtenances.

N. Securely anchor plastic pipe, valves, and headers to prevent movement during operation of valves.

O. Anchor plastic pipe between expansion loops and direction changes to prevent axial movement through anchors.

P. Provide elbows or tees supported from floors with base fittings where indicated on the Drawings.

Q. Support base fittings with metal supports or, when indicated on the Drawings, support on concrete piers.

R. Do not use chains, plumbers' straps, wire, or similar devices for permanently suspending, supporting, or restraining pipes.

S. Support plumbing drainage and vents in accordance with plumbing code as specified in Section 01410 - Regulatory Requirements.

T. Supports, clamps, brackets, and portions of support system bearing against copper pipe: Copper plated, copper throughout, or isolated with neoprene or polyvinyl chloride tape.

U. Where pipe is insulated, install over-sized supports and hangers.

V. Install thermal pipe shield in accordance with MSS SP-58, Type 40 on pipe supports for insulated pipes.

W. Install riser clamps at floor penetrations and where indicated on the Drawings.

X. Coat support system components as specified in Section 09960 - High-Performance Coatings.

END OF SECTION

SECTION 15062

PREFORMED CHANNEL PIPE SUPPORT SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Preformed channel pipe support system consisting of preformed channels, fittings, straps, and fasteners engineered to support piping.

1.02 REFERENCES

A. American Institute of Steel Construction (AISC).

B. American Iron and Steel Institute (AISI).

C. Manufacturer's Standardization Society (MSS):
   1. SP-58 - Pipe Hangers and Supports - Materials, Design, and Manufacture.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data.

1.04 QUALITY ASSURANCE

A. Design preformed channel pipe support system for loads in accordance with applicable provisions of:
   1. AISC Manual of Steel Construction.
   2. AISI Cold-Formed Steel Design Manual.

B. Product standards:
   1. Pipe support materials: In accordance with MSS SP-58.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fabricate preformed channel pipe support system using, as a minimum, parts specified below and meeting the requirements specified under Design Criteria.
   1. Manufacturers: One of the following or equal:
      a. Unistrut, Series P1000 or P1001; P5500 or P5501.
      b. Allied Support Systems, Power Strut, Figure PS-200 or PS-200 2TS; PS-150 or PS-150 2TS.
      c. Cooper Ind., B-Line, Channel Type B22 or B22A; B12 or B12A.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Design responsibility:
   1. The manufacturer of the preformed channel pipe support system is responsible for the design of the support system.
   2. Prepare design calculations utilizing the design criteria included in these Specifications.
   3. Prepare detailed shop drawings illustrating the layout of the support system and identifying the components of the support system.

B. Design criteria:
   1. Include live, dead, and seismic loads associated with piping, valves, and appurtenances. Consider the content of the pipes in load calculations.
   2. Minimum gauge thickness: 12-gauge.
   3. Allowable stress of channels:
      a. Steel channels: The lesser of 25,000 pounds per square inch, or 0.66 times yield stress of steel.
      b. Stainless steel channels: 0.66 times the yield stress of the stainless steel alloy.
   4. Maximum deflection: 1/240 of span.
   5. Allowable column loads: As recommended by manufacturer in published instruction for column's unsupported height and "K" value for calculating effective column length of not less than 1.0.
   6. Future loads:
      a. Support systems indicated on the Drawings may include spaces intended to accommodate future pipes.
      b. Assume such spaces are occupied by 6-inch diameter ductile iron pipes. Only the number of pipes that would physically fit into the space need be considered.
      c. Include the weight of the pipe contents in determining future loads. Assume pipe contents are water.
   7. Seismic design criteria: As specified in Section 01850 - Design Criteria as specified for mechanical equipment.
   8. Spacing of supports: As required to comply with design requirements but not more than 5 feet.

C. Supports below the top of walls of water bearing structures: Use Type 316 stainless steel for support system components.
   1. Supports in other locations: Use hot-dipped galvanized components unless other materials are specifically indicated on the Drawings.

2.03 ACCESSORIES

A. Preformed channel concrete inserts: Minimum 12 inches long:
   1. Manufacturers: One of the following or equal:
      a. Unistrut, Series P-3200.
      b. Allied Support Systems, Figure 282.
      c. Cooper Ind., B-Line Series B32I.

B. 90-degree angle fittings:
   1. Manufacturers: One of the following or equal:
      a. Unistrut, P1026.
      b. Allied Support Systems, Power Strut, P603.

C. Pipe straps:
   1. For pipes 8 inches in diameter and smaller: Use 2-piece universal strap with slotted hex head screw and nut.
      a. Manufacturers: One of the following or equal:
         1) Unistrut, Series P1109 through P1126.
         2) Allied Support Systems, PS1100.
         3) Cooper Ind., B-Line Series B2000.
   2. For pipes greater than 8 inches in diameter: Unless different material is otherwise indicated on the Drawings use 1-piece 1-inch wide by 1/8-inch thick steel strap, hot-dip galvanized after fabrication.
   3. For stainless steel pipes: Use type of strap required for the pipe sizes specified above, but use Type 316 stainless steel materials.

D. Prefabricated double channel bracket:
   1. Manufacturers: One of the following or equal:
      a. Unistrut, P2542-P2546.
      b. Cooper Ind., B-Line Series B297.

E. Touch-up paint for galvanized surfaces:
   1. Manufacturers: The following or equal:
      a. Galvinox, Galvo-Weld.

F. Touch-up paint for painted surfaces: Same formulation as factory paint.

G. Cushion strip:
   1. For solvent welded plastic pipes in elevated temperatures, use a thermoplastic elastomer, cushion wrap designed for use from -50 degrees Fahrenheit to 275 degrees Fahrenheit. Contractor to add a cushion strip at each pipe support strap that meets this criteria.
      a. Manufacturers: One of the following or equal:
         1) Anvil, AS 3792.
         2) Unistrut, P2600 Unicushion.

2.04 FABRICATION

A. Hot-dip galvanize support system components after fabrication to required length and shape.

B. Do not galvanize or paint stainless steel components.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install preformed channel concrete inserts for vertical support, quantity based on manufacturer's structural design calculations.

B. Fasten preformed channel pipe supports to existing walls using Z-fittings and concrete anchors as indicated on the Drawings.

C. Fasten preformed channel pipe supports to preformed channel concrete inserts embedded in ceiling using U-shaped fittings.

D. Suspend threaded rods from concrete inserts embedded in ceiling. Support preformed channel pipe supports with threaded rods.

E. Touchup cut or damaged galvanized surfaces.

F. Prevent contact between pipes and support components of dissimilar metals. Utilize rubber coated, plastic coated, or vinyl coated components, stainless steel components, or wrap pipe with PVC or polyethylene tape.

G. Install support as near as possible to concentrated loads.

H. Install support within 2 feet of horizontal and vertical changes in pipe alignment.

I. Adjust supports or install shims to obtain specified slope or elevation.

END OF SECTION

SECTION 15076

PIPE IDENTIFICATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Pipe identification including the following:
   1. Pipe identification markers, flow direction arrows, tags, and bands.
   2. Underground warning tape.
   3. Tracer wire.
   4. Witness markers.
   5. Valve identification.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. A13.1 - Scheme for the Identification of Piping Systems.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Submit following:
   1. Product data.
   2. Samples.
   3. Manufacturer's installation instructions.
   4. Submit following as specified in Section 01770 - Closeout Procedures:
      a. Operation and Maintenance Data.
      b. Warranty.

PART 2 PRODUCTS

2.01 EXPOSED AND IN-CHASE PIPE IDENTIFICATION

A. For piping with outer diameter greater than or equal to 3/4-inch, provide lettered pipe markers and flow direction arrows:
   1. General requirements:
      a. Pipe markers shall include the following, minimum:
         1) Printed text identifying the pipe fluid.
            a) The text shall be all capital letters matching the text listed in the "Service" column of the Piping Schedule for the corresponding piping system.
         2) An arrow identifying the direction of fluid flow.
            a) The arrow can either be integral to the text marker or provided separately. If provided separately, the arrow must be placed immediately adjacent to each text marker, with the arrow aligned

with the text such that the text and arrow are both visible from the same viewpoint.

b) The arrow color shall match the text color, and the arrow background color shall match the text background color.

b. Suitable for outdoor application from -40 degrees to 180 degrees Fahrenheit; in accordance with ASME A13.1 requirements.

c. Lettering:

Outside Pipe Diameter Including Covering	Lettering Height
Less than 0.75 inches	N/A
0.75 to 1.5 inches	1/2-inch
1.5 inches to 2 inches	3/4-inch
2.5 inches to 4 inches	1-1/4 inches
8 inches to 10 inches	2-1/2 inches
Over 10 inches	3-1/2 inches

d. Marker colors:

Fluid service	Text/arrow color	Background color
Flammable and oxidizing fluids	Black	Yellow
Potable, cooling, boiler feed, nontoxic solutions, low hazard liquids, and other waters	White	Green
Compressed air	White	Blue
Fire quenching fluids (foam, fire water, CO_2 Halon)	White	Red
Toxic and corrosive fluids	Black	Orange
Combustible fluids	White	Brown

2. Coating: As specified in Section 09960 - High-Performance Coatings.
3. Pipe identification tags: Aluminum or stainless steel with stamped-in 1/4-inch high identifying lettering.
4. Pipe identification tag chains: Aluminum or stainless steel.
5. Self-adhesive type markers:
   a. Manufacturers: One of the following or equal:
      1) Seton, (of Brady Corporation), Opti Code Pipe Markers.
      2) Lab Safety Supply.
      3) Marking Services, Inc.
   b. Materials:
      1) Self-adhesive vinyl.
6. Snap-on markers: Markers with 3/4-inch high letters for 3/4 to 4-inch pipe or covering, or 5-inch high letters for 5-inch or larger pipe or cover:
   a. Manufacturers: One of following or equal:
      1) Brady BradySnap-On B-915.
      2) Seton (of Brady Corporation) Setmark.

B. For piping with outer diameter less than 3/4-inch, provide identification tags and flow direction arrows:
   1. Manufacturer: One of the following or equal:
      a. Seton (of Brady Corporation).
   2. Tag and chain materials:
      a. Copper piping: Brass.
      b. Ferrous piping: Type 316 stainless steel.
      c. Plastic piping: Stainless steel or Aluminum.
   3. Flow direction arrow colors shall adhere to the same requirements as for piping with outer diameter greater than or equal to 3/4 -inch, as specified in this Section.

C. Pipe bands:
   1. When bands are required by the Piping Schedule for a specific piping system, provide solid-colored 4-inch wide bands.
      a. Color as specified in the Piping Schedule.
   2. Self-adhesive type.
   3. Suitable for outdoor application from -40 degrees to 180 degrees Fahrenheit.

2.02 BURIED PIPELINE IDENTIFICATION

A. Underground warning tape:
   1. Manufacturer: One of the following or equal:
      a. Seton Name Plate Co.(of Brady Corporation).
      b. T. Christy Enterprises, Inc.
   2. Material:
      a. Polyethylene tape for prolonged underground use.
      b. Minimum tape thickness: 4 mils.
      c. Overall tape width: 4 inches.
      d. Message: “CAUTION” with the name of the service followed by “LINE BURIED BELOW.” in black lettering on colored background in accordance with approved APWA colors.

Service	**Color**
Potable water	Blue
Reclaimed water, irrigation, and slurry lines	Purple
Sewers and drain lines	Green
Gas, oil, steam, petroleum, chemicals, or other service	Yellow
Telephone	Orange

      e. Solid aluminum core.

B. Tracer wire:
   1. Manufacturers: One of the following or equal:
      a. Kris-Tech Wire.
      b. Aegion Corrpro.
   2. Materials: One of the following or equal:
      a. Solid copper conductor.
      b. Thickness minimum: 10 gauge.

c. Insulation:
1) Match insulation color to the color of the pipe being installed.
2) UF type, direct bury.
3) 30 mil HMWPE.

3. Splicing kit:
a. Manufacturers: One of the following or equal:
1) Rexel, 3M-82 A1N.

4. Station box:
a. Lid and collar materials: Cast iron.
b. Lid type: Locking.
c. Able to withstand heavy traffic loading.
d. Manufacturers: One of the following or equal:
1) CP Test & Valve Products, Inc., Glenn Test Station.
2) Farwest Corrosion Control.

C. Witness markers:
1. Manufacturers: One of the following or equal:
a. Carsonite Composites, Utility Marker.
b. Hampton Technical Associates, Inc.
2. Materials:
a. Glass fiber and resin reinforced thermosetting composite material.
b. UV resistant.
3. Constructed as a single piece.
4. Pointed at the bottom end.
5. Information to be included on the marker:
a. “Caution” (type of service) “Pipeline”.
b. Phone number for Underground Service Alert.
c. Phone number for Owner in case of emergency.
d. Station number.
e. Offset:
1) Only provide offset if marker is not directly over the pipe.
f. Name of appurtenance or fitting (e.g., 45, BO, ARV, etc.).

2.03 VALVE AND GATE IDENTIFICATION

A. Provide valve and gate schedule for each valve and gate in the Work with the following information:
1. Identification number.
2. Location.
3. Type.
4. Function.
5. Normal operating position.

B. Identification tag requirements.
1. Diameter: 2 inches.
2. Material:
a. Buried applications: Stainless steel or PVC.
b. Buried applications with concrete marker: Brass.
c. Above ground and in-chase applications: 19 gauge aluminum or PVC.
3. Stamp tags in 1/4-inch high letter.

4. Provide non-corrosive metal wire suitable for attaching the tag to the operator base.
5. Secure tags to valve or gate:
    a. Attach tags in such a way as to allow free and full operation of the valve or gate.
6. Buried applications with concrete marker: Secure tags to concrete marker.

C. Submittal requirements:
1. Submit 2 samples of the type of tag proposed and the manufacturer's standard color chart and letter styles to the Engineer for review.

D. Manufacturer: The following or equal:
1. Seton Name Plate Co.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify satisfactory conditions of substrate for applying identification.

B. Verify that conditions are satisfactory for installation and application of products as specified in the Agreement and Contract RFP in Volumes 1 and 2.

3.02 PREPARATION

A. Prepare and coat surfaces as specified in Section 09960 - High-Performance Coatings.

B. Prepare surface in accordance with identification product manufacturer's instructions.

3.03 EXPOSED AND IN-CHASE PIPING IDENTIFICATION

A. Identify exposed and in-chase piping with flow direction arrows and lettering (for piping with outer diameter greater than or equal to 3/4-inch) or tags (for piping with outer diameter less than 3/4-inch).

B. Color code: Paint piping with colors as scheduled in Piping Color Code and Marker Schedule or as selected by Owner. Where tags are used, color code pipe as scheduled.

C. Provide lettering (or tags for pipes with outer diameter less than 3/4-inch) and flow direction arrows near equipment served, adjacent to valves, both sides of walls and floors where pipe passes through, at each branch or tee, and at intervals of not more than 50 feet in straight runs of pipe.
1. Label all chemical tank fill pipelines at locations that are visible from chemical fill stations.

2. Place markers on piping so they are visible from operator's position in walkway or working platform near piping. Locate markers along horizontal centerline of pipe, unless better visibility is achieved elsewhere.
3. Do not apply markers, arrows, or tags to piping that is regularly submerged.

D. Where scheduled in the Piping Schedule, space 4-inch wide solid-color bands along piping at 10-foot intervals for stainless steel pipe and 5-foot intervals for other pipe.
1. Do not apply bands to piping that is regularly submerged.

3.04 BURIED PIPING IDENTIFICATION

A. Underground warning tape:
1. Non-detectable warning tape:
a. Place continuous run of warning tape in pipe trench, 12 inches above the pipe.
2. Detectable warning tape:
a. Place continuous run of warning tape in pipe trench, 12 inches above the pipe or a greater height if necessary to limit the tape bury depth to 36 inches. Do not bury detectable warning tape deeper than 36 inches.

B. Tracer wire:
1. Install on all non-metallic pipe.
2. Install an electrically continuous run of tracer wire along the entire length of the pipe with wire terminations in valve boxes, vaults, or structures.
3. Install tracer wire on top of the pipe and secure to pipe with tape a minimum of every 10 feet.
4. Where approved by the Engineer, splice sections of wire together using approved direct bury wire nuts.
a. Twisting the wires together is not acceptable.

C. Witness markers:
1. Install over pipe in unpaved open-space areas at intervals not greater than 200 feet.
2. Place markers at appurtenances located in unpaved areas.
3. Embed markers at least 18 inches into the soil.

3.05 APPLICATION

A. Identify piping with legend markers, directional arrow markers, and number markers; use self-adhesive arrow roll tape to secure ends of piping markers and indicate flow direction.

B. Provide legend markers, directional arrow markers, and number markers where piping passes through walls or floors, at piping intersections and at maximum 15-foot spacing on piping runs.

C. Provide piping marker letters and colors as scheduled.

3.06 PIPING COLOR CODE AND MARKER SCHEDULE

Service Fluid	Pipe Color	Marker Legend
Chemical Drain	Charcoal	CHEMICAL DRAIN
Cooling Water	Blue	COOLING WATER
Domestic Cold Water	Light Blue	DOMESTIC COLD WATER
Domestic Hot Water	Light Blue	DOMESTIC HOT WATER
Deionized Water	Blue	DEIONIZED WATER
Drain	Charcoal	DRAIN
Exhaust Gas	Yellow	EXHAUST GAS
Engine Jacket Water	Dark Blue	ENGINE JACKET WATER
Fuel Oil	Orange	FUEL OIL
Grit	Black	GRIT
Instrumental Air	Purple	INSTRUMENTATION AIR
Engine Lube Oil	Red	ENGINE LUBE OIL
Pumped Drain	Charcoal	PUMPED DRAIN
Process Water	Dark Blue	PROCESS WATER
Raw Wastewater	Buff	NONE USED
Return Water	Silver/Grey	RETURN WATER
Sample	Green	FLUID BEING SAMPLED
Sanitary Drain	Charcoal	SANITARY DRAIN
Service Air	Green	SERVICE AIR
Sodium Hypochlorite	Yellow	CHLORINE SOLUTION
Sodium Bisulfite	Yellow	SODIUM BISULFITE SOLUTION
Tank Drain	Charcoal	TANK DRAIN
Vent Pipe	Yellow	VENT PIPE
Washdown Water (W3)	Medium Blue	WASHDOWN WATER

Letters	Color of Pipe	Color of Bands	Color of Letters
Finished or Potable (cold)	Light blue	None	Black
Potable (hot)	Light blue	Red	Black
Non-potable or Raw	Light blue	Dark Gray	Black
Distilled or Demineralized	Light Blue	Black	Black

Letters	Color of Pipe	Color of Bands	Color of Letters
Service Water (lines downstream from backflow prevention unit	Dark Blue	White	Red
Sample	Dark Blue	Black	White
Fire Protection	Red	None	Black
Hydrants	Aluminum	None	Black
Filter-to-Waste	Light Brown	None	Black
Wash Water Drain	Light Gray	None	Black
Sewage	Light Gray	None	Black
Solids	Dark Brown	None	White
Scum	Dark Brown	None	White
Drain	Dark Gray	None	White
Sump Pump Pipe Line	Dark Gray	Red	White
Chlorine (gas, liquid, or vent)	Yellow	None	Black
Chlorine (solution)	Yellow	Red	Black
Ferric Chloride	Orange	Yellow	Black
Alum	Orange	Yellow	Black
Ammonia	Yellow	Dark Brown	Black
Auxiliary Chemical	Yellow	Dark Blue	Black
Sulfuric Acid	Yellow	Orange	Black
Sodium Hydroxide	Yellow	Dark Green	Black
Algaecide (Potassium Permanganate, Copper Sulfate)	Orange	White	Black
Polymer	Orange	Dark Green	Black
Polyphosphate	Orange	Dark Gray	Black
Carbon	Black	None	White
Ozone	None	Red	White
Stainless Steel Pipe	White	Red	White
Ozone Off Gas			
Stainless Steel Pipe	None	Orange	White
Other Pipe	White	Orange	White
Compressed Air	Light Green	None	Black
Instrument Air	Light Green	Dark Green	Black

Letters	Color of Pipe	Color of Bands	Color of Letters
Backwash Air (Low Pressure)			
Stainless Steel Pipe	None	None	Black
Other Pipe	Light Green	None	Black
Process Air (Ozone-Low Pressure)			
Stainless Steel Pipe	None	None	Black
Other Pipe	Light Green	None	Black
Laboratory Vacuum	Dark Green	Light Green	Red
Natural Gas	Red	Yellow	White
Refrigerant	Yellow	White	Black
Heating Water (supply)	Light Gray	White	Black
Heating Water (return)	Light Gray	Black	Black
Condenser Water (supply)	Light Gray	Dark Brown	Black
Condenser Water (return)	Light Gray	Red	Black
Chilled Water (supply)	Light Brown	Dark Gray	White
Chilled Water (return)	Light Brown	Red	White

END OF SECTION

SECTION 15082

PIPING INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Insulation for piping and related systems that are not plumbing systems.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. Standard Specifications for Highway Bridges.

B. ASTM International (ASTM):
   1. C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
   2. C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
   3. C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.
   4. C547 - Standard Specification for Mineral Fiber Pipe Insulation.
   5. C552 - Standard Specification for Cellular Glass Thermal Insulation.
   6. C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
   7. C929 - Standard Practice for Handling, Transporting, Shipping, Storage, Receiving, and Application of Thermal Insulation Materials for Use in Contact with Austenitic Stainless Steel.
   8. C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
   9. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   10. E96 - Standard Test Methods for Water Vapor Transmission of Materials.

C. California Energy Commission:
   1. Title 24 - Building Energy Efficiency Standards.

1.03 DEFINITIONS

A. Buried: Piping that is installed below buildings, foundations, or finish grade, either in soil or encased in concrete in soil.

B. Concealed: Piping above suspended ceilings and within walls, partitions, shafts, or service spaces and spaces not normally exposed to view but not buried.

C. Exterior: Piping that is installed outside a building or within a pipe trench or tunnel.

D. Flame Spread and Smoke Density: Burning characteristics determined in accordance with ASTM E84.

E. Interior: Piping that is installed inside a building.

F. K Factor: Thermal conductivity determined in accordance with ASTM C177 or C518.

G. Mineral Fiber: Fibers manufactured of glass, rock, or slag processed from a molten state, with or without a binder.

H. Water Vapor Permeance: Water vapor transmission determined in accordance with ASTM E96 and expressed in units of perm-inch.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section15050 - Common Work Results for Mechanical Equipment.
   1. Insulation properties: Include K factor, thickness, density, operating temperature limits, tensile strength, compressive strength, moisture absorption, flame spread, and smoke developed in accordance with ASTM E84 and corrosivity to stainless steel piping in accordance with ASTM C795.
   2. Jacket properties: Include covering material, cover thickness, tensile strength, tear strength, permeability in accordance with ASTM E96, flame spread, and smoke developed in accordance with ASTM E84, closure type or devices, and accessories.
   3. Insulating blankets: Include materials, performance characteristics, method of attaching to equipment, listing of locations where insulating blankets will be installed.
   4. Manufacturer's application instructions: Include assembly and application drawings and detailed instructions.

1.05 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2, with additional requirements in Section 15050 - Common Work Results for Mechanical Equipment and Section 15500 - Common Work Results for HVAC.

B. In accordance with California Energy Commission Title 24.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. As specified in Sections 15050 Common Work Results for Mechanical Equipment and 15500 - Common Work Results for HVAC.

B. Insulation thicknesses: Provide insulation thickness in inches in accordance with the following table. Insulation thickness shown is nominal. Manufacturing tolerance of 15 percent variation is permissible.

TABLE 1. Required Insulation Thicknesses					
Required Insulation Thicknesses (inches)					
Service Temperature Range as Designated in Insulation Schedule at End of this Section	**Nominal Pipe Diameters**				
	1 inch and Less	**1.25 to 2 inches**	**2.5 to 4 inches**	**5 to 10 inches**	**Over 10 inches**
Above 200 degrees Fahrenheit	2.0	2.5	3.0	3.5	3.5
100 to 200 degrees Fahrenheit	1.5	1.5	1.5	2.0	2.5
40 to 100 degrees Fahrenheit	0.5	1.0	1.0	1.5	2.0
Below 40 degrees Fahrenheit	1.0	1.0	1.5	2.0	2.0
Heat Traced Pipes	1.0	1.0	1.0	1.5	2.0
Aeration Air Pipes	0.5	0.5	1.0	1.0	1.0

2.03 PIPE INSULATION

A. Insulation types: Provide in accordance with the insulation types listed and scheduled.

B. Insulation, Type 1:
   1. Insulation material: Closed cell elastomeric insulation.
   2. Minimum temperature range: Minus 40 degrees Fahrenheit to plus 220 degrees Fahrenheit.
   3. K factor at 75 degrees Fahrenheit: Not more than 0.27 BTU-inch/hour-square feet-degrees Fahrenheit.
   4. Fire ratings:
      a. Flame spread: 25 or less.
      b. Smoke density: 50 or less for insulation thicknesses up to 1.5 inches.
   5. Joints: Seal with manufacturer's recommended contact adhesive to form continuous water barrier.
   6. Manufacturers: One of the following or equal:
      a. Armacell, AP Armaflex.
      b. Aeroflex USA Inc., Aerocel® AC.

C. Insulation, Type 2:
   1. Insulation material: Preformed mineral fiberglass insulation made from glass fibers bonded with a thermosetting resin.
      a. In accordance with ASTM C547, Class 1.
      b. Provide with factory installed vapor barrier.
         1) Material: White Kraft paper bound to aluminum foil in accordance with ASTM C1136, Type I.

2) Longitudinal lap seals: Pressure-sensitive, self-sealing longitudinal lap strip with factory applied adhesive.
3) Circumferential butt seals: 4-inch wide tape or similar properties or 4-inch wide overlap with adhesive seal.
4) Vapor barrier permeability: 0.02 perms or lower.
5) Vapor barrier flame spread rating: 25 or less.

2. Minimum temperature range: Minus 0 degrees Fahrenheit to plus 850 degrees Fahrenheit.
3. K factor at 75 degrees Fahrenheit: Not more than 0.23 BTU-inch/hour-square feet degrees Fahrenheit.
4. Maximum moisture absorption, volume percent: 5.
5. Manufacturers: One of the following or equal:
   a. Owens-Corning , Fiberglas™ FLEXWRAP® ASJ.
   b. Johns Manville, Micro-Lok® HP.
   c. Knauf Insulation, Earthwool® Redi-Klad® 1000° Pipe Insulation.

D. Insulation, Type 3:
1. Insulation material: Rigid cellular glass in accordance with ASTM C552, Type II.
2. Temperature range: Minus 450 degrees Fahrenheit to plus 900 degrees Fahrenheit.
3. K factor at 75 degrees Fahrenheit: Not more than 0.32 BTU-inch/hour-square feet-degrees Fahrenheit.
4. Minimum average density: 7.5 pounds per cubic foot.
5. Maximum moisture absorption, volume percent: 5.
6. Minimum compressive strength: 87 pounds per square inch.
7. Moisture permeability: 0.00 perm-inch.
8. Manufacturers: One of the following or equal:
   a. Owens- Corning, Foamglas® One™.

E. Insulation, Type 4:
1. Insulation material: Asbestos-free, rigid calcium silicate in accordance with ASTM C533; Type I for process temperatures up to 1,200 degrees Fahrenheit.
2. K factor at 500 degrees Fahrenheit: 0.55 for Type I.
3. Maximum average (dry) density: 14.5 pounds per cubic foot.
4. Compressive strength: 100 pounds per square inch, to produce a 5-percent compression.
5. Manufacturers: The following or equal: In accordance with ASTM C533 Type I:
   a. Johns Manville, Thermo-12 Gold.

2.04 INSULATION JACKETS

A. Jacket, Type 1:
1. Material: 28 ounces per square yard polyvinyl chloride on polyester fabric; total thickness 0.028-inch minimum.
2. Fire rating: 25 maximum flame spread, smoke developed 50 or less.
3. Color: As selected by the Engineer from manufacturer's standard colors.
4. Overlap: 1-inch minimum at joints and fittings.
5. Joint seal: Self-sealing lap tape.
6. Fittings: Factory made with full thickness insulation.

7. Manufacturers: The following or equal:
    a. Techlite® Insulation, 379 SSL Series.

B. Jacket, Type 2:
1. Material: Ultraviolet-resistant polyvinyl chloride jacketing, 20 mil minimum thickness.
2. Fire rating: 25 maximum flame spread, smoke developed 50 or less.
3. Color: White.
4. Overlap: 1-inch minimum at joints and fittings.
5. Joint seal: PVC solvent welded or adhesive as recommended by the manufacturer.
6. Fittings: Factory made with full thickness insulation.
7. Manufacturers: One of the following or equal:
    a. Johns Manville, Zeston® 2000 PVC.
    b. Proto Corp., LoSMOKE PVC.
    c. Speedline® Corp., Smoke-Safe™ PVC.

C. Jacket, Type 3:
1. Material: Aluminum, Alloy 3003 or 3105; 0.016-inch (26-gauge) minimum thickness.
2. Overlap: Overlap circumferential joints 4 inches minimum; overlap longitudinal joints 1-inch minimum; longitudinal joints oriented to minimize water entry.
3. Bands: 0.5-inch wide, 0.0508-inch (16-gauge) thick aluminum, same alloy as jacket or 0.0179-inch thick Type 304 stainless steel; install on 18-inch centers, uniformly spaced and at all fitting joints.
4. Joint seal: Apply waterproof adhesive at joints and overlaps.
5. Fittings: Custom fit of same materials.
6. Manufacturers: One of the following or equal:
    a. ECOIN Insulation.
    b. Haomei Aluminum.

2.05 VAPOR BARRIERS

A. Vapor barrier, Type 1:
1. Material: White Kraft paper bound to aluminum foil in accordance with ASTM C1136, Type 1.
2. Permeability: 0.02 perms or lower.
3. Maximum flame spread rating: 25.
4. Edge seal: Pressure-sensitive tape lap seal.
5. Circumferential joints: 4-inch wide tape or 4-inch overlap with adhesive seal.

B. Vapor barrier, Type 2:
1. Material: Mastic.
2. Manufacturers: One of the following or equal:
    a. Benjamin Foster, No. 30-76.
    b. Insul-Coustic, No. I.C.-580.
    c. Foster Products, 36-10/46-10 Weatherite.
    d. Childers Products CP10/11 VI-CRYL.

2.06 RELATED MATERIALS

A. Cover adhesive: Premium adhesive as recommended by the insulation cover supplier for heavy-duty service in corrosive, wet environments. Standard-duty adhesives are not permitted.

2.07 REMOVABLE INSULATING BLANKETS

A. In piping systems specified to be insulated, use removable insulating blankets for valves, meters, strainers, filters, catalytic converters, engine exhaust silencers, pumps, and other in-line piping appurtenances and equipment requiring periodic servicing, regardless of pipe size.

B. Size limits: Use removable insulating blankets for equipment and piping appurtenances 3 inches in nominal size and larger. For equipment and piping appurtenances less than 3 inches that do not require periodic servicing, insulate with molded sections of insulation or by field cutting insulation to conform to the shape of the component and to fit tightly around the component.

C. Manufacturers: One of the following, or equal:
   1. Thermal Energy Products, Inc., Energy Wrap.
   2. Accessible Products, Thermazip 2000 Jacket.
   3. Owens Corning, Temp-Mat.

D. Low temperature insulating blankets rated up to 800 degrees Fahrenheit:
   1. Use: For service temperatures up to 800 degrees Fahrenheit.
   2. Insulation: Fiberglass fiber, K factor 0.27 at 75 degrees Fahrenheit.
   3. Cover: 17-ounce fabric with both sides covered with silicone-impregnated glass cloth suitable for temperatures up to 800 degrees Fahrenheit.
   4. Cover fasteners: Use one of the following systems:
      a. Grommets in the blanket and stainless steel wire.
      b. 1-inch wide straps with stainless steel rectangular ring buckles and Velcro on strap tail.

E. High temperature insulating blankets rated up to 1,400 degrees Fahrenheit:
   1. Rated for sustained service temperatures up to 1,400 degrees Fahrenheit.
   2. Insulation: Ceramic fiber, K factor 0.50 at 600 degrees Fahrenheit, insulation material suitable for up to 2,300 degrees Fahrenheit, thickness to match adjacent piping insulation specified thickness.
   3. Cover: 17-ounce silicone impregnated fiberglass cloth suitable for temperatures up to 1,400 degrees Fahrenheit.
   4. Cover fasteners: Use one of the following systems:
      a. Grommets in the blanket and stainless steel wire.
      b. 1-inch wide straps with stainless steel rectangular ring buckles and Velcro on strap tail.

2.08 SHIPPING, SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

PART 3 EXECUTION

3.01 GENERAL

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

B. Handle and store insulation for use on stainless steel in accordance with ASTM C929.

3.02 PREPARATION

A. Pressure test piping and complete application of coating system before applying insulation.

B. When piping is to be heat traced, install and functionally test heat tracing before installation of insulation.

C. Before beginning installation of piping insulation, verify that the Engineer has accepted piping tests, pipe coating applications, and heat tracing tests.

3.03 INSULATION SCHEDULE

A. Table 2. Insulation Schedule, does not include insulation required for plumbing systems. Plumbing systems insulation: As specified in Section 15400 - Plumbing Systems.

Table 2. Insulation Schedule

Service Designation(1)	Location(2)	Insulation Type(3)	Jacket Type(3)	Service Temp. °F(4)	Vapor Barrier
Hot Water Supply and Return (non-plumbing)	Interior or Exterior	2 or 3	2 or 3	100 to 200	Required
Engine Jacket Water	Interior	2 or 3	2 or 3	Above 200	Required
Heat Traced Pipes(6)	Exterior	1 or 2	2	N/A	Install on Type 2 insulation

Notes:

(1) Refer to the Pipe Schedule in Section 15052 - Common Work Results for General Piping for service designations.
(2) Insulation jackets are not required for interior installations that are concealed. See definitions for description of concealed locations.
(3) Contractor may select from options listed.
(4) Unless noted otherwise, use service temperature range provided in this table to establish insulation thickness as required by Table 1. Required Insulation Thicknesses.
(5) Service temperature based on engine rating. Use Type I calcium silicate for exhaust temperatures up to 1,200 degrees Fahrenheit; use Type II calcium silicate for exhaust temperatures above 1,200 degrees Fahrenheit.
(6) Insulate piping systems that are specified to be heat traced.

3.04 INSTALLATION

A. Install insulation and jacket materials in accordance with manufacturer's written instructions.

B. Apply insulation in smooth, clean manner with tight and finished smooth joints. Fit insulation tightly against surfaces. Insulate each continuous run of pipe with full-length sections of insulation with a single piece cut to length to complete the run of pipe. Do not use cut pieces or scraps to complete the installation.

C. Butt longitudinal and circumferential insulation joints firmly together.

D. Maintain the integrity of vapor barrier jacketing. Do not use staples to hold vapor barrier overlaps in place.

E. Apply sealant or cement when previous applications of adhesives and cement have thoroughly dried.

F. Apply insulation to permit expansion or contraction of pipelines without damage to insulation or jacketing.

G. Fittings:
   1. Insulate fittings by covering with mitered sections of insulation or utilize factory-made prefabricated fitting shapes.
   2. Terminate preformed pipe jackets or covering at sufficient distance from flanges to permit removal of bolts.
   3. Overlap flange and flanged fitting insulation on adjacent pipe covering by at least 2 inches.

H. Valves:
   1. Insulate valves 3 inches in nominal size and larger with removable insulating blankets.
   2. Size blanket to extend up to packing gland only so that replacement of packing does not require removal of insulating blanket.

I. Provide continuous insulation through and over pipe supports and provide protection saddles at supports.

J. Extend insulation against insulation end protection shields or covers so that insulation voids do not exist and provide watertight end seals and covers where insulation terminates.

K. Insulate pipeline strainers to permit removal of strainer basket without disturbing insulation on strainer body.

L. Provide continuous pipe insulation and covering through sleeves or openings in walls and floors. When buried pipe enters a building through a below grade wall or slab penetration, begin insulation system on interior side of penetration.

M. Apply pre-molded pipe insulation with extended legs when used on pipe traced with either tubing or electric cable type.

N. Thermally isolate all insulation closure locations (end caps, transitions, etc.) Type 1 or 2 jacket installation on piping with potential reach temperatures greater than 150 degrees Fahrenheit.

O. Apply piping identification on jackets as specified in Section 15076 - Pipe Identification.

END OF SECTION

SECTION 15110

COMMON WORK RESULTS FOR VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Basic requirements for valves.

1.02 REFERENCES

A. American Water Works Association (AWWA):
   1. C111/A21.11 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe Fittings.

B. ASTM International (ASTM):
   1. A126 - Standard Specification for Gray Iron Casting for Valves, Flanges, and Pipe Fittings.
   2. A480 - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
   3. A536 - Standard Specification for Ductile Iron Castings.

C. NSF International (NSF):
   1. 61 - Drinking Water System Components - Health Effects.

D. Society for Protective Coatings (SSPC):
   1. SP7 - Brush-Off Blast Cleaning.
   2. SP10 - Near-White Blast Cleaning.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Submit the following information for each valve:
      a. Valve type, size, pressure rating, Cv factor.
      b. Coatings.
      c. Power valve actuators:
         1) Information on valve actuator including size, manufacturer, model number, limit switches, mounting; and motor enclosure, seating and unseating torque coefficient, dynamic torque, and bearing friction for calculation of maximum operating torque.
         2) Complete wiring diagrams and control system schematics.
      d. Manual valve actuators:
         1) Information on valve actuator including size, manufacturer, model number.
      e. Certified drawings with description of component parts, dimensions, weights, and materials of construction.

f. Certifications of reference standard compliance:
    1) Submit certification that the valves and coatings are suitable in potable water applications in accordance with NSF 61.
g. Clearly mark submittal information to show specific items, materials, and accessories or options being furnished.

C. Provide vendor operation and maintenance manual as specified in Section 01782 - Operation and Maintenance Manuals.
    1. Furnish bound sets of installation, operation, and maintenance instructions for each type of manual valve 4 inches in nominal size and larger, and all non-manual valves. Include information on valve operators.

D. Provide Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.

E. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications:
    1. Valves manufactured by manufacturers whose valves have had successful operational experience in comparable service.

1.05 DELIVERY STORAGE AND HANDLING

A. Protect valves and protective coatings from damage during handling and installation; repair coating where damaged.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Pressure rating:
    1. Suitable for service under minimum working pressures of 150 pounds per square inch gauge.
    2. When a piping system is specified in the Piping Schedule to be tested at a pressure greater than 150 pounds per square inch gauge, provide valves for that piping system with design working pressure which is sufficient to withstand the test pressure.

B. Valve to piping connections:
    1. Metallic valves:
        a. Valves 3 inches nominal size and larger: Flanged ends.
        b. Valves less than 3 inches nominal size: Screwed ends.

2. Plastic valves in plastic piping systems:
    a. Up to 4 inches: Provide solvent or heat welded unions, except for plastic butterfly valves.
        1) Plastic butterfly valves shall be flanged per Section 15112 - Butterfly Valves.
    b. 6 inches and above: Provide solvent or heat-welded flanges.

2.02 MATERIALS

A. Stainless steel: In accordance with ASTM A480, Type 316, or Type 304, UNS Alloy S31600 or S30400.

B. Valve and operator bolts and nuts (not including flange bolts and nuts, which are specified in Section 15052 - Common Work Results for General Piping):
    1. Fabricated of stainless steel for the following installation conditions:
        a. Submerged in sewage or water.
        b. In an enclosed space above sewage or water.
        c. In structures containing sewage or water, below top of walls.
        d. At openings in concrete or metal decks.
    2. Where dissimilar metals are being bolted, use stainless steel bolts with isolation bushings and washers.
    3. Underground bolts: Low-alloy steel in accordance with AWWA C111/A21.11.

C. Bronze and brass alloys: Use bronze and brass alloys with not more than 6 percent zinc and not more than 2 percent aluminum in the manufacture of valve parts; UNS Alloy C83600 or C92200 unless specified otherwise.

D. Cast iron valve bodies: In accordance with ASTM A126, Class 30 minimum.

E. Ductile iron valve bodies: In accordance with ASTM A536, Grade 65-45-12 minimum unless specified otherwise.

2.03 INTERIOR PROTECTIVE LINING

A. When specified in the particular valve specification, provide valves with type of protective lining specified in the particular valve Specification.

B. Apply protective lining to interior, non-working surfaces, except stainless steel surfaces.

C. Lining types:
    1. Fusion bonded epoxy:
        a. Manufacturers: The following or equal:
            1) 3-M Company, ScotchKote 134; certified to NSF 61 for drinking water use.
        b. Clean surfaces in accordance with SSPC SP 7 or SP 10, as recommended by epoxy manufacturer.
        c. Apply in accordance with manufacturer's published instructions.
        d. Lining thickness: 0.010 to 0.012-inch, except that:
            1) Lining thickness in grooves for gaskets: 0.005-inch.
            2) Do not coat seat grooves in valves with bonded seat.

e. Quality control:
    1) Lining thickness: Measured with a non-destructive magnetic type thickness gauge.
    2) Verify lining integrity with a wet sponge-testing unit operating at approximately 60 volts, or as recommended by the lining manufacturer.
    3) Consider tests successful when lining thickness meets specified requirements and when no pinholes are found.
    4) Correct defective lining disclosed by unsuccessful tests, and repeat test.
    5) Repair pinholes with liquid epoxy recommended by manufacturer of the epoxy used for lining.

2. High solids epoxy:
    a. Product equivalent to high solids epoxy as specified in Section 09960 - High-Performance Coatings.
        1) Certified in accordance with NSF 61 for drinking water use.
        2) Interior: Coat valve interior with manufacturer's equivalent high performance high solids epoxy coating system with a certifiable performance history for the service conditions and as approved by the Engineer. Manufacturer shall provide for approval, coating information sufficient to allow Engineer to assess equivalence to the specified high solids epoxy as specified in Section 09960 - High-Performance Coatings.
    b. Clean surfaces to meet SP-7 or SP-10, or as recommended by coating manufacturer.
    c. Quality control: After coating is cured, check coated surface for porosity with a holiday detector set at 1,800 volts, or as recommended by coating manufacturer.
        1) Repair holidays and other irregularities and retest coating.
        2) Repeat procedure until holidays and other irregularities are corrected.

2.04 UNDERGROUND VALVES

A. Provide underground valves with flanged, mechanical, or other type of joint required for the type of pipe to which the valve is to be connected.

B. Coating and wrapping:
    1. After installation, encase valves in polyethylene wrap as specified for ductile iron piping in Section 15211 - Ductile Iron Pipe: AWWA C151.
        a. Ascertain that polyethylene wrapping does not affect operation of valve.

2.05 STEAM VALVES

A. Valves in steam or steam condensate piping: Ductile iron body in accordance with ASTM A536, Grade 65-45-12 minimum or cast steel or forged steel.

2.06 VALVE BOXES

A. Provide cast-iron valve boxes at each buried valve to access valve and valve operators.

B. Do not support boxes on valve, valve operator, or pipe.

C. Boxes:
   1. 2-piece, fabricated of cast iron; provide cover, with asphalt varnish or enamel protective coating.
   2. Adjustable to grade, install centered around the upper portions of the valve and valve operator.

D. Manufacturers: One of the following or equal:
   1. Tyler Pipe Industries, Inc.
   2. Neenah Foundry Co.

2.07 VALVE OPERATORS

A. Valve operator "Open" direction: Open counterclockwise.

B. Provide valves located below operating level or deck with extensions for key operation or floor stands and handwheels, as indicated on the Drawings.

C. Provide manually operated valves located not more than 6 feet above the operating level with tee handles, wrenches, or handwheels.
   1. Make the valve operator more conveniently accessible by rolling valves, located more than 5 feet but less than 6 feet above the operating level, toward the operating side.
   2. Secure tee handles and wrenches to the valve head or stem, except where a handle or wrench so secured constitutes a hazard to personnel; in which case, stow handle or wrench immediately adjacent to the valve on or in a suitable hanger, bracket, or receptacle.

D. Fit valves located more than 6 feet above operating level with chain operated handles or valve wheels.
   1. Chains: Sufficient length to reach approximately 4 feet above the operating level.
   2. Where chains constitute a nuisance or hazard to operating personnel, provide holdbacks or other means for keeping the chains out of the way.

E. Provide an operator shaft extension from valve or valve operator to finished grade or deck level when buried valves, and other valves located below the operating deck or level, are specified or indicated on the Drawings to be key operated; provide 2 inches square AWWA operating nut, and box and cover as specified, or a cover where a box is not required.

PART 3 EXECUTION

3.01 EXAMINATION

A. Preparation prior to installation:
   1. Install valves after the required submittal on installation has been accepted.
   2. Determine after flanged valves and flanged check valves are selected, the face-to-face dimensions of flanged valves and flanged check valves.

B. Fabricate piping to lengths taking into account the dimensions of flanged valves and flanged check valves.

3.02 INSTALLATION

A. Provide incidental work and materials necessary for installation of valves including flange gaskets, flange bolts and nuts, valve boxes and covers, concrete bases, blocking, and protective coating.

B. Where needed, furnish and install additional valves for proper operation and maintenance of equipment and plant facilities under the following circumstances:
   1. Where such additional valves are required for operation and maintenance of the particular equipment furnished by Contractor.
   2. Where such additional valves are required as a result of a substitution or change initiated by Contractor.

C. Valve and actuator orientation:
   1. Contractor shall coordinate with valve supplier final orientation of valve and actuator assembly based on Contractor's selection of equipment manufacturers and the valve and piping arrangement as indicated on the Drawings.
      a. Contractor shall rotate valve and/or actuator mounting orientation as specified in this Section unless otherwise indicated on the Drawings.
   2. Install valves with their stems in vertical position above the pipe, except as follows:
      a. Butterfly valves, gate valves aboveground, globe valves, ball valves, and angle valves may be installed with their stems in the horizontal position.
      b. Install buried plug valves with geared operators with their stems in a horizontal position.
   3. Install valves so that handles clear obstructions when the valves are operated from fully open to fully closed.

D. Place top of valve boxes flush with finished grade or as otherwise indicated on the Drawings.

E. Valves with threaded connections:
   1. Install valves by applying wrench on end of valve nearest the joint to prevent distortion of the valve body.
   2. Apply pipe joint compound or Teflon™ tape on external (male) threads to prevent forcing compound into valve seat area.

F. Valves with flanged connections:
   1. Align flanges and gasket carefully before tightening flange bolts.
   2. When flanges are aligned, install bolts and hand tighten.
   3. Tighten nuts opposite each other with equal tension before moving to next pair of nuts.

G. Valves with soldered connections:
   1. Do not overheat connection to prevent damage to resilient seats and metal seat rings.

2. Position valves in full open position before starting soldering procedure.
3. Apply heat to piping rather than to valve body.

3.03 FIELD APPLIED COATING OF VALVE EXTERIOR

A. Match color and be compatible with manufacturer's coating system and as specified in Section 09960 - High-Performance Coatings.
   1. When shop applied finish coating matches field applied coating on adjacent piping, touch up shop coating in damaged areas in accordance with instructions recommended by the paint manufacturer.
   2. When shop applied coating does not match field coating on adjacent piping, or when damage has occurred to the shop applied coating that requires more than touchup, blast clean valve surfaces or utilize other surface preparation recommended by the manufacturer of the coating material and apply the coating system used for coating adjacent piping.

3.04 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services from each manufacturer for all valves supplied:
   1. Provide Manufacturer's Certificate of Source Testing.
   2. Provide Manufacturer's Certificate of Installation and Functionality Compliance.

C. As specified elsewhere for specific valve types, sizes or actuators.
   1. Source testing.
   2. Manufacturers on site services for Owner Training, Installation Testing, Functional Testing, and during the Process Operational Period.

END OF SECTION

SECTION 15111

BALL VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Ball valves.

B. As specified in Section 15110 - Common Work Results for Valves.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
   2. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through 24.

B. American Water Works Association (AWWA):
   1. C507 - Standard for Ball Valves 6 Inch Through 48 Inch.

C. ASTM International (ASTM):
   1. A48 - Standard Specification for Gray Iron Castings.
   2. A216 - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service.
   3. A351 - Standard Specification for Castings, Austenitic, for Pressure-Containing Parts.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15110 - Common Work Results for Valves:
   1. Metal body ball valves: 6 inches and larger only: Submit affidavit of compliance in accordance with AWWA C507.
   2. Operation and maintenance manual.

C. Commissioning submittals:
   1. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. General: Unless otherwise indicated on the Drawings use:
   1. Metal body ball valves on metallic pipelines.
   2. Plastic body ball valves on plastic pipelines.

B. Do not use metal body ball valves in sodium hypochlorite or sodium bisulfite systems.

C. Metal body ball valves, less than 6-inch size:
   1. Manufacturers: One of the following, or equal:
      a. Conbraco Industries, Inc., Apollo Valves.
      b. Flow-Tek, Inc.
      c. Metso Automation/Jamesbury.
      d. NIBCO, Inc.
   2. General:
      a. Type: Non-lubricated, full port and capable of sealing in either direction.
      b. End connections:
         1) Threaded or solder ends for sizes 3-inch and smaller.
         2) Class 150 flanged for sizes larger than 3 inches.
            a) Flanges: In accordance with ASME B16.1 standards.
      c. Stem packing: Manually adjustable while valve is under pressure.
      d. Shafts:
         1) Rigidly connected to the ball by a positive means.
            a) Design connection to transmit torque equivalent to at least 75 percent of the torsional strength of the shaft.
      e. Handles: Stainless steel latch lock handle with vinyl grip and stainless steel nut designed to open and close the valve under operating conditions.
      f. Temperature limits: Suitable for operation between minus 20 and 350 degrees Fahrenheit.
   3. Materials:
      a. Valves in copper lines: Bronze body.
      b. Valves in steel and ductile iron piping: Ductile iron or cast steel body.
      c. Valves in stainless steel piping: Stainless steel body, material type to match piping material as specified in Section 15052 - Common Work Results for General Piping.
      d. Ball: Type 304 or 316 stainless steel, Type 316 in digester gas applications.
      e. Seats: PTFE.
      f. Stem seals: PTFE or Viton™.
      g. Bearings: Self-lubricated, corrosion resistant material that will not contaminate potable water.
      h. Valves for combustible fluid applications (digester gas, natural gas, fuel oil, etc.) must be of fire safe design.

4. Venting requirements:
    a. Metal ball valves for hydrogen peroxide service:
        1) Provide valve with factory drilled 0.125-inch hole in the upstream side of the ball.
        2) Provide an engraved Type 316 stainless steel tag permanently attached to the valve stem stating, "One side of ball drilled for sodium hypochlorite service".

2.02 PLASTIC BODY BALL VALVES – FULL PORT (BAV40)

A. Manufacturers: One of the following or equal:
    1. Asahi America.
    2. Chemtrol Division, NIBCO, Inc.
    3. Georg Fischer Piping Systems.
    4. Hayward Flow Control.
        a. For sodium hypochlorite service, provide model TB-Z. Model TBH-Z shall not be used.
    5. IPEX USA, LLC.
    6. Plast-O-Matic Valves, Inc.

B. General:
    1. Type: Non-lubricated and capable of sealing in either flow direction.
    2. End connections:
        a. 4 inches and smaller size: Socket end true unions for solvent welded connection to adjacent piping.
        b. 6-inch size: Socket end true unions with attached flanges for flanged connection to adjacent piping.
    3. All valves shall have integral ISO 5211 mounting pad for actuator installation.
    4. All valves shall have integral plate for lock-out/tag-out.
    5. Stem: Double o-ring seal with shear point above seal.
    6. Pressure rating: Suitable for the test pressure and maximum temperature of the corresponding piping system listed in the Piping Schedule.

C. Materials:
    1. Body and ball:
        a. PVC piping systems: PVC.
        b. CPVC piping systems: CPVC.
    2. Seats: PTFE (Teflon™).
    3. O-rings: FKM (Viton™).

D. Limit switches, when indicated on the Drawings:
    1. Mechanical cam type with watertight enclosure and suited for remote indication of valve open-close status.
    2. Mount on valve actuator.
    3. Contacts: 120-volt alternating current, 20 amperes at 75 to 100 percent power factor and 24-volt direct current, 5 amperes minimum.

E. Valve actuator:
    1. Valves shall be quarter turn operated with valve seat adjustability.

2. Manually operated valves: Lever.
3. Electric motor operated valves, when indicated on the Drawings: Provide electric motor operator as specified in Section 13447 - Electric Actuators.

F. Venting requirements:
1. PVC and CPVC ball valves for hypochlorite service:
a. Provide valve with factory drilled 0.125-inch hole in the upstream side of the ball.
b. Provide an engraved plastic tag permanently attached to the valve stem stating, "One side of ball drilled for hypochlorite service".
c. Provide an arrow inscribed on the valve body to indicate direction of flow.

PART 3 EXECUTION

3.01 INSTALLATION

A. General: Install each type of valve in accordance with manufacturers' printed instructions.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services:
1. Provide certificates:
a. Manufacturer's Certificate of Installation and Functionality Compliance.

C. Functional testing:
1. Valves:
a. Test witnessing: Witnessed.
b. Conduct pressure and leak test, as specified in Section 15956 - Piping Systems Testing.

END OF SECTION

SECTION 15112

BUTTERFLY VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Butterfly valves:
      a. As specified in Section 15110 - Common Work Results for Valves.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, and 250.
   2. B16.5 - Pipe Flanges and Flanged Fittings, NPS 1/2 through NPS 24.

B. American Water Works Association (AWWA):
   1. C110 - Standard for Ductile-Iron and Gray-Iron Fittings.
   2. C504 - Rubber-Seated Butterfly Valves.
   3. C540 - Standard for Power-Actuating Devices for Valves and Sluice Gates.
   4. C550 - Protective Interior Coatings for Valves and Hydrants.
   5. C606 - Standard for Grooved and Shouldered Joints.

C. ASTM International (ASTM):
   1. A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   2. A216 - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for Higher-Temperature Service.
   3. A276 - Standard Specification for Stainless Steel Bars and Shapes.
   4. A351 - Standard Specification for Castings, Austenitic, for Pressure-Containing Parts.
   5. A395 - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures.
   6. A479 - Standard Specification for Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels.
   7. A515 - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate - and Higher-Temperature Service.
   8. A516 - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate - and Lower-Temperature Service.
   9. A536 - Standard Specification for Ductile Iron Castings.
   10. A564 - Standard Specification for Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes.
   11. A582 - Standard Specification for Free-Machining Stainless Steel Bars.
   12. A743 - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.

13. A890 - Standard Specification for Castings, Iron-Chromium-Nickel-Molybdenum Corrosion-Resistant, Duplex (Austenitic/Ferritic) for General Application.
14. B462 - Standard Specification for Forged or Rolled UNS N06030, UNS N06022, UNS N06035, UNS N06200, UNS N06059, UNS N10362, UNS N06686, UNS N08020, UNS N08024, UNS N08026, UNS N08367, UNS N10276, UNS N10665, UNS N10675, UNS N10629, UNS N08031, UNS N06045, UNS N06025, UNS R20033 Alloy Pipe Flanges, Forged Fittings, and Valves and Parts for Corrosive High-Temperature Service.
15. B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
16. B691 - Standard Specification for Iron-Nickel-Chromium-Molybdenum Alloys (UNS N08366 and UNS N08367) Rod, Bar, and Wire.
17. D429 - Standard Test Methods for Rubber Property-Adhesion to Rigid Substrate.

D. Compressed Gas Association (CGA):
   1. Standard G-4.1 - Cleaning Equipment for Oxygen Service.

E. NSF International (NSF):
   1. Standard 61 - Drinking Water System Components - Health Effects.

F. United States Code of Federal Regulations (CFR):
   1. 21 - Food and Drugs.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15110 - Common Work Results for Valves.
   1. For general purpose AWWA butterfly valves, include description of the method of attachment of the disc edge to the valve disc.
   2. Interior epoxy coatings: Affidavit of compliance attesting that epoxy coatings applied to interior surfaces of butterfly valves comply with all provisions in accordance with AWWA C550.
   3. Certification, for valves and coatings in contact with potable water, that the products used are suitable for contact with drinking water in accordance with NSF Standard 61.

C. Commissioning Submittals:
   1. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Design requirements:
   1. Valve pressure rating shall be greater than or equal to the piping system test pressure specified in the Piping Schedule at the maximum service temperature.
   2. General purpose AWWA butterfly valves:
      a. Design standard: Provide valves designed and manufactured in accordance with AWWA C504.
      b. Class:
         1) Provide butterfly valves in accordance with AWWA Class 150B, unless otherwise specified.
         2) Provide butterfly valves in accordance with AWWA Class 250B in piping systems with test pressure greater than 150 pounds per square inch gauge and less than 250 pounds per square inch gauge.
   3. High pressure butterfly valves.
   4. Piping systems designed for test pressures greater than 250 pounds per square inch gauge and less than 450 pounds per square inch gauge: Provide ASME B16.5, Class 300 flanged high pressure valves.
   5. Industrial class butterfly valves:
      a. Industrial class butterfly valves capable of 150 pounds per square inch gauge leak tight shut off.
   6. Stainless steel butterfly valves:
      a. Stainless steel butterfly valves capable of a minimum of 100 pounds per square inch gauge leak tight shut off and with special cleaning, packaging, and handling.

B. Usage:
   1. Provide and install butterfly valve types as outlined in the Butterfly Valve Application Schedule at the end of this Section.

C. Design requirements for butterfly valves with power actuating devices:
   1. Design valves and actuators for maximum operating torque, in accordance with and using safety factors required in AWWA C540, using the following values:
      a. Maximum water velocity: 16 feet per second with valve fully open.
      b. Maximum pressure differential across the closed valve equal to the pressure class designation.
      c. Coefficient for seating and unseating torque, dynamic torque, and bearing friction in accordance with valve manufacturer's published recommendations.
   2. Valve disc: Seat in an angular position of 90 degrees to the pipe axis and rotate an angle of 90 degrees between fully open and fully closed positions:
      a. Do not supply valves with stops or lugs cast with or mechanically secured to the body of the valve for limiting the disc travel.
   3. Unacceptable thrust bearings: Do not provide valves with thrust bearings exposed to the fluid in the line and consisting of a metal bearing surface in rubbing contact with an opposing metal bearing surface.

D. Performance requirements:
   1. Tight shutoff at the pressure rating of the valve with pressure applied in either direction.
   2. Suitable for the following service conditions:
      a. Throttling.
      b. Frequent operation.
      c. Operation after long periods of inactivity.
      d. Installation in any position and flow in either direction.

2.02 GENERAL PURPOSE AWWA BUTTERFLY VALVES (BFV00)

A. Manufacturers: One of the following or equal:
   1. DeZURIK/Sartell Model BAW.
   2. Mueller/Pratt Co.

B. Valve body:
   1. Material: Cast iron, ASTM A126, Grade B, or ductile iron, ASTM A536, Grade 65-45-12.
   2. Body design:
      a. Flanged body valves:
         1) Usage: Comply with limitations specified in the Butterfly Valve Application Schedule.
         2) Flanges: In accordance with ASME B16.1 Class 125 flanges for Class 150B valves, in accordance with ASME B16.1 Class 250 flanges for Class 250B valves.

C. Disc:
   1. Material: Cast iron or ductile iron with Type 316 stainless steel edge that matches seat in valve body.
   2. Secure valve disc to shaft by means of smooth-sided, taper or dowel pins, Type 316 stainless steel, or Monel.
   3. Extend pins through shaft and mechanically secure in place.

D. Shaft and bearings:
   1. Shaft design:
      a. Valves 20-inches and less: 1-piece, through disc design.
      b. Valves greater than 20-inch size: 2-piece, stub shaft design.
   2. Shaft seal: Vee type, chevron design.
   3. Shaft material for Class 150B valves: Type 316 stainless steel, ASTM A276.
   4. Shaft material for Class 250B valves: Type 17-4 pH stainless steel, ASTM A564.
   5. Shaft bearings: Self-lubricating sleeve type:
      a. Valves 20 inches and less: Nylatron.
      b. Valves greater than 20-inch size: Teflon™ with stainless steel or fiberglass backing.

E. Seats:
   1. Seat materials:
      a. Match gasket material that is specified in the Piping Schedule for the specific piping system.
      b. Low-pressure air applications: EPDM.

c. In all other applications: EPDM.

2. For valves 20 inches in nominal size and smaller, bond or vulcanize seat into the valve body.
3. For valves 24 inches in nominal size and larger, retain seats mechanically or by adhesive:
   a. Mechanical retainage: Retain seat by a clamping ring with segmented clamping ring locks with adjusting locking screws.
      1) Clamping ring, ring locks, and adjusting locking screws: Type 316 stainless steel.
      2) Provide means to prevent ring locks and screws used to retain seats from loosening due to vibration or cavitation.
   b. Adhesive retainage: Inset the seat within a groove in the valve body and retain in place with epoxy injected behind the seat so that the seat expands into the body.
   c. Do not provide valves with seats retained by snap rings or spring-loaded retainer rings.
4. Resilient seat: Withstand 75 pounds per inch pull when tested in accordance with ASTM D429, Method B.

F. Valve packing:
1. Valves 4 to 48 inches nominal size: Self-adjusting V-type packing or chevron-type packing. NBR or EPDM to match seat material.
2. Valves 54 inches nominal size and larger: Adjustable V-type packing with bronze packing gland or self-adjusting V-type packing. NBR or EPDM to match seat material.

2.03 BUTTERFLY VALVE ACTUATORS

A. Manufacturers: One of the following or equal:
1. Motorized actuators are specified in Section 13447.

2.04 COATING REQUIREMENTS FOR METAL VALVES

A. Shop coat interior and exterior metal surfaces of valves, except as follows:
1. Interior machined surfaces.
2. Surfaces of gaskets and elastomeric seats and stem seals.
3. Bearing surfaces.
4. Stainless steel surfaces and components.

B. Coating material for components in contact with potable water applications:
1. Formulate interior coating material from materials in accordance with CFR 21, AWWA C550, and NSF 61.
2. Submit affidavit of compliance attesting that epoxy coatings applied to interior surfaces of butterfly valves in accordance with CFR 21, AWWA C550, and NSF 61.

C. Interior surfaces:
1. Interior surfaces, except for valves used in low-pressure air service: High solids epoxy.
2. Interior surfaces of valves used in low-pressure air service: High temperature coating for range of 150 to 350 degrees Fahrenheit.

D. Exterior surfaces:
   1. Exterior surfaces of valves, actuators, and accessories coating as specified in Section 09960 - High-Performance Coatings, Attachment A - Coating Schedule for the following conditions:
      a. Submerged valves: High solids epoxy.
      b. Buried valves: Coal tar epoxy.
      c. Other valves: High solids epoxy with polyurethane topcoat.
   2. Coating product in contact with potable water must be in accordance with AWWA C550 and NSF 61.
   3. High temperature coating: As specified in Section 09960 - High-Performance Coatings and in accordance with AWWA C550.
   4. Polished and machined surfaces: Apply rust-preventive compound:
      a. Houghton, Rust Veto 344.
      b. Rust-Oleum, R-9.

E. Field applied coatings of valve exterior:
   1. Match color and be compatible with manufacturer's coating system and as specified in Section 09960 - High-Performance Coatings.
      a. When shop applied finish coating matches field applied coating on adjacent piping, touch up shop coating in damaged areas in accordance with instructions recommended by the paint manufacturer.
      b. When shop applied coating does not match field coating on adjacent piping, or when damage has occurred to the shop applied coating that requires more than touchup, blast clean valve surfaces or utilize other surface preparation recommended by the manufacturer of the coating material and apply the coating system used for coating adjacent piping.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install valves with valve shafts horizontal, unless a vertical shaft is required to suit a particular installation, and unless a vertical shaft is indicated on the Drawings.

B. Install pipe spools or valve spacers in locations where butterfly valve disc travel may be impaired by adjacent pipe lining, pipe fittings, valves, or other equipment.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning, and this Section.

B. Manufacturer services:
   1. Provide certificates:
      a. Manufacturer's Certificate of Installation and Functionality Compliance.

C. Functional Testing:
   1. Valves:
      a. Test witnessing: Witnessed.
      b. Conduct pressure and leak test, as specified in Section 15110 - Common Work Results for Valves.

D. Manufacturer services from each supplier for all motor operated butterfly valve assemblies supplied:
   1. As specified in Section 15110 - Common Work Results for Valves.
   2. On site services.

Manufacturer Rep Onsite					
Training Requirements		**Installation Testing**		**Functional Testing**	
Maintenance (hours per session)	**Operation (hours per session)**	**Trips**	**Days (each trip)**	**Trips**	**Days (each trip)**
0.5	0.5	1	1	1	1

3.03 BUTTERFLY VALVE APPLICATION SCHEDULE

A. Acceptable butterfly valve types and body styles are listed in the Butterfly Valve Application Schedule. Furnish and install butterfly valves in accordance with this Schedule.

Butterfly Valve Application Schedule	
Valve Type and Style	**Acceptable Applications**
General Purpose AWWA Butterfly Valves - Flanged Body Design	Aboveground or submerged in the following service applications only: • Acceptable in all service applications except oxygen and ozone service and high-pressure service. • May be used in buried applications when required by the specified piping system.

END OF SECTION

SECTION 15114

CHECK VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Swing check valves:
      a. General swing check valves.
   2. Ball check valves:
      a. Plastic ball check valves.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

B. American Water Works Association (AWWA):
   1. C508 - Standard for Swing-Check Valves for Waterworks Service 2 Inch Through 24 Inch NPS.

C. ASTM International (ASTM):
   1. A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   2. A213 - Standard Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes.
   3. A276 - Standard Specification for Stainless Steel Bars and Shapes.
   4. A313 - Standard Specification for Stainless Steel Spring Wire.
   5. A536 - Standard Specification for Ductile Iron Castings.
   6. A582 - Standard Specification for Free-Machining Stainless Steel Bars.
   7. A743 - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
   8. B16 - Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines.
   9. B61 - Standard Specification for Steam or Valve Bronze Casting.
   10. B62 - Standard Specification for Composition Bronze or Q=Ounce Metal Castings.
   11. B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.

D. National Electrical Manufacturers Association (NEMA).

E. NSF International (NSF):
   1. 61 - Drinking Water Components Health Effects.
   2. 372 - Drinking Water System Components - Lead Content.

F. Underwriters Laboratories, Inc. (UL).

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. As specified in the Agreement and Contract RFP in Volumes 1 and 2, and Section 15110 - Common Work Results for Valves.

C. Quality control submittals:
   1. Provide Manufacturer's Certificate of Installation Verification and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2, and Section 15110 - Common Work Results for Valves.

B. When not otherwise specified as indicated on the Drawings, provide check valves suitable for service:
   1. In either horizontal or vertical position.
   2. For working pressures up to 150 pounds per square inch.

C. Check valve materials as follows unless otherwise specified.
   1. Cast iron in accordance with ASTM A126, Grade B.
   2. Ductile iron in accordance with ASTM A536, Grade 65-45-12.
   3. Type 303 stainless steel in accordance with ASTM A582 (UNS S30300).
   4. Type316 stainless steel, in accordance with ASTM A313.

D. Flanges: Drilled in accordance with ASME B16.1 Class 125/150, unless otherwise specified or indicated on the Drawings.

2.02 GENERAL SWING CHECK VALVES (CKV00)

A. Valves 1/4 inch through 3 inches:
   1. Manufacturers: One of the following or equal:
      a. Crane Valve Co., Number 36.
      b. Lunkenheimer Co., Figure 554Y.
   2. Design:
      a. Y-pattern body with integral seat.
      b. Female threaded ends.
      c. Renewable hinged disc.
      d. Threaded cap for access to valve seat without disassembly of piping.
      e. Integral seats suitable for regrinding.

3. Materials:
    a. Body: Bronze in accordance with ASTM B62-83600.
    b. Disc: Bronze in accordance with ASTM B62 C92200.
        1) On valves less than 1-inch: Brass in accordance with ASTM B16.
    c. Hinge: Bronze in accordance with ASTM B584 C 87600.
    d. Lock nut and hinge pin plug: Brass in accordance with ASTM B16 HO2.
    e. Hinge pin: Stainless steel in accordance with ASTM A276.
    f. Cap: Bronze in accordance with ASTM B61 C92200.
    g. If used for steam service:
        1) Body and disc: S1 steam bronze in accordance with ASTM B61.

B. Valves 4 inches through 24 inches:
1. Manufacturers: One of the following or equal:
    a. APCO Model 250.
    b. Crispin SWL Series.
    c. Kennedy, Figure 106LW or M&H, Model 159.
    d. Mueller Co., Model A-2600.
2. Design:
    a. In accordance with AWWA C508.
    b. Constructed to permit top entry and removal of internal components without removing the valve.
    c. Equipped with outside lever and weight.
3. Materials:
    a. Body: Cast iron, ASTM A126, Class B, or ASTM A536, Grade 65-45-12 ductile iron.
    b. Disc:
        1) Valve disc shall be ASTM A126 cast iron, ASTM A536 ductile iron, or ASTM B584 bronze.
        2) 4-inch valves: Bronze or stainless steel rings and seats.
        3) 6 inches and larger valves: Bronze-faced or stainless steel rings and seats.
        4) Rubber seat Buna-N or EPDM.
    c. Hinge pins: Stainless steel.

2.03 PLASTIC BALL CHECK VALVES (CKV65)

A. Manufacturers: One of the following or equal:
1. Georg Fischer Piping Systems.
2. Plast-O-Matic Valves, Inc.
3. Hayward Flow Control.
4. Nibco, Chemtrol Series.

B. Design:
1. Ball type design.
2. Materials: As specified in the Check Valve Schedule.
3. Inlet pressure rating:
    a. PVC, CPVC, or PVDF: 150 pounds per square inch at 77 degrees Fahrenheit.
    b. PP: 100 pounds per square inch at 77 degrees Fahrenheit.

2.04 INTERIOR PROTECTIVE LININGS

A. As shown in the valve schedules and as specified in Section 15110 - Common Work Results for Valves.

PART 3 EXECUTION

3.01 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

3.02 FIELD QUALITY CONTROL

A. Manufacturer services:
   1. Provide the Manufacturer's Certificate of Installation Verification.

B. Functional Testing:
   1. Valves:
      a. Test witnessing: Witnessed.
   2. Conduct pressure and leak test, as specified in Section 15956 - Piping Systems Testing.

END OF SECTION

SECTION 15115

GATE, GLOBE, AND ANGLE VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Gate, globe, angle, plug disc and plain hose valves, and yard hydrants.
   2. As specified in Section 15110 - Common Work Results for Valves.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard.
   2. B16.47 - Large Diameter Steel Flanges: NPS 26 through NPS 60, Metric/Inch Standard.
   3. B36 - Stainless Steel Pipe.

B. American Water Works Association (AWWA):
   1. C515 - Standard for Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Services.
   2. C550 - Protective Interior Coatings for Valves and Hydrants.

C. ASTM International (ASTM):
   1. B98 - Standard Specification for Copper-Silicon Alloy Rod, Bar, and Shapes.

D. Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry:
   1. SP-81 - Stainless-Steel or Stainless-Steel-Lined, Bonnetless, Knife Gate Valves with Flanged Ends.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. As specified in Section 15110 - Common Work Results for Valves.

C. Commissioning Submittals:
   1. For valves larger than 16 inches:
      a. Provide Manufacturer’s Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

B. Interior epoxy coatings: Affidavit of compliance attesting that epoxy coatings applied to interior surfaces of valves comply in accordance with all provisions of AWWA C550.

PART 2 PRODUCTS

2.01 GATE VALVES - GENERAL SERVICE (GV00)

A. Aboveground:
   1. Valves less than 3 inches in size for clean water and air service:
      a. Manufacturers: One of the following or equal:
         1) Crane, Figure 431.
         2) Jenkins, Figure 47.
         3) Lunkenheimer Co., Figure 2151.
      b. Design:
         1) Size and configuration: Indicated on the Drawings.
         2) Manufacturer's standard bronze, solid wedge disc, rising stem, screwed end, Class 150 pounds.
   2. Valves 3 inches in size and larger, single disk.
      a. Manufacturers: One of the following or equal:
         1) American Flow Control, Series 2500.
         2) M&H/Kennedy Valve Co.
         3) Mueller.
      b. Design:
         1) Size, material, configuration: Indicated on the Drawings.
         2) Resilient wedge type in accordance with AWWA C515.
         3) Flange, iron body, and bonnet rated for 200 pound working pressure.
            a) Provide O-ring seal between valve body and bonnet.
         4) Ductile or cast iron wedge encapsulated in nitrile rubber and capable of sealing in either flow direction.
         5) Bronze stem with double or triple O-ring or braided packing stem seals.
         6) Rising stem configuration with handwheel diameter sized to allow opening of valve with no more than a 40-pound pull.
         7) Coat interior and exterior surfaces of valve body and bonnet with fusion-bonded epoxy in accordance with AWWA C550.
   3. Valves 3 inches in size and larger, double disc:
      a. Flanged.
      b. Materials:
         1) 200 pound iron body.
         2) Bronze mounted.
      c. Configuration:
         1) Outside screw and yoke (OS&Y).
         2) Stems of silicon bronze in accordance with ASTM B98, Alloy No. C66100.

d. Inside configuration:
    1) Double disc; parallel seat.
    2) Handwheel.
e. Manufacturers: One of the following or equal:
    1) M&H Valve Co., Figure 68-02.
f. Design:
    1) Size, material, configuration: Indicated on the Drawings.

B. Underground:
1. Manufacturers: One of the following or equal:
    a. American Flow Control.
    b. M&H/Kennedy Valve Co.
    c. Mueller Co.
2. Design:
    a. Size, material, configuration: Indicated on the Drawings.
    b. Resilient wedge type in accordance with AWWA C515.
    c. Stem:
        1) Iron body, resilient seat, non-rising stem, double O-ring stem seal.
        2) Rising stem configuration with handwheel diameter sized to allow opening of valve with no more than a 40-pound pull.
    d. Ductile or cast iron wedge encapsulated in nitrile rubber and capable of sealing in either flow direction.
    e. Bronze stem with double or triple O-ring or braided packing stem seals.
    f. Coat interior and exterior surfaces of valve body and bonnet with fusion-bonded epoxy in accordance with AWWA C550.
    g. Valve operator: Provide standard AWWA 2-inch operating nut, matching valve key, and valve box for operating stem.

2.02 GATE VALVES - STEAM AND CONDENSATE SERVICE (GV20)

A. Valves 3 inches and smaller in size:
1. Manufacturers: One of the following or equal:
    a. Crane, No. 428.
    b. Jenkins, Figure 47U.
    c. Lunkenheimer Co., Figure 2127.
2. Design:
    a. Size and configuration: Indicated on the Drawings.
    b. Bronze, screwed, rising stem, solid wedge, screwed bonnet, suitable for service under pressures equal to and less than 125 pounds per square inch gauge, steam working pressure (SWP).

B. Valves larger than 3 inches in size:
1. Manufacturers: One of the following or equal:
    a. Crane No. 465-1/2.
    b. Jenkins, Figure 651C.
    c. Lunkenheimer Co., Figure 1430.
2. Design:
    a. Size and configuration: Indicated on the Drawings.

b. Suitable for service under pressures equal to and less than 125 pounds per square inch gauge, steam working pressure (SWP), flanged, iron body, bronze mounted, solid wedge, outside screw and yoke (OS&Y).

3. Size and configuration: Indicated on the Drawings.

2.03 GLOBE VALVES - NON-PILOT-CONTROLLED AND ANGLE VALVES (BLV00 AND GLV20)

A. General purpose globe and angle valves:
   1. Valves 3 inches and smaller:
      a. Manufacturers: One of the following or equal:
         1) Except in welded steel piping:
            a) Crane, No. 1 Globe or No. 2 Angle.
            b) Lunkenheimer Co. Figure No. 2140 Globe or No. 2141 Angle.
         2) In welded steel piping:
            a) Crane, No. 351.
            b) Lunkenheimer Co., Figure No. 1123; or equal with flanged ends.
      b. Design:
         1) Size and configuration: Indicated on the Drawings.
         2) Valve: Class 125 threaded ends, rated for 250 degrees Fahrenheit at pressure of 170 pounds per square inch.
   2. Valves larger than 3 inches:
      a. Manufacturers: One of the following or equal:
         1) Crane, No. 351.
         2) Lunkenheimer Co., Figure No. 1123.
      b. Design:
         1) Size and configuration: Indicated on the Drawings.

B. Plug disc globe valves: type for throttling or severe service:
   1. Manufacturers: One of the following or equal:
      a. Crane, No. 212P or No. 384P.
      b. Lunkenheimer Co., 72-PS or 73-PS1.
   2. Design:
      a. Size and configuration: Indicated on the Drawings.
         1) Material: Iron body stainless steel trimmed plug type seat and disc.

C. Hose valves:
   1. Manufacturers:
      a. Globe threaded valve: One of the following or equal:
         1) Crane, No. 7TF.
         2) Stockham, Figure No. B22T.
      b. Angle threaded valve: One of the following or equal:
         1) Crane, No. 17TF.
         2) Stockham, Figure No. B222T.
   2. Design:
      a. Size and configuration: Indicated on the Drawings.
      b. Valve: Globe or angle valve with threaded ends.
      c. Disc: Renewable, made of Teflon™ or Buna-N.
      d. Threaded ends rated for a pressure of 200 pounds per square inch.

D. Yard hydrants:
    1. Freezeless yard hydrant:
        a. Manufacturers: One of the following or equal:
            1) Kupferle Foundry Co.
                a) #1 Total Eclipse Yard Hydrant - 3/4 inch and 1 inch.
            2) Murdock Company:
                a) #M-75 - 3/4 inch or #M100 - 1 inch.
            3) Zurn Company:
                a) #1385 - 3/4 inch or 1 inch.
        b. Design:
            1) Self-draining, non-freezing, compression type.
                a) Inlet connection size: Indicated on the Drawings.
                b) Outlet connection size: Indicated on the Drawings.
                c) Materials:
                    (1) Exterior casing pipe material: Indicated on the Drawings.
                    (2) Interior operating rod material: Indicated on the Drawings.
                    (3) Casing guard material: Indicated on the Drawings.
                    (4) Principal interior operating parts material: Brass and/or bronze and removable from yard hydrant for servicing without excavation.
                d) Provide 4 spoke, ball wheel handle operated.
    2. Freezeless post hydrants (HYD01):
        a. Manufacturers: The following or equal:
            1) Kupferle Foundry Co.:
                a) #2 Eclipse Post Hydrant.
            2) Mueller Co.:
                a) #A-411 Post Hydrant.
            3) Murdock Co.:
                a) #M-200 Post Hydrant.
        b. Design:
            1) Self-draining, non-freezing, compression type with a 2-3/16-inch valve opening.
            2) Inlet connection size: Indicated on the Drawings.
            3) Outlet connection size: Indicated on the Drawings.
            4) Materials:
                a) Exterior casing pipe material: Indicated on the Drawings.
                b) Interior operating rod material: Indicated on the Drawings.
                c) Top stock material: Indicated on the Drawings.
                d) Principal interior operating parts material: Brass and/or bronze and removable from hydrant for servicing without excavation.
            5) Provide 1-1/2-inch pentagon operating nut operated by a hydrant wrench or 10-inch handwheel:
                a) Manufacturers: The following or equal:
                    (1) Kupferle Foundry Co.

2.04 NEEDLE VALVES (NV00)

A. Manufacturers: One of the following or equal:
    1. Crane No. 88 or No. 89.

2. Lunkenheimer Co., Figure No. 906-BS or No. 907-BS.
3. Powell, Figure No. 180.

B. Design:
1. Size and configuration: Indicated on the Drawings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Mount yard hydrants on minimum 1-inch supply pipe or size indicated on the Drawings.

B. Mount post hydrants on minimum 2-inch supply pipe or size indicated on the Drawings.

C. Set yard and post hydrants in 4 cubic feet of 3/4 inch minimum crushed stone surrounding valve body to allow for proper drainage.
1. Install in accordance with AWWA recommendations for hydrants.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services: For valves larger than 16 inches.
1. Provide certificates:
a. Manufacturer’s Certificate of Installation and Functionality Compliance.

C. Functional Testing:
1. Valves:
a. Test witnessing: Witnessed.
b. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.

END OF SECTION

SECTION 15117

SPECIALTY VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Specialty valves.

B. As specified in Section 15110 - Common Work Results for Valves.

1.02 REFERENCES

A. American Society of Civil Engineers (ASCE):
   1. 25 - Earthquake-Actuated Automatic Gas Shutoff Devices.

B. American Society of Mechanical Engineers (ASME):
   1. B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

C. American Water Works Association (AWWA):
   1. C511 - Standard for Reduced Pressure-Principle Backflow-Prevention Assembly.
   2. C800 - Underground Service Line Valves and Fittings (Also Included: Collected Standards For Service Line Materials).

D. ASTM International (ASTM):
   1. A48 - Standard Specification for Gray Iron Castings.
   2. A126 - Standard Specification for Gray Iron Casting for Valves, Flanges, and Pipe Fittings.
   3. A276 - Standard Specification for Stainless Steel Bars and Shapes.
   4. A536 - Standard Specification for Ductile Iron Castings.
   5. B584 - Standard Specification for Copper Alloy Sand Castings for General Application.
   6. D2000 - Standard Classification System for Rubber Products in Automotive Applications.

E. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1000 V Maximum).

1.03 DEFINITIONS

A. NEMA Type 4 enclosure in accordance with NEMA 250.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15110 - Common Work Results for Valves.

C. Commissioning submittals:
   1. Backflow preventer certification.
   2. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.05 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 BACKFLOW PREVENTERS

A. Manufacturers: One of the following or equal:
   1. Febco backflow prevention:
      a. Model LF860 all sizes.
   2. Zurn/Wilkins:
      a. Model 975XL for 1/2-inch through 2-inch.
      b. Model 375AST for sizes 2 1/2 inch, 3 inch, 8 inch, and 10 inch.
      c. Model 375 and 375DA for sizes 4 inch and 6 inch.
   3. Watts regulator: Series LF909.

B. Design: Reduced pressure chamber type in accordance with AWWA C511.

C. Backflow preventers shall be lead-free.

D. Include shutoff valves at each end of backflow preventer with properly located test cocks.

E. Shutoff valves:
   1. Backflow preventers 2-inch and smaller: Provide with full-port, quarter turn, resilient seated ball valves.
   2. Backflow preventers larger than 2-inch: Provide with resilient seated, outside stem and yoke gate valves.

2.02 MUD VALVES

A. Manufacturers: One of the following or equal:
   1. Clow Corp., Series F-3075T.
   2. Waterman Industries, Inc., Model MV-11.

B. Design:
   1. Provide mud valves with non-rising stem.
   2. Provide standard AWWA 2-inch valve nut on stainless steel stem extension to height required.

C. Materials:
   1. Body, cover, and yoke: Cast-iron.
   2. Disc plug: Cast-iron.
   3. Seat rings: Resilient Neoprene or Buna-N seating face.

4. Stem and stem nut: Bronze.
5. Cap screws to bolt valve to cast-iron pipe flange: Type 316 stainless steel.

2.03 SOLENOID VALVES

A. 2-way solenoid valves:
   1. Manufacturers: One of the following or equal:
      a. Automatic Switch Co., Series 8210.
         1) Contractor shall provide external bypass to solenoid valve. External bypass shall use pipe of same material and size as main line and include a ball valve for manual operation.
      b. Skinner Electric Valve Division, Series C.

B. Design:
   1. Valves: Suitable for service under the following conditions:
      a. Fluid potable water.
      b. Temperature of fluid: 60 degrees Fahrenheit.
      c. Piping test pressure: 150 pounds per square inch gauge.
   2. Unless otherwise indicated on the Drawings, provide valves that meet the following requirements:
      a. Minimum NEMA Type 4 enclosure.
      b. 120 VAC operation.
      c. Suitable for use as indicated on the Drawings.
      d. Minimum Class F coil insulation.
   3. 2-way valves: Furnish with openings of size equal to or larger than the nominal size designation of the valve.
   4. Furnish with manual/bypass operators.

C. Materials:
   1. Body: Brass or bronze.
   2. Seats: Resilient material.

2.04 PLASTIC BODY DIAPHRAGM VALVES

A. Type of service: Use plastic body diaphragm valves in the following services:
   1. Sodium hypochlorite.

B. Manufacturers: One of the following or equal:
   1. Simtech.
   2. Chemtrol.
   3. Asahi-America (2-1/2 inch and less only for sodium hypochlorite service).
   4. Georg Fischer Piping Systems.
   5. Hayward Flow Control.

C. Materials:
   1. Body: PVC with reinforcing ribs at body and end connections.
   2. Diaphragm: Unless otherwise specified below, provide 2 diaphragm layers - Teflon™ diaphragm with EPDM backing or other material suitable for the intended use.
      a. For sodium hypochlorite service: 3 diaphragm layers, Teflon™ (PTFE), PVDF, and ethylene propylene diene (EPDM) or Viton™ backing cushion.

3. Bonnet: PVC with cast iron or silicon bronze drive nut, double lead acme stem threads, acrylic protective cap and visual position indicator.
    a. Adjustable travel stop: Type 316 stainless steel.
    b. Compressor: PVDF or cast iron.
4. Handwheel: Polypropylene.
5. Sleeve: Bronze or cast iron.
6. Stem: Type 316 stainless steel.
7. Bolt, nut, and washer: Type 316 stainless steel.
8. Thrust bearing: Teflon™ disc or carbon steel.
9. End connector: PVC.
10. End connector seal (flange gasket): Suitable for the intended use unless otherwise specified below.
    a. For sodium hypochlorite and sodium bisulfite solution service: Hypalon 1/8-inch thick gaskets.
11. O-rings: Viton™.
12. Position indicator: Carbon steel.

D. Valve design:
1. End connections: Flanged.
2. Operator handle: Handwheel, with position indicator and adjustable travel stop to prevent overtightening. Provide acrylic stem cap.
3. Diaphragm valves: Weir type.
4. Pressure: 150 pound per square inch gauge at 70 degrees Fahrenheit.

E. Electric actuator:
1. Manufacturers: One of the following or equal:
    a. Asahi/America.
    b. Barton/ITT Fluid Technology Corporation.
    c. Gemu.
2. General:
    a. Reversing type motor.
    b. Suitable for 115 volt, 1 phase, 60 hertz power supply.
    c. Travel stop limit switches with remote valve open and closed status indication.
    d. Brushless, capacitor-run motors with integral thermal overload protection and auto reset.
    e. Permanently lubricated gear train.
    f. Visual position indicator.
    g. Declutchable manual override.
3. Materials:
    a. Actuator housing: Aluminum.
    b. Output shaft: Type 316 stainless steel.
    c. Electrical housing: NEMA Type 4.
    d. Enclosure: NEMA Type 4.
    e. Thermally bonded epoxy powder coating with Type 316 stainless steel trim.

2.05 CORPORATION STOPS

A. Type: In accordance with AWWA C800:
   1. Manufacturers: One of the following or equal:
      a. Ford.
      b. Mueller Co.

2.06 CURB STOPS

A. Manufacturers: One of the following or equal:
   1. Ford.
   2. Mueller Co.

B. Description: Round way solid tee head stops.

2.07 COCKS

A. Gauge cock:
   1. Manufacturers: The following or equal:
      a. Lunkenheimer Co., Figure 1178 or Figure 1180.

B. Air cock:
   1. Manufacturers: One of the following or equal:
      a. Swagelok, Model B-42S4.
      b. Hoke, Inc., 7122G4B.

C. Plug cock:
   1. Manufacturers: The following or equal:
      a. Lunkenheimer Co., Figure 454.
   2. Design: Plug cocks: Bronze, straightway pattern complete with lever.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install as specified in Section 15110 - Common Work Results for Valves in accordance with manufacturer's published instructions.

B. Install with a minimum clearance of 12 inches and with maximum clearance of 30 inches between the relief port and the floor or finished grade or top of containment wall.

C. Plastic body diaphragm valves for sodium hypochlorite service:
   1. When valves are installed horizontally, install valves with valve stem position rotated as necessary such that no internal valve obstruction prevents the passage of vapors traveling along the top of adjacent piping from traveling through the valve.

D. Backflow preventers:
   1. Install with a minimum clearance of 12 inches and with maximum clearance of 30 inches between the relief port and the floor or finished grade or top of containment wall.
   2. Install with sufficient side clearance for access for testing and maintenance.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services:
   1. Provide certificates:
      a. Manufacturer's Certificate of Installation and Functionality Compliance.
   2. Manufacturer's Representative onsite requirements:
      a. For the following valves:
         1) Flow control valves.
      b. Installation: 1 trip, 1 day minimum.
      c. Functional Testing: 1 trip, 1 day minimum each.
      d. Training:
         1) Maintenance: 2 hours per session, 2 sessions.
         2) Operations: 2 hours per session, 2 sessions.

C. Functional testing:
   1. Flow control valves:
      a. Test witnessing: Witnessed.
      b. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.
   2. Backflow preventer:
      a. Test witnessing: Witnessed.
      b. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.
      c. Backflow preventer certification.
   3. Plastic body diaphragm valves:
      a. Test witnessing: Witnessed.
      b. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.

END OF SECTION

SECTION 15118

PRESSURE CONTROL VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Pressure reducing and pressure relief valves for water, air, sludge and chemical service.

B. As specified in Section 15110 - Common Work Results for Valves.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

B. ASTM International (ASTM):
   1. A536 - Standard Specification for Ductile Iron Castings.

C. Underwriters Laboratories, Inc. (UL).

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15110 - Common Work Results for Valves.

C. Commissioning submittals:
   1. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 METAL BODY PRESSURE REDUCING VALVES - WATER SERVICE (PRV00)

A. Metallic pressure reducing valves for water service, 2 1/2 inches and smaller:
   1. Manufacturers: One of the following or equal:
      a. Watts, Series LF223.
      b. Zurn Wilkins, 500 Series.
   2. Direct operated, single seat type pressure reducing valve.
   3. Downstream pressure adjustment range: 30 to 300 pounds per square inch gauge (psig).

4. Materials:
    a. Body and spring cover: Bronze or brass alloy meeting the zinc and aluminum requirements of Section 15110 - Common Work Results for Valves.
    b. Valve seat: Series 300 stainless steel.
    c. Diaphragm: Reinforced Buna Nitrile.
    d. Disk: Match the gasket/elastomer material of the corresponding piping system, as specified in the Piping Schedule.

B. Metallic pressure reducing valves for water service, 3 inches and larger:
1. Manufacturers: One of the following, or equal:
    a. Cla-Val Model 90-01KO. Inlet Angled pattern (vertical inlet) with X43H Strainer.
2. Design:
    a. Pilot controlled, hydraulically operated, diaphragm actuated, globe patterned valve.
    b. Include anti-cavitation trim.
    c. Rated for the test pressure of the corresponding piping system, as specified in the Piping Schedule.
    d. Downstream pressure adjustment range: 30 to 300 psig.
    e. Pilot line: Equipped with a strainer.
    f. Flanges: Class 150 , in accordance with ASME B16.42.
3. Materials:
    a. Body and cover: Ductile Iron ASTM A536.
    b. Valve trim: Bronze.
    c. Pilot control: Cast bronze with Type 303 stainless steel trim.
    d. Diaphragm: Nylon reinforced Buna N.
    e. NSF/ANSI 61 Fusion Bonded Epoxy.

2.02 PLASTIC BODY PRESSURE REDUCING VALVES - CHEMICAL OR WATER SERVICE (PRV40)

A. Manufacturers: One of the following or equal:
1. Plast-O-Matic: Series PRHM.

B. Materials:
1. Valve body:
    a. PVC piping systems: PVC.
    b. CPVC piping systems: CPVC.
2. U-cups:
    a. Match gasket/elastomer material of corresponding piping system, as indicated on the Piping Schedule.
3. Non-wetted metallic components: Stainless steel.

C. Design:
1. Diaphragm type.
2. Pressure rating: Not less than 150 pounds per square inch.
3. In-line or angle pattern design, size as indicated on the Drawings.
4. End connections: Threaded.

5. Downstream pressure set point:
    a. Externally adjustable without removing valve from piping system.
    b. Adjustable from 5 to 125 psig.

2.03 PLASTIC BODY PRESSURE RELIEF VALVES FOR CHEMICAL OR WATER SERVICE (PRV24)

A. Manufacturers: One of the following or equal:
    1. Plast-O-Matic, Series RVT, RVDT or TRVDT.
    2. Asahi/America.
    3. Georg Fischer Piping Systems.

B. Materials:
    1. Valve body:
        a. PVC piping systems: PVC.
        b. CPVC piping systems: CPVC.
    2. U-cup seals:
        a. Match gasket/elastomer material of corresponding piping system, as specified in the Piping Schedule.
    3. Adjusting bolt, locknut, control spring and fasteners: Stainless steel.

C. Design:
    1. Pressure rating: Not less than 150 pounds per square inch.
    2. In-line or angle pattern design, size as indicated on the Drawings.
    3. End connections:
        a. 1 inch and smaller: Threaded.
        b. Larger than 1 inch: Threaded.
    4. Relief set point:
        a. Externally adjustable without removing valve from piping system.
        b. Adjustment range:
            1) Valve sizes 2 inches and smaller: 5 to 125 psig.
            2) Valve sizes 3 inches and larger: 5 to 100 psig.
        c. For chemical pump discharge applications, set valve to open at 10 pounds per square inch more than pump discharge pressure at maximum operating point, or as indicated on the Drawings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install as specified in Section 15110 - Common Work Results for Valves.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services:
    1. Provide certificates:
        a. Manufacturer's Certificate of Installation and Functionality Compliance.

C. Functional testing:
    1. Valves:
        a. Test witnessing: Witnessed.
        b. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.

END OF SECTION

SECTION 15119

AIR AND VACUUM RELIEF VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Air release valves, air and vacuum valves, and air vents.

B. As specified in Section 15110 - Common Work Results for Valves.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
   2. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard.

B. American Water Works Association (AWWA).

C. ASTM International (ASTM):
   1. A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   2. A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
   3. A270 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Sanitary Tubing.
   4. B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15110 - Common Work Results for Valves.

C. Commissioning Submittals:
   1. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bond.

PART 2 PRODUCTS

2.01 METAL BODY AIR RELEASE VALVES - WATER SERVICE (ARV00)

A. Manufacturers: One of the following or equal:
   1. Multiplex Manufacturing Co., Crispin PL Series.
   2. Valve and Primer Corp., DeZURIK/APCO Series 200.

B. Design:
   1. Pressure rating: 150 pounds per square inch gauge unless differently indicated on the Drawings.
   2. Provide low pressure seat when the operating pressure is below 10 psi.
   3. Inlet: Screwed, 2-inch.
   4. Orifice size: 1/4-inch diameter.

C. Materials:
   1. Valve body: Cast iron.
   2. Float and internal trim: Type 316 stainless steel.
   3. Seat or valve plunger: Buna-N.

2.02 METAL BODY AIR RELEASE VALVES - SEWAGE SERVICE (ARV20)

A. Manufacturers: One of the following or equal:
   1. Multiplex Manufacturing Co., Crispin Series S.
   2. Valve and Primer Corp., DeZURIK/APCO, Series 400.

B. Design:
   1. Operation: Release accumulated air in sewage pipelines operating under pressure. After entrained air escapes through the orifice, the orifice is plugged by a needle mounted on a compound lever mechanism.
   2. Internal components removable through top cover without removing valve from pipeline.
   3. Pressure rating: 150 pounds per square inch.
   4. Provide low pressure seat when the operating pressure is below 10 psi.
   5. Orifice size: 1/4-inch diameter.
   6. Connections: 2-inch threaded inlet and 1/2-inch threaded outlet.

C. Accessories:
   1. Inlet shutoff valve. Utilize eccentric plug valve.
   2. 2 blowoff valves for backflushing.
   3. 10 feet of hose with quick disconnect couplings.

D. Materials:
   1. Body: Cast iron or ductile iron.
   2. Float: Type 316 stainless steel.
   3. Needle: Buna-N.

2.03 METAL BODY AIR AND VACUUM VALVES - WATER SERVICE (AVV00)

A. Manufacturers: One of the following or equal:
   1. Multiplex Manufacturing Co., Crispin A Series.
   2. Valve and Primer Corp., DeZURIK/APCO Series 140.

B. Design:
   1. Minimum performance requirements:
      a. Air in-flow through valve: Not less than 6 standard cubic feet per second.
      b. Air exhaust through valve: Not less than 6 standard cubic feet per second.
   2. Pressure rating: Up to 125 pounds per square inch gauge unless differently indicated on the Drawings.
   3. Inlet: Screwed.

C. Materials:
   1. Body: Cast iron.
   2. Float: Type 316 stainless steel.

2.04 METAL BODY COMBINATION AIR VALVES - WATER SERVICE (CAV00)

A. Manufacturers: One of the following or equal:
   1. Multiplex Manufacturing Co., Crispin UL Series.
   2. Valve and Primer Corp., DeZURIK/APCO, Series 140C.

B. Design:
   1. Operation: Automatic exhaust of large quantities of air from pipelines during filling and draining and release of accumulated air while pipeline is under pressure.
   2. Utilize compound lever system in conjunction with large and small orifices.
   3. Internal parts removable through top cover without removing valve from pipeline.
   4. Pressure rating: 125 pounds per square inch.
   5. Inlet: Screwed, 1-inch size.

C. Materials:
   1. Body: Cast iron.
   2. Float: Type 316 stainless steel.
   3. Needle: Buna-N.
   4. Lever frame: Cast iron or Delrin.

2.05 PLASTIC BODY DEGASSING VALVE FOR SODIUM HYPOCHLORITE SERVICE (DGV40)

A. Manufacturers: One of the following or equal:
   1. Plast-O-Matic, DGV.
   2. Primary Fluid Systems, Accu-Vent.

B. Materials:
   1. Body:
      a. PVC piping systems: PVC.
      b. CPVC piping system: CPVC.
   2. Elastomers: Match the gasket material specified in the Piping Schedule.

3. Minimum pressure rating: 150 pounds per square inch gauge.
4. Connection: 1/4-inch NPT minimum.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install as specified in Section 15110 - Common Work Results for Valves and the manufacturer's instructions.

B. Install air release valves and air and vacuum valves with suitable discharge lines to nearest drainage system.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services:
   1. Provide certificates:
      a. Manufacturer's Certificate of Installation and Functionality Compliance.

C. Functional Testing:
   1. Valves:
      a. Test witnessing: Witnessed.
      b. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.

END OF SECTION

SECTION 15120

PIPING SPECIALTIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Piping specialties, including:
      a. Pipe couplings for stainless steel piping.
      b. Vibration control joints.
      c. Transition fittings.
      d. Pipe saddles.
      e. Tapping sleeves.
      f. Surge cushions.
      g. Sight gauges.
      h. Chemical Injector/Diffuser.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard.

B. American Water Works Association (AWWA):
   1. C110 - Standard for Ductile-Iron and Gray-Iron Fittings.
   2. C151 - Standard for Ductile-Iron Pipe, Centrifugally Cast.

C. ASTM International (ASTM):
   1. A148 - Standard Specification for Steel Castings, High-Strength, for Structural Purposes.
   2. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   3. A194 - Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
   4. A536 - Standard Specification for Ductile Iron Castings.

D. NSF International (NSF):
   1. 61 - Drinking Water System Components - Health Effects, Includes Errata.
   2. 372 - Drinking Water System Components - Lead Content.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures and Section 01601 - Product Requirements.

B. Product data:
   1. For each piping product in this Section as applicable:
      a. Design features.
      b. Load capacities.
      c. Material designations by UNS alloy number or ASTM Specification and Grade.
      d. Data needed to verify compliance with the Specifications.
      e. Catalog data.
      f. Clearly mark Submittal information to show specific items, materials, and accessories or options being furnished.

C. Installation instructions:
   1. Provide manufacturer's installation instructions.

D. Calculations:
   1. Provide calculations in accordance with NSF 372 for materials in contact with drinking water.

E. Manufacturer's Certificate of Installation as specified in Section 01756 - Commissioning:
   1. Provide as specified in this Section.

1.04 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. As specified in Section 01601 - Product Requirements.

B. Materials in contact with drinking waters: In accordance with NSF 61 and NSF 372.

2.02 PIPE COUPLINGS FOR STAINLESS STEEL PIPING

A. Flexible hose:
   1. General:
      a. Type: Flexible stainless steel hose.
         1) Unbraided for pressures up to 150 pounds per square inch.
         2) Single braided for pressures up to 225 pounds per square inch.
         3) Double braided for pressures up to 360 pounds per square inch.
      b. End connections: Flanged, or as needed to comply with the specified type of joint:
         1) Sizes 2-1/2 inches and smaller may have threaded nipples.
         2) Sizes 2 inches through 12 inches may have grooved ends.
   2. Design:
      a. Open pitch spacing of corrugation.
      b. 1 fixed and 1 floating raised face flanged end connection.
      c. Able to withstand up to 1-inch offset motion from centerline.

3. Materials:
    a. Hose: Type 304 stainless steel.
    b. Flanges: Carbon steel.

2.03 VIBRATION CONTROL JOINTS

A. Manufacturers:
    1. Braided bronze flexible vibration joints 2 inches and less in size: One of the following or equal:
        a. Flex-Weld, Inc., Keflex, Type KFCB.
        b. Senior Flexonics Canada, Inc., Type BRC bronze connectors.
    2. Flexible vibration joints larger than 2 inches: One of the following or equal:
        a. Flex-Weld, Inc., Keflex, Series 151-TR-1215.
        b. Senior Flexonics Canada, Inc., Type TCS.
    3. Corrugated stainless steel with stainless steel braid flexible vibration joints: One of the following or equal:
        a. Flex-Weld, Inc., Keflex, Type USFNSS-31.
        b. Senior Flexonics Canada, Inc., Type BSFS stainless steel connectors.

B. Design:
    1. Flexible vibration joints 2 inches and smaller: Braided bronze, suitable for pressures of not less than 250 pounds per square inch gauge.
    2. Flexible vibration joints larger than 2 inches: Flexible bellows type, suitable for pressures of not less than 150 pounds per square inch gauge, at 70 degrees Fahrenheit, except as follows:
        a. Provide vibration joints in piping subject to test pressures higher than 150 pounds per square inch gauge, suitable for such higher pressures.
        b. Bellows: Stainless steel, equipped with a stainless steel liner.
        c. Ends: ASME Class 150 flanges.
    3. Vibration joints in high-pressure air piping and in digester gas piping: Corrugated Type 316 stainless steel with stainless steel braid, suitable for pressures of not less than 150 pounds per square inch gauge.
        a. Ends: ASME Class 150 flanges.

C. Protection: Protect vibration absorbers against end loading and torsional stresses by anchoring attached piping.

2.04 TRANSITION FITTINGS

A. Manufacturers: One of the following or equal:
    1. Spears.

B. Materials:
    1. Slip socket: Schedule 80 PVC.
    2. Collar: Type 316 stainless steel.
    3. Threaded insert: Type 316 stainless steel.

2.05 PIPE SADDLES

A. For ductile iron pipe:
    1. Double strap brass type.

2. Manufacturers: One of the following or equal:
    a. A.Y. McDonald, Style 3825.
    b. The Ford Meter Box Company, Style 202B.
    c. Mueller Company, Style BR2B.
3. Materials:
    a. Pipe saddle body, straps, and nuts: Brass or silicon bronze.
    b. Gaskets: EPDM.

B. For PVC C900 or C905 pipe:
1. Manufacturers: One of the following or equal:
    a. Romac Industries, Inc., Style 202S.
    b. Smith-Blair, Inc., Style 317.
2. Materials:
    a. Pipe saddles: Ductile iron with fusion bonded epoxy finish.
    b. Straps, bolts, and nuts: Type 304 stainless steel with Teflon™ coating on nuts.
    c. Gaskets: EPDM.

2.06 TAPPING SLEEVES

A. Manufacturers: One of the following or equal:
1. Romac Industries, Inc., Style FTS 420.
2. Smith-Blair, Inc., Style 622.

B. Materials:
1. Tapping sleeves: Steel construction.
2. Bolts and nuts: Type 304 stainless steel.
3. Nuts: Teflon™ coated.
4. Gaskets: EPDM.
5. Size of tapped boss: As indicated on the Drawings.

2.07 SURGE CUSHIONS

A. Design:
1. Minimum capacity: 150 psi.
2. Inlet and outlet:
    a. Size: 1 inches.
    b. Flange: 150 pound ASME B16.5.
    c. Connection with orifice plate to prevent extrusion of bladder from shell.
3. Surge cushion unit:
    a. Steel construction.
    b. Stamped that it meets ASME B16.5 pressure vessel requirements for pressure of 275 pounds per square inch gauge.
    c. Shell with removable top for inspection of bladder.
    d. Removable top with gas precharge connection and pressure gauge.
4. Bladder:
    a. Composed of aromatic Buna N, and charged with nitrogen.
    b. Effective for pressure shock cushion and to prevent gas absorption by the fluid.

2.08 SIGHT GAUGES, INDICATING FLOW OR LEVEL

A. Manufacturers: One of the following or equal:
   1. John C Ernst.
   2. Plast-O-Matic.

B. Provide sight gauges as indicated on the Drawings.

C. Double wall construction except for hydrofluoric acid or sodium hydroxide service.
   1. Borosilicate glass inner wall.
   2. High impact acrylic for outer wall.
      a. High light transmissibility.
      b. UV light resistant.

D. Single wall construction for hydrofluoric acid or sodium hydroxide service.
   1. High impact acrylic.

E. PTFE end connections.
   1. Suitable for 50 psi working pressure at 225 degrees Fahrenheit.

F. FKM O-ring seals.

G. FKM O-ring seals on ends of wafer connections.

H. Full 360-degree visibility.

I. Vinyl fluttering streamers for flow indication sight gauge.

2.09 CHEMICAL INJECTOR/DIFFUSER

A. Design:
   1. Chemical injector/diffuser:
      a. Injector configuration: Pre-assembled single feed point into center of water main.
      b. Operating pressure: 150 psi.
   2. Heavy duty brass corporation stop or stainless steel ball valve:
      a. Thread connection shall be NPT or AWWA inlet.
      b. Corporation stop must include a safety device to prevent accidental withdrawal of Injection/Diffuser solution tube.
   3. Injector/diffuser solution tube sized to match pump discharge line or injection flow rate:
      a. Tube shall extend 1/3- to 1/2-diameter of water main into center of main.
      b. Able to safely withdraw or insert injector/diffuser tube into center of water main while under pressure and without having to shut down the main.
      c. Integral ball check valve located on injector/diffuser assembly.
      d. Stainless steel safety chain located on injector/diffuser solution tube.

B. Materials:
   1. Injector/Diffuser: Hastelloy.

C. Manufacturers: The following or equal:
   1. Saf-T-Flo.

2.10 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 01601 - Product Requirements.

PART 3 EXECUTION

3.01 GENERAL

A. As specified in Section 01601 - Product Requirements.

B. Drawings supersede conflicts with this Section.

C. Vibration control joints:
   1. Protect joints against damage during pressure test.

3.02 INSTALLATION

A. Vibration control joints:
   1. Install at piping connections to or from mechanical equipment to prevent transmitting equipment vibration through the piping system.

B. Transition couplings:
   1. Application:
      a. Use with function and design similar to flexible couplings and flanged coupling adapters for connecting piping having different outside diameters.
   2. Install products specifically designed and manufactured for that application.

C. Pipe saddles:
   1. Coat threads on bolts with anti-gall coating prior to installation.

D. Tapping sleeves:
   1. Verify existing pipe material and outer diameter prior to ordering materials.
   2. Coat threads on bolts with anti-gall coating prior to installation.

E. Surge cushions:
   1. Provide to dampen shock pressure surges due to power loss, fast closing valves, or other events that produce water hammer.

3.03 FIELD QUALITY CONTROL

A. Manufacturer services:
   1. Required only for:
      a. Transition couplings.
   2. Provide Manufacturer’s Certificate of Installation.

B. Field testing:
   1. As specified in Section 15052 - Common Work Results for General Piping.
   2. Protect vibration control joints.

END OF SECTION

SECTION 15125

STRAINERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Strainers.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
   2. A420 - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service.

B. Society of Automotive Engineers (SAE).

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15052 - Common Work Results for General Piping.
   1. Shop drawings, detailing dimensions, and materials.
   2. Installation instructions.

C. Provide vendor operation and maintenance manual as specified in Section 01782 - Operation and Maintenance Manuals.
   1. Furnish bound sets of installation, operation and maintenance instructions for each type of strainer. Include information on valves for mechanically-cleaned strainers.

PART 2 PRODUCTS

2.01 Y-TYPE STRAINERS

A. Y-type strainers 4 inches and larger in diameter:
   1. Materials:
      a. Bodies: Cast iron or semi-steel.
      b. Ends: Flanged.
      c. Screens: Brass or Type 304 stainless steel.
   2. Suitable for following minimum pressure conditions:
      a. Steam service: 250 pounds per square inch gauge.
      b. Water, oil, and gas service: 200 pounds per square inch gauge.
   3. Perforated screens:
      a. Openings: 0.045 inches.

b. Active screen opening to pipe area ratio: 2.8, minimum.
c. Free area: 37 percent minimum.

4. Manufacturers: One of the following or equal:
   a. Armstrong International Inc., Code A1.
   b. ITT/Hoffman, 460 Series.

B. Y-type strainers less than 4 inches in diameter:
1. Materials:
   a. Bodies: Cast iron or semi-steel.
   b. Ends: Flanged or threaded.
   c. Screen: Brass or Type 304 stainless steel.
2. Suitable for maximum pressure of 250 pounds per square inch gauge.
3. Screens: Perforations: 1/32 inch.
4. Manufacturers: The following or equal:
   a. Armstrong, Y-Type Strainer.

2.02 H-STRAINER

A. Provide H-strainer as indicated on the Drawings.

B. Materials:
1. Bodies: Stainless steel.
2. Ends: Flanged.
3. Screen: Stainless Steel.

C. Suitable for maximum pressure rating of 250 pounds per square inch gauge.

D. Screen: 10 mesh or 2000 micron.

E. Connections: ANSI 150 pound flanged.

F. Manufacturers: The following or equal:
1. Cla Val, X43H.

2.03 BASKET TYPE STRAINERS

A. Provide basket type strainers single or duplex as indicated on the Drawings.

B. Materials:
1. Bodies: Cast iron or cast steel. PVC shall be used for chemical systems.
2. Baskets: Low-zinc bronze or stainless steel. PVC shall be used for chemical systems.

C. Pressure rating: Where not otherwise indicated on the Drawings, 125 pounds per square inch gauge, minimum.

D. Connections: Threaded or flanged, as required.

E. Covers:
1. For strainers 6 inches and smaller in size, secured by yokes or similar quick opening devices.

2. For strainers larger than 6 inches in size, bolted or hinged and bolted with slotted washers so that bolts or nuts need not be completely removed to open the strainer.
3. Provide lifting eyes on covers weighing more than 50 pounds.

F. Baskets:
1. Screen: Mesh or perforated sheet.
2. Openings: Not greater than 1/8 inch.
3. Free area: Not less than 30 percent.
4. Free area to pipe ratio: Not less than 3.

G. Provide duplex strainers with tapered plug transfer valve or with gate type transfer valves.
1. Where action on two valve actuators is required to transfer operation from one chamber to the other, provide actuators mechanically linked for simultaneous operation.

H. Manufacturers: One of the following or equal:
1. Single basket strainers:
a. Fluid Engineering, Series 528B.
b. Mueller Steam Specialty.
2. Double basket strainers:
a. Fluid engineering, Series 534 for sizes 1-1/2 inch to 8 inch, and Series 424 for sizes 10 inch and larger.
b. Mueller Steam Specialty.
3. Basket strainers for chemical service:
a. Hayward.
b. Dual or simplex as indicated on the Drawings; baskets and bodies PVC; gaskets Viton or EPDM as required for the chemical service; basket mesh size to be specified by the Engineer during shop drawing review.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with the manufacturer's recommendations.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning and this Section.

B. Manufacturer services for mechanically cleaned strainers, only:
1. Provide certificates:
a. Manufacturer’s Certificate of Installation and Functionality Compliance.
2. Manufacturer’s Representative onsite requirements:
a. Installation: 1 trip, 1 day minimum.
b. Functional Testing: 1 trip, 1 day minimum each.
3. Training:
a. Maintenance: 2 hours per session, 2 sessions.
b. Operation: 1 hour per session, 2 sessions.

4. Process operational period:
    a. As required by Owner or Contractor.

C. Functional testing:
    1. Mechanically cleaned strainers only:
        a. Test witnessing: Witnessed.
        b. Conduct Level 1 General Equipment Performance Test.

END OF SECTION

SECTION 15211

DUCTILE IRON PIPE: AWWA C151

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Ductile iron pipe, joints, connections, fittings, and pipe linings and coatings.

B. As specified in Section 15052 - Common Work Results for General Piping.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

B. American Water Works Association (AWWA):
   1. C104 - Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
   2. C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
   3. C110 - Standard for Ductile-Iron and Gray-Iron Fittings.
   4. C111 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
   5. C150 - Standard for Thickness Design of Ductile-Iron Pipe.
   6. C151 - Standard for Ductile-Iron Pipe, Centrifugally Cast.
   7. C153 - Standard for Ductile-Iron Compact Fittings for Water Service.
   8. C600 - Installation of Ductile Iron Water Mains and Their Appurtenances.
   9. C606 - Standard for Grooved and Shouldered Joints.

C. American Welding Society (AWS):
   1. D11.2 - Guide for Welding Iron Castings.

D. ASTM International (ASTM):
   1. A536 - Standard Specifications for Ductile Iron Castings.
   2. B1000 - Standard Practices for Casting Preparation and Test Procedure of Porcelain Enamel-Lined Pipe, Fittings, and Valves for Use in the Municipal Wastewater, Sewage, and Water Treatment Industry.
   3. C33 - Standard Specification for Concrete Aggregates.
   4. C150 - Standard Specification for Portland Cement.
   5. C283 - Standard Test Methods for Resistance of Porcelain Enameled Utensils to Boiling Acid.
   6. D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
   7. D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.

E. Ductile Iron Pipe Research Association (DIPRA):
   1. Thrust Restraint Design Manual.

F. International Organization for Standardization (ISO):
   1. 8179 - Ductile iron pipe, fittings, accessories and their joints - External zinc-based coating - Part 1: Metallic zinc with finishing layer.

G. National Association of Pipe Fabricators, Inc. (NAPF):
   1. 500-03 - Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings.

H. NSF International (NSF):
   1. 61 - Drinking Water System Components - Health Effects.

I. Society for Protective Coatings (SSPC):
   1. SP 5 - White Metal Blast Cleaning.
   2. SP 10 - Near White Wet Blast.
   3. SP 11 - Bare Metal Power Tool Cleaning.
   4. PA 2 - Measurement of Dry Coating Thickness with Magnetic Gages.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data.

C. Manufacturer's qualifications.
   1. Manufacturer qualifications and list of projects using the specified material: 5 years minimum.

D. Manufacturer's Quality Assurance Manual:
   1. Submit manufacturer's coating and lining application quality assurance manual to the Engineer prior to beginning coating application.
      a. Strict conformance to the requirements of the manual will be required.
      b. Deviation from the requirements of the manual will be grounds for the Engineer to reject the applied coating.

E. Shop Drawings:
   1. Detailed layout drawings showing alignment of pipes, location of valves, fittings, and appurtenances, types of joints, and connections to pipelines or structures.
   2. Thrust restraint systems.
   3. Photographs, drawings, and descriptions of fittings, gaskets, couplings, grooving of pipe and fittings.

F. Calculations:
   1. Thrust restraint system design.

1.04 QUALITY ASSURANCE

A. Ductile iron pipe shall be supplied by a single manufacturer.

B. Hydrostatically test each joint of ductile iron pipe in accordance with AWWA C151.

C. Pre-installation meeting:
   1. Arrange for the coating manufacturer's technical representative to attend preconstruction conferences and to make periodic visits to the factory or shop to inspect surface preparation of pipe, fittings, and accessories; and to inspect application of linings to interior and coatings to exterior of pipe, fittings, and accessories.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Block piping and associated fittings for shipment to prevent damage to coatings and linings.

B. Carefully handle piping and associated fittings during loading, unloading, and installation:
   1. Do not drop piping material from cars or trucks.
   2. Lower piping by mechanical means.
   3. Do not drop or pound pipe to fit grade.

C. Protect gaskets and polyethylene encasement from long-term exposure to sunlight.

D. Store piping, fittings, and other accessories such that they do not accumulate and hold rainwater, dirt, and debris.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Ductile iron piping:
   1. Manufacturers: One of the following or equal:
      a. American Cast Iron Pipe Co.
      b. McWane Ductile.
      c. SIP Industries.
      d. U.S. Pipe.

2.02 THRUST RESTRAINT SYSTEM DESIGN

A. Determine the length of pipe that must be restrained on each side of the focus of a thrust load as specified in the procedures and criteria established by the DIPRA Thrust Restraint Design Manual, City of Roseville standards, and the following additional criteria.

B. Design pressure: Test pressure.

C. Laying condition: Type 5 in accordance with AWWA C150.

D. Soil type: Silt 1 as defined by DIPRA.

E. Unit friction resistance for polyethylene encasement of pipe: DIPRA factor multiplied by a safety factor of 1.5.

2.03 CONCRETE THRUST BLOCK RESTRAINT

A. Joint thrust restraint system designed by the Contractor.
   1. Concrete thrust blocks will not be permitted for DIP restraint unless shown on the Drawings.

2.04 DUCTILE IRON JOINTS AND CONNECTIONS

A. General:
   1. Pressure class or special thickness class as indicated on the Drawings.
   2. In accordance with AWWA C150 and AWWA C151.
   3. Joints:
      a. Flanged.
      b. Grooved.
      c. Mechanical.
      d. Integrally restrained push-on.
   4. Connections:
      a. Tapping saddle.
      b. Tapping sleeve.
      c. Welded outlet.
   5. Fittings.

B. Joints:
   1. Flanged joints:
      a. Screw-on flanges:
         1) Comply with the diameter, thickness, drilling, and other characteristics in accordance with ASME B16.1.
         2) Ductile iron.
         3) Long hub, threaded, and specially designed for ductile iron pipe.
         4) After attaching to pipe, machine flange face to make pipe end and flange even and perpendicular to the axis of the pipe.
      b. Bolt holes on flanges: 2-holed and aligned at both ends of pipe.
      c. Cap screw or stud bolt holes: Tapped.
      d. Bolts and nuts:
         1) As specified in Section 15052 - Common Work Results for General Piping.
      e. Gaskets:
         1) Standard styrene butadiene copolymer (SBR) unless specified otherwise in Section 15052 - Common Work Results for General Piping.
   2. Grooved joints:
      a. In accordance with AWWA C606, as complemented and modified below, radius-cut type.
      b. Couplings:
         1) Rigid type, cast from ductile iron in accordance with ASTM A536, Grade 65-45-12.
      c. Bolts and nuts:
         1) In accordance with ASTM A 183, Grade 2.

d. Gaskets:
    1) Capable of being applied on surface of piping with cavities to provide for an improved seal with the internal piping pressure. Material to be used for following services:
        a) For liquid service: NBR.
        b) For air service: Fluoroelastomer.
        c) For hot water service: EPDM.
e. Fittings:
    1) In accordance with AWWA C606, rigid radius-cut groove.
    2) Center-to-center dimensions: In accordance with AWWA C110.
    3) Wall thickness and other characteristics: In accordance with AWWA C606.
f. Flanged unit connections:
    1) Flanged to grooved joint adapters or a long enough spool with one end flanged and the other end grooved to prevent interference with the operation of adjacent valves, pumps, or other items.

3. Mechanical joints:
    a. In accordance with AWWA C111.
    b. Gaskets:
        1) As specified in Section 15052 - Common Work Results for General Piping.
    c. Bolts and nuts, including T-bolts:
        1) As specified in Section 15052 - Common Work Results for General Piping.
4. Integrally restrained mechanical joints:
    a. Manufacturers: Where restrained mechanical joints are required, use one of the following or equal:
        1) American Cast Iron Pipe Co., MJ Coupled Joint.
        2) U.S. Pipe, Bolt-Lok.
        3) U.S. Pipe, Mech-Lok.
    b. Application:
        1) Where designated mechanical restraint.
        2) Mechanical joint is specified in the Piping Schedule provided on the Drawings, supply a restrained mechanical joint piping system, which includes restrained mechanical joints where necessary based upon thrust calculations.
        3) Standard mechanical joints as specified above can be used where thrust calculations demonstrate restraint is not required.
    c. Design:
        1) Integral retainer weldment type or lugged type joint with Type 304 stainless steel rods and nuts.
        2) Restrained mechanical joints of the configuration which utilizes a gripping or friction force for restraint will not be acceptable.
    d. Gaskets:
        1) As specified in Section 15052 - Common Work Results for General Piping.
    e. Bolts and nuts, including T-bolts:
        1) As specified in Section 15052 - Common Work Results for General Piping.

5. Integrally restrained push-on joints:
    a. Application:
        1) Where designation restrained push-on as indicated on the Drawings, supply a restrained push-on joint piping system, which includes restrained push-on joints where necessary based upon thrust calculations.
        2) Standard push-on rubber gasket joints as specified above can be used where thrust calculations demonstrate restraint is not required.
    b. Design:
        1) Restrained push-on joints of the configuration which utilizes a gripping or friction force for restraint will not be acceptable.
        2) Suitable for the following working pressures:
            a) 4- through 24-inch pipe: 350 pounds per square inch gauge.
            b) 30- through 54-inch pipe: 250 pounds per square inch gauge.
    c. Gaskets:
        1) As specified in Section 15052 - Common Work Results for General Piping.
    d. Manufacturers: One of the following or equal:
        1) American Cast Iron Pipe Co., Flex Ring or Lok-Ring.
        2) McWane Ductile, TR Flex.
        3) U.S. Pipe, TR Flex.
    e. Limit buried joints to half the manufacturer's published allowable angular joint deflection for purposes of pipeline alignment and elimination of fittings.

C. Connections:
    1. Tapping saddle as specified in Owner standard specification.
        a. If Owner does not have a standard specification, provide tapping saddles as specified in Section 15120 - Piping Specialties.
    2. Tapping sleeve as specified in Owner standard specification.
        a. If Owner does not have a standard specification, provide tapping sleeves as specified in Section 15120 - Piping Specialties.
    3. Welded outlet:
        a. Not allowed without Engineer approval.

D. Fittings:
    1. Ductile iron in accordance with AWWA C110 or AWWA C153.
    2. Joint type:
        a. Same as that of the associated piping as specified in Section 15052 - Common Work Results for General Piping.
    3. Plain end-to-flanged joint connectors using setscrews are not acceptable.

2.05 CEMENT MORTAR

A. Line pipe with cement mortar in accordance with AWWA C104 and as specified in this Section.

B. Cement:
    1. Cement: In accordance with ASTM C150, Type II.

C. Water:
   1. In accordance with AWWA C104 and as specified in this Section.

D. Sand and aggregate:
   1. In accordance with AWWA C104.
   2. Provide silica sand or other aggregate that is not subject to leaching in accordance with ASTM C33.

E. Lining:
   1. Minimum thickness: Standard in accordance with AWWA C104.
   2. Apply cement mortar on clean bare metal surfaces.
   3. Extend to faces of flanges, ends of spigots, and shoulders of hubs.
   4. Line special pieces or fittings by mechanical, pneumatic, or hand placement.
      a. Extend to faces of flanges and ends of spigots.
      b. Less than 12 inches in width: Coat with epoxy bonding agent prior to applying cement mortar.
      c. Larger than 12 inches in width: Reinforced with 2-inch by 4-inch No. 13 gauge welded steel wire mesh prior to applying cement mortar.
   5. Provide plastic end caps of sufficient thickness and strength to resist shipping, handling, and storage stresses.
   6. Repair damage to the cement mortar lining, including disbondment, or cracking caused by improper curing, shipping, handling, or installation in accordance with AWWA C104 and approved by the Engineer.
      a. Reinforce coating with 2 layers spirally-wound steel wire positioned approximately in center of mortar coating positioned approximately at the third points of mortar coating:
         1) No. 12 gauge spaced at maximum 1-inch centers.
         2) No. 14 gauge steel wire at maximum 1/2-inch centers.

2.06 POLYETHYLENE ENCASEMENT

A. General:
   1. Polyethylene encasement shall be supplied by the pipe manufacturer.

B. Materials: Supply one of the following polyethylene encasements:
   1. 2 layers of linear low-density polyethylene (LLDPE) film, minimum thickness of 8 mils in accordance with AWWA C105.
   2. Single layer of high-density, cross-laminated polyethylene (HDCLPE) film, minimum thickness of 4 mils in accordance with AWWA C105.

2.07 SEAL COAT

A. Asphaltic seal coat:
   1. Apply over cement mortar linings and to outside surface of pipes that will not receive another coating.
   2. Apply in accordance with AWWA C151.

2.08 CORROSION MONITORING

A. As specified in Section 15320 - Corrosion Protection Isolation.

2.09 CATHODIC PROTECTION

A. As specified in Section 15320 – Corrosion Protection Isolation.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
   1. Install ductile iron piping in accordance with AWWA C600, or as modified in Section 15052 - Common Work Results for General Piping.
   2. For underground piping, the trenching, backfill, and compaction:
      a. Inspect coating prior to backfill.
      b. As specified in Section 02318 - Trenching.

B. Joints:
   1. Install types of joints as specified in the piping schedule provided in the Drawings.
   2. Mechanical joints are not acceptable in above ground applications.
   3. Field closure for restrained push-on pipe:
      a. Locate field closures in areas where thrust calculations demonstrate restraint is not required.
   4. Grooved joints:
      a. Install piping with grooved joints where specified in the piping schedule, or as otherwise indicated on the Drawings.
      b. Assemble grooved joints in accordance with the manufacturer's published instructions.
      c. Support grooved-end pipe in accordance with the manufacturer's published instructions.
         1) Install at least 1 support between consecutive couplings.

C. Connection:
   1. Tapping ductile iron pipe:
      a. Direct tapping of ductile iron pipe may be performed but is limited to the following conditions:
         1) Maximum allowable tap diameter by pipe diameter and pressure class:

Pipe Size (inches)	Pressure Class				
	150	200	250	300	350
	Maximum Allowable Direct Tap Size (inches)				
3	-	-	-	-	3/4
4	-	-	-	-	3/4
6	-	-	-	-	1
8	-	-	-	-	1
10	-	-	-	-	1
12	-	-	-	-	1-1/4
14	-	-	1-1/4	1-1/2	1-1/2

Pipe Size (inches)	Pressure Class				
	150	200	250	300	350
	Maximum Allowable Direct Tap Size (inches)				
16	-	-	1-1/2	2	2
18	-	-	2	2	2
20	-	-	2	2	2
24	-	2	2	2	2

b. Maximum allowable tap diameter for pipelines greater than 24 inches is 2 inches.
c. 2 layers of 3-mil thread sealant are required to minimize the torque required to effect a watertight connection.

2. When direct tapping of ductile iron pipe is not possible due to limited wall thickness, a saddle tap shall be used.

3.02 DEFECTS IN COATINGS EXCEPT TAPE WRAP AND CEMENT MORTAR COATING

A. Engineer will identify defective coating to be field repaired in accordance with the applicable AWWA standard.
   1. Pipe joints exceeding the following defect maximum will be rejected.
      a. Minor defects:
         1) No more than 1.5 per 100 square feet of surface area.
         2) 2 or more minor repairs within an 8-inch diameter circle will be considered a single repair.
         3) Repairs for adhesion testing will not be included in the total number of repairs.
         4) Repair in accordance with the manufacturer's requirements.
      b. Major defects:
         1) No more than 3 major repairs on each pipe joint.
         2) No more than 30 percent repairs on the pipe surface area with defects.
   2. Minor repairs:
      a. Less than 8 inches in the greatest dimension.
      b. Repair in accordance with the manufacturer's requirements.
   3. Major repairs:
      a. Exceed 8 inches in the greatest dimension.
      b. Repair in accordance with the manufacturer's requirements.

3.03 POLYETHYLENE ENCASEMENT

A. Wrap buried ductile iron pipe and fittings in 2 layers of loose low-density polyethylene wrap or a single layer of high-density polyethylene wrap in accordance with AWWA C105 and as specified in this Section.

B. Wrap polyethylene encasement to be continuous and terminated neatly at connections to below grade equipment or structures.

C. At wall penetrations, extend encasement to the wall and neatly terminate.

D. At slab penetrations, extend encasement to 2 inches below the top of slab and neatly terminate.

E. When rising vertically in unimproved areas, extend encasement on pipe 6 inches above existing grade and neatly terminate.

F. Repair tears and make joints with 2 layers of plastic tape.

G. Work shall be inspected prior to backfilling of pipe and associated items.

3.04 CORROSION MONITORING FACILITIES

A. Bond pipe joints and associated fittings to provide electrical continuity.

B. Install dielectric insulating fittings and corrosion monitoring facilities as indicated on the Drawings and specified in Section 15320 - Corrosion Protection Isolation.

3.05 FIELD QUALITY CONTROL

A. Testing ductile iron piping:
   1. Test as specified in Section 15052 - Common Work Results for General Piping and Section 15956 - Piping Systems Testing.

B. Repair damaged cement mortar lining to match quality, thickness, and bonding of original lining in accordance with AWWA C104.
   1. When lining cannot be repaired or repairs are defective, replace defective piping with undamaged piping.

END OF SECTION

SECTION 15229

REINFORCED CONCRETE PIPE: ASTM C76

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Reinforced concrete gravity piping with plastic liner.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
   2. C150 - Standard Specification for Portland Cement.
   3. C361 - Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.
   4. D297 - Standard Test Methods for Rubber Products-Chemical Analysis.
   5. D395 - Standard Test Methods for Rubber Property-Compression Set.
   6. D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
   7. D2240 - Standard Test Method for Rubber Property-Durometer Hardness.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Shop drawings:
   1. Detailed layout drawings including listing of connector pipes with size and D-Load of pipe, stations where pipe joins mainline, and number of sections of pipe, length of sections, type of sections indicating straight, horizontal bevel, vertical bevel, or other type; pipe stubs; gasket shape and size; and liner details.
   2. Gasket specifications.
   3. Design calculations.

C. Provide Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning. Include:
   1. Cement mill certificates for each load of cement delivered showing specification, type, chemical analysis, and quantity; or for stockpiled pipe, certification that cement meets Specifications.
   2. Cement content compliance with yield to cubic yard of concrete.
   3. Lack of calcium chloride or admixtures.
   4. Admixture approval.
   5. Reinforcing steel mill certificates showing heat numbers, chemical analysis, and physical tests; or for stockpiled pipe, certification that steel meets or exceeds specifications.
   6. Gasket test results showing physical properties.

D. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Manufacture of proposed products for minimum 5 years with satisfactory performance record.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Maintain struts and other protective methods to prevent the formation of cracks larger than the specified tolerances.

B. Handle pipe with exterior slings or suitable forklifts.
   1. Do not use interior hooks or slings when lifting pipe.

C. Store cement in weathertight, dry, well-ventilated structures.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Determine reinforcement required for adequate pipe wall thicknesses and to support anticipated loads.

B. Calculate reinforcing steel and load requirements without consideration for sacrificial lining.

2.02 MATERIALS

A. Portland cement, aggregate, water, and steel: ASTM C76, with following exceptions:
   1. Cement: ASTM C150, Type II, low alkali.
   2. Admixtures: Without calcium chloride.

B. Gaskets: ASTM C361; o-ring type; diameter as indicated within 1/32 inch; with synthetic rubber compound containing minimum 50 percent neoprene by volume and no deleterious substances, and having the following characteristics:
   1. Tensile strength: Minimum 1,900 pounds per square inch when tested in accordance with ASTM D412.
   2. Elongation at break: Minimum 425 percent when tested in accordance with ASTM D412.
   3. Durometer hardness: Maximum Type A Shore of 55 within 3 when tested in accordance with ASTM D2240.
   4. Compression set: Maximum 20 percent after aging by the oxygen-pressure chamber for 96 hours, at 158 within 1.8 degrees Fahrenheit, and 300 pounds per square inch within 15 pounds per square inch, and tested in accordance with ASTM D395, Method B, except with 1/2-inch long disc of gasket stock.
   5. Aged tensile strength: Maximum 80 percent of pre-aged strength after aging by the oxygen-pressure chamber for 96 hours, at 158 within 1.8 degrees

Fahrenheit, and 300 pounds per square inch, and tested in accordance with ASTM D395, Method B, except with 1/2-inch long disc of gasket stock.

6. Aged durometer hardness: Maximum Type A Shore of 63 within 3, after aging in an oxygen-pressure chamber for 96 hours, at 158 within 1.8 degrees Fahrenheit, and 300 pounds per square inch within 15 pounds per square inch, and tested in accordance with ASTM D2240.
7. Specific gravity: From 1.29 to 1.31 when tested in accordance with ASTM D297.

C. Curing compound: As specified in Section 03300 - Cast-in-Place Concrete.

2.03 MIXES

A. Pipe concrete: Minimum 564 pounds cement per cubic yard of concrete, and water to produce a maximum 4-inch slump.

B. Reject lumpy concrete.

C. Allow concrete to cool to below 150 degrees Fahrenheit before use.

2.04 FABRICATION

A. Fabricate pipe in accordance with ASTM C76 as modified by the Contract Documents with Class and diameter indicated on the Drawings.

B. Fabricate pipe by vertical wet-cast or centrifugally spun process.
1. Do not use Tamped or Packer Head method.

C. Form rectangular grooves to be filled substantially with gaskets, and to compress and confine gaskets; while not reducing concrete cover over reinforcing.

D. Wrap steel reinforcement with maximum of 5 percent less wraps than wraps indicated on shop drawings.

E. Plainly mark manufacturer's identification, D-Load, class of pipe, and date poured inside pipe sections.

F. Vibrate, spade, or compact concrete against liner carefully to protect liner and to produce a dense, homogeneous concrete that securely anchors liner anchors.

G. Cure concrete by one of the following methods:
1. Steam curing:
    a. Provide adequate steam plant, piping, enclosures, and other facilities for curing pipe.
    b. Maintain enclosures between 110 and 150 degrees Fahrenheit continuously with maximum rate of rise of 30 degrees per hour.
    c. Equip steam-curing enclosures with 7-day recording thermometers.
    d. Cure pipe when concrete has attained an initial set, but not sooner than 1 hour or later than 8 hours after placing of concrete.

2. Water cure:
    a. When water curing is not started immediately, seal concrete surfaces with curing compound.
    b. Keep pipe moist during daylight hours.
    c. Cover pipe, including ends, with burlap for the first 3 days, or keep pipe constantly and completely wet with fog spray during daylight hours.

2.05 SOURCE QUALITY CONTROL

A. Require scales used to proportion materials to be calibrated and sealed by the government agency having jurisdiction over weights and measures.

B. Provide satisfactory facilities for identifying, inspection, and sampling cement at the mill, warehouse, and manufacturing site; and concrete at the manufacturing site.
    1. Engineer may inspect cement and obtain samples for testing at the mill, warehouse, and pipe-manufacturing site.
    2. Engineer may inspect concrete and obtain samples for testing at the manufacture site.

C. Pipe acceptance: Based on plant load-bearing tests, material tests, and inspection of pipe for defects in accordance with ASTM C76 as modified by the Contract Documents.

D. Concrete cylinder tests:
    1. In accordance with ASTM C76.
    2. Allow for a reasonable number of additional cylinders for testing by Owner.

E. Edge bearing tests: Perform a minimum of two, 3-edge bearing tests and determine the load needed to produce a 0.01-inch crack for each size of pipe.

F. Cracks:
    1. Sanitary sewer pipe:
        a. Reject sanitary sewer pipe with cracks that go through pipe walls, regardless of length of cracks.
        b. Repair single end cracks that do not exceed the depth of joints as measured from ends to inside shoulders.
    2. Other pipe:
        a. Reject pipe with cracks extending through pipe walls and extending for more than 1 foot; cracks measuring 0.01-inch wide, 1/16 inch or more deep, and 1 foot or more long; hairline cracks to reinforcing steel; and cracks longer than half the length of pipe.
    3. Repair pipe with single continuous hairline cracks longer than 1 foot, and not extending to reinforcing steel.

G. Porous areas:
    1. Remove porous or honeycomb concrete areas 6 inches in or less in diameter or in longest dimension, and repair areas.
    2. Reject pipe with larger porous or honeycomb concrete areas.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
   1. Lay pipe as specified in Section 15052 - Common Work Results for General Piping and this Section.
   2. Curves, bends, and closures:
      a. Make long radius curves by deflecting joints of straight pipe.
         1) Limit deflections to maximum 3/4-inch joint openings for 36-inch diameter pipe and larger.
      b. Make short radius curves by using straight pipe with beveled joints.
         1) Limit bevels to 5 degrees.
      c. Make shorter radius curves and closures by using fabricated specials.
      d. Install pipe so pipe joints fall on radii indicated on the Drawings.

END OF SECTION

SECTION 15230

PLASTIC PIPING AND TUBING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Plastic pipe, tubing, and fittings for systems that are not plumbing systems.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.12 - Cast Iron Threaded Drainage Fittings.

B. ASTM International (ASTM):
   1. D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
   2. D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80 and 120.
   3. D1869 - Standard Specification for Rubber Rings for Asbestos-Cement Pipe.
   4. D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.
   5. D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
   6. D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
   7. D2513 - Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings.
   8. D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
   9. D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
   10. D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.
   11. D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
   12. D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
   13. D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.
   14. D3350 - Standard Specification for Polyethylene Plastic Pipes and Fittings Materials.
   15. D4101 - Standard Specification for Polypropylene Injection and Extrusion Materials.
   16. F438 - Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40.

17. F439 - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.
18. F441 - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.
19. F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
20. F493 - Standard Specification for Solvent Cements for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.
21. F645 - Standard Guide for Selection, Design and Installation of Thermoplastic Water-Pressure Piping Systems.
22. F679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
23. F714 - Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

C. American Water Works Association (AWWA):
   1. C900 - Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 Inches to 12 Inches, for Water Transmission Distribution.

D. NSF International (NSF).

E. Plastics Pipe Institute (PPI):
   1. TR 31 - Underground Installation of Polyolefin Piping.

1.03 ABBREVIATIONS

A. ABS: Acrylonitrile-butadiene-styrene.

B. CPVC: Chlorinated polyvinyl chloride.

C. DR: Dimension ratio.

D. DWV: Drain, waste, and vent.

E. HDPE: High-density polyethylene.

F. ID: Inside diameter of piping or tubing.

G. NPS: Nominal pipe size followed by the size designation.

H. NS: Nominal size of piping or tubing.

I. PE: Polyethylene.

J. PP: Polypropylene.

K. PVC: Polyvinyl chloride.

L. SDR: Standard dimension ratio; the outside diameter divided by the pipe wall thickness.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15052 - Common Work Results for General Piping.

C. Shop Drawings:
   1. Describe materials, pipe, fittings, gaskets, and solvent cement.
   2. Installation instructions.

1.05 QUALITY ASSURANCE

A. Plastic pipe in potable water applications: Provide pipe and tubing bearing NSF seal.

B. Mark plastic pipe with nominal size, type, class, schedule, or pressure rating, manufacturer and all markings required in accordance with ASTM and AWWA standards.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect piping materials from sunlight, scoring, and distortion.

B. Do not allow surface temperatures on pipe and fittings to exceed 120 degrees Fahrenheit.

C. Store and handle pipe and fittings as recommended by manufacturer in published instructions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Extruding and molding material: Virgin material containing no scrap, regrind, or rework material except where permitted in the referenced standards.

B. Fittings: Same material as the pipe and of equal or greater pressure rating, except that fittings used in drain, waste, and vent piping systems need not be pressure rated.

C. Unions 2-1/2 inches and smaller: Socket end screwed unions. Make unions 3 inches and larger of socket flanges with 1/8-inch full-face soft EPDM gasket.

2.02 PVC PIPING, SCHEDULE TYPE

A. The requirements for PVC piping used in plumbing systems are found in Section 15400 - Plumbing Systems.

B. Materials:
   1. PVC Pipe: Designation PVC 1120 in accordance with ASTM D1785 and appendices:
      a. Pipe and fittings: Extruded from Type I, Grade 1, Class 12454 material in accordance with ASTM D1784.
      b. PVC Pipe: Schedule 80 unless otherwise indicated on the Drawings.
   2. Fittings:
      a. Supplied by pipe manufacturer.
      b. Pressure fittings: In accordance with ASTM D2466 or ASTM D2467.
      c. DWV fittings: In accordance with ASTM D2665.
   3. Solvent cement: In accordance with ASTM D2564:
      a. Chemical service: For CPVC or PVC pipe in chemical service, provide the following primer and cement, or equal:
         1) Primer: IPS Corp., Type P70.
         2) Cement: IPS Corp., Type 724 cement or another cement certified by the manufacturer for chemical service.

2.03 PVC GRAVITY SEWER PIPING

A. The requirements for PVC piping used in plumbing systems are found in Section 15400 - Plumbing Systems.

B. Materials:
   1. Polyvinyl chloride (PVC) gravity sewer pipe and fittings: In accordance with ASTM D3034 for piping NPS 15 and smaller diameter, and to ASTM F679 for piping NPS 18 and larger diameter:
      a. Referenced standards apply as complemented and modified in this Section.
      b. Fittings: Supplied by the pipe manufacturer.
   2. PVC compounds: Class Number 12454, in accordance with ASTM D1784:
      a. Stabilizers, antioxidants, lubricants, colorants, and other additives and fillers: Not to exceed 10 parts by weight per 100 of PVC resin in the compound.
   3. Pipe NPS 15 and smaller diameter: Wall thickness SDR 26:
      a. Joints: Push-on joints in accordance with ASTM D3212.
   4. Pipe NPS 18 and larger diameter:
      a. PVC compound: Cell classification 12454 in accordance with ASTM D1784.
      b. Minimum wall thickness: Thickness T-1 in accordance with Table 1 in ASTM F679.
      c. Joints: Integral bell gasketed joints in accordance with ASTM F679.
      d. Bell: Fabricated from pipe sections, thickness of the wall of the bell equivalent to the pipe wall thickness.
      e. Gasket ring: Locked into the bell.
      f. Spigot end of the pipe: Marked by the manufacturer to identify the final in-place position of the spigot in the bell.
   5. Fittings, including wyes, tees, elbow caps, plug adapters, and manhole waterstops: Same wall thickness as the pipe:
      a. Fittings: Factory molded with joints and gaskets equal to those of the pipe.

6. Gasket: EPDM in accordance with ASTM D3212 or ASTM F477:
    a. Keep rubber gasket in place during pipe joining.
7. Gasket for connection to manhole: Stainless steel clamp with gasket or similar device to seal the penetration.

2.04 CPVC PIPING

A. Materials:
1. CPVC pipe: Schedule 40 or Schedule 80, as specified, in accordance with ASTM F441 and Appendix, CPVC 4120:
    a. Pipe: Extruded from Type IV, Grade 1, Class 23447 material in accordance with ASTM D1784.
    b. Manufacturers: One of the following or equal:
        1) Charlotte Pipe and Foundry Co.
        2) Eslon Thermoplastics, Inc.
        3) GF Harvel.
2. Fittings: In accordance with ASTM F438 or ASTM F439 for pressure fittings, as appropriate to the service and pressure requirement:
    a. Fittings: Supplied by the pipe manufacturer.
    b. Manufacturers: One of the following or equal:
        1) Colonial Engineering.
        2) Eslon Thermoplastics, Inc.
        3) Chemtrol.
        4) Spears Manufacturing Co.
3. Solvent cement: In accordance with ASTM F493:
    a. For CPVC pipe in chemical service, utilize IPS Corp., Type 724 cement or another cement certified by the manufacturer for high strength hypochlorite service.

2.05 PFA TUBING AND FITTINGS

A. Materials:
1. Small bore PFA tubing: ASTM D 3307 Type II, Natural color, OD copper tubing size.
    a. Plastic tubing ID as follows:
        1) For NS 1/4 inch, ID of 0.125 inch.
        2) For NS 5/16 inch, ID of 0.1875 inch.
        3) For NS 3/8 inch, ID of 0.25 inch.
        4) For NS 1/2 inch, ID of 0.375 inch.
        5) For NS 3/4 inch, ID of 0.625 inch.
        6) For NS 1 inch, ID of 0.875 inch.
        7) For NS 1-1/8 inch, ID of 1 inch.
    b. Fittings: Compression fittings.
    c. Supplied in 1000 foot coiled lengths.
    d. Manufacturers: One of the following or equal:
        1) Altaflo, Altraflour 400.
        2) Parker Hannifin Corp., 104 Series Heavy Wall.

2.06 SOURCE QUALITY CONTROL

A. The requirements for PVC piping used in plumbing systems are found in Section 15400 - Plumbing Systems.

B. PVC piping, Schedule Type:
   1. Mark pipe and fittings in accordance with ASTM D1785.

C. PVC gravity sewer piping:
   1. Mark pipe and fittings in accordance with ASTM D3034. Also mark the production control code on pipe and fittings.

D. CPVC piping:
   1. Mark pipe and fittings in accordance with ASTM F441.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
   1. Where not otherwise specified, install piping in accordance with ASTM F645, or manufacturer's published instructions for installation of piping, as applicable to the particular type of piping.
   2. Provide molded transition fittings for transitions from plastic to metal or IPS pipe. Do not thread plastic pipe.
   3. Locate unions where indicated on the Drawings, and elsewhere where required for adequate access and assembly of the piping system.
   4. Provide serrated nipples for transition from plastic pipe to rubber hose.

B. Installation of PVC piping, Schedule Type:
   1. The requirements for PVC piping used in plumbing systems are found in Section 15400 - Plumbing Systems.
   2. Solvent weld joints in accordance with ASTM D2855:
      a. For PVC pipe in chemical service use IPS Corp., Type 724 cement in accordance with manufacturer's instructions.
   3. Install piping in accordance with manufacturer's published instructions.

C. Installation of PVC gravity sewer piping:
   1. The requirements for PP piping used in plumbing systems are found in Section 15400 - Plumbing Systems.
   2. Install piping in accordance with manufacturer's published instructions, as modified and complemented in this Section.
   3. Install pipe and fittings not later than 4 months after their manufacture.
   4. Provide for contraction and expansion at joints with a gasket ring.
   5. Provide plugs or caps for stubs and branch pipes left unconnected to laterals.
   6. Lubricate and assemble joints in accordance with the pipe manufacturer's published instructions.

7. Make connections to manholes with a manhole gasket that prevents infiltration and exfiltration through the penetrations:
    a. Provide opening for connection large enough to allow subsequent grouting around the manhole gasket.
    b. Grout around the manhole gasket and seal the opening.

D. Installation of CPVC piping:
1. Clean dirt and moisture from pipe and fittings.
2. Bevel pipe ends in accordance with manufacturer's instructions with chamfering tool or file. Remove burrs.
3. Use solvent cement and primer formulated for CPVC:
    a. For CPVC pipe in chemical service use IPS Corp., Type 724 cement in accordance with manufacturer's instructions.
4. Use primer on pressure and non-pressure joints.
5. Do not solvent weld joints when ambient temperatures are below 40 degrees Fahrenheit or above 90 degrees Fahrenheit unless solvent cements specially formulated for these conditions are utilized.

3.02 FIELD QUALITY CONTROL

A. Leakage test for PVC piping:
1. The requirements for PVC piping used in plumbing systems are found in Section 15400 - Plumbing Systems.
2. Polyvinyl chloride (PVC) piping: Subject to visible leaks test and to pressure test with maximum leakage allowance, as specified in Section 15956 - Piping Systems Testing.
3. Pressure test with maximum leakage allowance: Perform test after backfilling:
    a. Pressure: 125 pounds per square inch, gauge.
    b. Maximum leakage allowance as follows, wherein the value for leakage is in gallons per 100 joints per hour:

NPS, Inches	1-1/2	2	2-1/2	3	4	6	8	10	12
Leakage	0.41	0.52	0.63	0.76	0.98	1.45	1.88	2.35	2.80

B. Mandrel tests for PVC gravity sewer piping:
1. The requirements for PVC piping used in plumbing systems are found in Section 15400 - Plumbing Systems.
2. Perform initial mandrel test:
    a. After cleaning and completion of other tests.
    b. After placement and compaction of backfill.
    c. Before construction of pavement or surfacing.
    d. Not sooner than 30 days after pipe installation.
    e. Not later than 60 days after installation.
3. Perform final verification mandrel test:
    a. Not sooner than 30 days before the end of the warranty period.
    b. Not later than 10 days before the end of the warranty period.
    c. Consider the final verification mandrel test a warranty service, and include the costs related to final verification mandrel test in the Contract Price.

4. Utilize a 9 rod mandrel with minimum length equal to NPS and diameter as follows:

Nominal Pipe Size (NPS)	Mandrel Diameter, inches
6	5.50
8	7.37
10	9.21
12	10.96
15	13.56

5. Test procedure: Pull the mandrel through the line under test by 1 person, by hand, with reasonable effort, without the aid of mechanical equipment.
6. Failing test: Where the mandrel test is not successful, remove and replace the section of piping with the obstruction; test the piping again, including visible leaks test, pressure test with maximum leakage allowance, mandrel tests, and other specified tests:
    a. Correction of excessive deflection or obstructions by methods other than removal of the affected piping and replacement of the removed piping with new piping will not be accepted.

END OF SECTION

SECTION 15247

POLYVINYL CHLORIDE (PVC) PIPE: GRAVITY

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Gravity sewer pipe and fittings in accordance with ASTM D3034 and ASTM F679 standards.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
   2. D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
   3. D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
   4. D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
   5. D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
   6. F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
   7. F679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

1.03 ABBREVIATIONS

A. PVC: Polyvinyl chloride.

B. SDR: Standard dimension ratio; the outside diameter divided by the pipe wall thickness.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15052 - Common Work Results for General Piping.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect from sunlight, scoring, and distortion.

B. Do not allow surface temperatures to exceed 120 degrees Fahrenheit.

C. Store and handle as recommended by manufacturer in published instructions.

PART 2 PRODUCTS

2.01 PIPE

A. Extruding and molding material: Virgin material containing no scrap, regrind, or rework material except where permitted in the referenced standards.

B. PVC compound: Cell classification 12454-C in accordance with ASTM D1784.

C. Stabilizers, antioxidants, lubricants, colorants, and other additives and fillers not to exceed 10 parts by weight per 100 of PVC resin in the compound.

D. Pipe less than or equal to 15-inch diameter:
   1. In accordance with ASTM D3034.
   2. Wall thickness SDR 26 or as specified in the Piping Schedule on the Drawings.
   3. Joints: Push-on in accordance with ASTM D3212.
      a. Integral bell.
      b. Factory installed gaskets meeting the requirements in accordance with ASTM F477.

2.02 FITTINGS

A. Same material as the pipe.

B. Minimum wall thickness: Same as the minimum wall thickness of the equivalent size pipe as specified in Table 1 of ASTM F679.

C. Supplied by the pipe manufacturer.

D. Factory molded with joints and gaskets equal to those of the pipe.

E. Gasket:
   1. In accordance with ASTM F477.
   2. Manhole adapter gasket: Stainless steel clamp with gasket or similar device to seal the penetration.

F. Flexible gaskets for precast bases with a flexible pipe connection: In accordance with ASTM C923:
   1. Manufacturer: One of the following or approved equal:
      a. Press-Seal Gasket Corp.: PSX.
      b. A-Lok Premium.

G. Waterstop grouting rings:
   1. Manufacturer: One of the following or approved equal:
      a. NPC.
      b. Press-Seal Gasket Corp.

2.03 SOURCE QUALITY CONTROL

A. Mark pipe and fittings in accordance with ASTM D3034 and ASTM F679 as appropriate.

B. Mark the production control code on pipe and fittings.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
   1. Install piping in accordance with ASTM D2321 and manufacturer's published installation instructions.
   2. Provide plugs or caps for stubs and branch pipes left unconnected to laterals.
   3. Lubricate and assemble joints in accordance with the pipe manufacturer's published instructions.
   4. Trenching and backfill as specified in Section 02318 - Trenching.
   5. For open cut installations, install underground warning tape as specified in Section 15076 - Pipe Identification.
   6. Install pipe with tracer wire as specified in Section 15076 - Pipe Identification.

B. Connections to manholes:
   1. Make connections to manholes with a manhole gasket that prevents infiltration and exfiltration through the penetrations using 1 of the following methods:
      a. Precast bases with a flexible pipe connection:
         1) Pipe connectors shall be cast into the base.
            a) Pipe openings shall contain flexible gaskets.
         2) Follow manufacturer's recommendation for lubrication to prevent damage to the gasket during pipe insertion.
         3) When PSX gaskets are used, the take-up screws for the gasket clamps shall be positioned a minimum of 90 degrees apart.
         4) Install and grout in place per manufacturer's instructions.
      b. Cast in place or precast bases using grouting rings:
         1) Provide opening for connection large enough to allow subsequent grouting around the grouting ring.
         2) Grout around the pipe penetration manhole gasket and seal the opening.

3.02 FIELD QUALITY CONTROL

A. Test pipe as specified in Section 15956 - Piping Systems Testing.

B. Mandrel tests:
   1. Perform initial mandrel test:
      a. After cleaning and completion of other tests.
      b. After placement and compaction of backfill.
      c. Before construction of pavement or surfacing.
      d. Not sooner than 30 days after pipe installation.
      e. Not later than 60 days after installation.

2. Perform final verification mandrel test:
3. Not sooner than 30 days before the end of the warranty period.
4. Not later than 10 days before the end of the warranty period.
5. Consider the final verification mandrel test a warranty service, and include the costs related to final verification mandrel test in the Contract Price.
6. Utilize a 9 rod mandrel with minimum length equal to NPS and diameter as follows:

Nominal Pipe Size (NPS)	Mandrel Dia (in) (SDR 35/PS46)	Mandrel Dia (in) (SDR 26/PS 115)
6	5.45	5.33
8	7.28	7.11
10	9.08	8.87
12	10.79	10.55
15	13.20	12.90
18	16.13	15.76
21	19.00	18.57
24	21.36	20.87
27	24.06	23.51
30	27.68	27.04

7. Test procedure: Pull the mandrel through the line under test by 1 person, by hand, with reasonable effort, without the aid of mechanical equipment.
8. Failing test: Where the mandrel test is not successful, remove and replace the section of piping with the obstruction; test the piping again, including visible leaks test, pressure test with maximum leakage allowance, mandrel tests, and other specified tests:
    a. Correction of excessive deflection or obstructions by methods other than removal of the affected piping and replacement of the removed piping with new piping will not be accepted.

END OF SECTION

SECTION 15286

STAINLESS STEEL PIPE AND TUBING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Stainless steel piping and tubing.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
   2. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard.
   3. B16.11 - Forged Fittings, Socket-Welding and Threaded.
   4. B31.3 - Process Piping.
   5. B36.19 - Stainless Steel Pipe.

B. ASTM International (ASTM):
   1. A182 - Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
   2. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
   3. A194 - Standard Specification for Carbon and Alloy Steel Nuts and Bolts for High Pressure or High Temperature Service, or Both.
   4. A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
   5. A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
   6. A276 - Standard Specification for Stainless Steel Bars and Shapes.
   7. A312 - Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
   8. A351 - Standard Specification for Castings, Austenitic, for Pressure-Containing Parts.
   9. A380 - Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
   10. A403 - Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings.
   11. A743 - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
   12. A744 - Standard Specification for Castings, Iron-Chromium-Nickel, Corrosion Resistant, for Severe Service.

13. A774 - Standard Specification for As-Welded Wrought Austenitic Stainless Steel Fittings for General Corrosive Services at Low and Moderate Temperatures.
14. A778 - Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products.
15. A789 - Standard Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Tubing for General Service.
16. A790 - Standard Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe.
17. A928 - Standard Specification for Ferritic/Austenitic (Duplex) Stainless Steel Pipe Electric Fusion Welded with Addition of Filler Metal.
18. A967 - Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts.
19. B622 - Standard Specification for Seamless Nickel and Nickel-Cobalt Alloy Pipe and Tube.
20. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

C. American Welding Society (AWS):
   1. D1.6 - Structural Welding Code - Stainless Steel.

D. NSF International (NSF):
   1. Standard 61 - Drinking Water System Components - Health Effects.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15052 - Common Work Results for General Piping.

C. Shop Drawings:
   1. Detailed layout drawings:
      a. Dimensions and alignment of pipes.
      b. Location of valves, fittings, and appurtenances.
      c. Location of field joints.
      d. Location of pipe hangars and supports.
      e. Connections to equipment and structures.
      f. Location and details of shop welds.
   2. Thickness and dimensions of fittings and gaskets.
   3. Photographs, drawings, and descriptions of pipe, fittings, welding procedures, and pickling and passivating procedures.
   4. Material specifications for pipe, gaskets, fittings, and couplings.
   5. Data on joint types and components used in the system including grooved joint couplings and screwed joints.

D. Field welding references:
   1. Welder and weld operator qualification certificates and welding procedures.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Piping layout: Lay out and fabricate piping systems with piping sections as long as possible, while still allowing shipment, so that joints are minimized.
   1. Piping design indicated on the Drawings illustrates piping layout and configuration and does not indicate the location of every joint and flexible coupling that may be needed to connect piping sections fabricated in the shop.
   2. Where joints and couplings are specifically indicated on the Drawings, design and shop-fabricate piping sections utilizing the joint or coupling illustrated at the locations shown.
   3. Add joints and flexible couplings in a manner that achieves intent of maximizing size of individual piping sections.

B. Shop fabrication: Fabricate piping sections in the shop and pickle and passivate at point of manufacture.

C. Field assembly:
   1. Field welding is prohibited.

2.02 STAINLESS STEEL PIPE

A. General:
   1. Pipe sizes specified in the Specifications and indicated on the Drawings are nominal.

B. Wall thickness:
   1. As specified in Section 15052 - Common Work Results for General Piping.

C. Piping material and manufacturing:
   1. Comply with the requirements outlined in the following table:

Service	Stainless Steel Grade	Pipe Manufacturing Process
For low chloride water service with chloride concentrates below 200 parts per million and/or free chlorine less than 2 parts per million at ambient temperatures.		
Piping 3 inches in nominal diameter and larger	Type 304L stainless steel in accordance with ASTM A240	In accordance with ASTM A778
Piping less than 3 inches in nominal diameter	Type 304L stainless steel in accordance with ASTM A240	In accordance with ASTM A312
Digester Gas, Oxygen and Ozone Service, Membrane and Reverse Osmosis Filtration Systems with chloride concentrations less than 1,000 parts per million and/or free chlorine less than 4 parts per million at ambient temperatures.		
Piping 3 inches in nominal diameter and larger	Type 316L or LDX 2101 stainless steel in accordance with ASTM A240	Type 316L in accordance with ASTM A778
		Type LDX 2101 in accordance with ASTM A790

Service	Stainless Steel Grade	Pipe Manufacturing Process
Piping less than 3 inches in nominal diameter	Type 316L or LDX 2101 stainless steel in accordance with ASTM A240	Type 316L in accordance with ASTM A312
		Type LDX 2101 in accordance with ASTM A790
Brackish water Membrane and Reverse Osmosis Membrane Filtration Systems with chloride concentrations between 1,000 and 10,000 parts per million.		
All piping diameters	Austenitic or duplex grades of material with PREN greater than 33	In accordance with ASTM A312, ASTM A778, ASTM A790, or ASTM A928
Brackish and Seawater Membrane and Reverse Osmosis Membrane Filtration Systems with chloride concentrations between 10,000 to 20,000 parts per million		
All piping diameters	Austenitic and duplex grades of material with PREN greater than 40	In accordance with ASTM A312, ASTM A790 or ASTM A928
Brackish and Seawater Reverse Osmosis Concentrate (i.e., Brine) with chloride concentrations greater than 20,000 parts per million		
All piping diameters	Austenitic and duplex grades of material with PREN greater than 45	In accordance with ASTM A312, ASTM A778, ASTM A790, or ASTM A928
PREN: Pitting Resistance Equivalency Number PREN = Cr% + (3.3 x Mo%) + (16 x N%)		

UNS #	Alloy	Cr%	Mo%	N%	Other	PREN
N10276	C-276	14.5-16	15-17	-	W 3-4.5	64
S32750	Alloy 2507	24-26	6-8	0.24-0.32	-	48
S32654	654SMO	24-25	7-8	-	-	47
N06625	Alloy 625	20-23	8-10	-	Cb 3.25-4.15	46
N08366	AL6XN	20-22	6-7	-	-	40
N06985	Alloy G	21-23.5	5.5-7.5	-	-	39
S32760	Zeron 100	24-26	3-4	0.2-0.3	W 0.5-1.0	37
S32205	Alloy 2205	22-23	3-3.5	0.14-0.20	-	34
N08904	904L	19-23	4-5	-	-	32
S31726	317LNM	17-20	4-5	0.1-0.2	-	32
N08825	Alloy 825	19-23.5	2.5-3.5	-	-	27
S32101	LDX-2101	21.5	0.3	0.22	-	26
S31603	316L	16-18	2-3	-	-	23
S30403	304L	18-20	-	-	-	18

D. Fittings for piping less than 3 inches in diameter:
   1. Material: In accordance with ASTM A240 stainless steel, grade to match the pipe.
   2. Manufacturing standard: In accordance with ASTM A403, Class WP.
   3. Wall thickness and dimensions of fitting: In accordance with ASME B16.11 and as required for the schedule of pipe specified.
   4. End configuration: As needed to comply with specified type of joint.
   5. Forgings in accordance with ASTM A182, or barstock in accordance with ASTM A276. Match forging or barstock material to the piping materials.

E. Piping joints:
   1. Joints in piping 2 inches in diameter and smaller: grooved, welded,press fit, or screwed with Teflon™ tape thread lubricant, as specified in Section 15052 - Common Work Results for General Piping.

F. Gaskets:
   1. Aeration air service: As specified in Section 15052 - Common Work Results for General Piping.
   2. All other service applications: EPDM, nitrile, or other materials compatible with the process fluid.
      a. Drinking water applications: NSF Standard 61 compliant materials only.

G. Fabrication of pipe sections:
   1. Welding: Weld in accordance with ASME B31.3.
   2. Weld seams:
      a. Full penetration welds, free of oxidation, crevices, pits and cracks, and without undercuts.
      b. Provide weld crowns of 1/16 inch with tolerance of plus 1/16 inch and minus 1/32 inch.
      c. Where internal weld seams are not accessible, use gas tungsten-arc procedures with internal gas purge.
      d. Where internal weld seams are accessible, weld seams inside and outside using manual shielded metal-arc procedures.

H. Cleaning (pickling) and passivation:
   1. Following shop fabrication of pipe sections, straight spools, fittings, and other piping components, clean (pickle) and passivate fabricated pieces.
   2. Clean (pickle) and passivate in accordance with ASTM A380 or ASTM A967.
      a. If degreasing is required before cleaning to remove scale or iron oxide, cleaning (pickling) treatments with citric acid are permissible.
         1) However, these treatments must be followed by inorganic cleaners such as nitric acid/hydrofluoric acid.
      b. Passivation treatments with citric acid are not allowed.
   3. Finish requirements: Remove free iron, heat tint oxides, weld scale, and other impurities, and obtain a passive finished surface.

2.03 STAINLESS STEEL TUBING

A. Stainless steel tubing:
   1. Seamless tubing made of Type 316L stainless steel and in accordance with ASTM A269, wall thickness not less than 0.035 inch.

B. Fittings: Swage ferrule design:
   1. Components made of:
      a. Type 316 stainless steel.
   2. Double acting ferrule design, providing both a primary seal and a secondary bearing force.
   3. Flare type fittings are not acceptable.
   4. Manufacturers: One of the following, or equal:
      a. Crawford Fitting Co., Swagelok.
      b. Hoke, Gyrolok.
      c. Parker, CPI.

C. Valves for use with stainless steel tubing:
   1. Ball type valves with swage ends to match tubing diameter.
   2. Constructed from:
      a. Type 316 stainless steel with TFE seats.
   3. Manufacturers: The following or equal:
      a. Crawford Fitting Co., Swagelok.

2.04 SOURCE QUALITY CONTROL

A. Visually inspect pipe for welding defects such as crevices, pits, cracks, protrusions, and oxidation deposits.

B. Provide written certification that the pipe as supplied are in accordance with ASTM A778. Supplemental testing is not required.

C. Provide written certification that the fittings as supplied are in accordance with ASTM A774.
   1. Supplementary testing is not required.

D. Thoroughly clean any equipment before use in cleaning or fabrication of stainless steel.

E. Storage: Segregate location of stainless steel piping from fabrication of any other piping materials.

F. Shipment to site:
   1. Protect pipe ends by encapsulating in dense foam.
   2. Securely strap all elements to pallets with nylon straps. Use of metallic straps is prohibited.
   3. Cap ends of tube, piping, pipe spools, fittings, and valves with non-metallic plugs.
   4. Load pallets so no tube, piping, pipe spools, fittings, or valves bear the weight of pallets above.
   5. Notify Engineer when deliveries arrive so Engineer may inspect the shipping conditions.
   6. Engineer may reject material due to improper shipping methods or damage during shipment.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install piping in such a manner as not to impart strain to connected equipment.

B. Slope horizontal lines so that they can be drained completely.

C. Provide valve drains at low points in piping systems.

D. Install eccentric reducers where necessary to facilitate draining of piping system.

E. Provide access for inspection and flushing of piping systems to remove sediment, deposits, and debris.

3.02 FIELD ASSEMBLY OF SHOP-FABRICATED PIPING SECTIONS

A. Join shop-fabricated piping sections together using backing flanges, flexible couplings, flanged coupling adapters, grooved couplings, or flanges.

3.03 FIELD QUALITY CONTROL

A. Test piping to pressure and by method as specified in Section 15052 - Common Work Results for General Piping.
   1. If pressure testing is accomplished with water:
      a. Use only potable quality water.
      b. Piping: Thoroughly drained and dried or place immediately into service.

B. Visually inspect pipe for welding defects such as crevices, pits, cracks, protrusions, and oxidation deposits.

3.04 PROTECTION

A. Preserve appearance and finish of stainless steel piping by providing suitable protection during handling and installation and until final acceptance of the Work.
   1. Use handling methods and equipment to prevent damage to the coating, include the use of wide canvas slings and wide padded skids.
   2. Do not use bare cables, chains, hooks, metal bars, or narrow skids.
   3. Store stainless steel piping and fittings away from any other piping or metals. Storage in contact with ground or outside without projection from bad weather is prohibited.
   4. Protect stainless steel piping and fittings from carbon steel projections (when grinding carbon steel assemblies in proximity) and carbon steel contamination (do not contact stainless steel with carbon steel wire brush or other carbon steel tool).

END OF SECTION

SECTION 15320

CORROSION PROTECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Galvanic anode cathodic protection systems.
   2. Corrosion protection isolation.

1.02 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. B1.1 - Unified Inch Screw Threads (UN, UNR, and UNJ Thread Forms).
   2. B1.20.1 - Pipe Threads, General Purpose, Inch.

B. American Water Works Association (AWWA):
   1. C217 - Petrolatum and Petrolatum Wax Tape Coatings for the Exterior of Connections and Fittings for Steel Water Pipelines.

C. Association for Materials Protection and Performance (AMPP) (formerly NACE):
   1. SP0104 - The Use of Coupons for Cathodic Protection Monitoring Applications.
   2. SP0169 - Control of External Corrosion on Underground or Submerged Metallic Piping Systems.
   3. SP0286 - Electrical Isolation of Cathodically Protected Pipelines.
   4. TM0113 - Evaluating the Accuracy of Field-Grade Reference Electrodes.
   5. TM0497 - Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Piping Systems.

D. ASTM International (ASTM):
   1. B3 - Soft or Annealed Copper Wire.
   2. B843- Magnesium Alloy Anodes for Cathodic Protection.
   3. C33/C33M - Concrete Aggregates.
   4. C94 - Ready-Mixed Concrete.
   5. D1248 - Polyethylene Plastics Extrusion Materials for Conductor and Cable.
   6. F436 - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.
   7. G97 - Evaluation of Magnesium Sacrificial Anode Test Specimens for Underground Applications.
   8. G193 - Standard Terminology and Acronyms Relating to Corrosion.

E. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

F. NSF International (NSF):
   1. 61/600 - Drinking Water System Components - Health Effects.

G. Underwriters Laboratories, Inc. (UL).

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Bonded dielectric coating: Protective barrier coating system with high electrical resistivity bonded directly to underlying structure, acting to physically and electrically isolate metallic structure from electrolyte.
   2. Cathodic protection:
      a. Galvanic anode cathodic protection: Reduction of corrosion of metal in electrolyte by galvanically coupling to more anodic metal:
         1) Also referred to as sacrificial or passive protection.
      b. Impressed current cathodic protection: Reduction of corrosion of metal in electrolyte by supplying DC current through external power source and employing impressed current anode.
         1) Also referred to as active protection.
   3. Electrical isolation: The condition of being electrically separate from other metallic structures (including, but not limited to, piping, reinforcement, casings) and the environment as defined in NACE SP0169.
   4. Electrically continuous: A structure which has a linear electrical resistance equal to or less than the sum of the resistance of the structure plus the maximum allowable joint bond resistance for each bonded joint as specified in this Section.
   5. Electrolyte: Electrically conductive solution, such as soil or water:
      a. Terms for specific conductive solutions may be substituted for “electrolyte” in these definitions:
         1) Conductive solutions include:
            a) Water.
            b) Soil.
            c) Concrete.
            d) Other conductive liquid medium.
   6. Foreign structure: Buried structure not owned or operated by the Owner.
   7. Reference electrode: Electrode whose open circuit potential is constant under similar conditions of measurement; used for measuring relative potentials of other electrodes (e.g., protected structures):
      a. Sometimes referred to as reference half-cell.
      b. Copper-copper sulfate reference electrode (CSE) is often used.
   8. Structure-to-electrolyte potential:
      a. Potential of structure in electrolyte as compared to potential of reference electrode contacting same electrolyte.
      b. Static: Determined without any external current:
         1) For instance: Prior to energizing cathodic protection system, and with no galvanic couple, pH cell, interference currents, or like present.
         2) After such current source has been disconnected for an extended amount of time.
         3) Also referred to as native.
      c. Uncorrected: Determined with cathodic protection system energized and cathodic protection current flowing:
         1) Also referred to as protective potential (ON potential) and may contain significant IR drop error.

d. Polarized: Determined after cathodic protection system has been energized, but immediately after cathodic protection current is interrupted:
    1) Also referred to as “instant off” structure-to-electrolyte potential.
e. Polarization: Change from static or native potential as result of current flow across electrode/electrolyte interface:
    1) Also considered difference between polarized and native potentials.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and the Agreement and Contract RFP in Volumes 1 and 2.

B. Qualifications:
1. Cathodic protection technologist (NACE CP3) or cathodic protection specialist (NACE CP4) certifications for personnel conducting or directing testing and installation work.
    a. Include list of verifiable experience with corrosion monitoring and cathodic protection.

C. Product data:
1. Include as a minimum:
    a. Galvanic anodes.
    b. Test station.
    c. Shunts.
    d. Variable resistors (if necessary).
    e. Cables.
    f. Continuity bonds.
    g. Cable splice kits.
    h. Cable labels.
    i. Cable terminals.
    j. Conduit.
    k. Isolation flange kits.
    l. Backfill materials.
    m. Exothermic welding equipment (molds, cartridges, primer, caps).
    n. Dielectric coating systems for exothermic welds, metallurgical, and mechanical bonds.
    o. Wax tape.
    p. Corrosion coupon and holder.
    q. Permanent reference electrode.

D. Installation instructions:
1. Provide manufacturer’s installation instructions.

E. Quality Control Submittals:
1. Testing data:
    a. Indicated test equipment, test method, and criteria requirement used for each test.
    b. Placement of reference electrode during each test (if applicable).
    c. Magnesium anode in accordance with ASTM G97 current capacity test results supplied by the manufacturer.

d. Results of tests conducted.
    1) Locations of test stations, electrical continuity bonds, isolation.
        a) Use unique identifier and GPS coordinates.
        b) Include type of test station.
        c) List of cable identification in test stations.
    2) Isolation checks before and after backfill.
    3) Electrical continuity checks.
    4) Native potential readings at each test station (for commissioning only).
    5) ON and Instant-OFF potential readings at each test station.
    6) Anode potentials.
    7) Anode current output.
    8) Coupon potential readings.
    9) Permanent reference electrode checks.
    10) Indicate that exothermic welds passed the strike test with a peen hammer.
    11) Analysis and discussion of any deficiencies identified and recommendations to correct such deficiencies.

1.05 QUALITY ASSURANCE

A. Installation and testing conducted by or under direction of cathodic protection technologist (NACE CP3) or cathodic protection specialist (NACE CP4). Other qualified individuals may assist installation and testing personnel.

B. Materials, installation, and testing:
    1. Consistent with corrosion engineering principles and practices in accordance with NACE TM0497, NACE TM0113, NACE SP0104, NACE SP0286, and NACE SP0169.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2, and the manufacturer's instructions.

B. Materials:
    1. Store off the ground.
    2. Protect against weather, condensation, and mechanical damage.
    3. Handle with care.
    4. Do not sharply bend or tightly coil wires.
    5. Replace equipment or materials damaged in shipment or installation.
    6. Isolation flange kits:
        a. Do not store insulated flange gaskets at jobsites under direct sunlight or at temperatures exceeding 110 degrees Fahrenheit.
        b. Protect against mechanical damage.
    7. Anodes:
        a. Shipped in waterproof bags or wrapping and shall remain dry until installation.
        b. Coil the anode core cables and secure and package the anode in crates as required to prevent damage during shipping.

c. Ensure that the cable is not damaged and that the anodes or lead connection at the anode end are not physically stressed.
d. If anode or anode core cables are damaged, replace the complete anode.

8. Anode backfill:
   a. Bulk or bag shipping.
   b. Shipped and stored in a manner to keep it dry in order to minimize it from freezing solid.
   c. If bagged, provide and ship in waterproof bags.
   d. Bags shall be UV resistant or protected with tarps to protect from UV exposure.
9. Reference electrodes:
   a. Do not allow to freeze.
   b. Store in a protected area.
   c. Protect from UV exposure.
   d. Utilize before shelf life expires.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Electrical items shall be UL listed or labeled, where such listing or labeling is obtainable.

B. Provide cathodic protection systems for the following features as indicated on the Drawings:
   1. Campus Oaks:
      a. Ductile iron 16-inch diameter PW pipe.
      b. Ductile iron 10-inch diameter AF pipe.
   2. Misty Wood:
      a. Ductile iron 16-inch diameter PW pipe.
      b. Ductile iron 10-inch diameter AF pipe.

C. Provide wax tape corrosion protection system for ductile iron pipe smaller than 6-inch diameter.

D. Provide electrical isolation for the following features as indicated on the Drawings:
   1. Between cathodically protected and non-cathodically protected pipe.
   2. At every change in pipe material type (i.e., steel to ductile iron).
   3. Before and after entering/exiting buildings.
   4. Before entering storage tanks or wells.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide corrosion-engineering services to furnish, install, and test galvanic cathodic protection systems:
   1. Include electrical continuity bonds, isolation kits, test stations, and accessory equipment and features as directed in this Section, or otherwise indicated.

B. Galvanic cathodic protection systems shall provide a minimum service life of 20 years.

2.03 ANODES

A. Manufacturers: One of the following or equal:
   1. Anode Systems Company, Grand Junction, CO.
   2. Farwest Corrosion Control, Downey, CA.
   3. Galvotec, McAllen, TX.
   4. MESA, Denver, CO.

B. Magnesium anodes shall be GA-MG-17 HP 17D3, or equal:
   1. High potential, in accordance with ASTM B843, Grade M1C and conform to the following specifications:

TABLE 1 – HIGH POTENTIAL MAGNESIUM ANODE COMPOSITION	
Aluminum (Al)	0.010% maximum
Manganese (Mn)	0.50 to 1.30%
Copper (Cu)	0.02% maximum
Nickel (Ni)	0.001% maximum
Iron (Fe)	0.03% maximum
Silicon (Si)	0.05% maximum
Other Impurities - each	0.3% maximum
Magnesium (Mg)	Balance

   2. Open circuit potential of -1.7 volts or more negative in reference to a copper-copper sulfate reference electrode.
   3. Dimensions: Minimum bare weight of 17 pounds with an ingot length of 25.8 inches, height of 3.75 inches, and a width of 3.5 inches.
   4. Anode backfill:
      a. Furnish anodes prepackaged in special backfill material consisting of 75 percent ground hydrated gypsum, 20 percent powdered bentonite and 5 percent anhydrous sodium sulfate.
   5. Factory anode-to-cable connection: Exposed mild steel core, and exposed copper cable potted in epoxy.
   6. Silver-solder connection between anode cable and mild steel core.
   7. Anode core cable:
      a. Minimum of 50 feet in length or sufficient length to reach test station without being spliced, whichever is greater.
      b. In accordance with Table 2 of this Section.

2.04 TEST STATIONS

A. Manufacturers: One of the following or equal:
   1. Cott Manufacturing, Pittsburg, PA.
   2. Farwest Corrosion Control, Downey, CA.
   3. Gerome Electric Supply Co, Uniontown, PA.
   4. Tinker & Rasor, New Braunfels, TX.

B. Test stations:
   1. Specifically constructed for cathodic protection system installations and intended environment.
   2. Protected as required for permanency.
   3. Provide terminals and associated hardware for the number and size of cables and required accessories:
      a. Provide a minimum of 7 terminals.
   4. Terminal lugs shall be high conductivity copper alloy manufactured specifically for making electrical connections, such as:
      a. Burndy Type KLU or KA4C lugs.
      b. Ilsco Type SLU, SLUH, or CP-4 lugs.
   5. Polycarbonate, above ground type:
      a. Big Fink, ZapGard, Model T-3, or other.
   6. Flush in-ground type:
      a. Products:
         1) Brooks Model 3RT.
         2) Model G03.
      b. Details:
         1) As indicated on the Drawings.
         2) Include test station inside of box.

2.05 CABLES

A. Manufacturers: One of the following or equal:
   1. Corpro Inc., Chicago, IL.
   2. Farwest Corrosion Control, Downey, CA.
   3. MESA Products, Tulsa, OK.

B. In accordance with ASTM B3.

C. Manufactured not more than 24 months prior to notice to proceed.

D. Single-conductor:
   1. Stranded, plain, annealed copper cable.

E. Insulation:
   1. Rated for 600 volts and direct immersion or burial.
   2. In accordance with ASTM D1248.
   3. Insulation as specified in Table 2.

F. Suitable lengths to permit installation from terminus to terminus (e.g., structure-to-test station or structure-to-structure) free of splices and without stress, unless otherwise specified.

G. Cable gauges:
   1. Sizes are as specified in Table 2, unless otherwise specified.

TABLE 2 - CABLE DETAILS			
Cable Type	**Cable Size (AWG)**	**Insulation**	**Color Code**
Galvanic anode cable/core cable	#10 or larger	HMWPE	Red
Protected structure cable	#10 or larger	HMWPE	Black
Unprotected structure cable	#10 or larger	HMWPE	White
Electrical continuity bond cable	See TABLE 3	HMWPE	Black

2.06 CONTINUITY JOINT BONDS FOR PIPE

A. Manufacturers: One of the following or equal:
   1. Erico International Corp, Solon, OH.
   2. Hoff Company, Centennial, CO.

B. Connections on a joint bond shall be welded or soldered. Mechanical or compression type connections are not permitted.

C. Bonds and welds shall exhibit sufficient strength and flexibility to allow thermal movement of the pipe after pipe backfill without cracking or breakage.

D. Make bond connections to pipe with an Engineer approved welding method.

E. Insulated or coated copper with exposed copper field coated to prevent galvanic corrosion of the pipe.

F. Joint bond cable size as indicated in Table 3.

2.07 CONDUIT

A. Rigid hot dipped galvanized steel conduit and fittings.
   1. Threaded at one end (minimum).
   2. Length as required for installation requirements.
   3. Diameter based on cable needs: 2-inch minimum.
   4. For cables installed above ground.

B. Schedule 40 PVC conduit and fittings.
   1. Length as required for installation requirements.
   2. Diameter based on cable needs: 2-inch minimum.
   3. For cables installed between buried metalwork.

2.08 TEST STATION MOUNTING POST

A. As indicated on the Drawings.

2.09 STRUCTURE CONNECTIONS

A. Manufacturers: One of the following or equal:
   1. Continental Industries, Inc. (Thermo-Weld), Tulsa, OK.
   2. Erico Products Inc. (Cadweld), Cleveland, OH.

B. Exothermic metallurgical welds - Cable or strap to structure connections.
   1. Thermite weld materials consist of wire sleeves, welders, and weld cartridges according to the weld manufacturer's recommendations.
   2. Exothermic metallurgical weld system designed for:
      a. Cathodic protection systems.
      b. Metallic substrate material.
      c. Weld orientation.
      d. For cable or strap, as appropriate.
   3. Exothermic reaction must produce molten copper, which produces a permanent, high conductivity connection.
   4. Exothermic welds:
      a. Use a special alloy to provide minimum heat effect on substrate material.
      b. Shall have a current carrying capacity equal or better than that of the conductor.

2.10 DIELECTRIC COATING FOR STRUCTURE CONNECTIONS

A. Specifically designed for cathodic protection systems.

B. Applied with primer coat, as needed.

C. Suitable for intended environment.

D. Coat exposed weld nuggets, exposed cable, or structure metal using mastic coating.
   1. In accordance with NSF 61 if subject to immersion in potable water.

E. Manufacturers: One of the following or equal:
   1. Carboline, St. Louis, MO.
   2. Royston Laboratories, Pittsburgh, PA.

F. Product:
   1. Bitumastic 50.
   2. Roskote A51.
   3. Royston Handy Cap IP.

2.11 ISOLATION FLANGE KITS

A. Complete assembly shall have an AMSE rating equal to or higher than that of the joint and pipeline.

B. Materials and pre-assembled isolating flange kits shall be suitable for the intended chemical exposure, operating temperatures, and operating pressures.

C. Manufacturers: One of the following or equal:
   1. Advanced Products and Systems, Scott, LA.
   2. Central Plastics Co., Shawnee, OK.
   3. GPT Industries, Houston, Texas.

D. Flange kit:
   1. Full-face insulating gasket, an insulating sleeve for each bolt, insulating washers, and steel washers:
      a. Pipe diameters up to 36 inches: 1 insulating washer and 1 steel washer on each side of flange for each bolt.
      b. Pipe diameters larger than 36 inches: Insulating washers shall be sandwiched between a pair of matching steel washers on each side of the flange for each bolt.
   2. Isolating gaskets:
      a. Gasket retainers shall be full face, Type E, NEMA G-10 glass reinforced epoxy retainers with an ethylene propylene diene monomer (EPDM) rubber rectangular cross section O-ring seal.
      b. Minimum total gasket thickness shall not be less than 1/8 inch.
      c. Gasket shall have the same outside diameter as the pipe flange.
         1) For steel pipe, the gasket's inside diameter shall be equal to the inside diameter of the pipe's steel cylinder.
         2) At valve to pipe connections where the inside diameters are not equal, the gasket's inside diameter shall be equal to the smaller of the 2 inside diameters.
      d. Certified in accordance with NSF 61.
      e. Dielectric strength shall be not less than 550 volts per mil, and compressive strength shall be not less than 50,000 psi.
      f. Installed within 6 months of date of manufacture.
      g. Product:
         1) Linebacker 61 insulating gasket, or equal.
   3. Insulating sleeves:
      a. Full-length one-piece Mylar or fiberglass reinforced epoxy (NEMA G-10 grade).
      b. Dielectric strength shall be not less than 400 volts per mil.
      c. Length of the insulating sleeves shall provide an air gap between the end of the insulating sleeve and inside surface of the stud bolt nut with a tolerance of 1/32-inch minimum and 1/8-inch maximum.
         1) Adjusted for the actual thickness of the steel washers and insulating washer thickness.
   4. Insulating washers:
      a. Fiberglass reinforced epoxy (NEMA G-10 grade).
      b. Minimum thickness of 1/8 inch.
      c. Dielectric strength shall not be less than 550 volts per mil, and compressive strength shall not be less than 50,000 psi.
      d. Inside diameter shall be sized to fit over the insulating sleeve's outside diameter.
   5. Steel washer:
      a. In accordance with ASTM F436.
      b. Inside and outside diameter shall match those of the insulating washers.

c. Able to freely rotate around the insulating sleeve.
d. Attention must be paid to the fit between the steel washers and the insulating sleeve to avoid twisting and cracking of the sleeves when the flange bolts are torqued.

2.12 WAX TAPE COATING SYSTEM FOR BURIED ISOLATING FLANGES AND DUCTILE IRON PIPE SMALLER THAN 6-INCH DIAMETER

A. General:
1. Apply a wax tape coating system in accordance with AWWA C217.
2. Consists of 3 parts: Surface primer, wax tape, and outer covering.
a. All 3 parts shall be the product of the same manufacturer.

B. Primer:
1. Shall be a blend of petrolatum, plasticizer, and corrosion inhibitors having a paste like consistency.
2. Pour point of 100 degrees Fahrenheit to 110 degrees Fahrenheit and a flash point of 350 degrees Fahrenheit.
3. Trenton Wax-Tape Primer® or approved equal.

C. Wax tape:
1. Consists of a synthetic-fiber felt, saturated with a blend of high melt microcrystalline wax, solvents, and corrosion inhibitors.
2. Saturant pour point between 125 degrees Fahrenheit and 130 degrees Fahrenheit.
3. Dielectric strength equal to a minimum of 100 volts per mil.
4. Thickness shall be 50 mils to 90 mils in 6-inch wide rolls.
5. Trenton No. 1 Wax-Tape or approved equal.

D. Outer covering:
1. Consists of 2 layers of a plastic wrapper at total of one 150-gauge or three 50-gauge wound together as a single sheet.
2. Plastic wrapper material a clear polyvinylidene chloride, high cling membranes wound together as a single sheet.
3. Trenton Poly-Ply™ or approved equal.

2.13 CONCRETE FOOTINGS

A. ASTM C94, Ready-Mixed Concrete.

2.14 SAND BACKFILL

A. ASTM C33, fine aggregate.

2.15 PERMANENT REFERENCE ELECTRODES

A. Manufacturers: One of the following or equal:
1. Corrpro Inc., Chicago, IL.
2. GMC Electrical, Inc, Corona, CA.

B. Material:
   1. Permanent type, copper-copper sulfate reference electrode.
   2. Suitable for intended environment.
   3. Minimum design life of 25 years.

C. Cable:
   1. As specified in Table 2 of this Section.
   2. Length of 25 feet, or as required for splice free installation.

D. Backfill:
   1. As recommended by the electrode manufacturer.

2.16 CORROSION COUPONS

A. Manufacturers: One of the following or equal:
   1. Cott Manufacturing, Wexford, PA.
   2. M.C. Miller, Sebastian, FL.

B. Steel coupon:
   1. EDI Model UI-MS, board or adjustable mount as required, with activating magnet.
   2. Exposed steel area to be 0.01 square feet.
   3. Provide with 2 cables, sized as specified in Table 2 of this Section.

C. Coupon holder:
   1. PVC fitting made to fit onto a 2-inch PVC pipe.
   2. Model COU175.

D. Switch:
   1. Magnetic reed switch, normally closed, with connecting leads and terminals or equivalent.

2.17 MISCELLANEOUS MATERIALS

A. Test station wire terminations:
   1. One-piece, tin-plated crimp on ring tongue connector.

B. Compression connectors:
   1. For in-line and tap splices shall be “C” taps made of conductive wrought copper.
   2. Sized to fit the wires being spliced.
   3. Applied with the crimp tool and die recommended by the manufacturer for the wire and tap connector size.
   4. Burndy Type “YC”, or equal.

C. Electrical tape:
   1. Linerless rubber high-voltage splicing tape and vinyl electrical tape suitable for moist and wet environments.
   2. Scotch 130C and Scotch 88.

D. Warning tape:
    1. Polyethylene for anode cables:
        a. Minimum 3-inches wide.
        b. Red or yellow with black lettering.
        c. Suitable for direct burial.
    2. Print full length of tape with the following:
        a. “Caution - Cathodic Protection Cable Buried Below”.

PART 3 EXECUTION

3.01 GENERAL

A. Electrical isolation:
    1. Structures to be cathodically protected shall be electrically isolated from other extraneous metal (e.g., casings, foreign structures, and rebar in concrete).

B. Dielectric materials, other than designated non-metallic carrier pipe, that might cause shielding of cathodic protection current (e.g., plastic debris) shall not be left around structures, including areas within excavation sites.

3.02 INSTALLATION

A. Galvanic anodes:
    1. Install anodes in horizontal orientation to surface grade and parallel to pipe longitudinal axis.
        a. Anode details:
            1) Campus Oaks:
                a) Ductile iron 16-inch diameter PW pipe.
                    (1) Number of anodes: 3.
                    (2) Anode separation distance: 23 feet.
                b) Ductile iron 10-inch diameter AF pipe.
                    (1) Number of anodes: 3.
                    (2) Anode separation distance: 33 feet.
            2) Misty Wood:
                a) Ductile iron 16-inch diameter PW pipe.
                    (1) Number of anodes: 6.
                    (2) Anode separation distance: 38 feet.
                b) Ductile iron 10-inch diameter AF pipe.
                    (1) Number of anodes: 3.
                    (2) Anode separation distance: 33 feet.
        b. Minimum 1 anode length from non-metallic structures.
        c. Depth:
            1) Minimum 5 feet underneath pipe.
    2. Remove outer water-resistant covering (plastic or paper bag) on pre-packaged anodes before installation. Do not damage wettable covering containing backfill and magnesium.
    3. Do not support anodes by their cables.
    4. Do not wet pre-packaged anodes until they are in the ground, surrounded with compacted earth, and covered by at least 1 foot of compacted backfill.

5. Do not connect anodes to structures at test stations; energize systems only at time of testing.
6. Connect individual galvanic anodes to structures through individual calibrated 0.01 ohm shunts within the test station for current measurement (1 shunt for each anode).
    a. As indicated on the Drawings.
7. Connect individual anodes to structure through variable resistors within test station to allow for adjusting output current from individual anodes (if necessary).
    a. As indicated on the Drawings.

B. Test stations:
    1. General:
        a. Mount and wire the test stations as indicated on the Drawings.
        b. Uniquely label each test station.
        c. Cable sizes as specified in Table 2 of this Section.
    2. Location:
        a. Readily accessible.
        b. Not likely to be damaged or interfere with personnel and/or equipment (e.g., adjacent to above ground structures).
        c. As close to the structure connection as possible.
        d. Cathodic protection test stations:
            1) Locations:
                a) As indicated on the Drawings.
        e. Isolation test stations:
            1) As indicated on the Drawings.
            2) Locations:
                a) Each isolation joint flange kit.
            3) Where multiple isolation flanges are connected in electrically parallel configurations, only 1 isolation test station is required for each group.
            4) Provide a pair of cables exothermically welded to the pipe on each side of the insulator, 2 cables on protected side and 2 cables on unprotected side, for a total of 4 cables per isolation.
            5) Where isolation and cathodic protection test stations are next to each other, combine into one test station.

C. Cable:
    1. Inspect for insulation defects prior to backfilling:
        a. Replace cable if insulation is damaged.
    2. Install without kinks, stresses, and/or splices.
    3. Identify origin of cables terminating in an enclosure:
        a. Cable identification as to distinct originating structure or anode as indicated on the Drawings.
        b. Printed letters on shrinkable label attached to cables clearly visible within the enclosure.
        c. Encase printed labels in clear heat shrink tubing.
    4. Connect to test station with crimped, ring-tongue connectors.
    5. Size of cable as specified in Table 2 of this Section.
    6. Run cable through PVC conduit underground and rigid galvanized conduit once cable emerges from ground, as indicated on the Drawings.

7. Structure cables:
    a. 2 cables per structure at each test station.
    b. Connect cables to structures by exothermic metallurgical welding as indicated on the Drawings.
        1) Make exothermic metallurgical bond in accordance with the bonding supply manufacturer's instructions.
        2) Coat bare copper, weld nugget, and ferrous materials at metallurgical bonds with an approved dielectric metallurgical bond coating.
            a) Allow dielectric material to cure before repair of damaged structure coating or lining.
8. Anode cables (also called anode core cable):
    a. Installed free of splices.
    b. Terminate at the test station, as indicated on the Drawings, or connect to the buried metallic structure by exothermic metallurgical welding as indicated on the Drawings.
        1) Follow the same procedure indicated for structure cables above.
9. Electrical continuity joint bonds:
    a. Number and length of bond cable per TABLE 3.
    b. Connect cables or straps to structure by exothermic metallurgical welding as indicated on the Drawings.
        1) Follow the same procedure indicated for structure cables above.
        2) For straps, follow manufacturer instructions.

D. Isolation:
1. Install to electrically isolate the structure from other metallic structures or dissimilar metals.
2. Align and install isolation joints according to the manufacturer's recommendations to avoid damaging materials.
3. Test before and after backfill to ensure isolation is satisfactory.

E. Electrical continuity joint bonds:
1. Provide metallurgical bonds at mechanical type joints (e.g., non-welded joints) between ferrous parts included in a particular cathodic protection system as specified in this Section, or as necessary to ensure electrical continuity.
2. Minimum number, type, and size of bond per bond joint is shown in Table 3.
3. Bond cable installed with sufficient slack to prevent stress or tugging:
    a. Allow for minimum 1/2-inch joint movement.
4. Bond Details:
    a. Ductile Iron pipe joints:
        1) Joint bond size and number per joint, based on Table 3.

TABLE 3 -BOND DETAILS

Bond Location	Bond Type	BOND LENGTH	Number of Bonds
16-inch Ductile Iron Pipe			
Cable	#6 AWG	18"- 24"	2
10-inch Ductile Iron Pipe			
Cable	#6 AWG	18"- 24"	2

F. Reference electrode:
   1. Remove plastic or paper wrapper and place within the pipeline trench excavation 6 inches from pipe in a vertical position.
   2. Activate in accordance with the manufacturer's written instructions.
   3. Backfill hole with select native material in 6-inch layers and hand tamp each layer around reference electrode.
   4. Exercise care not to strike reference cell or lead wire with tamper.
   5. Terminate reference electrode cable in test station, free of splices.

G. Coupon:
   1. Place within 6 inches of pipe and reference electrode.
   2. Terminate each cable in test station, free of splices.
   3. Connect coupon to structure with magnetic switch as indicated on the Drawings.

3.03 FIELD QUALITY CONTROL

A. Equipment:
   1. Portable multimeter: Fluke Model 179 or equivalent. Minimum input impedance of 10 megohms and capable of measuring DC voltages between 0.1 millivolt to 100 volts.
   2. Portable CSE reference electrode.
   3. Insulation checker: M.C. Miller Model MIC or equivalent.
   4. Low resistance ohmmeter: Megger Model DLRO10 or equivalent, capable of 10 ampere test current with resolution of 0.1 micro-ohms.

B. Structure-to-soil potential:
   1. Verify that each test station is properly labeled.
      a. Unique identifier and GPS coordinates.
      b. Cable identification in test stations.
   2. Conduct testing in least 2 testing cycles:
      a. First testing cycle:
         1) Prior to energizing system:
            a) Test structure electrical continuity.
               (1) Determine voltage difference unchanged between structure cables.
               (2) Test station integrity.
                  (a) Determine voltage difference between cables within each test station.
            b) Measure native structure-to-soil potentials of coupons.
               (1) At each individual test station location.
               (2) Place portable reference electrode as close to buried metalwork as possible for structure-to-soil potential measurements.
               (3) Saturate ground with water to reduce reference cell contact resistance.
         2) After the system is energized:
            a) Determine protective (uncorrected) and polarized structure-to-soil potentials of coupons in accordance with NACE TM0497.
               (1) At each individual test station location.

(2) Place portable reference electrode as close to buried metalwork as possible for structure-to-soil potential measurements.
(3) Saturate ground with water to reduce reference cell contact resistance.

b) Determine current output of each individual anode in test stations.

c) Adjust variable resistor setting for each anode to obtain required balance of current output (if variable resistors are required).

b. Second and subsequent testing cycles:
1) Time between testing cycles shall be 30 to 60 days.
2) Cathodic protection system shall not be adjusted between testing cycles.
3) Repeat testing required after energizing the system during the first testing cycle.
4) If data indicates that cathodic protection system requires adjustment to meet requirements, adjust cathodic protection system and conduct subsequent testing cycles within 30 to 60 days.

c. Troubleshoot and correct problems.

3. Submit final data after last testing cycle when performance criteria have been met and no further adjustments are needed.

C. Electrical continuity:
1. Test completed continuity bonds prior to and after backfilling.
2. Quality control test shall be performed on bonds after installation but before backfilling or closing the structure.
3. Repair any damaged pipe coating as specified.

D. Isolation:
1. Check isolation flanges, couplings, sleeves, and washers to ensure adequate electrical isolation prior to backfilling or closing the structure using a portable multimeter, ohmmeter, or isolation checker in accordance with the manufacturer's written instructions.
2. Verify isolation of bolts used with isolation kits.
3. Use isolation checker in accordance with the manufacturer's written instructions, or other approved method.
4. Conduct additional isolation testing as needed to ensure that isolation is not electrically shorted to other equipment or concrete reinforcement.
5. Replace damaged or defective isolation identified during testing.

END OF SECTION

SECTION 15400

PLUMBING SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for materials and installation of plumbing systems.

1.02 REFERENCES

A. Abbreviations:
   1. gpf - gallons per flush.
   2. gph - gallons per hour.
   3. gpm - gallons per minute.
   4. psig - pounds per square inch, gauge.

B. Standards:
   1. American Concrete Institute (ACI).
   2. American Gas Association (AGA).
   3. American Society of Mechanical Engineers (ASME).
      a. B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300.
      b. B16.12 - Cast Iron Threaded Drainage Fittings.
   4. American Society of Sanitary Engineering (ASSE):
      a. 1070 - Performance Requirements for Water Temperature Limiting Devices.
   5. American Water Works Association (AWWA):
      a. C511 - Reduced-Pressure Principle Backflow Prevention.
      b. C700 - Standard for Cold-Water Meters—Displacement Type, Bronze Main Case.
      c. C702 - Standard for Cold-Water Meters—Compound Type.
   6. Americans with Disabilities Act (ADA).
   7. ASTM International (ASTM):
      a. A48 - Standard Specification for Gray Iron Castings.
      b. A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
      c. A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
      d. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
      e. A888 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
      f. B32 - Standard Specification for Solder Metal.
      g. B88 - Standard Specification for Seamless Copper Water Tube.
      h. B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube.
      i. B828 - Standard Specification for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings.

j. C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
k. C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
l. C547 - Standard Specification for Mineral Fiber Pipe Insulation.
m. C552 - Standard Specification for Cellular Glass Thermal Insulation.
n. C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
o. C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
p. D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
q. D297 - Standard Test Methods for Rubber Products—Chemical Analysis.
r. D395 - Standard Test Methods for Rubber Property—Compression Set.
s. D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
t. D638 - Standard Test Method for Tensile Properties of Plastics.
u. D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
v. D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
w. D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
x. D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
y. D2240 - Standard Test Method for Rubber Property—Durometer Hardness.
z. D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
aa. D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
bb. D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
cc. D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
dd. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
ee. E96 - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.
ff. F438 - Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40.
gg. F439 - Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.
hh. F441 - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.
ii. F493 - Standard Specification for Solvent Cements for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.
jj. F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
kk. F594 - Standard Specification for Stainless Steel Nuts.

ll. F645 - Standard Guide for Selection, Design, and Installation of Thermoplastic Water- Pressure Piping Systems.

8. California Code of Regulations (CCR):
   a. Title 24 - Building Standard Code.
9. International Association of Plumbing and Mechanical Officials (IAPMO):
   a. IS 03 - Copper plumbing Tube Pipe and Fittings.
10. National Electrical Manufacturers Association (NEMA):
   a. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
11. Plumbing and Drainage Institute (PDI):
   a. WH-201 - Water Hammer Arresters Standard.
12. Underwriters Laboratories, Inc. (UL):
   a. 94 - Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
13. United States Environment Protection Agency (EPA): Water Sense.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Buried: Piping that is installed below buildings, foundations, or finish grade, either in soil or encased in concrete in soil.
   2. Exterior: Piping that is installed outside a building or within a pipe trench or tunnel.
   3. Flame spread and smoke density: Burning characteristics determined in accordance with ASTM E84.
   4. Interior: Piping that is installed inside a building.
   5. K factor: Thermal conductivity determined in accordance with ASTM C177 or ASTM C518.
   6. Mineral fiber: Fibers manufactured of glass, rock, or slag processed from a molten state, with or without a binder.
   7. Water vapor permeance: Water vapor transmission determined in accordance with ASTM E96 and expressed in units of perm-inch.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Manufacturer’s instructions.

C. Shop Drawings:
   1. System layout, mechanical, electrical power, and control diagrams.
   2. Nameplate information.
   3. Materials.
   4. Coatings and linings.
   5. Rough-in drawings.
   6. Supports, vibration isolators, and details.
   7. Primary and ancillary equipment.
   8. Proposed cutting and patching.
   9. Maximum recommended equipment vibration levels and field-testing method.
   10. Copy of factory test results.

D. Certificates: As specified in the Agreement and Contract RFP in Volumes 1 and 2:
   1. American Backflow Prevention Association for backflow prevention assembly.
   2. National Science Foundation for products when specified.

E. Field testing documentation.

F. Warranties.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Roof coordination:
   1. Provide plumbing equipment roof penetrations information required in the preparation of roofing drawings, including, but not limited to:
      a. Location.
      b. Diameter.
      c. Configuration of penetration and the surround.
   2. Provide roof mounted plumbing equipment information required in the preparation of roofing drawings, including, but not limited to:
      a. Location.
      b. Size.
      c. Weight.
      d. Anchoring and support details.

1.06 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Devices and fixtures shall be in accordance with CCR Title 24.

2.02 PLUMBING FIXTURES

A. General:
   1. ADA compliant unless specifically stated otherwise in the fixture requirements.
   2. Exposed fixture fittings and piping:
      a. Polished chrome.
   3. Stops:
      a. Fixtures, except showers, shall have stops at the fixtures' service.
      b. Stops for laboratory equipment, and for other equipment or fixtures for which stops have not been otherwise specified in this Section, shall be chrome-plated straight pattern compression stops or chrome-plated angle pattern compression stops.

4. Faucets:
    a. Motion sensor activated unless manual levers are specially stated in the fixture requirements.
        1) Provide 6 V DC transformers using 115 V power or 6 V DC CR-P2 lithium battery (or similar) when Drawings do not show 115 V connection.
        2) Manual levers: Indexed.
    b. Brass construction, 1/4 turn ceramic disc valve cartridge.
    c. Vacuum breaker.
    d. Integral check valve.
    e. Flow rates specified for an inlet pressure of 60 psig.
5. P-traps:
    a. Cast-iron, adjustable with metal strainer, gaskets, and cleanout plug.
6. Escutcheons to be used for at wall, floor, and ceiling penetrations:
    a. Manufacturers: One of the following or equal:
        1) Keeney.
        2) Plumbing Products.
    b. IAPMO listed.
    c. Material: Chrome-plated steel plate.
    d. Hinged, spring loaded, and sized appropriately for the piping.
7. Manufacturer to supply necessary mounting hardware and installation fittings suitable to complete the installation, including, but not limited to:
    a. Faucets.
    b. Brass braided hoses.
    c. Carriers.
    d. P-traps.
    e. Toilet seats.
8. Drawings indicate fixtures using designated style identifiers.

B. Service sinks:
1. General:
    a. ADA compliance not required.
    b. Sink manufacturer to supply faucet, mounting hardware, and installation fittings.
    c. Faucet:
        1) Exposed yoke, wall- mounted, top braced.
        2) Rigid spout with 3/4-inch threaded hose end and bucket hook.
        3) Deliver not more than 15 gpm.
        4) Manual lever.
    d. Center drains with strainer.
    e. Provide 5-foot hose with wall hook and rigid end spout at each service sink.
2. Type SS-1: Enamel:
    a. Manufacturers: One of the following or equal:
        1) American Standard, Akron.
        2) Kohler Co.
    b. Wall-mounted.
    c. Bowl:
        1) Cast-iron with acid-resisting enamel interior.
        2) Overall nominal: 24 inches wide by 12 inches deep.
        3) Stainless steel rim guard.

d. Backsplash:
1) 9 inch high, plain.

3. Type SS-3: Free standing:
a. Manufacturers: One of the following or equal:
1) American Standard.
2) E.L. Mustee, 19F Utilatub.
b. Free standing.
c. Bowl:
1) One-piece molded thermoplastic.
2) 13-inch tub with 18 gallon capacity.
d. Dual lever, 6-inch swing spout faucet.
1) With aerator and hose end.
2) Not more than 15 gpm.

C. Water closets and urinals:
1. General:
a. Manufacturers: One of the following or equal:
1) American Standard.
2) Kohler.
b. EPA WaterSense labeled.
2. Style WC-1: Water closet, flush valve:
a. Bowl:
1) Wall mounted.
2) Elongated white vitreous china.
3) Exposed top stud.
b. Flush valve:
1) Manual:
a) Self-cleaning brass piston.
b) Backpressure vacuum breaker.
c) Non-hold-open type handle.
d) Flush volume adjustable.

D. Lavatories:
1. General:
a. Bowl material:
1) White vitreous china.
b. Faucet:
1) Battery operated:
a) Open time adjustable.
2) Flow rate: 0.5 gpm maximum.
2. Style LAV-1:
a. Manufacturers: One of the following or equal:
1) American Standard.
2) Kohler, Pinoir.
b. Wall mounted.
c. Bowl:
1) 22 inch by 18 inch.

2.03 PLUMBING AND DRAINAGE PRODUCTS

A. Water hammer arrestors:
   1. Manufacturers: One of the following or equal:
      a. Jay R. Smith.
      b. Josam.
      c. Zurn.
   2. Determine manufacturer model:
      a. Based on Table 1 in accordance with PDI WH-201.
      b. Working pressure: 125 psig.
      c. Static pressure: 250 psig.
   3. Temperature: 300 degrees Fahrenheit.
   4. Provide water hammer arrestors on each fixture supply line branch.
   5. Casing and bellows.
      a. Material: Type 304 stainless steel.
      b. Welded bellows.
   6. Hermetically sealed air cushion.

B. Type HB-1: Hose bib stations:
   1. Manufacturers: One of the following or equal:
      a. Flexon Pro Series.
      b. Gilmore Group.
   2. Hose bib: Size and mounting requirements as indicated on the Drawings.
   3. Hose rack: Type and installation as indicated on the Drawings.
   4. Hose:
      a. Length: 75 feet.
      b. Size: 1 inch.
      c. Commercial/industrial grade rubber hose.
   5. Hose nozzle:
      a. Spray: 7-pattern select-a-spray with vinyl grip.
      b. Hold-open clip for continuous spraying.
      c. Material: Rust resistant stainless steel spring.
      d. Lifetime leak proof seal.

C. Fixed air gaps:
   1. Manufacturers: One of the following or equal:
      a. Josam.
      b. Zurn, Z1025.
   2. Provide and size as indicated on the Drawings.
   3. Coated cast iron.
   4. Slip joint inlet and no-hub outlet.
   5. Threaded outlets.

D. Trap primers:
   1. Electronic trap primers:
      a. Manufacturers: One of the following or equal:
         1) Precision Plumbing Products PTS.
         2) Sioux Chief.
      b. Provide electronic trap primer and distribution unit as indicated on the Drawings.

c. Design:
1) Supply a minimum of 2 ounces of water at 20 pounds per square inch gauge at setting of 10 seconds every 24 hours.
2) Manifold: Type L copper tubing in accordance with ASTM B88.
3) Backflow prevention.
4) Power: 120 volts.
5) Pre-assembled in a surface mounted cabinet.
a) Provide enclosure as specified in Section 16050 - Common Work Results for Electrical.

E. Cleanouts:
1. Cleanouts:
a. Cast-iron ferrule, countersunk plug, gastight and watertight seal.
b. Adjustable cleanout head extension.
c. Nickel-bronze top and securing screw.
d. Type FCO-1: Floor cleanouts, finished floors:
1) Manufacturers: One of the following or equal:
a) Josam Co.
b) Zurn Ind., Inc., ZN1400.
2) For finished floors.
3) Traffic: Heavy wheel/vehicular traffic.
e. Type FCO-2: Floor cleanouts, unfinished floors:
1) Manufacturers: One of the following or equal:
a) Josam Co., 55000.
b) Zurn Ind., Inc.
2) For unfinished floors.
f. Type FCO-3: Floor cleanout, exterior, in asphalt or ground areas:
1) Manufacturers: One of the following or equal:
a) Josam Co., 55000.
b) Zurn Ind., Inc.
2) Rated for outdoor use.

F. Drains:
1. Type, shape, and size as indicated on the Drawings with connections suitable for the piping system.
a. Provide drains of one type from the same manufacturer.
2. Type FD-1: Floor drain, finished floors, pedestrian traffic:
a. Manufacturers: One of the following or equal:
1) Josam, 30000-A.
2) Zurn.
b. Round, adjustable strainer head, floor level grate.
c. Body material: Coated cast iron.
d. Strainer:
1) Material: Nickel bronze.
2) Size:
a) 6 inch diameter for 3-inch drain.
b) 8 inch diameter for 4-inch drain.
3. Type FD-2: Floor drain, finished floors, heavy wheel traffic:
a. Manufacturers: One of the following or equal:
1) Josam.
2) Zurn Z521.

b. Adjustable extension frame with heavy-duty tractor grate.
1) Size: 12 inch diameter.
c. Material: Resin-coated cast iron top.
d. No-hub outlet.
e. Seepage pan with membrane flashing clamp.
4. Type TD-1: Trench drain:
a. Manufacturers: One of the following or equal:
1) Josam.
2) Zurn, Z664.
b. Modular linear trench drain.
c. Size: 6 inches wide by 12 inches long modules.
d. Bottom outlet, with secondary dome strainer.
e. Overall length as indicated on the Drawings.

2.04 PLUMBING PIPING SYSTEMS

A. As indicated on the Drawings in the Piping Schedule or specified in Section 15052 - Common Work Results for General Piping.

B. Cast iron soil pipe piping system:
1. In accordance with ASTM A74.
2. Bell-and-spigot, service weight.
a. Above ground: Hubless in accordance with CISPI 310.
3. Joints underground: Positive double seal compression type gaskets in accordance with ASTM C564.
4. Joints aboveground:
a. American standard taper screw threads, cut clean and made up with Teflon™ tape or an acceptable paste thread compound applied to the male threads only.
b. Slip joints permitted only in trap seals or on the inlet side of the traps.
1) Do not use long screws or bushings.
5. Cast iron drainage pattern fittings.
6. Couplings for “No Hub”: Stainless steel corrugated shield and clamp assembly over a molded 1-piece neoprene sealing sleeve, in accordance with ASTM A888.
7. Line pipe and fittings inside and coat outside with bituminous coating, except as follows:
a. Exposed, above ground piping:
1) Line inside only.
2) Coat outside with EPU-M-1, epoxy polyurethane, as specified in Section 09960 - High-Performance Coatings.
a) Color: Coordinate with the Owner.
8. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute.

C. Seamless copper water tube:
1. Type: ASTM B88:
a. Exposed copper piping or tubing: Type L hard-drawn, rigid.
b. Copper tubing buried in the ground or in plastic conduit: Type K soft annealed.

2. Fittings: Solder type forged or wrought copper.
    a. Manufacturers: One of the following or equal:
        1) Crawford Fitting Co., Swagelok.
        2) Hoke, Gyrolok.
        3) Parker.
3. Solder: ASTM B32, Alloy Grade Sb5.
4. Flux: ASTM B813.
5. Dielectric insulating unions or fittings:
    a. Manufacturers: One of the following or equal:
        1) Mueller Co.
        2) Watts Series 3001A.
6. Special thread to tube adapters:
    a. Manufacturers: One of the following or equal:
        1) Crawford Fitting Co., Swagelok.
        2) Hoke, Gyrolok.
        3) Parker.

D. PVC piping system:
1. Pipe: Designation PVC 1120 in accordance with ASTM D1785:
    a. Pipe and fittings: Extruded from Type I, Grade 1, Class 12454 B material in accordance with ASTM D1784.
    b. PVC pipe: Schedule 40, unless otherwise specified.
2. Fittings:
    a. Supplied by pipe manufacturer.
    b. Pressure fittings: In accordance with ASTM D2466 or ASTM D2467.
    c. DWV fittings: In accordance with ASTM D2665.
3. Solvent cement: In accordance with ASTM D2564:
    a. Chemical service: For PVC pipe in chemical service, provide the following primer and cement, or equal:
        1) Primer: IPS Corp Type P-70™.
        2) Cement: IPS Corp Type 724™ cement or cement certified by the manufacturer for chemical service.

2.05 WALL AND FLOOR SEALS

A. Single seal.

B. Seal element: Nitrile with the following physical characteristics:
1. ASTM D297 Specific Gravity: 1.15.
2. ASTM D395 Compression Set (22 hours at 158 degrees Fahrenheit): 45 percent.
3. ASTM D412 Elongation at Break: 300 percent.
4. ASTM D412 Tensile Strength: 1,300 psi.
5. ASTM D2240 Durometer Hardness (Shore A): 50±5.

C. Pressure plate: Reinforced nylon polymer:
1. ASTM D256 IZOD Impact/Notch: 11.1 ft-lb/in.
2. ASTM D638 Elongation (Break): 11 percent.
3. ASTM D638 Tensile Strength (Yield): 20,000 psi.
4. ASTM D790 Flexural Modulus: 1,124,000 psi.

5. ASTM D790 Flexural Strength (Yield): 30,750 psi.
6. ASTM D792 Specific Gravity: 1.38.

D. Bolts: Type 316 stainless steel in accordance with ASTM F593, minimum tensile strength of 85,000 psi.

E. Nuts: Type 316 stainless steel in accordance with ASTM F594, minimum tensile strength of 85,000 psi.

2.06 ANTI-SEIZE LUBRICANT

A. Manufacturers: One of the following or equal:
1. Bostik, Never Seez.
2. Oil Research Center.

B. Use with assembly of stainless steel nuts and bolts.

2.07 WATER HEATERS

A. Manufacturers: One of the following or equal:
1. A.O. Smith Corp.
2. State Ind., Inc.

B. General:
1. Size and requirements as indicated on the Drawings.
2. Provide with temperature limiting device in accordance with ASSE 1070.
3. Tanks:
    a. Glass lined.
    b. Exterior steel casing with factory standard enamel finish.
    c. 2 inches minimum fiberglass insulation.
    d. Pressure tested to 150 psig.
    e. ASME rated temperature and pressure relief valve.
    f. Magnesium anode and tank cleanout.
    g. Adjustable to store up to 180 degrees Fahrenheit water.
    h. Water heaters shall meet the requirements in accordance with CCR Title 24.
    i. Provide the manufacturer’s standard bracing in accordance with applicable codes.
4. Warranty:
    a. Special warranty:
        1) Duration: Provide 3-year warranty.

C. Tankless electric:
1. High temperature limit switch with automatic reset.
2. Flow switch.
3. Maximum operating pressure of 150 psig.
4. Heating elements:
    a. Material: Nichrome high efficiency.
    b. Automatic temperature control.
    c. Externally adjustable setting.
    d. Replaceable configuration.

e. UL listed.
5. Compression fittings.
6. Water hammer arrestor.
7. Power: As indicated on the Drawings and as scheduled.
8. Type WH-1: Water heater, tanked, single lavatory:
   a. Manufacturers: One of the following or equal:
      1) Eemax, SPEX.
      2) Keltech.
   b. Heating module with thermostatic control: 1 module.
   c. Temperature rise 40 degrees Fahrenheit at 0.5 gpm.
   d. Flow actuated at 0.2 gpm.

2.08 BACKFLOW PREVENTERS

A. Manufacturers: One of the following or equal:
   1. Febco backflow prevention:
      a. LF860, all sizes.
   2. Zurn/Wilkins:
      a. 975XL for 1/2 inch through 2 inch.
      b. 375AST for sizes 2-1/2 inch, 3 inch, 8 inch, and 10 inch.
      c. 375 and 375DA for sizes 4 inch and 6 inch.
   3. Watts regulator: Series LF909.

B. Design: Reduced pressure chamber type in accordance with AWWA C511.

C. Shutoff valves:
   1. 2-inch and smaller: Provide with full-port, quarter turn, resilient seated ball valves.
   2. Larger than 2-inch: Provide with resilient seated, outside stem and yoke gate valves.

2.09 PIPE INSULATION

A. General:
   1. Insulation thicknesses: Provide insulation thickness in inches in accordance with Table 1 in accordance with the 2021 International Energy Conservation Code (IECC). Insulation thickness shown is nominal. Manufacturing tolerance of 15 percent variation is permissible.
   2. Insulation conductivity and nominal pipe size as specified in Table 1.

Table 1 - Insulation Thickness Requirements

Fluid Operating Temperature Range And Usage (°F)	Insulation Conductivity		Nominal Pipe or Tube Size (inches)				
	Conductivity Btu x in./(h x ft^2 x °F)	Mean Rating Temperature (°F)	<1	1 to <1-1/2	1-1/2 to <4	4 to <8	>8
>350	0.32-0.34	250	4.5	5.0	5.0	5.0	5.0
251-350	0.29-0.32	200	3.0	4.0	4.5	4.5	4.5
201-250	0.27-0.30	150	2.5	2.5	2.5	3.0	3.0
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0

Table 1 - Insulation Thickness Requirements							
Fluid Operating Temperature Range And Usage (°F)	**Insulation Conductivity**		**Nominal Pipe or Tube Size (inches)**				
	Conductivity Btu x in./(h x ft² x °F)	**Mean Rating Temperature (°F)**	**<1**	**1 to <1-1/2**	**1-1/2 to <4**	**4 to <8**	**>8**
105-140	0.21-0.28	100	1.0	1.5	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	1.0	1.0	1.0	1.0
<40	0.20-0.26	50	1	1.5	1.5	1.5	1.5

3. Service designation and location requirements as specified in Table 2, including the following requirements.
   a. Insulation type.
   b. Jacket type.
   c. Vapor barrier requirements.

Table 2 - Insulation Schedule					
Service Designation(1)	**Location(2)**	**Insulation Type(3)**	**Jacket Type(3)**	**Service Temp. °F(4)**	**Vapor Barrier**
Hot Water	Interior or Exterior	1 or 2	Type 1 on Exterior installations; none required on Interior installations	100-200	Install on Type 2 insulation
Tepid Water	Interior or Exterior	1 or 2	Type 1 on Exterior installations; none required on Interior installations	60-100	Install on Type 2 insulation

Notes:
(1) Refer to Plumbing Piping Schedule as indicated on the Drawings for service designations.
(2) Insulation jackets are not required for concealed interior installations in accordance with appliable plumbing code.
(3) Contractor may select from options listed.
(4) Unless noted otherwise, use service temperature range provided in this table to establish insulation thickness as required by Table 1.
(5) Insulate piping systems that are heat traced as indicated on the Drawings.

B. Type 1: Pipe insulation, closed cell elastomeric insulation:
   1. Manufacturers: One of the following or equal:
      a. Aeroflex USA Inc., Aerocel® AC.
      b. Armacell®, AP Armaflex.
   2. Insulation material: Closed cell elastomeric insulation.
   3. Minimum temperature range: -40 degrees Fahrenheit to 220 degrees Fahrenheit.
   4. K factor at 75 degrees Fahrenheit: Not more than 0.27 Btu-inch/hour-square feet-degrees Fahrenheit.
   5. Fire ratings:
      a. Flame spread: 25 or less.

b. Smoke density: 50 or less for insulation thicknesses up to 1.5 inches.

6. Joints: Seal with the manufacturer's recommended contact adhesive to form continuous water barrier.

C. Type 2: Pipe insulation, preformed mineral fiberglass:
   1. Manufacturers: One of the following or equal:
      a. Johns Manville, Micro-Lok® HP.
      b. Knauf Insulation.
      c. Owens-Corning.
   2. Insulation material: Preformed mineral fiberglass insulation made from glass fibers bonded with a thermosetting resin.
      a. In accordance with ASTM C547, Class 1.
      b. Provide with factory installed vapor barrier.
         1) Material: White Kraft paper bound to aluminum foil in accordance with ASTM C1136, Type I.
         2) Longitudinal lap seals: Pressure-sensitive, self-sealing longitudinal lap strip with factory applied adhesive.
         3) Circumferential butt seals: 4-inch wide tape or similar properties or 4-inch wide overlap with adhesive seal.
         4) Vapor barrier permeability: 0.02 perms or lower.
         5) Vapor barrier flame spread rating: 25 or less.
   3. Minimum temperature range: -0 degrees Fahrenheit to 850 degrees Fahrenheit.
   4. K factor at 75 degrees Fahrenheit: Not more than 0.23 Btu-inch/hour-square feet degrees Fahrenheit.
   5. Maximum moisture absorption, volume percent: 5.

D. Type 3: Pipe insulation, rigid cellular glass:
   1. Manufacturers: The following or equal:
      a. Owens-Corning, Foamglas® One™.
   2. Insulation material: Rigid cellular glass in accordance with ASTM C552, Type II.
   3. Temperature range: -450 degrees Fahrenheit to 900 degrees Fahrenheit.
   4. K factor at 75 degrees Fahrenheit: Not more than 0.32 Btu-inch/hour-square feet-degrees Fahrenheit.
   5. Minimum average density: 7.5 pounds per cubic foot.
   6. Maximum moisture absorption, volume percent: 5.
   7. Minimum compressive strength: 87 pounds per square inch.
   8. Moisture permeability: 0.00 perm-inch.

E. Insulation jackets:
   1. Type 1: Pipe insulation jacket, ultraviolet-resistant polyvinyl chloride:
      a. Manufacturers: One of the following or equal:
         1) Johns Manville, Zeston® 2000 PVC.
         2) Proto Corp., LoSMOKE PVC.
         3) Speedline® Corp., Smoke-Safe™ PVC.
      b. Material: Ultraviolet-resistant polyvinyl chloride jacketing, 20 mil minimum thickness.
      c. Fire rating: 25 maximum flame spread, smoke developed 50 or less.
      d. Color: White.
      e. Overlap: 1 inch minimum at joints and fittings.
      f. Joint seal: PVC solvent welded or adhesive as recommended by the manufacturer.

g. Fittings: Factory made with full thickness insulation.

2. Type 2: Pipe insulation jacket, aluminum:
   a. Manufacturers: One of the following or equal:
      1) Childers Products.
      2) Premetco International.
   b. Material: Aluminum, Alloy 5005; 0.016 inch (26-gauge) minimum thickness.
   c. Overlap: Overlap circumferential joints 4 inches minimum; overlap longitudinal joints 1-inch minimum; longitudinal joints oriented to minimize water entry.
   d. Bands: 0.5 inch wide, 0.0508-inch (16-gauge) thick aluminum, same alloy as jacket or 0.0179-inch thick Type 304 stainless steel; install on 18-inch centers, uniformly spaced and at all fitting joints.
   e. Joint seal: Apply waterproof adhesive at joints and overlaps.
   f. Fittings: Custom fit of same materials.

F. Vapor barriers:
   1. Type 1: Pipe insulation vapor barrier, white Kraft paper bound to aluminum foil:
      a. Material: White Kraft paper bound to aluminum foil in accordance with ASTM C1136, Type 1.
      b. Permeability: 0.02 perms or lower.
      c. Maximum flame spread rating: 25.
      d. Edge seal: Pressure-sensitive tape lap seal.
      e. Circumferential joints: 4-inch wide tape or 4-inch overlap with adhesive seal.
   2. Type 2: Pipe insulation vapor barrier, mastic:
      a. Manufacturers: One of the following or equal:
         1) Benjamin Foster, No. 30-76.
         2) Childers Products.
         3) Foster Products.
         4) Insul-Coustic.
      b. Material: Mastic.

PART 3 EXECUTION

3.01 GENERAL

A. Furnish and install vents required in drainage piping as part of the plumbing system, in accordance with Laws and Regulations.

B. Use anti-seize lubricant for stainless steel treads on fittings and fasteners.

3.02 INSTALLATION

A. Fixtures:
   1. Rough-in fixtures and accessories in accordance with the dimensions supplied by the manufacturers of the fixtures.
   2. Mount fixtures and accessories without cutting of finish surface.

B. Plumbing and drainage products:
   1. Traps:
      a. Install traps as near the fixtures as possible.
   2. Sizes of equipment drains and of floor drains shall be as indicated on the Drawings.

C. Plumbing piping systems:
   1. Cast iron soil pipe, PVC, polypropylene:
      a. Where not specified otherwise, install horizontal piping with a grade of 1/4 inch per foot.
      b. Provide vents, roof drains, and pipes flashed and made watertight at the roof with lead sheet flashings.
         1) Minimum 4-pound lead sheet.
      c. Extend flashing not less than 6 inches up the pipes, and counter flash with standard cast iron or malleable iron recessed roof couplings.
      d. Extend flashing for vents up to the top of the vent and turn down into the pipe.
      e. Extend flashing shields not less than 8 inches from vent and pipe in all directions.
   2. Copper tube:
      a. Install in accordance with ASTM B828 and IAPMO IS 03.
      b. Install in straight runs, supported at intervals close enough to avoid sagging.
      c. Make cuts square with a tubing cutter or with a 32-tooth hacksaw.
         1) Provide a sizing tool to correct distortions.
      d. Insulate piping as specified.
   3. Black steel:
      a. Install in accordance with applicable codes and regulations.
   4. CPVC:
      a. Install in accordance with ASTM F645 or the manufacturer's published instructions for installation of piping, as applicable to the particular type of piping.
      b. Provide molded transition fittings for transitions from plastic to metal or IPS pipe.
         1) Do not thread pipe.
         2) Do not use flanged transition fittings unless specifically indicated on the Drawings.
      c. Locate unions where indicated on the Drawings, and elsewhere where required for adequate access and assembly of the piping system.
      d. Provide serrated nipples for transition from plastic pipe to rubber hose.
      e. Clean dirt and moisture from pipe and fittings.
      f. Bevel pipe ends in accordance with the manufacturer's instructions with chamfering tool or file.
         1) Remove burrs.
      g. Use solvent cement and primer formulated for CPVC.
      h. Use primer on pressure and non-pressure joints.
      i. Do not solvent weld joints when ambient temperatures are below 40 degrees Fahrenheit or above 90 degrees Fahrenheit unless solvent cements specially formulated for these conditions are utilized.

D. Wall and floor seals:
   1. Provide seals at rated walls.
   2. Provide seals between floors.
   3. Use specified barrier seals for concrete/masonry wall and floor penetrations.

E. Anti-seize lubricant:
   1. Use with assembly of stainless steel nuts and bolts.

F. Pipe insulation:
   1. Install insulation and jacket materials in accordance with the manufacturer's written instructions.
   2. Fittings:
      a. Insulate fittings by covering with mitered sections of insulation or utilize factory-made prefabricated fitting shapes.
      b. Terminate preformed pipe jackets or covering at sufficient distance from flanges to permit removal of bolts.
      c. Overlap flange and flanged fitting insulation on adjacent pipe covering by at least 2 inches.
   3. Valves:
      a. Insulate valves 3 inches in nominal size and larger with removable insulating blankets.
      b. Size blanket to extend up to packing gland only so that replacement of packing does not require removal of insulating blanket.
   4. Provide continuous insulation through and over pipe supports and provide protection saddles at supports.
   5. Provide continuous pipe insulation and covering through sleeves or openings in walls and floors.
      a. When buried pipe enters a building through a below grade wall or slab penetration, begin insulation system on interior side of penetration.
   6. Apply pre-molded pipe insulation with extended legs when used on pipe traced with either tubing or electric cable type.
   7. Thermally isolate insulation closure locations (end caps, transitions, etc.).
      a. Type 1 or 2 jacket installation on piping with potential reach temperatures greater than 150 degrees Fahrenheit.
   8. Apply piping identification on jackets as specified in Section 15076 - Pipe Identification.

G. Backflow preventers:
   1. Include shutoff valves at each end of backflow preventer with properly located test cocks.

3.03 FIELD QUALITY CONTROL

A. Test water piping in accordance with the plumbing code as specified in Section 01410 - Regulatory Requirements.

B. Test drain, waste, and vent lines as specified and in accordance with the plumbing code as specified in Section 01410 - Regulatory Requirements.

C. Backflow preventer:
   1. Test witnessing: Witnessed.

2. Conduct pressure and leak test as specified in Section 15110 - Common Work Results for Valves.
3. Certificate of backflow prevention from a tester listed by the American Backflow Prevention Association.

3.04 CLEANING

A. Upon completion of installation, clean piping interior of foreign matter and debris.

B. Flush and disinfect potable water piping as specified in Section 01757 - Disinfection.

3.05 SCHEDULES

A. As indicated on the Drawings.

END OF SECTION

SECTION 15430

EMERGENCY EYE/FACE WASH AND SHOWER EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Emergency shower and eyewash.
   2. Water heaters.

1.02 REFERENCES

A. American Gas Association (AGA) Standards.

B. American National Standards Institute (ANSI):
   1. Z358.1 - Emergency Eyewash and Shower Equipment.

C. American Society of Mechanical Engineers (ASME).

D. American Society of Sanitary Engineering's (ASSE):
   1. 1070 - Standard for devices that limit water temperature to a fixture or fixtures such as sinks, lavatories, or bathtubs to reduce the risk of scalding.
   2. 1071 - Performance Requirements for Temperature Actuated Mixing Valves for Plumbed Emergency Equipment.

E. Americans with Disabilities Act (ADA) Standards.

F. California Code of Regulations (CCR):
   1. Title 24 - Building Standards Code.

G. California Department of Occupational Safety and Health Administration (Cal-OSHA).

H. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

I. Occupational Safety and Health Administration (OSHA).

J. Underwriters Laboratories, Inc. (UL).

1.03 ABBREVIATIONS

A. IPS - Industrial Piping Systems.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures and the Agreement and Contract RFP in Volumes 1 and 2.

1.05 QUALITY ASSURANCE

A. Regulatory requirements:
   1. As applicable, equipment of this Section shall comply with requirements of public agencies of the state where the project is located including ASME, Cal-OSHA, NFPA, OSHA, UL.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Packing and shipping: Deliver to the job site in manufacturer's original containers.

B. Delivery: After wet operations in building are completed.

C. Storage and protection:
   1. Store materials in original, unopened containers in compliance with manufacturer's printed instructions.
   2. Keep materials dry until ready for use.
   3. Keep packages of material off the ground, under cover, and away from sweating walls and other damp surfaces.
   4. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with a protective covering.

PART 2 PRODUCTS

2.01 EMERGENCY SHOWERS AND EYE/FACE WASHES

A. General design requirements:
   1. Combination unit emergency shower with eye/face wash:
      a. Floor mounted fixture consisting of pipe standard, showerhead assembly, and eyewash assembly.
      b. Provide stanchion and floor flange, with interconnecting piping.
   2. Showerhead flow: 20.0 gallons per minute flow, minimum.
   3. Eye/face wash flow: 3.0 gallons per minute flow, minimum.
   4. Meet or exceed all requirements of ANSI Z358.1.
   5. Provide ANSI compliant identification sign and markings.

B. Shower/eyewash unit with integral controls to alarm the system is in use.
   1. Flow switch:
      a. Construction:
         1) NEMA Type 4.
         2) Brass or Type 316 Stainless Steel.
      b. Type: Magnetic proximity switch.
      c. Alarm Contacts: Double pole, double throw contacts rated at 2.0 amps at 120 VAC configurable for either Normally Open or Normally Closed.

C. Combination unit emergency shower and eye/face wash:
   1. Manufacturers: One of the following or equal:
      a. Haws, Model No. 8309.
      b. Guardian Equipment, Model No. G1950HFC.
      c. Bradley, Model No. S19314AC.
   2. Pipe standard:
      a. 1-1/4-inch hot-dip galvanized steel pipe, and fittings with interconnecting piping, stanchion, and 9-inch diameter floor flange.
      b. Corrosion protection:
         1) Manufacturers: One of the following or equal:
            a) Bradley Galvanized steel with BradTect® safety yellow coating.
            b) Guardian Equipment "-GC" epoxy protective coating in corrosive environments.
            c) Haws "-CRP".
   3. Shower head:
      a. Material and size: ABS plastic, 10-inch diameter with 20 gallons per minute flow control.
      b. Valve and actuator: Stay open chrome plated brass ball valve equipped with stainless steel ball and stem operated by a rigid stainless steel pull rod.
   4. Eye/face wash receptor:
      a. Valve and actuator: Stay open chrome plated brass ball valve with stainless steel ball and stem operated by a stainless steel or epoxy coated aluminum push handle and foot treadle.
      b. Spray head(s): ABS plastic or polypropylene eye/face wash type heads, with integral flip top protective dust covers releasing with water pressure.
      c. Receptor bowl: Stainless steel; 11 inches diameter.
   5. Supply: 1-1/4-inch IPS.
   6. Waste: 1-1/4-inch IPS.

D. Safety shower and eye/face wash tepid water mixing valves:
   1. Manufacturers: One of the following or equal:
      a. Bradley, Model No. S19-2250.
      b. Guardian Equipment, Model No. G3800 Series.
      c. Haws, Model No. 9201 Series.
   2. General requirements:
      a. Provide 1 mixing valve for each safety unit or group of safety units mounted within 100 feet of each other.
   3. Tepid water system to provide a minimum of 20 gallons per minute for shower and 3 gallons per minute for eye/face wash of water for a period of at least 15 minutes at a delivery temperature of 80 to 85 degrees Fahrenheit.

E. Safety shower tester:
   1. Manufacturers: One of the following or equal:
      a. Bradley, Model No. S19-330ST.
      b. Guardian Equipment, Model No. AP250-005.
      c. Haws, Model No. 9010 with No. 9009.
   2. Kit includes:
      a. Minimum 5 gallon plastic bucket.

b. 7 foot long watertight 12-gallon translucent vinyl plastic bag for attaching over drench showerhead.
    1) Bag shall have drawstring at top and be hemmed at bottom.
c. Testing record card.

2.02 WATER HEATERS

A. Size and requirements as indicated on the Drawings.

B. Provide with temperature limiting device meeting ASSE 1070.

C. Water heaters shall meet the requirements in accordance with CCR Title 24.

D. Tankless electric heater:
1. Modular heating chambers.
2. NEMA 4X Type 316 stainless steel cabinet:
    a. Internal heater protection to -30 degrees Fahrenheit.
    b. Wall mounted.
3. Flow actuated at 2.5 gpm.
4. Inlet flow:
    a. Up to 40 gpm and 150 psig.
5. Outlet flow:
    a. Minimum temperature rise: 22 degrees Fahrenheit at maximum inlet flow.
    b. Factory set maximum temperature: 115 degrees Fahrenheit.
    c. Temperature set point: 85 (within 1) degrees Fahrenheit.
6. Provide water heater piping components necessary for installation:
    a. Drain piping, material as indicated on Piping Schedule.
    b. Supply valve.
    c. Y strainer.
    d. Pressure regulating valve and gauge.
    e. Water hammer arrestor.
7. Manufacturers: One of the following or equal:
    a. Haws, Model 9327.
    b. EEMAX, similar models.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturers' recommendations.

B. Install products in accordance with code requirements and ANSI Z358.1.

C. Plumbing and mechanical work as specified in Section 15400 - Plumbing Systems and Section 15050 - Common Work Results for Mechanical Equipment.

3.02 FIELD QUALITY CONTROL

A. Functional testing:
   1. Shower/eyewash unit with integral controls:
      a. Test witnessing: Witnessed.
      b. Electrical Instrumentation and Controls:
         1) Test witnessing: Witnessed.
         2) Conduct testing as specified in Section 17950 - Commissioning for Instrumentation and Controls.

3.03 SCHEDULES

A. As indicated on the Drawings.

END OF SECTION

SECTION 15500

COMMON WORK RESULTS FOR HVAC

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. General prescriptive, design, and performance requirements for products and mechanical equipment used to heat, ventilate, cool, or otherwise condition or distribute indoor air.
   2. Specific requirements for ductwork accessories:
      a. Dampers and damper operators.
      b. Diffusers, grills, and registers.
   3. Specific requirements for refrigerant piping.

1.02 REFERENCES

A. Air-Conditioning, Heating, and Refrigeration Institute (AHRI):
   1. 210/240 - Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
   2. 270 - Sound Rating of Outdoor Unitary Equipment.
   3. 340/360 - Performance Rating of Commercial and Industrial Unitary Air Conditioning and Heat Pump Equipment.
   4. 430 - Performance Rating of Central Station Air-handling Unit Supply Fans.

B. Air Movement and Control Association International, Inc. (AMCA):
   1. 11 - Certified Ratings Program Operating Manual.
   2. 210 - Laboratory Methods for Testing Fans for Certified Aerodynamic Performance Rating.
   3. 211 - Certified Rating Program- Product Rating Manual for Fan Air Performance.
   4. 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data.
   5. 311 - Certified Ratings Program — Product Rating Manual for Fan Sound Performance.
   6. 500 – Laboratory Methods of Testing Dampers for Rating.
   7. 511 - Certified Ratings Program Product Rating Manual for Air Control Devices.

C. American Bearing Manufacturer's Association (ABMA):
   1. 9 - Load Ratings and Fatigue Life for Ball Bearings.
   2. 11 - Load Ratings and Fatigue Life for Roller Bearings.

D. American National Standards Institute (ANSI):
   1. Z21.47 - Gas Fired Central Furnaces (except Direct Vent Central Furnaces).

E. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE):
   1. Standard 15 - Safety Standard for Refrigeration System.
   2. Standard 52.2 - Methods of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.

F. American Society of Mechanical Engineers (ASME):
   1. RTP-1 – Reinforced Thermoset Plastic Corrosion-Resistant Equipment.

G. ASTM International (ASTM):
   1. B32 - Standard Specification for Solder Metal.
   2. B75 - Standard Specification for Seamless Copper Tube.
   3. B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
   4. B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube.
   5. B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fitting.
   6. C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
   7. D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
   8. D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
   9. D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
   10. D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
   11. D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.

H. California Energy Commission (CEC):
   1. Title 24 - Building Energy Efficiency Standards.

I. National Bureau of Standards: NBS PS15-69 - Custom Contact-Molded Reinforced-Polyester Chemical-Resistant Process Equipment.

J. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1000 V Maximum).

K. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).
   2. 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.

L. National Roofing Contractors Association (NRCA).

M. International Association of Plumbing and Mechanical Officials (IAPMO):
   1. IS 3 - Installation Standard for Copper Plumbing Tube, Pipe, and Fittings.

N. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

O. Underwriters Laboratories, Inc. (UL):
   1. 555 - Standard for Fire Dampers.
   2. 555S - Standard for Smoke Dampers.
   3. 900 - Standard for Air Filter Units.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination.
   1. Provide roof mounted HVAC equipment information required in the preparation of roofing drawings including, but not limited to:
      a. Location.
      b. Size.
      c. Weight.
      d. Anchoring and support details.

1.04 SUBMITTALS

A. Where items in this Section are components of equipment or systems specified in other sections, include data for this Section's components with the equipment or system submittal.

B. When products are specified in this Section but are not referenced in other Technical Sections, submit:
   1. As specified in Section 01330 - Submittal Procedures.
   2. Product data:
      a. Sufficient to substantiate specified requirements.
   3. Description of coating system and instructions for field touch up and re-coating.

C. Projects subject to CEC Title 24:
   1. Damper operators:
      a. Electric: Wiring diagrams.
   2. Manufacturer's recommendation for testing and/or maintenance of product.

PART 2 PRODUCTS

2.01 GENERAL

A. Technical Sections product requirements supersede conflicting requirements in this Section.

B. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

C. Electrical:
   1. Components and assemblies.
   2. Carry UL Listing Marking.
   3. In accordance with NEC requirements.

D. Fans:
   1. Rated and labeled in accordance with AMCA 210 and AMCA 211.

2. Belt drive systems:
    a. Adjustable for minimum within 5 percent speed change.
    b. Rated for 150 percent of maximum motor horsepower.

E. Unitary air conditioners and heat pumps:
1. Rated in accordance with AHRI Standards 210/240 or 340/360, AHRI 270, and AHRI 430.
2. In accordance with ASHRAE Standard 15.
3. Heating: Certified in accordance with ANSI Z21-47.
4. Refrigerant: HFC R-410A.

F. Filters:
1. Media: UL 900 listed.

G. Insulation and adhesives: In accordance with NFPA 90A requirements for flame spread and smoke generation.

H. Roof curbs: Supplied by manufacturer of product requiring the curb.

I. Factory coating: For equipment with factory coatings, manufacturer to supply 2 containers (each about a pint) of the paint for Contractor/Owner touch up.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. General:
1. Environmental conditions as specified in Section 01850 - Design Criteria.
2. Provide instrumentation and controls to meet the equipment operating requirements as specified in Section 15936 - Instrumentation and Control Devices for HVAC.

B. Fans:
1. Sharply rising pressure characteristics throughout the operating range and beyond the efficiency peak.
2. Peak operating points to be as close as possible to the maximum efficiency and whose operating range is within the normal fan selection range.
3. Bearings rated per ABMA 9 or 11 for a L10 life rating of not less than 50,000 hours.
4. Total sound power levels in the 8 octave band range in accordance with, AMCA 301, not to exceed the lesser of the following or the sones level indicated on the Drawings.

Sound Power Level, decibels levels referenced to 10-12 watts								
Frequency, Hz	63	125	250	500	1,000	2,000	4,000	8,000
General	100	98	94	88	84	84	78	75

5. Shall comply with AMCA Publication 11 and bear the AMCA Certified Ratings Program seal for air performance and sound performance according to AMCA Publication 211 and AMCA Publication 311.

C. Unitary air conditioners and heat pumps:
   1. Outdoor noise levels: Outdoor noise levels in the 8 octave band ranges, as measured in accordance with AHRI 270 shall not exceed the following:

OCTAVE BANDS								
Unit Nominal Capacity (Tons)	**63**	**125**	**250**	**500**	**1,000**	**2,000**	**4,000**	**8,000**
0 to 5	64	70	71	74	74	71	67	67
6	79	85	78	74	71	73	66	59
7-1/2 to 10	64	70	73	79	82	78	74	67
12 and larger	84	88	84	83	84	78	72	68

   2. Capable of starting and cooling from 45 to 125 degrees Fahrenheit ambient outdoor air temperature and exceeding the maximum load criteria of AHRI Standard 210/240 or 340/360.
   3. Heat pumps capable of starting and heating at or above 0 degrees Fahrenheit outdoor ambient air temperature.
   4. Minimum cooling, Energy Efficiency Ratio (EER) and Integrated Energy Efficiency Ratio (IEER), as rated in accordance with AHRI 210/240 or 340/360 for split systems and packaged units is as follows:

Equipment Type	**Net Cooling Cap (British Thermal Units per hour)**	**EER(1)**	**IEER(2)**
Space Constrained, Air Cooled	<30,000	11.7	N/A
Small Duct, High Velocity, Air Cooled	<65,000	12.1	N/A
Air Cooled	<65,000	13.4	N/A
Air Cooled	>65,000 and <135,000	11.2	14.8
Air Cooled	>135,000 and <240,000	11.0	14.2
Air Cooled	>240,000 and <760,000	10.0	13.2
Air Cooled	>760,000	9.7	12.5
Water Cooled	<65,000	12.1	12.3
Water Cooled	>65,000 and <135,000	12.1	13.9
Water Cooled	>135,000 and <240,000	12.5	13.9
Water Cooled	>240,000 and <760,000	12.4	13.6
Water Cooled	>760,000	12.2	13.5
Evaporatively Cooled	<65,000	12.1	12.3
Evaporatively Cooled	>65,000 and <135,000	12.1	12.3
Evaporatively Cooled	>135,000 and <240,000	12.0	12.2
Evaporatively Cooled	>240,000 and <760,000	11.9	12.0
Evaporatively Cooled	>760,000	11.7	11.9

Equipment Type	Net Cooling Cap (British Thermal Units per hour)	EER(1)	IEER(2)
(1) Deduct 0.2°from the required EER for units with a heating section other than electric resistance heat. (2) IEER is only applicable to equipment with capacity control in accordance with AHRI 340/360.			

5. Units with heating capabilities: Meet or exceed the following:
   a. Annual fuel utilization efficiency: 80 percent.
   b. Steady state efficiency: 80 percent.
   c. Comply with CEC Title 24: Seasonal Energy Efficiency Ratio (SEER) minimum: 76.9 percent.
6. Energy efficiency requirements:
   a. Comply with CEC Title 24.
7. Unit air flows for cooling:
   a. Minimum of 300 cubic feet per minute (cfm) per ton.
8. Maximum 500 cfm per ton.

D. Filters:
1. Efficiency: 45 to 50 percent dust spot efficiency when rated in accordance with ASHRAE Test Standard 52.2.

E. Smoke detector requirements:
1. Provide all supply, exhaust, and odor control fans greater than or equal to 2,000 cubic feet per minute with smoke detectors:
   a. Duct or fan mounted smoke detector as specified in Section 15936 - Instrumentation and Control Devices for HVAC.

2.03 DAMPERS

A. General:
1. Damper type, style, and size as indicated on the Drawings.
2. Components: Include with each damper:
   a. Type, Frame, actuators, clips, connectors, and other accessories necessary for mounting.
      1) Manual actuators: Factory supplied locking quadrant on factory mounted stand-off bracket.
         a) Bracket finish to match frame.
      2) Electric actuators when indicated on the Drawings.
3. Leakage Class, when specified, to be in accordance with AMCA Standard 511 and product to bear AMCA Rating Seal for Air Leakage.
   a. Blade seals to be mechanically attached.
4. All fire dampers and combination smoke/fire dampers to have duct access door near damper as specified in technical sections.

B. Backdraft dampers (BDD):
1. BDD-1; Style 1; counterbalanced backdraft damper:
   a. Manufacturers: One of the following or equal:
      1) Ruskin: Model CBD6.
      2) Greenheck.

b. Frame:
    1) Minimum depth: 2.25 inches.
    2) Minimum thickness: 0.125-inch.
    3) Material: 6063T5 aluminum.
    4) With insect screen and water stop.
c. Blades:
    1) Minimum thickness: 0.070-inch.
    2) Material: 6063T5 aluminum.
    3) High strength nylon bearings.
    4) Elastomer edge seals.
    5) Aluminum tie-bar.
    6) Blades require no more than 4.25 inches clearance beyond frame when fully open.
d. Counterbalance:
    1) Zinc plated bar on blades.
    2) Adjustable down to 0.01-inch wg opening.
e. Finish:
    1) Mill.

2.04 DAMPER OPERATORS

A. General: Provide manual or electric damper operator for each damper furnished as indicated on the Drawings.

B. Manual operators by damper manufacturer:
    1. Operate damper manually with a force not exceeding 20 pounds.
    2. Provide with locking quadrant.
    3. Provide 3/8 inch, or larger, square double-ended drive shaft adequate for required damper torque, with machined keyways allowing for mounting in 2 positions, 90 degrees apart.
    4. Provide sufficient number of operators for torque required to operate damper.

2.05 SCREENS

A. Required on all fans and louvers unless otherwise indicated on the Drawings.

B. Characteristics and features:
    1. Bird screen: 1/2-inch mesh by 14 gauges.
        a. For exhaust applications.
    2. Insect screens: 18 by 14 mesh.
        a. For intake applications.
    3. Screens and frames, same material as ductwork, hood, louver, fan, or equipment connected to screen.
    4. Screens secured in frames.

2.06 REFRIGERANT PIPING

A. Seamless copper tube:
    1. Type:
        a. Straight lengths: ASTM B75, USN Alloy C12200, H55 Temper.
        b. Coiled lengths: ASTM B280, USN Alloy C12200, O60.

c. Outside diameter sized, minimum wall thickness in accordance with ASTM B280 and B75.

2. VRF-System Refrigerant Piping:
   a. Entire refrigerant piping system shall be brazed connections and fittings and meet test pressures required by VRF manufacturer.
3. Non-VRF System Refrigerant Piping:
   a. Solder: ASTM B32, Alloy Grade Sb5.
   b. Flux: ASTM B813.

2.07 CONDENSATE DRAIN PIPING

A. PVC:
   1. PVC Pipe: Designation PVC 1120 in accordance with ASTM D1785 and appendices:
      a. Pipe and fittings: Extruded from Type I, Grade 1, Class 12454 B material in accordance with ASTM D1784.
      b. PVC Pipe: Schedule 80 unless otherwise indicated on the Drawings.
   2. Fittings:
      a. Supplied by pipe manufacturer.
      b. Pressure fittings: In accordance with ASTM D2466 or ASTM D2467.
      c. DWV fittings: In accordance with ASTM D2665.
   3. Solvent cement: In accordance with ASTM D2564:
      a. Manufacturers: The following or equal:
         1) Primer: IPS Corp Type P-70™.
         2) Cement: IPS Corp Type 724™ cement or cement certified by the manufacturer for chemical service.

2.08 PIPE INSULATION

A. General:
   1. As specified in the Agreement and Contract RFP in Volumes 1 and 2.
   2. Insulation thicknesses: Provide insulation thickness in inches in accordance with the following table. Insulation thickness shown is nominal. Manufacturing tolerance of 15 percent variation is permissible.

Table 1 - Required Insulation Thicknesses (inches)

Service Temperature Range as Designated in Insulation Schedule at End of this Section	Nominal Pipe Diameters	
	1 inch and Less	1.25 to 2 inches
100 to 200 degrees Fahrenheit	1.5	1.5
40 to 100 degrees Fahrenheit	0.5	1.0

B. Insulation, Type 1:
   1. Manufacturers: One of the following or equal:
      a. Aeroflex USA Inc., Aerocel® AC.
      b. Armacell®, AP Armaflex.
   2. Insulation material: Closed cell elastomeric insulation.
   3. Minimum temperature range: Minus 40 degrees Fahrenheit to plus 220 degrees Fahrenheit.

4. K factor at 75 degrees Fahrenheit: Not more than 0.27 BTU-inch/hour-square feet-degrees Fahrenheit.
5. Fire ratings:
   a. Flame spread: 25 or less.
   b. Smoke density: 50 or less for insulation thicknesses up to 1.5 inches.
6. Joints: Seal with manufacturer's recommended contact adhesive to form continuous water barrier.

C. Insulation jackets:
1. Type 1:
   a. Manufacturers: One of the following or equal:
      1) Johns Manville, Zeston® 2000 PVC.
      2) Proto Corp., LoSMOKE PVC.
      3) Speedline® Corp., Smoke-Safe™ PVC.
   b. Material: Ultraviolet-resistant polyvinyl chloride jacketing, 20 mil minimum thickness.
   c. Fire rating: 25 maximum flame spread, smoke developed 50 or less.
   d. Color: White.
   e. Overlap: 1-inch minimum at joints and fittings.
   f. Joint seal: PVC solvent welded or adhesive as recommended by the manufacturer.
   g. Fittings: Factory made with full thickness insulation.

D. Vapor barriers:
1. Vapor barrier, Type 1:
   a. Material: White Kraft paper bound to aluminum foil in accordance with ASTM C1136, Type 1.
   b. Permeability: 0.02 perms or lower.
   c. Maximum flame spread rating: 25.
   d. Edge seal: Pressure-sensitive tape lap seal.
   e. Circumferential joints: 4-inch wide tape or 4-inch overlap with adhesive seal.
2. Vapor barrier, Type 2:
   a. Manufacturers: One of the following or equal:
      1) Benjamin Foster, No. 30-76.
      2) Childers Products CP10/11 Vi-Acryl.
      3) Foster Products, 36-10/46-10 Weatherite.
      4) Insul-Coustic, No. I.C.-580.
   b. Material: Mastic.

E. Insulation schedule:

Table 2 - Insulation Schedule

Service Designation(1)	Location(2)	Insulation Type	Jacket Type	Service Temp. °F(3)	Vapor Barrier
HVAC Refrigerant	Interior or Exterior	1	1	40 - 200	Required
HVAC Condensate	Interior or Exterior	1	1	Below 60	Required

Table 2 - Insulation Schedule					
Service Designation[1]	**Location[2]**	**Insulation Type**	**Jacket Type**	**Service Temp. °F[3]**	**Vapor Barrier**

Notes:
1. Refer to Piping Schedule in Section 15052 - Common Work Results for General Piping for service designations.
2. Insulation jackets are not required for interior installations that are concealed. See definitions for description of concealed locations.
3. Unless noted otherwise, use service temperature range provided in this table to establish insulation thickness as required by Table 1.

2.09 EQUIPMENT NAMEPLATES

A. Provide a nameplate with the following markings that is plainly visible after installation:
   1. Manufacturer's name, trademark, or other descriptive marking to identify specific equipment.
   2. Where equipment is electrically powered:
      a. Supply voltage, phase, frequency, and full-load current.
      b. Power source or circuit ID.
      c. Short-circuit current rating based on one of the following:
         1) Short-circuit current rating of a listed and labeled assembly.
         2) Short-circuit current rating established utilizing an approved method.

2.10 SHIPPING, SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

B. Inspect fasteners for proper tightness.

C. Ship units in 1 piece (or modular, if required), factory assembled, piped, internally wired, and factory tested.

D. Provide:
   1. Filters: 2 extra (3 total) sets per each unit with filters.
   2. Sheaves and belts: 1 set for change-out for final balance per unit installed.
   3. Belts: 1 extra set for each unit installed as determined by final balance.

E. Provide a 2-year supply of maintenance products as indicated in manufacturer's maintenance literature.

PART 3 EXECUTION

3.01 GENERAL

A. Technical Sections execution requirements supersede conflicting requirements in this Section.

B. As specified in the Agreement and Contract RFP in Volumes 1 and 2.

C. Inspect fasteners for proper tightness.

D. Provide temporary closures for openings designed for airflow.

3.02 INSTALLATION

A. Examine and verify details and sections as indicated on the Drawings, ascertain adequacy, and determine conflicts in dimensions and clearances.
   1. Take measurements and verify dimensions to ascertain fit of installation.
   2. Ascertain structural sufficiency to support installation.
   3. Ascertain that supports and openings are correctly located; otherwise cut new openings where required.
   4. Confirm specified thermostat or other controls are compatible with specified equipment.

B. Install in accordance with manufacturer instructions.
   1. Electrical products installation in accordance with NFPA 70 NEC.
   2. If there are conflicts, NEC supersedes manufacturer's instruction.
      a. Notify Engineer of conflicts.

C. Equipment and ducts:
   1. Remove dust and debris before installation.
   2. Protect from dust and debris by covering openings with tape or plastic during installation and until equipment is operated.
   3. Adjust alignment of ducts to resolve conflicts with the work of other trades.
   4. Install and wire unitary air conditioners, controls, and thermostats in accordance with manufacturer's recommendations.
   5. Provide flexible duct and flexible piping connections at connections to unitary air conditioners.
      a. FL-1 and FL-2, Flexible Connections:
         1) Install at building expansion joints and as indicated on the Drawings.
         2) Install with collar and metal band to form airtight joints.
         3) Install with minimum 4 inches of slack in fabric.
         4) Install with minimum 3 inches of specified material on each side of fabric.
         5) Exterior locations: Install sheet metal weather cover over fabric.
         6) Duct alignment shall be a maximum of 1/2-inch offset.
         7) The minimum/maximum gap shall be 2-inches and 6-inches.
         8) Lap longitudinal joints and glue per manufacturer’s recommendations.
   6. Lubrication lines and fittings:
      a. Support and protect lines from source to point of use.
      b. Fittings:
         1) Bring to outside of equipment in manner such that fittings are readily accessible from outside without necessity of removing covers, plates, housings, or guards.
         2) Mount together wherever possible using factory-mounted multiple fitting assemblies securely mounted, parallel with equipment lines, and protected from damage.
   7. Concrete surfaces designated to receive non-shrink grout under equipment:
      a. Heavy sandblast concrete surface in contact with non-shrink grout.

b. Clean concrete surfaces of sandblasting sand, grease, oil, dirt, and other foreign material that may reduce bond to non-shrink grout.
c. Saturate concrete with water. Concrete shall be saturated surface damp at time non-shrink grout is placed.

8. Remove dust and debris from ductwork and equipment at completion of installation.
9. Set grilles, dampers, and diffusers to achieve flows and flow patterns indicated on the Drawings.

D. Refrigerant piping:
1. Support copper tubing as specified in Sections 15061 - Pipe Supports and 15062 - Preformed Channel Pipe Support System.
2. Clean copper lines with high-pressure air after first disconnecting piping at instruments, filters, pressure reducers, valve operators, and other special devices.
3. Installation of copper tubing:
a. Install copper tubing in accordance with ASTM B828 and IAPMO IS 3.
b. Install copper tubing in straight runs, supported at intervals close enough to avoid sagging.
c. Make cuts square with a tubing cutter or with a 32-tooth hacksaw.
1) Provide a sizing tool to correct distortions.
4. Ream the inside of the tubing and remove burrs from the outside, holding the end of the tubing downward and preventing chips and fillings from entering the tubing.
5. Perform flaring with a flare block and yoke type screw feed flaring tool:
a. After removing the tubing from the flare block, inspect both surfaces of the flare for splits, cracks, or other imperfections.
b. Where there are imperfections, cut off the imperfect flare and prepare a new flare.
6. Insulate piping as specified in Sections 15400 - Plumbing systems.

E. Gas, water piping, drains, and venting in accordance with the authority having jurisdiction and applicable codes.

F. Roof curbs: Install in accordance with NRCA Manual.

G. Completed equipment installations must have confirmation that:
1. The equipment is properly assembled.
2. The equipment moves or rotates in the proper direction.
3. Shafting, drive elements, and bearings are installed and lubricated in accordance with proper tolerances.
4. No unusual power consumption, lubrication temperatures, bearing temperatures, or other conditions are observed.
5. The installation meets the requirements for intended use as well as the specified vibration and noise tolerances.

END OF SECTION

SECTION 15739

VRF HEAT PUMPS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. VRF Heat Pump and Heat Recovery Systems.

1.02 REFERENCES

A. Air-Conditioning, Heating, and Refrigeration Institute (AHRI):
   1. 210-240 - Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment.
   2. 270 - Sound Rating of Outdoor Unitary Equipment.
   3. 1230 - Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment.

B. Air Movement and Control Association International, Inc. (AMCA):
   1. 210 - Laboratory Methods for Testing Fans for Certified Aerodynamic Performance Rating.

C. American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE):
   1. 15 - Safety Standard for Refrigeration Systems.
   2. 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.

D. ASTM International (ASTM):
   1. B117 - Standard Practice for Operating Salt Spray (FOG) Apparatus.

E. International Organization for Standardization (ISO):
   1. 9277 - Determination of the Specific Surface Area of Solids by Gas Adsorption — BET Method.

F. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).
   2. 90A - Standard for the Installation of Air Conditioning and Ventilating Systems.

G. National Roofing Contractors Association (NRCA).

H. Underwriters Laboratories, Inc. (UL).

1.03 ADMINISTRATIVE REQUIREMENTS

A. Roof coordination.
   1. As specified in Section 15500 - Common Work Results for HVAC.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.05 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Design features.
   2. Load capacities.
   3. Efficiency ratings.
   4. Dimensions.
   5. Weight.
   6. Shipping and operating.
   7. Manufacturer's recommendations for handling, storage, and installation.

C. Shop Drawings:
   1. Component layout and identification.
   2. Views:
      a. Front, side, rear elevations, and top and bottom views, with dimensions.
      b. Connection locations including electrical, mechanical, and other.
   3. Cut away drawings.
      a. Parts list.
      b. Material specification lists.
   4. Wiring, control schematics, control logic diagrams and ladder logic or similar for computer-based controls.
   5. Refrigerant piping diagram with pipe diameters, lengths, and refrigerant volume.
   6. Details for supports, isolators, and bracing.
   7. Nameplate data.

D. Calculations:
   1. Structural: Supports, vibration isolators, and seismic bracing calculations, if applicable.

E. Delegated Design Submittals:
   1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria.
      a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
      b. For equipment installed outdoors.

F. Engineering data:
   1. Manufacturer's published data for compressor, evaporator coil, condenser, evaporator fan, refrigerant, filter, etc.
   2. Maximum equipment vibration levels and field-testing method.
   3. Sound power level in each of 8 octave bands and overall sones.

4. Fan performance curves showing specified operating condition.
5. Bearing life.

G. Vendor operation and maintenance manuals: Manufacturer's standard instruction manual for operation and maintenance.

1.06 WARRANTY

A. Provide warranty as specified in Section 01783 - Warranties and Bonds.

B. Special warranty:
1. Refrigerant compressors and closed or sealed refrigerant systems warranty duration: Provide 5-year warranty.
2. Evaporator and condensing coils warranty duration: Provide 10-year warranty.

PART 2 PRODUCTS

2.01 GENERAL

A. As specified in Section 15500 - Common Work Results for HVAC.

B. Supplied components of the unit shall be furnished and fully integrated by the unit system supplier:
1. Furnish and install piping, valves, dampers, sensors, and wiring within the unit package.
2. Provide a prewired, unit mounted control panel to dampers and sensors within the unit.

C. Motors:
1. Totally enclosed.
2. Voltage and number of phases as scheduled.
3. Compressor motors:
   a. Cooled by refrigerant gas passing through windings.
   b. Provided with line break thermal and current overload protection.
4. Fan and blower motors:
   a. Permanently lubricated ball bearings.
   b. Integral automatic reset thermal overload protection.

D. Electrical:
1. Provide a single conduit connection in the unit for both power and control wiring.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Design requirements:
1. Seismic supports: Design supports to comply with the criteria specified in Section 01850 - Design Criteria.
2. Wind supports: Design supports to comply with the criteria specified in Section 01850 - Design Criteria.
3. Control sequences of operations: As specified in Section 15936 - Instrumentation and Control Devices for HVAC.

4. Electrical components: UL listed and meeting the design and installation requirements of the NEC.
5. Water piping, drains, and venting: In accordance with building code, mechanical code, and plumbing code as specified in Section 01410 - Regulatory Requirements and in accordance with NFPA 90A.
6. Fans supplied with heat pump units: Rated in accordance with AMCA 210.
7. Unit heat pumps: Rated in accordance with AHRI Standards 210-240 and AHRI 270 and in accordance with the latest version of ASHRAE 15.
8. Roof curbs: Designed in accordance with NRCA standards.
9. Insulation and adhesives: In accordance with NFPA 90A requirements for flame spread and smoke generation.
10. Refrigerant: HCFC R-410A.

B. Performance requirements:
1. Performance requirements as specified and as scheduled on the VRF Heat Systems Schedule indicated on the Drawings.
2. Maximum nominal sound pressure shall be as shown and measured in accordance with AHRI Standard 270:

Capacity (MBH)	Sound Pressure Level dB(A)
72	57
96	60
120	60
144	60
168	62
192	62
216	63
240	63
264	64
288	64
312	64
336	65
360	65

3. Air filters: 25 to 30 percent efficiency when rated in accordance with ASHRAE Tested Standard 52.2.
4. Capable of starting and providing cooling from 45 to 125 degrees Fahrenheit ambient outdoor air temperature and exceeding the maximum load criteria of AHRI Standards 210-240.
5. Capable of starting and providing heating at or above -10 degrees Fahrenheit outdoor ambient air temperature.
6. Minimum energy efficiency ratios IEER, EER, COP values for systems sized 300 MBH and smaller shall be certified to AHRI Standard 1230. Systems sized larger than 300 MBH shall be rated to AHRI Standard 1230. System shall meet the efficiencies in the tables below.

Capacity (MBH)	System IEER* (part load - ducted)	System IEER* (part load - non-ducted)	System IEER* (part load - mixed)
72	21.5	25.8	23.7
96	18.8	23.0	20.9
120	17.2	20.4	18.8
144	22.1	21.5	21.8
168	20.2	22.0	21.1
192	19.1	19.9	19.5
216	19.5	19.2	19.4
240	16.1	18.2	17.2
264	19.1	20.8	20.0
288	18.8	19.6	19.2
312	17.0	18.2	17.6
336	16.1	15.9	16.0
360	15.3	15.1	15.2

Capacity (MBH)	System EER* (full load - ducted)	System EER* (full load - non-ducted)	System EER* (full load - mixed)
72	12.8	14.1	13.4
96	12.5	13.5	13.0
120	11.9	12.5	12.2
144	12.7	14.0	13.4
168	12.1	12.4	12.3
192	11.8	11.7	11.8
216	11.7	11.6	11.7
240	11.6	11.5	11.6
264	11.7	11.3	11.5
288	10.5	11.5	11.0
312	11.5	10.7	11.1
336	10.7	10.8	10.8
360	10.8	9.8	10.3

Capacity (MBH)	System COP@47F* (full load - ducted)	System COP@47F* (full load - non-ducted)	System COP@47F* (full load - mixed)
72	3.71	4.00	3.86
96	3.65	4.20	3.93
120	3.63	3.80	3.72
144	3.70	3.90	3.80
168	3.70	3.95	3.83

Capacity (MBH)	System COP@47F* (full load - ducted)	System COP@47F* (full load - non-ducted)	System COP@47F* (full load - mixed)
192	3.55	3.70	3.63
216	3.60	3.80	3.70
240	3.50	3.60	3.55
264	3.50	3.50	3.50
288	3.45	3.50	3.48
312	3.30	3.30	3.30
336	3.45	3.45	3.45
360	3.20	3.45	3.33

Capacity (MBH)	System COP@17F* (full load - ducted)	System COP@17F* (full load - non-ducted)	System COP@17F* (full load - mixed)
72	2.40	2.65	2.53
96	2.50	2.85	2.68
120	2.50	2.65	2.58
144	2.45	2.55	2.50
168	2.45	2.65	2.55
192	2.45	2.55	2.50
216	2.45	2.60	2.53
240	2.35	2.55	2.45
264	2.30	2.45	2.38
288	2.45	2.45	2.45
312	2.35	2.35	2.35
336	2.35	2.35	2.35
360	2.30	2.40	2.35

2.03 VARIABLE REFRIGERANT FLOW (VRF) SYSTEM

A. System description:
   1. Variable capacity, heat pump, air conditioning system shall be a variable refrigerant flow (VRF) (heat and cool model) split system as specified.
      a. System shall consist of multiple evaporators, piping joints and headers, a refrigeration distribution system using PID control and a VRF outdoor unit.
      b. Outdoor unit is a direct expansion (DX), air-cooled heat pump, multi-zone air-conditioning system with variable speed inverter driven compressors using HCFC R-410A refrigerant.
      c. Zones are each capable of operating separately with individual temperature control.
   2. Outdoor unit(s) shall be interconnected to indoor unit models.
      a. Indoor units shall be connected to the outdoor utilizing specified piping joints and headers.

b. Each indoor unit or group of indoor units shall be independently controlled.

3. Operation of the system shall permit cooling or heating of each indoor unit. Each indoor unit or group of indoor units shall be able to provide set temperature independently via a local remote controller, a centralized controller, or a BMS interface.
4. Controls as specified in Section 15936 - Instrumentation and Control Devices for HVAC.

B. Manufacturers: One of the following, or equal:
1. Daikin VRV®.
2. Mitsubishi.
3. Samsung.

C. Refrigerant piping:
1. Provide piping as specified in Section 15500 - Common Works for HVAC.
2. Modular systems shall require outdoor refrigerant kits for module connection provided by the manufacturer.
3. Between indoor and outdoor units shall be sized and installed by manufacturer factory trained service professional.
4. Insulate as specified in Section 15500 - Common Works for HVAC.

D. Indoor/evaporator units:
1. General: Factory assembled and tested DX fan-coil units, with electronic proportional expansion valve, control circuit board, factory wiring and piping, self-diagnostics, auto-restart function, 3-minute fused time delay and test run switch.
2. Recessed ceiling units:
a. Ceiling cassette with central return air grille, for installation in lay-in ceiling grid.
1) Type: 4-way 24x24.
2) Exposed housing: White, impact resistant, with washable decoration panel.
3) Return air filter: As indicated on the Drawings.
4) Minimum capacity: As indicated on the Drawings.
5) Condensate pump: Built-in with minimum lift of:
a) 19 inches for 2-foot by 2-foot units.
b. Ventilation air option: As indicated on the Drawings.
c. Air discharge: Provided with vane control and swing mode.
3. Refrigerant circuit factory-charged with dehydrated air, for field charging.
4. Evaporator coils:
a. Nonferrous construction with fins on copper tubing.
b. Tubing shall have inner grooves for high efficiency heat exchange.
c. Braze tube joints with phos-copper or silver alloy. Factory tested.
5. Fans:
a. Direct-drive with statically and dynamically balanced impellers.
b. High and low speeds unless otherwise indicated; motor thermally protected.
c. Bearings shall be permanently sealed ball bearing type and permanently lubricated.

6. Condensate drainage: Built-in condensate drain pan with PVC drain connection.
    a. Units with built-in condensate pumps: Provide condensate safety shut-off and alarm.
    b. Units without built-in condensate pumps: Provide manufacturer recommended external condensate pump, minimum 10 feet of head.
        1) See Drawings for required flow rate.
        2) Provide with built-in condensate float switch and wiring connections for condensate safety shut-off and alarm.
7. Control: As specified in Section 15936 - Instrumentation and Control Devices for HVAC and below:
    a. Temperature Control Mechanism: Return air thermistor and computerized Proportional-Integral-Derivative (PID) control of superheat.
    b. Unit shall have controls provided by the manufacturer to perform input functions necessary to operate the system.
    c. Unit shall be compatible with interfacing with a BMS system via optional LonWorks or BACnet gateways.
    d. Unit shall be compatible with the VRF System primary controller.

E. Outdoor/condensing units:
1. General: Air-cooled DX refrigeration units, designed specifically for use with indoor/evaporator units; factory assembled and wired with necessary electronics and refrigerant controls; modular design for ganging multiple units.
    a. Refrigerant circuit: Scroll compressors, motors, fans, condenser coil, electronic expansion valves, solenoid valves, 4-way valve, distribution headers, capillaries, filters, shut-off valves, oil separators, service ports, and refrigerant regulator.
    b. Refrigerant: Factory charged.
    c. Variable flow control: Modulate compressor capacity automatically to maintain constant suction and condensing pressure while varying refrigerant flow to suit heating/cooling loads.
    d. Capable of heating operation at low end of operating range as specified, without additional low ambient controls or auxiliary heat source; during heating operation, reverse cycle (cooling mode) oil return is not permitted due to potential reduction in space temperature.
    e. Power failure mode: Automatically restart operation after power failure without loss of programmed settings.
    f. Provide refrigerant auto-charging and refrigerant charge check functions.
    g. Safety devices: High pressure safety switch, over-current protection, crankcase heater.
    h. Provide refrigerant sub-cooling to ensure the liquid refrigerant does not flash when supplying indoor units.
    i. Defrost mode: Unit shall be capable of continuous heating function during defrost of separate coil circuits.
2. Unit cabinet:
    a. Weatherproof and saltwater corrosion resistant; rustproofed mild steel panels coated with baked enamel finish.
    b. Designed to allow side-by-side installation with minimum spacing.
3. Fans:
    a. One or more direct-drive propeller type, vertical discharge, with multiple speed operation via DC (Digitally Commutated) inverter.

b. External static pressure:
    1) Factory set at 0.12-inch WG, minimum.
    2) External Static Pressure capability dependent upon type of unit.
c. Fan motors: Factory installed; permanently lubricated bearings; inherent protection; fan guard; output as indicated for specific equipment.

4. Condenser coils:
    a. Outdoor coil shall be of nonferrous construction with lanced or corrugated plate fins on copper tubing.
    b. Provide corrosion resistant coating to withstand ASTM B117 salt spray test for a minimum of 2,500 hours or ISO 9277 salt spray test for minimum of 960 hours.
5. Compressors:
    a. Inverter driven scroll hermetic type to modulate capacity.
    b. Variable speed control: Capable of changing the speed to follow the variations in total cooling and heating load as determined by the suction gas pressure; high/low pressure calculated by samplings of evaporators and condenser temperatures every 20 seconds, with compressor capacity adjusted to eliminate deviation from target value by changing inverter frequency or on/off setting of fixed speed compressors.
    c. Multiple condenser modules: Balance total operation hours of compressors by means of duty cycling function, providing for sequential starting of each module at each start/stop cycle, completion of oil return and completion of defrost, or every 8 hours.
    d. Failure mode: In the event of compressor failure, operate remaining compressor(s) at proportionally reduced capacity; provide microprocessor and associated controls specifically designed to address this condition.
    e. Inverter driven compressors: PWM inverter driven, highly efficiency reluctance DC (Digitally Commutated), hermetically sealed scroll.
    f. Provide each compressor with crankcase heater, high pressure safety switch and internal thermal overload protector.
    g. Provide oil separators and intelligent oil management system.
    h. Provide spring mounted vibration isolators.

F. Controls and equipment safety features:
1. Advanced zoning: A single system shall be capable of providing for up to 50 zones.
2. Each system shall have a refrigerant auto-charging function.
3. Oil return heating: Each system shall maintain continuous heating during oil return operation. Reverse cycle (cooling mode) oil return during heating operation shall not be permitted due to the potential reduction in space temperature.
4. Each indoor unit shall use a dedicated electronic expansion valve for independent control.
5. VFD inverter control: Each condensing unit shall use a high efficiency, variable speed inverter compressor coupled with inverter fan motors for superior part load performance.
6. Compressor capacity shall be modulated automatically to maintain constant suction and condensing pressures while varying the refrigerant volume for the needs of the cooling or heating loads.
7. Systems shall be capable of up to 540 feet of linear piping between the condensing unit and furthest located indoor unit.

8. Systems shall have a vertical (height) separation of up to 160 feet between the condensing unit and the indoor units.
9. Systems shall be capable of 50 feet between indoor units.
10. Condensing units shall be supported with a fan motor ESP up to 0.30 inches WG as standard to allow connection of discharge ductwork and to prevent discharge air short circuiting.
11. Simple wiring: Systems shall use 2 wire, multi-stranded, non-shielded, and non-polarized daisy chain control wiring.
12. Systems shall provide outside air capability, when required.
13. Advanced controls: Each system shall have at least 1 remote controller capable of controlling up to 16 indoor units.
14. Provide outdoor units with corrosion resistant coating to withstand ASTM B117 or ISO 9277 salt spray test.
15. Hail guard: Outdoor units shall be provided with a manufacturer supplied snow/hail guard, providing protection from hail damage and projectiles in severe climates.
16. Unit defrost:
    a. Unit must defrost all circuits simultaneously in order to resume full heating more quickly.
    b. Partial defrost which may extend “no or reduced heating” periods shall not be allowed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect components for shipping damage, conformance to specifications, and proper torques and tightness of fasteners, as specified in Section 15500 - Common Work Results for HVAC.

B. Examine and verify that Work is in condition to receive installation specified in this Section.
1. Take measurements and verify dimensions to ascertain fit of installation.
2. Ascertain structural sufficiency to support installation.
3. Ascertain that supports and openings are correctly located; otherwise cut new openings where required.
    a. Submit details of proposed cutting and patching.
4. Confirm specified thermostat or other controls are compatible with specified equipment.

C. Examine and verify structural details and sections indicated on the Drawings, ascertain adequacy, and determine conflicts in dimensions and clearances.

3.02 PREPARATION

A. Before installation, remove dust and debris from equipment and ducts.

B. During installation and until equipment is operated, protect equipment and ducts from dust and debris by covering openings.

C. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.03 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. Adjust alignment of ducts where necessary to resolve conflicts with architectural features or to resolve conflicts with the work of other trades.

C. Install outdoor units on a solid longitudinal foundation (steel beam frame, rail curb, or concrete) as recommended by unit manufacturer.

D. Upon completion of installation, remove debris from ductwork and equipment and clean ducts.

3.04 SCHEDULES

A. As indicated on the Drawings.

END OF SECTION

SECTION 15762

HEATING UNITS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for electric, gas fired, steam, hot water unit heaters and thermostats for heaters.

1.02 REFERENCES

A. American Gas Association (AGA).

B. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

C. Underwriters' Laboratories, Inc. (UL).

1.03 ADMINISTRATIVE REQUIREMENTS

A. Roof coordination as specified in Section 15500 - Common Work Results for HVAC.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.05 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Catalog cuts, bulletins, and brochures:
   1. Design features.
   2. Load capacities.
   3. Efficiency ratings.
   4. Dimensions.
   5. Weight: Shipping and operating.

C. Drawings:
   1. Component layout and identification.
   2. Views:
      a. Front, side, rear elevations, and top and bottom views, with dimensions.
      b. Connection locations including electrical, mechanical, and other.
   3. Cut away drawings:
      a. Parts list.
      b. Material specification lists.

4. Wiring, control schematics, control logic diagrams and ladder logic or similar for computer-based controls.
5. Details for supports, isolators, and bracing.

D. Delegated Design Submittals:
1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria.
a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
b. For wall mounted equipment weighing 125 pounds or more.

E. Engineering data:
1. Manufacturer's published data for fan, burner, and filter.
2. Maximum equipment vibration levels and field-testing method.
3. Sound power level in each of 8 octave bands and overall Sones.
4. Fan performance curves showing specified operating condition.
5. Bearing life.

F. Manufacturer's recommendations for handling, storage, and installation.

G. Nameplate data.

H. Seismic certification.

I. Vendor operation and maintenance manuals: Manufacturer's standard instruction manual for operation and maintenance.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2 with additional requirements in Section 15500 - Common Work Results for HVAC.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. As specified in Section 15500 - Common Work Results for HVAC.

B. Provide instrumentation and controls to meet the equipment operating requirements as specified in Section 15936 - Instrumentation and Control Devices for HVAC.

2.03 ELECTRIC UNIT HEATER (EUH)

A. Manufacturers: One of the following or equal:
1. Indeeco, Type TRIAD.
2. Trane.

3. Markel.
4. Chromalox.

B. Fan type: Aluminum axial flow:
1. Provide fan guards.
2. Dynamically balance.
3. Fan designed for quiet operation.
4. Permanently lubricated ball bearings.
5. Automatic reset thermal overload protection.

C. Heating element characteristics:
1. Rated capacity at entering air temperature of 65 degrees Fahrenheit.
2. Fin type, Type 316 stainless steel plated heater elements, with elements brazed to common fins, designed for maximum strength and maximum heat transfer.
3. 3-phase designed for balanced phases.
4. Over temperature cutout with automatic reset.

D. Features:
1. Built-in magnetic contactors.
2. Control transformer for 24-volt or 120-volt control as indicated in the Heating Unit Schedules.
3. Required mounting brackets.
4. Individually adjustable outlet louvers.
5. Heavy 16 gauge stainless steel louvered outlet grille and plated rear grille.
6. Cabinet formed of minimum thickness 18-gauge steel with steel stiffeners. Listed for corrosive areas and NEMA 4X hose down requirements.
7. Controls:
   a. Provide thermostat as specified in this Section.
   b. Provide control transformer suitable for 24-volt or 120-volt control as indicated in the Heating Unit Schedules.

E. Finishes:
1. Casing finish backed enamel in manufacturer's standard color.

2.04 THERMOSTATS FOR UNIT HEATERS

A. Type: Wall mounted, heat only with fan AUTO-ON selector switch when fan part of unit and separate system ON-OFF selector switch.

B. Dial or lever temperature setpoint adjustment with 45 to 90 degrees Fahrenheit setpoint range.

C. Setpoint and temperature indication.

D. Control voltage as indicated in the Heating Unit Schedules.

E. The use of mercury within the thermostat is not acceptable.

F. Bi-metallic contacts suitable for 1- or 2-stage unit heater control as specified for the heater size or as scheduled.

2.05 SHIPPING, SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2, with additional requirements in Section 15500 - Common Work Results for HVAC.

PART 3 EXECUTION

3.01 GENERAL

A. As specified in Section the Agreement and Contract RFP in Volumes 1 and 2, with additional requirements in Section 15500 - Common Work Results for HVAC.

3.02 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.03 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

3.04 TESTING

A. Test equipment performance and balance equipment as specified in Section 15954 - Testing, Adjusting, and Balancing for HVAC.

3.05 FIELD QUALITY CONTROL

A. Verify equipment operation is within manufacturer's standards and that noise levels do not exceed levels specified.

3.06 SCHEDULES

A. As indicated on the Drawings.

END OF SECTION

SECTION 15830

FANS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Fans, motors, and accessories.

1.02 REFERENCES

A. Abbreviations:
   1. As used in this Section and on the Drawings, abbreviations and Fan Schedule headings have the following meaning:
      a. EF or EXF: Exhaust Fan.
      b. Hp: Fan motor horsepower.
      c. SF or SPF: Supply Fan.
      d. Size: Nominal fan blade or wheel diameter in inches.
      e. SP or ESP: Fan External Static Pressure in inches water column.
      f. Type: Fan type as specified in this Section.
      g. V/Ph: Fan motor voltage and power phases.

B. Standards:
   1. Air Movement and Control Association International, Inc. (AMCA).
   2. American Bearing Manufacturers Association (ABMA):
      a. 9 - Load Ratings and Fatigue Life for Ball Bearings.
      b. 11 - Load Ratings and Fatigue Life for Roller Bearings.
   3. ASTM International (ASTM):
      a. A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
      b. D4167 - Standard Specification for Fiber Reinforced Plastic Fans and Blowers.
      c. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   4. National Fire Protection Association (NFPA):
      a. 820 - Standard for Fire Protection in Wastewater Treatment and Collection Facilities.
   5. National Roofing Contractors Association (NRCA).
   6. Occupational Safety and Health Administration (OSHA).

1.03 ADMINISTRATIVE REQUIREMENTS

A. Roof coordination as specified in Section 15500 - Common Work Results for HVAC.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.05 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Materials.
   2. Primary and ancillary equipment.
   3. Sound Power Level in each of 8 octave bands and overall Sones.
   4. Fan system layout, mechanical, electrical power, and control diagrams.
   5. Supports, vibration isolators, and seismic bracing calculations and details.
   6. Calculated fan vibration levels and field-testing method.
   7. Bearing life.
   8. Fan performance curves showing specified operating condition.

C. Drawings:
   1. Component layout and identification.
   2. Views:
      a. Front, side, rear elevations, and top and bottom views, with dimensions.
      b. Connection locations including electrical, mechanical, and other.
   3. Cut away drawings.
      a. Parts list.
      b. Material specification lists.
   4. Wiring, control schematics, control logic diagrams and ladder logic or similar for computer-based controls.
   5. Details for supports, isolators, and bracing.

D. Delegated Design Submittals:
   1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria.
      a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
      b. For equipment installed outdoors.
      c. For wall mounted equipment weighing 125 pounds or more.

E. Manufacturer's recommendations for handling, storage, and installation.

F. Nameplate data.

G. Vendor operation and maintenance manuals: Manufacturer's standard instruction manual for operation and maintenance.

H. Provide manufacturers reports on factory testing.

PART 2 PRODUCTS

2.01 GENERAL

A. As specified in Section 15500 - Common Work Results for HVAC.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instrumentation and controls to meet the equipment operating requirements as specified in Section 15936 - Instrumentation and Control Devices for HVAC.

B. Roof curb:
   1. Factory fabricated to match fan material.
   2. Capable of supporting entire unit weight.
   3. Suitable for installing and connecting ductwork to curb.
   4. In accordance with NRCA Standards.
   5. Extend a minimum of 8 inches above top of built up roofing.
   6. Curb shall be a minimum height of 12 inches.
   7. Flashing: In accordance with NRCA Standards and roof manufacturer.

2.03 TYPE 4, SIDEWALL PROPELLER FANS

A. Manufacturers: One of the following or equal:
   1. Greenheck, Model SBE, or SBS.
   2. Loren Cook, similar series.
   3. Penn Ventilator, similar model.

B. Characteristics:
   1. Wall-mounted, low noise propeller type, packaged unit.
   2. Fan: Statically and dynamically balanced propeller with aluminum blades, unless noted otherwise.
   3. Motor: Permanently lubricated; selected to avoid running in the service factor.
   4. Finishes: Provide 2 coat finish with a 2.0 to 3.0 mils thick epoxy primer base coat and 2.0 to 3.0 mils thick polyester powder coated topcoat or approved equal finish on fan and accessories.

C. Accessories:
   1. Mounting brackets: Necessary for installation.
   2. Motor and fan side OSHA guards.
   3. Wall mount collar when necessary for.
   4. Dampers with damper guards when damper scheduled.
   5. Weather hood when scheduled.
   6. Provide other accessories as scheduled.

2.04 TYPE 5, CENTRIFUGAL CEILING EXHAUST FANS

A. Manufacturers: One of the following or equal:
   1. Greenheck, Model SP, CSP.
   2. Loren Cook, similar series.
   3. Penn, similar series.

B. Characteristics:
   1. Type: Cabinet type centrifugal fan.
   2. Fan: Steel, forward-curved, squirrel-cage type wheel.
   3. Housing: Heavy gauge carbon steel housing.
   4. Access: Removable access panel.
   5. Finish: Galvanized fan, housing, and damper.

C. Accessories:
   1. Exhaust grille, egg-crate pattern, aluminum, or PVC construction.
   2. Factory installed backdraft damper on discharge of fan.
   3. Provide other accessories as scheduled.

2.05 SOURCE QUALITY CONTROL

A. Factory test fans listed on the Fan Schedule for proper operation, performance, and electrical controls.

2.06 SHIPPING, SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2, with additional requirements in Section 15500 - Common Work Results for HVAC.

B. Deliver units in 1 piece, factory assembled, internally wired, and lubricated.

PART 3 EXECUTION

3.01 GENERAL

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2, with additional requirements in Section 15500 - Common Work Results for HVAC.

3.02 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.03 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

3.04 TESTING

A. Test equipment performance and balance equipment as specified in Section 15954 - Testing, Adjusting, and Balancing for HVAC.

3.05 FIELD QUALITY CONTROL

A. Verify equipment operation and unit vibration is within manufacturer's submitted maximum.

3.06 SCHEDULES

A. As indicated on the Drawings.

END OF SECTION

SECTION 15936

INSTRUMENTATION AND CONTROL DEVICES FOR HVAC

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Controls for Heating, Ventilating, and Air Conditioning (HVAC) Systems.

1.02 REFERENCES

A. California Code of Regulations (CCR):
   1. Title 24 - Building Standard Code.

B. CSA International (CSA).

C. National Electrical Code (NEC).

D. Restriction of Certain Hazardous Substances (RoHS).

E. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 Volts Maximum).

F. National Fire Protection Association (NFPA):
   1. 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.

G. Underwriters' Laboratories, Inc. (UL):
   1. 13 – Standard for Safety Power-Limited Circuit Cables.
   2. 268A - Standard for Smoke Detectors for Duct Application.
   3. 508 - Standard for Industrial Control Equipment.
   4. 1479 - Fire Tests of Through-Penetration Firestops.
   5. 1685 – Standard for Safety Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables.

1.03 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Product data: As specified in Section 15500 - Common Work Results for HVAC.

C. Shop drawings:
   1. Manufacturer's information including:
      a. Catalog information clearly marked to show specific products, models, and sizes being furnished.
      b. Component cut sheets.
   2. Control diagrams showing the interconnection of control components including wiring terminal strip diagrams.

3. Detail drawings showing control panel layout and dimensions including control panel terminal strips for wiring to outside control devices and panels.
4. Provide certification that components and systems meet CCR Title 24 and are approved by the California Energy Commission.

D. Provide vendor operation and maintenance manual as specified in Section 01782 - Operation and Maintenance Manuals.

E. Provide Manufacturer's Certificate of Installation and Functionality Compliance as specified in Section 01756 - Commissioning.

1.04 QUALITY ASSURANCE

A. The control system shall be designed in accordance with UL and CSA standards.

B. Regulatory requirements: In accordance with CCR Title 24.

1.05 DELIVERY, STORAGE, AND HANDLING

A. The system control products shall be stored and handled per manufacturer's recommendations.

1.06 SITE CONDITIONS

A. Elevation and ambient conditions as specified in Section 01850 - Design Criteria.

1.07 WARRANTY

A. Special warranties: Warranty period begins at date of Project Acceptance or first date of Beneficial Use by the Owner:
1. 1 year: Parts and on-site labor for components, systems, and programming.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. General requirements:
1. All electrical components shall be UL-listed and meet the design and installation requirements of the NEC.
2. Complete, functional system: Provide all necessary electrical power and control systems, components, and wiring to make a complete functioning system.
3. Comply with electrical Sections for electrical power and control systems.
4. System control functions to perform as described in Products.
5. Materials: New, free from defects, and of the quality specified.
6. Common manufacturer: Provide components, component accessories, and devices, as much as possible, by the same manufacturer throughout the work.
7. Mounting: Mount control components and devices in accessible locations for maintenance and as recommended by the manufacturer; provide necessary

manufacturer-approved mounting and configuration hardware for mounting and operation of control components and devices.

8. Components and systems must in accordance with CCR Title 24 energy conservation regulations and be listed with the California Energy Commission as approved for sale in California.

B. Fire detection system design requirements:
   1. Provide all supply and exhaust fans greater than 2,000 cubic feet per minute with a smoke control system including the following minimum components.
      a. Fan and air handling unit interlocks interlock to shut down upon smoke detection signal from fire alarm control panel.
      b. Field wiring terminal blocks for connection of shut down signals from local fire alarm control panel.

2.02 VRF SYSTEM WALL MOUNTED THERMOSTAT CONTROLLER

A. Each indoor/evaporator unit shall be supplied with a wall mounted thermostat controller. The controller shall have a backlit LCD display and be able to support the following display items and user input operations:
   1. On/Off control.
   2. Manual change of mode of operation.
   3. Set-point adjustment.
   4. Reading of both heating and cooling set-point temp.
   5. Reading of actual room temp.
   6. Fan speed setting.
   7. Mode of operation on the unit display.
   8. Individual heating and cooling (dual) set-point adjustment.

B. The controllers shall be capable of diagnostic use and provide malfunction codes to indicate the type of failure that has occurred. The user shall be able to read superheat temperatures, return air and discharge air temperature values directly from the wall mounted thermostats.

C. The controllers shall be capable of accepting independent set-points for cooling and heating operation. The use of a common set-point is not allowable.

D. The system shall provide automatic changeover from heating to cooling mode of operation. If, in heating mode, the space temperature rises 1 degree above the cooling set-point, the system shall change from heating to cooling mode. If, in cooling mode, the space falls 1 degree below the heating set-point, the system shall change from cooling to heating mode. Auto-change-over is required for all systems (heat pump and heat recovery). If not available in heat pump system, then manufacturer must provide system capable of meeting this requirement.

E. Adjustable setback temperature - The controllers shall allow for independent and adjustable setback temperature at each unit. The setback temperature (adjustable) shall determine the "override" temperature to start the system when in setback mode if the temperature rises or falls outside of the specified range.

F. Manufacturers: The following or equal:
   1. Daikin: Model BRC1E73.

2. Mitsubishi: Similar Model.
3. Samsung: Similar Model.

2.03 THERMOSTATS

A. General:
1. Thermostat types: Thermostat types are called out on the drawings by the letter T followed by a number; this designation refers to the specified thermostat types specified in this Section; where no type is called out, provide 1 of the specified types that will match the controlled equipment requirements and provide a functioning system.
2. Manufacturers: One of the following or equal:
   a. Johnson Controls, model as specified with each type.
   b. Honeywell, Tradeline, equivalent models.
3. Thermostat cable:
   a. Conductor: Number of conductors required to be determined by HVAC system, solid bare copper, 18/20 American Wire Gauge (up to 250 feet); provide sufficient length to accommodate the thermostat locations as indicated on the Drawings.
   b. Insulation: Heat and moisture resistant colored Polyvinylchloride (PVC) or Polypropylene insulation.

Thermostat Terminal	Wire Color (Typical)	Function Description
R	Red	24V AC/Heat Single Transformer
Rc	Red	24V for Dual Transformer - AC
Rh	Red	24V for Dual Transformer - Heat
C	Black/Blue	Common 24VAC Power Source
Y	Yellow	Primary Cooling
Y2	Light Blue/Yellow	Secondary Cooling
W	White	Primary Heating
W2	Brown	Secondary Heating
G	Green	Fan Relay
O	Orange	Reversing Valve

   c. Jacket: White or Brown Polyvinylchloride.
   d. In accordance with:
      1) UL 13 in accordance with NEC Article 725.
      2) UL Listed Type CL2, Sunlight Resistant.
      3) UL 1685 Vertical Tray. RoHS compliant.
   e. Temperature Rating: 140 degrees Fahrenheit.
   f. Voltage Rating: Up to 150V.

B. T-2, Type 2 Thermostat, Cooling Only, Line Voltage:
   1. Manufacturers: The following or equal: Johnson Controls Model:
      a. Dry locations (no hose bibs or open water processes in room): Model A19BBC-2C in NEMA 1 enclosure.
      b. Wet locations (hose bibs or open water processes in room): Model A19QSC-1C in rain and dusttight enclosure.
   2. Switch action: Single-pole double-throw, close on rising temperature.
   3. Sensing element: Coiled bulb and capillary.
   4. Setpoint: 30 to 110 degrees Fahrenheit with knob adjuster and visible scale.
   5. Electrical ratings: 16 amps alternating current at 120 volts, 9.2 amps alternating current at 208 volts.
   6. Differential range: For dry locations, 3 to 12 degrees Fahrenheit adjustable; for wet locations, 5 degrees Fahrenheit fixed.

2.04 RESISTANCE TEMPERATURE DETECTOR (RTD) TYPE TEMPERATURE TRANSMITTER

A. Manufacturers: The following or equal:
   1. Omega Engineering, Model EWSA-PT100-TX.
   2. Greyston Energy Systems Inc., Model TDHRBF12XA002.

B. Characteristics and features:
   1. Sensor: Platinum RTD 100 ohm or 1000 ohm.
   2. Power supply: 10 to 30 Vdc, loop powered.
   3. Probe sensing range: 32 to 158 degrees Fahrenheit.
   4. Output signal: 4-20 mA.
   5. Transmitter accuracy: Within 0.1 percent of span.
   6. Enclosure:
      a. NEMA 4X (IP65) for non-hazardous areas.
      b. NEMA 7 for hazardous areas.
   7. Wiring connection: Screw terminal block, 2-wire.

2.05 HVAC CONTROL DESCRIPTIONS

A. General: Provide control systems that will maintain room or area comfort under changing ambient conditions and varying use; descriptions in this Section are general in nature and do not cover every mode of operation.

B. Chemical Room Control Sequences:
   1. Exhaust Fan WD37-FANx-13302/WD37-FANx-19302 will run continuously to provide 6 ACH to the space.
      a. WD37-FANx-13302/WD37-FANx-19302 will be hardwired to a break-glass emergency shutdown switch. Upon switch activation, the supply fan will de-energize.
      b. WD37-FANx-13302/WD37-FANx-19302 will send a “General HVAC Fault” alarm to the SCADA system upon unit de-energizing.
   2. Electric Unit Heater WD37-HEAT-13203/WD37-HEAT-19203 will be controlled by a thermostat with an adjustable set-point. The heating set-point will be 55 degrees Fahrenheit. When the temperature falls 3 degrees below the set-point, the unit will energize. When the temperature rises 3 degrees above the set-point, the unit will de-energize.

C. Pump Room Control Sequences:
   1. Exhaust Fan WD37-FANx-13301/Exhaust Fan WD37-FANx-19301 will be controlled by a thermostat with an adjustable set-point. The cooling set-point will be 80 degrees Fahrenheit. When the temperature rises 3 degrees above the set-point, the unit will energize. When the temperature falls 3 degrees below the set-point, the unit will de-energize.
   2. Electric Unit Heaters WD37-HEAT-13201/WD37-HEAT-19201 and WD37-HEAT-13202/WD37-HEAT-19202 will be controlled by thermostats with an adjustable set-point. The heating set-point will be 55 degrees Fahrenheit. When the temperature falls 3 degrees below the set-point, the unit will energize. When the temperature rises 3 degrees above the set-point, the unit will de-energize.

D. Campus Oaks Electrical Room Control Sequences:
   1. The variable refrigerant flow (VRF) will be comprised of the outdoor heat pump unit WD37-HVAC-13101 and indoor fan coil units WD37-HVAC-13102, WD37-HVAC-13103, and WD37-HVAC-13104. The indoor units will be controlled by a single thermostat with adjustable set-points. The cooling set-point will be 90 degrees Fahrenheit. When the temperature rises 3 degrees above the set-point, the unit will energize. When the temperature falls 3 degrees below the set-point, the unit will de-energize. The heating set-point will be 55 degrees Fahrenheit. When the temperature falls 3 degrees above the set-point, the unit will energize. When the temperature rises 3 degrees below the set-point, the unit will de-energize.
      a. Provide lockbox for thermostat. Setpoint shall be locked out from being set below 90 degrees Fahrenheit, or below 55 degrees Fahrenheit.
   2. Electric Unit Heater WD37-HEAT-13204 will be controlled by a thermostat with an adjustable set-point. The heating set-point will be 50 degrees Fahrenheit. When the temperature falls 3 degrees below the set-point, the unit will energize. When the temperature rises 3 degrees above the set-point, the unit will de-energize.

E. Misty Woods Electrical Room Control Sequences:
   1. The variable refrigerant flow (VRF) system will be comprised of the outdoor heat pump unit WD37-HVAC-19101 and indoor fan coil units WD37-HVAC-19102, WD37-HVAC-19103, WD37-HVAC-19104, and WD37-HVAC-19105. The indoor units will be controlled by a single thermostat with adjustable set-points. The cooling set-point will be 90 degrees Fahrenheit. When the temperature rises 3 degrees above the set-point, the unit will energize. When the temperature falls 3 degrees below the set-point, the unit will de-energize. The heating set-point will be 55 degrees Fahrenheit. When the temperature falls 3 degrees above the set-point, the unit will energize. When the temperature rises 3 degrees below the set-point, the unit will de-energize.
      a. Provide lockbox for thermostat. Setpoint shall be locked out from being set below 90 degrees Fahrenheit, or below 55 degrees Fahrenheit.
   2. Electric Unit Heater WD37-HEAT-19204 will be controlled by a thermostat with an adjustable set-point. The heating set-point will be 50 degrees Fahrenheit. When the temperature falls 3 degrees below the set-point, the unit will energize. When the temperature rises 3 degrees above the set-point, the unit will de-energize.

F. Restroom Control Sequences:
   1. Restroom Exhaust Fan WD05-FANx-13303/WD05-FANx-19303 will be interlocked with the lights of restroom. When the lights are turned on, the fan will energize. When the lights are turned off, the fan will de-energize.

2.06 ELECTRICAL MATERIALS

A. Provide conduit as specified in Section 16010 - General Requirements for Electrical, and Section 16130 - Conduits.

B. Provide control and instrumentation wire as specified in Section 16123 - 600-Volt or Less Wires and Cables.

PART 3 EXECUTION

3.01 PREPARATION

A. Before installation remove dust and debris from equipment and accessories.

B. During installation and until equipment is operated, protect equipment and accessories from dust and debris.

3.02 INSTALLATION

A. Install as indicated on the Drawings, in accordance with NFPA 90A, and per the manufacturer's written instructions.

B. Coordinate installation of HVAC control systems with other trades.
   1. Prior to installation, coordinate wiring and conduit requirements with electrical subcontractor.

C. Mount remote annunciator and test station on wall near smoke detector.
   1. Devices shall be easily accessible from floor level.
   2. Label annunciator and test station.

D. Provide all electrical work to support smoke detector.
   1. Coordinate with electrical subcontractor.

E. Thermostat cable conduit installation:
   1. As specified in Electrical Sections - 16050 - Common Work Results for Electrical, 16123 - 600-Volt or Less Wires and Cables, and 16130 - Conduits.

F. Sensor and control station mounting:
   1. Where not otherwise indicated, mount 5 feet above floor or walking level.
   2. Provide insulating back plates when mounting is on an exterior wall or a wall adjoining an unconditioned space.
   3. Shield outside thermostats or sensors from the sun; provide thermostats with remote bulb and compensated capillary.
   4. Install locking covers where indicated on the Drawings.

3.03 TESTING

A. Test witnessing: Witnessed.

B. Test each control component and system as part of HVAC system testing, adjusting, and balancing as specified in Section 15954 - Testing, Adjusting, and Balancing for HVAC.

END OF SECTION

SECTION 15954

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Requirements for testing air systems installed as part of this contract and existing air systems affected by the installation of new equipment.

1.02 REFERENCES

A. Associated Air Balance Council (AABC):
   1. National Standards Total System Balance.

B. National Environmental Balancing Bureau (NEBB):
   1. Procedural Standards for Testing, Adjusting, and Balancing Environmental Systems.

C. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA):
   1. HVAC Systems - Testing, Adjusting, and Balancing.

D. Testing, Adjusting, and Balancing Bureau (TABB):
   1. TAB Procedural Guide.

1.03 SUBMITTALS

A. Resumes of proposed supervisor and personnel showing training and qualifications.
   1. Include courses, exams, or tests relating to HVAC testing - taken and passed.

B. Testing plan:
   1. At least 30 days prior to starting field work.
   2. Set of report forms completed with design flow values and installed equipment pressure drops, and required cubic feet per minute for air terminals.
   3. Heating, ventilating, and air conditioning system schematic similar to Figure 6-1 in SMACNA HVAC Testing, Adjusting, and Balancing.
   4. Complete list of instruments proposed to be used, organized in appropriate categories, with data sheets for each showing:
      a. Manufacturer and model number.
      b. Description and use when needed to further identify instrument.
      c. Size or capacity range.
      d. Latest calibration date.
   5. Proposed schedule for testing and balancing.

C. Report:
   1. Not more than 45 days prior to Contractor's request for final inspection, submit draft report on applicable reporting forms.

2. At least 15 days prior to Contractor's request for final inspection, submit 3 copies of final reports incorporating Engineer's comments on draft report.
3. List of instruments used and last date of calibration of each.
4. Procedures followed for testing, adjusting, and balancing.
5. Identification and succinct description of systems included in report.
6. Initial balance test results made with all dampers and air control devices in full open positions.
7. Description of final locations and sizes, including opening area and dimensioned configuration of orifices and other restrictions used to achieve final balanced flows.
8. Description of final location and opening positions of dampers, registers, louvers, and valves.
9. Schematics of systems included in report; use schematics as part of testing, adjusting, and balancing report to summarize design and final balanced flows.
10. Testing, adjusting, and balancing report forms.
11. Final field results established for system balancing including airflow, fan speeds, and fan static pressures at the fan inlet and outlet.
12. Appendices.
    a. Raw field data taken during testing.
    b. Sample calculation sheet for each type of calculation made to convert raw field data to final results.
    c. Initial air balance results with dampers and registers in full open position; include airflow at all inlets and outlet, initial fan speed and fan suction and discharge pressures.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

A. Work of testing, adjusting, and balancing of heating, ventilation, and air conditioning systems to be by an independent testing agency and a certified member in good standing with AABC, NEBB, or TABB.

B. Field testing to be performed or directly supervised by personal who have passed a Test and Balance course or exam and is an AABC, NEBB, or TABB certified supervisor.

3.02 PREPARATION

A. Prior to start of testing, adjusting, and balancing, verify that:
    1. System installation is complete in accordance with the requirements for completed equipment installations in Section 15500 - Common Work Results for HVAC and capable of full operation.
    2. Outside conditions are within reasonable range relative to design conditions.
    3. Lighting fixtures are energized.

4. Special equipment such as computers, laboratory equipment, and electronic equipment are in full operation.
5. Requirements for preparation for testing and balancing have been met for elements of each system which require testing.

3.03 FIELD QUALITY CONTROL

A. Test, adjust, and balance each separate complete heating, ventilating, and air conditioning systems.
   1. Include existing heating, ventilating, and air conditioning components when effected by the Work.

B. Perform testing, adjusting, and balancing cycles until airflows meet acceptance criteria.
   1. Ascertain airflow balance between overall requirements and flow in individual supply and exhaust grilles.

C. Initial testing, adjusting, and balancing:
   1. Test each system with dampers, grilles, orifices, and other variable airflow devices in their full open position; measure and report initial airflows, fan speed, and fan static pressures at fan inlet and outlet.
   2. Adjust total system flow downward or upward by adjusting fan speed until one inlet or outlet is at indicated flow and all other flows exceed indicated flows.
   3. Adjust fan speed by changing fan drives or sheaves as necessary.

D. Subsequent testing, adjusting, and balancing:
   1. Perform adjustments by adjusting dampers, louvers, or size of orifices or plates.
   2. Measure and record air volume discharged at each inlet and outlet and adjust air inlets and outlets to design air volumes within 0 to 5 percent over design rates.
   3. Adjust fan speeds and motor drives within drive limitations, for required air volume.
   4. Measure air flow and static pressures and adjust air supply and exhaust fan units to deliver at least 100 to 105 percent of the design air volume.
   5. Measure and record static air pressure conditions on fans, including filter and coil pressure drops, and total pressure across the fan.
   6. Evaluate building and room pressure conditions to determine adequate supply and return air conditions.
   7. Evaluate space and zone temperature of conditions to determine adequate performance of the systems to maintain temperatures without draft.
   8. Permanently mark final balance positions of balancing dampers.

E. Develop heating, ventilating, and air conditioning system schematics similar to Figure 6-1 in SMACNA Testing, Adjusting, and Balancing.

F. Accurately record the required data on AABC, NEBB, or TABB test and balance report forms.

G. Measure amperage draw of fan and pump motors at final balance.

H. Test primary source equipment in accordance with AABC, NEBB, or TABB procedures.
   1. Primary source equipment includes items listed in this Section not previously tested as part of this testing, adjusting, and balancing work.
   2. Complete appropriate AABC, NEBB, or TABB equipment test forms for each piece of equipment.
   3. Calculate cooling and heating capacities to show conformance with specified capacities.
   4. Adjust equipment as needed to deliver specified cooling and heating loads.
   5. Record final equipment performing characteristics and adjustment settings in the final design report.

I. Testing, adjusting, and balancing acceptance criteria:
   1. Procedures successful and complete when heating, ventilating, and air conditioning systems and components are functioning properly and system air flows are within specified tolerances of design flows.

END OF SECTION

SECTION 15956

PIPING SYSTEMS TESTING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Test requirements for piping systems.

1.02 REFERENCES

A. National Fuel Gas Code (NFGC).

B. American Society of Mechanical Engineers (ASME):
   1. B31.1 - Power Piping.
   2. B31.3 - Process Piping.
   3. B31.8 - Gas Transmission and Distribution Piping Systems.

C. Underwriters Laboratories Inc. (UL).

1.03 TESTING REQUIREMENTS

A. General requirements:
   1. Testing requirements are stipulated in Laws and Regulations; are included in the Piping Schedule in Section 15052 - Common Work Results for General Piping; are specified in the specifications covering the various types of piping; and are specified in this Section.
   2. Requirements in Laws and Regulations supersede other requirements of Contract Documents, except where requirements of Contract Documents are more stringent, including higher test pressures, longer test times, and lower leakage allowances.
   3. Test plumbing piping in accordance with Laws and Regulations, the plumbing code, as specified in Section 01410 - Regulatory Requirements, and UL requirements.
   4. When testing with water, the specified test pressure is considered to be the pressure at the lowest point of the piping section under test.
      a. Lower test pressure as necessary (based on elevation) if testing is performed at higher point of the pipe section.

B. Furnish necessary personnel, materials, and equipment, including bulkheads, restraints, anchors, temporary connections, pumps, water, pressure gauges, and other means and facilities required to perform tests.

C. Water for testing, cleaning, and disinfecting:
   1. Water for testing, cleaning, and disinfecting will be provided as specified in Section 01500 - Temporary Facilities and Controls.

D. Pipes to be tested: Test only those portions of pipes that have been installed as part of this Contract. Test new pipe sections prior to making final connections to existing piping. Furnish and install test plugs, bulkheads, and restraints required to isolate new pipe sections. Do not use existing valves as test plug or bulkhead.

E. Unsuccessful tests:
   1. Where tests are not successful, correct defects or remove defective piping and appurtenances and install piping and appurtenances that comply with the specified requirements.
   2. Repeat testing until tests are successful.

F. Test completion: Drain and leave piping clean after successful testing.

G. Test water disposal: Dispose of testing water at locations specified by the City of Roseville in accordance with requirements of federal, state, county, and city regulations governing disposal of wastes in the location of the Project and disposal site. All requirements and costs associated with notifications and obtaining any discharge permit or approvals shall be responsibility of Contractor.

1.04 SUBMITTALS

A. Submit as specified in Section 01330 - Submittal Procedures.

B. Schedule and notification of tests:
   1. Submit a list of scheduled piping tests by noon of the working day preceding the date of the scheduled tests.
   2. Notification of readiness to test: Immediately before testing, notify Engineer in writing of readiness, not just intention, to test piping.
   3. Have personnel, materials, and equipment specified in place before submitting notification of readiness.

1.05 SEQUENCE

A. Clean piping before pressure or leak tests.

B. Test gravity piping underground, including sanitary sewers, for visible leaks before backfilling and compacting.

C. Underground pressure piping may be tested before or after backfilling when not indicated or specified otherwise.

D. Backfill and compact trench, or provide blocking that prevents pipe movement before testing underground piping with a maximum leakage allowance.

E. Test underground piping before encasing piping in concrete or covering piping with slab, structure, or permanent improvement.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 TESTING ALIGNMENT, GRADE, AND DEFLECTION

A. Alignment and grade:
   1. Visually inspect the interior of gravity piping with artificial light, reflected light, or laser beam.
   2. Consider inspection complete when no broken or collapsed piping, no open or poorly made joints, no grade changes that affect the piping capacity, or no other defects are observed.

B. Deflection test:
   1. Pull a mandrel through the clean piping section under test.
   2. Perform the test not sooner than 30 days after installation and not later than 60 days after installation.
   3. Use a 9-rod mandrel with a contact length of not less than the nominal diameter of the pipe within 1 percent plus or minus.
   4. Consider test complete when the mandrel can be pulled through the piping with reasonable effort by one person, without the aid of mechanical equipment.

3.02 AIR TESTING METHOD FOR PRESSURE PIPING

A. Air test piping, indicated with "AM" in the Piping Schedule, with air or another nonflammable or inert gas.

B. Test gas, air, liquefied petroleum gas, liquid chlorine, and chlorine gas piping by the air test method:
   1. Test chlorine piping with dry air or nitrogen having a dew point of minus 40 degrees Fahrenheit or less. Supply temporary air dryers as necessary.

C. Test at pressure as specified in the Piping Schedule on the Drawings:
   1. Provide temporary pressure relief valve for piping under test:
      a. Set at the lesser of 110 percent of the test pressure or 50 pounds per square inch gauge over the test pressure.
   2. Air method test pressures shall not exceed 110 percent of the piping maximum allowable working pressure calculated in accordance with the most stringent of ASME B31.1, ASME B31.3, ASME B31.8, or the pipe manufacturer's stated maximum working pressure.
   3. Gradually increase test pressure to an initial test pressure equal to the lesser of 1/2 the test pressure or 25 pounds per square inch gauge.
   4. Perform initial check of joints and fittings for leakage.
   5. Gradually increase test pressure in steps no larger than the initial pressure. Check for leakage; at each step increase until test pressure reached.
   6. At each step in the pressure, examine and test piping being air tested for leaks with soap solution.
   7. Consider examination complete when piping section under test holds the test pressure for 15 minutes without losses.

3.03 TESTING GRAVITY FLOW PIPING

A. Test gravity flow piping indicated with "GR" in the Piping Schedule, as follows:
   1. Unless specified otherwise, subject gravity flow piping to the following tests:
      a. Alignment and grade.
      b. For plastic piping test for deflection.
      c. Visible leaks and pressure with maximum leakage allowance, except for storm drains and culverts.
   2. Inspect piping for visible leaks before backfilling.
   3. Provide temporary restraints when needed to prevent movement of piping.
   4. Pressure test piping with maximum leakage allowance after backfilling.
   5. With the lower end plugged, fill piping slowly with water while allowing air to escape from high points. Keep piping full under a slight head for the water at least 24 hours:
      a. Examine piping for visible leaks. Consider examination complete when no visible leaks are observed.
      b. Maintain piping with water, or allow a new water absorption period of 24 hours for the performance of the pressure test with maximum leakage allowance.
      c. After successful completion of the test for visible leaks and after the piping has been restrained and backfilled, subject piping to the test pressure for minimum of 4 hours while accurately measuring the volume of water added to maintain the test pressure:
         1) Consider the test complete when leakage is equal to or less than the following maximum leakage allowances:
            a) For concrete piping with rubber gasket joints: 80 gallons per day per inch of diameter per mile of piping under test:
               (1) Advise manufacturer of concrete piping with rubber gasket joints of more stringent than normal maximum leakage allowance.
            b) For vitrified clay piping: 500 gallons per day per inch of diameter per mile of piping under test.
            c) For other piping: 80 gallons per day per inch diameter per mile of piping under test.

3.04 TESTING HIGH-HEAD PRESSURE PIPING

A. Test piping for which the specified test pressure in the Piping Schedule is 20 pounds per square inch gauge or greater, by the high head pressure test method, indicated "HH" in the Piping Schedule.

B. General:
   1. Test connections, hydrants, valves, blowoffs, and closure pieces with the piping.
   2. Do not use installed valves for shutoff when the specified test pressure exceeds the valve's maximum allowable seat differential pressure. Provide blinds or other means to isolate test sections.

3. Do not include valves, equipment, or piping specialties in test sections if test pressure exceeds the valve, equipment, or piping specialty safe test pressure allowed by the item's manufacturer.
4. During the performance of the tests, test pressure shall not vary more than plus or minus 5 pounds per square inch gauge with respect to the specified test pressure.
5. Select the limits of testing to sections of piping. Select sections that have the same piping material and test pressure.
6. When test results indicate failure of selected sections, limit tests to piping:
    a. Between valves.
    b. Between a valve and the end of the piping.
    c. Less than 500 feet long.
7. Test piping for minimum 2 hours for visible leaks test and minimum 2 hours for the pressure test with maximum leakage allowance.

C. Testing procedures:
1. Fill piping section under test slowly with water while venting air:
    a. Use potable water for all potable waterlines and where noted on the Piping Schedule.
2. Before pressurizing for the tests, retain water in piping under slight pressure for a water absorption period of minimum 24 hours.
3. Raise pressure to the specified test pressure and inspect piping visually for leaks:
    a. Consider visible leakage testing complete when no visible leaks are observed.

D. Pressure test with maximum leakage allowance:
1. Leakage allowance is zero for piping systems using flanged, National Pipe Thread threaded and welded joints.
2. Pressure test piping after completion of visible leaks test.
3. For piping systems using joint designs other than flanged, threaded, or welded joints, accurately measure the makeup water necessary to maintain the pressure in the piping section under test during the pressure test period:
    a. Consider the pressure test to be complete when makeup water added is less than the allowable leakage and no damage to piping and appurtenances has occurred.
    b. Successful completion of the pressure test with maximum leakage allowance shall be achieved when the observed leakage during the test period is equal or less than the allowable leakage and no damage to piping and appurtenances has occurred.
    c. When leakage is allowed, calculate the allowable leakage by the following formula:

        $L = S \times D \times P^{1/2} \times 148{,}000^{-1}$

        wherein the terms shall mean:

        L = Allowable leakage in gallons per hour.

        S = Length of the test section in feet.

D = Nominal diameter of the piping in inches.

P = Average observed test pressure in pounds per square inches gauge, at the lowest point of the test section, corrected for elevation of the pressure gauge.

x = The multiplication symbol.

3.05 TESTING LOW-HEAD PRESSURE PIPING

A. Test piping for which the specified test pressure is less than 20 pounds per square inch gauge, by the low head pressure test method, indicated "LH" in the Piping Schedule.

B. General:
   1. Test pressures shall be as scheduled in Section 15052 - Common Work Results for General Piping.
   2. During the performance of the tests, test pressure shall not vary more than plus or minus 2 pounds per square inch gauge with respect to the specified test pressure.
   3. Test connections, blowoffs, vents, closure pieces, and joints into structures, including existing bell rings and other appurtenances, with the piping.
   4. Test piping for minimum 2 hours for visible leaks test and minimum 2 hours for the pressure test with maximum leakage allowance.

C. Visible leaks test:
   1. Subject piping under test to specified pressure measured at the lowest end.
   2. Fill piping section under test slowly with water while venting air:
      a. Use potable water for all potable waterlines and where noted on the Piping Schedule.
   3. Before pressurizing for the tests, retain water in piping under slight pressure for the water absorption period of minimum 24 hours.
   4. Raise pressure to the specified test pressure and inspect piping visually for leaks. Consider testing complete when no visible leaks are observed.

D. Pressure test with maximum leakage allowance:
   1. Pressure test piping after completion of visible leaks test.
   2. Accurately measure the makeup water necessary to maintain the pressure in the piping section under test during the pressure test period:
      a. Consider the pressure test to be complete when makeup water added is less than the allowable leakage of 80 gallons per inch of nominal diameter, per mile of piping section under test after 24 hours, and no damage to piping and appurtenances has occurred.
      b. Successful completion of the leakage test shall have been achieved when the observed leakage is equal or less than the allowable leakage and no damage to piping and appurtenances has occurred.

E. Optional joint test:
   1. When joint testing is allowed by note in the Piping Schedule, the procedure shall be as follows:
      a. Joint testing will be allowed only for low head pressure piping.

b. Joint testing does not replace and is not in lieu of any testing of the piping system or trust restraints.

2. Joint testing may be performed with water or air.
3. Joint test piping after completion of backfill and compaction to the top of the trench.
4. Joint testing with water:
   a. Measure test pressure at the invert of the pipe. Apply pressure of 4 feet plus the inside diameter of the pipe in water column within 0.20 feet in water column.
   b. Maintain test pressure for 1 minute.
   c. Base the allowable leakage per joint on 80 gallons per inch nominal diameter, per mile of piping, per 24 hours equally distributed to the actual number of joints per mile for the type of piping.
   d. Consider the pressure test to be complete when makeup water added is less than the allowable leakage.
   e. Successful completion of the joint test with water shall have been achieved when the observed leakage is equal or less than the allowable leakage.
5. Joint testing with air:
   a. Apply test pressure of 3 pounds per square inch gauge with a maximum variation of plus 0.20 and minus 0.00 pounds per square inch.
   b. Maintain test pressure for 2 minutes.
   c. Consider the pressure test to be complete when the test pressure does not drop below 2.7 pounds per square inch for the duration of the test.

END OF SECTION

SECTION 15958

MECHANICAL EQUIPMENT TESTING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Testing of mechanical equipment and systems.

1.02 REFERENCES

A. American National Standards Institute (ANSI):
   1. S1.4 Specification for Sound Level Meters.

B. Hydraulic Institute (HI).

C. National Institute of Standards and Technology (NIST).

1.03 SUBMITTALS

A. Provide Source Test Plans as specified in Section 01756 - Commissioning.

B. Provide Installation and Functional Testing Plans as specified in Section 01756 - Commissioning.

C. Provide vendor operation and maintenance manual as specified in Section 01782 - Operation and Maintenance Manuals.
   1. Include motor rotor bar pass frequencies for motors larger than 500 horsepower.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Commissioning of equipment as specified in:
   1. This Section.
   2. Section 01756 - Commissioning.
   3. Equipment sections:
      a. If testing requirements are not specified, provide Level 1 Tests.

B. Test and prepare piping as specified in Section 15956 - Piping Systems Testing.

C. Provide necessary test instrumentation that has been calibrated within 1 year from date of test to recognized test standards traceable to the NIST or approved source.
   1. Properly calibrated field instrumentation permanently installed as a part of the Work may be utilized for tests.
   2. Prior to testing, provide signed and dated certificates of calibration for test instrumentation and equipment.

D. Test measurement and result accuracy:
   1. Use test instruments with accuracies as recommended in the appropriate referenced standards. When no accuracy is recommended in the referenced standard, use 1 percent or better accuracy test instruments.
      a. Improved (lower error tolerance) accuracies specified elsewhere prevail over this general requirement.
   2. Do not adjust results of tests for instrumentation accuracy.
      a. Measured values and values directly calculated from measured values shall be the basis for comparing actual equipment performance to specified requirements.

3.02 VARIABLE SPEED EQUIPMENT TESTS

A. Establish performance over the entire speed range and at the average operating condition.

B. Establish performance curves for the following speeds:
   1. The speed corresponding to the rated maximum capacity.
   2. The speed corresponding to the minimum capacity.
   3. The speed corresponding to the average operating conditions.

3.03 PUMP TESTS, ALL LEVELS OF TESTING

A. Test in accordance with the following:
   1. Applicable HI Standards.
   2. This Section.
   3. Equipment sections.

B. Test tolerances: In accordance with appropriate HI Standards, except the following modified tolerances apply:
   1. From 0 to plus 5 percent of head at the rated design point flow.
   2. From 0 to plus 5 percent of flow at the rated design point head.
   3. No tolerance for head and flow when ranges are specified.
   4. No negative tolerance for the efficiency at the rated design point, and other specified conditions.
   5. Use of specified test tolerances shall not result in motor overload while operating at any point on the supplied pump operating head-flow curve, including runout.
   6. No positive tolerance for vibration limits. Vibration limits and test methods in HI Standards do not apply, use limits and methods specified in this or other Sections of the Specifications.

3.04 DRIVERS TESTS

A. Test motors as specified in Section 16222 - Low Voltage Motors up to 500 Horsepower.

B. Test other drivers as specified in the equipment section.

3.05 NOISE REQUIREMENTS AND CONTROL

A. Perform noise tests in conjunction with vibration test analysis.

B. Make measurements in relation to reference pressure of 0.0002 microbar.

C. Make measurements of emitted noise levels on sound level meter meeting or exceeding ANSI S1.4, Type II.

D. Set sound level meter to slow response.

E. Unless otherwise specified, maximum free field noise level not to exceed 85 dBA measured as sound pressure level at 3 feet from the equipment.

3.06 PRESSURE TESTING

A. Hydrostatically pressure test pressure containing parts at the appropriate standard or code required level above the equipment component specified design pressure or operating pressure, whichever is higher.

3.07 INSPECTION AND BALANCING

A. Statically and dynamically balance each of the individual rotating parts as required to achieve the required field vibration limits.

B. Statically and dynamically balance the completed equipment rotating assembly and drive shaft components.

C. Furnish copies of material and component inspection reports including balancing reports for equipment system components and for the completed rotating assembly.

D. Critical speed of rotating equipment:
   1. Satisfy the following:
      a. The first lateral and torsional critical speed of all constant, variable, and 2-speed driven equipment that is considered rigid such as horizontal pumps, all non-clog pumps, blowers, air compressors, and engines shall be at least 25 percent above the equipment's maximum operating speed.
      b. The first lateral and torsional critical speed of all constant, variable, and 2-speed driven equipment that is considered flexible or flexibly mounted such as vertical pumps (vertical in-line and vertical non-clog pumps

excluded) and fans shall at least 25 percent below the equipment's lowest operating speed.

c. The second lateral and torsional critical speed of all constant, variable, and 2-speed equipment that is considered flexible or flexibly mounted shall be at least 25 percent above the maximum operating speed.

E. Vibration tests:

1. Definitions:
    a. Root mean square: for pumps operating at speeds greater than 600 rpm, the vibration measurement shall be measured as the overall velocity in inches per second root mean square (RMS).
    b. Peak-to-peak displacement: The root means squared average of the peak-to-peak displacement multiplied by the square root of 2.
    c. Peak velocity: The root mean squared average of the peak velocity multiplied by the square root of 2.
    d. Peak acceleration: The root mean squared average of the peak acceleration multiplied by the square root of 2.
    e. High frequency enveloping: A process to extract very low amplitude time domain signals associated with impact or impulse events such as bearing or gear tooth defects and display them in a frequency spectrum of acceleration versus frequency.
        1) Manufacturers: One of the following or equal:
            a) Rockwell Automation, Entek Group, "Spike Energy" analysis.
            b) CSI, "PeakVue."
    f. Rotor bar pass frequency (RBF), for detecting loose rotor bars.
    g. Low speed equipment: Equipment or components of equipment rotating at less than 600 revolutions per minute.
    h. High speed equipment: Equipment and equipment components operating at or above 600 revolutions per minute.
    i. Preferred operating range: Manufacturer's defined preferred operating range (POR) for the equipment.
    j. Allowable operating range: Manufacturer's defined allowable operating range (AOR) for the equipment.
2. Vibration instrumentation requirements:
    a. Analyzers: Use digital type analyzers or data collectors with anti-aliasing filter, 12-bit A/D converter, fast fourier transform circuitry, phase measurement capability, time wave form data storage, high-frequency enveloping capabilities, 35 frequency ranges from 21 to 1,500,000 cycles per minute, adjustable fast fourier transform resolution from 400 to 6,400 lines, storage for up to one hundred 3,200 line frequency spectra, data output port, circuitry for integration of acceleration data to velocity or double integration to displacement.
        1) Manufacturers: One of the following or equal:
            a) Computational Systems Inc., (CSI) Division of Emerson Process Management, Model 2120A, Data Collector/analyzer with applicable analysis software.
            b) Pruftechnik, VIBXPERT II.
    b. Analyzer settings:
        1) Units: English, inches/second, mils, and gravitational forces.
        2) Fast fourier transform lines: Most equipment 1,600 minimum; for motors, enough lines as required to distinguish motor current

frequencies from rotational frequencies, use 3,200 lines for motors with a nominal speed of 3,600 revolutions per minute; 3,200 lines minimum for High Frequency Enveloping; 1,600 lines minimum for low speed equipment.

3) Sample averages: 4 minimum.
4) Maximum frequency (Fmax): 40 times rotational frequency for rolling element bearings, 10 times rotational frequency for sleeve bearings.
5) Amplitude range: Auto select but full scale not more than twice the acceptance criteria or the highest peak, whichever is lower.
6) Fast fourier transform windowing: Hanning Window.
7) High pass filter: Minus 3 dB at 120 cycles per minute for high speed equipment. Minus 3 dB at 21 cycles per minute for low speed equipment.

c. Accelerometers:
   1) For low speed equipment: Low frequency, shear mode accelerometer, 500 millivolts per gravitational force sensitivity, 10 gravitational force range, plus/minus 5 percent frequency response from 0.5 hertz to 850 hertz, magnetic mount.
      a) Manufacturers: One of the following or equal:
         (1) Wilcoxon Research, Model 797L.
         (2) PCB, Model 393C.
   2) For high speed equipment: General purpose accelerometer, 100 millivolts per gravitational force sensitivity, 50 gravitational force range, plus/minus 3dB frequency response range from 2 hertz to 12,000 hertz when stud mounted, with magnetic mount holder.
      a) Manufacturers: One of the following or equal:
         (1) Wilcoxon Research, Model 793.
         (2) Entek-IRD Model 943.

3. Accelerometer mounting:
   a. Use magnetic mounting or stud mounting.
   b. Mount on bearing housing in location with best available direct path to bearing and shaft vibration.
   c. Remove paint and mount transducer on flat metal surface or epoxy mount for High Frequency Enveloping measurements.
4. Vibration acceptance criteria:
   a. Testing of rotating mechanical equipment: Tests are to be performed by an experienced, factory trained, and independent authorized vibration analysis expert.

b. Vibration displacement limits: Unless otherwise specified, equipment operating at speeds 600 revolutions per minute or less is not to exhibit unfiltered readings in excess of following:

Operating Conditions and Application Data	Overall Peak-to-Peak Displacement	
	Field, mils	Factory, mils
Operation within the POR	3.0	4.0
Operation within the AOR	4.0	5.0
Additive value when measurement location is greater than 5 feet above foundation	2.0	2.0
Additive value for solids-handling pumps	2.0	N/A
Additive value for slurry pumps	2.0	N/A

c. Vibration velocity limits: Unless otherwise specified, equipment operating at speeds greater than 600 revolutions per minute is not to exceed the following peak velocity limits:

HI Pump Type	Horsepower	Field Test	Factory Test
		Overall RMS	Overall RMS
Horizontal Solids Handling Centrifugal Pumps	Below 33 hp	0.25	0.28
Horizontal and Vertical In-Line Centrifugal Pumps (other than Non-Clog type)	Between 33 and 100 hp	0.28	0.31
	100 hp and above	0.31	0.34
Vertical Solids Handling Centrifugal Pumps	Below 33 hp	0.30	0.33
Vertical Turbine, Mixed Flow, and Propeller Pumps (solids-handling type pumps)	Between 33 and 100 hp	0.32	0.35
	100 hp and above	0.34	0.35
Non-Solids Handling Centrifugal Pumps	Below 268 hp	0.15	0.19
HI Types BB1, BB2, BB3, BB4, BB5, OH1, OH2, OH3, OH4, OH5, and OH7	268 hp and above	0.19	0.22
Vertical Turbine, Mixed Flow, and Propeller Pumps HI Types VS1, VS2, VS3, VS4, VS5, VS6, VS7, and VS8	Below 268 hp	0.13	
	268 hp and above	0.17	
Slurry Pumps		0.25	0.30
Motors		See Applicable Motor Specification	See Applicable Motor Specification

HI Pump Type	Horsepower	Field Test	Factory Test
		Overall RMS	Overall RMS
Gear Reducers, Radial		Not to exceed AGMA 6000-B96 limits	Not to exceed AGMA 6000-B96 limits
Other Reducers, Axial		0.1	N/A

d. Equipment operation: Measurements are to be obtained with equipment installed and operating within capacity ranges specified and without duplicate equipment running.
e. Additional criteria:
    1) No narrow band spectral vibration amplitude components, whether sub-rotational, higher harmonic, or synchronous multiple of running speed, are to exceed 40 percent of synchronous vibration amplitude component without manufacturer's detailed verification of origin and ultimate effect of such excitation.
    2) The presence of discernable vibration amplitude peaks in Test Level 2 or 3 vibration spectra at bearing inner or outer race frequencies shall be cause for rejection of the equipment.
    3) For motors, the following shall be cause for rejection:
        a) Stator eccentricity evidenced by a spectral peak at 2 times electrical line frequency that is more than 40 percent of the peak at rotational frequency.
        b) Rotor eccentricity evidenced by a spectral peak at 2 times electrical line frequency with spectra side bands at the pole pass frequency around the 2 times line frequency peak.
        c) Other rotor problems evidenced by pole pass frequency side bands around operating speed harmonic peaks or 2 times line frequency side bands around rotor bar pass frequency or around 2 times the rotor bar pass frequency.
        d) Phasing problems evidenced by 1/3 line frequency side band spectral peaks around the 2 times electrical line frequency peak.
    4) The presence of peaks in a High Frequency Enveloping spectra plot corresponding to bearing, gear or motor rotor bar frequencies or harmonics of these frequencies shall be cause for rejection of the equipment; since inadequate lubrication of some equipment may be a cause of these peaks, lubrication shall be checked, corrected as necessary and the high frequency envelope analysis repeated.

5. Vibration testing results presentation:
    a. Provide equipment drawing with location and orientation of measurement points indicated.
    b. For each vibration measurement take and include appropriate data on equipment operating conditions at the time vibration data is taken; for pumps, compressors, and blowers record suction pressure, discharge pressure, and flow.
    c. When Vibration Spectra Data required:
        1) Plot peak vibration velocity versus frequency in cycles per minute.
        2) Label plots showing actual shaft or part rotation frequency, bearing inner and outer race ball pass frequencies, gear mesh frequencies

and relevant equipment excitation frequencies on the plot; label probable cause of vibration peaks whether in excess of specification limits or not.

3) Label plots with equipment identification and operating conditions such as tag number, capacity, pressure, driver horsepower, and point of vibration measurement.

4) Plot motor spectra on a log amplitude scale versus frequency.

d. For low speed equipment, plot peak vibration displacement versus frequency as well as velocity versus frequency.

e. Provide name of manufacturer and model number of the vibration instrumentation used, including analyzer and accelerometer used together with mounting type.

3.08 TESTING LEVELS

A. Level 1 Tests:

1. Level 1 Performance Test:

a. General:

1) For equipment, operate, rotate, or otherwise functionally test for 15 minutes minimum after components reach normal operating temperatures.

2) Operate at rated design load conditions.

3) Confirm that equipment is properly assembled.

4) Confirm the equipment moves or rotates in the proper direction.

5) Confirm shafting, drive elements, and bearings are installed and lubricated in accordance with proper tolerances.

6) Confirm that no unusual power consumption, lubrication temperatures, bearing temperatures, or other conditions are observed.

b. Pumps:

1) Comply with general performance test requirements as specified in this Section.

2) Measure flow and head while operating at or near the rated condition; for factory testing, testing may be at reduced speeds with flow and head corresponding to the rated condition when adjusted for speed using the appropriate affinity laws.

a) Use of a test driver is permitted for factory tests when actual driver is given a separate test at its point of manufacture as specified in Section 16222 - Low Voltage Motors up to 500 Horsepower or the applicable equipment section.

b) Use actual driver for field tests.

3) Record measured flow, suction pressure, discharge pressure, and make observations on bearing temperatures and noise levels.

2. Level 1 Vibration Test:

a. Test requirement:

1) Measure filtered vibration spectra versus frequency in 3 perpendicular planes at each normally accessible bearing housing on the driven equipment, any gears and on the driver; 1 plane of measurement to be parallel to the axis of rotation of the component.

2) Vibration spectra versus frequency shall be in accordance with Vibration Acceptance Criteria.

b. Equipment operating condition: Test at specified maximum speed.

3. Level 1 Noise Test:
   a. Measure unfiltered overall A-weighted sound pressure level in dBA at 3 feet horizontally from the surface of the equipment and at a mid-point of the equipment height.

B. Level 2 Tests:
   1. Level 2 Performance Test:
      a. General:
         1) For equipment, operate, rotate, or otherwise functionally test for at least 2 hours after components reach normal operating temperatures.
         2) Operate at rated design load conditions.
         3) Confirm that equipment is properly assembled.
         4) Confirm the equipment moves or rotates in the proper direction.
         5) Confirm shafting, drive elements, and bearings are installed and lubricated in accordance with proper tolerances.
         6) Confirm that no unusual power consumption, lubrication temperatures, bearing temperatures, or other conditions are observed.
      b. Pumps:
         1) Comply with general performance test requirements as specified in this Section.
         2) Test 2 hours minimum for flow and head at the rated condition; for factory testing, testing may be at a reduced speeds with flow and head corresponding to the rated condition when adjusted for speed using the appropriate affinity laws.
            a) Use of a test driver is permitted for factory tests when actual driver is given a separate test at its point of manufacture as specified in Section 16222 - Low Voltage Motors up to 500 Horsepower.
            b) Use actual driver for field tests.
         3) Test for flow and head at 2 additional conditions; 1 at 25 percent below the rated flow and 1 at 10 percent above the rated flow.
         4) Record measured flow, suction pressure, discharge pressure, and observations on bearing temperatures and noise levels at each condition.
   2. Level 2 Vibration Test:
      a. Test requirement:
         1) Measure filtered vibration spectra versus frequency and measure vibration phase in 3 perpendicular planes at each normally accessible bearing housing on the driven equipment, any gears and on the driver; 1 plane of measurement to be parallel to the axis of rotation of the component; measure actual rotational speeds for each vibration spectra measured using photometric or other tachometer input connected directly to the vibration data collector.
         2) Vibration spectra versus frequency shall be in accordance with Vibration Acceptance Criteria.
      b. Equipment operating condition: Repeat test requirements at design specified maximum speed and at minimum speed for variable speed equipment.

c. Natural frequency test of field installed equipment:
1) Excite the installed equipment and support system in 3 perpendicular planes, use same planes as operating vibration measurement planes, and determine the as-installed natural resonant frequency of the driven equipment, the driver, gears, and supports.
2) Perform test at each bearing housing, at each support pedestal, and for pumps on the suction and discharge piping.
3) Perform with equipment and attached piping full of intended service or process fluid.

3. Level 2 Noise Test:
a. Measure filtered A-weighted overall sound pressure level in dBA for each of 8 octave band mid-points beginning at 63 hertz measured at 3 feet horizontally from the surface of the equipment at mid-point height of the noise source.

C. Level 3 Tests:
1. Level 3 Performance Tests:
a. General:
1) For equipment, operate, rotate, or otherwise functionally test for at least 4 hours after components reach normal operating temperatures.
2) Operate at rated design load conditions for 1/2 the specified time; operate at each of any other specified conditions for a proportionate share of the remaining test time.
3) Confirm that equipment is properly assembled.
4) Confirm the equipment moves or rotates in the proper direction.
5) Confirm shafting, drive elements, and bearings are installed and lubricated in accordance with proper tolerances.
6) Confirm that no unusual power consumption, lubrication temperatures, bearing temperatures, or other conditions are observed.
7) Take appropriate capacity, power or fuel consumption, torque, revolutions per minute, pressure, and temperature readings using appropriate test instrumentation to confirm equipment meets specified performance requirements at the design rated condition.
8) Bearing temperatures: During maximum speed or capacity performance testing, measure and record the exterior surface temperature of each bearing versus time.

b. Pumps:
1) Comply with general performance test requirements as specified in this Section.
2) Test 4 hours minimum for flow and head; begin tests at or near the rated condition; for factory and field-testing, test at full speed.
a) Use of a test driver is permitted for factory tests when actual driver is given a separate test at its point of manufacture as specified in Section 16222 - Low Voltage Motors up to 500 Horsepower.
b) Use actual driver for field tests.
3) Test each specified flow and head condition at the rated speed and test at minimum as well as maximum specified speeds; operate at each test condition for a minimum of 15 minutes; or longer as

necessary to measure required performance, vibration, and noise data at each test condition. For factory testing, test at other speeds may be omitted if test driver at reduced speeds is used for rated condition testing.

4) Record measured shaft revolutions per minute, flow, suction pressure, discharge pressure; record measured bearing temperatures (bearing housing exterior surface temperatures may be recorded when bearing temperature devices are not required by the equipment section) and record observations on noise levels.

5) Perform efficiency and/or Net Positive Suction Head Required (NPSHr) and/or priming time tests when specified in the equipment section in accordance with the appropriate HI standard and as follows:

a) Perform NPSHr testing at maximum rated design speed, head and flow with test fluids at ambient conditions; at maximum rated speed, test at 15 percent above rated design flow, and 25 percent below rated design flow.

b) Perform efficiency testing with test fluids at maximum rated speed.

c) Perform priming time testing with test fluids at maximum rated speed.

2. Level 3 Vibration Test:
   a. Requirements: Same as Level 2 vibration test except data taken at each operating condition tested and with additional requirements below.
   b. Perform High Frequency Enveloping Analysis for gears and bearings.
      1) Measure bearing element vibration directly on each bearing cap in a location close as possible to the bearing load zone that provides a smooth surface and direct path to the bearing to detect bearing defects.
      2) Report results in units of acceleration versus frequency in cycles per minute.
   c. Perform Time Wave Form analysis for gears, low speed equipment and reciprocating equipment; plot true peak amplitude velocity and displacement versus time and label the period between peaks with the likely cause of the periodic peaks (relate the period to a cause).
   d. Plot vibration spectra on 3 different plots; peak displacement versus frequency, peak acceleration versus frequency and peak velocity versus frequency.
3. Level 3 Noise Test: Measure filtered, un-weighted overall sound pressure level in dB at 3 feet horizontally from the surface of the equipment at mid-point height and at 4 locations approximately 90 degrees apart in plain view; report results for each of 8 octave band mid-points beginning at 63 hertz.

D. Level 4 Tests:
   1. Level 4 Performance Test:
      a. General:
         1) For equipment, operate, rotate, or otherwise functionally test for at least 8 hours after components reach normal operating temperatures.

2) Operate at rated design load conditions for 1/2 the specified time; operate at each of any other specified conditions for a proportionate share of the remaining test time.
3) Confirm that equipment is properly assembled.
4) Confirm the equipment moves or rotates in the proper direction.
5) Confirm shafting, drive elements, and bearings are installed and lubricated in accordance with proper tolerances.
6) Confirm that no unusual power consumption, lubrication temperatures, bearing temperatures, or other conditions are observed.
7) Take appropriate capacity, power or fuel consumption, torque, revolutions per minute, pressure and temperature readings, using appropriate test instrumentation to confirm equipment meets specified performance requirements at the design rated condition.
8) Bearing temperatures: During maximum speed or capacity testing, measure and record the exterior surface temperature of each bearing versus time.

b. Pumps:
1) Comply with general performance test requirements as specified in this Section.
2) Test 8 hours minimum for flow and head; begin tests at or near the rated condition; for factory and field-testing, test with furnished motor at full speed.
3) Test each specified flow and head condition at the rated speed and test at minimum as well as maximum specified speeds; operate at each test condition for a minimum of 20 minutes or longer as necessary to measure required performance, vibration, and noise data at each test condition.
4) Record measured shaft revolutions per minute, flow, suction pressure, discharge pressure; record measured bearing temperatures (bearing housing exterior surface temperatures may be recorded when bearing temperature devices not required by the equipment section) and record observations on noise levels.
5) Bearing temperatures: During maximum speed or capacity testing, measure and record the exterior surface temperature of each bearing versus time.
6) Perform efficiency and/or Net Positive Suction Head Required (NPSHr) and/or priming time tests when specified in the equipment section in accordance with the appropriate HI standard and as follows:
a) Perform NPSHr testing at maximum rated design speed, head and flow with test fluids at ambient conditions; at maximum rated speed, test at 15 percent above rated design flow, and 25 percent below rated design flow.
b) Perform efficiency testing with test fluids at maximum rated speed.
c) Perform priming time testing with test fluids at maximum rated speed.

2. Level 4 Vibration Test: Same as Level 3 vibration test.
3. Level 4 Noise Test: Same as Level 3 Noise Test except with data taken at each operating condition tested.

END OF SECTION

SECTION 16050

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Requirements for electrical:
      a. Basic design and performance criteria.
      b. Installation.

B. Contract Drawings:
   1. Schematic diagrams:
      a. Controls are shown as de-energized.
      b. Add relays, where required, to provide necessary contacts for the control system or where needed to function as interposing relays for control voltage coordination, equipment coordination, or control system voltage drop considerations.
      c. Mount devices shown on motor controller schematic diagrams in the controller compartment enclosure, unless otherwise noted.
   2. Plan drawings:
      a. Electrical drawings show desired locations, arrangements, and components of the electrical Work in a diagrammatic manner.
      b. Locations and sizes of equipment are approximate only.
   3. Installation details:
      a. Contract Drawings include typical installation details the Contractor is to use to complete the electrical Work. For cases where a typical detail does not apply, develop installation details that may be necessary for completing the Work, and submit these details for review by the Engineer.
      b. Not all typical installation details are referenced within the drawing set. Apply and use typical details where appropriate.

1.02 REFERENCES

A. Abbreviations:
   1. FAT: Factory acceptance test that is also referred to as source test.
   2. ICSC: Instrumentation and controls subcontractor.
   3. PCIS: Process control and instrumentation system.

B. Standards:
   1. American National Standards Institute (ANSI).
   2. National Electrical Manufacturers Association (NEMA):
      a. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
   3. National Fire Protection Association (NFPA):
      a. 70 - National Electrical Code (NEC).
   4. Underwriters Laboratories, Inc. (UL).

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. LCP: Local control panel: Operator interface panel that may contain pilot type control devices, operator interface devices, control relays, etc., and does not contain a PLC or RIO.
   2. PCM: Process control module: An enclosure containing any of the following devices: PLC, RTU, or RIO.
   3. Space: Portion of a switchgear, motor control center, panelboard, switchboard, or control panel that does not physically contain a device but is capable of accepting a device with no modifications to the equipment.
      a. Furnish hardware to accommodate installation of future circuit breakers, instruments, relays, and controls.
      b. Wire relay and circuit breaker control power and network connections to the compartment and provide terminations.
      c. Space for future devices shall include:
         1) All necessary bus.
         2) Device supports and mounting equipment.
         3) Device connections to bus work.
         4) Wire troughs or raceway space.
   4. Spare: Portion of a switchgear, motor control center, panelboard, switchboard, or control panel that physically contains a device with no load connections to be made.
   5. Unequipped space: Portion of a switchgear, motor control center, panelboard, switchboard, or control panel that does not physically contain a device, standoff, bus, hardware, or other equipment.

1.04 DELEGATED DESIGN

A. Requirements for Delegated Design are specified in the Technical Sections.

1.05 QUALITY ASSURANCE

A. General:
   1. Furnish equipment listed by and bearing the label of UL or of an independent testing laboratory acceptable to the Engineer and the Authority Having Jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Shipping precautions:
   1. After completion of shop assembly and successful factory testing, pack equipment in protective crates, and enclose in heavy duty polyethylene envelopes or secured sheeting to provide complete protection from damage, dust, and moisture.
   2. Place dehumidifiers, when required, inside the polyethylene coverings.
   3. Skid-mount the equipment for final transport.
   4. Provide lifting rings for moving without removing protective covering.
   5. Display boxed weight on shipping tags together with instructions for unloading, transporting, storing, and handling at the job site.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Loop drawings:
      a. Provide electrical information required in the preparation of loop drawings, including, but not limited to:
         1) Conduit numbers and associated signal(s) contained within each conduit.
         2) Wire numbers.
         3) Equipment terminal numbers.
         4) Junction boxes and signal(s) contained within each junction box.
         5) Equipment power sources, and associated circuit numbers.
         6) As-built drawings detailing wiring.

B. Meetings:
   1. As specified in Section 01312 - Project Meetings.

C. Sequencing and scheduling:
   1. Equipment anchoring: Project construction schedule must include an event for obtaining the anchor layout drawings from equipment manufacturers in adequate time for templates to be constructed and anchors to be cast-in-place.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide field wiring and terminations.

B. Equipment mounting and anchoring:
   1. Design equipment anchorage, supports, and connections for dead load, running loads, loads during start-up, seismic load specified in Section 01850 - Design Criteria, and other loads as required for proper operation of equipment.
      a. For equipment with an operating weight of 400 pounds or greater and equipment that is supported higher than 4 feet above the floor, provide calculations for:
         1) Operating weight and location of the centroid of mass for the equipment.
         2) Forces and overturning moments.
         3) Shear and tension forces in equipment anchorages, supports, and connections.
         4) Design of equipment anchorage, supports, and connections based on calculated shear and tension forces.
   2. Anchorage of equipment to concrete or masonry:
      a. Perform calculations and determine number, size, type, strength, and location of anchor bolts or other connections.

b. Unless otherwise indicated on the Drawings, select and provide anchors from the types specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.
c. Provide bolt sleeves around cast-in anchor bolts for 400 pounds or greater equipment.
1) Adjust bolts to final location and secure the sleeve.

3. Anchorage of equipment to metal supports:
a. Perform calculations and determine number, size, type, strength, and location of bolts used to connect equipment to metal supports.

2.02 MATERIALS

A. Enclosures:
1. Provide enclosures for electrical, instrumentation, and control equipment, regardless of Supplier or Subcontractor furnishing the equipment, that meet the requirements of NEMA Standard 250.
a. Provide metallic enclosures unless specifically indicated otherwise.

B. Stainless steel:
1. Where stainless steel is indicated or used for any portion of the electrical Work, provide a non-magnetic, corrosion-resistant alloy, ANSI Type 316, satin finish.
2. Provide exposed screws of the same alloys.
3. Use stainless steel hardware, when chemically compatible, in all chemical areas or areas requiring NEMA Type 4X construction.
4. Do not use stainless steel in any area containing chlorine, gas or solution, chlorine products or ferric chloride.

C. Plant area electrical Work requirements:
1. Provide electrical materials in accordance with the following table, unless otherwise specifically indicated on the Drawings:
a. Conduit installation requirements: As specified in Section 16130 - Conduits.

Table 1. Electrical Material Requirements

Plant Area	Environment: W = Wet D = Damp C = Clean/dry X = Corrosive H = Hazardous	NEMA Enclosure Type	Exposed Conduit Type (as specified in Section 16130 - Conduits)	Support Materials
Electrical Room	C	1, 12	GRC	GRC
Pump Room	D	4X Stainless Steel	GRC	GRC
Chemical Room	X	4X non-metallic	PCS	Fiberglass
Outdoors	W	4X Stainless Steel	PCS	Stainless steel

PART 3 EXECUTION

3.01 INSTALLATION

A. Equipment:
   1. Where the Drawings do not show dimensions for locating equipment, install equipment in the approximate locations indicated on the Drawings.

B. Provide NEC required working space in front of electrical equipment as if it could be worked on energized.

C. Circuits of different service voltage:
   1. Voltage and service levels:
      a. Low voltage:
         1) Power and controls: 120 V to 480 V.
         2) Instrumentation: Less than 50 VDC.
      b. Fiber.
   2. Install different service voltage circuits in separate raceways as well as underground manholes and hand holes.
   3. Install different service voltage circuits in separate junction boxes and pullboxes or provide physical dividers where boxes can be divided.

D. Conductors shall not pass through equipment they are not terminating in unless indicated on the Drawings or approved by the Engineer.

3.02 FIELD QUALITY CONTROL

A. Workmanship:
   1. Leave wiring in panels, manholes, boxes, and other locations neat, clean, and organized:
      a. Neatly coil and label spare wiring lengths.
      b. Shorten, re-terminate, and re-label excessively used, as well as spare, wire and cable lengths, as directed by the Engineer.

B. Inspection activities conducted during construction do not satisfy the inspection or testing requirements specified in Section 16950 - Field Electrical Acceptance Tests.

C. Provide onsite assistance for troubleshooting and correcting electrical issues discovered during installation and testing for the Project.

3.03 CLEANING

A. General:
   1. Clean and vacuum enclosures to remove metal filings, surplus insulation and any visible dirt, dust, or other matter before energization of the equipment or system start-up:
      a. Use of compressors or air blowers for cleaning is not acceptable.
   2. Clean luminaries in the areas affected by the construction.

END OF SECTION

SECTION 16060

GROUNDING AND BONDING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Grounding materials and requirements.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. B3 - Standard Specification for Soft or Annealed Copper Wire.
   2. B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
   3. B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes.

B. Institute of Electrical and Electronics Engineers (IEEE):
   1. 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System.

C. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

D. Underwriters Laboratories, Inc. (UL):
   1. 467 - Ground and Bonding Equipment.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Catalog cutsheets.

1.04 QUALITY ASSURANCE

A. Grounding components and materials shall be UL listed and labeled.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Ground equipment and raceway systems so that the completed installation is in accordance with applicable code requirements.

B. Provide a complete electrical grounding system as indicated on the Drawings and as specified including but not limited to:
   1. Grounding electrodes.
   2. Bonding jumpers.
   3. Ground connections.

2.02 MANUFACTURERS

A. Compression connectors: One of the following or equal:
   1. ABB.
   2. Burndy.
   3. Erico.
   4. Harger.
   5. Panduit.

B. Ground rods: One of the following or equal:
   1. Erico.
   2. Harger.
   3. Nehring.

C. Ground cable: One of the following or equal:
   1. Erico.
   2. Harger.
   3. Nehring.
   4. Southwire.

D. Precast ground well boxes: One of the following or equal:
   1. Brooks Products, 3-RT Valve Box.
   2. Christy Concrete Products, G12 Valve Box.

2.03 MATERIALS

A. Ground rod:
   1. Minimum: 3/4-inch diameter, 10-feet long.
   2. Uniform 10 mil covering of electrolytic copper metallically bonded to a rigid steel core:
      a. Copper-to-steel bond shall be corrosion resistant.
   3. In accordance with UL 467.
   4. Sectional type joined by threaded copper alloy couplings.
   5. Fit the top of the rod with a threaded coupling and steel-driving stud.

B. Ground cable:
   1. Requirements:
      a. Soft drawn (annealed).

b. Concentric lay, coarse stranded in accordance with ASTM B8.
c. Bare copper in accordance with ASTM B3.

2. Size is as indicated on the Drawings, but not less than required by the NEC.

C. Compression connectors:
1. Manufactured of high copper alloy specifically for the particular grounding application.
2. Suitable for direct burial in earth and concrete.
3. Identifying compression die number inscription to be impressed on compression fitting.
4. Barrels prefilled and sealed with oxide-inhibiting and anti-seizing compound.

D. Grounding electrode conductors:
1. Minimum size in accordance with the NEC.

E. Main bonding jumpers and bonding jumpers:
1. Minimum size in accordance with the NEC.

2.04 ACCESSORIES

A. Precast ground well boxes:
1. Minimum 10-inch interior diameter.
2. Traffic-rated cast iron cover.
3. Permanent “GROUND” marking on cover.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide bonding jumpers and wire, grounding bushings, clamps and appurtenances required for complete grounding system to bond equipment and raceways to equipment grounding conductors.

B. Provide a separate grounding conductor for each motor and connect at motor terminal box. Do not use bolts securing motor box to frame or cover for grounding connectors:
1. When grounding motors driven by variable frequency drives (VFD) comply with the requirements of the VFD manufacturer.

C. Provide a grounding type bushing with lug for connection of grounding conductor for conduits that originate from each motor control center section, switchboard, or panelboard:
1. Individually bond these raceways to the ground bus in the equipment.

D. Provide grounding type bushings with lugs for connection of grounding conductor at both ends of metallic conduit runs. Bond ground bushings to the grounding system.

E. Provide a green insulated wire-grounding jumper from the ground screw to a box grounding screw and, for grounding type devices, to equipment grounding conductor.

F. Interconnect the secondary switchgear, switchboard, or panelboard neutral bus to the ground bus in the secondary switchgear, switchboard, or panelboard compartment, only at service entrance point or after a transformer.

G. Duct bank ground system:
   1. Provide a bare copper grounding conductor the entire length of each duct bank, embedded in the concrete of the duct bank as indicated on the Drawings and specified in the Specifications.
   2. Bond duct bank ground conductors together where duct banks join, merge, intersect, or split.

H. Grounding at service (600 V or Less):
   1. Connect the neutral to ground only at one point within the enclosure of the first disconnecting means on the load side of the service transformer.

I. Ground connections:
   1. Connections to the ground grid system, the duct bank grounding system, equipment, ground rods, etc., shall be made using compression type grounding connectors as indicated on the Drawings, UL listed, and labeled for the application.
   2. Make ground connections in accordance with the manufacturer's instructions.
   3. Do not conceal or cover any ground connections until the Engineer or authorized representative has established and provided written confirmation that every grounding connection is as indicated on the Drawings and specified in the Specifications.

J. Grounding electrode system:
   1. Ground ring:
      a. Provide trenching and materials necessary to install the ground ring as indicated on the Drawings.
      b. Ground ring conductor shall be in direct contact with the earth, or where embedded, concrete, of the size as indicated on the Drawings.
      c. Minimum burial depth 36 inches or as indicated on the Drawings.
      d. Re-compact disturbed soils to original density in 6-inch lifts.
   2. Ground rods:
      a. Locations as indicated on the Drawings.
      b. Length of rods forming an individual ground array shall be equal in length.
      c. Drive ground rods and install grounding conductors before construction of concrete slabs and duct banks.
      d. Pre-crimp ground rods, as recommended by the manufacturer, before crimping connector to ground rod.
   3. Metal underground water pipe:
      a. Bond metal underground domestic water pipe to grounding electrode system.
      b. Cathodically protected systems: Bond in accordance with cathodic protection system design requirements.
   4. Metal frame of building or structure:
      a. Bond metal frame of building or structure to grounding electrode system.
   5. Extend grounding conductors through concrete to accessible points for grounding equipment and electrical enclosures.

6. Where grounding conductors are exposed and subject to physical damage, install in Schedule 80 PVC conduit for protection.
7. Install grounding system at each structure where switchgear, motor control centers, switchboards, panelboards, panels, or other electrical equipment are installed.

K. Ground magnetic flowmeters as indicated on the Drawings.

L. Shield grounding:
1. Analog signal cables shields shall only be grounded at a single point in the loop. Unless otherwise noted, ground signal cable shields at control panel.
2. For communication and data line signal cable shields and drain wires should be grounded at both ends of the cable run.
3. Insulate the shielding and exposed drain wire for each signal cable with heat-shrink tubing.
4. Terminate the signal cable shield on a dedicated grounding terminal block.

M. Where indicated on the Drawings, install ground rods in precast ground wells.

3.02 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
1. As specified in Section 16950 - Field Electrical Acceptance Tests.

B. Ground system resistance (electrode to ground) of the completed installation, as determined by tests, shall be:
1. 5 ohms or less for industrial systems.
2. 1 ohm or less for electrical buildings.

C. Measure grounding electrode system resistance to ground in accordance with IEEE 81.

3.03 ADJUSTING

A. Under the direction of the Engineer, add additional parallel connected ground rods and/or deeper driven rods until the ground resistance measurement meets the specified resistance requirements:
1. Use of salts, water, or compounds to attain the specified ground resistance is not acceptable.

END OF SECTION

SECTION 16070

HANGERS AND SUPPORTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Mounting and supporting electrical equipment and components.

1.02 REFERENCES

A. American National Standards Institute (ANSI).

B. ASTM International (ASTM):
   1. A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   2. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   3. A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
   4. D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
   5. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Anchor: Elements (including hardware) connecting hangers and supports to the structure.
   2. Hardware: Nuts, bolts, straps, clamps, threaded rod, etc.
   3. Supports: Preformed channel or other structural member on which the electrical equipment or raceway is mounted.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
    1. Supports:
        a. Materials.
        b. Geometry.
        c. Manufacturer.
    2. Hardware:
        a. Materials.
        b. Manufacturer.

C. Shop Drawings:
    1. Dimensioned and scalable Shop Drawings of hangers and supports for distribution systems and equipment.
    2. Complete details for:
        a. Member sizes and arrangement in hangers and support assemblies.
        b. Connections between members in hangers and support assemblies.
        c. Anchoring hangers and supports to structures.
        d. Bracing for hangers and supports and anchoring of bracing to structures.
    3. Include data on connections, attachment hardware and construction to demonstrate that hangers and supports will satisfy the design loading, bracing, and anchoring criteria.

D. Delegated Design Submittals:
    1. Hangers and supports - General:
        a. Locations and conditions:
            1) Hangers and supports inside structures.
            2) Hangers and supports that resist cable pulling/rigging loads.
        b. Required Submittals: Details with supporting calculations for:
            1) Support member arrangement, sizes, and connections.
            2) Bracing to resist cable pulling/rigging loads.
            3) Connections of hangers, supports, and bracing to the structure.
            4) Connections between supports and the equipment or raceway(s) thereon.
    2. Hangers and supports - Exterior and seismic conditions:
        a. Locations and conditions:
            1) Hangers and supports at structures designated as Seismic Design Category (SDC) C, D, E, or F in Section 01850 - Design Criteria.
            2) Hangers and supports for outdoor installations.
        b. Required Submittals:
            1) Interior: Bracing to resist seismic design loads specified in Section 01850 - Design Criteria.
            2) Exterior: Bracing to resist seismic, wind, and other environmental loads specified in Section 01850 - Design Criteria.
    3. Hangers and supports anchored to concrete and masonry:
        a. Locations and conditions:
            1) Post-installed mechanical anchors in tension.
            2) Post-installed adhesive-bonded all-thread rods in tension.
        b. Required Submittals:
            1) Calculations demonstrating that anchors have a demand/capacity ratio (D/C) not greater than the following when anchor capacity is

adjusted for moisture conditions, anchor spacing and edge distances, and sustained loading conditions present at the location of installation.
a) Post-installed mechanical anchors maximum: 85 percent.
b) Post-installed adhesive-bonded anchors maximum: 75 percent.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Mount raceways, cabinets, boxes, fixtures, instruments, and devices on Contractor-fabricated supports unless otherwise indicated on the Drawings.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Hangers and supports individually and as a system shall resist weights and code-required forces without deflections and deformations that would damage the supporting elements, the raceway or equipment supported, or the surrounding construction.
   1. Provide the necessary sway bracing to keep support structures from swaying due to lateral forces, including wire and cable pulling forces.
   2. Lateral deflection at top of slab mounted supports shall not exceed support height divided by 240, unless otherwise approved by the Engineer.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. Preformed channel:
      a. Eaton B-line.
      b. Power-Strut.
      c. Robroy.
      d. Tyco.
      e. Unistrut.

2.04 MATERIALS

A. Hot dip galvanized steel:
   1. Supports:
      a. In accordance with ASTM A123 or A153.
      b. Minimum zinc coating thickness of 2.5 mils.
      c. Nominal dimensions: 1-5/8 inch by 1-5/8 inch.

2. Hardware:
    a. Electro-galvanized.
    b. In accordance with ASTM A153.

B. Stainless steel:
1. Supports:
    a. In accordance with ASTM A240.
    b. ANSI Type 316 material.
    c. Nominal dimensions: 1-5/8 inch by 1-5/8 inch.
2. Hardware:
    a. ANSI Type 316 material.

C. PVC coated galvanized steel:
1. Supports:
    a. Hot dip galvanized steel as specified in this Section.
    b. PVC coating thickness of 10 to 20 mils.
    c. Nominal dimensions: 1-5/8 inch by 1-5/8 inch.
2. Hardware:
    a. ANSI Type 316 material.

D. Fiberglass:
1. Supports:
    a. Vinyl ester.
    b. Nominal dimensions: 1-5/8 inch by 1-5/8 inch.
    c. Flame spread rating of 25 or less in accordance with ASTM E84.
    d. Tested in accordance with ASTM D635.
2. Hardware:
    a. Polypropylene.
    b. Thermal plastic elastomer.
    c. Fiberglass reinforced plastic.

2.05 COMPONENTS

A. Fabricated metal supports: As specified in Section 05500 - Metal Fabrications.

2.06 ACCESSORIES

A. Anchors:
1. As specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.

2.07 FINISHES

A. Paint and finish structures as specified in Section 09960 - High-Performance Coatings.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Use materials appropriate for the area as specified in Section 16050 - Common Work Results for Electrical.

B. General:
   1. Refer to the Drawings for details. Equipment, cabinets, boxes, instruments, and devices in damp or wet locations on minimum of 7/8-inch preformed mounting channel.
   2. Mount channel vertically along the length of the device so that water or moisture may run freely behind the device.

C. Corrosion protection:
   1. Isolate dissimilar metals, except where required for electrical continuity.
      a. Use neoprene washers, 9-mil polyethylene tape, or gaskets for isolation.

D. Anchoring methods:
   1. Solid concrete:
      a. Anchor bolts, anchor rods or post-installed anchors as specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.
   2. Metal surfaces: Machine screws or bolts.
   3. Hollow masonry units:
      a. Post installed anchors as specified in Section 05190 - Mechanical Anchoring and Fastening to Concrete and Masonry.
   4. Wood and metal studs:
      a. When supporting devices on metal or wood stud construction, bridge studs with preformed channel, and mount the devices to the channel.

E. Recoat or seal drilled holes, cut or scratched surfaces or with products recommended by the manufacturer.

F. Group raceway and position on racks to minimize crossovers.

END OF SECTION

SECTION 16075

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Identification of electrical equipment, devices and components.
   2. Material, manufacturing and installation requirements for identification devices.

1.02 REFERENCES

A. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

B. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

C. Occupational Safety and Health Administration (OSHA).

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Nameplates:
      a. Color.
      b. Size:
         1) Outside dimensions.
         2) Lettering.
      c. Material.
      d. Mounting means.
   2. Nameplate schedule:
      a. Show exact wording for each nameplate.
      b. Include nameplate and letter sizes.
   3. Wire numbers:
      a. Manufacturer’s catalog data for wire labels and label printer.

C. Record documents:
   1. Update the conduit schedule to reflect the exact quantity of wire numbers, including spares and destination points for all wires.

1.04 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.05 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

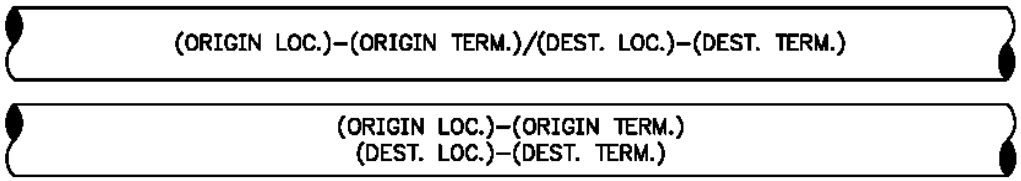
2.01 GENERAL

A. Nameplates:
   1. Provide for control panel operator devices (e.g., pushbuttons, selector switches, pilot lights, etc.):
      a. Same material and same color and appearance as the device nameplates to achieve an aesthetically consistent and coordinated system.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Nameplates:
   1. Provide for each piece of electrical equipment, device, control panel, and control panel components.
   2. Identical style, color, and material throughout the facility.
   3. Device nameplates information:
      a. Equipment tag number as indicated on the Drawings.

B. Wire numbers:
   1. Coordinate the wire numbering system with vendors of equipment so that every field wire has a unique number associated with it for the entire system:
      a. Correspond to the wire numbers on the control drawings or the panel and circuit numbers for receptacles and lighting.
      b. Correspond to the terminal block number to which they are attached in the control panel.
      c. Internal panel wires on a common terminal shall have the same wire number.
      d. Multi-conductor cables shall be assigned a cable number that shall be attached to the cable at intermediate pull boxes and stub-up locations beneath freestanding equipment. Multi-conductor and instrumentation cables shall be identified at pull points as described above:
         1) Label armored multi-conductor cable using the conduit number as indicated on the Drawings, following the requirements for conduit markers specified in Section 16130 - Conduits.
   2. Provide the following wiring numbering schemes throughout the Project for field wires between process control module (PCM), vendor control panels (VCP), motor control centers (MCC), field starters, field instruments, etc.



OR:

Where:

ORIGIN LOC. = Designation for originating panel or device

ORIGIN TERM. = Terminal designation at originating panel or device

DEST. LOC. = Designation for destination panel or device

DEST. TERM. = Terminal designation at destination panel or device or PLC

3. I/O address at destination panel:
   a. Identify equipment and field instruments as the origin.
   b. PCMs are always identified as the destination.
   c. Location is the panel designation for VCP, LCP, or PCM. For connections to MCCs, location is the specific starter tag and loop number. Location is the tag and loop number for motor starters, field instruments and equipment. Any hyphen in the panel designation or tag and loop number shall be omitted.
   d. Terminal designation is the actual number on the terminal block where the conductor terminates at field devices and vendor control panels. For multi-conductor cables, all terminal numbers shall be shown, separated by commas.
   e. Terminal designations at motor leads shall be the motor manufacturer's standard terminal designation (e.g., T1, T2, T3, etc.).
   f. Terminal designations at PCMs where the field conductor connects to field terminal blocks for a PLC input or output shall be the PLC address (Note: The following PLC I/O numbering scheme is typical for Allen-Bradley. The numbering scheme should be modified to match that of the actual PLC manufacturer used for the Project):

      Discrete Point: W:X:Y/Z.

      Analog Point: W:X:Y.Z.

      Where:

      W = I for input, O for output.

      X = PLC number (1, 2, 3…)

      Y = Slot number (01, 02, 03…)

      Z = Terminal number (00, 01, 02…) for a discrete point or a word number for an analog point (1, 2, 3…)

   g. Terminal designations at PCMs where the conductor does not connect to a PLC I/O point shall be the terminal number with a "C" prefix (e.g., C0010). For common power after a fuse or neutrals after a switch, the subsequent points shall have and capital letter suffix starting with "A" (e.g., C0010A).

2.03 MANUFACTURERS

A. Nameplates and signs:
   1. One of the following or equal:
      a. Brady.
      b. Seton.

B. Conductor and cable markers:
   1. Heat-shrinkable tubing:
      a. One of the following or equal:
         1) Brady.
         2) Kroy.
         3) Panduit.
         4) Raychem.
   2. Non heat-shrinkable tubing:
      a. One of the following or equal:
         1) Brady.
         2) Panduit.
         3) Seton.

C. Conduit and raceway markers:
   1. Brass: One of the following or equal:
      a. Panduit.

2.04 MATERIALS

A. Nameplates:
   1. Colors:
      a. Warning: White-center, red face.
      b. Other: Black-center, white face.
   2. Laminated plastic engraving stock:
      a. 3/32-inch thick material.
      b. 2-ply.
   3. With chamfered edges.
   4. Lettering:
      a. Block style engraved characters of adequate size to be read easily from a distance of 6 feet.
      b. Minimum letter height: 1/8 inch.

B. Signs:
   1. Automatic equipment and high voltage signs:
      a. Suitable for exterior use.
      b. In accordance with OSHA regulations.

C. Conductor and cable markers:
   1. Lettering:
      a. Machine printed black characters on white tubing.
      b. Minimum letter height: 10-point type or larger.

D. Conduit and raceway markers:
    1. Solid brass:
        a. Minimum thickness: 0.036 inches.
        b. Minimum dimensions: 1/2- inch wide, 2-inches long.
        c. Letter and number characters: Engraved.
        d. Minimum letter height: 1/4-inch.

PART 3 EXECUTION

3.01 INSTALLATION

A. Nameplates:
    1. Attach to equipment with rivets, bolts, or sheet metal screws, approved waterproof epoxy-based cement or install in metal holders welded to the equipment.
    2. Provide for each disconnecting means with the following:
        a. Equipment served, voltage, and fuse size as required.
        b. Identification of the circuit source that supplies the disconnecting means.
    3. On NEMA Type 4 or NEMA Type 4X enclosures, use epoxy-based cement to attach nameplates.
    4. Aligned and level or plumb to within 1/32 inch over the entire length:
        a. Misaligned or crooked nameplates shall be remounted or new enclosures shall be provided at the discretion of the Engineer.

B. Conductor and cable markers:
    1. Apply before termination.
    2. Heat-shrinkable tubing:
        a. Shrunk using a heat gun that produces low temperature heated air.
        b. Tight on the wire after it has been heated.
        c. Characters shall face the open panel and shall read from left to right or top to bottom.
        d. Marker shall start within 1/32 inch of the end of the stripped insulation point.

C. Conduit markers:
    1. Furnish and install markers for every conduit in the electrical system that is identified in the conduit schedule or part of the process system:
        a. Markings shall match the conduit schedule.
    2. Mark conduits at the following locations:
        a. At each end of the conduit.
        b. Within 3 feet of any pull box, electrical equipment, or control panel.
        c. Where the conduit penetrates a wall, structure, manhole, or handhole.
        d. Where the conduit emerges from the ground, slab, etc.
    3. Position conduit markers so that they are easily read from the floor.
    4. Attach brass tags with 18 gauge Type 304 stainless steel wire.
    5. Mark conduits before construction review by the Engineer for punch list purposes.

D. Signs and labeling:
   1. Furnish and install permanent warning signs at mechanical equipment that may be started automatically or from remote locations:
      a. Fasten warning signs with round head stainless steel screws or bolts.
      b. Locate and mount in a manner to be clearly legible to operations personnel.
   2. Furnish and install warning signs on equipment that has more than one source of power.
      a. Warning signs to identify every panel and circuit number of the disconnecting means of external power sources.
   3. Place warning signs on equipment that has 120 VAC control voltage source used for interlocking.
      a. Identify panel and circuit number or conductor tag for control voltage source disconnecting means.
   4. Label service entrance equipment, switchgear, switchboards, MCCs, panelboards, and transfer switches with the available short circuit current, equipment label, and date of application in accordance with NEC. Coordinate with Section 16305 - Electrical System Studies for available fault current data.

3.02 FIELD QUALITY CONTROL

A. Replace any nameplates, signs, conductor markers, cable markers, or raceway labels that in the sole opinion of the Engineer do not meet the Engineer's aesthetic requirements.

END OF SECTION

SECTION 16123

600-VOLT OR LESS WIRES AND CABLES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. 600-volt class or less wire and cable.

1.02 REFERENCES

A. Abbreviations:
   1. AWG: American wire gauge.
   2. BCCS: Bare copper-covered steel.
   3. CPE: Chlorinated polyethylene.
   4. FHDPE: Foam high-density polyethylene.
   5. FPE: Foam polyethylene.
   6. OD: Outside diameter.
   7. PVC: Polyvinyl chloride.
   8. XHHW: Cross-linked high heat water resistant insulated wire.

B. Standards:
   1. ASTM International (ASTM):
      a. B3 - Standard Specification for Soft or Annealed Copper Wire.
      b. B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
   2. CSA International (CSA).
   3. Insulated Cable Engineers Association (ICEA):
      a. S-90-661 - Individually Unshielded Twisted Pair Indoor Cables for Use in Communication Wiring Systems.
   4. National Electrical Manufacturers Association/Insulated Cable Engineers Association (NEMA/ICEA):
      a. NEMA WC 66/ICEA S-116-732 - Standard for Category 6 and 6A, 100 Ohm, Individually Unshielded Twisted Pairs, Indoor Cables (With or Without an Overall Shield) for Use in LAN Communication Wiring Systems.
      b. NEMA WC 70/ICEA S-95-658-1999 - Standard for Power Cables Rated 2,000 Volts or Less for the Distribution of Electrical Energy.
   5. National Fire Protection Association (NFPA):
      a. 70 - National Electrical Code (NEC).
      b. 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
   6. Telecommunications Industry Association (TIA):
      a. 568.2-D - Balanced Twisted-Pair Telecommunications Cabling and Components Standard.
      b. 569-B - Commercial Building Standards for Telecommunications Pathways and Spaces.

7. Underwriters Laboratories Inc. (UL):
    a. 44 - Standard for Thermoset-Insulated Wires and Cables.
    b. 1666 - Standard for Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
1. Manufacturer of wire and cable.
2. Insulation:
    a. Type.
    b. Voltage class.
3. AWG size.
4. Conductor material.
5. Pulling compounds.

C. Shop Drawings:
1. Show splice locations.
    a. For each proposed splice location provide written justification describing why the splice is necessary.

D. Test reports:
1. Submit test reports for meg-ohm tests.

E. Calculations:
1. Submit cable pulling calculations for cables that will be installed using mechanical pulling equipment. Show that the maximum cable tension and sidewall pressure will not exceed manufacturer recommended values:
    a. Provide a table showing the manufacturer's recommended maximum cable tension and sidewall pressure for each cable type and size included in the calculations.
    b. Submit the calculations to the Engineer a minimum of 2 weeks before conduit installation.

F. Cable lengths:
1. Submit installed cable lengths using a conduit measuring tape for 3-phase circuits.
2. Submit installed lengths of cable for the following single-phase circuits:
    a. Circuits feeding single-phase transformers.
    b. Circuits feeding single-phase panelboards.

1.04 QUALITY ASSURANCE

A. Wires and cables shall be UL listed and labeled.

1.05 PROJECT OR SITE CONDITIONS

A. General Site and Project conditions:
1. As specified in Section 01850 - Design Criteria.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Color-coding:
   1. Color-coding shall be consistent throughout the facility.
   2. The following color code shall be followed for 240/120-volt and 208/120-volt systems:
      a. Phase A: Black.
      b. Phase B: Red.
      c. Phase C: Blue.
      d. Single phase system: Black for 1 hot leg, red for the other.
      e. Neutral: White.
      f. High phase or wild leg: Orange.
      g. Equipment ground: Green.
   3. The following color code shall be followed for 480/277-volt systems:
      a. Phase A: Brown.
      b. Phase B: Orange.
      c. Phase C: Yellow.
      d. Neutral: Gray.
      e. Equipment ground: Green.
   4. The following color code shall be followed for 120 VAC control wiring:
      a. Power: Red.
      b. Neutral: White.
   5. The following color code shall be followed for general purpose DC control circuits:
      a. Grounded conductors: White with blue stripe.
      b. Ungrounded conductors: Blue.
   6. Switch legs shall be violet. 3-way switch runners shall be pink.
   7. Wires in intrinsically safe circuits shall be light blue.
   8. Wire colors shall be implemented in the following methods:
      a. Number 2 AWG and smaller: Wires manufactured of the desired color.
      b. Number 1 AWG and larger by one of the following:
         1) Wire manufactured of the desired color.
         2) Continuously spiral wrap the first 6 inches of the wire from the termination point with colored tape:
            a) Colored tape shall be wrapped to overlap half of the width of the tape.

2.02 MANUFACTURERS

A. One of the following, or equal:
   1. 600-volt class wire and cable:
      a. Okonite Co.
      b. Prysmian General Cable.
      c. Service Wire.

d. Southwire Co.
2. 600-volt VFD cable:
   a. Prysmian General Cable.
   b. Service Wire.
   c. Southwire Co.
3. Instrumentation class wire and cable:
   a. Alpha Wire Co.
   b. Belden CDT.
   c. Okonite Co.
   d. Prysmian General Cable.
   e. Rockbestos Surprenant Cable Corp.
4. Network cables:
   a. Belden.
   b. CommScope.
   c. General Cable.

2.03 MATERIALS

A. Conductors:
   1. Copper in accordance with ASTM B3.

2.04 MANUFACTURED UNITS

A. General:
   1. Provide new wires and cables manufactured within 1 year of the date of delivery to the Site.
   2. Permanently mark each wire and cable with the following at 24-inch intervals:
      a. AWG size.
      b. Voltage rating.
      c. Insulation type.
      d. UL symbol.
      e. Month and year of manufacture.
      f. Manufacturer's name.
   3. Identify and mark wire and cable as specified in Section 16075 - Identification for Electrical Systems:
      a. Use integral color insulation for #2 AWG and smaller wire.
      b. Wrap colored tape around cable larger than #2 AWG.

B. 600-volt class wire and cable:
   1. Provide AWG or kcmil sizes as indicated on the Drawings or in the Conduit Schedules:
      a. When not indicated on the Drawings, size wire as follows:
         1) In accordance with the NEC:
            a) Use 75-degree Celsius ampacity ratings.
            b) Ampacity rating after derating factors, equal to or greater than rating of the overcurrent device.
         2) Provide #12 AWG minimum for power conductors.
         3) Provide #14 AWG minimum for control conductors.
   2. Provide Class B stranding in accordance with ASTM B8:
      a. Provide Class C stranding where extra flexibility is required.

3. Insulation:
    a. XHHW-2.
    b. 90-degree Celsius rating.

C. 600-volt VFD cables:
    1. Conductor:
        a. Provide Class B stranding in accordance with ASTM B3 and B8.
        b. Copper conductor.
    2. Insulation:
        a. Cross-linked Polyethylene, XLPE.
        b. 90-degree Celsius rating.
        c. UL 44 Type RHH/RHW-2 or XHHW-2.
        d. 2,000 volts.
    3. Ground:
        a. Provide Class B compressed stranded bare copper in accordance with ASTM B3 and B8.
        b. 3 symmetrically placed bare copper conductors in direct contact with shield.
        c. Equivalent ground size 50 percent of the phase conductor size.
    4. Filler:
        a. Cable sizes 8 and 6 use polypropylene filler.
        b. Other cable sizes use paper filler.
    5. Metallic shield:
        a. Overall 5 mil bare copper tape shield with 50 percent overlap.
    6. Outer jacket:
        a. UL 1277 Type PVC.
    7. Cable tray rated, UL Type TC-ER.

D. Instrumentation class cable:
    1. Type TC.
    2. Suitable for use in wet locations.
    3. Voltage rating: 600 volts.
    4. Temperature rating:
        a. 90-degree Celsius rating in dry locations.
        b. 75-degree Celsius rating in wet locations.
    5. Conductors:
        a. Insulation:
            1) Flame-retardant PVC, 15 mils nominal thickness, with nylon jacket 4 mils nominal thickness.
        b. #16 AWG stranded and tinned.
        c. Color code: ICEA Method 1:
            1) Pair: Black and white.
            2) Triad: Black, white and red.
            3) Multiple pairs or triads:
                a) Color-coded and numbered.
    6. Drain wire:
        a. #18 AWG.
        b. Stranded, tinned.
    7. Jacket:
        a. Flame retardant, moisture and sunlight resistant PVC.
        b. Ripcord laid longitudinally under jacket to facilitate removal.

8. Shielding:
    a. Individual pair/triad:
        1) Minimum 1.35-mil double-faced aluminum foil-polyester tape overlapped to provide 100 percent coverage.
    b. Multiple pair or triad shielding:
        1) Group shield: Minimum 1.35-mil double-faced aluminum foil-polyester tape overlapped to provide 100 percent coverage.
        2) Completely isolate group shields from each other.
        3) Cable shield: 2.35-mil double-faced aluminum and synthetic polymer backed tape overlapped to provide 100 percent coverage.
    c. Shielding to be in contact with the drain wire.

E. Network cables:
1. Copper Ethernet cable:
    a. Provide copper Ethernet cable types as indicated on the Drawings and Specifications.
    b. General requirements:
        1) Cables shall meet the standards set by TIA-568.2-D and verified by third-party testing laboratory.
        2) Conductors:
            a) 4 balanced twisted pairs.
                (1) #22 to #24 AWG thermoplastic insulated solid copper conducts enclosed by a thermoplastic jacket. Copper clad aluminum is not allowed.
        3) Insulation:
            a) Non-Plenum: Polyolefin.
            b) Plenum: Fluoropolymer.
        4) Color coded per T568B.
        5) Outer jacket with ripcord.
        6) Shielding:
            a) Provide F/UTP cables with drain wire for cables inside any equipment or enclosure with 480 VAC and above, outdoor installations, and where indicated on the Drawings.
        7) Voltage rating:
            a) At a minimum provide 300 VAC rated jacket.
            b) 600 VAC rated jacket when cables are inside equipment or enclosures that contain 480 VAC power.
        8) Approvals and listings:
            a) Meets any necessary NEC and NFPA requirements for each application.
            b) Riser applications: CMR in accordance with UL 1666.
            c) Plenum applications: CMP in accordance with NFPA 262.
        9) Certification:
            a) Provide Category 6 cables with NEMA WC 66/ICEA S-116-732 certification.

2.05 ACCESSORIES

A. Wire ties:
   1. One of the following, or equal:
      a. Panduit, cable ties.
      b. T&B, “Ty-Rap” cable ties.

B. Wire markers:
   1. As specified in Section 16075 - Identification for Electrical Systems.

2.06 SOURCE QUALITY CONTROL

A. Assembly and testing of cable shall comply with the applicable requirements of NEMA WC 70/ICEA S-95-658-1999.

B. Test Type XHHW-2 in accordance with the requirements of UL 44.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install conductors only after the conduit installation is complete, and enclosures have been vacuumed clean, and the affected conduits have been swabbed clean and dry:
   1. Install wires only in approved raceways.
   2. Do not install wire:
      a. In incomplete conduit runs.
      b. Until after the concrete work and plastering is completed.

B. Properly coat wires and cables with pulling compound before pulling into conduits:
   1. For #4 AWG and larger, use an approved wire-pulling lubricant while cable is being installed in conduit:
      a. Ideal Products.
      b. Polywater Products.
      c. 3M Products.
      d. Greenlee Products.
      e. Or equal, as recommended by cable manufacturer.
      f. Do not use oil, grease, or similar substances.

C. Cable pulling:
   1. Prevent mechanical damage to conductors during installation.
   2. For cables #1 AWG and smaller, install cables by hand.
   3. For cables larger than #1 AWG, power pulling winches may be used if they have cable tension monitoring equipment.
   4. Provide documentation that maximum cable pulling tension was no more than 75 percent of the maximum recommended level as published by the cable manufacturer. If exceeded, the Engineer may, at his discretion, require replacement of the cable.
   5. Ensure cable pulling crews have calculations and cable pulling limitations while pulling cable.

6. Make splices or add a junction box or pullbox where required to prevent cable pulling tension or sidewall pressure from exceeding 75 percent of the manufacturer's recommendation for the specified cable size:
    a. Make splices in manholes or pull boxes only.
    b. Leave sufficient slack to make proper connections.

D. Install and terminate wire in accordance with the manufacturer's recommendations.

E. Neatly arrange and lace conductors in switchboards, panelboards, pull boxes, and terminal cabinets by means of wire ties:
    1. Do not lace wires in gutter or panel channel.
    2. Install wire ties with a flush cutting wire tie installation tool:
        a. Use a tool with an adjustable tension setting.
    3. Do not leave sharp edges on wire ties.

F. Terminate stranded conductors on equipment box lugs such that conductor strands are confined within the lug:
    1. Use ring type lugs if box lugs are not available on the equipment.

G. Lighting circuits:
    1. Each circuit shall have a dedicated neutral.

H. Splices:
    1. Provide continuous circuits from origin to termination whenever possible:
        a. Obtain the Engineer's approval prior to making any splices.
    2. Lighting and receptacle circuit conductors may be spliced without prior approval from the Engineer.
    3. Where splices are necessary because of extremely long wire or cable lengths that exceed standard manufactured lengths:
        a. Splice box NEMA rating requirements as specified in Section 16050 - Common Work Results for Electrical.
        b. Make splices in labeled junction boxes for power conductors.
        c. Make splices for control and instrument conductors in terminal boxes:
            1) Provide terminal boards with setscrew pressure connectors, with spade or ring lug connectors.
    4. Power and control conductors routed in common raceways may be spliced in common junction boxes.
    5. Clearly label junction and terminal boxes containing splices with the word "SPLICE LOCATED WITHIN".
    6. Leave sufficient slack at junction boxes and termination boxes to make proper splices and connections. Do not pull splices into conduits.
    7. Install splices with compression type butt splices and insulate using a heat-shrink sleeve:
        a. In NEMA Type 4 or NEMA Type 4X areas, provide heat-shrink sleeves that are listed for submersible applications.
    8. Splices in below grade pull boxes, in any box subject to flooding, and in wet areas shall be made waterproof using:
        a. A heat shrink insulating system listed for submersible applications.
        b. Or an epoxy resin splicing kit.

I. Apply wire markers to wires at each end after being installed in the conduit and before meg-ohm testing and termination.

J. Instrumentation class cable:
   1. Install instrumentation class cables in separate raceway systems from power cables:
      a. Install instrument cable in metallic conduit within non-dedicated manholes or pull boxes.
      b. Install cable without splices between instruments or between field devices and instrument enclosures or panels.
   2. Do not make intermediate terminations, except in designated terminal boxes as indicated on the Drawings.
   3. Shield grounding requirements as specified in Section 16060 - Grounding and Bonding.

K. Copper Ethernet cables:
   1. In accordance with TIA-568.2-D.
   2. Pathways:
      a. For initial installation, the maximum fill capacity for pathways (i.e., conduit, raceways, trays, baskets) is 40 percent. The maximum fill capacity of 60 percent is allowed to accommodate future additions after initial installation.
      b. Conduit should be run in the most direct route possible with no more than two 90-degree bends between pull boxes and serve no more than 3 outlet boxes.
   3. Cable bend radius:
      a. Proper cable bend radius control must be maintained throughout the pathways. Bend radius needs to be at a minimum 10 times the cable diameter.
   4. Cable pulling:
      a. Provide cable pulling swivel system to prevent winding and tangling of rope and cables during pull.
      b. Maximum pulling tension is not to exceed the manufacturer's recommendations. Cable installation should not in any way deform the cable jacket.
      c. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
   5. Cable management:
      a. Organize and manage cables for quick and easy moves, adds and changes.
   6. Cable termination:
      a. Install equipment outlet connector hardware (e.g., RJ45, M12, etc.), and connect to field equipment outlet (e.g., instrument, VFD, actuator, etc.).
      b. Use shielded connectors as required by the installation.
      c. Coordinate cable termination at copper patch panels with ICSC and General Contractor.
   7. Testing:
      a. Copper Ethernet cable testing requirements as specified in Section 16950 - Field Electrical Acceptance Tests.

8. Separation from EMI sources:
    a. Comply with TIA-569-B recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.
    b. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:
        1) Electrical equipment rating less than 2 kVA: A minimum of 5 inches.
        2) Electrical equipment rating between 2 and 5 kVA: A minimum of 12 inches.
        3) Electrical equipment rating more than 5 kVA: A minimum of 24 inches.
    c. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:
        1) Electrical equipment rating less than 2 kVA: A minimum of 2-1/2 inches.
        2) Electrical equipment rating between 2 and 5 kVA: A minimum of 6 inches.
        3) Electrical equipment rating more than 5 kVA: A minimum of 12 inches.
    d. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
        1) Electrical equipment rating less than 2 kVA: No requirement.
        2) Electrical equipment rating between 2 and 5 kVA: A minimum of 3 inches.
        3) Electrical equipment rating more than 5 kVA: A minimum of 6 inches.
    e. Separation between communications cables and electrical motors and transformers, 5 kVA or HP and larger: A minimum of 48 inches.

L. Signal cable:
    1. Separate and isolate electrical signal cables from sources of electrical noise and power cables by a minimum of 12 inches.

M. Wiring allowances:
    1. Equipment locations may vary slightly from the Drawings. Include an allowance for necessary conductors and terminations for motorized equipment, electrical outlets, fixtures, communication outlets, instruments, and devices within 10 linear feet of locations indicated on the Drawings.
    2. Locations for pull boxes, manholes, and duct banks may vary slightly from the Drawings. Include an allowance for necessary conductors and related materials to provide conductors to pull boxes, manholes and duct banks within 20-linear feet of locations indicated on the Drawings.

3.02 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
    1. As specified in Section 16950 - Field Electrical Acceptance Tests.

END OF SECTION

SECTION 16125

FIBER OPTIC CABLE AND APPURTENANCES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Fiber optic cable.
   2. Fiber splices and terminations.
   3. Accessories.

1.02 REFERENCES

A. Abbreviations:
   1. N/Cm: Newtons per centimeter.
   2. OTDR: Optical Time Domain Reflectometer (Tier 2 test).
   3. OTLS: Optical Loss Test Set (Tier 1 test).

B. Standards:
   1. Bellcore Standards:
      a. GR-409 - Generic Requirements for Indoor Fiber.
   2. Electronic Industry Association (EIA):
      a. FOTP-25 - Impact testing of Fiber Optic Cables and Cable Assemblies.
      b. FOTP-33 - Fiber Optic Cable Tensile Loading and Bending Test.
      c. FOTP-41 - Compressive Loading Resistance of Fiber Optic Cables.
      d. FOTP-81 - Compound Flow (Drip) Test for Filled Fiber Optic Cable.
      e. FOTP-104 - Fiber Optic Cable Cyclic Flexing Test.
      f. FOTP-181 - Lightning Damage Susceptibility Test for Fiber Optic Cables with Metallic Components.
   3. Insulated Cable Engineer's Association (ICEA):
      a. S-83-596 - Optic Fiber Premises Distribution Cables.
      b. S-87-640 - Optic Fiber Outside Plant Communications Cable.
      c. S-104-696 - Indoor-Outdoor Optic Fiber Cable.
   4. TIA/EIA Standards:
      a. 598 - Optical Fiber Cable Color Coding.
      b. 11801 - Information technology - Generic cabling for customer premises.
   5. Underwriters Laboratories, Inc. (UL):
      a. 1666 - Test for Flame Propagation Height of Electrical and Optical-Fiber Cables Installed Vertically in Shafts.
      b. 1685 - Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical and Optical-Fiber Cables.

1.03 TERMINOLOGY

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Complete manufacturer's brochures that identify materials and options.
   2. Completed datasheets, including catalog number and source for determining catalog number.
   3. Manufacturer's installation instructions.
   4. Include the following:
      a. Manufacturer's data on testing equipment used on this Project.
      b. Manufacturer's specifications and datasheets for all fiber types.
      c. Manufacturer's specifications and datasheets for all connectors, bulkheads, splicing kits, breakout devices, and appurtenances used in connecting and terminating fiber spans.
   5. Catalog data on testing devices proposed for use plus certifications of accuracy, calibration, and traceability to standards of the NIST.
   6. Manufacturer's test procedures and quality assurance procedures:
      a. After review, the Engineer may require that additional tests be performed before installation.

C. Shop Drawings:
   1. Interconnection cabling diagrams for the complete system including every fiber in each cable.
   2. Drawings indicating locations of all pull boxes including pull box identifiers and lengths.
   3. Submit optical power budget calculations for fiber segments. Include the following:
      a. Minimum transmit power of active devices.
      b. Minimum receive sensitivity.
      c. Available power, in dBm.
      d. Loss for each segment in dBm, including cable attenuation and connector losses. Use manufacturer's data for cable attenuation at the wavelength to be used. Assume 0.5 dB per connector.
      e. Demonstrate that remaining power budget at each receiver is equal to or greater than 3.0 dBm.

D. Calculations:
   1. Cable pulling calculations for conduit runs:
      a. Indicate on the Submittal any additional pull boxes that are required, including pull box identifiers and a written description of the location.

E. Installation instructions:
   1. Submit a cable pulling and splicing work plan that includes the following:
      a. Pull tension calculations.
      b. Detailed description of pull operation methods for conduit runs.
      c. Tools and equipment to be used for cable installation and testing.
      d. Physical location of equipment setup and type.
      e. Exact locations of splice points.
      f. Safety and manual assist cable-pulling operations.
      g. Detailed schedule for pulling and testing cables.

h. Name and qualifications of the supervisory personnel directly responsible for installation of the conduit system.
i. Sample fiber optic cable test sheets.
j. Signed test sheet results.

F. Quality Control Submittals:
1. Manufacturer's representative qualifications.
2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
3. Manufacturer's Certificate of Installation as specified in Section 01756 - Commissioning.

G. Test reports:
1. Submit results of specified tests to the Engineer.
2. Submit 3 copies of test reports showing results of tests specified in this Section or in Section 16950 - Field Electrical Acceptance Tests:
a. Test forms shall include the following information at a minimum:
1) Test type.
2) Test location.
3) Test date.
4) Wavelength.
5) Index of refraction.
6) Cable identification.
7) Fiber type.
8) Fiber number.
9) Fiber color.
10) Result of the value of the tested parameter.
3. Furnish hard copy and electronic copy for OTDR traces.
4. Submit certification that the fiber optic cable has passed each testing stage:
a. Submit separate documentation for each testing stage result.

H. Operation and maintenance manuals:
1. As specified in Section 01782 - Operation and Maintenance Manuals.

I. Record documents:
1. Furnish updated electrical drawings, network diagrams, and fiber cable block diagrams at the end of construction and submit as record drawings.

1.05 QUALITY ASSURANCE

A. Furnish cable and appurtenances manufactured within 1 year of installation.

B. Proof test optical fibers by the fiber manufacturer at a minimum load of 50 kpsi.

C. Provide 100 percent attenuation testing for optical fibers:
1. Include with each cable reel the attenuation of each fiber.

D. Provide information on at least 5 successful fiber optic cable installations of comparable size and complexity in the past 3 years with name, address, and telephone number of facility owner, name of project with completion date, and type of conduit system and length of cable pulled.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package cable for shipment on wooden reels:
   1. Seal both ends of cable to prevent ingress of moisture.
   2. Place fiber cable assemblies on reels such that both cable ends are available for testing.
   3. Weatherproof cable reel markings shall include the following:
      a. Manufacturer.
      b. Date of manufacture.
      c. Shipping date.
      d. Cable identification.
      e. Cable configuration/fiber count.
      f. Cable length.
      g. Gross weight.
      h. Cable test date.
      i. Handling instructions.
      j. Direction to unreel.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Submit a cable pulling and splicing work plan a minimum of 45 days before the planned initiation of cable pulling. Cable pulling and splicing work plan must be approved a minimum of 15 days before pulling cable.
   2. Testing sequence:
      a. Perform testing of each fiber in each cable as follows:
         1) At factory before shipment.
         2) At Project Site upon delivery.
         3) Submit copies of test results to the Engineer within 5 days after the delivery to the site.
         4) After installation, before breakout and terminations.
         5) After installation is complete.
      b. Submit test reports following each set of tests as specified in this Section.

B. Scheduling:
   1. Schedule Engineer, 5 days before installation, to witness cable installations.
   2. Notify the Engineer and Owner a minimum of 15 days before post-installation testing.

1.09 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Furnish a complete fiber optic network as indicated on the Drawings.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Install fiber optic system components in accordance with the recommendations of the manufacturer.

2.03 MANUFACTURERS

A. Acceptable manufacturers are indicated with each component type as listed in the remainder of this Specification.

2.04 MANUFACTURED UNITS

A. General fiber cable requirements:
   1. Suitable for the installed environment.
   2. Color-coded fibers according to TIA/EIA-598.
   3. Color-coded buffer tubes according to TIA/EIA-598.
   4. Furnish buffer tubes of a single layer nylon construction or of a material with similar mechanical performance.
   5. Fillers may be included in the cable core to lend symmetry to the cable cross-section where needed.
   6. Apply binders with sufficient tension to secure buffer tubes to the central member without crushing the buffer tubes:
      a. Provide binders that are:
         1) Non-hygroscopic.
         2) Non-wicking (or rendered so by the flooding compound).
         3) Dielectric with low shrinkage.
   7. Provide a minimum of 1 ripcord under the cable sheath.
   8. Provide high tensile strength Aramid yarns, Kevlar, and/or fiberglass helically stranded evenly around the cable core:
      a. No metallic elements whatsoever are allowed in non-armored cable.
   9. Jacket or sheath shall be free of holes, splits, and blisters.
   10. Mark jacket or sheath with:
      a. Manufacturer’s name.
      b. “Optical Cable”.
      c. Year of manufacture.
      d. Sequential meter marks.
      e. Repeat markings every 1-meter.
      f. Actual length of the cable to be within 1 percent of the length marking.
      g. Marking must be in a contrasting color to the cable jacket.
      h. Height of the marking:
         1) Approximately 2.5 millimeters.
   11. Shipping, storage, and operating temperature range of the cable shall be -40 degrees Celsius to +70 degrees Celsius.

12. General performance characteristics:
    a. Rated tensile load of the cables:
        1) Indoor/outdoor:
            a) Short term: 1,330 N.
            b) Long term: 400 N.
    b. Non-armored fiber optic cables: Compressive load withstand of 220 N/cm applied uniformly over the length of the cable.
    c. Armored fiber optic cables: Compressive load withstand of 440 N/cm applied uniformly over the length of the cable.
    d. Average increase in attenuation for the fibers: Less than or equal to 0.10 dB at 1,550 nm for a cable subjected to this load:
        1) With no measurable increase in attenuation after load removal.
    e. Test in accordance with EIA FOTP-41 except that the load must be applied at the rate of 3 millimeters to 20 millimeters per minute and maintained for 10 minutes.
    f. Capable of withstanding 25 cycles of mechanical flexing at a rate of 30 within 1 cycles/minute.
    g. Average increase in attenuation for the fibers: Less than or equal to 0.10 dB at 1,550 nm at the completion of the test.
    h. For armored cables, any visible cracks causing separation of the armor and propagating more than 5 millimeters constitutes failure.
    i. Outer cable jacket cracking or splitting observed under 10X times magnification, constitutes failure.

B. Indoor/outdoor cable:
    1. Cable construction:
        a. General:
            1) Cable type: Indoor/Outdoor - Flame retardant, low smoke, zero halogen, UV resistant.
            2) Fiber count: As indicated on the Drawings.
            3) Fiber type: As indicated on the Drawings.
            4) Buffer tube: Loose tube.
            5) Armoring: None.
            6) Waterproofing: Water blocking layer.
            7) Strength member:
                a) Loose tube: Utilize a central, nonmetallic strength member with a coefficient of thermal expansion similar to the fibers as the central anti-buckling member.
            8) Approvals and listings: UL 1666 and UL 1685.
            9) Design and test criteria: In accordance with ICEA S-104-696.
        b. Testing:
            1) Fibers in the cable:
                a) Proof test of 100 kpsi.
                b) Each optical fiber: Bellcore GR-409 strip force testing.
                c) No gaps are allowed between the coating material and the buffer material visible under a 50-power microscope.
        c. Outer jacket material:
            1) Linear low-density polyethylene.
            2) Meet requirements of the NEC for use in indoor/outdoor areas (excluding plenums) without being enclosed in conduit.
            3) Flame retardant OFNR riser rated conforming to UL 1666.

4) Printed with necessary UL marks and manufacturer identification.
5) Sequential printing of footage in 2-foot increments.
6) With a ripcord incorporated under the cable jacket.

C. Single mode fibers:
1. Fibers in the cable must be usable fibers and meet required specifications.
2. Each optical fiber shall consist of a doped silica core surrounded by a concentric silica cladding.
3. Single mode fiber characteristics:
a. Category: OS2 compliant with ITU-G.657.A1.
b. Jacket color: Yellow.

D. Indoor/outdoor:
1. Tight buffer:
a. Corning Cable Systems, Freedm® One.
b. Optical Cable Corporation, DX-Series.
c. CommScope, LazrSPEED/TerraSPEED.

2.05 ACCESSORIES

A. Patch cords:
1. General:
a. Connector types to match supplied equipment and patch panel terminations.
b. Maximum length of patch cords: 25 feet.
c. Provide 2 spare patch cords (or 1 duplex patch cord) of each type used at each PLC or network cabinet.
d. Factory assembled and optically tested.
e. Provide mode-conditioning cords for multimode fibers operating at 1,310 nm.
2. Manufacturers: One of the following or equal:
a. CommScope.
b. Corning Cable Systems.

B. Fiber connectors:
1. As specified in Section 17733 - Control Systems: Network Materials and Equipment.

C. Fiber optic identification/warning tags:
1. Black letters on orange or yellow background.
2. UV resistant polyethylene or other suitable material:
a. Manufacturers: The following or equal:
1) Almetek.

2.06 SOURCE QUALITY CONTROL

A. Source Testing:
1. Before shipment and while on the shipping reel, test 100 percent of fibers for attenuation:
a. Copies of the results shall be:
1) Maintained on file.

2) Attached to the cable reel in a waterproof pouch.
3) Submitted before the delivery of the cable to the job Site to the Engineer for approval.

2. Conduct the flex test in accordance with EIA FOTP-104 test condition I and III with a maximum sheave diameter of 20 times the cable OD.
3. Verify that the cable withstands 25 impact cycles with:
   a. Average increase in attenuation for fibers less than 0.20 dB at 1,550 nm.
   b. No evidence of cracking or splitting.
   c. Conduct test in accordance with EIA FOTP-25.
4. Certify that the cable withstands a tensile load of 2,700 N (600 pounds):
   a. Without exhibiting an average increase in attenuation of greater than 0.10 dB.
   b. Test in accordance with EIA FOTP-33 using a maximum mandrel and sheave diameter of 560 millimeters.
   c. Apply the load for 1 hour in test condition II.
5. Certify that the cable withstands a simulated lightning strike:
   a. Peak value of the current pulse greater than 105 kA.
   b. Use a test current with a damped oscillatory maximum time-to-peak value of 15 µs (which corresponds to a minimum frequency of 16.7 kHz) and a maximum frequency of 30 kHz.
   c. Time to half-value of the waveform envelope 40 to 70 µs.
   d. Conduct the test in accordance with the EIA FOTP-181.
   e. In addition to the analysis criterion set forth in EIA FOTP-181, the integrity of the buffer tubes (or analogous loose tube, i.e., core tube) and strength members must be intact after removal of the cable specimens from the test box.
6. Furnish test reports and Manufacturer's Certificate of Source Testing.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify the condition of the conduit system before installation of the fiber optic cable or inner duct.

B. Pass a test mandrel through fiber optic conduits prior to pulling fiber or installing inner duct.
   1. Run the mandrel in both directions.

C. Examine materials and equipment before installation and verify they are free from physical damage and defects.

3.02 PREPARATION

A. Equipment support and anchoring to structures:
   1. Prepare anchor setting template(s) and use to position anchors during construction of supporting structures.
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

B. Before fiber splicing terminating or testing activities, verify sufficient workspace is available to perform the activity without interferences from other trades.

C. Pre-installation test:
   1. Upon arrival at the site:
      a. Inspect the cable and reel for damage.
      b. Test fibers with an optical time domain reflectometer (OTDR) for fiber integrity.
      c. Verify that the fiber lengths are consistent with the cable manufacture.
      d. Verify that traces yield no point discontinuities.
   2. Complete test sequence and obtain approval from the Engineer of submitted test results before cable installation.

3.03 INSTALLATION

A. Install fiber optic patch cords in open network trays or in dedicated conduits no longer than 25 feet in length.

B. Install fiber optic cable in continuous lengths without intermediate splices, except where approved by the Engineer.

C. Cable installation:
   1. Properly attach the fiber optic cable's strength elements to a 600-pound breakaway swivel containing tension or shear pins using Kellums pulling grips that are a minimum of 18 inches long.
   2. Certify that cable tensile limits do not exceed cable pull tension and bend limits using tension monitoring devices.
   3. Leave an extra loop of fiber optic cable in each pull box.
   4. Conform with the cable manufacturer's specifications, practices, and the following requirements:
      a. When power equipment is used to install fiber optic cables, use low speeds and do not exceed a rate of 30 meters per minute.
      b. Do not exceed the tensile and bending limitation for fiber optic cables under any circumstances.
      c. Use large diameter wheels, pulling sheaves, and cable guides to maintain the specified bending radius.
      d. Use commercial dynamometers or load cells to monitor pulling tension.
      e. A nonfreezing type of swivel inserted between the pulling line and cable pulling grip to prevent twisting under strain.
      f. Cable to be installed using a breakaway swivel.
   5. Apply to conduits a lubricant at each conduit ingress and egress location during the pull operation:
      a. Pour or pump lubricant into the end of the conduit at the feed location at a nominal application rate of 3 gallons per 1,000 feet of cable.
      b. If the conduit is open at intermediate locations, then apply the appropriate proportion of lubricant at each opening.
      c. Continuously lubricate the cable as it is being pulled by pouring or pumping the lubricant into the conduit at the feed location and at each intermediate location.
      d. Station workers at each intermediate location as required.
      e. Remove excess lubricant that has collected.

f. Remove and clean the surrounding area after cable installation.

6. Install using a hydraulic capstan or winch equipped with a recording running line dynamometer graph which measures and records pulling tensions:
   a. Use pulling equipment with slip-load capability to allow the winch to maintain a constant pulling force without taking up the winch line.
   b. Use pulling equipment equipped with a hydraulic bypass set so that a maximum tension of 600 pounds is not exceeded.
   c. Use only equipment designed to prevent a preset pulling tension from being exceeded.
   d. Fiber optic cable manufacturer to provide the pulling tension setpoint.
   e. If during the pulling operation excessive tension is detected, cease operations and notify the Engineer.
7. Position the cable reel at the feed point in alignment with the raceway and in such a position that the cable can be passed from the top of the reel in a long, smooth bend into the raceway system:
   a. Use of a cable feeder is required unless the cable is hand-pulled.
8. Supply bull wheels, blocks, split wheels, cable feeders, and necessary equipment required to provide a clean and safe operation:
   a. Cable shall not be allowed to travel over any wheel or block that has a radius less than the minimum radius allowed by the cable manufacturer.
9. Minimize the use of snatch blocks and rollers to guide the cable into the conduit at the feed point:
   a. Slack feed by hand the cable into the feed point and raceway without the use of rollers.
10. Tend the cable reel at all times and turn by hand to provide the required cable slack:
    a. Under no circumstances shall the cable tension be allowed to turn the cable reel.
11. Use a rim roller, with a wheel radius greater than the minimum cable bending radius placed at the manhole or vault opening to prevent the cable from dragging on the manhole rim or steps.
12. Perform a continuous thorough visual inspection for flaws, breaks, and abrasions in the cable sheath as the cable leaves the reel and maintain a slow pulling speed to permit this inspection.
13. Damage to the sheath or finish of the cable is cause for rejecting the cable:
    a. Replace any cable damaged in any way during installation.
14. If the cable becomes damaged during installation, stop operations and notify the Engineer immediately:
    a. Engineer to determine whether to replace the entire reel of cable or to install a termination panel to eliminate the damaged section.
15. Document pulls by a graph which is annotated with the following information:
    a. Reel number.
    b. Pull point ID.
    c. Date and time.
    d. Explanations for abnormalities in readings or interruptions.
    e. Sign-off by the Contractor and Engineer.
16. Under no conditions shall the fiber optic cable be left exposed or unattended.

D. After the cables are installed and spliced:
    1. Rack the cables:
        a. Loosely secure in racked position with wire ties.
        b. Attach imprinted plastic-coated cloth identification/warning tags to each cable in at least 2 locations in each handhole/manhole.

E. Splices:
    1. Provide field splices in a splice tray located in a waterproof splice enclosure:
        a. Manufacturers: The following or equal:
            1) Tyco/Raychem, FOSC style splice enclosure.
    2. Loop the individual fibers a minimum of 1 full turn within the splice tray to avoid macro/micro bending.
    3. After completion of cable terminations, neatly dress cables.
    4. Protect splices with a thermal shrink sleeve.
    5. Provide fusion type fiber optic cable splicing meeting the following requirements:
        a. Joins multimode or single mode fibers.
        b. Establishes a permanent fusion splice.
        c. Waterproof.
        d. Re-enterable, rearrangeable, and reusable.
        e. Splice loss less than 0.10 dB.
        f. Protected by a splice enclosure.
    6. Requirement for outdoor fiber splice enclosures:
        a. Seal.
        b. Bond.
        c. Anchor.
        d. Protect fiber optic cable splices.
        e. Stand-alone unit that does not require an outer enclosure.
        f. Provide for a maximum of 6 cable entries in a butt-end configuration.
        g. Used in aerial, underground, and direct buried applications.
    7. Requirement for indoor fiber splice enclosures:
        a. Anchor.
        b. Protect fiber optic cable splices.
        c. Stand-alone unit that does not require an outer enclosure.
        d. Suitable for the minimum number of splices at that location plus additional capacity for reconfigurations.
    8. Re-splice any splice that has a loss greater than 0.10 dB.
    9. Leave a minimum of 20 feet of fiber optic cable at each end of splice.

F. Terminations:
    1. Terminate fiber inside a patch panel:
        a. Direct landing to a switch, router hub, or PLC will not be allowed.
    2. Terminate outdoor cables using a breakout kit that seals the cable and provides physical protection for the fiber strands.
    3. Terminate indoor cables using factory assembled terminations pig tail spliced to the cable ends.
    4. Labeling:
        a. Permanently label cable terminations. Use labels produced by a wire printer using pressure sensitive polyester labels.
        b. Label patch panels as specified in Section 16075 - Identification for Electrical Systems.

G. Installation Verification:
    1. Furnish Manufacturer's Certificate of Installation Verification.

3.04 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
    1. As specified in Section 16950 - Field Electrical Acceptance Tests.

B. Utilize personnel certified by the manufacturer with specific knowledge of the cable manufacturer's recommended installation procedures.

C. General:
    1. Test results shall meet or exceed manufacturer specifications:
        a. Test each fiber of each cable for breaks, abnormalities, and overall attenuation characteristics.
    2. Pre-installation tests and post-installation tests to be witnessed and signed off by the Engineer and Owner.
    3. Perform OLTS test with equipment capable and calibrated to show anomalies of 0.1 dB as a minimum:
        a. Test multimode fibers at 850 nm and 1,300 nm.
        b. Test single mode fibers at 1,310 nm and 1,550 nm.
    4. Perform OTDR tests on fiber cables less than 100 meters with the aid of a launch cable:
        a. Adjust OTDR pulse width settings to a maximum setting of 1/1,000th of the cable length or 10 nanoseconds.

3.05 CLEANING

A. Clean fiber optic connectors after termination and before testing. After cleaning, cover unterminated connectors with a protective boot.

B. At the completion of construction, touch up the finish on fiber patch panels and enclosures.

3.06 PROTECTION

A. Protect the fiber system from physical damage and the encroachment of dust, before, during, and after installation.

END OF SECTION

SECTION 16130

CONDUITS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Metallic conduits.
   2. Nonmetallic conduits.
   3. Conduit bodies.
   4. Conduit fittings and accessories.
   5. Conduit installation.

1.02 REFERENCES

A. Abbreviations:
   1. FRD: Fiberglass-reinforced duct.
   2. GRC: Galvanized rigid steel conduit.
   3. NPT: National pipe thread.
   4. PCS: Polyvinyl chloride (PVC) coated rigid steel conduit.
   5. PVC: Polyvinyl chloride rigid nonmetallic conduit.
   6. SLT: Sealtight-liquidtight flexible conduit.

B. Standards:
   1. American National Standards Institute (ANSI):
      a. C80.1 - Electrical Rigid Steel Conduit.
   2. National Electrical Manufacturers Association (NEMA).
      a. RN-1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Steel Conduit.
   3. National Fire Protection Association (NFPA):
      a. 70 - National Electrical Code (NEC).
   4. Underwriters Laboratories (UL), Inc.**:**
      a. 1 - Standard for Safety Flexible Metal Conduit.
      b. 6 - Standard for Safety Electrical Rigid Metal Conduit - Steel.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Conduit bodies: A separate portion of a conduit system that provides access through a removable cover to the interior of the system at a junction of 2 or more conduit sections. Includes, but not limited to, shapes C, E, LB, T, X, etc.
   2. Conduit fitting: An accessory that primarily serves a mechanical purpose. Includes, but not limited to, bushings, locknuts, hubs, couplings, reducers, etc.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures and Section 16070 - Hangers and Supports.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer's catalog sheets for every type and size of conduit, fitting, conduit body, and accessories to be used on the Project.
   2. Manufacturer's recommended special tools to be used for installation, if required.
   3. Certified test results for PVC-coated metallic conduit showing the adhesive bond is stronger than the tensile strength of the PVC.

C. Shop Drawings:
   1. Furnish conduit routing plans for conduits before the installation of any conduits embedded within concrete.
   2. Detail the intended routing of each conduit, conduit material and include supporting methods.
   3. Number conduits in accordance with the Contract Documents.
      a. Provide conduit labels as specified in Section 16075 - Identification for Electrical Systems.

D. Delegated Design Submittals:
   1. As specified in Section 16070 - Hangers and Supports.

E. Certifications:
   1. Furnish PVC-coated conduit manufacturer's valid, unexpired certification for each installer.

F. Record documents:
   1. Incorporate changes in conduit routing on electrical plan drawings.
   2. Dimension underground and concealed conduits from building lines.
   3. Furnish hard copy drawings.

1.06 QUALITY ASSURANCE

A. Conduits, conduit bodies, and fittings shall be UL listed and labeled.

B. Every installer of PVC-coated metallic conduit shall be certified by the manufacturer for installation of the conduit, and be able to present a valid, unexpired installer certification card prior to installation beginning.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Do not expose non-metallic conduit to direct sunlight.

B. Do not store conduit in direct contact with the ground.

1.08 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.09 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide conduits, conduit bodies, fittings, junction boxes, and necessary components, whether or not indicated on the Drawings, as required, to install a complete electrical raceway system.

B. Provide location and protection of existing underground utilities, underground conduit trenching, conduit and backfill necessary for the complete installation of underground conduits.

2.02 MANUFACTURERS

A. Galvanized rigid steel conduit:
   1. One of the following or equal:
      a. Allied Tube and Conduit.
      b. Western Tube and Conduit.
      c. Wheatland Tube Co.

B. PVC-coated rigid steel conduit:
   1. One of the following or equal:
      a. Allied.
      b. Calbond.
      c. NEC, Inc. BlackGuard.
      d. Ocal, Inc.
      e. Robroy Ind.

C. Sealtight-liquidtight flexible conduit:
   1. One of the following or equal:
      a. AFC Cable Systems.
      b. Anaconda.
      c. Electri-Flex Co.
      d. Southwire.

D. Rigid nonmetallic PVC conduit:
   1. One of the following or equal:
      a. Cantex.
      b. Carlon.
      c. Triangle Conduit and Cable.

E. Fiberglass reinforced duct:
   1. One of the following or equal:
      a. Champion Fiberglass.
      b. FRE Composites.
      c. Smith Fiberglass.

F. Conduit bodies:
   1. One of the following or equal:
      a. Appleton.
      b. Calbond.
      c. Carlon.
      d. Crouse-Hinds.
      e. O-Z/Gedney.
      f. Ocal, Inc.
      g. Robroy Ind.

G. Joint compound:
   1. As recommended by the conduit manufacturer.

H. Galvanized rigid steel conduit expansion fittings:
   1. One of the following or equal:
      a. Appleton.
      b. Crouse-Hinds.
      c. O-Z/Gedney.

2.03 COMPONENTS

A. GRC:
   1. NPT standard conduit threads with a 3/4-inch taper per foot:
      a. Running conduit threads are not acceptable.
   2. Hot-dip galvanized inside and out:
      a. Ensures complete coverage and heats the zinc and steel to a temperature that ensures the zinc alloys with the steel over the entire surface.
      b. Electro-galvanizing is not acceptable.
   3. Manufactured in accordance with:
      a. UL 6.
      b. ANSI C80.1.

B. PCS:
   1. Steel conduit, before PVC coating, shall be new, unused, hot-dip galvanized material, in accordance with to the requirements for Type GRC.
   2. Coated conduit NEMA Standard RN-1:
      a. Galvanized coating may not be disturbed or reduced in thickness during the cleaning and preparatory process.
   3. Factory-bonded PVC jacket:
      a. Exterior galvanized surfaces shall be coated with primer before PVC coating to ensure a bond between the zinc substrate and the PVC coating.
      b. Nominal thickness of the exterior PVC coating shall be 0.040 inch except where part configuration or application of the piece dictates otherwise.

c. PVC coating on conduits and associated fittings shall have no sags, blisters, lumps, or other surface defects and shall be free of holes and holidays.
d. PVC adhesive bond on conduits and fittings shall be greater than the tensile strength of the PVC plastic coating:
1) Confirm bond with certified test results.

4. Urethane coating shall be uniformly and consistently applied to the interior of conduits and fittings:
a. Nominal thickness of 0.002 inch.
b. Conduits having areas with thin or no coating are not acceptable.
c. Threads shall be coated with urethane.
5. PVC exterior and urethane interior coatings applied to the conduits shall afford sufficient flexibility to permit field bending without cracking or flaking at temperature above 30 degrees Fahrenheit (-1 degree Celsius).
6. PCS conduit bodies and fittings:
a. Malleable iron.
b. Conduit body, before PVC coating, shall be new, unused material and shall be in accordance with appropriate UL standards.
c. PVC coating on the outside of conduit bodies shall be 0.040-inch thick and have a series of ribs to protect the coating from tool damage during installation.
d. 0.002-inch interior urethane coating.
e. Utilize PVC coating as an integral part of the gasket design.
f. Stainless steel cover screw heads shall be encapsulated with plastic to ensure corrosion protection.
g. PVC sleeve extending 1 conduit diameter or 2 inches, whichever is less, shall be formed at each female conduit opening.
1) Inside diameter of the sleeve shall be the same as the outside diameter of the conduit to be used.
2) Sleeve shall provide a vapor- and moisture resistant seal at every connection.
3) Fittings shall be Form 8 and supplied with plastic encapsulated stainless steel cover screws. Fittings shall be UL Type 4X. Fittings shall be from the same manufacturer as the conduit in order to maintain system continuity and warranty.

C. SLT:
1. Temperature rated for use in the ambient temperature at the installed location but not less than the following:
a. General purpose:
1) Temperature range: -20 degrees Celsius to +80 degrees Celsius.
b. Oil-resistant:
1) Temperature range: -20 degrees Celsius to +60 degrees Celsius.
2. Sunlight-resistant, weatherproof, and watertight.
3. Manufactured from single strip steel, hot-dip galvanized on all 4 sides before conduit fabrication.
4. Strip steel spiral wound resulting in an interior that is smooth and clean for easy wire pulling.
5. Overall PVC jacket.
6. With integral copper ground wire, built in the core, in conduit trade sizes 1/2 inch through 1-1/4 inch.

D. PVC:
   1. Extruded from virgin PVC compound:
      a. Schedule 40 unless otherwise specified.
      b. Schedule 80 extra-heavy wall where specified.
   2. Rated for 90 degrees Celsius conductors or cable.
   3. Rated for use in direct sunlight.

E. FRD:
   1. Suitable for use at -40 degrees Celsius to 110 degrees Celsius.
   2. Integral bell and spigot either glued together or assembled with an integral urethane tri-seal gasket held in place with a retainer ring.
   3. For underground use only.
   4. Conduits and fittings shall be pigmented with UV-inhibiting carbon black.

F. Conduit bodies:
   1. Material consistent with conduit type:
      a. Malleable iron bodies and covers when used with Type GRC.
      b. PVC-coated malleable iron bodies and covers when used with Type PCS.
   2. Conduit bodies to be in accordance with to Form 8, Mark 9, or Mogul design:
      a. Mogul design in accordance with to NEC requirements for bending space for large conductors for conduit trade sizes of 1 inch and larger with conductors #4 AWG and larger, or where required for wire-bending space.
   3. Gasketed covers attached to bodies with stainless steel screws secured to threaded holes in conduit body.

2.04 ACCESSORIES

A. Connectors and fittings:
   1. Manufactured with compatible materials to the corresponding conduit.

B. Insulated throat metallic bushings:
   1. Construction:
      a. Malleable iron or zinc-plated steel when used with steel conduit.
      b. Positive metallic conduit end stop.
      c. Integrally molded non-combustible phenolic-insulated surfaces rated at 150 degrees Celsius.
      d. Use fully insulated bushings on nonmetallic conduit system made of high-impact 150 degrees Celsius rated non-combustible thermosetting phenolic.

C. Insulated grounding bushings:
   1. Construction:
      a. Malleable iron or steel, zinc-plated, with a positive metallic end stop.
      b. Integrally molded non-combustible phenolic-insulated surfaces rated at 150 degrees Celsius.
      c. Tin-plated copper grounding saddle for use with copper or aluminum conductors.

D. Electrical unions (Erickson Couplings):
   1. Construction:
      a. Malleable iron for use with steel conduit.

b. PVC-coated malleable iron for use with PCS conduit.
c. Concrete tight, 3-piece construction.
d. Rated for Class I Division 1 Group D in hazardous areas.

E. SLT fittings:
1. Construction:
a. Malleable iron.
b. Furnished with locknut and sealing ring.
c. Liquidtight, raintight, oiltight.
d. Insulated throat.
e. Furnish as straight, 45-degree elbows, and 90-degree elbows.
f. Designed to prevent sleeving:
1) Verify complete bonding of the raceway jacket to the plastic gasket seal.
g. Equipped with grounding device to provide ground continuity irrespective of raceway core construction. Grounding device, if inserted into raceway and directly in contact with conductors, shall have rolled-over edges for sizes under 5 inches.
h. Where terminated into a threadless opening using a threaded hub fitting, a suitable moisture-resistant/oil-resistant synthetic rubber gasket shall be provided between the outside of the box or enclosure and the fitting shoulder. Gasket shall be adequately protected by and permanently bonded to a metallic retainer.
2. Corrosion-resistant and outdoor SLT fittings:
a. Construction:
1) PVC-coated liquidtight fittings with a bonded 0.040-inch-thick PVC coating on the metal connector to form a seal around the SLT conduit.
2) Insulated throat and an integral sealing ring.

F. Hubs for threaded attachment of steel conduit to sheet metal enclosures:
1. Construction:
a. Insulated throat.
b. PVC-coated when used in corrosive areas.
c. Bonding locknut.
d. Recessed neoprene O-ring to ensure watertight and dusttight connector.
e. 1/2-inch through 1-1/4-inch steel zinc electroplated.
f. 1-1/2-inch through 6-inch malleable iron zinc plated.
2. Usage:
a. Conduits in damp, wet, outdoor, and corrosive areas shall use threaded hubs for connections to sheet metal enclosures.

G. Expansion/deflection couplings:
1. Use to compensate for movement in any directions between 2 conduit ends where they connect.
2. Shall allow movement of 3/4 inch from the normal in all directions.
3. Shall allow angular movement for a deflection of 30 degrees from normal in any direction.
4. Constructed to maintain electrical continuity of the conduit system.
5. Materials:
a. End couplings: Bronze or galvanized ductile iron.

b. Sleeve: Neoprene.
c. Bands: Stainless steel.
d. Bonding jumper: Tinned copper braid.

H. Expansion couplings:
1. Shall allow for expansion and contraction of conduit:
a. Permitting 8-inch movement, 4 inches in either direction.
2. Constructed to maintain electrical continuity of the conduit system.
3. Materials:
a. Head: Malleable or ductile iron.
b. Sleeve: Steel.
c. Insulating bushing: Phenolic.
d. Finish: Hot-dip galvanized.
e. PVC-coated steel when used with Type PCS.

I. Conduit markers:
1. As specified in Section 16075 - Identification for Electrical Systems.

PART 3 EXECUTION

3.01 EXAMINATION

A. Before installing any conduit or locating any device box:
1. Examine the complete set of Drawings and Specifications, and applicable Shop Drawings.

B. Verify all dimensions and space requirements and make any minor adjustments to the conduit system as required to avoid conflicts with the building structure, other equipment, or the work of other trades.

3.02 INSTALLATION

A. General:
1. Conduit routing:
a. Electrical drawings are diagrammatic in nature:
1) Install conduit runs as specified with schematic representation indicated on the Drawings and as specified.
2) Modify conduit runs to suit field conditions, as accepted by the Engineer:
a) Make changes in conduit locations that are consistent with the design intent but are dimensionally different, or routing to bypass obstructions.
b) Make changes in conduit routing due to the relocation of equipment.
c) Install conduits and equipment in such a manner as to avoid obstructions and to preserve headroom and keep openings and passageways clear.
3) Where the Drawings do not indicate the exact mounting and/or supporting method to be used, use materials and methods similar to the mounting details indicated on the Drawings.

4) Electrical drawings do not indicate all required junction boxes and pull boxes:
    a) Provide junction boxes and pull boxes to facilitate wire pulling as required:
        (1) To meet cable manufacturer's pulling tension requirements.
        (2) To limit total conduit bends between pull locations.
    b) Install junction boxes and pull boxes at locations acceptable to the Engineer.

b. Contractor is responsible for any deviations in general location, conduit size, routing, or changes to the conduit schedule without the express written approval or direction by the Engineer:
    1) Engineer is the sole source in determining whether the change is constituted as a deviation.
    2) Perform any changes resulting in additional conduits, or extra work from such deviations.
    3) Incorporate any deviations on the Record Documents.

2. Use only tools recommended by the conduit manufacturer for assembling the conduit system.
3. Provide adequate clearances from high-temperature surfaces for conduit runs. Provide minimum clearances as follows:
    a. Clearance of 6 inches from surfaces 113 degrees Fahrenheit to 149 degrees Fahrenheit.
    b. Clearance of 12 inches from surfaces greater than 149 degrees Fahrenheit.
    c. Keep conduits at least 6 inches from the coverings on hot water and steam pipes, 18 inches from the coverings on flues and breechings, and 12 inches from fuel lines and gas lines.
    d. Where it is necessary to route conduits close to high-temperature surfaces, provide a high-reflectance thermal barrier between the conduit and the surface.
4. Support conduit runs on water-bearing walls a minimum of 7/8-inch away from wall on an accepted preformed channel:
    a. Do not run conduits within water-bearing walls unless otherwise indicated on the Drawings.
5. Do not install 1-inch or larger conduits in or through structural members unless approved by the Engineer.
6. Run conduits exposed to view parallel with or at right angles to structural members, walls, or lines of the building:
    a. Install straight and true conduit runs with uniform and symmetrical elbows, offsets, and bends.
    b. Make changes in direction with long radius bends or with conduit bodies.
7. Install conduits with total conduit bends between pull locations less than or equal to 270 degrees.
8. Route exposed conduits to preserve headroom, access space and workspace, and to prevent tripping hazards and clearance problems:
    a. Install conduit runs so that runs do not interfere with proper and safe operation of equipment and do not block or interfere with ingress or egress, including equipment-removal hatches.
    b. Route conduits to avoid drains or other gravity lines. Where conflicts occur, relocate the conduit as required.

9. Conduits may be run in concrete members or slabs with permission of the Engineer or as indicated on the Drawings:
    a. Refer to the typical details for conduit spacing and size requirements.
10. When installing conduits through existing slabs or walls, make provisions for locating any possible conflicting items where the conduit is to penetrate. Use tone signal or X-ray methods to make certain that no penetrations will be made into the existing conduits, piping, cables, post-tensioning cables, etc.
11. Plug conduits brought into pull boxes, manholes, handholes, and other openings until used to prevent entrance of moisture.
12. Install conduits through wall and floor seals where indicated on the Drawings.
13. For existing and new 2-inch and larger conduit runs, snake conduits with a conduit cleaner equipped with a cylindrical mandrel of a diameter not less than 85 percent of nominal diameter of the conduit:
    a. Remove and replace conduits through which mandrel will not pass.
14. Provide sleeves and openings required for the passage of electrical raceways or cables even when these openings or sleeves are not specifically indicated on the Drawings.
15. Install complete conduit systems before conductors are installed.
16. Provide metallic conduits terminating in transformer, switchgear, motor control center, or other equipment conduit windows with grounding bushings and ground with a minimum No. 6 AWG ground wire.
17. Underground conduits:
    a. Install underground conduits, including conduit runs below slabs-on-grade in concrete-reinforced duct bank construction:
        1) As specified in Section 16133 - Duct Banks.
    b. Make underground conduit size transitions at handholes and manholes.
    c. Install spare conduits in underground duct banks towards top center of runs to allow for ease of installation of future cables as conduits enter underground manholes and handholes.
    d. Seal around conduit penetrations of below grade walls with a mechanical seal.
18. Underground conduit trenching:
    a. Perform trenching as specified in Section 02318 - Trenching.
    b. Trench must be uniformly graded with the bottom, rock free and covered with select material.
    c. Damage occurring to existing ducts, conduits, cables, and other utilities during underground conduit installation shall be remediated to the satisfaction of the Owner.
    d. Whenever possible, use the walls of the trench as forms for concrete encasement:
        1) Forms are required where the soil is not self-supporting.

B. Equipment grounding conductors:
    1. Provide a separate, green insulated, grounding conductor in each raceway independent of raceway material:
        a. Multi-conductor power and control cables shall include an integral green insulated grounding conductor.
        b. Provide a separate grounding conductor in each individual raceway for parallel feeders.

2. Conductors shall be the same type and insulation as the circuit conductors:
   a. Use 600-volt insulation for the equipment grounding conductors for medium voltage systems.
3. Minimum size in accordance with the NEC.

C. Lighting and receptacle conduits:
1. Provide conduit runs for lighting and receptacle circuits, whether or not indicated on the Drawings.
2. Install conduits in accordance with the requirements of this Section unless otherwise indicated.
3. Minimum conduit size:
   a. 3/4-inch for exposed conduits.
   b. 1-inch for underground or in-slab conduits.
4. Provide conduit materials for the installed location as specified in Section 16050 - Common Work Results for Electrical.

D. Conduit usage:
1. Exposed conduits:
   a. Rigid conduit:
      1) Install the rigid conduit type for each location as specified in Section 16050 - Common Work Results for Electrical.
      2) Minimum size: 3/4-inch.
   b. Flexible conduit:
      1) Use flexible conduit for final connections between rigid conduit and motors, vibrating equipment, instruments, control equipment, or where required for equipment servicing:
         a) Use Type SLT with rigid metallic conduit.
      2) Minimum size: 3/4-inch:
         a) 1/2 when required for connection to instruments.
      3) Maximum length:
         a) Fixed equipment:

Conduit Trade Size	Flexible Conduit Length (inch)
3/4	18
1	18
1-1/4	18
1-1/2	18
2	36
2-1/2	36
3	36
3-1/2	38
4	40

         b) Removable instruments or hinged equipment:
            (1) As required to allow complete removal or full movement without disconnecting or stressing the conduit.

2. Concrete-encased and embedded conduits:
    a. Straight runs and bends less than 45 degrees:
        1) Type PVC Schedule 40.
    b. Bends with total deflection greater than 45 degrees:
        1) PCS, or FRD.
    c. Entering and exiting duct bank, underground or embedded conduit runs a minimum 12 inches above and below grade, finished floor, or entering equipment:
        1) PCS.
    d. Minimum size:
        1) 2-inch in duct banks.
        2) 1-inch for in-slab conduits.
        3) Provide conduit fittings to enlarge the conduit from the exposed size in the conduit schedule as required.
3. Direct-buried conduits:
    a. Type PCS.
    b. Minimum size: 1 inch.
4. Below-slab conduits:
    a. Type PCS.
    b. Minimum size: 1-inch.
5. PVC-coated rigid metallic conduit:
    a. Use specifically manufactured or machined threading dies to manufacturer's specifications to accommodate the PVC jacket.
    b. Repair damage to PVC coatings with manufacturer supplied touchup compound or PVC Coating Repair Kit for PVC Coated Raceway Systems.
6. GRC:
    a. Conduit shall be cut square and reamed before threading.

E. Conduit joints and bends:
1. General:
    a. Where conduit is underground, under slabs on grade, exposed to the weather, or in NEMA Type 4 or NEMA Type 4X locations, make joints liquidtight.
    b. Keep bends and offsets in conduit runs to an absolute minimum.
    c. Bends shall be symmetrical.
    d. The following conduit systems shall use large-radius sweep elbows:
        1) Underground conduits.
        2) Conduits containing shielded cables.
        3) Conduits containing fiber optic cables.
    e. Provide large-radius factory-made bends for 1-1/4-inch trade size or larger.
    f. Make field bends with a radius of not less than the requirements found in the NEC:
        1) Minimum bending radius of the cable must be less than the radius of the conduit bend.
        2) Make field bends with power bending equipment or manual benders specifically intended for the purpose:
            a) Make bends so that the conduit is not damaged and the internal diameter is not effectively reduced.
            b) For the serving utilities, make bends to meet their requirements.
    g. Replace deformed, flattened, or kinked conduit.

2. Threaded conduit:
    a. Cut threads on rigid metallic conduit with a standard conduit-cutting die that provides a 3/4-inch per foot taper and to a length such that bare metal exposed by the threading operation is completely covered by the couplings or fittings used. In addition, cut the lengths of the thread such that joints become secure and wrench-tight just preceding the point where the conduit ends would butt together in couplings or where conduit ends would butt into the ends or shoulders of other fittings.
    b. Thoroughly ream conduit after threads have been cut to remove burrs.
    c. Use bushings or conduit fittings at conduit terminations.
    d. On exposed conduits, repair scratches and other defects with galvanizing repair stick, Enterprise Galvanizing "Galvabar™," or CRC "Zinc It."
    e. Coat conduit threads with an approved electrically conductive sealant and corrosion inhibitor that is not harmful to the conductor insulation:
        1) Apply to the male threads and tighten joints securely.
        2) Clean excess sealant from exposed threads after assembly.
    f. Securely tighten threaded connections.
    g. Any exposed threaded surfaces must be cleaned and coated with a galvanizing solution so that exposed surfaces have a galvanized protective coating.
3. PVC:
    a. Use approved solvent-weld cement specifically manufactured for the purpose. Spray-type cement is not allowed.
    b. Apply heat for bends so that conduit does not distort or discolor. Use a spring mandrel as required to ensure full inside diameter at bends:
        1) Utilize a heater specifically for PVC conduit as recommended by the conduit manufacturer.

F. Conduit sealing and drainage:
1. Other than required for hazardous and classified areas:
    a. Provide sealing and drainage in vertical drops of long (in excess of 20 feet), exterior, above-grade conduit runs at the points at which the conduit enters buildings, switchgear, control panels, lighting panelboards, and other similar enclosures.
    b. Provide seal fittings with drains in vertical drops directly above grade for exterior and above-grade conduit runs that are extended below grade.
    c. Provide conduit seals with drains in areas of high humidity and rapidly changing temperatures:
        1) Where portions of an interior raceway pass through walls, ceilings, or floors that separate adjacent areas having widely different temperatures.
    d. Provide conduit seals similar to O-Z/Gedney (Type CSM) on conduits between corrosive and non-corrosive areas.
    e. Seal 1 end only of underground conduits at highest point with O-Z/Gedney sealing (non-hazardous) filling, or equal.
2. Install seals with drains at any location along conduit runs where moisture may condense or accumulate. This requirement includes, but is not limited to, the following locations: Control panels, junction boxes, pullboxes, or low points of the conduit.

G. Hangers and supports:
   1. General:
      a. Provide appropriate hangers, supports, fasteners, and seismic restraints to suit applications:
         1) As specified in Section 16070 - Hangers and Supports.
         2) Provide support materials consistent with the type of conduit being installed as specified in Section 16050 - Common Work Results for Electrical.
      b. Support conduit at the intervals required by the NEC.
      c. Perforated strap and plumbers' tape are not acceptable for conduit supports.
   2. Conduit on concrete or masonry:
      a. Use 1-hole malleable iron straps with metallic or plastic expansion anchors and screws or support from preset inserts.
      b. Use preset inserts in concrete when possible.
      c. Use pipe spacers (clamp backs) in wet locations.
   3. Suspended conduit:
      a. Use malleable-iron factory-made split-hinged pipe rings with threaded suspension rods sized for the weight to be carried (minimum 3/8-inch diameter), Kindorf, or equal.
      b. For grouped conduits, construct racks with threaded rods and tiered angle iron or preformed channel cross members. Clamp each conduit individually to a cross member. Where rods are more than 2-feet long, provide rigid sway bracing.
   4. Supports at structural steel members:
      a. Use beam clamps.
      b. Drilling or welding may be used only as specified or with approval of the Engineer.
   5. PVC-coated rigid metal systems:
      a. Provide right-angle beam clamps and "U" bolts specially formed and sized to snugly fit the outside diameter of the coated conduit. Provide "U" bolts with PVC-encapsulated nuts that cover the exposed portions of the threads.
      b. Securely fasten exposed conduits with Type 316 stainless steel clamps or straps.

H. Expansion or expansion/deflection fittings:
   1. General:
      a. Align expansion coupling with the conduit run to prevent binding.
      b. Follow manufacturer's instructions to set the piston opening.
      c. Install expansion fittings across concrete expansion joints and at other locations where necessary to compensate for thermal or mechanical expansion and contraction.
      d. Furnish fittings of the same material as the conduit system.
   2. For metallic conduit, provide expansion or expansion/deflection couplings, as appropriate, where:
      a. Install expansion fittings a minimum of every 200 feet in straight conduit runs.

I. Empty conduits:
   1. Provide a pull tape in each empty conduit more than 10 feet in length.

2. Seal ends of conduits with approved, manufactured conduit seals, caps, or plugs immediately after installation:
    a. Keep ends sealed until immediately before pulling conductors.

J. Miscellaneous:
1. Seal roof penetrations for raceways and other items that penetrate the roof in accordance with roofing manufacturer's instructions and as indicated on the Drawings.
2. Provide electrical unions at all points of union between ends of rigid conduit systems that cannot otherwise be coupled:
    a. Running threads and threadless couplings are not allowed.
3. Replace any conduits installed that the Engineer determines do not meet the requirements of this Specification.
4. Provide conduit housekeeping curb around embedded or below-grade conduits exiting or entering the slab, in accordance with the Typical Details.

END OF SECTION

SECTION 16133

DUCT BANKS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Electrical underground duct banks.
   2. Duct bank installation requirements.

1.02 REFERENCES

A. Underwriters Laboratories, Inc. (UL).

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. PVC conduit spacers.
   2. Detectable underground marking tape.
   3. Pull line.

C. Shop Drawings:
   1. Submit Site plan drawings of duct banks, including underground profiles indicating underground utilities.
   2. Submit cross section of each duct bank with dimensions.
   3. For duct bank routings crossing under building footers or foundations alternative to designed routings indicated on the Drawings:
      a. Submit Shop Drawings detailing the new building footer crossing locations and plan drawings labeling equipment to be installed on top of the new routing for approval by the Project structural Engineer.

1.04 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Before performing any trenching locate existing underground utilities:
      a. As specified in Section 02280 - Subsurface Utility Engineering.

B. Scheduling:
   1. Schedule a coordination meeting to adjust duct bank configurations and routing for each duct bank section after trenching and exposure of any underground utilities withing the vicinity of the duct bank route. Meeting shall determine the final configuration of the duct bank before installation.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Duct bank sections indicated on the Drawings are an initial arrangement and may need to be modified due to existing Site conditions, existing underground utilities, and infrastructure.
   1. Reorganize duct bank section with approval of the Engineer.
   2. Make changes required to accommodate duct bank configuration and routing changes due to field conditions.
      a. Where changes in a duct bank configuration extend to a manhole or handhole, coordinate manhole/handhole blockouts and size with the new configuration.

B. Provide location and protection of existing underground utilities, duct bank, trenching, forming, rebar, spacers, conduit, concrete, backfill, and compaction necessary for the complete installation of the duct banks.

C. Provide reinforced concrete duct banks for conduits installed below grade, on the Site, below structures, or in contact with the earth, unless otherwise indicated on the Drawings.

2.02 MANUFACTURERS

A. Conduit spacers:
   1. One of the following or equal:
      a. Cantex.
      b. Osburn Associates, Inc.

B. Detectable underground marking tape:
   1. One of the following or equal:
      a. Blackburn Manufacturing Co.
      b. Panduit.

C. Pull line:
   1. One of the following or equal:
      a. Arnco.
      b. Greenlee.
      c. Osburn Associates, Inc.

D. Duct seal:
   1. The following or equal:
      a. O-Z/Gedney type DUX.

2.03 MATERIALS

A. Provide conduit as specified in Section 16130 - Conduits.

B. Provide reinforcing steel as specified in Section 03200 - Concrete Reinforcing:
   1. Provide minimum Number 4 reinforcing steel.

C. Concrete:
   1. Mix requirements as specified in Section 03300 - Cast-in-Place Concrete.
   2. Provide a red-oxide conduit encasement coloring agent as specified in Section 03300 - Cast-in-Place Concrete.

2.04 MANUFACTURED UNITS

A. Conduit spacers:
   1. Recommended by the conduit manufacturer or specified above.
   2. Saddle type.
   3. Non-metallic, non-corrosive, non-conductive.
   4. Interlocking type:
      a. Vertical interlocking.
      b. Horizontal interlocking.
   5. Suitable for concrete encasement.
   6. Molded-in rebar holder.
   7. Accommodates 2-inch through 6-inch conduit sizes.
   8. Relieves the conduit from both horizontal and vertical stresses.

B. Pull line:
   1. Minimum 1/4-inch wide, flat design.
   2. Polyester.
   3. Minimum pulling strength 1,200 pounds.
   4. Sequential footage markings.

C. Detectable marking tape:
   1. Locatable by a cable or metal detector from above the undisturbed grade.
   2. Aluminum core laminated between polyethylene film.
   3. 6-inch-wide red tape imprinted with black lettering stating “CAUTION - BURIED ELECTRIC LINE BELOW”, or equivalent.

D. Duct seal:
   1. Non-hardening sealing compound.
   2. Flexible, can be applied by hand.
   3. UL Listed for use with installed conductors.

PART 3 EXECUTION

3.01 INSTALLATION

A. Duct banks:
   1. Encased in concrete at least 24 inches below finish grade, unless otherwise indicated on the Drawings.

2. Damage minimization:
    a. Conduit should not be left exposed in an open trench longer than is necessary.
    b. Protect underground duct banks against damage during pouring of concrete or backfilling.
3. Plastic conduit fittings to be joined should be exposed to the same temperature conditions for a reasonable length of time before assembly.
4. Provide No. 4/0 American Wire Gauge bare copper ground wire the entire length of duct bank and bond to the grounding system at each end of the duct bank:
    a. Where duct bank terminates at structures with a grounding electrode, bond duct bank ground wire to the grounding electrode.
    b. Where duct bank terminates at electrical equipment, bond duct bank ground wire to the equipment ground bus.
    c. Where duct bank terminates at structure without either a grounding electrode or electrical equipment, provide ground rod adjacent to structure and bond duct bank ground wire to ground rod.
5. Install underground ducts to be self-draining:
    a. Slope duct banks away from buildings to manholes, handholes, or pullboxes.
    b. Slope a minimum of 1/4 inch per 10 feet.
6. Install pull line in spare conduits:
    a. Provide adequate pull line at both ends of conduits to facilitate conductor pulling.
    b. Cap above ground spare conduit risers at each end with screw-on conduit caps.

B. Trenching:
1. Perform as specified in Section 02318 - Trenching.
2. Trench must be uniformly graded with the bottom rock free and covered with select material.
3. Whenever possible, use the walls of the trench as forms for concrete encasement:
    a. Forms are required where the soil is not self-supporting.
4. Damage occurring to existing ducts, conduits, cables, and other utilities during duct bank installation shall be remediated to the satisfaction of the Owner.

C. Duct spacing:
1. Separate conduits with manufactured plastic spacers using a minimum space between the outside surfaces of adjacent conduits of 2 inches, unless otherwise indicated on the Drawings:
2. Install spacers to maintain uniform spacing of duct assembly a minimum of 4 inches above the bottom of the trench during concrete pour. Install spacers on 8-foot maximum intervals:
    a. Due to some distortion of conduit from heat, and other means, it may be necessary to install extra spacers within the duct bank:
        1) Install the intermediate set of spacers within normal required spacing to maintain the proper horizontal clearance:
            a) Clearance is required to allow the proper amount of concrete to infiltrate vertically among the duct to ensure proper protection.

3. Spacers shall not be located at the center of a bend:
    a. Locate spacer in the tangent, free of the coupling on fabricated bends.
    b. Locate spacers midway between the tangent and the center bend on trench formed sweeps.

D. Terminating:
1. Use bell ends in duct at entrances into cable vaults.
2. Make conduit entrances into cable vaults tangential to walls of cable vault.
3. Form trapezoidal transitions between duct bank and cable vaults as needed in order to ensure adequate cable bending radius for the duct bank-to-vault transition.
4. Install duct seal in all conduits, including spare conduits, at entrance to manholes/handholes. Form by hand to conduit and around cables to develop moisture barrier.
5. New manhole or handhole applications, provide a single opening or “window” per duct bank, sized to accommodate the duct bank envelope.

E. Concrete:
1. Install concrete as specified in Section 03300 - Cast-in-Place Concrete.
2. Provide tie wires as specified in Section 03200 - Concrete Reinforcing to prevent displacement of the conduits during pouring of concrete:
    a. Tie wire shall not act as a substitute for spacers.
3. Install minimum 3-inch cover around conduit and rebar.
4. Consolidation of encasement concrete around duct banks shall be by hand puddling. Mechanical vibrators are acceptable for use outside of the rebar cage.
5. Conduit is subject to temperature rise. As concrete cures, allow the free end to expand by pouring the concrete from the center of the run or from one tie in point.

F. Marking tape:
1. Install a detectable marking tape 12 inches above the duct bank the entire length of the duct bank.

G. For conduit installations beneath building slabs:
1. Duct banks shall be continued under building slabs to the final destination of the conduits.
    a. Construct separate duct banks as required.
    b. Concrete for encasement under building slabs need not be colored red.
    c. For duct banks crossing under building footers or foundations, install the top of the duct bank a minimum of 6 inches below the footer.
    d. Where duct banks enter through building walls, foundation walls, stem walls, etc., make connections as indicated on the Drawings.
    e. Where duct banks terminate with conduit risers entering building walls, install an expansion/deflection fitting or a flat-wise elbow (elbow parallel to building wall) in order to accommodate differential movement between the conduits and structure.

3.02 CLEANING

A. Clean conduits of dirt and debris by use of an appropriately sized steel mandrel no less than 1/2 inch smaller than the inside diameter of the conduit.

3.03 PROTECTION

A. Provide shoring and pumping to protect the excavation and safety of workers.

B. Protect excavations with barricades as required by applicable safety regulations.

END OF SECTION

SECTION 16134

BOXES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Device boxes.
   2. Raceway system boxes.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. Standard Specifications for Highway Bridges.

B. ASTM International (ASTM):
   1. A47 - Standard Specification for Ferritic Malleable Iron Castings.

C. Joint Industry Conference (JIC).

D. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

E. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

F. Underwriters Laboratories, Inc. (UL).

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Arcing parts: Circuit breakers, motor controllers, switches, fuses, or any device intended to interrupt current during its operation.
   2. Raceway system boxes: Boxes that are used for wire and cable pullboxes, conduit junction boxes, or terminal boxes.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer.
   2. Materials.
   3. Dimensions:
      a. Height.
      b. Width.
      c. Depth.

d. Weight.
e. NEMA rating.
4. Conduit entry locations.
5. Catalog cutsheets.
6. Installation instructions.

C. Shop Drawings:
1. Include identification and sizes of pullboxes.

1.05 QUALITY ASSURANCE

A. Regulatory requirements:
1. Outlet boxes shall comply with applicable standards of:
a. JIC.
b. NEC.
c. NEMA.
d. UL.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide outlet boxes for wiring devices, security systems, junction, and pullboxes for use in the raceway systems, etc.

B. Provide boxes as indicated on the Drawings or as needed to complete the raceway installation.

C. Size pullboxes in accordance with NEC requirements and to provide sufficient room for any future conduits, components, and cables as indicated on the Drawings.

D. Provide materials and construction suitable for environmental conditions at the location of the box as specified in Section 16050 - Common Work Results for Electrical.

E. For boxes not indicated:
1. Provide types and mountings as required to suit the equipment and that will be consistent with the conduit system and environmental conditions as indicated in Section 16050 - Common Work Results for Electrical.

2.02 MANUFACTURERS

A. One of the following or equal:
   1. Plastic and/or fiberglass boxes:
      a. Carlon.
      b. Hoffman.
      c. Stahlin.
   2. Plastic coated boxes:
      a. OCAL.
      b. Rob Roy.
   3. Cast device boxes:
      a. Appleton.
      b. Crouse - Hinds.
      c. O-Z/Gedney.
   4. Formed steel enclosures:
      a. Hoffman.
      b. Rittal
      c. Stahlin.
   5. Stainless steel enclosures:
      a. Hoffman.
      b. Rittal.
      c. Stahlin.

2.03 MANUFACTURED UNITS

A. Cast device boxes:
   1. Construction:
      a. With internal green ground screw.
      b. Furnished with a suitable gasketed cover.
      c. With integral cast mounting lugs when surface mounted.
      d. Conduit sizes range from 3/4 inch to 1 inch.
      e. Tapered threaded hubs with integral bushing.
   2. Aluminum (copper free) boxes:
      a. High strength copper free 4/10 of 1 percent maximum alloy for use with aluminum rigid conduit.
   3. Malleable iron boxes:
      a. In accordance with ASTM A47 Grade 32510.

B. Plastic coated cast device boxes:
   1. Construction:
      a. With internal green ground screw.
      b. Furnished with a suitable gasketed cover.
      c. With integral cast mounting lugs when surface mounted.
      d. Conduit sizes range from 3/4 inch to 1 inch.
      e. Double coated with a nominal 0.002-inch (2 mil) urethane on both the interior and exterior before application of PVC coating.
      f. With a minimum 0.040-inch (40 mil) PVC coating bonded to exterior.
      g. With pressure sealing sleeve to protect the connection with conduit.

C. Fiberglass boxes:
   1. NEMA Type 4X.

2. Constructed of molded fiberglass reinforced polyester.
3. Integral neoprene gasket on cover attached with an oil-resistant adhesive.
4. Enclosures to have internal pads for mounting optional panels and terminal kits.
5. Covers:
    a. Screw cover enclosures:
        1) Covers held in place with captive, stainless steel, or Monel® screws.
        2) Covers attached to body with internal zinc-plated steel hinges.
    b. Quick release latches covers:
        1) Corrosion resistant fiberglass hinges.
        2) Spring loaded fiberglass latches with a Monel® or stainless steel bail attached with Monel® or stainless steel screws.
        3) With a Type 316 stainless steel padlock hasp.
6. With external mounting feet.

D. Formed steel enclosures:
    1. Steel:
        a. NEMA Type 12.
        b. Fabricated from 14-gauge steel, minimum.
        c. Seams continuously welded ground smooth.
        d. Door:
            1) Rolled lip around 3 sides.
            2) Attached to enclosure by means of a continuous stainless steel hinge and pin.
        e. Neoprene door gasket to provide a watertight, dusttight, oiltight seal:
            1) Attached with an adhesive.
            2) Retained by a retaining strip.
        f. Fabricate external removable hardware for clamping the door to the enclosure body from zinc-plated heavy gauge steel:
            1) With a hasp and staple for padlocking.
        g. Provide large enclosures with door and body stiffeners for extra rigidity.
        h. No holes or knockouts.
        i. Finish:
            1) ANSI 61 gray electrostatically applied polyester powder inside and out over cleaned and primed surfaces.
            2) White electrostatically applied polyester powder mounting plate.
        j. Heavy gauge steel external mounting brackets when surface mounted.
    2. Stainless steel:
        a. NEMA Type 4X:
            1) Boxes in locations subject to flooding or temporary submersion:
                a) NEMA Type 6.
        b. Fabricated from 14-gauge Type 316 stainless steel.
        c. Seams continuously welded.
        d. Door:
            1) Rolled lip around 3 sides.
            2) Attached to enclosure by means of a continuous stainless steel hinge and pin.
        e. Neoprene door gasket to provide a watertight seal:
            1) Attached with an adhesive.
            2) Retained by a retaining strip.

f. Fabricate external removable hardware for clamping the door to the enclosure body from heavy gauge stainless steel:
   1) With a hasp and staple for padlocking.
g. Provide large enclosures with door and body stiffeners for extra rigidity.
h. No holes or knockouts.
i. Finish:
   1) Brushed.
j. Stainless steel external mounting brackets when surface mounted.

2.04 ACCESSORIES

A. Fasteners:
   1. Electroplated or stainless steel in boxes with wiring devices.
   2. Screws, nuts, bolts, and other threaded fasteners:
      a. Stainless steel.

B. Provide breather and drain fittings where appropriate.

C. Internal panels:
   1. Provide internal panels where required for mounting of terminal strips or other equipment.
   2. With plated steel shoulder studs.
   3. Steel with white polyester powder finish.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
   1. Provide outlet box materials to match the conduit system:
      a. GRC - Cast ferrous boxes.
      b. PCS - PVC coated cast ferrous boxes.
   2. Solid type gang boxes:
      a. For more than 2 wiring devices.
      b. For barriered outlets.
   3. Support wall mounted NEMA Type 4 or NEMA Type 4X boxes to maintain a minimum of 7/8-inch free air space between the back of the enclosure and the wall:
      a. Use machined spacers to maintain air space; built-up washers are not acceptable.
      b. Use stainless steel or nylon materials for spacers.
   4. Use cast malleable iron boxes when box must support other devices.
   5. Boxes serving luminaires or wiring devices:
      a. Use as pullboxes wherever possible.
   6. In terminal boxes, furnish terminals as indicated on the Drawings with a minimum of 20 percent spare terminals:
      a. Furnish wireways for discrete and analog/DC wiring.
      b. Separate analog wiring from 120 V discrete or power wiring.
   7. For fire-rated construction, provide materials and installation for use in accordance with the listing requirements of the classified construction.

B. Outlet boxes:
   1. Locate outlet boxes as indicated on the Drawings:
      a. Adjust locations so as not to conflict with structural requirements or other trades.
   2. Use deep threaded-hub malleable iron boxes:
      a. In hazardous areas.
      b. Where exposed to the weather.
      c. In unheated areas.
      d. Where subject to mechanical damage:
         1) Defined as exposed boxes less than 10 feet above the floor.
      e. To act as a pullbox for conductors in a conduit system.
      f. Accommodate wiring devices.
   3. Use deep threaded-hub plastic coated malleable iron boxes in corrosive and NEMA Type 4X area and when the exposed conduit system is PVC coated steel.
   4. Outlet boxes may be used as junction boxes wherever possible.

C. Pullboxes and junction boxes:
   1. Install pullboxes such that access to them is not restricted.
   2. Outlet, switch, and junction boxes where surface mounted in exposed locations:
      a. Cast ferrous boxes with mounting lugs, zinc or cadmium plating finish.
   3. Outlet, control station, and junction boxes for installation in corrosive locations:
      a. Fiberglass reinforced polyester, stainless steel, or plastic-coated steel to match the conduit system.
      b. Furnished with mounting lugs.
   4. Fire rated construction: Use materials and methods to comply with the listing requirements for the classified construction.

END OF SECTION

SECTION 16140

WIRING DEVICES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Switches.
   2. Receptacles.
   3. Plates.

1.02 REFERENCES

A. Federal Specifications (FS):
   1. W-C 596 - Connector, Electrical, Power, General Specification for.
   2. W-S 896/2 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification).

B. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

C. Telecommunications Industry Association (TIA):
   1. T568A - Eight-position jack pin/pair assignment.
   2. T568B - Optional eight-position jack pin/pair assignment.

D. Underwriters Laboratories, Inc. (UL):
   1. 20 - General Use Snap Switches.
   2. 498 - Standard for Attachment Plugs and Receptacles.
   3. 943 - Ground-Fault Circuit-Interrupters.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. GFCI: Ground fault circuit interrupter.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Catalog cutsheets.

C. Shop Drawings:
   1. Engraving schedule:
      a. Furnish complete engraving schedule for engraved nameplates.

1.05 QUALITY ASSURANCE

A. Wiring devices shall be UL listed and labeled.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Switches, receptacles, and plates as indicated on the Drawings, wired and operable to form a complete system.

2.02 MANUFACTURERS

A. Switches:
   1. One of the following or equal:
      a. Cooper Wiring Devices.
      b. Hubbell.
      c. Leviton.

B. Receptacles:
   1. General purpose:
      a. One of the following or equal:
         1) Cooper Wiring Devices.
         2) Hubbell.
         3) Leviton.

C. Plates:
   1. General location:
      a. One of the following or equal:
         1) Cooper Wiring Devices.
         2) Legrand.
   2. Wet or corrosive areas:
      a. One of the following or equal:
         1) ABB.
         2) Cooper Wiring Devices.
         3) Hubbell.
         4) Pass and Seymour.
   3. In-use covers:
      a. One of the following or equal:
         1) ABB.
         2) Cooper Wiring Devices.

3) Pass and Seymour.
4) TayMac.

2.03 MANUFACTURED UNITS

A. Switches:
1. General:
a. 120 to 277 VAC.
b. 20-amp.
c. Listed in accordance with UL 20.
d. Designed and constructed in accordance with FS W-S-896/2.
e. Back and side wired unless otherwise indicated.
f. Integral grounding terminal.
g. Totally enclosed:
1) Color-coded body with color corresponding to amp rating.
h. Provide switches with the operator style and contact arrangement as indicated on the Drawings and as required for proper operation.
i. Color:
1) Ivory in finished areas.
2) Brown in all other areas.
2. General purpose switches:
a. Toggle type.
3. Switches for office areas:
a. Rocker type.
b. Rectangular.
4. Switches for use with photocell:
a. Maintained contact.
b. 2 circuit.
c. 3 position:
1) Center off.

B. Receptacles:
1. General purpose receptacles:
a. Single or duplex as indicated on the Drawings.
b. 125 VAC.
c. 20 amp or as indicated on the Drawings.
d. NEMA Type 5-20R configuration for 20 amp receptacles.
e. Other NEMA configurations as indicated on the Drawings.
f. Listed in accordance with UL 498.
g. Designed and constructed in accordance with FS W-C-596.
h. Back and side wired.
i. 1-piece, rivet-less mounting strap.
j. Color:
1) Ivory in finished areas.
2) Brown in all other areas.
3) Orange when powered by a UPS.
2. Ground fault interrupter receptacles (GFCI):
a. 125 VAC.
b. 20 amp.
c. Trip level 4 to 6 mA.
d. Individual and feed through protection.

e. UL 943 and UL 498 listed.
f. NEMA Type 5-20R configuration.
g. For damp or wet locations:
1) Weather resistant, in accordance with UL 498.

C. Plates:
1. General location:
a. Type 302 or 304 stainless steel.
b. Brushed satin finish.
c. Minimum thickness: 0.032 inches.
d. Rectangular or square shape.
e. Engraving:
1) Engrave each switch plate with the following:
a) Area served.
b) Panelboard and Circuit.
2) Engrave each receptacle plate with the following:
a) Panelboard and Circuit.
3) Treat engraving to improve visibility.
4) Characters shall be block letter pantograph engraved with a minimum character height of 1/8-inch.
f. Coordinate the number of gangs, number, and type of openings with the specific location.
2. Outdoor and wet areas requiring NEMA Type 4 or NEMA Type 4X enclosures:
a. General:
1) UL listed for wet locations.
2) Gasketed.
3) Die cast metal:
a) Match material to box material.
b. Switches:
1) Lever operated:
a) Provide toggle switch.
c. Receptacles:
1) Weatherproof in-use cover:
a) Die cast metal construction with electrostatic powder coating for corrosion resistance.
b) Gasketed.
c) Lockable.
d) UL listed and in accordance with NEC.
3. Corrosive areas:
a. Neoprene.
b. Gasketed.
c. Weatherproof.

PART 3 EXECUTION

3.01 INSTALLATION

A. Mounting heights:
1. Process and production areas:
a. Switches and receptacles 48 inches from finished floor to top of plate.

2. Offices and finished areas:
    a. Switches: 48 inches from finished floor to top of plate.
    b. Receptacles: 18 inches from finished floor to center of plate.

B. Receptacles:
1. Provide GFCI receptacles as indicated on the Drawings.
    a. Provide weather resistant GFCI receptacles in wet or damp areas.
2. Mount receptacles vertically:
    a. Ground slot down.

C. Ensure plates make a firm seal with wall for recessed mounted devices:
1. Outside edges of plates parallel with building lines.

END OF SECTION

SECTION 16150

LOW VOLTAGE WIRE CONNECTIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Wire connecting devices.
   2. Terminations.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape.

B. CSA International (CSA):
   1. C22.2 - No. 197-M1983 (R2208) - PVC Insulating Tape.

C. Underwriters Laboratories, Inc. (UL):
   1. 486A-B - Standard of Safety for Wire Connectors.
   2. 510 - Standard for Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape.
   3. 1953 - Outline of Investigation for Power Distribution Blocks.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Catalog cutsheets.
   2. Installation instructions.

1.04 QUALITY ASSURANCE

A. Materials shall be UL listed.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide a complete system of wiring connectors, terminators, fittings, etc., for a complete wiring system suitable for the cables and conductors used.

2.02 MANUFACTURERS

A. Manufacturers for each type of technology are specified with the equipment in this Section.

2.03 EQUIPMENT

A. Control connections:
   1. Use insulated ring type wire terminators for connections to screw terminals:
      a. With chamfered/funneled terminal barrel entry.
      b. Deep internal serrations.
      c. Long barrel design to reduce electrical resistance and increased insulator-barrel surface area to ensure that the insulator remains in contact with the barrel.
      d. Electroplated-tin copper conductor.
      e. Manufacturers: The following or equal:
         1) ABB, Sta-Kon.
   2. For process equipment connections, work from manufacturer's drawings.

B. Joints, splices, taps, connections, and terminations:
   1. 600-volt conductors:
      a. Use solderless connectors.
      b. Copper pigtail adaptors.
         1) For use on select applications as approved by the Engineer.
         2) 600 volt, 90 degrees Celsius rated.
         3) UL 486A/B listed.
         4) Manufacturers: The following or equal:
            a) Burndy APY series.
            b) ILSCO CPM series.
      c. Use only plated copper alloy connectors or lugs:
         1) Aluminum connectors or lugs are not acceptable for copper conductors.
      d. Under those specific conditions where aluminum conductors have been allowed or are specified then the connectors for aluminum conductors shall be specifically designed for that purpose.
      e. For wire Number 10 AWG and smaller, use compression splice caps, with insulating caps:
         1) Manufacturers: The following or equal:
            a) Buchanan, 2006S or 2011S, with 2007 or 2014 insulating caps.
      f. For wire Number 8 AWG and larger, use heavy duty copper compression connectors:
         1) Manufacturers: One of the following or equal:
            a) ABB.
            b) Burndy.

g. Heat shrink tubing:
1) Suitable for indoors, outdoors, overhead, direct burial or submerged applications.
2) Minimum shrink ratio: 4 to 1.
3) Continuous operating temperature: -55 degrees Celsius to 110 degrees Celsius.
4) Internally applied adhesive sealant.
5) Cross-linked polyolefin:
a) Manufacturers: One of the following or equal:
(1) 3M, ITCSN.
(2) ABB, Shrink-Kon.

C. Insulating tape:
1. General purpose insulating tape:
a. Minimum 7 mil vinyl tape.
b. Suitable for application in an ambient of -18 degrees Celsius (0 degrees Fahrenheit).
c. Operating range up to 105 degrees Celsius (220 degrees Fahrenheit).
d. Flame retardant, hot- and cold-weather resistant, UV resistant.
e. For use as a primary insulation for wire cable splices up to 600 VAC.
f. Meeting and complying with:
1) ASTM D3005 Type I.
2) UL 510.
3) CSA C22.2.
g. Manufacturers: The following or equal:
1) 3M, Scotch Number Super 33+.
2. General purpose color-coding tape:
a. Minimum 7 mil vinyl tape.
b. Suitable for application on PVC and polyethylene jacketed cables.
c. For use indoors and outdoors in weather protected enclosures.
d. Available with the following colors:
1) Red.
2) Yellow.
3) Blue.
4) Brown.
5) Gray.
6) White.
7) Green.
8) Orange.
9) Violet.
e. For use as phase identification, marking, insulating, and harnessing.
f. Meeting and complying with:
1) UL 510.
2) CSA C22.2.
g. Manufacturers: The following or equal:
1) 3M, Scotch Number 35.

PART 3 EXECUTION

3.01 INSTALLATION

A. Load connections:
   1. Connect loads to the circuits as indicated. Color-code branch circuits as specified in Section 16123 - 600-Volt or Less Wires and Cables.

B. Zero to 600-volt systems:
   1. Make connections with the proper tool and die as specified by the device manufacturer.
   2. Use only tooling and dies manufactured by the device manufacturer.
   3. Insulate connections and splices with Scotch 33+ tape and Scotchfill, or pre-molded plastic covers, or heat shrink tubing and caps.
   4. Number power and control wires before termination.

C. Motor connections (600 volts and below):
   1. Terminate leads and wires with compression type ring lugs.
   2. Terminations on motor leads, including leads that are connected together to accommodate the motor voltage, and the machine wires entering the motor terminal box from the power source, shall have ring type compression lugs.
   3. Cover bolted connectors with a heat shrinkable, cross-linked polyolefin material formed as a single opening boot:
      a. In damp and wet locations, use a complete kit containing mastic that shall seal out moisture and contamination.
      b. Shrink cap with low heat as recommended by the manufacturer.
   4. Wire markers shall be readable after boot installation.
   5. Manufacturers: The following or equal:
      a. Raychem, MCK.

END OF SECTION

SECTION 16210

UTILITY COORDINATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Coordination with the utility companies to provide service.
   2. Contractor's responsibilities for connecting to utilities and providing utility service to the facilities.
   3. Descriptions of utility services required.

B. Utility contacts:
   1. Electric utility:
      a. Name: Joey Mckinney.
      b. Utility: Roseville Electric Utility.
      c. Address: 2090 Hilltop Circle, Roseville, CA 95747.
      d. Phone number: (916) 774-5691.
      e. E-mail: JMcKinney@roseville.ca.us.

1.02 REFERENCES

A. Underwriters Laboratories, Inc. (UL).

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Certification:
   1. Submit certification that the intended installation has been coordinated with the utility companies.
   2. Include a narrative description of the utility's requirements and points of connection, names and telephone numbers for contacts at the utilities.

1.04 QUALITY ASSURANCE

A. Materials and equipment used in performance of Electrical Work shall be listed or labeled by UL, or other equivalent recognized independent testing laboratory, for the class of service intended.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 ADMINISTRATIVE REQUIREMENTS

A. Scheduling:
   1. General:
      a. Before the start of Site Work, make arrangements for temporary telephone and electrical service as required.
   2. Electrical systems:
      a. Before bidding, contact the utilities to determine the Work and materials that will be required from the Contractor for inclusion in the bid.
      b. Coordinate Work with the Engineer to minimize downtime of existing operating equipment and electrical distribution systems and to preclude unsafe operation:
         1) Notify Owner 10 days before power interruptions.
         2) Coordinate downtime with Owner and local electric utility.
      c. Before commencing Work, coordinate electric service entrance requirements with local electric utility to ensure that the installation will be complete:
         1) Confirm the utility transformer size, electrical characteristics, and location are consistent with the design and service voltage provided by the electric utility.
         2) Arrange for utility revenue meter.
         3) Coordinate installation of metering CTs and PTs furnished by the electric utility.
   3. Before commencing Site Work, coordinate underground conduit installations with other Work to eliminate conflicts and avoid interferences with other underground systems.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Electrical service:
   1. Temporary construction power:
      a. As specified in Section 01500 - Temporary Facilities and Controls.
      b. Provide all Work and materials not provided by the electric utility.
      c. Pay fees and costs for temporary construction power.
   2. Provide all Work and materials for providing the permanent electrical service, including, but not limited to:
      a. Work and materials not provided by the electric utility.
      b. Provide electrical ducts, raceways, conductors, and connections indicated on the Drawings, and all other Work and materials required for a complete electrical service.

B. General:
   1. Coordinate and obtain inspections and final installation approval from the serving utilities and authorities having jurisdiction.

2.02 MATERIALS

A. Provide materials in accordance with the applicable requirements of the utilities and as specified in these Specifications.

2.03 EQUIPMENT

A. Provide equipment in accordance with the applicable requirements of the utilities and as specified in these Specifications.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 16222

LOW VOLTAGE MOTORS UP TO 500 HORSEPOWER

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Low voltage motors up to and including 500 horsepower (hp).

1.02 REFERENCES

A. Standards:
   1. American Bearing Manufacturers Association (ABMA):
      a. 9 - Load Ratings and Fatigue Life for Ball Bearings.
      b. 11 - Load Ratings and Fatigue Life for Roller Bearings.
   2. ASTM International (ASTM):
      a. B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
   3. Institute of Electrical and Electronic Engineers (IEEE):
      a. 43 - IEEE Recommended Practice for Testing Insulation Resistance of Rotating Machinery.
      b. 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators.
   4. National Electrical Manufacturers Association (NEMA):
      a. MG 1 - Motors and Generators.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Submit completed motor data sheets for each motor supplied:
   1. As specified in Attachment A - Motor Data Sheet.
   2. Manufacturer’s or other data sheets are not acceptable.

C. Product data:
   1. Descriptive bulletins.
   2. Machine tag and loop number as indicated on the Drawings and in the specification section number of the driven machine.
   3. Complete electrical data.
   4. Manufacturer’s storage recommendations.
   5. Torque, current, and power factor versus speed curves:
      a. At 100 percent rated voltage for full voltage started and VFD-driven motors.
      b. For motors on reduced voltage start at 70, 80, 90, and 100 percent rated voltage.
   6. Accessories data:
      a. Power factor correction capacitors:
         1) Size in KVAR for motors not connected to variable frequency drives.

b. Motor winding heaters:
    1) Voltage.
    2) Watts.
c. Winding temperature detectors:
    1) Type.
    2) Rating.
d. Moisture detectors.

7. Mechanical data:
    a. Bearing design and bearing life calculations.
    b. Resonant frequencies for VFD-driven motors 50 hp or greater.

D. Shop Drawings:
1. Motor weight.
2. Frame size.
3. Conduit box(es), size(s), and location(s).
4. Outline drawings with dimensions.
5. Installation details for the project seismic criteria.

E. Calculations:
1. Where Site conditions specified in Section 01850 - Design Criteria exceed manufacturer's ratings, provide derating calculations for each motor.

F. Quality Control Submittals:
1. Manufacturer's representative qualifications.
2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
    a. With test reference standard identified.

G. Certification:
1. When motors are driven by variable speed drive systems, submit certification that selected motor:
    a. Is capable of satisfactory performance under the intended load.
    b. Meets the requirements of the latest edition of NEMA MG 1 Part 31.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store motors in accordance with the manufacturer's recommendations.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.
1. Provide a 2-year duration special warranty.

PART 2 PRODUCTS

2.01 GENERAL

A. Furnish and install electric motors and accessories as specified in this Section and the Sections specifying driven equipment to provide a complete and operable installation.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. Baldor.
   2. General Electric.
   3. Reliance.
   4. Toshiba.
   5. US Motors.

2.04 EQUIPMENT

A. 3-phase induction motors - general:
   1. Voltage:
      a. Motors 1/2 hp and larger shall be rated 460 V, 3-phase unless otherwise indicated on the Drawings.
      b. Dual voltage motors rated 230/460 V; 3-phase are acceptable provided all leads are brought to the conduit box.
   2. Motors driving identical machines shall be identical.
   3. Motors greater than 1 hp and up to 500 hp shall meet the NEMA Premium Efficiency percent listed in NEMA MG 1.
   4. Horsepower as indicated on the Drawings:
      a. Horsepower ratings indicated on the Drawings are based on vendor's estimates. Provide motors sized for the load of the actual equipment furnished without operating in the service factor.
   5. Service factor:
      a. 1.15 service factor on sine wave power.
      b. 1.0 when driven by VFD.
   6. Torque:
      a. Provide motors that develop sufficient torque for acceleration to full speed at voltage 10 percent less than motor nameplate rating.
      b. When started using reduced voltage starters:
         1) Provide motors that develop sufficient torque for acceleration to full speed.
      c. NEMA Design B except where driven load characteristics require other than normal starting torque:
         1) In no case shall starting torque or breakdown torque be less than the values specified in NEMA MG 1.

7. Enclosures:
    a. As specified in the individual equipment Specifications or in this Section.
    b. Totally enclosed fan cooled:
        1) Cast iron conduit box.
        2) Tapped drain holes with Type 304 stainless steel plugs for frames 286 and smaller, and automatic breather and drain devices for frames 324 and larger.
    c. Explosion proof:
        1) Tapped drain holes with corrosion resistant plugs for frames 286 and smaller and automatic breather and drain devices for frames 324 and larger.
    d. Lifting devices: Motors weighing 265 pounds (120 kilograms) or more shall have suitable lifting devices for installation and removal.
8. Manufactured with cast iron frames in accordance with NEMA MG 1 or manufacturer's standard material for the specified rating.
9. Nameplates:
    a. Provide motors with a permanent, stainless steel nameplate indelibly stamped or engraved with:
        1) NEMA standard motor data:
            a) Indicate compliance with NEMA MG 1 Part 31 for inverter duty motors.
        2) AFBMA bearing numbers and lubrication instructions.
10. Hardware:
    a. Type 304 stainless steel.
11. Conduit boxes:
    a. Cast iron or stamped steel.
    b. Split from top to bottom.
    c. Provide gaskets at the following interfaces:
        1) Frames and conduit boxes.
        2) Conduit boxes and box covers.
    d. Rotatable through 360 degrees in 90-degree increments:
        1) Where available based on the size of the conduit box.
    e. Exceeding the dimensions defined in NEMA MG 1.
    f. Provide grounding lugs inside conduit boxes for motor frame grounding.
12. Motor bearings:
    a. Antifriction.
    b. Regreasable and initially filled with grease for horizontal motors and vertical motors in accordance with the manufacturer's standard design.
    c. Bearings and lubrication suitable for ambient temperature and temperature rise.
    d. Suitable for intended application and have a rate for ABMA 9 or 11, L-10 rating life of 60,000 hours or more.
    e. Fit bearings with easily accessible grease supply, flush, drain, and relief fittings using extension tubes where necessary.
    f. Where specified in the equipment Specifications, provide split-sleeve type hydrodynamic radial bearings. Provide a bearing isolator to protect bearings from contaminants.
    g. Install a ball valve on the lubrication drain port.
13. Insulation systems:
    a. Motors installed in ambient temperatures 40 degrees Celsius or less:
        1) Provide Class F insulation.

2) Design temperature rise consistent with Class B insulation.
3) Rated to operate at an ambient temperature of 40 degrees Celsius at the altitude where the motor will be installed.

b. Motors installed in ambient temperatures between 40 degrees Celsius and 50 degrees Celsius:
1) Provide Class F insulation.
2) Design temperature rise consistent with Class B insulation.
3) Rated to operate at an ambient temperature of 50 degrees Celsius at the altitude where the motor will be installed.

c. Motors installed in ambient temperatures between 50 degrees Celsius and 65 degrees Celsius:
1) Provide Class H insulation.
2) Design temperature rise consistent with Class F insulation.
3) Rated to operate at an ambient temperature of 65 degrees Celsius at the altitude where the motors will be installed.

14. Motor leads:
a. Insulated leads with non-wicking, non-hydroscopic material. Class F insulation.

15. Noise:
a. Maximum operating noise level in accordance with NEMA MG 1.

B. Vertical motors:
1. Enclosures:
a. As specified in the equipment specifications.
2. Thrust bearings:
a. Selected for combined rotor and driven equipment loads.
b. Coordinate with driven equipment supplier for maximum vertical thrust of driven equipment.
3. Anti-reverse ratchet.

C. Motors driven by variable frequency drives:
1. Compatible with the variable frequency drives specified.
2. Inverter duty rated and labeled.
3. Meet the requirements of NEMA MG 1 Part 31.
4. Winding insulation meets the requirements of NEMA MG 1 Part 31.4.4.2.
5. Capable of running continuously at 1/10th of full speed, with no harmful effects or overheating.
6. Shaft grounding ring:
a. Provide a manufacturer-installed shaft grounding ring for each VFD-driven motor.
b. Aluminum frame and internal components.
c. Conductive microfiber brushes.
d. Maintenance free design.
e. Colloidal silver compound installed on shaft under the shaft grounding ring.
f. High frequency ground strap.
g. Grounding ring:
1) Installed inside motor housing on drive end (DE).
2) Installed on exterior of motor housing on drive end with written permission from the Engineer.

h. Refer to the following table for specific requirements based upon the driven motor:

Motor Size	<100 hp	100 hp to 500 hp	>500 hp
Voltage	<600 VAC	<600 VAC	<600 VAC
AEGIS® Ring	SGR	SGR	PRO
Bearing Insulation	No	NDE	NDE & DE
Colloidal Sliver	Recommended	Required	Required
HF Grounding Straps	Required	Required	Required

Notes:
DE - drive end.
HF - AEGIS® High Frequency Grounding Strap.
NDE - non-drive end.
PRO - AEGIS® PRO Series Shaft Grounding Rings.
SGR - AEGIS® Shaft Grounding Ring Series.

i. AEGIS® bearing protection ring, as manufactured by Electro Static Technology, or equal.

7. Insulated bearings:
   a. Provide motor manufacturer's standard insulated sleeve or ceramic bearings.
   b. Motors 100 hp to 500 hp: Provide insulated bearing on non-drive end (NDE) of the motor the end opposite the shaft grounding ring as recommended by the motor manufacturer.
   c. Motors larger than 500 hp: Provide insulated bearings on both the DE and NDE, and AEGIS® PRO Series shaft ground ring externally mounted on the DE.

D. Motors installed in corrosive environments:
   1. Nameplate indicating conformance to IEEE 841.
   2. Stator double dipped in varnish and baked.
   3. Stator and rotor coated with corrosion resistant epoxy.
   4. Frame, brackets, fan guard and conduit box coated with minimum of 2 coats of epoxy paint.
   5. Withstand salt spray tests in accordance with ASTM B117.

E. Single-phase motors:
   1. Capacitor start type rated for operation at 115 volts, 60 hertz, unless otherwise specified or as indicated on the Drawings.
   2. Totally enclosed fan cooled (TEFC) motors manufactured in accordance with NEMA MG 1.
   3. Ball bearings: Sealed.
   4. 1/2 hp or less fan motors:
      a. Split-phase or shaded pole type when standard for the equipment.
      b. Open type when suitably protected from moisture, dripping water, and lint accumulation.
   5. Wound rotor or commutator type single-phase motors only when their specific characteristics are necessary for application and their use is acceptable to the Engineer.
   6. Integral overload protection.

2.05 ACCESSORIES

A. Motor winding heaters:
   1. Provide 3-phase motors with belted or cartridge space heaters mounted within the motor enclosure.
   2. Space heater rating shall be 120 volts, single-phase, unless otherwise indicated on the Drawings.
   3. Power leads for heaters wired into conduit box.
   4. Installed within motor enclosure adjacent to core iron.

B. Winding temperature detectors:
   1. Provide factory installed winding temperature detector with leads terminating in the conduit box:
      a. Where required by the driven equipment Specification or as indicated on the Drawings.
      b. RTD type, 2 per phase, 100-ohm platinum.
   2. Temperature switches with normally closed contacts as indicated on the Drawings.

C. Bearing temperature detectors:
   1. Where required by the driven equipment Specification or as indicated on the Drawings.
   2. RTD type and wiring matches the winding RTDs.

2.06 SOURCE QUALITY CONTROL

A. Source testing:
   1. Motors less than 250 hp:
      a. Perform manufacturer's standard production tests, including, but not limited to:
         1) No load current.
         2) High potential test.
         3) Winding resistance.
      b. Furnish copies of standard test reports on prototype or identical units.
   2. Motors 250 hp and larger:
      a. Perform tests in accordance with IEEE 112 or IEEE 43.
      b. Tests shall include the following:
         1) Winding resistance (cold).
         2) Locked rotor test.
         3) Temperature rise test.
         4) Load test.
         5) Breakdown torque test.
         6) No-load test.
         7) High-potential test.
         8) Insulation resistance test.
         9) Vibration test in accordance with NEMA MG 1.
         10) Speed-torque curve.
         11) Shaft voltage.
         12) Bearing insulation resistance.
         13) Efficiency and power factor versus load test performed at rated speed and 50 percent, 75 percent, 90 percent, and 100 percent of

rated load. Curves from the motor tests shall be submitted for information.

14) Maximum allowable residual unbalance in each correction plane (journal) shall be calculated using the following equation:

U = 4 W/N

where:

U = residual correction plane unbalance, in ounces-inches
W = static correction plane journal loading, in pounds
N = maximum specified operating speed, in revolutions per minute

c. Furnish test reports and Manufacturer's Certificate of Source Testing.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install motors in accordance with the manufacturer's instructions.

B. Install shaft grounding ring on VFD-driven motors in accordance with the manufacturer's instructions.

3.02 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

B. Before start-up, perform insulation resistance test on each motor furnished or installed on this project:
   1. Windings energized to 1,000 volts DC for 1 minute.
   2. Resistance measured at the end of the test, recorded, and submitted to the Engineer for review.
   3. Inform the Engineer of any unusual or unacceptable test results.
   4. This test is in addition to the acceptance tests in Section 16950 - Field Electrical Acceptance Tests.

END OF SECTION

ATTACHMENT A - MOTOR DATA SHEET

MOTOR DATA SHEET

MOTOR/ EQUIPMENT TAG _____ MOTOR NUMBER _____

SPECIFICATION NUMBER OF DRIVEN MACHINE _____

MOTOR NAMEPLATE DATA

MANUFACTURER _____ MODEL/SERIES _____ MODEL NO. _____

FRAME _____ ENCLOSURE _____ NEMA DESIGN _____

HP _____ SERVICE FACTOR _____ RPM _____

INSULATION CLASS _____ VOLTS _____ FULL LOAD AMPS _____

AMBIENT TEMP _____ PHASE _____ NO LOAD AMPS _____

DESIGN TEMP _____ HERTZ _____ LOCK ROTOR AMPS _____

INRUSH CODE LETTER _____

	100% LOAD	75% LOAD	50% LOAD
GUARANTEED MINIMUM EFFICIENCIES:			
GUARANTEED MINIMUM POWER FACTOR:			

MAXIMUM SIZE OF POWER FACTOR CORRECTION CAPACITOR: _____ KVAR

ACCESSORIES

MOTOR WINDING HEATER _____ VOLTS _____ WATTS

WINDING THERMAL PROTECTION:

WINDING TEMP SWITCHES (YES/NO) _____

RTD:

TYPE _____ QUANTITY PER PHASE _____ # OF WIRES _____

NOMINAL RESISTANCE _____ NOMINAL TEMP _____ COEFFICIENT _____

RECOMMENDED ALARM _____ DEGREES CELSIUS RECOMMENDED TRIP _____ DEGREES CELSIUS

SPECIAL APPLICATIONS

INVERTER DUTY* (YES/NO) _____ PART WINDING (YES/NO) _____ WYE - DELTA (YES/NO) _____

2 SPEED, 1 WINDING (YES/NO) _____ 2 SPEED, 2 WINDING (YES/NO) _____

AREA CLASSIFICATION:

CLASS _____ DIVISION _____ GROUP _____ TEMP CODE _____

* Conforms to NEMA MG 1 Part 31.

SECTION 16239

GENERATOR CONNECTION CABINET

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Generator connection cabinets.

1.02 REFERENCES

A. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 Volts Maximum).

B. Underwriters Laboratories, Inc. (UL):
   1. 1773 - Standard for Termination Boxes.

1.03 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer of generator connection cabinet.
   2. Bill of material.
   3. Assembly ratings including:
      a. Voltage.
      b. Phase.
      c. Short-circuit rating.
      d. Continuous current amperage rating.

C. Shop Drawings:
   1. Product technical data.
   2. Overall product dimensions: Height, width, depth.
   3. Front and side elevation views.
   4. Foot/wall print.
   5. Line and load connection details.
   6. Conduit entry location(s).

D. Delegated Design Submittals:
   1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria:
      a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
      b. For equipment installed outdoors.
      c. For wall mounted equipment weighing 125 pounds or more.

E. Installation instructions:
   1. Detail the complete installation of the equipment including rigging, moving, and setting into place.
   2. Provide manufacturer's installation instructions.

F. Quality Control Submittals:
   1. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.

1.05 QUALITY ASSURANCE

A. Manufacturer of this equipment shall have produced similar electrical equipment for a minimum of 5 years.

B. Generator connection cabinet shall be UL 1773 listed and labeled.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Generator connection cabinets shall be a standard design and manufacture, not a custom-built piece of equipment.

2.02 MANUFACTURERS

A. One of the following or equal:
   1. Berthold Electric.
   2. Powertron Standard Series.

2.03 EQUIPMENT

A. Ratings:
   1. Voltage and amperage: As indicated on the Drawings.
   2. Short circuit withstand: 35,000 ASC.

2.04 COMPONENTS

A. Enclosure:
   1. Pad mount.
   2. NEMA Type 3R.
   3. Lockable latches on front door.
   4. Access panel door for field terminated cables held captive by front door.
   5. Drip hood.

B. Construction:
   1. Bus material: Tin-plated copper.
   2. Bus supported with UL recognized component insulators.
   3. Permanent bus connection:
      a. Long barrel compression lugs.
      b. Quantity: As required for the number of conductors indicated on the Drawings.
   4. Field (temporary) wiring connections:
      a. Cam-Loks:
         1) Color coded male 400A.
         2) Quantity: 1 connection per 400A.

2.05 ACCESSORIES

A. Cam-Lok snap covers.
   1. Color-coded to match Cam-Loks.
   2. Spring activated to close when not connected.
   3. Thermoplastic covers and bodies.

2.06 FINISHES

A. Electrostatic powder coat.

B. Manufacturer’s standard color.

2.07 SOURCE QUALITY CONTROL

A. Source Testing:
   1. Perform standard factory tests on the generator connection cabinets.
   2. Test in accordance with the latest version of NEMA and UL standards.
   3. Furnish test reports and Manufacturer’s Certificate of Source Testing.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. General:
   1. Mount as indicated on the Drawings.

END OF SECTION

SECTION 16265

REDUCED HARMONIC VARIABLE FREQUENCY DRIVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Reduced harmonic 18 pulse or active front end, variable frequency drives (VFD), 60 to 500 hp for control of standard NEMA Design B squirrel cage induction motors.

1.02 REFERENCES

A. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

B. Underwriters Laboratories, Inc. (UL):
   1. 508A - Standard for Safety for Industrial Control Panels.
   2. 61800-5-1 - Standard for Adjustable Speed Electrical Power Drive Systems.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. AFE: Active Front End.
   2. IGBT: Insulated Gate Bipolar Transistor.
   3. VFD: Variable Frequency Drive.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures:
   1. Custom prepared by the VFD manufacturer and specific for the equipment furnished.

B. Product data:
   1. Manufacturer of the VFD.
   2. Manufacturer of all components of the VFD.
   3. Dimensions:
      a. Height.
      b. Width.
      c. Depth.
   4. Weight.

5. Nameplate schedule.
6. Bill of material.
7. Ratings:
    a. Voltage.
    b. Phase.
    c. Input current.
    d. Output current.
    e. Interrupting rating.
    f. Momentary current rating.
8. Catalog cutsheets for major components.
9. Surge protection data.
10. Design data:
    a. Efficiency and power factor values.
    b. Certification that the drive is sized for the full nameplate motor hp and current (at rated RPM) of the driven load at the installed altitude.
    c. Certification that based upon VFD design, cable length to motor, and motor dielectric insulation level that the VFD will not damage motor insulation due to carrier frequency, reflected wave, dv/dt, or other VFD produced characteristics.
    d. Certification that electronic circuits and printed circuit boards are conformably coated.
    e. Certification that the VFD will operate with all power sources (including alternate utilities and on-site generation when applicable).
11. List of recommended spare parts.
12. For equipment installed in structures designated as seismic design category C, D, E, or F, submit the following as specified in Section 01850 - Design Criteria:
    a. Manufacturer's statement of seismic qualification with substantiating test data.
    b. Manufacturer's special seismic certification with substantiating test data.

C. Shop Drawings:
1. Complete plan and elevation drawings showing:
    a. All dimensions.
    b. Panel, sub-panel and component layout indexed to the bill of material.
    c. Conduit connections.
    d. Required clearance around equipment.
2. Block diagram showing the basic control and protection systems identifying the protection, control, trip and alarm functions, the reference signals and commands and the auxiliary devices.
3. Complete schematic, wiring and interconnection diagrams showing connections to both internal and external devices:
    a. Wiring diagrams shall include terminal number and wire numbers.
4. Complete 1-line and 3-line diagrams, including, but not limited to, circuit breakers, motor circuit protectors, contactors, instrument transformers, meters, relays, timers, control devices, and other equipment comprising the complete system:
    a. Device electrical ratings shall be clearly indicated on the Drawings.

D. Calculations:
    1. Harmonic study:
        a. Perform a preliminary harmonic analysis:
            1) Measure conductor lengths and obtain other information required for the analysis from Drawings.
            2) A power system short circuit ratio of 20 shall be used.
            3) VFDs shall be assumed to be operating at maximum speed and maximum load.
            4) Short circuit current (ISC) utilized for the harmonic analysis calculations is defined as:
                a) ISC = 20 * (Sum Total Full Load Amps of all VFDs).
    2. Detailed calculations or details of the actual physical testing performed on the VFD to prove the VFD is suitable for the seismic conditions at the Project Site.

E. Delegated Design Submittals:
    1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria:
        a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
        b. For equipment installed outdoors.

F. Installation instructions:
    1. Detail the complete installation of the equipment including rigging, moving, and setting into place.
    2. Provide manufacturer's installation instructions.

G. Quality Control Submittals:
    1. Manufacturer's representative qualifications.
    2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
    3. Manufacturer's Certificate of Installation as specified in Section 01756 - Commissioning.
    4. Test reports.
    5. Report listing the setting of VFD adjustable parameters and their values after start-up.

H. Owner Training Submittals:
    1. As specified in Section 01756 - Commissioning.

I. Certifications:
    1. Certification letter from the VFD manufacturer stating that the VFD(s) are capable of operating with new and existing sources (utility sources and on-site generation in possible operating configurations).
    2. Certification letter from the VFD manufacturer stating that the VFD(s) are capable of operating with new and existing VFDs in the existing and new distribution system.

J. Control descriptions and control logic program:
    1. Provide control descriptions describing the full control functionality to be incorporated into the programming of the drive including the following:
        a. Functionality in local and remote.
        b. Software and hardware interlocks.
        c. Control response upon loss and restoration of power.
    2. Provide complete register list of all IO available to the plant PCS.
    3. Submit the completed control logic program for each and every device supplied.
    4. Submit a list of networking address tables.
    5. Submit configuration settings in accordance with actual motor and field equipment being supplied.

K. Operation and maintenance manuals:
    1. As specified in Section 01782 - Operation and Maintenance Manuals.
    2. Spare parts list with supplier names and part numbers.
    3. Start-up and commissioning instructions and data.
    4. Complete bill of material indexed to the drawings identifying the catalog or part numbers, manufacturer, and quantities of components of the VFD system.
    5. Operating manuals:
        a. Submit operating instructions and a maintenance manual presenting full details for care and maintenance of each model of VFD provided under this Contract.
    6. Operating instructions:
        a. Written descriptions shall detail the operational functions of controls on the front panel including keypad functions and parameters.
    7. Maintenance manual:
        a. Furnish maintenance manuals with instructions covering details pertaining to care and maintenance of equipment, as well as identifying all parts.
        b. Manuals shall include, but are not limited to, the following:
            1) Adjustment and test instructions covering the steps involved in the initial test, adjustment and start-up procedures.
            2) Detailed control instructions that outline the purpose and operation of every control device used in normal operation.
            3) Schematic wiring and external diagrams:
                a) Furnish drawings in a fully legible reduced 11-inch by 17-inch format.

1.06 QUALITY ASSURANCE

A. Qualifications:
    1. Any third-party certification, safety or protection requirements shall be applied to the VFD system as a whole. Certification or protection of system elements or individual components by themselves is not acceptable.
    2. UL 61800-5-1 listed and labeled.
    3. Systems (packaged VFD panels) shall be UL 508A listed and labeled.
    4. Manufactured by the VFD manufacturer at its own facility, which shall have a quality assurance program that is certified in accordance with ISO 9001.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Ship VFDs to the job site on a dedicated air ride vehicle that will allow the Contractor to utilize on site off-loading equipment:
   1. VFDs shall be delivered to the site pre-assembled and wired.
   2. Ship each VFD with 2 tamperproof accelerometers that record the maximum shock and vibration experienced by the VFD during shipping and handling.

B. Furnish temporary equipment heaters within the VFD to prevent condensation from forming.

1.08 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.09 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Conduct programming and data exchange coordination meeting.
   2. Conduct factory acceptance test and submit certified test results for the Engineer's review.
   3. Ship equipment to Project Site after successful completion of factory acceptance test.
   4. Assemble equipment in the field.
   5. Conduct field acceptance tests including harmonic testing and submit results for the Engineer's review:
      a. Utility power sources and on-site generation shall be installed and operable for field test.
   6. Submit manufacturer's certification that equipment has been properly installed and is fully functional for the Engineer's review.
   7. Conduct Owner Training sessions.
   8. Commissioning and process start-up as specified in Section 01756 - Commissioning.

1.10 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.
   1. Provide a 2-year duration special warranty.

1.11 SYSTEM START-UP

A. VFD manufacturer shall be responsible for start-up of the VFDs in the presence of the equipment suppliers, Contractor, Engineer, and Owner.

1.12 MAINTENANCE

A. Manufacturer shall describe the field service system available to support the proposed VFD system. As a minimum describe:
   1. Type of technical support available (e.g., system engineering and technician).
   2. Location of field service personnel.

3. Field service daily rates in dollars per hour and dollars per day.
4. Guaranteed response times to service requests.

B. Spare parts:
1. The following spare parts shall be furnished:
   a. 1 set of power and control fuses for each VFD.
   b. 1 spare fan for each VFD unit.
   c. 2 sets of ventilation filters for each VFD unit (if applicable in VFD cabinet louvers).
   d. 1 power input module of each sized furnished.
   e. 1 power output module of each size furnished.
   f. Any special dedicated tools for emergency service and troubleshooting.
   g. Hardware and software required for configuration, maintenance, troubleshooting and inquiry of drive parameters.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria, and as indicated on the Drawings.

B. Design requirements:
1. Each VFD system shall consist of all components required to meet the performance, protection, safety, testing and certification criteria of this Section.
2. VFD system:
   a. Is a fully integrated package.
   b. Includes material necessary to interconnect VFD system elements, even if shipped separately.
3. Any modifications to a standard product necessary to meet this Section shall be made only by the VFD manufacturer.
4. Each VFD shall be completely factory pre-wired, assembled and then tested as a complete package by the VFD manufacturer to ensure a properly coordinated, fully integrated drive system.
5. VFD shall be capable of operating standard NEMA Design B motors. It is the responsibility of the VFD manufacturer to ensure that the drive will not damage motor insulation due to high carrier frequency, reflected wave, dv/dt or other drive electrical characteristics:
   a. VFD manufacturer shall furnish equipment necessary to mitigate potential damage to motor insulation.
   b. Coordinate bearing protection methods with the supplier of the driven equipment.
   c. Motors as specified in Section 16222 - Low Voltage Motors up to 500 Horsepower.

C. Performance:
1. Operating envelope:
a. Speed and torque requirements:
1) Provide a variable torque or constant torque VFD as required by the driven load.
2) VFD shall be capable of producing a variable alternating voltage/frequency output to provide continuous operation over the 40 to 110 percent (25 to 66 hertz) speed range.
b. Current requirements:
1) Provide 100 percent of rated output current on a continuous basis.
2) Variable torque VFD:
a) Minimum 110 percent current overload for 1 minute.
3) Constant torque VFD:
a) Minimum 150 percent current overload for 1 minute.
2. Harmonics:
a. VFD shall meet the following distortion limits at 2 percent line voltage unbalance measured at the input terminals of the VFD:
1) Voltage harmonics: Maximum allowable total harmonic distortion, THD, for each VFD shall not exceed 5 percent.
2) Current harmonics: Maximum allowable total harmonic current distortion limit, TDD, for each VFD shall not exceed 5 percent as measured at the input terminals of the VFD system.
3. Efficiency:
a. VFD system minimum efficiency shall be 93 percent at rated kilowatt output of the VFD. VFD system efficiency shall be calculated as follows:

$$Efficiency\ (\%) = \frac{Power\ (Load)}{Power\ (Supply)}\ X\ 100$$

b. Power:
1) Load power is the total 3-phase power measured at the output terminals of the drive system, including the output filter.
2) Supply power is the total power measured at the input terminals of the VFD including phase shifting transformer or active front end components and auxiliary equipment (e.g., controls, fans) for complete system operation.
4. Total power factor:
a. Minimum of 0.96 lagging across the entire speed range.
b. Under no operating conditions shall the VFD have a leading power factor.
5. Frequency accuracy:
a. Minimum of within 0.01 percent.
6. Speed regulation:
a. Minimum of within 0.5 percent across the entire speed range.
7. Capable of working with all available power sources (utility and on-site generation) and with new and existing VFDs.

2.02 MANUFACTURERS

A. One of the following or equal:
1. ABB.
2. Allen-Bradley.

3. Eaton.
4. Schneider-Electric.

2.03 EQUIPMENT

A. General:
   1. Sinusoidal pulse width modulated, (PWM), voltage source type drive shall consist of the following:
      a. Rectifier section.
      b. Direct current link with capacitors.
      c. Insulated gate bipolar transistor (IGBT), inverter section.
      d. Microprocessor based controls.
      e. Output filter.
   2. Rectifier section:
      a. Provide VFDs with either an 18-pulse rectifier section or an active front end.
      b. 18-pulse rectifier:
         1) Integral phase shifting auto-transformer:
            a) Converts 3-phase utility power to 3 sets of 3 power circuits with each set phase shifted and powering its own 3-phase bridge rectifier.
         2) Minimum 18-pulse diode rectifier section consisting of three 3-phase bridge rectifiers:
            a) Specifically designed as a system to share currents between the bridges to within 1 percent.
      c. Active front end rectifier:
         1) IGBT based converter module:
            a) 6 IGBTs minimum.
         2) Inductor/capacitor/inductor, LCL, harmonic filter:
            a) Low pass filter.
            b) Filter shall be disconnected from the line when the VFD is not running or powered off.
            c) Installed within same enclosure as VFD.
      d. 6-pulse rectifiers with harmonic filters are not allowed.

B. Ratings:
   1. Voltage:
      a. Input voltage: 480 volts plus or minus 10 percent, 3-phase, 3-wire, 60 hertz.
      b. Solidly grounded.
   2. Short-circuit rating:
      a. 65 kA RMS symmetrical.

C. Operational features:
   1. Protective features:
      a. Annunciated at the keypad and available via network connection.
      b. Include the following protective features:
         1) Motor overload protection.
         2) Instantaneous overcurrent.
         3) Instantaneous overvoltage.
         4) Undervoltage.
         5) Power unit overtemperature.

6) Phase loss.
7) VFD output short circuit.
8) VFD output ground fault.
9) Blown fuse with blown fuse indication.
10) IGBT protection.
11) Cooling fan failure.
12) Component failure.
13) Motor overtemperature protection:
a) Winding and bearing temperature:
(1) From 100 ohm, platinum RTDS.
(2) Quantity as specified in Section 16222 - Low Voltage Motors up to 500 Horsepower and the driven equipment specification, or as indicated on the Drawings.

2. Control mode:
   a. VFD shall operate in either a constant volts/hertz or sensorless vector mode. Selectable using the programming keypad.
3. Frequency control:
   a. Minimum of 3 selectable skip frequencies with adjustable bandwidths.
   b. Programmable minimum frequency.
   c. Programmable maximum frequency.
4. Acceleration/Deceleration:
   a. Separately adjustable acceleration and deceleration rates.
   b. Each rate shall be adjustable from 0.01 to 1,800 seconds.
5. Spinning load:
   a. Capable of determining the speed and direction of a spinning load, “catch” the load and accelerate or decelerate it without damage to the load.
6. Programmable loss of signal:
   a. Upon loss of reference speed signal the VFD shall be programmable to either stop, maintain current speed, or default to preselected speed.
7. Power interrupt ride through:
   a. Capable of continuous operation in the event of a power loss of 5 cycles or less.
8. Hardwired inputs and outputs:
   a. Manufacturer’s standard number the following:
      1) Analog inputs:
         a) Configurable as either 0 to 10 volts or 4 to 20 mA.
      2) Analog outputs:
         a) Programmable 4 to 20 mA isolated.
      3) Discrete inputs:
         a) Programmable.
      4) Discrete outputs:
         a) Programmable.
         b) Form C relay contacts.
      5) Potentiometer 3-wire input.
   b. Provide additional inputs and outputs as required to meet the control functions indicated on the Drawings.
9. Communications:
   a. Provide each VFD with a Modbus TCP communications interface module.
   b. Use of gateways is not acceptable.
   c. Control and monitoring of the bypass starter shall be available over the communications network.

d. Protocols shall be certified by the governing authority.

10. Real-time clock:
    a. Capable of providing time-stamped events.
    b. Set locally or via a remote controller.
    c. Programmable for day, month, year, local time zones in hours, minutes and seconds.
11. Diagnostics:
    a. Minimum of 4 fault conditions in memory on a first in - first out basis.
    b. Time stamped.
    c. Operating frequency, drive status and power mode shall also be stored at the time of the fault.
    d. Fault memory shall be maintained in the event of a power outage.
    e. Fault memory shall be accessible via RS-232, RS-422, RS-485, or USB.
12. Automatic restart:
    a. User selectable, automatic restart feature allowing the VFD to restart following a momentary power failure or other VFD fault:
        1) Programmable for up to 9 automatic restart attempts with an adjustable time delay between restart attempts.

2.04 COMPONENTS

A. Enclosure:
1. NEMA Type 12.
2. Provide cooling devices required to maintain the VFD within the manufacturer's specified temperature limits for the Project conditions:
    a. Provide cooling device alarm.

B. Power disconnect:
1. Flange mounted thermal magnetic circuit breaker:
    a. Lockable in the OFF position.

C. Phase shifting transformer for 18-pulse VFDs:
1. Auto-transformer.
2. Integral part of the VFD assembly and factory mounted and wired within the VFD enclosure.
3. Embedded thermal protection.
4. Rated for rectifier duty.
5. Copper or aluminum windings with 180-degree Celsius insulation.

D. Output filter:
1. 3 percent load reactor.

E. Keypad:
1. Furnished with a keypad for programming and control.
2. Password security to protect drive parameters.
3. Mounted on the door of the VFD.
4. Back-lit LCD with a minimum of 2 lines of a minimum of 16 characters each.
5. Programming and display features language: English.
6. Capable of displaying the following parameters:
    a. Speed (percent).
    b. Input current (amperes).

c. Output current (amperes).
d. Output frequency (hertz).
e. Input voltage.
f. Output voltage.
g. Total 3-phase kilowatt.
h. Kilowatt hour meter.
i. Elapsed run time meter.
j. Revolutions per minute.
k. Direct current bus voltage.

7. In addition to keys required for programming, keypad shall have the following:
   a. Automatic/Manual selector.
   b. Start pushbutton.
   c. Stop pushbutton.
   d. Jog pushbutton.
   e. Speed increment.
   f. Speed decrement.
   g. Forward/Reverse selector.
   h. RUN indicator.
   i. PROGRAM indicator.
   j. FAULT indicator.
   k. DRIVE READY indicator.
   l. Diagnostics.
8. Provide the VFD with the hardwired controls indicated on the Drawings.

F. Control power transformer:
   1. Mounted and wired inside the drive enclosure:
      a. Primary and secondary fusing.
   2. Size transformer to supply power to all VFD controls and options as well as any external devices indicated on the Drawings including the motor winding heater.

G. Bypass starter:
   1. Where indicated on the Drawings, the VFD shall be furnished with an integral full voltage non-reversing bypass starter.
   2. Provide motor overload protection for bypass operation.
   3. Provide mechanically/electrically interlocked contactors for bypass operation.
   4. Provide a VFD/Off/Bypass selector switch on the VFD front panel.

H. Line side tuning for AFE VFDs:
   1. Provide 2 sets of line side tuning parameters: One for the normal utility supply, another for the alternate (generator) supply.
   2. Parameters shall be selectable via the communications network or a digital input from a contact enclosure at the automatic transfer equipment or PCIS.
   3. When more than 1 generator source is used, VFD shall be capable of storing multiple generator profiles to use as the alternate supply based on command inputs.

2.05 ACCESSORIES

A. Surge protection:
   1. Metal oxide varistors:
      a. Provide protection for the VFD against:
         1) Line transients: 5,000-volt peak minimum.
         2) Line to ground transients: 7,000-volt peak minimum.

B. Conformal coating:
   1. Provide conformal coating material applied to electronic circuitry and printed circuit boards to act as protection against moisture, dust, temperature extremes, and chemicals such as H_2S and chlorine.

C. Air filters:
   1. Mounted on the outside of the VFD enclosure:
      a. Replaceable without requiring that the VFD be turned off or the door opened.
   2. Located on the front or top of the VFD enclosure:
      a. Side or rear mounted air filters are not acceptable.

2.06 FINISHES

A. Enclosure finish shall be manufacturer's standard gray.

2.07 SOURCE QUALITY CONTROL

A. Source Testing:
   1. Not witnessed.
   2. Testing procedures specified are the minimum acceptable requirements. Manufacturer may perform additional tests at its discretion.
   3. Failure of any component during testing requires replacement of the faulted component and a complete retest.
   4. Component tests:
      a. Preliminary inspection:
         1) Verify that components are correct.
         2) Verify that connections are properly torqued.
      b. Printed circuit boards:
         1) Test each printed circuit board in accordance with the manufacturer's standard testing procedure.
      c. Wiring:
         1) Control and power wiring continuity verified point-to-point.
         2) Hi-pot power and control wiring at manufacturer's recommended levels.
         3) Verify ground bond resistance.
      d. Load testing:
         1) No load testing in accordance with the manufacturer's standard factory test procedure.
         2) Full load testing:
            a) Test each VFD and all control logic with a representative motor or dynamometer load to simulate field operation conditions at 25 percent, 50 percent, and 100 percent full load current.

b) Tests shall be conducted in a manner in which the inverter (IGBT) section supplies all the output power (kw) of the VFD system. Control strategies using a contactor or other means of bypassing the VFD when operating at the line frequency shall not be permitted.
c) Tests shall be conducted using a minimum output frequency of 60 hertz, and a minimum switching frequency of 2.5 kHz.

5. Submit control description checklist and IO checklist organized by VFD for use during the control logic portion of the testing.
6. Furnish test reports and the Manufacturer's Certificate of Source Testing. Include the following:
   a. Efficiency at rated power output and output frequency of 60 hertz.
   b. Power factor at 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent speed.
   c. Harmonics at the input terminals of the VFD at 100 percent speed and 100 percent load:
      1) Voltage distortion: Measure individual harmonics up to and including the 50th harmonic and total harmonic distortion.
      2) Current distortion: Measure individual harmonics up to and including the 50th harmonic and total demand distortion.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. General:
   1. Furnish cables, conduit, lugs, bolts, and other accessories needed to complete installation of the VFD (free-standing or within motor control center).
   2. Assemble and install the VFD in the locations and with the layouts indicated on the Drawings.
   3. Perform Work in accordance with the manufacturer's instructions and Shop Drawings.
   4. Furnish components and equipment as required to complete the installation.
   5. Replace any hardware lost or damaged during the installation or handling to provide a complete installation.
   6. Install free-standing enclosures on a raised concrete housekeeping pad:
      a. Provide structural leveling channels in accordance with the manufacturer's recommendations to provide proper alignment of the units.
      b. Weld and/or bolt the VFD frame to the leveling channels.

7. Provide openings in top or bottom of the VFD (free-standing or within motor control center) enclosure for conduit only, no additional openings will be allowed:
    a. Improperly cut holes will require that the entire panel be replaced:
        1) No hole closers or patches will be allowed.
8. Bundle circuits together and terminate in each unit:
    a. Tie with nylon wire ties. As specified in Section 16123 - 600-Volt or Less Wires and Cables.
    b. Label wires at each end with wire numbers shown on the approved Control Drawings.
    c. Connections to and from the VFD (free-standing or within motor control center) enclosure must be made via terminal blocks.

C. Installation Verification:
1. Furnish Manufacturer's Certificate of Installation Verification.

3.03 FIELD QUALITY CONTROL

A. As specified in Section 16050 - Common Work Results for Electrical.

B. Field electrical acceptance testing:
1. As specified in Section 16950 - Field Electrical Acceptance Tests.

C. Provide the services of a VFD manufacturer representative for start-up assistance and training:
1. Inspection and field adjustment:
    a. Supervise the equipment installation and confirm controls have been properly installed, aligned, adjusted, and readied for operation.
    b. Configure AFE drives for new and existing sources (utility sources and on-site generation in possible operating configurations).
2. Start-up field testing:
    a. Provide technical direction for testing, checkout, and startup of the VFD equipment in the field.
    b. Under no circumstances are any portions of the drive system to be energized without authorization from the manufacturer's representative.
    c. Compliance with the following specified parameters shall be verified by the VFD manufacturer:
        1) Motor terminal voltage:
            a) Make field measurements at the motor connection box.
            b) Make measurements of the full speed range of the VFD.
            c) Make measurements with a recording type oscilloscope.
        2) Harmonics:
            a) Make field measurements at the input terminals of the VFD with and without the VFD in operation.
            b) Make measurements with a recording type harmonic analyzer displaying individual and total harmonic currents and voltages:
                (1) Record currents and voltages for a minimum of 10 minutes.
                (2) Analyzers using snapshots are not acceptable.
    d. Utility sources and on-site generation shall be operational for start-up field testing.

3. Furnish field acceptance test procedures and forms used during the tests:
    a. Certification that the actual measured harmonic distortion for both voltage and current is within the specification limits at the installed site.
    b. Certification that the actual measured peak voltage at the motor terminations is less than 90 percent of the motor insulation dielectric withstand level.

3.04 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

3.05 ADJUSTING

A. Make adjustments as necessary and recommended by the manufacturer, Engineer, or testing firm.

B. Provide the services of a VFD manufacturer factory technician to make drive parameter and protective device settings:
    1. Protective device settings provided by the VFD manufacturer in accordance with the manufacturer of the driven equipment requirements.
    2. Provide documentation of VFD settings, including, but not limited to:
        a. Minimum speed.
        b. Maximum speed.
        c. Skip speeds.
        d. Current limit.
        e. Acceleration time.
        f. Deceleration time.
        g. Carrier frequency.

C. Programming:
    1. Manufacturer/Supplier may contract with the Project programmer for portions of the tasks below.
    2. Provide network communication card between the drive to the Owner’s control system as required.
    3. Provide control logic as indicated in the control descriptions.
    4. Configure network communications with applicable security settings, IP addresses and any other addressing tables required to provide a fully functioning system.
    5. Coordinate IP addresses with the Owner.
    6. Coordinate data exchange approach for efficient communications to the Owner’s control and maintenance systems. This effort will include a coordination meeting to discuss the data exchange approach including formatting and mapping.
    7. Provide witnessed Source Testing to prove out overload control logic as well as interaction with the Owner’s control and maintenance systems at the Supplier’s facility. ICSC/programmer shall attend witnessed testing.

END OF SECTION

SECTION 16272

DRY-TYPE TRANSFORMERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Enclosed dry-type transformers:
      a. Rated 1 to 1,000 kilovolt-amperes, single and 3-phase.
      b. Primary voltage 600 volts and below.

1.02 REFERENCES

A. Institute of Electrical and Electronics Engineers (IEEE):
   1. 389 - IEEE Recommended Practice for Testing Electronics Transformers and Inductors.
   2. C57.96 - IEEE Guide for Loading Dry-Type Distribution and Power Transformers.

B. Underwriters Laboratory (UL):
   1. 1561 - Standard for Dry-Type General Purpose and Power Transformers.

C. United States Department of Energy (DOE):
   1. 10 CFR Part 431 - Energy Efficiency Program for Certain Commercial and Industrial Equipment.

1.03 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Catalog cutsheets.
   2. Nameplate data.
   3. Dimensions:
      a. Height.
      b. Width.
      c. Depth.
   4. Inrush current.
   5. Insulation system and temperature constraints.
   6. Number and rating of taps.
   7. Sound levels.

8. Connection diagrams:
    a. Primary.
    b. Secondary.
9. BIL rating.
10. Required clearances.
11. Percent impedance.
12. Efficiency.
13. Certification of full capacity capability at the Project elevation and ambient conditions.
14. For equipment installed in structures designated as seismic design category C, D, E, or F, submit the following as specified in Section 01850 - Design Criteria:
    a. Manufacturer's statement of seismic qualification with substantiating test data.
    b. Manufacturer's special seismic certification with substantiating test data.

C. Delegated Design Submittals:
1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria:
    a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
    b. For equipment installed outdoors.

D. Installation instructions:
1. Detail the complete installation of the equipment including rigging, moving, and setting into place.
2. Provide manufacturer's installation instructions.

E. Quality Control Submittals:
1. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

B. Provide 3-phase or 1-phase, 60 hertz dry-type with voltage ratings, kilovolt-ampere capacities, and connections as indicated on the Drawings:
   1. Transformers shall provide full capacity at the Project elevation and environmental conditions as specified in Section 01850 - Design Criteria after all derating factors have been applied.
   2. Suitable for continuous operation at full rating with normal life expectancy in accordance with IEEE C57.96.

2.02 MANUFACTURERS

A. One of the following or equal:
   1. ABB.
   2. Eaton.
   3. Jefferson.
   4. Schneider Electric.

2.03 MATERIALS

A. Cores:
   1. Non-aging, grain-oriented silicon steel.
   2. Magnetic flux densities below the saturation point.

B. Windings:
   1. High-grade magnet wire.
   2. Impregnated assembly with non-hydroscopic, thermo-setting varnish:
      a. Cured to reduce hot-spots and seal out moisture.
   3. Material electrical grade:
      a. Copper.

2.04 EQUIPMENT

A. General:
   1. 10 kilovolts BIL for 600-volt class windings.
   2. Sound levels, in accordance with IEEE 389 test conditions, not to exceed:

Kilovolt-Amperes Range	Audible Sound Level (dB)
1-9	40
10-50	45
51-150	50
151-300	55
301-500	60
501-700	62
701-1,000	64

   3. Taps:
      a. 15 kilovolt-amperes and less:
         1) Two 5 percent full capacity primary taps below rated voltage.
      b. 25 kilovolt-amperes and larger:
         1) Four 2.5 percent full capacity primary taps below rated voltage.

2) Two 2.5 percent full capacity primary taps above rated voltage.
c. Operated by a tap changer handle or tap jumpers accessible through a panel.
4. Terminals:
a. UL listed for either copper or aluminum conductors.
b. Rated for 75 degrees Celsius.
5. Daily overload capacities, at rated voltage and without reduction in life, in accordance with IEEE C57.96.

B. Transformers less than 15 kilovolt-amperes:
1. Insulation class: 185 degrees Celsius.
2. Temperature rise: 115 degrees Celsius.

C. Energy efficient transformers 15 kilovolt-amperes and larger:
1. Insulation class: 220 degrees Celsius.
2. Temperature rise: 115 degrees Celsius, except as noted below:
a. 150-degree Celsius rise for dry-type transformers located in motor control centers.
3. Efficiency:
a. In accordance with DOE 10 CFR Part 431.

D. Enclosures:
1. Heavy gauge steel:
a. Indoor: NEMA Type 2.
2. Louvers to limit coil temperature rise to the value stated above, and case temperature rise to 50 degrees Celsius.
3. Built-in vibration dampeners to isolate the core and coils from the enclosure:
a. Neoprene vibration pads and sleeves.

2.05 ACCESSORIES

A. Nameplates:
1. Non-corrosive metal or UL listed non-metallic:
a. Stamped, engraved or printed with the following information:
1) Phases.
2) Frequency.
3) Kilovolt-ampere rating.
4) Voltage ratings.
5) Temperature rise.
6) Impedance.
7) Insulation class.
8) BIL rating.
9) Connection diagram.
10) Weight.
11) Manufacturer.
12) Identification “transformer”.
13) Classes of cooling.
14) Tap voltage(s).
15) Vector diagram.

2.06 FINISHES

A. Finish to consist of de-greasing, phosphate cleaning, and an electrodeposited manufacturer's standard gray enamel rust-inhibiting paint.

2.07 SOURCE QUALITY CONTROL

A. Factory tests:
   1. Applied voltage test to each winding and from each winding to the core:
      a. 600-volt class winding 4.5 kilovolt.
   2. Induced voltage test at 2 times normal voltage and 400 hertz for 1,080 cycles.
   3. Voltage ratio and polarity.
   4. Sound level, performed in a test room with ambient sound level not exceeding 24 dB.
   5. Perform tests in accordance with UL 1561.
   6. Furnish test reports and Manufacturer's Certificate of Source Testing.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. General:
   1. Mounted as indicated on the Drawings.
   2. Install where not in direct contact with building structure.
   3. Install on single layer vibration pad under the entire mounting surface:
      a. Manufacturers: The following or equal:
         1) Korfund.
   4. Make any necessary connections to the enclosure with liquidtight flexible conduit having neoprene gaskets and insulated ground bushings.
   5. Ground the enclosure:
      a. To an equipment ground conductor in the conduit.
      b. To the facility grounding electrode system.
   6. Floor mounted transformers:
      a. Install transformers on housekeeping pads.
      b. Install transformers with adequate space from walls or other enclosures for proper ventilation in accordance with the manufacturer's recommendations.

3.03 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.04 ADJUSTING

A. Set the transformer taps as required to obtain nominal output voltage on the secondary terminals.

END OF SECTION

SECTION 16285

SURGE PROTECTIVE DEVICES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. High-energy surge protective devices.

1.02 REFERENCES

A. Institute of Electrical and Electronics Engineers (IEEE):
   1. C62.41.1 - Guide on the Surge Environment in Low-Voltage (1,000 V and less) AC Power Circuits.
   2. C62.41.2 - Recommended Practice on Characterization of Surges in Low-Voltage (1,000 V and Less) AC Power Circuits.
   3. C62.45 - Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1,000 V and Less) AC Power Circuits.
   4. C62.62- Standard Test Specifications for Surge Protective Devices (SPDs) for Use on the Load Side of the Service Equipment in Low Voltage (1,000 V and less) AC Power Circuits.

B. International Electrotechnical Commission (IEC).

C. National Electrical Manufacturers Association (NEMA).

D. National Fire Protection Agency (NFPA):
   1. 20 - Standard for the Installation of Stationary Pumps for Fire Protection.
   2. 70 - National Electric Code (NEC).
   3. 75 - Standard for the Fire Protection of Information Technology Equipment.
   4. 780 - Standard for the Installation of Lightning Protection Systems.

E. Underwriters Laboratory (UL):
   1. 96A - Standard for Installation Requirements for Lightning Protection Systems.
   2. 1283 - Standard for Electromagnetic Interference Filters.
   3. 1449 - Standard for Surge Protective Devices.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. I_n: Nominal discharge current.
   2. MCOV: Maximum continuous operating voltage.
   3. MOV: Metal oxide varistor.
   4. SAD: Silicon avalanche diode.
   5. SCCR: Short circuit current rating.

6. SPD: Surge protective device.
7. VPR: Voltage protection rating.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Furnish complete product data confirming detailed compliance or exception statements to all provisions of this Section.
   2. Manufacturer's catalog cutsheets indicating:
      a. Manufacturer and model numbers.
      b. Ratings of each SPD, including, but not limited to:
         1) Short circuit current rating.
         2) Nominal discharge current.
         3) Maximum continuous operating voltage.
         4) Voltage protection rating.
         5) System voltage.
         6) System frequency.
         7) Surge current capacity.
   3. Submit independent test data from a nationally recognized testing laboratory verifying the following:
      a. Overcurrent protection.
      b. UL 1449.

C. Shop Drawings:
   1. Electrical and mechanical drawings that detail:
      a. Unit dimensions.
      b. Weights.
      c. Components.
      d. Field connection locations.
      e. Mounting provisions.
      f. Connection details.
      g. Wiring diagram.

D. Quality Control Submittals:
   1. Manufacturer's representative qualifications.
   2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.

E. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

F. Operation and maintenance manuals:
   1. As specified in Section 01782 - Operation and Maintenance Manuals.
   2. Provide the manufacturer's manual with installation, start-up, and operating instructions for the specified system.

1.05 QUALITY ASSURANCE

A. Provide SPD units that are designed, manufactured, tested and installed in compliance with the following codes and standards:
   1. IEEE C62.41.1, C62.41.2, C62.45, C62.62.
   2. Federal Information Processing Standards Publication 94 (FIBS PUB 94).
   3. NEMA.
   4. NFPA 20, 70, 75, and 780.
   5. UL 1449 current edition and UL 1283.

B. IEC 801.

C. Provide surge protective devices that are suitable for application in IEEE C62.41.1, C62.41.2 Category A, B, and C3 environments, as tested to IEEE C62.45.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Coordinate with and provide SPD equipment to the electrical equipment manufacturer before final assembly and factory testing.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

B. Extended warranty:
   1. Furnish a manufacturer's standard parts and labor warranty from date of shipment against any part failure when installed in compliance with the manufacturer's written instructions, UL listing requirements, and any applicable national, state, or local electrical codes.
   2. Warranty shall include:
      a. Direct, factory trained employees must be available within 48 hours for assessment of the problem.
      b. A 24-hour toll-free 800-number for warranty support.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide surge protection as indicated on the Drawings.

2.02 MANUFACTURERS

A. One of the following or equal:
   1. ABB.
   2. Eaton.

3. Southern Tier Technologies.
4. Schneider Electric.

2.03 EQUIPMENT

A. Provide Type 1 or Type 2 SPD units as required for the locations indicated on the Drawings.

B. Electrical requirements:
   1. SPD ratings are to be consistent with the nominal system operating voltage, phase, and configuration as indicated on the Drawings.
   2. MCOV:
      a. For the SPD and all components in the suppression path (including all MOVs, SADs, and selenium cells): Greater than 115 percent of the nominal system operating voltage.
   3. Operating frequency:
      a. 47 to 63 hertz.
   4. SCCR:
      a. 65 kAIC minimum, but not less than the equipment it is connected to as indicated on the Drawings.
      b. Marked on the SPD in accordance with UL 1449 and the NEC.
   5. Nominal discharge current I_n:
      a. 20 kA.
   6. Maximum VPR:

Modes	240/120 3W	208Y/120	480Y/277	480 V
L-N, L-G, N-G	700	700	1,200	1,800
L-L	1,200	1,200	2,000	1,800

   7. Peak surge current:
      a. Service entrance locations:
         1) 240 kA per phase minimum.
         2) 120 kA per mode minimum.
      b. Branch locations:
         1) 120 kA per phase, minimum.
         2) 60 kA per mode minimum.

C. Protection modes:
   1. Provide SPD protection modes as follows:
      a. Line to Neutral (L-N) where applicable.
      b. Line to Ground (L-G).
      c. Neutral to Ground (N-G), where applicable.

D. Environmental requirements:
   1. Storage temperature:
      a. -40 to 122 degrees Fahrenheit.
   2. Operating temperature:
      a. 32 to 140 degrees Fahrenheit.
   3. Relative humidity:
      a. 5 to 95 percent.

4. Audible noise:
    a. Less than 45 dBa at 5 feet (1.5 m).
5. Operating altitude:
    a. Zero to 12,000 feet above sea level.

2.04 COMPONENTS

A. Enclosure:
    1. Located in electrical equipment as indicated on the Drawings.

B. Internal connections:
    1. Provide low impedance copper plates for intra-unit connections:
        a. Attach surge modules using bolted connections to the plates for low impedance connections.
    2. Size connections, conductors, and terminals for the specified surge current capacity.

C. Surge diversion modules:
    1. MOV:
        a. Where multiple MOVs are used in parallel, utilize computer matched MOVs to within 1 volt variance and tested for manufacturer's defects.

D. Overcurrent protection:
    1. Individually fuse components, including suppression, filtering, and monitoring components:
        a. Rated to allow maximum specified nominal discharge current capacity.
        b. Overcurrent protection that limits specified surge currents is not acceptable.

E. Connections:
    1. Provide terminals to accommodate wire sizes up to #2 AWG.

2.05 ACCESSORIES

A. Unit status indicators:
    1. Provide red and green solid-state indicators, with printed labels, on the front cover to redundantly indicate on-line unit status:
        a. The absence of the green light and the presence of the red light indicate that surge protection is reduced and service is needed to restore full operation.
        b. Indicates the status of protection on each mode or phase.

B. Dry contacts for remote monitoring:
    1. Electrically isolated Form C dry contacts (1 A/125 VAC, or 2 A/24 VDC) for remote monitoring of system integrity, and indication of under voltage, phase and/or power loss.

C. Provide an audible alarm which activates under any fault condition:
    1. Alarm On/Off switch to silence the alarm.
    2. A visible LED will confirm whether alarm is On or Disabled.
    3. Locate both switches and the audible alarm on the unit's front cover.

D. Provide transient counter to count transient voltage surges:
   1. LCD readout located on the unit's front cover.
   2. Counter to utilize batteries with a 10-year nominal life or non-volatile memory to maintain accurate counts in the event of power loss.

2.06 SOURCE QUALITY CONTROL

A. Source Testing:
   1. Perform manufacturer's standard factory test:
      a. Perform testing in accordance with UL 1449.
   2. Furnish test reports and Manufacturer's Certificate of Source Testing.

B. Permanently affix surge rating to the SPD.

PART 3 EXECUTION

3.01 INSTALLATION

A. Follow the manufacturer's recommended installation practices and comply with all applicable codes.

B. Special techniques:
   1. Do not subject SPD to insulation resistance testing.

3.02 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.03 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

END OF SECTION

SECTION 16290

ELECTRICAL POWER MONITORING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Power meters and accessories.

1.02 REFERENCES

A. American National Standard Institute (ANSI):
   1. C12.20 - Electricity Meters - 0.2 and 0.5 Accuracy Classes.

B. Institute of Electrical and Electronics Engineers (IEEE):
   1. C57.13.6 - Standard for High Accuracy Instrument Transformers.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. FS - Full scale.
   2. SSM - Solid state multifunction power meter.
   3. THD - Total harmonic distortion.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Power meter data, including, but not limited to:
      a. Power requirements.
      b. Communications protocols.
      c. Input/outputs.
      d. Dimensions.
      e. Measurement functions.
      f. Front panel controls.
      g. Display characteristics.
   2. Accessory data:
      a. Test switch dimensions and wiring diagrams.

C. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

D. Operation and maintenance manuals:
   1. As specified in Section 01782 - Operation and Maintenance Manuals.
   2. Descriptive and technical bulletins and sales aids edited to reflect only the equipment to be provided and covering each of the components in the system.

3. A maintenance section including instruction leaflets and technical data necessary to setup, change setup and maintain the power meters.
4. Original licensed copies of software and software manuals.

E. Configuration files and reports:
1. Settings, including, but not limited to:
a. Device tag name.
b. IP addresses.
c. Alarm settings.
d. Time synchronization settings.
e. Security settings.
2. Configuration files are to be provided in the selected manufacturer's native format.
3. Configuration reports are to be submitted in .PDF format, listing each configured parameter setting and description of each parameter.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. One of the following or equal:
1. ABB.
2. Allen-Bradley.
3. Eaton.
4. Electro Industries/GaugeTech Power Meters.
5. GE Multilin.
6. Schneider Electric.

2.02 COMPONENTS

A. Power meters:
1. Power meter shall include at a minimum:
a. Individual phase currents, within 0.5 percent FS.
b. Phase-to-phase and phase-to-neutral voltages, within 0.5 percent FS.
c. Watts, VARs, VA, within 1 percent FS.
d. Watt-hours, VAR-hours, VA-hours, within 1 percent FS.
e. PF (apparent and displacement), within 2 percent FS.
f. Frequency, within 1 percent hertz.
g. Demand:
1) Ampere, within 0.5 percent FS.
2) Watt, VAR, VA, within 1 percent FS.

h. Minimum and maximum values:
    1) Volts (L-L), volts (L-N), current, watts, VARS, VA.
    2) Power factor:
        a) Apparent.
        b) Displacement.
        c) Frequency.
i. Synch-input kilowatts utility.
j. LCD with LED backlight.

2.03 ACCESSORIES

A. Current transformers:
    1. Ring type:
        a. Suitable for service within low or medium voltage equipment as indicated on the Drawings.
        b. Designed to have a mechanical and thermal rating to withstand short-circuit current, stresses, and heating effects equal to the rating of the equipment of the application.
    2. Current ratio: As indicated on the Drawings.
    3. Rated in accordance with IEEE C57.13.6 with accuracy of the current transformers suitable for relay accuracy class and rated for 200 percent burden for the required connected devices.
    4. Identify polarity with standard marking or symbols.
    5. Capable of carrying rated primary current continuously without damage.
    6. Install secondary wiring from current transformers in a suitable wiring trough, or conduit to proper short-circuiting type terminal blocks for connection to relays, instruments, and other devices.
    7. 3 CTs for 3-wire systems. 4CTs for 4-wire systems.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install power meters in accordance with the manufacturer’s instructions in the electrical equipment as indicated on the Drawings.

3.02 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
    1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.03 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

END OF SECTION

SECTION 16305

ELECTRICAL SYSTEM STUDIES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Short-circuit fault analysis studies.
   2. Protective device coordination study.
   3. Arc-flash hazard study.

1.02 REFERENCES

A. American National Standards Institute (ANSI).

B. Institute of Electrical and Electronics Engineers (IEEE):
   1. 1584 - IEEE Guide for Performing Arc-Flash Hazard Calculations.

C. National Fire Protection Association (NFPA):
   1. 70E - Standard for Electrical Safety in the Workplace.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Modified: Equipment with load additions or with loads being removed that affect fault current, include new overcurrent protective devices that require settings and device coordination, or require additional/removal/replacement of arc flash labels.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Signed and sealed electrical system study reports.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Credentials of the individual(s) performing the study and the individual in responsible charge of the study.

C. General:
   1. Format and quantity:
      a. 6 bound copies of all final reports.
      b. 3 complete sets of electronic files on CD or DVD media, including the electrical system model(s), configuration files, custom libraries, and any

other files used to perform the studies and produce the reports. Also provide an electronic version of the bound reports in PDF format.

2. One-line diagrams:
    a. The following information shall be included at a minimum:
        1) Motor horsepower.
        2) Transformer data:
            a) kVA.
            b) Configuration.
        3) Cable data:
            a) Insulation.
            b) Size.
            c) Length.
    b. Fully legible at 11-inch by 17-inch size.

D. Initial short-circuit fault analysis:
    1. Based on the Contract Documents and electric utility information.
    2. Include a description of all operating scenarios.
    3. One-line diagrams.
    4. Indicate the estimated available short-circuit current at the line side terminals of each piece of equipment covered by the scope of the study.
        a. Measure conductor lengths from the Drawings. Use of arbitrary short conductor lengths is not allowed.
        b. Provide a list of assumptions used in the initial study.

E. Delegated Design final studies and reports:
    1. Include the following sections at a minimum:
        a. Copies of correspondence and data obtained from the electric utility company.
        b. Letter certifying the inspection and verification of existing equipment and incorporation of applicable RFI's and change orders.
        c. Short-circuit fault analysis:
            1) Modify the initial short-circuit fault analysis as follows:
                a) Utilize the actual equipment provided on the project.
                b) Utilize conductor lengths based on installation.
                c) Update one-line diagrams to show as-built conditions.
            2) Descriptions, purpose, basis, assumptions, recommendations, and scope of the study.
            3) Normal system connections and those that result in maximum fault conditions.
            4) Tabulation of circuit breaker, fuse, and other protective device ratings compared to maximum calculated short-circuit duties.
            5) Fault current calculations for the cases run including a definition of terms and guide for interpretation of computer software printouts.
        d. Protective device coordination study shall include:
            1) Descriptions, purpose, basis, assumptions, recommendations, and scope of the study.
            2) List requirements used in the selection and setting criteria for any protective devices.
            3) TCCs graphically indicating the coordination proposed for the system on log-log graphs:
                a) All TCCs shall be in color.

4) Tabulation of relay, fuse, circuit breaker, and other protective devices in graphical form with a one-line diagram to display area coordination.
5) Where coordination could not be achieved, an explanation shall be included in the report to support the statement along with recommendations to improve coordination. Recommended equipment modifications or settings shall be in a tabulated form.
6) Protective device settings in a tabulated format.

e. Include in the arc-flash hazard study:
1) Descriptions, purpose, basis, assumptions, recommendations, and scope of the study.
2) Normal system connections and those that result in maximum arc-flash conditions.
3) Arc-flash raw data, calculations, and assumptions.

f. Form and format of arc-flash labels.
1) Label data:
a) Identifying the content of each label.
b) Identifying the location of each label.

F. Submit course outline for Owner Training.

1.06 QUALITY ASSURANCE

A. Qualifications of the entity responsible for electrical system studies:
1. A minimum of 5 years of experience in power system analysis is required for the individual in responsible charge of the studies.
2. Short-circuit fault analysis, protective device coordination, and arc-flash hazard studies shall be performed with the aid of a digital computer program:
a. Point-to-point calculations are not acceptable.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
1. The individual performing the studies shall visit the site and collect necessary field data in order to perform and complete comprehensive electrical system studies.
2. Obtain, for all equipment, the required data for preparation of the study, including, but not limited to:
a. Transformer kilovolt-ampere (kVA), nameplate data, and impedances.
b. Generator impedances, kilovolt-ampere (kVA), and voltage.
c. Generator decrement curves.
d. Bus withstand ratings.
e. Cable and bus data.
f. Protective device taps, time dials, instantaneous pickups, and time-delay settings.
g. As-built lengths for new wire and cable installations covered by the studies.
h. Grounding schemes (solidly grounded or resistive grounded).
3. Obtain the electric utility information on the minimum and maximum available fault current, minimum and maximum utility impedances, utility protective device settings including manufacturer and model number, interrupting ratings, X/R ratios, and model information one level above the point of connection:
a. Utility tolerances and voltage variations.

b. Coordinate with the utility for changes to their protective devices and settings to achieve a coordinated system between the utility and the Owner.

4. Obtain equipment layouts and configurations from the manufacturer's final Submittal requirements and Project layout drawings as required.
5. Bus and conductor data:
   a. Use impedances of the actual installed or specified conductors, unless otherwise indicated.
   b. Use cable and bus impedances calculated at 25 degrees Celsius, unless otherwise indicated.
   c. Use 600-volt cable reactance based on typical dimensions of actual installed or specified conductors, unless otherwise indicated.
   d. Use bus withstand values for all equipment having buses.

B. Use medium-voltage cable reactance based on typical dimensions of shielded cables with 133 percent insulation levels, unless otherwise indicated.

C. Certification:
1. Submit written certification signed by the professional engineer conducting the study, equipment supplier, and electrical subcontractor, stating that the data used in the study is correct and captures all RFIs, as-builts, and change orders affecting the study.

D. Meetings:
1. Electrical system study meetings:
   a. As specified in Section 01312 - Project Meetings.
   b. The individual conducting the electrical system studies leads the meeting.
   c. Meet with the Owner and Engineer 3 times.
   d. First meeting:
      1) Discuss the scope of the studies.
      2) Confirm electrical system operating modes.
      3) Confirm assumptions to be used in the electrical system study with the Owner, including, but not limited to:
         a) Maximum protective device fault clearing time.
      4) Discuss the Owner's operational requirements for both normal operation and maintenance.
   e. Second meeting:
      1) Inform the Owner of the results of the study and impacts on normal operation and maintenance including:
         a) Protective device coordination problems and recommended solutions.
         b) Explanation of the arc-flash hazard study results and its potential impact on operations.
         c) Recommendations for reduction of arc-flash category levels including reduction of protective device settings or changes in operational practices.
   f. Final meeting:
      1) Prior to substantial completion.
      2) Discuss changes to the studies based on the previous meeting.
      3) Discuss with the Owner how changes to the electrical system may change the arc-flash hazard category.

E. Sequencing:
    1. Below is an outline of the typical work sequence. Proposed changes to the work sequence may be reviewed and approved by the Engineer.
        a. First system study meeting.
        b. Submit the initial short-circuit fault analysis study before submittal of any electrical equipment.
            1) Only the initial short-circuit results will be reviewed.
        c. Site visit to gather data on the existing facility systems for all studies:
            1) Make multiple trips as required to obtain data for the short-circuit fault analysis, protection device coordination, and arc flash hazard studies.
        d. Submit the preliminary short-circuit fault analysis, protective device coordination, and arc-flash hazard studies after the approval of all electrical equipment.
        e. Second system study meeting for preliminary results.
        f. Update the model with changes to the electrical system made during start-up and commissioning.
        g. Final system study meeting.
        h. Submit the final electrical system studies.
        i. Label equipment with approved arc-flash labels.
        j. Owner Training.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. General study requirements:
    1. Scope:
        a. Short-circuit fault analysis, protective device coordination, and arc-flash hazard studies shall include all equipment in the power distribution system, including, but not limited to:
            1) Utility equipment (utility transformer and primary protective device).
            2) Available utility fault contribution current.
            3) All electrical equipment including:
                a) Dry-type transformers.
                b) 240- and 208-volt panelboards.
            4) Motors.
            5) Vendor control panels.
            6) HVAC equipment.
        b. Study scenarios:
            1) Include all possible electrical system configurations.
    2. Motors:
        a. Each motor shall be individually modeled:
            1) Grouping of motors for fault contribution current is not acceptable.

b. Motors with variable frequency drives (VFDs) may be assumed to have no contribution to fault current, unless VFDs are equipped with bypass contactors.
    1) If VFDs are equipped with bypass contactors, perform the fault current and arc flash study assuming the of bypass contactor is in the closed position.
3. Use the equipment, bus, and device designations as indicated on the Drawings for all studies.

B. Short-circuit fault analysis study additional requirements:
1. Calculate 3-phase bolted fault, line-to-line fault, line-to-ground fault, double line-to-ground fault, short-circuit 1/2 cycle momentary symmetrical and asymmetrical RMS, 1-1/2 to 4 cycle interrupting symmetrical RMS, and 30-cycle steady-state short-circuit current values at each piece of equipment in the distribution system.
2. Evaluate bus bracing, short-circuit ratings, fuse interrupting capacity and circuit-breaker-adjusted interrupting capacities against the fault currents, and calculate X/R values:
    a. Identify and document all devices and equipment as either inadequate or acceptable.
3. Calculate line-to-ground and double line-to-ground momentary short-circuit values at buses having ground-fault devices.
4. Provide calculation methods, assumptions, one-line diagrams, and source impedance data, including utility X/R ratios, typical values, recommendations, and areas of concern.

C. Protective device coordination study additional requirements:
1. Furnish protective device settings for functions indicated on the Drawings, including, but not limited to:
    a. Current.
2. Provide log-log form time-current curves (TCCs) graphically indicating the coordination proposed for the system:
    a. Include with each TCC a complete title and one-line diagram with legend identifying the specific portion of the system covered by the particular TCC:
        1) Typical TCCs for identical portions of the system, such as motor circuits, are acceptable as allowed by the Engineer.
    b. Include a detailed description of each protective device identifying its type, function, manufacturer, and time-current characteristics:
        1) These details can be included on the TCC.
    c. Include a detailed description of each protective device tap, time dial, pickup, instantaneous, and time delay settings:
        1) These details can be included on the TCC.
3. TCCs shall include all equipment in the power distribution system where required to demonstrate coordination. Include utility relay and fuse characteristics, medium-voltage equipment protective relay and fuse characteristics, low-voltage equipment circuit breaker trip device characteristics, transformer characteristics, motor and generator characteristics, and characteristics of other system load protective devices:
    a. Include devices down to the largest branch circuit and largest feeder circuit breaker in each motor control center, main breaker in branch panelboards, and fused disconnect switches.

b. Provide ground fault TCCs with adjustable settings for ground fault protective devices.
c. Include manufacturing tolerances and damage bands in plotted fuse and circuit breaker characteristics.
d. On the TCCs, show transformer full load currents, transformer magnetizing inrush, ANSI transformer withstand parameters, and transformer damage curves.
e. Cable damage curves.
f. Terminate device characteristic curves at a point reflecting the maximum symmetrical or asymmetrical fault current to which the device is exposed based on the short-circuit fault analysis study.
g. Coordinate time interval medium-voltage relay characteristics with upstream and downstream devices to avoid nuisance tripping.

4. Suggest modifications or additions to equipment rating or settings in a tabulated form.

D. Arc-flash hazard study additional requirements:
1. Include the calculated arc-flash boundary and incident energy (calories/square centimeter) at each piece of equipment in the distribution system:
a. Perform study with 15 percent arcing fault variation in accordance with IEEE 1584.
b. Perform arc-flash calculations at minimum and maximum utility fault contributions.
c. Perform arc-flash calculations for both the line side and load side of the switchgear, switchboard, motor control center, and panelboard main breakers.
d. Perform arc-flash calculations for short-circuit scenarios with all motors on for 3 to 5 cycles and with all motors off.
2. Provide executive summary of the study results:
a. Provide summary based upon worst case results.
3. Provide a detailed written discussion and explanation of the tabulated outputs:
a. Include all scenarios.
4. Provide alternative device settings to allow the Owner to select the desired functionality of the system:
a. Minimize the arc-flash energy by selective trip and time settings for equipment maintenance purposes.
b. Identify the arc-flash energy based upon the criteria of maintaining coordination and selectivity of the protective devices.

2.02 MANUFACTURERS

A. Electrical system study software: The following, no equal:
1. SKM Systems Analysis, Powertools.

2.03 COMPONENTS

A. Arc-flash hazard labels:
1. Dimensions:
a. Minimum 5 inches by 3.5 inches.
2. Materials:
a. Polyester with polyvinyl polymer over-laminate.

b. Self-adhesive.
c. Resistant to:
1) UV.
2) Chemicals and common cleaning solvents.
3) Scuffing.
4) Wide temperature changes.

3. Contents:
a. Short-circuit bus identification.
b. Calculated incident energy (calories/square centimeter) range:
1) Based on worst-case study results.
c. Arc-flash protection boundary.
d. Shock hazard boundary:
1) Contractor may provide separate labels for indication of the shock hazard boundary.
e. Fed from:
1) Identify the tag number of the upstream equipment providing power.

4. Color scheme:
a. For locations above 40 calories/square centimeter:
1) White label with red “DANGER” strip across the top.
2) Black lettering.
b. For locations below 40 calories/square centimeter:
1) White label with orange “WARNING” strip across the top.
2) Black lettering.

PART 3 EXECUTION

3.01 INSTALLATION

A. After review and acceptance of the arc-flash hazard study by the Engineer, install arc-flash hazard labels:
1. At all locations required by NFPA, ANSI, or IEEE standards.
2. At a minimum, in the following locations:
a. Front of each main or incoming service compartment.
b. Front of each low-voltage switchgear section.
c. Front of each medium-voltage circuit breaker door.
d. Front of each accessible auxiliary or conductor compartment.
e. Each accessible rear or side vertical section.
f. Each motor control center vertical section.
g. Each panelboard covered by the study.
h. Each control panel, individual starter or VFD, or other equipment covered by the scope of the study.

3.02 OWNER TRAINING:

A. Including, but not limited to:
1. Introduction and basics of NFPA 70E: 1 hour 1 session.
2. Detailed review of the electrical system study: 1 hour 1 session.

3.03 FIELD QUALITY CONTROL

A. Individual performing the arc-flash hazard study shall direct the installation of the arc-flash hazard labels:
   1. Remove and replace any improperly applied labels.
   2. Repair the equipment finish damaged by removal of any label.
   3. Install labels level or plumb across the entire dimension of the label.

3.04 ADJUSTING

A. After review and acceptance of the draft arc-flash hazard study and protective device coordination study by the Engineer, adjust protective device settings in accordance with final study prior to equipment energization.
   1. Devices that require power for configuration may be set during energization, but before any subfed loads are energized.
   2. Ensure that settings for upstream equipment are set prior to energizing downstream devices. Provide documentation that protective devices are set in accordance with the study recommendation.

END OF SECTION

SECTION 16411

DISCONNECT SWITCHES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Knife blade fusible and non-fusible disconnect switches.
   2. Switch-rated plugs and receptacles.

1.02 REFERENCES

A. National Electric Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
   2. KS 1-2001 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).

B. Underwriters Laboratories Inc. (UL):
   1. 98 - Enclosed and Dead-Front Switches.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Safety switches and disconnect switches are to be considered synonymous.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer.
   2. Manufacturer’s specifications and description.
   3. Ratings:
      a. Voltage.
      b. Current.
      c. Horsepower.
      d. Short circuit rating.
   4. Fused or non-fused.
   5. NEMA enclosure type.
   6. Dimensions:
      a. Height.
      b. Width.
      c. Depth.
   7. Weight.
   8. Cross-referenced to the disconnect schedule indicated on the Drawings.

C. Shop Drawings:
   1. Manufacturer's installation instructions:
      a. Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance, Regulatory Requirements below.
      b. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.
   2. For each switch, indicate nameplate inscription, including voltage, circuit, fuse size (if applicable), and equipment served.

D. Installation instructions:
   1. Provide manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

A. Regulatory requirements:
   1. NEMA Type KS 1- Enclosed and Miscellaneous Distribution Switches (600 V Maximum).
   2. UL 98 - Enclosed and Dead-Front Switches.

B. Disconnect switches shall be UL listed and labeled.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Conduct the initial fault current study as specified in Section 16305 - Electrical System Studies and submit results for the Engineer's review.
   2. After successful review of the initial fault current study, submit complete equipment Submittal.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide knife blade disconnect switches and switch-rated plugs and receptacles as indicated on the Drawings and specified in the Contract Documents.

B. Provide equipment with the number of poles, voltage, current, short circuit, and horsepower ratings as required by the load and the power system.

2.02 MANUFACTURERS

A. Knife-blade disconnect switches:
   1. One of the following or equal:
      a. ABB.
      b. Appleton.
      c. Crouse-Hinds.
      d. Eaton.
      e. Schneider Electric.
      f. Siemens.

2.03 EQUIPMENT

A. Knife-blade style switch disconnects:
   1. Switch mechanism:
      a. Quick-make, quick-break heavy-duty operating mechanisms:
         1) Provisions for padlocking the switch in the Off position.
         2) A minimum of 90-degree handle travel position between Off and On positions:
            a) Provide handle position indicators to identify the handle position.
         3) Full cover interlock to prevent opening of the switch door in the On position and to prevent closing the switch mechanism with the door open:
            a) With an externally operated override.
   2. Switch interior:
      a. Switch blades visible when the switch is Off and the cover is open.
      b. Lugs:
         1) Front accessible.
         2) Removable.
         3) UL listed for 60/75-degree Celsius copper conductors.
      c. Current carrying parts completely plated to resist corrosion.
      d. Removable arc suppressors to facilitate easy access to line side lugs.
      e. Furnish equipment ground kits for every switch.
   3. Fused switches:
      a. Furnish with fuses as indicated on the Drawings:
         1) Provide fuses as specified in Section 16494 - Low Voltage Fuses.
      b. UL approved for field conversion from standard Class H fuse spacing to Class J fuse spacing:
         1) Ratings 100 amps through 600 amps at 240 volts.
         2) Ratings 30 amps through 600 amps at 600 volts.
         3) Provide spring reinforced and plated fuse clips.
   4. Ratings:
      a. UL horsepower rated for AC or DC with the rating not less than the load served.
      b. Current:
         1) 30 to 1,200 amps.
      c. Voltage:
         1) 250 volts AC, DC.
         2) 600 volts (30 A to 200 A, 600 volts DC).
      d. Poles:
         1) 2, 3, 4, and 6 poles.

e. UL listed short circuit ratings:
    1) 10,000 RMS symmetrical amps when used with or protected by Class H or K fuses (30 to 600 amps).
    2) 200,000 RMS symmetrical amps when used with or protected by Class R or J fuses (30 to 600 amps employing appropriate fuse rejection).
    3) 200,000 RMS symmetrical amps when used with or protected by Class L fuses (800 to 1,200 amperes amps).

B. Where not indicated on the Drawings, provide switches with the NEMA ratings specified in Section 16050 - Common Work Results for Electrical for the installed location.

C. Size, fusing and number poles as indicated on the Drawings or as required:
    1. Provide solid neutral where indicated on the Drawings.

2.04 ACCESSORIES

A. Disconnect switches to have provisions for a field installable “B” type electrical interlock for position indication as indicated on the Drawings.

B. Disconnect switches to have provisions for a field installed insulated groundable neutral kit as indicated on the Drawings.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
    1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
    2. Install anchors of type and material indicated on approved anchoring designs.
    3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. General:
    1. Use Myers hubs or bolt-on hubs for conduit penetrations on NEMA Type 12, Type 4, and Type 4X enclosures.
    2. Provide mounting brackets, stands, supports and hardware as required:
        a. Match finish and materials for brackets, stands, and hardware with the switch installed.
        b. Provide adequate supporting pillar(s) for disconnect switches in accordance with the approved seismic calculations, and locate aboveground or above decks, where there is no structural wall or surface for box.

3. When possible, mount switches rigidly to exposed building structure or equipment structural members:
    a. For NEMA Type 4 and Type 4X locations, maintain a minimum of 7/8 inch air space between the enclosure and supporting surface.
    b. When mounting on preformed channel, position channel vertically so that water may freely run behind the enclosure.
4. Provide a nameplate for each disconnect switch:
    a. As specified in Section 16075 - Identification for Electrical Systems.

3.03 FIELD QUALITY CONTROL

A. As specified in Section 16050 - Common Work Results for Electrical.

B. Field electrical acceptance testing:
    1. As specified in Section 16950 - Field Electrical Acceptance Tests.

END OF SECTION

SECTION 16412

LOW VOLTAGE MOLDED CASE CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Low voltage molded case circuit breakers.

1.02 REFERENCES

A. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

B. Underwriters Laboratories (UL):
   1. 489 - Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.

1.03 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Catalog cutsheets.
   2. Manufacturer’s time-current curves for molded case circuit breakers furnished.

C. Delegated Design Submittals:
   1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria.
      a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
      b. For equipment installed outdoors.
      c. For wall mounted equipment weighing 125 pounds or more.

D. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

1.05 QUALITY ASSURANCE

A. Low voltage molded case circuit breakers shall be UL listed and labeled.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Molded case thermal magnetic, solid-state, or motor circuit protector type circuit breakers as indicated on the Drawings and connected to form a completed system.

2.02 MANUFACTURERS

A. One of the following or equal:
   1. ABB.
   2. Eaton.
   3. Schneider Electric.

2.03 MANUFACTURED UNITS

A. General:
   1. In accordance with UL 489.
   2. Operating mechanism:
      a. Quick-make, quick-break, non-welding silver alloy contacts.
      b. Common Trip, Open and Close for multi-pole breakers such that all poles open and close simultaneously.
      c. Mechanically trip free from the handle.
      d. Trip indicating handle - automatically assumes a position midway between the manual ON and OFF positions to clearly indicate the circuit breaker has tripped.
      e. Lockable in the “OFF” position.
   3. Arc extinction:
      a. In arc chutes.
   4. Voltage and current ratings:
      a. Minimum ratings as indicated on the Drawings.
      b. Minimum frame size 100A.
   5. Interrupting ratings:
      a. Minimum ratings as indicated on the Drawings.
      b. Modify as required to meet requirements of the short circuit fault analysis as specified in Section 16305 - Electrical System Studies.
      c. Not less than the rating of the assembly (panelboard, switchboard, motor control center, etc.).

B. Motor circuit protectors:
   1. Instantaneous only circuit breaker as part of a listed combination motor controller.
   2. Each pole continuously adjustable in a linear scale with “LO” and “HI” settings factory calibrated.

2.04 COMPONENTS

A. Terminals:
   1. Line and load terminals suitable for the conductor type, size, and number of conductors indicated on the Drawings and in accordance with UL 489.

B. Case:
   1. Molded polyester glass reinforced.
   2. Ratings clearly marked.

C. Trip units:
   1. Provide thermal magnetic or solid-state trip units as indicated on the Drawings.
   2. Thermal magnetic:
      a. Instantaneous short circuit protection.
      b. Inverse time delay overload.
      c. Ambient or enclosure compensated by means of a bimetallic element.
   3. Solid state:
      a. With the following settings as indicated on the Drawings:
         1) Adjustable long time current setting.
         2) Adjustable long time delay.
         3) Adjustable short time pickup.
         4) Adjustable short time delay.
         5) Adjustable instantaneous pickup.
         6) Adjustable ground fault pickup as for breakers rated1000 amps and higher.
         7) Adjustable ground fault delay as for breakers rated 1000 amps and higher.
      b. Energy reducing maintenance switch on breakers 1,200 amps and above and on additional breakers as indicated on the Drawings.

D. Provide ground fault trip devices as indicated on the Drawings.

E. Molded case circuit breakers for use in panelboards:
   1. Bolt-on type:
      a. Plug-in type breakers are not acceptable.
   2. Ground fault trip devices as indicated on the Drawings.

2.05 SOURCE QUALITY CONTROL

A. Test breakers in accordance with:
   1. UL 489.
   2. Manufacturer’s standard testing procedures.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install breakers to correspond to the accepted Shop Drawings.

3.03 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.04 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

3.05 ADJUSTING

A. Adjust trip settings in accordance with Protective Device Coordination Study as accepted by the Engineer and in accordance with manufacturer's recommendations.

B. Adjust motor circuit protectors in accordance with NEC and the manufacturer's recommendation based on the nameplate values of the installed motor.

END OF SECTION

SECTION 16413

LOW VOLTAGE INSULATED CASE CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Low voltage insulated case circuit breakers.

1.02 REFERENCES

A. Underwriters Laboratories (UL):
   1. 489 - Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Catalog cutsheets.
   2. Manufacturer's time-current curves for all trip devices furnished.

C. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

1.04 QUALITY ASSURANCE

A. Insulated case circuit breakers shall be UL listed and labeled.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Insulated case circuit breakers as indicated on the Drawings and connect to form a completed system:
   1. Used to open and close a circuit, and to open a circuit automatically on a predetermined overload or overcurrent, without damage to itself when properly applied within its ratings.

2.02 MANUFACTURERS

A. One of the following, or equal:
   1. ABB.
   2. Eaton.
   3. Schneider Electric.

2.03 MANUFACTURED UNITS

A. Operating mechanism:
   1. Manual or electric as indicated on the Drawings:
      a. Manual operation:
         1) Circuit breaker closing spring is energized by no more than 6 operations of the constant-force charging handle.
         2) Pushing the “CLOSE (ON)” button will close the breaker’s contacts and pushing the “OPEN (OFF)” button will open the breaker’s contacts.
         3) Opening springs are automatically charged when the breaker is closed.
      b. Quick-make, quick-break, non-welding silver alloy contacts.
      c. Common trip, open and close for multi-pole breakers such that all poles open and close simultaneously.
      d. Mechanically trip free from the handle.
      e. Trip indicating handles - automatically assumes a position midway between the manual ON and OFF positions to clearly indicate the circuit breaker has tripped.
      f. Lockable in the “OFF” position.

B. Arc extinction:
   1. In arc chutes.

C. Voltage and current ratings:
   1. Minimum ratings as indicated on the Drawings.

D. Interrupting ratings:
   1. Minimum ratings as indicated on the Drawings:
      a. Modify as required to meet requirements of the Contractor’s Short Circuit Fault Analysis as specified in Section 16305 - Electrical System Studies.
   2. Matching the rating of the assembly.

E. Circuit breaker mounting shall be as indicated on the Drawings and consist of one of the following configurations:
   1. Draw out type capable of being racked to the disconnect position with the door closed:
      a. Interlocks shall be provided to prevent connecting or disconnecting the circuit breaker unless the breaker is in the open position.
      b. Breaker shall be prevented from being closed during any racking operation.
      c. A test position shall be provided to permit operating the breaker while it is disconnected from the power circuit.

d. Equipped with interlocks to discharge stored energy spring before the circuit breaker is withdrawn from the cell.
2. Plug-in (stationary) type capable of being removed with the main bus power off.
3. Individually mounted in a separate enclosure.

2.04 COMPONENTS

A. Terminals:
1. Line and load terminals suitable for the conductor type, size, and number of conductors indicated on the Drawings and in accordance with UL 489.

B. Case:
1. Molded polyester glass reinforced.
2. Double level of insulation between primary current-carrying parts and operating personnel.
3. Ratings clearly marked.
4. Open contact indication.
5. Closed contact indication.
6. Charging spring charged indication.
7. Charging spring discharged indication.
8. Open pushbutton.
9. Close pushbutton.
10. Retractable charging handle.

C. Trip units:
1. Microprocessor based with positive action flux-shifting trip device and a solid state type with the following functions:
a. Adjustable ampere setting:
1) To determine the value of current that the breaker will carry indefinitely.
b. Adjustable long time delay:
1) Varies the time it will take the breakers to trip under sustained overload.
c. Adjustable short time pickup:
1) Controls the level of high current the breaker will carry for short periods.
d. Adjustable short time delay:
1) Controls the length of time the breaker will carry a high current without tripping.
e. Adjustable instantaneous pickup:
1) Controls level at which immediate tripping of breaker occurs.
f. Adjustable ground fault pickup:
1) Controls the level at which the breaker will trip under a ground fault condition.
g. Adjustable ground fault delay:
1) Controls the time that a ground fault can exist without tripping the breaker.
h. Long time pickup indicator:
1) Provides a visual indication that the breaker is experiencing an overload condition.

i. Energy reducing maintenance switch:
   1) Allows for input of alternative trip settings for arc flash hazard reduction during maintenance procedures.
   2) Enabled by the following:
      a) Hardwired input.
      b) Trip unit controls.
      c) Trip unit network.
   3) Status:
      a) Contact for remote indication.
      b) Indication on trip unit.
      c) Status communicated over trip unit network.

D. Fault indicators:
   1. Powered from a lithium battery.
   2. LED indicators for:
      a. Overcurrent fault trip on long-time feature.
      b. Overcurrent fault trip on short-time feature.
      c. Short circuit fault trip on the instantaneous feature.
      d. Ground fault trip.

2.05 ACCESSORIES

A. Provide circuit breakers with the following accessories as indicated on the Drawings and required for proper operation of the system:
   1. Electrical operator (field convertible by adding a plug-in motor operator):
      a. Circuit breaker closing spring is energized by an electric motor-driven charging mechanism.
      b. Control voltage:
         1) 120 VAC.
   2. Remote close solenoid.
   3. Shunt trip device.
   4. Key interlock device.
   5. Anti-pump provision to prevent closing or reclosing operations when used with a normally closed contact in the “close” circuit.
   6. Terminal blocks.
   7. Operations counter.

2.06 SOURCE QUALITY CONTROL

A. Test breakers in accordance with:
   1. UL 489.
   2. Manufacturer’s standard testing procedures.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install breakers to correspond to the accepted Shop Drawings.

3.02 FIELD QUALITY CONTROL

A. As specified in Section 16050 - Common Work Results for Electrical.

B. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.03 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

3.04 ADJUSTING

A. Adjust trip settings in accordance with the Protective Device Coordination Study as accepted by the Engineer and in accordance with the manufacturer's recommendations.

END OF SECTION

SECTION 16422

MOTOR STARTERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Motor starters and contactors.

1.02 REFERENCES

A. Abbreviations:
   1. FVNR: Full voltage non-reversing.
   2. FVR: Full voltage reversing.
   3. PWS: Part winding start.
   4. RVAT: Reduced voltage auto transformer.
   5. RVSS: Reduced voltage solid state.
   6. TS1W: 2 speed 1 winding (consequent pole).
   7. TS2W: 2 speed 2 winding.

B. Standards:
   1. Institute of Electrical and Electronics Engineers (IEEE).
   2. International Electrotechnical Commission (IEC):
      a. 801-1 - Electromagnetic Compatibility for Industrial-Process Measurement and Control Equipment - Part 1: General Information.
      b. 947-4 - Low-Voltage Switchgear and Control Gear.
   3. National Electrical Manufacturer's Association (NEMA):
      a. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
      b. ICS 2-230 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays Rated 600 V.
   4. Underwriters Laboratories, Inc. (UL):
      a. 508 - Standard for Industrial Control Equipment.
      b. 508A - Standard for Industrial Control Panels.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Overload relay class: A classification of an overload relay time current characteristic by means of a number which designates the maximum time in seconds at which it will operate when carrying a current equal to 600 percent of its current rating.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures:
   1. Submit motor starter data with equipment Submittal.

B. Product data:
   1. Manufacturer.
   2. Catalog cutsheets.
   3. Technical information.
   4. Complete nameplate schedule.
   5. Complete bill of material.
   6. List of recommended spare parts.
   7. Confirmation that the overload relay class for each starter meets the requirements of the equipment and motor supplier.
   8. Electrical ratings:
      a. Phase.
      b. Wire.
      c. Voltage.
      d. Ampacity.
      e. Horsepower.
   9. Furnish circuit breaker submittals as specified in Section 16412 - Low Voltage Molded Case Circuit Breakers.

C. Shop Drawings:
   1. Elementary and schematic diagrams:
      a. Provide 1 diagram for every starter and contactor.
      b. Indicate wire numbers for control wires on the diagrams:
         1) Wire numbering as specified in Section 16075 - Identification for Electrical Systems.
      c. Indicate interfaces with other equipment on the Drawings.

D. Delegated Design Submittals:
   1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria:
      a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
      b. For equipment installed outdoors.
      c. For wall mounted equipment weighing 125 pounds or more.

E. Quality Control Submittals:
   1. Manufacturer’s representative qualifications.
   2. Manufacturer’s Certificate of Source Testing as specified in Section 01756 - Commissioning.
   3. Test reports.

F. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

G. Operation and maintenance manuals:
   1. As specified in Section 01782 - Operation and Maintenance Manuals.
   2. Submit complete operating and maintenance instructions presenting full details for care and maintenance of equipment furnished or installed under this Section, including, but not limited to:
      a. Electrical ratings:
         1) Phase.
         2) Wire.
         3) Voltage.
         4) Ampacity.
      b. Complete bill of material.
      c. Manufacturer's operating and maintenance instructions starter and/or contactor component parts, including:
         1) Protective devices (fuses, breakers, overload relays, heater elements, etc.).
         2) Pilot devices.
      d. Complete renewal parts list.
      e. As-built drawings:
         1) Furnish as-built drawings for each starter and contactor indicating final:
            a) Wire numbers.
            b) Interfaces with other equipment.
         2) 11-inch by 17-inch format.

1.06 QUALITY ASSURANCE

A. Regulatory requirements:
   1. Starters and components shall be UL listed and labeled:
      a. UL 508 - Industrial Control Equipment.
      b. UL 508A - Industrial Control Panels.
   2. NEMA ICS 2 - Industrial Control and System Controllers; Contactors and Overload Relays Rated: 600 Volts.
   3. Combination starters shall be UL listed and labeled.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Conduct the initial fault current study as specified in Section 16305 - Electrical System Studies and submit results for the Engineer's review.
   2. After successful review of the initial fault current study, as specified in Section 16305 - Electrical System Studies, submit complete equipment Submittal.
   3. Conduct factory acceptance test.

4. Ship equipment to the Project Site after successful completion of factory acceptance test.
5. Assemble equipment in the field.
6. Submit Manufacturer's Certificate of Installation Verification.
7. Conduct field acceptance test and submit results for the Engineer's review.
8. Conduct Owner Training sessions.
9. Commissioning and process start-up as specified in Section 01756 - Commissioning.

1.09 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.10 MAINTENANCE

A. Spare parts:
   1. Provide the following spare parts, suitably packaged and labeled with the corresponding equipment number:
      a. 1 spare fuse of each size and type per starter.

PART 2 PRODUCTS

2.01 GENERAL

A. Starters for motor control centers, individual enclosed starters, or control panels.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the Site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. NEMA starters and contactors:
      a. ABB.
      b. Allen-Bradley.
      c. Eaton.
      d. Schneider Electric.

2.04 MANUFACTURED UNITS

A. General:
   1. Provide combination type starters with motor circuit protector or thermal-magnetic circuit breaker and control power transformer with ratings as indicated on the Drawings.
   2. NEMA size, design, and rated:
      a. NEMA Size 1 minimum.

3. Coordinate motor circuit protector, thermal magnetic circuit breaker, or fusible disconnect, and overload trip ratings with nameplate horsepower and current ratings of the installed motor.
    a. If motors provided are different in horsepower rating than those specified or indicated on the Drawings, provide starters coordinated to the actual motors furnished.
4. Provide starters NEMA Size 2 and larger with arc quenchers on load breaking contacts.
5. Mount extended overload reset buttons to be accessible for operation without opening starter enclosure door.

B. Full voltage starters (FVNR, FVR, TS1W, TS2W):
1. Across-the-line full voltage magnetic starters.
2. Rated for 600 volts.
3. Electrical characteristics as indicated on the Drawings.
4. Provide positive, quick-make, quick-break mechanisms, padlockable enclosure doors.
5. Furnish starter with solid state electronic overload relays.
6. Double-break silver alloy contacts.
7. Reversing starters provided with both mechanical and electrical interlocks to prevent line shorts and energizing both contactors simultaneously.
8. Provide 2-speed, 2-winding motor starters consisting of two 3-pole contactors and 2 sets of overload relays assembled together:
    a. Provided with contactors that are both mechanically and electrically interlocked to prevent energizing both contactors simultaneously.

2.05 COMPONENTS

A. Molded case circuit breakers:
1. Circuit breaker type and ratings as indicated on the Drawings.
2. Provide as specified in Section 16412 - Low Voltage Molded Case Circuit Breakers.

B. Contactors:
1. NEMA size as indicated on the Drawings.
2. Electrically held:
    a. For lighting loads designed to withstand the initial inrush currents of ballast and lamp loads.
3. Factory adjusted and chatter free.
4. Auxiliary contacts:
    a. Contact ratings in accordance with NEMA A600 rating:
        1) Auxiliary contacts rated 10 amps at 600 volts.
    b. Provide contacts indicated on the Drawings and any additional contacts required for proper operation.
    c. Provide at least 1 normally open and 1 normally closed spare auxiliary contact.
5. Constructed in accordance with the following standards:
    a. UL 508.

b. IEC 947-4:
    1) Type 1 coordination when protected by a circuit breaker.
    2) Type 2 coordination when protected by a suitable UL listed fuse.
c. IEC 801-1 parts 2 through 6.

C. Overloads:
1. Solid state electronic:
    a. Selectable Class 10, 20, 30 protection.
    b. Ambient insensitive:
        1) Operating temperature: -20 to 70 degrees Celsius.
    c. Thermal memory.
    d. Protective functions:
        1) Motor overcurrent.
        2) Phase unbalance (adjustable).
        3) Phase loss.
        4) Ground fault protection.
    e. Self-powered.
    f. Provide current transformers for metering of motor current.
    g. Visible trip indicator.
    h. Push-to-trip test.
    i. Isolated normally open alarm contact.
    j. Normally closed trip contact.
    k. Manual reset.

D. Control power transformer:
1. Furnish integral control power transformer capacity to power:
    a. Motor controls: Motor and starter accessories indicated on the Drawings or specified.
2. Primary and secondary fusing as indicated on the Drawings:
    a. Fusing sized by the manufacturer for the rating of the transformer furnished.
3. Control power transformer secondary voltage:
    a. As indicated on the Drawings.

2.06 ACCESSORIES

A. Lugs and terminals:
1. For external connections of No. 6 AWG and larger.
2. UL listed for either copper or aluminum conductors.

B. Surge protective devices:
1. Furnish surge protection devices across the coil of each starter, contactor, and relay.

C. Pilot devices:
1. Provide pilot lights, switches, elapsed time meters, and other devices as specified or as indicated on the Drawings.
2. As specified in Section 17710 - Control Systems: Panels, Enclosures, and Panel Components.

D. Nameplates and wire markers:
1. As specified in Section 16075 - Identification for Electrical Systems.

E. Conformal coating:
   1. Provide conformal coating material applied to electronic circuitry and printed circuit boards to act as protection against moisture, dust, temperature extremes, and chemicals such as H_2S and chlorine.

2.07 SOURCE QUALITY CONTROL

A. Source Testing:
   1. Not witnessed.
   2. Furnish test reports and Manufacturer's Certificate of Source Testing.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. Starters in motor control centers:
   1. As specified in Section 16444 - Low Voltage Motor Control Centers.

3.03 FIELD QUALITY CONTROL

A. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.04 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

3.05 ADJUSTING

A. Make adjustments as necessary and as recommended by the manufacturer, Engineer, or testing firm.

B. Set overloads and motor circuit protectors based on the nameplate values of the installed motor.

END OF SECTION

SECTION 16442

INDIVIDUALLY MOUNTED CIRCUIT BREAKER SWITCHBOARDS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Free standing, dead-front type metal-enclosed, low voltage switchboards with individually mounted circuit protective devices.

1.02 REFERENCES

A. Electric Utility Service Requirements Committee (EUSERC).

B. International Organization for Standardization (ISO):
   1. 9001 - Quality Management Systems - Requirements.

C. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
   2. PB 2 - Deadfront Distribution Switchboards.

D. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code.
   2. 70E® - Standard for Electrical Safety in the Workplace®.

E. Underwriters Laboratories, Inc. (UL):
   1. 891 - Switchboards.

1.03 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer of switchboard.
   2. Manufacturer of component parts of switchboard.
   3. Dimensions:
      a. Width.
      b. Length.
      c. Height.
      d. Weight.
   4. Nameplate schedule.
   5. Bill of material.

6. Ratings:
    a. Voltage.
    b. Phase.
    c. Current.
    d. Interrupting rating (circuit breakers and fuses).
7. List of recommended spare parts.
8. Certification that the utility metering compartment meets the requirements of the serving electrical utility.
9. Name of dealer's repair facility and parts stocking agreement with the factory:
    a. Agreement shall outline in detail the manufacturer's parts stocking requirements and the method by which the manufacturer's representative verifies that the stock is at an acceptable level.
    b. Agreement should also outline the method by which the manufacturer's representative determines that the service personnel meet factory standards.
    c. A toll-free or local phone number with 24/7 emergency monitoring/call back is required.
10. Furnish circuit breaker Submittals as specified in:
    a. Section 16412 - Low Voltage Molded Case Circuit Breakers.
    b. Section 16413 - Low Voltage Insulated Case Circuit Breakers.
11. For equipment installed in structures designated as seismic design category C, D, E, or F, submit the following as specified in Section 01850 - Design Criteria:
    a. Manufacturer's statement of seismic qualification with substantiating test data.
    b. Manufacturer's special seismic certification with substantiating test data.

C. Shop Drawings:
1. Complete, detailed, and scaled switchboard layout:
    a. Front panel.
    b. Sub-panels.
    c. Interior panels.
    d. Top and bottom conduit windows.
2. Complete electrical wiring diagrams:
    a. Point-to-point connections.
    b. Internal compartment-to-compartment interconnection wiring diagrams.
    c. Wiring identification and terminal numbers.
3. Complete 3-line diagrams for each switchboard lineup.
    a. These Drawings shall indicate devices comprising the switchboard assembly, including, but not limited to, circuit breakers, control power and instrument transformers, meters, and control devices.
    b. Clearly indicate electrical ratings of devices on Drawings.
4. Complete interface and connection diagrams for metering system.
5. Complete bill of material list and equipment datasheets identifying appropriate information specific to the switchboard being supplied.
6. Nameplate schedule.
7. Interfaces to other equipment.

D. Delegated Design Submittals:
   1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria:
      a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.

E. Installation instructions:
   1. Detail the complete installation of the equipment including rigging, moving, and setting into place.
   2. Provide manufacturer's installation instructions.

F. Quality Control Submittals:
   1. Manufacturer's representative qualifications.
   2. Manufacturer's Certificate of Source Testing as specified in Section 01756 - Commissioning.
   3. Manufacturer's Certificate of Installation as specified in Section 01756 - Commissioning.
   4. Test reports.

G. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

H. Operation and maintenance manuals:
   1. As specified in Section 01782 - Operation and Maintenance Manuals.
   2. Operating instructions:
      a. Printed and framed instruction chart suitable for wall hanging.
      b. Detail the operational functions custom controls which have been placed on the front of the switchboard.
   3. Maintenance manual:
      a. Furnish maintenance manuals with instructions for maintenance of equipment and data identifying all parts.
      b. Include information needed to maintain the switchboard, including, but not limited to, the following:
         1) Instructions for testing, adjustment, and start-up.
         2) Detailed control instructions which outline the purpose and operation of every control device used in normal operation.
         3) Schematic and wiring diagrams:
            a) Showing internal and external connections.
            b) Furnished in a reduced 11-inch by 17-inch fully legible format.

1.05 QUALITY ASSURANCE

A. Switchboard and components shall be UL listed and labeled.

B. The switchboard shall be UL labeled and listed Suitable for Service Entrance.

C. Equipment shall be designed and constructed in accordance with the following standards and requirements:
   1. NEMA PB 2.
   2. UL 891.

D. Manufacturer shall be ISO 9001 certified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Ship switchboards to the site in dedicated air ride vans that will allow the Contractor to utilize onsite off-loading equipment.

B. Furnish temporary equipment heaters within the switchboard to prevent condensation from forming.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Conduct the initial fault current study as specified in Section 16305 - Electrical System Studies and submit results for the Engineer's review.
   2. After successful review of the initial fault current study, submit complete equipment Submittal.
   3. Conduct factory acceptance test and submit certified test results for the Engineer's review.
   4. Ship equipment to the Project Site after successful completion of the factory acceptance test.
   5. Assemble equipment in the field.
   6. Conduct final fault current and coordination study.
   7. Conduct field acceptance test and submit results for the Engineer's review.
   8. Submit manufacturer's certification that the equipment has been properly installed and is fully functional for the Engineer's review.
   9. Conduct Owner Training sessions.
   10. Commissioning as specified in Section 01756 - Commissioning.

1.09 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Factory assembled, wired, and tested switchboards, with major components being products of a single manufacturer, including circuit breakers, and other equipment specified in this Section and indicated on the Drawings.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

B. Non-conditioned spaces:
   1. Provide additional temperature conditioning equipment to maintain the equipment temperature within a band of 10 degrees Fahrenheit above the minimum operating temperature and 10 degrees Fahrenheit below maximum operating temperature.

C. Outdoor installations:
   1. Provide conditioning equipment incorporated into the equipment to maintain the enclosures within the equipment manufacturer's specified operating ranges.

D. Provide complete and functional switchboards with required controls.

E. Furnish and install devices or accessories not described in this Section but necessary for the proper installation and operation of the equipment.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. ABB.
   2. Eaton.
   3. Schneider Electric.

2.04 EQUIPMENT

A. Voltage ratings:
   1. Voltage level and configuration: As indicated on the Drawings.
   2. Frequency: 60 hertz.
   3. Insulation level:
      a. Twice the rated voltage plus 1,000 volts.

B. Bus:
   1. General:
      a. Tin-plated copper.
      b. Bus cross-section in accordance with UL heat rise requirements.
      c. Current density of 1,000 amps per square inch.
      d. Mounted on supports of high-impact, non-tracking insulators.
      e. Phase A-B-C bus arrangement:
         1) Top-to-bottom, left-to-right, front-to-back throughout the switchboard.
      f. Symmetrical short circuit current bracing of as indicated on the Drawings.
      g. Continuous current rating as indicated on the Drawings.
   2. Horizontal bus:
      a. Provisions for future connections to additional switchboard sections.
   3. Ground bus:
      a. Sized in accordance with UL 891.

C. Space for future devices:
   1. Provide spaces as indicated on the Drawings.
   2. As specified in Section 16050 - Common Work Requirements for Electrical.

D. Utility metering compartment:
   1. When indicated on the Drawings, furnish an integral utility current and voltage transformer cabinet for utility company metering.
   2. EUSERC compliant.
   3. Instrument transformer mounting, connections and metering sequence shall conform to electric utility requirements.
   4. Dimensions, ratings, spacings, and standards shall conform with the requirements of the electric utility.
   5. Service entrance cables to enter the utility metering compartment as indicated on the Drawings.

E. Enclosure:
   1. General:
      a. Self-supporting structures bolted together to form the required line-up.
      b. All sections rear aligned.
      c. Dead-front.
      d. Conduit entry:
         1) Open bottom.
         2) Removable top cover.
   2. Frame:
      a. Die-formed 12-gauge steel.
   3. Covers:
      a. Bolt-on.
      b. Code gauge steel.
      c. Removable front covers:
         1) Held in place by captive screws.
   4. Rating:
      a. NEMA Type 1.

2.05 COMPONENTS

A. Circuit breakers:
   1. As specified in Section 16412 - Low Voltage Molded Case Circuit Breakers and Section 16413 - Low Voltage Insulated Case Circuit Breakers.
   2. Individually mounted with line and load bus connections.
   3. Main circuit breakers shall be 100 percent rated, fixed mounted insulated case breaker with frame and trip ratings as indicated on the Drawings.
      a. Breaker with rating of 1,000 amps or more shall be provided with ground fault shunt trip.
   4. Individually fixed mounted feeder devices shall be insulated case circuit breaker with ratings as indicated on the Drawings.
   5. Have a minimum interrupting rating equal to the bus rating or as indicated on the Drawings.

B. Wiring:
   1. Provide necessary internal wiring, fuse blocks, and terminal blocks as required. Number wires at each end and indicate wire numbers on Shop Drawings.

2. Control wiring within the equipment shall utilize type SIS switchboard wire with at least 26 strands. Minimum wire size shall be No. 14 for control circuits and No. 12 for voltage and current transformer circuits.
3. Wires shall be numbered and labeled as specified in Section 16075 - Identification for Electrical Systems.

2.06 ACCESSORIES

A. Surge protective devices:
   1. As specified in Section 16285 - Surge Protective Devices.

B. Nameplates:
   1. As specified in Section 16075 - Identification for Electrical Systems.
   2. Furnish an individual nameplate for each breaker and/or switch identifying the load served.
   3. Furnish an individual nameplate for each vertical section identifying the vertical section:
      a. Mounted and centered on the top horizontal wireway for each vertical section.
   4. Furnish an individual nameplate for each cubicle:
      a. 1 nameplate to identify cubicle designation.
      b. 1 nameplate to identify load served.
   5. Manufacturer's labels:
      a. Each vertical section shall have a label identifying:
         1) Serial number.
         2) Shop order number.
         3) Bus rating.
         4) Vertical section reference number.
         5) Date of manufacture.

C. Warning signs:
   1. Voltage:
      a. Provide a minimum of 2 warning signs on the front of the switchboard lineup and 2 on the back.
      b. Red laminated plastic engraved with white letters approximately 1/2-inch high.
      c. Signs shall read:
         1) "WARNING-HIGH VOLTAGE-KEEP OUT".
   2. Arc flash:
      a. Provide 1 warning sign for each switchboard compartment.
      b. Signs shall have read a minimum of:
         1) "DANGER ELECTRIC ARC FLASH HAZARD."
         2) Signs shall meet the requirements of NFPA 70E and NEC Article 110.16.

D. Lugs:
   1. For external connections of No. 6 AWG or larger, plated or otherwise suitable for copper or aluminum and UL listed for copper or aluminum.

2. Shall be of the compression type in design requiring a hydraulic press and die for installation as manufactured by:
    a. Burndy.
    b. T&B.

E. Key interlocks:
    1. Provide key interlocks as indicated on the Drawings.

2.07 FINISHES

A. Chemically clean steel surfaces before painting.

B. Exterior color manufacturer's standard gray over phosphate-type rust inhibitor.

2.08 SOURCE QUALITY CONTROL

A. Source Testing:
    1. Not witnessed.
    2. Test in accordance with manufacturer's standard testing procedures.
    3. Furnish test reports and Manufacturer's Certificate of Source Testing.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
    1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
    2. Install anchors of type and material indicated on approved anchoring designs.
    3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. General:
    1. Furnish cables, conduit, lugs, bolts, and other accessories needed to complete the installation of the switchboard.
    2. Physically assemble and install the switchboard in the location and layout indicated on the Drawings.
    3. Make bus splice connections.
    4. Perform Work in accordance with the manufacturer's instructions and Shop Drawings.
    5. Furnish components and equipment as required to complete the installation.
    6. Replace hardware lost or damaged during the installation or handling to provide a complete installation.
    7. Install the switchboard on a raised concrete housekeeping pad:
        a. Provide structural leveling channels in accordance with the manufacturer's recommendations to provide proper alignment of the units.

b. Weld and/or bolt the switchgear frame to the leveling channels.

8. Provide openings in top or bottom of the enclosure for conduit only, no additional openings will be allowed:
   a. Improperly cut holes will require that the entire panel be replaced:
      1) No hole closers or patches will be allowed.

C. Installation Verification:
   1. Furnish Manufacturer's Certificate of Installation Verification.

3.03 FIELD QUALITY CONTROL

A. As specified in Section 16050 - Common Work Results for Electrical.

B. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

C. Provide the services of a qualified manufacturer's representative to:
   1. Inspect, verify, and certify that the mechanical installation meets the manufacturer's requirements.
   2. Make control connections across the shipping splits.
   3. Install and align circuit breakers.
   4. Make bus splice connections.
   5. Make control connections across shipping splits.
   6. Ensure that items furnished are in proper operating condition:
      a. Technician must be completely knowledgeable in the operation, maintenance, and start-up of the electrical system.

3.04 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

3.05 ADJUSTING

A. Make adjustments as necessary and recommended by the manufacturer, Engineer, or testing firm.

END OF SECTION

SECTION 16444

LOW VOLTAGE MOTOR CONTROL CENTERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Low voltage motor control centers.

1.02 REFERENCES

A. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
   2. ICS 18-2001 - Motor Control Centers.

B. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

C. Underwriters Laboratories (UL):
   1. 845 - Motor Control Centers.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. SELV: Safety extra-low voltage.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer of motor control center.
   2. Manufacturer of motor control center parts.
   3. Nameplate schedule.
   4. Bill of material.
   5. Enclosure:
      a. NEMA rating.
      b. Finish color.
   6. Ratings:
      a. Voltage.
      b. Phase.

c. Current:
1) Horizontal bus ampacity.
2) Vertical bus ampacity.
3) Ground bus ampacity.
d. Short circuit withstand rating.
e. Protective device interrupting rating.
7. List of recommended spare parts.
8. Catalog cutsheets:
a. Submit complete manufacturer's catalog information:
1) Clearly indicate the features of the equipment including any options necessary to meet the required functionality.
9. Furnish component Submittals as specified in the appropriate Section.
10. For equipment installed in structures designated as seismic design category C, D, E, or F, submit the following as specified in Section 01850 - Design Criteria:
a. Manufacturer's statement of seismic qualification with substantiating test data.
b. Manufacturer's special seismic certification with substantiating test data.

C. Shop Drawings:
1. Layout drawings:
a. Provide fully dimensioned and to scale layout drawings which include:
1) Dimensions:
a) Overall length.
b) Overall width.
c) Overall height.
d) Overall weight and weight of individual shipping splits.
2. Interfaces to other equipment.
3. Shipping splits.
4. Allowable top and bottom conduit windows.
5. Complete component and unit layout drawings, including control, networking, and metering components.
6. Indicate lug sizes, type, and manufacturer based on the cable size specified in the Contract Documents and as indicated on the Drawings.
7. Elementary schematics:
a. Provide 1 custom schematic diagram for each compartment:
1) Include remote devices.
2) Show wire numbers on the schematics:
a) Provide wire numbering as specified in Section 16075 - Identification for Electrical Systems.
8. External connection diagram showing the wiring to the external controls and devices associated with the motor control center.
9. One-line diagrams:
a. Provide complete one-line diagrams for each motor control center, including, but not limited to: Protective devices, starters, drives, metering, and other equipment.
b. Indicate electrical ratings of the equipment shown on the one-line diagrams.

D. Delegated Design Submittals:
    1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria:
        a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
        b. For equipment installed outdoors.

E. Installation instructions:
    1. Detail the complete installation of the equipment including rigging, moving, and setting into place.
    2. Provide manufacturer's installation instructions.

F. Quality Control Submittals:
    1. As specified in Section 01756 - Commissioning, including the following:
        a. Manufacturer's representative qualifications.
        b. Certificates:
            1) Requirements as specified in this Section.
        c. Test Plans:
            1) Test requirements as specified in this Section.
        d. Test Reports.
        e. Manufacturer's representatives field notes and data.
        f. Owner Training.

G. Operation and maintenance manuals:
    1. Provide complete operating and maintenance instructions presenting full details for care and maintenance of all types of equipment furnished and/or installed under this Section. Include the following:
        a. Electrical ratings:
            1) Phase.
            2) Wire.
            3) Voltage.
            4) Ampacity.
            5) Bus bracing and protective device interrupting ratings.
        b. Manufacturer's operating and maintenance instructions for the motor control center and component parts, including:
            1) Starters.
            2) Overload relays and heater elements.
            3) Variable frequency drives.
            4) Protective devices, including, but not limited to, fuses, circuit breakers and protective relays.
            5) Pilot devices.
        c. Complete renewal parts list.

H. Test forms and reports:
    1. Submit complete factory acceptance test procedures and forms used during the test.

I. Record documents:
   1. Elementary schematics:
      a. Furnish as-built elementary schematics indicating final:
         1) Wire numbers.
         2) Interfaces with other equipment.
      b. Provide 1 custom schematic diagram for each compartment:
         1) Include remote devices.
         2) Show wire numbers on the schematics.
      c. Layout drawings: Provide complete dimensioned component and unit layout drawings.
   2. Record documents shall reflect modifications made during the submittal review process and during construction.

J. Calculations:
   1. Detailed calculations or details of the actual physical testing performed on the motor control center to prove the motor control center is suitable for the seismic requirements at the Project Site.

1.06 QUALITY ASSURANCE

A. All portions of the motor control center, vertical bays, and components shall be UL listed and labeled.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Ship the motor control center and associated equipment to the job site on a dedicated air ride vehicle that will allow the Contractor to utilize onsite off-loading equipment.

B. Furnish temporary equipment heaters within the motor control center to prevent condensation from forming.

1.08 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.09 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Conduct the initial fault current study as specified in Section 16305 - Electrical System Studies and submit results for Engineer’s review.
   2. After successful review of the initial fault current study, as specified in Section 16305 - Electrical System Studies, submit complete equipment submittal.
   3. Conduct factory acceptance test.
   4. Submit manufacturer’s test results.
   5. Ship equipment to the Project Site after successful completion of factory acceptance test.
   6. Assemble equipment in the field.
   7. Conduct field acceptance test and submit results for Engineer’s review.
   8. Submit manufacturer’s certification that the equipment has been properly installed and is fully functional for Engineer’s review.

9. Conduct Owner's training sessions.
10. Commissioning and process start-up as specified in Section 01756 - Commissioning.

1.10 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.
   1. Provide a 2-year duration special warranty.

PART 2 PRODUCTS

2.01 GENERAL

A. Factory assembled, factory wired and factory tested motor control centers:
   1. Motor control centers and major components to be products of a single manufacturer.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

B. Outdoor installations:
   1. Provide conditioning equipment incorporated into the equipment to maintain the enclosures within the equipment manufacturer's specified operating ranges.

2.03 MANUFACTURERS

A. One of the following, or equal:
   1. ABB.
   2. Allen-Bradley.
   3. Eaton.
   4. Schneider Electric.

2.04 EQUIPMENT

A. General:
   1. Furnish motor control centers as specified in the Contract Documents and indicated on the Drawings.
   2. Arrange the equipped sections to form continuous motor control center lineups as indicated on the Drawings:
      a. Identify any deviations from the Drawings in writing and submit for approval.
   3. Provide wire markers at each end of every wire as specified in Section 16075 - Identification for Electrical Systems.
   4. Provide complete and functional motor control centers.
   5. Provide devices or accessories not specified in this Section but necessary for the proper installation and operation of the equipment.

B. Design and construct motor control center to operate at the voltage level and configuration indicated on the Drawings.

C. Bus system:
   1. Material:
      a. Tin-plated copper.
      b. Short-circuit rating:
         1) As indicated on the Drawings.
      c. Bus bar supports:
         1) High impact strength, non-tracking glass-polyester material that is impervious to moisture and gases.
   2. Horizontal power bus:
      a. Current-carrying capacity as indicated on the Drawings.
      b. Mounting:
         1) Mount horizontal bus bars edgewise, one above the other, and fully isolated from wireways and units.
      c. Temperature rise:
         1) In accordance with UL 845.
         2) De-rate the temperature rating of the bus for the specified conditions of ambient temperature and altitude as specified in Section 01850 - Design Criteria.
   3. Vertical power bus:
      a. Current-carrying capacity of not less than 600 amps.
      b. Mounting:
         1) Enclose the vertical bus in a polyester-glass cover with small openings to permit unit stabs to mate with the bus:
            a) Provide a shutter mechanism to cover the stab openings when plug-in units are removed.
         2) Provide top and bottom bus covers for insulation and isolation of the ends of the bus.
      c. Isolated from the unit compartments by a full height barrier.
   4. Ground bus:
      a. Horizontal ground bus:
         1) Current-carrying capacity:
            a) 300 amps when the horizontal bus is 2,000 amps or less.
            b) 600 amps when the horizontal bus is greater than 2,000 amps.
         2) Mounting:
            a) Full width, firmly secured to each vertical section structure:
               (1) Located in the top or bottom wireway.
            b) Pre-drilled and furnished with lugs for connection to equipment ground wires:
               (1) Furnish a minimum of 10 lugs per vertical section of MCC.
      b. Vertical ground bus:
         1) Mounting:
            a) Furnish in each vertical section.
            b) Bolted to the horizontal ground bus.
            c) Install parallel to the vertical power bus.
            d) Mount vertical ground bus such that plug-in units engage the ground bus before any connection to the power bus is made. Upon removal of plug-in units, ground stabs are disconnected

from the ground bus after the power stabs have been disconnected.

5. Bus splice bars:
   a. Provided to join the bus at the splits.
   b. Connected to each horizontal bus bar with a minimum of 2 bolts.
   c. Employ conical or spring washers at connections, designed to maintain constant pressure against the splice joint.
   d. Same ampacity rating as the horizontal bus.
6. Provide bus system configured for back-to-back MCCs, where required.

D. Enclosures:
   1. Each motor control center shall consist of 1 or more vertical sections bolted together:
      a. Freestanding.
      b. Totally enclosed.
      c. Dead-front assembly.
      d. Designed for modification and/or addition of future vertical sections.
      e. Form each vertical section of heavy gauge steel.
      f. Designed for back-to-back arrangement installation, where required and/or as indicated on the Drawings.
   2. Enclosure rating:
      a. Indoor:
         1) NEMA Type 1 gasketed.
   3. Standard section dimensions:
      a. Nominal height: 90 inches.
      b. Nominal depth: 20 inches.
      c. Vertical section width as indicated on the Drawings.
   4. Wireways:
      a. Provide each vertical section with a horizontal wireway at the top and bottom of the section:
         1) Arranged to provide a full-width metal enclosed wiring trough across the entire motor control center assembly.
      b. Provide each vertical section with a full-height vertical wireway.
      c. Completely isolated from the vertical and horizontal bus bars.
      d. Provide a removable, hinged door.
   5. Shipping splits:
      a. No more than 3 vertical sections and not more than 60 inches in width.
      b. Solid bussing between vertical sections in a shipping split is not acceptable.
   6. Lifting angles:
      a. Furnish each vertical section and/or shipping split with a removable lifting angle mounted to the top of the enclosure:
         1) Extending the entire width of the shipping split.
   7. Mounting channels:
      a. Mount each vertical section and/or shipping split on an external 1.5-inch by 3-inch mounting channel.

E. Units:
   1. A plug-in unit consists of:
      a. Assembly.
      b. Support pan.
      c. Door assembly.

2. Completely enclosed and isolated from adjacent units, buses, and wireways, except for conductor entries into the unit, by a metal enclosure.
3. Supported and guided by a removable unit support pan:
    a. Re-arrangement of units and the removal of a unit so that a new and possibly larger unit can be added without the removal of an in-service unit to gain access to the unit support pan.
4. Held in place by screws or other positive locking means after insertion.
5. Provide a test position with the unit supported in the structure but disengaged from the bus.
6. Integral plug-in ground stab.
7. Stabs:
    a. Free floating.
    b. Self-aligning.
    c. Backed by spring steel clips to ensure high pressure contacts.
    d. Electrolytically tin-plated copper.
8. Handle:
    a. Provide a flange mounted handle mechanism to operate each disconnect switch or circuit breaker.
    b. Door mounted operators or operator handles are not acceptable.
    c. Engaged with the disconnect device at all times as an integral part of the unit independent of the door position.
    d. Lockable in the “OFF” position with up to 3 padlocks.
    e. Mechanically interlocked so that the door cannot be opened with the handle in the “ON” position:
        1) Provide a means for qualified personnel to defeat this interlock.
    f. Interlocked so the unit cannot be inserted or withdrawn with the handle in the “ON” position.
    g. Lockable in the “ON” position:
        1) This shall not prevent the circuit breaker from operating and opening the contacts in the event of a fault condition.
    h. Color-coded to indicate position.
    i. Located so the center of the grip when it is in its highest position is not more than 6 feet 7 inches above the finished floor, including the height of the housekeeping pad and mounting channels.
9. Space for future devices:
    a. Provide spaces as indicated on the Drawings.
    b. As specified in Section 16050 - Common Work Requirements for Electrical.

2.05 COMPONENTS

A. Provide components contained within the motor control center as specified in:
    1. Section 16075 - Identification for Electrical Systems.
    2. Section 16123 - 600-Volt or Less Wires and Cables.
    3. Section 16150 - Low Voltage Wire Connections.
    4. Section 16290 - Electrical Power Monitoring.
    5. Section 16412 - Low Voltage Molded Case Circuit Breakers.
    6. Section 16422 - Motor Starters.
    7. Section 17710 - Control Systems: Panels, Enclosures, and Panel Components.

2.06 ACCESSORIES

A. Wiring:
   1. Wire the motor control center in accordance with the following NEMA Class and Type as defined by NEMA ICS 18-2001:
      a. NEMA Class II-S:
         1) Furnish wiring diagrams for individual units consisting of drawings that identify electrical devices, electrical connections, and indicate terminal numbering designations.
         2) Furnish individual unit diagrams with each unit and include inter-wiring between units, i.e., electrical interlocking, etc., as specifically specified in the Contract Documents.
         3) Provide custom drawings with unique terminal numbering designations in lieu of standard manufacturer drawings.
      b. NEMA Type B wiring:
         1) Control wiring:
            a) Type B-T pull-apart terminal blocks.
         2) Power wiring:
            a) Type B-T for Size 1 starters.
            b) Type B-T or B-D for Size 2 and 3 starters.
            c) Type B for Size 4 and larger starters and feeder units.

B. Lugs and terminals:
   1. For external connections of No. 6 AWG wire or larger:
      a. UL listed for copper or aluminum conductors.
   2. Compression type, requiring a hydraulic press and die for installation.
   3. Provide additional terminal blocks as needed for control conductors passing through the MCC.
   4. Provide 30 percent spare control block terminals.

C. Nameplates:
   1. Provide nameplates as specified in Section 16075 - Identification for Electrical Systems:
      a. Identifying the motor control center designation as indicated on the Drawings.
   2. Furnish individual nameplates for each unit indicated on the Drawings:
      a. 1 nameplate to identify the unit designation.
      b. 1 nameplate to identify the load served.
      c. Furnish space units with blank nameplates.
   3. Manufacturer's labels:
      a. Furnish each vertical section with a label identifying:
         1) Serial number.
         2) Bus rating.
         3) Vertical section reference number.
         4) Date of manufacture.
         5) Catalog number of section.

2.07 FINISHES

A. Finish metal surfaces and structural parts with phosphatizing, or equal, treatment before painting.

B. Finish interior surfaces including bus support angles, control unit back plates, and top and bottom barrier plates with baked white enamel.

C. Finish exterior of enclosure with manufacturer's standard gray.
   1. Finish NEMA Type 3R exterior cabinets with ultraviolet resistant enamel paint that is UL recognized for outdoor use.

2.08 SOURCE QUALITY CONTROL

A. Source Testing (Factory Acceptance Tests):
   1. Not witnessed.
   2. Test the complete motor control center at the manufacturer's establishment. Completely assemble, wire, and test the motor control center:
      a. Detailed inspections before and after assembly to ensure correctness of design and workmanship.
   3. Provide groups of wires leaving the shipping-assembled equipment with terminal blocks with suitable numbering strips.
   4. Furnish test reports and Manufacturer's Certificate of Source Testing.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. General:
   1. Furnish cables, conduit, lugs, bolts, and other accessories necessary to completely install the motor control center for the line, load, and control connections.
   2. Assemble and install the motor control center in the locations and with the layouts as indicated on the Drawings.
   3. Make bus splice connections.
   4. Perform work in accordance with manufacturer's instruction and Shop Drawings.
   5. Furnish components and equipment necessary to complete the installation.
   6. Replace hardware, lost or damaged during installation or handling, in order to provide a complete installation.

7. Install the MCC on a raised concrete housekeeping pad:
    a. Provide structural leveling channels in accordance with the manufacturer's recommendations to provide proper alignment of the units:
        1) Remove the manufacturer's supplied mounting channels as required by the manufacturer's installation instructions.
    b. Weld and/or bolt the motor control center frame to leveling channels.

C. Provide openings in the top or bottom of the motor control center for conduit only:
    1. No additional openings will be accepted:
        a. Miscut holes will require that the entire vertical section or removable panel be replaced.
        b. No hole closers or patches will be accepted.

D. Bundle circuits together and terminate in each unit:
    1. Tie with nylon wire ties as specified in Section 16123 - 600-Volt or Less Wires and Cables.
    2. Label wires at each end with wire markers as specified in Section 16075 - Identification for Electrical Systems as shown on the approved elementary schematics.

E. Installation Verification:
    1. Furnish Manufacturer's Certificate of Installation Verification.

3.03 FIELD QUALITY CONTROL

A. Provide the services of a manufacturer's representative to:
    1. Inspect, verify, and certify that the motor control center installation meets the manufacturer's requirements.

B. Functional Testing:
    1. As specified in Section 16950 - Field Electrical Acceptance Tests.

3.04 OWNER TRAINING

A. Owner Training:
    1. Perform Owner Training as specified in Section 01756 - Commissioning.

3.05 ADJUSTING

A. Make adjustments as necessary and recommended by the manufacturer, Engineer, or testing firm.

END OF SECTION

SECTION 16445

PANELBOARDS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Panelboards serving feeder circuits and branch circuits.

1.02 REFERENCES

A. National Electrical Manufacturers Association (NEMA):
   1. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).

B. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

C. Underwriters Laboratories, Inc. (UL):
   1. 67 - Standard for Panelboards.

1.03 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Manufacturer of panelboard.
   2. Bill of material.
   3. Assembly ratings including:
      a. Voltage.
      b. Phase.
      c. Continuous current.
      d. Short circuit interrupting rating.
   4. NEMA enclosure type.
   5. Cable terminal sizes based upon actual feeder and sub-feeder conductors used.
   6. Furnish circuit breaker Submittals as specified in Section 16412 - Low Voltage Molded Case Circuit Breakers.
   7. For equipment installed in structures designated as seismic design category C, D, E, or F, submit the following as specified in Section 01850 - Design Criteria:
      a. Manufacturer’s statement of seismic qualification with substantiating test data.
      b. Manufacturer’s special seismic certification with substantiating test data.

C. Shop Drawings:
    1. Overall panelboard dimensions, interior panel dimensions, and wiring gutter dimensions:
        a. Height.
        b. Length.
        c. Width.
    2. Weight.
    3. Anchoring locations.
    4. Breaker layout drawing with dimensions:
        a. Location of the main, branches, solid neutral, and ground.
    5. Conduit entry/exit locations:
        a. Identify conduit entry/exit locations and restrictions.
    6. Individual panel schedules identifying breaker locations, ratings, and nameplate designations within the panelboard, for every panelboard.

D. Calculations:
    1. Detailed calculations or details of the actual physical testing performed on the panelboard to prove the panelboard is suitable for the seismic requirements at the Project Site.

E. Delegated Design Submittals:
    1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria:
        a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
        b. For equipment installed outdoors.
        c. For wall mounted equipment weighing 125 pounds or more.

F. Installation instructions:
    1. Detail the complete installation of the equipment including rigging, moving, and setting into place.
    2. Provide manufacturer’s installation instructions.

G. Quality Control Submittals:
    1. Manufacturer’s Certificate of Source Testing as specified in Section 01756 - Commissioning.
    2. Test reports.

H. Operations and maintenance manual:
    1. As specified in Section 01782 - Operation and Maintenance Manuals.
    2. Provide a complete manual for the operation and maintenance of the panelboard, circuit breakers, devices, and accessories:
        a. Including, but not limited to:
            1) Instruction narratives and bulletins.
            2) Renewal parts lists.
            3) Time-current curves for all devices.

1.05 QUALITY ASSURANCE

A. Where indicated as service entrance equipment, panelboards shall be UL listed and labeled “Suitable for Service Entrance.”

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Circuit breaker panelboards as indicated in the panelboard schedules, one-lines, and where indicated on the Drawings:
   1. Service voltage and configuration as indicated on the panel schedules.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide equipment and components that are fully rated for the site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. ABB.
   2. Eaton.
   3. Schneider Electric.

B. Circuit breakers:
   1. Same manufacturer as the panelboard.

2.04 EQUIPMENT

A. Provide panelboards with:
   1. Molded-case circuit breakers with trip ratings as shown on the panel schedules.
   2. Spares and spaces for future circuit breakers in panels as shown on the panel schedules.
      a. Space for future devices as specified in Section 16050 - Common Work Requirements for Electrical.

B. Short circuit rating:
   1. Provide as indicated on the Drawings.
   2. Testing method in accordance with UL 67.

3. Mark each panelboard with its maximum short circuit rating at the supply voltage.
4. Panelboards shall be fully rated.

2.05 COMPONENTS

A. Enclosure:
   1. NEMA enclosure type as indicated on the Drawings:
      a. Where not indicated on the Drawings, as specified in Section 16050 - Common Work Results for Electrical for the installed location.
   2. Minimum width: 20 inches.
   3. Gutter space in accordance with the NEC:
      a. Minimum of 4 inches.
   4. Dead-front, no live parts when the panelboard is in service.
   5. Enclose entire panelboard bus assembly in a corrosion resistant galvanized steel cabinet.
   6. 4-piece front to provide ease of wiring access.
   7. Lockable, hinged door over the protective devices with a flush, cylinder tumbler-type lock with catch and door pull:
      a. Minimum 2 keys per panelboard.
      b. Key all panelboard locks alike.
   8. Circuit directory frame and card on the inside of the door.
   9. Door-in-door construction consists of a one-piece front with 2 doors:
      a. Smaller door provides access to device handles and rating labels and shall be lockable.
      b. Larger door provides access to conductors and wiring terminals.
   10. Interior design such that replacement of circuit breakers does not require disturbing adjacent units or removal of the main bus connectors.
   11. Outdoor locations: Provide NEMA Type 4X enclosures with a NEMA Type 4X stainless steel outer enclosure (with a hinged door) and a NEMA Type 1 interior panelboard, unless otherwise indicated.

B. Bus:
   1. General:
      a. Tin-plated copper.
   2. Phase bus:
      a. Full size and height without reduction.
      b. Dimensions and temperature rise in accordance with UL 67:
         1) Limit current density to less than 1,000 amps per square inch.
      c. Insulate current carrying parts from ground and phase-to-phase with a high dielectric strength insulator.
   3. Ground bus:
      a. Copper, solidly bonded.
   4. Neutral bus:
      a. Provide where indicated on the Drawings.
      b. 100 percent rated.
      c. Provide lugs for each outgoing feeder requiring a neutral connection.
   5. Provide insulation barriers over the vertical bus behind the dead front shield to provide increased safety during field service.

C. Lugs:
   1. UL listed for copper and aluminum wire:
      a. Rated for 75-degree Celsius terminations.
      b. Provide bolted or compression main lug terminations as required for the incoming cable size.

D. Circuit breakers: As specified in Section 16412 - Low Voltage Molded Case Circuit Breakers and as indicated on the Drawings:
   1. Provide with bolt-on connections:
      a. Plug-in circuit breakers are not allowed.

2.06 ACCESSORIES

A. Surge protective devices:
   1. Furnish panelboards with surge protective devices as indicated on the Drawings.
   2. As specified in Section 16285 - Surge Protective Devices.

B. Nameplates:
   1. As specified in Section 16075 - Identification for Electrical Systems.
   2. Install on outside of door.
   3. Indicating:
      a. Panel designation.
      b. Voltage.
      c. Number of phases and configuration.

C. Circuit identification labels:
   1. Provide index cards behind heavy clear plastic in cardholders on the inside of the doors.
   2. Type all information on the cards using designations in the panel schedules.
   3. Laminated on both sides.

D. Pad locking mechanism:
   1. Provide a pad locking attachment to allow circuit breakers to be locked in the off position.
   2. At a minimum, provide 1 mechanism per panelboard:
      a. Provide multiple mechanisms if required to accommodate all circuit breaker frame sizes in the panelboard.

2.07 FINISHES

A. Finish stand-alone panelboards with a primer, rust-resistant phosphate undercoat, and 2 coats of oven-baked enamel with manufacturer’s standard gray.

B. Finish panelboards mounted in motor control centers to match the motor control center finish and color.

2.08 SOURCE QUALITY CONTROL

A. Source Testing:
   1. Perform standard factory tests on the panelboards.

2. Test in accordance with NEMA and UL standards.
3. Furnish test reports and Manufacturer's Certificate of Source Testing.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. General:
   1. Mounted as indicated on the Drawings.
   2. Mount rigidly to structural members with exposed surfaces plumb and level to within 1/32 inch.
   3. Perform Work in accordance with the manufacturer's instructions and Shop Drawings.
   4. Provide brackets, hangers, supports, and hardware for mounting as required.
   5. In NEMA Type 4 and NEMA Type 4X locations, mount panelboards on 7/8-inch deep stainless steel preformed channel, with channel running vertically from top to bottom of panelboard:
      a. Use only stainless steel mounting hardware.
   6. Mount panelboard so that top operating handle is not more than 6 feet-7 inches above the operating floor.

C. Provide typewritten schedule in each panelboard.

3.03 FIELD QUALITY CONTROL

A. As specified in Section 16050 - Common Work Results for Electrical.

B. Field electrical acceptance testing:
   1. As specified in Section 16950 - Field Electrical Acceptance Tests.

END OF SECTION

SECTION 16494

LOW VOLTAGE FUSES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Fuses: 600-volt class and lower.

1.02 REFERENCES

A. As specified in Section 16050 - Common Work Results for Electrical.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Catalog cut sheets.
   2. Complete fuse schedule.
   3. Manufacturer original 11-inch by 17-inch, time current curves for all fuses furnished.

C. Shop Drawings:
   1. Include drawings of spare fuse cabinets.

1.04 QUALITY ASSURANCE

A. Low voltage fuses shall be UL listed and labeled.

1.05 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.07 MAINTENANCE

A. Spare parts:
   1. Provide 3 spare fuses for each size and type used or supplied under any Section of the Contract Documents.
   2. Provide spare fuse cabinet(s):
      a. Metal cabinet with hinged door and shelves or fuse holders.
      b. Gray enamel finish.
      c. Mount near equipment and label “Spare Fuses” on face of cabinet.

d. Suitable pocket inside door of each cabinet with typewritten spare fuse inventory in clear plastic protective insert.
e. Provide as many cabinets as required to hold entire spare fuse inventory.

PART 2 PRODUCTS

2.01 GENERAL

A. Fuses for overcurrent protection and/or current limiting applications as indicated on the Drawings.

2.02 MANUFACTURERS

A. One of the following or equal:
   1. Bussmann.
   2. Ferraz Shawmut.
   3. Littelfuse.

2.03 MANUFACTURED UNITS

A. General:
   1. Provide durable, readily visible label inside each fuse enclosure, clearly indicating the correct type, size, and ratings of replacement fuse:
      a. Label shall not cover or interfere with the equipment manufacturer's instructions.
   2. Affix a label indicating recommended torque for fuse mounting bolts or studs to the inside of fuse access doors.
   3. To ensure selective coordination of protective devices:
      a. Provide fuses for new facilities by the same manufacturer.
      b. Provide fuses for renovations of the same manufacturer as existing fuses.
   4. Provide fuses rated for the voltage and available short circuit current at which they are applied.

B. Fuses for services, switchboard mains, feeders, and branch circuits:
   1. 600 amperes and less:
      a. Provide UL listed RK1 dual-element, time-delay fuses with ampere ratings as indicated on the Drawings, except as may be modified by the Contract Documents.

C. Fuses for motor branch circuits:
   1. Ampere ratings shall not exceed the motor controller manufacturer's recommended values:
      a. If the manufacturer does not have such standards, provide fuses as specified in this Section.
   2. Provide Class RK1 fuses or fuses as indicated on the Drawings and as specified in the Contract Documents, rated in accordance with the fuse manufacturer's recommendations for backup running protection of motor circuits containing overload relays.
   3. Determine fuse ratings for overload protection of motor branch circuits by actual full-load currents of motors provided.

4. Fuses in motor control centers may be time-delay Class J or Class CC fuses, if MCC manufacturer's standard designs use these fuse types:
    a. Time-delay Class J fuse ratings shall not exceed 150 percent of motor full load current except as permitted.
    b. Follow the fuse manufacturer's recommendations for Class CC fuses.
    c. A motor having starting duty or other special characteristics requiring larger fuses than specified above may have branch circuit fuse ratings increased as necessary to meet the motor's requirements, but no larger than maximum permitted by the NEC.
        1) Increased requirements for an individual motor shall not be cause for increasing size of all fuses.

PART 3 EXECUTION

3.01 INSTALLATION

A. General:
    1. Properly aligned, electrically and mechanically secure.
    2. Evenly torque mounting bolts and nuts to ASTM recommendations for type and diameter of mounting bolts or studs provided.
    3. Paralleling of fuses is not permitted.
    4. Install fuses so that the fuse nameplate and rating are easily readable in the equipment.

B. Replace fuses, on all phases, for any fuses that opened during start-up and testing.

C. After completion of testing, deliver spare fuses in quantities specified:
    1. New, in manufacturer's original packaging, and stored in a clean, dry location.

D. Install spare fuse cabinets where instructed by the Owner.

END OF SECTION

SECTION 16510

LIGHTING: LED LUMINAIRES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. LED luminaires, drivers, poles, and accessories.

1.02 REFERENCES

A. Illuminating Engineering Society (IES):
   1. LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products.
   2. LM-80 - Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules.
   3. RP-7 - Recommended Practice for Lighting Industrial Facilities.
   4. TM-21 - Projecting Long Term Lumen, Photon, and Radiant Flux Maintenance of LED Light Sources.

B. Institute of Electrical and Electronics Engineers (IEEE):
   1. C62.41 - IEEE Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.

C. National Electrical Manufacturers Association (NEMA):
   1. 410 - Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Discharge Ballasts.

D. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

E. Underwriters Laboratories (UL):
   1. 1598 - Luminaires.
   2. 8750 - Light Emitting Diode (LED) Equipment for Use In Lighting Products.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. CCT (correlated color temperature) - Scientific scale to describe how “warm” or how “cool” the light source is, measured in Kelvin. The lower the Kelvin temperature, the warmer the light feels, or appears.
   2. CRI (color rendering index) - A quantitative measure of the ability of a light source to reveal the colors of various objects faithfully in comparison with an ideal or natural light source.
   3. Driver - Device that manages power and controls the current flow from AC to DC for an LED lighting product.

4. Efficacy - Lumen output of a light source per unit of power supplied to that source (lumens per watt).
5. EMI (electromagnetic interference) - Electrical interference (noise) generated by electrical and electronic devices.
6. FC (foot candles) - Measure of light level on a surface being illuminated.
7. L70 - Extrapolated life in hours of the luminaire when the luminous output depreciates 30 percent from initial values.
8. LED (light emitting diode) - A solid-state semiconductor device that produces light when electrical current flows through it.
9. LED light source - See LED luminaire.
10. LED luminaire - A complete lighting unit consisting of LED-based light emitting elements and a matched driver together with parts to distribute light, to position and protect the light emitting elements, and to connect the unit to a branch circuit.
11. Lumen - International (SI) unit of luminous flux or quantity of light. The amount of light that is spread over a square foot of surface by 1 candle power when all parts of the surface are exactly 1 foot from the light source.
12. Lumen ambient temperature multiplier - LED light source relative lumen output when compared to a standard ambient temperature.
13. Lumen maintenance factor - How well an LED light source is able to retain its intensity when compared to new.
14. Luminaire - Lighting unit.
15. THD (total harmonic distortion) - Combined effect of harmonic Distortion on the AC waveform produced by a driver or other device.

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing for light poles.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. LED luminaires:
      a. Catalog literature for each luminaire specified, cross-referenced to the luminaire type on the Luminaire Schedule, in the Drawings.
      b. Provide for each luminaire type:
         1) Materials.
         2) Type of diffuser.
         3) Hardware.
         4) Gasketing.
         5) Reflector.
         6) Chassis.
         7) Finish and color.
         8) Driver type and protection.
         9) LED luminaire:
            a) Initial lumen output at 40 degrees Celsius ambient.
            b) Correlated color temperature.

c) Lumen maintenance factors.
d) Lumen ambient temperature multipliers.
e) Drive current.
f) Efficacy.

10) Picture of luminaire.
11) IES optical distributions.
12) Dimensioned drawings:
    a) Effective projected area rating for pole mounted luminaires.
13) Weight.
14) Photometric data:
    a) Coefficient of utilization tables based on the IES zonal cavity system by an approved testing laboratory.
    b) Luminaire dirt depreciation factor.
    c) Candlepower distribution curves.
    d) Average luminaire brightness.
    e) Lumen output charts.
15) Furnish support method for interior luminaires weighing more than 30 pounds and all wall-mounted luminaires:
    a) Support methods shall be based on seismic requirements at the Project Site as specified in Section 01850 - Design Criteria.

c. Luminaire substitutions:
    1) Provide complete literature for each luminaire substitution:
    2) Submittals for substituted luminaires shall be sufficient for competent comparison of the proposed luminaire to the originally specified luminaire:
        a) Photometric data:
            (1) IES file in standard IES format.
            (2) Coefficient of utilization tables based on the IES zonal cavity system by an approved testing laboratory.
            (3) Candlepower distribution curves.
            (4) Average luminaire brightness.
            (5) Lumen output charts.
            (6) Power requirements in watts and volt-amperes.
        b) Calculations:
            (1) Provide software generated calculations showing illuminance levels in footcandles and power usage in watts per square foot for each of the areas in which substitutions are proposed:
                (a) Use surface reflectance values in accordance with IES RP-7.
                (b) Use manufacturer projected lumen maintenance factor for minimum of 60,000 hours to perform all calculations.
        c) Specification sheets:
            (1) If lacking sufficient detail to indicate compliance with Contract Documents, standard specification sheets will not be accepted. This includes, but is not limited to, luminaire type designation, manufacturer’s complete catalog number, voltage, LED type, CCT, CRI, specific driver information, system efficacy, L70 life rating, and any modifications necessary to meet the requirements of the Contract Documents.

3) Substitutions for specified luminaires will be evaluated upon quality of construction, light distribution, energy use, appearance, and maintenance.
4) Substitutions shall comply with all applicable building and energy codes.

2. Driver: Provide for each driver type:
   a. Catalog number.
   b. Type of driver.
   c. Output wattage.
   d. Input voltage.
   e. Operating voltage range.
   f. Maximum input power.
   g. Efficiency.
   h. Operating line current.
   i. Power factor.
   j. Operating temperature range.
   k. Current output range in ambient temperatures of 30 to 55 degrees Celsius.
   l. Surge suppression data.
3. Photocell:
   a. Provide for each photocell type:
      1) Switching capacity.
      2) Life expectancy when used on LED sources.
      3) Means of adjusting the lighting pickup level.
      4) Enclosure type.
      5) Mounting method.
4. Luminaire poles:
   a. Submit complete data for each pole type including, but not limited to:
      1) Material.
      2) Finish and color.
      3) Handholes.
      4) Anchoring.
      5) Luminaire attachment methods and fittings.
      6) Pole height.
      7) Pole dimensions.
      8) Bolt hole circle layout and hardware.
      9) Accessories.
      10) Provide the EPA wind load rating.
      11) Installation instructions for rigging, moving and setting into place.

C. Delegated Design Submittals:
   1. Project-specific calculations with anchoring and bracing details based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria.

D. Record documents:
   1. Update the Luminaire Schedule in the Drawings to reflect the acceptable substitutions, after the substitution has been reviewed and accepted by the Engineer.

1.06 QUALITY ASSURANCE

A. Luminaires shall be UL listed and labeled.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 ADMINISTRATIVE REQUIREMENTS

A. Scheduling:
   1. Exterior and outdoor lighting system operation shall be demonstrated during the hours of darkness.
   2. Lighting demonstration shall occur within 2 weeks before substantial completion.

1.09 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

B. LED luminaire:
   1. 5-year warranty from the date of installation including material, workmanship, photometrics, driver, and LED modules.

1.10 MAINTENANCE

A. Furnish 1 complete spare LED luminaire, with driver, of each type used.

PART 2 PRODUCTS

2.01 GENERAL

A. Individual luminaire types are indicated on the Drawings and on the Luminaire Schedule.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide luminaires and accessories for all lighting systems, complete and operable, in accordance with the requirements of the Contract Documents.

2.03 MANUFACTURERS

A. Luminaires:
   1. The following or equal:
      a. As noted on the Luminaire Schedule.

B. Drivers:
   1. One of the following or equal:
      a. eldoLED.
      b. Philips Advance.
      c. Thomas Research.

C. Photo-electric cells:
   1. One of the following or equal:
      a. Cooper.
      b. Hubbell-Killark.
      c. Intermatic.
      d. Tork.

D. Substitutions:
   1. Lighting design and luminaire selection has been based upon the photometric data of the identified luminaire. It is the Contractor's responsibility to ensure and prove to the Engineer at time of Submittal the substitutions meet the quality and photometric requirements of the original design.

2.04 EQUIPMENT

A. LED luminaires:
   1. General:
      a. Pre-wired with leads of 18-AWG, minimum, for connection to building circuits.
      b. Provide the luminaires furnished as indicated on the Luminaire Schedule in the Drawings:
         1) Specifications noted in this Section are an addition or supplement to the Luminaire Schedule.
      c. Individual LEDs connected such that a catastrophic loss or the failure of 1 LED will not result in the loss of the entire luminaire.
   2. Minimum ambient temperature range of 0 degrees Celsius to 40 degrees Celsius.
   3. Minimum rated life:
      a. Office areas: 70,000 hours when operated at 25 degrees Celsius.
      b. Process areas: 100,000 hours when operated at 40 degrees Celsius.
      c. Hazardous areas: 100,000 hours when operated at 40 degrees Celsius.
   4. Minimum efficacy of 70 lumens/watt.
      a. Hazardous areas: Minimum 60 lumens/watt.
   5. Minimum Color Rendering Index of 70.
   6. Tested according to IES LM-79 and LM-80.
   7. Lumen maintenance projection in accordance with IES TM-21.
   8. RoHS compliant.
   9. Integral driver.
   10. Suitable for dry, damp, or wet locations as indicated on the Drawings or on the Luminaire Schedule.
      a. Wet or damp locations: UL 1598 listed.
   11. Designed as a complete LED assembly. Retrofit LED lamps in luminaires not designed specifically for LED light sources shall not be used.
   12. Exterior/outdoor luminaires:
      a. Luminaires in combination with their mounting pole and bracket shall be capable of withstanding:
         1) Wind levels at the Project Site without damage.
         2) Seismic levels at the Project Site.
      b. Corrosion-resistant hardware and hinged doors or lens retainer.
      c. Luminaires furnished with integral photoelectrical control shall be of the luminaire manufacturer's standard design.

d. California Energy Code Light Pollution Reduction Compliance:
    1) Provide exterior luminaires with cutoff photometrics.
        a) Luminaire design shall allow no more than 0.01 horizontal footcandles to escape beyond the site boundary.
    2) Provide exterior luminaires with photocells to automatically control exterior lighting dusk to dawn to turn off or lower the lighting levels during inactive periods. Reference the Drawings for specific luminaires to be controlled.

B. Photo-electric cells:
    1. Weatherproof.
    2. In Class I Division 2 locations:
        a. Rated for used in Class I Division 2, Groups A, B, C, D locations.
        b. Factory sealed.
    3. Photoelectric cells for control of multiple luminaires:
        a. Self-contained.
        b. Provided with time-delay features.
        c. Sized to meet switching capacity of the circuit:
            1) Based on luminaire VA as indicated on the Drawings.
    4. Photoelectric cell for control of a single luminaire:
        a. Integral to the luminaire.

C. Luminaire control:
    1. Lighting control relays or contactors as specified in Section 16422 - Motor Starters.

D. Drivers:
    1. Dimmable, with dimming signal protocol of 0-10 VDC or DALI.
    2. Input power source:
        a. As indicated on the Drawings.
    3. Drive current:
        a. As indicated in the Luminaire Schedule.
    4. Power factor: Greater than 0.90.
    5. Efficiency: Greater than 80 percent.
    6. Total harmonic distortion (THD) of the input current less than 20 percent.
    7. Rated life of 60,000 hours in an LED luminaire operated at an ambient temperature of 40 degrees Celsius.
    8. Minimum operating temperature of 0 degrees Celsius.
    9. Sound rating: Class A+ or quieter.
    10. UL listed Class 2 Outdoor in accordance with UL 8750.
    11. In accordance with IEEE C62.41 Category A for transient protection.
    12. Driver must limit inrush current:
        a. Meet or exceed NEMA 410 driver inrush standard:
            1) 230 amps per 10 amp load with a maximum of 106 amps squared-seconds at 120 V.
            2) 430 amps per 10 amp load with a maximum of 370 amps squared-seconds at 277 V.

2.05 COMPONENTS

A. Luminaire poles:
   1. As indicated on the Luminaire Schedule.
   2. Anchor bolts:
      a. Use anchor bolts, bolts, or welded studs for anchors for resisting seismic and wind forces.
         1) Standard hex bolt head.
         2) Do not use anchor bolts fabricated from rod stock with an L- or J-shape.
      b. Complete with leveling shims.
   3. Anchor base:
      a. Fabricated from the same type of material as the pole shaft.
      b. Base plate to telescope the pole shaft.
      c. Welded top and bottom along the entire perimeter.
      d. With slotted bolt holes on the bolt circles as submitted.
   4. Pole shaft:
      a. As indicated on the Luminaire Schedule.
   5. Handhole:
      a. Reinforced handhole located approximately 18 inches above the base.
      b. Complete with cover fabricated from the same material as the pole shaft and stainless steel attachment screws.
      c. With an integral ground connection nut, 1/2 inch by 13 inch UNC welded to the pole for connection to the grounding system.
   6. Shroud:
      a. Fabricated from the same type of material as the pole shaft.
      b. 1-piece formed channel section that shall conform to the pole shaft taper.
      c. Secured by a locking device with provisions for a padlock to prevent accidental lowering.
   7. Fastening hardware:
      a. Stainless steel.
   8. Finish:
      a. As indicated on the Luminaire Schedule.

PART 3 EXECUTION

3.01 PREPARATION

A. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.02 INSTALLATION

A. Install the equipment in accordance with the accepted installation instructions and anchorage details.

B. Special techniques:
   1. Support luminaires from structural elements capable of carrying the total weight.
   2. Install luminaires plumb and square with building and wall intersections:
      a. Suspend pendant-mounted luminaries that are mounted from sloping ceilings with ball hangers, unless otherwise indicated on the Drawings.
      b. Install luminaires in machinery rooms after machines have been installed, so as to ensure no conflict with machinery, piping, or ductwork.
   3. In all cases, coordinate luminaire locations with work of other trades to prevent obstruction of light from the fixtures:
      a. Locate bottom of luminaire approximately at the bottom of ductwork, unless otherwise specified or indicated on the Drawings.
   4. Support luminaires weighing more than 25 pounds independently of the outlet box and the conduit.
   5. Provide ceiling or pendent mounted luminaires with a safety chain connecting the lens, driver, and other components to the building structure.
   6. Provide recessed luminaires with auxiliary safety supports attached directly to the building structure:
      a. Safety supports shall consist of number 12 AWG soft drawn galvanized wires.
   7. Provide luminaires equipped with battery backup with an additional unswitched conductor from the power source circuit designated on the Drawing. Wall switches shall be wired to switch luminaires on and off, while maintaining power to the backup batteries.

C. Luminaire poles:
   1. Set poles on anchor bolts and secured with double nuts on each bolt.
   2. Dry-pack the pole base, after the luminaire and pole has been leveled and plumbed.
   3. Bond metal poles to the plant grounding system, utilizing a ground lug connection within the pole:
      a. Route ground conductor through pier and pole base sleeve using Schedule 40 PVC conduit.

3.03 ADJUSTING

A. Aim and verify exterior and outdoor luminaires alignment, during dark evening hours, as directed by the Owner or the Engineer.

3.04 CLEANING

A. Clean lenses, diffusers, and reflectors.

B. Refinish luminaires' trim, poles, and support brackets, where finish has been damaged.

C. Clean LED luminaires (new and old), used during construction for construction lighting, before substantial completion.

3.05 SCHEDULES

A. Refer to the Luminaire Schedule in the Drawings.

END OF SECTION

SECTION 16710

FIRE ALARM SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Design and installation of fire alarm systems.

1.02 REFERENCES

A. Regulations:
   1. As specified in Section 01410 - Regulatory Requirements.

B. Standards:
   1. Federal Communications Commission (FCC).
   2. National Fire Protection Association (NFPA):
      a. 1 - Fire Code.
      b. 70 - National Electrical Code.
      c. 72 - National Fire Alarm and Signaling Code.
      d. 75 - Standard for the Protection of Information Technology Equipment.
      e. 90A - Standard for the installation of Air Conditioning and Ventilation systems.
      f. 1221 - Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems.
   3. National Institute for Certification in Engineering Technologies (NICET).
   4. Underwriters Laboratories, Inc. (UL):
      a. 864/1730 - Standard for Control Units and Accessories for Fire Alarm Systems.

1.03 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Fire alarm system design.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Delegated Design Submittals:
   1. Product data for fire alarm system components and materials.
   2. Shop Drawings:
      a. Furnish all Shop Drawings required to obtain approval of the fire alarm system by the authority having jurisdiction (AHJ).
   3. Calculations.

C. Installation instructions:
   1. Provide manufacturer's installation instructions.

D. Quality Control Submittals:
   1. Designer and installer qualifications.
   2. Manufacturer's representative qualifications.
   3. Manufacturer's Certificate of Installation as specified in Section 01756 - Commissioning.
   4. Manufacturer's Certificate of Functional Compliance as specified in Section 01756 - Commissioning.

E. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

F. Operation and maintenance manuals:
   1. As specified in Section 01782 - Operation and Maintenance Manuals.

1.05 QUALITY ASSURANCE

A. Installer qualifications:
   1. NICET Level II Fire Alarm System Technician.
   2. Installation to be supervised by NICET Level III Technician.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in the Agreement and Contract RFP in Volumes 1 and 2, and the manufacturer's instructions.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:
   1. Furnish Submittals to the local authority having jurisdiction (AHJ), for review and approval of the proposed system.
      a. Pay all plan check, permit, and inspection fees.
      b. Submit AHJ's approval to the Engineer.

1.09 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.10 MAINTENANCE

A. Furnish service and maintenance of fire alarm system for 1 year from date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL

A. Design, furnish, and install fire alarm systems in the following locations:
   1. Campus Oaks Pump Station.
   2. Misty Woods Pump Station.

2.02 MANUFACTURERS

A. One of the following or equal:
   1. Edwards Signaling Solutions.
   2. Honeywell.
   3. Siemens Fire Safety Solutions.

2.03 DESIGN AND PERFORMANCE CRITERIA

A. Provide a complete, non-coded, microprocessor-based fire alarm system with initiating devices, notification appliances, controls, and supervisory devices.

B. HVAC shutdown:
   1. Shutdown all HVAC equipment serving an area in the event of an alarm.
   2. Related HVAC equipment as indicated on the Drawings.

C. Alarms from the fire alarm system shall be routed to:
   1. PLC.

2.04 EQUIPMENT

A. All fire alarm system equipment and materials shall be UL listed.

B. Fire alarm equipment shall be rated for the installed location as indicated on the Drawings.

2.05 COMPONENTS

A. Conduit:
   1. Use the conduit type for the installed location as specified in Section 16050 - Common Work Results for Electrical.
   2. Provide conduit as specified in Section 16130 - Conduits.

B. Boxes:
   1. Provide boxes as specified in Section 16134 - Boxes.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install system components and associated devices in accordance with applicable NFPA Standards and manufacturer's recommendations.

B. Smoke detectors shall not be installed until after construction cleanup on all trades is complete and final in accordance with NFPA 70, NFPA 72, NFPA 75, NFPA 90A, FCC, and other codes applicable to the individual installation location.

C. Locate the fire alarm control panel as indicated on the Drawings.

D. Wiring:
   1. Conduit and wiring systems:
      a. Size, provide, and install necessary conduits and wiring systems necessary to meet the requirements of the approved fire alarm system design.
      b. Installed in accordance with the NEC, state, and local codes.

E. Installation Verification:
   1. Furnish Manufacturer's Certificate of Installation Verification.

3.02 FIELD QUALITY CONTROL

A. Provide services of a factory-authorized service representative to:
   1. Supervise the field assembly and connection of components and the pre-testing, testing, and adjustment of the system.
   2. Verify proper installation, correct deficiencies, and be present at the jobsite during final inspection by the Engineer.

B. Functional testing:
   1. Witnessed.
   2. Notify the Engineer and the AHJ in writing a minimum of 2 weeks before the scheduled day for the field acceptance tests.
   3. Furnish the services of a field service engineer, and any special tools, equipment, and labor to perform the tests.
   4. Each device and control function shall be individually witness tested and recorded:
      a. Acceptance tests shall be witnessed by and signed off by the Engineer, the FASS's field engineer, the installing Subcontractor, and a representative of the AHJ.
   5. Furnish test reports and the Manufacturer's Certificate of Functional Compliance.

3.03 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.

END OF SECTION

SECTION 16752

SECURITY

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Access system hardware:
      a. Cameras.
      b. Card readers.
      c. Card reader panel.
      d. Non-contact magnetic door switch.

1.02 REFERENCES

A. National Fire Protection Association (NFPA):
   1. 70 - National Electrical Code (NEC).

1.03 TERMINOLOGY (NOT USED)

1.04 SYSTEM DESCRIPTION

A. Refer to Contract drawings. The security system will comprise of card readers, cameras, video recorders, and an access controller. The access controller and video recorders will be connected to the Owner's information network via Ethernet TCP/IP at the project site and be available to City personnel via access from SCADA workstations and other authorized computers. The Contractor will provide and install the material listed in this Section per engineer and manufacturer's direction. After installation, the Owner will configure the security components and interface them with the SCADA system and other Owner systems. The contractor will not need to provide separate workstations for the security system. The Owner has specified the exact material they'd like for the security system. All card readers, door hardware, and cameras, will be tested after configuration to ensure operability. The Contractor will work with the engineer and owner to conduct and complete testing. Testing of the security system components shall be part of the site acceptance testing procedure.

1.05 ADMINISTRATIVE REQUIREMENTS (NOT USED)

1.06 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

1.07 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and the Agreement and Contract RFP in Volumes 1 and 2.

B. Product data.
   1. Model numbers of all components furnished on the job.
   2. Manufacturer's catalog data sheets for all components.
   3. Input power requirements for all components.
   4. Warranty information.

C. Shop Drawings.
   1. Complete engineered drawings indicating:
      a. Layout, wiring diagrams, and dimensions.
      b. Point-to-point wiring diagrams for all devices.
      c. Termination details for all devices.
      d. Single-line system architecture drawings representing the entire system.

D. Calculations.

E. Schedules.

F. Delegated Design Submittals:
   1. Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria.
      a. For equipment installed in structures designated as seismic design category C, D, E, or F.
      b. For equipment installed outdoors.
      c. For wall mounted equipment weighing 125 pounds or more.

G. Installation instructions:
   1. Detail the complete installation of the equipment including rigging, moving, and setting into place.
   2. Provide manufacturer’s installation instructions.

H. Quality Control Submittals:
   1. Manufacturer’s representative qualifications.
   2. Manufacturer’s Certificate of Source Testing as specified in Section 01756 - Commissioning.
   3. Manufacturer’s Certificate of Installation Verification as specified in Section 01756 - Commissioning.
   4. Manufacturer’s Certificate of Functional Compliance as specified in Section 01756 - Commissioning.

I. Owner Training Topics and Details Submittals:
   1. As specified in Section 01756 - Commissioning and 3.05 Owner Training.

J. Operation and maintenance manuals:
   1. As specified in Section 01782 - Operation and Maintenance Manuals.
   2. Complete documentation shall be provided with the system.
   3. The documentation shall completely describe all operations, each program, data sets, and the hardware and peripherals.
      a. All updates, addendum, and adjustments to the documentation shall be provided at no additional charge, in the same quantities as originally required.

b. System administrator manual:
    1) Overview and step-by-step guide and instructions detailing all system administrator responsibility and authority.
c. User manual:
    1) Step by step guide and instructions detailing all system user functions and responsibilities.

4. Photo imaging user's manual:
    a. Step-by-step guide and instructions detailing all image capture, badge creation, cardholder modification and all Photo Imaging user functions and responsibilities.
5. Alarm monitoring manual:
    a. Step-by-step guide and instructions detailing all alarm monitoring system user functions and responsibilities.
6. Technical maintenance manual:
    a. Shall be a comprehensive and detailed document providing all maintenance action, system testing schedules, troubleshooting flowcharts, functional system layout, and block diagrams and schematic diagrams of all system wiring.

1.08 QUALITY ASSURANCE

A. SMS supplier/installer qualifications:
    1. Company specializing in the integration of ACS, IDS, closed circuit television (CCTV), networked digital video management systems (NDVMS), and design and installation of cabling and fiber infrastructures with a minimum of 5 years documented experience in successful completion of a minimum of 3 projects similar in scope and cost.
    2. Minimum of 2 factory-trained and certified technicians on staff for the duration of the Project and the warranty period.

B. Permits and inspections:
    1. Material and workmanship will conform to all applicable legal and code requirements, and as specified in the Contract Documents.
    2. Perform all tests required to demonstrate conformance with the Contract Documents.

C. Job conditions:
    1. The installation is to be supervised on a regular basis by a person designated by the Contractor. This person will be authorized and will be competent to be in charge of the Project.

1.09 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 01601 - Product Requirements, Section 16050 - Common Work Results for Electrical, and the manufacturer's instructions.

1.10 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.11 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds and Section 16050 - Common Work Results for Electrical.

1.12 SYSTEM START-UP

A. After installation is complete and signed off and the required material in configured then conduct tests to provide the operability of the material and that the required information is shared with SCADA and other authorized systems. The acceptance test and performance demonstration plan shall be developed and documented by the Contractor.
   1. These requirements shall apply to all system components and software, including, but not limited to:
      a. All system computers.
      b. Field controllers.
      c. Card reader devices.
      d. PIN pads.
      e. Photo imaging system peripherals.
      f. CCTV cameras and equipment.
      g. Interface capability.
   2. Operational scenarios shall be developed and used by the Contractor to simulate the actual use of the system in the normal environment of the facility.
   3. Perform the tests and document the results under the supervision and witnessing of the Engineer and Owner.

B. The Engineer upon Owner approval reserves the right to modify the Contractor's plan or develop new operational test and evaluation procedures to effectively document system operations.

1.13 MAINTENANCE (NOT USED)

PART 2 PRODUCTS

2.01 GENERAL (NOT USED)

2.02 MATERIAL

A. If any of the material listed below is obsolete or no longer available, consult the Engineer for a possible replacement.

B. Cameras:
   1. Axis Communications (No equal).
      a. Part number Q3536-LVE (No equal).

C. Card readers:
   1. HID Signo Reader 40 Black (No equal).
      a. Part number 40NKS-0000044C (No equal).

D. Card reader panel:
    1. Software House (No equal).
        a. Part number GSTAR004-POE (No equal).

E. Non-contact magnetic door switch:
    1. Edwards Signaling (No equal).
        a. Part number 151-6Z-12K (No equal).

F. Video recorder:
    1. Razberi (No equal).
        a. SSIQ8-R2-8S (No equal).

2.03 FIELD HARDWARE POWER SUPPLIES

A. Power supplies for field hardware shall be compatible with the SMS equipment installed.
    1. Power supplies shall be regulated, linear and isolated versions for the field controllers and other equipment and shall be UL listed for specific application.
    2. Each version shall be available in UPS with battery backup models only.
    3. All power supplies shall be housed in tampered, locked enclosures.

2.04 DOOR SECURITY HARDWARE

A. Ancillary door hardware shall meet the following minimum specifications:
    1. A surface-mounted magnetic switch shall be used for roof hatch alarms (NIC).
    2. A wide gap overhead door contact shall be used for overhead loading dock doors.
        a. A low profile in rugged aluminum housing shall mount directly to the floor.
        b. Connection to the alarm circuit junction box shall be armored cable to protect the wiring.
        c. The magnet shall also be protected by a rugged aluminum housing mounted on the bottom of the overhead door.
        d. Both the switch and the magnet assembly shall be weatherproofed and resistant to shock with multiple layers of protection.
    3. All exterior doors shall be provided with a latch position indicating switch (monitor strike) which shall be internal to the door and concealed from view.
    4. An electro-mechanical lockset shall be used for specific doors, with an access control CR.
    5. The strikes shall operate on 24 VDC signal.
        a. A double signal switch shall be provided for the purpose of indicating the status condition of the latch but when not energized, and to activate a local alarm.
        b. The types of electric door latch shall be as follows:
            1) Fail secure:
                a) At the loss of electric energy, these locks shall lock.
                b) At restoration of electrical energy, these locks shall return to open.
                c) The door shall be opened with a key.
            2) Fail safe:
                a) At the loss of electric energy, these locks shall open.

b) At the restoration of electric energy, the locks shall automatically lock.
c) The door shall be unlocked and opened with a key.

6. All card reader controlled doors will include card reader, door contact, and request to exit (REX). The REX shall be integrated into the lever/lockset.

B. Related hardware:
1. Magnetic door switches, door strikes, door strike indicators, panic hardware, door closures, etc., to complete the system. Contractor shall be responsible for providing all necessary hardware, and for the complete operation of all related hardware.

C. Input power requirements:
1. Major components of the AC/IDS-Add-On, such as ACUs, shall operate on 120 VAC, 60 hertz, single phase input power.
2. Monitoring alarm devices and access control devices, such as door strikes, latches, etc., shall be powered by 24 VDC (2 wire-ungrounded), class 1 power limited circuits. Appropriate sized transformers, rectifiers or power supplies shall be provided for monitoring alarm devices by the Contractor, which shall receive its electricity from the building. Appropriate power supplies shall be provided for access control devices which shall receive their electricity from the building.

D. Spare parts:
1. A recommended spare parts list shall be provided, including part price and quantity of each item and for the lot.

E. Door types:
1. Door types for the Project have been grouped as follows:

Type	Configuration	Strike Type	Exit Control	Operation	Local Alarm
A	Double	Lockset	PIR/REX switch	Fail-Secure	No
B	Single	Lockset	PIR/REX switch	Fail-Secure	No
C	Single	Lockset	Hinge Switch	Fail-Secure	No
D	Double	Crashbar	Microswitch	Fail-Secure	No
E	Double	Auto opener	PIR/REX switch	Fail-Secure	No
F	Single	Strike	PIR-REX switch	Fail-Secure	No
G	Single	Crashbar	Microswitch	Fail-Safe	Yes

2. Secured door type "A" (double doors to the facility):
a. Opening either door of secured door type "A" shall cause a change in state of the magnetic switch (MS) or the monitor strike (MST) and an alarm condition shall be generated by the AC/IDS. Either the MS or the MST or both devices shall cause an alarm condition to be generated by the AC/IDS. Only 1 device shall be required to generate an alarm condition.

b. Entry through a secured door type "A" shall require the use of an authorized access card.
    1) The access card shall be presented to the CR and the AC/IDS shall verify that the individual is authorized for the particular access point at that particular time of day and day of the week.
    2) If the individual is authorized the AC/IDS shall grant access by momentarily energizing the electro-mechanical lockset and shunting the alarm condition that shall be generated by the MS and MST when the door is opened.
    3) The alarm condition shunt shall only be effective for a programmable maximum time period to prevent the door from being propped open after a valid access.
    4) If the door remains open for the programmable maximum time period after a valid access, the AC/IDS shall generate an alarm condition and a local alarm.
c. Exit through a secured door type "A" shall be similar to the entry procedure, except that the change of state of an IR motion detector shall be used in place of the CR. In an emergency the exit shall Fail-Open but shall cause the AC/IDS to generate an alarm condition.

3. Secured door type "B" (single door to the facility):
    a. Opening the door of secured door type "B" shall cause a change in state of the magnetic switch (MS) or the monitor strike (MST) and an alarm condition shall be generated by the AC/IDS. Either the MS or the MST or both the devices shall cause an alarm condition to be generated by the AC/IDS. Only 1 device shall be required to generate an alarm condition and a local alarm.
    b. Entry through a secured door type "B" shall require the use of an authorized access card.
        1) The access card shall be presented to the CR and the AC/IDS shall verify that the individual is authorized for the particular access point at that particular time of day and day of the week.
        2) If the individual is authorized the AC/IDS shall grant access by momentarily energizing the electro-mechanical lockset and shunting the alarm condition that shall be generated by the MS and MST when the door is opened.
        3) The alarm condition shunt shall only be effective for a programmable maximum time period to prevent the door from being propped open after a valid access.
        4) If the door remains open for the programmable maximum time period after a valid access, the AC/IDS shall generate an alarm condition and a local alarm.
    c. Exit through a secured door type "B" shall be similar to the entry procedure, except that the change of state of a hinge-mounted-switch shall be used in place of the CR. In an emergency the exit shall Fail-Closed and shall cause the AC/IDS to generate an alarm condition.
4. Secured door type "C" (single door to facility):
    a. Opening the door of secured door type "C" shall cause a change in the state MS or the MST and an alarm condition shall be generated by the AC/IDS. The door type shall not have a local audible alarm.

b. Entry through a secured door type "C" shall require the use of an authorized access card.
    1) The access card shall be presented to the CR and the AC/IDS shall verify that the individual is authorized for the particular access point at that particular time of day and day of the week.
    2) If the individual is authorized the AC/IDS shall grant access by momentarily energizing the electro-mechanical lockset and shunting the alarm condition that shall be generated by the MS and the MST when the door is opened.
    3) The alarm condition shunt shall only be effective for a programmable maximum time period to prevent the door from being propped open after a valid access.
    4) If the door remains open for the programmable maximum time period after a valid access, the AC/IDS shall generate an alarm condition (no local alarm).
c. Exit through a secured door type "C" shall be similar to the entry procedure, except that the change of state of a hinge-mounted or lockset internal switch shall be used in place of the CR. In an emergency exit the exit shall Fail-Closed and shall cause the AC/IDS to generate an alarm condition.

5. Secured door type "D" (double door interior to the facility):
    a. Opening the door of secured door type "D" shall cause a change in state of the MS or the MST and an alarm condition shall be generated by the AC/IDS. The door type shall not have a local audible alarm.
    b. Entry through a secured door type "D" shall require the use of an authorized access card.
        1) The access card shall be presented to the CR and the AC/IDS shall verify that the individual is authorized for the particular access point at that particular time of day and day of the week.
        2) If the individual is authorized the AC/IDS shall grant access by momentarily energizing the latch retraction solenoid and shunting the alarm condition that shall be generated by the MS and MST when the door is opened.
    c. The alarm condition shunt shall only be effective for a programmable maximum time period to prevent the door from being propped open after valid access. If the door remains open for the programmable maximum time period after a valid access, the AC/IDS shall generate an alarm condition (no local alarm).
    d. Exit through a secured door type "D" shall be similar to the entry procedure, except that the change of state of a crash-bar mounted micro-switch shall be used in place of the CR. In an emergency exit the exit shall Fail-Closed and shall cause the AC/IDS to generate an alarm condition.

2.05 SOURCE QUALITY CONTROL (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION (NOT USED)

3.02 PREPARATION

A. Perform a layout check to ensure that adequate access is available for construction, installation, and maintenance of equipment and devices furnished. The Contractor shall consult the Owner and Engineer in the design of the monitoring workstation area.

B. Anchoring and bracing to structures:
   1. Prepare equipment anchor setting template(s) and use to position anchors during construction of supporting structure(s).
   2. Install anchors of type and material indicated on approved anchoring designs.
   3. Install anchors with embedment indicated on approved anchoring designs.

3.03 INSTALLATION

A. Although expected locations are indicated on the Drawings, all equipment locations, shall be field verified with the Engineer.

B. Install the equipment in accordance with the accepted installation instructions and anchorage details.
   1. Installation of the security system material shall include the appropriate material and shall be performed by a factory-trained and certified contractor. The installation shall be completed per this Section and Project Drawings as required by the Owner. The installation shall include the following:
      a. Site planning of field hardware.

C. Furnish Manufacturer’s Certificate of Installation Verification.

3.04 FIELD QUALITY CONTROL

A. Perform acceptance tests to show system is properly installed and that it meets the Specifications and applicable codes. The acceptance tests will include demonstration of the integration to the existing head end, and the capability to be monitored and controlled form other workstations on the Enterprise.

B. Performance specification requirements:
   1. Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated.
   2. General overall performance of a product is implied where the product is specified for a specific application.
   3. All equipment shall be installed per applicable UL listing for that device or component.

C. Comply with manufacturer's instructions and recommendations for installation of product in the applications indicated. Anchor products securely in place, accurately located and aligned with other work.

D. Site Acceptance Testing:
   1. Witnessed, in-person.
      a. Number of Owner and Engineer representatives in person: 1.

2. Testing requirements:
    a. Card Readers are fully functionable and operate as intended.
    b. Door hardware and power is fully functional and operate as intended.
    c. Exit buttons are fully functional and operate as intended.
    d. Cameras are fully functional and operate as intended.
    e. Required data is shared with the SCADA and other systems as intended.
3. Furnish test reports and the Manufacturer's Certificate of Functional Compliance.

3.05 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.
    1. Number of sessions:
        a. Operations: 4, each 2 hour duration.
        b. Maintenance: 4, each 2 hour duration.

3.06 ADJUSTING (NOT USED)

3.07 CLEANING

A. As specified in Section 16050 - Common Work Results for Electrical.

3.08 PROTECTION

A. As specified in Section 16050 - Common Work Results for Electrical.

3.09 SCHEDULES (NOT USED)

END OF SECTION

SECTION 16950

FIELD ELECTRICAL ACCEPTANCE TESTS

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PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Responsibilities for testing the electrical installation.
   2. Adjusting and calibration.
   3. Acceptance tests.

B. Copyright information:
   1. Some portions of this Section are copyrighted by the InterNational Electrical Testing Association, Inc. (NETA). See NETA publication ATS for details.

1.02 REFERENCES

A. Project references:
   1. Specification sections for the electrical equipment being tested.
   2. Electrical equipment Shop Drawings.

B. Standards:
   1. American National Standards Institute (ANSI).
   2. ASTM International (ASTM).
   3. Institute of Electrical and Electronics Engineers (IEEE):
      a. 43 - IEEE Recommended Practice for Testing Insulation Resistance of Rotating Machinery.
      b. 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System.
      c. 95 - IEEE Recommended Practice for Insulation Testing of AC Electric Machinery (2,300 V and Above) With High Direct Voltage.
      d. 450 - IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications.
      e. 1106 - IEEE Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications.
      f. 1188 - IEEE Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications.
      g. C57.13 - IEEE Standard Requirements for Instrument Transformers.
      h. C57.13.1 - IEEE Guide for Field Testing of Relaying Current Transformers.
      i. C57.13.3 - IEEE Guide for Grounding of Instrument Transformer Secondary Circuits and Cases.
      j. C57.104 - IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers.
   4. Insulated Cable Engineer's Association (ICEA).
   5. InterNational Electrical Testing Association (NETA).
      a. ATS- Standard for Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems.
   6. International Electrotechnical Commission (IEC).
   7. National Electrical Manufacturers Association (NEMA):
      a. MG1 - Motors and Generators.

8. National Fire Protection Association (NFPA):
    a. 70 - National Electrical Code (NEC).
    b. 110 - Standard for Emergency and Standby Power Systems.
9. National Institute of Standards and Technology (NIST).

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
    1. Testing laboratory: Organization performing the acceptance tests.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Copper Ethernet test form:
    1. Cable test reports:
        a. Submit 3 copies of test reports showing the results of all tests specified in this Section:
            1) Test type.
            2) Test location.
            3) Test date.
            4) Cable number.
            5) Cable length.
            6) Certification that the cable meets or exceeds the specified standard.
        b. Furnish hard copy and electronic copy for all traces.

C. Manufacturers' testing procedures:
    1. Submit manufacturers' recommended testing procedures and acceptable test results for review by the Engineer prior to beginning testing.

D. Test report:
    1. Include the following:
        a. Summary of Project.
        b. Description of equipment tested.
        c. Description of tests performed.
        d. Test results.
        e. Conclusions and recommendations.
        f. Completed test forms.
        g. List of test equipment used and calibration dates.
        h. LAN cable test reports.

E. Test data records:
    1. Include the following:
        a. Identification of the testing organization.
        b. Equipment identification.
        c. Nameplate data.
        d. Humidity, temperature and or other conditions that may affect the results of the tests and or calibrations.
        e. Dates of inspections, tests, maintenance and or calibrations.

f. Indication of the inspections, tests, maintenance, and or calibrations to be performed and recorded.
g. Expected results when calibrations are to be performed.
h. Indication of as-found and as-left results as applicable.
i. Indication of test results outside specified tolerances.

F. Testing laboratory qualifications:
1. Submit a complete resume and statement of qualifications from the proposed testing laboratory detailing their experiences in performing the tests specified:
a. This statement will be used to determine whether the laboratory is acceptable, and shall include:
1) Corporate history and references.
2) Resume of individual performing test.
3) Equipment list and test calibration data.

G. Division of responsibilities:
1. Submit a list identifying who is responsible for performing each portion of the testing.

1.05 QUALITY ASSURANCE

A. Testing laboratory qualifications:
1. May be qualified testing personnel from the electrical subcontractor's staff or an independent testing company.
2. NETA certification required.
3. Selection of the testing laboratory and testing personnel is subject to approval by the Engineer based on testing experience and certifications of the individuals and testing capabilities of the organization.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. General requirements:
1. Testing of electrical equipment installed under this Contract in accordance with the manufacturer's requirements and as specified in this Section.
2. Conduct tests in the presence of the Engineer or the Engineer's representative:
a. Engineer will witness visual, mechanical, and electrical tests, and inspections.
3. Testing and inspections shall verify that the equipment is operational within the tolerances required and expected by the manufacturer, and these Specifications.

B. Responsibilities:
1. Contractor responsibilities:
a. Ensure that resources are made available for testing and that testing requirements are met.
2. Electrical subcontractor responsibilities:
a. Perform routine tests during installation.

b. Demonstrate operation of electrical equipment.
c. Commission the electrical installation.
d. Provide the necessary services during testing, and provide these services to the testing laboratory, Contractor, and other subcontractors, including, but not limited to:
    1) Providing electrical power as required.
    2) Operating of electrical equipment in conjunction with testing of other equipment.
    3) Activating and shutting down electrical circuits.
    4) Making and recording electrical measurements.
    5) Replacing blown fuses.
    6) Installing temporary jumpers.

3. Testing laboratory responsibilities:
    a. Perform acceptance tests specified in this Section.
    b. Provide required equipment, materials, labor, and technical support during acceptance tests.

C. Sequencing:
1. Prior to testing:
    a. At least 30 days before commencement of the acceptance tests, submit the manufacturer's complete field testing procedures to the Engineer and to the testing laboratory, complete with expected test results and tolerances for equipment to be tested.
2. Perform testing in the following sequence:
    a. Perform routine tests as the equipment is installed including:
        1) Insulation-resistance tests.
        2) Continuity tests.
        3) Rotational tests.
    b. Adjusting and preliminary calibration.
    c. Acceptance tests.
    d. Demonstration.
    e. Commissioning and plant start-up.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION

A. Test instrument calibration:
1. Utilize a testing laboratory with a calibration program which maintains applicable test instrumentation within rated accuracy.
    a. Calibrating standard shall be of better accuracy than that of the equipment tested.
2. Accuracy shall be traceable to the NIST in an unbroken chain.

3. Calibrate instruments in accordance with the following frequency schedule:
    a. Field instruments: 6 months maximum.
    b. Laboratory instruments: 12 months maximum.
    c. Leased specialty equipment where the accuracy is guaranteed by the lessor (such as Doble): 12 months maximum.
4. Dated calibration labels shall be visible on test equipment.
5. Maintain an up-to-date instrument calibration record for each test instrument:
    a. Records shall show the date and results of each calibration or test.
6. Maintain an up-to-date instrument calibration instruction and procedure for each test instrument.

B. Requirements prior to testing:
1. Do not begin testing until the following conditions have been met:
    a. Instruments required are available and in proper operating condition.
    b. Required dispensable materials such as solvents, rags, and brushes are available.
    c. Equipment handling devices such as cranes, vehicles, chain falls, and other lifting equipment are available or scheduled.
    d. Instruction books, calibration curves, or other printed material to cover the electrical devices are available.
    e. Datasheets to record test results are available.

3.02 INSTALLATION

A. Test decal:
1. Testing laboratory shall affix a test decal on the exterior of equipment or equipment enclosure of protective devices after performing electrical tests.
2. Color coded to communicate the condition of maintenance of the protective. Color scheme for condition of maintenance of overcurrent protective devices shall be:
    a. White: Electrically and mechanically acceptable.
    b. Yellow: Minor deficiency not affecting fault detection and operation, but minor electrical or mechanical condition exists.
3. Shall include the following information at a minimum:
    a. Testing organization.
    b. Project identifier.
    c. Test date.
    d. Technician identifier.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

B. Functional Testing:
1. Also called Field Acceptance Testing.

C. Panelboards:
1. Cleaning:
    a. Visually inspect panelboard for evidence of discoloration, abnormal dust accumulation, metal shards, or any other indication of overheating, wear, or other abnormal conditions prior to cleaning.

b. Clean cabinet with a brush, vacuum cleaner, or clean, dry, lint-free rags to remove any accumulation of dust, dirt, or other foreign matter. Do not use liquids, solvents, or detergents when cleaning panelboards or components.
c. Avoid blowing dust into panelboards. Do not use a blower or compressed air.
d. Clean supports, terminals, and other major insulating surfaces with clean, dry, lint-free rags or soft bristled brushes.
e. Remove dust, soot, grease, moisture, and foreign material from surface of circuit breakers.

2. General:
   a. Compare equipment nameplate data with the Contract Documents.
   b. Check panelboard circuit schedule for accuracy.
   c. Verify appropriate anchorage, required area clearances, and correct alignment.
   d. Inspect overall general condition for physical damage.
      1) Check for broken studs and loose or damaged wires, connector, terminations, etc.
      2) Check bolts, nuts, washer, and pins for tightness.
      3) Tighten or use manufacturer's replacement parts as required.
   e. Inspect cabinets for signs of rust, corrosion, or deteriorating paint. Inspect cabinets for evidence of localized heat damage to the paint. Investigate sources of heat. Repair painted surfaces.
   f. Check that covers are in place and fastened. Plug any open unused knockouts.
   g. Inspect panelboard for moisture. Seal off any cracks or openings which have allowed moisture to enter the cabinet. Inspect component devices. Replace any components that show evidence of damage from moisture.
   h. Look for any recent changes in sprinklers or other plumbing that might expose indoor panelboards to a source of liquids. Eliminate sources of water, moisture, or liquids, or provide adequate barriers to protect panelboards from sources of water, moisture, or liquids.
   i. Inspect panelboards and internal components for evidence of overheating, arc spatter, sooty deposits, and tracking.
      1) Investigate and correct sources of arcing or overheating.
      2) Consult the panelboard manufacturer for recommendations.
   j. Verify that fuse and/or circuit breaker sizes and types correspond to record drawings, if available, as well as to the circuit breakers' address for microprocessor communications packages, if equipped.
   k. Set adjustable circuit breakers in accordance with engineering coordination study.

3. Terminations, connections, and lugs:
   a. Inspect bolted electrical connections for high resistance using one of the following methods:
      1) Use of low-resistance ohmmeter.
         a) Compare bolted connection resistance values to values of similar connections:
            (1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.

2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:
a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.

b. Inspect terminations, connection, and lugs for alignment, physical damage, burns, corrosion, discoloration, flaking, heat damage, arcing, pitting, melting, deterioration, carbonization, cracks, chips, breaks, partial discharge, or moisture. Investigate and eliminate sources of any damage.
c. Follow manufacturer recommendations for cleaning, repairing, and replacing damaged parts.
d. Replace overheated connections. Tighten connections to proper torque levels as specified above.

4. Conductors and raceways:
a. Inspect supply conductors and terminations for overheating, discoloration, and oxidation. Investigate and correct any deficiencies.
b. Ensure the conductors are protected within their ampacities.
c. Visually check panelboard, cables, and raceways for proper bonding and grounding. Correct improper bonding and grounding.
d. Inspect conductors for discoloration, arcing, pitting, melting, flaking of insulation and/or metal parts. Repair or replace damaged components in accordance with the manufacturer's recommendations.
e. Inspect for frayed or broken wires. Replace or repair damaged components in accordance with manufacturer recommendations.
f. Inspect for frayed or broken wires. Replace or repair conductors as necessary.
g. Inspect conduits for moisture. Seal conduits which are a source of moisture and provide means to drain moisture away from the panelboard.

5. Circuit breakers:
a. Perform visual and mechanical inspection as specified in this Section.
b. Operate several times in order to exercise the mechanisms and the contacts, and to ensure smooth operation. Do not oil or grease parts of molded case circuit breakers.
c. Visually check for evidence of overheating and thermal damage. Investigate and eliminate sources of overheating.
d. Check for visual defects, chipping, cracks, breaks, burns, and deterioration. Replace damaged circuit breakers.
e. Verify correct operation of any auxiliary features such as trip and pickup indicators, zone interlocking, electrical close and trip operation, trip-free, and antipump function.
f. Inspect interchangeable trip-unit circuit breakers for tightness of trip units.
g. Check terminals and connections for tightness as specified above.
h. Breakers rated 100 A and higher:
1) Perform electrical tests as specified in this Section.

D. Switchgear and switchboard:
1. Visual and mechanical inspection:
a. Compare equipment nameplate data with the Contract Documents.
b. Inspect physical and mechanical condition.
c. Inspect anchorage, alignment, grounding and required area clearances.
d. Verify the unit is clean and shipping bracing, loose parts, and documentation shipped inside cubicles have been removed.

e. Verify that circuit breaker/fuse sizes and types correspond to the approved Submittals and the coordination study as well as to the circuit breakers address for microprocessor-communication packages.
f. Verify that current and voltage transformer ratios correspond to those indicated on the Drawings.
g. Verify that wiring connections are tight and that wiring is secure to prevent damage during routine operation of moving parts.
h. Inspect bolted electrical connections for high resistance using one of the following methods:
    1) Use of low-resistance ohmmeter.
    2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:
        a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
i. Verify operation and sequencing of interlocking systems:
    1) Attempt closure on locked-open devices.
    2) Attempt to open locked-closed devices.
    3) Make/attempt key-exchanges in all positions.
j. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
k. Inspect insulators for evidence of physical damage or contaminated surfaces.
l. Verify correct barrier and shutter installation and operation.
m. Exercise active components.
n. Inspect mechanical indicating devices for correct operation.
o. Verify that filters are in place and/or vents are clear.
p. Perform visual and mechanical inspection of instrument transformers as specified in this Section.
q. Perform visual and mechanical inspection of surge arresters as specified in this Section.
r. Control power transformers:
    1) Inspect for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.
    2) Verify that primary and secondary fuse/circuit breaker ratings match the Submittal Drawings.
    3) Verify correct functioning of drawout disconnecting contacts grounding contacts, and interlocks.

2. Electrical tests:
    a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.
    b. Perform insulation-resistance tests on each bus section, phase-to-phase and phase-to-ground for 1 minute.
        1) Perform test in accordance with NETA ATS tables.
    c. Perform electrical tests on instrument transformers as specified in this Section.
    d. Perform ground-resistance tests:
        1) Perform point-to-point tests to determine the resistance between the main grounding system and major electrical equipment frames, system neutral and derived neutral points.
    e. Test metering devices as specified in this Section.

f. Perform current injection tests on the entire current circuit of each switchgear or switchboard:
    1) Perform current tests by secondary injection with magnitudes such that a minimum current of 1.0 ampere flows in the secondary circuit:
        a) Verify the correct magnitude of current at each device in the circuit.
g. Perform system function tests.
h. Verify operation of space heaters.
i. Perform electrical tests of surge arresters as specified in this Section.

3. Test values:
    a. Compare bolted connection resistance values to values of similar connections:
        1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    c. Insulation-resistance values of bus insulation shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
        2) Investigate insulation values less than the allowable minimum.
        3) Do not proceed with dielectric withstand voltage tests until insulation-resistance values are above minimum values.
    d. If no evidence of distress or insulation failure is observed by the end of the total time of voltage application during the dielectric withstand test, the test specimen is considered to have passed the test.
    e. Instrument transformer test values shall be as specified in this Section.
    f. Meter test values shall be as specified in this Section.
    g. Investigate grounding system point-to-point resistance values that exceed 0.5 ohm.
    h. Results of system function tests shall match the Drawings and Specifications.
    i. Heaters shall be operational.
    j. Phasing checks shall prove the switchgear or switchboard phasing is correct and in accordance with the system design.
    k. Results of electrical tests on surge arresters shall be as specified in this Section.

E. Dry type transformers:
    1. Visual and mechanical inspection:
        a. Compare equipment nameplate data with the Contract Documents.
        b. Inspect physical and mechanical condition.
        c. Inspect anchorage, alignment, and grounding.
        d. Verify that resilient mounts are free and that any shipping brackets have been removed.
        e. Inspect equipment for cleanliness.
        f. Inspect bolted electrical connections for high resistance using one of the following methods:
            1) Use of low-resistance ohmmeter.

2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:
a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.

g. Verify that as-left tap connections are as specified.

2. Electrical tests:
a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.
b. Perform insulation-resistance tests winding-to-winding and each winding-to-ground:
1) Apply voltage in accordance with the manufacturer's published data.
a) Refer to NETA ATS tables in the absence of the manufacturer's published data.
c. Calculate dielectric absorption ration or polarization index.
d. Verify correct secondary voltage, phase-to-phase and phase-to-neutral after energization and before loading.

3. Test values:
a. Compare bolted connection resistance values to values of similar connections:
1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
c. Tap connections are left as found unless otherwise specified.
d. Minimum insulation-resistance values of transformer insulation shall be in accordance with the manufacturer's published data:
1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
2) Investigate insulation values less than the allowable minimum.
e. Dielectric absorption ratio or polarization index shall not be less than 1.0.
f. Turns-ratio results should not deviate more than 1/2 percent from either the adjacent coils or calculated ratio.
g. Phase-to-phase and phase-to-neutral secondary voltages shall be in agreement with nameplate data.

F. Low voltage cables, 600 volt maximum:
1. Visual and mechanical inspection:
a. Compare cable data with the Drawings and Specifications.
b. Inspect exposed sections of cable for physical damage and correct connection as indicated on the Drawings.
c. Inspect bolted electrical connections for high resistance by one of the following methods:
1) Use of low-resistance ohmmeter.
2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:
a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
d. Inspect compression applied connectors for correct cable match and indentation.

e. Inspect for correct identification and arrangement.
f. Inspect cable jacket insulation and condition.

2. Electrical tests:
   a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.
   b. Perform insulation resistance test on each conductor sized #8 AWG or larger with respect to ground and adjacent conductors:
      1) Applied potential shall be 500 volts DC for 300-volt rated cable and 1,000 volts DC for 600-volt rated cable.
      2) Test duration shall be 1 minute.
   c. Perform continuity tests on power and control conductors to ensure correct cable connection.
   d. Verify uniform resistance of parallel conductors.

3. Test values:
   a. Compare bolted connection resistance values to values of similar connections:
      1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
   b. Insulation-resistance values shall be in accordance with the manufacturer's published data:
      1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
      2) Investigate values of insulation-resistance less than the allowable minimum.
   c. Cable shall exhibit continuity.
   d. Deviations in resistance between parallel conductors shall be investigated.

G. Low voltage molded case and insulated case circuit breakers:

1. Visual and mechanical inspection:
   a. Compare equipment nameplate data with the Contract Documents.
   b. Inspect physical and mechanical condition.
   c. Inspect anchorage and alignment.
   d. Verify the unit is clean.
   e. Operate the circuit breaker to ensure smooth operation.
   f. Inspect bolted electrical connections for high resistance by one of the following methods:
      1) Use of low-resistance ohmmeter.
      2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:
         a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
   g. Perform adjustments for final protective device settings in accordance with the coordination study.

2. Electrical tests:
   a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.

b. For breakers 100 A and higher:
    1) Perform insulation-resistance tests for 1 minute on each pole, phase-to-phase and phase-to-ground with the circuit breaker closed and across each open pole:
        a) Apply voltage in accordance with the manufacturer's published data.
        b) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    2) Perform a contact/pole-resistance test.
    3) Determine long-time pickup and delay by primary current injection.
    4) Determine short-time pickup and delay by primary current injection.
    5) Determine ground-fault pickup and delay by primary current injection.
    6) Determine instantaneous pickup value by primary current injection.
    7) Perform minimum pickup voltage tests on shunt trip and close coils in accordance with the manufacturer's published data.
    8) Verify correct operation of any auxiliary features such as trip and pickup indicators, zone interlocking, electrical close and trip operation, trip-free, anti-pump function and trip unit battery condition:
        a) Reset trip logs and indicators.
    9) Verify operation of charging mechanism.

3. Test values:
    a. Compare bolted connection resistance values to values of similar connections:
        1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    c. Insulation-resistance values shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
        2) Investigate values of insulation-resistance less than the allowable minimum.
    d. Microhm or DC millivolt drop values shall not exceed the high levels of the normal range as indicated in the manufacturer's published data:
        1) If the manufacturer's data is not available, investigate any values which deviate from adjacent poles or similar breakers by more than 50 percent of the lowest value.
    e. Long-time pickup values shall be as specified, and the trip characteristic shall not exceed the manufacturer's published time-current characteristic tolerance band including adjustment factors:
        1) If the manufacturer's curves are not available, trip times shall not exceed the value shown in NETA ATS tables.
    f. Short-time pickup values shall be as specified, and the trip characteristic shall not exceed the manufacturer's published time-current tolerance band.
    g. Ground fault pickup values shall be as specified, and the trip characteristic shall not exceed the manufacturer's published time-current tolerance band.

h. Instantaneous pickup values shall be as specified and within the manufacturer's published tolerances:
    1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
i. Pickup values and trip characteristics shall be within the manufacturer's published tolerances.
j. Determine energy reducing maintenance switch pickup value by primary current injection.
k. Breaker open, close, trip, trip-free, anti-pump, and auxiliary features shall function as designed.
l. Charging mechanism shall operate in accordance with the manufacturer's published data.

H. Instrument transformers - current transformers:
1. Visual and mechanical inspection:
    a. Compare equipment nameplate data with the Contract Documents.
    b. Inspect physical and mechanical condition.
    c. Verify correct connection of transformers with system requirements.
    d. Verify that adequate clearances exist between primary and secondary circuit wiring.
    e. Verify the unit is clean.
    f. Inspect bolted electrical connections for high resistance using one of the following methods:
        1) Use of low-resistance ohmmeter.
        2) Verify tightness of accessible bolted electrical connections by calibrated torque wrench method:
            a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
    g. Verify that required grounding and shorting connections provide contact.
    h. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
2. Electrical tests:
    a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.
    b. Perform insulation-resistance test of each current transformer and its secondary wiring with respect to ground at 1,000 VDC for 1 minute:
        1) For solid state devices that cannot tolerate the applied voltage, follow the manufacturer's recommendation.
    c. Perform a polarity test of each current transformer in accordance with IEEE C57.13.1.
    d. Perform a ratio verification test using the voltage or current method in accordance with IEEE C57.13.1.
    e. Perform an excitation test on current transformers used for relaying applications in with accordance with IEEE C57.13.1.
    f. Measure current circuit burdens at transformer terminals in accordance with IEEE C57.13.1.
    g. When applicable, perform insulation-resistance tests on the primary winding with the secondary grounded:
        1) Test voltages shall be in accordance with NETA ATS tables.
    h. Perform power-factor or dissipation-factor tests in accordance with the test equipment manufacturer's published data.

i. Verify that current transformer secondary circuits are grounded and have only 1 grounding point in accordance with IEEE C57.13.3:
    1) That grounding point should be located as specified by the Engineer in the Contract Documents.

3. Test values:
    a. Compare bolted connection resistance values to values of similar connections:
        1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    c. Insulation-resistance values of instrument transformers shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    d. Polarity results shall agree with transformer markings.
    e. Ratio errors shall be in accordance with IEEE C57.13.
    f. Excitation results for current transformers shall match the curve supplied by the manufacturer or be in accordance with IEEE C57.13.1.
    g. Measured burdens shall be compared to instrument transformer ratings.
    h. If no evidence of distress or insulation failure is observed by the end of the total time of voltage application during the dielectric withstand test, the primary winding is considered to have passed the test.
    i. Power-factor or dissipation-factor values shall be compared to the manufacturer's published data:
        1) In the absence of the manufacturer's published data, use the test equipment manufacturer's published data.
    j. Test results shall indicate that the circuits have only 1 grounding point.

l. Instrument transformers - voltage transformers:
1. Visual and mechanical inspection:
    a. Compare equipment nameplate data with the Contract Documents.
    b. Inspect physical and mechanical condition.
    c. Verify correct connection of transformers with system requirements.
    d. Verify that adequate clearances exist between primary and secondary circuit wiring.
    e. Verify the unit is clean.
    f. Inspect bolted electrical connections for high resistance using one of the following methods:
        1) Use of low-resistance ohmmeter.
        2) Verify tightness of accessible bolted electrical connections by calibrated torque wrench method:
            a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
    g. Verify that required grounding and connections provide contact.
    h. Verify correct primary and secondary fuse sizes for voltage transformers.
    i. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
    j. Perform as-left tests.

2. Electrical tests - voltage transformers:
    a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.
    b. Perform insulation-resistance tests winding-to-winding and winding-to-ground:
        1) Test voltage shall be applied for 1 minute in accordance with NETA ATS requirements.
        2) For solid state devices that cannot tolerate the applied voltage, follow the manufacturer's recommendation.
    c. Perform a polarity test on each voltage transformer to verify the polarity marks on H_1- X_1 relationship as applicable.
    d. Perform a turns ratio test on all tap positions.
    e. Measure voltage circuit burdens at transformer terminals.
    f. Perform a dielectric withstand test on the primary windings with the secondary windings grounded:
        1) Dielectric voltage shall be in accordance with NETA ATS tables.
        2) Apply the test voltage for 1 minute.
    g. Perform power-factor or dissipation-factor tests in accordance with the test equipment manufacturer's published data.
    h. Verify that voltage transformer secondary circuits are grounded and have only 1 grounding point in accordance with IEEE C57.13.3:
        1) That grounding point should be located as specified by the Engineer in the Contract Documents.
3. Test values:
    a. Compare bolted connection resistance values to values of similar connections:
        1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    c. Insulation-resistance values of instrument transformers shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    d. Polarity results shall agree with transformer markings.
    e. Ratio errors shall be in accordance with IEEE C57.13.
    f. Measured burdens shall be compared to instrument transformer ratings.
    g. If no evidence of distress or insulation failure is observed by the end of the total time of voltage application during the dielectric withstand test, the primary winding is considered to have passed the test.
    h. Power-factor or dissipation-factor values shall be compared to the manufacturer's published data:
        1) In the absence of the manufacturer's published data, use the test equipment manufacturer's published data.
    i. Test results shall indicate that the circuits have only 1 grounding point.

J. Metering devices, microprocessor based:
    1. Visual and mechanical inspection:
        a. Compare equipment nameplate data with the Contract Documents.

b. Inspect meters and cases for physical damage.
c. Clean front panel.
d. Verify tightness of electrical connections.
e. Record the following:
    1) Model number.
    2) Serial number.
    3) Firmware revision.
    4) Software revision.
    5) Rated control voltage.
f. Verify operation of display and indicating devices.
g. Record passwords.
h. Verify the unit is grounded in accordance with the manufacturer's instructions.
i. Set required parameters including instrument transformer ratios, system type, frequency, power demand methods/intervals, and communications requirements.

2. Electrical tests:
    a. Apply voltage or current as appropriate to each analog input and verify correct measurement and indication.
    b. Confirm correct operation and setting of each auxiliary input/output feature including mechanical relay, digital and analog.
    c. After initial system energization, confirm measurements and indications are consistent with loads present.
3. Test values:
    a. Nameplate data shall match the Contract Documents.
    b. Tightness of electrical connections shall ensure a low resistance connection.
    c. Display and indicating devices shall operate in accordance with the manufacturer's published data.
    d. Measurement and indication of applied voltages and currents shall be within the manufacturer's published tolerances for accuracy.
    e. Auxiliary input/output features shall operate in accordance with the settings and the manufacturer's published data.
    f. Measure and indications shall be consistent with energized system loads.

K. Grounding systems:
1. Visual and mechanical inspection:
    a. Inspect ground system for compliance with the Contract Documents and the NEC.
    b. Inspect physical and mechanical condition.
    c. Inspect bolted electrical connections for high resistance using one of the following methods:
        1) Use of low-resistance ohmmeter.
        2) Verify tightness of accessible bolted electrical connections by calibrated torque wrench method:
            a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
    d. Inspect anchorage.
2. Electrical tests:
    a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.

b. Perform fall of potential test or alternative test in accordance with IEEE 81 on the main grounding electrode or system.
c. Perform point-to-point tests to determine the resistance between the main grounding system and major electrical equipment frames, the system neutral and any derived neutral points.

3. Test values:
   a. Grounding system electrical and mechanical connections shall be free of corrosion.
   b. Compare bolted connection resistance values to values of similar connections:
      1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
   c. Bolt-torque levels shall be in accordance with the manufacturer's published data:
      1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
   d. Resistance between the main grounding electrode and ground shall be as specified in Section 16060 - Grounding and Bonding.
   e. Investigate point-to-point resistance values that exceed 0.5 ohm.

L. Rotating machinery, AC induction motors and generators:
1. Visual and mechanical inspection:
   a. Compare equipment nameplate information with the Contract Documents.
   b. Inspect physical and mechanical condition.
   c. Inspect anchorage, alignment, and grounding.
   d. Inspect air baffles, filter media, cooling fans, slip rings, brushes, and brush rigging.
   e. Inspect bolted electrical connections for high resistance using one or more of the following methods:
      1) Use of low-resistance ohmmeter.
      2) Verify tightness of accessible bolted electrical connections by calibrated torque wrench method:
         a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
   f. Manually rotate the rotor and check for problems with the bearings or shaft.
   g. Rotating equipment:
      1) Operate at rated design load conditions.
      2) Confirm that equipment is properly assembled.
      3) Confirm the equipment moves or rotates in the proper direction.
      4) Confirm shafting, drive elements, and bearings are installed and lubricated in accordance with proper tolerances.
      5) Confirm that no unusual power consumption, lubrication temperatures, bearing temperatures, or other conditions are observed.
   h. Verify correct application of appropriate lubrication and lubrication systems.
   i. Verify that resistance temperature detector (RTD) circuits conform to that indicated on the Drawings.
2. Electrical tests - AC induction:
   a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.

b. Perform insulation-resistance test in accordance with IEEE 43:
    1) On motors 200 horsepower and smaller, test duration shall be 1 minute. Calculate dielectric absorption ratio for 60/30-second periods.
    2) On motors larger than 200 horsepower, test duration shall be 10 minutes. Calculate polarization index.
c. On machines rated at 2,300 volts and greater, perform dielectric withstand voltage tests in accordance with:
    1) IEEE 95 for DC dielectric withstand voltage tests.
    2) NEMA MG1 for AC dielectric withstand voltage tests.
d. Perform phase-to-phase stator resistance test on machines rated at 2,300 volts and greater.
e. Perform insulation-resistance test on insulated bearings in accordance with the manufacturer's published data.
f. Test surge protection devices as specified in this Section.
g. Test motor starter as specified in this Section.
h. Perform resistance tests on resistance temperature detector (RTD) circuits.
i. Verify operation of motor space heater, if applicable.
j. Perform vibration test while machine is running under load.

3. Test values:
    a. Inspection:
        1) Air baffles shall be clean and installed in accordance with the manufacturer's published data.
        2) Filter media shall be clean and installed in accordance with the manufacturer's published data.
        3) Cooling fans shall operate.
        4) Slip ring alignment shall be within the manufacturer's published tolerances.
        5) Brush alignment shall be within the manufacturer's published tolerances.
        6) Brush rigging shall be within the manufacturer's published tolerances.
    b. Compare bolted connection resistance values to values of similar connections:
        1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    c. Bolt-torque levels shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    d. Airgap spacing and machine alignment shall be in accordance with the manufacturer's published data.
    e. Recommended minimum insulation-resistance ($IR_{1\ min}$) test results in megohms shall be in accordance with NETA ATS tables.
        1) Polarization index value shall not be less than 2.0.
        2) Dielectric absorption ratio shall not be less than 1.4.
    f. If no evidence of distress or insulation failure is observed by the end of the total time of voltage application during the dielectric withstand test, the test specimen is considered to have passed the test.
    g. Investigate phase-to-phase stator resistance values that deviate by more than 5 percent.

h. Power factor or dissipation factor values shall be compared to the manufacturer's published data:
    1) In the absence of the manufacturer's published data, compare values of similar machines.
i. Tip-up values shall indicate no significant increase in power factor.
j. If no evidence of distress, insulation failure, or waveform nesting is observed by the end of the total time of voltage application during the surge comparison test, the test specimen is considered to have passed the test.
k. Bearing insulation-resistance measurements shall be within manufacturer's published tolerances:
    1) In the absence of the manufacturer's published data, compare values of similar machines.
l. Test results of surge protection devices shall be as specified in this Section.
m. Test results of motor starter equipment shall be as specified in this Section.
n. RTD circuits shall conform to the design intent and machine protection device manufacturer's published data.
o. Heaters shall be operational.
p. Vibration amplitudes of the uncoupled and unloaded machine shall be in accordance with the manufacturer's published data:
    1) In the absence of the manufacturer's published data, vibration amplitudes shall not exceed values in NETA ATS tables.
    2) If values exceed those in the NETA ATS tables, perform a complete vibration analysis.

M. Motor starters, low voltage:
1. Visual and mechanical inspection:
    a. Compare equipment nameplate information with the Contract Documents.
    b. Inspect physical and mechanical condition.
    c. Inspect anchorage, alignment, and grounding.
    d. Verify the unit is clean.
    e. Inspect contactors:
        1) Verify mechanical operation.
        2) Verify contact gap, wipe, alignment, and pressure is in accordance with the manufacturer's published data.
    f. Motor-running protection:
        1) Verify overload element rating/motor protection settings are correct for its application.
        2) If motor running protection is provided by fuses, verify correct fuse rating.
    g. Inspect bolted electrical connections for high resistance using one of the following methods:
        1) Use of low-resistance ohmmeter.
        2) Verify tightness of accessible bolted electrical connections by calibrated torque wrench method:
            a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
    h. Lubrication requirements:
        1) Verify appropriate lubrication on moving current-carrying parts.
        2) Verify appropriate lubrication on moving and sliding surfaces.

2. Electrical tests:
    a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.
    b. Perform insulation-resistance tests for 1 minute on each pole, phase-to-phase and phase-to-ground with the starter closed, and across each open pole for 1 minute:
        1) Test voltage shall be in accordance with the manufacturer's published data.
        2) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    c. Test motor protection devices in accordance with the manufacturer's published data.
    d. Test circuit breakers as specified in this Section.
    e. Perform operational tests by initiating control devices.
3. Test values:
    a. Compare bolted connection resistance values to values of similar connections:
        1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    c. Insulation-resistance values shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
        2) Investigate values of insulation-resistance less than the allowable minimum.
    d. Motor protection parameters shall be in accordance with the manufacturer's published data.
    e. Circuit breaker test results shall as be specified in this Section.
    f. Control devices shall perform in accordance with system design requirements.

N. Motor control centers, low voltage:
1. Visual and mechanical inspection:
    a. Compare equipment nameplate data with the Contract Documents.
    b. Inspect physical and mechanical condition.
    c. Inspect anchorage, alignment, grounding and required clearances.
    d. Verify the unit is clean and shipping bracing, loose parts, and documentation shipped inside cubicles have been removed.
    e. Verify that circuit breaker/fuse sizes and types correspond to the approved Submittals and the coordination study.
    f. Verify that current and voltage transformer ratios correspond to those indicated on the Drawings.
    g. Verify that wiring connections are tight and that wiring is secure to prevent damage during routine operation of moving parts.
    h. Inspect bolted electrical connections for high resistance using one of the following methods:
        1) Use of low-resistance ohmmeter.

2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:
a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.

i. Verify operation and sequencing of interlocking systems:
1) Attempt closure on locked-open devices.
2) Attempt to open locked-closed devices.
3) Make/attempt key-exchanges in all positions.

j. Lubrication requirements:
1) Verify appropriate lubrication on moving current-carrying parts.
2) Verify appropriate lubrication on moving and sliding surfaces.

k. Inspect insulators for evidence of physical damage or contaminated surfaces.

l. Verify correct barrier and shutter installation and operation.

m. Exercise active components.

n. Inspect indicating devices for correct operation.

o. Verify that filters are in place and/or vents are clear.

p. Perform visual and mechanical inspection of instrument transformers as specified in this Section.

q. Perform visual and mechanical inspection of surge arresters as specified in this Section.

r. Inspect control power transformers:
1) Inspect for physical damage, cracked insulation, broken leads, and tightness of connections, defective wiring, and overall general condition.
2) Verify that primary and secondary fuse/circuit breaker ratings match the Submittal Drawings.
3) Verify correction functioning of grounding contacts.

s. Perform visual and mechanical inspection of motor control center components as specified in this Section.

2. Electrical tests:
a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.

b. Perform insulation-resistance tests on each bus section, phase-to-phase and phase-to-ground for 1 minute:
1) Perform test in accordance with NETA ATS tables.

c. Perform a dielectric withstand test on each bus section, each phase-to-ground with phases not under test grounded, in accordance with the manufacturer's published data or NETA ATS tables. Apply the test voltage for 1 minute.

d. Perform electrical tests on instrument transformers as specified in this Section.

e. Perform ground-resistance tests:
1) Perform point-to-point tests to determine the resistance between the main grounding system and major electrical equipment frames, system neutral and derived neutral points.

f. Control power transformers:
1) Perform insulation-resistance tests, winding-to-winding and winding-to-ground:
a) Test voltages shall be in accordance with NETA ATS tables or as specified by the manufacturer.

2) Perform secondary wiring integrity test:
a) Disconnect transformer at secondary terminals and connect secondary wiring to a rated secondary voltage source:
(1) Verify correct potential at all devices.
3) Verify correct secondary voltage by energizing primary winding with system voltage:
a) Measure secondary voltage with the secondary wiring disconnected.

g. Verify operation of space heaters.
h. Perform electrical tests of motor control center components as specified in this Section.

3. Test values:
a. Compare bolted connection resistance values to values of similar connections:
1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
c. Insulation-resistance values for bus and control power transformers shall be in accordance with the manufacturer's published data:
1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
2) Investigate insulation values less than the allowable minimum.
3) Do not proceed with dielectric withstand voltage tests until insulation-resistance values are above minimum values.
d. Bus insulation shall withstand the over potential test voltage applied.
e. Instrument transformer test values shall be as specified in this Section.
f. Investigate grounding system point-to-point resistance values that exceed 0.5 ohm.
g. Meter accuracy shall be in accordance with the manufacturer's published data.
h. Control power transformers:
1) Insulation-resistance values of control power transformers shall be in accordance with the manufacturer's published data:
a) Refer to NETA ATS tables in the absence of the manufacturer's published data.
b) Investigate insulation values less than the allowable minimum.
c) Do not proceed with dielectric withstand voltage tests until insulation-resistance values are above minimum values.
2) Secondary wiring shall be as indicated on the Drawings and specified in the Specifications.
3) Secondary voltage shall be as indicated on the Drawings.
i. Heaters shall be operational.
j. Test values for motor control center components shall be as specified in this Section.

O. Variable frequency drive systems:
1. Visual and mechanical inspection:
a. Compare equipment nameplate data with the Contract Documents.

b. Inspect physical and mechanical condition.
c. Inspect anchorage, alignment, and grounding.
d. Verify the unit is clean.
e. Ensure vent path openings are free from debris and that heat transfer surfaces are clean.
f. Verify correct connections of circuit boards, wiring, disconnects, and ribbon cables.
g. Motor running protection:
    1) Verify drive overcurrent setpoints are correct for their application.
    2) If drive is used to operate multiple motors, verify individual overload element ratings are correct for their application.
    3) Apply minimum and maximum speed setpoints. Verify setpoints are within limitations of the load coupled to the motor.
h. Inspect bolted electrical connections for high resistance using one of the following methods:
    1) Use of low-resistance ohmmeter.
    2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:
        a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
i. Verify correct fuse sizing in accordance with the manufacturer's published data.
j. Perform visual and mechanical inspection of input circuit breaker as specified in this Section.

2. Electrical tests:
    a. Perform resistance measurements through bolted connections with low resistance ohmmeter.
    b. Test the motor overload relay elements by injecting primary current through the overload circuit and monitoring trip time of the overload element.
    c. Test for the following parameters in accordance with relay calibration procedures specified in NETA ATS, or as recommended by the manufacturer:
        1) Input phase loss protection.
        2) Input overvoltage protection.
        3) Output phase rotation.
        4) Overtemperature protection.
        5) Direct current overvoltage protection.
        6) Overfrequency protection.
        7) Drive overload protection.
        8) Fault alarm outputs.
    d. Harmonic distortion measurements for both voltage and current is within the specification limits at the installed site.
    e. Peak voltage at the motor terminations is less than 90 percent of the motor insulation dielectric withstand level.
    f. Perform continuity tests on bonding conductors as specified in accordance with NETA ATS.
    g. Perform start-up of drive in accordance with the manufacturer's published data. Calibrate drive to the system's minimum and maximum speed control signals.

h. Perform operational tests by initiating control devices:
    1) Slowly vary drive speed between minimum and maximum. Observe motor and load for unusual noise or vibration.
    2) Verify operation of drive from remote start/stop and speed control signals.
i. Perform electrical tests of input circuit breaker as specified in this Section.
j. Measure fuse resistance.

3. Test values:
    a. Compare bolted connection resistance values to values of similar connections:
        1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
    b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
        1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
    c. Overload test trip times at 300 percent of overload element rating shall be in accordance with the manufacturer's published time-current curve.
    d. Test values for input circuit breaker shall be as specified in this Section.
    e. Continuity of bonding conductors shall be in accordance with NETA ATS.
    f. Control devices shall perform in accordance with system requirements.
    g. Operational tests shall conform to system design requirements.
    h. Investigate fuse resistance values that deviate from each other by more than 15 percent.

P. Surge arresters, low-voltage:
1. Visual and mechanical inspection:
    a. Compare equipment nameplate data with the Contract Documents.
    b. Inspect physical and mechanical condition.
    c. Inspect anchorage, alignment, grounding, and clearances.
    d. Verify the arresters are clean.
    e. Inspect bolted electrical connections for high resistance using one of the following methods:
        1) Use of low-resistance ohmmeter.
        2) Verify tightness of accessible bolted electrical connections by the calibrated torque wrench method:
            a) Refer to the manufacturer's instructions for proper foot-pound levels or NETA ATS tables.
    f. Verify that the ground lead on each device is individually attached to a ground bus or ground electrode.
    g. Verify that stroke counter is correctly mounted and electrically connected, if applicable.
    h. Record stroke counter reading.
2. Electrical tests:
    a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter.
    b. Perform an insulation-resistance test on each arrester, phase terminal-to-ground:
        1) Apply voltage in accordance with manufacturer's published data.
        2) Refer to NETA ATS tables in the absence of the manufacturer's published data.

c. Test grounding connection as specified in this Section.

3. Test values:
   a. Compare bolted connection resistance values to values of similar connections:
      1) Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
   b. Bolt-torque levels shall be in accordance with the manufacturer's published data:
      1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
   c. Insulation-resistance values shall be in accordance with the manufacturer's published data:
      1) Refer to NETA ATS tables in the absence of the manufacturer's published data.
      2) Investigate insulation values less than the allowable minimum.
   d. Resistance between the arrester ground terminal and the ground system shall be less than 0.5 ohm.

Q. Fiber-optic cables:
   1. Visual and mechanical inspection:
      a. Compare cable, connector, and splice data with the Contract Documents.
      b. Inspect cable and connections for physical and mechanical damage.
      c. Verify that connectors and splices are correctly installed.
   2. Optical tests:
      a. Perform cable length measurement, fiber fracture inspection, and construction defect inspection using an optical time domain reflectometer (OTDR):
         1) OTDR test performed on fiber cables less than 100 meters shall be performed with the aid of a launch cable.
         2) Adjust OTDR pulse width settings to a maximum setting of 1/1,000th of the cable length or 10 nanoseconds.
      b. Perform connector and splice integrity test using an optical time domain reflectometer.
      c. Perform cable attenuation loss measurement with an optical power loss test set:
         1) Perform attenuation tests with an optical loss test set capable and calibrated to show anomalies of 0.1 dB as a minimum.
         2) Test multimode fibers at 850 nanometer and 1,300 nanometer.
         3) Test single mode fibers at 1,310 nanometer and 1,550 nanometer.
      d. Perform connector and splice attenuation loss measurement from both ends of the optical cable with an optical power loss test set:
         1) At the conclusion of all outdoor splices at 1 location, and before they are enclosed and sealed, splices shall be tested with OTDR at the optimal wavelengths (850 and 1,300 for multimode, 1,310 and 1,550 for single mode), in both directions. Splices shall be tested for integrity as well as attenuation.
      e. Perform fiber links integrity and attenuation tests using each link shall be an OTDR and an optical loss test set:
         1) OTDR traces shall be from both directions on each fiber at the 2 optimal wavelengths, 850 nanometer, and 1,300 nanometer for multimode fibers.

2) Optical loss testing shall be done with handheld test sets in 1 direction at the 2 optimal wavelengths for the appropriate fiber type. Test equipment shall equal or exceed the accuracy and resolution of Agilent/HP 8147 high performance OTDR.

3. Test values:
   a. Cable and connections shall not have been subjected to physical or mechanical damage.
   b. Connectors and splices shall be installed in accordance with industry standards.
   c. Optical time domain reflectometer signal should be analyzed for excessive connection, splice, or cable backscatter by viewing the reflected power/distance graph.
   d. Attenuation loss measurement shall be expressed in dB/km. Losses shall be within the manufacturer's recommendations when no local site specifications are available.
   e. Individual fusion splice losses shall not exceed 0.1 dB. Measurement results shall be recorded, validated by trace, and filed with the records of the respective cable runs.

R. Copper Ethernet cable installation testing:
   1. Pre-installation:
      a. Immediately prior to installation, verify that cable to be installed matches that which was submitted.
      b. Verify that no damage has been done to the cable during shipping or handling.
      c. Inspect cable for physical and mechanical damage.
      d. Engineer shall be notified if a cable fails to meet inspection and the cable shall not be installed unless otherwise directed by the Engineer.
   2. Post-installation:
      a. Prior to copper Ethernet cable termination, perform cable end-to-end continuity validation testing on installed cables, conductor pairs and cable shields using toner and probe kit. Any cable that fails testing shall be removed and replaced.
      b. Inspect equipment outlet connectors for damage and ensure connectors hold tightly in field device ports.
   3. Test equipment:
      a. Certification equipment used for the testing shall be capable of verifying twisted pair cable installation with end-to-end continuity testing.
      b. Use only test cords and adapters that are qualified by the test equipment manufacturer for channel or link test configuration.
      c. Manufacturers: The following or equal:
         1) Fluke Networks, IntelliTone Pro 200 Toner and Probe Kit, MT-8200-60-KIT.
      d. Permanent link testing requirements: As specified in Section 17950 - Commissioning for Instrumentation and Controls.

3.04 CLEANING

A. Dispose of testing expendables.

B. Vacuum cabinets.

C. Sweep clean surrounding areas.

END OF SECTION

SECTION 17050

COMMON WORK RESULTS FOR PROCESS CONTROL AND INSTRUMENTATION SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Process control and instrumentation systems requirements for common components including installation, including, but not limited to, the following:
      a. Hardware.
      b. Software.
      c. Programming.
      d. Testing.
      e. Commissioning.
   2. Loop drawings:
      a. Provide complete loop drawings for all systems, including packaged equipment furnished as part of a vendor furnished package, and pre-purchased equipment.
      b. The form, minimum level of detail, and format for the loop drawings must match that of the sample loop drawings included in the Contract Documents.
      c. Owner and Engineer are not responsible for providing detailed loop diagrams for Contractor furnished equipment.
   3. Requirements of the Instrumentation and Control Specifications apply to all Instrumentation and Control Work specified in Technical Sections, including packaged mechanical systems, LCPs, VCPs, etc.
   4. Carollo Engineers Inc will be providing the PLC programming and SCADA programming; and is referred to as the programmer in this section.

B. Contract Drawings:
   1. Schematic diagrams:
      a. Use schematic diagrams in conjunction with the descriptive operating sequence in the Technical Sections to furnish a coordinated and fully functional control system.
      b. Schematic diagrams show control function only.
         1) Incorporate other necessary functions for proper operation and protection of the system.
      c. Controls are indicated on the Drawings as de-energized.
      d. Add relays, where required, to provide necessary contacts for the control system or where needed to function as interposing relays for control voltage coordination, equipment coordination, or control system voltage drop considerations.
      e. Mount devices shown on motor controller schematic diagrams in the controller compartment enclosure, unless otherwise noted or indicated on the Drawings.

1.02 REFERENCES

A. Abbreviations:
   1. ACB: Automatic current balance.
   2. ATS: Automatic Transfer Switch.
   3. CCS: The PCS central computer system (CCS) consisting of computers and software. The personal computer-based hardware and software system that includes the operator interface, data storage, data retrieval, archiving, alarming, historian, reports, trending, and other higher level control system software and functions.
   4. DPDT: Double-pole, double-throw.
   5. ECP: Electronic circuit protector.
   6. ES: Ethernet Switch.
   7. FAT: Factory acceptance test also known as Source Test.
   8. HART: Highway addressable remote transducer.
   9. HMI: Human machine interface is a software application that presents information to an operator or user about the state of a process, and to accept and implement the operators control instructions. Typically, information is displayed in a graphical format.
   10. HOA: Hand-Off-Auto control function that is totally PLC based. In the Hand mode, equipment is started or stopped, valves are opened or closed through operator direction under the control of the PLC software. In the Auto mode, equipment is started or stopped, and valves are opened or closed through a control algorithm within the PLC software. In the Off mode, the equipment is prohibited from responding from the PLC control.
   11. I/O: Input/Output.
   12. ICSC: Instrumentation and control system contractor: Subcontractor who specializes in the design, construction, fabrication, software development, installation, testing, and commissioning of industrial instrumentation and control systems.
   13. IJB: Instrument junction boxes: A panel designed with cord sets to easily remove, replace, or relocate instrument signals.
   14. IP: Internet protocol or ingress protection.
   15. LAN: Local area network: A control or communications network that is limited to the physical boundaries of the facility.
   16. LCP: Local control panel: Operator interface panel that may contain an HMI, pilot type control devices, operator interface devices, control relays, etc. and does not contain a PLC or RIO.
   17. LOI: Local Operator Interface is an operator interface device consisting of an alphanumeric or graphic display with operator input functionality. The LOI is typically a flat panel type of display mounted on the front of an enclosure with either a touch screen or tactile button interface.
   18. LOR: Local-Off-Remote control function. In the Remote mode, equipment is started or stopped, and valves are opened or closed through the PLC based upon the selection of the HOA. In the Local mode, equipment is started or stopped, valves are opened or closed based upon hardwired control circuits completely independent of the PLC with minimum interlocks and permissive conditions. In the Off mode, the equipment is prohibited from responding to any control commands.

19. NJB: Network junction box. An enclosure that contains multiple access points to various networks within the facility. Networks could be Ethernet, Ethernet/IP, Fieldbus, RIO, etc.
20. P&ID: Process and instrumentation diagram.
21. PC: Personal computer.
22. PCIS: Process control and instrumentation system: Includes the entire instrumentation system, the entire control system, and all of the Work specified in the Instrumentation and Control Specifications and depicted on the Instrumentation Drawings. This includes all the PCS and instruments and networking components as well as the various servers, workstations, thin clients, etc.
23. PCM: Process control module: An enclosure containing any of the following devices: PLC, RTU, or RIO.
24. PCS: Process Control System: A general name for the computerized system that gathers and processes data from equipment and sensors and applies operational controls to the process equipment. It includes the PLCs and/or RIOs, LOIs, HMIs, both LCPs, VCPs and all data management systems accessible to staff.
25. PJB: Power junction box: An enclosure with terminal blocks that distribute power to multiple instruments.
26. PLC: Programmable logic controller.
27. PS: Power supply.
28. RIO: Remote I/O device for the PLC consisting of remote I/O racks or remote I/O blocks.
29. RTU: Remote telemetry unit: A controller typically consisting of a PLC, and a means for remote communications. The remote communications devices typically are radios, modems, etc.
30. SCADA: Supervisory control and data acquisition system: A general name for the computerized system that gathers and processes data from sensors and equipment located outside of the facility, such as wells, lift stations, metering stations, etc.
31. SELV: Safety extra-low voltage.
32. SFP: Small form-factor pluggable.
33. SPDT: Single-pole, double-throw.
34. SPST: Single-pole, single-throw.
35. UPS: Uninterruptible power supply.
36. VCP: Vendor control panel: Control panels that are furnished with particular equipment by a vendor other than the ICSC. These panels may contain PLCs, RIO, LOI, HMI, etc.
37. WAN: Wide area network: A control or communications network that extends beyond the physical boundaries of the facility.

B. Standards:
    1. American Petroleum Institute (API):
        a. RP 550 - Manual on Installation of Refinery Instruments and Control Systems; Part II-Process Stream Analyzers; Section 5-Oxygen Analyzers.
        b. RP 551 - Process Measurement Instrumentation.
    2. International Organization for Standardization (ISO):
        a. 9001 - Quality Management Systems - Requirements.
    3. International Society of Automation (ISA):
        a. 5.1 - Instrumentation Symbols and Identification.

b. 5.4 - Instrument Loop Diagrams.
c. 20 Instrument Forms Plus Pro-Combo-Enterprise Version (Microsoft SQL Server Express Database Software based).

4. National Electrical Manufacturers Association (NEMA).
5. National Fire Protection Association (NFPA):
   a. 70 - National Electrical Code (NEC).
6. National Institute of Standards and Technology (NIST).
7. Underwriters Laboratories, Inc. (UL):
   a. 508 - Standard of Safety for Industrial Control Equipment.
   b. 508A - Standard of Safety for Industrial Control Panels.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. 2-Wire transmitter (loop powered): A transmitter that derives its operating power supply from the signal transmission circuit and requires no separate power supply connections. As used in this Section, 2-wire transmitter refers to a transmitter that provides a signal such as 4 to 20 mA 24 VDC regulation of a signal in a series circuit with an external 24 VDC driving potential:
      a. Fieldbus communications signal or both.
   2. Control circuit: Any circuit operating at 120 volts alternating current (VAC) or direct current (VDC) or less, whose principal purpose is the conveyance of information (including performing logic) and not the conveyance of energy for the operation of an electrically powered device.
   3. Digital bus: A communication network, such as PROFIBUS, Foundation Fieldbus, or DeviceNet, allowing instruments and devices to transmit data, control functions, and diagnostic information.
   4. Instrument: A measurement device that includes a sensor for taking the measurement and one or both of the following:
      a. A local display.
      b. A device for communicating the measurement to a remote location such as a PLC or DCS.
   5. Modifications: Changing, extending, interfacing to, removing, or altering an existing circuit.
   6. Panel: An instrument support system that may be a flat surface, a partial enclosure, or a complete enclosure for instruments and other devices used in process control systems.
   7. Power circuit: Any circuit operating at 90 volts (AC or DC) or more, whose principal purpose is the conveyance of energy for the operation of an electrically powered device.
   8. Powered transmitters: A transmitter that requires a separate power source (120 VAC, 240 VAC, etc.) in order for the transmitter to develop its signal. As used in this Section, the produced signal may be a 4 to 20 mA 24 VDC signal, a digital bus communications signal, or both.
   9. Programmer: Responsible for PLC programming and SCADA/HMI software configuration.
   10. RS-485: RS-485 is also known as TIA-485 or EIA-485, is a standard defining the electrical characteristics of drivers and receivers for use in serial communications system. Electrical signaling is balanced, and multipoint

systems are supported, can be used with data rates up to 10 Mbit/s or at lower speeds distances up to 1,000 meters (4,000 feet).

11. Signal circuit: Any circuit operating at less than 50 VAC or VDC, which conveys analog information or digital communications information.

1.04 DELEGATED DESIGN

A. The requirements for Delegated Design are specified in the Technical Sections.

1.05 SUBMITTALS

A. General:
   1. Adhere to the wiring numbering scheme as specified in Section 16075 - Identification for Electrical Systems throughout the Project:
      a. Uniquely number each wire.
      b. Wire numbers must appear on Equipment Drawings.
   2. Some items of Work are represented schematically, and are designated for the most part by numbers, as derived from criteria in ISA-5.1:
      a. Employ the nomenclature and numbers designated in this Section and indicated on the Drawings exclusively throughout Shop Drawings, datasheets, and similar Submittals.
      b. Replace any other symbols, designations, and nomenclature unique to a manufacturer's, Supplier's, or Subcontractor's standard methods with those identified in this Section and indicated on the Drawings.

B. Specific Submittal requirements:
   1. Control Panel Drawings:
      a. General Requirements:
         1) Submit panel, enclosure, console, furniture, and cabinet layout drawings for all items provided.
         2) Use equipment and instrument tags as depicted on the P&IDs for all Submittals.
         3) Nameplates and Wire Labeling:
            a) Nameplate legend including text, letter size, materials, and colors.
            b) As specified in Section 16075 - Identification for Electrical Systems or as indicated on the Drawings.
         4) Structural Requirements:
            a) Anchoring method and leveling criteria, including manufacturer's recommendations for the Project site seismic criteria.
            b) Weight.
         5) Clearly show modifications to existing circuits:
            a) Show existing unmodified wiring to clearly depict the functionality and electrical characteristics of the complete modified circuits.
      b. Required for materials and equipment listed in this and other Technical Sections.
      c. Front, side, rear, internal, external elevations, and top and bottom views, showing all dimensions and all to scale.
         1) Locations of conduit entrances and access plates.
         2) Component layout and identification.

3) Complete and detailed bills of materials:
    a) Including quantity, description, manufacturer, and part number for each assembly or component for each control panel.
    b) Include all items within an enclosure.
4) Requirements for physical separation between control system components and 120 VAC, 480 VAC, and medium-voltage power cables.
5) Complete grounding requirements for each system component including any requirements for PLCs, process LANs, and Control System equipment.
6) PLC rack and card layout:
    a) Provide a count of current I/O allocation.
    b) Future I/O allocation.
    c) Quantity of spares provided.
7) NEMA rating.
8) Material and finish.

2. Schematics and Wiring Diagrams:
    a. General Requirements:
        1) Submit panel wiring diagrams for every panel that contains wiring.
        2) Use equipment and instrument tags as depicted on the P&IDs for all Submittals.
        3) Nameplates and Wire Labeling:
            a) As specified in Section 16075 - Identification for Electrical Systems or as indicated on the Drawings.
        4) Clearly show modifications to existing circuits:
            a) Show existing unmodified wiring to clearly depict the functionality and electrical characteristics of the complete modified circuits.
    b. Include the following information:
        1) Name of panel.
        2) Wiring sizes and types.
        3) Terminal strip numbers.
        4) Terminal identification for device and field connections.
        5) Wire tags and labels.
        6) Functional name and manufacturer’s designation for items to which wiring are connected.
        7) Set points for relays and control or alarm contact settings.
    c. Incorporate equipment manufacturer’s Shop Drawing information into the schematic diagrams in order to document the entire control system.
3. Loop drawings:
    a. General Requirements:
        1) Submit loop drawings for every analog, discrete, fieldbus signal, vendor supplied equipment packages, and control panels.
            a) Includes monitoring, alarming, interlocks, and control devices.
        2) Use equipment and instrument tags as depicted on the P&IDs for all Submittals.
        3) Show and identify each component of each loop or system using requirements and symbols from ISA-5.4.
        4) Provide Drawings for every instrumentation loop system:
            a) Furnish a separate Drawing sheet for each system or loop diagram.

5) Nameplates and Wire Labeling:
a) As specified in Section 16075 - Identification for Electrical Systems or as indicated on the Drawings.
6) Clearly show modifications to existing circuits:
a) Show existing unmodified wiring to clearly depict the functionality and electrical characteristics of the complete modified circuits.
7) Provide loop drawings in the format indicated in the Contract Drawings.

b. Provide a complete index in the front of each bound volume:
1) Index the loop drawings by systems or process areas.

c. In addition to the ISA-5.4 requirements, show the following details:
1) Functional name of each loop.
2) Reference name, drawing, and loop diagram numbers for any signal continuing off the loop diagram sheet.
3) Show all terminal numbers, regardless of the entity providing the equipment.
4) MCC panel, circuit, and breaker numbers for power feeds to the loops and instrumentation.
5) Terminal assignments associated with every manhole, pull-box, junction box, conduit, and panel through which the loop circuits pass.
6) Show vendor control panel, instrument panel, conduit, junction box, equipment and PCS terminations, termination identification, wire numbers and colors, power circuits, and ground identifications.
7) Cables required for communication requirements.

4. PLC I/O List:
a. A complete listing of the PCS system point I/O database:
1) Include for each data point relevant parameters such as range, contact orientation, limits, incremental limits, I/O hardware address, and PLC assignment.
2) Organize on a site-by-site basis and separate by point type.
3) In addition to the active I/O points, list the implemented spare I/O points and the available I/O points remaining on each card, as well as other defined future points specified or shown.
4) Upon completion of the Work, update I/O lists to indicate the final as-built configuration of the systems:
a) Organize as-built I/O list on a site-by-site basis, separated by equipment and point type.

5. Instrument Datasheets:
a. The datasheets provided with the instrument specifications are preliminary and are not complete but are provided to assist with the completion of final instrument datasheets. Additional datasheets may be required.
b. Furnish fully completed datasheets for each instrument and component according to ISA-20 Specification Forms for Process Measurement and Control Instruments, Primary Elements and Control Valves.
c. Format: Provide datasheets in Microsoft Word or Microsoft Excel.
1) Features and options that are furnished.
d. Provide completed datasheet as specified in the Technical Sections and for each control system component.

6. Instrument Installation Drawings:
    a. Provide instrument installation, mounting, and anchoring details for components and assemblies, including access requirements and conduit connection or entry details.
    b. Each installation shall be identified by the equipment or instrument by tag number.
    c. Provide certification by the instrument manufacturer that the proposed installation is in accordance with the instrument manufacturer's recommendations and is fully warrantable.
    d. Provide, at a minimum, the following contents for each detail:
        1) Necessary sections and elevation views required to define instrument location by referencing tank, building, or equipment names and numbers, and geographical qualities such as north, south, east, west, basement, first floor, etc.
        2) Ambient temperature and humidity where the instrument is to be installed.
        3) Corrosive qualities of the environment where the instrument is to be installed.
        4) Hazardous rating of the environment where the instrument is to be installed.
        5) Process line pipe or tank size, service, and material.
        6) Process tap elevation and location.
        7) Upstream and downstream straight pipe lengths between instrument installation and pipe fittings and valves.
        8) Routing of tubing and identification of supports.
        9) Mounting brackets, stands, anchoring devices, and sunshades.
        10) Conduit entry size, number, location, and delineation between power and signal.
        11) NEMA ratings of enclosures and components.
        12) Clearances required for instrument servicing.
        13) List itemizing manufacturer makes, model numbers, quantities, lengths required, and materials of each item required to support the implementation of the detail.
7. Product data:
    a. Provide a technical brochure or bulletin ("cutsheet") for each instrument or equipment on the project labeled with equipment and instrument tags as depicted on the P&IDs.
        1) Submit with the corresponding datasheets.
        2) Organization: Index product data in the Submittal by systems or loops.
    b. Engineering data:
        1) Test data and performance curves, when applicable.
    c. Manufacturer's technical reference manuals.
8. Commissioning Submittals:
    a. As specified in Section 01756 - Commissioning.
    b. Manufacturer representative qualifications.
    c. Manufacturer certificates.
    d. Test plans.
    e. Test reports.
    f. Owner Training Submittals.

g. Operation and maintenance manuals.
    1) Organize the operation and maintenance manuals for each process in the following manner:
        a) Section A - Process and Instrumentation Diagrams.
        b) Section B - Control Panel Drawings.
        c) Section D - Schematics and Wiring Diagrams.
        d) Section E - Loop Drawings.
        e) Section F - Network Diagrams.
        f) Section G - PLC I/O List.
        g) Section I - Instrument Datasheets.
        h) Section J - Instrument Installation Drawings.
        i) Section K - Product Data.
        j) Section L - Sizing Calculations.
        k) Section M - Test Results.
        l) Section N - Operational Manual.
        m) Section O - Spare Parts List.

1.06 QUALITY ASSURANCE

A. Manufacture instruments at facilities certified to the quality standards of ISO 9001.

B. Provide equipment listed by and bearing the label of UL or of an independent testing laboratory acceptable to the Engineer and the Authority Having Jurisdiction.

C. The ICSC must have their own operating UL listed panel fabrication facility.
    1. Panels must be fabricated at this facility and meet UL 508/508A requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt of instruments in the field:
    1. Outside of the package: Prominently display tag number identification.
    2. On each instrument: Provide a nameplate as specified in this Section.

1.08 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

B. Area classifications:
    1. Furnish enclosures that match the area classifications as specified in Section 16050 - Common Work Results for Electrical.

1.09 ADMINISTRATIVE REQUIREMENTS

A. Project PCIS overview meeting (kickoff meeting):
    1. Contractor leads the meeting.
    2. Timing:
        a. Prior to start of ICSC and Programmer Work.
    3. Attendees:
        a. Engineer, Owner, ICSC, and Programmer.
        b. Contractor.
        c. Electrical subcontractor.

d. Manufacturers furnishing major pieces of equipment must attend, including, but not limited to:
    1) Vendor control panels.
    2) Chemical feed systems.
    3) Motor control centers.
    4) Variable frequency drives.

4. Agenda:
    a. Meeting purpose:
        1) Ensure parties listed in 3.a above are aware of and in agreement to the details of the items listed below in b. thru k.
    b. Review entire project.
    c. Review equipment lists.
    d. Review control philosophy.
    e. Review schedules.
    f. Review Submittal requirements.
    g. Discuss Construction activities
    h. Discuss Commissioning activities
    i. Safety and security.
    j. Action items.
    k. Next meeting.

B. Construction Meetings:
1. Contractor leads the meeting.
2. Timing:
    a. As necessary and determined by the Contractor.
3. Attendees:
    a. As the Contractor sees fit but the Owner and Engineer must be notified (invited to) 2 weeks prior of all meetings; unless the meeting is an emergency.
4. Agenda:
    a. Determined by the Contractor.
5. Final review meeting:
    a. Contractor leads the meeting.
    b. Timing:
        1) After initial completion of configuration work.
        2) Prior to the Source Test.
    c. Attendees:
        1) Engineer, Owner, Programmer, and ICSC.
    d. Agenda:
        1) Meeting purpose:
            a) Ensure parties listed in 5.c above are aware of and in agreement to the details of the items listed below in 2. thru 9.
        2) Review the PLC and SCADA system configuration.
        3) Review the PLC and SCADA HMI system database.
        4) Review the control schemes.
        5) Review the PLC HMI and SCADA HMI displays.
        6) Review the report formats.
        7) Safety and security.
        8) Action items.
        9) Next meeting.
    e. Make final format revisions after this review.

f. Additional requirements as specified in the following:
    1) Section 17100 - Control Strategies.
    2) Section 17101A - Specific Control Strategies.
    3) Section 17720 - Control Systems: Programmable Logic Controllers.

6. Pre-Commissioning Meeting:
    a. Contractor leads the meeting.
    b. Timing:
        1) 1 week prior to commissioning commences.
    c. Attendees:
        1) Owner, Engineer, ICSC, Programmer, and packaged equipment vendors.
    d. Agenda:
        1) Meeting Purpose:
            a) Discuss and agree to Who, What, When, Why, Where, and How as detailed in the Commissioning plan.
                (1) Commissioning plan to contain but not limited to:
                    (a) Procedure.
                    (b) Forms/Documentation.
                    (c) Schedule.
                    (d) Resourcing.
7. Commissioning Meetings:
    a. Contractor leads the meeting.
    b. Timing:
        1) As necessary and determined by the Contractor.
    c. Attendees:
        1) As the Contractor sees fit but the Owner and Engineer must be notified (invited to) 2 weeks prior of all meetings; unless the meeting is an emergency.
    d. Agenda:
        1) Determined by the Contractor.
8. Post Commissioning Meeting (Lessons Learned):
    a. Contractor leads the meeting.
    b. Timing:
        1) Determined by the Contractor.
    c. Attendees:
        1) Owner, Engineer, ICSC, Programmer.
    d. Agenda:
        1) Results of Commissioning.
        2) Lessons Learned.
            a) Successes.
            b) Opportunities to improve.

PART 2 PRODUCTS

2.01 GENERAL

A. Furnish meters, instruments, and other components that are the most recent field proven models marketed by their manufacturers at the time of Submittal of the Shop Drawings unless otherwise specified to match existing equipment.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Non-conditioned spaces:
   1. Provide additional temperature conditioning equipment to maintain equipment in non-conditioned spaces subject to these ambient temperatures, between 60 and 90 degrees Fahrenheit.

B. Outdoor installations:
   1. Provide electrical, instrumentation and control equipment suitable for operation in the ambient conditions where the equipment is located.
   2. Provide heating, cooling, and dehumidifying devices incorporated into and included with electrical equipment, instrumentation and control panels to maintain the enclosures within the rated environmental operating ranges as specified in the Sections for the equipment.
      a. Assume an external temperature range of -5 to 120 degrees Fahrenheit.

C. This facility includes classified areas:
   1. As specified in Section 16050 - Common Work Results for Electrical.
   2. Provide enclosures suitable for the area classification.
   3. Where suitable enclosures are not available, utilize other methods such as intrinsic safety barriers.

D. Unless otherwise specified, furnish individual instruments that have a minimum accuracy of within 0.5 percent of full scale and a minimum repeatability of within 0.25 percent of full scale.

E. Discrete circuit configuration:
   1. Configure discrete control circuits to fail safe, on loss of continuity or loss of power.
   2. Alarm contacts: Fail to the alarm condition.
   3. Control contacts fail to the inoperative condition unless otherwise indicated on the Drawings.

F. Grounding:
   1. Analog signal cables shields shall only be grounded at a single point in the loop. Unless otherwise noted, ground signal cable shields at control panel.
   2. For communication and data line signal cable shields and drain wires should be grounded at both ends of the cable.
   3. Insulate the shielding and exposed drain wire for each signal cable with heat-shrink tubing.
   4. Terminate the signal cable shield on a dedicated grounding terminal block.
   5. Provide isolating amplifiers within control panels for field equipment possessing a grounded input or output, except when the panel circuit is galvanically isolated.

G. Terminal blocks:
   1. Schematics do not reflect the actual conductor routing. Add intermediate terminal in enclosures and equipment as needed based on the actual conductor routing.

H. Signal transmission:
   1. Analog signals:
      a. Furnish analog measurements and control signals that vary in direct linear proportion to the measured variable, unless otherwise indicated.
      b. Furnish electrical analog signals outside control panels that are 4 to 20 mA 24 VDC, except as indicated.
      c. Electrically or optically isolate analog signals from other signals.
      d. Furnish regulated analog signals that are not affected by changes in supply voltage or load resistance within the unit's rating.
      e. Maintain the total 4 to 20 mA loop impedance to 10 percent below the published value at the loop operating voltage.
      f. Where necessary, reduce loop impedance by providing current-to-current (I/I) isolation amplifiers for signal re-transmission.
   2. Discrete input signals:
      a. As indicated in the controller hardware specification.
   3. Discrete output signals:
      a. Dry contacts or TRIAC outputs (with express written approval by the Engineer) as needed to coordinate with the field device.
      b. Provide external terminal block mounted fuse with blown fuse indication for discrete outputs.
      c. Provide interposing relays for discrete outputs for voltage and/or current compatibilities.
      d. Provide interposing relays as required for functionality of the control circuit.
   4. Signal performance and design criteria:
      a. Stability:
         1) After controls have taken corrective action, oscillation of the final control element shall not exceed 2 cycles per minute or a magnitude of motion of 0.5 percent of full travel.
      b. Response:
         1) Any change in setpoint or controlled variable shall produce a corrective change in position of the final control element and stabilized within 30 seconds.
      c. Agreement:
         1) Setpoint indication of controlled variable and measured indication of controlled variable shall agree within 3 percent of full scale over a 6:1 operating range.
      d. Repeatability:
         1) For any repeated magnitude of control signal, from either an increasing or decreasing direction, the final control element shall take a repeated position within 0.5 percent of full travel regardless of force required to position the final element.
      e. Sensitivity:
         1) Controls shall respond to a setpoint deviations and measured variable deviations within 1.0 percent of full scale.
      f. Performance:
         1) Instruments and control devices shall perform in accordance with the manufacturers' specifications.

2.03 ACCESSORIES

A. Provide flow conditioning devices or other required accessories as needed to meet the accuracy requirements in the Contract Documents.

PART 3 EXECUTION

3.01 INSTALLATION

A. Field instruments installation:
   1. Install field instruments as specified in the Contract Documents, API RP 550 and RP 551, and the manufacturer's instructions.
   2. Mount field instruments so that they can be easily read, readily approached, and easily serviced, and so they do not restrict access to mechanical equipment:
      a. Mount field instruments on a pipe stand or local panel, if they are not directly mounted, unless otherwise indicated on the Drawings.
      b. Provide sun shields for field electronic instruments, panels, and enclosures located outdoors. Sun shields shall include standoffs to allow air gap between shield and equipment.
      c. Orient LED, LCD, or other readout screens north to minimize sun glare and reduce potential of sun damage.
   3. Make connections from rigid conduit systems to field instruments with PVC coated flexible conduit:
      a. Type of flexible conduit required for the area classification:
         1) Area classification as specified in Section 16050 - Common Work Results for Electrical.
      b. Maximum length of 18 inches.
   4. Connect field instruments with cable as specified in the Electrical Specifications, except when the manufacturer requires the use of special cable, or otherwise specified in this Section:
      a. Special cable applications shall be in accordance with the NEC.
   5. Verify the correctness of each installation:
      a. Polarity of electric power and signal connections.
   6. Ensure process connections are free of leaks.

B. Process sensing lines and air tubing:
   1. Install individual tubes parallel and/or perpendicular to and near the surfaces from which they are supported.
   2. Provide supports for rigid tubing at intervals of not more than 3 feet.
   3. Slope horizontal runs of instrument tubing at a minimum of 1/16-inch per foot to allow for draining of any condensate.
   4. Bends:
      a. Make bends for parallel lines symmetrical.
      b. Make bends without deforming or thinning the walls of the tubing.
   5. Square-cut and clean ends of tubing before being inserted in the fittings.
   6. Provide bulkhead fittings at panels requiring pipe and/or tubing entries.

7. Use stainless steel tubing for piping hard piped from the air header, unless otherwise indicated on the Drawings or not compatible with the fluids or atmosphere in the area:
    a. Use flexible connections only on moving equipment and under the constraint that the length shall be less than 1.5 times maximum travel of the equipment.

C. Cable and conductor termination:
    1. Terminate cables and conductors on terminal blocks.
    2. Terminal block enclosures:
        a. Suitable for the area classification as specified in Section 16050 - Common Work Results for Electrical.

D. Surge protection:
    1. Provide outdoor field instrument loops with voltage surge protection units installed on the instruments and the panel.
    2. Individually fuse each 4 to 20 mA DC loop with a 1/2-amp fuse between power supplies and receiver surge protectors.
    3. Provide voltage surge protection for 4 wire transmitters and analyzers:
        a. Protect both power source and signal loop.

3.02 RE-INSTALLATION

A. Existing instrumentation:
    1. Clean, recondition and re-calibrate each existing instrument to be reused, removed, or reinstalled using an authorized service facility of the instrument manufacturer.
    2. Provide certification of this Work before reinstallation of each instrument.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning and Section 17950 - Commissioning for Instrumentation and Controls.

3.04 ADJUSTING

A. Control valves:
    1. Stroke control valves, cylinders, drives and connecting linkages from the control system as well as local control devices and adjust to verify proper control action, hand switch action, limit switch settings, torque settings, remote control actions, and remote feedback of valve status and position.
    2. Check control valve actions and positioner settings with the valves in place to ensure that no changes have occurred since the bench calibration.

B. Make revisions necessary to the control system software, as directed by the Engineer.
    1. It is understood that the Contractor knows and agrees that changes will be required in the control system software during commissioning.

3.05 CLEANING

A. Vacuum clean control panels and enclosures before process start-up and again after final completion of the project.

B. Clean panel surfaces.

C. Return to new condition any scratches and/or defects.

D. Wipe instrument faces and enclosures clean.

E. Leave wiring in panels, manholes, boxes, and other locations in a neat, clean, and organized manner:
   1. Neatly coil and label spare wiring lengths.
   2. Shorten, re-terminate, and re-label excessive spare wire and cable lengths, as determined by the Engineer.

END OF SECTION

SECTION 17100

CONTROL STRATEGIES

PART 1 GENERAL

1.01 SUMMARY

A. PLC programming and SCADA configuration/programming for Campus Oaks and Misty Wood well sites will be performed by Carollo Engineers Inc. Programming Services. Carollo Programming Services will acquire the PLC program for the Roseville Solaire Well site and duplicate/modify the program to work for Campus Oaks and Misty Wood well sites. Carollo Programming Services already knows the City's PLC and SCADA programming standards; because of this Part 3.02 – Programming Requirements is not used.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 SUBMITTALS

A. Submit the configuration files and logic files.
   1. Full annotation and descriptions for all PLCs files involved in the project, both new and modified.
   2. Highlight each aspect of the logic that complies with the End User's specifications or the Engineer's specification.
   3. Denote in the logic that does not comply with the End User's or the Engineer's specification.
   4. The Engineer's specifications can be located in this Section and Section 17101A - Specific Control Strategies - [Process Area].
   5. Logic files shall be submitted in an organized manner with searchable text and book marked.
   6. Logic files and configuration files shall be submitted together with the submittal requirement in Section 17101A - Specific Control Strategies - [Process Area].
   7. Submittals shall comply with additional submittal requirements specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 ERECTION, INSTALLATION, APPLICATION, CONSTRUCTION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.02 PROGRAMMING REQUIREMENTS (NOT USED)

3.03 COMMISSIONING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems and 01756 - Commissioning.

END OF SECTION

SECTION 17101A

SPECIFIC CONTROL STRATEGIES - [PROCESS AREA]

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Loop descriptions:
   2. Specific control requirements and functional descriptions for individual control loops.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 DEFINITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.04 SYSTEM DESCRIPTION

A. Abbreviations:
   1. **[None.]**

B. Definitions:
   1. Loop description: Specific control requirements and functional descriptions for individual control loops.
   2. **[None.]**

C. Setpoints:
   1. **[See P&IDs, Instrument Datasheets, and I/O List.]**

1.05 SUBMITTALS

A. Develop an overall control strategy for the project.

B. Develop detail loop descriptions based on loop number and title to adhere to the following:
   1. References:
      a. List P&IDs that are specifically referenced.
   2. Abstract:
      a. General description of how the loop works, what devices are involved, and how the process will be controlled.
      b. For each control loop, provide a detailed functional description of the operation of the equipment, signals, and controls shown on the P&IDs.
      c. Include all functions depicted or described in the Contract Documents.

d. Include the following within each loop description:
    1) All requirements specific to that loop.
    2) Submit loop descriptions with all implemented modifications from this Section clearly marked.
    3) Remove all markings on final loop.
    4) Common control requirements applicable to that loop.
e. Include within the Control Description content:
    1) Specific requirements.
    2) Common requirements that pertain in general to all loops.
    3) Listing ranges, setpoints, timers, values, counter values, etc.
    4) Manual keyboard entries.
    5) Entry codes.
    6) System responses.
    7) Modes:
        a) Startup.
        b) Routine and normal operation.
        c) Regulation and control.
        d) Shutdown under specified modes of operation.
        e) Emergency operating shutdown.
f. Process values, setpoints, and limits, including units and ranges:
    1) Show span and range values for analog inputs and outputs, and operating point and deadband for discrete inputs.

3. Hardwired control:
    a. Detailed description of the control functions at the local level.
    b. Function of local operator interfaces.
    c. Operation of hardwired field pilot controls:
        1) Pushbuttons.
        2) Selector switches.
        3) Potentiometers.
        4) Pilot lights, indicators, and other displays.
4. Hardwired interlocks:
    a. Explanation of the operation of system interlocks and hardwired permissive conditions.
5. PLC control:
    a. Detailed description of the control functions that are under control of the PLC.
    b. Operator controls and automatic controls.
    c. Setpoints, alarms, etc.:
        1) Include units and ranges for analog values.
        2) Include span and range for analog inputs and outputs.
        3) Include operating point and deadband for discrete inputs, and identify conditions where contacts are open, and when they close.
    d. Control sequences.
    e. Software interlocks:
        1) Operation of system software interlocks.
6. PCS/LOI/HMI control:
    a. Detailed description of the operator controls.
    b. Setpoints, alarms, etc.
7. Indicators and alarms:
    a. List any indicators and alarms specific to the loop that are not covered in the common control strategies.

8. Failure modes:
    a. List any failure modes specific to the loop that are not covered in the common control strategies.

C. Where there are similar loops with identical control, such as multiple loops for individual raw water pumps, only 1 loop description need be developed and the remaining loops may reference that loop description.

1.06 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 ASR WELL CONTROL

A. Aquifer Recharge Operation (AR in AS/AR):
    1. References:
        a. P&ID 13N01.
        b. P&ID 19N01.
        c. P&ID 13N02.
        d. P&ID 19N02.
        e. P&ID 13N03.
        f. P&ID 19N03.
    2. Abstract:
        a. Aquifer Recharge (AR) operating mode consists of directing the flow of water into the well or recharging the well using water from the Roseville distribution system for storage in the aquifer. The operational sequence is done in stages. First is to vent all air in the above ground piping. This is done by first having all valves (20, 30, 40, 50, 60) closed, including the Baski DHCV (11). Then open WD34-MOVX-30150/ WD34-MOVX-36150. Second is purge all air in the column pipe. This will be done by opening WD34-MOVX-30130/WD34-MOVX-36130 which will allow the flow of water to prime the column pipe. All venting will happen with the AVRV valves located at the above ground piping sections. Once all air is purged out the above ground piping and column pipe the modulating BASKI Down Hole Control Valve (DHCV) will regulate the recharge flow rate via control of nitrogen which actuates the BASKI valve. Purging of the air to atmosphere is to mitigate the well being clogged with entrapped air in the water.
        b. The recharge mode is used to store excess water from the Roseville system for later use. The rate of recharge flow shall be measured by the main piping discharge magmeter along with the trickle flow magmeter, and integrated over time by the PLC to determine the volume during the recharge period. (The main piping magmeter is located in a drop-loop section of piping in order to keep the unit full of water during periods when the piping may otherwise drain down when not in the recharge mode. If

allowed to drain there would be a lag in reliable flow information from the magmeter during start-up operation. The trickle flow magmeter is located near the wellhead.) The instantaneous flowrate and totalized quantity recharged shall be added to the total quantity stored information which will be displayed on the local OIT and transmitted from the PLC to the centralized historian system via the SCADA interface. Below are the steps for PLC programming to complete a Recharge cycle: (all set-points, unless noted, are specified in the set-points screen).

c. During Recharge the system uses two (2) flow control valves in series to control the flow of water.
    1) The purpose of the downhole Baski control valve (Inflate) is to create enough backpressure to keep the ASR pump vertical column pipe full so as to prevent cascading and possible air entrainment during recharge. The pump assembly below the downhole control valve has its own check valve (below the bowl assembly) that will prevent flow backwards through the pump.
    2) The rate of recharge flow will be mainly controlled by modulating the pressure (inflation / deflation of nitrogen) on the downhole control valve (BASKI valve). A secondary option, should the BASKI valve have issues, would be to modulate the flow rate using the Recharge Flow Control Valve (WD34-MOVX-30130/WD34-MOVX-36130) located on the surface piping downstream of the pressure reducing valve on the incoming recharge pipe from the system.
    3) If desired recharge rates are not met with the DHCV valve fully open and if the annular water column is brought above surface at a minimum of 2 psi, the installed Annular Recharge Valve WD34-MOVX-30120/WD34-MOVX-36120 may be used to provide additional flow capacity down well. Additionally the annular recharge valve is the third valve that will provide additional means for recharge in the well. This valve is only opened after recharge is taking place through the down hole control valve, the well annular pressure is above 2 psi (this allows for the water in the annular column space to be brought to ~4.5 feet above land surface and purging of air through the ARV attached to the annular piping), and if the desired set flow rate is not yet achieved. This valve is a fully open or closed valve. As a result, if opening the valve does create excess capacity than the set flow rate, then the DHCV shall still be modulated to decrease flow down the pump column to bring the system to the set flow rate.
    4) Recharge Mode should be initiated either by:
        a) An operator manually engaging the recharge mode.
        b) An inputted date time start/stop and/or set total volume of recharge amount.

3. Hardwired control:
    a. The following valves required for Recharge have LOCAL-STOP-REMOTE mode, when placed in LOCAL mode each valve can be either fully opened, fully closed or somewhere in between:
        1) WD34-FCVX-30150, Recharge Flow Control Valve.
        2) WD34-MOVX-30130, Pump Column Recharge Valve.
        3) WD34-MOVX-30120, Well Annulus Recharge Valve.
        4) WD34-MOVX-30140, Waste Valve.
        5) WD34-MOVX-30160, Aquifer Recovery to Production Valve.

6) WD34-FCVX-36150, Recharge Flow Control Valve.
7) WD34-MOVX-36130, Pump Column Recharge Valve.
8) WD34-MOVX-36120, Well Annulus Recharge Valve.
9) WD34-MOVX-36140, Waste Valve.
10) WD34-MOVX-36160, Aquifer Recovery to Production Valve.

4. Hardwired interlocks/Overload Programmed Interlocks:
   a. None.
5. PLC Control:
   a. Step 1 – Initiate.
      1) The operator selects the Recharge button on the local OIT.
   b. Step 2 – Maintenance Check.
      1) The ASR system will automatically go to maintenance mode where all valves are to be closed (except the trickle flow).
   c. Step 3 – Preliminary Flow.
      1) The WD34-MOVX-30150 / WD34-MOVX 36150 flow control valve shall fully open. This allows water to enter the surface piping through the modulating flow control valve and to force any air in the above ground piping to vent through air release valves (during normal recharge operation where the DHCV controls recharge rates the flow control valve should be set to fully open). After a preset time-delay sufficient to vent the air from the piping (to be determined during startup) the next downstream recharge valve for pump column recharge can be opened; however, the downhole recharge valve shall remain closed.
   d. Step 4 – Auto Control (Flow).
      1) Once the air is purged from the above ground piping the Pump Column Recharge Valve will open to allow recharge flow to begin down the pump column. As the pump column fills the air is vented out through the air release valve on the pump discharge pipe. The flow will stabilize to 0 gpm once all the air is vented. A time step (which will be determined during start up of each well) will need to be entered as a minimum set time prior to proceeding to the next recharge step.
      2) The downhole flow control valve (Baski valve) located in the pump column above the bowl assembly will open and modulate to the pre-set recharge desired flow rate which will begin recharge through the well annular space. The Baski valve opens and closes based off of low and high pressure limits of the nitrogen pressure lines attached from the above ground tanks and controls. The low pressure (fully open) and high pressure (fully close) are determined during startup but can range from 100 psi to 250 psi respectively. The programing shall regulate the nitrogen pressure to meet the set recharge desired flow rate. Pressure ranges of operation for valve settings in closed, partially opened and fully opened positions shall be established during start-up and then entered in the programing function for automatic operation. (Note the ASR pump is OFF and the non-reverse ratchet is in place to prevent any backspin. There is also a check valve on the suction of the bowl assembly to prevent reverse flow through the bowls.) As the recharge continues down the pump column and the recharge water enters the well through the downhole

control valve, the water level in the well casing annulus will rise based off the Specific Injectivity (S_i) of the aquifer.

3) If the annular pressure is greater than 2 psi and if the targeted recharge rate is not achieved with the DHCV (Baski) valve fully open, then the PLC starts a pre-set time delay to account for fluctuations in the level transducer. When the timer is done, the control sequence will continue to step 6, skipping step 5.

6. Step 5 – Auto Control (Pressure).
    1) The downhole control valve is switched to auto control based on pressure. Pressure on the Baski valve shall modulate to set recharge flow rate. The PLC shall be connected to two valves on the Baski operation panel. One valve controls the pressurization of the DHCV by opening and supplying nitrogen down hole, the other opens an above ground vent line that will depressurize the DHCV. A deadband range shall be established during startup so that there's no excess ventilation of nitrogen gas as it is a finite source.

b. Step 6 – Opening Annulus Recharge Valve (FCVX-30120 / -36120).
    1) The annulus recharge valve opens when is safe to recharge. Air entrapment is the main issue that is needed to be mitigated for annular recharge. As the water level in the well casing rises air will be released through the air and vacuum release valve on the annular recharge piping. Once the well annular pressure reaches 2 psi the water should be at ~6 feet above surface. This is above the proposed annular recharge valve WD34-MOVX-30120 (and -36120). A time step delay should be set (to be determined during startup) to verify pressure does not dip below the target 2 psi prior to opening the annular recharge valve (when the well level set-point is met). After the valve is opened, the sequence will continue to step 7.

c. Step 7 – Recharge into the well/Done.
    1) This is the last step of recharge. In this step, the PLC will maintain a steady flow based on a flow rate set-point using the downhole control valve. Water flows down the pump column, and if needed to achieve the flowrate set-point, down the annular column allowing greater flows. The annular valve shall not be shut off unless the target recharge volume is exceeded and the down hole control valve is completely closed. In that case the PLC shall open up the down hole control valve to fully open and close the annular recharge valve. A 15 minute time delay will start (may be adjusted during start up) prior returning to step 6 (this is done to manage looping between steps 6 and 7 continuously given the set flow rate may exceed the rate allowed down pump column but may exceed with annular recharge and pump column closed).
    2) The following actions will take the system out of recharge mode:
        a) Operator putting the system in Maintenance mode.
        b) As set by the inputted schedule described in 3.01.A.2.c.4(b).
        c) The PLC is constantly monitoring the well empty level. If it gets below the level set-point, a 20 second time delay will start. After the timer finishes, it will close the well annulus recharge valve and return to step 5 to control the flow based on pressure to wait for optimal conditions where the annular valve can be opened again.

7. Indicators and alarms:
    a. As mentioned in A.5 and as indicated on the Drawings.
8. Failure modes:
    a. As mentioned in A.5 and as indicated on the Drawings.

B. Waste Only (Backflush) Operation:
1. References:
    a. P&ID 13N01.
    b. P&ID 19N01.
    c. P&ID 13N02.
    d. P&ID 19N02.
    e. P&ID 13N03.
    f. P&ID 19N03.
2. Abstract:
    a. The Waste Only (or Flushing or Backflushing) operating mode consists of flushing water out of the aquifer through the well screen, pump column, and aboveground piping to the proposed air gap structure. This typically is done prior to recovery or, when specific capacity (or specific injectivity) of the well decreases 70 percent - 80 percent or after prolonged inactivity during storage season. The flushing rate of the well should be greater than the recovery rate of the well and typically would last up to an hour but the time duration, frequency and flow rates will be determined during the well development period one to two years after startup. The rate of flow will be measured by magmeter, and integrated over time by the PLC to determine the volume during the flushing period. The instantaneous flowrate and totalized flush quantity shall be deducted from the stored quantity information will be displayed on the local OIT and transmitted from the PLC to the centralized historian system via the SCADA interface. Below in C.5 are the steps the PLC is programmed to do to complete a Flushing cycle.
3. Hardwired control:
    a. The following valves required for Recharge have LOCAL-STOP-REMOTE mode, when placed in LOCAL mode each valve can be either fully opened, fully closed or somewhere in between:
        1) WD34-FCVX-30150, Recharge Flow Control Valve.
        2) WD34-MOVX-30130, Pump Column Recharge Valve.
        3) WD34-MOVX-30120, Well Annulus Recharge Valve.
        4) WD34-MOVX-30140, Waste Valve.
        5) WD34-MOVX-30160, Aquifer Recovery to Production Valve.
        6) WD34-FCVX-36150, Recharge Flow Control Valve.
        7) WD34-MOVX-36130, Pump Column Recharge Valve.
        8) WD34-MOVX-36120, Well Annulus Recharge Valve.
        9) WD34-MOVX-36140, Waste Valve.
        10) WD34-MOVX-36160, Aquifer Recovery to Production Valve.
        11) Downhole Control Valve.
    b. In LOCAL mode, VFD can be operated via the VFD HMI.
4. Hardwired interlocks/Overload Programmed Interlocks:
    a. Well Pump discharge HiHi Pressure Switch.
    b. Well Pump seal Water Lo Flow Switch.
    c. Well Pump motors HiHi Temperature.
    d. Well Pump VFD Fault.

5. PLC Control:
    a. Step 1 – Initiate.
        1) The operator inputs the Flushing rate and time for flushing on the OIT (the interface shall have the max flowrate from any prior Recovery cycle along with the max flow rate from the last set of recovery cycle(s) back to the prior Flushing Operation. Note there is a minimum flow rate required for the pump to bring the water column to surface, through the aboveground piping and to the discharge structure. This minimum flow rate shall be listed on the HMI. If operator selects flow rate less than minimum and ERROR message shall be shown on the HMI and the programing shall not progress to Step 2. The minimum flow rate shall be established during start-up).
        2) The operator hits the Flushing button on the local OIT.
    b. Step 2 – Maintenance Check.
        1) If the ASR system is coming from recharge mode or recovery mode, the sequence will continue to step 4. If the ASR system is in any other mode, it will automatically go to maintenance mode to close every valve. If all valves are closed, the sequence will continue to step 3.
    c. Step 3 – Priming Column and Above Ground Piping.
        1) The Recharge flow control valve shall open to prime the above ground piping.
        2) Once open the Pump Column Recharge Valve shall be opened.
        3) A specified time delay shall be initiated to allow for pre-lubrication of the pump shaft (the time delay is to be determined during start-up). After the time delay is completed, it will continue to step 4.
            a) Additionally the well is configured with pre-lube and is connected into the pump and controlled via a solenoid and can be programmed as a secondary option for lubrication of the line shaft. This should be programmed into the PLC and set with an initial timer of < 1 minute and adjusted during start-up.
    d. Step 4 – Open the Aquifer Flush Valve.
        1) The aquifer flush valve is commanded to open to start flowing water from the well to well to waste airgap structure. When the valve gives confirmation of being opened, the sequence will continue to step 5.
    e. Step 5 – Auto Control (Flow).
        1) The pump is turned on and set to control the flow of water based on the operator-specified flow set-point. After the pump starts running, it will continue to step 6.
    f. Step 6 – Auto Flush/Done.
        1) The flushing mode continues to flush for a user adjustable amount of time. The HMI shall show the countdown timer on the screen. When the timer is done, it will take the system into Maintenance mode to close and stop everything.
6. Indicators and alarms:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
7. Failure modes:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.

C. Recovery Operation – Flow Control Mode:
   1. References:
      a. P&ID 13N01.
      b. P&ID 19N01.
      c. P&ID 13N02.
      d. P&ID 19N02.
      e. P&ID 13N03.
      f. P&ID 19N03.
      g. P&ID 13N04.
      h. P&ID 19N04.
      i. P&ID 13N05.
      j. P&ID 19N05.
      k. P&ID 13N06.
      l. P&ID 19N06.
   2. Abstract:
      a. Recovery operating mode consists on pumping water out of the aquifer to the Roseville distribution system. As the water flows out of the ASR well is disinfected with NaOCl and fluorinated with NaF as the water is being returned to the distribution system. The instantaneous flowrate and totalized quantity recovered shall be deducted to the total quantity stored information which will be displayed on the local OIT and transmitted from the PLC to the centralized historian system via the SCADA interface. Below in D.5 are the steps the PLC is programmed to do to complete a Recovery cycle.
      b. There shall be two initiation modes for the Recovery Operation:
         1) Recovery based off of distribution system's zonal pressure – This option allows the operator to set a minimum system pressure to start up the well. The intent of this mode is to automate the starting and stopping of the well as the distribution system's zonal pressure set point. A programmed delayed response shall be included and set during start-up to prevent the pump pre-maturely starting and/or stopping due to pressure fluctuations in zonal system pressure with small differential time steps.
         2) Recovery based off of operator assigned flow rate – This option allows the operator to initiate the recovery flow rate by inputting a desired flow rate of recovery (so long as it's greater than the minimum flow rate as established during start-up).
   3. Hardwired control:
      a. The following valves required for Recharge have LOCAL-STOP-REMOTE mode, when placed in LOCAL mode each valve can be either fully opened, fully closed or somewhere in between:
         1) WD34-FCVX-30150, Recharge Flow Control Valve.
         2) WD34-MOVX-30130, Pump Column Recharge Valve.
         3) WD34-MOVX-30120, Well Annulus Recharge Valve.
         4) WD34-MOVX-30140, Waste Valve.
         5) WD34-MOVX-30160, Aquifer Recovery to Production Valve.
         6) WD34-FCVX-36150, Recharge Flow Control Valve.
         7) WD34-MOVX-36130, Pump Column Recharge Valve.
         8) WD34-MOVX-36120, Well Annulus Recharge Valve.
         9) WD34-MOVX-36140, Waste Valve.
         10) WD34-MOVX-30160, Aquifer Recovery to Production Valve.

11) Down Hole Control Valve.

b. In LOCAL mode, VFD can be operated via the VFD HMI.

4. Hardwired interlocks/Overload Programmed Interlocks:
   a. Well Pump discharge HiHi Pressure Switch.
   b. Well Pump seal Water Lo Flow Switch.
   c. Well Pump motors HiHi Temperature Switch.
   d. Well Pump VFD Fault.
5. PLC Control:
   a. Step 1 – Initiate.
      1) The operator sets the desired Recovery flow rate on the local OIT.
      2) The operator sets the desired Backflush flow rate and time on the OIT.
      3) The operator selects the Recovery Mode on the local OIT. The HMI will record the date and time when this mode is initiated.
   b. Step 2 – Maintenance Check.
      1) If the ASR system is coming from recharge or backflush mode, the sequence will continue to step 4. If the ASR system is in any other mode, it will automatically go to maintenance mode to close every valve. If all valves are closed, the sequence will continue to step 3.
   c. Step 3 – Priming Column and Above Ground Piping.
      1) The Recharge flow control valve shall open to prime the above ground piping.
      2) Once open the Pump Column Recharge Valve shall be opened.
      3) A X minute time delay shall be initiated to allow for pre-lubrication of the pump shaft. After time delay is completed, it will continue to step 4.
   d. Step 4 – Backflush Check.
      1) If a flow rate and time frame is entered in the Backflush flow OIT and it meets the minimum flow rate then the aquifer flush valve is commanded to open to start flowing water from the well to well to waste airgap structure. When the valve gives confirmation of being opened, the sequence will continue to step 5.
      2) If a flow rate and time frame = 0 then the sequence will continue to step 7.
   e. Step 5 – Auto Control (Backflush Flow).
      1) The pump is turned on and set to control the flow of water based on the operator inputted waste flow set-point. After the pump starts running, it will continue to step 6.
   f. Step 6 – Auto Flush / Done.
      1) The flushing mode continues to flush for a user adjustable amount of time. The HMI shall show the countdown timer on the screen. When the timer is done, it will continue to step 7.
   g. Step 7 – Aquifer Recovery to Production Valve OPEN.
      1) The Aquifer Recovery to Production Valve is commanded to open to start flowing water to the distribution system. When the valve gives confirmation of being opened, the sequence shall continue to step 8.
   h. Step 8 – Recovery Flow.
      1) A check shall initiate to confirm that the pump is ON. If pump is ON proceed to Step 8.2, if pump is OFF turn pump on and set to control the flow of water based on the operator entered production flow

set-point. After the pump starts running, the sequence will continue to step 9.

2) The ASR Well will adjust to the entered flow setpoint for recovery. When done the Waste Valve will be set to CLOSE. Once the valve is CLOSED the sequence will continue to step 9.

i. Step 9 – Flowing to Distribution/Done.

1) The ASR Well Pump is set to control the flow of water based on a flow set-point. The system will remain in this step, flowing water at a specific set-point until maintenance mode is initiated by the operator at the OIT.

6. Indicators and alarms:
   a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
7. Failure modes:
   a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.

D. Recovery Operation – Pressure Control Mode:
1. References:
   a. P&ID 13N01.
   b. P&ID 19N01.
   c. P&ID 13N02.
   d. P&ID 19N02.
   e. P&ID 13N03.
   f. P&ID 19N03.
   g. P&ID 13N04.
   h. P&ID 19N04.
   i. P&ID 13N05.
   j. P&ID 19N05.
   k. P&ID 13N06.
   l. P&ID 19N06.
2. Abstract:
   a. Recovery – Pressure control operating mode consists of having an option to turn ON or turn OFF an automated process to initiate the Recovery mode based on system pressure. Like the Recovery mode this mode initiates pumping water out of the aquifer to the Roseville distribution system. As the water flows out of the ASR well is disinfected with NaOCl and fluorinated with NaF as the water is being returned to the distribution system.

      This mode will become active if the mode is set to “ON”. Active means this mode wont necessarily start but will start if the following parameters are met: If the system pressure drops below the operator entered minimum system pressure valve the Pressure Control Mode Operation will begin. Likely the system will turn to OFF if the system pressure exceeds the operator entered maximum system pressure value in the OIT (for both start up and shut down there shall be a time interval programmed to eliminate the small description in pressure changes).

      The instantaneous flowrate and totalized quantity recovered shall be deducted to the total quantity stored information which will be displayed

on the local OIT and transmitted from the PLC to the centralized historian system via the SCADA interface.

Below in E.5 are the steps the PLC is programmed to do to complete a Recovery cycle.

3. Hardwired control:
   a. The following valves required for Recharge have LOCAL-STOP-REMOTE mode, when placed in LOCAL mode each valve can be either fully opened, fully closed or somewhere in between:
      1) WD34-FCVX-30150, Recharge Flow Control Valve.
      2) WD34-MOVX-30130, Pump Column Recharge Valve.
      3) WD34-MOVX-30120, Well Annulus Recharge Valve.
      4) WD34-MOVX-30140, Waste Valve.
      5) WD34-MOVX-30160, Aquifer Recovery to Production Valve.
      6) WD34-FCVX-36150, Recharge Flow Control Valve.
      7) WD34-MOVX-36130, Pump Column Recharge Valve.
      8) WD34-MOVX-36120, Well Annulus Recharge Valve.
      9) WD34-MOVX-36140, Waste Valve.
      10) WD34-MOVX-30160, Aquifer Recovery to Production Valve.
      11) Down Hole Control Valve.
   b. In LOCAL mode, VFD can be operated via the VFD HMI.
4. Hardwired interlocks/Overload Programmed Interlocks:
   a. Well Pump discharge HiHi Pressure Switch.
   b. Well Pump seal Water Lo Flow Switch.
   c. Well Pump motors HiHi Temperature Switch.
   d. Well Pump VFD Fault.
5. PLC Control:
   a. Step 1 – Initiate.
      1) The operator sets “Minimum System Pressure to turn pump ON” to a X (psi) value on the local OIT.
      2) The operator sets “Maximum System Pressure to turn pump OFF” to a X (psi) value on the local OIT.
      3) The operator sets “Desired System Pressure” to indirectly set target pump recovery speed.
      4) The operator sets the desired Backflush flow rate and time on the OIT.
      5) This setting will still allow for other modes of operation to still happen. It will however override any other system operation if the system pressure falls outside these parameters. If the system falls outside these parameters the HMI will record the date and time when this mode is initiated and it will proceed to step 2
   b. Step 2 – Maintenance Check.
      1) If the ASR system is coming from recharge or backflush mode, the sequence will continue to step 4. If the ASR system is in any other mode, it will automatically go to maintenance mode to close every valve. If all valves are closed, the sequence will continue to step 3.
   c. Step 3 – Priming Column and Above Ground Piping.
      1) The Recharge flow control valve shall open to prime the above ground piping.
      2) Once open the Pump Column Recharge Valve shall be opened.

3) A X minute time delay shall be initiated to allow for pre-lubrication of the pump shaft. After time delay is completed, it will continue to Step 4.

d. Step 4 – Backflush Check.
   1) If a flow rate and time frame is entered in the Backflush flow OIT and it meets the minimum flow rate then the aquifer flush valve is commanded to open to start flowing water from the well to well to waste airgap structure. When the valve gives confirmation of being opened, the sequence will continue to step 5.
   2) If a flow rate and time frame = 0 then the sequence will continue to step 7.

e. Step 5 – Auto Control (Backflush Flow).
   1) The pump is turned on and set to control the flow of water based on the operator inputted waste flow set-point. After the pump starts running, it will continue to step 6.

f. Step 6 – Auto Flush / Done.
   1) The flushing mode continues to flush for a user inputted amount of time. The HMI shall show the countdown timer on the screen. When the timer is done, it will continue to step 7.

g. Step 7 – Aquifer Recovery to Production Valve OPEN.
   1) The Aquifer Recovery to Production Valve is commanded to open to start flowing water to the distribution system. When the valve gives confirmation of being opened, the sequence shall continue to step 8.

h. Step 8 – Recovery Flow.
   1) A check shall initiate to confirm that the pump is ON. If pump is ON proceed to step 8.2, if pump is OFF turn pump on and set to control the flow of water based on the operator entered production flow set-point. After the pump starts running, the sequence will continue to step 9.
   2) The ASR Well will adjust to the entered flow setpoint for recovery. When done the Waste Valve will be set to CLOSE. Once the valve is CLOSED the sequence will continue to step 9.

i. Step 9 – Flowing to Distribution / Done.
   1) The ASR Well Pump is set to control the flow of water based on desired system pressure. The system will remain in this step, flowing water at a specific set-point until maintenance mode is initiated by the operator at the OIT or the Maximum system pressure set point is reached. Once reached consistently for X minutes system shall go into maintenance mode.

6. Indicators and alarms:
   a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
7. Failure modes:
   a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.

E. Maintenance Operation:
1. References:
   a. P&ID 13N01.
   b. P&ID 19N01.
   c. P&ID 13N02.

d. P&ID 19N02.
e. P&ID 13N03.
f. P&ID 19N03.
g. P&ID 13N04.
h. P&ID 19N04.
i. P&ID 13N05.
j. P&ID 19N05.
k. P&ID 13N06.
l. P&ID 19N06.

2. Abstract:
   a. Maintenance mode consists of closing all valves and stopping all pumps. This mode puts the system in “stand-by” mode. The operator should take the system into Maintenance mode after finishing with every other mode. Below in F.5 are the steps the PLC is programmed to complete a Maintenance cycle.
3. Hardwired control:
   a. The following valves required for Recharge have LOCAL-STOP-REMOTE mode, when placed in LOCAL mode each valve can be either fully opened, fully closed or somewhere in between.
      1) WD34-FCVX-30150, Recharge Flow Control Valve.
      2) WD34-MOVX-30130, Pump Column Recharge Valve.
      3) WD34-MOVX-30120, Well Annulus Recharge Valve.
      4) WD34-MOVX-30140, Waste Valve.
      5) WD34-MOVX-30160, Aquifer Recovery to Production Valve.
      6) WD34-FCVX-36150, Recharge Flow Control Valve.
      7) WD34-MOVX-36130, Pump Column Recharge Valve.
      8) WD34-MOVX-36120, Well Annulus Recharge Valve.
      9) WD34-MOVX-36140, Waste Valve.
      10) WD34-MOVX-30160, Aquifer Recovery to Production Valve.
      11) Down Hole Control Valve.
   b. In LOCAL mode, VFD can be operated via the VFD HMI.
4. Hardwired interlocks/Overload Programmed Interlocks:
   a. None.
5. PLC Control:
   a. Step 1 – Initiate.
      1) The operator hits the Maintenance button on the local OIT.
   b. Step 2 – Pump OFF.
      1) This step makes sure the pump/VFD is set to OFF and ZERO speed. This step also resets internal PLC bits and internal modes. When the VFD gives confirmation of not running, the sequence will continue to step 3.
   c. Step 3 – Chemicals OFF.
      1) This step makes sure the chemical pumps are set to OFF and ZERO speed. When the pumps give confirmation of not running, the sequence will continue to step 4.
   d. Step 4 – Trickle Flow ON.
      1) This step makes sure the trickle flow solenoid is CLOSED. There’s no confirmation in this step, so the sequence continues to step 5 immediately.

e. Step 5 – Down Hole Control Valve CLOSED.
    1) This step confirms that the down hole control valve is fully CLOSED with position set to XXX psi as determined during start-up. When the valve pressure transducer gives confirmation of set point, the sequence will continue to step 6.
f. Step 6 – Recharge Valve CLOSED.
    1) This step makes sure the flow control valve is set to OFF and ZERO percent opening. When the valve gives confirmation of closed, the sequence will continue to step 7.
g. Step 7 – Aquifer Flush Valve CLOSED.
    1) This step makes sure the Aquifer Flush valve is set to CLOSED. When the valve gives confirmation of closed, the sequence will continue to step 8.
h. Step 8 – Recovery Valve CLOSED.
    1) This step makes sure the Recovery valve is set to CLOSED. When the valve gives confirmation of closed, the sequence will continue to step 9.
i. Step 9 – Well Annulus Recharge Valve CLOSED.
    1) This step makes sure the Well Annulus Recharge valve is set to CLOSED. When the valve gives confirmation of closed, the sequence will continue to step 10.
j. Step 10 – Done.
    1) The system stays in this step until an operator input.

6. Indicators and alarms:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
7. Failure modes:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.

F. Sodium Hypochlorite Feed System:
1. References:
    a. P&ID 13N02.
    b. P&ID 19N02.
    c. P&ID 13N04.
    d. P&ID 19N04.
2. Abstract:
    a. During Recovery operations the chlorine residual will be restored for the recovered water via feeding a liquid Sodium Hypochlorite solution. The feed pump rate per stroke shall be operator adjustable. Below in G.5 are the steps the PLC is programmed to control the chemical feed system.
3. Hardwired control:
    a. TBD.
4. Hardwired interlocks/Overload Programmed Interlocks:
    a. TBD.
5. PLC Control:
    a. Step 1 – Initiate.
        1) The selected active feed pump will start when the Recovery mode is selected.

b. Step 2 – Flow Pacing with Closed Loop and Analyzer Trim, reference Section 17100 - Control Strategies.
    1) The feed rate shall be paced with the recovery flowrate to achieve the desired disinfection level.
c. Step 3 – Done.
    1) Once the Recovery mode is deselected the operation of the selected feed pump shall stop.

6. Indicators and alarms:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
7. Failure modes:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.

G. Sodium Fluoride Feed System:
1. References:
    a. P&ID 13N02.
    b. P&ID 19N02.
    c. P&ID 13N05.
    d. P&ID 19N05.
    e. P&ID 013N06.
    f. P&ID 19N06.
2. Abstract:
    a. During Recovery operations, if necessary, the fluoride residual will be restored for the recovered water via feeding liquid Sodium Fluoride solution. The feed pump rate per stroke shall be operator adjustable.
    b. Below in H.5 are the steps the PLC is programmed to control the chemical feed system.
3. Hardwired control:
    a. TBD.
4. Hardwired interlocks/Overload Programmed Interlocks:
    a. TBD.
5. PLC Control:
    a. Step 1 – Initiate.
        1) The selected active feed pump will start when the Recovery mode is selected.
    b. Step 2 – Flow Pacing with Closed loop and Analyzer Trim, reference Section 17100 - Control Strategies.
        1) The feed rate shall be paced with the recovery flowrate to achieve the desired disinfection level.
    c. Step 3 – Done.
        1) Once the Recovery mode is deselected the operation of the selected feed pump shall stop.
6. Indicators and alarms:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
7. Failure modes:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.

H. Nested Monitoring Well (containing Zone B, and C):
   1. References:
      a. P&ID 13N06.
      b. P&ID 19N06.
   2. Abstract:
      a. Water from Zone B and C of the monitoring well will be individually sampled as needed. A sump pump will deliver each sample of the monitoring well water to the ASR building.
   3. Hardwired control:
      a. In LOCAL mode, VFD can be operated via the VFD HMI.
   4. Hardwired interlocks/Overload Programmed Interlocks:
      a. Well Pump VFD Fault.
   5. PLC Control:
      a. Sampling will be done at the end of a timer interval or when initiated by the operator at the VFD or via the OIT.
      b. When initiated either automatically or manually, the timer will reset when the pump is confirmed not running.
      c. The automatic duty cycle of the sump pump is TBD.
      d. The speed profile of the VFD is TBD.
   6. Indicators and alarms:
      a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
   7. Failure modes:
      a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.

I. Nested Monitoring Well (containing Zone A):
   1. References:
      a. P&ID 13N06.
      b. P&ID 19N06.
   2. Abstract:
      The water level in Zone A of the monitoring well will be continuously monitored.
   3. Hardwired control:
      a. None.
   4. Hardwired interlocks/Overload Programmed Interlocks:
      a. None.
   5. PLC Control:
      a. None.
   6. Indicators and alarms:
      a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
   7. Failure modes:
      a. As specified in Section 17100 - Control Strategies.

J. Filters (for future installation):
   1. References:
      a. N/A.
   2. Abstract:
      a. Filter System Overview: The filter system consists of several pressure filters used to remove iron and manganese from the well water before

sending the water to the distribution system. This system will be programmed by the supplier of the equipment with a dedicated operator interface terminal (OIT). This section provides a general overview of the filter operation and the filter system submittal will provide the additional details. A master PLC at the site will both provide inputs to the OIT and received outputs from the OIT in an effort to coordinate overall processes on the site. Other systems that require coordination with the filter system include the Backwash Waste Tank, Well, and Sodium Hypochlorite chemical feed.

b. Filter Operations: Filters will be operated in one of several modes:
    1) Filtration: Water is filtered and going to the system. Valves are positioned accordingly.
    2) Backwash: Filter is washed and washwater is going to the backwash waste tank. Valves are positioned accordingly.
    3) Maintenance: Filter is taken out-of-service (no water flow either direction) for inspection and/or repair. The filter cannot be automatically brought into an active state (Filtration or Backwash) until removed from Maintenance Mode.
    4) Offline: Filter is taken-of-service and all valves are closed. The filter can automatically be brought into an active state.
c. Water Production to System: Flow meters on each filter train will measure individual flow rates per train and summed together to provide a total flowrate. Likewise a totalized volume for both individual trains and combined trains will be calculated by the Filter System PLC. During a backwash there may be flow backwards across the flow meter. This change in direction (negative value) will be accounted for in the calculations.
d. Backwash Flow: When a filter is washed a backwash flow meter and control valve will be used to adjust the wash rate. The flow rate will be measured and the totalized volume will be calculated.
e. Backwash Event: A filter can either be brought into a backwash mode automatically through setpoints or manually initiated by the treatment operator. Setpoints for automatic operation include filter run time, differential pressure across the filter train, and totalized volume treated since last backwash.

3. Hardwired control:
    a. The following valves required for Recharge have LOCAL-STOP-REMOTE mode, when placed in LOCAL mode each valve can be either fully opened, fully closed or somewhere in between:
        1) WD34-FCVX-30150, Recharge Flow Control Valve.
        2) WD34-MOVX-30130, Pump Column Recharge Valve.
        3) WD34-MOVX-30120, Well Annulus Recharge Valve.
        4) WD34-MOVX-30140, Waste Valve.
        5) WD34-MOVX-30160, Aquifer Recovery to Production Valve.
        6) WD34-FCVX-36150, Recharge Flow Control Valve.
        7) WD34-MOVX-36130, Pump Column Recharge Valve.
        8) WD34-MOVX-36120, Well Annulus Recharge Valve.
        9) WD34-MOVX-36140, Waste Valve.
        10) WD34-MOVX-30160, Aquifer Recovery to Production Valve.
        11) Down Hole Control Valve
    b. In LOCAL mode, VFD can be operated via the VFD HMI.

4. Hardwired interlocks/Overload Programmed Interlocks:
    a. Well Pump discharge HiHi Pressure Switch.
    b. Well Pump seal Water Lo Flow Switch.
    c. Well Pump motors HiHi Temperature Switch.
    d. Well Pump VFD Fault.
5. PLC Control:
    a. Step 1 – Initiate.
        1) The operator selects the Recovery Mode on the local OIT. The HMI will record the date and time when this mode is initiated.
    b. Step 2 – Maintenance Check.
        1) If the ASR system is coming from recharge mode, it will automatically go to maintenance mode to close every valve. If not, the sequence will continue to step 3.
    c. Step 3 – Preliminary Flow.
        1) The pump is started to a specific initial speed set-point for a specific time. After the time has passed, it will continue to step 4. At the same time, the primary chemical pumps are started, supply the chemicals based on dosage set-points. When the timer is done, the sequence will continue to step 4.
    d. Step 4 – Opening Recovery Valve.
        1) The recovery valve is commanded to open to start flowing water to the distribution system. When the valve gives confirmation of being opened, the sequence will continue to. step 5.
    e. Step 5 – Flowing to Distribution/Done.
        1) The pump is set to control the flow of water based on a flow set-point. The system will remain in this step, flowing water at a specific set-point until maintenance mode is initiated by the operator at the OIT.
6. Indicators and alarms:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.
7. Failure modes:
    a. As indicated on the Drawings and specified in Section 17100 - Control Strategies.

3.02 DEMONSTRATION AND TRAINING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.03 TESTING

A. As specified in Section 17950 - Commissioning for Instrumentation and Controls.

END OF SECTION

SECTION 17201

LEVEL MEASUREMENT: SWITCHES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Conductivity probe level switch.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide complete documentation covering the traceability of calibration instruments.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions, including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

C. Manufacture instrument facilities certified to the quality standards of ISO 9001 - Quality Systems - Model for Quality Assurance in Design/Development, Production, Installation and Servicing.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. Project environmental conditions as specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or Specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.09 MAINTENANCE

A. Furnish parts, materials, fluids, etc., necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver these supplies before Project Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed Site conditions, including, but not limited to, material compatibility, Site altitude, Site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. Conductivity level switch:
      a. Standard applications:
         1) Ametek Drexelbrook, Model 6012/6013 probes with Series 5200 relay.
         2) E+H, Liquipoint FTW.
         3) Warrick Controls, Model 3 series probes with 16 VM relay.
      b. Intrinsically safe:
         1) B/W, Control High Sensitivity Series 5200 N7.
         2) Warrick Controls, Model 27.

2.04 MANUFACTURED UNITS

A. As specified in this Section, including Attachment A - ISA Datasheet - Level Measurement: Switches.

B. Conductivity level switch:
   1. General:
      a. Probe type conductivity level switches integrating a control relay, control and reference electrode probes as required, and electrode probe holder. Electrode probes shall be rigid stainless steel and probe holder pressure tight.

b. All components provided by the same manufacturer.

2. Element:
   a. Rigid type:
      1) For probe lengths of 6 feet and less, provide Type 316 stainless steel rigid probes.
      2) Electrode probe shall be threaded at one end to fit electrode holder threads and insulated with 1/32-inch PVC sheath down to 1 inch from the other end.
   b. Electrode probe holder.
   c. Suspended probes:
      1) For probe lengths longer than 6 feet, provide wire suspended probes within a protective plastic shield suspended and PVC insulated wires.
      2) Provide suitable adapters for fastening upper end to electrode fitting.
3. Switch: Control relay senses the liquid level by conductance through electrode probes and the process liquid:
   a. Provide a solid-state general-purpose control relay designed for single level or differential control.
   b. Electrical connection: One 1/2-inch NPT conduit entry.
   c. Power supply:
      1) As indicated in the datasheets.
4. Output:
   a. Relay outputs:
      1) As indicated in the datasheets.
      2) Enclosure:
         a) As indicated in the datasheets.
      3) Configurable for fail-safe operation.
5. Components:
   a. Adjustable time delay on increasing or decreasing level.

2.05 SOURCE QUALITY CONTROL

A. FM approval certification or equal when installed in classified areas.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

3.04 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be as indicated on the Drawings, as specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - LEVEL MEASUREMENT: SWITCHES

Level Switch

SPECIFICATION 17201

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES

CUSTOMER CITY OF ROSEVILLE

PROJECT 11843A10_P3

LOCATION ROSEVILLE CA

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID	SERVICE	CHEMICAL TRENCH DRAIN LEVEL SWITCH				
WD33-LSHX-3020	13N07	**FLUID**	SODIUM HYPOCHLORIT	**HAZARDOUS APP**	N/A	**POWER**	[*]
WD33-LEXX-30209		**MEASURING PRINCIPLE**	CONDUCTIVITY	**ELEM. ENC. CLASS**	NEMA 4X	**POWER LOCATION**	LOOP
		SET POINT	1/2"	**ELEM. MATERIAL**	MFR. STD.	**OUTPUT**	RELAY
		MOUNTING	N/A	**SWITCH ENCL. CLASS**	NEMA 4X	**RELAY FORM**	SPDT
		TYPICAL DETAILS	NL113	**ENCL. MATERIAL**	MFR. STD.	**PLC**	WD31-PLCX-30101
		SURGE PROTECTION	NO				

Notes: MOUNT SO TIP OF PROBE IS 3/8" ABOVE THE FINISHED SURFACE.

TAG	P&ID	SERVICE	CHEMICAL TRENCH DRAIN LEVEL SWITCH				
WD33-LSHX-3620	19N07	**FLUID**	SODIUM HYPOCHLORIT	**HAZARDOUS APP**	N/A	**POWER**	[*]
WD33-LEXX-36209		**MEASURING PRINCIPLE**	CONDUCTIVITY	**ELEM. ENC. CLASS**	NEMA 4X	**POWER LOCATION**	LOOP
		SET POINT	1/2"	**ELEM. MATERIAL**	MFR. STD.	**OUTPUT**	RELAY
		MOUNTING	N/A	**SWITCH ENCL. CLASS**	NEMA 4X	**RELAY FORM**	SPDT
		TYPICAL DETAILS	NL113	**ENCL. MATERIAL**	MFR. STD.	**PLC**	WD31-PLCX-36101
		SURGE PROTECTION	NO				

Notes: MOUNT SO TIP OF PROBE IS 3/8" ABOVE THE FINISHED SURFACE.

SECTION 17208

LEVEL MEASUREMENT: RADAR PULSE TIME OF FLIGHT (PTOF)

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Non-contact radar (PTOF) level instruments.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Abbreviations:
   1. PTOF: Pulse Time of Flight.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Quality Control Submittals:
   1. Manufacturer's representative qualifications as specified in Section 01756 - Commissioning.

C. Owner Training Submittals:
   1. As specified in Section 01756 - Commissioning.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide instruments manufactured at facilities certified to the quality standards of ISO 9001.

C. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions, including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed Site conditions, including, but not limited to, material compatibility, Site altitude, Site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. Endress+Hauser, Micropilot FMR51.

2.04 MANUFACTURED UNITS

A. Pulse Time of Flight:
   1. General:
      a. Instrument emits radar pulses via a transmitter, with a frequency range of up to 80 GHz.
      b. Pulses reflect from the surface being measured and are received back at the instrument via a sensor.
      c. Instrument measures the pulse travel time between the transmitter, surface, and receiver to calculate the level.
      d. Safety:
         1) Shall not generate frequency waves with power levels hazardous to humans.

2. Performance requirements:
    a. Accuracy: Level:
        1) 0.25 inch.
3. Element:
    a. Level element must conform to the process material compatibility as indicated in Attachment A - ISA Datasheet - Level Measurement: Radar Pulse Time of Flight (PTOF) or the Instrument Index.
    b. Connections:
        1) Process: Antenna design shall be suitable for mounting in a nozzle as indicated in Attachment A - ISA Datasheet - Level Measurement: Radar Pulse Time of Flight (PTOF) or the Instrument Index.
        2) Design shall be such that product condensation on the antenna shall not affect the performance of the gauge. It shall be possible to choose between parabolic-, cone-, or rod-shaped antennas.
4. Transmitter:
    a. Microprocessor-based signal converter/transmitter.
    b. Power supply:
        1) As indicated in the datasheets.
    c. Outputs:
        1) As indicated in the datasheets.
    d. Backlit digital display for level or volume.
    e. Self-diagnostics and automatic data checking.
    f. Signal integrity:
        1) Immune to radio frequency and electromagnetic interference with field strength of 15 volts/meter or less over a frequency range of 50 Hz to 460 MHz.
        2) Able to ignore momentary level spikes or momentary loss of echo and indicate loss of echo condition on indicating transmitter unit.
    g. Protected terminals and fuses in a separate compartment, which isolates field connection from electronics.
        1) Indication: Local - 5-digit display.
    h. Enclosure:
        1) As indicated in the datasheets.
    i. Electrical connection: 1/2-inch male NPT.

2.05 ACCESSORIES

A. Software: Provide Windows based PC software for configuration and echo mapping.

B. Provide sun shield for outdoor installations.

C. Configurable additional remote mountable display.

2.06 FINISHES (NOT USED)

2.07 SOURCE QUALITY CONTROL

A. Factory calibrate each level transmitter at a facility that is traceable to NIST.

B. Provide complete documentation covering the traceability of calibration instruments.

C. FM approval certification or equal when installed in classified areas.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Coordinate the installation with trades to ensure that the mechanical system has necessary appurtenances, including weld-o-lets, valves, etc., for proper installation of instruments.

3.03 CALIBRATION AND TESTING

A. As specified in Section 17950 - Commissioning for Instrumentation and Controls.

3.04 OWNER TRAINING

A. Perform Owner Training as specified in Section 01756 - Commissioning.
   1. Number of sessions:
      a. Operations: 2, 1 hour duration.
      b. Maintenance: 2, 1 hour duration.

3.05 ADJUSTING

A. Verify factory calibration of instruments in accordance with the manufacturer's instructions:
   1. Return factory calibrated devices to the factory if they do not meet the field verification requirements for calibration.

3.06 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - LEVEL MEASUREMENT: RADAR PULSE TIME OF FLIGHT (PTOF)

Level Transmitter

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD33-LITX-30201 (WD33-LEXX-30201)
SPECIFICATION NUMBER 17208
MEASURING PRINCIPLE RADAR PTOF
DRAWING NUMBER 13N04
PLC WD31-PLCX-30101
SERVICE SODIUM HYPOCHLORITE STORAGE TANK LEVEL ELEMENT
TYPICAL DETAILS NL174

CONNECTION

PROCESS CONNECTION FLANGE MOUNT

FLUID

LEVEL RANGE 0-7 FT 1 IN
TEMPERATURE 50 DEG F

ELEMENT

ELEMENT TAG NO. WD33-LEXX-30201
ENCLOSURE CLASS NEMA 4
ELEMENT HAZ. MATERIALS N/A
ELEMENT MATERIAL PVDF
SUBMERGENCE DETECTION NO
TEMPERATURE COMP. NO
HEATED ELEMENT NO

TRANSMITTER

TRANSMITTER TAG NO. WD33-LITX-30201
HAZARDOUS APPROVALS N/A
MOUNTING REM
ENCLOSURE CLASS NEMA 4
POWER [*]
OUTPUT 4-20 MA
AMBIENT TEMPERATURE 80 DEG F
MEASUREMENT APPL LEVEL
SURGE PROTECTION NO

NOTES

IGNORE INT ON P&ID. FMR20-AAPBNVCERRFA+R4Z1 WAS ORDERED FOR WESTBROOK AND SOLARIE.

Level Transmitter

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD33-LITX-36201 (WD33-LEXX-36201)
SPECIFICATION NUMBER 17208
MEASURING PRINCIPLE RADAR PTOF
DRAWING NUMBER 19N04
PLC WD31-PLCX-36101
SERVICE SODIUM HYPOCHLORITE STORAGE TANK LEVEL ELEMENT
TYPICAL DETAILS NL174

CONNECTION

PROCESS CONNECTION FLANGE MOUNT

FLUID

LEVEL RANGE 0-7 FT 1 IN
TEMPERATURE 50 DEG F

ELEMENT

ELEMENT TAG NO. WD33-LEXX-36201
ENCLOSURE CLASS NEMA 4
ELEMENT HAZ. MATERIALS N/A
ELEMENT MATERIAL PVDF
SUBMERGENCE DETECTION NO
TEMPERATURE COMP. NO
HEATED ELEMENT NO

TRANSMITTER

TRANSMITTER TAG NO. WD33-LITX-36201
HAZARDOUS APPROVALS N/A
MOUNTING REM
ENCLOSURE CLASS NEMA 4
POWER [*]
OUTPUT 4-20 MA
AMBIENT TEMPERATURE 80 DEG F
MEASUREMENT APPL LEVEL
SURGE PROTECTION NO

NOTES

IGNORE INT ON P&ID. FMR20-AAPBNVCERRFA+R4Z1 WAS ORDERED FOR WESTBROOK AND SOLARIE.

SECTION 17301

FLOW MEASUREMENT: SWITCHES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Thermal dispersion flow switches.

B. Provide all instruments identified in the Contract Drawings.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 DEFINITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Sections 01330 - Submittal Procedures and 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide complete documentation covering the traceability of all calibration instruments.

1.05 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that all required accessories are provided and are compatible with the process conditions and physical installation.
   3. Notify the Engineer if any installation condition does not meet the instrument manufacturer’s recommendations or specifications.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide instruments suitable for the installed site conditions including, but not limited to, material compatibility, site altitude, site seismic conditions, humidity, and process and ambient temperatures.

1.08 WARRANTY

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.09 MAINTENANCE

A. Furnish all parts, materials, fluids, etc. necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver all of these supplies before project substantial completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. One of the following or equal:
   1. Thermal dispersion type:
      a. Fluid Components International LLC, FLT93. (This was selected at Westbrook and Solaire.)
      b. Kayden.

2.02 MANUFACTURED UNITS

A. As specified in this Section including Attachment A - ISA Data Sheet - Flow Measurement: Switches.

B. Thermal dispersion type:
   1. General:
      a. Instrument uses a heated probe and a reference probe.
         1) Deviation in the amount of heat measured by the reference probe deviates beyond the setpoint an adjustable relay closes.
         2) Switch:
            a) Micro-processor based with continuous self-diagnostics, “Smart Heater” to prevent sensor failure, no mechanical jumpers or trim pots, and a 3-year warranty.

3) Seal water applications:
a) For clean water flow applications in line sizes 1-inch or smaller, provide in-line pre-assembled flow switch assembly with NPT process connections.

2. Performance requirements:
1) Accuracy: Within 2 degrees Fahrenheit.
b. Repeatability: Within 1 percent of setpoint range.
c. Response time: 0.5 to 2.5 seconds.
d. Adjustable bypass delay timer.
e. Adjustable range.

3. Switch characteristics:
a. Exposed parts: Powder coated aluminum housing.
b. Wetted parts:
1) Materials as recommended by the manufacturer and approved by the Engineer.
c. Power supply:
1) 120 VAC.
2) Power consumption: 13 VA maximum.
3) Operating temperature range: -40 degrees Fahrenheit to 350 degrees Fahrenheit.
d. Enclosure:
1) Non-hazardous area:
a) NEMA Type 4X.

2.03 ACCESSORIES

A. Provide sunshades for outdoor installations.

2.04 SOURCE QUALITY CONTROL

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Factory calibrate each instrument with a minimum 3-point calibration or according to Manufacturer's standard at a facility that is traceable to the NIST.
1. Submit calibration data sheets to the Engineer at least 30 days before shipment of the instruments to the project site.

C. FM approval certification or equal when installed in classified areas.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.
1. Notify the Engineer promptly if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.03 FIELD QUALITY CONTROL

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.04 ADJUSTING

A. As specified in Section 17950 - Commissioning for Instrumentation and Controls.

3.05 CLEANING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.06 DEMONSTRATION AND TRAINING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.07 PROTECTION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.08 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - FLOW MEASUREMENT: SWITCHES

Flow Switch

SPECIFICATION 17301

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES

PROJECT 11843A10_P3

CUSTOMER CITY OF ROSEVILLE

LOCATION ROSEVILLE CA

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID						
WD34-FSLX-3011	13N01	**SERVICE**	PRELUBE FLOW SWITCH				
WD34-FEXX-30113		**FLUID**	WATER	**HAZARDOUS APP**	N/A	**POWER**	120VAC-1P
		MEASURING PRINCIPLE	THERMAL	**ELEM. ENC. CLASS**	NEMA 4	**POWER LOCATION**	WD31-VFDX-30101
		SET POINT	7 GPM	**SWITCH ENCL. CLASS**	NEMA 4	**OUTPUT**	RELAY
		PROCESS CONNECTION	3/4" M-NPT	**PRESSURE**	80 PSI	**RELAY FORM**	SPDT
		CONNECTION MATERIAL	PVC	**TEMPERATURE**	50 DEG F	**PLC**	WD31-PLCX-30101
		INSERTION LENGTH	0.375"	**VISCOSITY**	1	**SURGE PROTECTION**	YES
		TYPICAL DETAILS	NF111				
	Notes	*0-40 GPM RANGE MINIMUM*					

TAG	P&ID						
WD34-FSLX-3611	19N01	**SERVICE**	PRELUBE FLOW SWITCH				
WD34-FEXX-36113		**FLUID**	WATER	**HAZARDOUS APP**	N/A	**POWER**	120VAC-1P
		MEASURING PRINCIPLE	THERMAL	**ELEM. ENC. CLASS**	NEMA 4	**POWER LOCATION**	WD31-VFDX-36101
		SET POINT	7 GPM	**SWITCH ENCL. CLASS**	NEMA 4	**OUTPUT**	RELAY
		PROCESS CONNECTION	3/4" M-NPT	**PRESSURE**	80 PSI	**RELAY FORM**	SPDT
		CONNECTION MATERIAL	PVC	**TEMPERATURE**	50 DEG F	**PLC**	WD31-PLCX-36101
		INSERTION LENGTH	0.375"	**VISCOSITY**	1	**SURGE PROTECTION**	YES
		TYPICAL DETAILS	NF111				
	Notes	*0-40 GPM RANGE MINIMUM*					

SECTION 17302

FLOW MEASUREMENT: MAGNETIC FLOWMETERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Full-body magnetic flowmeters.

B. Provide all instruments identified in the Contract Drawings.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.
   1. International Organization for Standardization (ISO):
      a. 9000 - Quality management systems -- Fundamentals and vocabulary.
      b. 17025 - General requirements for the competence of testing and calibration laboratories.
   2. National Institute of Standards and Technology (NIST).
   3. NSF International (NSF).

1.03 DEFINITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Sections 01330 - Submittal Procedures and 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Include sizing information from the manufacturer that includes:
   1. Chart of the measurement error from zero to maximum measured volumetric flow range indicated in data sheets.
   2. Indication of all input parameters and their values used in the calculations.

1.05 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.

c. Accessories: Verify that all required accessories are provided and are compatible with the process conditions and physical installation.

3. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.08 WARRANTY

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.09 MAINTENANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. One of the following, no equal:
   1. Endress+Hauser:
      a. Promag W flowtube with 500 series transmitter.
      b. Promag H flowtube with 500 series transmitter.

2.02 MANUFACTURED UNITS

A. As specified in this Section including Attachment A - ISA Data Sheet - Flow Measurement: Magnetic Flowmeters.

B. Magnetic flowmeter:
   1. General:
      a. Include for each magnetic flow metering system:
         1) A metering tube with electrodes (sensor).
         2) Signal cable.
         3) Transmitter integral or remote as indicated on the Drawings.
         4) Flowmeter grounding rings.
   2. Element:
      a. Metering tube:
         1) Per Attachment A - ISA Data Sheet - Flow Measurement: Magnetic Flowmeters.

2) Liner material in conformance with:
    a) Manufacturer's recommendations for the intended service.
3) Electrodes type and material in conformance with:
    a) Manufacturer's recommendations for the intended service.
4) Meter terminal housing NEMA Type 4, unless installed in locations such as vaults that will experience submergence. In those applications NEMA 6P is required.
    a) Unless specifically noted otherwise in Attachment A - ISA Data Sheet - Flow Measurement: Magnetic Flowmeters.
5) Meter coating consisting of epoxy painted finish.
6) Components:
    a) 2 grounding rings:
        (1) Which are in conformance with the manufacturer's bore and material recommendation for the meter's intended service.

3. Transmitter:
    a. Power supply:
        1) As indicated in the data sheets.
        2) Power consumption: 60 VA maximum.
    b. Outputs:
        1) As noted in Attachment A - ISA Data Sheet - Flow Measurement: Magnetic Flowmeters.
    c. Microprocessor-based signal converter/transmitter.
    d. Utilize DC pulse technique to drive flux-producing coils.
    e. Contain a 6-digit display for flow rate, percent of span, and totalizer.
    f. Operator keypad interface.
    g. Integral zero return to provide consistent zero output signals in response to an external dry contact closure.
    h. Integral low flow cut-off zero return.
    i. Programmable parameters including:
        1) Meter size.
        2) Full-scale flow rate.
        3) Magnetic field frequency.
        4) Time constant.
    j. Data retention for a minimum of 5 years without auxiliary main or battery power.
    k. Self-diagnostics and automatic data checking.
    l. Protected terminals and fuses in a separate compartment which isolates field connection from electronics.
    m. Ambient operating temperature limits of -5 to 140 degrees Fahrenheit (-20 to 60 degrees Celsius).
    n. Enclosure:
        1) Non-hazardous area:
            a) NEMA Type 4.
        2) For more information, see Attachment A - ISA Data Sheet - Flow Measurement: Magnetic Flowmeters.
    o. The transmitter should support commissioning options via a service interface or via an internal web server accessible through an RJ-45 Ethernet port.
    p. The Transmitter should retain all setup parameters and accumulated measurements internally in non-volatile memory in the event of power failure.

2.03 ACCESSORIES

A. Provide stainless steel tags for each instrument. Tags shall be labeled as specified in the Contract Documents.

B. Provide sunshades for all transmitters located outdoors.

C. Provide galvanic isolation gaskets, nylon/Teflon™ flange bolt insulation bushings and nylon washers on all meters installed on pipes with cathodic protection.

D. Furnish 1 spool piece for every size of magnetic flow tube being provided.

2.04 SOURCE QUALITY CONTROL

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Factory calibrate each flow metering system at a facility that is traceable to the NIST.
   1. ISO-17025 accredited test facility with certified accuracy traceable to NIST.

C. Evidence of accreditation shall originate from a national verification agency such as A2LA.

D. FM approval certification or equal when installed in classified areas.

E. A real-time computer generated printout of the actual calibration date indication actual velocities and as read values of the flow tube.
   1. Flow calibration report of the manufacturers flow lab calibration procedure shall be shipped with the meter system.
   2. Minimum calibration shall be a 3 point calibration including 1, 3, and 10 feet per second velocities for every meter and transmitter system.
   3. Manufacturer shall archive all calibration reports for future reference.

PART 3 EXECUTION

3.01 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. For instruments located outdoors or where instrument elements and transmitters are separated by conduit located outside the building envelope, provide surge protection devices at the transmitters.

3.02 FIELD QUALITY CONTROL

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide manufacturer’s services to perform installation inspection.

3.03 ADJUSTING

A. Field verification:
   1. Verify factory calibration of all instruments in accordance with the manufacturer's instructions.
   2. The Transmitter and sensor to include a method to verify flow meter performance to the original manufacturer specifications.
   3. Verification should be traceable to factory calibration using a third party, attested onboard system pursuant to ISO standards.
   4. The Verification report should be compliant to common quality systems such as ISO 9000 to prove reliability of the meter specified accuracy.
   5. Return factory calibrated devices to the factory if they do not meet the field verification requirements for calibration.

3.04 CLEANING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.05 DEMONSTRATION AND TRAINING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Demonstrate performance of all instruments to the Engineer before commissioning.

3.06 PROTECTION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.07 SCHEDULES

A. Instrument Data Sheets included in this Section.

B. The provided information does not necessarily include all required instruments.

C. Provide all instruments identified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - FLOW MEASUREMENT: TRANSMITTER

Engineers...Working Wonders With Water®

Magnetic Flow Transmitter

RESERVOIR

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-FITX-30105 (WD34-FEXX-30105)
SPECIFICATION NUMBER 17302
DRAWING NUMBER 13N01
SERVICE ASR WELL PUMP PRELUBE/TRICKLE FLOW ELEMENT
MEASURING PRINCIPLE MAGNETIC
PLC WD31-PLCX-30101
POWER LOCATION WD31-PLCP-30101
TYPICAL DETAIL(S) NF130, NF136

CONNECTION

LINE SIZE 3/4"
LINE MATERIAL PVC
PROCESS CONNECTION ANSI 150
PROCESS CONN. MATERIAL STAINLESS STEEL

FLUID

FLUID WATER
NOMINAL FLOW 25 GPM
FLOW RANGE 0-40 GPM
PRESSURE 125 PSI
TEMPERATURE 50 DEG F
VISCOSITY 1
CONDUCTIVITY 1

ELEMENT

ELEMENT TAG NO. WD34-FEXX-30105
ENCLOSURE CLASS NEMA 4
HAZARDOUS APPROVALS N/A
TUBE SIZE FULL BORE
TUBE MATERIAL MFR. STD.
PROCESS CONNECTION ANSI 150
LINER MATERIAL HARD RUBBER
VACUUM POSSIBILITY NO
ELECTRODE TYPE FLUSH
ELECTRODE MATERIAL 316 SST

TRANSMITTER

TRANSMITTER TAG NO. WD34-FITX-30105
MOUNTING INT
ENCLOSURE CLASS NEMA 4
POWER 120VAC-1P
AMBIENT TEMPERATURE 80 DEG F
OUTPUT 4-20 MA
SURGE PROTECTION NO
HAZARDOUS APPROVALS N/A
EMPTY PIPE DETECTION YES
BI DIRECTIONAL FLOW NO
PULSE OUTPUT YES
RELAY OPTIONS YES
POTTED ELECTRONICS NO
CATHODIC PROT. LINE NO

NOTES

PROCESS CONNECTION SHALL HAVE A MATERIAL COMPATIBILITY RATING OF "GOOD" OR GREATER.

Engineers...Working Wonders With Water®

Magnetic Flow Transmitter

RESERVOIR

PROJECT INFORMATION

PLANT	CAMPUS OAKS & MISTY WOODS ASR FACILITIES	**CUSTOMER**	CITY OF ROSEVILLE
PROJECT	11843A10_P3	**LOCATION**	ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG	WD34-FITX-36104 (WD34-FEXX-36104)	**MEASURING PRINCIPLE**	MAGNETIC
SPECIFICATION NUMBER	17302	**PLC**	WD31-PLCX-36101
DRAWING NUMBER	19N02	**POWER LOCATION**	WD31-PCMP-36101
SERVICE	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	**TYPICAL DETAIL(S)**	NF130, NF136

CONNECTION

LINE SIZE	12"	**PROCESS CONNECTION**	ANSI 150
LINE MATERIAL	PVC	**PROCESS CONN. MATERIAL**	STAINLESS STEEL

FLUID

FLUID	WATER	**PRESSURE**	125 PSI
NOMINAL FLOW	2,500 GPM	**TEMPERATURE**	50 DEG F
FLOW RANGE	0-3000 GPM	**VISCOSITY**	1
		CONDUCTIVITY	1

ELEMENT

ELEMENT TAG NO.	WD34-FEXX-36104	**PROCESS CONNECTION**	ANSI 150
ENCLOSURE CLASS	NEMA 4X	**LINER MATERIAL**	HARD RUBBER
HAZARDOUS APPROVALS	N/A	**VACUUM POSSIBILITY**	NO
TUBE SIZE	FULL BORE	**ELECTRODE TYPE**	FLUSH
TUBE MATERIAL	MFR. STD.	**ELECTRODE MATERIAL**	316 SST

TRANSMITTER

TRANSMITTER TAG NO.	WD34-FITX-36104	**HAZARDOUS APPROVALS**	N/A
MOUNTING	INT	**EMPTY PIPE DETECTION**	YES
ENCLOSURE CLASS	NEMA 4	**BI DIRECTIONAL FLOW**	YES
POWER	120VAC-1P	**PULSE OUTPUT**	YES
AMBIENT TEMPERATURE	80 DEG F	**RELAY OPTIONS**	YES
OUTPUT	4-20 MA	**POTTED ELECTRONICS**	NO
SURGE PROTECTION	NO	**CATHODIC PROT. LINE**	NO

NOTES

PROCESS CONNECTION SHALL HAVE A MATERIAL COMPATIBILITY RATING OF "GOOD" OR GREATER.

Engineers...Working Wonders With Water®

Magnetic Flow Transmitter

RESERVOIR

PROJECT INFORMATION

PLANT	CAMPUS OAKS & MISTY WOODS ASR FACILITIES	**CUSTOMER**	CITY OF ROSEVILLE
PROJECT	11843A10_P3	**LOCATION**	ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG	WD34-FITX-36105 (WD34-FEXX-36105)	**MEASURING PRINCIPLE**	MAGNETIC
SPECIFICATION NUMBER	17302	**PLC**	WD31-PLCX-36101
DRAWING NUMBER	19N01	**POWER LOCATION**	WD31-PLCP-36101
SERVICE	ASR WELL PUMP PRELUBE/TRICKLE FLOW ELEMENT	**TYPICAL DETAIL(S)**	NF130, NF136

CONNECTION

LINE SIZE	3/4"	**PROCESS CONNECTION**	ANSI 150
LINE MATERIAL	PCV	**PROCESS CONN. MATERIAL**	STAINLESS STEEL

FLUID

FLUID	WATER	**PRESSURE**	125 PSI
NOMINAL FLOW	25 GPM	**TEMPERATURE**	50 DEG F
FLOW RANGE	0-40 GPM	**VISCOSITY**	1
		CONDUCTIVITY	1

ELEMENT

ELEMENT TAG NO.	WD34-FEXX-36105	**PROCESS CONNECTION**	ANSI 150
ENCLOSURE CLASS	NEMA 4X	**LINER MATERIAL**	HARD RUBBER
HAZARDOUS APPROVALS	N/A	**VACUUM POSSIBILITY**	NO
TUBE SIZE	FULL BORE	**ELECTRODE TYPE**	FLUSH
TUBE MATERIAL	MFR. STD.	**ELECTRODE MATERIAL**	316 SST

TRANSMITTER

TRANSMITTER TAG NO.	WD34-FITX-36105	**HAZARDOUS APPROVALS**	N/A
MOUNTING	INT	**EMPTY PIPE DETECTION**	YES
ENCLOSURE CLASS	NEMA 4	**BI DIRECTIONAL FLOW**	NO
POWER	120VAC-1P	**PULSE OUTPUT**	YES
AMBIENT TEMPERATURE	80 DEG F	**RELAY OPTIONS**	YES
OUTPUT	4-20 MA	**POTTED ELECTRONICS**	NO
SURGE PROTECTION	NO	**CATHODIC PROT. LINE**	NO

NOTES

PROCESS CONNECTION SHALL HAVE A MATERIAL COMPATIBILITY RATING OF "GOOD" OR GREATER.

SECTION 17316

FLOW MEASUREMENT: ROTAMETERS (VARIABLE AREA FLOWMETERS)

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Rotameters (variable area flowmeters).

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions, including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the instrument manufacturer’s recommendations or specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed Site conditions, including, but not limited to, material compatibility, Site altitude, Site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. ABB.
   2. Brooks.
   3. King Instrument Co.

2.04 MANUFACTURED UNITS

A. Rotameters:
   1. General:
      a. Variable area type flowmeters with local flow indication.
      b. Material construction:
         1) As indicated in the datasheet.
   2. Performance requirements:
      a. Flow range:
         1) As specified in instrument datasheets or instrument index.
      b. Accuracy:
         1) Glass tube: Within 2.0 percent of range.
         2) Metal tube: Within 5.0 percent of range.
         3) Repeatability: 0.50 percent of range.
   3. Element:
      a. Flow tube:
         1) Glass tube: Borosilicate glass, or as required to be compatible with the process conditions.
      b. Metal tube with magnetic follower:
         1) Type 316 stainless steel.
      c. Turndown: 10 to 1.
      d. Process temperature:
         1) As indicated in the datasheet.
      e. Maximum process pressure:
         1) As indicated in the datasheet.
         2) Range:
            a) As indicated in the datasheet.

3) Polycarbonate operator protection shield.

f. Float:

1) Design to provide the widest possible immunity band change for lowest pressure loss.

2) Metal tube rotameters: Float with encapsulated magnet.

4. Components:

a. Seals: O-rings or packing glands fully compatible with process fluid.

b. Integral needle valve for flow control.

5. Scale:

a. Metal tube: Dial indicator with rotatable magnet coupled to magnet encapsulated in rotameter float.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Coordinate the installation with trades to ensure that the mechanical system has necessary appurtenances, including weld-o-lets, valves, etc., for proper installation of instruments.

3.03 CALIBRATION AND TESTING

A. As specified in Section 17950 - Commissioning for Instrumentation and Controls.

3.04 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:

1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - FLOW MEASUREMENT: ROTAMETERS (VARIABLE AREA FLOWMETERS)

Rotameter

SPECIFICATION 17316

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID						
WD34-FIXX-30103	13N01	**SERVICE**	PROPELLER TURBINE				
		FLUID	WATER	**TYPICAL DETAILS**	[*]	**FLOW RANGE**	[*]
		MEASURING PRINCIPLE	VARIABLE AREA FLOW	**PRESSURE**	150 PSIG	**VISCOSITY**	1
		LINE SIZE	2"	**TEMPERATURE**	50 DEG F	**SEAL MATERIAL**	EPDM
		LINE MATERIAL	PVC	**PROCESS CONN.**	F-NPT	**TUBE MATERIAL**	[*]
		PROCESS CONN. MAT'L	STAINLESS STEEL				
TAG	**P&ID**	**SERVICE**	PRELUBE ROTAMETER				
WD34-FIXX-30108	13N01	**FLUID**	WATER	**TYPICAL DETAILS**	[*]	**FLOW RANGE**	0-30 GPM
		MEASURING PRINCIPLE	VARIABLE AREA FLOW	**PRESSURE**	100 PSI	**VISCOSITY**	N/A
		LINE SIZE	3/4"	**TEMPERATURE**	50 DEG F	**SEAL MATERIAL**	FLUOROELASTOMER RUBBE
		LINE MATERIAL	PVC	**PROCESS CONN.**	F-NPT	**TUBE MATERIAL**	POLYSULFONE PLASTIC
		PROCESS CONN. MAT'L	STAINLESS STEEL				
TAG	**P&ID**	**SERVICE**	PRELUBE ROTAMETER				
WD34-FIXX-36108	19N01	**FLUID**	WATER	**TYPICAL DETAILS**	[*]	**FLOW RANGE**	0-30 GPM
		MEASURING PRINCIPLE	VARIABLE AREA FLOW	**PRESSURE**	100 PSI	**VISCOSITY**	N/A
		LINE SIZE	3/4"	**TEMPERATURE**	50 DEG F	**SEAL MATERIAL**	FLUOROELASTOMER RUBBE
		LINE MATERIAL	PVC	**PROCESS CONN.**	F-NPT	**TUBE MATERIAL**	POLYSULFONE PLASTIC
		PROCESS CONN. MAT'L	STAINLESS STEEL				

SECTION 17401

PRESSURE/VACUUM MEASUREMENT: DIAPHRAGM SEALS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Diaphragm seals.

B. Provide all seals identified in the Contract Documents.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 DEFINITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Sections 01330 - Submittal Procedures and 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Additional requirements:
   1. Product data:
      a. Manufacturer’s installation instructions.
      b. Seal type.
      c. Body materials.
      d. Diaphragm material.
      e. Fill fluid type.
      f. Seal size.
      g. Options.
      h. Process connection.

1.05 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify the compatibility with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.

c. Accessories: Verify that all required accessories are provided and are compatible with the process conditions and physical installation.

3. C.Notify the Engineer if any installation condition does not meet the manufacturer's recommendations or specifications.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.08 WARRANTY

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.09 MAINTENANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide spare annular seal for every size indicated in the project.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Diaphragm seals:
   1. For chemical applications, liquids containing solids, and liquids with pulsating flow having pressures less than or equal to 15 pounds per square inch gauge: One of the following or equal:
      a. Ashcroft:
         1) Flushing connection: Type 741.
         2) Without flushing connection: Type 740.
      b. Mansfield and Green:
         1) Flushing connection: Type SGT.
         2) Without flushing connection: Type SBT.
      c. Wika, Type L990.40.
      d. Emerson, Rosemount.
   2. For chemical applications, liquids containing solids, and liquids with pulsating flow having pressures greater than or equal to 15 pounds per square inch gauge: One of the following or equal:
      a. Ashcroft:
         1) Flushing connection: Type 201.
         2) Without flushing connection: Type 200.
         3) Saddle mount: Type 205.

b. Mansfield and Green:
    1) Flushing connection: Type SG.
    2) Without flushing connection: Type SB.
    3) Saddle mount: Type SJ.
c. Wika:
    1) Type L990.10.
    2) Saddle mount: L910.ZA.

2.02 MANUFACTURED UNITS

A. Diaphragm seals:
    1. General:
        a. Diaphragm seal and pressure instrument shall be assembled by pressure instrument manufacturer and shipped as an assembly.
    2. Requirements:
        a. Seal type:
            1) Metallic diaphragm: Welded to upper housing.
            2) Elastomer diaphragm: Bonded to upper housing.
        b. Process connection: 1 inch NPT.
        c. Instrument connection: 1/2inch NPT.
            1) Material Construction: Type 316 stainless steel.
        d. Provide 1/4-inch flushing connection in diaphragm lower housing or provide flushing ring.
        e. Flush port plug: Same material of construction as diaphragm lower housing.
        f. Provide fill/bleed connection.
        g. Mounting: As indicated in the Contract Documents.
        h. Provide Type 316 stainless steel armored capillary for all remote installations.
        i. Nuts and bolts: Type 316 stainless steel.
        j. Materials of construction:
            1) Chlorine:
                a) Diaphragm: Tantalum.
                b) Lower housing: Hastelloy C.
                c) Upper housing: Manufacturer’s standard.
                d) Fill fluid: Halocarbon.
            2) Fluorosilicic acid:
                a) Diaphragm: Viton™.
                b) Lower housing: PVC.
                c) Upper housing: Manufacturer’s standard.
                d) Fill fluid: Silicone oil.
            3) Engineer’s approval.

2.03 ACCESSORIES

A. Provide field fill kits.

2.04 SOURCE QUALITY CONTROL

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

PART 3 EXECUTION

3.01 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation System.

B. Coordinate the installation with all trades to ensure that the mechanical system has all necessary appurtenances including weld-o-lets, valves, etc. for proper installation of instruments.

C. Do not use Teflon™ thread seal tape on pressure instruments with silicone oil fill fluid.

3.02 FIELD QUALITY CONTROL

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.03 CLEANING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.04 DEMONSTRATION AND TRAINING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.05 PROTECTION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

END OF SECTION

SECTION 17402

PRESSURE/VACUUM MEASUREMENT: INSTRUMENT VALVES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Valve manifolds and instrument valves.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 SUBMITTALS

A. Furnish submittals as specified in Sections 01330 - Submittal Procedures and 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Additional requirements:
   1. Product data:
      a. Valve type.
      b. Body material.
      c. Size.
      d. Options.
   2. Shop drawings:
      a. Mounting details for all manifold valves.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the valves are compatible with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that all required accessories are provided and are compatible with the process conditions and physical installation.

C. Provide valves manufactured at facilities certified to the quality standards of ISO 9001.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Protect valve manifolds and protective coatings from damage during handling and installation. Repair coating where damaged.

1.06 PROJECT OR SITE CONDITIONS

A. Project environmental conditions as specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the valve manufacturer's recommendations or specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.09 MAINTENANCE

A. Furnish all parts, materials, fluids, etc. necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver all of these supplies before project substantial completion.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide all valves identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide valves suitable for the installed site conditions including, but not limited to, material compatibility, process, and ambient temperatures.

2.03 MANUFACTURERS

A. Valve manifold:
   1. One of the following or equal:
      a. Anderson Greenwood.
      b. Hex Valve.
      c. Noshok.
      d. Emerson, Rosemount.

B. Block and bleed valve:
   1. One of the following or equal:
      a. Anderson Greenwood.
      b. Hex Valve.

C. Gauge valve:
   1. One of the following or equal:
      a. Anderson Greenwood.
      b. Hex Valve.

D. Level sensor isolation valve:
   1. One of the following or equal:
      a. Indu-Tech, Level Sensor Isolation Valve.
      b. DeZURIK, Level Sensor Isolation Valve.
      c. Tyco, Rovalve Isolation Knife Gate Valve.

2.04 MANUFACTURED UNITS

A. Valve manifolds:
   1. General:
      a. Provide 2-valve, 3-valve, blowdown type 5-valve, or metering type 5-valve manifolds as indicated on the Drawings.
      b. Valve manifolds shall have one piece bonnet with a metal-to-metal seal to the valve body below the bonnet threads.
   2. Requirements:
      a. Bonnet lock pin to prevent accidental loosening.
      b. Gas leak tested metal-to-metal hard seat design for hard seat valves.
      c. Gas leak tested soft seat design with replaceable seat for soft seat valves.
      d. Manifold valves shall have straight through portion for bi-directional flow and easy roddable cleaning.
      e. Manifold valves shall allow for direct or remote instrument mounting.
      f. Shall be able to withstand pressures up to 6,000 psi for soft seat valves and 10,000 psi for hard seat valves at maximum 200 degrees Fahrenheit.
      g. Materials of construction:
         1) Body material: Type 316 stainless steel.
         2) O-ring: Teflon™.
      h. 2-Valve manifolds:
         1) 1 isolation valve and 1 drain/vent and calibration valve.
      i. 3-Valve manifolds:
         1) 2 isolation valves and 1 equalizing valve for differential pressure applications.
         2) Plugged vent connections used for vent/drain or calibration.
      j. Blowdown 5-valve manifold:
         1) 2 isolation valves, 1 equalizing valve, 2 blowdown valves for differential pressure applications.
      k. Metering 5-valve manifold:
         1) 2 isolation valves, 2 equalizing valves, 1 vent/drain and calibration valve for differential pressure applications.

B. Block and bleed valves:
   1. General:
      a. Valve shall provide process isolation and venting/draining capabilities.
      b. Gas leak tested metal-to-metal hard seat design for hard seat valves.
      c. Gas leak tested soft seat design with replaceable seat for soft seat valves.
      d. Valve shall not be used with fluids with high solids content, such as raw wastewater or sludge.
   2. Requirements:
      a. Materials of construction:
         1) Body material: Type 316 stainless steel.
         2) O-ring: Teflon™.

C. Gauge valves:
   1. General:
      a. Valve shall provide process isolation from pressure instrument.
      b. Gas leak tested, metal-to-metal hard seat design for hard seat valves.
      c. Gas leak tested soft seat design with replaceable seat for soft seat valves.
   2. Requirements:
      a. Materials of construction:
         1) Body material: Type 316 stainless steel.
         2) O-ring: Teflon™.

D. Level sensor isolation valves:
   1. General:
      a. Valve shall provide process isolation from level diaphragm.
      b. Gas leak tested, metal-to-metal hard seat design for hard seat valves.
      c. Gas leak tested soft seat design with replaceable seat for soft seat valves.
   2. Requirements:
      a. Materials of construction:
         1) Body material: Type 316 stainless steel.
         2) Flange diameter size: 3 inches.

2.05 ACCESSORIES

A. Provide tube fitting, female NPT, or pipe butt weld connections if necessary.

B. Provide stainless steel concentric or eccentric pipe nipples when necessary.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location and verify the valve will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Coordinate the installation with all trades to ensure that the mechanical system has all necessary appurtenances including weld-o-lets, valves, etc. for proper installation of all valves.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

END OF SECTION

SECTION 17403

PRESSURE/VACUUM MEASUREMENT: SWITCHES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Pressure/vacuum switches.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Product data:
   1. Accessories.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. Project environmental conditions as specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.09 MAINTENANCE

A. Furnish parts, materials, fluids, etc. necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver these supplies before project substantial completion.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments specified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed site conditions, including, but not limited to, material compatibility, site altitude, site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. Mechanical type pressure switch: One of the following or equal:
   1. Ashcroft, B Series Type 400. (This was selected for Westbrook and Solaire.)
   2. United Electric Controls Series 400.
   3. ASCO, S-Series.

2.04 MANUFACTURED UNITS

A. As specified in this Section including Attachment A - ISA Data Sheet - Pressure/Vacuum Measurement: Switches.

B. Mechanical type pressure switches:
   1. General:
      a. Pressure switch shall be diaphragm or diaphragm-sealed piston type.
   2. Performance requirements:
      a. Pressure range:
         1) As shown on the P&IDs.
      b. Accuracy:
         1) Within 1.0 percent of range.
      c. Repeatability:
         1) Within 1.0 percent of range.

3. Element:
    a. Type: Diaphragm, diaphragm-sealed piston, or Bourdon® tube.
    b. Overpressure:
        1) Minimum 130 percent of maximum range pressure without damage to switch or sensing element.
        2) Minimum 400 percent of nominal range without leakage or rupture.
    c. Sensing element shall not require ambient temperature compensation.
    d. Wetted materials: Stainless steel.
    e. Setpoint:
        1) Single.
        2) Switch shall activate at setpoint on increasing pressure for high-pressure alarm applications and on decreasing pressure for low-pressure alarm applications.
        3) Fixed deadband.
    f. Switch elements:
        1) Snap acting.
            a) Single-pole double-throw (SPDT).
        2) Rated at 5 A, 125/250 VAC.
            a) Automatic reset type.
    g. Enclosure: Epoxy coated:
        1) Non-hazardous area:
            a) NEMA Type 4X.
        2) For more information, see Attachment A - ISA Data Sheet - Pressure/Vacuum Measurement: Switches.
    h. Switch mounting:
        1) Process connection: 1/2-inch NPT.
4. Components:
        1) Provide all necessary hardware for pressure switch mounting.

2.05 ACCESSORIES

A. Pulsation dampeners and snubbers:
    1. Provide pulsation dampener or snubber with each pressure switch installed on discharge of positive displacement type pump.
    2. Materials: Stainless steel.
    3. Mount pulsation dampener or snubber integrally to the pressure switch.
    4. Connection: 1/2-inch NPT.

B. Provide diaphragm seals as specified in datasheets or as indicated on the Drawings and as specified in Section 17401 - Pressure/Vacuum Measurement: Diaphragm and Annular Seals:
    1. Diaphragm seal and pressure switch shall be assembled by manufacturer and shipped as an assembly.

C. Furnish block and bleed valves as specified in Section 17402 - Pressure/Vacuum Measurement: Instrument Valves.

D. Furnish gauge valves as specified in Section 17402 - Pressure/Vacuum Measurement: Instrument Valves.

E. Provide stainless steel tags for each instrument. Tags shall be labeled as specified in the Contract Documents.

2.06 SOURCE QUALITY CONTROL

A. Factory calibrate each instrument with a minimum 3-point calibration or according to Manufacturer's standard at a facility that is traceable to the NIST.
   1. Submit calibration datasheets to the Engineer at least 30 days before shipment of the instruments to the project site.

B. FM approval certification or equal when installed in classified areas.

PART 3 EXECUTION

3.01 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Coordinate the installation with trades to ensure that the mechanical system has necessary appurtenances including weld-o-lets, valves, etc., for proper installation of instruments.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

3.03 ADJUSTING

A. Verify factory calibration of instruments in accordance with the manufacturer's instructions:
   1. Return factory calibrated devices to the factory if they do not meet the field verification requirements for calibration.

3.04 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments specified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - PRESSURE/VACUUM MEASUREMENT: SWITCHES

Pressure Switch

SPECIFICATION 17403

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID	SERVICE	ASR WELL RECOVERY PRESSURE SWITCH HI HI				
WD34-PSHH-3010	13N02	**FLUID**	WATER	**HAZARDOUS APP**	N/A	**POWER**	[*]
WD34-PEXX-30107		**FLUID TEMPERATURE**	50 DEG F	**ELEM. ENCL. CLASS**	NEMA 4X	**POWER LOCATION**	LOOP
		MEASURING PRINCIPLE	PRESSURE	**ELEMENT MATERIAL**	316L SST	**OUTPUT**	RELAY
		SET POINT	@ ~ 125 PSIG	**SWITCH ENCL. CLASS**	NEMA 4	**RELAY FORM**	SPDT
		ADJUSTABLE RANGE	100-150 PSIG	**ENCL. MATERIAL**	ALUMINUM	**PLC**	WD31-PLCX-30101
		TYPICAL DETAILS	NP501	**SURGE PROTECTION**	NO	**MANUAL RESET**	NO
		CONN. MOUNTING	BOTTOM	**BOTT. HOUSING MAT.**	316L STAINLESS S	**SEAL TYPE**	N/A
		CONNECTON TYPE	M-NPT	**INSTRUMENT VALVES**	INSTRUMENT VALVE TREE	**DIAPHRAGM/WET MAT**	316L STAINLESS STEEL

Notes: STATUS TRANSMITTED TO THE PLC VIA MBTCP ON THE VFD

TAG	P&ID	SERVICE	ASR WELL RECOVERY PRESSURE SWITCH HI HI				
WD34-PSHH-3610	19N02	**FLUID**	WATER	**HAZARDOUS APP**	N/A	**POWER**	[*]
WD34-PEXX-36107		**FLUID TEMPERATURE**	50 DEG F	**ELEM. ENCL. CLASS**	NEMA 4X	**POWER LOCATION**	LOOP
		MEASURING PRINCIPLE	PRESSURE	**ELEMENT MATERIAL**	316L SST	**OUTPUT**	RELAY
		SET POINT	@ ~ 125 PSIG	**SWITCH ENCL. CLASS**	NEMA 4	**RELAY FORM**	SPDT
		ADJUSTABLE RANGE	100-150 PSIG	**ENCL. MATERIAL**	ALUMINUM	**PLC**	WD31-PLCX-36101
		TYPICAL DETAILS	NP501	**SURGE PROTECTION**	NO	**MANUAL RESET**	NO
		CONN. MOUNTING	BOTTOM	**BOTT. HOUSING MAT.**	316L STAINLESS S	**SEAL TYPE**	N/A
		CONNECTON TYPE	M-NPT	**INSTRUMENT VALVES**	INSTRUMENT VALVE TREE	**DIAPHRAGM/WET MAT**	316L STAINLESS STEEL

Notes: STATUS TRANSMITTED TO THE PLC VIA MBTCP ON THE VFD

SECTION 17404

PRESSURE/VACUUM MEASUREMENT: GAUGES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Pressure/vacuum gauges.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Standards:
   1. American Society of Mechanical Engineers (ASME):
      a. B40.100 - Pressure Gauges and Gauge Attachments.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Product data:
   1. Accessories.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments specified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed site conditions, including, but not limited to, material compatibility, site altitude, site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. One of the following or equal:
   1. Ashcroft:
      a. Maximum pressure less than 10 pounds per square inch: Model 1188.
         1) If a stainless steel dial casing is required:
            a) Model 1009.
      b. Maximum pressure greater than or equal to 10 pounds per square inch: Model1279.
         1) If a stainless steel dial casing is required:
            a) Model 1009. (This was selected for Westbrook and Solaire.)
      c. Removable Gauges:
         1) Model 1082.
   2. Wika.
   3. Ametek U.S. Gauge.

2.04 MANUFACTURED UNITS

A. General:
   1. Pressure gauge assembly shall include pressure sensing element, gauge case, and dial mechanism.

B. Performance requirements:
   1. Pressure range:
      a. As specified in the Contract Documents.

2. Accuracy:
    a. Grade 2A, as defined by ASME B40.100.
    b. Within 1.0 percent of span after friction errors are eliminated by tapping or vibration.
    c. Maximum allowable friction inaccuracy: Within 1.0 percent of span.
3. Element:
    a. Where the maximum pressure is less than 10 pounds per square inch, provide socket and bellows; for all other pressure ranges, employ a Bourdon® tube.
    b. Socket tips for bellows and Bourdon® tube:
        1) Materials: Type 316 stainless steel.
    c. Overpressure: Minimum 130 percent of maximum range pressure without damage to gauge or sensing element.
    d. Wetted materials: Type 316 stainless steel.
4. Dial gauge:
    a. Dial size: 4-1/2 inches.
    b. Dial case material:
        1) Maximum pressure less than 10 pounds per square inch:
            a) Phenolic.
        2) Maximum pressure greater than or equal to 10 pounds per square inch:
            a) Stainless steel.
    c. Provide safety gauge with safety blow out through the back or top of the unit.
    d. Dial face: Gasketed shatterproof glass or polycarbonate.
    e. Provide gauge locks on all pressure gauges directly connected to diaphragm seals.
    f. Provide gauge locks where possible.
    g. Connection and mounting:
        1) Direct mounted and suitable for outdoor installation.
        2) 1/2-inch NPT.
        3) Connection material: Stainless steel.
    h. Pointer: Externally adjustable.

2.05 ACCESSORIES

A. Pulsation dampeners and snubbers:
    1. Provide pulsation dampener or snubber with each pressure gauge installed on discharge of positive displacement type pump.
    2. Provide piston-type snubber if pressure spikes will exceed 130 percent of gauge maximum range.
    3. Materials: Type 316 stainless steel.
    4. Mount pulsation dampener or snubber integrally to the pressure gauge.
    5. Connection: 1/2-inch NPT.
    6. Provide diaphragm seals as specified in the Contract Documents and in Section 17401 - Pressure/Vacuum Measurement: Diaphragm and Annular Seals:
    7. Diaphragm seal and pressure gauge shall be assembled by manufacturer and shipped as an assembly.

B. Provide means for gauge isolation as specified in Section 17402 - Pressure/Vacuum Measurement: Instrument Valves:
   1. Mount valve manifold integrally to the gauge.
   2. Valve manifold and pressure gauge shall be assembled by manufacturer and shipped as an assembly.

C. Provide stainless steel tags for each instrument. Tags shall be labeled as specified in the Contract Documents.

2.06 SOURCE QUALITY CONTROL

A. Factory calibrate each pressure gauge at a facility that is traceable to the NIST.

B. Provide complete documentation covering the traceability of calibration instruments.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Coordinate the installation with trades to ensure that the mechanical system has necessary appurtenances including weld-o-lets, valves, etc., for proper installation of instruments.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

3.04 ADJUSTING

A. Verify factory calibration of instruments in accordance with the manufacturer’s instructions:
   1. Return factory calibrated devices to the factory if they do not meet the field verification requirements for calibration.

3.05 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - PRESSURE/VACUUM MEASUREMENT: GAUGES

Pressure Gauge

SPECIFICATION 17404

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID	SERVICE	ASR WELL RECOVERY PRESSURE GAUGE				
WD34-PIXX-30102	13N02	FLUID	WATER	CONNECTION TYPE	[*]	BOTT. HOUSING MAT.	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	N/A
		PRESSURE RANGE:	25-125 PSI	TYPICAL DETAILS	[*]	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-150 PSIG	OPTIONS	[*]	AMBIENT TEMP	80 DEG F
TAG	**P&ID**	**SERVICE**	TRICKLE FLOW PRESSURE GAUGE				
WD34-PIXX-30105	13N01	FLUID	WATER	CONNECTION TYPE	1/4 IN NPT	BOTT. HOUSING MAT.	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	N/A
		PRESSURE RANGE:	0 - 390 'H2O	TYPICAL DETAILS	NP502	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-160 PSI	OPTIONS	[*]	AMBIENT TEMP	80 DEG F
TAG	**P&ID**	**SERVICE**	STORAGE LINE PRESSURE GAUGE				
WD34-PIXX-30106	13N03	FLUID	WATER	CONNECTION TYPE	1/2 IN NPT	BOTT. HOUSING MAT.	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	N/A
		PRESSURE RANGE:	25-35 PSI	TYPICAL DETAILS	[*]	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-160 PSIG	OPTIONS	MOVEMENT DAMPI	AMBIENT TEMP	80 DEG F
TAG	**P&ID**	**SERVICE**	RECHARGE LINE PRESSURE GAUGE				
WD34-PIXX-30150	13N03	FLUID	WATER	CONNECTION TYPE	[*]	BOTT. HOUSING MAT.	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	N/A
		PRESSURE RANGE:	25-35 PSI	TYPICAL DETAILS	NP501	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-150 PSIG	OPTIONS	[*]	AMBIENT TEMP	80 DEG F

Pressure Gauge

SPECIFICATION 17404

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID						
WD34-PIXX-36102	19N02	**SERVICE**	ASR WELL RECOVERY PRESSURE INDICATOR				
		FLUID	WATER	**CONNECTION TYPE**	[*]	**BOTT. HOUSING MAT.**	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	**ISOLATION SEALS**	N/A	**INSTRUMENT VALVES**	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	**CASE MATERIAL**	PHENOLIC	**DIAPHRAGM MAT.**	N/A
		PRESSURE RANGE:	25-125 PSI	**TYPICAL DETAILS**	[*]	**DIAL SIZE**	4-1/2"
		GAUGE RANGE	0-150 PSIG	**OPTIONS**	[*]	**AMBIENT TEMP**	80 DEG F
TAG	**P&ID**						
WD34-PIXX-36105	19N01	**SERVICE**	TRICKLE FLOW PRESSURE GAUGE				
		FLUID	WATER	**CONNECTION TYPE**	1/4 IN NPT	**BOTT. HOUSING MAT.**	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	**ISOLATION SEALS**	N/A	**INSTRUMENT VALVES**	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	**CASE MATERIAL**	PHENOLIC	**DIAPHRAGM MAT.**	N/A
		PRESSURE RANGE:	0 - 390 'H2O	**TYPICAL DETAILS**	[*]	**DIAL SIZE**	4-1/2"
		GAUGE RANGE	0-160 PSI	**OPTIONS**	[*]	**AMBIENT TEMP**	80 DEG F
TAG	**P&ID**						
WD34-PIXX-36106	19N03	**SERVICE**	RECHARGE LINE PRESSURE GAUGE				
		FLUID	WATER	**CONNECTION TYPE**	1/2 IN NPT	**BOTT. HOUSING MAT.**	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	**ISOLATION SEALS**	N/A	**INSTRUMENT VALVES**	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	**CASE MATERIAL**	PHENOLIC	**DIAPHRAGM MAT.**	N/A
		PRESSURE RANGE:	25-35 PSI	**TYPICAL DETAILS**	[*]	**DIAL SIZE**	4-1/2"
		GAUGE RANGE	0-160 PSIG	**OPTIONS**	MOVEMENT DAMPI	**AMBIENT TEMP**	80 DEG F
TAG	**P&ID**						
WD34-PIXX-36109	19N02	**SERVICE**	ASR WELL STORAGE PRESSURE INDICATOR				
		FLUID	WATER	**CONNECTION TYPE**	[*]	**BOTT. HOUSING MAT.**	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	**ISOLATION SEALS**	N/A	**INSTRUMENT VALVES**	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	**CASE MATERIAL**	PHENOLIC	**DIAPHRAGM MAT.**	N/A
		PRESSURE RANGE:	0-35 PSI	**TYPICAL DETAILS**	[*]	**DIAL SIZE**	4-1/2"
		GAUGE RANGE	0-150 PSIG	**OPTIONS**	[*]	**AMBIENT TEMP**	80 DEG F

Pressure Gauge

SPECIFICATION 17404

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID	SERVICE	RECHARGE LINE PRESSURE GAUGE				
WD34-PIXX-36150	19N03	FLUID	WATER	CONNECTION TYPE	[*]	BOTT. HOUSING MAT.	316L STAINLESS STEEL
		TEMPERATURE	50 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	N/A
		PRESSURE RANGE:	25-35 PSI	TYPICAL DETAILS	[*]	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-150 PSIG	OPTIONS	[*]	AMBIENT TEMP	80 DEG F

TAG	P&ID	SERVICE	EMERGENCY SHOWER/EYEWASH PRESSURE GAUGE				
WD37-PIXX-30001	13N04	FLUID	WATER	CONNECTION TYPE	[*]	BOTT. HOUSING MAT.	316L STAINLESS STEEL
		TEMPERATURE	80 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	N/A
		PRESSURE RANGE:	0-80 PSI	TYPICAL DETAILS	[*]	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-150 PSIG	OPTIONS	[*]	AMBIENT TEMP	80 DEG F

TAG	P&ID	SERVICE	RESTROOM HOT WATER PRESSURE GAUGE				
WD37-PIXX-30002	13N07	FLUID	WATER	CONNECTION TYPE	[*]	BOTT. HOUSING MAT.	[*]
		TEMPERATURE	95 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	[*]
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	[*]	DIAPHRAGM MAT.	N/A
		PRESSURE RANGE:	0-30 PSIG	TYPICAL DETAILS	NP502	DIAL SIZE	[*]
		GAUGE RANGE	0-60 PSI	OPTIONS	[*]	AMBIENT TEMP	80 DEG F

Notes: CHOOSE HOUSING AND CASE MATERIAL, FITTING SIZE AND DIAL SIZE AS APPROPRIATE FOR THE APPLICATION.

TAG	P&ID	SERVICE	EMERGENCY SHOWER/EYEWASH PRESSURE GAUGE				
WD37-PIXX-36001	19N04	FLUID	WATER	CONNECTION TYPE	[*]	BOTT. HOUSING MAT.	316L STAINLESS STEEL
		TEMPERATURE	80 DEG F	ISOLATION SEALS	N/A	INSTRUMENT VALVES	INSTRUMENT VALVE TREE
		MEASURING PRINCIPLE	DIRECT	CASE MATERIAL	PHENOLIC	DIAPHRAGM MAT.	N/A
		PRESSURE RANGE:	0-80 PSI	TYPICAL DETAILS	[*]	DIAL SIZE	4-1/2"
		GAUGE RANGE	0-150 PSIG	OPTIONS	[*]	AMBIENT TEMP	80 DEG F

Pressure Gauge

SPECIFICATION 17404

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES

CUSTOMER CITY OF ROSEVILLE

PROJECT 11843A10_P3

LOCATION ROSEVILLE CA

ELEMENT/SWITCH

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

TAG	P&ID	SERVICE	RESTROOM HOT WATER PRESSURE GAUGE				
WD37-PIXX-36002	19N07		**FLUID** WATER	**CONNECTION TYPE** [*]		**BOTT. HOUSING MAT.** [*]	
			TEMPERATURE 95 DEG F	**ISOLATION SEALS** N/A		**INSTRUMENT VALVES** [*]	
			MEASURING PRINCIPLE DIRECT	**CASE MATERIAL** [*]		**DIAPHRAGM MAT.** N/A	
			PRESSURE RANGE: 0-30 PSIG	**TYPICAL DETAILS** NP502		**DIAL SIZE** [*]	
			GAUGE RANGE 0-60 PSI	**OPTIONS** [*]		**AMBIENT TEMP** 80 DEG F	

Notes: CHOOSE HOUSING AND CASE MATERIAL, FITTING SIZE AND DIAL SIZE AS APPROPRIATE FOR THE APPLICATION.

SECTION 17405

PRESSURE/VACUUM MEASUREMENT: DIRECT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Pressure transmitters and indicators.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Calibrated range: Range that the pressure transmitter is configured to measure.
      a. Low end of the calibrated range must be greater than the lower range value (LRV) of the transmitter.
      b. High end of the calibrated range must be less than or equal to the upper range value (URV).
      c. Calibrated range corresponds to the flow signal sent from the transmitter.
   2. Lower range value (LRV): Lowest pressure that the pressure transmitter is capable of measuring.
   3. Upper range value (URV): Highest pressure that the pressure transmitter is capable of measuring.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide complete documentation covering the traceability of calibration instruments.

1.05 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions, including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.

b. Location within the process.
c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

C. Provide instruments manufactured at facilities certified to the quality standards of ISO 9001.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
1. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.09 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.10 MAINTENANCE

A. Furnish parts, materials, fluids, etc., necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver these supplies before Project Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed Site conditions, including, but not limited to, material compatibility, Site altitude, Site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. One of the following or equal:
1. ABB, 266 Series.
2. Emerson, Rosemount 2051 Series with high performance option.
3. Emerson, Rosemount 3051 Series.

4. Endress & Hauser, Cerabar S Series.
5. Yokogawa, EJA Series.

2.04 MANUFACTURED UNITS

A. Pressure transmitters - direct:
   1. General:
      a. Pressure transmitter assembly shall include a diaphragm type pressure transducer and microprocessor-based transmitter for measurement of gauge, vacuum, or absolute pressure.
   2. Performance requirements:
      a. Maximum ratio of total instrument range to calibrated span: 10 to 1.
      b. Accuracy:
         1) Reference accuracy: Within 0.075 percent of calibrated span, including effects of hysteresis, nonlinearity, and repeatability.
         2) Total performance accuracy: Within 0.30 percent of calibrated span, including reference accuracy effects, static pressure and ambient temperature effects.
         3) Stability: Within 0.15 percent of upper range limit over 5 years.
   3. Element:
      a. Diaphragm type transducer integral to pressure transmitter.
      b. Diaphragm material: Stainless steel or ceramic.
      c. Process material compatibility:
         1) Verify material compatibilities with the instrument manufacturer.
      d. Process connection: As specified in Attachment A - ISA Datasheet - Pressure/Vacuum Measurement: Direct.
   4. Transmitter:
      a. Power supply:
         1) As indicated in the datasheets.
      b. Outputs:
         1) As indicated in the datasheets.
      c. Provided with electronic microprocessor.
      d. Adjustments: Adjustable electronic zero and span, with elevated or suppressed zero as required by application. Adjustment shall be possible without mechanical fulcrum points or handheld configurator.
      e. Local display:
         1) 5-digit LCD.
         2) Scaled in engineering units.
      f. Enclosure:
         1) As indicated in the datasheets.
      g. Over range protection: To maximum process line pressure.
      h. Conduit: 1/2-inch male NPT.
   5. Components:
      a. Transmitter mounting:
         1) As indicated in the datasheets.
         2) Provide necessary hardware for transmitter mounting.

2.05 ACCESSORIES

A. Furnish instrument isolation as indicated in the datasheets and specified in Section 17402 - Pressure/Vacuum Measurement: Instrument Valves:
   1. Mount isolation device integrally to the instrument.
   2. Isolation device and instrument shall be assembled by the manufacturer and shipped as an assembly.

B. Provide remote or integral diaphragm seals as indicated on the Drawings or as indicated in the datasheets.

C. Provide sunshades for outdoor installations.

D. Provide stainless steel tags for each instrument. Tags shall be labeled as specified in the Contract Documents.

2.06 FINISHES (NOT USED)

2.07 SOURCE QUALITY CONTROL

A. Factory calibrate each instrument with a minimum 3-point calibration or according to the manufacturer's standard at a facility that is traceable to the NIST.
   1. Submit calibration datasheets to the Engineer at least 30 days before shipment of the instruments to the Project Site.

B. FM approval certification or equal when installed in classified areas.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Coordinate the installation with trades to ensure that the mechanical system has necessary appurtenances, including weld-o-lets, valves, etc., for proper installation of instruments.

3.03 CALIBRATION AND TESTING

A. As specified in Section 17950 - Commissioning for Instrumentation and Controls.

3.04 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - PRESSURE/VACUUM MEASUREMENT: DIRECT

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Pressure Transmitter

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-PITX-30102 (WD34-PEXX-30102)
SPECIFICATION NUMBER 17405
MEASURING PRINCIPLE DIRECT
DRAWING NUMBER 13N02
PLC WD31-PLCX-30101
SERVICE ASR WELL RECOVERY PRESSURE ELEMENT
TYPICAL DETAILS NP501

CONNECTION

CONNECTION TYPE M-NPT
INSTRUMENT VALVES INSTRUMENT VALVE TREE

FLUID

FLUID WATER
PRESSURE RANGE 0-160 PSIG
TEMPERATURE 50 DEG F

ELEMENT

ELEMENT TAG NO. WD34-PEXX-30102
SEAL TYPE N/A
ENCLOSURE CLASS NEMA 4
DIAPHRAGM MATERIAL 316L STAINLESS STEEL
HAZARDOUS APPROVALS N/A
BOTTOM HOUSING MAT. 316L STAINLESS STEEL

TRANSMITTER

TRANSMITTER TAG NO. WD34-PITX-30102
AMBIENT TEMPERATURE 80 DEG F
MOUNTING INT
OUTPUT 4-20 MA
ENCLOSURE CLASS NEMA 4X
SURGE PROTECTION NO

NOTES

[*]

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

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GENERAL

TAG WD34-PITX-30106 (WD34-PEXX-30106)
SPECIFICATION NUMBER 17405
MEASURING PRINCIPLE DIRECT
DRAWING NUMBER 13N03
PLC WD31-PLCX-30101
SERVICE STORAGE LINE PRESSURE ELEMENT
TYPICAL DETAILS NP501

CONNECTION

CONNECTION TYPE M-NPT
INSTRUMENT VALVES INSTRUMENT VALVE TREE

FLUID

FLUID WATER
PRESSURE RANGE 0-150 PSIG
TEMPERATURE 50 DEG F

ELEMENT

ELEMENT TAG NO. WD34-PEXX-30106
SEAL TYPE N/A
ENCLOSURE CLASS NEMA 4
DIAPHRAGM MATERIAL 316L STAINLESS STEEL
HAZARDOUS APPROVALS N/A
BOTTOM HOUSING MAT. 316L STAINLESS STEEL

TRANSMITTER

TRANSMITTER TAG NO. WD34-PITX-30106
AMBIENT TEMPERATURE 80 DEG F
MOUNTING INT
OUTPUT 4-20 MA
ENCLOSURE CLASS NEMA 4X
SURGE PROTECTION NO

NOTES

[*]

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-PITX-30109 (WD34-PEXX-30109)
SPECIFICATION NUMBER 17405
MEASURING PRINCIPLE DIRECT
DRAWING NUMBER 13N02
PLC WD31-PLCX-30101
SERVICE ASR WELL STORAGE PRESSURE ELEMENT
TYPICAL DETAILS NP501

CONNECTION

CONNECTION TYPE M-NPT
INSTRUMENT VALVES INSTRUMENT VALVE TREE

FLUID

FLUID WATER
PRESSURE RANGE 0-150 PSIG
TEMPERATURE 50 DEG F

ELEMENT

ELEMENT TAG NO. WD34-PEXX-30109
SEAL TYPE N/A
ENCLOSURE CLASS NEMA 4
DIAPHRAGM MATERIAL 316L STAINLESS STEEL
HAZARDOUS APPROVALS N/A
BOTTOM HOUSING MAT. 316L STAINLESS STEEL

TRANSMITTER

TRANSMITTER TAG NO. WD34-PITX-30109
AMBIENT TEMPERATURE 80 DEG F
MOUNTING INT
OUTPUT 4-20 MA
ENCLOSURE CLASS NEMA 4X
SURGE PROTECTION NO

NOTES

[*]

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-PITX-36102 (WD34-PEXX-36102)
SPECIFICATION NUMBER 17405
DRAWING NUMBER 19N02
SERVICE ASR WELL RECOVERY PRESSURE ELEMENT
MEASURING PRINCIPLE DIRECT
PLC WD31-PLCX-36101
TYPICAL DETAILS NP501

CONNECTION

CONNECTION TYPE M-NPT
INSTRUMENT VALVES INSTRUMENT VALVE TREE

FLUID

FLUID WATER
TEMPERATURE 50 DEG F
PRESSURE RANGE 0-150 PSIG

ELEMENT

ELEMENT TAG NO. WD34-PEXX-36102
ENCLOSURE CLASS NEMA 4
HAZARDOUS APPROVALS N/A
SEAL TYPE N/A
DIAPHRAGM MATERIAL 316L STAINLESS STEEL
BOTTOM HOUSING MAT. 316L STAINLESS STEEL

TRANSMITTER

TRANSMITTER TAG NO. WD34-PITX-36102
MOUNTING INT
ENCLOSURE CLASS NEMA 4X
AMBIENT TEMPERATURE 80 DEG F
OUTPUT 4-20 MA
SURGE PROTECTION NO

NOTES

[*]

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-PITX-36106 (WD34-PEXX-36106)
SPECIFICATION NUMBER 17405
DRAWING NUMBER 19N03
SERVICE STORAGE LINE PRESSURE ELEMENT
MEASURING PRINCIPLE DIRECT
PLC WD31-PLCX-36101
TYPICAL DETAILS NP501

CONNECTION

CONNECTION TYPE M-NPT
INSTRUMENT VALVES INSTRUMENT VALVE TREE

FLUID

FLUID WATER
TEMPERATURE 50 DEG F
PRESSURE RANGE 0-150 PSIG

ELEMENT

ELEMENT TAG NO. WD34-PEXX-36106
ENCLOSURE CLASS NEMA 4
HAZARDOUS APPROVALS N/A
SEAL TYPE N/A
DIAPHRAGM MATERIAL 316L STAINLESS STEEL
BOTTOM HOUSING MAT. 316L STAINLESS STEEL

TRANSMITTER

TRANSMITTER TAG NO. WD34-PITX-36106
MOUNTING INT
ENCLOSURE CLASS NEMA 4X
AMBIENT TEMPERATURE 80 DEG F
OUTPUT 4-20 MA
SURGE PROTECTION NO

NOTES

[*]

Pressure Transmitter

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-PITX-36109 (WD34-PEXX-36109)
SPECIFICATION NUMBER 17405
MEASURING PRINCIPLE DIRECT
DRAWING NUMBER 19N02
PLC WD31-PLCX-36101
SERVICE ASR WELL STORAGE PRESSURE ELEMENT
TYPICAL DETAILS NP501

CONNECTION

CONNECTION TYPE M-NPT
INSTRUMENT VALVES INSTRUMENT VALVE TREE

FLUID

FLUID WATER
PRESSURE RANGE 0-150 PSIG
TEMPERATURE 50 DEG F

ELEMENT

ELEMENT TAG NO. WD34-PEXX-36109
SEAL TYPE N/A
ENCLOSURE CLASS NEMA 4
DIAPHRAGM MATERIAL 316L STAINLESS STEEL
HAZARDOUS APPROVALS N/A
BOTTOM HOUSING MAT. 316L STAINLESS STEEL

TRANSMITTER

TRANSMITTER TAG NO. WD34-PITX-36109
AMBIENT TEMPERATURE 80 DEG F
MOUNTING INT
OUTPUT 4-20 MA
ENCLOSURE CLASS NEMA 4X
SURGE PROTECTION NO

NOTES

[*]

SECTION 17406

PRESSURE/VACUUM MEASUREMENT: DIFFERENTIAL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Differential pressure transmitters and indicators.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Calibrated range: Range that the pressure transmitter is configured to measure.
      a. Low end of the calibrated range must be greater than the lower range value (LRV) of the transmitter.
      b. High end of the calibrated range must be less than the upper range value (URV).
      c. Calibrated range corresponds to the pressure signal sent from the transmitter.
      d. When a Low-Flow Cut-Off is considered, the calibration set points need to be 10 percent, 25 percent, 50 percent, 75 percent, and 100 percent of the output flowrate rather than starting form 0 percent.
   2. Lower range value (LRV): Lowest pressure that the pressure transmitter is capable of measuring.
   3. Upper range value (URV): Highest pressure that the pressure transmitter is capable of measuring.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Product data:
   1. Accessories.

C. Provide complete documentation covering the traceability of calibration instruments.

1.05 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions, including:
    1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
    2. Physical conditions:
        a. Installation and mounting requirements.
        b. Location within the process.
        c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.07 PROJECT CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
    1. Notify the Engineer if any installation condition does not meet the instrument manufacturer’s recommendations or specifications.

1.09 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.10 MAINTENANCE

A. Furnish parts, materials, fluids, etc., necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver these supplies before Project Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments specified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed Site conditions, including, but not limited to, material compatibility, Site altitude, Site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. One of the following, no equal:
    1. Emerson, Rosemount 3051S Series.

2. Endress + Hauser, Deltabar S Series.
3. SMAR, LD300 Series.

2.04 MANUFACTURED UNITS

A. As specified in this Section, including Attachment A - ISA Datasheet - Pressure/Vacuum Measurement: Differential.

B. Pressure transmitters - differential:
   1. General:
      a. Differential pressure transmitter assembly shall include a diaphragm-type pressure transducer and microprocessor-based transmitter for measurement of differential pressure.
      b. Differential pressure transmitters shall be used for differential pressure, flow, or liquid level measurement as indicated on the Drawings.
   2. Performance requirements:
      a. Maximum ratio of total instrument range to calibrated span: 10 to 1.
      b. Accuracy:
         1) Reference accuracy: Within 0.075 percent of calibrated span, including effects of hysteresis, nonlinearity, and repeatability.
         2) Stability: Within 0.30 percent of upper range limit over 5 years.
   3. Element:
      a. Diaphragm-type transducer integral to differential pressure transmitter.
      b. Diaphragm/wetted material: As indicated in Attachment A - ISA Datasheet - Pressure/Vacuum Measurement: Differential.
      c. Wetted materials: As indicated in the datasheets.
      d. Process material compatibility:
         1) Verify material compatibilities with the instrument manufacturer.
      e. Diaphragm fill fluid: **[Silicon oil][Inert halocarbon]**.
      f. Process connection: As indicated in the datasheets.
   4. Transmitter:
      a. Power supply:
         1) As indicated in the datasheets.
      b. Outputs:
         1) As indicated in the datasheets.
      c. Provided with electronic microprocessor.
      d. Adjustments: Adjustable electronic zero and span, with elevated or suppressed zero as required by application. Adjustment shall be possible without mechanical fulcrum points or handheld configurator.
      e. Square root extraction for flow calculation.
      f. Local display:
         1) 5-digit LCD.
         2) Scaled in engineering units.
      g. Enclosure:
         1) As indicated in the datasheets.
      h. Overrange protection: To maximum process line pressure.
      i. Conduit connection: 1/2-inch male NPT.
   5. Components:
      a. Transmitter mounting:
         1) As indicated in the datasheets.
         2) Provide necessary hardware for transmitter mounting.

2.05 ACCESSORIES

A. Provide seals as indicated on the Drawings and as indicated in the datasheets.
   1. Diaphragm seals and instrument shall be assembled by the manufacturer and shipped as an assembly.

B. Furnish device isolation as indicated in the datasheets and specified in Section 17402 - Pressure/Vacuum Measurement: Instrument Valves:
   1. Mount isolation device integrally to the instrument.
   2. Isolation device and instrument shall be assembled by the manufacturer and shipped as an assembly.

C. Provide flanged diaphragm for tank or vessel level measurement:
   1. Flanged diaphragm and transmitter shall be assembled by the manufacturer and shipped as an assembly.

D. Provide sunshades for outdoor installations.

E. Provide stainless steel tags for each instrument. Tags shall be labeled as specified in the Contract Documents.

F. Sensing (impulse) lines:
   1. Provide sensing lines for each instrument.
   2. Seamless stainless steel.
   3. Pressure rated for the actual field service conditions.
   4. Diameter based on the overall length.
      a. Up to 10 feet: 3/8-inch.
      b. From 10 feet to 20 feet: 1/2-inch.
      c. From 20 feet to 40 feet: 1-inch.
      d. Increase the diameter 1 increment for medium to heavy viscosity fluids, very dirty fluids and sludges.

2.06 FINISHES (NOT USED)

2.07 SOURCE QUALITY CONTROL

A. Each differential pressure transmitter shall be factory calibrated with 5-point calibration at a facility that is traceable to the NIST.

B. Provide complete documentation covering the traceability of calibration instruments.

C. FM approval certification or equal when installed in classified areas.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Coordinate the installation with trades to ensure that the mechanical system has necessary appurtenances, including weld-o-lets, valves, etc., for proper installation of instruments.

C. Install sensing lines in accordance with the Contract Documents and the line manufacturer.

3.03 CALIBRATION AND TESTING

A. As specified in Section 17950 - Commissioning for Instrumentation and Controls.

3.04 ADJUSTING

A. Verify factory calibration of instruments in accordance with the manufacturer's instructions:
   1. Return factory calibrated devices to the factory if they do not meet the field verification requirements for calibration.

3.05 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - PRESSURE/VACUUM MEASUREMENT: DIFFERENTIAL

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Pressure Transmitter

RESERVOIR

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-PDIT-30151 (WD34-PEXX-30151)
SPECIFICATION NUMBER 17406
MEASURING PRINCIPLE DIFFERENTIAL
DRAWING NUMBER 13N03
PLC WD31-PLCX-30101
SERVICE H-STRAINER DIFFERENTIAL PRESSURE TRANSMITTER
TYPICAL DETAILS NP189

CONNECTION

CONNECTION TYPE 1/2" M-NPT
INSTRUMENT VALVES METERING 5-VALVE MANIFOLD

FLUID

FLUID WATER
PRESSURE RANGE 0-5 PSI
TEMPERATURE 50 DEG F

ELEMENT

ELEMENT TAG NO. WD34-PEXX-30151
SEAL TYPE N/A
ENCLOSURE CLASS NEMA 4
DIAPHRAGM MATERIAL 316L STAINLESS STEEL
HAZARDOUS APPROVALS N/A
BOTTOM HOUSING MAT. 316L STAINLESS STEEL

TRANSMITTER

TRANSMITTER TAG NO. WD34-PDIT-30151
AMBIENT TEMPERATURE 80 DEG F
MOUNTING INT
OUTPUT 4-20 MA HART
ENCLOSURE CLASS NEMA 4
SURGE PROTECTION NO

NOTES

[*]

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-PDIT-36151 (WD34-PEXX-36151)
SPECIFICATION NUMBER 17406
DRAWING NUMBER 19N03
SERVICE H-STRAINER DIFFERENTIAL PRESSURE TRANSMITTER
MEASURING PRINCIPLE DIFFERENTIAL
PLC WD31-PLCX-36101
TYPICAL DETAILS NP189

CONNECTION

CONNECTION TYPE 1/2" M-NPT
INSTRUMENT VALVES METERING 5-VALVE MANIFOLD

FLUID

FLUID WATER
TEMPERATURE 50 DEG F
PRESSURE RANGE 0-5 PSI

ELEMENT

ELEMENT TAG NO. WD34-PEXX-36151
ENCLOSURE CLASS NEMA 4
HAZARDOUS APPROVALS N/A
SEAL TYPE N/A
DIAPHRAGM MATERIAL 316L STAINLESS STEEL
BOTTOM HOUSING MAT. 316L STAINLESS STEEL

TRANSMITTER

TRANSMITTER TAG NO. WD34-PDIT-36151
MOUNTING INT
ENCLOSURE CLASS NEMA 4
AMBIENT TEMPERATURE 80 DEG F
OUTPUT 4-20 MA HART
SURGE PROTECTION NO

NOTES

[*]

SECTION 17407

PRESSURE MEASUREMENT: SUBMERSIBLE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Submersible pressure transmitters.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures, and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide complete documentation covering the traceability of calibration instruments.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions, including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

C. Provide instruments manufactured at facilities certified to the quality standards of ISO 9001.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. Project environmental conditions as specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.09 MAINTENANCE

A. Furnish parts, materials, fluids, etc., necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver these supplies before Project Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed Site conditions, including, but not limited to, material compatibility, Site altitude, Site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. Submersible level measurement with 2-wire integral transmitter:
   1. One of the following or equal:
      a. Endress+Hauser, Waterpilot FMX21. (This was selected for Westbrook and Solaire.)
      b. Druck, PTX-1830.
      c. Siemens, SITRANS LH100.
      d. Measurement Specialties, KPSI 700 Series.

2.04 MANUFACTURED UNITS

A. As specified in this Section, including Attachment A - ISA Datasheet - Pressure Measurement: Submersible.

B. Submersible level measurement with 2-wire integral transmitter:
   1. General:
      a. Pressure is measured through a diaphragm-type measuring cell and converted to linear pressure measurement.
      b. Each submersible pressure transmitter system shall include:
         1) Signal cable, including pressure compensation tube.
         2) Transducer probe with integral transmitter.
         3) Transmitter cable termination box.

2. Performance requirements:
    a. Accuracy:
        1) 0.3 percent of range.
    b. Repeatability:
        1) 0.25 percent of full scale.
    c. Rangeability:
        1) 3:1.
    d. Range:
        1) As indicated on the contract documents.
3. Element:
    a. Sensor housing shall be Type 316L stainless steel or titanium with ceramic, Teflon™-coated, or titanium diaphragm.
    b. Protective cap shall be manufacturer's recommended material, chemically resistant to process fluid.
        1) Slip resistant extension cable with pressure compensation tube with Teflon™ filter.
    c. Enclosure for probe and transmitter assembly shall be NEMA Type 6P.
4. Transmitter:
    a. Power supply:
        1) 24 VDC: 2wire loop powered.
        2) Power consumption: 18 VA maximum.
    b. Outputs:
        1) Isolated 4 to 20 milliamperes DC.
    c. Without display.
    d. Ambient operating temperature limits of -10 to 70 degrees Celsius (-14 to 158 degrees Fahrenheit).
    e. Transmitter shall be integral to probe housing.
5. Transmitter cable termination box:
    a. NEMA Type 4X.
    b. Equipped with filter or desiccant chamber to eliminate moisture from the pressure compensation tube.
    c. Termination for signal wires and pressure compensation tube.

2.05 ACCESSORIES

A. Type 316L stainless steel mounting clamp with Type 304 stainless steel mounting screws.

B. Provide cable clamp and strain relief.

C. Provide remote display with backlight or loop indicator with backlight as indicated on the Drawings and as specified in Section 17710 - Control Systems: Panels, Enclosures, and Panel Components.

D. Provide sunshade for outdoor installations.

2.06 SOURCE QUALITY CONTROL

A. Factory calibrate each instrument with a minimum 3-point calibration or according to the manufacturer's standard at a facility that is traceable to the NIST.
   1. Submit calibration datasheet to the Engineer at least 30 days before shipment of the instruments to the Project Site.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Coordinate the installation with trades to ensure that the mechanical system has necessary appurtenances, including weld-o-lets, valves, etc., for proper installation of instruments.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

3.04 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - PRESSURE/VACUUM MEASUREMENT: SUBMERSIBLE

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Submersible Pressure Transmitter

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD33-LITX-30401 (WD33-LEXX-30401)
SPECIFICATION NUMBER 17407
MEASURING PRINCIPLE DIRECT
DRAWING NUMBER 13N06
PLC WD31-PLCX-30101
SERVICE COMW-C WELL WATER LEVEL
TYPICAL DETAILS [*]

CONNECTION

CONNECTION TYPE [*]
INSTRUMENT VALVES N/A
ISOLATION SEALS N/A

FLUID

FLUID WATER
INSTRUMENT RANGE 0-500FT
TEMPERATURE 50 DEG F

ELEMENT

ELEMENT TAG NO. WD33-LEXX-30401
HOUSING MATERIAL 316L SST
ENCLOSURE CLASS NEMA 4X
MEMBRANE MATERIAL FKM
HAZARDOUS APPROVALS N/A
DIAPHRAGM MATERIAL MFR. STD.

TRANSMITTER

TRANSMITTER TAG NO. WD33-LITX-30401
SIGNAL OUTPUT AI
ENCLOSURE CLASS NEMA 4X
OUTPUT [*]
TRANS. MOUNTING INT
AMBIENT TEMPERATURE 80 DEG F
SURGE PROTECTION YES

NOTES

E&H FMX21-AA221PGE##A+POPSPWZ1 WAS ORDERED FOR WESTBROOK AND SOLAIRE

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Submersible Pressure Transmitter

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD33-LITX-36401 (WD33-LEXX-36401)
SPECIFICATION NUMBER 17407
DRAWING NUMBER 19N06
SERVICE COMW-C WELL WATER LEVEL
MEASURING PRINCIPLE DIRECT
PLC WD31-PLCX-36101
TYPICAL DETAILS [*]

CONNECTION

CONNECTION TYPE [*]
ISOLATION SEALS N/A
INSTRUMENT VALVES N/A

FLUID

FLUID WATER
TEMPERATURE 50 DEG F
INSTRUMENT RANGE 0-500FT

ELEMENT

ELEMENT TAG NO. WD33-LEXX-36401
ENCLOSURE CLASS NEMA 4X
HAZARDOUS APPROVALS N/A
HOUSING MATERIAL 316L SST
MEMBRANE MATERIAL FKM
DIAPHRAGM MATERIAL MFR. STD.

TRANSMITTER

TRANSMITTER TAG NO. WD33-LITX-36401
ENCLOSURE CLASS NEMA 4X
TRANS. MOUNTING INT
SURGE PROTECTION YES
SIGNAL OUTPUT AI
OUTPUT [*]
AMBIENT TEMPERATURE 80 DEG F

NOTES

E&H FMX21-AA221PGE##A+POPSPWZ1 WAS ORDERED FOR WESTBROOK AND SOLAIRE

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-LITX-30100 (WD34-LEXX-30100)
SPECIFICATION NUMBER 17407
MEASURING PRINCIPLE DIRECT
DRAWING NUMBER 13N02
PLC WD31-PLCX-36101
SERVICE ASR WELL LEVEL TRANSDUCER
TYPICAL DETAILS [*]

CONNECTION

CONNECTION TYPE FLANGED
INSTRUMENT VALVES [*]
ISOLATION SEALS N/A

FLUID

FLUID [*]
INSTRUMENT RANGE ___-___FT
TEMPERATURE [*]

ELEMENT

ELEMENT TAG NO. WD34-LEXX-30100
HOUSING MATERIAL MFR. STD.
ENCLOSURE CLASS NEMA 4X
MEMBRANE MATERIAL MFR. STD.
HAZARDOUS APPROVALS N/A
DIAPHRAGM MATERIAL MFR. STD.

TRANSMITTER

TRANSMITTER TAG NO. WD34-LITX-30100
SIGNAL OUTPUT AI
ENCLOSURE CLASS NEMA 4X
OUTPUT [*]
TRANS. MOUNTING INT
AMBIENT TEMPERATURE [*]
SURGE PROTECTION NO

NOTES

[*]

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Submersible Pressure Transmitter

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PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
CUSTOMER CITY OF ROSEVILLE
PROJECT 11843A10_P3
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD34-LITX-36100 (WD34-LEXX-36100)
SPECIFICATION NUMBER 17407
MEASURING PRINCIPLE DIRECT
DRAWING NUMBER 19N02
PLC WD31-PLCX-36101
SERVICE ASR WELL LEVEL TRANSDUCER
TYPICAL DETAILS [*]

CONNECTION

CONNECTION TYPE FLANGED
INSTRUMENT VALVES [*]
ISOLATION SEALS N/A

FLUID

FLUID [*]
INSTRUMENT RANGE ___-___FT
TEMPERATURE [*]

ELEMENT

ELEMENT TAG NO. WD34-LEXX-36100
HOUSING MATERIAL MFR. STD.
ENCLOSURE CLASS NEMA 4X
MEMBRANE MATERIAL MFR. STD.
HAZARDOUS APPROVALS N/A
DIAPHRAGM MATERIAL MFR. STD.

TRANSMITTER

TRANSMITTER TAG NO. WD34-LITX-36100
SIGNAL OUTPUT AI
ENCLOSURE CLASS NEMA 4X
OUTPUT [*]
TRANS. MOUNTING INT
AMBIENT TEMPERATURE [*]
SURGE PROTECTION NO

NOTES

[*]

SECTION 17505

ANALYZERS: RESIDUAL CHLORINE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Residual chlorine analyzers.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide complete documentation covering the traceability of calibration instruments.

C. Furnish commissioning Submittals listed below, as specified in this Section, and Section 01756 - Commissioning:
   1. Manufacturer's representative qualifications.
   2. Owner training.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that required accessories are provided and are compatible with the process conditions and physical installation.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. Project environmental conditions as specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.09 MAINTENANCE

A. Furnish parts, materials, fluids, etc., necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver these supplies before project substantial completion.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide instruments identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed site conditions including, but not limited to, material compatibility, site altitude, site seismic conditions, humidity, and process and ambient temperatures.

B. Sensor probe and transmitter must be from the same manufacturer.

2.03 MANUFACTURERS

A. Colorimetric residual analyzers:
   1. The following or equal:
      a. HACH, CL17sc.
         1) Transmitter Model sc4500.

2.04 MANUFACTURED UNITS

A. As specified in this Section, including Attachment A - ISA Datasheet - Analyzers: Residual Chlorine.

B. Colorimetric residual analyzers:
   1. General:
      a. Residual chlorine analyzer utilizing the DPD colorimetric method to provide accurate measurements independent of swings in pH or alkalinity levels in the sample source.

b. Convert from free to total chlorine by changing reagents:
    1) Measure a sample blank before each sample measurement to provide zero reference compensation for sample color and turbidity, changes in light intensity due to voltage fluctuations, or light intensity.

2. Performance requirements:
    a. Complete analysis every 2.5 minutes for free or total chlorine residual.
    b. Designed for 30 days of unattended operation, with less than 500 milliliters of reagent used per month.
    c. Accuracy:
        1) Within 5 percent of reading or within 0.035 milligrams per liters.
    d. Range:
        1) 0 to 5 milligrams per liters free or total residual.
    e. Repeatability:
        1) Within 5 percent or 0.05 milligrams per liters.

3. Transmitter:
    a. Microprocessor-based signal converter/transmitter:
        1) Self-diagnostic functions available via the alphanumeric, menu-driven keyboard.
    b. Power supply:
        1) 120 VAC.
    c. Outputs:
        1) Isolated 4 to 20 milliamperes DC.
        2) As indicated on the instrument data sheets.
        3) Relay outputs:
            a) SPST relay contacts: 2.
            b) Selectable to activate on the following conditions:
                (1) High or low sample concentration.
                (2) Analyzer system warning.
                (3) Analyzer system shutdown.
    d. Enclosure:
        1) Rating: NEMA 4X.
        2) Clear polycarbonate windows.
        3) Wall mounted.
    e. Display:
        1) LCD, 3-digit readout, and 6-character alphanumeric scrolling text line.
    f. Light source:
        1) Class I LED (light emitting diode), with peak wavelength of 520 nanometer; 50,000 hours estimated minimum life.

2.05 ACCESSORIES

A. Provide sun shades for outdoor installations.

B. Provide surge suppression for outdoor installations.

2.06 SOURCE QUALITY CONTROL

A. Factory calibrate each instrument with a minimum 3-point calibration or according to Manufacturer's standard at a facility that is traceable to the NIST.
   1. Submit calibration datasheets to the Engineer at least 30 days before shipment of the instruments to the project site.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

3.04 SCHEDULES

A. The provided information does not necessarily include all required instruments. Provide all instruments identified in the Contract Documents:
   1. Instruments may be indicated on the Drawings, specified in the Specifications, or both.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - ANALYZERS: RESIDUAL CHLORINE

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Analyzer Transmitter

PROJECT INFORMATION

PLANT	CAMPUS OAKS & MISTY WOODS ASR FACILITIES	**CUSTOMER**	CITY OF ROSEVILLE
PROJECT	11843A10_P3	**LOCATION**	ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG	WD33-AITX-30205 (WD33-AEXX-30205)	**POWER LOCATION**	WD31-PLCX-30101
SPECIFICATION NUMBER	17505	**MEASURING PRINCIPLE**	COLORIMETRIC
DRAWING NUMBER	13N06	**PLC**	WD31-PLCX-30101
SERVICE	CHLORINE RESIDUAL ANALYZER	**TYPICAL DETAILS**	[*]

FLUID

FLUID	WATER	**PRESSURE**	LESS THAN 120
MEASUREMENT RANGE	0-10 MG/L	**TEMPERATURE**	50 DEG F
SAMPLE FLOW	[*]	**SAMPLE TEMPERATURE**	40 - 80 DEG F
SAMPLE pH	1-14		

ELEMENT

ELEMENT TAG NO.	WD33-AEXX-30205	**PROCESS CONNECTION**	INSERTION
ENCLOSURE CLASS	NEMA 4	**HAZARDOUS APPROVALS**	N/A
CLEANING APPARATUS	NO	**ELEMENT MOUNTING KIT**	FLOW ASSEMBLY

TRANSMITTER

TRANSMITTER TAG NO.	WD33-AITX-30205	**SIGNAL OUTPUT**	AI
ENCLOSURE CLASS	NEMA 4	**OUTPUT**	4-20 MA
TRANS. MOUNTING	REM	**TRANS. HAZ APPROVALS**	N/A
POWER	120VAC-1P	**RELAY OPTIONS**	YES
SURGE PROTECTION	NO	**AMBIENT TEMPERATURE**	80 DEG F
AIR CLEANING SYSTEM	NO		

NOTES

[*]

Analyzer Transmitter

PROJECT INFORMATION

PLANT	CAMPUS OAKS & MISTY WOODS ASR FACILITIES	**CUSTOMER**	CITY OF ROSEVILLE
PROJECT	11843A10_P3	**LOCATION**	ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG	WD33-AITX-36205 (WD33-AEXX-36205)	**POWER LOCATION**	WD31-PLCX-36101
SPECIFICATION NUMBER	17505	**MEASURING PRINCIPLE**	COLORIMETRIC
DRAWING NUMBER	19N06	**PLC**	WD31-PLCX-36101
SERVICE	CHLORINE RESIDUAL ANALYZER	**TYPICAL DETAILS**	[*]

FLUID

FLUID	WATER	**PRESSURE**	LESS THAN 120
MEASUREMENT RANGE	0-10 MG/L	**TEMPERATURE**	50 DEG F
SAMPLE FLOW	[*]	**SAMPLE TEMPERATURE**	40 - 80 DEG F
SAMPLE pH	1-14		

ELEMENT

ELEMENT TAG NO.	WD33-AEXX-36205	**PROCESS CONNECTION**	INSERTION
ENCLOSURE CLASS	NEMA 4	**HAZARDOUS APPROVALS**	N/A
CLEANING APPARATUS	NO	**ELEMENT MOUNTING KIT**	FLOW ASSEMBLY

TRANSMITTER

TRANSMITTER TAG NO.	WD33-AITX-36205	**SIGNAL OUTPUT**	AI
ENCLOSURE CLASS	NEMA 4	**OUTPUT**	4-20 MA
TRANS. MOUNTING	REM	**TRANS. HAZ APPROVALS**	N/A
POWER	120VAC-1P	**RELAY OPTIONS**	YES
SURGE PROTECTION	NO	**AMBIENT TEMPERATURE**	80 DEG F
AIR CLEANING SYSTEM	NO		

NOTES

[*]

SECTION 17529

ANALYZERS: FLUORIDE

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Fluoride analyzers.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 SUBMITTALS

A. Furnish submittals as specified in Section 01330 - Submittal Procedures and 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Furnish commissioning submittals listed below and specified in this Section as specified in Section 01756 - Commissioning:
   1. Manufacturer's representative qualifications.
   2. Owner training.

1.04 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Examine the complete set of Contract Documents and verify that the instruments are compatible with the installed conditions including:
   1. Process conditions: Fluids, pressures, temperatures, flows, materials, etc.
   2. Physical conditions:
      a. Installation and mounting requirements.
      b. Location within the process.
      c. Accessories: Verify that all required accessories are provided and are compatible with the process conditions and physical installation.

C. Provide instruments manufactured at facilities certified to the quality standards of ISO 9001.

1.05 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. Project environmental conditions as specified in Section 01850 - Design Criteria.

1.07 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Notify the Engineer if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.09 MAINTENANCE

A. Furnish all parts, materials, fluids, etc., necessary for operation, maintenance, and calibration purposes throughout the warranty period. Deliver all of these supplies before project substantial completion.

B. Furnish the following spare parts:
   1. Spare pump.
   2. Spare sensor.
   3. 3 Pump tubes.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide all instruments as identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide instruments suitable for the installed site conditions including, but not limited to, material compatibility, site altitude, site seismic conditions, humidity, and process and ambient temperatures.

2.03 MANUFACTURERS

A. One of the following, no equal:
   1. Prominent, same as what is installed at Westbrook and Solaire facilities.

2.04 MANUFACTURED UNITS

A. Fluoride analyzer:
   1. Model D1Cb: D1CBW00601000VF1211G00EN.
   2. Package to include the following:
      a. Sensor module: DLG IV.
      b. Backboard 24-inch W x 24-inch H.
      c. Sample valve.
      d. PT100 temperature probe (P/N 1002856).

e. Reference electrode (P/N 1083790).
f. Fluoride sensor 0-10 PPM (P/N 1028279).
g. Transducer (P/N 1028280).

2.05 SOURCE QUALITY CONTROL

A. Factory calibrate each instrument with a minimum 3-point calibration or according to Manufacturer's standard at a facility that is traceable to the NIST:
   1. Submit calibration data sheets to the Engineer at least 30 days before shipment of the instruments to the project site.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the installation location for the instrument and verify that the instrument will work properly when installed:
   1. Notify the Engineer promptly if any installation condition does not meet the instrument manufacturer's recommendations or specifications.

3.02 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

END OF SECTION

ATTACHMENT A - ISA DATASHEET - ANALYZERS: FLOURIDE

Engineers...Working Wonders With Water®

Analyzer Transmitter

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
LOCATION ROSEVILLE CA

GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD33-AITX-30307 (WD33-AEXX-30307)
SPECIFICATION NUMBER 17529
DRAWING NUMBER 13N06
SERVICE FLUORIDE ANALYZER
POWER LOCATION WD31-PLCX-30101
MEASURING PRINCIPLE COLORIMETRIC
PLC WD31-PLCX-30101
TYPICAL DETAILS [*]

FLUID

FLUID WATER
MEASUREMENT RANGE 0-10 PPM
SAMPLE FLOW [*]
SAMPLE pH 1-14
PRESSURE LESS THAN 120 PSI
TEMPERATURE 50 DEG F
SAMPLE TEMPERATURE 40 - 80 DEG F

ELEMENT

ELEMENT TAG NO. WD33-AEXX-30307
ENCLOSURE CLASS NEMA 4X
CLEANING APPARATUS NO
PROCESS CONNECTION INSERTION
HAZARDOUS APPROVALS N/A
ELEMENT MOUNTING KIT FLOW ASSEMBLY

TRANSMITTER

TRANSMITTER TAG NO. WD33-AITX-30307
ENCLOSURE CLASS NEMA 4
TRANS. MOUNTING REM
POWER 120VAC-1P
SURGE PROTECTION NO
AIR CLEANING SYSTEM NO
SIGNAL OUTPUT AI
OUTPUT 4-20 MA
TRANS. HAZ APPROVALS N/A
RELAY OPTIONS YES
AMBIENT TEMPERATURE 80 DEG F

NOTES

[*]

Analyzer Transmitter

PROJECT INFORMATION

PLANT CAMPUS OAKS & MISTY WOODS ASR FACILITIES
PROJECT 11843A10_P3
CUSTOMER CITY OF ROSEVILLE
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GENERAL NOTE: FIELDS SHOWN WITH THE [*] SYMBOL ARE NOT SHOWN ON THE DATASHEET BUT MAY BE REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT COMPLETE ISA DATASHEETS FOR EACH INSTRUMENT PER ALL SPECIFIED REQUIREMENTS.

GENERAL

TAG WD33-AITX-36307 (WD33-AEXX-36307)
SPECIFICATION NUMBER 17529
DRAWING NUMBER 19N06
SERVICE FLUORIDE ANALYZER
POWER LOCATION WD31-PLCX-36101
MEASURING PRINCIPLE COLORIMETRIC
PLC WD31-PLCX-36101
TYPICAL DETAILS [*]

FLUID

FLUID WATER
MEASUREMENT RANGE 0-10 PPM
SAMPLE FLOW [*]
SAMPLE pH 1-14
PRESSURE LESS THAN 120 PSI
TEMPERATURE 50 DEG F
SAMPLE TEMPERATURE 40 - 80 DEG F

ELEMENT

ELEMENT TAG NO. WD33-AEXX-36307
ENCLOSURE CLASS NEMA 4X
CLEANING APPARATUS NO
PROCESS CONNECTION INSERTION
HAZARDOUS APPROVALS N/A
ELEMENT MOUNTING KIT FLOW ASSEMBLY

TRANSMITTER

TRANSMITTER TAG NO. WD33-AITX-36307
ENCLOSURE CLASS NEMA 4
TRANS. MOUNTING REM
POWER 120VAC-1P
SURGE PROTECTION NO
AIR CLEANING SYSTEM NO
SIGNAL OUTPUT AI
OUTPUT 4-20 MA
TRANS. HAZ APPROVALS N/A
RELAY OPTIONS YES
AMBIENT TEMPERATURE 80 DEG F

NOTES

[*]

SECTION 17710

CONTROL SYSTEMS: PANELS, ENCLOSURES, AND PANEL COMPONENTS

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PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Design, fabrication and assembly of instrumentation enclosures, control panels and components provided under this Contract, including, but not limited to:
      a. Custom built instrumentation and control panels, including enclosures for hand stations controllers, low voltage power distribution and marshalling panels.
      b. Control panels furnished as part of equipment systems specified in other Divisions, such as vendor control panels (VCPs) and chemical feed panels.
      c. Control components.
      d. Control panel installation.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Standards:
   1. Institute of Electrical and Electronics Engineers (IEEE):
      a. C62.41.1 - Guide on the Surge Environment in Low-Voltage (1,000 V and less) AC Power Circuits.
      b. 802.3af - Standard for Information Technology Telecommunications and Information Exchange Between Systems - Local and Metropolitan Area Networks - Specific Requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications.
      c. 802.3at - Standard for Information Technology -- Local and Metropolitan area networks -- Specific requirements -- Part 3: CSMA/CD Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements.
   2. International Electrotechnical Commission (IEC):
      a. 61643-11 - Low-Voltage Surge Protective Devices - Part 11: Surge Protective Devices Connected to Low-Voltage Power Systems - Requirements and test methods.
      b. 61643-21 - Low-Voltage Surge Protective Devices - Part 21: Surge Protective Devices Connected to Telecommunications and Signaling Networks - Performance Requirements and Testing Methods.
   3. National Fire Protection Association (NFPA):
      a. 70 - National Electrical Code (NEC).
   4. Underwriters Laboratories Inc. (UL):
      a. 248-14 - Low-Voltage Fuses - Part 14: Supplemental Fuses.
      b. 497B - Standard for Protectors for Data Communications and Fire-Alarm Circuits.
      c. 508 - Standard for Industrial Control Equipment.
      d. 508A - Standard for Industrial Control Panel.
      e. 698A - Standard for Industrial Control Panels Relating to Hazardous (Classified) Locations.

f. 913 - Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, III, Division 1, Hazardous (Classified) Locations.
g. 1077 - Standard for Supplementary Protectors for Use in Electrical Equipment.
h. 1283 - Standard for Electromagnetic Interference Filters.
i. 1310 - Standard for Class 2 Power Units.
j. 1449 - Standard for Surge Protective Devices.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. The term “panel” in this Section is interchangeable with the term “enclosure.”

1.04 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.05 SUBMITTALS

A. Provide Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide a control panel hardware Submittal for each control panel/enclosure being provided on this Project, including, but not limited to:
   1. Product data:
      a. Enclosure construction details and NEMA type.
      b. Manufacturer’s literature and specification datasheets for each type of equipment to be installed within or on the panel or enclosure.
   2. Shop Drawings:
      a. Scaled, detailed exterior panel (front and side views) and interior panel layout showing equipment arrangement and dimensional information:
         1) Provide draft for review and approval by the Engineer. Engineer has the authority to substantially alter initial panel layouts.
      b. Complete nameplate engraving schedule.
      c. Structural details of fabricated panels.
   3. Calculations:
      a. Cooling calculations, including, but not limited to:
         1) Highest expected ambient temperature for the enclosure’s location.
         2) Internal heat load.
         3) Exposure to direct sunlight.
         4) Dimensions of the enclosure in inches.
         5) Maximum allowable temperature inside the enclosure, based on the lowest operating temperature limit of the installed components.

C. Delegated Design Submittals:
    1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria:
        a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.
        b. For equipment installed outdoors.
        c. For wall mounted equipment weighing 125 pounds or more.

1.06 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Assemble panels, enclosures, and rack systems along with internal and external devices, wiring, equipment, and materials in a facility that is recognized by UL to assemble and certify UL-labeled control panels:
    1. Provide components and equipment with UL 508 listing.
    2. Control panels shall be UL 508A labeled, unless the equipment in the panel and the design in the Contract Documents cannot be reasonably modified to meet the requirements for UL 508A labeling.
    3. Provide fuses for equipment that is not UL or UR listed.
    4. Install intrinsically safe circuits and equipment in accordance with UL 698A.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide control panels identified in the Contract Documents.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Panel dimensions:
    1. It is the responsibility of the Contractor or manufacturer to design and size panels:
        a. Size panels to provide space for equipment, wiring, terminations, and other items in the panel, including 20 percent of the total back panel area shall remain empty.
        b. Maximum panel depth: 16 inches, unless approved by the end user.

B. Provide equipment and components that are fully rated for the Site elevation and operating environment where the equipment will be installed as specified in Section 01850 - Design Criteria and as indicated on the Drawings.

C. Non-conditioned spaces and outdoor installations:
   1. Provide additional temperature conditioning equipment to maintain the equipment temperature within a band of 10 degrees Fahrenheit above the minimum operating temperature and 10 degrees Fahrenheit below maximum operating temperature.

D. As listed below in the individual component paragraphs.
   1. Provide conditioning equipment incorporated into the equipment to maintain the enclosures within the equipment manufacturer's specified operating ranges.

2.03 MATERIALS

A. Construct and finish enclosures using materials capable of withstanding the mechanical, electrical, and thermal stresses, as well as the effects of humidity and corrosion that are likely to be encountered in normal service:
   1. Enclosures shall have the following properties:
      a. NEMA Type 1: Steel.
      b. NEMA Type 4: Steel with gasketed door, raintight.
      c. NEMA Type 4X: Type 316 stainless steel.
      d. NEMA Type 12: Steel with gasketed door, dusttight.
      e. NEMA Type 7: Cast aluminum.

B. Bolting material:
   1. Commercial quality 1/2-inch diameter, stainless steel hex-head Grade 5 bolts, nuts, and washers, with unified coarse (UNC) threads.
   2. Carriage bolts for attaching end plates.
   3. Other bolted joints shall have S.A.E. standard lock washers.

2.04 MANUFACTURED UNITS

A. Panels/enclosures:
   1. Manufacturers: One of the following or equal:
      a. nVent/Hoffman.
      b. Rittal.
      c. Saginaw Control & Engineering. (This was selected for use at Westbrook and Solaire).
   2. Panel assembly:
      a. General guidelines for panel fabrication include:
         1) Continuous welds ground smooth.
         2) Exposed surfaces free of burrs and sharp edges.
         3) Base formed of heavy channel iron, either galvanized or powder coated, minimum 1/2-inch holes at 12-inch spacing to accommodate anchoring of freestanding enclosures to floor.

b. Construct enclosure and mounting panel using stretcher-level quality sheet metal having minimum thickness not less than the following sizes (U.S. Standard Gauge):

Enclosure Height (inches)	Minimum Enclosure Steel Thickness (gauge)	Minimum Back Mounting Panel Thickness (gauge)
Wall-mounted up to 48	14	14
Up to 57	12	12
57 to 69	12	10
69 to 82	12, except 10 on back	10
82 or more	10	10

1) Use heavier sheet metal to meet seismic requirements at the Project Site or when required due to equipment requirements.

c. For Rittal or engineer-approved equal free-standing modular enclosure, construct enclosure and mounting panel using stretcher-level quality sheet metal having minimum thickness not less than the following sizes (U.S. Standard Gauge):

Enclosure Height (inches)	Minimum Enclosure Steel Thickness (gauge)	Minimum Back Mounting Panel Thickness (gauge)
Wall-mounted up to 48	16	14
Up to 57	14	13
57 or more	16	11

d. Construct supporting frame structure with angled, channeled, or folded rigid section of sheet metal, rigidly attached to and having essentially the same outer dimensions as the enclosure surface and having sufficient torsional rigidity to resist the bending moments applied via the enclosure surface when it is deflected.

e. Provide stiffeners for back mounting or C folded back panels in enclosures larger than 4 feet. In addition, secure the panels in place by collar studs welded to the enclosure.

f. Door construction:
   1) Turned-back edges suitably braced and supported to maintain alignment and rigidity without sagging.
   2) Sufficient width to permit door opening without interference with rear projection of flush-mounted instruments.
   3) Heavy-gauge stainless steel hinges.
   4) For NEMA Type 12, Type 4, and Type 4X, provide oil-resistant neoprene sealing gasket and adhesive to seal cover to enclosure.
   5) Gasket installed to seal against roll lip on the enclosure opening.

g. Latches:
   1) For panels, provide each door with an oil tight 3-point latching mechanism and locking handle with rollers on the ends of the latch rods. Latch rods shall be connected to a common door handle, hold doors securely, and form a compressed seal between door and gasket, at the top, side, and bottom.
      a) Provide padlock for each enclosure with padlock provisions.

b) Provide 2 keys per panel.
c) All locks keyed alike.

2) For Rittal or engineer-approved equal free-standing modular enclosure, provide each door with a 4-point latching mechanism, if available, or a 2-point latching mechanism if a 4-point is not available.
3) For cabinets not available with 3-point latching hardware, provide multiple clips and padlock hasps.

h. Panel cut-outs:
1) Cut, punch, or drill cutouts for instruments, devices, and windows. Smoothly finish with rounded edges.
2) Allow a minimum of 3-inch envelope around displays, controllers, and monitors.
3) Reinforce around cut-outs with steel angles or flat bars for the following:
a) Large panel cutouts; for example, openings for local operator interfaces.
b) Pilot device groupings, where the removed metal exceeds 50 percent of the available metal.

i. NEMA Type 4X powder-coated stainless steel enclosures are not an acceptable substitute for stainless steel unless indicated on the Drawings.

3. Indoor enclosures shall be NEMA 12.
4. Outdoor panels. Supplementary requirements for panels located outdoors are as follows:
a. Shall be NEMA 4X.
b. Enclosures located outdoors shall be explicitly designed and rated for outdoor service by the manufacturer.
c. Door hardware: Stainless steel.
d. Provide factory installed rain canopy and sun shield for enclosures with operator interface panels.
e. Bases: Heavy channel, gasketed stainless steel bases, flanges up, for anchoring to pad.

B. Arrangement of components:
1. Arrange panel internal components for external conduit and piping to enter into panel either from above or below.
2. Arrange panel instruments and control devices in a logical configuration, associating pushbutton and selector switches with related readout devices.
3. Mount internal control components on an internal back panel. Devices shall not be mounted on the side panel.
4. Control panel mounted operator interface devices shall be mounted between 3 feet and 5 feet above finished floor.
5. Components shall be install according to their manufacturer’s instructions and recommendations.
6. Heat generating components shall be install towards the top of the enclosure.
7. The PLC shall be mounted between 42 inches and 60 inches above the finished floor. The finished floor is considered the floor that a person would stand on comfortably to access the PLC (i.e., housekeeping pad).
8. Panels not containing a PLC shall have a maximum depth of 18 inches.
9. Panels shall be designed such that there is a sufficient clearance to allow air flow for cooling, heating, and condensate prevention, within the maximum

depth requirement. Components requiring ventilation shall follow the manufacturer's installation instructions to ensure proper air flow.

10. Panels shall be sized such that all terminal strips and components such as relays and isolators are mounted on the enclosure back panel. Mounting of wiring terminals strips and panel components on the panel side walls is not allowed.

C. Overcurrent protection:
   1. Main overcurrent device:
      a. Control panels supplied with 120 VAC:
         1) Provide an internal breaker with the line side terminals covered by a barrier.
         2) Provide a nameplate prominently positioned on the control panel identifying the location of the power source and a warning statement requiring the source to be disconnected before opening the door to the enclosure.
         3) Provide a nameplate prominently positioned on the control panel stating "CAUTION Risk of Electric Shock - UPS equipment outputs remain energized with main disconnect in off position" for any panel containing a UPS.
   2. Provide circuit breakers as specified in Section 16412 - Low Voltage Molded Case Circuit Breakers.
   3. Selection and ratings of protective devices:
      a. Interrupting ratings: Not less than the system maximum available fault current at the point of application.
      b. Voltage rating: Not less than the voltage of the application.
      c. Select current rating and trip characteristics to be suitable for:
         1) Maximum normal operating current.
         2) Inrush characteristics.
         3) Coordination of the protective devices to each other and to the source breaker feeding the panel.
      d. Circuit breakers, fuses, and motor overcurrent protection devices used for branch circuit protection must be UL 508A compliant.
         1) Circuit breakers listed under UL 1077 Standard for Supplementary Protectors that do not comply with UL 508A requirements are not acceptable.
         2) Miscellaneous, miniature, and micro fuses listed under UL 248 Part 14 that do not comply with UL 508A requirements are not acceptable.
         3) Manual motor controllers provided with an instantaneous-trip overcurrent mechanism listed under UL 508 that do not comply with UL 508A requirements are not acceptable.
   4. Provide a separate protective device for each powered electrical device:
      a. An individual circuit breaker for each 120-VAC instrument installed within its respective control panel and clearly identified for function.
      b. An individual fuse for each PLC discrete output. Provide with individual blown fuse indication external of the I/O card:
         1) Size external fuse to open before any I/O-card-mounted fuses.

c. Individual discrete inputs shall use a 1/2-amp fuse.
    1) The Carollo standard has been overruled by the City standard which is.
        a) Discrete and Analog inputs shall use a knife disconnect with each individual input.
d. Individual discrete output:
        a) Size external fuse to open before any I/O-card-mounted fuses.
    2) Analog loop powered from the control panel:
        a) 0.25-amp fuse.
        b) The Carollo standard has been overruled by the City standard which is.
            (1) No fuse is required for individual analog loops.
e. Install protective devices on the back mounting panel and identify by a service nameplate in accordance with the wiring diagrams.

5. Fuses for analog and discrete control loops:
    a. Provide durable, readily visible label for each fuse, clearly indicating the correct type, size, and ratings of replacement fuse:
        1) Label shall not cover or interfere with equipment manufacturer's instructions.
    b. Provide fuses rated for the voltage and available short-circuit current at which they are applied.
    c. Manufacturers: One of the following or equal:
        1) Bussmann.
        2) Ferraz Shawmut.
        3) Littelfuse.
6. Fuse holders:
    a. Modular type:
        1) DIN rail mounting on 35-millimeter rail.
        2) Touch-safe design: Connection terminals to be protected against accidental touch.
        3) Incorporates blown-fuse indicator with an ampere draw less than 2.3 mA.
        4) Plug-in style fuse terminals and fuse plugs are not acceptable.
    b. Provide nameplate identifying each fuse:
        1) As specified in Section 16075 - Identification for Electrical Systems.
    c. Manufacturers: One of the following or equal:
        1) Allen-Bradley, 1492-FB Series B. (This was selected for Westbrook and Solaire.)
        2) Phoenix Contact, UT4-HESI Series.
7. Control circuit breakers:
    a. DIN rail mounting on 35-millimeter rail.
    b. Manual OPEN-CLOSE toggle switch.
    c. Rated for 250 VAC.
    d. Interrupting rating: 10 kA or available fault current at the line terminal, whichever is higher.
    e. Current ratings: As required for the application.
    f. Provide nameplate identifying each circuit breaker:
        1) As specified in Section 16075 - Identification for Electrical Systems.
    g. Manufacturers: One of the following or equal:
        1) ABB.
        2) Allen-Bradley. (1489-M was selected for Westbrook and Solaire.)

3) Phoenix Contact, TMC Series.
4) Square D.

8. Electronic circuit protectors:
   a. Used where a NEC Class 2 power circuit is required.
   b. Confirms to NEC Class 2 according to UL 1310.
   c. DIN rail mounting on 35-millimeter rail.
   d. Power source:
      1) Operating voltage: 24 VDC.
      2) Output current ratings: As required for the application.
      3) Maximum output current: 4 A.
      4) Maximum nameplate rating: 100 VA.
   e. LED for status indication.
   f. Remote status contact.
   g. When using multi-channel electronic circuit protectors, distribute devices such that a failure is limited to a single network or segment.
   h. Provide nameplate identifying each circuit electronic circuit protector module:
      1) As specified in Section 16075 - Identification for Electrical Systems.
   i. Manufacturers: One of the following or equal:
      1) Single channel:
         a) Allen-Bradley, 1694 series.
         b) Phoenix Contact, PTCB E1 series.
      2) Multi-channel:
         a) Rockwell Automation 1692-TD014.
         b) Puls PISA11 series. (This was selected for Westbrook and Solaire.)

D. Conductors and cables:
   1. Power and control wiring:
      a. Materials: Stranded, soft annealed copper.
      b. Insulation: 600 VAC type MTW.
      c. Minimum sizes:
         1) Primary power distribution: 12 AWG, no smaller.
         2) Secondary power distribution: 14 AWG.
         3) Indicating light circuits shall be 18 AWG.
         4) Control: 16 AWG.
      d. Control Panel and Instrumentation Wire Color:
         1) (+) 24 VDC: Red.
         2) (-) 24 VDC: Gray.
         3) Analog Signal: Positive (+) = Black, Negative (-) = Clear.
         4) Discrete Events and Low Voltage Control: Positive (+) = Red, Negative (-) = Gray.
         5) Ground: Green.
         6) 120 VAC Power (L1): Black.
         7) 120 VAC Neutral (L2): White.
         8) 120 VAC Control: Violet.
         9) 120 VAC Ground: Green.
   2. Signal cables:
      a. Materials: Stranded, soft annealed copper.
      b. Insulation: 600 VAC, PVC outer jacket.
      c. Minimum size: 18 AWG paired triad.

d. Overall aluminum shield (tape).
e. Twisted pair.
f. Copper drain wire.
g. Color:
    1) 2-conductor:
        a) Positive (+): Black.
        b) Negative (-): Clear.
    2) 3-conductor:
        a) Positive (+): Black.
        b) Negative (-): Clear.
        c) Signal: White.
h. Insulate the foil shielding and exposed drain wire for each signal cable with heat-shrink tubing.

E. Conductor identification:
1. Identify each conductor and cable with unique wire numbers as specified in Section 16075 - Identification for Electrical Systems.
2. Readily identified without twisting the conductor.

F. General wiring requirements:
1. Wiring methods: Wiring methods and materials for panels shall be in accordance with the NEC requirements for General Purpose (no open wiring) unless otherwise specified.
2. Install components in accordance with the manufacturer's instructions included in the listing and labeling.
3. Provide a nameplate on the cover of the control panel identifying sources of power supply and foreign voltages within the control panel.
4. Provide transformers, protective devices, and power supplies required to convert the supply voltage to the needed utilization voltage.
5. Provide power surge protection for control panels.
6. Provide signal surge protection within control panels for each analog I/O, discrete I/O, and data line (Copper Ethernet, Coax, Fieldbus signals) that originates from outdoor devices.
7. Provide non-metallic ducts for routing and organization of conductors and cables:
    a. Provide wiring separation plan.
    b. Size ducts for ultimate build-out of the panel, or for 50-percent spare, whichever is greater. Duct shall not exceed 50 percent capacity.
    c. Provide separate ducts for signal and low voltage wiring from power and 120 VAC control wiring:
        1) 120 VAC: Grey colored ducts.
        2) 24 VDC: White colored ducts.
8. Cables shall be fastened with cable-mounting clamps or with cable ties supported by any of the following methods:
    a. Screw-on cable tie mounts.
    b. Hammer-on cable-tie mounting clips.
    c. Fingers of the nonmetallic duct.
9. Wire ties:
    a. No wire ties inside wire duct. Outside duct is allowed at intervals not exceeding 6 inches unless longer unsupported runs are required for

access or maintenance. Wiring to doors shall be installed such that bending is axial.
    b. Use a cable tie installation tool, with tension control/cutoff.
        1) Verify cut ends are cut flush filed smooth after installed, not sharp.
10. Flexible stranded copper wiring shall be used throughout.
11. Where shielding is required, shields shall be continuous foil or metalized plastic providing 100 percent coverage. A drain wire in continuous contact with the shield shall be included. Drain wires shall only be terminated at the PLC panel to prevent ground loops.
12. Provide supports at the ends of cables to prevent mechanical stresses at the termination of conductors.
13. Support panel conductors where necessary to keep them in place.
14. Wiring to rear terminals on panel-mount instruments shall be run in nonmetallic duct secured to horizontal brackets run adjacent to the instruments.
15. Conductors and cables shall be run from terminal to terminal without splice or joints. Exceptions:
    a. Factory-applied connectors molded onto cables shall be permitted. Such connectors shall not be considered as splices or joints.
16. Control panel shall be the source of power for 120 VAC devices interconnected with the control panel, including, but not limited to:
    a. Solenoid valves.
    b. Instruments both mounted in the control panel and remotely connected to the control panel.
17. Field wiring shall be run into a pull box mounted adjacent to a PLC panel. There shall be no conduit penetrations directly into the top or bottom of the PLC enclosure field wiring for other types of panels should be routed to minimize the possibility of moisture accumulation inside panels.

G. Provide power circuits for Contractor- and vendor-furnished PLC cabinets in accordance with the PLC and instrument power wiring diagrams indicated on the Drawings or as specified.

H. Thermal management:
    1. Provide heating, cooling, and dehumidifying devices in order to maintain instrumentation and control devices to within a range as specified in Section 17050 - Common Work Results for Process Control and Instrumentation.
    2. Enclosure temperature sensor:
        a. Provide wall-mounted RTD transmitter to measure internal cabinet temperature in enclosures containing electrical components such as PLCs, RTUs, RIO, and VFDs.
        b. Sensor and electronic enclosure.
        c. Accuracy: Within 2 degrees Fahrenheit.
        d. Platinum RTD.
        e. 4-20mA DC output:
            1) Manufacturers: One of the following or equal:
                a) Veris, TEC00. (This was selected for Westbrook and Solaire.)
                b) Omega, EWS Series.
                c) TCS Basys Controls, TS Series.
    3. Status relays and discrete inputs for switches, and power supplies):
        a. Provide as indicated on the Drawings or as specified.

4. Air conditioning units and strip heaters shall be provided on outdoor panels or panels which are not in I temperature controlled environment. Panels located within a temperature controlled environment may use internal fans to provide panel ventilation. Filters are required on intake and exhaust openings.

I. Pilot devices:
   1. General:
      a. Provide operator pushbuttons, switches, and pilot lights, from a single manufacturer.
      b. Size:
         1) 30.5 millimeters.
      c. Heavy duty.
      d. Pushbuttons:
         1) Contacts rated:
            a) NEMA Type A600.
         2) Furnish 1 spare normally open contact and normally closed contact with each switch.
         3) Equipment shutdown (ESD): Palm or mushroom-head type with self-latching feature. ESD device will remain in the actuated position until deliberately reset.
      e. Selector switches:
         1) Contacts rated:
            a) NEMA Type A600.
            b) Knob type.
         2) Furnish 1 spare normally open contact and normally closed contact with each switch.
         3) Provisions for locking in the OFF position where lockout provisions are indicated on the Drawings.
      f. Pilot lights:
         1) Type:
            a) LED for interior installations.
         2) Push to test.
         3) Lamp color:
            a) On/Running/Start/Closed: Red.
            b) Off/Stop/Opened: Green.
            c) Power/Auto: White.
            d) Alarm: Amber.
   2. Indoor and outdoor areas:
      a. NEMA Type 4/13.
      b. Manufacturers: One of the following or equal:
         1) Allen-Bradley, Type 800T.
         2) General Electric, Type CR104P.
         3) IDEC, TWND Series.
         4) Schneider Electric, Class 9001, Type K.
   3. Corrosive areas:
      a. NEMA Type 4X.
      b. Corrosion resistant.
      c. Exterior parts of high-impact strength fiberglass-reinforced polyester or multiple-layer epoxy-coated zinc.
      d. Manufacturers: One of the following or equal:
         1) Allen-Bradley, Type 800H.

2) Cutler Hammer, Type E34.
3) IDEC, TWND Series.
4) Schneider Electric, Class 9001, Type SK.

4. Hazardous (classified) areas/Class I Division 2:
   a. NEMA Type 4X.
   b. Corrosion resistant.
   c. Exterior parts of high-impact strength fiberglass-reinforced polyester or multiple-layer epoxy-coated zinc:
      1) Contacts contained within a hermetically sealed chamber:
         a) Pushbuttons.
         b) Selector switches.
         c) Push-to-test contacts on pilot lights.
      2) UL listed and labeled for Class I Division 2 areas.
   d. Manufacturers: One of the following or equal:
      1) Allen-Bradley, Type 800H.
      2) Cutler Hammer, Type E34.

J. Signal isolators and converters:
   1. Signal interface modules shall be used on each circuit to isolate PLC analog input (AI) modules from the external field instruments and circuits. They may also be used for signal conversion, i.e., a voltage signal to a current signal (E to I).
   2. The end user's standard is that all hardwired PLC analog inputs are 4-20mA, and that isolators are used. These are typically, current to current convertors, however voltage to current converters are sometimes used when the field device provides a voltage signal. Analog input isolators shall be din rail mountable and grouped together within the panel. Circuits shall be designed such that the failure of one field device or isolator shall not cause multiple points to fail.
   3. Isolator linearity deviations shall be no greater than +/-0.02 percent of span, and shall be rated at no greater than +/- 0.02 percent deviation per degree Celsius throughout the specified interior temperature of the panel. Zero and span settings shall be adjustable for all signals isolators.
   4. Furnish signal isolators that provide complete isolation of input, output, and power input:
      a. Minimum isolation level: 1.0 kilovolts AC/50 hertz for at least 1 minute.
      b. Adjustable span and zero.
      c. Ambient temperature range: -4 degrees to 149 degrees Fahrenheit.
   5. Manufacturers: One of the following:
      a. Phoenix Contact, Mini Analog Pro.
      b. Acromag, 1500, 600T, 800T, Flat Pack, or ACR Series.
      c. Action Instruments, Q500 Series or Ultra SlimPakII.
      d. AGM Electronics, Model TA-4000.
      e. Moore Industries, MIT 4-Channel.

K. Relays:
   1. In PLC panels, provide interposing relays for signal isolation between external circuits and PLC discrete output (DO) modules.
   2. Provided relays for incoming AC power and power supply failure alarms. Note that the relays mentioned here do not include motor contactors installed in MCCs, Control relays in the control panels shall be relays within panels shall

be of the “ice cube” style, which plug onto din rail mountable sockets. All relays of this type shall contain an LED illuminator, which indicated when the relay is energized. Relays shall be segregated by type, i.e., all PLC outputs relays shall be grouped together. PLC output interposing relays shall use 24 VDC as the coil operating voltage. Other types of relays within the panel should use 24 VDC as much as reasonably possible; however, 120 VAC relays can be used for purposes such as incoming power failure alarming. Relays installed for similia purposes should be from the same manufacturer to provide uniform appearance, operating characteristics, and spare parts inventory.

3. Other types of relays may be used, based upon purposes and load requirements.
4. General:
    a. For all types of 120-VAC relays, provide surge protection across the coil of each relay.
    b. For all types of 24-VDC relays, provide a free-wheeling diode across the coil of each relay.
    c. For plug in type relays, provide a relay base from the same manufacturer as the relay manufacturer.
5. Control:
    a. Magnetic style.
    b. For use as standard control relay for motor and starter relay logic.
    c. NEMA ratings:
        1) 300 volts.
        2) 10 amps thermal continuous test current.
        3) 60 amps make.
        4) 6 amps break.
    d. Plug-in type.
    e. LED indication for energization status.
    f. Coil voltages: As required for the application.
    g. Minimum poles: DPDT.
    h. Touch-safe design: Connection terminals to be protected against accidental touch.
    i. Enclose each relay in a clear plastic heat and shock-resistant dust cover.
    j. Quantity and type of contact shall be as indicated on the Drawings or as needed for system compatibility.
    k. Relays with screw-type socket terminals.
    l. Provide additional relays when the following occurs:
        1) Number or type of contacts shown exceeds the contact capacity of the specified relays.
        2) Higher contact rating is required in order to interface with starter circuits or other equipment.
    m. DIN rail mounting on 35-millimeter rail.
    n. Ice-cube-type relays with retainer clips to secure relay in socket.
    o. Integrated label holder for device labeling.
    p. Manufacturers: One of the following or equal:
        1) Allen-Bradley: Type 700 HC. (This was selected for Westbrook and Solaire.)
        2) IDEC: R* Series (* = H, J, R, S, U).
        3) Potter and Brumfield: Type KRP or KUP.
        4) Square D: Type K.
6. Isolation:

a. Electromechanical style.
b. For use as an interposing relay for PLC based discrete I/O signals.
c. NEMA ratings:
    1) Switching voltage: 250 volts AC/DC.
    2) Limiting current: 6 amps continuous.
    3) Interrupt: 1,500 volt-amperes.
d. Plug-in type.
e. LED indication for energization status.
f. Coil voltages: As required for the application.
g. Minimum poles: SPDT.
h. Touch-safe design: Connection terminals to be protected against accidental touch.
i. Quantity and type of contact shall be as indicated on the Drawings or as needed for system compatibility.
j. Relays with screw-type socket terminals.
k. DIN rail mounting on 35-millimeter rail.
l. Integrated label holder for device labeling.
m. Manufacturers: One of the following or equal:
    1) Allen-Bradley, Type 700 HL TBR Series.
    2) Eaton, XR TBR Series.
    3) IDEC, RV8H Series.
    4) Phoenix Contact, PLC-INTERFACE Series.

7. Time delay:
    a. Provide time-delay relays to control contact transition time.
    b. Contact rating:
        1) 240 volts.
        2) 10 amps continuous.
        3) 3,600 volt-amperes make.
        4) 360 volt-amperes break.
    c. Coil voltage: As required for the application.
    d. Provide pneumatic or electronic type with on-delay, off-delay, and on/off-delay:
        1) For off-delay, use true power-off time-delay relays. Where the required timing range exceeds capability of the off-delay relay use, signal off-delay where power loss will not cause undesirable operation or pneumatic time-delay relays.
    e. Minimum contacts: DPDT.
    f. Units include adjustable dial with graduated scale covering the time range in each case.
    g. Minimum timing range: 0.1 second to 10 minutes, or as required for the application.
    h. Manufacturers: One of the following or equal:
        1) Allen-Bradley, Type 700-HR.
        2) IDEC, RTE Series.
        3) Tyco Electronics, Agastat 7000 Series (pneumatic).

L. Terminal blocks:
    1. DIN rail mounting on 35-millimeter rail.
    2. Rated for 15 amps at 600 volts.
    3. The end user has adopted Spring Cage Clamp type. Screw terminal type shall not be utilized unless approved by the end user.

4. Provide mechanism to prevent wire connection from loosening in environments where vibration is present. This mechanism shall not cause permanent deformation to the metal body.
5. Finger-safe protection for terminals for conductors.
6. Construction: Polyamide insulation material capable of withstanding temperature extremes from -40 degrees to 221 degrees Fahrenheit.
7. Terminals: Plainly identified to correspond with markings on the diagrams:
    a. Permanent machine-printed terminal identification.
8. Disconnect-type field signal conductor terminals with socket/screw for testing.
9. Identify terminals suitable for use with more than 1 conductor.
10. Position:
    a. So that the internal and external wiring does not cross.
    b. To provide unobstructed access to the terminals and their conductors.
11. Manufacturers: One of the following or equal:
    a. Allen-Bradley, 1492-L Series.
    b. Phoenix Contact, ST4 Series. (This was selected for Westbook and Solaire.)
12. Terminal block are grouped based upon purpose. The following terminal block designations shall be used to ensure uniformity in all panels.
    a. TB-1: 24 VDC Power (+) Bus.
    b. TB-2: 24 VDC Common (-) Bus.
    c. TB-3: 120 VAC L1 Bus.
    d. TB-4: 120 VAC L2 Bus.
    e. TB-5: Discrete Inputs.
    f. TB-6: Discrete Outputs.
    g. TB-7: Analog Inputs.
    h. TB-8: Analog Outputs.
    i. TB-9: 110VAC Instrument Source Bus.
    j. TB-10 UPS Loads.

M. DIN rail grounding:
1. Grounding terminal blocks used exclusively for bonding each DIN rail section to panel grounding busbar shall:
    a. Mount to DIN rail via grounding foot with mounting screw.
    b. Connect to the panel grounding busbar shall be via a green insulated conductor sized in accordance with NEC.
    c. Not be used for grounding signal cable shields.
2. Screw terminal type.
3. DIN rail mounting on 35-millimeter rail.
4. Provide mechanism to prevent wire connection from loosening in environments where vibration is present. This mechanism shall not cause permanent deformation to the metal body.
5. Finger-safe protection for terminals for conductors.
6. Terminals: Plainly identified to correspond with markings on the diagrams:
    a. Permanent machine-printed terminal identification.
7. Manufacturers: One of the following or equal:
    a. Allen-Bradley, 1492-LG Series.
    b. Phoenix Contact, ST 4-PE Series. (This was selected for Westbrook and Solaire.)

N. Wire duct:

1. Provide flame retardant plastic wiring duct, slotted with dust cover.
2. Type:
    a. Wide slot.
    b. Narrow slot.
    c. Round hole.
3. Manufacturers: One of the following or equal:
    a. ABB.
    b. Iboco.
    c. Panduit. (This was selected for Westbrook and Solaire.)
    d. Phoenix Contact.

O. DIN rail:
1. Perforated steel.
2. 35-mm width.
3. 15-mm deep.
4. Provide 2-inch offset using one of the following:
    a. Offset brackets.
    b. Preformed standoff DIN Rail Channel.

P. Surge protection devices (SPD):
1. 120 VAC control panel power SPD:
    a. Provide SPD for all panel 120 VAC power entrances:
        1) Non-faulting and non-interrupting design.
        2) Provide line to neutral and neutral to ground surge protection.
    b. Provide surge protection at secondary of main circuit breaker:
        1) Surge protection is not required for 120 VAC circuits that are only used for panel lights and receptacles.
        2) For panels receiving power at 480 VAC, provide surge protection on the 120 VAC control power transformer secondary.
    c. DIN rail mounting.
    d. Attach wiring to the SPD by means of a screw-type cable-clamping terminal block:
        1) Gastight connections.
        2) Visual status indication of MOV status on the input and output circuits.
        3) Dry contact rated for remote status indication.
    e. Approvals:
        1) Tested in accordance with IEC 61643-11.
        2) Tested in accordance with UL 1283.
        3) Tested in accordance with UL 1449.
        4) Surge protection minimum requirements: Withstand a minimum 10-kA test current of an 8/20 µs waveform in accordance with IEEE C62.41.1 Category C Area.
    f. Manufacturers: One of the following or equal:
        1) ASCO, Model 277.
        2) Phoenix Contact, Type SFP Filter. (This was selected for Westbrook and Solaire.)
        3) Rockwell, 4983-DC series.
        4) Sola HD, STFE Elite series.
2. 24 VDC control panel power SPD:
    a. Provide SPD for 24 VDC power circuits.

b. Provide surge protection at DC power supply output.
c. DIN rail mounting.
d. Attach wiring to the SPD by means of a screw-type cable clamping terminal block:
    1) Optical status indicator.
    2) Dry contact rated for remote status indication.
e. Approvals:
    1) Tested in accordance with IEC 61643-11.
f. Manufacturers: One of the following or equal:
    1) Field instruments that require auxiliary power:
        a) Emerson, Model 265 (SLAC) series.
        b) Phoenix Contact, Plugtrab PLT--SEC-T3-24-FM-UT. (This was selected for Westbrook and Solaire.)
    2) Loop powered field instruments:
        a) Emerson/Edco, Model SS65-036-2.

3. Panel mounted control, signal, and data line SPD:
    a. General:
        1) This section applies to SPD located in a control panel, field panel, network junction box, or marshalling panel.
        2) Approvals:
            a) Tested in accordance with IEC 61643-21.
            b) Tested in accordance with UL 497B.
        3) SPD shall consist of 2 parts:
            a) Base module:
                (1) DIN rail mounting.
                    (a) Grounded to DIN rail via mounting rail foot.
            b) Plug protection module:
                (1) Replacing a plug shall not require the removal of any wires nor interrupt the signal.
        4) Provide indirect shield ground style SPD unless otherwise noted.
        5) Provide ability to locally identify and indicate SPD health.
        6) SPD shall be provided with controller module with dry contact for remote status monitoring of SPD device health.
        7) SPD modules shall be compatible with signal, communication bus type, data type, or control power being protected.
        8) Provide dedicated SPD for each signal, communication bus type, or data line being protected.
    b. Manufacturers: One of the following or equal:
        1) Dehn, Blitzductor XTU Series.
        2) Phoenix Contact, Plugtrab PT-IQ Series. (This was selected for Westbrook and Solaire.)
4. Copper Ethernet SPD:
    a. Protects network equipment from lightning or other surge events.
    b. Suitable for Gigabit networks.
    c. Shielded RJ-45 ports.
    d. Compliant with PoE standards IEEE 802.3af and 802.3at.
    e. Nominal discharge surge current: 10 kA.
    f. Approvals:
        1) Tested in accordance with IEC 61643-21.
        2) Tested in accordance with UL 497B.
    g. Manufacturers: One of the following or equal:

1) Citel, MJ8-C6A.
2) Eaton/MTL, ZoneBarrier High Energy Ethernet.
3) Phoenix Contact, DT-LAN-CAT6+.
4) Weidmuller, VDATA CAT6.

5. Field device mounted SPD:
   a. Conduit entry mounting.
      1) Provide parallel or through wiring configurations as required by the application.
         a) Use parallel wiring configuration if there is an available cable gland at the device.
         b) Use through wiring configuration if there is no available cable gland at the device.
      2) Provide screw connections compatible with field device.
   b. NEMA 4X stainless steel material housing.
   c. Approvals:
      1) Tested in accordance with IEC 61643-21.
   d. 4-wire field device:
      1) Module shall provide simultaneous protection of signal cable, communication bus, or data line, and power supply line.
         a) Maximum continuous voltage:
            (1) DC:
               (a) Signal: 32 VDC.
               (b) Power supply: 255 VDC.
            (2) AC:
               (a) Signal: 22.6 VAC.
               (b) Power supply: 255 VAC.
      2) Manufacturers: The following; Engineer knows of no equal:
         a) Endress+Hauser, HAW569-CB2C.
   e. 2-wire or 3-wire field device:
      1) Module shall provide protection for the signal cable, communication bus or data line.
      2) Manufacturers: One of the following or equal:
         a) Eaton/MTL, TP Series.
         b) Endress+Hauser, HAW569 Series.
         c) Phoenix Contact, Surgetrab S-PT Series.

Q. Horns and beacons:
   1. Beacons/horn combination units:
      a. Manufacturers: One of the following or equal:
         1) Edwards, Multi-Status LED 108i with tone module.
         2) Federal Signals, AV1ST Strobe Combination Audible/Visual Signal.
      b. LED Colors: Red, Green, and Amber.
      c. Power: 120 VAC.
      d. Provide accessories such as pipe mount flange, pipe extensions, corner mount brackets, or wall mount brackets as needed.
      e. Horn rated 80 dB minimum at 10 feet.
   2. Dedicated beacon unit:
      a. Manufacturers: One of the following or equal:
         1) Allen-Bradley, 855 B *-* 10 Series.
         2) Edwards, 102 Series.
         3) Federal Signal Corp., Starfire Series.

3. Dedicated horn unit:
    a. Electromechanical:
        1) Manufacturers: One of the following or equal:
            a) Edwards, 878EX or 879EX Series.
            b) Federal Signal, 350 or 31X Series.
    b. Electronic:
        1) Manufacturers: One of the following or equal:
            a) Allen-Bradley, 855H or 855XH Series.
            b) Edwards, 5530M or 5533MD Series.
            c) Federal Signal, 300GCX or 300X Series.
    c. Rated for 80 dB minimum at 10 feet.

R. Power supplies:
1. Configure power supply system so that either the primary or backup supply can be removed, repaired or replaced, and returned to service without disrupting the system operation.
2. Convert 120 VAC to 24-volt DC or other DC voltages required or as required for the application.
3. Provide redundant backup 24 VDC power supply units to automatically supply the load upon failure of the primary supply.
4. Provide power supply arrangement that is configured with several modules to supply adequate power in the event of a single module failure in either a 1+1 or N+1 configuration as required:
    a. Provide automatic switchover upon module failure.
    b. Alarm contacts monitored by the PLC.
5. Provide protective isolation between power supply units either by means of Diodes, Diode Modules, MOSFET Modules, or use power supplies with built in redundancy. Power supplies with built in redundancy must actively isolate each power supply and be designed as such.
6. Sized to provide 40-percent excess rated capacity.
7. UL 508 listed to allow full-rated output without de-rating.
8. Provide fuse or short-circuit protection.
9. Provide a minimum of 1 set of dry contacts for each power supply configured to change state on failure for monitoring and signaling purposes.
10. Output regulation: Within 0.05 percent for a 10-percent line change or a 50-percent load change.
11. Operating temperature range: 32 degrees to 140 degrees Fahrenheit.
12. Touch-safe design: Connection terminals to be protected against accidental touch.
13. DIN rail mounting on 35-millimeter rail:
    a. Mount the power supply in the proper orientation as recommended by the manufacturer to ensure adequate thermal dispersion without derating the power supply.
14. Provide self-protecting power supplies with a means of limiting DC current in case of short circuit.
15. Manufacturers: One of the following or equal:
    a. Fully redundant:
        1) IDEC, PS5R Series:
        2) Phoenix Contact, Quint Power Supply with SFB technology.
            a) Phoenix Contact, Quint.
        3) PULS. (This was selected for Westbrook and Solaire.)

4) Sola.
b. Redundancy module:
1) Phoenix Contact, O-ring redundancy module. (This was selected for Westbrook and Solaire.)

S. Limit switches:
1. NEMA Type 4X.
2. AC contact rating 120 volts, 10 A.
3. DC contact rating 125 volts, 0.4 A.
4. Provide robust actuation mechanism not prone to degradation.
5. Provide complete actuator mechanism with required hardware.
6. Allows for contact opening even during contact weld condition.
7. UL approved.
8. Operating temperature range: 0 degrees to 230 degrees Fahrenheit).
9. Manufacturers: One of the following or equal:
a. ABB.
b. Allen-Bradley, 802 Series.
c. Eaton, E47, E49, E50.
d. Honeywell, HDLS Series.
e. Omron, D4 Series.

2.05 ACCESSORIES

A. Provide panels with an inside protective pocket to hold the panel drawings. Ship panels with 1 copy of accepted Shop Drawings, including, but not limited to, schematic diagram, connection diagram, and layout drawing of control wiring and components in a sealed plastic bag stored in the panel drawing pocket.

B. Provide a folding shelf for enclosures that contain programmable controllers. Shelf shall be mounted on the inside surface of the door, capable of supporting a laptop computer.

C. Provide nameplate to each panel as indicated on the Drawings:
1. As specified in Section 16075 - Identification for Electrical Systems on internal and external instruments and devices.
2. With the following markings that is plainly visible after installation:
a. Manufacturer’s name, trademark, or other descriptive marking by which the organization responsible for the panel can be identified.
b. Supply voltage, phase, frequency, and full-load current.
c. Power source or circuit ID.
d. Short-circuit current rating of the panel based on one of the following:
1) A listed and labeled assembly.
2) Established utilizing an approved method.

D. Lighting:
1. Provide 1 luminaire for each section, on the interior of the panel, spaced evenly along the top-front of the enclosure door opening(s):
a. Covered or guarded.
b. Provide On-Off door-activated switches where indicated on the Drawings.
c. 120-volt, single-phase, 15-amp style plug.
d. Provide 4,000 K, 900 lumens LED fixture.

1) Provide additional fixtures for every 36 inches of width.

E. Receptacles:
1. Provide 1 duplex receptacle located every 6 feet of enclosure width, spaced evenly along the back mounting panels.
2. GFCI, 120-volt, single-phase, 15-amp style plug.
3. Provide circuit breaker or fuse to limit receptacle draw to 5 amps.

F. Grounding:
1. Provide the following:
   a. Grounding strap between enclosure doors and the enclosure.
   b. Equipment grounding conductor terminals.
   c. Provide equipment grounding busbar with lugs for connection of equipment grounding wires.
   d. Bond multi-section panels together with an equipment grounding conductor or an equivalent grounding busbar.
2. Identify equipment grounding conductor terminals with the word “GROUND,” the letters “GND”, the letter “G”, or the color green.
3. Signal cable shields shall only be grounded at a single point in the loop. Unless otherwise noted, ground signal cable shields at control panel.
4. Ensure the continuity of the equipment grounding system by effective connections through conductors or structural members.
5. Design so that removing a device does not interrupt the continuity of the equipment-grounding circuit.
6. Provide an equipment-grounding terminal for each incoming power circuit, near the phase conductor terminal.
7. Size ground wires in accordance with NEC and UL Standards, unless noted otherwise.
8. Unless otherwise noted, connect exposed, noncurrent-carrying conductive parts, devices, and equipment to the equipment-grounding circuit.
9. Connect the door stud on the enclosures to an equipment-grounding terminal within the enclosure using an equipment-bonding jumper.
   a. Control panel ground lugs and ground bar shall be copper mechanical or compression connection type. Aluminum connectors or lugs are not acceptable for use with copper conductors.

G. Sunshades:
1. Provide panel-mounted sunshades for outdoor installations.
2. Provide thermally insulated standoff.
3. Provide deburred cutouts for access to exterior panel accessories.
4. Material of sunshade and mounting hardware shall match enclosure.

2.06 FINISHES

A. Finishes:
1. Metallic (non-stainless):
   a. Metal surfaces of panels shall be prepared by chemical cleaning and mechanical abrasion in accordance with the finish manufacturer’s recommendations to achieve a smooth, well-finished surface.

b. Scratches or blemishes shall be filled before finishing. 1 coat of zinc phosphate shall be applied according to the manufacturer's recommended dry-film thickness and allowed to dry before applying the finish coat.
c. Finish coat shall be a baked polyester-urethane powder, aliphatic air-dry polyurethane, or epoxy enamel to meet NEMA rating specified application.
d. Exterior of enclosures located outdoors shall be UV-resistant polyester powder coating. Total dry film thickness shall be 3 mils, minimum.

2. Stainless steel:
   a. Stainless enclosures shall be provided with a Number 4 brushed finish - not painted.

B. Colors:
1. Exterior color of panels mounted indoors shall be manufacturer's standard light gray.
2. Exterior of panels mounted outdoors shall be manufacturer's standard white.
3. Panel interiors shall be manufacturer's standard white.

PART 3 EXECUTION

3.01 PREPARATION

A. Equipment support and anchoring to structures:
1. As specified in Section 01850 - Design Criteria, including, but not limited to:
   a. Anchor bolt layout.
   b. Equipment templates.
   c. Anchor installation.

3.02 INSTALLATION

A. Install enclosures so that their surfaces are plumb and level within 1/8-inch over the entire surface of the panel: Anchor securely to wall and structural supports at each corner, minimum. Direct attachment to drywall is not permitted.

B. Install the equipment in accordance with the accepted installation instructions and anchorage details.

C. Provide floor stand kits for wall-mounted enclosures larger than 48-inches high.

D. Provide concrete housekeeping pads for freestanding enclosures.
1. Refer to the structural typical details.

E. Install gasket and sealing material under panels with floor slab cutouts for conduit:
1. Undercoat floor-mounted panels.

F. Provide a full-size equipment-grounding conductor in accordance with NEC included with the power feeder. Terminate to the incoming power circuit-grounding terminal.

G. Holes for field conduits, etc., shall be cut in the field. No additional holes, factory cut holes, or hole closers allowed. Incorrect holes, additional holes, or miscut holes shall require that the entire enclosure be replaced.

H. Protect wiring from sharp edges and corners.

I. Control panels that are adjacent to motor control centers shall be fully wired to the motor control centers using wireways integral to the motor control center or additional conduits as needed. These interconnections are not shown or reflected on the Conduit Schedule but shall be shown on the loop drawings prepared by the Contractor.

J. Provide individually fused analog input module points with blown-fuse indicator lights, mounted external of the module on the output terminal strip.

K. Side panels:
   1. Side panels shall be kept free of control equipment and devices. Any deviation must be sent to the Engineer in writing asking for a deviation.

3.03 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

END OF SECTION

SECTION 17712

CONTROL SYSTEMS: UNINTERRUPTIBLE POWER SUPPLIES 10 KVA AND BELOW

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Single-phase double conversion uninterruptible power supplies rated 10 kVA and below.

1.02 REFERENCES

A. As specified in Sections 16050 - Common Work Results for Electrical and 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Standards:
   1. Federal Communications Commission (FCC):
      a. FCC Part 15:
         1) Class A.
         2) Class B.
      b. C62.41 - IEEE Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.
   2. National Electrical Manufacturers Association (NEMA):
      a. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
   3. Underwriters Laboratories, Inc. (UL):
      a. UL 1778 - Standard for Uninterruptible Power Supply Systems and Equipment.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Critical load: Load supplied by the UPS.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Product data:
   1. Manufacturer and model number.
   2. Catalog data.
   3. Dimensions:
      a. Height.
      b. Width.
      c. Depth.

d. Weight.

4. Ratings:
   a. Input voltage.
   b. Output voltage.
   c. Input/output power factor.
   d. Efficiency.
   e. Harmonic distortion.
   f. Runtime.
5. Noise specifications.
6. Heat dissipation.
7. Warranties and maintenance contracts:
   a. Documentation to demonstrate conformance to Specifications noted in this Section.
   b. Descriptive package of offerings of preventative and full-service maintenance contracts for both UPS system and batteries.
   c. Extended warranty options available.
8. Communications requirements such as software, cards, etc.
9. Alarms and status available for remote monitoring and system health.

C. Shop Drawings:
1. Power distribution block diagrams.
2. Front and rear views of equipment enclosures:
   a. Front elevation, including control and indicating devices.
3. Support points and weight of overall equipment.
4. Schematic and control wiring diagrams, including, but not limited to:
   a. Line and load terminals.
   b. Alarm and status terminals.
   c. Manual maintenance bypass switch terminals.
   d. External battery or step-down/step-up transformers, if any.
   e. External wiring requirements for communication signals.
5. Switching and overcurrent protective devices.

D. Calculations:
1. Include derating for temperature and elevation as necessary.
2. UPS sizing computation:
   a. Apply safety factors as specified in this Section.
   b. Provide itemized list of critical loads, including individual VA and watt ratings.
3. Battery time calculation based on specified runtime for total load with the safety factor multiplied to it. Table/graph for back-up time calculation.
4. Load calculation shall include power for all shown in the power distribution drawing, which includes, but is not limited to, PLC power supply, field instruments (120 VAC and 24 VDC), instrument power, Ethernet switches, and I/O modules. Refer to network drawings for additional information and notes.
5. Total battery recharge time as a function of capacity utilized.

E. Design data:
1. Design mounting and anchorage for seismic design criteria specified in Section 01850 - Design Criteria:
   a. Provide seismic kits as required to meet design criteria.

F. Record documents:
   1. Provide record drawings of installed unit(s), including layout and wiring.

G. Manufacturer's field reports.

H. Operation and maintenance manuals:
   1. As specified in Section 01782 - Operation and Maintenance Manuals.
   2. System instruction manuals that describe troubleshooting, installation, operations, and safety procedures.
   3. Recommendations for maintenance procedures and intervals.
   4. Battery data/replacement information.
   5. Parts list.

1.05 QUALITY ASSURANCE

A. Manufacturer qualifications:
   1. A minimum of 10 years' experience in the design, manufacture, and testing of solid-state UPS systems.
   2. ISO 9001 certified.

B. Regulatory requirements for complete UPS system:
   1. UL listed in accordance with UL 1778.
   2. IEEE C62.41, Category B.
   3. FCC 15:
      a. Greater than 2,000 VA - Class A.
      b. Less than 2,000 VA - Class B.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide complete, factory-assembled, wired, and tested, true on-line double conversion UPS equipment, including, but not limited to, rectifier, DC bus, inverter, battery charger, batteries, automatic bypass, and ancillary components as specified in this Section.

B. The Uninterruptable Power Supplies (UPS) shall be used to power critical panel components, PLCs, communication equipment, etc. In general all circuits within the

panel, with the exception of convenience outlets, temperature control systems, and panel fluorescent lighting should be powered from the UPS.

C. UPS's location in outdoor enclosures shall be rated to operate in temperatures up to 40 degrees Celsius, regardless whether the enclosure in air conditioned or not.

D. UOS's shall be sized such that 120 VAC power is maintained within the panel for a minimum of 30 minutes after loss of source power. The UPS shall be provided with outputs wired to the local PLC to monitor: UPS online, low battery, UPS in bypass mode, and UPS fail alarms. UPSs shall be provided with maintenance bypass switches to allow maintenance on the UPS without disturbing panel power.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Critical loads as indicated on the Drawings.

2.03 MANUFACTURERS

A. Double conversion true online UPS system:
   1. One of the following or equal:
      a. Eaton, 9PX Series.
      b. Vertiv, Liebert GXT5 Series.

2.04 MANUFACTURED UNITS

A. Design requirements:
   1. Minimum VA rating of the UPS shall be greater than or equal to the safety factor (as indicated in the UPS schedule) times the connected load or 700 VA, whichever is greater.
   2. UPS system input:
      a. Voltage:
         1) Less than or equal to 3 kVA UPS:
            a) 120 VAC within 3 percent, single-phase, 2-wire plus ground (L1, N, G).
         2) Greater than 3 kVA UPS:
            a) 208 VAC within 5 percent, single-phase, 3-wire plus ground (L1, L2, N, G).
         3) Frequency: 60 hertz:
            a) Auto sensing on initial power up.
            b) User configurable.
      b. Current harmonic distortion (THDi%):
         1) Less than or equal to 5 percent at full load operation.
      c. Power factor:
         1) Greater than or equal to 0.99 lagging at rated load.
      d. Connections:
         1) As specified and as indicated on the Drawings.
   3. Mounting:
      a. Configurable for rack and tower mounting applications.
      b. Provide manufacturer's standard mounting kit as required by the application.

4. Cooling:
    a. UPS shall have integral forced air cooling.
5. Output connections:
    a. Receptacles:
        1) Less than or equal to 3 kVA UPS:
            a) Provide a minimum of four NEMA Type 5-15R or Type 5-20R receptacles.
            b) Provide at least one NEMA Type L5-30R receptacle.
        2) Greater than 3 kVA UPS:
            a) Provide a minimum of four NEMA Type 5-20R receptacles.
            b) Provide at least one NEMA Type L14-30R receptacle.
        3) Provide hardwired connections as required and as indicated on the Drawings.

B. Environmental requirements:
1. Operating ambient temperature:
    a. UPS module: 50 degrees Fahrenheit to 104 degrees Fahrenheit (10 degrees Celsius to 40 degrees Celsius).
    b. Battery: 68 degrees Fahrenheit to 86 degrees Fahrenheit (20 degrees Celsius to 30 degrees Celsius).
2. Operating altitude:
    a. Project Site conditions as specified in Section 01850 - Design Criteria.
3. Surge protection:
    a. UPS shall be accordance with IEEE C62.41, Category B.
4. Audible noise:
    a. Less than 46 dB at 1 meter.

C. Communications:
1. Relay outputs:
    a. Provide low voltage signals for On Battery, Low Battery, Any Mode Shutdown, and Battery Mode Shutdown.
    b. Connections on a terminal block on the rear panel.
2. Serial:
    a. RS-232 serial connection.
3. USB:
    a. Provide a USB connection that is HID compliant for network connection.

2.05 ACCESSORIES

A. External maintenance bypass:
1. Manufacturers: One of the following or equal:
    a. Eaton, HotSwap MBP Series.
    b. Vertiv, Liebert Micropod Series.
2. Properties:
    a. Provides isolation of the UPS for maintenance purposes.
    b. Provide maintenance bypass from the same manufacturer as the UPS manufacturer.
    c. UL 1778 listed.
    d. Provide manufacturer’s recommended mounting kit as required by the application.

e. Make-before-break design so that UPS can be isolated from the critical loads by placing these loads on source power without interruption of operation.
f. Utility and UPS status indications.
g. Rated to carry the full input current of the UPS.
h. Connections to match UPS connections and as indicated on the Drawings.
i. Supply necessary input/output cords and receptacles for connections with power source and UPS.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install equipment in accordance with the manufacturer's instructions.

B. Do not utilize extension cords, adapters, or other electrical connectors for UPS input.

3.02 FIELD QUALITY CONTROL

A. Perform inspections and test procedures before UPS startup:
1. Inspect equipment for signs of damage.
2. Verify installation as indicated on the Drawings and specified in the Specifications.
3. Inspect cabinets for foreign objects.
4. Verify neutral and ground conductors are properly sized and terminated.
5. Inspect battery cases.
6. Inspect batteries for proper polarity.
7. Check power and control wiring for tightness.
8. Check terminal connectors for tightness.
9. Ensure connection and voltage of the battery string(s).

3.03 SCHEDULES

Tag	Minimum Runtime	Input Voltage/ Connection	Safety Factor	Notes
WD31-UPSX-30101	30min	120VAC/5-15P	1.5	Control Panel WD31-PLCP-30101
WD31-UPSX-36101	30min	120VAC/5-15P	1.5	Control Panel WD31-PLCP-36101

END OF SECTION

SECTION 17720

CONTROL SYSTEMS: PROGRAMMABLE LOGIC CONTROLLERS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Programmable logic controller (PLC) based control systems hardware.
   2. Development software to be used with the specified PLC hardware.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Abbreviations:
   1. CPU: Central processing unit.
   2. I/O: Input/Output.

C. Standards:
   1. Institute of Electrical and Electronics Engineers (IEEE).

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Application software: Software that is programmed specifically for the Project.
   2. Development operating software: Software provided by the PLC manufacturer for use in programming the PLC.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures and 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Product data:
   1. CPU:
      a. Processor type.
      b. Processor speed.
      c. Memory.
      d. Internal processor battery backup time.
   2. I/O modules:
      a. Type.
      b. Standard wiring diagram.
   3. Programming languages.
   4. Operating system requirements.

C. Calculations:
   1. Calculations or documented estimate to verify that memory requirements of this Section are met, including spare requirements. If possible, use the PLC manufacturer's calculation or estimating worksheet.
   2. Calculations to verify that spare I/O requirements of this Section are met.
   3. Calculations to verify that PLC power supply requirements of this Section are met.

D. Control logic:
   1. Fully annotated copy of programmed PLC logic.
   2. Cross-referenced index of PLC registers or points.

E. Provide application software for the specific Project process requirements:
   1. Fully annotated copy of programmed PLC logic in its native format.
   2. Cross-referenced index of PLC registers or points.

1.05 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide PLC hardware manufactured at facilities certified to the quality standards of ISO 9001.

1.06 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.07 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.08 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

1.09 MAINTENANCE

A. Furnish the following if part of the original design:
   1. CPU: 1 spare for each type of CPU in the system.
   2. I/O cards: 3 spares for each type of I/O card in the system.
   3. Power supplies: 2 spares for every power supply in the system.
   4. Network/communications cards: 1 spare for every network or communications card in the system.
   5. Communication cable: 1 spare for each type of cable used in the system.

B. Installed spare requirements:
   1. I/O points:
      a. Provide total of 25 percent spare I/O capacity for each type of I/O at every PLC/RIO rack using the following calculation:

$$\left(1 - \frac{\text{UTILIZED IO POINT COUNT}}{\text{TOTAL IO POINT COUNT}}\right) * 100 = \%\text{SPARE}$$

      b. Wire spare I/O points to field terminal blocks in the same enclosure the PLC/RIO resides in.
   2. PLC backplane capacity:
      a. Provide 25 percent or 3 spare backplane slots, whichever is greater, in racks containing I/O.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide PLC hardware as specified in this Section.

2.02 DESIGN AND PERFORMANCE CRITERIA

A. Provide PLC system components by a single manufacturer:
   1. Third-party communication modules may be used only for communication or network media functions not provided by the PLC manufacturer.

B. Use PLC manufacturer approved hardware, such as cable, mounting hardware, connectors, enclosures, racks, communication cable, splitters, terminators, and taps.

C. PLC hardware, CPUs, I/O devices, and communication devices shall be new, free from defects, and produced by manufacturers regularly engaged in the manufacture of these products.

D. Wherever possible, use the same model of each PLC module type throughout the Project.

2.03 MANUFACTURERS

A. The following, no equal:
   1. Modicon:
      a. M340, BMXP3420 Series.

2.04 MANUFACTURED UNITS

A. Programmable logic controller:
   1. PLC power supply:
      a. Model: BMXCPS – Standalone.
      b. Input: 120 VAC.
      c. Sized to power modules mounted in that housing including an average module load for any empty housing slots plus 50 percent above that total.

2. PLC input/output, I/O modules:
    a. Discrete input modules:
        1) Model: BMX-DDI-1602.
        2) 24VDC.
        3) Isolated channels.
        4) 20 pin terminal block.
    b. Discrete output modules:
        1) Model: BMX-DRA-1605.
        2) Relay.
        3) 16 relay channels.
        4) 20 pin terminal block.
    c. Analog input modules:
        1) Model: BMX-AMI-0810.
        2) Signal type: Provide 4-20 mA for most applications; other levels are acceptable to interface to vendor control panels.
        3) Analog-to-digital conversion: Minimum 12-bit precision with the digital result entered into the processor.
        4) The analog-to-digital conversion updated with each scan of the processor.
        5) Individually isolated each input.
        6) Coordinate the size of the external fuse with the protection located on the module, so that the external fuse opens first under a fault condition.
    d. Analog output modules:
        1) Model: BMX-AMO-0410.
        2) Signal type: Provide 4-20 mA for most applications; other levels are acceptable to interface to vendor control panels.
        3) Individual isolated output points each rated for loads of up to 1,000 ohms.
3. Communications modules:
    a. Network communications modules:
        1) General:
            a) Install communications modules in the PLC backplane external to the PLC housing.
        2) Modbus:
            a) Model: BMX-NOE-01x0.
            b) Ports: 1 RJ-45.
            c) Communication rate: 100 Mbit/s.
        3) Ethernet:
            a) Model: BMX-NOC-0401.
            b) Ports: 4 RJ45.
        4) Provide all network taps, connectors, termination resistors, drop cables, and trunk cables necessary for remote I/O communications.
4. PLC backplane housing:
    a. Model: BMEXBP – Dual Ethernet and X bus rack.
    b. Mount the PLC power supply, CPU, communications module, and I/O modules in a suitable standard PLC backplane or housing.
    c. Provide spare slots in each PLC and RIO location in accordance with the requirements of this Section.
    d. Provide a blank slot filler module for each spare slot.

B. PLC programming software:
   1. PLC software shall be Modicon, Control Expert v14.1.

PART 3 EXECUTION

3.01 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Utilize personnel to accomplish or supervise the physical installation of all elements, components, accessories, or assemblies:
   1. Employ installers who are skilled and experienced in the installation and connection of all elements, components, accessories, and assemblies.

C. All components of the control system, including data network cables, are the installation responsibility of the ICSC unless specifically noted otherwise.

D. Control system logic program shall reside at the PLC level.

E. Use the tag and loop identifications found on the P&IDs for all tags used and/or assigned as part of the application software work provided by the ICSC.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

B. Owner Training:
   1. As specified in Section 17950 - Commissioning for Instrumentation and Controls.

END OF SECTION

SECTION 17730

CONTROL SYSTEMS: PCS COMPUTER EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. PC-based PCS system hardware, including:
      a. Operator workstations (thin clients).
      b. Industrial LCD monitors.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.03 DEFINITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Specific definitions:
   1. CAL: Client access license.
   2. RAID: Redundant array of independent disks.
   3. SNMP: Simple network management protocol.

1.04 SYSTEM DESCRIPTION

A. Provide all PCS computer equipment identified in the Contract Documents.

B. Miscellaneous requirements:

C. All Material used in satisfying the equipment requirements shall be new and unused and must be actively marketed by the original equipment manufacturer for new applications at the time of the factory demonstration test. The Contractor shall not use equipment destined for installation or spare parts for the Owner’s system for any reason other than development and testing of the system.

1.05 SUBMITTALS

A. Furnish Submittals as specified in Sections 01330 - Submittal Procedures and 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.07 DELIVERY, STORAGE, AND HANDLING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.08 PROJECT OR SITE CONDITIONS

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.09 WARRANTY

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

A. Workstations (Thin Client):
   1. Manufacturers: the following no equal:
      a. Dell, Wyse 5070.
   2. General:
      a. General purpose, PC-architecture thin computers. Operating system shall be Ubuntu 20.04 operating system as coordinated with the Owner.
      b. Thin workstation.
      c. Form factor: Mini.
      d. Processor: Pentium Silver J5005.
      e. Memory: 16GB eMMC.
      f. Network card: 10/100/1000-Base-TX.
      g. Ports:
         1) 4 USB 2.0.
         2) 1 RJ-45.
         3) 2 DVI or DisplayPort.
      h. Mouse:
         1) Optical.
         2) Wheel-type, 3-button (count wheel click as one button).
         3) Wired.
         4) A touchpad mouse is NOT acceptable.
      i. Keyboard: Windows 104-key.
         1) Full-size.
         2) A touch pad is NOT acceptable.
      j. Color: Black.
      k. Folding vertical mounted keyboard and mouse rack.
         1) Manufacturers (or equal):
            a) Rack Solutions: Model 104-4846.

B. LED monitor:
   1. LED panel mounted monitors shall meet the following minimum requirements:
      a. LED manufacturers: the following no equal:
         1) Hope Industrial Systems, HISML23.8-STTC.
      b. Viewing area: 23.8 inches.
      c. Aspect ratio: 16:9.
      d. Resolution: 1920 x 1080, 16.7 million colors.
      e. Interface:
         1) Digital Visual Interface connectors (DVI-I).
         2) DisplayPort.

PART 3 EXECUTION

3.01 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. General:
   1. Install equipment and cabling so that, in the event of an earthquake, seismic movement will not damage cables. In particular, provide appropriate slack in cables.

C. Each device with a unique IP address shall be individually labeled with its IP address. The labeling must be printed; Handwritten labels will not be accepted.

3.02 FIELD QUALITY CONTROL

A. As specified in Section17950 - Commissioning for Instrumentation and Controls.

3.03 CLEANING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.04 DEMONSTRATION AND TRAINING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Training:
   1. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

END OF SECTION

SECTION 17733

CONTROL SYSTEMS: NETWORK MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Materials and equipment used in process control and LAN networks, including:
      a. Network switches.
      b. Patch panels and other data network hardware.
      c. Related accessories.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Standards:
   1. Electronic Industries Alliance (EIA):
      a. 310-E - Cabinets, Racks, Panels, and Associated Equipment.
   2. Institute of Electrical and Electronics Engineers (IEEE):
      a. 802.1X - Standard for Local and Metropolitan Area Networks—Port-Based Network Access Control.
      b. 802.3 - Standard for Ethernet.
      c. 802.11b - Standard for Information Technology - Telecommunications and information exchange between systems - Local and Metropolitan networks - Specific requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications: Higher Speed Physical Layer (PHY) Extension in the 2.4 GHz band.
   3. National Electrical Manufacturers Association (NEMA):
      a. 250 - Enclosures for Electrical Equipment (1,000 V Maximum).
   4. National Fire Protection Association (NFPA):
      a. 70 - National Electrical Code (NEC).
   5. Telecommunications Industry Association (TIA):
      a. 569 - Telecommunications Pathways and Spaces.
      b. 607 - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises.
   6. Underwriters Laboratories, Inc. (UL).

1.03 DELEGATED DESIGN

A. As specified in Section 01357 - Delegated Design Procedures.

B. Anchoring and bracing.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. Product data:
   1. Include information on all network equipment.
   2. Manufacturer's operation and installation instructions.

C. Shop Drawings:
   1. Complete set of drawings, including, but not limited to:
      a. System block diagram showing relationship and connections between devices provided under this Contract, including connections to any existing equipment.
      b. Include manufacturer and model information, and address settings.
      c. Network riser diagram.
      d. Network port diagram, which physically locates all ports within the facility, and identifies their patch panel and switch port.
      e. Construction drawings for equipment cabinets, including dimensions, identification of components, preparation and finish data, and nameplates.
      f. Electrical connection diagrams.
      g. Complete grounding requirements.
   2. Furnish data sheets for each component together with a technical product brochure or bulletin:
      a. Manufacturer's model number.
      b. Project equipment tag.
   3. Complete and detailed bills of materials broken up by each cabinet. Each bill of material item will include the following:
      a. Quantity.
      b. Description.
      c. Manufacturer.
      d. Part numbers.

D. Delegated Design Submittals:
   1. Anchoring and bracing: Provide project-specific calculations based on support conditions and requirements to resist loads specified in Section 01850 - Design Criteria.
      a. To structures for equipment installed in structures designated as seismic design category C, D, E, or F.

E. Calculations:
   1. Cooling calculations, including, but not limited to:
      a. Highest expected ambient temperature for the enclosure's location.
      b. Internal heat load.
      c. Exposure to direct sunlight.
      d. Dimensions of the enclosure in inches.
      e. Maximum allowable temperature inside the enclosure, based on the lowest operating temperature limit of the installed components.

F. Test reports:
   1. As specified in Section 16125 - Fiber Optic Cable and Appurtenances and Section 17950 - Commissioning for Instrumentation and Controls.

2. Signed test results as described in this Section.
3. Test results shall include:
    a. Narrative describing the test procedures followed.
    b. Block diagram of test set up.
    c. Manufacturer's information on test equipment used.
    d. Detailed test results.
    e. A narrative summarizing the results of the testing and identifying any further action required.

G. Operating manuals:
1. Complete installation, operation, calibration, and testing manuals as specified in Section 01756 - Commissioning.

H. Record drawings:
1. As specified in Section 17950 - Commissioning for Instrumentation and Controls.
2. Electrical connection diagrams shall be revised to reflect any changes made in the field and submitted as record drawings.

1.05 QUALITY ASSURANCE

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

1.06 PROJECT OR SITE CONDITIONS

A. As specified in Section 01850 - Design Criteria.

1.07 WARRANTY

A. As specified in Section 01783 - Warranties and Bonds.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Vendor shall manufacture using low VOC-based materials to provide superior indoor air quality demonstrated by Greenguard certification.

2.02 MANUFACTURERS

A. As listed below in the individual component paragraphs.

2.03 MANUFACTURED UNITS

A. Ethernet switches:
1. Managed Process Floor Ethernet switches:
    a. Manufacturers: One of the following, no equal:
        1) Aruba:
            a) 12 Port Switch, Model: R8N89A.

2) Mounting:
a) Shelf.

B. Patch panels:
1. Fiber optic patch panels:
a. General:
1) Optical fiber cables shall be provided with strain relief and terminated at a fiber patch panel. Final connections between the patch panel and the fiber optic network equipment shall be made via factory tested fiber optic patch cords.
2) Fiber cable strands shall be terminated at the patch panels; no loose fiber strands are allowed.
3) Provide space for excess fiber and provide strain relief for the fiber cable.
4) Fiber cables shall be installed such that the outer sheath of the cable is carried into the interconnect enclosure or patch panels before breaking out buffer tubes.
5) Fiber connectors: LC.
b. DIN-rail mounted:
1) Manufacturers: One of the following or equal:
a) Corning.
b) DINSpace, SNAP Cu. *(This was selected for Westbrook and Solaire.)*
c) Hirschmann, MIPP.
2) Properties:
a) Use for the termination of a single cable inside of cabinets, in small enclosures or as indicated on the plans.
b) DIN-rail mounted fiber patch panels shall be provided as a complete unit, including the housing, connector panels, splice trays, and fiber connectors.

2.04 ACCESSORIES

A. Provide duplex patch cords to connect the interface cards provided with the associated patch panels.

B. Provide dust covers or plugs for unused ports.

C. Furnish accessories as specified in Section 17730 - Control Systems: PCS Computer Equipment.

PART 3 EXECUTION

3.01 INSTALLATION

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. Provide installation and configuration for the new and existing managed Ethernet switches. Provide configuration of the Ethernet switch network for a complete,

functioning plant control system as indicated on the Drawings and as specified in this Section:

1. Refer to Network Connection diagram for all new network connections.
2. Provide configuration for the managed Ethernet switch listed in 2.03.
3. The Process floor managed Ethernet switches for the process control network shall be configured and programmed for rapid fail over protection.

C. All Work shall be performed in a neat and workmanlike manner.
   1. Ground enclosure and equipment in accordance with TIA-607.
      a. Individually bond all network equipment chassis to rack's grounding busbar. Do not daisy-chain bonding conductors.
      b. Size the bonding conductor per network equipment manufacturer's recommendation, or #10 AWG, whichever is larger.

D. All Cables and terminations shall be labeled with cable designations as specified in Section 16075 - Identification for Electrical Systems.

E. Each data port shall be individually labeled with its patch panel/switch port ID:
   1. Labeling must be printed - No handwritten labels will be allowed.

F. At the completion of the wiring installation, provide the following documentation:
   1. A plan-view of the premise(s) showing the jack numbering scheme.
   2. A printed certification report for the entire wiring installation showing compliance with all TIA specifications for data cable.
   3. Reports such as those generated by Fluke DSP cable certification equipment meet this requirement.

G. Managed Ethernet switches:
   1. Configure switches to prevent broadcast storms.
   2. All Installations shall employ IGMP snooping to limit multicast messaging.

3.02 ADJUSTING

A. Perform all firmware installations, configuration, and other set up, as required, to place the network into proper operation.

3.03 CLEANING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.04 DEMONSTRATION AND TRAINING

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

B. After completion of the cable system tests and before placing the system in operation, power up all devices installed on the LAN and verify communication between the devices.

C. Verify that all equipment is operable on the network simultaneously. Confirm that all network device communications settings are properly configured.

END OF SECTION

SECTION 17903

SCHEDULES: I/O LIST

PART 1 GENERAL

1.01 SUMMARY

A. The I/O list is not a take-off list. Additional information is as indicated on the Drawings and specified in the Contract Documents. Where any discrepancies between this list and the P&ID drawings arise, the P&ID shall govern.

B. Abbreviations used in the I/O list are indicated on the Drawings.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 I/O LIST

A. As specified in Attachment A - I/O list.

END OF SECTION

ATTACHMENT A – I/O LIST

PLC I/O Listing for WD31-PLCX-30101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
13N04	WD33-LIXX-30201	AI	WD31-PLCX-30101	LEVEL	SODIUM HYPOCHLORITE STORAGE TANK LEVEL ELEMENT	
WD31-PLCX-3	Total AI Points = 1					
13N04	WD33-LIXX-30202	DI	WD31-PLCX-30101	LEAK	TANK LEAK DETECTION SWITCH	
WD31-PLCX-3	Total DI Points = 1					
13GN05	WD31-TIXX-30101	AI	WD31-PLCX-30101	TEMP	PLC AUX POWER	
13N01	WD34-FIXX-30105	AI	WD31-PLCX-30101	FLOW	ASR WELL PUMP PRELUBE/TRICKLE FLOW ELEMENT	
13N01	WD34-PIXX-30122	AI	WD31-PLCX-30101	PRESS	NITROGEN PRESSURE GAUGE	
13N02	WD34-PIXX-30102	AI	WD31-PLCX-30101	PRESS	ASR WELL RECOVERY PRESSURE ELEMENT	
13N02	WD34-PIXX-30109	AI	WD31-PLCX-30101	PRESS	ASR WELL STORAGE PRESSURE ELEMENT	
13N02	WD34-ZX-30120	AI	WD31-PLCX-30101	POSITION	WELL ANNULUS RECHARGE VALVE	
13N03	WD34-PDXX-30151	AI	WD31-PLCX-30101	PRESS DIFF	H-STRAINER DIFFERENTIAL PRESSURE TRANSMITTER	
13N03	WD34-PIXX-30106	AI	WD31-PLCX-30101	PRESS	STORAGE LINE PRESSURE ELEMENT	
13N03	WD34-ZXXX-30150	AI	WD31-PLCX-30101	POSITION	RECHARGE CONTROL VALVE	
13N05	WD33-SIXX-30213	AI	WD31-PLCX-30101	SPEED IN	SODIUM FLUORIDE FEED PUMP	
13N06	WD33-AIXX-30205	AI	WD31-PLCX-30101	CHLORINE	CHLORINE RESIDUAL ANALYZER	
13N06	WD33-AIXX-30206	AI	WD31-PLCX-30101	pH	pH ANALYZER	
13N06	WD33-AIXX-30307	AI	WD31-PLCX-30101	FLUORIDE	FLUORIDE ANALYZER	
13N06	WD33-LIXX-30401	AI	WD31-PLCX-30101	LEVEL	COMW-C WELL WATER LEVEL	
WD31-PLCX-3	Total AI Points = 14					
13N02	WD34-ZCX-30120	AO	WD31-PLCX-30101	POSITION	WELL ANNULUS RECHARGE VALVE	
13N03	WD34-ZCXX-30150	AO	WD31-PLCX-30101	POSITION	RECHARGE CONTROL VALVE	
13N05	WD33-SCXX-30213	AO	WD31-PLCX-30101	SPEED OUT	SODIUM FLUORIDE FEED PUMP	
WD31-PLCX-3	Total AO Points = 3					

PLC I/O Listing for WD31-PLCX-30101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
13GN05	WD31-AUX1-30101	DI	WD31-PLCX-30101	ON UPS POWER	PCM UPS	
13GN05	WD31-JS1-30101	DI	WD31-PLCX-30101	PWR SUP OK		
13GN05	WD31-JS2-30101	DI	WD31-PLCX-30101	PWR SUP OK		
13GN05	WD31-JS3-30101	DI	WD31-PLCX-30101	REDUNDANCY OK		
13GN05	WD31-JS4-30101	DI	WD31-PLCX-30101	ACB OK		
13GN05	WD31-XA10-30101	DI	WD31-PLCX-30101	ECP-GW FAIL		
13GN05	WD31-XA1-30101	DI	WD31-PLCX-30101	SPD1 FAIL		
13GN05	WD31-XA2-30101	DI	WD31-PLCX-30101	SPD2 FAIL		
13GN05	WD31-XA3-30101	DI	WD31-PLCX-30101	LOW BATTERY	PCM UPS	
13GN05	WD31-XA4-30101	DI	WD31-PLCX-30101	ON BATTERY	PCM UPS	
13GN05	WD31-XA5-30101	DI	WD31-PLCX-30101	ES-C FAIL		
13GN05	WD31-XA6-30101	DI	WD31-PLCX-30101	ES-F FAIL		
13GN05	WD31-XA7-30101	DI	WD31-PLCX-30101	ECP-C FAIL		
13GN05	WD31-XA8-30101	DI	WD31-PLCX-30101	ECP-F FAIL		
13GN05	WD31-XA9-30101	DI	WD31-PLCX-30101	GW FAIL		
13GN05	WD31-ZS-30101	DI	WD31-PLCX-30101	INTRUSION	PLC AUX POWER	
13GN05	WD37-HSNX-30302	DI	WD31-PLCX-30101	FAN E-STOP		
13GN05	WD37-ZSXA-30793	DI	WD31-PLCX-30101	INTRUSION	PUMP ROOM DOOR A	
13GN05	WD37-ZSXB-30793	DI	WD31-PLCX-30101	INTRUSION	PUMP ROOM DOOR B	
13GN05	WD37-ZSXC-30793	DI	WD31-PLCX-30101	INTRUSION	CHEM ROOM ROLLUP DOOR	
13GN05	WD37-ZSXD-30793	DI	WD31-PLCX-30101	INTRUSION	CHEM ROOM DOOR	
13GN05	WD37-ZSXE-30793	DI	WD31-PLCX-30101	INTRUSION	ELECTRICAL ROOM DOOR E	
13GN05	WD37-ZSXF-30793	DI	WD31-PLCX-30101	INTRUSION	ELECTRICAL ROOM DOOR F	
13GN05	WD37-ZSXG-30793	DI	WD31-PLCX-30101	INTRUSION	PUMP ROOM ROLLUP DOOR G	
13GN05	WD37-ZSXH-30793	DI	WD31-PLCX-30101	INTRUSION	PUMP ROOM ROLLUP DOOR H	
13N02	WD34-ZSOX-30120	DI	WD31-PLCX-30101	OPENED	WELL ANNULUS RECHARGE VALVE	
13N02	WD34-ZSOX-30130	DI	WD31-PLCX-30101	OPENED	PUMP COLUMN RECHARGE CONTROL VALVE	

PLC I/O Listing for WD31-PLCX-30101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
13N03	WD34-ZSOX-30140	DI	WD31-PLCX-30101	OPENED	AQUIFER & WELL FLUSH TO WASTE VALVE	
13N03	WD34-ZSOX-30150	DI	WD31-PLCX-30101	OPENED	RECHARGE CONTROL VALVE	
13N03	WD34-ZSOX-30160	DI	WD31-PLCX-30101	OPENED	RECOVERY/PRODUCTION VALVE	
13N04	WD37-FSXX-30001	DI	WD31-PLCX-30101	FLOW	EMERGENCY SHOWER/EYEWASH FLOW SWITCH	
13N05	WD33-HSNX-30313	DI	WD31-PLCX-30101	E-STOP	SODIUM FLUORIDE FEED PUMP	
13N05	WD33-HSXX-30313	DI	WD31-PLCX-30101	REMOTE	SODIUM FLUORIDE FEED PUMP	
13N05	WD33-LALX-30312	DI	WD31-PLCX-30101	TANK	SOLUTION TANK LEVEL SWITCH	
13N05	WD33-LAXX-30310	DI	WD31-PLCX-30101	CONTAINMENT	SODIUM FLUORIDE CONTAINMENT LEVEL SWITCH	
13N05	WD33-MIXR-30313	DI	WD31-PLCX-30101	RUNNING	SODIUM FLUORIDE FEED PUMP	
13N05	WD33-PUMP-30313	DI	WD31-PLCX-30101	RUNNING	SODIUM FLUORIDE FEED PUMP	
13N05	WD33-YAFX-30313	DI	WD31-PLCX-30101	FAILED	SODIUM FLUORIDE FEED PUMP	
13N05	WD33-YAXX-30313	DI	WD31-PLCX-30101	DIA LEAK	SODIUM FLUORIDE FEED PUMP	
13N07	WD33-LSHX-30209	DI	WD31-PLCX-30101	LEVEL	CHEMICAL TRENCH DRAIN LEVEL SWITCH	
WD31-PLCX-3	Total DI Points = 40					
13N01	WD34-HCOX-30124	DO	WD31-PLCX-30101	DEFLATE	NITROGEN BLEED SOLENOID VALVE	
13N02	WD34-HCGX-30130	DO	WD31-PLCX-30101	CLOSE	PUMP COLUMN RECHARGE CONTROL VALVE	
13N03	WD34-HCGX-30140	DO	WD31-PLCX-30101	CLOSE	AQUIFER & WELL FLUSH TO WASTE VALVE	
13N03	WD34-HCGX-30160	DO	WD31-PLCX-30101	CLOSE	RECOVERY/PRODUCTION VALVE	
13N05	WD33-HCCX-30313	DO	WD31-PLCX-30101	ENABLE	SODIUM FLUORIDE FEED PUMP	
WD31-PLCX-3	Total DO Points = 5					

PLC I/O Listing for WD31-PLCX-30101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	A PH CURRENT	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	A PH V	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	AVERAGE 3 PH CURRENT	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	B PH CURRENT	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	B PH V	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	C PH CURRENT	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	C PH V	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	CURRENT ALARM HIGH	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	DAILY RUN TIME	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	DAILY STARTS	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	ELAPSED TIME	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	EQUIPMENT SHUTDOWN	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	FAIL TO RESPOND	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	FAULT	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	LOCAL	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	OFF	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	OVERLOAD	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	POWER FACTOR	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	POWER KVA	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	POWER KW	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	REMOTE	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	RESET ELAPSED TIME	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	RUNNING	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	SMART OVERLOAD FAILED	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	SPEED	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	SPEED FEEDBACK	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	START	ASR PUMP	

PLC I/O Listing for WD31-PLCX-30101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	STOP	ASR PUMP	
13N02	WD34-PUMP30101	MODBUS TCP	WD31-PLCX-30101	TOTAL STARTS	ASR PUMP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	COMMON ALARM	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	CURRENT ALARM HIGH	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	DIRECTION OF ROTATION	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	LEAK DETECTED	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	LOCAL	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	OFF	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	OVER VOLTAGE	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	REMOTE	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	RUNNING	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	SPEED	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	SPEED FEEDBACK	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	START	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	STOP	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	TEMPERATURE ALARM HIGH	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	UNDER VOLTAGE	SODIUM HYPOCHLORITE VCP	
13N04	WD33-PLCP30210	MODBUS TCP	WD31-PLCX-30101	WRONG SPEED	SODIUM HYPOCHLORITE VCP	
WD31-PLCX-3	Total MODBUS TCP Points = 45					

PLC I/O Listing for WD31-PLCX-36101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
19N04	WD33-LIXX-36201	AI	WD31-PLCX-36101	LEVEL	SODIUM HYPOCHLORITE STORAGE TANK LEVEL ELEMENT	
WD31-PLCX-3	Total AI Points = 1					
19N04	WD33-LIXX-36202	DI	WD31-PLCX-36101	LEAK	TANK LEAK DETECTION SWITCH	
WD31-PLCX-3	Total DI Points = 1					
13N02	WD34-LIXX-30100	AI	WD31-PLCX-36101	LEVEL	ASR WELL LEVEL TRANSDUCER	
19GN05	WD31-TIXX-36101	AI	WD31-PLCX-36101	TEMP	PLC UPS POWER	
19N01	WD34-FIXX-36105	AI	WD31-PLCX-36101	FLOW	ASR WELL PUMP PRELUBE/TRICKLE FLOW ELEMENT	
19N01	WD34-PIXX-36122	AI	WD31-PLCX-36101	PRESS	NITROGEN PRESSURE GAUGE	
19N02	WD34-LIXX-36100	AI	WD31-PLCX-36101	LEVEL	ASR WELL LEVEL TRANSDUCER	
19N02	WD34-PIXX-36102	AI	WD31-PLCX-36101	PRESS	ASR WELL RECOVERY PRESSURE ELEMENT	
19N02	WD34-PIXX-36109	AI	WD31-PLCX-36101	PRESS	ASR WELL STORAGE PRESSURE ELEMENT	
19N02	WD34-ZX-36120	AI	WD31-PLCX-36101	POSITION	WELL ANNULUS RECHARGE VALVE	
19N03	WD34-PDXX-36151	AI	WD31-PLCX-36101	PRESS DIFF	H-STRAINER DIFFERENTIAL PRESSURE TRANSMITTER	
19N03	WD34-PIXX-36106	AI	WD31-PLCX-36101	PRESS	STORAGE LINE PRESSURE ELEMENT	
19N03	WD34-ZXXX-36150	AI	WD31-PLCX-36101	POSITION	RECHARGE CONTROL VALVE	
19N05	WD33-SIXX-36213	AI	WD31-PLCX-36101	SPEED IN	SODIUM FLUORIDE FEED PUMP	
19N06	WD33-AIXX-36205	AI	WD31-PLCX-36101	CHLORINE	CHLORINE RESIDUAL ANALYZER	
19N06	WD33-AIXX-36206	AI	WD31-PLCX-36101	pH	pH ANALYZER	
19N06	WD33-AIXX-36207	AI	WD31-PLCX-36101	FLUORIDE	FLUORIDE ANALYZER	
19N06	WD33-LIXX-36401	AI	WD31-PLCX-36101	LEVEL	COMW-C WELL WATER LEVEL	
WD31-PLCX-3	Total AI Points = 16					
19N02	WD34-ZCX-36120	AO	WD31-PLCX-36101	POSITION	WELL ANNULUS RECHARGE VALVE	
19N03	WD34-ZCXX-36150	AO	WD31-PLCX-36101	POSITION	RECHARGE CONTROL VALVE	
19N05	WD33-SCXX-36213	AO	WD31-PLCX-36101	SPEED OUT	SODIUM FLUORIDE FEED PUMP	
WD31-PLCX-3	Total AO Points = 3					

PLC I/O Listing for WD31-PLCX-36101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
13N02	WD34-HSXX-30120	DI	WD31-PLCX-36101	REMOTE	WELL ANNULUS RECHARGE VALVE	
13N02	WD34-HSXX-30130	DI	WD31-PLCX-36101	REMOTE	PUMP COLUMN RECHARGE CONTROL VALVE	
13N02	WD34-MOVX-30120	DI	WD31-PLCX-36101	CLOSED	WELL ANNULUS RECHARGE VALVE	
13N02	WD34-MOVX-30130	DI	WD31-PLCX-36101	CLOSED	PUMP COLUMN RECHARGE CONTROL VALVE	
13N03	WD34-HSXX-30140	DI	WD31-PLCX-36101	REMOTE	AQUIFER & WELL FLUSH TO WASTE VALVE	
13N03	WD34-HSXX-30150	DI	WD31-PLCX-36101	REMOTE	RECHARGE CONTROL VALVE	
13N03	WD34-HSXX-30160	DI	WD31-PLCX-36101	REMOTE	RECOVERY/PRODUCTION VALVE	
13N03	WD34-MOVX-30140	DI	WD31-PLCX-36101	CLOSED	AQUIFER & WELL FLUSH TO WASTE VALVE	
13N03	WD34-MOVX-30150	DI	WD31-PLCX-36101	CLOSED	RECHARGE CONTROL VALVE	
13N03	WD34-MOVX-30160	DI	WD31-PLCX-36101	CLOSED	RECOVERY/PRODUCTION VALVE	
19GN05	WD31-AUX1-36101	DI	WD31-PLCX-36101	ON UPS POWER	PCM UPS	
19GN05	WD31-JS1-36101	DI	WD31-PLCX-36101	PWR SUP OK		
19GN05	WD31-JS2-36101	DI	WD31-PLCX-36101	PWR SUP OK		
19GN05	WD31-JS3-36101	DI	WD31-PLCX-36101	REDUNDANCY OK		
19GN05	WD31-JS4-36101	DI	WD31-PLCX-36101	ACB OK		
19GN05	WD31-XA10-36101	DI	WD31-PLCX-36101	ECP-GW FAIL		
19GN05	WD31-XA1-36101	DI	WD31-PLCX-36101	SPD1 FAIL		
19GN05	WD31-XA2-36101	DI	WD31-PLCX-36101	SPD2 FAIL		
19GN05	WD31-XA3-36101	DI	WD31-PLCX-36101	LOW BATTERY	PCM UPS	
19GN05	WD31-XA4-36101	DI	WD31-PLCX-36101	ON BATTERY	PCM UPS	
19GN05	WD31-XA5-36101	DI	WD31-PLCX-36101	ES-C FAIL		
19GN05	WD31-XA6-36101	DI	WD31-PLCX-36101	ES-F FAIL		
19GN05	WD31-XA7-36101	DI	WD31-PLCX-36101	ECP-C FAIL		
19GN05	WD31-XA8-36101	DI	WD31-PLCX-36101	ECP-F FAIL		
19GN05	WD31-XA9-36101	DI	WD31-PLCX-36101	GW FAIL		
19GN05	WD31-ZS-36101	DI	WD31-PLCX-36101	INTRUSION	PLC UPS POWER	
19GN05	WD37-HSNX-30302	DI	WD31-PLCX-36101	FAN E-STOP		

PLC I/O Listing for WD31-PLCX-36101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
19GN05	WD37-ZSXA-36793	DI	WD31-PLCX-36101	INTRUSION	PUMP ROOM DOOR A	
19GN05	WD37-ZSXB-36793	DI	WD31-PLCX-36101	INTRUSION	PUMP ROOM DOOR B	
19GN05	WD37-ZSXC-36793	DI	WD31-PLCX-36101	INTRUSION	CHEM ROOM ROLLUP DOOR	
19GN05	WD37-ZSXD-36793	DI	WD31-PLCX-36101	INTRUSION	CHEM ROOM DOOR	
19GN05	WD37-ZSXE-36793	DI	WD31-PLCX-36101	INTRUSION	ELECTRICAL ROOM DOOR E	
19GN05	WD37-ZSXF-36793	DI	WD31-PLCX-36101	INTRUSION	ELECTRICAL ROOM DOOR F	
19GN05	WD37-ZSXG-36793	DI	WD31-PLCX-36101	INTRUSION	PUMP ROOM ROLLUP DOOR G	
19GN05	WD37-ZSXH-36793	DI	WD31-PLCX-36101	INTRUSION	PUMP ROOM ROLLUP DOOR H	
19N02	WD34-HSXX-36120	DI	WD31-PLCX-36101	REMOTE	WELL ANNULUS RECHARGE VALVE	
19N02	WD34-HSXX-36130	DI	WD31-PLCX-36101	REMOTE	PUMP COLUMN RECHARGE CONTROL VALVE	
19N02	WD34-MOVX-36120	DI	WD31-PLCX-36101	CLOSED	WELL ANNULUS RECHARGE VALVE	
19N02	WD34-MOVX-36130	DI	WD31-PLCX-36101	CLOSED	PUMP COLUMN RECHARGE CONTROL VALVE	
19N02	WD34-ZSOX-36120	DI	WD31-PLCX-36101	OPENED	WELL ANNULUS RECHARGE VALVE	
19N02	WD34-ZSOX-36130	DI	WD31-PLCX-36101	OPENED	PUMP COLUMN RECHARGE CONTROL VALVE	
19N03	WD34-HSXX-36140	DI	WD31-PLCX-36101	REMOTE	AQUIFER & WELL FLUSH TO WASTE VALVE	
19N03	WD34-HSXX-36150	DI	WD31-PLCX-36101	REMOTE	RECHARGE CONTROL VALVE	
19N03	WD34-HSXX-36160	DI	WD31-PLCX-36101	REMOTE	RECOVERY/PRODUCTION VALVE	
19N03	WD34-MOVX-36140	DI	WD31-PLCX-36101	CLOSED	AQUIFER & WELL FLUSH TO WASTE VALVE	
19N03	WD34-MOVX-36150	DI	WD31-PLCX-36101	CLOSED	RECHARGE CONTROL VALVE	
19N03	WD34-MOVX-36160	DI	WD31-PLCX-36101	CLOSED	RECOVERY/PRODUCTION VALVE	
19N03	WD34-ZSOX-36140	DI	WD31-PLCX-36101	OPENED	AQUIFER & WELL FLUSH TO WASTE VALVE	
19N03	WD34-ZSOX-36150	DI	WD31-PLCX-36101	OPENED	RECHARGE CONTROL VALVE	
19N03	WD34-ZSOX-36160	DI	WD31-PLCX-36101	OPENED	RECOVERY/PRODUCTION VALVE	
19N04	WD37-FSXX-36001	DI	WD31-PLCX-36101	FLOW	FLOW SWITCH	
19N05	WD33-HSNX-36313	DI	WD31-PLCX-36101	E-STOP	SODIUM FLUORIDE FEED PUMP	
19N05	WD33-HSXX-36313	DI	WD31-PLCX-36101	REMOTE	SODIUM FLUORIDE FEED PUMP	
19N05	WD33-LALX-36312	DI	WD31-PLCX-36101	TANK	SOLUTION LEVEL SWITCH	

PLC I/O Listing for WD31-PLCX-36101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
19N05	WD33-LAXX-36210	DI	WD31-PLCX-36101	CONTAINMENT	SODIUM FLUORIDE CONTAINMENT LEVEL SWITCH	
19N05	WD33-MIXR-36213	DI	WD31-PLCX-36101	RUNNING	SODIUM FLUORIDE FEED PUMP	
19N05	WD33-PUMP-36313	DI	WD31-PLCX-36101	RUNNING	SODIUM FLUORIDE FEED PUMP	
19N05	WD33-YAFX-36313	DI	WD31-PLCX-36101	FAILED	SODIUM FLUORIDE FEED PUMP	
19N05	WD33-YAXX-36213	DI	WD31-PLCX-36101	DIA LEAK	SODIUM FLUORIDE FEED PUMP	
19N07	WD33-LSHX-36209	DI	WD31-PLCX-36101	LEVEL	CHEMICAL TRENCH DRAIN LEVEL SWITCH	
19N07	WD37-YAXX-26901	DI	WD31-PLCX-36101	FAULT		
WD31-PLCX-3	Total DI Points = 61					
13N01	WD34-HCOX-30123	DO	WD31-PLCX-36101	INFLATE	NITROGEN SUPPLY SOLENOID VALVE	
13N02	WD34-HCOX-30130	DO	WD31-PLCX-36101	OPEN	PUMP COLUMN RECHARGE CONTROL VALVE	
13N03	WD34-HCOX-30140	DO	WD31-PLCX-36101	OPEN	AQUIFER & WELL FLUSH TO WASTE VALVE	
13N03	WD34-HCOX-30160	DO	WD31-PLCX-36101	OPEN	RECOVERY/PRODUCTION VALVE	
19N01	WD34-HCOX-36124	DO	WD31-PLCX-36101	DEFLATE		
19N01	WD34-HCOX-36124	DO	WD31-PLCX-36101	INFLATE		
19N02	WD34-HCGX-36120	DO	WD31-PLCX-36101	CLOSE	PUMP COLUMN RECHARGE CONTROL VALVE	
19N02	WD34-HCOX-36120	DO	WD31-PLCX-36101	OPEN	PUMP COLUMN RECHARGE CONTROL VALVE	
19N03	WD34-HCGX-36140	DO	WD31-PLCX-36101	CLOSE	AQUIFER & WELL FLUSH TO WASTE VALVE	
19N03	WD34-HCGX-36160	DO	WD31-PLCX-36101	CLOSE	RECOVERY/PRODUCTION VALVE	
19N03	WD34-HCOX-36140	DO	WD31-PLCX-36101	OPEN	AQUIFER & WELL FLUSH TO WASTE VALVE	
19N03	WD34-HCOX-36160	DO	WD31-PLCX-36101	OPEN	RECOVERY/PRODUCTION VALVE	
19N05	WD33-HCCX-36213	DO	WD31-PLCX-36101	ENABLE	SODIUM FLUORIDE FEED PUMP	
WD31-PLCX-3	Total DO Points = 13					

PLC I/O Listing for WD31-PLCX-36101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	COMMUNICATION FAILURE	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	FLOW TOTALIZER 1	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	FLOW TOTALIZER 2	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	FLOW TOTALIZER 3	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	HARDWARE FAILURE	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	MAINTENANCE REQUIRED	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	MEASUREMENT FAILURE	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	RESET TOTALIZER 1	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	RESET TOTALIZER 2	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	RESET TOTALIZER 3	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	SOFTWARE FAILURE	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-FEXX36104	MODBUS TCP	WD31-PLCX-36101	VOLUME FLOW	AQUIFER STORAGE/RECOVERY FLOW ELEMENT	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	A PH CURRENT	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	A PH V	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	AVERAGE 3 PH CURRENT	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	B PH CURRENT	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	B PH V	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	C PH CURRENT	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	C PH V	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	CURRENT ALARM HIGH	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	DAILY RUN TIME	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	DAILY STARTS	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	ELAPSED TIME	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	EQUIPMENT SHUTDOWN	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	FAIL TO RESPOND	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	FAULT	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	LOCAL	ASR PUMP	

PLC I/O Listing for WD31-PLCX-36101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	OFF	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	OVERLOAD	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	POWER FACTOR	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	POWER KVA	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	POWER KW	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	REMOTE	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	RESET ELAPSED TIME	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	RUNNING	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	SMART OVERLOAD FAILED	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	SPEED	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	SPEED FEEDBACK	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	START	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	STOP	ASR PUMP	
19N02	WD34-PUMP36101	MODBUS TCP	WD31-PLCX-36101	TOTAL STARTS	ASR PUMP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	COMMON ALARM	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	CURRENT ALARM HIGH	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	DIRECTION OF ROTATION	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	LEAK DETECTED	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	LOCAL	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	OFF	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	OVER VOLTAGE	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	REMOTE	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	RUNNING	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	SPEED	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	SPEED FEEDBACK	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	START	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	STOP	SODIUM HYPOCHLORITE VCP	

PLC I/O Listing for WD31-PLCX-36101

Drawing	Tag	I/O	Location	Description	Service	(E/F)
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	TEMPERATURE ALARM HIGH	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	UNDER VOLTAGE	SODIUM HYPOCHLORITE VCP	
19N04	WD33-PLCP36210	MODBUS TCP	WD31-PLCX-36101	WRONG SPEED	SODIUM HYPOCHLORITE VCP	
WD31-PLCX-3	Total MODBUS TCP Points = 57					

SECTION 17950

COMMISSIONING FOR INSTRUMENTATION AND CONTROLS

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PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Testing requirements that apply to process control and instrumentation systems for the entire Project.

1.02 REFERENCES

A. As specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.
   1.

1.03 TERMINOLOGY

A. The words and terms listed below are not defined terms that require initial capital letters, but, when used in this Section, have the indicated meaning.
   1. Complete End-to-End Testing (CEET) - Signals are tested from the field device through the PLC program, the network, and all the way to the operator's HMI graphic screens.
   2. Loop validation tests - Signals are tested from the field device to the PLC.
   3. Permanent link: Fixed portion of cabling installed between an equipment outlet and its immediate distributor or between 2 distributors.
   4. Platform testing: Testing of the PLC and SCADA/HMI at the manufacturer's or programmer's shop to demonstrate the program's functionality based upon specified and designed control requirements.

1.04 SUBMITTALS

A. Furnish Submittals as specified in Section 01330 - Submittal Procedures.

B. General:
   1. Reference additional detailed test Submittal scheduling and prerequisite requirements as specified in the sequencing article of Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

C. Overall test plan:
   1. Develop the PCIS system test Submittals in consultation and cooperation with applicable Subcontractors.
   2. Develop and submit an overall testing plan for the PCIS. Overall test plan to be reviewed and approved by the Engineer before detailed test plans, procedures, and forms will be reviewed.
   3. Describe the test phases as they apply specifically to this Project and each process system.
   4. Provide a preliminary testing schedule to show the sequence of tests and commissioning as they apply to each process system and each PLC.
   5. Provide a description of factory tests. Describe what equipment will be included, what testing equipment will be used, and the simulator that will be used.
   6. Provide examples of proposed forms and checklists.

D. Test procedures:
   1. Develop and submit detailed test procedures to show that the integrated SCADA system hardware and software is fully operational and in compliance with the requirements specified in the Contract Documents.
   2. Provide a statement of test objectives for each test.
   3. Prepare specific procedures for each process system.
   4. Describe sequentially the steps to be followed in verifying the correct operation of each process system, including features described in the loop descriptions, control strategies, and shown in the P&IDs. Implied or generic test procedures are not acceptable.
   5. Specify who will perform the tests, specifically what testing equipment will be used (including serial numbers and NIST-traceable calibration), and how the testing equipment will be used.
   6. Describe the expected role of the Engineer, as well as any requirements for assistance from the Owner's staff.
   7. Provide the forms and checklists to be used.

E. Test forms:
   1. Submit completed calibration forms, test forms, and checklists.
      a. Test forms shall include the detailed test procedures or shall include clear references to separate pages containing the complete test procedure applicable to each form. If references to procedures are used, the complete procedure shall be included with each test binder.
      b. Every page of each test form shall include Project name, date, time, name of person conducting the test, signature of person conducting the test, and for witnessed tests, place for signature of person (Engineer and Owner) witnessing the test.
      c. Sample test forms at the end of this Section show the minimum required content:
         1) Sample test forms have not been customized for this Project.
         2) Develop and submit test forms customized for the Project and meeting the specified test and Submittal requirements.

F. FAT procedure additional minimal requirements:
   1. Prepare and submit a FAT procedure which includes:
      a. Control system testing block diagram.
      b. Estimated test duration.
      c. Details on the simulator construction, components, and operation.

G. Testing binders:
   1. Sub-system to be tested: Provide and submit a test binder containing test procedures and individual forms for the test. References to other documents for test procedures and requirements are not acceptable.
   2. Fill out in advance, headings and all other information known before the test.
   3. Include applicable test plan information, as well as a list of test prerequisites, test personnel, and equipment.
   4. Include or list reference material and provide separately at the time of the test.
   5. Record test results and verify that all test requirements and conditions have been met.

H. Furnish Commissioning Submittals listed below, as specified in this Section, and Section 01756 - Commissioning:
   1. Manufacturer's representative qualifications.
   2. Owner Training.

I. Test reports:
   1. At the conclusion of each test, submit a complete test report, including test results and certifications.
   2. Include completed test binders, forms, and checklists.
   3. Submission, review, and acceptance of each test report is required before the start of the sub-system.

1.05 QUALITY ASSURANCE

A. Test personnel:
   1. Furnish qualified technical personnel to perform calibration, testing, and verification. Test personnel are required to be familiar with this Project and the equipment, software, and systems before being assigned to the test program.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation supervision:
   1. Provide as specified in Section 17050 - Common Work Results for Process Control and Instrumentation Systems.

3.02 COMMISSIONING

A. As specified in Section 01756 - Commissioning.

B. Testing and training phase:
   1. Source Testing:
      a. Manufacturer services: Provide as specified in the table below.

Section Number	Section Title	Source Testing (Witnessed or Non-Witnessed)
17710 - Control Systems - Panels, Enclosures, and Panel Components	Control Systems - Panels, Enclosures, and Panel Components	Witnessed
17950 - Commissioning for Instrumentation and Controls	Commissioning for Instrumentation and Controls	Witnessed

      b. Prerequisite requirements:
         1) Engineer approval of the hardware and equipment Source Testing Submittal is required before proceeding to preliminary FAT.

c. Control System FAT testing:
    1) Perform tests to show that the integrated system hardware and software is fully operational and in compliance with the requirements specified in the Contract Documents.
        a) The Contractor is responsible for scheduling the Control System FAT.
            (1) Invites for the FAT shall be sent out 30 days prior to the FAT. The invites shall include but not limited too: the Owner, Engineer, ICSC, Programmer, and equipment vendors.
        b) The Contractor is responsible to lead coordination efforts with the programmer and other equipment vendors.
        c) The Contractor shall coordinate efforts to have all the necessary equipment and tools in one place for an in-person FAT.
        d) The Contractor is responsible for determining the location of the FAT; the FAT shall not be at the construction site.
        e) The Contractor is responsible to develop the FAT procedure and forms for record; this can be done with help from Carollo Programming Services.
        f) The Contractor and Carollo Programming Services shall conduct and lead the FAT together.
        g) Any disagreement regarding the FAT procedure and execution of the FAT procedure will be resolved by the Engineer and Owner.
        h) A pre-FAT is not required, however all equipment must be complete, configured, wired up together as a system (including network cabling) and ready for testing 1 day prior to the day FAT starts. The FAT procedure and forms submittal must be approval and all comments resolved 1 full week prior to FAT.
    2) The FAT is to include the completely built Facility Control Panel including all it's components, the MCC and other motor starters and VFDs that interface with the Facility Control Panel, any and all local control panels that interface with motor starters or VFDs, the PLC program, and a workstation that has a copy of the Owners SCADA system on it with the modified configuration, alarming, reporting, and display graphics for the project.
    3) For any fault tolerant networks such as ring topology networks, disconnect each segment of the network individually to demonstrate proper failover and alarming at the HMI.
    4) Testing simulation:
        a) Inputs and outputs shall be simulated and proper control and system operation shall be validated.
        b) Whenever supplied equipment is available, such as devices internal to the control panel, test input and output signals using the equipment. Simulation is not acceptable.
        c) FAT shall make use of simulators that contain switches, pilot lights, variable analog signal generators, and analog signal level

displays, which shall be connected to the I/O points within the HMI/SCADA system:

(1) Use of jumper wires, terminal block mounted pilot lights, and loose meters to act as or supply the functionality of a simulator shall not be allowed.

(2) Simulator may consist of a PLC, operating under an HMI/SCADA software package, or other approved software that has its I/O points wired to the PLC's I/O points.

(3) Software operating on a PC may then act as the switches, pilot lights, variable analog signal generators, and analog signal level displays.

5) Additional source tests are specified in other sections of the instrumentation and control Specifications.

6) Panel inspections:

a) Engineer will inspect each control panel for completeness, workmanship, fit and finish, and compliance with the Contract Documents and the accepted Shop Drawings:

(1) Inspection to include, as a minimum: Layout, mounting, wire and data cable routing, wire tags, power supply, components and wiring, I/O components layout (including terminals, wiring and relays), device layout on doors and front panels, and proper ventilation operation.

b) Inspection forms:

(1) Provide panel inspection forms as part of the FAT procedures Submittal.

(2) A sample FAT control panel form has been provided at the end of this Section.

7) I/O test:

a) Engineer will verify that I/O is properly wired to field terminals and is properly mapped into the PLC and the rest of the SCADA system, including operator interface devices.

b) Test methodology:

(1) Discrete inputs:

(a) Apply appropriate input from simulator at panel terminal, observe input card indicator, observe data value at each indicated data address, and observe data received at field wiring terminals or operator interface screen.

(2) Discrete outputs:

(a) Issue commands from operator interface screen or PLC, verify output card indicator light, and measure response at field wiring terminals or multimeter.

(3) Analog inputs:

(a) Apply appropriate analog input signal at panel terminals on simulator, observe data value at each indicated data address, and observe data properly received at field wiring terminals or operator interface screen.

(b) Check each point at 0 percent, 50 percent, and 100 percent of scale.

(4) Analog outputs:
(a) Enter scaled values in the output buffer file, observe the output data file value, and measure appropriate response at field wiring terminals or multimeter.
(b) Check each point at 0 percent, 50 percent, and 100 percent of scale.

c) Test forms to include, but not be limited to, the following data:
(1) PLC and panel number.
(2) I/O type.
(3) I/O tag name.
(4) Rack/slot/number of I/O point.
(5) Check-off for correct response for each I/O point.
(6) Comments field.
(7) Initials of individual performing test.
(8) Date test was performed.
(9) Witness signature lines.

d) Test forms:
(1) For each test, list the specification page and paragraph of the function demonstrated, and provide a description of the function.
(2) List the specific tests and steps to be conducted.
(3) For each function, list all of the different sub-functions or ways the function can be used, and provide a test check-off for each:
(a) Include signature and date lines.

8) Engineer approval of the FAT Communication Testing activities is required before proceeding to FAT Platform Testing.

d. FAT Platform Testing - Control logic test:
1) Verify the PLC, HMI, and SCADA, provides monitoring and control functionality based upon specified and designed control requirements.
2) Testing requirements:
a) Demonstrate each function described in the Control Strategies.
b) Demonstrate in detail how each function operates under a variety of operating scenarios:
(1) Test to verify the application of each general control strategy function to each specific control strategy or loop description.
c) Demonstrate the proper operation of the programming and configuration for each control strategy or loop description:
(1) Test each strategy or loop description on a sentence by sentence and function by function basis.
(2) Loops with similar or identical logic must each be tested individually.
(3) Test the boundaries of each numeric operator input by entering values outside of the allowable range.
d) Demonstrate the proper operation of digital communication links and networks.
(1) Verify each digital communication I/O point.
e) Failure testing: Demonstrate how the system responds to and recovers from abnormal conditions, including, but not limited to, equipment failure, operator error, communications subsystem error, communications failures, simulated/forced software

lockups, power failure (both utility power and power to HMI and/or SCADA hardware), process equipment failure, and high system loading conditions.

3) Test forms:
   a) Submit completed test forms for each loop, including, but not limited to, the fully revised and approved control strategy.
   b) Identify the cause and effect as each I/O point is toggled through the simulator:
      (1) Identify and track proper and/or improper operation of the loop.
   c) Note any deficiencies or operational changes on the forms for correction and documentation:
      (1) Include signature and date lines.
4) Engineer approval of the FAT Submittal is required prior to shipment of system components.

2. Owner Training:
   a. Perform Owner Training as specified in Section 01756 - Commissioning.

Course Title	Minimum Course Length (Hours per Session)	Personnel (Estimated Number of Students)	Minimum Number of Sessions
System Overview	0	0	0
Operator Training - Basic	0	0	0
Operator Training - Advanced	0	0	0
PLC Hardware	0	0	0
PLC Software	0	0	0
LOI Hardware and Software	0	0	0
Network Equipment	0	0	0
Follow-Up Training	0	0	0

3. Installation testing:
   a. Calibration:
      1) Performed by the Contractor and ICSC.
      2) Calibrate and adjust instruments, devices, valves, and systems, in accordance with the component manufacturer's instructions and as specified in these Contract Documents.
      3) Replace either individually or within a system, defective elements that cannot achieve proper calibration or accuracy.
         a) Discrete devices:
            (1) Calibrate and adjust devices for reliable operation and to avoid nuisance tripping.
         b) Ultrasonic and radar level devices:
            (1) Provide echo transmission and signal quality on level transmitters, including guided and unguided units.
               (a) Submit printout of the actual transmission and parameters.
            (2) Adjust mounting as required to obtain accurate readings.

(3) Post mounting: Provide any additional calibration required by the manufacturer.

c) Analog transmitters:
(1) Components having adjustable features are to be set accurately for the specific conditions and applications of this installation.
(2) Test and verify that components and/or systems are within the specified limits of accuracy.
(3) Calibration points:
(a) Calibrate each analog instrument at 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of span, using test instruments with accuracies traceable to NIST.
(4) Field verify calibration of instruments, including units that have been factory-calibrated to determine whether any of the calibrations are in need of adjustment.

d) Analyzer:
(1) Calibrate and test each analyzer system as a workable system after installation. Follow the testing procedures directed by the manufacturers' technical representatives.
(2) Submit completed instrument calibration sheets for every field instrument and analyzer.
(3) Calibration tags:
(a) Attach a calibration and testing tag to each instrument, piece of equipment, or system.
(b) Sign the tag when calibration is complete.

e) Industrial networking test equipment:
(1) Submit calibration documentation.

b. Loop check:
1) Performed by the Contractor.
2) Cabling installed, terminated, and labeled.
3) Perform continuity check of wiring to each field device through intermediate devices to field terminals in the cabinet.
4) Complete loop check form for each device.
5) Submit loop check test results before proceeding to the next step.

c. Loop validation tests:
1) Performed by the Contractor, ICSC, and the manufacturer's representative, working together, and witnessed by the Owner or Owner's representative.
2) Perform tests on the signal from each field device through intermediate devices to the I/O module on the PLC.
a) PLC may or may not be connected to the network.
3) Engineer approval of the loop validation test Submittal is required before proceeding to CEET.

d. Copper Ethernet cable acceptance testing:
1) Testing procedures and field-test instruments shall comply with applicable requirements of:
a) TIA-1152 - Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling.
b) TIA-568.0-E - Generic Telecommunications Cabling for Customer Premises.

c) TIA-568.1-E - Commercial Building Telecommunications Infrastructure Standard.
d) TIA-568.2-D - Balanced Twisted-Pair Telecommunications Cabling and Components Standard.
e) Copper Ethernet cable installation testing as specified in Section 16950 - Field Electrical Acceptance Tests.

2) Testing shall be performed by trained technicians who have successfully completed an appropriate training program and have obtained a certificate as proof thereof shall execute the tests. These certificates may have been issued by any of the following organizations or an equivalent organization:
   a) Manufacturer of the connectors or cable.
   b) Manufacturer of the test equipment used for the field certification.
   c) Training organizations (e.g., BICSI).
3) Submit the following information before testing begins:
   a) Manufacturer's catalog sheets, specifications, and the most recent calibration report for the test equipment.
   b) Certificate of testing technician's training.
   c) A schedule of balanced twisted-pair copper links to be tested, including:
      (1) Cable identification as it appears on the cable records.
      (2) Cable identification as it appears on the individual test reports.
      (3) Cable identification as specified in Section 16075 - Identification for Electrical Systems.
   d) Sample test reports.
   e) Installed cabling Permanent Links shall be field-tested and pass the test requirements and analysis as described below:
      (1) Any Permanent Link that fails these requirements shall be diagnosed and corrected.
      (2) Any corrective action that must take place shall be documented and followed with a new test to prove that the corrected Permanent Link meets performance requirements.
      (3) Final and passing result of the tests for Permanent Links shall be provided in the test results documentation in accordance with the testing requirements.
   f) Acceptance of the test results shall be given in writing after the Project is fully completed and tested in accordance with the Contract Documents and to the satisfaction of the Engineer.
4) Cable field-test instruments:
   a) Field-test instrument shall be within the calibration period recommended by the manufacturer, typically 12 months.
   b) Certification tester requirements:
      (1) Level III in accordance with TIA-1152.
      (2) Independent verification of accuracy.
      (3) Must be capable of storing more than 10,000 results for all required measurements.
      (4) Manufacturers: The following or equal:
         (a) Fluke Cable Analyzer Industrial Ethernet Kit, DSX2-5-IE-K1.

c) Permanent Link adapters:
   (1) Use the manufacturer's adapter for connecting to tested equipment.
      (a) Patch cables shall not be used for testing.
   (2) RJ45 plug must meet the requirements for NEXT, FEXT, and return loss in accordance with TIA-568.2-D Annex C.
d) Measurement capabilities:
   (1) Wire map.
   (2) Length.
   (3) Propagation delay.
   (4) Delay skew.
   (5) DC loop resistance.
   (6) DC resistance unbalance.
   (7) Insertion loss.
   (8) NEXT (near-end crosstalk).
   (9) PS NEXT (power sum near-end crosstalk).
   (10) ACR-N (attenuation to crosstalk ratio near-end).
   (11) PS ACR-N (power sum attenuation to crosstalk ratio near-end).
   (12) ACR-F (attenuation to crosstalk ratio far-end).
   (13) PS ACR-F (power sum attenuation to crosstalk ratio far-end).
   (14) Return loss.
   (15) TCL (transverse conversion loss).
   (16) ELTCTL (equal level transverse conversion transfer loss).
   (17) Time domain reflectometer.
   (18) Time domain crosstalk analyzer.

5) Testing requirements:
   a) Field-test instruments shall have the latest software and firmware installed.
   b) Permanent Link test results, including the individual frequency measurements from the tester shall be recorded in the test instrument upon completion of each test for subsequent uploading to a PC in which the administrative documentation (reports) may be generated.
   c) Testing shall be performed on each cabling segment from connector to connector:
      (1) Sampling is not acceptable.
   d) Installer shall build a reference link:
      (1) Components shall be anchored so it is not possible to disturb them.
      (2) Technician is to conduct a Permanent Link test each day, for each type of category cable used, to ensure no degradation of the tester or its Permanent Link adapters.
   e) Unless noted otherwise tests shall use the following frequency resolution:
      (1) 1 to 31.25 MHz: 150 kHz.
      (2) 31.25 to 100 MHz: 250 kHz.
      (3) 100 to 250 MHz: 500 kHz.

f) Wire map measurement:
   (1) Wire map test is intended to verify pin-to-pin termination at each end and check for installation connectivity errors. For each of the 8 conductors in the cabling, the wire map indicates:
      (a) Continuity to the remote end.
      (b) Shorts between any 2 or more conductors.
      (c) Reversed pairs.
      (d) Split pairs.
      (e) Transposed pairs.
      (f) Distance to open on shield.
      (g) Any other miss-wiring.
      (h) Correct connectivity of telecommunications outlets/connectors is defined in TIA-568.2-D:
         - 2 color schemes are permitted.
         - User shall define which scheme is to be used.
         - Field tester shall document which color scheme was used.

g) Length measurement:
   (1) Record the length of each cable. Use the physical length of the link calculated using the pair with the shortest electrical delay for reporting and to determine pass/fail.
   (2) Pass or fail criteria is based on the maximum length allowed for the Permanent Link as specified in TIA-568.2-D plus the nominal velocity of propagation (NVP) uncertainty of 10 percent. For a Permanent Link, the length measurement can be 325 feet before a fail is reported.

h) Propagation delay measurement:
   (1) Is the time it takes for a signal to reach the end of the link.
   (2) Measurement shall be made at 10 MHz in accordance with TIA-1152.
   (3) Propagation delay of each balanced twisted pair shall be recorded.
   (4) Is not to exceed 498 ns in accordance with TIA-568.2-D Section 6.4.21.

i) Delay skew measurement:
   (1) Is the difference in propagation delay at 10 MHz between the shortest delay and the delays of the other wire pairs.
   (2) Delay skew of each balanced twisted pair shall be recorded.
   (3) Is not to exceed 44 ns in accordance with TIA-568.2-D Section 6.4.22.

j) DC resistance:
   (1) Often reported as resistance, is the loop resistance of both conductors in the pair.
   (2) Is not specified in TIA-1152 but shall be recorded for all 4 pairs.

k) DC resistance unbalance:
   (1) Often reported as resistance unbalance, is the difference in resistance of the 2 wires within the pair.
   (2) Is not specified in TIA-1152 for a Permanent Link but shall be recorded for all 4 pairs.

l) Insertion loss:
   (1) Is the loss of signal strength over the cabling (in dB).
   (2) Worst case shall be reported for all 4 pairs in one direction only.
   (3) Reported margins found to be within the accuracy of the field tester shall be marked with an asterisk.
   (4) Is not to exceed the Category 6 Permanent Link limits in accordance with TIA-568.2-D Section 6.4.10.

m) NEXT (near-end crosstalk):
   (1) Is the difference in amplitude (in dB) between a transmitted signal and the crosstalk received on other wire pairs at the same end of the cabling.
   (2) Shall be measured in both directions (12 pair to pair possible combinations).
   (3) Both worst case and worst margins shall be reported.
   (4) Is not to exceed the Category 6 Permanent Link limits in accordance with TIA-568.2-D Section 6.4.11.
   (5) Reported margins found to be within the accuracy of the field tester shall be marked with an asterisk (*).
   (6) Time domain crosstalk data shall be stored for any marginal or failing NEXT results.

n) PS NEXT (power sum near-end crosstalk):
   (1) Is the difference (in dB) between the test signal and the crosstalk from the other pairs received at the same end of the cabling.
   (2) Shall be measured in both directions (8 pair possible combinations).
   (3) Both worst case and worst margins shall be reported.
   (4) Is not to exceed the Category 6 Permanent Link limits in accordance with TIA-568.2-D Section 6.4.12.
   (5) Reported margins found to be within the accuracy of the field tester shall be marked with an asterisk (*).
   (6) Time domain crosstalk data shall be stored for any marginal or failing PS NEXT results.

o) ACR-N (attenuation crosstalk ratio near-end):
   (1) Is a calculation of NEXT minus insertion loss of the disturbed pair in dB.
   (2) Shall be calculated in both directions.
   (3) Is not specified in TIA-1152 but shall be recorded for all 12 possible combinations.

p) PS ACR-N (power sum attenuation crosstalk ratio near-end):
   (1) Is a calculation of PS NEXT minus insertion loss of the disturbed pair in dB.
   (2) Shall be calculated in both directions.
   (3) Is not specified in TIA-1152 but shall be recorded for all 8 possible combinations.

q) ACR-F (attenuation crosstalk ratio far-end):
   (1) Is a calculation of FEXT minus insertion loss of the disturbed pair in dB.
   (2) Shall be measured in both directions (24 pair to pair possible combinations).

(3) Both worst case and worst margins shall be reported.
(4) Is not to exceed the Category 6 Permanent Link limits in accordance with TIA-568.2-D Section 6.4.14.
(5) Reported margins found to be within the accuracy of the field tester shall be marked with an asterisk (*).

r) PS ACR-F (power sum attenuation crosstalk ratio far-end):
(1) Is a calculation of PS FEXT minus insertion loss of the disturbed pair in dB.
(2) Shall be measured in both directions (8 pair possible combinations).
(3) Both worst case and worst margins shall be reported.
(4) Is not to exceed the Category 6 Permanent Link limits in accordance with TIA-568.2-D Section 6.4.16.
(5) Reported margins found to be within the accuracy of the field tester shall be marked with an asterisk (*).

s) Return loss:
(1) Is the difference (in dB) between the power of a transmitted signal and the power of the signals reflected back.
(2) Shall be measured in both directions (8 pair possible combinations).
(3) Both worst case and worst margins shall be reported.
(4) Shall be ignored at all frequencies where the insertion loss is less than 3 dB for that pair.
(5) Is not to exceed the Category 6 Permanent Link limits in accordance with TIA-568.2-D Section 6.4.9.
(6) Reported margins found to be within the accuracy of the field tester shall be marked with an asterisk (*).
(7) Time domain reflectometer data shall be stored for any marginal or failing return loss results.

t) TCL (transverse conversion loss):
(1) Is the ratio (in dB) between a differential mode signal inject at the near-end and the common-mode signal measured at the near-end on the same wire pair.
(2) Shall be measured in both directions.
(3) Is not specified in TIA-1152 for a Permanent Link but shall be recorded for all 8 possible combinations.

u) ELTCTL (equal level transverse conversion transfer loss):
(1) Is the ratio (in dB) between a differential mode signal inject at the near-end and the common-mode signal measured at the far end on the same wire pair minus the insertion loss of that pair.
(2) Shall be measured in both directions.
(3) Is not specified in TIA-1152 for a Permanent Link but shall be recorded for all 8 possible combinations.

6) Test results documentation:
a) Detailed test results documentation data is to be provided in an electronic database for each tested balance twisted pair and shall contain the following information:
(1) Overall pass/fail evaluation of the link-under-test.
(2) Date and time the test results were saved in the memory of the tester.

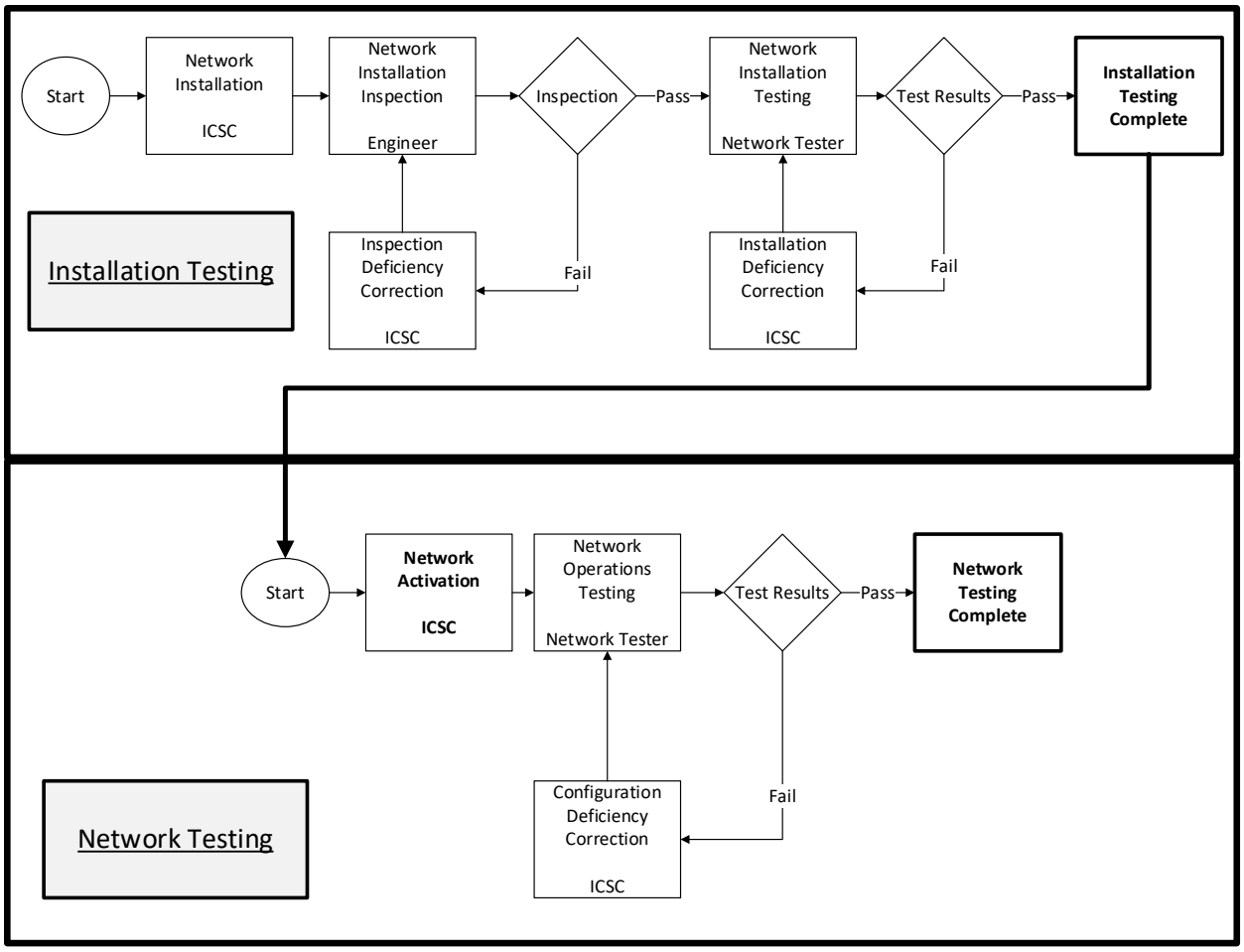
(3) Identification of the customer site as specified by the end user.
(4) Name of the test limit selected to execute the stored test results.
(5) Name of the personnel performing the test.
(6) Version of the test software and the version of the test limit database held within the test instrument.
(7) Manufacturer, model, and serial number of the field-test instrument.
(8) Adapters used.
(9) Factory calibration date.
(10) Wire map.
(11) Propagation delay values, for all 4 pairs.
(12) Delay skew values, for all 4 pairs.
(13) DC resistance values, for all 4 pairs.
(14) DC resistance unbalance, values for all 4 pairs.
(15) Insertion loss, worst case values for all 4 pairs.
(16) NEXT, worst case margin and worst case values, both directions.
(17) PS NEXT, worst case margin and worst case values, both directions.
(18) ACR-F, worst case margin and worst case values, both directions.
(19) PS ACR-F, worst case margin and worst case values, both directions.
(20) Return loss, worst case margin and worst case values, both directions.
(21) TCL, worst case values both directions.
(22) ELTCTL, worst case values, both directions.
(23) Time domain crosstalk data if the link is marginal or fails.
(24) Time domain reflectometer data if the link is marginal or fails.

b) Maintain a set of “red-line” throughout during construction:
(1) Drawings shall be available for review at any time as requested by the Owner or Engineer.
(2) Provide record copy drawings at the end of the Project.
(a) Shall be in CAD format and include notations reflecting the as-built conditions of any additions to or variation from the drawings provided, such as, but not limited to, cable paths and termination point.
(3) As-built drawings shall include, but are not limited to, block diagrams, frame and cable labeling, cable termination points, equipment room layouts and frame installation details.
(4) As-builts shall include field changes made up to construction completion:
(a) Field directed changes to pull schedule.
(b) Horizontal cable routing changes.

7) Associated detail drawings. Engineer approval of the copper Ethernet cable acceptance-testing Submittal is required before proceeding to CEET.

e. Industrial network testing:
    1) General test requirements:
        a) Contractor will hire a network tester who is a Certified Profibus Installer for testing for the proper installation and operation of the Profibus network.
        b) Provide necessary components and labor required to address changes required to bring the network into compliance.
        c) Personnel shall be available at the time of network inspection and testing to address network deficiencies.
        d) Before commencing any network inspection or testing activities:
            (1) Verify that network segments and nodes are in their final installed condition:
                (a) Network node devices installed.
                (b) Field devices physically disconnected from the network.
            (2) Process and process equipment is not dependent on operation of the network.
            (3) Inspect network components and deficiencies addressed.
            (4) Manufacturer's data and specifications for installed network components, available on site for use by the network testing firm.
            (5) A complete set of Contract Documents included addenda and change orders are available on site for use by the network testing firm.
        e) Network operation may be interrupted for inspection and testing.
        f) Figure 1, Network Test Sequence and Responsibilities, defines the general test sequence.

Figure 1. Network Test Sequence and Responsibilities



2) Test equipment:
   a) Use the following:
      (1) Network line analyzer: ProfiTrace v1.6 or equivalent.
      (2) Oscilloscope: Fluke Scopemeter Series 190 or equivalent.
      (3) Digital VOM: Fluke 87 Multimeter or equivalent.
      (4) Network bus monitor, ProfiTrace v1.6 or equivalent.
3) Network installation testing:
   a) Performed by the Contractor/ICSC, network tester, and the Owner's representative working together.
   b) This activity focuses on the physical media and its installation.
   c) Conduct a physical inspection to establish the network configuration as indicated on the Drawings:
      (1) Validate the node type and quantity.
      (2) Identify improper installation and damaged components.
   d) Validate integrity of cables and connectors via a physical media test to confirm the signal propagation capabilities of the network media using visual and mechanical inspection:
      (1) Compare network devices nameplate data with Drawings and Specifications.
      (2) Confirm network components are PTO compliant.
      (3) Verify labeling of trunk cables.

(4) Confirm permissible cable length.
(5) Confirm correct cable type.
(6) Verify the presence/absence of stub lines.
(7) Verify network terminators are in place.
(8) Verify power supply source and connections for active terminations.
(9) Verify total network node count.
(10) Verify power supply specifications, including quantity, ratings, locations, and configuration. Verify power supply source of supply location, conductor size, and rating.
(11) Inspect accessible network cabling for adherence to specified installation practices:
(a) Cable installed in conduit or protective raceway.
(b) Cable proximity to high voltage wiring.
(c) Exposure to extreme temperatures, shock, vibration, chemicals, or moisture.
(d) Bend radius.
(12) Inspect cable and conductor terminations for adherence to specified installation practices.
(13) Check accessible components for evidence of physical damage.
(14) Check grounding techniques, including ground conductor sizes and termination points.
(15) Eliminate signal reflections.

e) Electrical tests:
(1) Measure total network resistance.
(2) Cable length and configuration evaluation:
(a) Confirm the network cable topology (length and configuration) does not exceed data rate limitations.
(b) Confirm total stub length (if required by design) does not exceed data rate limitations.
(c) Calculate spare trunk length for the specified data rate.
(3) Line analysis for the following conditions:
(a) Short circuit between signal lines A and B.
(b) Short circuit between signal lines A and B and the cable shield.
(c) Shield continuity.
(d) Cross-wired signals lines.
(e) Terminator installed in wrong position.
(f) Poor transmission or reception levels.
(g) Non-permissible stub line.
(4) Examine the data traffic between the controller and each agent device.
(5) Verify baud rate meets specified requirements.
(6) Confirm signal level meets specified requirements.
(7) Verify network cycle time meets specified requirements.
(8) Generate agent device list.
(9) Verify and record scanner diagnostic data, including node status and error codes.
(10) Monitor and capture network waveform.

(11) Measure and record power supply voltage at active terminations.

f) Submit corrective measures recommendations based on the results of the inspections and testing.

g) Engineer approval of the network installation validation and testing Submittal is required before proceeding to network operations validation and testing.

4) Network operations testing:

a) Performed by the Contractor/ICSC, network tester, and the Owner's representative ,and programmer working together.

b) General requirements:

(1) Network performance is monitored and measured using non-intrusive test equipment and procedures in accordance with the referenced standards:

(a) Profibus networks.

(2) Modifications required as a result of network operations validation and shall be in accordance with the applicable standards from Profibus organization, North America, PTO.

c) Online evaluation:

(1) Confirm specified agent devices appear on the live list.

(2) Evaluate data traffic between controller and each agent to confirm proper agent configuration and performance.

(3) Inspect waveform capture for evidence of excessive noise.

(4) Evaluate and report any failed or questionable network tests.

(5) Evaluate and report network error codes and related symptoms.

d) Network operations validation and testing report:

(1) Prepare a report that documents the results of the qualification and testing activities, including, but not limited to, the following:

(a) Document the installed condition of the network and provide baseline values for future network maintenance and testing activities.

(b) Executive summary for each network, including the following:

- Inspection and test results for each network.
- Calculated network parameters.
- Recommendations.
- Description of test procedures and required test equipment.
- Network agency specifications.

(c) Manufacturer's specifications and guidelines:

- Include applicable manufacturer's specifications and guidelines.
- May supersede the specifications of the applicable governing body for the associated network but at a minimum must meet the governing body's requirements.

e) Submit final report of the industrial network testing to the Engineer upon successful completion of the testing.

5) Engineer approval of the industrial network testing Submittals is required before proceeding to CEET.

f. Complete End-to-End Testing (CEET):
   1) Performed by the Contractor, ICSC, and the manufacturer's representative ,and Carollo programmer working together, with assistance from the Owner or the inspection staff, as needed:
      a) Participants need to be dedicated full-time to CEET.
      b) ICSC will provide staff to verify input signals at, and create output signals from, an HMI or engineering workstation.
      c) Contractor and ICSC will be responsible for creating field signals and verifying proper operation of final control elements.
   2) Prerequisites:
      a) CEET cannot begin until the successful completion of the preceding tests:
         (1) Calibration.
         (2) Loop check.
         (3) Loop validation tests.
         (4) Copper Ethernet cable acceptance testing.
         (5) Industrial network testing.
   3) Testing description:
      a) This testing is to ensure I/O signals operate to the intent of the design from the field device to the HMI and all other auxiliary controls and indicators in the PCS.
      b) Connect PLC to the network to test signals from the field device through the PLC program, the network, and to the operator's HMI graphic screens. Outputs will be energized for a duration long enough to verify proper operation of the final control element.
      c) SCADA screens:
         (1) Test and record operator commands and signal readouts to each operator device where there is more than one operator interface point.
         (2) For each signal, perform separate tests for SCADA computer screens, local operator interface (LOI) screens, and local control panels.
         (3) Retest any loop following any necessary corrections.
   4) Check control loops under simulated operating conditions by causing a range of input signals at the primary control elements and observing appropriate responses of the respective control and monitoring elements, final control elements, and the graphic displays associated with the HMI/SCADA system:
      a) Use actual process inputs wherever available.
      b) Issue commands from the HMI/SCADA system and verify proper responses of field devices:
         (1) Test SCADA system inputs from field device to SCADA system operator workstations:
            (a) Track responses through trend charts in the HMI/SCADA system.
         (2) Test SCADA system outputs from SCADA operator workstations to field devices and equipment.

5) Discrete device testing:
    a) Exercise each field device providing a discrete input to the HMI/SCADA system in the field and observe the proper operation shall be observed at the operator workstation:
        (1) Test limit switches, set limits mechanically, and observe proper operation at the operator workstation.
        (2) Exercise starters, relay contacts, switch contacts, and observe proper operation.
        (3) Calibrate and test instruments supplying discrete inputs and observe proper operation.
    b) Test each device accepting a discrete output signal from the HMI/SCADA. Perform the appropriate operator action at the SCADA operator stations (including LOIs, if present) and confirm the proper operation of the field device:
        (1) Stroke valves through outputs from the HMI/SCADA system and confirm proper directional operation. Confirm travel limits and any feedback signals to the HMI/SCADA system.
        (2) Exercise motors starters from the HMI/SCADA system and verify proper operation through direct field observation.
        (3) Exercise solenoids and other field devices from the HMI/SCADA system and verify proper operation through direct field observation.
6) Analog device testing:
    a) Apply continuously variable up and down analog inputs to verify the proper operation and setting of discrete devices (signal trips, etc.).
    b) Apply provisional settings on controllers and alarm setpoints.
7) Analog input:
    a) Exercise each field device monitoring the analog signal, through the HMI/SCADA system:
        (1) Apply simulated sensor inputs corresponding to 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of span for networks that incorporate analog elements and monitor the resulting outputs to verify compliance to accuracy tolerance requirements.
8) Analog output:
    a) Exercise each field device requiring an analog command signal, through the HMI/SCADA system:
        (1) Vary the output from the PLC HMI/SCADA system and measure the end device position, speed, etc., to confirm the proper operation of the device for the supplied analog signal.
        (2) Manually set the output from the HMI/SCADA screen at 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent and measure the response at the final device and at any intermediate devices.
9) Submit completed test forms:
    a) Discrete instrument input devices:
        (1) Switch setting, contact action, and dead band.

(2) Valve position switches:
(a) Response in the PLC as the valve is stroked from the PLC.
(b) Field observed actual valve position, and valve indicator position as the valve is stroked from the PLC.
(3) Operator interface switches (control stations and other pilot devices) and associated response.
(4) Starter and drive auxiliary device contact response.
(5) Response of all other discrete inputs to the PLC.
(6) Test equipment used and associated serial numbers.

b) Discrete output devices:
(1) Observed response of field device to the discrete output from the PLC.
(2) Observe the proper operation of Open, Close, Start, Stop, On, Off, etc.
(3) Test equipment used and associated serial numbers.

c) Analog input devices:
(1) Calibration range.
(2) Calibration data: Input, output, and error at each test value.
(3) Analog input associated PLC register address.
(4) Value in PLC register at each test point.
(5) Value displayed at each operator interface station (local operator interface displays and SCADA workstations).
(6) Test equipment used and associated serial numbers.

d) Analog output devices:
(1) Calibration range.
(2) Test value at each test point.
(3) Analog output associated PLC register address.
(4) Control variable value at field device at each test point.
(5) Physical device response at each test point:
(a) Response to be actual valve position, or motor speed, etc.
(6) Test equipment used and associated serial numbers.

10) Failure testing:
a) Demonstrate how the system reacts and recovers from abnormal conditions, including, but not limited to:
(1) Equipment failure.
(2) Communications sub-system error.
(3) Power failure.
(4) Process equipment failure.
(5) High system loading conditions.

11) Engineer approval of the CEET Submittals is required before proceeding to Functional Testing.

4. Functional Testing:
a. General:
1) Testing to demonstrate proper operation of systems with process equipment operating over full operating ranges under conditions as closely resembling actual operating conditions as possible.
2) Performed by the Contractor, ICSC, and the manufacturer's representative ,and programmer working together, with assistance from the Owner or the inspection staff, as needed.

3) Additional tests are specified in other instrumentation and control Sections.
4) Follow approved detailed test procedures and check lists for Functional test activities.

b. Control logic operational validation:
1) The purpose of control logic validation is to field test the operation of the complete control system, including all parts of the HMI/SCADA system, control panels (including vendor control panels), control circuits, control stations, monitored/controlled equipment, and final control elements.
2) Demonstrate control functionality shown on the P&IDs, control schematics, and other drawings, and specified in the loop descriptions, control strategies, electrical Specifications, and mechanical equipment Specifications.
3) Test in detail on a function-by-function and sentence-by-sentence basis.
4) Thoroughly test hardware and software functions, including hardwired and software control circuit interlocks and alarms.
5) Test final control elements, controlled equipment, control panels, and ancillary equipment under startup, shut down, and steady-state operating conditions to verify logic and control is achieved.
6) Control logic validation tests to include, but not be limited to, a repeat of control logic tests from the FAT, modified and expanded to include field instruments, control panels, circuits, and equipment.
7) Functional certification:
a) Including test forms with test data entered, submitted to the Engineer with a clear and unequivocal statement that Functional test requirements have been satisfied.

C. Process Start-up Phase:
1. Process Start-up:
a. ICSC and Programmer shall be on site to support process Start-up activities and provide functional changes as required.
2. Process operation period:
a. ICSC and Programmer shall be available to support process operational period and provide functional changes as required:

3.03 SCHEDULES

A. Example test forms:
1. Attached at the end of this Section. They may be used as a starting point for the development of project-specific test forms for this Project.
2. Not intended to be complete or comprehensive. Edit and supplement the forms to meet the requirements for testing and test forms specified in this Section and other Contract Documents.

END OF SECTION

ATTACHMENT A - FACTORY ACCEPTANCE TEST - CONTROL PANELS

	FACTORY ACCEPTANCE TEST - CONTROL PANELS	

1. GENERAL INSPECTION

A. Structural Inspection

- ☐ Verify lifting lugs installed.
- ☐ Verity enclosure has lock and lock is functional.
- ☐ Confirm that seismic bracing components are provided in accordance with manufacturer's installation instructions.

B. Exterior Inspection

- ☐ Cabinet exterior is clean, scratch, and dent free.
- ☐ Inspect externally for corrosion and damage.
- ☐ Verify enclosure door opens and closes easily.
- ☐ Verify enclosure has a 3-point latch.
- ☐ Verify enclosure has a flange mounted disconnect (where voltages greater than 120 VAC enter the cabinet).
- ☐ Verify enclosure has the appropriate NEMA rating (1, 1G, 12, 3R, 4, 4X, etc.).
- ☐ Verify enclosure is the appropriate size (not grossly larger than design, and will still fit in the plant).

Nameplates

- ☐ Cabinet has identification nameplate.
- ☐ All door labels are straight, spelled correctly, and match the tagging defined in the Contract.
- ☐ Cabinet has a nameplate that includes the following:
  - ☐ Power source(s).
  - ☐ Integrator's logo.
  - ☐ Circuit ID(s).
  - ☐ Short Circuit KAIC ratings.
- ☐ If labels are screwed to door, silicone was utilized to cover screw holes. (Labels screwed to the door of a NEMA 4/4X panel technically violates the NEMA rating.)

Door Devices

- ☐ All devices penetrating the outside of panel have gaskets, silicone or both.
- ☐ All door devices are installed (HMIs, Pilot Devices, etc.).
- ☐ Door mounted equipment is mounted straight and square.
- ☐ All exterior or door mounted equipment present and accounted for, installed and securely fastened.
- ☐ NEMA classification has not been violated due to penetrations.
- ☐ Door mounted equipment has the same NEMA rating as the panel.
- ☐ All door mounted equipment installed at the correct height.
- ☐ All door mounted equipment installed in the correct positions and order (layout of door mounted equipment is grouped properly and in a logical manner).
- ☐ Doors with multiple penetrations have adequate bracing (if needed).
- ☐ Visually check condition of indicators, controllers, and annunciators.
- ☐ Check that pilot lights illuminate correctly.
- ☐ Check the Push-To-Test function.
- ☐ Ensure correct pilot light color.

Peripheral Devices

- ☐ Horn/Beacon is installed (where required).
- ☐ Silence and Reset pushbutton.

PROJECT NAME:		TEST DATE:	
FACILITY NAME:		TESTED BY:	
PROCESS AREA:		COMPANY:	
NETWORK ID:		PAGE:	
WITNESSED BY:		SIGNATURE:	

	FACTORY ACCEPTANCE TEST - CONTROL PANELS	

1. GENERAL INSPECTION (continued)

C. Interior Inspection

- ☐ Cabinet is cleaned of marks and dirt.
- ☐ Inspect internally for corrosion and damage.
- ☐ Back panel is clean of marks and dirt.
- ☐ Interior of panel vacuumed and shall be free of all debris.
- ☐ Check that the panel roof is clean and clear of foreign materials.
- ☐ Bottom of panel has been cut out (where bottom entry is required), with angle iron welded around the bottom perimeter. Re-painting has been performed.
- ☐ If internal light door limit switch is provided, ensure the light automatically turns “on” when the doors are open.
- ☐ Check that a document pocket has been provided.
- ☐ Intrusion alarms (where required).

Interior Labeling

- ☐ All panel mounted equipment has identification labeling, by using either a Brothers or Phenolic type tags.
- ☐ Verify that door mounted components are mounted square and symmetrical.
- ☐ Verify that nameplates are straight, legible, and spelled correctly.
- ☐ All terminal blocks are identified/labeled with permanent labels, including tight end blocks and caps.
- ☐ All wiring shrink labeled and or phased correctly to the specifications.
- ☐ All wire labels shrunk completely rotated and aligned alike for easy identification.
- ☐ All fuses and circuit breakers are labeled with ID and current rating.
- ☐ System Integrator’s label or labels installed on door.
- ☐ Panel manufacturer model/serial number tag is present.
- ☐ All required safety/warning tags installed and straight.
- ☐ Correct UL (typically UL 508) or cUL tag installed and registered and all other associated tags installed and straight. (The UL tag might not be installed in the panel at the factory test. If the panel is modified due to changes during the factory test or a punch list generated from the factory test, the UL labeling would need to be re-applied. Some UL shops do not apply the UL label until the panel is released to be shipped.)

Wireways

- ☐ Plastic wire way covers installed properly.
- ☐ Plastic wireways have no sharp edges.
- ☐ No wire ties inside the wireways.
- ☐ No sharp edges on wire ties.
- ☐ Separation: White duct is used for DC voltages; Gray duct is used for AC voltages.
- ☐ Ensure wiring duct is not over-full, includes provision for 20% more wiring and the cover may easily be installed. Panduit recommends 50% duct fill, but 40% is a better practice.

PROJECT NAME:	_____	TEST DATE:	_____
FACILITY NAME:	_____	TESTED BY:	_____
PROCESS AREA:	_____	COMPANY:	_____
NETWORK ID:	_____	PAGE:	_____
WITNESSED BY:	_____ SIGNATURE:		_____

	FACTORY ACCEPTANCE TEST - CONTROL PANELS	

1. GENERAL INSPECTION (continued)

C. Interior Inspection (continued)

Wiring

- ☐ Visually check terminals and condition of internal wirings.
- ☐ Verify that the control panel has been assembled and wired as designed.
- ☐ Verify that all components are operational and perform the functions intended.
- ☐ Verify that all components are sized appropriately for the application.
- ☐ Verify that equipment control circuits function as intended.
- ☐ Back of door wiring is labeled and neatly formed.
- ☐ Back panel to door wiring has sufficient bending radius with spiral wrap.
- ☐ Wire connection has been verified wired to correct points within the panel.
- ☐ Individual wires have been given a pull test to verify a good terminal connection.
- ☐ Wire and cable minimum bending radius have not been violated.
- ☐ All equipment installed straight and square to back panel.
- ☐ Wire colors are correct:
  - ☐ Black and White > AC hot and neutral, respectively.
  - ☐ Red > AC control signals.
  - ☐ Blue > DC power and control (Blue w/White stripe for DC ground).
  - ☐ Yellow > Foreign voltages (those still present when panel power is disconnected).
  - ☐ Green > AC equipment ground.
  - ☐ Black > TSP (+).
  - ☐ White > TSP(-).
- ☐ Analog wiring shields are continuous (connected by a dedicated terminal block for such shields).
- ☐ Analog shield wires are grounded within the panel, where not otherwise grounded at the transmitter itself.
- ☐ Discrete inputs are separately fused or protected by a circuit breaker on a “per loop” basis.
- ☐ Intrinsic Safety Wiring.
  - ☐ Ensure wiring associated with intrinsic safety circuits or intrinsic safety barriers is kept away from all other wiring by UL minimum distances or by a physical (grounded metal) barrier preventing non-intrinsically safe wiring from coming in contact with intrinsically safe circuits or wiring.
- ☐ Verify all spare terminals are installed according to the percentage listed in the specifications.

Grounding

- ☐ Equipped with “Blackburn” or other grounding type lug.
- ☐ Lug is securely fastened to the panel structure.
- ☐ Verify grounding bar is installed.
- ☐ Verify isolated ground bar is installed.

PROJECT NAME:	_____	TEST DATE:	_____
FACILITY NAME:	_____	TESTED BY:	_____
PROCESS AREA:	_____	COMPANY:	_____
NETWORK ID:	_____	PAGE:	_____
WITNESSED BY:	_____	SIGNATURE:	_____

	FACTORY ACCEPTANCE TEST - CONTROL PANELS	

2. POWER TEST

A. AC Power

- ☐ AC power is routed correctly within the panel and is isolated from DC and network wiring.
- ☐ All fuses are installed and sized properly.
- ☐ All breakers are installed and sized properly.
- ☐ 24 VDC Power Supplies are functional.
- ☐ 24 VDC Power fail contacts are functional.
- ☐ 24 VDC power supplies are redundant and have diode modules enabling the hot swap-over between supplies.
  - ☐ 24 VDC supplies are equipped with dry contact failure alarms, wired as PLC inputs to signal failure of any DC power supply. Such alarm inputs to the PLC have been tested as being functional.
- ☐ Dedicated receptacle is wired to receive a dedicated AC supply.
- ☐ Verify continuity for all DC commons, ground and AC neutrals.
- ☐ Verify that the CP temporary input power is connected correctly and is the correct voltage.
- ☐ Close the CP main circuit breaker(s).
- ☐ Verify that voltages at subsequent circuit breakers are correct.
- ☐ Close circuit breakers.
- ☐ Verify that power feeding interruptible and uninterruptible power supplies is correct.
- ☐ Turn on power supplies if they are not already on.
- ☐ Verify that voltages at distribution terminals are correct.
- ☐ Energize any remaining hardware such as the PLC.

B. Uninterruptible Power Supply (UPS)

- ☐ Mounted appropriately within the cabinet, on a dedicated shelf, or rear of a swing-out sub panel.
- ☐ Is equipped with maintenance bypass switch (or at least plug/receptacle means for bypassing the unit).
- ☐ Test all UPS alarms (on inverter, failure, battery failure etc.).
- ☐ Turn off the AC power supply and verify that the UPS will be switched on to supply the designated vital loads in the control panel.

3. CONTROLS & AUXILIARY DEVICES TEST

- ☐ Verify all interposing and auxiliary relays are functioning.
- ☐ Verify panel lights are functioning.

Ventilation and Heating

- ☐ If ventilation fans are fitted, check the fans operate correctly any associated air filters are clean and not blocked.
- ☐ Verify components are installed in the correct orientation for proper air flow.

4. HARDWIRED INTERLOCK AND SAFETY TEST

- ☐ Verify that hardwired interlocks through the control panel as shown on schematic drawings are functioning. For example, outlet high pressure switch interlock to a pump.
- ☐ Verify that all hardwired safety devices through the control panel is functioning. For example, the pull cord emergency stops of conveyors.

PROJECT NAME:	_____	TEST DATE:	_____
FACILITY NAME:	_____	TESTED BY:	_____
PROCESS AREA:	_____	COMPANY:	_____
NETWORK ID:	_____	PAGE:	_____
WITNESSED BY:	_____ SIGNATURE:		_____

5. PLC TEST

A. Components

☐ PLC interior High Temperature alarm is installed, wired to the PLC, and is shown to be functional.

☐ Relays have transient suppression across their coils. This is particularly important for DC coil relays, where diodes in reverse polarity are often used.

☐ TVSS is installed across the main incoming 120 VAC.

PLC and PLC Rack

☐ Verify all cards are securely seated.

☐ Ensure clearance around PLC rack has been met, such that convective heat transfer is not impeded by devices erroneously mounted in the “no encroachment” area. Confirm with manufacturer clearance recommendations.

B. PLC I/O Test

☐ Furnish **I/O test forms** and test all the listed input and output points as follows:

☐ Discrete Inputs: Simulate a field contact closure by “shorting” across the appropriate terminal blocks. Observe the transition between a logical “0” and “1” in the PLC software.

☐ Discrete Outputs: Force the output bit to toggle between logical “0” and logical “1” using the PLC software. Measure contact resistance at the wired terminal blocks using a digital meter selected for the “ohms” setting.

☐ Analog Inputs: Connect a signal generator to the appropriate terminal blocks. Tailor the connection depending on whether a 2-wire or 4-wire simulation is required. Modulate the 4-20mA signal. Observe the associated PLC internal memory register to transition between 0-65535 or if scaled in engineering units, between 0 and the maximum scaled engineering unit. The latter method is preferred.

☐ Analog Outputs: Force the output register to a value between 0-65535 or 0-100%, if the scaling block can be manipulated. Observe the measured 4-20mA value increment and decrement using a digital ammeter.

C. Redundant Controllers (where required) Test

☐ Remove Communication cable from primary PLC to verify switching to backup PLC.

☐ Remove Communication cable from backup PLC to verify switching back to primary PLC.

☐ Remove Power cable from primary PLC to verify switching to backup PLC.

☐ Remove Power cable from backup PLC to verify switching back to primary PLC.

D. PLC Control Logic Verification

☐ The PLC control strategy is verified by following the Control Logic Verification Form based on the specifications. Each control strategy will be verified by simulating the process and checking the state or value of PLC outputs. The results of equipment status and alarms and process instrument values and trends shall also be verified on the Plant SCADA graphic screens stored in a temporary SCADA computer. Since all PLC input and output wiring has been verified and some field devices are not available during Factory Acceptance Testing, certain inputs will be simulated either by means of additional hardware and/or software as described below.

☐

☐

☐ DI states are either simulated by hardwired switches or forced inputs using a programming terminal.

☐ For example, when starters and drives are not provided as part of the Contract, jumpers may be installed from the output call relays to the running confirmation inputs to simulate the running state of the motors.

PROJECT NAME:	_____	TEST DATE:	_____
FACILITY NAME:	_____	TESTED BY:	_____
PROCESS AREA:	_____	COMPANY:	_____
NETWORK ID:	_____	PAGE:	_____
WITNESSED BY:	_____	SIGNATURE:	_____

5. PLC TEST (continued)

D. PLC Control Logic Verification (continued)

Typical Fault Logic

- ☐ If the fault input is high and the disable (if applicable) for the fault is not high and the common disable (if applicable) is not high begin timing. If any of these conditions changes, stop timing and reset the timer. If the timer reaches its preset, activate the alarm output. If the fault alarm is a shutdown alarm stop the associated motor and latch the alarm so that it remains present even if the condition clears.
- ☐ The fault condition must return to normal and the alarm must be reset for a latched alarm to clear.

Typical Fail to Start Logic

- ☐ If the motor is called to run (call output high) and no running feedback is received (running input is low) and the fail to start and common alarm disables (if applicable) are not high start timing. If any of these conditions changes, stop timing and reset the timer. If the timer reaches its preset, activate the alarm output, stop calling the motor and latch the alarm.

6. HMI OR OIT TEST

HMI/OIT Functionality

- ☐ Communication with PLC.
- ☐ Screen Layouts.
- ☐ Screen Navigation.
- ☐ Set Point Entry.
- ☐ Animation.
- ☐ Color Correctness (Green=Run, Red=Off, Amber=Alarm, or the agreed upon convention).
- ☐ Alarms.
- ☐ Acknowledge and Reset.
- ☐ Security/Access Levels/Passwords.

7. NETWORK COMMUNICATION TEST

A. Network Components

- ☐ Fiber optic cabling terminates in a patch panel.
- ☐ Media converters are installed and functional.
- ☐ Terminating resistors have been installed for trunk/tap topologies or where required.
- ☐ Wire and cable bending limitations have not been violated.

B. Networking Functions

- ☐ Verify data transfer via the network to different PLCs as shown on the Network Block Diagrams.
- ☐ Verify network traffic rate and error margin is acceptable.

PROJECT NAME:		TEST DATE:	
FACILITY NAME:		TESTED BY:	
PROCESS AREA:		COMPANY:	
NETWORK ID:		PAGE:	
WITNESSED BY:		SIGNATURE:	

	FACTORY ACCEPTANCE TEST - CONTROL PANELS	

8. FAT DOCUMENTATION AND RECORD

Panel Documentation

- ☐ As-built panel drawings showing actual panel construction and devices arrangement and c/w Bill of Material.
- ☐ Panel schematic and interconnection drawings.
- ☐ P&ID drawings and schematic drawings for the process area controlled by the panel that is to be tested.
- ☐ I/O list test forms of the process area to be tested.
- ☐ FAT procedure of the process area to be tested.
- ☐ Test record forms of the process area to be tested. Forms shall include area for signature of responsible test personnel.
- ☐ Hard copy of the PLC application program of the process area to be tested.
- ☐ Hard copy of the HMI/OIT graphic screens of the process area to be tested.

9. FAT TOOLS AND SOFTWARE

- ☐ Simulation software if required.
- ☐ Digital volt meter Fluke 87.
- ☐ Process meter Fluke 787.
- ☐ Laptop computer with PLC application program.
- ☐ Temporary SCADA computer with HMI software and applicable graphic screens.
- ☐ Jumper wires.

PROJECT NAME:	_____	TEST DATE:	_____
FACILITY NAME:	_____	TESTED BY:	_____
PROCESS AREA:	_____	COMPANY:	_____
NETWORK ID:	_____	PAGE:	_____
WITNESSED BY:	_____ SIGNATURE:		_____

ATTACHMENT B - INSTALLATION AND CERTIFICATION CHECKLIST DOCUMENTATION

	INSTALLATION AND CERTIFICATION CHECKLIST DOCUMENTATION	

INSTRUMENT LOOP NO. _____

SERVICE DESCRIPTION _____

A COPY OF LATEST ISSUE OF THE FOLLOWING DOCUMENTS ARE INCLUDED IN THIS INSTRUMENT INSTALLATION CERTIFICATION FILE:

☐ INSTRUMENT SPECIFICATION SHEETS (FOR ALL INSTRUMENTS IN THE LOOP)

☐ INSTRUMENT INSTALLATION DETAILS (FOR ALL INSTRUMENTS IN THE LOOP)

☐ INSTRUMENT LOOP WIRING DIAGRAMS

☐ INSTRUMENT INSTALLATION CERTIFICATION CHECKLIST

☐ SIZING CALCULATIONS

☐ INSTRUMENT INSTALLATION SCHEDULE (APPLICABLE PART)

☐ NAMEPLATE SCHEDULE (APPLICABLE PART)

☐ VENDOR LITERATURE CALIBRATION INFORMATION

	☐ No	☐ Yes
INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS?		

REMARKS: _____

CHECKED BY (COMPANY) _____ ACCEPTED BY (COMPANY) _____

SIGNATURE _____ SIGNATURE _____

DATE _____ DATE _____

ATTACHMENT C - SWITCHES INSTALLATION AND CALIBRATION CHECKLIST

	SWITCHES INSTALLATION AND CALIBRATION CHECKLIST	

INSTRUMENT LOOP NO. _____

SERVICE DESCRIPTION _____

CHECK BELOW, WHEN COMPLETED:

☐ BENCH CALIBRATED PER SPECIFICATION SHEET NO. _____

☐ VERIFIED PER P&ID NO. _____

☐ CORRESPONDS TO SPECIFICATION SHEET NO. _____

☐ WIRING CORRECT PER INSTRUMENT LOOP DRAWING NO. _____

☐ INSTALLATION CORRECT PER DETAIL NO. _____

☐ ACCESSORIES ARE PRESENT AND PROPERLY INSTALLED

☐ INSTRUMENT IS ACCESSIBLE FOR MAINTENANCE OR REMOVAL

☐ ENGRAVED LAMINATED NAMEPLATE (NO SPELLING ERRORS) PERMANENTLY INSTALLED

	☐ No	☐ Yes
INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS?		

FIELD CALIBRATION CHECK

CONTACT NO.	FUNCTION	FOR SIGNAL	CONTACT IS TO	AT SPECIFIED VALUE FOR		ACTUAL TRIP POINT WAS	
1	☐ ALARM	☐ INCR	☐ OPEN	SET PT =		SET PT =	
	☐ S/D PERM	☐ DECR	☐ CLOSE	RESET =		RESET =	
2	☐ ALARM	☐ INCR	☐ OPEN	SET PT =		SET PT =	
	☐ S/D PERM	☐ DECR	☐ CLOSE	RESET =		RESET =	
3	☐ ALARM	☐ INCR	☐ OPEN	SET PT =		SET PT =	
	☐ S/D PERM	☐ DECR	☐ CLOSE	RESET =		RESET =	
4	☐ ALARM	☐ INCR	☐ OPEN	SET PT =		SET PT =	
	☐ S/D PERM	☐ DECR	☐ CLOSE	RESET =		RESET =	

NOTE: PERM IS ABBREVIATION FOR PERMISSIVE

	SWITCHES INSTALLATION AND CALIBRATION CHECKLIST	

REMARKS: _____

CHECKED BY (COMPANY) _____ ACCEPTED BY (COMPANY) _____

SIGNATURE _____ SIGNATURE _____

DATE _____ DATE _____

ATTACHMENT D - TRANSMITTER/CONTROLLER/INDICATOR INSTALLATION AND CALIBRATION CHECKLIST

	TRANSMITTER/CONTROLLER/INDICATOR INSTALLATION AND CALIBRATION CHECKLIST	

☐ ☐

INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS? No Yes

INSTRUMENT TYPE ☐ TRANSMITTER ☐ CONTROLLER ☐ INDICATOR

☐ OTHER DESCRIPTION _____

INSTRUMENT TAG NO. _____ SERIAL NO. _____

SERVICE DESCRIPTION _____

BENCH CALIBRATION CHECK

INPUT RANGE = _____ OUTPUT RANGE = _____

HEAD CORRECTION = _____ ☐ LINEAR

CALIBRATED SPAN = _____ ☐ SQUARE ROOT

% CALIB SPAN	DESIRED VALUE	ACTUAL VALUE	EXPECTED VALUE	ACTUAL VALUE
0				
50				
100				

CHECK BELOW, WHEN COMPLETED:

☐ BENCH CALIBRATED PER SPECIFICATION SHEET NO. _____

☐ VERIFIED PER P&ID NO. _____

☐ CORRESPONDS TO SPECIFICATION SHEET NO. _____

☐ WIRING CORRECT PER INSTRUMENT LOOP DRAWING NO. _____

☐ INSTALLATION CORRECT PER DETAIL NO. _____

☐ ACCESSORIES ARE PRESENT AND PROPERLY INSTALLED

☐ INSTRUMENT IS ACCESSIBLE FOR MAINTENANCE OR REMOVAL

☐ ENGRAVED LAMINATED NAMEPLATE (NO SPELLING ERRORS) PERMANENTLY INSTALLED

FIELD CALIBRATION CHECK

INPUT RANGE = _____ OUTPUT RANGE = _____

% CALIB SPAN	DESIRED VALUE	ACTUAL VALUE	EXPECTED VALUE	ACTUAL VALUE
0				
50				
100				

	TRANSMITTER/CONTROLLER/INDICATOR INSTALLATION AND CALIBRATION CHECKLIST	

☐ DIRECT ☐ REVERSE

☐ ACTION VERIFIED AT 50% SPAN

☐ ACTION VERIFIED AT _____ SPAN

CONTROLLER SETTINGS								
SETTING	**GAIN**	**PB**	**RESET (INTEGRAL)**	**DERIV. (RATE)**	**HIGH LIMIT**	**LOW LIMIT**	**ELEV. ZERO**	**ZERO SUPP**
PRE-TUNE								
POST-TUNE								

PRE-TUNE SETTINGS					
	GAIN	**PB**	**RESET (REPEAT/MIN)**	**RESET (MIN/REPEAT)**	**DERIVATION (MINUTES)**
FLOW	1.0	100	10	0.1	N/A
LEVEL	1.0	100	MIN.	MAX.	N/A
PRESSURE	2.0	50	2.0	0.5	N/A
TEMP.	4.0	25	0.1	10	OFF

REMARKS _____

CHECKED BY (COMPANY) _____ ACCEPTED BY (COMPANY) _____

SIGNATURE _____ SIGNATURE _____

DATE _____ DATE _____

ATTACHMENT E - ANALYZERS INSTALLATION AND CALIBRATION CHECKLIST

	ANALYZERS **INSTALLATION AND CALIBRATION CHECKLIST**	

☐ No ☐ Yes

INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS?

TYPE OF INSTRUMENT _____

INSTRUMENT TAG NO. _____ SERIAL NO. _____

SERVICE DESCRIPTION _____

CHECK BELOW, IF TRUE

☐ BENCH CALIBRATED PER SPECIFICATION SHEET NO. _____

☐ VERIFIED PER P&ID NO. _____

☐ CORRESPONDS TO SPECIFICATION SHEET NO. _____

☐ WIRING CORRECT PER INSTRUMENT LOOP DRAWING NO. _____

☐ INSTALLATION CORRECT PER DETAIL NO. _____

☐ ACCESSORIES ARE PRESENT AND PROPERLY INSTALLED

☐ INSTRUMENT IS ACCESSIBLE FOR MAINTENANCE OR REMOVAL

☐ ENGRAVED LAMINATED NAMEPLATE (NO SPELLING ERRORS) PERMANENTLY INSTALLED

REMARKS _____

CHECKED BY (COMPANY) _____ ACCEPTED BY (COMPANY) _____

SIGNATURE _____ SIGNATURE _____

DATE _____ DATE _____

ATTACHMENT F - CONTROL VALVES
INSTALLATION AND CALIBRATION CHECKLIST

	CONTROL VALVES INSTALLATION AND CALIBRATION CHECKLIST	

☐ No ☐ Yes

INSTRUMENT LOOP IS PART OF EQUIPMENT START-UP/SHUTDOWN INTERLOCKS?

☐ VALVE TAG NO. _____ SERIAL NO. _____

☐ TRANSDUCER TAG NO. _____ SERIAL NO. _____

☐ SOLENOID TAG NO. _____ SERIAL NO. _____

☐ VOLUME BOOSTER TAG NO. _____ SERIAL NO. _____

☐ POSITIONER _____ SERIAL NO. _____

SERVICE DESCRIPTION _____

TRANSDUCER CHECK					
INPUT RANGE =			OUTPUT RANGE =		
CALIBRATED SPAN =			CALIBRATED SPAN =		
BENCH					
SPAN	**DESIRED**	**ACTUAL**	**SPAN**	**EXPECTED**	**ACTUAL**
0%			0%		
50%			50%		
100%			100%		
FIELD					
SPAN	**DESIRED**	**ACTUAL**	**SPAN**	**EXPECTED**	**ACTUAL**
0%			0%		
50%			50%		
100%			100%		

CHECK BELOW, IF TRUE:

☐ BENCH CALIBRATED PER ABOVE _____

☐ VERIFIED PER P&ID NO. _____

☐ CORRESPONDS TO SPECIFICATION SHEET NO. _____

- ☐ VALVE SPECIFICATION NO. _____
- ☐ TRANSDUCER SPECIFICATION NO. _____
- ☐ SOLENOID SPECIFICATION NO. _____

☐ WIRING CORRECT PER INSTRUMENT LOOP DRAWING NO. _____

☐ INSTALLATION CORRECT PER INSTRUMENT INSTALLATION DETAILS _____

- ☐ VALVE DETAIL NO. _____
- ☐ TRANSDUCER DETAIL NO. _____
- ☐ SOLENOID DETAIL NO. _____

	CONTROL VALVES INSTALLATION AND CALIBRATION CHECKLIST	

☐ ACCESSORIES ARE PRESENT AND PROPERLY INSTALLED

☐ INSTRUMENT IS ACCESSIBLE FOR MAINTENANCE OR REMOVAL

☐ ENGRAVED LAMINATED NAMEPLATE (NO SPELLING ERRORS) PERMANENTLY INSTALLED

VALVE CHECK			
FLOW CHECK	☐ PROCESS FLOW DIRECTION THROUGH THE VALVE IS CORRECT		
SAFETY CHECK	ON LOSS OF AIR VALVE FAILS ☐ OPEN ☐ CLOSE	ON LOSS OF POWER SOLENOID FAILS ☐ TO VENT ☐ TO VALVE	
TRAVEL CHECK	FULL OPEN AT _____ PSI	FULL CLOSED AT _____ PSI	MEASURED TRAVEL _____ INCHES
SEATING CHECK	☐ ON BENCH ☐ IN-LINE	RESULTS	ACTUATOR BENCH SET
POSITIONER CHECK			
VALVE FULL OPEN AT _____ PSI TO POSITIONER _____			
VALVE FULL CLOSED AT _____ PSI TO POSITIONER _____			
VOLUME BOOSTER CHECK			
BYPASS VALVE (GAIN) ADJUSTING SCREW BACKED OUT _____ TURNS FROM CLOSED TO ENSURE QUICK BUT STABLE OPERATION (TYPICALLY 1-1/2 TO 2 TURNS)			

REMARKS _____

CHECKED BY (COMPANY) _____ ACCEPTED BY (COMPANY) _____

SIGNATURE _____ SIGNATURE _____

DATE _____ DATE _____

RESOLUTION NO. 25-099

APPROVING A DESIGN-ASSIST CONSTRUCTION AGREEMENT, BY AND BETWEEN AUBURN CONSTRUCTORS, LLC, AND THE CITY OF ROSEVILLE, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a Design-Assist Construction Agreement for the Aquifer Storage and Recovery Wells 13 (Campus Oaks) and 19 (Misty Wood) Project, by and between Auburn Constructors, LLC, and the City of Roseville, has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said agreement is hereby approved.

BE IT FURTHER RESOLVED that the City Manager, or his designee, is authorized to approve change orders for the project, consistent with the contract terms, provided that the net cost of all change orders shall not exceed ten percent (10%) of the contract price.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

CITY OF ROSEVILLE CALIFORNIA

CONTRACT DOCUMENTS FOR

DESIGN-ASSIST AND CONSTRUCTION OF AQUIFER STORAGE AND RECOVERY WELLS 13 (CAMPUS OAKS) AND 19 (MISTY WOOD) PROJECT

VOLUME 2 of 4:
SAMPLE CONTRACT
RFP #08-135

INCLUDING:

Agreement and Agreement Exhibits

Note: Final Executed Agreement will be conformed to all Addenda and incorporate final negotiations with Contractor prior to award of Agreement

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DESIGN-ASSIST CONSTRUCTION AGREEMENT
AQUIFER STORAGE AND RECOVERY WELLS
13 (CAMPUS OAKS) AND 19 (MISTY WOOD)

This Design-Assist Construction Agreement ("Agreement") is made and entered into on this _____day of _____ , 20____, by and between the CITY of Roseville, a municipal corporation ("CITY"), Auburn Constructors, LLC (CSLB License #1043407), a California limited liability company (hereinafter referred to as "CONTRACTOR").

RECITALS

WHEREAS, the CITY issued a Request for Letter Proposal for the design-assist construction of two (2) aquifer storage and recovery wells, known as the "Aquifer Storage and Recovery Wells 13 (Campus Oaks) and 19 (Misty Wood) Project" (hereinafter "Project"); and

WHEREAS, CONTRACTOR has submitted a Proposal to CITY, dated February 5, 2025, attached hereto and made a part hereof as Exhibit B – Contractor's Proposal, and CITY desires for CONTRACTOR to provide the design assist and construction services as set forth in this Agreement; and

WHEREAS, CONTRACTOR is ready, willing and able to perform the aforementioned services required in accordance with the terms and conditions of this Agreement; and

NOW, THEREFORE, CITY and CONTRACTOR agree as follows:

ARTICLE 1 - DEFINITIONS OF LANGUAGE USED, WORDS AND TERMS

Where used in the Contract Documents, the following words and terms shall have the meanings indicated. The meanings shall be applicable to the singular, plural, masculine and feminine of the words and terms.

The Contract Documents include the terms "as allowed," "as approved," "as ordered", "as directed" or terms of like effect to authorize an exercise of professional judgment by the CITY, Construction Manager or Engineer. The adjectives/terms "reasonable," "suitable," "acceptable," "proper," "satisfactory," and "of like effect" are used to describe an action or determination of the CITY, Construction Manager or Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term is not intended to and shall not be effective to assign to CITY, Construction Manager or Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority contrary to the other provisions of the Contract Documents.

Specification Section Paragraphs entitled "Section Includes" summarize briefly what is generally included in the section. Requirements of Specifications are not limited by "Section Includes" paragraphs.

Specifications and Drawings have been partially streamlined by intentionally omitting words and phrases, such as "the Contractor shall," "in conformity therewith," "shall be" following "as indicated," "a," "an," "the" and "all." The phrases "by CITY's Representative", "by Engineer", and "by Construction Manager" modify words such as "accepted," "directed," "selected," "inspected," "permitted," "submit",

"report", and "satisfactory" when they are unmodified. Words "Contractor shall" are implied when direction is stated.

Colons (:) are used to introduce a list of particulars, an amplification, or an illustrative quotation. When used after designation of product, colons are used in place of words "shall be."

Whether the term or phrase is capitalized or in all capitals (for example, Contractor or CONTRACTOR) in the Contract Documents shall be deemed to be the same for purposes of the Definitions of Language Used, Words and Terms.

1.1. **"Agreement" or "Contract"** means this Design-Assist Construction Agreement, its exhibits, and all amendments and/or modifications hereto executed by the parties. The defined terms "Contract" and "Agreement" may be used throughout interchangeably and should be considered as one in the same defined term.

1.2. **"Allowance" or "Construction Allowance"** is an amount of money set aside under the Contract for a special purpose identified and defined in the Contract Documents. Voluntary Allowance items are described by Contractor in Exhibit C – Guaranteed Maximum Price, Fee, and Cost of Work and are included in the total GMP.

1.3. **"Applicable Laws"** means all laws, codes, ordinances, rules and regulations of **governmental** authorities having jurisdiction over the Site and/or the Work.

1.4. **"Application for Payment"** means the document prepared by CONTRACTOR and **submitted** to CITY showing CONTRACTOR's entitlement to progress payments, the requirements of which are more fully described in Article 8 hereof.

1.5. **"Architect/Engineer"** means a licensed professional(s) (and/or entity(ies)) retained by CITY, who provides architectural, design and/or engineering services as may be required by the Work. The Architect/Engineer shall be registered in the State of California and the architect and/or engineer of record for the Work pursuant to their design responsibilities. The Architect/Engineer may be substituted or replaced at the discretion of CITY.

1.6. **"Asbestos"** is any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

1.7. **"Authorized Representatives"** means the Design-Assist Team and those individuals appointed by CITY and CONTRACTOR from time to time in accordance with the provisions of Article 4.2.1.

1.8. **"Beneficial Occupancy" or "Beneficial Occupation"** is a term that can be used to describe a distinct portion of the Work, that in the CITY's Representative's opinion, is capable of being used for its intended purpose, even though it may have some minor deficiencies, including outstanding punch list items to complete.

1.9. **"Business Day"** means any day when the office of the CITY Clerk of the CITY of Roseville is open for business.

1.10. **"Certificate of Substantial Completion"** means a certificate prepared by CONTRACTOR in accordance with Article 8.13 and forwarded to CITY.

1.11. **"Certificate of Final Completion"** means a certificate prepared by CONTRACTOR and forwarded to CITY stating that the Project is finally complete and that CONTRACTOR is entitled to Final Payment in accordance with Article 8.14 hereof.

1.12. **"Change Directive", "Change Order", or "Construction Change Directive (CCD)"** is a written order prepared by the Construction Manager and signed by the CITY, directing a change

in the Work and stating a proposed basis for adjustment, if any, in the Contract GMP amount or Contract Time.

1.13. **"Change Proposal"** means a proposal for a Change Order submitted by CONTRACTOR to CITY, either at the request of CITY, or at CONTRACTOR's own initiative.

1.14. **"City"** refers to the City of Roseville, the governing body of which is termed the "City Council".

1.15. **"City's Representative"** is the person(s) designated by the Director of the CITY's Environmental Utilities Department who has been duly authorized to exercise control and supervision of the Work. A CITY's Representative generally will be either a professional engineer or architect, depending on the nature of the Work, but is not required to be a professional engineer or architect. The CITY may change the individual(s) acting as the CITY's Representative(s), or delegate one or more specific functions to one or more specific CITY's Representative at any time without notice and without liability to Contractor. Each CITY's Representative is the beneficiary of all Contractor obligations to CITY, including without limitation, all releases and indemnities

1.16. **"Claim".** A demand or assertion by the Contractor seeking an adjustment of the GMP or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

1.17. **"Construction Documents"** means the plans and specifications prepared by the Design Assist Team for the Project, approved by CITY, and incorporated into this Agreement by reference after such approval, to be used to construct the Project. The Construction Documents shall set forth in detail all items necessary to complete the construction of the Project in accordance with the Contract Documents (subject to their completion following commencement of the Construction Phase). All amendments and modifications to the Plans and Specifications must be approved by CITY prior to incorporation into this Agreement. CONTRACTOR's attention is hereby directed to the confidentiality requirements of Article 2.12.

1.18. **"Construction Consultant".** The CITY may retain a Construction Consultant(s) as it deems necessary to assist/advise the CITY staff and/or other CITY consultants during the progress of the Work. Any Construction Consultant retained by CITY for this Project will not have any formal contract administration responsibilities. The Construction Consultant(s) is the beneficiary of all Contractor obligations to CITY, including without limitation, all releases and indemnities.

1.19. **"Construction Manager"** is the person designated, in writing, by the CITY to act as its representative at the Site and to perform administrative functions relating to this Agreement. The Construction Manager shall also furnish inspection services as provided by the contract between the Construction Manager and the CITY. All contact between the Contractor and the CITY shall be through the Construction Manager; unless otherwise specified or directed. Only the CITY may modify the Agreement. The CITY may assign all or part of the CITY's Representative's duties, rights and responsibilities to the Construction Manager. The Construction Manager is the beneficiary of all Contractor obligations to CITY, including without limitation, all releases and indemnities.

1.20. **"Construction Phase"** means the period beginning with the issuance of the Construction Notice to Proceed (NTP) and ending on the date of Final Completion of the Project.

1.21. **"Construction Work"** means that portion of the Work consisting of the provision of labor, materials, equipment and services in connection with the construction of the Project as set forth in the Contract Documents.

1.22. **"Contingency Costs"** means those items of Cost of the Work attributable to a contingency for

which CITY is responsible and which are payable by CITY to CONTRACTOR pursuant to a Change Order as provided in Article 9.7-CHANGE ORDERS ON ACCOUNT OF CONTINGENCIES.

1.23. **"Contract"** means this Design-Assist Construction Agreement, its exhibits, and all amendments and/or modifications hereto executed by the parties. The defined terms "Contract" and "Agreement" may be used throughout interchangeably and should be considered as one in the same defined term.

1.24. **"Contract Documents"** means 1) this document (Agreement) and its Exhibits,2) the Technical Specifications, and 3) Project Drawings, all of which form the entire integrated agreement between CITY and CONTRACTOR. In the event of a conflict between any of these documents, this Agreement controls, followed by its Exhibits.

1.25. **"Contract Time"** The number of days or the dates stated in the Agreement to: (i) achieve Milestones, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Construction Manager's written recommendation of final payment. See Exhibit H - COMPLETION TIMES AND LIQUIDATED DAMAGES.

1.26. **"Contractor"** means the individual or entity identified in the preamble to this Agreement.

1.27. **"Contractor's Plant and Equipment"** means the equipment, material, supplies and all other items, except labor, brought onto the Site by the Contractor to carry out the Work, but not to be incorporated in the Work.

1.28. **"Contractor Event of Default"** shall have the meaning set forth in Article 14.1 hereof.

1.29. **"Cost of the Work"** consists of those items of Work, which are paid for by CITY to CONTRACTOR, and consist of those categories of costs set forth as allowable on Exhibit C.

1.30. "**County**" refers to Placer County where the Site is located.

1.31. **"CPM"** means a critical path method schedule in the form of precedents, networks and time sequences.

1.32. **"Day" or "Days"** means calendar days, including legal holidays, Saturdays and Sundays, unless specifically noted otherwise. The day shall be 24 hours measured from midnight to the next midnight.

1.33. "**Defective Work**" refers to Work that does not meet the requirements of the Contract Documents and has been identified to the Contractor by the Construction Manager in writing because the Work:

a. Does not meet the requirements of or conform to the Contract Documents; or

b. Does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. Has been damaged prior to Construction Manager's or Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by CITY as of the Substantial Completion date in accordance with the Contract Documents).

Punch list or other minor corrective items of work that are not in compliance with the Contract Documents do not meet to the definition of "Defective Work" as used in these Contract Documents. For work to be deemed "Defective Work," the Construction Manager must have notified the Contractor in writing of a defective item of the Work.

1.34. **"Design-Assist Team"** includes the following: Architect/Engineer; CONTRACTOR; and/or

others as coordinated by CONTRACTOR and CITY.

1.35. **"Design Development Documents"** means the drawings, specifications and other documents prepared by the Design-Assist Team for CITY's review and approval prior to the preparation of the Construction Documents. The Design Development Documents shall illustrate the scale and relationship of Project components, outline the nature and structural exterior and three dimensional scale of the Project and shall fix and describe in detail the configuration and character of the Project concerning all items of the Project necessary for the complete and final preparation of the Construction Documents in accordance with the requirements of the Contract Documents, including architectural and electrical systems, materials and such other elements as may be appropriate. CONTRACTOR's attention is hereby directed to the confidentiality requirements of Article 2.12.

1.36. **"Design Materials"** means any and all documents, shop drawings, electronic information, data, plans, drawings, sketches, illustrations, specifications, descriptions, models and other information developed, prepared, furnished, delivered or required to be delivered by CONTRACTOR to CITY under the Contract Documents or developed or prepared by CONTRACTOR specifically to discharge its duties under the Contract Documents. CONTRACTOR's attention is hereby directed to the confidentiality requirements of Article 2.12.

1.37. **"Design-Assist Work"** means that portion of the Work consisting of the design-assist services required to be provided in connection with the Architect/Engineer's design of the Project as set forth in the Contract Documents, which shall be performed consistent with the standards of care set forth herein.

1.38. "**Direct**" is an action of the CITY or Construction Manager by which the Contractor is ordered to perform or refrain from performing work under the Agreement.

1.39. "**Drawings**", also referred to as "**Plans**" are that part of the Contract Documents consisting of the graphical and technical requirements of the Agreement as included on the plan, profile, section and detail sheets, included in a response to Request for Information or any revisions issued by Engineer. Drawings, or reproductions thereof, show the location, character, dimensions and details of the Work to be done. Shop drawings and other Contractor submittals are not Drawings as so defined.

1.40. "**Engineer**". The engineer, architect or specialty design consultant designated by the CITY to have design control over the Work or a specified portion of the Work, acting either directly or through duly authorized representatives. Such representatives shall act within the scope of the particular duties delegated to them. The Engineer may also furnish inspection services as provided by the Agreement. The Engineer may also be referred to as the "CITY's Representative" if the definition is used in an Engineer role and capacity. The CITY may assign all or part of the CITY's Representative's duties, rights and responsibilities to the Engineer. The Engineer is the beneficiary of all Contractor obligations to CITY, including without limitation, all releases and indemnities.

1.41. **"Equipment"** (Construction) is all machinery and equipment, together with the necessary supplies for upkeep and maintenance, including tools and apparatus necessary for the proper construction and acceptable completion of the Work contemplated. Equipment (Installation) is all material or articles used in equipping a facility or apparatus required to fulfill a functional design.

1.42. **"Execution"** means field or site performance, workmanship, installation, erection, application, field fabrication, quality control, and protection of installed products on the Site.

1.43. **"Excusable Delay"** shall have the meaning set forth in Article 7.3.3.

1.44. **"Extra Work"** is new or unforeseen work, or added work of a different character or function; or that involves revisions of the details of the Work on which Contractor based its GMP. If the extra work increases the Contractor's Cost of the Work and/or time to perform the Work, and is approved by the CITY via a written Change Order, the GMP and/or Contract Times shall be adjusted as provided in the Contract Documents. Extra Work shall not include Work which is shown, detailed or specified in the Contract Documents or which constitutes "Incidental Work" as defined within the Contract Documents definition below.

1.45. **"Fee"**, if applicable, means the fee payable to CONTRACTOR pursuant to this Agreement and as part of the GMP, if shown on Exhibit C – GUARANTEED MAXIMUM PRICE, COST OF WORK AND FEE attached hereto.

1.46. **"Field Directive"** is a change in the scope of the Agreement that does not cause an increase in the Cost of the Work, nor an adjustment to the GMP or the Contract Time(s), unless the Construction Manager determines the Field Directive warrants a Change Order.

1.47. **"Field Order"** is a written instruction given to the Contractor by Construction Manager authorizing work that is a change to the scope of Work to be performed on a time and material basis or a lump sum cost agreed to between CITY and the Contractor and documented in a Change Order.

1.48. **"Final Acceptance"** is the formal approval by CITY in accepting a portion of the Contractor's work as completed.

1.49. **"Final Completion"** means the date when the work is 100% complete in accordance with the terms and conditions of the Contract Documents, including completion of all Punch list items as certified by the Construction Manager.

1.50. **"Force Majeure"** includes industry wide or nationwide labor dispute (excluding labor shortage), fire, unusual delay in transportation or delivery, unavoidable casualty, flood (assuming CONTRACTOR has taken reasonable precautions), earthquake, epidemic, civil disturbance, war, freight embargo, riot, sabotage (by persons other than CONTRACTOR or Subcontractors), material shortage or any other similar act or condition, in each case only to the extent the event in question is beyond the reasonable control of and without the fault or negligence of CONTRACTOR. It is expressly agreed that the following matters shall not constitute Force Majeure:

a. Lack of or inability to use funds for any reason;

b. Any occurrence which results from the wrongful act, or wrongful omission, of the affected party, or the failure by the affected party to act in a prudent and proper manner and in accordance with good and accepted industry practices;

c. Any failure by the affected party to reach agreement with any third party necessary to enable the affected party to perform its obligations under this Agreement;

d. An event or circumstance, where the event or circumstance, or its effects on the affected party, or the resulting inability of the affected party to perform its obligations could have been prevented, overcome or remedied by the exercise by the affected party of the standard of care and diligence consistent with that of a reasonable and prudent person;

e. Breakdown of Contractor's Equipment;

f. Strike or industrial action of Contractor's employees or those of subcontractors; or

g. Adverse weather conditions including, without limitation, wet weather, unless the

weather is unusually severe for the Site.

1.51. **"Governmental Approvals"** means those CITY approvals necessary for the completion of the Project, including, but not limited to, modification of existing zoning, vacation of certain streets and/or alleys, and modifications to or variances from applicable building or zoning regulations.

1.52. **"Guaranteed Maximum Price"** or **"GMP"** means the amount set forth on Exhibit C-GUARANTEED MAXIMUM PRICE, FEE, AND COST OF WORK hereto, which may be increased or decreased in accordance with the provisions of the Contract Documents.

1.53. **"Hazardous Materials"** means those items identified on Exhibit E-HAZARDOUS MATERIALS hereto.

1.54. **"Holidays"** are the legal holidays as designated by the CITY including: New Year's Day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, the day after Thanksgiving and Christmas Day.

1.55. **Incidental Work.** Incidental work includes reasonably implied parts of the not shown on Drawings nor described in Specifications, but which is necessary or normally or customarily required as a part of the Work shown on the Drawings or described in the Specifications to provide a complete installation which is fully connected and tied into the existing facilities and processes and is fully functional and operational. Incidental work shall be treated as if fully described in Specifications and shown on Drawings, and expense thereof shall be included in the GMP. Incidental work shall be performed by Contractor and included in the Cost of the Work without an increase in the GMP.

1.56. **"Indemnified Parties"** includes, but is not limited to, CITY, its agents, officers, employees, and volunteers.

1.57. **"Inspector"** shall mean the person(s), firm(s), or agency(ies) employed by the CITY to perform inspection during construction of the Work, under the direction of the Construction Manager. It shall also mean any representative of the CITY who will perform inspections of the Work for code compliance and quality assurance reporting in addition to those inspections performed by the CITY's Representative and/or the Engineer. Said inspector may be the Construction Manager or may be another representative of the CITY.

1.58. **"Liquidated Damages"** means the damages payable by CONTRACTOR to CITY in the event CONTRACTOR does not achieve project Milestones Final Completion of the Project by the date required on the Schedule, as adjusted, as more fully described in Article 7.5 and Exhibit H-COMPLETION TIMES AND LIQUIDATED DAMAGES hereof.

1.59. **"Modification"** means an amendment to this Agreement executed by the parties after the date hereof.

1.60. **"Non-Excusable Delay"** shall have the meaning set forth in Article 7.3.2.

1.61. **"Notice of Completion"** is the formal action taken by the CITY in determining that the Contractor's Work has been completed, or as delegated pursuant to a CITY Council resolution, accepting the Work as fully completed. The written notice is signed by the CITY and filed with the County Recorder.

1.62. **"Notice to Proceed"** (NTP) is the written notice given by the CITY to the Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

1.63. **"Or Equal"** means any product, equipment, material, thing, service, mean/method or service which is proposed by the Contractor for use in the Work, which is equal to or better than, and is

as suitable as the product, equipment, material, thing, service, mean/method or service specified in the Contract Documents as to function, performance, reliability, quality, schedule and general configuration. Any "or equal" substitutions must be approved by the CITY.

1.64. **"Owner"** refers to the CITY, or authorized representative as approved by the CITY.

1.65. **"Party"** shall mean CITY or CONTRACTOR individually, and **"Parties"** shall mean CITY and CONTRACTOR collectively.

1.66. **"Payment and Performance Bonds"** means the payment bond and performance bond issued by an admitted Surety covering the faithful performance and completion of the Construction Work, including payment for all materials and labor furnished or supplied in connection with the Construction Work, by CONTRACTOR. Such bonds shall be in the form described in Exhibit G-BOND FORMS.

1.67. **"Plans".** See "Drawings".

1.68. **"Project"** means the design and construction of the project described in the Recitals, together with all on-site infrastructure, site improvements and appurtenances to be designed, constructed and installed in connection therewith, as more fully set forth and described in the Contract Documents and as required thereby or reasonably inferred therefrom.

1.69. **"Project Manager"** means the person assigned by the Director of the CITY's administering department to monitor the Project and Work.

1.70. **"Proposal"** is the offer of a Proposer to perform the Work pursuant to completed prescribed Bid Proposal requirements and forms, properly executed and guaranteed, and timely submitted.

1.71. **"Punch List"** means those minor items of Work to be completed after Substantial Completion and prior to Final Completion, which do not prevent the Project from being used for the purpose for which it is intended and which will not prevent beneficial occupancy or use.

1.72. **"Reference Specifications"** are those standards, rules, method of tests or analysis, codes, and specifications of other agencies, engineering societies, or industrial associations referred to in the Contract Documents.

1.73. **"Request for Information"** also referred to as "Request for Clarification". A Request for Information (RFI) is issued by the Contractor to the Construction Manager requesting additional information necessary to clarify or amplify an item in the Contract Documents that the Contractor believes is not clearly shown or called for in the Drawings or Specifications or other portions of the Contract Documents, or to address problems which have arisen under field conditions. A RFI is not to be used for request for materials/equipment substitutions or value engineering/cost reduction incentive proposals.

1.74. **"Request for Quotation"** is a request for a proposed cost made to the Contractor by the CITY to add, delete or change the Work. A Request for Quote (RFQ) shall not be deemed to be a direction to proceed with any addition, deletion or change to the Work.

1.75. **"Retention"** means the amount withheld from progress payments from CITY to CONTRACTOR from time to time, as more fully described in Article 8.6-RETENTION, ESCROW AGREEMENT, FINAL PAYMENTS hereof.

1.76. **"Samples"** refers to physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

1.77. **"Schedule"** means the schedule pursuant to the Proposal and/or other Contract Documents to which CONTRACTOR has agreed to complete the Work. The Schedule shall be adjusted

pursuant to the provisions of the Contract Documents. In the event the Schedule is not contained within the Proposal, then CONTRACTOR shall provide to CITY, within fifteen (15) days of issuance of a Notice To Proceed by CITY, with a complete milestone schedule identifying, among other things, critical paths (if any) and total calendar days until Substantial and Final Completion. In the event the Schedule is contained in the Proposal, the start of the Schedule shall be adjusted by the CONTRACTOR to reflect the date of the Notice To Proceed.

1.78. **"Scheduled Date of Substantial Completion"** means the date CONTRACTOR has agreed to achieve Substantial Completion of the Project in accordance with the Schedule, as adjusted.

1.79. **"Scope Change Costs"** means those items of Cost of the Work attributable to changes in scope of the Work and payable by CITY to CONTRACTOR pursuant to a Change Order, as provided in Article 9-CHANGES IN THE WORK.

1.80. **"Separate Contractors"** means those individuals or entities (including, but not limited to, concessionaires) who have entered into arrangements with CITY for the provision of labor, materials or other services in connection with the Project.

1.81. **"Shop Drawings (Submittals)"** are drawings, diagrams, illustrations, schedules, performance charts, instructions, brochures, and other data which are prepared by the Contractor or any subcontractor, manufacturer, supplier, or distributor and which illustrate some portion of the Work.

1.82. **"Site"** is the real property on which the Project will be located.

1.83. **"Specifications"** are that part of the Contract Documents consisting of written descriptions of the technical features of materials, equipment, construction systems, standards, and workmanship.

1.84. **"Specify"** refers to information described, shown, noted or presented in any manner in any part of the Agreement.

1.85. **"State"** is the State of California.

1.86. **"State of California Specifications"** are the State of California Department of Transportation Standard Specifications in effect as documented in the Specifications and/or Drawings. Also referred to as State Standard Specifications and Caltrans Standard Specifications.

1.87. **"Subcontract"** means an agreement between CONTRACTOR and another person or entity engaged to perform a portion of the Work.

1.88. **"Subcontractor"** means an individual or entity who has entered into an agreement with CONTRACTOR or another Subcontractor for the provision of labor, materials or other services required to be performed by CONTRACTOR under the Contract Documents.

1.89. **"Subcontractor-KEY".** Key subcontractors are defined as a subcontractor who will perform greater than or equal to twenty-five percent (25%) of the GMP.

1.90. **"Subcontractor-MAJOR".** Major subcontractors are defined as a subcontractor who will perform greater than five percent (5%) of the GMP.

1.91. **"Subcontractor-LISTED"**. Listed subcontractors are defined as a subcontractor who will perform greater than one half percent (>0.5%) of the GMP.

1.92. **"Submittals"** are the information which is specified for submission to the Construction Manager in accordance with the Contract Documents.

1.93. **"Substantial Completion"** means the stage in the progress of the Work when the Work or a designated portion thereof is sufficiently complete in accordance with the Contract Documents

so that CITY may use the Project for its intended purpose. Determination of Substantial Completion is solely at the discretion of the CITY. Substantial Completion does not mean complete in accordance with the Agreement nor shall Substantial Completion of all or any part of the Project entitle the Contractor to Final Completion under the Agreement.

1.94. **"Surety"** means one or more issuers of the Payment and Performance Bonds, each of which shall be admitted and licensed to do business in the State of California.

1.95. **"Surveyor"** means a land surveyor licensed in the State of California.

1.96. **"Trade Names".** Where a certain product is called by its Trade Name, it is intended as a guide for type and quality.

1.97. **"Typical Details"** are details of standard structures, devices or instructions referred to on the Plans and Specifications by title or number and developed by the Engineer.

1.98. **"Underground Facilities"** means all underground pipelines, including but not limited to, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electrical, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

1.99. **"Unit Price Work"** is work to be paid for on the basis of unit prices.

1.100. **"Utility"** is a public or private fixed works for, including but not limited to, the transportation of fluids, gasses, power, signals, or communications.

1.101. **"Work"** or **"Scope of Work"** means the Project, inclusive of all labor, materials and services required to be performed or provided by CONTRACTOR officers, employees, agents, Subcontractors or Suppliers pursuant to the provisions of this Agreement and its Exhibits.

1.102. **"Work Day".** A working day is defined as any day, except Saturdays, Sundays and CITY's Legal Holidays. Any work scheduled by the Contractor on non-working days (Saturdays, Sundays, and CITY Legal Holidays) shall be verified with the CITY at least 72 hours in advance. Depending on the circumstances, the CITY may request Contractor compensation for inspection work, at an hourly rate, for any work performed on non-working days and for overtime.

ARTICLE 2 - SCOPE OF WORK / PROJECT REQUIREMENTS

2.1 Scope of Work Summary

The CITY, in conjunction with its Engineer and other consultants, developed the Design-Assist and Construction Contract Documents for the Aquifer Storage and Recovery 13 (Campus Oaks) and 19 (Misty Wood) Project. The work includes but is not limited to, Construction of two (2) Aquifer Storage and Recovery well facilities including; new concrete masonry unit (CMU) block Well building, well pump, piping, valving, and equipment, chemical feed systems, mechanical systems including down-hole flow control valve, electrical switchgear, instrumentation and controls, Contractor Design Assist Responsibilities, and all other structural, mechanical, civil, and ancillary systems in support of the Project, including asset management, startup and testing to provide a complete integrated and operational system in all respects.

Based on the 60% Design Level Drawings and Partial Draft Technical Specifications provided to the contractor, and in accordance with the Contract Documents, the Contractor is a Design-Assist Team

member with responsibility to complete the following design assist activities. Coordination with other members of the Design-Assist Team will be required; the City, Engineer, Construction Manager and possibly other personnel that have regulatory or funding authority.

A. Conduct a constructability review of the 60% Design Level Drawings and Partial Draft Technical Specifications, and submit comments and identified mitigation solutions to the City.

B. Identify cost savings and added value alternative design/construction solutions and submit to the City for evaluation.

C. Develop detailed cost estimates for identified alternatives when requested by City for the City's evaluation.

D. Identify construction sequencing and the impacts of the identified alternatives on the sequencing.

E. Develop a detailed schedule and the impacts of the identified alternatives on the schedule.

F. Participate in a cooperative partnership relationship with City, Engineer, and Construction Manager to develop a comprehensive construction plan to address project risk and minimize existing facility disruptions.

G. Participate in up to eight (8) Final Design Coordination Meetings lasting up to four (4) hours each to present and work collaboratively to allow for issuance of the Project Drawings and Specifications for construction.

Note that the Engineer is the entity professionally responsible for the design of the Project. City acknowledges that Contractor is a general contractor and not an architect or engineer. Except with respect to any subcontractors of Contractor providing architectural or engineering services for the Project as design-build work, the Contractor's review of or input for any design documents, or Contractor's recommendation for any design concepts, is made solely in Contractor's capacity as a licensed contractor and not as a licensed design professional. Contractor is not responsible for any errors in the Engineer's design or failure of the design to comply with applicable laws, codes, rules and regulations, or lawful orders of public authorities. However, if Contractor observes any such nonconformity or errors it shall promptly notify City's Representative and the Engineer.

2.2 Performance of Work

CONTRACTOR shall perform the Work in accordance with this Agreement. CONTRACTOR covenants and agrees that it shall be responsible for performing and completing, and for causing all Subcontractors to perform and complete, the Work in accordance with the Contract Documents, standard professional and trade practices, Local Ordinances, and Applicable Laws. CONTRACTOR covenants that the Work and the materials provided thereunder shall be appropriate for the purposes stated in the Request for Proposal and Proposal. Although it is the responsibility of CONTRACTOR to conform the Work to Applicable Laws at all times, to the extent there is a change in one or more Applicable Laws after the date of execution of this Contract, and such change has the effect of increasing the cost or time of performance of the Work, such change may be the subject of a Change Order under the provisions of Article 9- CHANGES IN THE WORK hereof.

2.3 Standards of Performance

The Work shall be performed by CONTRACTOR in accordance with the professional standards applicable to projects, buildings or work of complexity, quality and scope comparable to the Work and the Project. CONTRACTOR may make such additions or substitutions to personnel and responsibilities

as it deems necessary or appropriate in order to carry out its responsibilities hereunder, provided such personnel shall be suitably qualified. Nothing in this Agreement shall be construed to create any contractual liability with CITY toward any Subcontractor.

2.4 Execution, Correlation and Intent

2.4.1 Execution of Agreement.

Execution of this Agreement by CONTRACTOR is a representation that CONTRACTOR has visited the Site, become familiar with the local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

2.4.2 Intent of Contract Documents.

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by CONTRACTOR. The Contract Documents are complementary and what is required by one shall be as binding as if required by all; performance by CONTRACTOR shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. Any work, materials or equipment that may reasonably be inferred from the requirements of the Contract will be furnished and performed whether or not specifically called for. When words or phrases that have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning

2.4.3 Organization of Material.

Organization of the Design Materials into divisions, sections and articles, and arrangement of drawings does not necessarily control CONTRACTOR in dividing the Construction Work among Subcontractors or in establishing the extent of Construction Work performed by any trade.

2.4.4 Resolving Conflicts

In resolving conflicts resulting from errors or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:

A. Permits from other agencies specifically required for the performance of the Work as may be required by law,

B. Supplemental Agreements and Change Orders, the one dated later having the precedence over another dated earlier,

C. Agreement,

D. General Requirements (Division 1),

E. Technical Specifications (Division 2 and all other Divisions following),

F. Contract Drawings,

G. City of Roseville's most current version of Construction Standards and Design Standards and Amendments to the Current Version,

H. Other Referenced Standard Specifications, and

I. Other Referenced Standard Plans.

With reference to the Drawings, the order of precedence is as follows:

A. Addenda/Change Order drawings govern over any other drawings,

B. Enumerated dimensions govern over scaled dimensions,

C. Detail drawings govern over general drawings, and

D. Contract Drawings govern over standard drawings/plans.

The provisions of the Contract Documents shall take precedence over any Laws or Regulations applicable to the performance of the work unless such an interpretation of the provisions of the Contract Documents would result in a violation of such Law or Regulation.

2.4.5 Meaning of Words

Unless otherwise stated in this Agreement, words which have well-known technical or construction industry meanings are used in accordance with such recognized meanings.

2.5 Contractor Services and Facilities

2.5.1 General.

CONTRACTOR shall provide everything required for the orderly progress and proper execution and completion of the Work and the Project in accordance with the requirements of the Contract Documents, whether temporary or permanent and whether or not incorporated or to be incorporated into the Work, including, but not limited to, services, labor, materials, equipment, furnishings, tools, construction equipment and machinery, utilities, transportation and other facilities and services.

2.5.2 Supervision

CONTRACTOR shall supervise and direct the Work in accordance with its best skill and attention. CONTRACTOR shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures. CONTRACTOR shall be responsible to CITY for the acts and omissions of, and whenever this Contract refers to the negligence, fault or omission of CONTRACTOR, such term shall include the negligence, fault or omission of, CONTRACTOR's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under an agreement with CONTRACTOR. CONTRACTOR shall not be relieved of obligations to perform the Work in accordance with the Contract Documents by tests, inspections or approvals required or performed by persons other than CONTRACTOR.

2.5.3 Coordination

CONTRACTOR shall coordinate construction requirements with Governmental agencies, utilities, and all other parties either involved in infrastructure improvements or otherwise affected by the design and construction requirements.

2.5.4 Design-Assist Development Coordination

CONTRACTOR understands and agrees that all Design Development Documents and time schedules prepared by Architect/Engineer must be coordinated with CONTRACTOR and CITY. CONTRACTOR shall participate and provide recommendations in the development of the drawings and other documents to fix and describe the size and character of the Project in its entirety as to structural, and electrical systems, materials and other essentials in CONTRACTOR's capacity as a general contractor and not as a design professional, focusing on constructability and cost implications of the evolving design.

2.5.5 Construction Documents Coordination. [reserved]

2.5.6 Cooperation

CONTRACTOR shall cooperate with the Architect/Engineer, and CITY's financial, design and construction consultants and all other designated representatives during the design and construction of the Project.

2.5.7 Management

CONTRACTOR shall implement suitable management systems and work plans for the Project relative to Project safety, quality assurance and managing and controlling the Work.

2.5.8 Reports

CONTRACTOR shall prepare and submit to CITY monthly progress reports on the Work accomplished during the previous monthly period, which reports shall be prepared in a manner and in a format reasonably acceptable to CITY. Such reports shall be furnished at the time of submission of each monthly Application for Payment. As part of such report, CONTRACTOR shall provide an updated Schedule, including CPM, if any, illustrating the progress that has been made, by reference to the initial CPM, and specifying whether the Work is on schedule or behind schedule and actions being taken to correct Schedule slippage. The monthly report shall also set forth CONTRACTOR's projected progress for the forthcoming month.

2.6 Labor and Materials; Liens (Stop Payment Notice Claims); Indemnity

Unless otherwise provided in the Contract Documents, CONTRACTOR shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. CONTRACTOR shall enforce strict discipline and good order among CONTRACTOR's employees, subcontractors, and other persons carrying out the Work. CONTRACTOR shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

CONTRACTOR shall not permit any Subcontractor, materialman, or laborer to place liens on the Project covering any portion of the Work for which CITY has made payment to CONTRACTOR. If any liens (e.g., stop payment notice claims) are imposed, CITY may withhold payment in the amount of 125% of the claim until such time an unconditional release is provided in a form satisfactory to CITY. CONTRACTOR shall indemnify, defend, and hold harmless CITY regarding any claim or lien that proceeds to, or is the subject of litigation. CITY may withhold payment(s) pending compliance with this provision.

2.7 Local Conditions; Environmental Site Conditions

2.7.1 Local Conditions

CONTRACTOR represents that it has taken steps reasonably necessary to ascertain the nature and location of the Work, and that it has investigated and satisfied itself as to the general and local conditions which are applicable to the Work such as (a) conditions bearing on transportation, disposal, handling and storage of materials; (b) the availability of labor, water, power and roads; (c) normal weather conditions; (d) observable physical conditions at the Site; (e) the surface conditions of the ground; and (f) the character of equipment and facilities needed prior to and during the performance of the Work. To the

extent CONTRACTOR encounters subsurface or concealed conditions which differ materially from that actually known by CONTRACTOR on the date of this Agreement or from those ordinarily found to exist and generally recognized as inherent in the activities of the character provided in the Contract Documents; then CONTRACTOR shall give notice to CITY promptly before conditions are disturbed and in no event later than two (2) Days after the first observance of the conditions if a Change Order is contemplated by CONTRACTOR due to such condition. Such materially different conditions may entitle CONTRACTOR to an equitable adjustment in the GMP and/or Schedule pursuant to the Change Order provisions of this Agreement.

2.7.2 Hazardous Materials

The Parties' agreement as to the handling of Hazardous Materials discovered at the Site (and not brought there by CONTRACTOR or any Subcontractor) is set forth in Exhibit E-HAZARDOUS MATERIALS hereto, and the only duties and responsibilities of CONTRACTOR in connection therewith are as therein specified, notwithstanding any other provision of this Agreement.

2.8 Legal Requirements

CONTRACTOR shall comply with all Applicable Laws, and shall give applicable **notices** pertaining thereto.

2.8.1 Governmental Approvals

CONTRACTOR shall comply with Applicable Laws, and shall give applicable notices pertaining thereto. Except with respect to Governmental Approvals, CONTRACTOR shall prepare and file all documents required to obtain the necessary approvals of governmental authorities having jurisdiction over the Work and/or the Project and shall secure and pay for permits and governmental fees, licenses and inspections necessary for the proper execution of the Work and completion of the Project. Notwithstanding the foregoing, CITY has informed CONTRACTOR that fees in connection with building permits, street use permits, and similar permits relating to construction will be waived and are not to be included in the GMP. If and to the extent charges for such permits are imposed in the future, such charges shall be paid by CITY, or shall be the subject of a Change Order to the Contract in accordance with the Change Order provisions of this Agreement.

2.8.2 Permits, Fees and Notices

Unless otherwise provided in the Contract Documents, and subject to the provisions of Article 2.8-Legal Requirements hereof, CONTRACTOR shall secure all permits, governmental fees, licenses and inspections necessary for the proper execution and completion of the Work. To the extent there is a change in the type or cost of any of such permits, fees, licenses or inspection occurring after execution of this Agreement, there shall be an equitable adjustment in the GMP and Schedule on account of such change in accordance with the Change Order provisions. CONTRACTOR shall comply with and give notices required by Applicable Laws.

2.8.3 Patents, Trademarks, Copyrights

CONTRACTOR shall pay, as a Cost of the Work, all-applicable royalties and license fees on any matters arising in connection with the Work. CONTRACTOR shall defend all suits or claims for infringement of patent, trademark, and copyrights against the Indemnified Parties, and shall save the Indemnified Parties harmless from loss on account thereof for any and all matters arising in connection with the Work or the Project (such costs to be paid as Cost of the Work), except with respect to any particular design process or the product of a particular manufacturer or manufacturers specified and required by CITY, other than

pursuant to the recommendation or suggestion of CONTRACTOR or a subcontractor; provided however, if CONTRACTOR has reason to believe that the design, process or product so specified is an infringement of a patent, CONTRACTOR shall be responsible for any loss resulting unless CONTRACTOR has provided CITY with prompt written notice of CONTRACTOR's belief, and CITY has nevertheless elected to go forward with such design, process or product so specified.

2.9 Warranty

CONTRACTOR warrants to CITY that any and all materials, equipment and furnishings incorporated in the Work will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Construction Work will be free from defects not inherent in the quality required or permitted, and that the Construction Work will conform with the requirements of the Contract Documents. Construction Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective by CITY at its sole discretion.

CONTRACTOR shall warranty the Construction Work for a period of one-year commencing upon recording of the notice of completion. If within this one-year warranty period any of the Work is found to be defective or not in accordance with the requirements of the Contract Documents, CONTRACTOR shall correct it promptly after receipt of written notice from CITY to do so. CITY shall give such notice promptly after discovery of the condition. CONTRACTOR shall bear the cost of correction. CONTRACTOR's attention is directed to Article 11.13-Payment, Performance, and Warranty Bonds and Exhibit G-BOND FORMS regarding Warranty Bond requirements.

2.10 Use of Site.

2.10.1 Beneficial Use

CITY shall be permitted beneficial use of the Work.

2.10.2 Access by CITY

CONTRACTOR shall afford CITY and its authorized designees access to the Project Site at all times, subject to reasonable prior notice for access outside of normal business hours.

2.10.3 Rubbish; Debris; Cleanup

During the performance of all on-site Work, CONTRACTOR shall at all times, as a Cost of the Work, keep the Site and adjacent streets, properties and sidewalks free from waste materials, debris and/or rubbish, and shall employ adequate dust control measures. If accumulation of such materials, debris, rubbish or dust constitutes a nuisance or safety hazard or is otherwise objectionable in the reasonable opinion of CITY, CONTRACTOR shall promptly remove them. Upon Substantial Completion of the Work, or any portion or component thereof, CONTRACTOR shall remove from the Site, or applicable portion thereof, all tools, construction equipment, machinery, surplus materials, waste materials and rubbish and shall leave the Site in a "broom clean" condition. If CONTRACTOR fails to clean up as provided in the Contract Documents, CITY may do so and the cost thereof shall be charged to CONTRACTOR as a Cost of the Work.

2.10.4 Noise and Night Work

CONTRACTOR shall comply with CITY's noise ordinance.

2.11 Taxes

CONTRACTOR shall pay, as Cost of the Work, all existing and future applicable federal, state and local sales, consumer, use and similar taxes, whether direct or indirect, relating to, or incurred in connection with, the performance of the Work (excluding taxes based on CONTRACTOR's income). In the event CONTRACTOR is obligated to pay any new or increased taxes or duties adopted after the date hereof, the amount of such new or increased taxes shall increase the GMP pursuant to the Change Order provisions of this Contract. In the event CONTRACTOR receives the benefit of a tax exemption or tax reduction taking effect after the date hereof, the amount of such exemption or reduction shall decrease the GMP pursuant to the Change Order provisions of this Contract

2.12 Ownership of Documents and Materials, and Confidentiality

CITY shall have unlimited rights to copy and use in connection with the Project all Design Materials, including the right to use same on the Project at no additional cost to CITY, regardless of degree of completion, provided that said services performed have been fully paid for as required by the terms of this Agreement. CONTRACTOR and its Subcontractors shall keep all design documents confidential, and shall not disclose such documents except as may be required in performance of the Work or pursuant to legal process.

2.13 Value Engineering

CONTRACTOR shall suggest to CITY value engineering to reduce the cost of the Project, which CITY may accept at its sole discretion.

2.13.1 Acceptance of Value Suggestions

To the extent that CONTRACTOR provides value engineering suggestions or comments with respect to the Project's design, CITY acknowledges that such services are advisory only and not professional design services. CITY shall refer all such suggestions and comments to the Architect/Engineer for review and evaluation prior to CITY's acceptance thereof. CITY shall cause the Architect/Engineer to revise the Project's design documents to reflect all value engineering suggestions and comments accepted by CITY without delay or disruption to the timely and orderly progress of the Work, including revisions needed to address the impact of an agreed value engineering solution on other portions of the Work. The GMP and Contract Time shall be adjusted by Change Order promptly after CONTRACTOR's review and pricing of the change to the Work reflected in the revised design documents.

2.13.2 Subcontractors Bids

CONTRACTOR shall make recommendations to the Architect/Engineer regarding the appropriate quality of materials, equipment, component systems and types of construction for the most reasonable prices for inclusion in the Construction Documents, and CONTRACTOR shall also recommend to the Architect/Engineer and CITY reasonable adjustments in the scope of the Project so that the total cost bid by the bidding Subcontractors will not exceed the estimate.

2.14 Design Development Documents and Construction Documents.

2.14.1 General

The Design-Assist Team understands that all construction documents, working drawings and specifications must be coordinated with, submitted to, and approved by, CITY prior to construction. CONTRACTOR shall allow CITY a minimum of fourteen (14) days for review of Submittals and corrections made thereto. CONTRACTOR shall work with the Design-Assist Team to prepare, for the approval of CITY, working drawings and specifications setting forth in detail the requirements for the

construction of the Project in its entirety CITY's review of the Design Development Documents and the Construction Documents shall not relieve CONTRACTOR from its responsibilities under this Agreement, or be deemed to be an approval or waiver by CITY of any deviation from, or of CONTRACTOR's failure to comply with, any provision or requirement of the Contract Documents, unless such deviation or failure has been identified as such in writing in the document submitted for approval by CONTRACTOR and approved by CITY. CONTRACTOR shall comply with all CITY construction standards as deemed applicable by the CITY. CONTRACTOR shall provide CITY with a complete, accurate, full size, and current set of as built drawings in a hard copy acceptable to City prior to Final Completion.

The Architect/Engineer is the entity professionally responsible for the design of the Project. CITY acknowledges that CONTRACTOR is a general contractor and not an architect or engineer. Except with respect to any subcontractors of CONTRACTOR providing architectural or engineering services for the Project as design-build work, CONTRACTOR's review of or input for any design documents, or CONTRACTOR's recommendation for any design concepts, is made solely in CONTRACTOR's capacity as a licensed contractor and not as a licensed design professional. CONTRACTOR is not responsible for any errors in the design or failure of the design to comply with applicable laws, codes, rules and regulations, or lawful orders of public authorities. However, if CONTRACTOR observes any such nonconformity or errors it shall promptly notify CITY and the Architect/Engineer.

2.14.2 Reliance on Approvals

CONTRACTOR shall be entitled to rely on the approvals of CITY with respect to the Design Materials. If CITY revokes, modifies or otherwise changes in a material way its approval of a given system after such system has been designed and approved, or modifies the original Scope of Work in a material manner requiring modification to one or more systems which have been designed and approved, CONTRACTOR shall be entitled to a Change Order in accordance with the provisions of Article 9-CHANGES IN THE WORK hereof. No Change Order shall be issued to the extent such modification is due to the fault or neglect of CONTRACTOR.

2.14.3 Review of Contract Documents and Field Conditions

CONTRACTOR shall take field measurements and verify field conditions and shall carefully compare such field conditions and other information known to CONTRACTOR with the Contract Documents before commencing activities. CONTRACTOR shall perform the Work in accordance with the Contract Documents and submittals approved in accordance with the procedures set forth in this Agreement.

2.15 Shop Drawings, Product Data, Samples and Other Submittals.

2.15.1 Documents and Samples at the Site

From and after commencement of the Construction Work, CONTRACTOR shall maintain at the site one (1) record copy of the Construction Documents, and any and all amendments thereto, in good order and marked to record changes and selections made during the Construction Phase. In addition, CONTRACTOR shall maintain at the site approved shop drawings, product data, samples and similar required submittals. These shall be provided to CITY upon completion of the Work.

2.15.2 Shop Drawings

Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by CONTRACTOR, a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

2.15.3 Product Data

Product Data includes illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by CONTRACTOR to illustrate materials or equipment for some portion of the Work.

2.15.4 Samples

Samples are physical examples, which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

2.15.5 Submittals are not Contract Documents.

Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required the way CONTRACTOR proposes to conform the construction to the Construction Documents.

2.15.6 Submission of items listed in Article 2.15.5

Requirements and procedures for submittal of shop drawings, product and equipment data are covered in technical specification section 01322 and 01330.

2.15.7 Responsibility

CONTRACTOR shall not be relieved of responsibility for the deviations from requirements of the Contract Documents by CITY's approval of Shop Drawings, Product Data, Samples or similar submittals unless CONTRACTOR has specifically informed CITY of such deviation at the time of the submittal and CITY has given written approval to the specific deviation. CONTRACTOR shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by CITY's approval thereof.

2.16 Tests and Inspections

2.16.1 Initial Tests and Inspections

Tests, inspections and approvals of portions of the Construction Work shall be made as required by the Contract Documents, Applicable Laws or normal construction practices and/or as directed by CITY. Unless otherwise provided, CONTRACTOR shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to CITY, or with the appropriate public authority. The costs of such tests, inspections and approvals shall be a cost paid by CONTRACTOR. CONTRACTOR shall give CITY timely notice of when and where tests and inspections are to be made so that CITY may observe such procedures. All costs of tests, inspections or approvals imposed upon CONTRACTOR by changes in Applicable Laws occurring after execution of this Agreement shall be an increase to the GMP in accordance with the Change Order provisions herein.

2.16.2 Additional Tests and Inspections

If CITY, or any other public authority having jurisdiction, determines that portions of the Construction Work require additional testing, inspection or approval beyond that required by Article subsection 2.16.1 above, CITY will instruct CONTRACTOR to make arrangements for such additional testing, inspection or approval by an entity acceptable to CITY, and CONTRACTOR shall give timely notice to CITY of when and where tests and inspections are to be made so CITY may observe such procedures. If such additional tests and/or inspections reveal failure of the portions of the Work to comply with the

requirements of the Contract Documents, the costs of such tests and required correction shall be paid as a Cost of the Work, subject to the limitations set forth in Article 2.19-CORRECTION OF WORK hereof. If the additional tests and/or inspections show that the portions of the Work comply with the requirements of the Contract Documents, the costs thereof shall be an increase to the GMP in accordance with the Change Order provisions of this Agreement.

2.16.3 Required Certificates

Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by CONTRACTOR and promptly delivered to CITY.

2.16.4 Timing of Testing

Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

2.17 Cutting and Patching

2.17.1 Cutting and Patching of the Work

CONTRACTOR shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

2.17.2 Damage to Work of CITY or Separate Contractors

CONTRACTOR shall not damage or endanger a portion of the completed Work, fully or partially completed construction of CITY, or work or construction by Separate Contractor(s) by cutting, patching or otherwise altering such construction or work, or by excavation. CONTRACTOR shall not cut or otherwise alter such construction by CITY or a Separate Contractor except with written consent of CITY and of such Separate Contractor, such consent not to be unreasonably withheld.

2.18 Uncovering of Construction Work.

2.18.1 Uncovering

If a portion of the Construction Work is covered contrary to CITY's written request to observe such work prior to it being covered or contrary to requirements of the Contract Documents, it must, if directed in writing by CITY, be uncovered for CITY's observation and be replaced without change in the Schedule or GMP. The costs of such uncovering and replacement shall be Cost of the Work, subject to the limitation set forth in Article 2.19-CORRECTION OF WORK hereof.

2.18.2 Covering of Work Requested to be Observed

If a portion of the Construction Work has been covered, which CITY has not specifically requested to observe prior to being covered, CITY may request to see such Construction Work and it shall be uncovered by CONTRACTOR. If such Construction Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be charged to CITY and shall increase the GMP. An appropriate time extension shall also be given. If such Construction Work is not in accordance with the Contract Documents, CONTRACTOR shall pay such costs as Cost of the Work, unless such condition was caused by CITY or a Separate Contractor in which event CITY shall be responsible for payment of such costs by appropriate Change Order, and an appropriate time extension shall also be given.

2.19 Correction of Work

2.19.1 Work Rejected by CITY

CONTRACTOR shall promptly correct Construction Work rejected by CITY or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. CONTRACTOR shall bear the costs of correcting such rejected Construction Work, as a Cost of the Work, including additional testing and inspection and compensation for services and expenses of CITY made necessary thereby.

2.19.2 Removal of Work

CONTRACTOR shall remove from the Site portions of the Construction Work, which are not in accordance with the requirements of the Contract Documents and are neither corrected by CONTRACTOR nor accepted by CITY. The costs incurred in removing such Work shall be a Cost of the Work, subject to the limitation set forth in Article 2.19-CORRECTION OF WORK hereof.

2.19.3 Failure to Correct Nonconforming Work

If CONTRACTOR fails to correct nonconforming Construction Work within a reasonable time, CITY may correct it in accordance with the terms of this Agreement. If CONTRACTOR does not proceed with correction of such nonconforming Construction Work within a reasonable time fixed by written notice from CITY, CITY may remove it and store the salvageable materials or equipment at CONTRACTOR's expense. If CONTRACTOR does not pay costs of such removal and storage within ten (10) Days after written notice, CITY may, upon ten (10) additional Days written notice, sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by CONTRACTOR, including compensation for services and expenses made necessary thereby. If such proceeds of sale do not cover costs which CONTRACTOR should have borne, CONTRACTOR shall pay such excess to CITY. If such proceeds are in excess of the costs which CONTRACTOR should have borne, such excess shall be paid by CITY to CONTRACTOR. If such costs arise during the performance of the Work, such costs shall be charged against the Cost of the Work. If such costs arise after Substantial Completion, such costs shall be payable as provided in Article 8.1-GUARANTEED MAXIMUM PRICE.

2.19.4 Damaged or Destroyed Work

CONTRACTOR shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of CITY or Separate Contractors caused by CONTRACTOR's correction or removal of Construction Work which is not in accordance with the requirements of the Contract Documents. If such costs arise during the performance of the Work, such costs shall be charged against the Cost of the Work. If such costs arise after Substantial Completion, such costs shall be payable as provided in Article 8.1-GUARANTEED MAXIMUM PRICE.

2.19.5 No Limitation

Nothing contained in this Article 2.19-CORRECTION OF WORK shall be construed to establish a period of limitation with respect to other obligations which CONTRACTOR might have under the Contract Documents.

2.19.6 Acceptance of Nonconforming Work

If CITY prefers to accept Work, which is not in accordance with the requirements of the Contract Documents, CITY may do so instead of requiring its removal and correction, in which case the GMP will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

2.20 Contractor Registration

No contractor or subcontractor may work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. During the performance of this Contract, CONTRACTOR and its subcontractors shall have a continuing legal obligation to maintain current registration with the Department of Industrial Relations. CONTRACTOR is hereby notified that this Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

ARTICLE 3 - CONTRACT ADMINISTRATION

3.1 Administration of the Contract

The CITY's Representative and the Construction Manager will provide administration of the Agreement as hereinafter described. If the status of any of the above parties should change, the CITY will provide written notice to the Contractor of such change.

3.2 CITY's Representative

3.2.1 General

The CITY's Representative has the authority to act on behalf of the CITY on change orders, field orders, progress payments, Contract Decisions, acceptability of the Contractor's work, and early possession.

3.2.2 Change Orders

The CITY's Representative has the authority to accept or reject change orders and cost proposals submitted by the Contractor or as recommended by the Construction Manager.

3.2.3 Progress Payments

CITY's Representative has the authority to accept or reject requests for progress payments which have been submitted by the Contractor and recommended by the Construction Manager.

3.2.4 Contract Decisions

Should CONTRACTOR disagree with the Construction Manager's decision with respect to the Agreement, the CONTRACTOR may appeal to the CITY's Representative in accordance with the provisions of the Agreement.

3.2.5 Acceptability of Work

The CITY's Representative has the authority to make the final determination of the acceptability of the Work.

3.3 Construction Manager

3.3.1 General

The Construction Manager is a representative of the CITY employed to act as advisor and consultant to the CITY in construction matters related to the Agreement. The term Construction Manager may include more than one individual to perform contract administration and construction observation. Hereinafter, the term Construction Manager includes any and all representatives working under the direction of the Construction Manager.

All instructions to the Contractor and all communications from the Contractor to the CITY or the CITY's Representative shall be forwarded through the Construction Manager. The Construction Manager will have authority to act on behalf of the CITY only to the extent provided in the Contract Documents. The CITY has delegated its authority to the Construction Manager to make initial decisions regarding questions which may arise as to the quality or acceptability of materials furnished and work performed, and as to the manner of performance and rate of progress of the Work. The Construction Manager shall make initial decisions with respect to the Contractor's fulfillment of the Agreement and the Contractor's entitlement to compensation. The Contractor shall look initially to the Construction Manager in matters relating to the Agreement.

The Construction Manager's authority to act under Article 3-CONTRACT ADMINISTRATION, herein, and any decision made by it in good faith either to exercise or not to exercise such authority, shall not be interpreted or construed as control of or responsibility for any of the Work performed under this Agreement.

3.3.2 On-Site Representative

The Construction Manager will observe the progress, quality, and quantity of the Work to determine, in general, if the Work is proceeding in accordance with the provisions of the Contract Documents. The Construction Manager shall not be responsible for the superintendence of the construction site conditions; construction means, methods, appliances techniques, sequences, or procedures; operation of equipment; Contractor's personnel; or for safety practices or unsafe practices, precautions, and programs in connection with the Work.

In accordance with the provisions of these Contract Documents, the Construction Manager will make decisions relative to all matters of interpretation or execution of the Contract Documents.

3.3.3 Observation and Inspections of Construction

The Construction Manager shall observe the construction and shall have the authority to reject work and materials which do not conform to the Contract Documents, and to require special inspection or testing. Observation and inspection by the Construction Manager or an inspector is not an authorization to revoke, alter, or waive any requirements of the Specifications. Observation and inspection is the authorization to call the attention of the Contractor to any failure of the Work, materials or workmanship to conform to the Contract Documents. The Construction Manager shall have this authority including the ability to reject materials or, in any emergency, suspend the Work. The Contractor may appeal any such issue which it disagrees with to the Construction Manager for decision. If the decision of the Construction Manager is not satisfactory to the Contractor, the Contractor may appeal such decision to the CITY's Representative.

3.3.4 Acceptability of the Work

The Construction Manager has the authority to make a recommendation as to the acceptability of the Work.

3.3.5 Change Orders

The Construction Manager has the authority to initiate change orders; to reject change orders proposed by the Contractor; to negotiate and recommend acceptance of change orders to the CITY; or to order minor changes in the Work that result in no cost to the CITY.

3.3.6 Construction Schedule

The Construction Manager has the authority to review and recommend acceptance of the progress schedule submitted by the Contractor at the start of the Work and subsequent significant revisions for conformance to the specified sequence of Work and logic.

3.3.7 Progress Payments

The Construction Manager has the authority to recommend acceptance or rejection of requests for progress payments which have been submitted by the Contractor.

3.3.8 Final Payment

The Construction Manager, with the assistance of the CITY's Representative and the Engineer, will conduct inspections to determine the date of Final Completion of the Work, and the Construction Manager will receive and forward to the CITY, for the CITY's review, written warranties and related documents required by the Agreement and assembled by the Contractor.

3.3.9 Contract Interpretation by the Construction Manager

Notwithstanding any omission from the Specifications or the Drawings it shall be the duty of the Contractor to call the Construction Manager's attention to apparent errors or omissions upon discovery by the Contractor and request instructions in writing before proceeding with the Work. The Contractor shall not unreasonably take advantage of any errors or omissions found by Contractor. If the Contractor discovers any errors or omissions that it believes affect the time or cost of performing the Work, it shall be entitled to request a Change Order. Contractor shall promptly notify the Construction Manager in writing of any design, materials, or specified method that the Contractor identifies as defective or insufficient, provided, however, that in doing so Contractor will be acting in its capacity as a contractor and not an architect or engineer, and that this section does not affect CITY's responsibility with regard to the Contract Documents. The Construction Manager may, by appropriate written instructions, correct errors and supply omitted information, which instructions shall be as binding upon the Contractor as though contained in the original Specifications or Drawings when incorporated into Change Orders. Such instructions shall be incorporated into the Agreement in accordance with the Change Order provisions of the Agreement.

Any discrepancies discovered by the Contractor between the Contract Documents and Site conditions or any inconsistencies or ambiguities in the Contract Documents shall be promptly reported, in writing, to the Construction Manager. Questions regarding the meaning and intent of the Contract Documents shall be referred in writing by the Contractor to the Construction Manager with a Request for Information (RFI).

Work done by the Contractor after its discovery of such errors, omissions, discrepancies, inconsistencies or ambiguities without such notice and prior to response from the Construction Manager shall be done at the Contractor's risk and shall not be reimbursed as a Cost of the Work, nor be a basis for an increase in the GMP.

3.4 Engineer

3.4.1 General

The Engineer will have the authority to act on behalf of the CITY only to the extent provided in the Contract Documents. The Engineer shall not be responsible or have authority for the superintendence of construction site conditions; construction means, methods, appliances techniques, sequences, or procedures; operation of equipment; Contractor's personnel; or for safety practices or unsafe practices; precautions and programs in connection with the Work; or for any failure of the Contractor to comply with laws, regulations, rules, ordinances, codes, or orders applicable to the Contractor furnishing and performing the Work.

3.4.2 Interpretations

The Engineer has the authority to be the initial interpreter of the technical requirements of the Contract Documents. Either party to the Agreement may make written request to the Construction Manager for interpretations necessary for the proper execution or progress of the Work. The Construction Manager shall refer such written requests to the Engineer, who will render such interpretations. Where the Contractor has requested an interpretation from the Construction Manager, or been notified by the Construction Manager that such interpretation has been requested by the CITY, any work done before receipt of such interpretations, if not in accordance with same, shall be removed and replaced or adjusted as directed by the Construction Manager without additional expense to CITY and shall not be reimbursed as a Cost of the Work, or be a basis for an increase in the GMP.

3.4.3 Acceptability of the Work

The Engineer has the authority to make a recommendation as to the acceptability of the Work. The Engineer has the authority to recommend acceptance regarding the remediation or retention of Defective Work.

3.4.4 Submittal

The Engineer shall receive, through the Construction Manager, shop drawings, product data and samples for review.

The Engineer has the authority to review and take other appropriate action upon the Contractor's submittal such as shop drawings, product data and samples, but only for conformance with the design concept of the Work and the information given in the Contract Documents.

ARTICLE 4 - CITY'S RIGHTS AND RESPONSIBILITIES

4.1 General

CITY, acting through the CITY's Representative or the Construction Manager, shall have the authority to act as the sole judge of the Work and materials with respect to both quantity, quality function, performance and reliability as set forth in the Agreement except as delegated to the Construction Manager in these Contract Documents.

4.2 Information and Services Required of CITY

4.2.1 CITY Designation of Authorized Representative

Both Parties shall designate, from time to time, one or more representatives authorized to act on their behalf with respect to the Project, together with the scope of his/her respective authority.

CONTRACTOR shall not be entitled to rely on directions from anyone outside the scope of that person's authority as set forth in written delegations pursuant to this Agreement. Directions and decisions made by Authorized Representative(s) of CITY shall be subject to any further approval(s) required by any provisions of CITY's Charter or the Roseville Municipal Code.

4.2.2 Communication

During the term of this Contract, CITY shall communicate with Subcontractors, suppliers and others performing any part of the Work only through CONTRACTOR's Authorized Representative.

4.2.3 CITY'S instruction to CONTRACTOR

Wherever CITY is identified in the contract documents in reference to providing the CONTRACTOR with instruction, the "CITY" reference could mean, Construction Manager, Engineer, or Representative acting on behalf of the CITY as delegated in that instance.

4.3 Activities on Site by CITY or Separate Contractors

4.3.1 Observation and Inspection

In addition to the Construction Manager's designated representative, the CITY may provide one or more inspectors to the Construction Manager to observe the Work and with the same authority as provided for in Article 3.3.3, Observation and Inspections of Construction.

Separate and independent from the observations and inspections above, the Work may be inspected by Building Officials, Fire Officials, Roseville Electric and/or Pacific Gas and Electric for code compliance. Such inspectors shall have the authority provided to them by their jurisdiction. Any design deficiencies or additional work required by these code inspections not required by the Contract Documents may be incorporated into the Work in accordance with the Change Order provisions of the Agreement

4.3.2 CITY'S Right to Award Separate Contracts

CITY reserves the right to perform work or operations related to the Project with the CITY'S own forces, and to award separate contracts to Separate Contractors in connection with the Project or other work on the Site. If the Contractor claims that delay, damage, or additional cost is involved because of such action by the CITY, the Contractor shall make such claim as provided elsewhere in the Contract Documents. When separate agreements are awarded for different portions of the Project or other work on the Site, the term "Contractor" in the Contract Documents in each case shall mean the contractor who executes each separate Agreement.

4.3.3 Integration of the Work with Separate Contractors

Following the request of CITY, CONTRACTOR shall prepare a plan in order to integrate the work performed by Separate Contractors with the performance of the Work, and shall submit such plan to CITY for approval. The plan shall be fair and reasonable for CONTRACTOR and the Separate Contractors, and CONTRACTOR shall work with the Separate Contractors to reach agreement on such plan. CONTRACTOR shall arrange the performance of the Work so that the Work and the work of the Separate Contractors are, to the extent applicable, properly integrated, jointed in an acceptable manner, and performed in the proper sequence so that any disruption or damage to the Work or to any work of Separate Contractors is avoided.

4.3.4 Coordination

CONTRACTOR shall provide for the coordination of the activities of CONTRACTOR and its Subcontractors with the activities of the Separate Contractors. CONTRACTOR shall participate with all Separate Contractors and CITY in reviewing and coordinating the schedules of the Separate Contractors with the Schedule. CONTRACTOR shall make any revisions to the Schedule deemed necessary to properly incorporate the work of the Separate Contractors with the Work. To the extent (a) the date of Substantial Completion is extended by such Schedule revision; (b) CONTRACTOR is required to perform its Work materially out of sequence, and in a manner which is not as efficient or cost effective as originally planned; or (c) the Scope of Work is increased, an equitable adjustment in the GMP and the Schedule shall be made in accordance with the Change Order provisions of this Agreement.

4.3.5 Use of Site

CONTRACTOR shall afford CITY and all Separate Contractors reasonable opportunity for storage of materials and equipment and performance of their work. CONTRACTOR shall also connect and coordinate its Work and operations with CITY and all Separate Contractors' operations as required by the Contract Documents. CITY shall direct the Separate Contractors to cooperate with CONTRACTOR and to avoid actions or omissions, which could interfere with or delay the activities of CONTRACTOR.

4.3.6 Deficiency in Work of Contractors

If part of CONTRACTOR's Work depends upon proper execution or results upon construction or operations by CITY or a Separate Contractor, CONTRACTOR shall, prior to proceeding with that portion of the Work, promptly report to the Separate Contractor and CITY apparent discrepancies or defects in such other construction that would render it unsuitable for proper execution and results by CONTRACTOR. CONTRACTOR and the Separate Contractor shall use good faith efforts to resolve any such discrepancies or defects or any disagreements relating thereto. Failure of CONTRACTOR to report such discrepancies or defects shall constitute acceptance by CONTRACTOR of the work of Separate Contractors as fit and proper to receive CONTRACTOR's Work (except as to those defects or discrepancies that are not apparent).

4.4 Claims Involving Separate Contractors

In the event that CONTRACTOR unnecessarily and unreasonably delays the work of Separate Contractors by not cooperating with them as required hereby, or by not affording them reasonable opportunity to perform their work as stated herein, CONTRACTOR shall, in such event, pay, as Cost of the Work, all reasonable direct incremental costs and expenses incurred by such Separate Contractors due to any such delays. If any Separate Contractor shall assert a claim or bring an action against CITY alleging damage due to the fault or neglect of CONTRACTOR, CITY shall immediately notify CONTRACTOR, who shall defend such claim. If it is determined that CONTRACTOR was at fault, CONTRACTOR shall pay all costs of defense, including attorney's fees, as well as any resulting judgment or settlement, as a Cost of the Work.

4.5 Assignment of Separate Contracts

If CITY determines that it wishes to assign to CONTRACTOR one or more contracts between CITY and a Separate Contractor, it shall give CONTRACTOR written notice of such desire, including in such notice a copy of such contract for CONTRACTOR's review and approval. The Separate Contractor shall be fully qualified to perform the work under the to-be-assigned contract, shall possess the financial capability to perform its obligations under such to-be-assigned contract, and shall provide one hundred percent (100%) payment and performance bonds covering such work from sureties meeting the standards

set forth in Article 11-Insurance and Bonds; Indemnification hereof. Such contract shall contain provisions similar to those contained in CONTRACTOR's agreements with its Subcontractors with respect to liability, indemnification, retention, payment, labor, warranty, and other material items. Upon CONTRACTOR's approval of the assignment of such contract, which approval shall not be unreasonably withheld, delayed or conditioned, such Separate Contractor shall cease to be a Separate Contractor and shall thereafter be deemed to be a Subcontractor of CONTRACTOR, and the GMP shall be increased by Change Order in the amount of (a) such assigned contract, and (b) the additional Fee pursuant to the provisions of Article 9.6-Change Orders on Account of Scope Change.

4.6 CITY's Right to Stop the Work

If CONTRACTOR persistently fails to correct Work which is not in accordance with the requirements of the Contract Documents and this Agreement or persistently fails to carry out the Work in accordance with the Contract Documents, CITY, by written order signed by CITY, may deliver a notice to CONTRACTOR setting forth that such a persistent and material failure is occurring and has occurred, and demanding that CONTRACTOR commence a cure of such persistent and material failure within twenty (20) Days and diligently pursue such cure thereafter. In the event that the cure is not commenced and pursued diligently, CITY may, by written notice to CONTRACTOR, order CONTRACTOR to stop the Work, or any portion thereof, until the use for such order has been eliminated; provided, however, that the right of CITY to stop the Work shall not give rise to a duty on the part of CITY to exercise this right for the benefit of CONTRACTOR or any other person or entity and shall not give rise to any liability of CITY to CONTRACTOR resulting from any delay (except to the extent that such order is found to be improper).

If CONTRACTOR fails to correct an unsafe condition as specified in Article 12-SAFETY: PROTECTION OF PERSONS AND PROPERTY, the CITY shall have the right to notify the Contractor through the Construction Manager that an unsafe condition may exist and must be corrected or the Work in question can be stopped immediately. CITY's has a right to stop the work, until the condition is corrected to the satisfaction of the CITY.

4.7 CITY's Right to Carry Out the Work

If CONTRACTOR defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven (7) Day period after receipt of written notice from CITY to commence and diligently continue correction of such default or neglect with diligence and promptness, CITY may, after such seven (7) Day period, give CONTRACTOR a second written notice to correct such deficiencies within such second seven (7) Day period. If CONTRACTOR within such second seven (7) Day period after receipt of such second notice fails to commence and diligently continue to correct any deficiencies, CITY, without prejudice to other remedies CITY may have, may correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due to CONTRACTOR the cost of correcting such deficiencies, including Compensation for additional services and expenses made necessary by such default, neglect or failure. If payments then or thereafter due to CONTRACTOR are insufficient to cover such amounts, CONTRACTOR shall pay the difference to CITY.

The CITY also reserves the right to perform and suspend any portion of the Work due to an emergency threatening the safety of the Work, public, CITY, and any property or equipment. No deductive Change Order shall be issued for an emergency not caused by Contractor.

4.8 Non-Responsibility of the CITY

CITY shall not be held responsible for the care or protection of any material or parts of the Work prior to the Final Acceptance, except as expressly provided in the Contract Documents.

ARTICLE 5 - CONTRACTOR RIGHTS AND RESPONSIBILITIES

5.1 Status of Contractor and Subcontractors

5.1.1 Contractor

It is stipulated and agreed that the Contractor shall be an independent contractor in the performance of this Agreement and shall have complete charge of persons engaged in performance of the Work. The Contractor shall perform the Work in accordance with its own means, methods, and appliances subject to compliance with the requirements of the Agreement.

5.1.2 Subcontractors

If any part of the Work to be done under this Agreement is subcontracted, the subcontract shall be in writing and shall provide that all Work to be performed thereunder shall be performed in accordance with the terms of the Contract Documents. The subcontracting of any or all of the Work to be done will in no way relieve the Contractor of any part of its responsibility under the Agreement. Subcontractors will not be recognized as having a direct relationship with the CITY. The persons engaged in the Work, including employees of subcontractors and suppliers, will be considered employees of the Contractor and their work shall be subject to the provisions of the Agreement. References in the Contract Documents to actions required of subcontractors, manufacturers, suppliers, or any person other than the Contractor, the CITY or the Construction Manager shall be interpreted as requiring that the Contractor shall require such subcontractor, manufacturer, supplier or person to perform the specified action.

The Contractor shall only employ subcontractors that are properly licensed in accordance with State law and are registered with the California Department of Industrial Relations (DIR).

Prior to commencement of any work by a subcontractor, the Contractor shall submit to the Construction Manager:

A. Verification that the subcontractor is properly licensed for the work it will perform.

B. Upon CITY'S request, copies of subcontract agreements.

C. Copies of subcontractor's insurance certificates and endorsements.

5.2 Contractor's Representative

The Contractor shall provide in writing, a request to the CITY to delegate authority to an individual to serve in the capacity of authorized representative and shall wait to receive written confirmation from the CITY, before the authorized representative can start work. The authorized representative shall be qualified for the duties required and have complete authority to represent and to act for the Contractor. Said authorized representative has the authority to act in matters relating to the Agreement, and shall be personally present at the Site at all times while work is actually in progress on the Agreement. During periods when the Work is suspended, arrangements acceptable to the Construction Manager shall be made for any emergency work that may be required. The Contractor's authorized representative shall be fluent and proficient in the English language in order to understand, receive, and carry out oral and written communications or instructions relating to all job functions and responsibilities. All

communications to and from the Contractor's authorized representative shall be binding as if given to or by the Contractor.

Contractor shall provide its authorized representative's contact information which shall include the representative's name, office street address, office telephone number, mobile phone number, home phone number, email address and the office mailing address if different from the street address.

The Contractor's authorized representative shall give its personal attention to and shall supervise the Work to the end that it shall at all reasonable times be prosecuted faithfully; and when the authorized representative is not personally present on the Work, the representative shall at all reasonable times be represented by a competent designated alternate, superintendent or foreman (approved in writing by the CITY, to act in this capacity) who shall receive and obey all instructions or orders given under this Agreement, and who shall have full authority to supply materials, tools, and labor without delay, and who shall be the legally appointed representative of the Contractor. The Contractor shall be liable for the faithful observation of any instructions delivered to the Contractor or to its authorized representative.

5.3 Supervision and Superintendence

CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

At all times during the progress of the Work, Contractor shall assign a competent resident Superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

5.4 Documents and Samples at the Site.

CONTRACTOR shall maintain at the site for CITY one record copy of the drawings, specifications, addenda, Change Order and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. CONTRACTOR shall also prepare one reproducible set of as-built drawings. These shall be provided to CITY upon completion of the Work.

5.5 Use and Protection of CITY'S Site and Adjacent Property

5.5.1 Designated Areas

With the approval of the Construction Manager, the Contractor may use designated portions of the CITY'S Site for storage of construction equipment, materials and field offices provided the Contractor does not interfere with CITY'S operations. The Contractor will not be allowed to unreasonably encumber the Site or adjacent areas with its materials and/or equipment. The CITY will not accept any responsibility for damage to or loss of the Contractor's equipment or materials stored on any Project related site caused by vandalism, nature, or otherwise, suffered by the Contractor, including its suppliers and subcontractors. Protection of all construction equipment, stores, and supplies shall be the sole responsibility of the Contractor. Where additional work space is desired by the Contractor or where the CITY cannot provide the space to the Contractor, it shall be the Contractor's sole responsibility and expense to obtain such a space for its use.

5.5.2 Contractor's Site Access

All workers or representatives of the Contractor, subcontractors or suppliers are admitted to the Site only for the proper execution of the Work and have no tenancy without the express written permission of the CITY. Furthermore, no persons may occupy property owned by the CITY outside the limit of the Work, as indicated on the Drawings, without the express written permission of the CITY.

5.5.3 Provisions for Handling Emergencies

It is possible that emergencies may arise during the progress of the Work, which may require special treatment or make advisable extra shifts of labor forces to continue the Work for twenty-four (24) hours per day. These emergencies may be caused by damage or possible damage to nearby existing structures or property by reason of the work under construction, or by storm, accidents, or leakage. The Contractor shall be prepared in case of such emergencies to make all necessary repairs and shall promptly execute such work when required; such emergency work will be reimbursed as a Cost of the Work and the GMP increased accordingly to the extent the incidence of the emergency was outside Contractor's reasonable control.

Upon start of the Work, Contractor shall provide means for immediate emergency notification of Contractor's designated representative and designated emergency alternates.

5.5.1 Debris, Trash, and Construction Wastes

The Contractor shall keep the Site reasonably free from debris, trash and construction wastes to permit Contractor to perform construction services efficiently, safely and without interfering with the use of and enjoyment of adjacent land areas, and as further stipulated in the Contract Documents. At the end of each worked day, Contractor shall collect and dispose of all litter or enclose it in a secured onsite refuse bin. When the Work is Substantially Complete, or a portion of the Work has been completed, Contractor shall remove all debris, trash, construction wastes, materials, equipment, machinery and tools arising from the Work or applicable portions thereof to permit CITY to occupy the Project or a portion of the Project for its intended use. Contractor shall provide a finished cleaning of all areas acceptable to the CITY before releasing any area to the CITY for occupancy.

5.6 Compliance with Laws

The CITY is a municipal corporation in the State of California and is subject to the applicable provisions of law relating to public contracts as a Charter CITY. It is agreed that all provisions of law applicable to public contracts are a part of these Contract Documents to the same extent as though set forth herein and will be complied with by Contractor.

The Contractor shall at all times observe and comply with all existing laws, ordinances, regulations, orders and decrees; and shall protect, indemnify, and defend the CITY, the Construction Manager, the Engineer, the Funding Agencies and all of their officers, officials, employees, agents, volunteers, and servants against any claim or liability arising from or based upon the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor itself, employees, or its subcontractors.

The Contractor, shall at its own cost and expense, observe and keep itself and its subcontractors fully informed of all existing and future legislated State and Federal Laws and CITY and County ordinances and regulations which in any manner affect those engaged or employed in the Work, or the materials and equipment used in the Work, or which in any way affect the conduct of the Work, and all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same.

If any discrepancy or inconsistency is discovered in the Drawings, Specifications, or in any other part of this Agreement, in relation to any law, ordinance, regulation, order or decree, the Contractor shall immediately report the same to the Construction Manager in writing.

Attention is directed to the following specific regulations and requirements that are hereby included in the Contract Documents. This list of regulations is not warranted to be complete and the burden of ascertaining legal requirements that must be satisfied shall rest solely with the Contractor.

5.6.1 Prevailing Wages

For purposes of this Agreement, CONTRACTOR and its Subcontractors shall comply with all applicable prevailing wage laws, e.g., but not limited to, California Labor Code Sections 1770 et seq. In accordance with said Section 1775, CONTRACTOR shall forfeit as a penalty to the CITY Two Hundred Dollars ($200) for each calendar Day or portion thereof for each worker paid less than the prevailing rates for such work or craft in which such worker is employed for any work done on-Site under the Agreement by CONTRACTOR or by any Subcontractor in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to said Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each worker for each calendar Day or portion thereof for which each worker was paid less than the stipulated prevailing wage shall be paid to each worker by CONTRACTOR or the applicable Subcontractor.

Pursuant to the provisions of California Labor Code Sections 1773, the Department has identified the source, stated below, of the General Prevailing Rate of Wages applicable to the work to be done, for straight time, overtime, and holiday work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of worker concerned. These wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm, which is a part of this Agreement.

Pursuant to Labor Code Section 1773.2, General Prevailing Wage Rates set forth above, which forms a part of this Agreement, shall be posted by CONTRACTOR at a prominent place at the Site. Prevailing wage rates to be posted at the Site will be furnished by the Department. The possibility of wage increases is one of the elements to be considered by CONTRACTOR in determining its Proposal, and will not under any circumstances be considered as the basis of a claim against CITY or the Agreement.

5.6.2 DIR Registration

California Labor Code section 1725.5 requires the Contractor and all lower-tier subcontractors performing public works services to be currently registered with the California DIR, as specified in California Labor Code section 1725.5. California Labor Code section 1771.1 provides that a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal (subject to the requirements of Section 4104 of the California Public Contract Code), or engage in the performance of any contract for public work, unless currently registered and qualified to perform public work pursuant to California Labor Code section 1725.5. The Contractor shall list the Contractor's current DIR registration number, and the current DIR registration number of all subcontractors, as part of its Bid Proposal.

Further information can be found on DIR's website at http://www.dir.ca.gov/Public-Works/Contractors.html. The above summary is provided solely for informational purposes, and does not in any way affect the Contractor's and subcontractors' obligation to comply in all respects with all other applicable laws and regulations. The Contractor shall disseminate these provisions to every lower-tier subcontractor.

5.6.3 Apprentices on Public Work Projects

The Contractor and any subcontractor or subconsultant shall comply with California Labor Code section 1777.5 et seq., and implementing regulations set forth in Title 8 of the California Code of Regulations, governing the employment of apprentices. Contractor and any subcontractor or subconsultant performing Public Work will be subject to penalties for apprenticeship violations in accordance with Labor Code section 1777.7. Please refer to the link below for guidance in meeting your obligation to satisfy the apprentice requirements for this Project:
https://www.dir.ca.gov/das/DASApprenticesOnPublicWorksSummaryOfRequirements.htm.

5.6.1 Receipt of Workers' Wages, Fee for Registering or Placing Persons in Public Works

The Contractor and any subcontractor or subconsultant shall comply with California Labor Code sections 1778 and 1779 of the California Labor Code, which read as follows:

Section 1778. "Every person, who individually or as a representative of an awarding or public body or officer, or as a contractor or subcontractor doing public work, or agent or officer thereof, who takes, receives or conspires with another to take or receive, for his own use or the use of any other person any portion of the wages of any workman or working subcontractor, in connection with services rendered upon any public work is guilty of a felony."

Section 1779. "Any person or agent or officer thereof who charges, collects, or attempts to charge or collect, directly or indirectly, a fee or valuable consideration for registering any person for public work, or for giving information as to where such employment may be procured, or for placing, assisting in placing, or attempting to place, any person in public work, whether the person is to work directly for the State, or any political subdivision or for a contractor or subcontractor doing public work is guilty of a misdemeanor."

5.6.2 Travel and Subsistence Payments

Each worker needed to execute the Work must be paid travel and subsistence payments as defined in the applicable collective bargaining agreements filed in accordance with Section 1773.1 of the California Labor Code.

5.6.3 Workday

In accordance with the provisions of Division 2, Part 7, Chapter 1, Article 3 of the Labor Code, State of California, and in particular Sections 1810 to 1815 inclusive, thereof, eight (8) hours labor shall constitute a days' work and no laborer, worker, or mechanic in the employ of said Contractor, or any subcontractor doing or contracting to do any part of the Work contemplated by this Agreement, shall be required or permitted to work more than eight (8) hours in any one calendar day, and forty (40) hours in any one calendar week unless compensated at not less than time and a half as set forth in California Labor Code Section 1815. However, if the prevailing wage determination requires a higher rate of pay for overtime than is required under said Section 1815, then the overtime rate must be paid, as specified in California Code of Regulation Title 8, Group 3, Section 16200(a)(3)(F). The Contractor and each subcontractor shall also keep an accurate record showing the names and actual hours worked of all workers employed by them in connection with the work contemplated by this Agreement, which record shall be open at all reasonable hours for the inspection of the CITY or its officers or agents and by the Division of Labor Standards Enforcement of the Department of Industrial Relations, their deputies or agents; and it is hereby further agreed that said Contractor shall forfeit as a penalty to the CITY, the sum of the greater of (i) Twenty-Five and No/100 Dollars ($25.00) or (ii) the maximum penalty allowable by statute for each laborer, worker or mechanic employed in the execution of this Agreement by the Contractor or by any

subcontractor for each calendar day during which such laborer, worker or mechanic is required or permitted to labor more than eight (8) hours in any one calendar day and forty (40) hours in one calendar week in violation of these provisions.

5.6.4 Labor Discrimination

The Contractor and any subcontractor or subconsultant shall comply with California Labor Code Section 1735, which reads as follows:

Section 1735. "No discrimination shall be made in the employment of persons upon public works because of the race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, or sex of such persons, except as provided in Section 12940 of the Government Code, and every contractor for public works violating this Section is subject to all the penalties imposed for violation of this chapter."

Contractor agrees that it shall not discriminate against any person on account of their sex, race, color, religious creed, ancestry, national origin, disability, medical condition, marital status, age, gender, military or veteran status, genetic information, or sexual orientation in violation of the Fair Employment and Housing Act or the Unruh Civil Rights Act. Upon a final determination by a court of competent jurisdiction that the Grantee has violated either of these Acts, the CITY may, at its option, (1) withhold payments to Contractor under this Agreement until Contractor complies; or (2) suspend or terminate this Agreement. Contractor shall include the provisions of this paragraph in every subcontract, including procurement of materials and lease of equipment, unless specifically exempted by the CITY.

5.6.5 Asbestos Related Work

All work involving asbestos containing material must be performed in accordance with California Labor Code, Sections 6501.5 through 6510, inclusive, and California Administrative Code, Title 8, Section 5208 and all other pertinent laws, rules, regulations, codes, ordinances, decrees and orders.

5.6.6 Compliance with Environmental Laws

During construction, the Contractor shall comply with all pertinent requirements of Federal, State, and local environmental laws and regulations, including, but not limited to, the Federal Clean Air Act, State and local air pollution and noise ordinances, construction site erosion control regulations.

5.6.7 Public Records Act

5.6.7.1 Ownership and Disclosure

Except as otherwise provided herein, all records, documents, drawings, plans, specifications, and all other information relating to the conduct of CITY'S business, including information submitted by the Contractor ("Records"), shall become the exclusive property of CITY and shall be deemed public records. Said Records are subject to the provisions of the California Public Records Act (Government Code § 6250 et seq.). The CITY'S use and disclosure of its records are governed by this Act. The CITY will use its best efforts to inform the Contractor of any request for any financial records or documents marked "Trade Secret," "Confidential" or "Proprietary" provided by the Contractor to CITY. The CITY will not advise as to the nature or content of documents entitled to protection from disclosure under the California Public Records Act.

5.6.7.2 Litigation Related to Disclosure

In the event of litigation concerning the disclosure of any Records, CITY'S sole involvement will be as a stakeholder, retaining the Records until otherwise ordered by a court. The submitting party, at its sole

expense and risk, shall be fully responsible for any and all fees for prosecuting or defending any action concerning the Records and shall indemnify and hold CITY harmless from all costs and expenses including attorney's fees in connection with any such action.

5.7 Certified Electricians

Workers performing work for an electrical contractor installing, constructing, or maintaining any electrical system covered by the National Electrical Code shall be certified as a General Electrician per California Labor Code Section 3099.

5.8 Contractor's Safety Responsibility

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons and property during performance of the Work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), the California Occupational Safety and Health Act (Cal OSHA), and all other applicable Federal, State, County, and local laws, ordinances, codes, including but not limited to the requirements set forth in Article 12 – SAFETY: PROTECTION OF PERSONS AND PROPERTY, and any regulations that may be detailed in other parts of these Contract Documents. In the event of conflicting requirements, the most stringent requirement as it pertains to the Contractor's safety responsibility, shall be followed by the Contractor. Refer to Article 12 - SAFETY: PROTECTION OF PERSONS AND PROPERTY

5.9 Nonstandard Working Hours

The Contractor may be required to prosecute the Work at night or outside of the normal working hours defined in Section 01140-1.04 C Hours of Work and Overtime. At the sole reasonable direction of CITY, such work may be required due to project or operational constraints as defined in Section 01140 or if emergencies arise as provided for in Article 5.5.3-Provisions for Handling Emergencies. When required, ordered, or permitted to work at night, the Contractor shall provide sufficient and satisfactory lighting and other facilities therefore. Except as provided in 5.5.3-Provisions for Handling Emergencies, for work outside of the normal working hours, the Contractor shall receive no extra payment, but compensation shall be considered as having been included in the GMP stipulated for the Work, except for authorized work performed outside of the Agreement.

5.10 Cooperation with Other Contractors

This paragraph shall serve as notice to the Contractor that the CITY may allow other contracts for other work at or near the Site of this Work. The Contractor shall afford other Contractors reasonable opportunity for the delivery and storage of their materials and the execution of their work, and shall properly connect and coordinate its work with theirs.

Should construction be under way by other forces or by other Contractors within or adjacent to the limits of the work or in the vicinity of the work to be done under this Agreement, the Contractor shall so conduct its operations as to interfere to the least possible extent with the work of such other forces or Contractors.

Any difference or conflicts which may arise between the Contractor and any other forces or Contractors, creating delays or hindrance to each other, shall be adjusted as determined by the Construction Manager.

ARTICLE 6 - SUBCONTRACTORS

6.1 Incorporation of Contract Documents

CONTRACTOR may enter into Subcontracts with various Subcontractors for portions of the Work. The Subcontracts shall require each Subcontractor, to the extent of the Work to be performed by such Subcontractor, to assume towards CONTRACTOR all the obligations and responsibilities which CONTRACTOR assumes towards CITY. All Subcontracts shall incorporate the terms of this Agreement and the Contract Documents to the extent applicable to the Work to be performed by the Subcontractor.

6.2 Approval of Subcontractors

Those portions of the Construction Work that the CONTRACTOR does not intend to perform with CONTRACTOR's own personnel shall be performed under Subcontracts. A proposed list of Subcontractors shall be submitted to CITY for approval. Proposed Subcontractors will be deemed accepted unless CITY objects in writing within five (5) days after submission by CONTRACTOR.

ARTICLE 7 - TIME AND PROGRESS OF THE WORK

7.1 Commencement of Work

Within five (5) calendar days after execution of the Agreement, written Notice to Proceed will be issued by the City to Contractor. Notwithstanding other provisions of the Agreement, the Contractor shall not be obligated to perform the Work, and the City shall not be obligated to accept or pay for such Work performed by the Contractor, prior to City's issuance of the Notice to Proceed. The Contractor shall provide the required Agreement bonds and evidences of insurance prior to the City's execution of this Agreement and prior to commencement of any Work.

The Contractor shall commence execution of the Work within five (5) days after the date established in the Notice to Proceed for the commencement of Contract Time.

The Contractor shall give the Construction Manager written notice not less than five (5) working days in advance of the actual date on which the Work is to begin on the Site (excluding Preconstruction Services performed under the Agreement) will be started. The Contractor shall be entirely responsible for any delay in the Work which may be caused by its failure to give such notice.

7.2 Contract Time

All time limits for Substantial Completion, and Final Completion as stated in the Contract Documents are of the essence of the Agreement. The counting of Working or Calendar Days shall begin five (5) Calendar Days from the date of the Notice to Proceed. The Contractor shall prosecute the Work so that the various portions of the Work shall be complete and ready for use within the times specified in Exhibit H-COMPLETION TIMES AND LIQUIDATED DAMAGES. It is expressly understood and agreed by and between the Contractor and the City that the Contract Time(s) for Contract Milestones, Substantial Completion of the Work and for Final Completion are reasonable times taking into consideration the average climatic and economic conditions and other factors prevailing in the locality and the nature of the Work known as of the date this Agreement is entered into.

7.3 Delays

7.3.1 Notice of Delays

When the Contractor foresees a delay in the prosecution of the Work and, in any event, promptly upon the occurrence of a delay to its Work, the Contractor shall notify the Construction Manager in writing of the occurrence of delay, providing the estimated extent of the delay and its cause. The Contractor shall take immediate steps to prevent or mitigate, if possible, the occurrence or continuance of the delay.

The Contractor agrees that no claim shall be made for any occurrence of delay that is not the subject of a written notice and that is not submitted to the attention of the Construction Manager within ten (10) calendar days of its occurrence. The City may accept a delay with more than ten (10) calendar days of notice if the City finds that the Contract was acting in good faith and the City was not prejudiced by the Contractor's failure to timely provide the required notice.

7.3.2 Non-Excusable Delays

Non-excusable delays in the prosecution of the Work are delays which were caused by the Contractor, or by its subcontractors and suppliers, at any tier level, or delays which could have been avoided by the exercise of care, prudence, and diligence on the part of the Contractor or its subcontractors or suppliers, at any tier level. The Contractor shall receive no compensation or time extension for such delay. The determination of Non-Excusable Delays shall be made solely by the Construction Manager. In the event that the Contractor is not in agreement with the Construction Manager's decision, the Contractor may appeal the decision by submitting to the City (for consideration), evidence that supports the Contractor's claim for an Excusable Delay consideration.

7.3.3 Excusable Delays

Excusable Delays in the prosecution or completion of the Work are delays which are not caused by or within the control of Contractor and which could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its subcontractors or suppliers, at any tier level. In addition, before a delay will be deemed an "Excusable Delay," the delay must prevent the Contractor from proceeding with at least seventy-five (75%) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest approved progress schedule submitted by Contractor in accordance with the Contract Documents. The Contractor shall receive no compensation for such delay unless such delay also qualifies as a Compensable Delay, as described below. The following are examples of Excusable Delays:

A. Site Availability; Failure or inability of CITY to make available any or all of the Site in accordance with the requirements of the Schedule.

B. Regulatory and Governmental Authority; Failure or inability of CITY or CONTRACTOR to obtain necessary zoning changes, variances, code changes, permits or approvals from any governmental authority, or failure to obtain any street or alley vacations required for the performance of the Work, except to the extent due to the fault or neglect of CONTRACTOR.

C. Separate Contractor's Acts or Omissions; Delays resulting solely from the acts or omissions of Separate Contractors; provided however, only to the extent Separate Contractors perform their work improperly and not in accordance with any applicable critical path schedule.

D. Force Majeure; Delays resulting from Force Majeure.

E. Differing Site Conditions; Differing, unusual or concealed site conditions that could not reasonably have been anticipated by CONTRACTOR in preparing the Schedule.

F. Hazardous Materials; Delays resulting from the existence or discovery of Hazardous

Materials on the Site not brought to the site by CONTRACTOR or any Subcontractor.

G. Applicable Laws; Delays resulting from changes in Applicable Laws occurring after the date of execution of this Agreement.

H. CITY Acts or Omissions; Delays occurring solely due to the acts or omissions of CITY and those within the control of CITY, including, but not limited to, Separate Contractors.

I. Abnormal Delays; Delays caused by fire, unusual storms, floods, tidal waves, earthquakes, strikes, labor disputes, freight embargoes, and shortages of materials shall be considered as Excusable Delays insofar as they prevent the Contractor from proceeding with at least seventy-five (75%) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest favorably reviewed progress schedule.

J. Weather Delays; Delays caused by inclement weather conditions defined in 8 CCR 2940.3 or the conditions resulting from inclement weather shall be considered as "Excusable Delays" if they prevent the Contractor from proceeding with at least seventy-five (75%) percent of the normal labor and equipment force listed in the published schedule as being engaged in the current critical activity item for a period of at least five (5) hours per day toward completion of such operation or operations, and the crew is dismissed as a result thereof.

K. Material Shortages; Upon the Contractor's submission of satisfactory proof to the Construction Manager, shortages of material may be considered an "Excusable Delay" upon the satisfaction of the conditions set forth herein. The Contractor must demonstrate that the Contractor has made every effort to obtain such materials from all known sources within reasonable reach of the proposed Work. Only the physical shortage of material, caused by unusual and unforeseeable circumstances, will be considered as eligible for an "Excusable Delay," and no consideration will be given to any claim that the material could not be obtained at a reasonable, practical, or economical cost or price, unless it is shown to the satisfaction of the Construction Manager that such material could have been obtained only at exorbitant prices entirely out of line with current rates, taking into account the quantities involved and usual practices in obtaining such quantities. A time extension for shortage of material will not be considered for material ordered or delivered late or whose availability is affected by virtue of the Contractor's or its subcontractor's or supplier's mishandling of the procurement for such material. The above provisions apply equally to equipment to be installed in the Work. Nothing herein is intended to affect the Contractor also needing to demonstrate that the delay must prevent the Contractor from proceeding with at least seventy-five (75%) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest favorably reviewed progress schedule.

7.3.4 Compensable Delays

Compensable Delays in the prosecution or completion of the Work are delays which meet each of the following three elements: (1) delays which result from causes beyond the control of the Contractor and which could not have been avoided by the reasonable exercise of care, prudence, and diligence on the part of the Contractor or its subcontractors or suppliers, at any tier level; (2) delays that prevent the Contractor from proceeding with at least seventy-five (75%) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest approved progress schedule; and (3) delays that are caused by one of the following three causes:

A. CITY Acts or Omissions; Delays due to the actions and/or inactions of the City,

Construction Manager, Engineer or any of their agents or employees.

B. Differing Site Conditions; Delays due to differing site conditions as defined in Article 7.3.3.E-DIFFERING SITE CONDITIONS.

C. Separate Contractor's Acts or Omissions; Delays due to other contractors employed by the City who interfere with the Contractor's prosecution of the Work as defined above.

7.3.5 Concurrent Delays

Concurrent delays are those delay periods when the prosecution of the Work is delayed during the same period of time due to causes from a combination of the delays defined in Article 7.3.2-NON-EXCUSABLE DELAYS, Article 7.3.3-EXCUSABLE DELAYS, or Article 7.3.4-COMPENSABLE DELAYS. During such concurrent delay periods, time extensions will be granted in accordance with Article 7.4-TIME EXTENSIONS; however, the Contractor will be granted a non-compensable time extension, and the City shall not assess its actual costs as defined in Article 7.4.1-NON-EXCUSABLE DELAYS, nor will the City assess Liquidated Damages.

7.4 Time Extensions

7.4.1 Non-Excusable Delays

The Contractor shall receive no compensation or time extension for Non-Excusable Delays.

7.4.2 Excusable or Compensable Delays

If the Contractor is delayed in the performance of its Work as defined in Article 7.3.3-EXCUSABLE DELAYS, or Article 7.3.4-COMPENSABLE DELAYS, then the Contract Time(s) will be extended by the City for such time that, the Contractor shows, and the City agrees (which agreement will not be unreasonably withheld), the Project's critical path completion dates will be delayed, provided that the Contractor strictly fulfills the following:

A. The Contractor shall have provided written notification, in accordance with Article 7.3.1-NOTICE OF DELAYS;

B. The Contractor shall have submitted in writing a request for an extension of time to the Construction Manager stating at a minimum the cause of the delay and the estimated number of days being requested. The Contractor's request for a time extension shall be submitted within fifteen (15) days of the Contractor furnishing its written notice pursuant to Article 7.3.1-NOTICE OF DELAYS. In the case of an Excusable Delay or Compensable Delay that allegedly is impacting the Contractor's operations for a period longer than fifteen (15) days, the Contractor shall update its request for a time extension, including updating its time impact analysis, every thirty (30) days until the delay is no longer allegedly impacting the Contractor's operations.

C. If the Contractor maintains that the delay at issue is a Compensable Delay, the Contractor shall submit an estimate of the additional compensation for Field Overhead and Indirect Home Office Overhead (per Article 7.4.4-FIELD OVERHEAD AND INDIRECT HOME OFFICE OVERHEAD FOR COMPENSABLE DELAYS that it is seeking in regard to the alleged delay. This estimate shall be included with the Contractor's request for time extension that is described in paragraph B, above. In the case of a Compensable Delay that allegedly is impacting the Contractor's operations for a period longer than fifteen (15) days, the Contractor shall update its estimate of additional compensation every thirty (30) days until the delay is no longer allegedly impacting the Contractor's operations.

D. If requested by the Construction Manager, the Contractor shall provide sufficient information to the Construction Manager to assess the cause or effect of the alleged delay (as well as additional compensation in the case of Compensable Delay), or to determine if other concurrent delays affected the Work. Such additional information shall be furnished within fifteen (15) days of the Construction Manager's request for additional information.

E. Time extensions due to Excusable or Compensable Delays will be granted only if such delays involve controlling critical path operations which would prevent completion of the whole Work within the specified Contract Time(s), as described in the above conditions for determination of "Excusable Delay" or "Compensable Delay."

Construction Manager will, in writing, approve or reject the Contractor's request for a time extension within fifteen (15) days of the latter of (i) the Construction Manager's receipt of the Contractor's complete request for a time extension; or (ii) the Construction Manager's receipt of the additional information referenced in paragraph C, above. If Construction Manager does not provide a written response within such fifteen (15) day time period, the Contractor's request shall be deemed denied by the City.

If the Construction Manager determines that the Contractor is entitled to a time extension, during such approved extension of time, neither extra compensation for engineering, inspection and administration nor damages for delay will be charged to the Contractor.

7.4.3 Weather Delays

For Weather Delays, the Contractor will be granted a non-compensable time extension for weather caused delays, pursuant to Article 7.3.3.J-WEATHER DELAYS, over and above an allowance as provided for in Exhibit H-Completion Times and Liquidated Damages. No time extensions for weather delays will be granted until the total number of weather days exceeds this allowance.

Should the Contractor fail to complete the Work within the time specified in the Agreement, as extended in accordance with this clause if appropriate, the Contractor shall pay to the City liquidated damages in accordance with Article 7.5-Liquidated Damages.

7.4.4 Field Overhead and Indirect Home Office Overhead for Compensable Delays

The Contractor shall be compensated for field overhead and indirect home office overhead expenses due to Compensable Delays for periods of time when the Work is delayed as defined in Article 7.3.4-COMPENSABLE DELAYS. However, no payment shall be made for compensable delays which occur during a concurrent delay as defined in Article 7.3.5-CONCURRENT DELAYS. As a condition precedent to payment for field overhead and indirect home office overhead, the Contractor must fulfill all conditions as provided in Article 7.4.2-EXCUSABLE OR COMPENSABLE DELAYS. Compensation will be calculated in accordance with 7.4.4.1 and 7.4.4.2 below. No additional markup for overhead or profit shall be provided for such field overhead and indirect home office overhead expenses.

Payment to the Contractor for indirect overhead expenses will be made only if the extended Contract Time period granted for the compensable delay(s) is required to complete the Work following the depletion of the original Contract Time period and any time extensions granted other than compensable time extensions. Payment for field overhead and indirect home office overhead shall be calculated as follows:

7.4.4.1 Field Overhead

For those allowable delay periods as described in Article 7.4.4-FIELD OVERHEAD AND INDIRECT HOME OFFICE OVERHEAD FOR COMPENSABLE DELAYS, the Contractor shall be reimbursed for its field overhead based on:

A. Actual invoice costs for on-site field offices and temporary utilities as described in Section 01500, TEMPORARY FACILITIES AND UTILITIES.

B. Actual labor costs as shown in Exhibit C, GUARANTEED MAXIMUM PRICE, COST OF WORK AND FEE, for field office staff.

C. Fair rental values acceptable to the Construction Manager as described in Article 9.6-Cost Determination, for construction equipment idled due to the delay.

D. Actual Errors and Omissions insurance costs attributable to delay periods.

7.4.4.2 Indirect Home Office Overhead

For those delay periods as described in the introduction of Article 7.4.4-FIELD OVERHEAD AND INDIRECT HOME OFFICE OVERHEAD FOR COMPENSABLE DELAYS, the Contractor shall be reimbursed for its indirect home office overhead based on the following formula:

[Guaranteed Maximum Price ($) divided by the Contract Time Period (Calendar Days)] x 0.03 = Daily Indirect Home Office Overhead ($/Calendar Day)

As it is impractical to determine the actual home office overhead, such reimbursement shall encompass full payment for any and all indirect home office overhead expenses for such periods of time for the Contractor and all subcontractors. Distribution of the markup amount among the Contractor and all subcontractors and suppliers is the responsibility of the Contractor.

7.5 Liquidated Damages

City and the Contractor recognize that time is of the essence of this Agreement and that the City will suffer financial loss if the Work is not completed within the times specified in Exhibit H-COMPLETION TIMES AND LIQUIDATED DAMAGES, plus any extensions thereof allowed in accordance with Article 7.4-TIME EXTENSIONS. It is hereby understood and agreed that it is and will be difficult and/or impossible to ascertain and determine the actual damage which the City will sustain in the event of and by reason of the Contractor's failure to fully perform the Work or to fully perform all of its Agreement obligations that have accrued by the times for completion as specified in Exhibit H-COMPLETION TIMES AND LIQUIDATED DAMAGES.

It is, therefore, agreed in accordance with California Government Code Section 53069.85 that the Contractor will forfeit and pay to the City liquidated damages in the amount set forth in Exhibit H, COMPLETION TIMES AND LIQUIDATED DAMAGES, per day for each and every calendar day that expires after the times for completion specified for each construction milestone except as otherwise provided by extension of time pursuant to Article 7.4-TIME EXTENSIONS. It is further understood and agreed in accordance with California Government Code Section 53069.85 that the liquidated damages sum specified in this provision is not manifestly unreasonable under the circumstances existing at the time this Agreement was made, and that the City may deduct liquidated damages sums in accordance with this provision from any payments due or that may become due the Contractor.

Liquidated damages will continue to accrue at the stated rate until the completion of any defined completion milestone(s) and Final Completion of Work, all as set forth in Exhibit H, COMPLETION TIMES AND LIQUIDATED DAMAGES. Accrued liquidated damages may be deducted by the City from amounts due or that become due to the Contractor for performance of the Work. Liquidated

damages may not be waived or reduced by the City unless expressly waived or reduced in writing by the City.

ARTICLE 8 - PAYMENT AND COMPLETION

8.1 Guaranteed Maximum Price ("GMP") and GMP Shared Savings

CITY shall pay for CONTRACTOR's performance under this Agreement the Cost of the Work and Fee (as described in Exhibit C-GUARANTEED MAXIMUM PRICE, FEE, AND COST OF WORK hereto); provided, however, that the sum of the Cost of the Work and the Fee shall not exceed the GMP, as adjusted by Change Order/Directive in accordance with the Contract Documents. CONTRACTOR bears the risk of its increased costs due to market price increases (including escalating costs for materials).

8.2 Shared Savings

CONTRACTOR shall be compensated for actual work completed based on the Cost of Work and Fee up to the amount of the GMP. If CONTRACTOR's actual total Cost of the Work and Fee is less than the GMP, upon Final Completion, the CONTRACTOR shall be entitled to receive a negotiated percentage of the GMP Savings as described in Exhibit C-GUARANTEED MAXIMUM PRICE, FEE, AND COST OF WORK hereto. "GMP" Savings shall mean the positive difference, if any, when the actual Total Cost of the Work and Fee is subtracted from the GMP; provided, however, that unused Allowance monies, if any, shall not be subject to shared savings.

8.3 Schedule of Values

Contractor will be required to submit a complete schedule of values upon selection of proposal to facilitate contract negotiation within ten (10) days of notice. Schedule of values should set forth the various portions of the Work, and the portions of the GMP allocated to each portion.

8.4 Applications for Payment

CONTRACTOR shall deliver to CITY not more than once each month an Application for Payment covering the Cost of Work and Fee applicable to the Work performed during the immediately preceding month. With each Application for Payment CONTRACTOR shall submit such evidence as may be necessary to demonstrate costs incurred on account of Cost of the Work during such month and the percentage of completion of each category of Work. CITY may reject requests for payment, or portions thereof, for Work, or portions thereof, not performed or completed.

8.5 Amount of Progress Payments

CITY shall pay CONTRACTOR the actual Cost of the Work and Fee, if any, through the period covered by the Application for Payment, less Retention as set forth in Article 8.6 below, provided that the aggregate payment amount before retention will not exceed the percentage of completion of the Work multiplied by the GMP (excluding items of the GMP not subject to retention). CITY may additionally withhold from progress payments such amounts pursuant to stop payment notice claims as required by law and CITY administrative regulation 4.01.

8.6 Retention, Escrow Agreement, Final Payment

Five percent (5%) Retention shall be withheld from each progress payment until the expiration of thirty-five (35) days following the recordation of the notice of completion; provided however, CITY shall

continue to retain such amount as required by law and/or CITY administrative regulation 4.01. CONTRACTOR may elect to establish an escrow account for securities in-lieu of the five percent (5%) Retention in a form of escrow agreement compliant with law and subject to approval by the CITY Attorney (form of escrow agreement is attached as Exhibit F–IN LIEU OF SECURITIES ESCROW AGREEMENT. Release of Retention monies shall constitute the Final Payment.

8.7 Early Release of Subcontractor Retention. [reserved]

8.8 Payment for On-Site and Off-Site Stored Materials.

8.8.1 Payment for Materials:

8.8.1.1 Payment may be made for those materials delivered to the site but not incorporated in the work to the extent that the materials are included in the Construction Schedule as cost-loaded material delivery activities.

8.8.1.2 Payment for materials delivered will not be made before the respective shop drawings, installation instructions and O&M manuals have been submitted, reviewed, and accepted in accordance with Section 01330, Submittal Procedures.

8.8.1.3 To receive payment for materials delivered to the site, but not incorporated in the work, it shall be necessary for the CONTRACTOR to submit to the ENGINEER, at least 7 days prior to the end of said month, a list of such materials.

8.8.1.4 At their sole discretion, the ENGINEER will approve items for which payment as for On-Site and Off-Site Stored Materials is to be made.

8.8.1.5 The list of materials and invoices shall be clearly identified by referencing the associated activity on the cost loaded schedule.

8.8.1.6 Payment for materials delivered to the site or a bonded warehouse will be made in an amount equal to the respective suppliers' invoices(s) for the actual net cost for the item(s) delivered plus delivery charges in accordance with payment terms of the Agreement.

8.8.1.7 The CONTRACTOR's actual net cost for the materials must be supported by invoices of suppliers.

8.8.2 Proper storage and protection of materials shall be provided by the CONTRACTOR. Final payment shall be made only for materials actually incorporated in the work and, upon acceptance of the work, all materials remaining for which advance payments had been made shall revert to the CONTRACTOR, unless otherwise agreed, and payments made for these items shall be deducted from the final payment for the work.

8.9 Title to Construction Work

CONTRACTOR warrants that title to all Construction Work covered by an Application for Payment shall pass to CITY no later than the time of payment. CONTRACTOR further warrants that upon submittal of an Application for Payment, all Construction Work for which Applications for Payment have been previously issued and payments received from CITY shall, to the best of CONTRACTOR's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of CONTRACTOR, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials or equipment relating to the Construction Work.

8.10 Withholding of Payment

CITY may withhold payment on account of an Application for Payment if required or authorized by any Applicable Law, or to the extent necessary to protect CITY from loss because of:

A. defective Work not remedied;

B. third party claims filed or reasonable evidence indicating probable filing of such claims;

C. failure of CONTRACTOR to make payments of undisputed amounts to Subcontractors for labor, materials or equipment;

D. damage to CITY or to a Separate Contractor caused by the fault or neglect of CONTRACTOR to the extent not reimbursed by insurance; or

E. reasonable evidence that the Work will not be Substantially Completed within the Contract Time due to Inexcusable Delay, and that the unpaid balance of the GMP would not be adequate to cover liquidated damages for the anticipated Inexcusable Delay.

8.11 Failure of Payment; Interest

In accordance with Public Contract Code §20104.50, CITY shall pay CONTRACTOR interest on any progress payment, which is made by CITY more than thirty (30) days after CITY receives an undisputed and properly submitted written payment request. Said interest shall be equal to the rate set forth in Code of Civil Procedure §685.010(a), and shall begin to accrue upon the expiration of said thirty (30) day period. Any written request for a progress payment which CITY determines to be disputed, improper or not suitable for payment for any reason shall be returned to CONTRACTOR within seven (7) days after receipt by CITY, along with a written statement of the reason or reasons why such request is disputed, improper or not suitable for payment.

8.12 Occupancy by CITY Prior to Acceptance

CITY reserves the right to Beneficial Occupancy and without charge by CONTRACTOR. In those areas of the Work which are completed, CITY may store materials, equipment, and supplies, and may perform partial operation.

8.13 Substantial Completion

When CONTRACTOR considers the entire Work complete and ready for its intended use, CONTRACTOR shall certify in writing to CITY that the entire Work is substantially complete provide CITY with a Certificate of Substantial Completion. Within a reasonable time thereafter, CITY and CONTRACTOR shall make an inspection of the Work to determine the status of completion. If CITY does not consider the Work substantially complete, CITY will notify CONTRACTOR in writing giving reasons therefor. If CITY considers the Work substantially complete, CITY will accept a corresponding partial Certificate of Substantial Completion. There shall be attached to the Certificate a Punch List of items to be completed or corrected before Final Acceptance and Final Payment.

8.14 Final Completion

When the Work is fully completed, CONTRACTOR shall provide CITY with a Certificate of Final Completion and shall request final inspection in writing. Additionally, CONTRACTOR shall provide legally effective releases or waivers satisfactory to CITY of all lien rights arising out of or liens filed in connection with the Work. Within ten (10) calendar days of receipt of such completed request form, CITY shall make final inspection. If following final inspection, CITY determines that the Work (including all Punch List items) has been fully completed, CITY will process a Notice of Completion. If

CITY determines that the Work is not complete after receipt of certification from CONTRACTOR, CONTRACTOR shall be notified in writing of deficiencies. After the deficiencies have been corrected, the procedure for final inspection as set forth above shall again be initiated by CONTRACTOR. In the event CITY determines the Work is fully completed, CITY shall initiate process of attaining a notice of completion.

8.15 Waiver of Claims at Final Payment

Acceptance of final payment by CONTRACTOR shall constitute a waiver of all claims by CONTRACTOR, except those previously made in writing and identified as unsettled at the time of final payment.

8.16 Construction Allowance Items

CONTRACTOR must have prior written authorization from CITY to begin work on allowance item scope. Upon approval of an invoice for work covered by an allowance item, the CITY shall pay for CONTRACTOR's performance under this Agreement the actual Cost of the Work and Fee (as described in Exhibit D - CONSTRUCTION ALLOWANCE ITEMS AND AMOUNTS hereto). When the approved invoices for the actual Cost of the Work is more or less than the amount of an allowance item, the Contract GMP will be adjusted by Change Order; provided, however, that the sum of the actual total cost of each allowance item shall not exceed the approved Allowance Amount of each, as adjusted by Change Order/Directive in accordance with the Contract Documents.

8.17 Contingency [reserved]

8.18 Audits and Access to Records.

The Contractor must maintain all books, records, documents, and other evidence directly pertinent to the performance of the Work in accordance with generally accepted accounting principles and practices. The Contractor must also maintain all financial information and data used by the Contractor in the preparation or support of any cost submission, including the Contractor's estimate, any Change Order, Dispute, Claim, Pay Application, or other request for equitable adjustment. City and its representatives will have access upon five (5) business days advanced written notice, during normal business hours, to all Contractor's books, summary reports, records, accounts, estimates, documents, detailed financial information, certified payroll records, AIS records and all other information and documentation relevant to the Work for the purposes of inspection, audit, and copying. The Contractor will, at no cost to City, provide reasonable facilities for such access, and inspection purposes. The City will arrange for and pay all costs of copying.

The Contractor agrees to include and make the requirements of this article, applicable to all subcontractors listed in their DESIGNATION OF SUBCONTRACTORS list.

Audits conducted pursuant to this article, will be in accordance with general accepted auditing standards and established procedures and guidelines of the reviewing or audit agency.

The Contractor agrees to provide requested information and reports resulting from access to records to City, subject to execution of an appropriate confidentiality order if requested.

Records must be maintained and made available during the performance of the Work and for four (4) years after Final Payment, and until final settlement of all Disputes or Claims, whichever occurs later.

The right of access provisions of this article, applies to all financial records pertaining to the Agreement:

A. To the extent the records pertain directly to Agreement performance;

B. To the extent required for verification of the costs incurred where such costs are the basis for billings pursuant to the Agreement including Change Orders;

C. To the extent there is credible evidence that Contractor has violated the federal False Claims Act and the California False Claims Act or that fraud, gross abuse, or corrupt practices may be involved; and

D. If the Agreement is terminated for default or convenience.

Access to records is not limited to the required retention periods. City's Authorized Representative or designee must be granted access to records at any reasonable time for as long as the records are required to be maintained.

In the event that City's audit determines that Contractor has billed for any costs that are ineligible for reimbursement or for any reason should not have been paid, or the Contractor's fee has been improperly applied or calculated, Contractor shall promptly refund all improper payments following receipt of City's written notice and explanation of the alleged overpayments or improper fee and shall be responsible to pay City for the City's reasonable costs to perform the audit unless the Contractor establishes that the overpayment or improper fee was the result of an unintentional, inadvertent clerical error.

ARTICLE 9 - CHANGES IN THE WORK

9.1 Contract Held Valid.

Any change in the Scope of Work or deviation from the Contract Documents including, without limitation, Extra Work or Omitted Work, shall not invalidate the original Contract, and shall be performed under the terms of the Contract Documents. The difference in cost of the work affected by such change will be added to or deducted from the Guaranteed Maximum Price (GMP), as the case may be.

9.2 Execution of Changes

A. Only the Contractor or the City may initiate changes in scope of Work or deviation from Contract Documents.

B. Changes in the Work may be accomplished after execution of the Contract where they are documented by an executed Field Directive, Field Order, or Change Order in accordance with applicable provisions of the Contract Documents.

C. Changes in the Work shall be performed under applicable provisions of the Contract Documents. If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to CITY or CONTRACTOR, the applicable unit prices for such change order/directive shall be equitably adjusted. No GMP adjustment on account of a Change Order shall include CONTRACTOR's or Subcontractor's profit, Fee, home office overhead or a formula allocation of indirect costs unless otherwise specifically allowed hereunder.

D. The prices agreed upon and any agreed upon adjustment in Contract Time shall be incorporated in the written order issued by the City, which shall be written so as to show acceptance on the part of the Contractor as evidenced by its signature. By signature of the Change Order, the Contractor acknowledges that the adjustments to the GMP and Contract

Time contained in the Change Order are in full satisfaction and accord and so waives any right to claim any further cost and time impacts at any time during and after completion of the Contract for the changes encompassed by the Change Order.

9.3 Definitions

9.3.1 Incidental Work

Incidental work includes reasonably implied parts of the work not shown on Drawings nor described in Specifications, but which is necessary or normally or customarily required as a part of the Work shown on the Drawings or described in the Specifications to provide a complete installation which is fully connected and tied into the existing facilities and processes and is fully functional and operational. Incidental work shall be treated as if fully described in Specifications and shown on Drawings, and expense thereof shall be included in the Guaranteed Maximum Price (GMP). Incidental work shall be performed by Contractor and included in the Cost of the Work without an increase in the GMP.

9.3.2 Extra Work

New or unforeseen work, or added work of a different character or function; or that involves revisions of the details of the Work on which Contractor based its GMP. If the extra work increases the Contractor's Cost of the Work and/or time to perform the Work, and is approved by the City via a written Change Order, the GMP and/or Contract Times shall be adjusted as provided in the Contract Documents. Extra Work shall not include Work which is shown, detailed or specified in the Contract Documents or which constitutes "Incidental Work" as defined within the Contract Documents definition above.

9.4 Change Directives

Changes in the Work may be directed by a Construction Change Directive prepared and signed by the OWNER'S REPRESENTATIVE. A Construction Change Directive signed by the CONTRACTOR indicates agreement of the CONTRACTOR with the actions specified in the Directive, including the inclusion or absence of an adjustment in Contract Amount or Contract Time or the method for determining them. The following procedures shall apply with respect to Change Directives.

A. Upon receipt of a Change Directive signed by CITY, CONTRACTOR shall promptly proceed with the change in the Work involved and advise CITY of CONTRACTOR's agreement or disagreement with the method, if any, provided in the Change Directive for determining the proposed adjustment in the GMP or the Schedule. If CONTRACTOR receives a written communication signed by CITY which CONTRACTOR believes is a Change Directive but is not so identified, it shall not proceed with the change in the Work until it receives from CITY a written confirmation that such communication is in fact a Change Directive.

B. A Change Directive signed by CONTRACTOR indicates the agreement of CONTRACTOR with the contents thereof, and shall convert the Change Directive to a Change Order.

C. If CONTRACTOR does not respond promptly or disagrees with the method for adjustment in the GMP or Schedule, the method and adjustment shall be determined as provided in these contract documents. In such case, CONTRACTOR shall keep and present, in such form as CITY may request, an itemized accounting, together with appropriate supporting data.

D. Pending final determination of cost to CITY, amounts not in dispute shall be included in Applications for Payment. The amount of credit to be allowed by CONTRACTOR to CITY for a deletion or change which results in a net decrease in the GMP shall be actual net cost. When

both additions and credits covering related Work or substitutions are involved in a change, the allowance for Fee shall be figured on the basis of net increase, if any, with respect to that change.

E. If CITY and CONTRACTOR do not agree with the adjustment in the Schedule or the GMP, such disagreement shall be submitted for dispute resolution in accordance with the provisions of this Contract.

9.5 Contract Modification Procedures

9.5.1 Request for Proposal (RFP)

A. The City may issue a Request for Proposal (RFP) to the Contractor in connection with the City considering an addition to, or deletion from, or other change in the Work. RFPs shall not be deemed to be directions to proceed with any addition, deletion or change to the Work.

B. Whenever the Contractor is required to prepare a cost proposal in response to an RFP, and whenever Contractor is entitled to submit a cost proposal and elects to do so, Contractor shall prepare and submit to City for consideration a cost proposal using a form provided by the CM or the Contractor may submit another form if deemed acceptable to the Construction Manager. All cost proposals must contain a complete breakdown of costs of credits, deducts, and extras; and itemize materials, labor, equipment, special services, taxes, and markups. All Subcontractor Work shall be so indicated. Individual entries on the Cost Proposal form shall follow the cost items defined in Cost Determination in this Section. The Contractor shall provide all required cost information requested by an RFP within fourteen (14) days after receiving the RFP.

C. Upon receipt of the Contractor's cost proposal, which shall include a detailed itemized breakdown as prescribed in this Section, the Construction Manager will act promptly thereon. If Construction Manager takes no exception to the cost proposal, Construction Manager will prepare Change Order for City and Contractor signatures, provided that City has elected to proceed with the changed Work. If a cost proposal is not acceptable to the Construction Manager, the Construction Manager will indicate to Contractor the unacceptable items in the proposal. Except as otherwise provided in this Section, Contractor shall have seven (7) days in which to respond to Construction Manager with a revised cost proposal.

D. If the parties do not agree on the price or time adjustment in response to an RFP, City may issue a unilateral change order pursuant to the Agreement, Article 9.5.3-FIELD ORDER-FORCE ACCOUNT WORK. Contractor shall perform the changed Work, notwithstanding any claims or disagreements of any nature, with the understanding that it preserves all rights to pursue adjustments to the GMP and/or Contract Time in connection with the change.

E. When the necessity to proceed with a change does not allow the Construction Manager sufficient time to conduct a proper check of the Contractor's cost proposal (or revised cost proposal), Construction Manager may order Contractor to proceed with the change, with the understanding that parties will negotiate in good faith to determine the value of the change at the earliest practical date. In this event, the value of change, with corresponding equitable adjustment to the GMP, shall not be more than any increase or less than any decrease proposed by the Contractor's cost proposal.

9.5.2 Field Directive/Supplemental Instruction Resulting from RFI's, Submittals or other instructions from the Engineer and/or City

A. The Contractor may be issued a Field Directive or Supplemental Instructions resulting from an RFI, Submittal or other instructions from the Engineer and/or City.

B. If the Contractor is satisfied with Field Directive or Supplemental Instruction and does not request change in the GMP or Contract Time, then the Field Directive or Supplemental Instruction shall be executed by the Contractor without a Change Order.

C. If the Contractor believes the Field Directive/Supplemental Instruction results in additional Cost of the Work or a change in the GMP or Contract Time, then Contractor must notify the Construction Manager within ten (10) days following receipt of Field Directive/Supplemental Instruction and before proceeding with this work. If the Construction Manager considers Contractor's notice to be justified, the instructions of the Field Directive/Supplemental Instructions will be revised or a proposed Change Order will be issued for the City's consideration. The Contractor shall have no claim for additional compensation or extension of the schedule because of any such additional instructions unless the Contractor provides the Construction Manager written notice thereof within the time frame specified above, unless the City is not Prejudiced by Contractor's untimely notice In addition, the Contractor shall within fifteen (15) days from the date of the Contractor furnishing written notice provide a detailed justification and analysis as well as estimated pricing and Time Impact Analysis to support any request for time extension. Should the work at issue impact Contractor's operations for a period longer than fifteen (15) days, Contractor shall update its request for additional compensation and/or additional time, every thirty (30) days until the disputed work is no longer allegedly impacting Contractor's operations. In addition, Contractor shall comply with the requirements of the Agreement concerning Records of Disputed Work and Submission of Disputed Work Costs, respectively.

D. Should the Contractor proceed with the work affected before receipt of a response from the Construction Manager, any portion of the work which is not done in accordance with the City's interpretation, clarifications, instructions, or decisions is at Contractor's risk.

E. If the Contractor and Construction Manager still do not agree on the Field Directive's impact to the GMP or Contract Time, then Contractor may appeal to the Engineer for decision. If the Engineer concurs with the Construction Manager's position, the Contractor will be directed again in writing to make the changes covered in the Field Directive/Supplemental Instructions and Contractor shall do so notwithstanding any claims or disagreements of any nature. Contractor may file a Notice of Potential Claim and Claim in accordance with the Agreement.

9.5.3 Field Order- Force Account Work

A. If either the amount of work or payment for a Change Order cannot be determined or agreed upon beforehand, the City may direct by issuing a unilateral Change Order or Field Order that the work be done on a force account basis. The term "force account" shall be understood to mean that payment for the work will be made based on an accounting of the Contractor's Cost of the Work as described in the Agreement, Exhibit C-Guaranteed Maximum Price, Cost of Work and Fee, and Article 9.6-Cost Determination.

B. Prior to the commencement of force account work, the Contractor shall notify the Construction Manager of its intent to begin work. The Contractor shall maintain accurate cost records, separate from the cost categories for the balance of the Work, which depict all

costs incurred for the authorized force account work. Upon request by the Construction Manager or City, these cost records must be made available for review as provided in the Agreement.

C. All subcontractors that expend labor, equipment and materials on force account work shall record those costs daily by using a form provided by or approved by the Construction Manager. The subcontractor reports, if found to be correct, shall be signed by the subcontractor, Contractor and Construction Manager, or inspector, and a copy of which shall be furnished to the Construction Manager no later than the working day following the subcontractor's performance of said work. The Daily Extra Work Report sheet shall thereafter be considered the true record of force account work provided by the subcontractor. If the Construction Manager, or inspector, does not agree with the labor, equipment and/or materials listed on the subcontractor's daily force account report, the Construction Manager, or inspector, shall sign-off on the items on which they are in agreement. The Construction Manager shall then review the items of disagreement and will advise the Contractor, in writing, of its determination. If the Contractor disagrees with this determination, it shall have the right to file a claim notice per the Agreement.

D. The Contractor shall maintain its records in such a manner as to provide a clear distinction between the direct costs of subcontractor work paid for on a force account basis and the costs of other operations.

E. To receive partial payments and final payment for force account work, the Contractor shall submit, in a manner approved by the Construction Manager, detailed and complete documented verification of the Contractor's and any of its subcontractor's Costs of the Work involved in the force account pursuant to the pertinent unilateral Change Order or Field Order. Such costs shall be submitted within thirty (30) days after said work has been performed. No payments will be made for work billed and submitted to the Construction Manager after the thirty (30) day period has expired, unless City is not prejudiced by Contractor's untimely billing and submittal of costs.

9.5.4 Construction Change Directive (CCD)

A. CCD is a written order prepared by the Construction Manager and signed by the City, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Price or Contract Time.

B. If at any time the City believes in good faith that a timely Change Order will not be agreed upon using the foregoing procedures, the City may issue a CCD with its recommended cost and/or time adjustment. Upon receipt of CCD, Contractor shall promptly proceed with the change of Work involved and concurrently respond to City's CCD within ten (10) calendar days.

C. Contractor's response must be any one of following:

1. Return CCD signed, thereby accepting City's response, time, and cost.
2. Submit a (revised if applicable) Cost Proposal with supporting documentation (if applicable, reference original Cost Proposal number followed by letter A, B, etc. for each revision), if City so requests.
3. Give notice of intent to submit a Claim as described in the Agreement.

D. If the CCD provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

1. Mutual acceptance of a lump sum properly itemized and supported by sufficient

substantiating data to permit evaluation.

2. Unit prices stated in the Contract Documents or subsequently agreed upon.
3. Cost to be determined in a manner agreed by the City and Contractor.
4. Cost to be determined pursuant to Article 9.6-Cost Determination.

E. A CCD signed by Contractor indicates the agreement of Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

F. If Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by Construction Manager on the basis of reasonable expenditures and savings of those performing the Work attributable to the change including, in case of an increase in the Contract Sum, an allowance for overhead and profit in accordance with Articles 9.6.3 and 9.6.4-Allowable Markups. If the parties still do not agree on the price for a CCD, Contractor may file a Claim in accordance with the Agreement. Contractor shall keep and present, in such form as Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this paragraph shall be limited to those provided in Article 9.6-Cost Determination.

G. Pending final determination of cost to the City, amounts not in dispute may be included in Applications for Payment.

9.5.5 Documentation for All Changes

A. Upon request of the Construction Manager, the Contractor shall provide the following information to support the request for change in cost or time:

1. Copy of original quotations, purchase order or invoices to verify costs included in original pricing.
2. Copy of all quotations, purchase order or actual invoices to support new costs submitted.
3. Copy of all insurance and bond costs resulting from change.
4. Copy of all quantity takeoff sheets for materials, labor and equipment.
5. Certified payroll records.
6. A list of equipment with manufacturer's name and model number and the alphanumeric designation used in the Equipment Rental Rates prepared by the California Department of Transportation, unless the equipment is included in the Agreement, Exhibit C-Guaranteed Maximum Price, Cost of Work and Fee.
7. Invoices for all non-owned rental equipment.
8. Other information, as reasonably required, to document the labor, equipment and materials used.

B. Correlation of Other Items:

1. Contractor shall revise Application for Payment forms to record each authorized Change Order or CCD as a separate line item and adjust the GMP on the next monthly progress billing.

2. Contractor shall revise the Progress Schedules prior to the next monthly pay period to reflect the effects of all authorized Change Orders or CCDs.

3. Contractor shall enter changes in Project Record Documents prior to the next monthly pay period and provide a copy to the Engineer with progress billing.

9.6 Cost Determination

With respect to Change Orders which increase or decrease the Scope of Work described in Exhibit B-Contractor's Technical Proposal, are not due to the errors or omissions of CONTRACTOR and are not attributable to Excusable Delays or the contingencies set forth in Article 9.7 below, the GMP shall be increased (or decreased) by the following "Scope Change Costs":

9.6.1 Contractor's Direct Cost Categories

The Contractor's allowed direct costs are found in the Agreement, Exhibit C-Guaranteed Maximum Price, Cost of Work and Fees.

9.6.2 Subcontractor's Direct Cost Categories

The categories described below are defined to be direct costs for subcontractors at all tier levels.

No other type of costs will be allowable as a direct cost. Direct costs shall not include any labor costs or indirect costs pertaining to the subcontractor's managers or superintendents, their office and engineering staffs, the cost of their offices, facilities, vehicles, or anyone not directly employed on such work, nor small tools (as defined in item C-Subcontractor's Construction Equipment Rental Cost of this Article 9.6.2) nor supplies. All such items are considered indirect costs which form a part of the Contractor's and subcontractors' overhead expenses.

A. Subcontractor's Direct Field Labor

1. The cost of labor for workers (including forepersons when authorized by the Construction Manager) used in actual and direct performance of the work by the subcontractor will be the sum of the following:

    a. The actual wages paid plus any employer payments to, or on behalf of workers for fringe benefits including health and welfare, pension, vacation and similar purposes.

    b. All payments imposed by State and Federal Laws including, but not limited to, workers' compensation insurance, and social security payments. The rates used for workers' compensation insurance shall be actual rates paid by the subcontractor for each specific craft and broken down by wage rate if applicable to that craft.

    c. General Liability insurance burden, if applied to subcontractor's payroll. By formal submittal, the subcontractor shall provide adequate backup information to Construction Manager to verify this burden rate is indicative of the actual rates paid by the Contractor as a percent of labor.

2. Except as otherwise may be agreed to in writing by the Construction Manager, the actual wages and benefits paid for manual classifications of subcontractor's on- site workers will not, in the aggregate, be less than the current applicable wage for each classification as established by the State of California Department of Industrial

Relations.

3. Specifically prohibited from the subcontractor's labor costs are other payroll burden factors such as small tools (as defined in item C below), bonuses of any kind and safety incentives.

4. Subcontractor shall include the actual travel and/or subsistence costs, if any, as a separate line item under the labor cost category. Except as otherwise may be agreed to in writing by the Construction Manager, the actual travel and/or subsistence costs will not be less than established in the State of California Department of Industrial Relations.

B. Subcontractor's Materials

1. The cost of all materials, including all factory testing, freight and delivery costs of materials, accepted by the City and used in performing the work will be the cost to the subcontractor from the supplier thereof. All discounts for early payment shall accrue to the subcontractor unless the City's payment to subcontractor is paid to subcontractor before discount payment is due in which case discount savings will be fully credited to City on next progress billing. All rebates and all returns from the sale of surplus materials shall be credited to the Cost of the Work.

2. At the request of the Construction Manager, the subcontractor will obtain more than one quote for materials to be used to complete change order or force account work. Copies of all quotes shall be shown to the Construction Manager.

3. For materials used in construction of the Project which may have additional uses on other projects for the subcontractor's benefit, such as dimensional lumber, beams and plywood to form concrete or temporary diversion pipes, the subcontractor shall submit a material unit cost to cover use of these types of materials for the approval of the City prior to delivery to the Work Site. This unit cost shall take into account the use of such materials on other past and future projects.

C. Subcontractor's Construction Equipment Rental Cost

1. The cost of construction machinery and equipment for changes shall be based on fair rental cost or equivalent rental cost of owned equipment. Such costs will be allowed for only those days or hours during which the equipment is in actual use. Payment shall be based on actual rental and transportation invoices but shall not exceed the rental rates listed for such equipment in the State of California Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates" which is in effect on the date upon which the work is performed. City-operated equipment rates shall not exceed the rates in the aforesaid Rental Rate publication plus the labor costs as provided in this section.

2. The aforesaid rental rates shall be deemed to include the cost of fuel, power, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of all kinds, depreciation, storage, insurance, labor except for construction equipment operators and any and all costs to the subcontractor incidental to the use of such construction equipment. All equipment must be in good working condition and suitable for the purpose for which it is to be used, as judged solely by the Construction Manager. Rental time will not be allowed while equipment is inoperative due to breakdowns.

3. Compensation for idle time of equipment through delays caused by the City will be made consistent with Section 8-1.09, Right of Way Delays, of the Caltrans Standard Specifications.

4. Small Tools. Individual pieces of equipment or tools having a replacement value of

$500 or less, whether or not consumed by use, are considered to be small tools and no rental payment will be made unless it can be demonstrated that the particular item is needed and purchased by the subcontractor solely for the completion of the Change Order work.

5. The rental time to be paid for equipment used to complete change order and force account work will be the time the equipment is in operation on the change order or force account work being performed or an approved outside rental rate from an equipment rental company provided such rental rate was approved by the Construction Manager prior to the equipment's transportation to the project for use in the change order or force account work.

6. For equipment not already on the project site to complete other portions of the Work, loading and transporting costs will be allowed for equipment approved by the Construction Manager to complete change order or force account work. The cost of transporting equipment in low bed trailers shall not exceed the hourly rates charged by established haulers in the area. The cost of transporting equipment shall not exceed the applicable minimum established rates of the California Department of Transportation.

D. Special Services used by Subcontractor

When the Construction Manager and the Contractor, by agreement, determine that special service or item of extra Work cannot be performed by forces of a subcontractor, service or extra Work item may be performed by a specialist. These types of services will be paid based on current market rates, subject to Construction Manager approval, which approval will not unreasonably be withheld.

9.6.3 Allowable Mark-Ups - Contractor

The Contractor's allowed mark-ups are found in Exhibit C Guaranteed Maximum Price, Cost of Work and Fees.

9.6.4 Allowable Mark-Ups – Contractor's Subcontractor(s)

The subcontractors shall be entitled to compensation for indirect field and home office overhead costs, and profit for Change Order work. This compensation shall be in the form of markup percentages applied to the direct cost of the Change Order increase or decrease of work, as further described below. The maximum markup which will be allowed for the subcontractor's combined overhead and profit will be:

A. For work by its own organization, the subcontractor may add up to the following percentages:

- Direct Field Labor: 15 percent
- Materials: 10 percent
- Equipment (owned or rented): 10 percent
- Special Services: 5 percent

B. For all such work done by subtier-subcontractors, such sub-subcontractors may add the same percentages as the subcontractor as listed in (9.6.4.A) above to its actual net increase in costs for combined overhead and profit. The subcontractor may then add up to five percent (5%) of the sub-subcontractor's total for its combined overhead and profit. No additional mark-ups will be allowed for further tier-ed subcontracts below a sub-subcontractor.

C. When both additional and deleted work are involved in any one change order, the combined overhead and profit shall be calculated on the basis of the net change, whether an increase or

decrease. For Change Order work which results in a net decrease in cost a minimum of five percent (5%) markup shall be added by the subcontractor to the sum of the direct labor, materials and equipment as a deduction for overhead, profit, and reduction in bond and insurance. The subcontractor shall not be entitled to nor claim for anticipated profits on work that has been omitted.

D. To the total of the subcontractor's actual costs and fees allowed herein under, not more than two percent (2%) shall be added for additional bonds, if bonds were required by the Contractor. The compensable percentage for the subcontractor's bonds shall be based on the subcontractor's actual bond costs, as substantiated through documentation formally submitted to the Construction Manager.

E. The added fixed fees shall be considered to be full compensation, covering the cost of general supervision, overhead, profit, small tools, incidentals and any other general expenses. The above fixed fees represent the maximum limits which will be allowed, and they include, but are not limited, to the subcontractors' indirect field and home office expenses and all other costs for cost proposal preparation, schedule analysis and preparation, operation and maintenance manual documentation, and record documents and change order administration.

9.6.5 Materials On Order at Time of Change Order

If acceptable material is ordered by the subcontractor for the deleted work prior to the date of notification of such deletion by the Construction Manager, and if orders for such material cannot be canceled, the subcontractor will be paid at the actual cost. In such case, the material paid for shall become the property of the City and City will pay for the actual cost of any further handling. If the material is returnable to the vendor, and if the Construction Manager so directs, the material shall be returned and the subcontractor will be paid for the actual costs of charges made by the vendor for returning the material. The actual cost of handling returned material will be paid for by the City.

9.6.6 Disallowed Costs in Change Order and Force Account Work

Disallowed subcontractor costs in Change Orders include, but are not limited to:

A. Interest cost of any type other than those mandated by statute;

B. Change Order preparation and review costs;

C. Meetings related to Change Orders;

D. Schedule preparation costs;

E. Submittal preparation costs;

F. Accounting and Invoicing costs related to Change Orders;

G. Developing and/or updating as-built drawings.

9.7 Change Orders on Account of Contingencies

With respect to Change Orders which are attributable to the following contingencies, the GMP shall be adjusted (increased or decreased) by the following **"Contingency Costs,"** consisting of the following:

9.7.1 Taxes

With respect to new, increases, or decreases in taxes arising after the date of this Agreement (other than taxes assessed based on the income of CONTRACTOR), the Change Order shall consist of the incremental amount of such new, increased or decreased taxes only.

9.7.2 Permit Fees

With respect to increases or decreases in fees for permits or other governmental certificates or instruments arising after the date of this Agreement, the Change Order shall consist of the incremental amount of such increases or decreases. To the extent this Agreement states that a permit or certificate is not required and CONTRACTOR is later required to procure such permit or certificate, all out-of-pocket costs reasonably associated therewith shall be included in the Change Order

9.8 Change Orders on Account of Excusable Delays

9.8.1 Construction Delay Costs

With respect to Change Orders, which are attributable to Excusable Delays, and subject to the exceptions set forth in Article 9.8.2 below, the GMP shall be increased by the following "Delay Costs":

A. Increased allowable labor costs resulting from wage increases paid due to the delay;

B. Premiums for overtime and extra shifts incurred in accelerating the Work, but only if acceleration is required in advance by CITY;

C. Additional general conditions costs which would not have been incurred but for the delay (itemized, and not based on a formula allocation);

D. Demobilization and remobilization costs; and

E. Additional items of Cost of the Work attributable to the Excusable Delay and which would not have been incurred but for the Excusable Delay.

9.8.2 Exceptions

With respect to the Excusable Delays described in Article 7.4.2, the following exceptions to the cost provisions of Article 9.8.1 above shall apply:

A. Failure or inability of CITY to make available any or all of the Site in accordance with the requirements of the Schedule is not a compensable delay if such Excusable Delay occurs prior to the commencement of the Construction Work.

B. Failure or inability of CITY or CONTRACTOR to obtain necessary zoning changes, variances, code changes, permits or approvals from any governmental authority; is not a compensable delay if such Excusable Delay occurs prior to the commencement of the Construction Work.

C. Changes in Applicable Laws. Additional compensation shall only be paid if the change in Applicable Law is not a change in law of general application (e.g., CAL/OSHA), but is a change in law specifically affecting the Project.

9.9 Change Orders on Account of Differing Site Conditions

If CONTRACTOR encounters conditions described in Article 7.3.3-Excusable Delays, in addition to the increase in the GMP on account of delay costs incurred by CONTRACTOR (as described in Section 9.8.1), the GMP shall also be increased by the additional Cost of the Work attributable to such conditions which would not have been incurred but for such conditions.

9.10 Cost Pricing Data and Access To Records

A. All cost and pricing data submitted by the Contractor with respect to any change, prospective or executed, or any claim for extra compensation shall be a true, complete, accurate and current representation of actual cost and pricing of the work. The Construction Manager may require a formal certification as to cost and pricing data submitted by the Contractor.

B. The Construction Manager shall have access to the records of Contractor and Subcontractors as provided in Article 8.18-Audits and Access to Records.

9.11 Time Extensions on Account of Change Orders.

CONTRACTOR shall be entitled to a time extension in connection with any Change Order to the extent its time of performance is extended due to such Change Order. CONTRACTOR shall present to CITY a CPM analysis showing how the Change Order affects the critical path of the Work.

9.12 Force Majeure

There shall be no additional compensation to CONTRACTOR on account of Force Majeure.

ARTICLE 10 - CORRECTION OF WORK

10.1 Correction of Work Prior to Completion

Prior to the date of Final Completion, CONTRACTOR shall correct Work which (a) CITY reasonably rejects as being defective or nonconforming to the requirements of the Contract Documents in a written notice delivered to CONTRACTOR or (b) CONTRACTOR recognizes is defective or nonconforming to the Contract Documents. If other portions of the Work are adversely affected by or are damaged by such defective Work, CONTRACTOR shall also correct, repair or replace such affected or damaged Work, as well as any other property of CITY or others damaged by such defective or nonconforming Work. Prior to the date of Final Completion, the cost of correcting any damaged or defective work shall be paid as a Cost of the Work.

10.2 Correction of Work After Completion

For defects identified by CITY and for which CITY has notified CONTRACTOR within a period of twelve (12) months after the date of Final Completion, or within such longer period as may be provided by special warranties contained in the Contract Documents, CONTRACTOR shall re-execute, correct, repair or replace all Work found to be defective or nonconforming to the Contract Documents (whether arising from a construction defect, error, omission or deficiency). If other portions of the Work are adversely affected by or damaged by such defective Work, CONTRACTOR shall also correct, repair or replace such affected or damaged Work, as well as any other property of CITY or others damaged by such defective or nonconforming Work.

10.3 Acceptance of Nonconforming Work

If CITY prefers to accept Work, which is not in accordance with the requirements of the Contract Documents, CITY may do so instead of requiring its removal and correction, in which case the GMP will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

10.4 No Effect on Limitations

Nothing contained in this Article shall be construed to establish a period of limitation with respect to other obligations, which CONTRACTOR may have under the Contract Documents.

ARTICLE 11 - INSURANCE AND BONDS; INDEMNIFICATION

11.1 Insurance to be provided by CONTRACTOR

CONTRACTOR shall, at all times, maintain in full force and effect at a minimum the insurance required by this section; and CONTRACTOR shall not allow any subcontractor to commence Work until similar insurance required of the subcontractor has been obtained and filed.

11.2 Evidence of Coverage

CONTRACTOR shall, at all times, maintain in full force and effect at a minimum the insurance required by this section; and CONTRACTOR shall not allow any subcontractor to commence Work until similar insurance required of the subcontractor has been obtained and filed. An original Certificate of Insurance, and copies of all required endorsements, all in a form approved by the Risk Manager, evidencing all required coverage or policies shall be filed after the award of the bid and prior to approval of the Contract by the City Council. CONTRACTOR shall provide ten (10) Days prior written notice to CITY of any reduction of coverage limits or cancellation of the coverage or policies shall be given to the City of Roseville as Certificate holder.

11.3 Qualifying Insurers

With the exception of the State Compensation Insurance Fund, all required insurance policies shall be issued by companies licensed to do business in the State of California and who hold a current policy holders alphabetic and financial size category rating of not less than AVII according to the most recent issue of Best's Insurance Reports.

11.4 Summary of Insurance Requirements

Commercial General Liability, automobile liability, and worker's compensation insurance shall be maintained as shown in the table below.

Table 1: Summary of Insurance Required

Coverage	Limits
Commercial General Liability Minor Construction Projects (Projects under $1,000,000)	$2,000,000 each occurrence $4,000,000 aggregate Personal Injury: $2,000,000 each occurrence $4,000,000 aggregate
Commercial General Liability Major Construction Projects (Projects over $1,000,000)	$5,000,000 each occurrence $10,000,000 aggregate Personal Injury: $5,000,000 each occurrence $10,000,000 aggregate
Comprehensive Automobile Liability For bodily injury (including death) and property damage which provides	Total limits of not less than One Million Dollars ($1,000,000) combined single limits per accident, applicable to all owned, non-owned, and hired vehicles
Statutory Workers' Compensation and Employer's Liability Insurance	Limits of not less than One Million Dollars ($1,000,000) per occurrence.
Builder's Risk/Course of Construction Insurance	All Risk" type of builder's Risk Insurance of the type covering one hundred percent (100%) of the value of the Work performed under this Contract
Contractor's Pollution Liability Insurance	Combined Single Limit for each occurrence: $2,000,000 General Aggregate: $2,000,000
Professional Liability Submittals prepared by licensed California Engineer	Limit per claim of at least $2,000,000, and a $4,000,000 in the aggregate for errors and omissions.

11.5 Commercial General Liability.

11.5.1 Coverage or Endorsements

The Commercial General Liability policy shall include coverage or endorsements for:

A. Completed operations.

B. Losses related to independent contractors, products and equipment.

C. Explosion, collapse and underground hazards.

11.5.2 Copies to be Provided

The Commercial General Liability Insurance shall include the following, copies of which shall be provided:

A. Inclusion of the CITY of Roseville, and its officers, agents, employees and volunteers, as additional insured (except for workers' compensation as respects services or operations under the Contract. The additional insured endorsement for the general liability policy shall be at least as broad as the Insurance Services Office ("ISO") CG 20 38 04 13 or an equivalent, blanket endorsement or section of the policy. Endorsements must include coverage for on-going and completed operations. Endorsements shall cover the CITY of Roseville, its officers, agents, employees, and volunteers.

B. Cross liability and severability of interest clauses providing that the insurance applies separately to each insured except with respect to the limits of liability.

C. Stipulation that the insurance is primary and noncontributory, as evidenced by a separate endorsement (CG 20 01 04 13 or an equivalent) or section of the policy, and that neither CITY nor its insurers will be called upon to contribute to a loss.

D. Such insurance shall specifically cover the contractual liability of the CONTRACTOR.

E. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (1) the minimum coverage and limits specified in this Agreement; or (2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

F. Waiver of subrogation endorsement.

G. CONTRACTOR shall furnish a certificate for the period covered.

11.5.3 Claims Made Coverage – Special Notice

SPECIAL NOTICE - CLAIMS MADE COVERAGE:

Liability insurance coverage may not be written on a "claims made" basis. The Certificate of Insurance must clearly provide that the coverage is on an "occurrence" basis.

11.6 Comprehensive Automobile Liability

Comprehensive Automobile Liability for bodily injury (including death) and property damage which provides total limits of not less than One Million Dollars ($1,000,000) combined single limits per accident, applicable to all owned, non-owned, and hired vehicles.

11.7 Statutory Workers' Compensation and Employer's Liability Insurance

Statutory Workers' Compensation and Employer's Liability Insurance, including a waiver of subrogation endorsement and a Broad Form "All-States" Endorsement for all employees engaged in services or operations under the Contract. The employer's liability insurance shall provide limits of not less than One Million Dollars ($1,000,000) per occurrence. Both the worker's compensation and employer's liability policies shall contain the Insurer's waiver of subrogation in favor of CITY, its officers, agents, employees, and volunteers.

11.8 Builder's Risk/Course of Construction Insurance

CONTRACTOR shall be responsible for all loss, damage or destruction whatsoever to the Work called for by this Contract until the approval of a Notice of Completion. CONTRACTOR shall secure "All Risk" type of builder's Risk Insurance of the type covering one hundred percent (100%) of the value of the Work performed under this Contract (the value is presumed to be the Contract amount unless otherwise stated in Supplemental Conditions) and all materials, equipment, or other items to be

incorporated therein while the same are located at the construction site, a bonded warehouse, or its place of manufacture. At any time, the policy shall cover the value of the Work completed. The policy shall cover hazards including the losses due to fire, explosion, hail, rain, lightning, flood (separate insurance as needed), vandalism, malicious mischief, wind, collapse, aircraft, and smoke.

The policies providing such insurance shall name CITY as a loss payee as its respective interests may appear, and certified copies of such policies shall be filed with CITY. The maximum deductible allowable under the Builder's All Risk policy shall be five percent (5%) of the Contract amount.

Builder's Risk Insurance is not required for coverage of losses in excess of five percent (5%) of the Contract amount for damages resulting from earthquake in excess of a magnitude of 3.5 on the Richter scale, or tidal waves. Coverage in the amount of five percent (5%) of the Contract amount for such losses is required.

11.9 Contractor's Pollution Liability Insurance

Contractor's Pollution Liability Insurance. The Contractor shall obtain Pollution Liability Insurance. This insurance shall be written in comprehensive form either as a separate policy or as an endorsement to Contractor's general liability coverage and shall cover liability for bodily injury, property damage, and environmental damage resulting from pollution and related cleanup costs incurred, all arising out of any Work to be performed under the Agreement, including liability for and defense of lawsuits and regulatory actions. Coverage shall be provided for both Work performed on Site, as well as during the transport of hazardous materials. Coverage shall apply to sudden as well as gradual pollution conditions, including without limitation conditions resulting from the escape or release of smoke, vapors, fumes, acids, alkalis, toxic chemicals, liquids, or gases, natural gas, waste materials, or other irritants, contaminants, or pollutants, including asbestos. The liability limits shall be not less than:

- Combined Single Limit for each occurrence: $2,000,000.
- General Aggregate: $2,000,000.

If the coverage required is written on a claims-made coverage form:

- The retroactive date must be shown, and this date must be before the award date of the Agreement.
- Insurance must be maintained, and evidence of insurance must be provided for at least five (5) years after final payment.
- If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the Agreement award date, the Contractor must purchase extended reporting period coverage for a minimum of five (5) years after Final Payment.
- A copy of the claims reporting requirements must be submitted to the City for review.

11.10 Professional Liability Insurance

All submittals required of the Contractor which are to be prepared by a licensed California engineer shall be prepared only by a licensed engineer who is covered by a professional liability insurance policy issued by a California-admitted carrier or a carrier authorized to do business in California with a Best's rating of A-: VII or better, with an limit per claim of at least $2,000,000, and a $4,000,000 in the aggregate for errors and omissions. Such insurance shall be maintained in effect by said engineer at all times while performing Work on the Project and for at least three (3) years after Final Completion of the Project.

Contractor shall submit an insurance certificate for such engineer prior to beginning Work for approval by the City.

11.11 Other Insurance Provisions.

A. The requirements of the Contract Conditions as to types and limits of insurance coverage to be maintained by CONTRACTOR, and any approval of insurance by CITY, are not intended to, and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by CONTRACTOR pursuant to the Contract, including, but not limited to, the provisions concerning indemnification, nor preclude CITY from taking any other action available to it under any other provision of the Contract or law.

B. CITY acknowledges that some insurance requirements contained in the Contract Conditions may be fulfilled by self-insurance on the part of CONTRACTOR. However, this shall not in any way limit liabilities assumed by CONTRACTOR under the Contract. Any self-insurance must be approved in writing by CITY, in its sole discretion and shall not reduce the limits of liability. Any deductibles or self-insured retentions ("SIR") must be declared on the certificate of insurance and approved by CITY in writing. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or CITY. CITY reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

C. CONTRACTOR agrees to include in its contracts with all subcontractors the same requirements and provisions of this Contract, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, CONTRACTOR shall require its subcontractors to agree to be bound to CONTRACTOR and CITY in the same manner and to the same extent as CONTRACTOR is bound to CITY under this Contract. Additionally, CONTRACTOR shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of CITY'S indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request. Alternatively, CONTRACTOR may insure subcontractor(s) under its own policy.

D. CITY, its officers, agents, employees and volunteers are to be covered as insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of CONTRACTOR; and with respect to liability arising out of work or operations performed by or on behalf of CONTRACTOR including materials, parts or equipment furnished in connection with such work or operations. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under California Insurance Code Section 11580.04. In addition, the insurance policy may not contain language which prohibits additional insureds or other insurers from satisfying the self-insured retention or deductible.

E. The limits of insurance required in this Contract may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of CITY (if agreed to in a written contract) before the CITY'S own insurance shall be called upon to protect it as a named insured.

F. In the event CONTRACTOR retains the Architect/Engineer, CONTRACTOR shall require its Architect/Engineer to provide professional liability (errors and omissions) insurance (certificate and additional insured endorsement) in the amount of $2,000,000.

G. CITY RESERVES THE RIGHT TO WITHHOLD ANY PROGRESS PAYMENTS TO CONTRACTOR IN THE EVENT OF NONCOMPLIANCE WITH ANY INSURANCE REQUIREMENTS.

11.12 Payment, Performance and Warranty Bonds

CONTRACTOR shall furnish and deliver to CITY Performance, Labor & Materials, and Warranty Bonds issued by a surety prior to, and as a condition precedent to, commencement of the Construction Work on the Site; provided, however, the Warranty Bond shall be waived if such bond is not required pursuant to CITY'S request for proposals for the Project. The Labor & Materials and Performance Bonds shall be in a penal sum equal to one hundred percent (100%) of the GMP, and the Warranty Bond shall be in the penal sum equal to ten percent (10%) of the GMP. All bonds shall be in the form as set forth in Exhibit G hereto. All premiums for the Performance, Labor & Materials, and Warranty Bonds shall be a Cost of the Work. CITY shall have the right to withhold any payment(s) under this Agreement until CONTRACTOR has fully complied with this sub-section.

Table 2: Summary of Bonding Requirements

Bond Type	Requirement
Performance	100% of the Total Contract Price
Labor and Materials	100% of the Total Contract Price
Warranty	One year following the date of Final Completion Penal sum equal to ten percent (10%) of the GMP

11.13 Indemnification

To the fullest extent allowed by law, CONTRACTOR shall defend, indemnify, and hold harmless, CITY, its officers, employees, agents, and volunteers, and each and every one of them, from and against all actions, damages, claims, losses, expenses or other liabilities of every type and description, including reasonable attorney fees, to which they may be subjected or put, by reason of, or resulting from, the performance of the Work, whether upon or off the Work, including the loss of use thereof, that is caused in whole or in part by willful or reckless misconduct and/or any negligent or wrongful act or omission of CONTRACTOR, any Subcontractor, and anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, whether or not it is caused in part by a party indemnified hereunder, except for such claims arising from the sole or active negligence of CITY. The parties intend that this provision shall be broadly construed.

CONTRACTOR's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Agreement for the full period of time allowed by law. The defense and indemnity obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Agreement.

ARTICLE 12 - SAFETY: PROTECTION OF PERSONS AND PROPERTY

12.1 Contractor's Responsibility for Site Safety

It is the intent of the parties that CITY is not an exposing, creating, controlling, or correcting employer under California Labor Code Section 6400. In accordance with generally accepted fabrication and

construction practices and all applicable Laws and Standards and Codes, CONTRACTOR shall have the authority and be solely and completely responsible for the safety of all property utilized and all persons performing under this Agreement. Moreover, the CONTRACTOR shall be the controlling employer and has the authority and responsibility to enforce safety for all fabrication, construction work, and Work performed under this Agreement.

The services of CITY'S contract administrator, if any, in conducting a review of CONTRACTOR's performance under this Agreement is not intended to include a review of the adequacy of CONTRACTOR's work methods, equipment or safety measures. If CITY and/or its contract administrator observes a safety violation related to the CONTRACTOR's performance under this Agreement, then CITY and/or its contract administrator will report the violation to the CONTRACTOR who is then responsible for assuring the violation is abated.

A. CONTRACTOR shall be responsible for initiating, maintaining and providing supervision of safety precautions and programs in connection with the Work, and shall also comply with any and all insurance carrier-mandated safety requirements and programs.

B. CONTRACTOR is hereby informed that work on this Project could be hazardous. CONTRACTOR shall carefully instruct all personnel performing under this Agreement in potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instructions as are necessary to prevent injury to personnel and damage to property.

C. All Equipment, Work and materials provided under this Agreement shall be in strict accordance with all applicable Laws and Standards and Codes, and attention is drawn to the requirements of CAL/OSHA.

D. CONTRACTOR shall perform under this Agreement so as not to expose personnel to, or to discharge into the atmosphere from any materials brought to the Site by CONTRACTOR, smoke, dust, asbestos, toxic chemicals or other air contaminants in violation of applicable Laws and Standards and Codes.

E. The Contractor shall indemnify, defend and hold CITY and Construction Manager, Engineer, Funding Agencies and their respective officers, officials, employees, agents and volunteers or other authorized representatives harmless to the full extent permitted by law concerning liability related to the Contractor's safety obligations in accordance with Article 11.14-Indemnification.

F. If death or serious injuries or serious damages occur, the accident shall be reported immediately by telephone or messenger to both the Construction Manager and the CITY. In addition, the Contractor shall furnish the Construction Manager with a copy of the Employer's Report of Injury immediately following any incident requiring the filing of said report during the prosecution of the Work under this Agreement. The Contractor shall also furnish the Construction Manager with a copy of the Employer's Report of Injury involving any subcontractors on this Project. The Contractor shall make all reports as are, or may be, required by any authority having jurisdiction, and permit all safety inspections of the Work being performed under this Agreement.

G. If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Construction Manager, giving full details of the claim.

12.2 Safety Program

The Contractor shall establish, implement, and maintain a written injury prevention program as required by Labor Code Section 6401.7. Before beginning the Work, the Contractor shall file with the Construction Manager a written Contractor Safety Program that provides for the implementation of all of the Contractor's safety responsibilities in connection with the Work at the Site and the coordination of that program and its associated procedures and precautions with safety programs, precautions and procedures of each of its subcontractors and other Contractors performing work at the Site. The Contractor shall be solely responsible for initiating, maintaining, monitoring, coordinating, and supervising all safety programs, precautions, and procedures in connection with the Work and for coordinating its programs, precautions, and procedures of the other contractors and subcontractors performing the Work at the Site. The Safety Program should contain all the necessary elements for the Contractor to administer its program on the Site

The Contractor's compliance with requirements for safety and/or the Construction Manager's acceptance for filing of the Contractor's Safety Program shall not relieve or decrease the liability of the Contractor for safety. The Construction Manager's review of the Contractor's Safety Program is only to determine if the above listed elements are included in the program. The Contractor's completion of review of the Safety Program does not confirm adequacy of the Program to protect workers. The Contractor is solely responsible to determine adequacy of the program to protect workers per the applicable Labor Code Section.

12.3 Safety Supervisor

The Contractor shall appoint an employee as safety supervisor who is qualified and authorized to supervise and enforce compliance with the Safety Program. The Contractor shall notify the Construction Manager in writing prior to the commencement of work of the name of the person who will act as the Contractor's safety supervisor and furnish the safety supervisor's resume to the Construction Manager.

The Contractor will, through and with its Safety Supervisor, ensure that all of its employees and its subcontractors of any tier, fully comply with the Project Safety Policies. The Safety Supervisor shall be a full-time employee of the Contractor whose responsibility shall be for supervising compliance with applicable safety requirements on the Site and for developing and implementing safety training classes for all job personnel. The CITY shall have the authority to require removal of the Contractor's Safety Supervisor if the representative is judged to be improperly or inadequately performing the duties; however, this authority shall not in any way affect the Contractor's sole responsibility for performing this work safely, nor shall it impose any obligation upon the CITY to ensure the Contractor performs its work safely.

12.4 Applicable Laws

The Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss and shall erect and maintain all necessary safeguards for such safety and protection.

12.5 Safety Notices

In connection with the performance of the Work, CONTRACTOR shall provide notices and comply with all Applicable Laws bearing on the safety of persons and property and their protection from damage, injury or loss. The Contractor shall notify owners of adjacent property and of underground facilities and utility districts when prosecution of the Work may affect them and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

12.6 Reasonable Precautions

CONTRACTOR shall take all precautions and implement all safety measures and requirements imposed by any Applicable Law. Without limiting the generality of the foregoing, CONTRACTOR shall take necessary precautions for the safety of, and shall provide necessary protection to prevent damage, injury or loss to:

A. Employees on the Work and other persons who may be affected thereby;

B. The Work and materials and equipment to be incorporated therein, whether in storage on or off the Site under care, custody or control of CONTRACTOR; and

C. Other property at the Site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of the Construction Work.

12.7 Specific Precautions

12.7.1 Confined Spaces

The Project requires work in confined spaces and requires compliance with CAL/OSHA and Federal OSHA requirements. Confined spaces for the purposes of this article shall be as defined by the Division of Industrial Safety. Work within confined spaces of this Project is subject to the definitions and applicable provisions of Section 5156 et seq., Title 8, Division 1, Chapter 4, Subchapter 7, Group 16, Article 108 of California Code of Regulations, and Title 29 Part 1926 of the Code of Federal Regulations.

In addition, the CITY classifies the following existing facilities as confined space: the interior of pipelines, vaults, manholes, reservoirs and any other such structure or space which is similarly surrounded by confining surfaces as to permit the accumulation of dangerous gases or vapors. The confined spaces are "permit" confined spaces as defined by OSHA and CAL/OSHA and therefore entry is allowed only through compliance with a confined space entry permit program by the Contractor that meets the requirements of 8 C.C.R. Section 5157. While the above-mentioned locations have been identified as permit confined spaces, other permit confined spaces may exist. It shall be the responsibility of the Contractor to identify and classify these confined spaces.

It is anticipated that the Contractor may encounter hazardous conditions within these permit confined spaces which include, but are not limited to the following:

A. Exposure to hydrogen sulfide, methane, carbon dioxide and other gases and vapors commonly found in municipal sewers which could have or has the potential of having Immediate Danger to Life or Health Conditions (IDLH).

B. Exposure to atmosphere containing insufficient oxygen to support human life.

C. Exposure to combustible, flammable and/or explosive atmosphere.

D. Exposure to sewage which may contain bacteriological, chemical and other constituents harmful to humans.

E. Work in conditions where engulfment or entrapment may occur.

F. Work in environments which may be slippery and/or have uneven work surfaces.

G. Work in structures where workers may trip, slip and/or fall several feet.

H. Exposure to an oxygen enriched environment.

12.7.2 Excavation Safety

A. Section 6705. In accordance with the provisions of Section 6705 of the Labor Code, the Contractor shall submit, in advance of excavation of any trench or trenches five feet or more in depth, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plans vary from the shoring system standards set forth in the Construction Safety Orders of the Division of Industrial Safety in Title 8, Subchapter 4, Article 6, California Code of Regulations, the plans shall be prepared and signed by a registered civil or structural engineer employed by the Contractor, and all costs therefore shall be included in the price named in the Agreement for completion of the Work as set forth in the Contract Documents. Nothing in this article shall be deemed to allow the use of a shoring, bracing, sloping, or other protective system less effective than that required by the Construction Safety Orders. Nothing in this article shall be construed to impose a tort liability on the CITY, the Engineer, the Construction Manager, nor any of their officers, officials, employees, agents, consultants or volunteers. The CITY'S review of the Contractor's excavation plan is only for general conformance to the Construction Safety Orders.

   Prior to commencing any excavation, the Contractor shall designate in writing to the Construction Manager the "competent person(s)" with the authority and responsibilities designated in the Construction Safety Orders.

B. Section 6707. Pursuant to the provisions of California Labor Code Section 6707, each Proposal submitted in response to this RFBP shall contain, as a separate cost item, adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life or limb in trenches and open excavation, exceeding five (5) feet, which shall conform to applicable safety orders. By entering an amount for this cost item below, the Proposer warrants that its action does not convey tort liability to the City, the Engineer, the Construction Manager, the Funding Agencies and their respective officers, employees, agents, and subconsultants.

12.7.1 Equipment Safety Provisions

The completed Work shall include the specified permanent safety devices, such as machinery guards and similar safety items, required by the State and Federal (OSHA) industrial authorities and applicable local and national codes. Further, any features of the Work, including CITY-selected equipment, subject to such safety regulations shall be fabricated, furnished, and installed in compliance with these requirements. All equipment furnished shall be grounded and provided guards and protection as required by safety codes. Where vapor-tight or explosion-proof electrical installation is required by safety codes, this shall be provided. Contractors and manufacturers of equipment shall be held responsible for compliance with the requirements included herein. The Contractor shall notify all equipment suppliers and subcontractors of the provisions of this paragraph.

12.7.1 Use of Explosives

Use of explosives is prohibited, unless approved in advance in writing by CITY. CITY may impose reasonable conditions on the use of explosives.

12.7.1 Loading Capacity

The Contractor shall determine safe loading capacities and shall not overload any structure, building, pipe or other existing facility beyond its safe capacity during construction. In addition to any requirements imposed by law, the Contractor shall shore up, brace, underpin and protect as may be necessary all foundations and other parts of all existing structures, facilities and improvements on the Site or adjacent to the Site which are in any way affected by the Contractor's excavations or other operations connected with the Work. Prior to commencing any work which in any way affects adjoining or adjacent land or buildings thereon, or public utilities, the Contractor shall notify the Construction Manager to discuss responsibilities for properly notifying the owners/occupants of adjacent land and the protective measures taken by the Contractor. Upon request of the Construction Manager, the Contractor shall meet with the recipient of any notice or attend local public meetings as proper public outreach on local impacts caused by completion of the Work should be communicated to any parties that may be affected prior to commencing any work.

12.8 Safety Violations

Should the Contractor fail to correct an unsafe condition, the CITY shall have the right to notify the Contractor through the Construction Manager that an unsafe condition may exist and must be corrected or the Work in question can be stopped in accordance with Article 4.6, CITY's Right to Stop the Work, until the condition is corrected to the satisfaction of the CITY. No extension of time or additional compensation will be granted as a result of any stop order so issued. The notification and suspension of such Work or the failure to provide such notification and suspension by the CITY shall not relieve the Contractor of its sole responsibility and liability for safety and the correction of any unsafe conditions.

The CITY shall have the authority to require the removal from the Project of any worker and the foreman and/or superintendent in responsible charge of the work where safety violations occur. The CITY also delegates such authority to the Construction Manager as well.

12.9 Public Safety and Convenience

The Contractor shall conduct its work so as to ensure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the Work and to ensure the protection of persons and property. No road or street shall be closed to the public except with the permission of the Construction Manager and the written approval by the proper governmental authority. Fire hydrants on or adjacent to the Work shall be accessible to firefighting equipment. Temporary provisions shall be made by the Contractor to ensure the use of sidewalks, private and public driveways and proper functioning of gutters, sewer inlets, drainage ditches and culverts, irrigation ditches and natural water courses.

12.10 Emergencies

In an emergency affecting the safety of persons or property, CONTRACTOR shall act, at CONTRACTOR's discretion, to prevent threatened damage, injury or loss. Additional costs or extensions of time caused by CONTRACTOR on account of an emergency not caused by the fault or neglect of CONTRACTOR shall be determined as provided in Article 9.8-Change Orders on Account of Excusable Delay.

12.11 Safeguards

CONTRACTOR shall erect and maintain, as required by existing conditions and performance of the Work, reasonable safeguards for safety and protection, including posting danger signs and other warnings

against hazards, promulgating safety regulations and notifying CITY and users of adjacent sites and utilities, and shall comply fully with the requirements of CAL/OSHA.

12.12 Security

CONTRACTOR shall take any and all precautions that may be reasonably necessary to render all portions of the Work, the Site and any adjacent areas affected by the Work secure in all material respects, to decrease the likelihood of accidents, and to avoid vandalism and other contingencies which are liable to delay the Work or give rise to claims or liabilities. CONTRACTOR shall furnish and install all necessary facilities to provide safe means of access to all points where Work is being performed. CONTRACTOR shall take all precautions and measures as may be reasonably necessary to secure the Project at all hours, including evenings, holidays and non-work hours. Such precautions may include provision of security guards.

12.13 Damage to Property at the Site

CONTRACTOR shall be responsible for any and all damage or loss to property at the Site, except to the extent caused by the acts or omissions of CITY or its representatives, agents or employees. The costs and expenses incurred by CONTRACTOR under this Article shall be paid as a Cost of the Work to the extent that such costs and expenses are in excess of or are not covered by required insurance, and to the extent of any deductibles. If such damage or loss is caused by CONTRACTOR, payment of such costs as Cost of the Work shall be limited by the provisions of Article 2.19.4 hereof.

12.14 Damage to Property of Others

A. CONTRACTOR shall avoid damage, as a result of CONTRACTOR's operations, to existing sidewalks, curbs, streets, alleys, pavements, utilities, adjacent property, the work of Separate Contractors and the property of CITY. CONTRACTOR shall repair any such damage caused by the operations of CONTRACTOR, which costs shall be paid as a Cost of the Work to the extent that such costs and expenses are in excess of or are not covered by required insurance, and to the extent of any deductible.

B. Failure of CONTRACTOR to Repair Damage. If CONTRACTOR fails to commence the repair of damage to property as set forth in this Article, and/or diligently pursue such repair, then CITY, after ten (10) Days prior written notice to CONTRACTOR (provided CONTRACTOR has not commenced such repair during such ten (10) Day period), may elect to repair such damages with its own forces and to deduct from payments due or to become due to CONTRACTOR amounts paid or incurred by CITY is correcting such damage.

12.15 Remedy of Damage

CONTRACTOR shall promptly remedy damage and loss to property referred to in Article 12.14-Damage to Property of Others (items B and C) caused in whole or in part by CONTRACTOR, or anyone employed by or in control of CONTRACTOR, or any Subcontractor. All costs incurred by CONTRACTOR in connection with its obligations under this Section shall be cost of the Work, but shall not increase the GMP.

ARTICLE 13 - DISPUTES

13.1 Disputes between CITY and CONTRACTOR

In the event of any dispute arising between CITY and CONTRACTOR regarding any part of the Contract or the Contract Documents, or the Parties' obligations or performance thereunder, and subject to any claims presentation requirements set forth in the Contract Documents, either Party may institute the dispute resolution procedures set forth herein. The Parties shall continue performance of their respective obligation hereunder notwithstanding the existence of a dispute.

13.2 Dispute Resolution Procedures

CONTRACTOR must submit all claims as defined in and in accordance with the claim resolution process set forth in Section 9204 of the Public Contract Code. Each such claim must be sent to CITY by registered mail or certified mail with return receipt requested and must contain reasonable documentation to support the claim. All claims must be received prior to acceptance of the Work and will be handled in accordance with the procedures set forth in Section 9204 of the Public Contract Code.

ARTICLE 14 - EVENTS OF DEFAULT AND REMEDIES; TERMINATION

14.1 CONTRACTOR Events of Default

The following shall be considered "CONTRACTOR Events of Default":

A. If CONTRACTOR fails or neglects to carry out the Work in accordance with the provisions of the Contract Documents, and fails, after seven (7) Days' notice from CITY, to commence a cure to correct such failure or neglect and thereafter diligently pursue such cure to completion;

B. If CONTRACTOR materially breaches this Agreement and fails, after seven (7) Days' notice from CITY, to commence a cure to correct such breach and thereafter diligently pursue such cure to completion (such breach to include, but not be limited to, failure to make payment to Subcontractors for materials or labor in accordance with the respective agreements between CONTRACTOR and the Subcontractors or violation of Applicable Laws);

C. If a custodian, trustee or receiver is appointed for CONTRACTOR, or if CONTRACTOR becomes insolvent or bankrupt, is generally not paying its debts as they become due or makes an assignment for the benefit of creditors, or CONTRACTOR causes or suffers an order for relief to be entered with respect to it under applicable bankruptcy law or applies for or consents to the appointment of a custodian, trustee or receiver for CONTRACTOR, or bankruptcy, reorganization, arrangement or insolvency proceedings, or other proceedings for relief under any bankruptcy or similar law or laws for the relief of debtors, are instituted by or against CONTRACTOR, and in any of the foregoing cases such action is not discharged or terminated within sixty (60) Days of its institution.

14.2 Remedies of CITY upon a CONTRACTOR Event of Default.

14.2.1 Termination of Contract

Upon the occurrence of a CONTRACTOR Event of Default, CITY shall have the right to terminate this Contract upon an additional seven (7) Days written notice to CONTRACTOR, provided that CONTRACTOR has not commenced a cure within such seven (7) Day period.

14.2.2 Without prejudice to any other rights or remedies of CITY, CITY may:

A. Take possession of the Site and of all materials, equipment, tools and construction equipment thereon owned by CONTRACTOR;

B. Accept assignment of Subcontracts; and

C. Finish the work by whatever reasonable method CITY may deem expedient.

D. When CITY terminates the Contract as aforesaid, CONTRACTOR shall not be entitled to receive further payment until the Work is finished. If the unpaid balance of the GMP exceeds costs incurred in finishing the Work, such excess shall be paid to CONTRACTOR, up to the amount due CONTRACTOR for work performed prior to termination. If such costs exceed the unpaid balance of the GMP, CONTRACTOR shall pay the difference to CITY.

14.3 Recourse to Payment and Performance Bonds

Upon the occurrence of a CONTRACTOR Event of Default and termination of this Contract by CITY, CITY may call upon the Surety to perform its/their obligations under the Payment and Performance Bonds, if applicable.

14.4 Remedies not Exclusive

Except as otherwise provided in this Agreement, no remedy hereunder is intended to be exclusive of any other remedy, but each and every such remedy shall be cumulative and shall be in addition to any other available legal or equitable remedy, existing now or hereafter. No delay or omission to exercise any right or power accruing shall impair any such right or power nor shall it be construed to be a waiver of any Event of Default or acquiescence therein, and every such right and power may be exercised from time to time as often as may be deemed expedient.

14.5 Termination or Suspension for Convenience.

14.5.1 Termination for Convenience.

CITY may, without cause, terminate this Contract, or any portion of Work to be performed hereunder at any time by a notice in writing from CITY to CONTRACTOR for CITY'S convenience. In such case, CITY shall pay to CONTRACTOR all funds due CONTRACTOR for work performed up to the date of termination, plus all demobilization and close-out costs, including, but not limited to, any amounts payable to Subcontractors for early termination, plus reasonable overhead and profit on Work performed. All funds due hereunder, including unpaid Retention, shall be released within thirty (30) Days of termination of the Contract for convenience, subject to any withholding required or authorized by any Applicable Law. In no event shall such amounts owed to CONTRACTOR exceed the GMP.

14.5.2 Suspension for Convenience

CITY may, without cause, order CONTRACTOR in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as CITY may determine. An adjustment shall be made for

increases in the cost of performance of the Work, including Fee on the increased cost of performance, caused by the suspension, delay or interruption, in accordance with the Change Order provisions of this Contract. No adjustment shall be made to the extent (1) the performance is, was or would have been so suspended, delayed or interrupted by another cause for which CONTRACTOR is responsible or (2) that an equitable adjustment to the GMP and/or Schedule is made or denied under another provision of this Contract. Adjustments made in the cost of performance may have a mutually agreed fixed or percentage Fee.

ARTICLE 15 - MISCELLANEOUS PROVISIONS

15.1 Governing Law

This Contract shall be construed with and governed by the laws of the State of California.

15.2 Successors and Assigns

CITY and CONTRACTOR respectively bind themselves, their partners, shareholders, successors, assigns and legal representatives to the other Party hereto and to shareholders, successors, assigns and legal representatives of such other Party in respect to covenants, agreements and obligations contained in the Contract Documents. Neither Party shall assign the Contract without the prior written consent of the other.

15.3 Notice

Any notices to Parties required by this Agreement shall be delivered or mailed, U.S. first class, postage prepaid, addressed as follows:

If to CITY:	If to CONTRACTOR:
City of Roseville Attn: City Clerk 311 Vernon Street Roseville, CA 95678	Auburn Constructors, LLC Attn: John West, President 730 West Stadium Lane Sacramento, CA 95834-1130 (916) 924-0344

Address for Notice may be changed by Notice to the other Party.

15.4 Modifications

No Modifications or Change Orders shall be valid unless in writing and signed by CITY and CONTRACTOR.

15.5 Interpretation

Any and all headings of this Agreement are for convenience of reference only and do not modify, define or limit the provisions thereof. Words of any gender shall be deemed and construed to include correlative

words of the other gender. Words importing the singular number shall include the plural number and vice versa, unless the context shall otherwise be deemed to include all supplements and/or amendments to any such exhibits or documents entered into in accordance with the terms hereof and thereof. All references to any person or entity shall be deemed to include any person or entity succeeding to the rights, duties and obligations of such person or entity in accordance with the terms of this Agreement. Where reference is made in this Agreement to another Contract Document, the reference refers to that provision as amended or supplemented by the other provisions of the Contract Documents. In the event of any conflict between or among the Contract Documents, the provisions of this Agreement shall govern.

15.6 Severability

If any provision of this Agreement is held to be inoperative or unenforceable as applied in any particular case because it conflicts with any other provision hereof or any constitution, statute, ordinance, rule of law or public policy, or for any other reason, such holding shall not have the effect of rendering the provision in question inoperative or unenforceable in any other case, or of rendering any other provision herein contained inoperative or unenforceable to any extent whatever. The invalidity of any one or more phrases, sentences, clauses or sections contained in this Agreement shall not affect the remaining portions of this Agreement or any part hereof, and they shall otherwise remain in full force and effect.

15.7 Whole Agreement

This Agreement, the Exhibits hereto and the Contract Documents, specifications and Drawings shall constitute the entire agreement between the Parties, and no inducements, considerations, promises or other references shall be implied in this Agreement that are not expressly addressed herein

15.8 Accounting Records

CONTRACTOR shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management under this Agreement; the accounting and control systems shall be reasonably satisfactory to CITY. CITY and CITY'S accountants shall be afforded access to CONTRACTOR's records, books, correspondence, instructions, drawings, receipts, Subcontracts, vouchers, memoranda and other data relating to this Agreement, and CONTRACTOR shall preserve these for a period of three (3) years after final payment, or for such longer period as may be required by law.

15.9 No Waiver

Neither the inspection by CITY or its agents, nor any order or certificate for payment of money, nor payment for, nor acceptance of the whole or any part of the work by CITY, nor any extensions of time, nor any position taken by CITY or its agents shall operate as a waiver of any provision of this Agreement or of any power herein reserved to CITY or any right to damages herein provided, nor shall any waiver of any breach of this Agreement be held to be a waiver of any other or subsequent breach.

15.10 CONTRACTOR Shall Assume Risks

Until the Final Completion or acceptance by CITY of all Work under this Contract, the Work shall be under CONTRACTOR's responsible care and charge. CONTRACTOR shall rebuild, repair, restore and make good all injuries, damages, corrections, and repairs occasioned or rendered necessary by accidental causes of any nature, to all or any portions of the Work, except as otherwise stipulated.

15.11 General Liability of CONTRACTOR

Except as otherwise herein expressly stipulated, CONTRACTOR shall perform all the work and furnish all the labor, materials, tools power and light, and appliances, necessary or proper for performing and completing the Work herein required in the manner within the time herein specified. The mention of any specific duty or liability of CONTRACTOR shall not be construed as a limitation or restriction of any general liability or duty of CONTRACTOR and, any reference to any specific duty or liability shall be construed to be the purpose of explanation.

15.12 Attorney's Fees and Venue

If either Party commences any legal action against the other Party arising out of this Agreement or the performance thereof, the prevailing Party shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorney's fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie. To the extent permitted by applicable law, each Party waives any defense that it may have based on lack of *in personam* jurisdiction or *forum nonconveniens*.

15.13 Third Party Beneficiaries

There are no third party beneficiaries to this Agreement.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attested to by its City Clerk under the authority of Resolution No. _____, adopted by the Council of the City of Roseville on the ___ day of _____, 20___, and CONTRACTOR has caused this Agreement to be executed.

CITY OF ROSEVILLE,
a municipal corporation:

BY:_____
DOMINICK CASEY
City Manager

ATTEST:

BY:_____
CARMEN AVALOS
City Clerk

AUBURN CONSTRUCTORS, LLC, a
California limited liability company

BY:_____

its: CEO/PRESIDENT

and

BY:_____

its: CFO/CONTROLLER

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE

BY: _____

SEAN BIGLEY

Environmental Utilities Director

LIST OF EXHIBITS

Exhibit A	Contractor's Statement of Pre-Qualification [Not Used]
Exhibit B	Contractor's Technical Proposal
Exhibit C	Guaranteed Maximum Price, Cost of Work, and Fee
Exhibit D	Construction Allowance Items and Amounts
Exhibit E	Hazardous Materials
Exhibit F	In Lieu of Securities Escrow Agreement
Exhibit G	Bond Forms; Performance, Labor & Materials, and Warranty Bonds
	Note: Warranty Bond requirement may be waived at the option of CITY.
Exhibit H	Completion Times and Liquidated Damages

EXHIBIT A - CONTRACTOR'S STATEMENTS OF PRE-QUALIFICATION (SOPQ)

[NOT USED].

END OF EXHIBIT A

EXHIBIT B - CONTRACTOR'S TECHNICAL PROPOSAL

EXHIBIT C - GUARANTEED MAXIMUM PRICE, COST OF WORK, AND FEE

A. **GUARANTEED MAXIMUM PRICE**: The Guaranteed Maximum Price as of the date of execution of this Agreement is thirteen million eight hundred and eighty-three thousand three hundred dollars ($13,883,300.00), U.S. Currency.

B. **FEE AND CONTINGENCY:** The Fee and Contingency amounts, if any, are as detailed in the CONTRACTOR'S Proposal in Attachment Form 8-GUARANTEED MAXIMUM PRICE, COST OF WORK, and FEE.

C. **COST OF THE WORK:**

Cost of the Work. The term "Cost of the Work" shall mean costs incurred by CONTRACTOR in the performance of the Work, that do not exceed the GMP. The following are categories of cost and expense to be paid by CITY to CONTRACTOR as Cost of the Work:

1. Construction Costs.

1.1. Labor Costs.

1.1.1. Wages of construction workers directly employed by CONTRACTOR to perform the construction of the Work at the Site or, with CITY'S agreement, at off-site workshops.

1.1.2. Wages or salaries of CONTRACTOR's supervisory and administrative personnel when stationed at the Site and wages, salaries and other costs of project management, pre-construction services, form design, foundation engineering, manpower planning, purchasing, estimating and data processing, whether performed at the Site or in CONTRACTOR's offices, including, but not limited to services rendered during the Design Phase of the Project.

1.1.3. Wages and salaries of CONTRACTOR's supervisory or administrative personnel engaged at factories, workshops or on the road, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.

1.1.4. Costs paid or incurred by CONTRACTOR for taxes, insurance, contributions, assessments and benefits required by law or collective bargaining agreements and, for personnel not covered by such agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided such costs are based on wages and salaries included in subsections 1.1.1 through 1.1.3 above.

1.2. **Subcontract Costs**. Amounts due Subcontractors in accordance with the requirements of the Subcontracts.

1.3. **Costs of Materials and Equipment Incorporated in the Completed Construction**. Costs, including transportation, of materials and equipment incorporated or to be incorporated in the completed construction.

1.4. **Costs of other Materials and Equipment, Temporary Facilities, and Related Items**.

1.4.1. Costs, including transportation, installation, maintenance, dismantling

and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by the construction workers, which are provided by CONTRACTOR at the Site and fully consumed in the performance of the Work; and cost, less salvage value, on such items if not fully consumed, whether sold to others or retained by CONTRACTOR. Costs for items previously used by CONTRACTOR shall mean fair market value.

1.4.2. Rental charges for temporary facilities, machinery, equipment and hand tools not customarily owned by the construction workers, which are provided by CONTRACTOR at the Site, whether rented from CONTRACTOR or others, and costs of transportation, installation, minor repairs and replacements, dismantling and removal thereof. Rental charges for equipment owned by CONTRACTOR shall be at then prevailing rates.

1.4.3. Costs of removal of debris from the Site and its proper disposal.

1.4.4. Costs of facsimiles, telegrams and long distance telephone calls, postage and delivery charges (whether originating at the Site or at the offices of CONTRACTOR or CONTRACTOR), telephone service at the Site and reasonable petty cash expenses of the Site office.

1.5. Premiums; Taxes; Fees; Royalties.

1.5.1. That portion directly attributable to this Agreement of premiums for insurance and the Payment and Performance Bonds.

1.5.2. Sales, use, gross receipts or similar taxes imposed by a governmental authority, which are related to the Work and for which CONTRACTOR is liable.

1.5.3. Fees and assessments for any permits, licenses and inspections required by the Contract Documents.

1.5.4. Fees of testing laboratories for tests required by the Contract Documents or government authorities.

1.5.5. Royalties and license fees paid for the use of a particular design, process or product required by the Contract Documents. The costs of defending suits or claims for infringement of patent rights arising from such requirement by the Contract Documents; payments made in accordance with legal judgments against CONTRACTOR or CONTRACTOR resulting from such suits or claims and payments of settlements in connection therewith.

1.5.6. Deposits lost for cause other than CONTRACTOR's negligence.

1.6. **Emergencies**. Costs incurred in taking action to prevent threatened damage, injury or loss in case of emergency affecting the safety of persons and property, as provided in Article 12.10-EMERGENCIES of this Agreement.

1.7. **Other Costs.** Other costs incurred in the performance of the Work, if and to the extent approved in writing by CITY, which approval shall not be unreasonably withheld.

2. Items not Included in Cost of the Work.

2.1. Salaries and other compensation of CONTRACTOR's personnel stationed at CONTRACTOR's principal office or offices other than the Site, except as specifically provided in subsection 1 above.

2.2. Expenses of CONTRACTOR's principal office and offices, other than the Site office.

2.3. Overhead and general expenses, except as may be included in subsection 1 above.

2.4. The capital expenses of CONTRACTOR, including interest on capital employed for the Work.

2.5. Costs that would cause the GMP to be exceeded.

END OF EXHIBIT C

EXHIBIT D - CONSTRUCTION ALLOWANCE ITEMS AND AMOUNTS

A. The following cost allowances and allowance amounts are included in the GMP as part of the Agreement:

Table D-1: Allowance Descriptions

Item#	Allowance Description	Allowance Amount
1	CMU Wall at Misty Wood Residential Property Line	$155,000
2	State of California Licensed Tree Contractor (C61/D49), ISA Certified Arborist or Certified Tree Worker for Cutting Roots, Trimming Trees at Misty Wood Well Site as required by the Approved Tree Permit	$20,000
3	Temporary CM/Inspector Office Trailer Mobilize/Demobilize: Permit, furnish, anchor, connect and install mobile office trailer for City's Construction Manager and Inspection team use within the Contractor's permitted work/laydown area.	$8,000
4	Temporary CM/Inspector Office Trailer Rental: Contractor Rental of Office Trailer (Item 3, above) to City, including grid power (air conditioning, lights and plugs). Allowance item based on assumed 18-month rental duration.	$18,000
5	Misty Wood Well – Traffic Control Allowance	$50,000
6	Construction Yard Rental (18-month duration)	$54,000
	Total of Allowances:	$305,000

B. DUTIES OF CONTRACTOR

1. Plan allowance Work collaboratively with the Construction Manager and CITY's Representative to control allowance costs and avoid impacts to the Progress Schedule.

2. Advise Construction Manager at least fifteen (15) days in advance of the need to purchase materials to avoid impacts to Progress Schedule.

3. Obtain competitive proposals from material suppliers, including:

3.1. Quantity.

3.2. Complete description of product and services provided under allowance.

3.3. Unit cost.

3.4. Total amount of purchase.

3.5. Taxes and delivery charges.

4. On notification of selection, enter into purchase agreement with designated supplier.

5. Arrange for delivery and unloading.

6. Install products in accordance with Contract Documents.

7. Maintain accurate cost records, separate from the cost categories for the balance of the Work, which depict the total cost incurred for each allowance item.

8. Monitor each allowance item total costs to date and immediately report to the Construction Manager should the total cost to date reach 80% of the total allowance amount of any allowance item amount shown in above table. Should the total cost of any allowance item reach 80% of the total allowance amount budgeted, the Contractor shall quantify and forecast the cost to complete the remaining known allowance item tasks and submit this forecasted quantity and completion cost to the Construction Manager.

C. DUTIES OF CONSTRUCTION MANAGER

1. Consult with Contractor and CITY in consideration of equipment or material and suppliers.

2. Provide Contractor with all required product, technical or design related information as it pertains to the allowance items.

3. Make equipment, supplier or system selection and request proposal from Contractor for these items covered by each allowance.

4. Notify Contractor of final equipment, supplier or system selection to allow Contractor to begin submittal and procurement.

5. Review cost to date information submitted by the Contractor and prepare Change Orders as required for CITY approval.

D. ADJUSTMENT OF COSTS

1. The Contractor shall not exceed the allowance amounts shown in above table without the written approval of the CITY. Should the Contractor exceed the allowance amounts without the written approval of the CITY, the Contractor will be responsible for all costs greater than the allowance amounts shown in above table.

2. Contractor will be paid the actual total cost of each allowance item as a Cost of the Work. When actual total cost is more or less than amount of allowance, the GMP will be adjusted by Change Order.

END OF EXHIBIT D

EXHIBIT E - HAZARDOUS MATERIALS

A. Certain Definitions.

1. "Hazardous Materials means any substance:

1.1. The presence of which requires investigation or remediation under federal, state or local law, statute, regulation, ordinance, order, action, policy or common law;

1.2. Which is or becomes defined as a "hazardous waste," "hazardous substance," pollutant or contaminant under any federal, state or local law, statute, regulation, rule or ordinance or amendments thereto, including, without limitation, the Comprehensive Environmental Response, Compensation and Liability Act, 42 USC §§9601 et seq. ("CERCLA"), as amended, or the Resource, Conservation and Recovery Act, as amended, 42 USC §§6901 et seq. ("RCRA");

1.3. Shall include the meaning provided in Section 100 of the Solid Waste Disposal Act (42 USC Section 6903 and/or Section 25117 of the California Health and Safety Code) as amended from time to time, or any other hazardous material, hazardous waste, hazardous substance, pollutant, and/or contaminant with requirements under federal, State of California, or local law, statute, regulation, rule, ordinance, order, action, policy or common law;

1.4. Which is petroleum, including crude oil or any fraction thereof not otherwise designated as a "hazardous substance" under CERCLA, including without limitation gasoline, diesel fuel or other petroleum hydrocarbons;

1.5. Which is toxic, explosive, corrosive, flammable, infectious, radioactive, carcinogenic, mutagenic, or otherwise hazardous and is or becomes regulated by any governmental authority or instrumentality;

1.6. The presence of which on the Site causes or threatens to cause a nuisance upon the Site or to the adjacent properties or poses or threatens to pose a hazard to the health or safety of persons on or about the Site; or

1.7. The presence of which on adjacent properties could constitute a trespass by CONTRACTOR or CITY.

2. **"Underground Storage Tank"** shall have the definition assigned to that term by RCRA §9001, 42 USC §6991, and also shall include:

2.1. Any tank of 1,100 gallons or less capacity used for storing motor fuel;

2.2. Any tank used for storing heating oil for consumption on the premises where stored;

2.3. Any septic tank; and any pipes connected to items A.2.1-A.2.3.

3. **"Environmental Requirements"** means all Applicable Laws, statutes, regulations, rules, ordinances, codes, licenses, permits, orders and similar items of all federal, state or local governmental agencies or other instrumentalities and all applicable judicial, administrative and regulatory decrees, judgments and orders relating to the protection of human health or the environment, including, without limitation:

3.1. All requirements, including but not limited to, those pertaining to reporting,

licensing, permitting, investigation and remediation of emissions, discharges, releases or threatened releases of Hazardous Materials into the air, surface water, ground water or land, or relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials; and

3.2. All requirements pertaining to the protection of the health and safety of employees or the public.

4. **"Environmental Damages"** means all claims, judgments, damages, losses, penalties, fines, liabilities, encumbrances, liens, costs and expenses of investigation and defense of any claim, including, without limitation, attorney's fees, which are incurred at any time as a result of the existence of Hazardous Materials upon, about or beneath the Site or migrating or threatening to migrate to or from the Site, and including, without limitation:

4.1. Damages for personal injury, or injury to property or to natural resources occurring upon or off the Site;

4.2. Fees incurred for the services of attorneys, consultants, CONTRACTOR, experts, laboratories and all other costs incurred in connection with the investigation or remediation of such Hazardous Materials or violation of Environmental Requirements; and

4.3. Liability to any third party or governmental agency or political subdivision to indemnify such party, agency or political subdivision for costs expended in connection with the items listed in subparagraph A.4.2.

5. **"Environmental Conditions"** means collectively, Hazardous Materials and Underground Storage Tanks existing on the Site and not brought there by CONTRACTOR or any Subcontractor.

B. Investigation of Site.

1. Upon written notice from CITY, CONTRACTOR shall prepare for approval and execution by CITY, one or more contracts ("Environmental Contracts") with suitably qualified consultants and/or engineers ("Environmental Engineers"), for purposes of performing an investigation and analysis of the Site prior to demolition and excavation activities, to determine the presence of any Environmental Conditions on, in or under the Site. The Environmental Contracts shall provide for a commercially reasonable scope of investigation approved by CITY, and may provide for conducting the investigation and testing in phases acceptable to CITY. The Environmental Contracts shall also provide that the Environmental Engineers shall begin their tests and inspections at the Site as soon as CITY is able to arrange access to the Site, or any portions thereof, for such purposes. The Environmental Contracts shall provide that CONTRACTOR, acting as agent of CITY, shall coordinate the activities of the Environmental Engineers.

2. The Environmental Contracts shall provide that the Environmental Engineers shall prepare such reports, feasibility studies and remedial plans ("Environmental Assessments") as may be reasonably necessary in order to identify and explain the quantity, scope and nature of the Environmental Conditions found to exist at the Site. The Environmental Assessments shall contain a detailed analysis of the Environmental Conditions discovered, and the actions ("Remedial Actions") required for the response, removal, cleanup or remediation of such Environmental Conditions (i) which are required by Environmental Requirements, or (ii) which are reasonably necessary to

mitigate Environmental Damages.

3. The Environmental Contracts shall provide that the Environmental Engineers shall promptly provide CITY and CONTRACTOR with a copy of each Environmental Assessment, together with any other reports and test results generated pursuant to the Environmental Contracts. CONTRACTOR shall, promptly after receipt of the foregoing matters from the Environmental Engineers, prepare and submit to CITY a written report setting forth CONTRACTOR's understanding of whether and to what extent any recommended Remedial Actions may result in an amendment to the Schedule and the progress of the Work.

4. The Environmental Contracts shall provide that it shall be the responsibility of the Environmental Engineers to give any necessary notice to the appropriate regulatory agency or agencies of the presence of any Environmental Conditions; to pursue all necessary negotiations with such agencies concerning preparation and approval of a plan for clean-up to the extent required; and to obtain all necessary permits to perform any Remedial Actions.

C. Remedial Actions.

1. If so instructed by CITY, based upon the results of the Environmental Assessments, CONTRACTOR shall, as agent for CITY, obtain bids from remediation contractors ("Remediation Contractors) suitably qualified and approved by CITY, to perform the Remedial Actions selected by CITY and shall submit such bids to CITY, together with CONTRACTOR's recommendation of the Remediation Contractor(s) to be retained. If CITY elects to go forward with all or any portion of the Remedial Actions covered by the bids submitted, CITY will so advise CONTRACTOR in a written notice on or before the date which is sixty (60) Days after receipt of the foregoing matters from CONTRACTOR. Promptly after receipt of such notice, CONTRACTOR shall prepare for CITY's execution remediation contracts ("Remediation Contracts") with the Remediation Contractors identified in such notice.

2. CONTRACTOR, as agent for CITY, shall be responsible for coordinating the work and services performed by the Remediation Contractors, and coordinating such remediation work with the Work.

3. If in the course of performance of the Work, CONTRACTOR encounters on the Site any Hazardous Materials not previously disclosed and remediated by the Environmental Engineers or the Remediation Contractors, CONTRACTOR shall immediately suspend the Work in the area affected and promptly thereafter report the condition to CITY.

D. Payments: Liability of CONTRACTOR.

1. All payments due under the Environmental Contracts and the Remediation Contracts shall be made by CITY directly to the Environmental Engineers and the Remediation Contractors. Such payments will be based on requisitions, which requisitions shall be approved by CONTRACTOR prior to submission to CITY.

2. All payments due under the Environmental Contracts, the Remediation Contracts and for Environmental Damages, shall not be a part of the GMP, and shall be the sole responsibility of CITY, except as expressly provided otherwise in Section 5 hereof.

3. It is understood and agreed that with respect to any Environmental Conditions existing on the Site, CONTRACTOR is not, and shall not be deemed to be, a generator, arranger, operator, treater, storer, transporter or disposer of, or otherwise responsible for, any such Environmental Conditions. It is understood and agreed that CONTRACTOR shall

have no right to direct the means or methods of performance of any Environmental Engineer or Remediation Contractor.

4. CITY shall indemnify, defend and hold harmless CONTRACTOR, from and against any Environmental Damages asserted against or sustained by CONTRACTOR as a result of CONTRACTOR being deemed or determined to be a generator, arranger, operator, treater, storer, transporter or disposer of, or otherwise responsible for, any such Environmental Conditions.

E. Environmental Responsibilities of CONTRACTOR.

1. CITY acknowledges and agrees that CONTRACTOR shall not commence or continue any demolition or construction activities on any portion of the Site on or in which Remedial Actions are to be performed until such Remedial Actions are to the point where construction activities will not interfere with such Remedial Actions, as evidenced by appropriate certification by the applicable Environmental Engineer and/or Remediation CONTRACTOR and any required approval of any applicable government agency. CONTRACTOR agrees to use good faith diligent efforts to adjust and reschedule its activities at the Site so as to minimize, to the extent reasonably practical, the adverse effect on the progress of the Work resulting from any Remedial Actions.

2. CONTRACTOR shall not bring Hazardous Materials to the Site, and shall not include Hazardous Materials in any construction materials, unless permitted by Environmental Requirements. CONTRACTOR shall comply, and shall cause all Subcontractors to comply, with all Environmental Requirements regarding the generation, handling, storage, treatment and disposal of Hazardous Materials.

3. CONTRACTOR shall indemnify, defend and hold harmless the Indemnified Parties from and against any Environmental Damages asserted against or sustained by such parties as a result of any Environmental Conditions caused or created by CONTRACTOR or any Subcontractor, or of any violation by CONTRACTOR or the Subcontractors, of any Environmental Requirement arising out of the performance of the Work.

END OF EXHIBIT E-HAZARDOUS MATERIALS

EXHIBIT F - IN LIEU OF SECURITIES ESCROW AGREEMENT

(Form of agreement follows this page)

(Use is optional by CONTRACTOR)

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

(Project: _____)

THIS ESCROW AGREEMENT is made and entered into on this ____ day of _____, 20__ by and between the:

CITY of Roseville, whose address is:
311 Vernon Street
Roseville, CA 95678

(hereinafter called "CITY"); and

_____, whose address is:

_____

_____

(hereinafter called "CONTRACTOR"); and

_____, whose address is:

_____

_____

(hereinafter called "ESCROW AGENT").

For the consideration hereinafter set forth, CITY, CONTRACTOR, and ESCROW AGENT agree as follows:

1. Pursuant to Section 22300 of the Public Contract Code of the State of California, CONTRACTOR has the option to deposit securities, subject to prior approval of CITY, with ESCROW AGENT, as a substitute for retention earnings required to be withheld by CITY pursuant to the contract for public works entered into between the CITY and CONTRACTOR for the Project in the amount of _____ _____ dollars ($_____) dated _____, (hereinafter referred to as the "Contract"). Alternatively, on written request of CONTRACTOR, CITY shall make payments of the retention earnings directly to the ESCROW AGENT.

When CONTRACTOR deposits the securities as a substitute for Contract earnings, the ESCROW AGENT shall notify CITY within ten (10) days of the deposit. The market value of the securities at the

time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between CITY and CONTRACTOR. Securities shall be held in the name of ESCROW AGENT, and shall designate CONTRACTOR as the beneficial owner, and shall be limited to those types of acceptable securities as described in Public Contract Code Section 22300.

2. CITY shall make progress payments to CONTRACTOR for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that ESCROW AGENT holds securities in the form and amount specified above.

3. When CITY makes payment of retentions earned directly to ESCROW AGENT, ESCROW AGENT shall hold them for the benefit of CONTRACTOR until the time that the escrow created under this Agreement is terminated. CONTRACTOR may direct the investment of the payments into securities. All terms and conditions of this Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when CITY pays ESCROW AGENT directly.

4. CONTRACTOR shall be responsible for paying all fees for the expenses incurred by ESCROW AGENT in administering the Escrow Account and all expenses of CITY. These expenses and payment terms shall be determined by CITY, CONTRACTOR, and ESCROW AGENT.

5. The interest earned on the securities or the money market accounts held in escrow and all interest earning on that interest shall be for the sole account of CONTRACTOR and shall be subject to withdrawal by CONTRACTOR at any time and from time to time without notice to CITY.

6. CONTRACTOR shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to ESCROW AGENT accompanied by written authorization from CITY to ESCROW AGENT that CITY consents to the withdrawal of the amount sought to be withdrawn by CONTRACTOR.

7. CITY shall have a right to draw upon the securities in the event of default by CONTRACTOR. Upon seven (7) days' written notice to ESCROW AGENT from CITY of the default, ESCROW AGENT shall immediately convert the securities to cash and shall distribute the cash as instructed by CITY.

8. Only upon receipt of written notification from CITY certifying that the Contract is final and complete, and that CONTRACTOR has complied with all requirements and procedures applicable to the Contract, ESCROW AGENT shall release to CONTRACTOR all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.

9. ESCROW AGENT shall rely on the written notifications from CITY and CONTRACTOR pursuant to Sections (5) to (8), inclusive, of this Agreement and CONTRACTOR shall hold ESCROW AGENT harmless from ESCROW AGENT's release and disbursement of the securities and interest as set forth above.

10. The parties hereto mutually agree that this Agreement is substantially similar to the form under Public Contracts Code Section 22300.

11. The names of the persons who are authorized to give written notice or to receive written notice on behalf of CITY and on behalf of CONTRACTOR in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of CITY:

_____

Title

_____

Name

_____

Signature

_____

Address

On behalf of CONTRACTOR:

_____

Title

_____

Name

_____

Signature

_____

Address

On behalf of ESCROW AGENT:

_____

Title

_____

Name

_____

Signature

_____

Address

12. At the time the Escrow Account is opened, CITY and CONTRACTOR shall deliver to ESCROW AGENT a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement by its City Manager and attestation by its City Clerk under the authority of Resolution No. 87-141, adopted by the Council of the City of Roseville on the 5th day of August, 1987, and CONTRACTOR and ESCROW AGENT have authorized the execution of this Agreement.

CITY OF ROSEVILLE, a municipal corporation:

BY:_____
DOMINICK CASEY

CONTRACTOR:

_____, a
_____

BY:_____

City Manager

ATTEST:

BY:_____

CARMEN AVALOS

City Clerk

APPROVED AS TO FORM:

BY:_____

MICHELLE SHEIDENBERGER

City Attorney

its:_____ and

BY:_____

its:_____

ESCROW AGENT:

BY:_____

its:_____

and

BY:_____

its:_____

APPROVED AS TO SUBSTANCE:

BY:_____

DENNIS KAUFFMAN

Chief Financial Officer

ACKNOWLEDGED BY ADMINISTERING DEPARTMENT

BY:_____

END OF DOCUMENT-IN LIEU OF SECURITIES ESCROW AGREEMENT

Bond No._____

Premium $_____

EXHIBIT G - BOND FORMS

There are three (3) bond forms that constitute Exhibit G following this index sheet.

1. Performance Bond
2. Labor and Material Bond
3. Warranty Bond

Bond No._____

Premium $_____

PERFORMANCE BOND

This Performance Bond ("Performance Bond"), dated _____, 20___, is in the penal sum of _____ _____ Dollars ($_____), which is an amount not less than one hundred percent (100%) of the Total Contract Price, and is entered into by and between the undersigned _____ ("Principal" or "Contractor") and the undersigned _____

("Surety") to ensure the Principal's faithful performance of the Design Assist Construction Agreement for the _____ project ("Design Assist Contract"). This Performance Bond consists of this page and the following Performance Bond Terms and Conditions, Paragraphs 1 through 12. Any singular reference to the Principal, the Surety, the CITY of Roseville, California ("CITY") or other party shall be considered plural where applicable.

BOND TERMS AND CONDITIONS

1. The Principal and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the CITY for the complete and proper performance of the Design Assist Contract, which is incorporated herein by reference.

2. If the Principal completely and properly performs all of its obligations under the Design Assist Contract, the Surety and the Principal shall have no further obligation under this Performance Bond, except to participate in conferences as provided in Paragraph 3.1 below.

3. If there is no CITY Default, the Surety's obligation under this Performance Bond shall arise after:

   3.1 The CITY has notified the Contractor and the Surety at their respective addresses described in Paragraph 10 below, that the CITY is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen (15) days after receipt of such notice to discuss methods of performing the Design Assist Contract. If the CITY, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Design Assist Agreement, but such a mutual agreement shall not waive the CITY's right, if any, subsequently to declare a Contractor Default; and

   3.2 The CITY has declared a Contractor Default and formally terminated the Contractor's right to complete the Design Assist Contract. Such Contractor Default shall not be declared earlier than twenty (20) days after the Contractor and the Surety have received notice as provided in Paragraph 3.1 above.

   3.3 The CITY has agreed to pay the Balance of the Total Contract Price to:

      3.3.1 The Surety in accordance with the terms of this Performance Bond and the Design Assist Contract; or

      3.3.2 To a contractor selected to perform the Design Assist Contract in accordance with the terms of this Performance Bond and the Design Assist Contract.

4. When the CITY has satisfied the conditions of Paragraph 3 above, the Surety shall promptly (within thirty (30) days) and at the Surety's expense elect to take one of the following actions:

4.1 Arrange for the Contractor, with the CITY's consent, such consent to be in the CITY's sole discretion, to perform and complete the Design Assist Contract. If the

4.2 CITY withholds its consent, the Surety must elect an option described in Paragraphs 4.2, 4.3 or 4.4, below; or

4.3 Undertake to perform and complete the Design Assist Contract itself, through its agents or through independent contractors; or

4.4 Obtain proposals from qualified contractors acceptable to the CITY for a contract for performance and completion of the Design Assist Contract, and, upon determination by the CITY of the best value for the CITY, arrange for a contract to be prepared for execution by the CITY and the contractor selected, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Design Assist Contract; and, if the Surety's obligations defined in Paragraph 6 below exceed the Balance of the Total Contract Price, then the Surety shall pay to the CITY the amount of such excess; or

4.5 Waive its right to perform and complete the Design Assist Contract, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances, and, after investigation and consultation with the CITY, determine in good faith the amount for which it may then be liable to the CITY under Paragraph 6, below, for the performance and completion of the Design Assist Contract and, as soon as practicable after the amount is determined, tender payment therefor to the CITY with full explanation of the payment's calculation. If the CITY accepts the Surety's tender under this Paragraph 4.4, the CITY may still hold Surety liable for future damages then unknown or unliquidated resulting from the Seller Default. If the CITY disputes the amount of Surety's tender under this Paragraph 4.4, the CITY may exercise all remedies available to it at law to enforce the Surety's liability under Paragraph 6, below.

5. If the Surety does not proceed as provided in Paragraph 4, above, then the Surety shall be deemed to be in default on this Performance Bond ten (10) calendar days after receipt of an additional written notice from CITY to the Surety demanding that the Surety perform its obligations under this Performance Bond. At all times the CITY shall be entitled to enforce any remedy available to the CITY at law or under the Design Assist Contract including, without limitation, and by way of example only, rights to perform work, protect work, mitigate damages, or coordinate work with other consultants or contractors at Surety's sole expense.

6. The Surety's monetary obligation under this Performance Bond is limited by the amount of this Performance Bond. Subject to these limits, the Surety's obligations under this Bond are commensurate with the obligations of the Seller under the Design Assist Contract. The Surety's obligations shall include, but are not limited to:

6.1 The responsibilities of the Seller under the Design Assist Contract for completion of the Design Assist Contract and correction of defective work;

6.2 The responsibilities of the Seller under the Design Assist Contract to pay liquidated damages, and damages for which no liquidated damages are specified in the Design Assist Contract, including but not limited to, all valid and proper back charges, offsets, payments, indemnities, defense costs or other damages; and

6.3 Additional legal, design professional and delay costs resulting from the Seller Default or resulting from the actions or failure to act of the Surety under Paragraph 4, above.

Bond No._____

Premium $_____

7. The Surety shall not be liable to the CITY or others for the obligations of the Contractor that are unrelated to the Design Assist Contract, and the Balance of the Total Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Performance Bond to any person or entity other than the CITY or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, alteration or addition to the Design Assist Contract or to related subcontracts, purchase orders and other obligations, including but not limited to changes of time. The Surety consents to all terms of the Design Assist Contract, including provisions on changes to the Contract Documents. No extension of time, Change Order, alteration, Modification, deletion, or addition to the Contract Documents, or of the work required thereunder, shall release or exonerate Surety on this Performance Bond or in any way affect the obligations of Surety on this Performance Bond.

9. Any proceeding, legal or equitable, under this Performance Bond shall be instituted in any court of competent jurisdiction in Placer County, California within two (2) years after the Contractor Default or within two (2) years after the Contractor ceased working or within two (2) years after the Surety refuses or fails to perform its obligations under this Performance Bond, whichever occurs first. If the provisions of this Paragraph 9 are void or prohibited by law, the minimum period of limitation available to sureties as a defense in Placer County shall be applicable.

10. Notice to the Surety, the CITY or the Principal shall be mailed or delivered to the address shown on the signature page.

11. Any provision in this Performance Bond conflicting with any statutory or regulatory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Performance Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

    12.1 Balance of the Total Contract Price: The total amount payable by the CITY to the Contractor pursuant to the terms of the Design Assist Contract after all proper adjustments have been made under the Design Assist Contract, including, for example, deductions for progress payments made, deductions for liquidated damages owed, and increases/decreases for approved modifications to the Design Assist Contract.

    12.2 Design Assist Contract: The documents between the CITY and the Principal identified as the Contract Documents in that certain first above-mentioned Design Assist Construction Agreement, including all changes, Addenda and modifications thereto.

    12.3 Contractor Default: Material failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Design Assist Contract.

    12.4 CITY Default: Material failure of the CITY, which has neither been remedied nor waived, to pay the Contractor progress payments due under the Design Assist Contract or to perform other material terms of the Design Assist Contract, provided such failure is the cause of the asserted Contractor Default and is sufficient to justify Contractor termination of the Design Assist Contract.

IN WITNESS WHEREOF, the undersigned obligated parties have executed this instrument.

Bond No._____

Premium $_____

Principal:

Signature:

Name and Title:

Address:

(Corp. Seal)

Surety:

Signature:

Name and Title:

Address:

(Corp. Seal)

Attorney in Fact: _____

Surety shall submit the following documents along with this Performance Bond:

1. Verification that Surety is admitted to transact surety business in the State of California; and
2. Copy of Surety's Certificate of Authority, issued by the Insurance Commissioner of the State of California, along with a statement that said Certificate has not been surrendered, revoked, cancelled, annulled or suspended.

Approved: _____, CITY Attorney

END OF DOCUMENT – PERFORMANCE BOND

Bond No._____

Premium $_____

LABOR AND MATERIAL BOND

This Labor and Material Bond ("Labor and Material Bond") dated _____, 20____, is in the penal sum of _____ _____Dollars ($_____), which is an amount not less than one hundred percent (100%) of the Total Contract Price, and is entered into by and between the undersigned _____ ("Principal" or "Contractor") and the undersigned _____ ("Surety") to ensure the Principal's payment of claimants pursuant to the Design Assist Construction Agreement for the _____ project ("Design Assist Contract"). This Labor and Material Bond consists of this page and the following Labor and Material Bond Terms and Conditions, Paragraphs 1 through 15. Any singular reference to the Principal, the Surety, the CITY of Roseville, California ("CITY") or other party shall be considered plural where applicable.

BOND TERMS AND CONDITIONS

1. The Principal and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the CITY and to Claimants, to pay for labor, materials, Equipment furnished and Services provided in the performance of the Design Assist Contract, which is incorporated herein by reference.

2. With respect to the CITY, this obligation shall become null and void if and when the Principal:

   2.1 Promptly and fully makes payment, directly or indirectly, for all sums due Claimants, and

   2.2 Fully defends, indemnifies and holds harmless the CITY from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Design Assist Contact, provided the CITY has promptly notified the Principal and the Surety (at the address described in Paragraph 10 below) of any claims, demands, liens or suits and has tendered defense of such claims, demands, liens or suits to the Principal and the Surety, and provided there is no CITY Default. Otherwise, this Labor and Material Bond shall be, and remain, in full force and effect.

3. With respect to Claimants, this obligation shall become null and void if and when the Principal promptly and fully makes payment, directly or indirectly through its Subcontractors, for all sums due Claimants; otherwise, this Labor and Material Bond shall be, and remain, in full force and effect.

4. The Surety shall have no obligation to Claimants under this Labor and Material Bond until:

   4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the CITY, stating that a claim is being made under this Labor and Material Bond and, with substantial accuracy, the amount of the claim.

   4.2 Claimants who do not have a direct contract with the Contractor:

      4.2.1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the CITY, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the claim stating, with

substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

4.2.2 Have either received a rejection in whole or in part from the Contractor, or have not received within thirty (30) days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

4.2.3 Not having been paid within the above thirty (30) days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the CITY, stating that a claim is being made under this Labor and Material Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5. If a notice required by Paragraph 4 above is given by the CITY to the Contractor or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1 Send an answer to the Claimant, with a copy to the CITY, within forty-five (45) days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Labor and Material Bond, and the amount of this Labor and Material Bond shall be credited for any payments made in good faith by the Surety under this Labor and Material Bond.

8. Amounts due the Contractor under the Design Assist Contract shall be applied to satisfy claims, if any, under this Labor and Material Bond.

9. The Surety shall not be liable to the CITY, Claimants or others for obligations of the Contractor that are unrelated to the Design Assist Contract. The CITY shall not be liable for payment of any costs, expenses, or attorney's fees of any Claimant under this Labor and Material Bond, and shall have no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Labor and Material Bond.

10. The Surety hereby waives notice of any change, alteration or addition to the Design Assist Contract or to related subcontracts, purchase orders and other obligations, including but not limited to changes of time. The Surety consents to all terms of the Design Assist Contract, including provisions on changes to the Contract Documents. No extension of time, Change Order, alteration, modification, deletion, or addition to the Contract Documents, or of the work required thereunder, shall release or exonerate Surety on this Labor and Material Bond or in any way affect the obligations of Surety on this Labor and Material Bond.

11. Any proceeding, legal or equitable, under this Labor and Material Bond shall be instituted in any court of competent jurisdiction in Placer County, California within one (1) year from the date on which (i) the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.3.3, or (ii) the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Design Assist Contract, whichever of (i) or (ii) first occurs. If the provisions of this Paragraph 11 are void or prohibited by law, the minimum period of limitation available to sureties as a defense in Placer County shall be applicable.

Bond No._____

Premium $_____

12. Notice to the Surety, the CITY or the Principal shall be mailed or delivered to the address shown on the signature page below. Actual receipt of notice by the Surety, the CITY or the Principal, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page below.

13. Any provision in this Labor and Material Bond conflicting with any statutory or regulatory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein.
The intent is that this Labor and Material Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Labor and Material Bond, the Principal shall promptly furnish a copy of this Labor and Material Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1 CLAIMANT: An individual or entity having a direct contract with the Contractor or with a subcontractor (of any tier) of the Contractor to furnish labor, materials or equipment for use in the performance of the Design Assist Contract. The intent of this Labor and Material Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Design Assist Contract, architectural and engineering services used or reasonably required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien or stop payment notice might be asserted.

DESIGN ASSIST CONTRACT: The documents between the CITY and the Contractor identified as the Contract Documents in that certain first above-mentioned Design Assist Contract, including all changes, Addenda and modifications thereto.

15.2 CITY DEFAULT: Material failure of the CITY, which has neither been remedied nor waived, to pay the Contractor as required by the Design Assist Contract, provided such failure is the cause of the failure of Principal to pay the Claimants and is sufficient to justify Contractor termination of the Design Assist Contract.

IN WITNESS WHEREOF, the undersigned obligated parties have executed this security instrument.

Principal:

Signature:

Name and Title:

Address:

(Corp. Seal)

Bond No._____

Premium $_____

Surety:

Signature:

Name and Title:

Address:

(Corp. Seal)

Attorney in Fact: _____

Surety shall submit the following documents along with this Labor and Material Bond:

1. Verification that Surety is admitted to transact surety business in the State of California; and
2. Copy of Surety's Certificate of Authority, issued by the Insurance Commissioner of the State of California, along with a statement that said Certificate has not been surrendered, revoked, cancelled, annulled or suspended.

Approved: _____, CITY Attorney

END OF DOCUMENT – LABOR AND MATERIAL BOND

Bond No._____

Premium $_____

WARRANTY BOND

This Warranty Bond ("Warranty Bond"), dated _____, 20___, is in the penal sum of _____ for the Design-Assist Construction Agreement for the _____ project, and is entered into by and between the undersigned _____ ("Principal" or "Contractor") and the undersigned _____ ("Surety") to guaranty that all Equipment and Services provided by Seller under the above-mentioned Design Assist Contract will fulfill the requirements of Principal's warranties and guarantees included in the Contract Documents. This Warranty Bond consists of this page and the following Warranty Bond Terms and Conditions, Paragraphs 1 through 7. Any singular reference to the Principal, the Surety, the CITY of Roseville, California ("CITY") or other party shall be considered plural where applicable.

BOND TERMS AND CONDITIONS

1. The Principal and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the CITY for a period of one (1) year following the date of Final Acceptance, or such longer period specified in the Contract Documents, its unconditional warranty of the quality and adequacy of all of the work including, without limitation, all equipment and work provided by Contractor and its subcontractors and subvendors of all tiers in connection with the Design Assist Contract.

2. Neither final payment nor use or occupancy of the Equipment or Services performed by the Contractor shall constitute an acceptance of such Equipment or Services not done in accordance with this Warranty Bond or relieve Contractor of liability in respect to any express guarantees, warranties or responsibilities for faulty materials or workmanship, ordinary wear and tear excepted. If within one (1) year after the date of Final Acceptance, or such longer period of time as may be prescribed the terms of the Contract Documents, any Equipment or Services is found to be defective, Contractor and Surety shall promptly, without cost to CITY and in accordance with CITY's written instructions, correct such defective Equipment or Services. Contractor and Surety shall remove any defective Equipment rejected by CITY and replace it with Equipment that is not defective. If Contractor or Surety fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, CITY may have the defective Equipment or Services corrected or removed and replaced. Contractor and Surety shall pay for all claims, costs, losses and damages caused by or resulting from such removal and replacement. Where Contractor and Surety fail to correct defective Equipment or Services, or defects are discovered outside the correction period, CITY shall have all rights and remedies granted by law.

3. As part of the obligation secured hereby and in addition to the face amount specified therefor, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by CITY.

Bond No._____

Premium $_____

4. The Surety hereby waives notice of any change, alteration or addition to the Design Assist Contract or to related subcontracts, purchase orders and other obligations, including but not limited to changes of time. The Surety consents to all terms of the Design Assist Contract, including provisions on changes to the Contract Documents. No extension of time, Change Order, alteration, Modification, deletion, or addition to the Contract Documents, or of the work required thereunder, shall release or exonerate Surety on this Warranty Bond or in any way affect the obligations of Surety on this Warranty Bond.

5. If the Surety does not proceed as provided in Paragraph 2 above, then the Surety shall be deemed to be in default on this Warranty Bond ten (10) calendar days after receipt of an additional written notice from CITY to the Surety demanding that the Surety perform its obligations under this Warranty Bond. At all times the CITY shall be entitled to enforce any remedy available to the CITY at law or under the Design Assist Contract including, without limitation, and by way of example only, rights to perform work as Surety's expense, protect work, mitigate damages, or coordinate work with other consultants or contractors.

6. All abbreviations and definitions of terms used in this Warranty Bond shall have the meanings set forth in the Contract Documents, including, without means of limitation, the Design Assist Contract.

7. The foregoing Warranty Bond is in addition to any other guarantees and warranties of Contractor contained in the Contract Documents, and not in lieu of, any and all other liability imposed on Contractor under the Contract Documents and at law with respect to Contractor's duties, obligations, and performance under the Contract Documents. In the event of any conflict or inconsistency between the terms of this Warranty Bond and any guaranty, warranty or obligation of the Seller under the Contract Documents or at law, such inconsistency or conflict shall be resolved in favor of the higher level of obligation of the Contractor and Surety.

IN WITNESS WHEREOF, the undersigned obligated parties have executed this instrument.

Principal:

Signature:

Name and Title:

Address:

(Corp. Seal)

Bond No._____

Premium $_____

Surety:

Signature:

Name and Title:

Address:

(Corp. Seal)

Attorney in Fact: _____

Surety shall submit the following documents along with this Warranty Bond:

1. Verification that Surety is admitted to transact surety business in the State of California; and
2. Copy of Surety's Certificate of Authority, issued by the Insurance Commissioner of the State of California, along with a statement that said Certificate has not been surrendered, revoked, cancelled, annulled or suspended.

Approved: _____, CITY Attorney

END OF DOCUMENT – WARRANTY BOND

EXHIBIT H - COMPLETION TIMES AND LIQUIDATED DAMAGES

Aquifer Storage and Recovery Wells 13 (Campus Oaks) and 19 (Misty Wood) Project

A. Project Milestones

Following are scope descriptions for substantial completion of project milestones.

1. **Milestone 1:** Order all parts identified by the Contractor and Engineer in the initial project as having a lead time that has the reasonable potential to effect the critical path schedule and for which there is sufficient information to order within the timeframe provided for Milestone 2.
2. **Milestone 2:** Complete all work below ground and hardscape, fencing, piping, tracer wires, conduits, foundations, grating, the facility CMU walls, encroachments to the public street, discharge points to swales or creeks, rip rap, geotextiles and their permanent coverings, sidewalks and sidewalk restoration, cleanouts, pull boxes, hand holes, grounding rings and rods, etc. such that no further below-ground work is required.
3. **Milestone 3**: Substantial Completion of both Wells 13 and 19 in accordance with Article 8.13 and City has accepted a partial Certificate of substantial completion and punch list. Determination of Substantial Completion is solely at the discretion of the CITY.
4. **Milestone 4**: Final Completion in accordance with Article 8.14 and City has initiated the process of attaining a Notice of Completion. Determination of Final Completion is solely at the discretion of the CITY.

B. Times Allowed for Completion

In accordance with the provisions of Article 7-TIME AND PROGRESS OF WORK, the following table summarizes the scope of work milestones and the contracted completion time. Each milestone shall be completed within the number of consecutive calendar days from the date established in the Notice to Proceed for the commencement of Contract Time.

Table H-1: Times Allowed for Completion of Each Project Milestone

Contractual Completion Event	**Completion Time (Calendar Days)**
Milestone 1 – Long Lead time Parts Ordered	120
Milestone 2 – Below-Ground Work Complete and Paved	251
Milestone 3 – Substantial Completion	483
Milestone 4 – Final Completion	528

C. Damages for Delays

In accordance with the provisions of Article 7-TIME AND PROGRESS OF WORK for the period of time that any portion of the Work remains unfinished after the time fixed in above Table H-1: Times Allowed for Completion of Each Project Milestone, as modified by extensions of time granted by the Owner, it is understood and agreed by the Contractor and the Owner that the Contractor shall pay the Owner the liquidated damages listed below.

Table H-2: Daily Liquidated Damages for Non-Completion of Each Project Milestone

Contractual Completion Event	**Daily Liquidated Damages**
Milestone 1 – Long Leadtime Parts Ordered	---
Milestone 2 – Below-Ground Work Complete and Paved	$1,000
Milestone 3 – Substantial Completion	$1,000
Milestone 4 – Final Completion	$1,000

D. Weather Days

In accordance with the provisions of Article 7-TIME AND PROGRESS OF WORK, an allowance of working days of weather or other caused Excusable Delays noted in the table below are included in the time allowed for completion between physical demobilization and demobilization. This allowance represents a reasonable assessment of anticipated lost working days based on historical weather patterns. These weather days shall be included in the Contractor's schedule as specified in Technical Specifications Section 01321-SCHEDULES AND REPORTS.

Table H-3: Anticipated Rain Days

Month	Expected Rain Delay Days
Jan	6
Feb	7
Mar	6
Apr	3
May	2
Jun	1
Jul	0
Aug	0
Sep	1
Oct	3
Nov	5
Dec	6
Total Annual	40

END OF EXHIBIT H

ORDINANCE NO. 6929

ORDINANCE OF THE COUNCIL OF THE CITY OF ROSEVILLE AUTHORIZING CERTAIN AMENDMENTS TO THE FISCAL YEAR 2024-25 BUDGET AND DECLARING THIS ORDINANCE TO BE IMMEDIATELY EFFECTIVE AS AN APPROPRIATION MEASURE

THE CITY OF ROSEVILLE ORDAINS:

SECTION 1. The City of Roseville Annual Budget, Fiscal Year 2024-25, is hereby amended as listed on the attached budget adjustment for the Aquifer Storage and Recovery Wells 13 (Campus Oaks) and 19 (Misty Wood) project.

SECTION 2. This ordinance is hereby declared to be an appropriation measure, immediately effective pursuant to the provisions of Section 5.03 of the Charter.

SECTION 3. The City Clerk is hereby authorized and directed to post a true copy of the foregoing ordinance in each of three (3) conspicuous locations in the City and she shall immediately after such posting enter in the ordinance book, under the record of the ordinance, a certificate under her hand stating the time and place of such publication by posting.

PASSED AND ADOPTED by the Council of the City of Roseville, this _____day of_____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

REQUEST FOR BUDGET ADJUSTMENT

Updated 11/22/2024

Please complete the cells highlighted in yellow.

REQUESTER NAME & TITLE:	Keith Schmidt, Senior Engineer	FISCAL YEAR:	2024-25
PREPARER NAME & TITLE:	Linda York, EU Business Analyst	ORDINANCE:	
DEPARTMENT/DIVISION:	EU Technical Services		

EXPENDITURES/EXPENSES/TRANSFERS OUT

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
6120	6587	84001	500315	2,704,000	Increase Capital Outlay for Project #500315, Aquifer Storage and Recovery Wells 13 Campus Oaks and 19 Misty Wood
6120	5080	84001	500315	246,000	Increase Internal Project Labor for Project #500315, Aquifer Storage and Recovery Wells 13 Campus Oaks and 19 Misty Wood
EXPENDITURES/EXPENSES/TRANSFERS OUT TOTAL				2,950,000	

REVENUES/TRANSFERS IN

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
REVENUES/TRANSFERS IN TOTAL				-	

NET ADJUSTMENT	2,950,000	

FUND BALANCE

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
6120	3601	00000	000000	(2,950,000)	Decrease Water Construction Fund Balance
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
FUND BALANCE TOTAL				(2,950,000)	

Justification for Budget Adjustment:

The Campus Oaks and Misty Wood ASR well project (#500315) was established for the construction of two ASR wells capable of both water recharge and groundwater extraction. The project is funded by the Water Construction Fund (6120) and a grant from the State's Natural Resources Agency and Department of Water Resources. City participation in the grant agreement was approved by Council on September 20, 2023. The grant is administered by the Regional Water Authority (RWA) as part of a larger American River Terms for Ecosystem Support and Infrastructure Assistance Needs (ARTESIAN) Project.

The ARTESIAN grant provides this project with $8,010,000 to be utilized by December 31, 2025. This project will utilize grant money first for both construction and construction management until those funds are expended, then will utilize funds available in the Water Construction Fund.

An additional $2,950,000 is requested to fully fund the project ($246,000 for staff labor and $2,704,000 for construction management inspection services, utility connections, landscaping, and other costs). This request will bring the total project budget to $19,575,865. There are adequate resources available in the Water Construction Fund.

COUNCIL COMMUNICATION

CC #: 3836
File #: 0800-02

Title:	Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project - Approval of Construction Plans and Specifications and Authorize Staff to Call for Bids
Contact:	Inderpreet Chaggar 916-938-1595 ikchaggar@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.6.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council approve the construction plans and specifications for the Dry Creek Wastewater Treatment Plant Operations and Laboratory Building project and authorize staff to call for bids.

BACKGROUND

In 2021, the City's Environmental Utility Department (EUD) published a Request for Proposals (RFP 08-079) seeking professional architectural consulting firms to submit proposals for professional design and consulting services for the Pleasant Grove Wastewater Treatment Plant (PGWWTP) Maintenance Facilities Assessment and Dry Creek Wastewater Treatment Plant (DCWWTP) Operations and Laboratory Building Design.

The existing operations building at DCWWTP is aging and a larger building is required to accommodate staff growth and increased lab space needs based on required regulatory compliance. The City entered into a design agreement with Williams + Paddon Architects Planners, Inc. (W+P) on October 6, 2021. On August 30, 2022, W+P merged with 19six Architects, Inc. and design efforts for the DCWWTP task have been completed by 19six. The new Operations and Laboratory Building at DCWWTP is proposed to be a 10,000-square foot building that will house the operations and laboratory staff at DCWWTP.

The new building will replace the existing administration and laboratory building at DCWWTP and will include office space, training and conference rooms, laboratory area, and mechanical and electrical room. Construction of the new building will take place in phases, including partial construction of the new building, demolition of the existing building, and completed construction of the new building.

FISCAL IMPACT

The estimated construction cost for this Project $16,884,014. The Project will be funded from available resources in the Wastewater Regional Rehabilitation Fund for the rehabilitation portion of the project and from the capital improvement project budget approved by the South Placer Wastewater Agency for the building expansion. The current available budget of this project is $600,000 in the Wastewater Rehabilitation Fund and $12,299,523 in the SPWA Fund. A budget adjustment is anticipated for the construction phase of the project.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) only applies to projects which have the potential to cause a significant effect on the environment. The project authorizes the next step in a project that was already approved by the City Council in 2021. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. (CEQA Guidelines §15061(b)(3)).

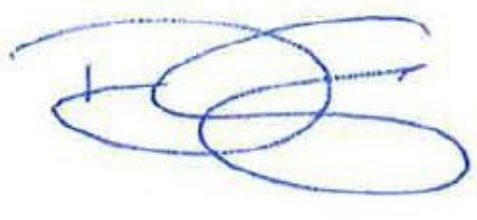
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Inderpreet Chaggar, Senior Engineer

Sean Bigley, Environmental Utilities Director



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

DCWWTP Ops and Lab_Project Manaul_1

DCWWTP Ops and Lab_Project Manaul_2

DCWWTP Ops and Lab_Project Manaul_3

DCWWTP Ops and Lab_Project Manaul_4

DCWWTP Ops and Lab_Project Manaul_5

DCWWTP Ops and Lab_Project Manaul_6



Buildings & Grounds

Project Manual

Project:

Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project

Department:

Environmental Utilities

CITY OF ROSEVILLE CALIFORNIA

CITY OF ROSEVILLE

Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project

The Specifications contained herein have been prepared by, or under the direct supervision of the following Registered Engineers:

Bid Documents Prepared by:
City of Roseville

Inderpreet K Chaggar, P.E.
Expires 03/31/2025

Specifications for Construction Prepared by:
19six Architects

Gregory M. Tonello
Expires 02/28/2027



PROJECT MANUAL

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CITY OF ROSEVILLE

DEPARTMENT OF ENVIRONMENTAL UTILITIES

DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS AND LABORATORY BUILDING PROJECT

NOTICE TO CONTRACTORS

NOTICE IS HEREBY GIVEN THAT sealed Proposals will be received at the Office of the City Clerk, 311 Vernon Street, Roseville, California, until Friday May 16, 2025, at 3:00 p.m. Late Proposals will be rejected. No exceptions.

The Proposals will be publicly opened and read by the City Clerk or designee of the City of Roseville at 3:05 p.m. on Friday May 16, 2025, at the Office of the City Clerk located at 311 Vernon Street, Roseville California for the following project: Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project.

An optional pre-bid meeting will be held at 1800 Booth Road Roseville, CA 95747 at 11am on Wednesday April 30, 2025.

A Project Manual, including all Contract Documents and the Proposal forms for bidding this project, may be obtained on-line from the City of Roseville's website at www.roseville.ca.us/business/procurement_services/bids_rfps or directly at www.publicpurchase.com. All communications relative to this project shall be conducted through Public Purchase.

Bids shall be submitted on the City's Proposal Forms included in the Project Manual, plainly endorsed with the Bidder's name together with signed acknowledgement of any and all addenda. Proposal Forms shall be securely sealed in a suitable envelope marked with the name and address of the Bidder, and marked in capital letters on the front and back of the envelope as

follows:

RFP # 08-156
Dry Creek Wastewater Treatment Plant Operations
and Laboratory Building Project

(Name of Bidder)
(Address of Bidder)

Whether mailed or personally delivered, all bids shall be addressed to the City of Roseville, Office of the City Clerk, 311 Vernon Street, Roseville, California, 95678.

Each bid must be accompanied by a Bid Guaranty in the form of a Certificate of Deposit, Certified or Cashier's Check, Bidder's Bond or Irrevocable Standby Letter of Credit in an amount equal to at least ten percent (10%) of the Bidder's Grand Total Price. The Bid Guaranty will be retained by the City and applied to any and all damages sustained by the City in the event that the successful Bidder fails or refuses to enter into the Contract awarded to it and to furnish all required bonds and Certificates of Insurance. The City intends to award the Contract to the lowest responsible Bidder based on the Grand Total Bid Price for all components of the Project. To the extent allowed by law, the City reserves the right to reject any and all bids and/or to waive any irregularities or informalities in any bid or in the bidding procedure. The City specifically reserves the right to not award the Contract after the opening of bids.

Any bid may be withdrawn at any time prior to the time fixed in the public notice for the deadline submission of bids only by written request for the withdrawal of the bid filed with the City Clerk. The request shall be executed by the Bidder or his or her duly authorized representative. The withdrawal of a bid does not prejudice the right of the Bidder to file a new bid by the submission deadline. Whether or not bids are opened exactly at the time fixed in the

public notice for opening bids, a bid will not be received after the deadline submission of bids nor may any bid be withdrawn after the time fixed in the public notice for deadline for submission of bids. Immediately following the deadline for submission of bids all bids shall become the property of the City of Roseville and the City is under no obligation to return bids.

Bids will be examined and reported to the City Council within sixty (60) business days after the bid opening. Except as permitted by applicable law, no Bidder may withdraw its bid for a period of sixty (60) business days after the date of bid opening. Each Bidder will be notified of any award of the Contract by the City.

The City will affirmatively ensure non-discrimination on the basis of one or more of the following: race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, age, sexual orientation, or military and veteran status in the award and administration of contracts that it awards.

Pursuant to Public Contract Code Section 22300, the successful Bidder may submit certain securities in lieu of the City withholding retention of payments during the Project.

The City has determined that the Contractor shall possess a valid Class A Contractor's license at the time that the bid is submitted, as well as any other license classification as may be required by the laws of the California for the performance of the work specified in the Contract Documents. Said license shall be maintained during the Contract period. Failure to possess the specified license shall render the bid nonresponsive and will act as a bar to the award of the Contract to any Bidder not possessing such a license at the time of bid submittal. The Contractor shall provide certification of the license, its number and the expiration date on the proposal form.

The work is to be done in Placer County. Pursuant to California Labor Code Section 1773, the City has ascertained the General Prevailing Rate of Wages in the County in which the

work is to be done to be as determined by the Director of Industrial Relations of the State of California. The Contractor is hereby made aware that information regarding prevailing wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm. The Contractor is required to post a copy of the applicable wage rates at the job site. Attention is directed to Section 5 "Legal Relations and Responsibility" of the General Conditions.

Pursuant to Labor Code Section 1771.1(b), notice is hereby given that a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in Labor Code Sections 1720, et seq., unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5 or exempt from registration requirements pursuant to Labor Code Section 1725.5(f). It is not a violation of Labor Code Section 1771.1 for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform work pursuant to Labor Code Section 1725.5 at the time the contract is awarded or is exempt from registration requirements pursuant to Labor Code Section 1725.5(f). The Contractor is hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Vehicles with a GVWR greater than 8,500 lbs. and light – duty package delivery vehicles operated in California may be subject to the California Air Resources Board Advanced Clean Fleets regulations. Such vehicles may therefore be subject to requirements to reduce emissions and air pollutants. For more information, please visit the CARB Advanced Clean Fleets webpage

at https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets. In addition, certain off-road diesel vehicles may be subject to the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation. For more information, please visit the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation webpage at https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueledfleets-regulation.

All questions prior to the deadline for bid submissions must be submitted via the Public Purchase website at https://www.publicpurchase.com. The deadline for submissions of questions and clarifications regarding the Contract Documents is ten (10) calendar days before the deadline for bid submissions. Only Addenda issued by the City are binding.

_____

City Clerk, City of Roseville

Dated: _____

Published: _____

INSTRUCTIONS TO BIDDERS

SECTION 1. GENERAL

1-1.01 **GENERAL.** These Instructions to Bidders form a part of the Contract Documents. Capitalized terms are defined in the General Conditions Section 1.

1-1.02 **EXAMINATION OF PLANS, CONTRACT DOCUMENTS AND SITE OF THE WORK.** The Bidder shall examine carefully the site of the Work and all the Contract Documents, including these Instructions to Bidders, and shall inform itself of the conditions relating to the execution of the Work. Failure to do so will not relieve the successful Bidder of its obligation to enter into an Agreement and complete the Work in strict accordance with the Contract Documents. Conditions relating to the execution of the Work include the requirements of federal, state, and local laws, statutes and ordinances relative to the execution of Work, including, but not limited to, applicable regulations concerning prevailing wage rates, non-discrimination in the employment of labor, protection of the public, employee health and safety, and environmental protection.

The submission of a bid shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of Work to be performed, the quantities of materials to be furnished, and as to the requirements of all the Contract Documents.

1-1.03 **EXISTING INFORMATION.** Where the Department has made investigations of site conditions, including subsurface conditions in areas where Work is to be performed under the Contract, such investigations are made only for the purpose of study and design. City does not represent that such conditions as found in these investigations or inferences or conclusions drawn as a result of these investigations will represent actual site

conditions and hereby disclaims any liability as a result of Contractor's or Bidder's reliance on such investigations. City will presume that all Bidders have conducted their own site investigations, and reviewed all available supplemental materials.. Where such investigations have been made, Bidders or Contractors may, upon written request, inspect the records of the Department as to such investigations subject to the conditions set forth in these Instructions to Bidders. Such inspection of records, if they exist, have been uploaded to the Public Purchase website for this RFP as "supplemental materials". The supplemental materials are not a part of the Contract Documents and are shown solely for the convenience of the Bidder or Contractor. The City assumes no responsibility whatsoever with respect to the sufficiency or accuracy of the investigations made, the records thereof, or of the interpretations set forth therein or made by the City in its use thereof. The City makes no warranty or guarantee, either express or implied, that the conditions indicated by such investigations or records are representative of those existing throughout such areas, or any part thereof, or that unforeseen developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

No information derived from such inspection of records of investigations or compilation thereof made by the City, the Department or from the Engineer, or his or her assistants, will in any way relieve the Bidder or Contractor from properly examining the site and making such additional investigations as it may elect, or from properly fulfilling the terms of the Contract.

SECTION 2: BID REQUIREMENTS

2-1.01 **PROPOSAL FORMS.** The Department will furnish to each Bidder standard Proposal Forms (included in this document under section PROP), which, when filled out and executed may be submitted as the bid. Proposals shall include all pages in the Project Manual with page numbers marked "PROP" plus the Addendum acknowledgment form (front sheet) from all Addenda received by the Bidder. Proposals shall be removed from the Project Manual. The full Project Manual shall not be submitted with the proposal. Bids not presented on forms so furnished will be disregarded.

The Proposal and one (1) copy thereof shall be submitted as directed in the "Notice to Contractors" under sealed cover plainly marked as a Proposal, and identifying the project to which the Proposal relates and the date of the bid opening therefor. Proposals which are not properly marked may be disregarded.

All blank spaces in the Proposal must be completed, as required, in ink. All price information shall be shown, clearly legible, in figures where required.

The Bidder shall sign the Proposal in the blank space provided therefor. If the Bidder is the sole owner, the Proposal shall be signed by the owner. If the Bidder is a corporation, the legal name of the corporation and its State of incorporation shall be set forth and the Proposal shall be signed by at least two officers authorized to sign contracts on behalf of the corporation. If the Bidder is a partnership, the true name of the firm shall be set forth, the names and addresses of all partners shall be given and the Proposal shall be signed by a partner in the firm authorized to sign contracts on behalf of the partnership. If the Bidder is a joint venture, the Proposal shall be signed on behalf of each participating company by officers or other individuals who have the full and proper authorization to do so. If the Proposal is signed by an agent of the

Bidder other than an officer of a corporation or a member of a partnership, a notarized Power of Attorney must be on file with the City prior to opening of bids or must be submitted with the Proposal. If requested by the City, the Bidder shall promptly submit evidence satisfactory to the City of the authority of the person signing the Proposal.

2-1.02 **SUBMISSION OF BIDS.** Bids must be submitted at the prescribed time and location specified in the Notice to Contractors. Any submission received after the prescribed time shall be rejected, regardless of whether or not bids are opened exactly at the prescribed time.

Any unauthorized conditions or qualifications entered on, or changes made to, the Proposal may render it invalid and may cause its rejection.

No telegraphic, telephonic, or facsimile or other electronically transmitted bids will be considered.

2-1.03 **REQUIRED LISTING OF PROPOSED SUBCONTRACTORS.** Each Proposal shall list the name, address and Contractor license number of each Subcontractor to whom the Bidder proposes to subcontract portions of the Work in an amount in excess of one-half of one percent (0.5%) of its total bid, in accordance with Section 4100 to 4114, inclusive, of the Public Contract Code for the State of California. The Bidder shall list the Subcontractor's license number and the portion of the Work that will be done by each Subcontractor. If the Bidder fails to specify a Subcontractor for any portion of the Work, the Bidder agrees to perform that portion of the Work itself, and represents that it is qualified to perform that portion of the Work itself. The Bidder's attention is invited to other provisions of the Public Contract Code related to the imposition of penalties for a failure to observe its provisions by using unauthorized Subcontractors or by making unauthorized substitutions.

2-1.04 **CONTRACTOR'S LICENSING LAWS.** Attention is directed to the provisions of Business and Professions Code Chapter 9 of Division 3 concerning the licensing of Contractors.

All Bidders at the time of bid submittal shall be licensed as Contractors in accordance with the laws of this State. Any Bidder or Contractor not so licensed is subject to the penalties imposed by such laws. The form of Contractor's license required is stated in the Notice to Contractors, provided that the City makes no representation as to whether the State may require other or additional licenses. It is the Bidder's and Contractor's responsibility to obtain the correct Contractor's licenses. Bidders shall be skilled and regularly engaged in the general class or type of Work called for under this Contract.

All Bidders and Contractors, including Subcontractors, shall have a current City business license before undertaking any Work.

2-1.05 **NONCOLLUSION DECLARATION.** By submitting a bid, the Bidder represents and warrants that such bid is genuine and not a sham or collusive or made in the interest or on the behalf of any person therein named, and that the Bidder has not, directly or indirectly, included or solicited any other Bidder to put in a sham bid, or any other person, firm, or corporation to refrain from bidding, and that the Bidder has not in any manner sought collusion to secure the Bidder an advantage over any other Bidder.

Bidders shall submit a properly completed and executed "Noncollusion Declaration" in the form required by Public Contract Code Section 7106 and provided with the Proposal (PROP-11).

2-1.06 **DISQUALIFICATION, REMOVAL OR OTHER PREVENTION OF BIDDING.** A bid may be rejected on the basis of a Bidder, any officer of such Bidder, or any

employee of such Bidder who has a proprietary interest in such Bidder, having been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local project because of a violation of law or a safety regulation.

2-1.07 **PROPOSAL GUARANTY.** All bids shall be accompanied by one of the following forms of Bidder's security: Cash, a cashier's check, a certified check, or a Bidder's bond executed by an admitted California surety insurer, made payable to the City of Roseville, or any other form of security deemed acceptable by the City Attorney. The security shall be in an amount equal to at least ten percent (10%) of the amount bid. A bid will not be considered unless one of the form of Bidder's security is enclosed with it.

A Bidder's bond shall conform to the City's bond form in the Proposal and shall be properly filled out and executed.

2-1.08 **SCHEDULE OF BID PRICES.** Bidders are directed to submit unit and lump sum prices for all Work set forth in the Contract Documents on the Proposal Form entitled "Schedule of Bid Prices."

Unit prices and lump sum prices, as indicated, must be entered in the appropriate spaces provided in the Schedule of Bid Prices. If applicable, unit prices shall be multiplied by the quantities shown, and the total shall be inserted in the Amount column. In the event of any error or discrepancy between the unit price and the calculated amount, the unit prices shall govern. The City may correct any mathematical errors apparent on the face of the bid.

The amounts shown in the Amount column must be added together in arriving at the Grand Total Bid Price.

Amounts for Allowance bid items must be entered in the exact amount in the Amount column.

The prices included within the Schedule of Bid Prices shall include all costs for labor, materials, tools, equipment, services, Subcontractors, suppliers, taxes, insurance, shipment, delivery, overhead, profit, and all other costs necessary to perform the Work in accordance with the Contract Documents.

The Grand Total Bid Price shall be indicated in the Summary table form included with the Schedule of Bid Prices. The Grand Total Bid Price shall be the sum of the amounts bid for each of the designated portions of the Work, as more specifically described on the Schedule of Bid Prices form itself.

Full compensation for complying with the Contract Documents, including requirements of the Standard Specifications, the General Conditions, Supplemental Conditions, and all warranties, shall be considered included in the bid items and no additional compensation shall be allowed therefor.

Full compensation for completion of all work as shown on the plans, as specified in the Specifications, and as directed by the City, shall be considered included in the bid items and no additional compensation shall be allowed.

Bidders are strongly discouraged from submitting unbalanced bids. As used herein, the term "unbalanced bid" is defined as any bid that does not include a reasonable proportionate allocation of indirect costs and profit of each bid item indicated in the Schedule of Bid Prices. The City reserves the right to reject any unbalanced bid if the City determines that there is a reasonable doubt that an acceptance of the bid will not result in the lowest ultimate cost to the City with regard to the work or a disproportionate distribution of contract funds.

The City reserves the right to delete any bid item in its entirety and/or significantly reduce the quantity of Work under a bid item. The City makes no representation that any Work

under a bid item will be performed during the course of the Project or that the Work will be performed at the quantities included in the Schedule of Bid Prices. As provided in the General Conditions, for any deleted Work, Contractor shall not be entitled to payment of the indirect costs and profit included for said bid item. All bid items shall be considered distinct and severable from the remaining bid items, and each Bidder acts at its peril if its bid is unbalanced.

The City shall compare bids on the basis of the Grand Total Bid Price, which includes the base bid and any alternates designated on the Schedule of Bid Prices. Alternates may or may not be awarded, or may be awarded in any combination, at the City's discretion.

2-1.09 **WITHDRAWAL OF PROPOSALS.** Any bid may be withdrawn at any time prior to the time fixed in the Notice to Contractors for the opening of bids, provided that a request in writing, executed by the Bidder or its duly authorized representative, for the withdrawal of such bid is filed with the City Clerk. Facsimile and electronic mail requests are not acceptable. The withdrawal of a bid shall not prejudice the right of a Bidder to file a new bid. The withdrawal of any bid after the time fixed in the Notice to Contractors for the opening of bids will not be permitted.

2-1.10 **ADDENDUM.** Proposals shall include all costs and account for all Addenda issued prior to opening of bids. The Bidder is responsible for verifying that all issued Addenda have been received. An Addendum acknowledgment form for each Addendum shall be included as part of the Proposal submittal.

2-1.11 **PUBLIC OPENING OF PROPOSALS.** Proposals will be publicly opened and read at the time and place indicated in the Notice to Contractors. Bidders or their authorized agents are invited to be present.

2-1.12 **TRENCHING AND EXCAVATION WORK.** In accordance with the

provisions of California Labor Code Section 6707, if the Work involves construction of a pipeline, sewer, sewage disposal system, boring or jacking pits, or similar trenches or open excavations, which are five feet (5') or deeper, each bid submitted shall contain, as a bid item, adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life or limb, which shall conform to all applicable safety orders.

SECTION 3: EVALUATION OF BIDS

3-1.01 **BID EVALUATION PROCESS.** Bids will be evaluated to determine the apparent low Bidder. The apparent low Bidder will be determined on the basis of the Grand Total Bid Price, as shown in the Schedule of Bid Prices. If additive or deductive alternates are used in the Schedule of Bid Prices, the apparent low Bidder will be the Bidder with the lowest total of the bid prices for base contract items plus the alternates designated by the City as those that will be used for determining the lowest bid price. However, the City reserves the right to (1) not award any alternates or (2) award any combination of alternates.

In case of discrepancy between the total of the base contract items and any specified alternates and the stated Grand Total Bid Price, the total of the base contract items plus specified alternates shall prevail. Any mathematical errors that appear on the face of the bid will be corrected by the City and the City will use the mathematically corrected addition. For example, if the mathematical total of Bidder's base contract items plus specified alternates equals $1,000,000, but the Bidder has written $1,250,000 as the Grand Total Bid Price, the City will consider $1,000,000 to be the Bidder's Grand Total Bid Price for purposes of comparison to other Bidders and actual bid award. The City reserves its rights to reject or accept bids based on discrepancies between the stated Grand Total Bid Price and the actual mathematical total of the

base contract bid items, plus specified alternates.

3-1.02 **REJECTION OF IRREGULAR PROPOSALS.** Proposals may be rejected in the City's sole discretion if they show any alterations of form, additions not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind. However, the City reserves the right to waive any minor irregularities and informalities in any bid or in the bid procedure for any reason.

3-1.03 **COMPETITIVE BIDDING.** If more than one proposal is offered by any individual, firm, partnership, corporation, association, or any combination thereof, under the same or different names, all such proposals may be rejected. A party who has quoted prices on materials or Work to a Bidder is not thereby disqualified from quoting prices to other Bidders, or from submitting a bid directly for the materials or Work.

All Bidders are put on notice that any collusive agreement to control or affect the awarding of this Contract is in violation of the competitive bidding requirements of the City Charter, State Contract Act and the Business and Professions Code and may render void any Contract let under such circumstances.

3-1.04 **RELIEF OF BIDDERS.** If the Bidder claims a mistake was made in its bid, the Bidder shall give the Department written notice within five (5) Days after the opening of the bids of the alleged mistake, specifying in the notice in detail how the mistake occurred. No relief from a claimed mistaken bid shall be granted unless such mistake clearly appears on the face of the bid submitted to the City. Claimed mistakes on backup worksheets, spreadsheets, computerized bidding programs, or any other similar calculative bidding mistake which is not apparent on the face of the bid shall not under any circumstance be considered as a basis for relief. The burden of proving the occurrence of a mistake entitling a Bidder to relief from its bid

rests entirely on the Bidder. Relief from bids shall be in the City's sole discretion.

SECTION 4: AWARD AND EXECUTION OF CONTRACT

4-1.01 **AWARD OF CONTRACT.** The City reserves the right to reject any and all proposals and to award (or not award) any combination of bid items at its option. Any such award will be to the lowest responsible Bidder whose proposal complies with the requirements prescribed for the bid items awarded. Such award, if made, will be made within sixty (60) business days after the opening of the proposals. If the lowest responsible Bidder refuses or fails to execute the Contract, or provide an acceptable Performance Bond, Payment Bond, and insurance certificate(s), the City may award the Contract to the second lowest responsible Bidder. Such award, if made, will be made within eighty-two (82) business days after the opening of proposals. If the second lowest responsible Bidder refuses or fails to execute the Contract, or provide an acceptable Performance Bond, Payment Bond, and insurance certificate(s), the City may award the Contract to the third lowest responsible Bidder. Such award, if made, will be made within one hundred four (104) business days after the opening of the proposals. The above time periods within which the award of Contract may be made are subject to extension for such further period as may be agreed upon in writing between the City and the Bidder concerned.

4-1.02 **RETURN OF BIDDER'S SECURITIES.** Within ten (10) Days after the award of the Contract, the City Clerk will return all Bidders' securities, other than Bidders' bonds, accompanying the proposals that are not to be further considered in making the award. Retained Bidders' securities will be held until the Contract has been fully executed, after which all Bidders' securities, except Bidders' bonds and any Bidders' securities that have been forfeited,

will be returned.

4-1.03 **CONTRACT BONDS.** The successful Bidder shall furnish two (2) bonds in the form contained in the section entitled Insurance Broker Information Packet and Bonds. One (1) bond shall secure the payment of the claims of laborers, mechanics or materialmen employed on the Work under the Contract, and the other bond shall guarantee the faithful performance of the Contract.

Each of the two (2) bonds shall be in a sum equal to one hundred percent (100%) of the Contract Price. If the Contract Price increases by the issuance of Change Orders, the penal amounts of the bonds required shall increase accordingly. Sureties on each of said bonds shall be satisfactory to the City.

All alterations, extensions of time, extra and additional Work, and other changes authorized by the Standard Specifications, the General Conditions, the Supplemental Conditions or any part of the Contract may be made without securing the consent of the surety or sureties on the Contract bonds.

Furthermore, the successful Bidder shall furnish a certificate from the County Clerk as required by California Civil Code of Procedure Section 995.660(a)(3).

4-1.04 **INSURANCE.** At the time of the execution of the Contract, the Contractor shall, at its own expense, procure, and at all times during the prosecution of the Work maintain in full force and effect Worker's Compensation Insurance, and Liability Insurance as specified in the General Conditions. The Contractor shall provide a Certificate of Insurance in the form contained in the section entitled Insurance Broker Information Packet.

4-1.05 **EXECUTION OF CONTRACT.** The Contract shall be signed by the successful Bidder and returned, together with all the required Contract bonds and insurance

certificates, within fifteen (15) Days after the Contract has been awarded, or as otherwise directed, in writing, by the City.

If the Bidder is an individual, the Contract shall be executed personally by the Bidder. If the Bidder is a partnership, it is desirable that the Contract be executed by all of the partners, but it may be executed by one of them. If the Bidder is a corporation, it must be executed by two officers of the corporation consisting of (1) the chairman of the board, president or vice president; and (2) the secretary, assistant secretary, chief financial officer, treasurer or assistant treasurer, or by a person authorized by the corporation to execute written contracts on its behalf, and the corporate seal affixed thereto. In the alternative, a person other than an officer may sign the Contract, provided evidence satisfactory to the City is provided indicating the individual's authority to bind the corporation. If the corporate seal is not affixed to the Contract, or if it is executed by a person other than officers, or only by one officer, there must be attached to the Contract a certified copy of a resolution of the corporation authorizing such officer or person to execute written contracts for and on behalf of the corporation. If the Bidder is a joint venture, the Contract must be executed on behalf of each participating firm by officers or other individuals who have the full and proper authorization to do so.

4-1.06 **FAILURE TO EXECUTE CONTRACT.** Failure of the lowest responsible Bidder, the second lowest responsible Bidder, or the third lowest responsible Bidder to execute the Contract and file acceptable bonds and insurance as provided within fifteen (15) Days after the Contract has been awarded, or as otherwise directed, in writing, by the City, shall be just cause for annulment of the award and forfeiture of the Bidder's security. The successful Bidder may file with the City Clerk a written notice, signed by the Bidder or Bidder's authorized representative, specifying that the Bidder will refuse to execute the Contract if presented to

Bidder. The filing of such notice shall have the same force and effect as the failure of the Bidder to execute the Contract and furnish acceptable bonds within the time prescribed.

SECTION 5: BID PROTEST PROCEDURES

5-1.01 **POLICY/PROCEDURES.** It is the policy of the City to consider fully and adjudicate promptly protests filed by prospective Bidders relating to the City's bidding procedure or award of the Contract. Protests shall be filed and processed in accordance with Section 4.12.150 of the Roseville Municipal Code. A Bidder's failure to follow the bid protest procedures may result in rejection of the protest by the City.

Project _____

Contractor _____

PROPOSAL

PROPOSAL TO THE DEPARTMENT OF ENVIRONMENTAL UTILITIES

for

Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project

Name of Bidder _____ Business Phone _____

Business Address _____

Place of Business _____

Contractor's License No. _____

License Expiration Date_____

License Classification Type _____

DIR Registration No. _____

Type of business organization: _____

*If a Corporation, incorporated under the laws of the State of: _____

City of Roseville Business License No._____

The undersigned Bidder herewith submits this Proposal and binds itself on award by the City of Roseville under this bid to execute a Contract in accordance with its bid and the Contract Documents.

The Notice to Contractors, Instructions to Bidders, Form of Agreement, Specifications, General Conditions, Supplemental Conditions, Contract Drawings, and Addenda, if any, are made part of this bid and all provisions thereof are hereby accepted, and all representations and warranties are required thereby are hereby affirmed.

The work to be done is described in the Bidding Documents entitled Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project, City of Roseville, California.

This offer shall be irrevocable for a period of sixty (60) Days after the date on which bids are opened.

The undersigned Bidder understands that any clarification made to the above or any new and different conditions or information submitted on or with its Proposal, other than that requested, may render the bid non-responsive.

The undersigned, as Bidder, declares that the only persons or parties interested in this Proposal as principals are those named herein; that this Proposal is made without collusion with any other person, firm, or corporation; that the Bidder has carefully examined the location of the proposed Work, the attached Form of Agreement, and the plans, Specifications, and other Contract Documents; and agrees if this Proposal is accepted, that it will contract with the City of Roseville, in the form of a copy of the Agreement contained in the Project Manual, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the Contract Documents, in the manner and time therein prescribed, and according to the requirements of the Director, as therein set forth, and that the Bidder will take in full payment therefore prices indicated in the Schedule of Bid Items, including all work modified by addendum numbers _____. (IF NONE, STATE

NONE).

Bids are required for all Bid Items. The amount of the Bid for comparison purposes will be the total of all items awarded.

The Bidder shall set forth for each item of work, in clearly legible figures, an item ("unit") price and a total for the item in the respective spaces provided for this purpose in the Schedule of Bid Items.

The prices included within the Schedule of Bid Items include all costs for labor, materials, tools, equipment, services, Subcontractors, suppliers, taxes, insurance, shipment, delivery, overhead, profit, and for all other costs necessary to perform the Work in accordance with the Contract Documents.

Accompanying this Proposal is _____.

(Notice: Insert the words "Cash $_____," "Cashier's Check," "Certified Check," or "Bidder's Bond," as the case may be, in an amount equal to at least ten percent (10%) of the total of the Bid.)

The names of all persons interested in the foregoing Proposal as Principals, are as follows: _____

_____

_____

_____

If SOLE OWNER, execute here:

I sign as sole owner of the business named above:

_____

If PARTNERSHIP, one or more partners sign here:

The undersigned certify that we are partners in the business named above and that we sign this bid with the full authority to do so:

_____

_____

If CORPORATION, execute here:

Corporate Name: _____

Incorporated under the laws of the State of _____

The undersigned certify that they sign this bid with the full and proper authorization so to do:

By_____	By_____
*Signature of Authorized Official**	*Signature of Authorized Official**
_____	_____
Title	*Title*
_____	_____
Typewritten or Printed Name	*Typewritten or Printed Name*

If JOINT VENTURE, execute here:

Joint Venture name composed of: _____

The undersigned certify that they sign this bid with the full and proper authorization so to do:

_____	_____
*Signature of Authorized Official**	*Signature of Authorized Official**
_____	_____
Title	*Title*
_____	_____
Typewritten or Printed Name	*Typewritten or Printed Name*

*If Bidder is a partnership or Joint Venture, give the full names of all partners and/or Joint Ventures in the space provided (use additional sheet if required). If Bidder is a corporation, two signatures are required as follows: (1) the Chairman, President, or Vice-President and (2) the Secretary, Assistant Secretary, Chief Financial Officer, Treasurer, or Assistant Treasurer. In the alternative, this Agreement may be executed by a single officer or a person other than an officer provided that evidence satisfactory to City is provided demonstrating that such individual is authorized to bind the corporation (example, a copy of a certified resolution from the corporation's board or a copy of the corporation's bylaws).

STATEMENT OF QUALIFICATIONS AND EXPERIENCE

Provide a summary of your firm's experience in providing these or similar services. Provide a minimum of three (3) references for projects or services similar in nature and scope that your firm's team members have completed in the last five (5) years. Include brief descriptions of the projects, dates, a list of proposed staff that were part of the project, client names and contact persons' names, addresses and telephone numbers. Public sector references are preferred.

LIST OF SUBCONTRACTORS

Contractor's Name: _____

The Bidder is required to furnish the following information in accordance with the provisions of Section 4100 and 4114, inclusive, of the Public Contract Code of the State of California. This list and information shall include all Subcontractors that perform work, provide labor or render services to the Bidder in connection with the Project in an amount in excess of one-half of one percent (0.5%) of the total amount of the Bidder Grand Total Price.

PORTION/ TYPE OF WORK	% OF CONTRACT	SUB-CONTRACTOR'S NAME	CONTRACTOR LICENSE NO.	DIR REG. NO.	BUSINESS ADDRESS (CITY, STATE)

SECURITY FOR COMPENSATION CERTIFICATE

(Required by California Labor Code Section 1861)

TO: City Council

City of Roseville

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract.

_____

_____

(Signature of Bidder)

_____

_____

Business Address

_____

Telephone

BIDDER'S BOND

City Council of the City of Roseville

KNOW ALL MEN BY THESE PRESENTS:

That we _____

_____, as PRINCIPAL, and

_____

a, _____ and duly authorized to transact business under the laws of the State of California, as SURETY, are held and firmly bound unto the City of Roseville in the penal sum of _____ dollars ($_____), being at least TEN PERCENT (10%) OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the City of Roseville, acting by and through the Public Works Director, for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, to the Director of the Department to which said Bid was submitted, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That whereas the Principal has submitted the above-mentioned Bid to the City Council of the City of Roseville, as aforesaid, for certain construction specifically described as follows, for which Bids are to be opened at the Office of the City Clerk located at 311 Vernon Street, Roseville, California, on _____, 20__ FOR

_____

(Copy here the exact title of work as it appears on the Proposal.)

NOW, THEREFORE, IF THE AFORESAID PRINCIPAL is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented for signature, enters into a written Contract, in the prescribed form, in accordance with the Bid, and files all insurance and two (2) Bonds with the Department, one (1) to guarantee Faithful Performance and the other to guarantee Payment for Labor and Materials, as required by law, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this _____ day of _____, 20___.

_____(Seal)

_____(Seal)

_____(Seal)

Principal

_____(Seal)

_____(Seal)

_____(Seal)

Surety

_____

_____

Business Address

NOTE: To be considered complete, both the Principal and the Surety must sign this Bidder's Bond. In addition, signatures of those executing for the Surety must be properly acknowledged.

Project _____

Contractor _____

SCHEDULE OF BID ITEMS

Bid Item	Item Description	Unit	Estimated Quantity	Unit Price ($)	Total Amount ($)
1					
2					
3					
4					
5					
6					
7					
8					
9					

GRAND TOTAL BID PRICE ($) = _____

Grand Total Bid Price in Words:_____

NONCOLLUSION DECLARATION

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid. The Bidder has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or to refrain from bidding. The Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder. All statements contained in the bid are true. The Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a Bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the Bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [date], at _____ [city], _____ [state].

_____

(Signature of Declarant)

DISQUALIFICATION QUESTIONNAIRE

The Bidder shall complete, under the penalty of perjury, the following questionnaire:

Has the Bidder, any officer of the Bidder, or any employee of the Bidder who has proprietary interest in the Bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes_____ No_____

If the answer is yes, explain the circumstances in the following space.

_____

_____

_____

_____

_____

_____

NAME OF BIDDER: _____

SIGNATURE OF BIDDER: _____

TITLE OF BIDDER: _____

DATE: _____

ACKNOWLEDGEMENT OF INSURANCE AND BOND REQUIREMENTS

Included in the Bid Price is full compensation for the requirements set forth in the INSURANCE BROKER INFORMATION PACKET of the Project Manual.

NAME OF BIDDER: _____

SIGNATURE OF BIDDER: _____

TITLE OF BIDDER: _____

DATE: _____

DISCLAIMER OF WARRANTIES AND ACCURACY OF DATA

Although soil and site investigation reports have been obtained from sources believed to be reliable, no warranty expressed or implied is made regarding accuracy, adequacy, completeness, legality, reliability or usefulness of any information contained therein. These reports are subject to change at any time, may be incomplete, and/or may contain errors. This information is provided for informational purposes only. The City of Roseville provides this information on an "as is" basis. Warranties of any kind, express or implied, or statutory, including but not limited to the implied warranties of merchantability, and fitness for a particular purpose ARE DISCLAIMED to any party viewing these documents or to any third party.

The City of Roseville does not accept and expressly disclaims liability to any party viewing such information, or to any third party whatsoever, for any loss, damage, or injury (including incidental or consequential damages) whether such loss, damage, or injury is the result of negligence, willful or intentional misconduct, or any other cause.

I have read and acknowledged the above disclaimer and agree to hold harmless the City of Roseville on any theory of liability for any loss, damage or injury whether in contract, strict liability or tort arising in any way out of the use or contents of the released information or documents described above or the performance of the work called for herein.

Print Name	Signature

Name of Business/Company/Corporation	Date
Address	Phone

END OF PROPOSAL

AGREEMENT

THIS AGREEMENT, is made and entered into this _____ day of _____, 20_____, by and between the City of Roseville, a municipal corporation, ("CITY"), and _____, a _____, ("CONTRACTOR"); and

W I T N E S E T H:

WHEREAS, the City Council of the CITY, at a meeting held on the ____day of _____, 20_____, approved plans and specifications for the

_____

and directed the City Clerk to advertise for sealed proposals for doing said work and providing that bids be submitted on the _____ day of _____, 20_____; and

WHEREAS, the City Clerk, thereafter duly and regularly caused a notice to be published in the manner and for the time prescribed by law; and

WHEREAS, CONTRACTOR, pursuant to the provisions of said notice duly filed a bid with the City Clerk, a true copy of which bid is now on file in the office of the City Clerk, and is hereby referred to and by this reference made a part hereof as fully as if set forth at length herein; and

WHEREAS, all bids received pursuant to said notice were opened and examined and publicly declared at the time specified in said advertisement for bids and at a meeting of the City Council held on the _____ day of _____, 20_____, the Council found and declared the bid of CONTRACTOR to be the lowest responsible bid and thereupon awarded a

contract to CONTRACTOR to do the work referred to in the aforementioned specifications.

NOW, THEREFORE, the parties agree as follows:

1. THE WORK. CONTRACTOR agrees:

a. To do the work and furnish all the labor, materials, tools, supplies, equipment, superintendence, insurance, and bonds required for the _____

_____

in accordance with the Contract Documents (the Work).

b. To do and perform the Work contemplated hereby in a good and workmanlike manner under the direction of and to the satisfaction of the Director of Public Works of the City of Roseville.

2. PAYMENT. CITY shall pay CONTRACTOR _____

_____ dollars ($_____) for the Work to be done under this Agreement in accordance with the Contract Documents.

3. CONTRACT DOCUMENTS. The complete Agreement between the parties hereto consists of the following documents:

a. The advertisement for bids (including the notice to bidders, instructions to bidders and proposals);

b. The accepted bid;

c. Plans and specifications (including general conditions, supplemental conditions, special provisions and construction details);

d. Bonds and insurance required by the Insurance Broker Information Packet section of this document; and

e. This contract.

All documents specified above are intended to operate so that any work called for in any one and not mentioned in the other, or vice versa, is to be executed the same as if mentioned in all said documents.

4. LIQUIDATED DAMAGES. In the event CONTRACTOR does not complete the Work within the time specified, CONTRACTOR agrees that CITY will suffer damages. Inasmuch as the actual damages which would result from such breach by CONTRACTOR under this Agreement are uncertain, and would be impractical or extremely difficult to fix, CONTRACTOR agrees that it shall pay, or CITY shall deduct from CONTRACTOR's fee, the amount of $1,500.00 per day as liquidated damages, in the event of such delay.

5. TIME OF COMPLETION. Time is of the essence of this Agreement. CONTRACTOR shall complete all Work under the Contract Documents within 181 Days of the date of this Contract. CONTRACTOR shall begin work by the date specified in the "Notice to Proceed" letter and shall diligently prosecute all of the Work under this Contract in all parts and requirements as defined in the Contract Documents.

6. SERVICE OF NOTICE. Any notice required or permitted to be given under this Agreement shall be deemed given when (a) personally delivered to the recipient identified below; (b) mailed by registered or certified mail, return receipt requested, postage pre-paid, to the address specified below; or (c) sent by facsimile, with confirmation of receipt, to the facsimile number identified below.

CITY OF ROSEVILLE	CONTRACTOR
_____	_____
_____	_____
_____	_____
_____	_____

CITY may also act through either its architect or construction manager if CITY expressly gives notice to CONTRACTOR, in writing, that CITY's designee has authority to act for CITY in a specific capacity.

7. DISPUTES. Disputes arising from this Agreement will be determined in accordance with the Contract Documents and Public Contract Code Sections 10240-10240.13.

8. GOVERNING LAW. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

9. INDEPENDENT CONTRACTOR. CONTRACTOR shall act as an independent contractor, and covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as, nor claim to be, an officer or employee of CITY by reason of this Agreement.

10. SUCCESSORS IN INTEREST. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

11. MODIFICATION. This Agreement and each provision contained herein may be waived, amended, supplemented or eliminated only by mutual written agreement of the parties.

12. SEVERABILITY. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

13. INTEGRATED AGREEMENT. This is an integrated agreement and contains all of the terms, considerations, understanding and promises of the parties. It shall be read as a whole.

14. CONTRACTORS LICENSE LAW. CONTRACTORS ARE REQUIRED BY LAW TO BE LICENSED AND REGULATED BY THE CONTRACTORS' STATE LICENSE

BOARD WHICH HAS JURISDICTION TO INVESTIGATE COMPLAINTS AGAINST CONTRACTORS IF A COMPLAINT REGARDING A PATENT ACT OR OMISSION IS FILED WITHIN FOUR (4) YEARS OF THE DATE OF THE ALLEGED VIOLATION. A COMPLAINT REGARDING A LATENT ACT OR OMISSION PERTAINING TO STRUCTURAL DEFECTS MUST BE FILED WITHIN TEN (10) YEARS OF THE DATE OF THE ALLEGED VIOLATION. ANY QUESTIONS CONCERNING A CONTRACTOR MAY BE REFERRED TO THE REGISTRAR, CONTRACTORS' STATE LICENSE BOARD, P.O. BOX 26000, SACRAMENTO, CALIFORNIA 95826.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attestation by its City Clerk under authority of Resolution No. _____, adopted by the Council of the City of Roseville on the ____day of _____, 20_____, and CONTRACTOR has caused this Agreement to be duly executed.

CITY OF ROSEVILLE, a municipal corporation

BY:_____

DOMINICK CASEY
City Manager

ATTEST:

BY:_____

CARMEN AVALOS
City Clerk

_____, a _____

BY: _____

its: _____

and

BY: _____

its: _____

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE:

BY: _____

Print Name:_____

Title:_____

INSURANCE BROKER INFORMATION PACKET

Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project

TABLE OF CONTENTS for INSURANCE BROKER INFORMATION PACKET

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NOTICE TO CONTRACTOR

For your convenience, this package contains the Requirements for Insurance and Bonds for this project, including the necessary City forms. You are required to return these forms in addition to the executed Contract within fifteen (15) calendar days after the award of the Bid, unless otherwise directed by City in writing. (See the Instructions to Bidders.)

Please insert the dollar amount of your accepted Bid into the blank on page INS-1 and present this entire package to your insurance broker if you are awarded the Bid.

NOTICE TO INSURANCE BROKER

Your client has been awarded a bid by the City Council of the City of Roseville to perform a public works project known as the Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project.

The Contract Amount is $_____

The Contract Conditions for this project require your client ("the Contractor") to return certain evidence of insurance and bonds to the City Attorney of the City within fifteen (15) days after the Bid award, unless otherwise directed by the City in writing, or else the Bid award may be terminated and awarded to another company.

This package contains the information you will need as an insurance broker to provide the appropriate insurance and bonds to the City. The insurance coverages the Contractor needs are specified in the section entitled "Insurance Requirements." Please note that, in addition to the insurance certificate itself, copies of several endorsements must be actually furnished.

Please refer to the Supplemental Conditions for modifications of the General Conditions, if any, and the requirements of this insurance packet.

Please use the standard City of Roseville Bond Forms provided in this package.

The Bonds required must each be in the penal amount of: $_____.

Bonds must be sent to the following staff person:

Inderpreet K Chaggar
2005 Hilltop Circle
Roseville, CA 95747

Insurance documents must be provided using ONLY ONE of the following methods:

a. By email to roseville@ebix.com
b. Or By fax to (770) 335-5727
c. Or mail the documents to

City of Roseville
Insurance Compliance
P.O. Box 100085-R1
Duluth, GA 30096

If sent by email or fax, please **DO NOT** also send the insurance certificate(s) by mail.

When forwarding the documents, please refer to the project name so that the documents can be matched with the Contract for which they are submitted.

Thank you.

INSURANCE REQUIREMENTS

The following sections are quoted from the General Conditions:

5-1.23 **INSURANCE COVERAGE.**

A. Evidence of Maintenance Required. The Contractor shall, at its expense, procure and at all times maintain in full force and effect at a minimum the insurance required by this section on all of its operations; and the Contractor shall not allow any Subcontractor to commence work until similar insurance required of the Subcontractor has been obtained and filed. An original Certificate of Insurance, and copies of all required endorsements, all in a form approved by the Risk Manager, evidencing all required coverage or policies shall be filed after the award of the bid and prior to approval of the Contract by the City Council. Contractor shall provide ten (10) days prior written notice to the City of any reduction of coverage limits or cancellation of the coverage or policies shall be given to the City of Roseville as Certificate holder.

B. Qualifying Insurers. With the exception of the State Compensation Insurance Fund, all required insurance policies shall be issued by companies acceptable to the City and licensed to do business in the State of California and who hold a current policy holders alphabetic and financial size category rating of not less than AVII according to the most recent issue of Best's Insurance Reports.

C. Insurance Required.

1. **Commercial General Liability (CGL):** Insurance Services Office Form CG 00 01 covering CGL on an "occurrence" basis, including products and completed operations with limits of no less than Two Million Dollars ($2,000,000) per occurrence for bodily injury,

personal injury and property damage for projects under One Million Dollars ($1,000,000) and limits of no less than Five Million Dollars ($5,000,000) per occurrence for bodily injury, personal injury and property damage for projects over One Million Dollars ($1,000,000). If a general aggregate limit applies, either the aggregate limit shall apply separately to this project or the general aggregate limit shall be twice the required occurrence limit.

The Commercial General Liability insurance shall include the following, copies of which shall be provided:

a. Inclusion of the City of Roseville, and its officers, agents, employees, and volunteers, as additional insureds (except for workers' compensation) as respects services or operations under the Contract. The additional insured endorsement for the general liability policy shall be at least as broad as the ISO CG 2010 10 01 combined with ISO CGL Endorsement CG 2037 10 01. Any other endorsement must be approved in writing by the City. Endorsements must include coverage for on-going and completed operations, which coverage shall be maintained for four (4) years following completion of the Project. Endorsements shall cover the City of Roseville, its officers, agents, employees, and volunteers.

b. The insurance shall provide coverage for claims by one insured against another insured and the policies shall not contain any cross-suits exclusions, cross-liability exclusions, or insured versus insured exclusions. The policies shall not contain any classification exclusions purporting to deny coverage for any work to be performed by Contractor or any of its Subcontractors.

c. Stipulation that the insurance is primary and noncontributory, as evidenced by a separate endorsement (CG 20 01 04 13 or an equivalent) or section of the policy, and that neither the City nor its insurers will be called upon to contribute to a loss.

d. Such insurance shall specifically cover the contractual liability of the Contractor.

e. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (1) the minimum coverage and limits specified in this Agreement; or (2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

f. Waiver of subrogation endorsement.

g. The Contractor shall furnish a certificate for the period covered.

2. **Automobile Liability:** Insurance Services Office Form Number CA 0001 covering Code 1 (any auto), or if Contractor has no owned autos, Code 8 (hired) and Code 9 (non-owned), with limits of no less than One Million Dollars ($1,000,000) per accident for bodily injury and property damage.

3. **Workers' Compensation:** In accordance with the provisions of the California Labor Code, Contractor is required to be insured against liability for Workers' Compensation or to undertake self-insurance. Statutory Workers' Compensation and Employers' Liability of at least One Million Dollars ($1,000,000) shall cover all Contractors staff while performing any work incidental to the performance or this Agreement.

4. **Professional Liability:** Professional Liability (Errors and Omission) Insurance appropriate to Contractor's profession, with a limit of liability not less than One Million Dollars ($1,000,000) per occurrence or claim and Two Million Dollars ($2,000,000) aggregate to cover all design and engineering services rendered by Contractor pursuant to the Agreement. Coverage must commence from the first day that Contractor or any of its

Subcontractors provided any design or engineering services in connection with the Project.

5. **Builder's Risk/Course of Construction Insurance Is __X__ OR Is Not ____ Required by Risk Management:** The Contractor shall be responsible for all loss, damage or destruction whatsoever to the work called for by this Contract until the approval of a Notice of Completion or acceptance of the Work if no Notice of Completion is to be recorded.

The Contractor shall secure "All Risk" type of Builder's Risk Insurance of the type covering one hundred percent (100%) of the value of the work performed under this Contract (the value is presumed to be the Contract amount unless otherwise stated in Supplemental Conditions) and all materials, equipment, or other items to be incorporated therein while the same are located at the construction site, a bonded warehouse, or its place of manufacture. At any time, the policy shall cover the value of the work completed. The policy shall cover hazards including the losses due to fire, explosion, hail, rain, lightning, flood (separate insurance as needed), vandalism, malicious mischief, wind, collapse, aircraft, and smoke.

The policies providing such insurance shall name the City as a loss payee as its respective interests may appear, and certified copies of such policies shall be filed with the City. The maximum deductible allowable under the Builder's All Risk policy shall be five percent (5%) of the Contract amount.

Builder's Risk Insurance is not required for coverage of losses in excess of five percent (5%) of the Contract amount for damages resulting from earthquake in excess of a magnitude of 3.5 on the Richter scale, or tidal waves. Coverage in the amount of five percent (5%) of the Contract amount for such losses is required.

6. **Pollution Coverage:** Contractor shall procure pollution liability coverage or other insurance covering claims for bodily injury or property damage arising out of the

abatement, removal, storage, transportation, or other exposure to hazardous materials or pollutants, in limits not less than Two Million Dollars ($2,000,000). Contractor shall add the City and all parties required to be indemnified by Contractor as additional insured on all pollution liability policies.

7. **Higher Coverage Limits:** If Contractor maintains higher coverage limits than the amounts shown above, then the City requires and shall be entitled to coverage for the higher coverage limits maintained by Contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the City.

8. **Claims Made Coverage:** Liability insurance coverage may not be written on a "claims made" or modified occurrence basis. The Certificate of Insurance must clearly provide that the coverage is on an "occurrence" basis.

5-1.24 **OTHER INSURANCE PROVISIONS.**

A. The requirements of the Standard Specifications as to types and limits of insurance coverage to be maintained by the Contractor, and any approval of insurance by the City, are not intended to, and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by the Contractor pursuant to the Contract, including, but not limited to, the provisions concerning indemnification, nor preclude the City from taking any other action available to it under any other provision of the Contract or law.

B. The City acknowledges that some insurance requirements contained in these Standard Specifications may be fulfilled by self-insurance on the part of the Contractor. However, this shall not in any way limit liabilities assumed by Contractor under the Contract. Any self-insurance must be approved in writing by the City, in its sole discretion and shall not reduce the limits of liability. Any deductibles or self-insured retentions ("SIR") must be

declared on the certificate of insurance and approved by City in writing. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City. City reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

C. The Contractor agrees to include in its contracts with all subcontractors the same requirements and provisions of this Contract, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, the Contractor shall require its subcontractors to agree to be bound to the Contractor and the City in the same manner and to the same extent as the Contractor is bound to the City under this Contract. Additionally, the Contractor shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of the City's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request. Alternatively, the Contractor may insure subcontractor(s) under its own policy.

D. The City, its officers, agents, employees, and volunteers are to be covered as insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the Contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under California Insurance Code Section 11580.04.

E. The limits of insurance required in this Contract may be satisfied by a

combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of the City (if agreed to in a written contract) before the City's own insurance shall be called upon to protect it as a named insured.

F. The insurance procured by Contractor shall be subject to the approval of the City, but any acceptance of insurance certificates by the City shall in no way limit or relieve Contractor of its duties and responsibilities under the Agreement.

G. Contractor shall be responsible for all premiums, deductibles, and self-insured retention applicable to the insurance it is required to procure under the Contract. All deductibles or self-insured retentions over five hundred thousand dollars ($500,000) must be approved by the City, in writing. Contractor shall be responsible for all deductibles, self-insured retention payments, and/or increased premiums incurred if the City's policies of insurance are forced to cover damages or respond to claims for which Contractor or its Subcontractors were obligated to provide insurance under the Contract.

H. Failure of the City to enforce in a timely manner any of the requirements of these insurance provisions shall not act as a waiver to enforcement of any of these provisions at a later date.

I. Contractor's indemnity obligations shall not be limited by these insurance provisions and shall survive the expiration of the Contract and the insurance provisions of the Contract shall likewise not be limited by the indemnity provisions of the Contract.

J. THE CITY RESERVES THE RIGHT TO WITHHOLD ANY PROGRESS PAYMENTS TO THE CONTRACTOR IN THE EVENT OF NONCOMPLIANCE WITH ANY INSURANCE REQUIREMENTS.

Bond No. _____

Premium $_____

PUBLIC WORKS

FAITHFUL PERFORMANCE BOND

(Project: _____)

WHEREAS, the City of Roseville ("CITY") has awarded a bid and contract to _____ as contractor ("PRINCIPAL") for the public work described as _____ _____ (the "WORK"). The contract ("AGREEMENT"), for the public work described above, and all of its terms and conditions are incorporated by reference and made a part hereof; and

WHEREAS, the PRINCIPAL is required to furnish a bond in connection with the AGREEMENT guaranteeing its faithful performance; and

NOW, THEREFORE, we the undersigned PRINCIPAL and _____ _____, a _____, admitted and duly authorized to transact business under the laws of the State of California, as SURETY ("SURETY"), are held and firmly bound unto the CITY or its successors and assigns in the sum of _____ dollars ($_____) (which amount is not less than 100% of the

AGREEMENT price) to be paid to the CITY or its successors and assigns; and for which payment, well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors or assigns jointly and severally, firmly by these presents.

The condition of this obligation is such that if the PRINCIPAL, or its heirs, executors, administrators, successors or assigns, shall abide by, and in all respects promptly and faithfully perform the covenants, conditions and provisions in said AGREEMENT and any alteration thereof made as therein provided, notice of which alterations to Surety being hereby waived, on its part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless CITY, its officers, agents, employees, volunteers as therein stipulated, then this obligation shall be null and void; otherwise, this obligation shall be and remain in full force and effect.

As condition precedent to the satisfactory completion of the contract, the obligation of the PRINCIPAL and SURETY under this Bond shall remain in effect for a period of one (1) year after the completion and acceptance of the WORK. During that time, if the PRINCIPAL, its heirs, executors, administrators, successors or assigns fails to make full, complete and satisfactory repair and replacement or totally protect the CITY from any loss or damage made evident during that year which results from or is caused by either defective materials or faulty workmanship in the prosecution of the WORK, then the obligation shall remain in full force and effect. However, anything in this paragraph to the contrary notwithstanding, the obligation of the SURETY shall

continue so long as any obligation of the PRINCIPAL remains.

No prepayment or delay in payments, and no change, extension, addition or alteration of any provision of the AGREEMENT or in the specifications agreed to between the PRINCIPAL and the CITY, or any forbearance on the part of the CITY shall operate to relieve the SURETY. The SURETY hereby waives the provisions of Section 2819 of the California Civil Code. The SURETY waives all rights of subrogation against the CITY or any person employed by the CITY. If the contract price increases by the issuance of change orders, the amount specified in this bond shall increase by the same amount.

Whenever PRINCIPAL shall be and declared by CITY to be in default under the AGREEMENT, SURETY shall promptly remedy the default, or shall promptly do one of the follow at CITY's election:

1. Undertake through its agents or independent contractors, reasonably acceptable to CITY, to complete the AGREEMENT in accordance with its terms and conditions and to pay and perform all obligations of PRINCIPAL under the AGREEMENT, including without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages.

2. Reimburse CITY for all costs CITY incurs in completing the AGREEMENT, and in correcting, repairing or replacing defects in materials or workmanship

and/or materials and workmanship which do not conform to the specifications in the AGREEMENT.

SURETY's obligations hereunder are independent of the obligations of any other surety for the performance of the AGREEMENT, and suit may be brought against SURETY and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing CITY's rights against the others.

No right of action shall accrue on this bond to or for the use of any person or corporation other than CITY or its successors or assigns.

As part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorneys' fees, incurred by CITY in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

[SIGNATURES NEXT PAGE]

IN WITNESS WHEREOF, this instrument has been duly executed by the PRINCIPAL and SURETY above-named, on the ____ day of _____, 20___.

PRINCIPAL:	SURETY:
BY:_____	BY:_____
PRINT NAME: _____	**PRINT NAME:** _____
PRINT TITLE: _____	**PRINT TITLE:**_____
AND	MAILING ADDRESS:
BY: _____	_____
PRINT NAME: _____	_____
PRINT TITLE:_____	_____

(Notarization by Surety and copy of Power of Attorney required.)

APPROVED AS TO FORM:

BY: _____

City Attorney

Bond No. _____

Premium $_____

PUBLIC WORKS

LABOR AND MATERIALS PAYMENT BOND

(Project: _____)

WHEREAS, the City of Roseville ("CITY"), has awarded a bid and contract to _____ as contractor ("PRINCIPAL"), for the public work described as _____ _____ (the "WORK"). The contract ("AGREEMENT"), for the public work described above, and all of its terms and conditions are incorporated by reference and made a part hereof; and

WHEREAS, the PRINCIPAL is required to furnish a bond in connection with the AGREEMENT guaranteeing payment of persons who provide labor and material; and

NOW, THEREFORE, we the undersigned PRINCIPAL and _____ _____, a _____, admitted and duly authorized to transact business under the laws of the State of California, as SURETY ("SURETY"), are held and firmly bound unto the CITY or its successors and assigns in the sum of _____ dollars ($_____) (which amount is not less than 100% of the AGREEMENT price) to be paid to the CITY or its successors and assigns; and for which

payment, well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors or assigns jointly and severally, firmly by these presents.

The condition of the obligation is such that if the PRINCIPAL, its subcontractors, heirs, executors, administrators, successors or assigns fails to pay any of the persons named in Section 8004 or 9100 of the Civil Code of the State of California, or the amounts due under the Unemployment Insurance Code of the State of California, or any amounts required to be deducted, withheld and paid over to the Employment Development Department from the wages of employees of the PRINCIPAL and its subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to work or labor performed by any such claimant, that the SURETY will pay for the same, in an amount not exceeding the sum specified in this bond, and also, in case suit is brought upon the bond, shall pay reasonable attorneys' fees, to be fixed by the Court.

This bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file a Stop Payment Notice pursuant to the provisions of Section 9350 et seq. of the Civil Code of the State of California, so as to give a right of action to them or their assigns in any suit brought upon this bond.

No prepayment or delay in payments, and no change, extension, addition or alteration of any provision of the AGREEMENT or in the specifications agreed to between the PRINCIPAL and the CITY, or any forbearance on the part of the CITY shall

operate to relieve the SURETY. The SURETY hereby waives the provisions of Section 2819 of the California Civil Code. The SURETY waives all rights of subrogation against the CITY or any person employed by the CITY. If the contract price increases by the issuance of change orders, the amount specified in this bond shall increase by the same amount.

As part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorneys' fees, incurred by CITY in successfully enforcing such obligation, all to be taxed as costs and included in any judgment rendered.

IN WITNESS WHEREOF, this instrument has been duly executed by the PRINCIPAL and SURETY above-named, on the _____ day of _____, 20__.

PRINCIPAL:	SURETY:
BY:_____	BY:_____
PRINT NAME: _____	**PRINT NAME:** _____
PRINT TITLE: _____	**PRINT TITLE:**_____
AND	MAILING ADDRESS:

BY: _____ _____

PRINT NAME: _____ _____

PRINT TITLE:_____ _____

(Notarization by Surety and copy of

Power of Attorney required.)

APPROVED AS TO FORM:

BY: _____

City Attorney

GENERAL CONDITIONS

FOR BUILDINGS AND GROUNDS

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SECTION 1

DEFINITIONS AND TERMS

1-1.01 **GENERAL.** When the following abbreviations and terms or pronouns in place of them appear in the Contract Documents, the intent and meaning shall be interpreted as provided in this Section 1.

1-1.02 **ACCEPTANCE.** Formal Acceptance by resolution by the Roseville City Council of the Contract when completed in all respects in accordance with the Contract Documents and any modifications previously approved.

1-1.03 **ADDENDUM.** Written interpretation or revision to any of the Contract Documents issued by the City before the bid opening.

1-1.04 **AS-BUILT DOCUMENTS, AS-BUILT DRAWINGS AND RECORD DOCUMENTS.** As-Built Documents, As-Built Drawings and Record Documents are all contract documents modified to reflect changes during the construction phase. Specifically, As-Built Documents/Drawings are a revised set of drawings submitted by the Contractor upon Final Completion of a project. They reflect changes made in the Specifications and Working Drawings during the construction process, and show the exact dimensions, geometry, and location of all elements of the work completed under the Contract. Record Documents, on the other hand, are compiled by the Engineer or Architect based on the As-Built Documents/Drawings submitted by the Contractor. They reflect the Engineer or Architect's concurring review of what changes were denoted, why they were made and where they occurred and create a record set of drawings.

1-1.05 **ASSESSMENT.** A cost imposed on the Contractor for non-compliance

with certain contractual requirements.

1-1.06 **BENEFICIAL OCCUPANCY.** The taking possession of a portion of the Work by the City for its use and/or occupancy on other than a temporary or emergency basis.

1-1.07 **BID GUARANTY.** The cashier's, certified check, irrevocable standby letter of credit, deposit of securities, or Bidder's Bond, accompanying the bid submitted by the Bidder, as a guaranty that the Bidder will enter into an agreement with the City for the performance of the Work, if the Agreement is awarded to Bidder, and the Bidder will submit the required Contract Bonds and Certificate of Insurance. Also referred to as the Bidder's Security.

1-1.08 **BIDDER.** Individual, firm, partnership, limited liability company, corporation, joint venture, or any combination thereof, submitting a Proposal for the Work, acting directly, or through a duly authorized representative.

1-1.09 **BIDDING DOCUMENTS.** Includes the Notice to Bidders, Bidding Requirements, Contract Conditions, Drawings, and Addenda.

1-1.10 **CHANGE ORDER.** Any written order to the Contractor directing an addition, deletion, or modification of the Work, or an adjustment in the Contract Price or Contract Time provided in the Contract Documents and issued after the Agreement has been signed.

1-1.11 **CITY.** The City of Roseville.

1-1.12 **CITY ATTORNEY.** The City Attorney of the City.

1-1.13 **CITY CLERK.** The City Clerk of the City.

1-1.14 **CLAIM.** A separate demand by Contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following: (a) a time extension, including, without limitation, for relief for damages or penalties for delay assessed by

the City; (b) payment by the City of money or damages arising from work done by, or on behalf of, Contractor pursuant to the Contract Documents and payment for which is not otherwise expressly provided or to which Contractor is not otherwise entitled; and (c) payment of an amount that is disputed by the City.

1-1.15 **CONSTRUCTION SCHEDULE.** A list or graphic display of construction activities required for completing the Work, in a format required by the Contract Documents. The duration, start and finish date, and sequence of significant activities, critical path, float and milestones must be indicated in the Construction Schedule.

1-1.16 **CONTRACT OR AGREEMENT.** The written agreement relating to the Work to be performed, the labor, materials, and equipment to be furnished, and the payment to be made therefor. The Agreement/Contract is part of and incorporates all of the Contract Documents.

1-1.17 **CONTRACT CONDITIONS.** Includes the General Conditions, Supplemental Conditions, and Specifications.

1-1.18 **CONTRACT DOCUMENTS.** Includes those documents that form the basis of the Contract, including but not limited to, Bidding Documents, the Bid or Proposal, Contract Bonds, the Contract, all required insurance certificates or endorsements, all bonds, all required certifications or statements, Change Orders, any Contract Amendment, any City Standard which is incorporated by reference and these City of Roseville General Conditions for Buildings and Grounds.

1-1.19 **CONTRACT DRAWINGS.** The official drawings including plans, elevations, sections, detail drawings, diagrams, plated, General Notes, information and schedules thereon, or exact reproductions thereof, showing the location, character, dimension, and details

of the Work. The Contract Drawings include any drawings or plates bound within the Supplemental Conditions.

1-1.20 **CONTRACT PRICE.** The total compensation to be paid to the Contractor in accordance with the terms of the Agreement.

1-1.21 **CONTRACT TIME.** The number of Days, or portion thereof, allowed for completion of the Work, including all authorized time extensions. The effective date for commencement of the Work specified in the Notice to Proceed shall define the beginning of the Contract Time.

1-1.22 **CONTRACTOR.** Individual, firm, partnership, limited liability company, corporation, joint venture, or any combination thereof, who has entered into the Agreement with City.

1-1.23 **DAY OR DAYS.** Unless otherwise designated, Day or Days as used in the Contract Documents will be understood to mean calendar Day or Days.

1-1.24 **DEPARTMENT.** The Department for Contract Administration, as identified in the Supplemental Conditions.

1-1.25 **DIRECT COSTS.** Those cost items (including labor, materials, equipment and any subcontractor's work) that are used in the actual performance of, and are specifically and uniquely attributable to the Work or changed Work. Direct Costs do not include Overhead. Direct Costs only include the following:

A. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by City and Contractor. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include salaries and

wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, sick leave, vacation and holiday pay applicable thereto. Such employees may include superintendents and foremen at the site. The expenses of performing work after regular working hours, on Saturday, Sunday or legal holidays shall be included in the above only to the extent authorized by City in writing.

B. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and suppliers' field services required in connection therewith. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to City, and Contractor shall make provisions so that they may be obtained.

C. Payments made by Contractor to the subcontractors for work performed by subcontractors. If required by City, Contractor shall obtain competitive bids from subcontractors acceptable to Contractor and shall deliver such bids to City who will then determine which bids will be accepted. If a subcontract provides that the subcontractor is to be paid on the basis of cost of the work plus a fee, the subcontractor's cost of the work shall be determined in the same manner as Contractor's cost of the work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

D. Costs of special consultants (including engineers, architects, testing laboratories, surveyors, and accountants) employed for services specifically, and only, related to the Work.

E. Supplemental costs including the following:

1. The proportion of necessary transportation, travel and subsistence

expenses of Contractor's employees incurred in discharge of duties connected with the Work.

2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value of such items used but not consumed which remain the property of Contractor.

3. Rentals of all construction equipment and machinery and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by City, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof, all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

4. Sales, consumer, use or similar taxes related to the Work, and for which Contractor is liable, imposed by laws and regulations.

5. The cost of utilities (including the meter and all associated installation costs), fuel and sanitary facilities at the site.

6. Cost of premiums for additional bonds and insurance required because of changes in the Work.

1-1-26 **DIRECTOR.** Director of the Department for Contract Administration or his or her designee.

1-1.27 **EMERGENCY.** Any sudden generally unforeseen occurrence (such as a fire, flood, storm, earthquake, civil disorder, or other natural and/or man-made disaster) that has the potential to adversely affect the safety of life, the Work, and/or adjacent property; to interrupt contracts essential to the performance of the Work; and/or to cause catastrophic failure of City

equipment and/or facilities.

1-1.28 **ENGINEER OR ARCHITECT.** Professional Engineer or Architect designated for a particular project responsible for signing and sealing the permit drawings, interpretation of the drawings where ambiguities exist, review of requests for information, design Change requests and Shop Drawings, resolution of errors and omissions, and finalization of Record Documents.

1-1.29 **FINAL COMPLETION.** When the project has been completed according to the terms and conditions set forth in the Contract Documents. Final Completion is not the same as Acceptance.

1-1.30 **FORCE ACCOUNT.** Payment by force account shall mean payment on the basis of the Contractor's time and materials.

1-1.31 **GENERAL NOTES.** The written instructions, provisions, conditions or other requirements appearing on the Contract Drawings and so identified thereon, which pertain to the performance of the Work.

1-1.32 **INSTALLATION, INSTALL.** Completely assembling, erecting, and/or connecting materials, parts, components, supplies, and related equipment specified or required for the completion of the Work.

1-1.33 **LABORATORY.** Established professional laboratories authorized by the City to test materials and Work involved in the Contract.

1-1.34 **LEGAL HOLIDAYS.** Those days designated as Federal holidays or declared by the City, or otherwise specified in the Contract Documents.

1-1.35 **LIQUIDATED DAMAGES.** The amount prescribed in the Contract Documents to be paid to the City or to be deducted from any payments due or to become due the

Contractor for each day's delay in completing the whole or any specified portion of the Work beyond the time allowed in the Supplemental Conditions.

1-1.36 **NOTICE OF COMPLETION.** A legal notice filed by the City with the Placer County Recorder's Office stating that construction has been completed and accepted by the City.

1-1.37 **NOTICE TO PROCEED.** A written notice given by the City to the Contractor fixing the date on which the Contract Time will commence to run.

1-1.38 **NOTICE OF TERMINATION.** Written notice from the City to the Contractor and/or its Surety terminating the Agreement, or a portion thereof, either for convenience of the City or for default due to the Contractor's failure to perform its contractual obligations.

1-1.39 **OVERHEAD.** Business or administrative expenses (including but not limited to office expenses, administrative staff, rent, insurance, utilities) not chargeable to a particular part of the Work. The term "Overhead" shall include all of the following:

A. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor whether at the Work Site or in Contractor's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications, all of which are to be considered administrative costs covered by the Contractor's fee.

B. Expenses of Contractor's principal and branch offices other than Contractor's office at the site.

C. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

D. Cost of premiums for all bonds and for all insurance whether or not Contractor is required by the Contract Documents to purchase and maintain the same, except as provided in section 1-1.25.

E. Other overhead or general expense costs of any kind.

1-1.40 **PREMISES.** Shall mean the area within construction easements, easements, rights of entry and City owned property which surrounds the Work Site, limited by the property lines thereof. In some cases Premises may coincide with the Work Site.

1-1.41 **PROFESSIONAL ENGINEER.** An engineer licensed by the Board of Registration for Professional Engineers, State of California.

1-1.42 **PROJECT MANUAL.** A book containing all Contract Documents.

1-1.43 **PROPOSAL FORMS.** The approved forms upon which the City requires that each Bidder submit its bid with regard to the Agreement.

1-1.44 **REQUEST FOR INFORMATION (RFI).** A document issued by the Contractor requesting information concerning the Contract Documents.

1-1.45 **SAFETY.** Includes the practice of identifying potential hazards, assessing their risk, taking corrective action where possible, including and providing control measures such as engineering design, written procedures, and the personal protective equipment for workers in order to eliminate or reduce the risk for exposure in the workplace.

1-1.46 **SCHEDULE OF VALUES.** The breakdown of the Contract Price that will serve as the basis for Contractor's Applications of Payment. Any lump sum bid item

included within the Contract Price will be apportioned among values relating to specific components of the Work covered by said lump sum.

1-1.47 **SHOP DRAWINGS.** Drawings, plans, diagrams, schedules, and other data specifically prepared and submitted to the City by the Contractor, showing in detail: (a) the proposed fabrication and assembly of a special component of the Work; and (b) the Installation (form, fit and attachment details) of a special component of the Work. Shop Drawings shall be deemed to include Working Drawings, Product Data, literature, and applicable performance and test data.

1-1.48 **SPECIFICATIONS.** The technical Specifications for the Work prepared by the Director or an Engineer or Architect describing in detail the nature of the Work, its components, any performance standards, and how the Work is to be constructed.

1-1.49 **SUBCONTRACTOR.** Any individual, firm, partnership, limited liability company, corporation, joint venture, or combination thereof, other than employees of the Contractor, engaged by the Contractor to furnish services, labor, equipment and materials for a portion of the Work.

1-1.50 **SUBMITTALS.** Those documents required to be submitted by the Contractor for review by the City in accordance with the Contract Documents.

1-1.51 **SUPPLEMENTAL CONDITIONS.** The Supplemental Conditions are specific clauses modifying or supplementing these General Conditions.

1-1.52 **SUPPLIER.** Any individual, firm, partnership, limited liability company, corporation, joint venture, or combination thereof, other than employees of the Contractor, that supplies a tangible product as a portion of the Work, with services usually limited to delivery and/or required testing, and with manufacturing, fabrication, or production facilities located off

the Work Site.

1-1.53 **WORK.** The furnishing of all labor, and the furnishing and Installing of all materials, articles, supplies and equipment as specified, designated, or required by the Contract Documents.

1-1.54 **WORK SITE.** All or portion of the Premises that the Work is limited to as shown on the Contract Drawings or designated by the Director. Public streets are not included unless Work is being done within the street right-of-way.

1-1.55 **WORKING DRAWINGS.** Original drawings prepared by the Contractor and/or its Subcontractors or Suppliers, of any tier, illustrating Work required for construction that will not become an integral part of the completed Work. This includes, but is not limited to, drawings for temporary structures such as decking, bulkheads, excavation supports, utility support, groundwater control, forming, falsework, access roads, staging areas, staging plans, and diversion plans. A Working Drawing is one type of a Shop Drawing.

SECTION 2

CONTROL AND SCOPE OF THE WORK

2-1.01 **AUTHORITY OF DIRECTOR.** The Contract shall be performed in a manner satisfactory to the Director who shall decide all questions which may arise as to the quality or acceptability of materials furnished and Work performed and as to the manner of performance and rate of progress of the Work; all questions which may arise as to the interpretation of the Contract Documents; all questions as to the acceptable fulfillment of the Contract on the part of the Contractor; and all questions as to compensation. The Director shall have authority to enforce and make effective such decisions and orders in the event the Contractor fails to promptly carry out the same.

2-1.02 **INTENT OF CONTRACT DOCUMENTS.** The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intent of the Contract Documents is to describe the details for the construction and completion of the Work. Where the Contract Documents describe portions of the Work in general terms, but not in complete detail, it is understood that only the best general practice shall be followed and that only materials and workmanship of the best quality are to be used. Any Work, materials, or equipment that are customarily provided, or that are reasonably inferable from the Contract Documents as being required to produce the intended result, shall be supplied, whether or not specifically called for. When words, which have a well-known technical or trade meaning are used to describe work, materials, or equipment, such words shall be interpreted in accordance with that meaning. Unless otherwise specified, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals, and do all the Work involved in executing the Contract in a

satisfactory and workmanlike manner.

Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, laws, or regulations in effect on the first published date of the Notice to Contractors, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of City or Contractor, or any of their consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to City, or City's designated representative, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to other provisions of the Contract Documents.

The Contract Documents are divided into parts, divisions, sections and articles for convenience, organization and reference. Generally, there has been no attempt to divide the Specifications sections into work performed by the various building trades, work by separate Subcontractors, or work required for separate facilities in the project.

2-1.03 **EXAMINATION AND VERIFICATION OF CONTRACT DOCUMENTS.** The Contractor shall thoroughly examine and become familiar with all of the various parts of the Contract Documents and shall determine the nature and location of the Work, the general and local conditions (including applicable laws) and all other matters which can in any way affect the cost, progress or performance of the Work under this Agreement. Failure to make an examination necessary for this determination shall not release the Contractor from the obligations of the Agreement. No oral agreement or conversation with any officer, or employee

of the City, or with the City's designated representative either before or after the execution of the Agreement, shall affect or modify any of the terms or obligations contained in the Contract Documents.

2-1.04 **CONTRACT DRAWINGS.** The Contract Drawings consist of general drawings and show such plans, elevations, sections, details and schedules as are necessary to give a graphic and pictorial description of the contemplated construction. All authorized alterations affecting the requirements and information given on the Contract Drawings shall be in writing.

2-1.05 **COORDINATION AND INTERPRETATION OF CONTRACT DOCUMENTS.** All Contract Documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary, and to describe and provide for a complete Work.

In the event of inconsistencies between requirements contained in different components of the Contract Documents, the precedence of the Contract Documents shall be as follows to resolve conflicts:

1. Change Orders
2. The Contract (including Addenda)
3. The Supplemental Conditions
4. Specifications
5. Contract Drawings
6. The General Conditions

Should it appear that the Work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall submit a

Request for Information ("RFI") to the Director for such further explanations as may be necessary and shall conform to the written explanation given as if part of the Contract Documents. The decisions of the Director shall be final.

Contractor shall anticipate that it will be necessary to prepare and submit RFIs regarding the Contract Documents. The City will respond to each RFI by no later than fourteen (14) Days after receipt of the RFI, unless the RFI is of significant complexity. Furthermore, in the event that there are numerous RFIs pending, Contractor shall cooperate with the City in establishing a priority for responding to the RFIs, and potentially some RFIs may be responded to beyond the fourteen (14) Day period.

Each RFI prepared by Contractor shall be full and complete. Contractor shall prepare RFIs so as to not cause any delay to the progress of the Work and to not cause any impact to Contractor's labor productivity in the field. Contractor shall not assert any Claims for delay or interference against the City if Contractor fails to timely submit any RFI to the City, after consideration of the response period allowed for by the City.

The response to an RFI shall not, by itself, constitute a writing that authorizes Contractor to perform any Work that causes an adjustment to either the Contract Price or the Contract Time. If Contractor believes that any response to any RFI should constitute a compensable change, Contractor shall provide a Notice of Potential Claim as provided in Section 7-1.03, below. Contractor's failure to provide the required written notice shall constitute a waiver of the Contractor's right to seek a compensable change based on the RFI response.

The Contractor shall examine all Contract Documents; shall verify all figures in the Contract Documents before laying out the Work; shall promptly notify the City of all errors, inconsistencies, and/or omissions that it discovers; and, in instances where such non-

conformities are discovered, shall obtain specific instructions in writing from the City before proceeding with the Work. Contractor's performance of any Work affected by such non-conformities prior to the City's decision shall be at the Contractor's risk. Any Work that is customarily provided or that is reasonably inferable shall not relieve the Contractor from performing such work at no additional expense and/or delay, and such Work shall be performed as if fully set forth in the Contract Documents.

2-1.06 **INDEPENDENT CONTRACTOR STATUS.** The Contractor shall independently perform all Work required by the Contract Documents and shall not be considered as an agent or employee of the City, nor shall the Contractor's Subcontractors or employees be considered as subagents of the City.

The Contractor and Contractor's Subcontractors shall be licensed in accordance with the laws of the State of California and as more particularly described in the bidding documents or elsewhere in the Contract Documents.

2-1.07 **ORDER OF WORK.** When required by the Contract Documents, the Contractor shall follow the sequence of operations set forth therein. Full compensation for conforming to such requirements will be considered as included in the prices paid for the various Contract items of work, and no additional compensation will be allowed therefor.

2-1.08 **SUBMITTALS.** It shall be the Contractor's responsibility to timely submit, so as to cause no delay in the Work, all Shop Drawings, descriptive data, manuals, instructions, affidavits, samples for the various trades as required by the Supplemental Conditions and Specifications, and offers of alternatives, if any. Such Submittals shall be checked and coordinated by the Contractor with the Work of other trades involved before they are submitted to the Director for examination.

The Contractor shall deliver at least one (1) electronic copy of the Submittals to the Director, and one (1) hard copy if requested. Work requiring the submittal of working drawings, descriptive data or samples shall not begin prior to approval of said Submittal by the Director.

The time allowed for review of each Submittal will be as indicated in the Supplemental Conditions. Review time will start upon receipt of the Submittal by the Director and will end upon the Director's mailing of the Submittals to the Contractor. Defective, incomplete or partial Submittals will be returned to the Contractor unreviewed.

Submittals shall be made by a letter of transmittal that shall contain a list of all matter submitted and identification of all variations from the Contract Documents contained in the Submittal. The letter and all items accompanying the same shall be fully identified as to project name and location, Contractor's name, district, county, and Contract number, with ample cross-references to the Contract Documents, to facilitate identification of items and their location in the Work.

All Shop Drawings and supporting data, catalogs, schedules, shall be submitted as the instruments of the Contractor, who shall be responsible for their accuracy and completeness. These Submittals may be prepared by the Contractor, Subcontractors, or Suppliers, but the Contractor shall ascertain that Submittals meet all of the requirements of the Contract Documents, while conforming to structural, space, and access conditions at the point of Installation. The Contractor shall check all Submittals before submitting them to the Director.

2-1.08A **SHOP DRAWINGS.** The Contractor shall submit an electronic copy (searchable PDF) of all Shop Drawings required by the Supplemental Conditions or Specifications, and one (1) hard copy, if requested by the Director. Shop Drawings shall also be provided separately in AutoCAD format using the latest version of AutoCAD. An electronic

copy will be returned to the Contractor either approved for use, as demonstrated by a stamp, or returned for correction and resubmittal. Materials, colors and/or samples will not be returned to the Contractor. Shop Drawings include any drawing, which requires execution by a draftsman as distinguished from printed matter. The size of Shop Drawings shall not exceed twenty-four inches (24") by thirty-six inches (36").

2-1.08B **DESCRIPTIVE DATA.** The Contractor shall submit an electronic copy (searchable PDF) of each set of manufacturer's brochures or other data required by the Supplemental Conditions or Specifications, and one (1) hard copy, if requested by the Director. The City will examine such Submittals and return either an electronic copy or a hard copy approved for use or returned for correction and resubmittal.

2-1.08C **SAMPLES.** The Contractor shall submit samples of articles, materials or equipment as required by the Supplemental Conditions or Specifications. The Work shall be in accordance with the approved samples. Samples shall be removed from City property when directed or may be incorporated in the Work if approved by the Director. Samples not removed by the Contractor will become the property of the City or, at the City's option, will be removed or disposed of by the City at the Contractor's expense.

2-1.08D **MANUALS, INSTRUCTIONS AND AFFIDAVIT.**

A. Manuals and Instructions. Where operation and maintenance manuals are required by the Supplemental Conditions, the Contractor shall submit two (2) sets of manuals, suitably bound, along with two (2) electronic copies in an approved format, to the Director within forty-five (45) Days after favorable review of the equipment or facilities. If operation and maintenance manuals are approved to be provided in PDF format, text shall be provided in searchable PDF format, making proper use of PDF for headings and heading levels,

paragraphs, tables, and lists. Submitted operation and maintenance manuals shall be a collected, organized, and indexed set of bookmarked PDF documents comprising each operation and maintenance manual that corresponds to a hardcopy binder. All manuals shall be marked to indicate the specific equipment furnished for this project and shall include at a minimum:

1. Equipment summary form
2. Cover/Title page
3. Table of contents
4. Operating procedures including start-up, shutdown, normal operation, all operating modes, emergency shutdown, and safety precautions
5. Lubrication instructions (if required)
6. Preventative maintenance procedures
7. Troubleshooting and corrective maintenance procedures
8. Reinstallation instructions
9. Overhaul instructions (if applicable)
10. Parts identification list with exploded view and associated cross references
11. Recommended spare parts list
12. Operator safety requirements
13. Electrical and control system wiring drawings, including panel wiring control (ladder) diagrams, logic diagrams, loop diagrams, and interconnection diagrams
14. Panel layout and assembly drawings

15. Mechanical drawings

16. Printouts of all software programs and configuration files

17. Factory and field test procedures and results

Operation and maintenance manuals for complex equipment shall also include:

18. Alternate specified operating modes

19. Emergency shutdown instructions

20. Normal shutdown instructions

21. Long term shutdown instructions

Operation and maintenance manuals for systems comprised of separate pieces of equipment shall include a system explanation of items 4, 7, 18, 19, 20, and 21 as well as the instructions for the separate pieces of equipment.

B. Affidavits. Where required in the Supplemental Conditions or Specifications, manufacturers of equipment shall provide field service as a part of this project. Equipment shall not be considered ready for full time operation until after the authorized factory-trained and qualified manufacturer's representative for the specific equipment has checked and adjusted the equipment and certified by written affidavit that the equipment has been properly Installed, tested, adjusted, lubricated, and calibrated, and is ready for full time operation. Acceptable affidavits shall be submitted prior to completion of the Work. Affidavits shall contain the following specific wording:

"The (Name of Equipment) has been properly installed, tested, adjusted, lubricated, and calibrated, and is ready for full time operation. The installation has been inspected and has been found to be in conformance with our (the manufacturer's) standards and requirements."

No amplification, dilution, or modification of this specific wording will be permitted.

2-1.08E **ALTERNATIVES.** For convenience in designation in the Contract Documents, certain materials, articles, or equipment may be designated by a brand or a trade name or the name of the manufacturer together with catalog designation or other identifying information, hereinafter referred to generically as "designated by brand name." Except in those instances where the product is designated to match others in use in a particular improvement, either completed or in the course of completion, an alternative material, article, or equipment which is of equal quality and of the required characteristics for the purpose intended may be proposed for use provided the Contractor complies with the following requirements:

A. The Contractor shall submit its proposal for an alternative in writing. Such request shall be made in ample time to permit review and approval without delaying the Work. The Contractor shall not be entitled to an adjustment of the Contract Time or an increase in the Contract Price based on any Contractor-proposed substitution.

B. No such proposal will be considered unless accompanied by complete information and descriptive data, necessary to determine the equality of the offered materials. The Contractor shall satisfy the Director as to the comparative quality, suitability, or performance of the offered material, articles, or equipment. In the event that the Director rejects the use of such alternative materials, articles, or equipment, then one of the particular products designated by brand name shall be furnished.

C. The burden of proof as to the quality and suitability of alternatives shall be upon the Contractor and it shall furnish all information necessary as required by the Director. The Director shall be the sole judge as to the quality and suitability of alternative articles or materials and such decisions shall be final. Where use of an alternative material

involves redesign of, or changes to, other parts of the Work, the cost and time required to effect such redesign or changes will be considered in evaluating the suitability of the alternative material. Cost of redesign by the City will be borne by the Contractor.

D. Whenever classification, rating or other certification by a body such as Underwriters Laboratories (UL) or the National Electrical Manufacturers Association (NEMA) is a part of the specification for any material, Contractor's request for use of alternative articles or materials shall be accompanied by reports from the listed or equivalent independent testing Laboratory indicating compliance with the Contract Documents. The cost of all testing required to prove equality of the material proposed shall be borne by the Contractor. Approval of an alternative shall be only for the characteristics or use named in such approval, and shall not be used to change or modify any requirement of the Contract Documents.

E. At its election, the City reserves the right to consider any Contractor proposed substitution as a Cost Reduction Proposal under Section 3-1.07 of these General Conditions in the event that there is a significant savings resulting from the substitution.

The Director will examine, with reasonable promptness, such Submittals, and return of Submittals to the Contractor shall not relieve the Contractor from responsibility for deviations and alternatives from the Contract Documents, nor shall it relieve the Contractor from responsibility for errors in the Submittals. A failure by the Contractor to identify in its letter of transmittal material deviations from the Contract Documents shall void the Submittal and any action taken thereon by the Director. When specifically requested by the Director, the Contractor shall resubmit such Shop Drawings, descriptive data and samples as may be required.

If any mechanical, electrical, structural, or other changes are required for the proper Installation and fit of alternative materials, articles, or equipment, or because of deviations from

the Contract, such changes shall not be made without the approval of the Director and shall be made without additional cost to the City.

2-1.09 **DISPOSAL OF MATERIAL OUTSIDE THE WORK SITE.** Unless otherwise stated elsewhere in the Contract Documents, the Contractor shall, at its own cost and expense, make its own arrangements for disposing of materials outside the Work Site.

Except when material is to be disposed of at a landfill or recycling center, when any material is to be disposed of outside the Work Site, the Contractor shall first obtain written permission from the City to dispose of the material at the intended location. The City's approval will be contingent upon the Contractor obtaining a written permit from the property owner on whose property the disposal is to be made. Prior to the disposal of any material at the intended location, the Contractor shall submit such permit or a certified copy thereof to the City, together with a written release from the property owner absolving the City from any and all responsibility related to the disposal of material on said property.

Disposal of Hazardous Materials must be done in accordance with all laws and regulations. Copies of all required regulatory documentation including copies of final manifests shall be supplied to the City.

2-1.10 **ACCESS TO THE WORK.** The Contractor shall satisfy itself that the jurisdictions through which its operations and haul routes pass will permit such operations with respect to the type of vehicle, laden weights, frequency and dimensions of loads, hours of operation and required traffic control. All necessary permits, licenses or bonds shall be obtained and paid for by the Contractor.

2-1.11 **TEMPORARY UTILITIES.** The Contractor shall make its own arrangements with utility companies for any temporary services it may require in performance of

the Work and shall pay all costs of these services directly to these utility organizations.

2-1.12 **UTILITY FACILITIES.** The Contractor shall protect from damage those utility facilities that are to remain in place, be Installed, relocated or otherwise arranged.

The Contractor's attention is directed to the possible existence of facilities not shown, and of facilities in a location different from that, which is indicated. The Contractor shall take steps to ascertain the exact location of all facilities prior to doing any Work, which may damage such facilities or interfere with their service. Where the location of a facility is indicated or inferred from the presence of visible facilities such as buildings, meters, and junction boxes, the Contractor shall make such excavations and explorations as are necessary to ascertain the correct location. Unless provided for elsewhere in the Contract Documents, the cost of such excavations and explorations will be considered as a part of the cost of other items of Work and no additional payment will be made. Such excavations and exploratory Work shall not entitle the Contractor to an extension of time.

If the Contractor discovers underground facilities not indicated or inferred from the Contract Documents, the Contractor shall immediately give the Director written notification of the existence of those facilities. The Contractor shall determine the exact location of the underground facilities and the cost of the work will be paid for in accordance with the Contract Documents. The underground facilities shall be protected from damage as directed by the Director and the cost of that work will be paid for as extra work. The Contractor shall, if directed by the Director, repair any damage, which may occur to the underground facilities. The cost of that repair work, not due to the failure of the Contractor to exercise reasonable care, will be paid for as extra work. Damage due to the Contractor's failure to exercise reasonable care shall be repaired at the Contractor's cost and expense.

Where it is determined by the City that the rearrangement of an underground facility, the existence of which is not shown on the Contract Drawings, is essential in order to accommodate the Work, the City will provide for the rearrangement of such facility by other forces or, when so ordered by Change Order, such rearrangement shall be performed by the Contractor and will be paid for as provided under a Change Order.

The Contractor shall be responsible for the maintenance of all utility facilities placed by the Contractor in temporary locations, and all utilities within the construction area not required to be relocated but which are required to be shored or supported during the construction period. The cost of such maintenance shall be borne by the Contractor, and no other compensation shall be due the Contractor for this Work.

The cost of providing and maintaining all necessary or required temporary structures, of making any necessary repairs, replacements, or similar operations, or furnishing indemnity or other bonds, if required, and all costs required by this Section shall be paid by the Contractor and shall be included in the prices bid in the schedule for other items of work.

2-1.13 **PRESERVATION AND CLEANING.** The Contractor shall clean up the Work at frequent intervals and at other times when directed by the Director. While finish Work is being accomplished, floors, Work areas and finished areas shall be kept clean, free of dust, construction debris and trash. Upon completion of the Work, the Contractor shall remove from the Premises its construction equipment and any waste materials not previously disposed of, leaving the Premises thoroughly clean and ready for final inspection.

2-1.14 **LIMITATIONS ON WORK SITE AND PREMISES.** The Contractor shall limit its construction operations to the Work Site unless otherwise shown on the Contract Drawings or specified. The Contractor shall perform no operation of any nature over or on the

Premises except such operations as are authorized by the Contract Documents or as authorized by the Director.

2-1.15 **DUST CONTROL.** During the performance of all Work under this Contract, the Contractor shall assume all responsibility for dust control and shall furnish all labor, equipment, and means required to carry out proper and efficient measures wherever and whenever dust control is necessary to prevent the operations from producing dust damage and nuisance to persons and property. Any claims resulting from dust damage or nuisance shall be borne solely by the Contractor. The Contractor shall comply with all applicable Air Quality Act requirements.

2-1.16 **SANITATION.** The Contractor shall provide sanitary facilities for all persons working on the Work.

2-1.17 **NIGHT WORK AND NORMAL WORKING HOURS.** Normal working hours at the construction site shall be between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday. Legal holidays are excluded. Certain utility connections and street operations are anticipated to require night Work by the Contractor during low usage periods. The Contractor may also be required to prosecute the Work at night if, at any time, the Director shall deem it necessary for the progress of the Work, or if emergencies arise. The Contractor shall promptly comply with any such requirements made in writing by the Director. The Contractor will also be permitted to Work at night if Contractor satisfies the Director of the need therefor, in order to maintain the required progress or protect the Work from the elements. Certain activities are required to be performed at night for nominal progress of the Work and/or are specified to be performed at night by other portions of the Supplemental Conditions. When required, ordered, or permitted to Work at night, the Contractor shall provide sufficient and

satisfactory lighting and other facilities therefor. The Contractor shall receive no extra payment for night Work, if specified or if required to be performed during the normal progress of the Work, but compensation shall be considered as having been included in the price stipulated for the Work.

If Contractor performs work during weekends, holidays or any non-normal work hours, Contractor shall pay for required City Inspectors.

2-1.18 **LINES AND GRADES.** Unless otherwise provided in the Supplemental Conditions, the Contractor shall lay out all Work, including structures and pipelines, and shall be responsible for any errors resulting therefrom. In all questions arising as to proper location of lines and grades, the Director's decision will be final.

As part of the bid price for the construction of the improvements, the Contractor shall provide and be responsible for the layout of all Work on this project. The Contractor shall provide all necessary surveys, field staking, and positioning for the construction of all components at the proper alignment, elevations, grades, and positions, as indicated on the Contract Drawings and as required for the proper operation and function. The Contractor shall stake its Work area limits. Contractor shall perform all construction staking using a land surveyor licensed in the State of California. Contractor shall provide a staking plan prior to commencement of Work for the City's review and maintain monuments, stakes, and marks, and shall update the plan as necessary. Director, or Director's designated representative, may verify the field condition. Errors or inconsistencies in the Contract Documents discovered by the Contractor shall be reported to the Director within twenty-four (24) hours and prior to constructive forms or related improvements. Any work Installed with this requirement shall be subject to removal and replacement at the Contractor's expense.

The Contractor's lay-out shall be based on existing structures, property lines, survey control, and bench marks established by the City. All structures and pipeline connections shall be Installed based on actual elevation of existing structures to which connections are made.

The Contractor shall supply such labor as required, at no extra charge, to aid and assist the Director in checking location and grades of the Work as set by the Contractor if the Director desires to perform this checking. This shall include moving materials and equipment located between monuments and the construction Work.

2-1.19 **ARCHEOLOGICAL DISCOVERIES.** Upon discovery of prehistoric or historic artifacts, or other indicators or examples of cultural resources discovered during the course of site preparation, grading, excavation, construction or other development activities, all operations within fifty feet (50') of the find shall cease until such time as the City provides the services of a qualified archeologist to evaluate the finds and recommend appropriate action.

Prehistoric materials can include flaked stone tools (e.g., projectile points, knives and choppers) or tool making debris of obsidian, chert, quartzite and other materials, culturally darkened soil (i.e., midden, which often contains heat affected rock, ash and charcoal, shellfish remains, and cultural materials), and stone milling equipment such as mortars, pestles and hand stones. Historic material may include wood, stone, concrete or adobe footings, walls and other structural remains; debris filled wells or privies; and deposits of wood, metal, glass, ceramics and other refuse.

2-1.20 **PRESERVATION OF MONUMENTS.** Any monuments or bench marks disturbed by construction operations shall be repaired per the City's standard and promptly re-established by a registered land surveyor or civil engineer. A plat for each monument shall be furnished to the Director after the plat has been recorded with the Placer

County Recorder's Office at no additional cost to the City. The recorded plat shall serve as a record of the re-establishment of said existing survey points.

2-1.21 **CONFORMITY WITH CONTRACT DOCUMENTS.** Work and materials shall conform to the lines, grades, cross sections, dimensions and material requirements, including tolerances, required by the Contract Documents. Although measurement, sampling and testing may be considered evidence as to such conformity, the City shall be the sole judge as to whether the Work or materials deviate from the Contract Documents. At its option, the City may elect to accept deviations from the Contract Documents with appropriate backcharge Assessments against the Contractor, and, if such an election is made, the City will provide written notice to the Contractor of such acceptance.

2-1.22 **FINAL CLEANUP.** Prior to final Acceptance of the Work, the Contractor shall thoroughly clean the Premises, remove all temporary structures built by or for the Contractor, and remove all equipment and surplus construction material and debris from the area. The entire project, before Acceptance by the City, shall be left in a neat and clean condition. All Work areas and temporary construction areas shall be returned to essentially the same conditions existing before the commencing of project construction.

2-1.23 **AS-BUILT DOCUMENTS AND DRAWINGS.** The Contractor shall maintain one set of the full size prints furnished by the City and mark thereon in color any deviations from plan dimensions, elevations, or orientations. Also, the Contractor shall locate on said prints, all underground facilities, such as piping, conduits and tanks by accurate field measurement from structure walls, corners, etc. The Contractor shall submit the prints and an electronic CD (searchable PDF or source file format such as AutoCAD) in good condition to the Director upon completion of the job as a condition of Acceptance of the project. Marked prints

shall be updated at least once each week and shall be available to the Director for review as to currency prior to developing partial payment estimates. After the completion of testing, but prior to Acceptance, the Contractor shall submit As-Built electrical drawings in color and an electronic CD showing all components and their wiring, and as specified in the Supplemental Conditions.

2-1.24 **SUPERINTENDENCE.** The Contractor shall supervise and direct the Work, which shall be performed in accordance with the requirements of the Contract Documents. The Contractor shall be solely responsible for implementation of all construction means, methods, techniques, sequences, and procedures and for coordination of all portions of the Work under the Agreement. The Contractor shall be solely responsible for the safety of its employees, Subcontractors of any tier, Suppliers, visitors to the Contractor, and other third parties associated with the Contractor.

The Contractor shall designate in writing before starting Work, an authorized representative who shall have the authority to represent and act for the Contractor.

When the Contractor is comprised of two (2) or more persons, firms, partnerships, or corporations functioning on a joint venture basis, said Contractor shall designate in writing before starting Work, the name of one authorized representative who shall have the authority to represent and act for the Contractor. Instances of misconduct, contract non-compliance, unsatisfactory performance, or incompetence by these personnel shall be grounds for the City to direct Contractor to dismiss them from the Project. Contractor shall immediately comply with the City's request for dismissal, at no cost to the City, and shall designate a replacement, which shall be subject to approval by the City.

Said authorized representative shall be present at the site of the Work at all times while Work is actually in progress on the Contract. When Work is not in progress and during periods

when Work is suspended, arrangements acceptable to the Director shall be made for any Emergency Work that may be required.

Whenever the Contractor or its authorized representative is not present on any particular part of the Work where it may be desired to give direction, orders will be given by the Director, which shall be received and obeyed by the superintendent or foremen who may have charge of the particular Work in reference to which the orders are given.

Any order given by the Director, not otherwise required by the Supplemental Conditions to be in writing, will on request of the Contractor, be given or confirmed by the Director in writing.

2-1.25 **CHARACTER OF WORKER.** If any Subcontractor or person employed by the Contractor shall appear to the Director to be incompetent or to act in a disorderly or improper manner, he or she shall be removed immediately on the requisition of the Director, and such person shall not again be employed on the Work.

2-1.26 **INSPECTION.** The Contractor shall at all times permit the Director to inspect the Work or any part thereof. The Contractor shall maintain proper facilities and provide safe access for such inspection by the Director to all parts of the Work, and to the shops where the Work is in preparation. Work shall not be covered up until authorized by the Director and the Contractor shall be solely responsible for notifying the Director where and when such Work is in readiness for inspection and testing. Should any such Work be covered without authorization, it shall, if so ordered, be uncovered at the Contractor's expense.

Unless otherwise designated as normal working hours, whenever the Contractor intends to perform Work on Saturday, Sunday, or a Legal Holiday, the Contractor shall give notice to the Director of such intention forty-eight (48) hours prior to performing such Work, or such longer

period as may be specified so that the Director may make necessary arrangements.

The observation and/or approval of the workmanship or materials by the City shall not relieve the Contractor of any obligations to fulfill the requirements of the Contract Documents. Workmanship and materials not meeting such requirements shall be corrected and unsuitable Work or material may be rejected, notwithstanding that such Work or materials have been previously observed and/or approved by the City, or payment therefor has been included in a progress estimate.

The City may order re-examination of questioned Work at any time before final Acceptance. If so ordered, the Contractor shall uncover the Work. If such work is found to be in accordance with the Contract Documents, the City will pay for the cost of uncovering, removing, recovering and replacing the parts removed; but if such Work so exposed or examined is not in accordance with the Contract Documents, the uncovering, removal, recovering and replacement shall be at the Contractor's expense. Work that has been covered prior to observation by the City does not qualify as re-examined work; the City may order such work uncovered for observation without payment of any costs.

2-1.27 **REMOVAL OF REJECTED AND UNAUTHORIZED WORK.** All Work which has been rejected shall be remedied, or removed and replaced by the Contractor in a manner acceptable to the Director and no compensation will be allowed the Contractor for such removal, replacement, or remedial Work.

Any Work done beyond the lines shown on the Contract Drawings or established by the Director, or any Work done without written authority will be considered as unauthorized Work and will not be paid for. Upon order of the Director, unauthorized Work shall be remedied, removed, or replaced at the Contractor's expense.

Upon failure of the Contractor to comply promptly with any order of the Director made under this section, the Director may cause rejected or unauthorized Work to be remedied, removed, or replaced, and the costs thereof will be deducted from any moneys due or to become due the Contractor.

SECTION 3

CHANGES IN THE WORK

3-1.01 **CHANGES.** The Director, without invalidating this Agreement and without notice to Contractor's surety, may order changes in the Work, consisting of additions or deletions, or other revisions. The Contract Price and the Contract Time shall be adjusted accordingly. All such changes in the Work, including in the Contract Price and the Contract Time, shall be authorized only by Contract Change Order, signed by the Director.

If Contractor claims that performance of any work entitles it to additional compensation or to an extension of time for performance of the Work, Contractor shall provide written notice to the City of any such claim prior to undertaking such work. Contractor shall provide written notice of any anticipated impacts to the Contract Price or Contract Time within three (3) Days of discovering such impact, by submitting a Notice of Potential Claim described in Section 7-1.03 below, or notice of delay as described in Section 6-1.09 below. If the Director refuses to issue a Change Order for such work, Contractor shall perform that work if directed or obligated to do so and shall submit a complete and specific Claim for additional compensation and/or extension of time for performance within fifteen (15) Days after such work is performed, as described in Section 7-1.03 below. Failure to provide written notice of claims prior to undertaking such work, failure to provide a timely Notice of Potential Claim, or failure to submit timely a complete and specific Claim for additional compensation and/or extension of the time for performance, shall be deemed a waiver and abandonment of any such Claim. No Claim, dispute or controversy shall interfere with the progress or performance of the Work and the Contractor shall proceed with the Work as directed by the Director. Failure to so proceed shall amount to a

default under this Agreement.

3-1.02 **PROPOSED CHANGE ORDERS.** The Contractor will be notified in writing of a proposed Change Order describing the intended change. Within fifteen (15) Days after receipt of a written request, the Contractor shall submit its proposed price to be added or deducted from the Contract Price due to the change and its estimate of the extent of the adjustment in the Contract Time, if any. The Contractor's proposed price to be added to or deducted from the Contract Price shall be supported by a detailed estimate of cost prepared by the Contractor, vendor or Supplier. The Contractor's proposed price submittal shall be accompanied by a statement of the time necessary for the changed Work, together with a description of how this time will be incorporated into the current Construction Schedule. The Contractor shall upon request by the Director permit inspection of its original Contract estimate, subcontract agreements or purchase orders relating to the change.

If agreement is reached on the adjustment in compensation as provided in Section 3-1.05, "Contract Price Adjustment," of these General Conditions, the Contractor shall proceed with the Work as changed at the agreed price.

If the Contractor and the Director fail to agree as to the adjustment in compensation for the performance of the changed Work, the Contractor, upon written order from the Director, shall proceed immediately with the changed Work and the Contract Price shall be adjusted in accordance with Section 3-1.06, "Force Account Payment," of these General Conditions.

If the Contractor fails to submit its cost estimate within such fifteen (15) Day period, the Contractor shall commence the Work as changed immediately upon receipt of written order of the Director, and the Contract Price will be adjusted in accordance with the Director's cost estimate for the changed Work.

3-1.03 **EMERGENCY AND INDETERMINATE TYPE CHANGE ORDERS.** Changes in the Work made necessary by an Emergency, as determined by the Director, or changes of a kind where the extent of the Work cannot be determined until completed, may be authorized by the Director in writing. The Change Order shall state that it is issued pursuant to this Section 3-1.03. Upon receipt of an authorized Change Order or other written order of the Director, the Contractor shall proceed with the ordered Work and the Director will maintain a daily job record containing a detailed summary of all labor, materials and equipment required for the changed Work.

Within fifteen (15) Days after receiving a written request, the Contractor shall submit a detailed estimate of cost for the change and any requested change in Contract Time in the same manner as required for proposed Change Orders in Section 3-1.02 of these General Conditions.

3-1.04 **EXECUTED CHANGE ORDER.** A Contract Change Order signed by both the Director and the Contractor is an "executed Contract Change Order." By signing the Contract Change Order, the Contractor agrees that the specified compensation constitutes full compensation for the changed Work, including payment for interruption, disruption, acceleration, extended Overhead, delay or any other "impact" claim or "ripple effect" claim. The Contractor specifically understands and agrees that its execution of the Contract Change Order shall constitute a waiver of any right for the Contractor to claim any additional compensation with respect to the subject matter of the Contract Change Order.

3-1.05 **CONTRACT PRICE ADJUSTMENT.** If a Contract Change Order provides for an adjustment to the Contract Price, the amount of such adjustment shall be determined by one of the following methods, or a combination thereof, as determined by the City and in its sole discretion:

A. Lump sum. The Contractor and the City may agree on a lump sum amount for the Change Order. At the City's request, the Contractor will provide pricing for the work. Maximum markups for Contract Change Orders paid for using lump sum pricing shall be paid for in the same manner and in the same amounts as markups for Force Account work, as described in Section 3-1.06 below.

B. Unit Prices. The unit prices set forth in the Contractor's Schedule of Bid Prices will be utilized where they are applicable and acceptable to the City. The Contractor's unit prices shall remain firm and shall not be subject to adjustment unless and until the actual quantity of work is increased or decreased by Contract Change Order in an amount greater than twenty-five percent (25%) from the estimated quantity indicated for such item. No markups will be given for Contract Change Orders paid for using unit prices.

Unit prices for new items included in the Contract Change Order but not included in the original bid shall be as mutually agreed upon or, in the absence of agreement, as determined by the City in the same manner as if the work were to be paid for on a Force Account basis, as described in Section 3-1.06 below.

C. Force Account. Where the City and the Contractor are unable to agree on lump sum pricing and if the City does not elect to utilize the unit prices in Contractor's bid, or such unit prices are not applicable, the changed work will be performed and tracked by the Contractor as Force Account work, as described in Section 3-1.06 below. The City will pay for such work, including markups, properly attributable to the change in accordance with those Force Account provisions.

D. Eliminated Items. The City reserves the right to delete any bid item of Work in its entirety. The City makes no representation that any work under a bid item of Work

will be performed, and all work may be subject to a Contract Change Order that deletes such work. Bid items are distinct and severable from the other bid items, and the Contractor shall not be entitled to any anticipated profit, unabsorbed Overhead, or other indirect expense attributable to the deleted item, except as provided immediately below with regard to Force Account mark-ups on the direct and verifiable costs incurred prior to the City's order that deletes the work.

Should any bid item of Work be eliminated in its entirety and not accounted for as described immediately above and, in the absence of an executed Contract Change Order covering such elimination, payment will be made to the Contractor for actual direct and verifiable costs incurred in connection with such eliminated bid item if incurred prior to the date of notification in writing by the City of such elimination. If acceptable material is ordered by the Contractor for the eliminated item prior to the date of notification of such elimination by the City, and if orders for such material cannot be canceled, it will be paid for at the actual direct and verifiable cost to the Contractor. Actual direct costs shall include documented vendor shipping fees, Supplier restocking fees, if applicable, and Contractor handling costs directly related to the eliminated item(s). In such case, the material paid for shall become the property of the City and the actual cost of any further handling will be paid for by the City. If the material is returnable to the vendor and if the City so directs, the material shall be returned and the Contractor will be paid for the actual direct cost of charges made by the vendor for returning the material. The actual direct cost of handling returned materials will also be paid for by the City. The actual direct and verifiable costs to be paid by the City as provided herein will be computed in the same manner as if the work were to be paid for on a Force Account basis, including the application of Force Account mark-ups to said costs.

3-1.06 **FORCE ACCOUNT PAYMENT.** When Work performed pursuant to a

Change Order is to be paid for on a Force Account basis, the Contractor's labor, materials and equipment used in the performance of such Work shall be subject to the approval of the City, and the compensation will be determined as set forth below in this section.

3-1.06A **LABOR.** The Contractor will be paid an amount based on the actual cost for the workers (including foremen when authorized by the Director) used in the actual and direct performance of the Work. All labor costs associated with Overhead, whether field or home office, are specifically excluded herein, as those labor costs are covered by the below mark-ups. The cost of labor, whether the employer is the Contractor, Subcontractor or other forces, shall include employer payments; assessment of benefits required by lawful labor union collective bargaining agreements; compensation insurance payments; contributions made to the State pursuant to the Unemployment Insurance Code; and for taxes paid to the Federal Government pursuant to the Social Security Act of August 14, 1935, as amended. No labor cost will be recognized at a rate in excess of the wages prevailing in the locality at the time the Work is performed, nor will the use of a labor classification, which would increase the cost, be permitted unless the Contractor establishes to the complete satisfaction of the Director the necessity for payment at a higher rate.

3-1.06B **MATERIALS.** Only materials furnished by the Contractor and necessarily used in the performance of the Work will be paid for. Such cost of materials may include the costs of procurement, transportation and delivery if necessarily incurred. If a cash or trade discount by the actual supplier is available to the Contractor, it shall be credited to the City. If materials are procured by the purchaser by any method which is not a direct purchase from and a direct billing by the actual supplier to such purchaser, the cost of such materials shall be deemed to be the price paid to the actual supplier plus the actual costs, if any, incurred in the

handling of such materials. If the materials are obtained from a supply or source owned wholly or in part by the purchaser, the cost of such materials shall not exceed the price paid by the purchaser for similar materials furnished from said source on Bid items or the current wholesale price for such materials delivered to the job site, less any discounts as provided herein, whichever is lower. If, in the opinion of the Director, the cost of materials is excessive, or if the Contractor fails to furnish satisfactory evidence of the cost to it from the actual supplier within sixty (60) Days after the date of delivery of the materials or within fifteen (15) Days after Acceptance of the Agreement, whichever occurs first, the cost of the materials shall be deemed to be the lowest current wholesale price at which similar materials are available in the quantities required, less any discounts provided herein. The Department reserves the right to furnish such materials required by the Change Order as it deems advisable, and the Contractor shall have no claim for cost or markups on material furnished by the Department.

3-1.06C **EQUIPMENT.** The Contractor will be paid an amount based on the actual cost for the use of equipment directly required and approved by the Director in the performance of the changed Work. No payment will be made for time while equipment is inoperative due to breakdowns or on Days when no Work is performed. In addition, the rental time shall include the time required to move the equipment to the Work from the nearest available source of such equipment, and to return it to the source. If such equipment is not moved by its own power, then loading and transportation costs will be paid. Moving time, loading and transportation costs will only be paid if the equipment is used exclusively on the changed Work during the time between move in and move out. Individual pieces of equipment having a replacement value of One Thousand Dollars ($1000) or less shall be considered to be tools or small equipment, and no payment will be made therefore. For equipment owned,

furnished, or rented by the Contractor, no cost therefore shall be recognized in excess of the equipment rental rates published by Caltrans at the following website address: http://www.dot.ca.gov/hq/construc/equipmnt.html. Equipment located at a Work Site and utilized on non-Force Account work shall not eligible for standby payment, and shall be charged on a Force Account basis only when solely performing pre-approved Force Account work tasks.

3-1.06D **MARKUPS.** When a Change Order increases the cost of the Work, the Contractor may add the following maximum markups to its actual costs of labor, materials, or equipment rental:

15 percent for labor;

10 percent for materials; and

5 percent for equipment rental.

The above markups include full compensation, covering the costs of all supervision, bonds, profit, Overhead, and other general expenses not specifically designated as a direct cost in Sections 3-1.06A through 3-1.06C above. The total payment (i.e., direct cost plus applicable markups) shall be deemed to be the actual cost of such work and shall constitute full compensation therefor. The Contractor specifically understands and agrees that such payment shall include any Contractor costs for interruption, disruption, and acceleration, extended Overhead, Change Order management, delay or other "impact" claim or "ripple effect" claim.

When work paid for on a Force Account basis is performed by forces other than the Contractor's own forces, the maximum allowable mark-ups for the Subcontractors' costs shall be fifteen percent (15%) for the cost of labor, ten percent (10%) for the cost of materials, and five percent (5%) for the cost of rented equipment. In these situations where the work is being performed by Subcontractors, the Contractor will only be entitled to an additional five percent

(5%) mark-up and will not be entitled to receive the additional mark-ups specified in this section.

When a Change Order decreases the cost of the Work, the reduction in cost shall include a five percent (5%) markup on the estimated cost for furnishing the labor, materials and equipment, which would have been used on such Work, had the Change Order not been issued.

When a Change Order involves both added Work and deleted Work, the markup or markups to be used shall be as follows:

The actual costs of labor, materials, and equipment rental for added and deleted Work shall be calculated separately without adding markups. If the difference between the calculated costs for labor results in an increased cost, a markup of fifteen percent (15%) shall be applied to the increased cost. If the difference between the calculated costs of materials or equipment rental results in an increased cost, a markup of ten percent (10%) and five percent (5%) respectively, shall be applied to the increased costs of materials or equipment rental, as the case may be. If the difference between the calculated costs for labor, materials or equipment rental results in a decreased cost, a markup of five percent (5%) shall be applied to the decreased costs of labor, materials or equipment rental, as the case may be.

Contractor shall not add mark-ups on work performed and billed by City staff nor add mark-ups to successive iterations of proposed Change Order cost proposals returned to Contractor by the City due to incomplete or inaccurate information being originally submitted by the Contractor. If the Contract Price increases by the issuance of Change Orders, the penal amounts of the bonds required shall increase accordingly.

3-1.06E **RECORDS.** The Contractor shall maintain its records in such a manner as to provide a clear distinction between the direct costs of extra work paid for on a Force Account basis and the costs of other operations.

From the above records, the Contractor shall furnish the City completed daily extra work reports, on forms acceptable to the City, for each Day's extra work to be paid for on a Force Account basis. The daily extra work reports shall itemize the materials used, and shall cover the direct cost of labor and the charges for equipment rental, whether furnished by the Contractor, Subcontractor, or other forces. The daily extra work reports shall provide names and identifications and classifications of workers, the hourly rate of pay and hours worked, and also the size, type, and identification number of equipment, and hours operated. Daily extra work and Force Account reports (actual or claimed) shall be signed by both the City's and the Contractor's representatives within twenty-four (24) hours of the performance of the work.

Valid copies of vendor's invoices shall substantiate material charges. Such invoices shall be submitted with the daily extra work reports, or if not available, they shall be submitted with subsequent daily extra work reports. Should said vendor's invoices not be submitted within sixty (60) Days after the date of delivery of the material or within fifteen (15) Days after the Acceptance of the Agreement, whichever occurs first, the City reserves the right to establish the cost of such materials at the lowest current wholesale prices at which said materials were available in the quantities, less any discounts.

The City will compare its records with the completed daily extra work reports furnished by the Contractor and make any necessary adjustments. When these daily extra work reports are agreed upon and signed by both parties, said reports shall become the basis of payment for the work performed, but shall not preclude subsequent adjustment based on a later audit by the City.

The Contractor's cost records pertaining to Work paid for on a Force Account basis shall be open to inspection or audit by representatives of the City during the life of the Agreement and for a period of not less than three (3) years after the date of Agreement completion and the

Contractor shall retain such records for that period. Where payment for materials or labor is based on the cost thereof to forces other than the Contractor, the Contractor shall make every reasonable effort to insure that the cost records of such other forces will be open to inspection and audit by representatives of the City on the same terms and conditions as the cost records of the Contractor. If an audit is to be commenced more than sixty (60) Days after the date of Acceptance of the Agreement, the Contractor will be given fifteen (15) Days' notice of the time when such audit is to begin.

3-1.07 **COST REDUCTION PROPOSALS.** The City encourages the Contractor to submit Cost Reduction Proposals whenever the Contractor identifies areas and/or instances in which there can be savings to the Work. Contractor may submit to the City, in writing, proposals for modifying the plans, Specifications or other requirements of the Agreement for the sole purpose of reducing the total cost of construction, including the time for completion of the Work. The City may consider such Cost Reduction Proposals and, if accepted, the Agreement will be equitably adjusted. The City has no obligation to consider or accept Cost Reduction Proposals.

SECTION 4

CONTROL OF MATERIALS

4-1.01 **MATERIALS.** The Contractor shall furnish all materials required to complete the Work, except materials that are designated in the Supplemental Conditions to be furnished by the City and materials furnished by the City in accordance with Section 3, "Changes in the Work," of these General Conditions.

Unless otherwise specified in the Supplemental Conditions, materials furnished by the Contractor for incorporation into the Work shall be new. When the quality or kind of materials, articles, or equipment is not particularly indicated, then the quality or kind thereof shall be similar to those that are indicated.

Articles or materials to be incorporated in the Work shall be stored in such a manner as to insure the preservation of their quality and fitness for the Work, and to facilitate inspection.

All materials which do not conform to the requirements of the Contract Documents as determined by the Director, will be rejected whether in place or not. Rejected material shall be removed immediately from the site of the Work, unless otherwise permitted by the Director. No rejected material, the defects of which have been subsequently corrected, shall be used in the Work, unless approval in writing has been given by the Director. Upon failure of the Contractor to comply promptly with any order of the Director made under these provisions, the Director shall have the authority to cause the removal and replacement of rejected material and to deduct the cost thereof from any moneys due or to become due the Contractor.

Manufacturer's warranties, guaranties, instruction sheets and parts lists, which are furnished with certain materials incorporated in the Work, shall be delivered to the Director

before Acceptance of the Contract.

Unless otherwise designated in the Supplemental Conditions or Specifications, materials furnished by the City will be delivered to the job site. Materials furnished by the City that are designated in the Supplemental Conditions as available at locations other than the job site shall be hauled to the site of the Work by the Contractor at its expense, including any necessary loading and unloading that may be involved.

The Contractor will be held responsible for all materials furnished to it, and shall pay all demurrage and storage charges. City-furnished materials lost or damaged from any cause whatsoever shall be replaced by the Contractor. The Contractor will be liable to the Department for the cost of replacing City-furnished material and such costs may be deducted from any moneys due or to become due the Contractor.

4-1.02 **PRODUCT AND REFERENCE STANDARDS.** When descriptive catalog designations, including manufacturer's name, product brand name, or model number are referred to in the Contract Documents, such designations shall be considered as being those found in industry publications in effect on the day the Notice to Contractors for the Work is dated, except as may be otherwise stated.

When standards or test designations of the Federal Government, trade societies, or trade associations are referred to in the Contract Documents by specific date of issue, these shall be considered as part of the Contract. When such references do not bear a date of issue, the edition in effect on the day the Notice to Contractors for the Work is dated shall be considered as part of the Contract.

4-1.03 **SAMPLING AND TESTING OF MATERIALS.** Unless otherwise specified, all tests shall be performed in accordance with the methods used by the State

Department of Transportation (Caltrans) and shall be made by the Director or his or her designated representative.

The State Department of Transportation has developed test methods for testing the quality of materials and Work. These test methods are identified by a California Test followed by the serial number. Copies of individual tests are available at the State Department of Transportation Laboratory, Sacramento, California, and will be furnished to interested persons upon request.

Whenever a reference is made in the Supplemental Conditions to a California Test by number, it shall mean the California test in effect on the day the Notice to Contractors for the Work is dated.

Whenever the Supplemental Conditions provide an option between two (2) or more test methods, the Director will determine the test method to be used.

Whenever a Supplemental Condition, manual, or test designation provides for test reports (such as certified mill test reports) from the manufacturer, copies of such reports, identified as to the lot of material, shall be furnished to the Director. The manufacturer's test reports shall supplement the inspection, sampling and testing provisions of this Section 4-1.03 and shall not constitute a waiver of the City's right to inspect. When material which cannot be identified with specific test reports is proposed for use, the Director may at his or her discretion, select random samples from the lot for testing. Testing specimens from the random samples, including those required for retest, shall be prepared in accordance with the referenced Supplemental Conditions and furnished by the Contractor at its expense. The number of such samples and test specimens shall be entirely at the discretion of the Director.

When requested by the Director, the Contractor shall furnish, without charge, samples of

all material entering into the Work, and no material shall be used prior to approval by the Director, except as provided in Section 4-1.04, "Certificates of Compliance," of these General Conditions.

A. Inspection and Access for Testing. The Contractor shall provide safe access for the Director and his or her inspectors to adequately inspect the quality of Work and conformance with the General and Supplemental Conditions. The Contractor shall provide adequate lighting, ventilation, ladders and other protective facilities as may be necessary for the safe performance of inspections.

The Contractor shall submit samples or specimens of such materials to be furnished or used in the Work as the Director may require. The Contractor shall furnish the Director all necessary labor and facilities for such things as excavation in the compacted fill to depths required to take samples.

Inspections, tests, or favorable review by the Director or others shall not relieve the Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Documents.

Work covered without the favorable review or consent of the Director shall, if required by the Director, be uncovered for examination at the Contractor's expense.

If the Engineer, Architect, or Director considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, at the Director's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Director may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of

satisfactory reconstruction. If, however, such Work is not found to be defective and the Work was not covered without favorable review of the Director, the Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to cover its costs directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction and an appropriate Change Order shall be issued.

Whenever the Contractor varies the period during which Work is carried on each Day, the Contractor shall give due notice to the Director so that proper inspection may be provided. Any Work done in the absence of the Director may be subject to rejection. Proper facilities for safe access for inspection to all parts of the Work shall at all times be maintained for the necessary use of the Director and other agents of the City. Authorized representatives and agents of the Director shall be permitted access to inspect all Work and materials wherever it is required for preparation of progress reports, and the Contractor shall provide proper facilities for such access and inspection.

It is the Contractor's responsibility to supervise the Work and complete the project in accordance with the Contract Documents. In the course of managing that effort, the Contractor shall generate its own punch lists as deemed necessary. The Director may prepare punch lists for the Director's own use in communicating with the Contractor; however, the Director shall be under no obligation to prepare punch lists for the Contractor. In general, the Director will prepare punch lists only after the Contractor has given the Director written notice that the subject Work is completed and tested in accordance with the Contract Documents and is ready for operation and/or use and/or occupancy. Failure of the Director to include an item in a punch list shall not relieve the Contractor of its duty to satisfactorily complete all Work required by the Contract Documents.

Upon Final Completion of the construction Work and request by the Contractor, the Director will conduct a final inspection as a basis for recommending to the City that the Work be accepted.

B. Field and Materials Testing. Where the Supplemental Conditions require Work to be specially field tested or approved, it shall be tested only in the presence of the Director after timely notice of its readiness for inspection and test, and the Work after testing shall be covered up only upon the consent thereto of the Director.

The results of any tests made are for the information of the Director. Regardless of any test results, the Contractor is solely responsible for the quality of workmanship and materials and for compliance with the requirements of the Contract Drawings and Supplemental Conditions.

Except as specifically required under the Supplemental Conditions, all tests by the Director of materials furnished by the Contractor will be done in accordance with commonly recognized standards of national organizations. The Contractor shall furnish such samples of all materials as required by the Director without charge. No material shall be used unless it has been favorably reviewed by the Director.

Where such inspection and testing are to be conducted by an independent Laboratory or agency, the sample or samples of materials to be tested shall be selected by such Laboratory or agency, or the Director, and not by the Contractor.

C. Costs of Testing.

1. Initial Services: The City shall furnish and pay for all initial testing services required by the Contract Documents. When initial tests indicate non-compliance with the Contract Documents, the cost of initial tests associated with that non-compliance will be

deducted by the City from the balance owed the Contractor. The Contractor shall furnish samples of materials for testing as may be required by the Director. Such samples shall be furnished without cost to the City.

2. Retesting: When initial tests indicate non-compliance with the Contract Documents, all subsequent retesting occasioned by the non-compliance shall be performed by the same testing Laboratory and the cost thereof will be deducted by the City from the balance owed the Contractor. Contractor shall be billed for each additional test.

3. Contractor Convenience Testing: Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

4. Additional Tests and Inspections: When in the opinion of the Director additional tests or inspections are required because of the manner in which the Contractor executes its Work, such tests and inspections shall be paid for by the City, but will be deducted from the Contract Price. Examples of such tests and inspections are tests of materials substituted for previously accepted materials or substituted for specified materials, retests made necessary by failure of material to comply with the requirements of the Specifications, load tests made necessary because of portions of the structure not fully meeting Specifications or plan requirements, etc.

4-1.04 **CERTIFICATES OF COMPLIANCE.** A Certificate of Compliance shall be furnished prior to the use of any materials for which the Supplemental Conditions require that such a Certificate be furnished. In addition, the Director may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance. The Certificate shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state that the materials involved comply in all

respects with the requirements of the Supplemental Conditions. A Certificate of Compliance shall be furnished with each lot of such materials delivered to the Work and the lot so certified shall be clearly identified in the Certificate.

All materials used on the basis of a Certificate of Compliance may be sampled and tested at any time. The fact that material is used on the basis of a Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating material in the Work which conforms to the requirements of the Contract Documents and any such material not conforming to such requirements will be subject to rejection whether in place or not.

The Department reserves the right to refuse to permit the use of material on the basis of a Certificate of Compliance.

The form of the Certificate of Compliance and its disposition shall be as directed by the Director.

SECTION 5

LEGAL RELATIONS AND RESPONSIBILITY

5-1.01 **LAWS TO BE OBSERVED.** The Contractor shall keep informed of and observe, and comply with and cause all of its agents and employees to observe and comply with, all prevailing Federal and State laws, and rules and regulations made pursuant to said Federal and State laws, and county and municipal ordinances, and regulations, which in any way affect the conduct of the Contract. If any conflict arises between provisions of the Contract and any such law above referred to, the Contractor shall notify the Director at once in writing. To the fullest extent allowed by law, the Contractor shall defend, indemnify, and save and hold harmless the City or any of its officers, agents, employees, and volunteers against any claim or liability arising from or based on the violation of any such law, rule, or regulation, whether by itself or its agents or employees.

5-1.02 **HOURS OF LABOR.** Eight (8) hours labor constitutes a legal Day's work. The Contractor or Subcontractor shall, as a penalty to City, forfeit Twenty-five Dollars ($25) for each worker employed in the execution of the contract by the respective Contractor or Subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one (1) calendar day and forty (40) hours in any one (1) calendar week in violation of the provisions of the Labor Code, and in particular, Section 1810 to Section 1815, thereof, inclusive, except that Work performed by employees of Contractors in excess of eight (8) hours per day, and forty (40) hours during any one (1) week, shall be permitted upon public work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half (1-1/2) times the basic rate of pay, as provided in said

Section 1815. In addition, Contractor and/or its Subcontractors may be required to pay double the basic rate of pay for all hours worked in excess of twelve (12) hours in any workday and under other circumstances. (See California Code of Regulations, Title 8, Sections 16100(c)(6) and (16200(a)(3)(F) and applicable Department of Industrial Relations prevailing wage determinations.)

5-1.03 **NONDISCRIMINATION.**

A. Attention is directed to Labor Code Section 1735, which reads as follows:

"A contractor shall not discriminate in the employment of persons upon public works on any basis listed in subdivision (a) of Section 12940 of the Government Code, as those bases are defined in Sections 12926 and 12926.1 of the Government Code, except as otherwise provided in Section 12940 of the Government Code. Every Contractor for public works who violates this section is subject to all the penalties imposed for a violation of this chapter."

B. During the performance of this Contract, Contractor and its Subcontractors shall not unlawfully discriminate against any employee or applicant for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, sexual orientation, or military and veteran status. The Contractor and Subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination. The Contractor and Subcontractors shall comply with the provisions of the California Fair Employment and Housing Act (Government Code §12900, et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, §7285.0 et seq.) and other applicable State and Federal regulations and City

policies pertaining to nondiscrimination and affirmative action which are incorporated into this Agreement by reference and made a part hereof as if set forth in full. The Contractor and its Subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreement.

C. Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform Work under the agreement.

5-1.04 **PREVAILING WAGE.** The Contractor and any Subcontractor shall comply with Labor Code Sections 1770 et seq. In accordance with said Section 1775 the Contractor and any Subcontractor under the Contractor shall, as a penalty, forfeit to the state or City not more than $200 for each calendar day or portion thereof, for each worker paid less than the prevailing rate as determined by the Director of Industrial Relations for the work or craft in which such worker is employed for under the Contract by the Contractor or by any Subcontractor under the Contractor.

The amount of the penalty shall be determined by the Labor Commissioner based on consideration of both of the following: (a) whether the failure to pay the correct rate of per diem wages was a good-faith mistake and, if so, whether the error was promptly and voluntarily corrected when brought to the attention of the Contractor or Subcontractor; and (b) whether the Contractor or Subcontractor has a prior record of failing to meet its prevailing wage obligations.

The penalty may not be less than forty dollars ($40) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, unless the failure of the Contractor or Subcontractor to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily corrected when brought to the attention of the Contractor or Subcontractor.

The penalty may not be less than eighty dollars ($80) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the Contractor or Subcontractor has been assessed penalties within the previous three (3) years for failing to meet its prevailing wage obligations on a separate contract, unless those penalties were subsequently withdrawn or overturned.

The penalty may not be less than one hundred twenty dollars ($120) for each calendar day, or portion thereof, for each worker paid less than the prevailing wage rate, if the Labor Commissioner determines that the violation was willful, as defined in subdivision (c) of Section 1777.1 of the Labor Code.

If the amount due under this section is collected from the Contractor or Subcontractor, any outstanding wage claim under Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 of the Labor Code against the Contractor or Subcontractor shall be satisfied before applying that amount to the penalty imposed on that Contractor or Subcontractor pursuant to this section.

The determination of the Labor Commissioner as to the amount of the penalty shall be reviewable only for an abuse of discretion.

In addition to said penalty, the difference between such stipulated prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the stipulated prevailing wage shall be paid to each worker by the Contractor or Subcontractor.

If a worker employed by a Subcontractor on a public works project is not paid the general prevailing per diem wages by the Subcontractor, the Contractor is not liable for any penalties described above unless the Contractor had knowledge of that failure of the Subcontractor to pay

the specified prevailing rate of wages to those workers or unless the Contractor fails to comply with all of the following requirements:

1. The contract executed between the Contractor and the Subcontractor for the performance of work on the public works project shall include a copy of the provisions of Sections 1771, 1776, 177.5, 1813, and 1815 of the Labor Code.
2. The Contractor shall monitor the payment of the specified general prevailing rate of per diem wages by the Subcontractor to the employees, by periodic review of the certified payroll records of the Subcontractor.
3. Upon become aware of the Subcontractor's failure to pay its workers the specified prevailing rate of wages, the Contractor shall diligently take corrective action to halt or rectify the failure, including, but not limited to, retaining sufficient funds due the Subcontractor for work performed on the public works project.
4. Prior to making final payment to the Subcontractor for work performed on the public works project, the Contractor shall obtain an affidavit signed under penalty of perjury from the Subcontractor that the Subcontractor has paid the specified general prevailing rate of per diem wages to its employees on the public works project and any amount due pursuant to 1813 of the Labor Code.

Pursuant to Section 1775 of the Labor Code, the Division of Labor Standards Enforcement shall notify the Contractor on a public works project within fifteen (15) Days of the receipt by the Division of Labor Standards Enforcement of a complaint of the failure of a Subcontractor on that public works project to pay workers the general prevailing rate per diem wages.

Pursuant to the provisions of California Labor Code Section 1773, the City has obtained

the general prevailing rate of wages applicable to the categories of workers the City anticipates will be utilized for this project for straight time, overtime, Saturday, Sunday, and holiday Work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of worker concerned or, if no collective bargaining applies, those holidays identified in Government Code Section 6700. These wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm, which is incorporated herein as a part of this Contract.

Pursuant to Labor Code Section 1773.2, the general prevailing wage rates set forth above, which forms a part of this Contract, shall be posted by the Contractor at a prominent place at the site of the Work.

Pursuant to Labor Code Section 1773.6 and California Code of Regulations Section 16204, Title 8, changes in general prevailing wage determinations shall apply to the project only if issued by the Director of Industrial Relations prior to the City's bid issuance date.

The City will not recognize any claim for additional compensation because of the payment by the Contractor of any wage rate in excess of the prevailing wage rate set forth in the Contract. The possibility of wage increases is one of the elements to be considered by the Contractor in determining its Bid, and will not under any circumstances be considered as the basis of a claim against the City or Contract.

When both California and Federal prevailing wage rates apply, the Contractor and any Subcontractors shall pay their workers the higher of the two rates. The Contractor and any Subcontractors shall insert this clause in any lower tier contract.

5-1.05 **REGISTRATION REQUIRED AS QUALIFICATION TO BID.**

Pursuant to Labor Code Section 1771.1(b), notice is hereby given that a Contractor or Subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contractor for public work, as defined in Labor Code Sections 1720, et seq., unless currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. It is not a violation of Labor Code Section 1771.1 for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5.

5-1.06 **PAYROLL RECORDS.** The Contractor's attention is directed to the following provisions of Labor Code Section 1776. The Contractor shall be responsible for the compliance with these provisions by its Subcontractors.

A. The Contractor and each Subcontractor shall keep accurate and current payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by it in connection with the public work. Each payroll record shall contain or be verified by a written declaration that is made under penalty of perjury, stating both of the following:

1. The information contained in the payroll record is true and correct.

2. The employer has complied with the requirements of Section 1771, 1811, and 1815 for any work performed by his or her employees on the public works project.

B. The payroll records enumerated under subdivision (A) shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following

basis:

1. A certified copy of an employee's payroll record shall be made available for inspection or furnished to such employee or his or her authorized representative on request.

2. A certified copy of all payroll records enumerated in subdivision (A) shall be made available for inspection or furnished upon request to a representative of the City, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations. The City reserves the right to withhold any progress payments to the Contractor in the event of noncompliance with the subsection.

3. A certified copy of all payroll records enumerated in subdivision (A) shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through either the City, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. The public shall not be given access to such records at the principal office of the Contractor.

C. The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the Division.

D. Each Contractor shall file a certified copy of the records enumerated in subdivision (A) with the entity that requested the records within ten (10) Days after receipt of a written request.

E. Any copy of the records made available for inspection as copies and furnished upon request to the public or any public agency by the City, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or

obliterated to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or Subcontractor performing the Contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (Section 175a of Title 29 of the United States Code) shall be marked or obliterated only to prevent the disclosure of an individual's name and social security number. A joint labor-management committee may maintain an action in a court of competent jurisdiction against an employer who fails to comply with Section 1774. The court may award restitution to an employee for unpaid wages and may award the joint labor-management committee reasonable attorneys' fees and costs incurred in maintaining the action. An action under this subdivision may not be based on the employer's misclassification of the craft of a worker on its certified payroll records. Nothing in this subdivision limits any other available remedies for a violation of this section.

F. The Contractor shall inform the City of the location of the records enumerated under subdivision (A), including the street address, city and county, and shall, within five (5) business days, provide a notice of a change of location and address.

G. The Contractor shall have ten (10) Days in which to comply subsequent to receipt of written notice requesting the records enumerated in subdivision (A). In the event that the Contractor or Subcontractor fails to comply within the ten (10) Day period, the Contractor shall, as a penalty to the State or City, forfeit twenty-five ($25) Dollars for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from any progress payment or final payment then due. A contractor

is not subject to a penalty assessment pursuant to this section due to the failure of a Subcontractor to comply with this section.

5-1.07 **SAFETY REQUIREMENTS.** It is the intent of the parties that the City is not an exposing, creating, controlling, or correcting employer under California Labor Code Section 6400. In accordance with generally accepted construction practices and State law, the Contractor shall have the authority and be solely and completely responsible for conditions on the Work Site, including safety of all persons and property during performance of the Work. Moreover, the Contractor shall be the controlling employer and has the authority and responsibility to enforce Work Site safety. The Contractor shall be responsible for conducting daily safety inspections and assuring all hazards and violations are abated. The Contractor is responsible for assuring that all Subcontractors adhere to the minimum Cal/OSHA safety requirements and that each Subcontractor has an effective Cal/OSHA IIPP (Illness and Injury Prevention Program) in place that specifically addresses all potential exposures, such as, but not limited to, fall protection, confined space, and trenching/shoring. These requirements shall apply continuously and not be limited to normal working hours. The Contractor shall be responsible for any delay costs or damages in the event the progress of Work is slowed or stopped due to a safety violation.

The Contractor shall designate a safety officer and have in place a health and safety plan in accordance with the laws of State of California and conduct safety meetings and document them in accordance with the law. The Contractor shall have the safety record available for inspection during working hours and shall submit job site safety meeting reports with each Application for Payment.

Prior to Contractor commencing construction project work on City property, Contractor

shall make available copies of its Health and Safety Plan (HASP) that meets or exceeds applicable Cal/OSHA regulations. The Contractor's HASP shall also meet or exceed the requirements of any applicable City-wide or departmental specific Injury and Illness Prevention Programs (IIPP) and other HASP programs, procedures, and plans. Potentially applicable HASP programs, procedures, and plans include, but are not limited to, the following:

1. Bloodborne Pathogens Exposure Control Plan;
2. Confined Space Entry Procedure;
3. Electrical Safety Program (Lockout/Tagout);
4. Emergency Action Plans (Site Specific);
5. Fire Prevention Plans (Site Specific);
6. Hazardous Waste Operations Emergency Response Plan (or Equivalent);
7. Hazard Communication Program (SDS's and Right-to-Know training);
8. Heat Illness & Prevention Plan;
9. Hearing Conservation Program;
10. Hot Work/Welding Procedure;
11. Job Hazard Analyses/Standard Operating Procedures;
12. Traffic Control & Flagging;
13. Excavation/Dig Safe Procedure;
14. Fall Protection Plan;
15. Personal Protective Equipment Plan;
16. Respirable Crystalline Silica Exposure Control Plan;
17. Respirator Program;
18. Soils Management Plan (for contaminated soils); and

19. Transite (Asbestos) Pipe Work Procedure.

Additionally, Contractor shall be responsible for complying with all City-wide and departmental specific safety requirements as identified in the Supplemental Conditions or presented at a pre-construction meeting.

Contractor shall inform City in advance of the quantity of chemical(s) to be used for the project and the total quantity of chemical(s) that will be brought onto City property. In addition, Contractor shall provide City with one copy of the Safety Data Sheet (SDS) for each chemical expected to be used to complete the project and for each chemical brought to the Work Site, regardless of whether such chemicals are ultimately used for the project.

The services of the Director in conducting construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's Work methods, equipment, bracing or scaffolding, or safety measures, in, on, or near the construction site. If a City employee observes a safety violation, the City employee will report the violation to the Contractor who is then responsible for assuring the violation is abated.

The Contractor is hereby informed that Work on this project could be hazardous. The Contractor shall carefully instruct all personnel working in potentially hazardous Work areas as to potential dangers and shall provide such necessary safety equipment and instructions as are necessary to prevent injury to personnel and damage to property. Special care shall be exercised relative to Work underground.

All Work and materials shall be in strict accordance with all applicable State, City, County, and Federal Rules, Regulations, and Codes, and attention is drawn to the requirements of Cal/OSHA. The Contractor shall be solely responsible for compliance with all City, County and State blasting requirements and for any damages caused by its operations.

To ensure compliance with California Labor Code Section 6705, the Contractor shall submit to the City, at least five (5) Days in advance of excavation of any trench five feet (5') or more in depth, Working Drawings to the Director showing the design of shoring, bracing, sloping and other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such Working Drawings vary from the shoring system standards established by the Cal/OSHA Construction Safety Orders of the Division of Industrial Safety, the plan shall be prepared and signed by a registered civil or structural engineer in the State of California. This in no way relieves the Contractor from the requirement of maintaining safety in all operations performed by the Contractor or the Contractor's Subcontractors and nothing in this section shall be deemed to allow the use of a shoring, sloping or protective system less effective than that required by the Cal/OSHA Construction Safety Orders of the Division of Industrial Safety Contractor's Working Drawings shall be subject to approval insofar as the details affect the character of the finished Work and for compliance with design requirements applicable to the construction when specified or called for, but details of the design will be left to Contractor who shall be responsible for the successful construction of the Work. The City shall approve Working Drawings before any Work involving such drawings is performed. Approval and/or acceptance by the City or its designated agent only constitutes acknowledgment of the submission and does not constitute review or approval of the designs, design assumptions or criteria, completeness of submissions, applicability to areas of intended use, nor implementation of the plans, which are solely the responsibility of the Contractor and its registered engineer.

The Contractor shall perform its Work as not to expose personnel to, or to discharge into the atmosphere from any source whatever, smoke, dust, asbestos, toxic chemicals or other air

contaminants in violation of the laws, rules, and regulations of the governmental entities having jurisdiction and shall bear full and exclusive responsibility for any release of hazardous or non-hazardous chemicals or substances during the course of the Work. The Contractor shall immediately report any such release to the City. The Contractor shall be solely responsible for all claims and expenses associated with the response to, removal and remediation of the release, including, without limitation, payment of any fines or penalties levied against the City by any agency as a result of such release and shall defend, indemnify, and save and hold harmless the City, its officers, agents, employees, and volunteers from any claims arising from such release. For purposes of this section only, the term "claims" shall include:

1. All notices, orders, directives, administrative or judicial proceedings, fines, penalties, fees, or charges imposed by any governmental agency with jurisdiction; and

2. Any claim, cause of action, or administrative or judicial proceeding brought against the City, its officers, agents, employees, and volunteers for any loss, cost (including reasonable attorneys' fees), damage or liability, sustained or suffered by any person or entity, including the City.

If the performance of the Work creates any hazardous wastes, those wastes shall be properly disposed of according to federal, state, and local laws, at the expense of the Contractor. The Contractor shall dispose of the wastes under its own EPA Generator Number. In no event shall the City be identified as the generator. The Contractor shall notify the City of any such hazardous wastes and the City reserves the right to a copy of the results of any tests conducted on the wastes, and, at its cost, to perform additional tests or examine those wastes, prior to disposition. The Contractor shall defend, indemnify, and save and hold harmless the City, its

officers, agents, employees, and volunteers from any claims arising from the disposal of the hazardous wastes, regardless of the absence of negligence or other malfeasance by the Contractor. Disposal of all Hazardous Materials must be done in accordance with all laws and regulations. Copies of required regulatory documentation including copies of final manifests shall be supplied to the City.

Contractors or Subcontractors removing one hundred or more square feet (100') of asbestos must be "Certified" in accordance with State law. All Work involving exposure to asbestos and all other hazardous materials shall be performed with protection of personnel in compliance with all applicable regulations and safety requirements including, but not limited to, California Code of Regulations Section 1529, Title 8.

Nothing in these General Conditions is to be construed to permit Work not conforming to governing codes. When Contract Documents differ from governing codes, the Contractor shall furnish and Install the higher standards called for without extra charge.

5-1.08 **SUBSURFACE EXCAVATIONS, NOTIFICATION.** The Contractor shall contact the regional notification center, "Underground Service Alert," and schedule its Work to allow ample time for the center to notify its members and, if necessary, for any member to field locate and mark its facilities. Without limiting the foregoing, the Contractor's attention is directed to Government Code Sections 4216 to 4216.9, and in particular Section 4216.2.

5-1.09 **PUBLIC SAFETY.** The Contractor shall assume all responsibility for public safety during the performance of its Work, and all costs arising therefrom shall be included in the Contract Price. Whenever the Contractor's operations create a condition hazardous to traffic or to the public, it shall furnish, erect and maintain, at its expense, such fences, barricades, lights, signs, and other devices and take such other protective measures as are

necessary to prevent accidents or damage or injury to the public. The Contractor shall establish the pedestrian detours with comparable lighting to the original pedestrian areas. The Contractor shall arrange for such flaggers as are necessary to give adequate warning to traffic or to the public of any dangerous conditions affecting traffic. For Work in a public right-of-way, the Contractor shall comply with the rules and regulations of the State, County, or local agency that owns the right-of-way.

The Contractor shall promptly and fully comply with and carry out, and shall without separate charge therefor to the City, all safety and first aid requirements prescribed by all applicable Federal, State, and local laws and regulations, rules, and orders. The Work shall be done in a safe manner; and the Contractor shall safeguard the safety and health of its employees, Subcontractors, and the people of local communities. The Contractor shall also be reasonable for ensuring that its Subcontractors comply with the provisions of this section.

Upon the failure of the Contractor to comply with any of the requirements of this section, the City shall have the authority, but not the duty, to stop the Work until such failure is remedied. The Contractor shall not be entitled to an adjustment of the Contract Time or an increase in the Contract Price due to any such suspensions.

When required by the Contract Documents, the Contractor shall construct, maintain, and remove detours for use of public traffic, without additional cost to the City, unless separate payment is specified in the Special Provisions.

The failure or refusal of the Contractor to construct and maintain detours at the proper time shall be sufficient cause for closing down the work until such detours are in satisfactory condition for use by public traffic.

Due care shall be exercised to avoid injury to existing improvements or facilities, utility

facilities, adjacent property and trees, shrubs, and other plants that are not to be removed.

Trees, shrubs and other plants that are not to be removed, and pole lines, fences, signs, survey markers and monuments, buildings and structures, conduits, pipe lines, sewer and waterlines, highway facilities, and any other improvements or facilities, under or above ground, that are within or adjacent to the work limit line shall be protected from injury or damage, and the Contractor shall provide and Install suitable safeguards to protect such objects from injury or damage. If such objects are injured or damaged by reason of the Contractor's operations, they shall be replaced or restored at the Contractor's expense. The facilities shall be replaced or restored to a condition as good as when the Contractor entered upon the Work Site, or as good as required by the Contract Documents if any such objects are part of the Work. The City may make or cause to be made such temporary repairs as are necessary to restore to service any damaged facility. The cost of such repairs shall be borne by the Contractor, and the costs may be deducted from any monies due or to become due to the Contractor under the Agreement.

The fact that any underground facilities is not shown on the Contract Drawings shall not relieve the Contractor of its responsibility pursuant to "Utility Facilities" in Section 2-1.12 elsewhere in the Contract Documents. It shall be the Contractor's responsibility, pursuant thereto, to ascertain the location of such underground improvements or facilities, which may be subject to damage by reason of its operations.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the Work involved in protecting or repairing property as specified in this section, shall be considered as included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefor.

5-1.10 **EMERGENCIES.** In an Emergency affecting the safety of life, the

Work, or adjoining property, the Contractor, without special instructions or authorization from the City, shall act at its discretion to prevent such threatened loss or injury. In such an Emergency, the Contractor may perform such additional work as is reasonably required. Any compensation claimed by the Contractor on account of Work performed to an Emergency shall be determined in accordance with the provisions relating to Force Account payment contained elsewhere in the Contract Documents.

5-1.11 **APPRENTICES.** Attention is directed to Labor Code Sections 1777.5, 1777.6 and 1777.7 and Title 8, California Code of Regulations Section 200 et seq. In accordance with Section 1777.5, the Contractor shall secure the necessary certificates and shall contribute to the apprenticeship fund or funds, a provided therein. The Contractor shall require each Subcontractor who will perform work or labor or render service to the Contractor in or about the construction of the work to fully comply with Sections 1777.5 and 1777.6 of the Labor Code. To insure compliance and complete understanding of the law regarding apprentices, and specifically the required ratio thereunder, each Contractor or Subcontractor should, where some questions exist, contact the Division of Apprenticeship Standards, , or one of its branch offices prior to commencement of Work on the public works Contract. Responsibility for compliance with this section lies with the prime Contractor.

It is State and City policy to encourage the employment and training of apprentices on public works Contracts as may be permitted under local apprenticeship standards.

5-1.12 **FAIR LABOR STANDARDS ACT.** Attention is invited to the fact that the City has been advised by the Wage and Hour Division, U.S. Department of Labor, that Contractors engaged in construction Work are required to meet the provisions of the Fair Labor Standards Act of 1958 and as amended (52 Stat. 1060).

5-1.13 **WORKERS' COMPENSATION.** Pursuant to the requirements of Labor Code Section 1860, the Contractor will be required to secure the payment of workers' compensation to its employees in accordance with the provisions of Labor Code Section 3700.

Prior to the commencement of Work, the Contractor shall sign and file with the Director a certification in the following form:

> "I am aware of the provisions of Labor Code Section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work of this Contract."

5-1.14 **AIR POLLUTION CONTROL AND ASBESTOS.** The Contractor shall comply with all air pollution control rules, regulations, ordinances and statutes which apply to any Work performed pursuant to the Contract, including any air pollution control rules, regulations, ordinances and statues, specified in Government Code Section 11017.

In the absence of any applicable air pollution control rules, regulations, ordinances or statutes governing solvents, all solvents, including but not limited to the solvent portions of paints, thinners, curing compounds, and liquid asphalt used on the project shall comply with the applicable material requirements of the applicable Air Quality Management District. All containers of solvent, paint, thinner, curing compound, or liquid asphalt shall be labeled to indicate that the contents fully comply with said requirements.

Unless otherwise provided in the Supplemental Conditions, material to be disposed of shall not be burned, either inside or outside the Premises.

The Contractor shall also comply with all rules, regulations, statutes and ordinances

regarding asbestos removal and disposal, including but not limited to, 42 U.S.C. Sections 7401, 7412 and 7601, 40 C.F.R. Part 61, Subpart M, and California Code of Regulations Section 1529, Title 8.

If the Contractor discovers that a building to be demolished or renovated contains asbestos containing material, the Contractor shall immediately cease Work and notify the City.

5-1.15 **USE OF PESTICIDES.** The Contractor shall comply with all local, state and federal rules and regulations of the Department of Food and Agriculture, the Department of Health, the Department of Industrial Relations and all other agencies which govern the use of pesticides required in the performance of the Work.

Pesticides shall include but shall not be limited to herbicides, insecticides, fungicides, rodenticides, germicides, nematocides, bactericides, inhibitors, fumigants, defoliants, desiccants, soil sterilants, and repellents.

Any substance or mixture of substances intended for preventing, repelling, mitigating, or destroying weed, insects, diseases, rodents, or nematodes and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant shall be considered as pesticide.

5-1.16 **SOUND AND LIGHT CONTROL REQUIREMENTS.** The Contractor shall comply with all local sound control, light control, and noise level rules, regulations and ordinances which apply to any Work performed pursuant to the Contract. Work shall not begin before 7 a.m. nor occur after 7 p.m., unless otherwise permitted by the City.

Each internal combustion engine, used for any purpose on the Work or related to the Work, shall be equipped with a muffler, in good working order, of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said

muffler.

5-1.17 **WEIGHT LIMITATIONS.** Unless expressly permitted elsewhere in the Contract Documents, the Contractor shall not operate construction equipment or vehicles of any kind which, laden or unladen, exceed the maximum weight limits set forth in Division 15 of the Vehicle Code over completed or existing base, surfacing, pavement or structures.

5-1.18 **ENVIRONMENTAL CLEARANCES; MITIGATION MONITORING PROGRAMS; AND REGULATORY AGENCY PERMIT REQUIREMENTS.** The Department will obtain all environmental clearances and other authorizations necessary for this project as set forth in the Contract Documents. The Contractor shall comply with the provisions, including giving notices during construction when required, of said authorizations. In the event the obtaining of said authorizations delays completion of all or any portion of the Work, an extension of time determined pursuant to the provisions in Section 6-1.08, "Liquidated Damages," of these General Conditions will be granted.

Contractor shall comply with: (1) all mitigation identified in the mitigation monitoring program (attached to and adopted as a component of the mitigated negative declaration or Environmental Impact Report) to mitigate impacts to protected natural resources; and (2) all related permit requirements issued by the regulatory agencies authorizing the project. Contractor shall defend, indemnify, and save and hold harmless the City, its officers, agents, employees, and volunteers from any fines, claims, suits, actions or regulatory sanctions of every name, kind and description brought forth, or on account of, damage to protected natural resources from or arising out of Contractor's negligence or willful misconduct in the performance of this Agreement.

5-1.19 **PERMITS AND LICENSES.** The Contractor acknowledges and agrees that, prior to the submission of its bid for the Work, it fully familiarized itself with the

requirements of all applicable federal, state, county and municipal laws, codes, rules, and regulations, as well as the conditions of any required licenses and permits.

The Contractor shall procure all permits and licenses, including any applicable building permits (except those procured or to be procured by the City which are listed elsewhere in the Contract Documents), in coordination with the Director, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the Work. Contractor shall be responsible for applying, paying all fees, and coordination for obtaining all permits for completion of the Work. All permits and licenses shall be obtained in sufficient time to prevent delays to the Work. Contractor will apply to the City for reimbursement for such permits costs. Accordingly, Contractor should not include the anticipated costs for permits in its bid, as the necessary permit costs will be reimbursed by the City.

The California Environmental Quality Act (Public Resources Code, Section 21000 to 21177) may be applicable to permits, licenses and other authorizations which the Contractor must obtain from State or local agencies in connection with performing the Work. The Contractor shall comply with the provisions of that Act in obtaining such permits, licenses and other authorizations, and all permits, licenses and other authorizations shall be obtained in sufficient time to prevent delays to the Work.

The Contractor shall maintain the applicable Contractor's license as identified in the Notice to Contractors and City business license for the duration of the Work.

5-1.20 **WATER POLLUTION.** The Contractor shall comply with all water pollution control rules, regulations, ordinances and statutes which apply to any Work performed pursuant to the Contract, including any water pollution control rules, regulations, and statutes, specified by the most current State of California NPDES General Permit for Stormwater

Discharges Associated with Construction Activity.

The Contractor shall take all necessary precaution to protect streams, vernal pools, ponds, reservoirs, and lakes from pollution with fuels, oils, bitumen, calcium chloride, and other harmful materials as consistent with the law. Also, the Contractor shall conduct and schedule operations so as to avoid discharging pollutants, such as but not limited to: sediment and silt to the storm drain system. The storm drain system consists of all facilities that are designed to convey stormwater to the Waters of the State as defined in the California Water Code. The storm drain system includes, but is not limited to, all streets, gutters, drain inlets, roadside ditches, streams, vernal pools, ponds, and lakes. Care shall be exercised to preserve roadside vegetation beyond the limits of construction.

5-1.21 **PROTECTION AND USE OF PROPERTY.** The Contractor shall be responsible for and provide and maintain all proper temporary walkways, covered walkways, barriers, roads, guards, railings, lights, warning signs, and take precaution at all times to avoid injury or damage to any person or any property, and upon completion of the Work, or at other times as directed, restore Premises and adjacent property to a proper condition. In the event of such injury or damage, Contractor shall report such injury and damage to City within forty-eight (48) hours of occurrence.

The Contractor shall protect adjoining property and nearby buildings, including City buildings, City roads, and public streets or roads, from dust, dirt, debris, or the nuisance arising out of the Contractor's operations or storage practices, and, if ordered by the Director, the Contractor shall provide and Install suitable safeguards, approved by the Director, to protect such objects from damage. If such objects are damaged by reason of the Contractor's operations, they shall be replaced or restored at the Contractor's expense.

If the Contractor damages any buildings, roads, utilities, or other property which belong to the City, or any Department or agency thereof, then the Director, at his or her option, may retain from the money due under the Contract an amount sufficient to insure repair of the damage.

The Director may make or cause to be made such temporary repairs as are necessary to restore to service any such damaged facility. The cost of such repairs shall be borne by the Contractor and may be deducted from any moneys due or to become due the Contractor under the Contract.

5-1.22 **RESPONSIBILITY FOR DAMAGE AND INDEMNIFICATION.**

The City of Roseville, its officers, agents, employees, and volunteers, including but not limited to the Director and his or her designee, shall not be answerable or accountable in any manner: for any loss or damage that may happen to the Work or any part thereof; for any loss or damage to any of the materials or other things used or employed in performing the Work; for injury to or death of any person, either workers or the public; or for damage to property from any cause which might have been prevented by the Contractor, its workers, or anyone employed by the Contractor or the Contractor's Subcontractors.

The Contractor shall be responsible for any liability imposed by law and for injuries to, or death of, any person including, but not limited to, workers and the public, or damage to property resulting from defects or obstructions, or from any cause whatsoever during the progress of the Work or at any time before its completion and final Acceptance.

To the fullest extent allowed by law, the Contractor shall defend (through counsel acceptable to the City), indemnify, and save and hold harmless the City, and its respective officers, agents, Subcontractors, employees, and volunteers, and the successors and assigns of

any of them, (hereinafter referred to as "Indemnitees") from and against all claims, demands, liability, suits, actions, costs or expenses for any and all loss or damage, including but not limited to, personal injury, property damage, or economic loss, arising out of or resulting from allegations of (1) Contractor's use of the City's property or any activities or Work performed hereunder by the Contractor; (2) the Contractor's performance of the Work under the Agreement; or (3) the Contractor's breach of any provision of the Agreement. The duty of the Contractor to indemnify and save harmless includes the duties to defend as set forth in Civil Code Section 2778. The only exception to these provisions is that the Contractor's obligations under this section will not apply to the extent that the claims, demands, liability, suits, actions, costs or expenses are caused by Indemnitees' active negligence, willful misconduct, criminal acts, or for defects in design furnished by the Indemnitees, misconduct, criminal acts, or for defects in design furnished by the Indemnitees.

The Contractor waives any and all rights to any type of express or implied indemnity against the City, its officers, agents, employees, or volunteers.

The Contractor's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Contract for the full period of time allowed by law. The defense and indemnity obligations of this Contract are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Contract. The parties intend that the defense and indemnity obligations in this Contract shall be broadly construed.

Any person, firm or corporation that Contractor authorizes to Work on the City's property including Subcontractors, shall be deemed to be an agent of the Contractor for purposes herein, shall be subject to all the applicable terms herein, and shall be within the scope of the Contractor's indemnity obligation described herein.

In addition to any remedy authorized by law, so much of the money due the Contractor under and by virtue of the Contract as shall be considered necessary by the Department may be retained by the City until disposition has been made of such suits or claims for damages.

The retention of money due the Contractor shall be subject to the following:

A. The City will give the Contractor thirty (30) Days' notice of its intention to retain funds from any partial payment which may become due to the Contractor prior to Acceptance of the Contract. Retention of funds from any payment made after Acceptance of the Contract may be made without such prior notice to the Contractor.

B. No retention of additional amounts out of partial payments will be made if the amount to be retained does not exceed the amount being withheld from partial payments pursuant to Section 7-1.07, "Progress Payments," of these General Conditions.

C. If the City has retained funds and it is subsequently determined that the City is not entitled to be indemnified and saved harmless by the Contractor in connection with matter for which such retention was made, the Department shall be liable for interest on the amount retained at the legal rate of interest for the period of such retention.

5-1.23 **INSURANCE COVERAGE.**

A. Evidence of Maintenance Required. The Contractor shall, at its expense, procure and at all times maintain in full force and effect at a minimum the insurance required by this section on all of its operations; and the Contractor shall not allow any Subcontractor to commence work until similar insurance required of the Subcontractor has been obtained and filed. An original Certificate of Insurance, and copies of all required endorsements, all in a form approved by the Risk Manager, evidencing all required coverage or policies shall be filed after the award of the bid and prior to approval of the Contract by the City Council. Contractor shall

provide ten (10) days prior written notice to the City of any reduction of coverage limits or cancellation of the coverage or policies shall be given to the City of Roseville as Certificate holder.

B. Qualifying Insurers. With the exception of the State Compensation Insurance Fund, all required insurance policies shall be issued by companies acceptable to the City and licensed to do business in the State of California and who hold a current policy holders alphabetic and financial size category rating of not less than AVII according to the most recent issue of Best's Insurance Reports.

C. Insurance Required.

1. Commercial General Liability (CGL): Insurance Services Office Form CG 00 01 covering CGL on an "occurrence" basis, including products and completed operations with limits of no less than Two Million Dollars ($2,000,000) per occurrence for bodily injury, personal injury and property damage for projects under One Million Dollars ($1,000,000) and limits of no less than Five Million Dollars ($5,000,000) per occurrence for bodily injury, personal injury and property damage for projects over One Million Dollars ($1,000,000). If a general aggregate limit applies, either the aggregate limit shall apply separately to this project or the general aggregate limit shall be twice the required occurrence limit.

The Commercial General Liability insurance shall include the following, copies of which shall be provided:

a. Inclusion of the City of Roseville, and its officers, agents, employees, and volunteers, as additional insureds (except for workers' compensation) as respects services or operations under the Contract. The additional insured endorsement for the general liability policy shall be at least as broad as the ISO CG 2010 10 01 combined with ISO CGL

Endorsement CG 2037 10 01. Any other endorsement must be approved in writing by the City. Endorsements must include coverage for on-going and completed operations, which coverage shall be maintained for four (4) years following completion of the Project. Endorsements shall cover the City of Roseville, its officers, agents, employees, and volunteers.

b. The insurance shall provide coverage for claims by one insured against another insured and the policies shall not contain any cross-suits exclusions, cross-liability exclusions, or insured versus insured exclusions. The policies shall not contain any classification exclusions purporting to deny coverage for any work to be performed by Contractor or any of its Subcontractors.

c. Stipulation that the insurance is primary and noncontributory, as evidenced by a separate endorsement (CG 20 01 04 13 or an equivalent) or section of the policy, and that neither the City nor its insurers will be called upon to contribute to a loss.

d. Such insurance shall specifically cover the contractual liability of the Contractor.

e. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (1) the minimum coverage and limits specified in this Agreement; or (2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

f. Waiver of subrogation endorsement.

g. The Contractor shall furnish a certificate for the period covered.

2. Automobile Liability: Insurance Services Office Form Number CA 0001 covering Code 1 (any auto), or if Contractor has no owned autos, Code 8 (hired) and Code 9

(non-owned), with limits of no less than One Million Dollars ($1,000,000) per accident for bodily injury and property damage.

3. Workers' Compensation: In accordance with the provisions of the California Labor Code, Contractor is required to be insured against liability for Workers' Compensation or to undertake self-insurance. Statutory Workers' Compensation and Employers' Liability of at least One Million Dollars ($1,000,000) shall cover all Contractors staff while performing any work incidental to the performance or this Agreement.

4. Professional Liability: Professional Liability (Errors and Omission) Insurance appropriate to Contractor's profession, with a limit of liability not less than One Million Dollars ($1,000,000) per occurrence or claim and Two Million Dollars ($2,000,000) aggregate to cover all design and engineering services rendered by Contractor pursuant to the Agreement. Coverage must commence from the first day that Contractor or any of its Subcontractors provided any design or engineering services in connection with the Project.

5. Builder's Risk/Course of Construction Insurance (If Required by Risk Management): The Contractor shall be responsible for all loss, damage or destruction whatsoever to the work called for by this Contract until the approval of a Notice of Completion or acceptance of the Work if no Notice of Completion is to be recorded.

The Contractor shall secure "All Risk" type of builder's Risk Insurance of the type covering one hundred percent (100%) of the value of the work performed under this Contract (the value is presumed to be the Contract amount unless otherwise stated in Supplemental Conditions) and all materials, equipment, or other items to be incorporated therein while the same are located at the construction site, a bonded warehouse, or its place of manufacture. At any time, the policy shall cover the value of the work completed. The policy shall cover hazards

including the losses due to fire, explosion, hail, rain, lightning, flood (separate insurance as needed), vandalism, malicious mischief, wind, collapse, aircraft, and smoke.

The policies providing such insurance shall name the City as a loss payee as its respective interests may appear, and certified copies of such policies shall be filed with the City. The maximum deductible allowable under the Builder's All Risk policy shall be five percent (5%) of the Contract amount.

Builder's Risk Insurance is not required for coverage of losses in excess of five percent (5%) of the Contract amount for damages resulting from earthquake in excess of a magnitude of 3.5 on the Richter scale, or tidal waves. Coverage in the amount of five percent (5%) of the Contract amount for such losses is required.

6. Pollution Coverage: Contractor shall procure pollution liability coverage or other insurance covering claims for bodily injury or property damage arising out of the abatement, removal, storage, transportation, or other exposure to hazardous materials or pollutants, in limits not less than Two Million Dollars ($2,000,000). Contractor shall add the City and all parties required to be indemnified by Contractor as additional insured on all pollution liability policies.

7. Higher Coverage Limits: If Contractor maintains higher coverage limits than the amounts shown above, then the City requires and shall be entitled to coverage for the higher coverage limits maintained by Contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the City.

8. Claims Made Coverage: Liability insurance coverage may not be written on a “claims made” or modified occurrence basis. The Certificate of Insurance must clearly provide that the coverage is on an “occurrence” basis.

5-1.24 **OTHER INSURANCE PROVISIONS.**

A. The requirements of the Standard Specifications as to types and limits of insurance coverage to be maintained by the Contractor, and any approval of insurance by the City, are not intended to, and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by the Contractor pursuant to the Contract, including, but not limited to, the provisions concerning indemnification, nor preclude the City from taking any other action available to it under any other provision of the Contract or law.

B. The City acknowledges that some insurance requirements contained in these Standard Specifications may be fulfilled by self-insurance on the part of the Contractor. However, this shall not in any way limit liabilities assumed by Contractor under the Contract. Any self-insurance must be approved in writing by the City, in its sole discretion and shall not reduce the limits of liability. Any deductibles or self-insured retentions ("SIR") must be declared on the certificate of insurance and approved by City in writing. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City. City reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

C. The Contractor agrees to include in its contracts with all subcontractors the same requirements and provisions of this Contract, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, the Contractor shall require its subcontractors to agree to be bound to the Contractor and the City in the same manner and to the same extent as the Contractor is bound to the City under this Contract. Additionally, the Contractor shall obligate its subcontractors to comply with these

same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of the City's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request. Alternatively, the Contractor may insure subcontractor(s) under its own policy.

D. The City, its officers, agents, employees, and volunteers are to be covered as insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the Contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under California Insurance Code Section 11580.04.

E. The limits of insurance required in this Contract may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of the City (if agreed to in a written contract) before the City's own insurance shall be called upon to protect it as a named insured.

F. The insurance procured by Contractor shall be subject to the approval of the City, but any acceptance of insurance certificates by the City shall in no way limit or relieve Contractor of its duties and responsibilities under the Agreement.

G. Contractor shall be responsible for all premiums, deductibles, and self-insured retention applicable to the insurance it is required to procure under the Contract. All deductibles or self-insured retentions over five hundred thousand dollars ($500,000) must be approved by the City, in writing. Contractor shall be responsible for all deductibles, self-insured

retention payments, and/or increased premiums incurred if the City's policies of insurance are forced to cover damages or respond to claims for which Contractor or its Subcontractors were obligated to provide insurance under the Contract.

H. Failure of the City to enforce in a timely manner any of the requirements of these insurance provisions shall not act as a waiver to enforcement of any of these provisions at a later date.

I. Contractor's indemnity obligations shall not be limited by these insurance provisions and shall survive the expiration of the Contract and the insurance provisions of the Contract shall likewise not be limited by the indemnity provisions of the Contract.

J. THE CITY RESERVES THE RIGHT TO WITHHOLD ANY PROGRESS PAYMENTS TO THE CONTRACTOR IN THE EVENT OF NONCOMPLIANCE WITH ANY INSURANCE REQUIREMENTS.

5-1.25 **THIRD PARTY BENEFICIARY.** No provisions in the Contract Documents shall in any way inure to the benefit any third party (including the public at large or any member thereof) so as to constitute such person a third party beneficiary of the Contract, or of any term or condition or other provision of the Contract or otherwise give rise to any cause of action in any person not a party to the Agreement, except as expressly provided elsewhere in the Contract Documents.

5-1.26 **COORDINATION AND ACCESS.** The Contractor acknowledges that the City may award, or has already awarded, other construction contracts for additional work or may perform additional work with its own forces and that such work may affect the Work under this Agreement. Additionally, the Contractor acknowledges that the State and other public and private agencies may be granted a right-of-entry by the City for the purpose of constructing

facilities within and adjacent to the Work Site. It is the obligation of the Contractor to coordinate its Work with the work of others working within or adjacent to the City's property.

During performance of its Work, the Contractor shall not have exclusive access to or use of the work areas. The City may also require that certain facilities and areas be used concurrently by the Contractor and by other contractors working in the area. When two (2) or more contractors are employed on related or adjacent City work, each shall conduct its operations in such a manner as not to cause any unnecessary delay or hindrance to the other. Each contractor shall be responsible to the other for all damage to any work, to persons or property caused to the other by its operations, and for loss caused the other due to any unnecessary delays or failure to finish the work within the time specified for completion.

If any party of the Contractor's Work depends on the work of any other contractor and/or the City for proper execution and/or results, the Contractor shall promptly notify the City of any discrepancies and/or defects in said other work that would render its work unsuitable for proper execution and/or results prior to proceeding with the Contractor's own Work. If it becomes necessary, the City will resolve coordination and access problems.

The Contractor and its representative in charge of the Work shall familiarize themselves with the City's property and Work Site, and adjacent surroundings in the vicinity of said Wok, and any private or public operations on adjoining properties.

5-1.27 **OCCUPANCY BY THE DEPARTMENT PRIOR TO ACCEPTANCE.** The City may at any time notify the Contractor in writing that it intends to take Beneficial Occupancy of any portion of the Work even though the Work may not be substantially complete. Unless the reason for the City's taking Beneficial Occupancy is that the Contractor has not completed the Work (or portions thereof) in accordance with the Contract

Time, the City's Beneficial Occupancy shall relieve the Contractor from its responsibility for maintenance, loss or damage to that portion of the Work for which the City has taken Beneficial Occupancy other than that resulting from the Contractor's act or omission, negligence, willful misconduct or breach of warranty.

Should the Work (or portion thereof) not be completed in accordance with the Construction Schedule within the Contract Time (as adjusted under the terms of the Contract Documents), the City shall have the right, but not the obligation, to take Beneficial Occupancy of the Work. In such event, the Contractor shall not be entitled to any additional compensation on account of said occupancy by the City, nor shall the Contractor be relieved of any of its responsibilities under the Contract Documents, including, without limitation, Contractor's obligation to complete the Work in accordance with the Construction Schedule.

Beneficial Occupancy shall not be deemed an Acceptance by the City either of the Work or of any portion thereof, nor will it relieve the Contractor of full responsibility for correcting defective Work or materials found at any time before the formal written Acceptance of the entire Contract by the Director or during the full warranty period after such Acceptance, as provided in Section 7-1.12, "Warranty," of these General Conditions.

The City's Beneficial Occupancy shall not relieve the Contractor of its responsibility to maintain all insurance and bonds required under the Contract Documents until the entire project is accepted by the City.

5-1.28 **RIGHT TO OPERATE UNSATISFACTORY FACILITIES AND EQUIPMENT.** If, after Installation, the operation or use of the facilities or equipment to be furnished under this Contract proves to be unsatisfactory to the Director, the City shall have the right to operate and use such facilities or equipment until they can, without damage to the City,

be taken out of service for correction or replacement. Such period of use of the defective facilities or equipment, pending correction or replacement, shall in no way decrease the warranty period required for the acceptable corrected or replaced facilities or equipment.

5-1.29 **CONTRACTOR'S RESPONSIBILITY FOR THE WORK.** Except as otherwise provided herein, the Contractor shall have the charge and care of the Work and shall bear the risk of injury or damage to any part of the Work by the action of the elements or from any other cause whether arising from the execution or from the nonexecution of the Work until the Acceptance of the Contract by the Director. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the Work occasioned by any cause before its completion and Acceptance, and shall bear the expense thereof. In case of suspension of Work from any cause whatever, the Contractor shall be responsible for the Work and it shall also be responsible for all materials, and shall properly store them if necessary, and shall provide suitable drainage and erect temporary structures where necessary.

The Contractor will be relieved of responsibility for any injury or damage to the Work caused by the following:

A. An earthquake in excess of a magnitude of 3.5 on the Richter Scale or a tidal wave, when the effect of such has been proclaimed a disaster or state of emergency by the Governor of the State of California or by the President of the United States, or was of such magnitude at the site of the Work as to have been sufficient to have caused a proclamation of disaster or state of emergency, had it occurred in a populated area.

B. Occupancy and use by the Department or the public prior to the completion of the entire project.

C. Acts of the Federal Government or the public enemy.

5-1.30 **RESPONSIBILITY FOR UTILITIES.** The Contractor shall be responsible at its own cost for any and all Work, expense or special precautions caused or required by the existence or proximity of utilities encountered in performing the Work, including without limitation, repair of any or all damage and all hand or exploratory excavation required. The Contractor is cautioned that such utilities may include communication cables or electrical cables which may be high voltage, and when working or excavating in the vicinity of such cables, or the ducts enclosing such cables, the Contractor shall undertake at its own cost any special precautions required. Suitable warning signs, barricades, and safety devices shall be erected as necessary or required.

However, if during the course of the Work the Contractor encounters utility Installations which are not shown or indicated in the Contract Documents or which are found in a location substantially different from that shown, and such utilities are not reasonably apparent from visual examination, then the Contractor shall promptly notify the Director in writing. Where necessary for the Work of the Contract, the Director shall issue a written order to the Contractor to make such adjustments, rearrangement, repair, removal, alteration, or special handling of such utility, including repair of the damaged utility. The Contractor shall perform the Work described in such written order, and compensation therefor will be made in accordance with Section 3 of these General Conditions relating to changes in the Work. Except for the items of cost specified in said Section 3, the Contractor shall receive no compensation for any other cost, damage, delay, interference, or hindrance to him or her due to the presence of such utility. If the Contractor fails to give the notice specified above and thereafter acts without instructions for the Director, then the Contractor shall be liable for any or subsequent to discovery thereof, and the Contractor shall repair and make good such damage at its own cost.

The precise location of underground facilities can only be determined by careful probing or hand digging in compliance with Article 6 of the Cal/OSHA Construction Safety Orders which states in part:

> "Prior to opening an excavation, effort shall be made to determine whether underground installations, i.e., sewer, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the approximate location of such an installation, the exact location shall be determined by careful probing or hand digging, and, when it is uncovered, adequate protection shall be provided for the existing installation."

The location of known existing utilities and pipelines are shown on the Contract Drawings in their approximate locations. Some of the locations include multiple conduits. The Contractor shall exercise care in avoiding damage to those facilities which are to remain in service subsequent to the construction of the particular new facility involved and the Contractor will be held responsible for any repairs if damaged. The Contractor shall also exercise care in maintaining those pipes and facilities required for continuing operation of the existing facilities until such time as they can be abandoned. There is no guarantee that all utilities or obstructions are shown on the Contract Drawings or that the locations indicated are accurate.

The Contractor shall exercise extreme caution in working in the area adjacent to the existing pipelines and utility services. It is essential that all the existing facilities be maintained in service. Construction of the connections between the existing facilities and the new facilities shall be at times and during periods acceptable to the City. The Contractor shall advise the Director in writing of its proposed Construction Schedule for these connections at least forty-eight (48) hours in advance.

The Contractor shall uncover all piping and conduits, to a point one foot (1') below the pipe, where crossings, interferences, or connections are shown on the Contract Drawings, prior to trenching or excavating for any pipe or structures, to determine actual elevations. New pipelines shall be laid to such grade as to clear all existing facilities which are to remain in service. If the Contractor does not expose all required utilities, it shall not be entitled to additional compensation for Work necessary to avoid interferences nor for repair to damaged utilities. Excavations around underground electrical ducts and conduits shall be performed using extreme caution to prevent injury or damage to workers and to the electrical ducts or conduits.

5-1.31 **PROPERTY RIGHTS IN MATERIALS.** Nothing in the Contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the Work or soil or after partial payment has been made as provided in Section 7-1.07, "Progress Payments," of these General Conditions for material delivered on the ground or stored subject to or under the control of the City and unused. All such material shall become the property of the City upon being so attached or affixed or upon payment for materials delivered on the ground or stored subject to or under the control of the City and unused, as provided in said Section 7-1.07.

5-1.32 **COURT ORDERED DELAY.** If, pursuant to court order, the Department temporarily suspends performance of all or any portion of the Work, an extension of time determined pursuant to the provisions in Section 6-1.08, "Liquidated Damages," of these General Conditions will be granted.

5-1.33 **NO PERSONAL LIABILITY.** Neither the Director, nor any other officer or authorized employee of the City, shall be personally responsible for any liability arising under or by virtue of the Contract.

5-1.34 **RIGHTS IN LAND AND IMPROVEMENTS.** The Contractor shall make no arrangements with any person or entity to permit occupancy or use of any land, structure or building within the limits of the Work, for any purpose whatsoever, either with or without compensation, in conflict with any agreement between the City and any third party owner, former owner, or tenant of such land, structure or buildings. The Contractor shall not occupy City-owned property outside the limit of the Work shown on the Contract Drawings unless it obtains prior approval.

5-1.35 **ANTITRUST CLAIMS.** The Contractor's attention is directed to the following provision of Public Contract Code Section 7103.5(b), which is applicable to the Contractor and its Subcontractors:

> " In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the contractor or subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgement by the parties."

5-1.36 **RIGHTS TO DRAWINGS, TECHNICAL DATA PATENTS.** Shop

Drawings and Working Drawings submitted to the City by the Contractor, Subcontractor or any lower tier Subcontractor pursuant to the Agreement, are the property of the City and the City may use, and disclose in any manner and for any purpose, Shop Drawings and Working Drawings delivered under the Contract.

Technical Data including manuals or instructional materials, computer or microprocessor software which are delivered or submitted to the City by the Contractor, Subcontractor, or any lower tier Subcontract pursuant to the Contract are the property of the City, and the City may use or disclose same in any manner and for any purpose.

The Contractor shall assume all costs arising from the use of patented materials, equipment, devices, or processes used on or incorporated in the Work, and shall defend, indemnify and save and hold harmless the City, and its duly authorized representatives, from all suits at law, or in equity, and actions of every nature for, or on account of the use of any patented materials, equipment, devices or processes. In case some materials, equipment, devices or processes are held to constitute an infringement and their use enjoined, the Contractor, at its expense, shall:

1. Secure for the City the right to continue using said materials, equipment, devices or processes by suspension of the injunction or by procuring a license or licenses; or
2. Replace such materials, equipment, devices, processes; or
3. Modify them so that they become non-infringing or remove the enjoined materials, equipment, devices or processes and refund the sums paid therefor without prejudice to any other rights of the City.

5-1.37 **PAYMENT OF TAXES.** Contractor shall pay all taxes and duties applicable to and assessable against any Work, equipment, materials, services, processes, and

operations incidental to or involved in the Agreement, including but not limited to, retail sales and use, transportation, export, import, business, and special taxes. The Contractor is responsible for ascertaining and acquainting itself with such taxes and making all necessary arrangements to pay them. The Contractor will maintain records that are auditable records, and these records shall be subject to the City's review to verify that Contractor's tax payments are current at all times.

The Contract Price paid for the Work shall include full compensation for all taxes which the Contractor is required to pay, whether imposed by Federal, State or local government, including, without being limited to, Federal excise tax. No tax exemption certificate nor any document designed to exempt the Contractor from payment of any tax will be furnished to the Contractor by the Department, as to any tax on labor, services, materials, transportation, or any other items furnished pursuant to the Contract.

The Contractor shall withhold and pay any and all sales and use taxes, withholding taxes, whether Federal, State, or local, Social Security taxes, State Unemployment Insurance charges and all other taxes which are now or hereafter may be required to be paid or withheld under any laws.

5-1.38 **GRATUITIES AND CONFLICT OF INTEREST.** The Contractor shall not offer or provide gratuities in the form of gifts, entertainment, loans, meals, rewards, and/or services to representatives of the City, including but not limited to, officers, employees, agents, Engineering Service Consultants, Consulting Engineers and Architects, Inspectors and/or Testing Agencies retained by the City. If it is found that the Contractor has violated this provision, the Contract may be subject to termination for default as defined elsewhere in these General Conditions.

During the term of the Contract and until the final payment has been made to the Contractor, the Contractor shall not employ or compensate in any manner whatsoever, the City's officers, employees and authorized representatives, agents, and any Engineering Service Consultants, Consulting Engineers and Architects, Inspectors, and/or Testing Agencies retained by the City. Any exception to the employment or compensation to any of the above named parties must be made in writing by the City. If the Contractor offers or provides employment or compensation to those named above during the term of the Contract, the Contract may be subject to termination for default.

5-1.39 **COOPERATION.** Should construction be under way by City forces or other forces or by other Contractors within or adjacent to the limits of the Work or should Work of any other nature be under way by such forces within or adjacent to said limits, the Contractor shall cooperate with all such forces to the end that any delay, interference or hindrance to their Work will be avoided. The right is reserved to perform other or additional Work at or near the site at any time, by the use of such forces.

5-1.40 **DIGGING TRENCHES OR OTHER EXCAVATIONS.** In the event any work involves digging trenches or other excavations that extend deeper than four feet (4') below the surface, City and Contractor shall comply with the following:

A. The Contractor shall promptly, and before the following conditions are disturbed, notify City in writing of any:

1. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

2. Subsurface or latent physical conditions at the site differing from those made available to Contractor for inspection as provided in the project proposal.

3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract.

B. The City shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a Change Order under the procedures described in the Contract.

C. In the event that a dispute arises between the City and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the contracting parties. However, no claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required by this Section. No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Contract.

5-1.41 **CONTRACTOR REGISTRATION.** No contractor or subcontractor may work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. During the performance of this Contract, the Contractor and its subcontractors shall have a continuing legal obligation to maintain current

registration with the Department of Industrial Relations. The Contractor is hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

5-1.42 **CITY OF ROSEVILLE ENCROACHMENT PERMITS AND RIGHTS-OF-WAY.** The Contractor need not obtain a separate encroachment permit from the City prior to construction within street rights-of-way or other City rights-of-way. Execution of the Contract by the City shall be deemed an encroachment permit for work required by the Contract within rights-of-way. All work shall conform to the rules and regulations of encroachment permits and shall be subject to the inspection and approval of the Director and City Engineer.

To the extent indicated in the Contract Drawings, the City will provide the rights-of-way over private lands or the site to enable the Contractor to perform its work. The Contractor shall be solely responsible for securing any additional rights-of-way desired by the Contractor. The City will not be a party to nor assume any liability for any separate agreements reached between the Contractor and any third parties with respect to these additional rights-of-way. The Contractor shall procure evidence that agreements are in place with said third parties before the Contractor uses those areas covered by the agreements. Any damage to such private lands caused by the Contractor's operations shall be the sole responsibility of the Contractor.

5-1.43 **CALIFORNIA AIR RESOURCES BOARD REGULATIONS.** The Contractor shall comply with any applicable regulations of the California Air Resources Board ("CARB") set forth below.

A. In-Use Off-Road Diesel-Fueled Fleets. If the Contractor will use vehicles subject to Cal. Code Regs., tit. 13, §§ 2449 et seq. for the project, it shall submit a valid Certificate of

Reported Compliance to the City as provided in § 2449(n).

B. Advanced Clean Fleets. Pursuant to Cal. Code Regs., tit. 13, § 2013(i)(1), the Contractor shall submit to the City either a signed statement stating that it is not subject to the High Priority and Federal Fleets regulation of title 13, CCR section 2015 through 2015.6, or a document evidencing that it is listed on the CARB Advanced Clean Fleets webpage as a compliant fleet.

SECTION 6

PROSECUTION AND PROGRESS

6-1.01 **SUBLETTING AND SUBCONTRACTING.** The Contractor shall be responsible for all Work performed under the Contract. The Contractor shall give its personal attention to the fulfillment of the Contract and shall keep the Work under its control. Nothing in the Contract Documents shall create any contractual relationship between the City and any Subcontractor. The Contractor is fully responsible to the City for the acts and omissions of its Subcontractors of any tier. When any Subcontractor fails to prosecute a portion of the Work in a manner satisfactory to the Director, that Subcontractor shall not again be employed on the Work. Although the sections of the Contract may be arranged according to various trades, or general grouping of the Work, the Contractor is not obligated to sublet the Work in such manner. The Director will not arbitrate disputes among Subcontractors or between Contractor and one or more Subcontractors concerning responsibility for performing any part of the Work.

The on-site production of materials produced by other than the Contractor's own forces shall be considered as subcontracted. The erection, establishment or reopening of on-site plants for production of materials and the operation thereof in the production of materials for use on the Work shall conform to the requirements relating to labor set forth in the Contract Documents.

The Contractor shall also be responsible for coordinating the Work performed by Subcontractors and Suppliers.

The Contractor shall not substitute any person as Subcontractor in place of a Subcontractor listed on its bid proposal without the written approval of the Director. Substitutions must be in accordance with the provisions of the "Subletting and Subcontracting

Fair Practices Act" beginning with Public Contract Code Section 4100. Violations of this Act by the Contractor may subject it to penalties which may include cancellation of Contract, Assessment of ten percent (10%) of the Subcontractor's bid, and disciplinary action by the Contractors State License Board.

The Contractor shall pay any Subcontractors approved by the City for work that has been satisfactorily performed no later than seven (7) Days from the date of Contractor's receipt of progress payments by the City. Within seven (7) Days after receipt from the City of funds attributable to work performed by a Subcontractor, Contractor shall release any retainage payments withheld to the Subcontractor. In the event Contractor does not make progress payments or release retention to Subcontractors in accordance with the time period specified herein, Contractor may be subject to prompt payment penalties per statute.

6-1.02 **ASSIGNMENT.** The performance of this Contract may not be assigned, except upon the written consent of the City Council of the City of Roseville. Consent will not be given to any proposed assignment which would relieve the original Contractor or its surety of their responsibilities under the Contract nor will the City consent to any assignment of a part of the Work under the Contract.

The Contractor may assign moneys due or to become due to it under the Contract and such assignment will be recognized by the City, if given proper notice thereof, to the extent permitted by law, but any assignment of moneys shall be subject to all proper set-offs in favor of the City and to all deductions provided for in the Contract and particularly all money withheld, whether assigned or not, shall be subject to being used by the City for the completion of the Work in the event that the Contractor should be in default therein.

6-1.03 **BEGINNING OF WORK.** After the execution of the Contract by both

parties, the City will issue the Notice to Proceed upon its determination that it is appropriate for the Contract Time to commence.

The Contractor shall begin Work within fifteen (15) Days after receiving the Notice to Proceed from the Director, subject to the requirements stated elsewhere in the Contract Documents regarding, among other things, the submittal of Baseline Schedule, and shall diligently prosecute the same to completion within the time limit provided in the Supplemental Conditions. Contractor shall also achieve any and all Contract milestones as described elsewhere in the Contract Documents.

The Contractor shall notify the Director, in writing, of its intent to begin Work at least seventy-two (72) hours before Work is begun. The notice shall be delivered to the Director and shall specify the date the Contractor intends to start. If the project has more than one (1) location of Work, a separate notice shall be given for each location.

The Contractor is not authorized to perform any Work until it has received a Notice to Proceed from the City. Should the Contractor begin Work in advance of receiving notice that the Contract has been approved as above provided, any Work performed by it in advance of the said date of approval shall be considered as having been done by the Contractor at its own risk and as a volunteer unless said Contract is so approved thereafter.

6-1.04 **PROGRESS SCHEDULE.**

A. Preliminary Progress Schedule. The Contractor shall submit to the Director, within twenty (20) Days after date of the Notice to Proceed, a Preliminary Progress Schedule covering the Contractor's activities over the first three (3) months of operation in detail and the remainder of the project in summary. The Preliminary Progress Schedule shall schedule the project within the Contract Time for completion of the Work, and shall be subject to

favorable review by the Director.

B. CPM Schedule. The Contractor shall submit an acceptable Critical Path Method (CPM) Schedule to the Director within thirty (30) Days after the receipt of the Notice to Proceed. Subsequent revisions to said schedule shall be submitted as set forth hereinafter. The requirement for the CPM schedule is included to allow for adequate planning and execution of the Work, to determine the critical nature of delays, and to assist the Director in appraising the reasonableness of the proposed schedule and evaluating progress of the Work. The CPM schedule submitted under this Section shall utilize a CPM format, either the precedence or arrow diagramming method. The definitions of CPM terms and functions shall be as provided in the Associated General Contractors of America book *CPM in Construction, A Manual for General Contractors*, or a favorably reviewed alternative publication or reference. No progress payment will be made prior to submission and acceptance of the CPM Schedule.

1. The CPM schedule system shall consist of diagrams and accompanying mathematical analyses. The diagrams shall show elements of the project in detail and an entire project summary. Diagrams shall show the order and interdependence of activities and sequence in which the Work is to be accomplished as planned by the Contractor. The basic concept of a network analysis diagram shall be followed to show how the start of a given activity is dependent on the completion of preceding activities and its completion restricts the start of following activities. Detailed network activities shall include, in addition to construction activities, the submittal and favorable review of samples of material and Shop Drawings, the procurement of critical materials and equipment, fabrication of special material and equipment, and their Installation and testing. All activities of the City and the Director that affect progress and required Contract dates for completion of all or parts of the Work shall be shown. The

selection and number of activities shall be subject to favorable review by the Director. Summary networks shall be time scaled. Durations shall be in Days and shall not exceed fifteen (15) Days, except for submittal and delivery items. Where the duration of continuous Work exceeds fifteen (15) Days, Work items in the Construction Schedule shall be subdivided by location, approximate stationing or other sub-element of the Work.

The graphic network diagram shall include for each activity, the description, activity number, the estimated duration in Days, and all activity relationship lines. The network diagram shall be drawn for the early start of activities. All significant Submittals shall be scheduled along with manual Submittals and training on all large or critical pieces of equipment. If the precedence technique is utilized, the schedule project shall include a calendar in Work Days, a network report sorted by early start and a logic table report sorted by preceding Work item. If the arrow technique is utilized, the schedule report shall include a calendar in Work Days, a network report sorted by early start, a network report sorted by I-J numbers, and a network sorted by slack time and I-J numbers.

2. The critical path shall be shown on all reports and on the graphic network diagram. The activities which constitute the critical path shall be identified.

3. The mathematical analysis of the network diagram shall include a tabulation of each activity. The following information shall be furnished as a minimum for each activity:

(a) preceding and following event numbers

(b) activity description and number

(c) estimated duration of activities

(d) earliest start date (by calendar date)

(e) earliest finish date (by calendar date)

(f) actual start date (by calendar date)

(g) actual finish date (by calendar date)

(h) latest start date (by calendar date)

(i) latest finish date (by calendar date)

(j) slack or float

(k) percentage of activity completed

4. The program shall be capable of accepting revised completion dates as modified by approved time adjustments and recomputations of all tabulation dates and float accordingly.

5. Submission and review of the system shall be as follows:

(a) The complete network analysis system, consisting of the detailed network mathematical analysis and network diagrams, shall be submitted within thirty (30) Days after receipt of the Notice to Proceed.

(b) The Contractor shall participate in a review and evaluation of the proposed network diagrams and analysis by the Director. Any revisions necessary as a result of this review shall be resubmitted for review by the Director within ten (10) Days. When completed, the favorably reviewed schedule shall then be the schedule to be used by the Contractor for planning, organizing and directing the Work and for reporting progress. If the Contractor thereafter desires to make significant changes in its method of operating and scheduling, the Contractor shall notify the Director in writing stating the reasons for the change.

(c) The Contractor shall submit at monthly intervals a report of the actual construction progress. Each monthly report shall cover a period of approximately thirty

(30) Days ending around the 20th of each month. The monthly reports shall be submitted within ten (10) Days of the end of the reporting period.

(1) If the project is proceeding on schedule, the monthly update report may consist of a marked-up copy of the graphical network diagram. This submittal shall clearly indicate the status of any minor shifts in sequence or schedule and the estimated completion date or percent complete of all activities currently in progress. The Contract completion date shall also be indicated. The Contractor shall submit a narrative report relating to status of construction, the schedule, and factors which may affect the remainder of the schedule. The report shall show the activities or portions of activities completed during the reporting period. The report shall state the percentage of the Work actually completed and scheduled as of the report date and the progress along the critical path in terms of Days ahead or behind the allowable dates.

(2) If, in the opinion of the Director, the project is behind schedule, the monthly report shall include a revised network diagram and/or mathematical analysis showing the Contractor's proposed revised schedule. An analysis of the effect that the delay has on progress along other paths shall also be included in the report. The Contractor shall also submit a narrative report with each updated analysis which shall include but not to be limited to a description of current and anticipated problem areas, delaying factors and their impact, and an explanation of corrective actions taken or proposed.

(3) Periodic report shall be submitted in sufficient copies to cover Contractor needs plus five (5) copies and an available electronic copy to be retained by the Director.

6. To the extent that the favorably reviewed initial Construction Schedule, or revisions thereto, indicate anything not jointly agreed upon, it shall be deemed to be not favorably reviewed by the Director. Any omission of Work from the detailed schedule, otherwise required for Contract compliance, will not excuse the Contractor from completing such Work within any applicable completion date. The CPM schedule shall be generated by computer methods.

C. Schedule Review. Once each month, on a date mutually agreed upon, but no later than seven (7) business days after the monthly schedule progress report date, a Work Site meeting will be held to review the Construction Schedule and job progress. The Contractor shall also attend weekly meetings scheduled by the Director to review the progress of the Work in the preceding week and in the subsequent week, coordinate the Work with public agencies or other Contractors as required, and allow the Director to plan his or her activities for testing, inspection, etc.

D. Schedule Revisions. The conditions under which the Director will require revisions of the Construction Schedule include the following:

1. When delay in completion of any Work item or sequence of Work items results in an estimated extension of project completion by either twenty (20) business days or by ten percent (10%) of the remaining duration of time to complete the Contract, whichever is less.

2. When delays in Submittals or deliveries make replanning or rescheduling of the Work necessary.

3. When the schedule does not represent actual prosecution and progress of the Work.

4. When any change to the sequence of activities, the completion date for major portions of the Work, or when changes occur which affect the critical path.

5. When Contract Amendments or a Change Order necessitates schedule revision, the Contractor shall submit a schedule analysis of all Change Order Work with its proposal.

E. Cash Flow Projection. A cash flow projection shall be submitted with the Construction Schedule. This cash flow projection shall be revised and resubmitted when revisions of the Construction Schedule will result in changes to the projected cash flow.

F. Schedules showing project completion dates earlier than specified in the Supplemental Conditions will be rejected unless justification can be provided for early completion.

6-1.05 **SCHEDULE OF VALUES.** Prior to preparation of the first estimate for a progress payment, the Contractor shall submit for favorable review by the Director a detailed Schedule of Values or cost breakdown of the Work under each bid item awarded. The breakdown will then become the basis for partial payment determination. Elements of Work shall be grouped by structure, pipeline, system, etc. Within each grouping, Work should be itemized by readily measurable quantities of Work complete in place. For example, concrete should be in units of cubic yards including form Work and reinforcing steel. Move-on costs, bond and insurance costs, and Overhead costs shall not be considered an item of cost for this purpose but shall be prorated over items of Work. In the event the Schedule of Values is not favorable reviewed by the Director, another Schedule of Values shall be submitted that is mutually acceptable to the Contractor and the Director.

6-1.06 **CITY'S RIGHT TO STOP WORK.** The Director shall have the

authority to order the Contractor, in writing, to suspend the Work wholly or in part, for such period as the Director may deem necessary due to the failure on the part of the Contractor to correct Work that is not in accordance with the requirements of the Contract Documents or if Contractor persistently fails to carry out Work in accordance with the Contract Documents.

The Contractor shall immediately comply with the written order of the Director to suspend the Work wholly or in part. The suspended Work shall be resumed when conditions are favorable and methods are corrected, as ordered or approved in writing by the Director.

Any stoppage of work under this section shall be at the Contractor's sole expense, and the Contractor shall have no claim against the City based on the Contractor's failure to perform the Work in accordance with the Contract Documents.

In addition to the City's right to stop Work, the City may order the Contractor to submit to the City at no additional cost to the City, additional information concerning Contractor's planned Work if the Contractor fails to promptly correct Work that is not in accordance with the requirements of the Contract Documents or persistently fails to carry out Work in accordance with the Contract Documents. The additional information ordered by the City may include, but is not limited to, preparation of Submittals or Working Drawings not otherwise required to be submitted under the Contract Documents.

In the event the City discovers that the Contractor has created an unsafe condition the City may arrange for other work forces to remedy the condition. Such remedial work shall be at the sole discretion of the City. If this action is required, the City may unilaterally terminate Work under the Contract, and will pay only for the quantities of Work actually performed, less the cost of the City's remedial Work. In the event that Work is not halted, the Contractor must take immediate steps to correct the situation. There will be no extra payment for Work required

to correct unsafe conditions.

The right of the City to suspend the Work shall not give rise to a duty on the part of the City to exercise this right for the benefit of the Contractor or any other person or entity. This right shall be in addition to and not in restriction or derogation of the City's other rights under the Contract Documents.

In the event of a suspension of Work under any of the conditions set forth in this Section 6-1.06, such suspension of Work shall not relieve the Contractor of its legal responsibilities as set forth in these General Conditions.

6-1.07 **TIME OF COMPLETION.** The Contractor shall complete the entire Work, including Installation, repairs, startup, troubleshooting, painting, and touchup, training, submittal or record drawings, and manuals, cleanup, demobilization, and all other Work within the number of Days set forth in the Supplemental Conditions. The time for completion includes an allowance for working time lost due to normal inclement weather.

Extensions of time may be allowed for unusual inclement weather under the provisions hereinafter described. Unusual inclement weather is weather which adversely affects "controlling" operations or the critical path of construction and which meets one of the following criteria:

A. For the particular calendar month in question, the number of individual Days with rainfall exceeding 0.10 inches exceeds the average number of such Days for that month over the immediately preceding five (5) years of record by at least three (3) Days.

B. For the particular calendar month in question, the total cumulative rainfall for that month exceeds the average cumulative rainfall for that month over the immediately preceding five (5) years of record by at least two inches (2").

Rainfall shall be measured at a publicly operated, maintained, and reported station in reasonable proximity to the construction site. A claim for delay shall indicate the period of rainfall which is claimed as "unusual," the specific dates during which the unusual rainfall and subsequent wet soil conditions prevented Work, and the specific critical path tasks adversely affected by such unusual weather. A claim for delay due to unusual inclement weather shall be filed within ten (10) Days of the apparent end of the unusual inclement rainfall period, whether or not the monthly totals are available at that time. The burden of proof that weather meets the criteria for unusual weather shall be solely the responsibility of the Contractor.

It is the responsibility of the Contractor to order materials required for the Work properly and promptly on a Notice to Proceed. If evidence presented demonstrates that, in spite of the Contractor's efforts, government-established priorities controls delay material deliveries, suitable extension of time will be made.

If performance of extra Work ordered by the City or failure of the City to provide the necessary site for Installation affects construction tasks which are "controlling" or which are on the "critical path" of the Construction Schedule, suitable extensions of time will be made.

The Contractor shall not be entitled to a time extension for delays in activities on non-critical paths of the favorably reviewed schedule unless the duration of the excusable delay exceeds the total float of the activities being delayed. If the duration of an excusable delay does exceed the total float of the activities affected by the delay, the Contractor shall be entitled to an extension equal to the difference.

C. Determination that a day is a non-working day by reason of inclement weather or conditions resulting immediately therefrom, shall be made by the Director.

6-1.08 **LIQUIDATED DAMAGES.** It is agreed by the parties to the Contract

that in case all the Work called for under the Contract in all parts and requirements is not completed within the number of Days as set forth in the Supplemental Conditions, damage will be sustained by the City and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the City will sustain in the event of and by reason of such delay; and it is therefore agreed that the Contractor will pay to the City, the monetary amount indicated in the Supplemental Conditions in dollars (U.S.) per day for each and every calendar day of delay in completing the Work in excess of the number of Days prescribed and the number of additional calendar days, if any, authorized by Contract Change Order; and the Contractor agrees to pay said Liquidated Damages herein provided for, and further agrees that the City may deduct the amount thereof from any moneys due or that may become due the Contractor under the Contract.

It is further agreed that in case the Work is not finished and completed in all parts and requirements within the number of Days specified, the City shall have the right to increase the number of Days or not, as it may deem best to serve the interest of the City, and if it decides to increase the said number of Days, it shall further have the right to charge to the Contractor, its heirs, assigns or sureties and to deduct from the final payment for the Work all of any part, as it may deem proper, of the actual cost of engineering, inspection, superintendence, and other Overhead expenses which are directly chargeable to the Contract, and which accrue during the period of such extension, except that cost of preparation of final statement shall not be included in such charges.

6-1.09 **DELAYS AND EXTENSIONS TO THE WORK.** The Contractor must complete all Work within the time specified in the Agreement. The Contractor will be granted an extension of time and will not be assessed with liquidated damages or the cost of engineering

and inspection for any delay in substantially completing the Work (or parts thereof) beyond the time set forth in the Agreement, provided that such delay was caused by unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include acts of public enemy, fire, floods, abnormal weather (as described below), earthquakes, epidemics, quarantine restrictions, strikes, labor disputes and freight embargoes, fire, changes made pursuant to the provisions of "Changes in the Work" under Section 3 of these General Conditions or acts or neglect of the City not contemplated by the Contract Documents. In all cases, any extension of time is conditioned on the following:

1. That the cause is not due to the fault or negligence of the Contractor, and the Contractor has taken reasonable precautions to prevent and minimize the effects thereof; and

2. That the Contractor notifies the Director in writing within three (3) Days from the beginning of such delay specifying the nature of the delay and the measures that have been or will be taken to prevent or minimize the delay. Failure to submit written notice within this time period shall constitute an absolute waiver of any claim for a time extension.

No extension of time will be granted for a delay caused by a shortage of materials, unless the Contractor furnishes to the City documentary proof that it has diligently made every effort to obtain such materials from all known sources within reasonable reach of the work and further proof, as acceptable to the Director, that the inability to obtain such materials when originally planned did in fact cause a delay in Final Completion of the entire Work which could not be compensated for by revising the sequence of the Contractor's operations. Only the physical shortage of material will be considered as a cause for extension of time, and no consideration

will be given to any claim that material could not be obtained at a reasonable, practical or economical cost or price, unless it is shown to the satisfaction of the City that such material could have been obtained only at exorbitant prices entirely out of line with current rates, taking into account the quantities involved and the usual practices in obtaining such quantities.

No extension of time will be granted for a delay caused by Contractor's staff turnovers, understaffing or insufficient quantity of qualified staff able to perform the necessary work.

The term "shortage of materials," as used in this section, shall apply only to materials, articles, parts or equipment which are standard items and shall not apply to materials, parts, articles or equipment which are processed, made, constructed, fabricated or manufactured to meet the specific requirements of the Contract Documents.

No extensions of time will be granted for delays that have no measureable impact on the completion of the Work (or parts thereof) under the Contract Documents. When extensions of time are granted, they will be limited to the period equivalent to the actual number of Days lost on the critical path or controlling operations of the Construction Schedule, taking into account the extent to which that delay could be decreased by reasonable mitigation measures by the Contractor. All requests for extensions of time must be supported with a critical path analysis showing the critical path and impacts to it. Contractor's failure to submit this analysis will be sufficient cause for denial of any request for a time extension.

Within a reasonable period of time after the Contractor submits the notice and information required by this section, the City will determine whether an extension of time is justified and, if so, the number of days for the extension.

Abnormal weather may be a valid basis for a time extension under the Agreement. "Abnormal Weather" occurs when the number of days of rain above 0.5 inches in a 24 hour

period exceeds the average for such rainfall in a particular month as determined by the National Weather Service. The Contractor will only be entitled to, at most, a time extension for the number of days of rain exceeding the average for that month in the locale where the Work is to be performed. If delays are caused by the Contractor or those for whom the Contractor is responsible, the Contractor will only be entitled to, at most, a time extension for the number of rain days exceeding the average for the month when the Work should have been performed.

In addition, before a time extension may be granted for abnormal weather, the Contractor must establish that the rain either significantly impacted at least sixty percent (60%) of the planned work of the controlling operations for a particular day or prohibited at least five (5) hours of work on the controlling operations planned for that day. Contractor shall employ reasonably methods to mitigate the impact of abnormal weather (i.e., dewatering, protection of site, etc.) The occurrence of rain during non-work hours or having minimal impact to work on the controlling operation shall not constitute a day of abnormal weather.

In the event that the project experiences favorable weather for a particular month (e.g., the number of actual rain days in a month less than that indicated above for allowable rain days per months), the additional float resulting from such favorable weather shall accrue to the project.

Any Contractor claim for damages or additional compensation based on delay shall be limited to only those circumstances where the Contractor has fulfilled each of the following three (3) requirements:

1. Contractor has established its entitlement to a time extension pursuant to the provisions described above regarding delay and extensions to the Work.
2. The delay was caused solely by the City's issuance of changes made pursuant to the

provisions of "Changes in the Work" under Section 3 of these General Conditions or by acts or neglect of the City.

3. The delay was unreasonable under the circumstances and not within the contemplation of the parties.

It is expressly understood and agreed that delays caused by the City will be non-compensable when there are concurrent delays caused by the Contractor. Also, the Contractor shall have no entitlement to additional compensation for any delay where there have been concurrent delays caused by non-compensable delays, including, but not limited to, fire, floods, earthquakes, epidemics, quarantine restrictions, strikes, labor disputes, and freight embargoes.

Contractor's damages and/or additional compensation for delays will consist solely of the extended costs of maintaining the Contractor's Work Site presence. The Contractor will not be entitled to any extended home office overhead.

Compensation for idle time of equipment will be determined in the same manner as determinations are made for equipment used in the performance of extra work paid for on a Force Account basis with the following exceptions:

1. The time for which compensation will be paid will be the actual normal working hours during which such delay conditions exists, but in no case will exceed eight (8) hours in any one day.
2. The days for which compensation will be paid will be each calendar day of the work week (defined elsewhere in the Contract Documents) and Legal Holidays, during the existence of such delay, except that when rental of the equipment is paid for under the provisions in Section 3-1.06C, "Force Account Payment – Equipment," of these General Conditions, no payment will be made for delays in accordance with the

provisions of this section.

Actual loss shall be understood to include no items of expense other than idle time of personnel, cost of extra moving of equipment, and cost of longer hauls. Compensation for idle time of equipment will be determined as provided in this section and compensation for idle time of personnel will be determined pursuant to Section 3-1.06A, "Force Account Payment – Labor," of these General Conditions. No markup will be added in either case for Overhead and profit. The cost of extra moving of equipment and the cost of longer hauls will be paid for as extra work as provided pursuant to "Changes to the Work" elsewhere in the Contract Documents.

6-1.10 **TERMINATION.**

6-1.10A **TERMINATION OF AGREEMENT – CONVENIENCE OF CITY.** The Department reserves the right to terminate the Contract at any time and for any reason if the Director determines that to do so would be in the best interest of the City. Any termination which is not based on the circumstances set forth in Section 6.1-10B below shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of Work under the Contract is terminated, and the date upon which such termination becomes effective.

Upon the Contractor's receipt of a written Notice of Termination for convenience, the Contractor shall cease Work as to those portions of the project so terminated and shall undertake the steps outlined in Section 6-1.10B below.

1. Acceptance of the Contract as hereinafter specified shall not relieve the Contractor of responsibility for damage to materials except as follows:

   a. The Contractor's responsibility for damage to materials for which partial payment has been made as provided in Section 7-1.07, "Progress

Payments," of these General Conditions and for materials furnished by the City for use in the Work and unused shall terminate when the Director certifies that such materials have been stored in the manner and at the locations he or she has directed.

b. The Contractor's responsibility for damage to materials purchased by the City subsequent to the issuance of the notice that the Contract is to be terminated shall terminate when title and delivery of such materials has been taken by the City.

c. When the Director determines that the Contractor has completed the Work under the Contract directed to be completed prior to termination and such other Work as may have been ordered to secure the project for termination, the Contractor will recommend that the City formally accept the Work, and immediately upon and after such Acceptance by the City, the Contractor will not be required to perform any further Work thereon and shall be relieved of its contractual responsibilities for injury to persons or damage to property which occurs after the formal Acceptance of the project by the City.

2. The total compensation to be paid to the Contractor shall be determined by the Director on the basis of the following:

a. The reasonable cost to the Contractor, without profit, for all Work performed under the Contract, including mobilization, demobilization and Work done to secure the project for termination. Reasonable cost will include a reasonable allowance for project Overhead and general

administrative Overhead not to exceed a total of seven percent (7%) of Direct Costs of such Work.

b. A reasonable allowance for profit on the cost of the Work performed as determined under subsection (a), provided the Contractor establishes to the satisfaction of the Director that it is reasonably probable that it would have made a profit had the Contract be completed and provided further, that the profit allowed shall in no event exceed four percent (4%) of said cost.

c. The reasonable cost to the Contractor of handling material returned to the vendor, delivered to the Department or otherwise disposed of as directed by the Director.

d. A reasonable allowance for the Contractor's administrative costs in determining the amount payable due to termination of the Contract.

All records of the Contractor and the Contractor's Subcontractors, necessary to determine compensation in accordance with this Section, shall be open to inspection or audit by representatives of the Department at all times after issuance of the notice that the Contract is to be terminated and for a period of three (3) years, and such records shall be retained for that period.

After Acceptance of the Work by the Director, the Director may make payments on the basis of interim estimates pending issuance of the Final Statement, when in his or her opinion the amount thus paid, together with all amounts previously paid or allowed, will not result in total compensation in excess of that to which the Contractor will be entitled. All payments, including payment upon the Final Statement, shall be subject to deduction for prior payments and amounts, if any, to be kept or retained under the provisions of the Contract.

In the event that the City terminates this Contract under Section 6-1.10B below and it is determined for any reason that there was not sufficient cause to do so, the City's termination automatically will convert to a termination for convenience under this section and the terms and conditions outlined in this section automatically will be applied to effectuate the Contract termination. Thus, damages to which a Contractor may be entitled as a result of an improper default termination will be limited to the amounts provided for in this section.

The provisions of this section shall be included in all subcontracts.

6-1.10B **TERMINATION OF AGREEMENT - FOR CAUSE.** An "Event of Default" as referred to in this section shall occur if the Contractor:

1. Fails to maintain progress of the Work in accordance with the requirements of the Contract Documents; or
2. Fails to prosecute the Work or any of its components in accordance with the Contract Documents; or
3. Persistently or repeatedly fails or refuses to supply sufficient properly skilled workers or proper material to permit the performance of the Work in accordance with the Contract Documents; or
4. Fails to make prompt payment to Subcontractors or Suppliers in accordance with the respective agreements between the Contractor and the Subcontractor and Contractor and Supplier; or
5. Fails to comply with applicable laws, ordinances or rules, regulations or orders of a public authority having jurisdiction over the Work; or
6. Abandons, assigns or sublets the Contract without approval of the City; or
7. Becomes bankrupt or is subject to appointment of a receiver on behalf of the

Contractor; or

8. Otherwise is guilty of a substantial breach of a provision of the Contract Documents.

Upon the City's reasonable belief that there has been an Event of Default by the Contractor, the City may elect to give the Contractor written notice thereof. The Contractor thereafter shall cure the default as soon as possible and in no event after ten (10) Days from the Contractor's receipt of the City's written notice.

If the Contractor does not timely cure its default, the City may, without waiver of any of its other rights and remedies, elect to terminate the Contract, or portion thereof.

Upon the City's election to terminate the Contract, or portion thereof, the City shall have the right to complete the Work, or portion involved, by whatever means and methods it deems expedient, including the hiring of others on such terms as the City deems advisable. The City shall have the right to take possession of the Contractor's materials, plant, tools, equipment and property of any kind provided by or on behalf of the Contractor for the purpose of the Work, or a portion of them, without being responsible to the Contractor for wear and tear. The Contractor shall have no rights in such property during its use by the City. The City shall not be required to obtain the lowest prices for completing the Work or a portion of it but shall make such expenditures as, in the City's sole judgment, best accomplish such completion.

The expense of completing such Work or portion thereof, together with a reasonable charge for engineering, managerial and administrative services, as certified by the City, shall be charged to the Contractor, and the expense so charged shall be deducted by the City out of such monies as may be due or may at any time thereafter become due to the Contractor. In case such expense is more than the sum which otherwise would have been payable to the Contractor under the Agreement, then the Contractor or its surety or sureties shall promptly pay the amount of

such excess so due. When the City terminates the Contract under this section, the Contractor shall not be entitled to receive any further payments until the Work is completed and there has been a final settlement of costs of completing the Work covered by such notice of default.

The City will issue to the Contractor a written notice specifying that the Contract, or portion thereof, is terminated. Upon receipt of said written notice and, except as otherwise directed in writing by the City, the Contractor shall:

1. Stop all Work under the Contract; or if partial termination, stop Work relating to the terminated portion of the Agreement;
2. Perform Work the City deems necessary to secure the Work Site for termination including measures to leave the Work Site in a safe condition;
3. Remove equipment from the site of Work, as specified by the City;
4. Take such action as is reasonably necessary to protect materials from damage;
5. Notify all Subcontractors and Suppliers that the Contract or portion thereof is being terminated and that their contracts or orders are not to be further performed unless otherwise authorized in writing by the City;
6. Provide the City with an inventory list of all materials previously produced, purchased or ordered from Suppliers for use in the Work and not yet used in the Work, including its storage location, and such other information as the City may request;
7. Dispose of materials not used in the Work as directed by the Director. It shall be the Contractor's responsibility to provide the City (a) with good title to all materials purchased by the City hereunder, including materials for which partial payment has been made by the City and (b) with bills of sale or other documents of title for such

materials;

8. Subject to the prior written approval of the City, settle all outstanding liabilities and all claims arising out of Subcontractors or orders for materials terminated hereunder. To the extent directed by the City, the Contractor shall assign to the City all rights, title and interests of the Contractor under subcontracts or orders for materials terminated hereunder. The City shall be at liberty to negotiate with and engage any Subcontractors who had contracted with the Contractor for the Work;
9. Furnish the City with the documentation required to be furnished by the Contractor under the provisions of the Contract Documents, including, on projects as to which Federal funds are involved, all documentation required under the Federal requirements included in the Agreement; and
10. Take such other actions as the City may direct.

If only a portion of the Work has been terminated, the Contractor shall perform the remainder of the Work in conformity with the Contract Documents and in such a manner as not to interfere with the City or others in their performance and completion of the portion of the Work which was terminated.

The City may recover from the Contractor the amount of any loss or damage, including consequential damages, suffered or incurred as a result of the Contractor's default.

SECTION 7

ACCEPTANCE AND PAYMENT

7-1.01 **ACCEPTANCE.** When the Contractor believes that the entire Work is fully and finally completed, including the satisfactory completion of inspections, tests, and documentation specified in the Contract Documents and completion of all punch list and clean-up items, the Contractor shall submit to the City a written request for final Acceptance within fifteen (15) Days thereafter, specifying that the Work is fully and finally completed and the date on which it was completed. Within thirty (30) Days after receipt of the request for final Acceptance, the City will inspect the Work and will either:

1. Reject the request for final Acceptance, specifying the defective and/or uncompleted portions of the Work; or
2. Notify the Contractor that the Work will be accepted by Resolution of the City Council of the City of Roseville, and a Notice of Completion will be caused to be recorded by the City Clerk; or
3. Notify the Contractor that the Work has been accepted by the City but no Notice of Completion will be recorded.

If the City rejects the request for final Acceptance, the Contractor shall promptly remedy the defective and/or uncompleted portions of the Work. Thereafter, the Contractor shall again submit a written request for final Acceptance of the Work, specifying a new date based on the date the defective and/or uncompleted portions of the Work were corrected. Thereafter, the foregoing procedure shall apply successively until the City has verified that the Work is fully and finally completed and accepted the Work by Resolution of the City Council or by written

notification from the Director. Immediately upon such Acceptance, the Contractor shall be relieved of the duty of maintaining the Work as a whole.

All warranties commence upon final Acceptance of the Work. The City's final Acceptance of the Work shall not be construed as an acceptance by the City of any latent defects discovered with regard to the Contractor's work. Furthermore, Contractor's obligations under Section 5-1.22 "Responsibility for Damage and Indemnification" shall still remain applicable after the City's grant of final Acceptance of the Work.

Prior to final Acceptance, the Contractor shall submit to the City the Record Documents and Operation and Maintenance Manuals as specified in the Contract Documents.

7-1.02 **SCOPE OF PAYMENT.** The Contractor shall accept the compensation provided in the Contract as full payment for furnishing all labor, materials, tools, equipment, and incidentals necessary to the completed Work and for performing all Work contemplated and embraced under the Contract; also for loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work until the Acceptance by the Director and for all risks of every description connected with the prosecution of the Work, also for all expenses incurred in consequence of the suspension or discontinuance of the Work as provided in the Contract; and for completing the Work according to the Contract. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective Work or material.

No compensation will be made in any case for loss of anticipated profits.

7-1.03 **NOTICE OF POTENTIAL CLAIM.** The Contractor shall not be entitled to the payment of any additional compensation for any act or failure to act by the City,

including failure or refusal to issue a Change Order, or for the happening of any event, thing, occurrence or other cause unless the Contractor has given the City due written Notice of Potential Claim as hereinafter specified, provided, however, that compliance with this Section 7-1.03 shall not be a prerequisite as to matters within the scope of the notice provisions in Section 6-1.07, "Time of Completion," or the notice provisions in Section 6-1.08, "Liquidated Damages," of these General Conditions, nor to any claim which is based on differences in measurement or errors of computation as to correct quantities.

The written Notice of Potential Claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. The said Notice as above required must have been given to the Director prior to the time that the Contractor shall have performed the Work giving rise to the potential claim for additional compensation, if based on an act or failure to act by the Director, or in all other cases within seven (7) Days after the happening of the event, thing, occurrence or other cause giving rise to the potential claim.

If the Notice of Potential Claim does not include complete information about the claim or the parties do not execute a Contract Change Order in connection with the Notice of Potential Claim, Contractor shall submit complete information about its claim for additional compensation and/or extension of time for performance within fifteen (15) Days after such work is performed. Failure to provide written notice of claim prior to undertaking such work or failure to timely submit a complete and specific information about the claim for additional compensation and/or extension of the time for performance shall be deemed a waiver and abandonment of such claim.

If there is a dispute over any claim, the Contractor shall continue to Work during the dispute resolution process in a diligent and timely manner as directed by the City, and shall be

governed by all applicable provision of the Agreement.

The Contractor shall maintain cost records of all Work that is the basis of any dispute. On a daily basis, Contractor shall submit to City completed daily forms, the format of which will be acceptable to the City, with respect to the Contractor's costs of performing the disputed work. These daily forms shall itemize all of Contractor's costs in performing the disputed work, including, but not limited to, all costs relating to materials, labor and equipment with respect to the disputed work. These daily forms shall provide names or identification and classification of affected workers, the hourly rate of pay and hours worked, and also the size, type, and identification number of equipment and hours operated. Said daily work forms shall be duly signed and verified by the Contractor or its authorized representative. The City's receipt of the Contractors' daily forms shall not constitute an approval of the Contractor's claim. Contractor's failure to submit the daily forms on a daily basis shall constitute a waiver of the Contractor's right to claim any additional compensation for the disputed work.

Each Contractor claim shall include full and complete information concerning the Claim. Contractor shall provide a clear, concise recital of the basis, upon which the claim is asserted, including a designation of the provisions of the Contract Documents upon which the claim is based. Contractor shall also include a statement as to the amount of time and/or compensation sought pursuant to the claim; if Contractor's claim arises from an ongoing occurrence, Contractor shall so state in its claim, including a description of the specific Work activities affected by the claim. All costs, expenses or damages and extensions of time claimed shall be described in reasonable detail under the circumstances together with complete supporting documentation.

The City will review any timely Notice of Potential Claim and supporting information

submitted by Contractor. In conducting this review, the City shall have the right to require the Contractor to submit such additional or supporting documents, data and other information as the City may require.

If an agreement can be reached which resolves the Contractor's claim, the parties will execute a Contract Change Order to document the resolution of the claim. If the parties cannot reach agreement with respect to the Contractor's claim, the Contractor shall still be obligated to comply with the claim identification provisions identified in these General Conditions, including but not limited to Section 7-1.04.

It is the intention of this Section 7-1.03 that differences between the parties arising under and by virtue of the Contract be brought to the attention of the Director at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that it shall have no right to additional compensation for any Claim that may be based on any such act, failure to act, event, thing or occurrence for which no timely written Notice of Potential Claim as herein required was filed.

7-1.04 **CLAIMS.** Contractor must submit all Claims, for which it has previously submitted a Notice of Potential Claim, prior to Acceptance of the Work. Each such Claim must be sent to the City by registered mail or certified mail with return receipt requested and must contain reasonable documentation to support the Claim.

Upon receipt of a Claim, the City shall conduct a reasonable review of the Claim and, within a period not to exceed forty-five (45) Days, or such further time as mutually agreed upon or necessary pursuant to Public Contract Code Section 9204, the City shall provide the Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. If the City does not respond to a Claim from the Contractor within the time

specified herein, such Claim shall be deemed rejected in its entirety.

Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) Days after the City issues its written statement.

If the Contractor disputes the City's written response, or if the City does not respond within the time specified herein, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the City shall schedule a meet and confer conference within thirty (30) Days for settlement of the dispute.

Within ten (10) business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the City shall provide the Contractor a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) Days after the City issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the City and the Contractor sharing the associated costs equally. The City and the Contractor shall mutually agree to a mediator within ten (10) business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be resolved in accordance with Section 7-1.05 below.

7-1.05 **DISPUTE RESOLUTION PROCEDURE.** All Claims not resolved

pursuant to Section 7-1.04, shall be resolved pursuant to Public Contract Code Section 10240, et seq.

7-1.06 **STOP PAYMENT NOTICES.** The City, by and through the Department or other appropriate office or officers, may at its option and at any time retain out of any amounts due the Contractor, sums sufficient to cover claims, filed pursuant to Civil Code Section 9350, et seq., including an amount to provide for the reasonable cost of any litigation thereunder.

7-1.07 **PROGRESS PAYMENTS.** Within fifteen (15) Days after the effective date in the Notice to Proceed, but in any event prior to Contractor's first Application for Payment, the Contractor shall submit to the City a detailed Schedule of Values.

Upon its approval, the Schedule of Values will form a basis for determining the compensation payable to the Contractor based on its actual progress of Work with respect to each Lump Sum bid item. The City, prior to any progress payment being made, must approve the Schedule of Values.

At the Director's discretion the approved Schedule of Values may be used as the basis for calculating the adjustment in compensation for a lump sum bid item due to changes ordered by the Director. When an ordered change increases or decreases the quantities shown in an approved Schedule of Values, at the Director's discretion, the adjustment in compensation may be determined in the same manner specified for increases and decreases in the quantity of a bid item of work in accordance with Section 3-1.05(B), "Contract Price Adjustment," of these General Conditions.

The Contractor once in each month shall submit an Application for Payment, for approval by the Director. Contractor's Applications shall be based on the Schedule of Values submitted to the City. These applications shall be supported by: (1) documentation requested by the City to

substantiate the payment request; (2) statutory releases from Contractor and all Subcontractors and suppliers pursuant to Civil Code Sections 8132 and 8138; and (3) certified payroll records for the period for which payment is requested. Specifically, the Contractor will submit conditional waivers upon progress payment executed by all contractors and suppliers that will be receiving sums sought in the instant payment request and also submit unconditional waivers upon progress payment executed by all contractors and suppliers that have been paid to the date of the payment request. The Contractor shall certify that the Work for which payment is requested has been accomplished. When requested by the City, the Contractor shall submit receipts, invoices and other documentation that the City requires to be furnished for purpose of evaluating the application.

The City will pay the Contractor within thirty (30) Days after its receipt of an undisputed and properly submitted Application for Payment, after deducting all previous payments, retention, and other sums as described in the Contract Documents. Within seven (7) Days of its receipt of the Contractor's Application for Payment, the City will determine whether it complies with the provisions of the Contract Documents. As appropriate, the City will return the application to the Contractor accompanied by a document prepared by the City setting forth the reasons for the rejection. Thereafter, the Contractor shall correct and resubmit the Application for Payment. Progress payments may be withheld for Work that is not performed in accordance with the Contract Documents.

The City may deduct the following from each progress payment:

1. An amount equal to one hundred and twenty-five percent (125%) of the amount claimed under any stop payment notice or other lien filed against the Contractor, which includes an amount to provide for the reasonable cost of any litigation

thereunder.

2. Any Liquidated Damages or Assessments that have accrued as of the date of the Application for Payment.
3. Any sums expended by the City in performing any of the Contractor's obligations under the Agreement that the Contractor has failed to perform.
4. Any other sums that the City is entitled to recover from the Contractor under the terms of the Contract including damages to the City's property.
5. The failure of the City to deduct any of the above identified sums from a progress payment shall not constitute a waiver of the City's right to such sums.

No such estimate or payment shall be construed to be an acceptance of any defective Work or improper materials.

Under no circumstances will the City make payment to unlicensed Contractors. As a condition of payment, the Contractor is required to maintain the applicable Contractor's license as identified in the Notice to Contractors for the duration of the Work.

7-1.08 **PAYMENT FOR MATERIALS AND EQUIPMENT ON HAND.**

Partial payments may be made to the extent of seventy-five percent (75%) of the cost of materials and equipment plus delivery to be incorporated in the Work, provided that such materials and equipment meet the requirements of the Contract Documents and are delivered to acceptable sites on the plant site or at other sites in the vicinity that are acceptable to the City and only with the prior written approval by the City. Such delivered costs of stored or stockpiled materials and equipment may be included in the next progress payment after the following conditions are met:

A. Equipment and materials will only be eligible if given conditional or final

Acceptance by the Director and are in apparent compliance with favorably reviewed Submittals.

B. Only equipment or materials which have received favorable review of Shop Drawings will qualify.

C. The material or equipment has been stored or stockpiled adequately protected against damage in a manner acceptable to the Director at an approved site.

D. The Contractor has furnished the Director with acceptable evidence of the quantity and the quality of such stored or stockpiled materials or equipment with identification of where they will be incorporated into the project with Specification reference.

E. The Contractor has furnished the Director with satisfactory evidence that the material or equipment and transportation costs have been paid.

F. The Contractor has furnished the City legal title (free of liens or encumbrances of any kind) and lien releases to the material or equipment so stored or stockpiled.

G. The Contractor has furnished the City evidence that the material or equipment so stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the Work.

It is understood and agreed that the transfer of title and the City payment for such stored or stockpiled materials or equipment shall in no way relieve the Contractor of its responsibility for furnishing and placing such materials or equipment in accordance with the requirements of the Contract Documents.

In no case will the amount of progress payments for materials or equipment on hand exceed the Contract Price for such materials or equipment or the Contract Price for the Contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant

materials.

The Contractor shall bear all costs associated with the progress payment of stored or stockpiled materials or equipment in accordance with the provisions of this Section.

7-1.09 **RETENTION ON PROGRESS PAYMENTS.** From each progress payment estimate, five percent (5%) will be deducted and held in retention by the City. The remainder, less any deductions described in Section 7-1.07, "Progress Payments," of these General Conditions, will be paid to the Contractor as progress payments.

Pursuant to Public Contract Code Section 22300, the successful Bidder may submit Securities in lieu of retention payments by the City. Upon the Contractor's request, the City will make payment of funds withheld from progress payments, pursuant to the requirements of California Public Contract Code Section 22300, if the Contractor deposits in escrow with the City or with a bank acceptable to the City, securities eligible for investment under California Government Code Section 16430, bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the City, upon the following conditions:

1. The Contractor shall bear the expenses of the City and the escrow agent in connection with the escrow deposit made.

2. Securities or certificates of deposit to be placed in escrow shall be of a value at least equivalent to the amounts of retention to be paid to the Contractor pursuant to this section.

3. Contractor shall enter into an escrow agreement satisfactory to the City, which agreement shall be substantially similar to the form provided in California Public Contract Code section 22300.

4. The Contractor shall obtain the written consent of the surety to such agreement.

7-1.10 **FINAL PAYMENT.** Final payment will be made only after Contractor has achieved Final Completion of the Work pursuant to the provisions of Section 7-1.01, "Acceptance," of these General Conditions. Before final payment can be made, the Contractor shall have furnished the City with the following:

1. All Record Documents, catalogues, instruction sheets and information as required by the Contract Documents.

2. Conditional Waivers and Releases Upon Final Payment executed by Contractor and all Subcontractors and Suppliers, as provided by Civil Code Section 8136. Unconditional Waivers and Releases Upon Final Payment, as provided in Civil Code Section 8138, executed by Contractor and all Subcontractors and Suppliers, must be provided for all Subcontractors and Suppliers that have been paid in full.

Within thirty (30) Days of the date of the City's Acceptance of the Work, the Contractor shall prepare and submit a Final Invoice, showing the proposed total amount due the Contractor, segregated by Bid item quantities, Change Order Work, and other basis for payments; deductions made or to be made for prior payment; and amounts previously retained. Prior invoices and payments shall be subject to correction in the proposed Invoice for Final Payment. Payments to the Contractor will be made only for actual quantities of the Contract items of work constructed in accordance with the Contract Documents.

The City will review the Contractor's proposed Final Invoice and necessary changes or corrections will be forwarded to the Contractor. Within ten (10) Days thereafter, the Contractor

shall submit a revised proposed Final Invoice incorporating changes or corrections made by the City together with any new claims resulting therefrom. Upon approval by the City, the corrected proposed Final Invoice will become the approval Final Invoice.

If agreements are reached on all questions regarding the Final Invoice, the City will pay the entire sum found due on the approved application. However, the City will withhold sums sufficient to pay all unsettled claims for which stop payment notices have been filed pursuant to Section 9350, et seq. of the California Civil Code, together with the reasonable cost of any litigation thereunder.

Final payment will be made within thirty (30) Days after receipt of an approved Final Invoice and other required Submittals referenced above or within sixty (60) Days after Acceptance of the work by the City, whichever is later, provided, however, that if an approved Final Invoice has not been submitted within sixty (60) Days after Acceptance of the Work by the City, the City may elect to make payment of sums not in dispute without prejudice to the right of either the City or the Contractor in connection with such disputed sums. Notwithstanding the foregoing, if a Notice of Completion is recorded, final payment shall not be made prior to the expiration of the thirty-five (35) calendar day lien period. The start of this lien period is the date the Placer County Recorder's Office records the Notice of Completion.

The City may withhold from the Final Payment an amount not to exceed one hundred fifty percent (150%) of any amount in dispute between the City and the Contractor.

The making of Final Payment shall not operate to release the Contractor or its sureties from obligations arising under the Contract, the Contract bonds and warranties as herein provided. Specifically, the making of final payment shall not constitute a waiver and release of claims by the City arising from:

1. Unsettled or future liens;

2. Failure of the Work to comply with the requirements of the Contract Documents;

3. The terms of any warranties required by or contained in the Contract Documents;

4. The right to any insurance proceeds or the right to make any insurance or bond claims;

5. Any claims with respect to Contractor's obligations of indemnity with respect to claims asserted by third parties; or

6. Any latent deficiencies with the Work or Contractor's fraud.

7-1.11 **CLERICAL ERRORS.** Notwithstanding the provisions of Section 7-1.10, "Final Payment," of these General Conditions, for a period of three (3) years after Acceptance of the Work, all estimates and payments made pursuant to said Section 7-1.10, are subject to correction for clerical errors in the calculations involved in the determination of quantities and payments. The Contractor and the City agree to pay to the other any sum due under the provisions of this Section 7-1.11, provided, however, if the total sum to be paid is less than $100, no such payment shall be made.

7-1.12 **WARRANTY.** Notwithstanding inspections and Acceptance by the City of Work furnished under the Contract Documents, the Contractor hereby unconditionally guarantees that all materials and equipment furnished will be of good quality and new, that the Work will be free from defects in workmanship and materials and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.

This warranty by the Contractor is in addition to any warranties or guarantees required elsewhere in the Contract Documents. This warranty shall be in effect notwithstanding any disclaimers, or limiting or conditional terms contained in such separate warranties furnished by manufacturers or suppliers.

The Contractor hereby agrees to repair or replace any and all Work, together with any other adjacent Work which may be displaced in so doing, that may prove to be not in accordance with the requirements of the Contract or that may be defective in its workmanship or material during the greater of a period of one (1) year after Acceptance of the Work by the City or the period specified in the Special Conditions, without any expense whatsoever to the City, ordinary wear and tear and unusual abuse or neglect excepted.

The Contractor further agrees, that within ten (10) Days after being notified in writing by the Department of any Work not in accordance with the requirements of the Contract Documents or of any defects in the Work, the Contractor will commence and prosecute with due diligence all Work necessary to fulfill the terms of this warranty, and to complete such Work within a reasonable period of time. In the event Contractor fails to comply, it does hereby authorize the Department to proceed to have such Work done at the Contractor's expense and the Contractor will honor and pay the cost and charges therefore upon demand. The Department shall be entitled to all costs and expenses, including reasonable attorneys' fees, necessarily incurred upon the Contractor's refusal to honor and pay the above costs and charges.

All warranties set forth in the Contract Documents shall be deemed cumulative and not alternative or exclusive. Nothing contained in this section shall be construed to establish a period of limitation with respect to any other obligation, which Contractor has under the Contract Documents or under any separate warranty or guaranty required thereby. The establishment of a

specific warranty period relates only to the specific obligation of Contractor to correct defective Work, and it has no relationship to the time within which its obligation to comply with the Contract Documents or applicable provision of law may be sought to be enforced, nor to the time within which proceedings may be commenced to establish Contractor's liability with respect to its obligations other than specifically to correct the Work. Without limiting the foregoing, it is understood and agreed that Contractor shall remain responsible for latent defects with its work, regardless of the expiration of any warranty period set forth in the Contract Documents.

7-1.13 **WARRANTY OF TITLE.** No material, supplies, or equipment for the Work under this Contract shall be purchased subject to any chattel mortgage, security agreement, or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by the seller or supplier. The Contractor warrants good title to all material, supplies, and equipment Installed or incorporated in the Work and agrees upon completion of all Work to deliver the Premises, together with all improvements and appurtenances constructed or placed thereon by it, to the City free from any claim, liens, security interest, or charges, and further agrees that neither the Contractor nor any person, firm, or corporation furnishing any materials or labor for any Work covered by this Contract shall have any right to a lien upon the Premises or any improvement or appurtenances thereon. Provided, that this shall not preclude the Contractor from Installing metering devices and other equipment of utility companies, the title of which is commonly retained by the utility company. In the event of the Installation of any such metering device or equipment, the Contractor shall advise the City as to the legal owner thereof. Nothing contained in this paragraph, however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the City.

The provisions of this paragraph shall be inserted in all subcontracts and material Contracts, and notice of its provisions shall be given to all persons furnishing materials for the Work when no formal Contract is entered into for such materials.

[END OF GENERAL CONDITIONS]

TEXT OF AB 626

Assembly Bill No. 626

CHAPTER 810

An act to add and repeal Section 9204 of the Public Contract Code, relating to public contracts.

[Approved by Governor September 29, 2016. Filed with Secretary of State September 29, 2016.]

LEGISLATIVE COUNSEL'S DIGEST

AB 626, Chiu. Public contracts: claim resolution.

Existing law prescribes various requirements regarding the formation, content, and enforcement of state and local public contracts. Existing law applicable to state public contracts generally requires that the resolution of claims related to those contracts be subject to arbitration. Existing law applicable to local agency contracts prescribes a process for the resolution of claims related to those contracts of $375,000 or less.

This bill would establish, for contracts entered into on or after January 1, 2017, a claim resolution process applicable to any claim by a contractor in connection with a public works project. The bill would define a claim as a separate demand by the contractor for one or more of the following: a time extension for relief from damages or penalties for delay, payment of money or damages arising from work done pursuant to the contract for a public work, or payment of an amount disputed by the public entity, as specified.

This bill would require a public entity, defined to exclude certain state entities, upon receipt

of a claim sent by registered or certified mail, to review it and, within 45 days, provide a written statement identifying the disputed and undisputed portions of the claim. The bill would authorize the 45-day period to be extended by mutual agreement. The bill would require any payment due on an undisputed portion of the claim to be processed within 60 days, as specified. The bill would require that the claim be deemed rejected in its entirety if the public entity fails to issue the written statement.

This bill would authorize, if the claimant disputes the public entity's written response or if the public entity fails to respond to a claim within the time prescribed, the claimant to demand to meet and confer for settlement of the issues in dispute. The bill would require any disputed portion of the claim that remains in dispute after the meet and confer conference to be subject to nonbinding mediation, as specified. The bill would provide that unpaid claim amounts accrue interest at 7% per annum. The bill would prescribe a procedure by which a subcontractor or lower tier contractor may make a claim through the contractor.

This bill would require the text of these provisions, or a summary, to be set forth in the plans or specifications for any public work which may give rise to a claim. The bill would specify that a waiver of these rights is void and contrary to public policy, except as specified. The bill would also specify that it does not impose liability on a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

By increasing the duties of local agencies and officials, this bill would impose a state-mandated local program.

This bill would, on January 1, 2020, repeal the provision establishing the claim resolution

process.

This bill would specify that these provisions constitute a matter of statewide concern.

The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that, if the Commission on State Mandates determines that the bill contains costs mandated by the state, reimbursement for those costs shall be made pursuant to these statutory provisions.

The people of the State of California do enact as follows:

SECTION 1. Section 9204 is added to the Public Contract Code, to read:

9204. (a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) ”Claim” means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for

delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3) (A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the

Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) ”Public works project” means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) ”Subcontractor” means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d) (1) (A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made

within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2) (A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but

not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the

claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

SECTION 2.

The Legislature finds and declares that it is of statewide concern to require a charter city, charter county, or charter city and county to follow a prescribed claims resolution process to ensure there are uniform and equitable procurement practices.

SECTION 3.

If the Commission on State Mandates determines that this act contains costs mandated by the state, reimbursement to local agencies and school districts for those costs shall be made pursuant to Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.

SUPPLEMENTAL CONDITIONS

Project: Dry Creek Wastewater Treatment Plant Operations and Laboratory Building

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Scope of Supplemental Conditions

1. The Work shall be performed in accordance with the General Conditions and Department Standards, except as the General Conditions may be modified by the following additional City Standards, incorporated herein by this reference, if so indicated.

	COMMUNITY DESIGN GUIDELINES 311 Vernon Street, Roseville, CA 95678
	SPECIFICATIONS FOR COMMERCIAL CONSTRUCTION (ELECTRIC) 2090 Hilltop Circle, Roseville, CA 95747
	PARKS CONSTRUCTION STANDARDS 316 Vernon Street, Suite 400, Roseville, CA 95678
X	DESIGN AND CONSTRUCTION STANDARDS 311 Vernon Street, Roseville, CA 95678
	OTHER

Above documents are available at: www.roseville.ca.us

2. Numbering in these Supplemental Conditions conforms to that in the General Conditions. The existence of a section in these Supplemental Conditions means that the corresponding section in the General Conditions is modified in some respect. Unless otherwise specified, the modified General Condition is deleted entirely and the provisions of these Supplemental Conditions are substituted.

SECTION 1. DEFINITIONS AND TERMS

1-1.24 **DEPARTMENT.** Section 1-1.24 of the General Conditions is amended to include the following:

The Department for Contract Administration is the Environmental Utilities Department of the City of Roseville.

SECTION 2. CONTROL AND SCOPE OF THE WORK

2-1.08 **SUBMITTALS.** Section 2-1.08 of the General Conditions is amended to include the following:

The time allowed for review of each submittal is (10) ten Days after receipt of the submittal by the Director.

SECTION 3. CHANGES IN THE WORK

There are no amendments to the General Conditions.

SECTION 4. CONTROL OF MATERIALS

There are no amendments to the General Conditions.

SECTION 5. LEGAL RELATIONS AND RESPONSIBILITY

5-1.14 **AIR POLLUTION CONTROL AND ASBESTOS.** Section 5-1.14 of the General Conditions is amended to include the following:

To the best of the City's knowledge, asbestos is__ present in the vicinity of the Project. Additional information shall be made available to Contractor upon request.

SECTION 6. PROSECUTION AND PROGRESS

6-1.04 **PROGRESS SCHEDULE.** Section 6-1.04F of the General Conditions is amended to include the following:

Progress schedules showing project completion dates more than _30_ Days earlier than specified in Section 6-1.07 shall be rejected.

6-1.07 **TIME OF COMPLETION.** Section 6-1.07 of the General Conditions is amended to include the following:

The Contractor shall begin Work within _21_ business days after receiving a Notice to Proceed and shall diligently prosecute the Work to completion. The Work shall be completed within _260_ business days of the Notice to Proceed.

If landscaping plants require an establishment period, that period will be _60_ calendar days. Start of the establishment should be as outlined in the Specifications.

6-1.08 **LIQUIDATED DAMAGES.** Section 6-1.08 of the General Conditions is amended to include the following:

The amount of Liquidated Damages is the sum of $1,500.00___ per Day.

SECTION 7: ACCEPTANCE AND PAYMENT

Section 7-1.02 of the General Conditions is amended to include the following:

Unless special payment is specifically provided in the Measurement and Payment Section, all incidental work and expense in connection with the Completion of Work Under the Contract will be considered a subsidiary obligation of the Contractor and all such costs shall be included in the appropriate items in the Schedule of Bid Items in connection with which costs are incurred.

[END OF SUPPLEMENTAL CONDITIONS]

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SECTION 1. GOVERNOR NEWSOM EXECUTIVE ORDER N-6-22 (EO)

April, 2022

RE: Contractor and Grantee Compliance with Economic Sanctions Imposed in Response to Russia's Actions in Ukraine

Dear Vendor:

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (EO) regarding sanctions in response to Russian aggression in Ukraine. The EO is located at https://www.gov.ca.gov/wp-content/uploads/2022/03/3.4.22-Russia-Ukraine-Executive-Order.pdf.

The EO directs all agencies and departments that are subject to the Governor's authority to take certain immediate steps, including notifying all contractors and grantees of their obligations to comply with existing economic sanctions imposed by the U.S. government in response to Russia's actions in Ukraine, as well as any sanctions imposed under state law.

This correspondence serves as a notice under the EO that as a contractor or grantee, compliance with the economic sanctions imposed in response to Russia's actions in Ukraine is required, including with respect to, but not limited to, the federal executive orders identified in the EO and the sanctions identified on the U.S. Department of the Treasury website (https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-country-information/ukraine-russia-related-sanctions). Failure to comply may result in the termination of contracts or grants, as applicable.

Please note that for any agreements or grants valued at $5 million or more you must report to the City of Roseville your compliance with economic sanctions including steps you have taken in response to Russia's actions in Ukraine, including, but not limited to, desisting from making new investments in, or engaging in financial transactions with, Russian entities, not transferring technology to Russia or Russian entities, and directly providing support to the government and people of Ukraine.

Sincerely,

DocuSigned by:
Shannon Wiest 4/25/2022

Shannon Wiest
City of Roseville
Purchasing and Warehouse Manager

SPECIFICATIONS FOR CONSTRUCTION

Specifications for the Construction of the City of Roseville

Dry Creek Wastewater Treatment Plant Operations and Laboratory Building Project

Prepared for

By

19Six

February 2025

City of Roseville

Dry Creek Wastewater Treatment Plant Operations and Lab Building

1800 Booth Road, Roseville, CA 95747

Project Specifications

19six Project No. 210015.01
AHJ Project No. 000000-00

Draft March 21, 2025

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PART 1 – **GENERAL**

1.01 GEOTECHNICAL REPORT

A. The project Geotechnical Report document has been provided by the Owner's consultant and is attached herein for reference:
   1. Geotechnical Exploration for The Dry Creek Wastewater Treatment Plant Operations Building, prepared by ENGEO, Project No. 438.000.002, dated May 10, 2023.

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THE DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING

ROSEVILLE, CALIFORNIA

GEOTECHNICAL EXPLORATION

SUBMITTED TO
Mr. Blaine Weigel
City of Roseville
311 Vernon Street
Roseville, CA 95678

PREPARED BY
ENGEO Incorporated

May 10, 2023

PROJECT NO.
4438.000.002

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ENGEO
Expect Excellence

Project No.
4438.000.002

March 10, 2023

Mr. Blaine Weigel
City of Roseville
311 Vernon Street
Roseville, CA 95678

Subject: The Dry Creek Wastewater Treatment Plant Operations Building
1800 Booth Road
Roseville, California

GEOTECHNICAL EXPLORATION

Dear Mr. Weigel:

ENGEO prepared this geotechnical report for City of Roseville as outlined in our agreement dated March 29, 2023. We characterized the subsurface conditions at the site to provide the enclosed geotechnical recommendations for design.

From a geotechnical engineering viewpoint, the proposed project may be designed as planned, provided the geotechnical recommendations in this report are properly incorporated into the design plans and specifications. The primary geotechnical considerations for site development include the presence of undocumented fill. Please let us know when working drawings are nearing completion so that we can coordinate review of the plans and specifications.

If you have any questions or comments regarding this report, please call and we will be glad to discuss them with you.

Sincerely,

ENGEO Incorporated

Allison Hauger

Mark Gilbert, GE



ah/mmg/ca

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

ENGEO prepared this geotechnical report for design of The Dry Creek Wastewater Treatment Plant Operations Building in Roseville, California. As outlined in our agreement dated March 29, 2023, you authorized ENGEO to conduct the following scope of services.

- Service plan development
- Subsurface field exploration
- Soil laboratory testing
- Data analysis and conclusions
- Report preparation

For our use, we received the following.

1. Nineteen Six Architects. 2023. Plans for Dry Creek Wastewater Treatment Plant, City of Roseville, 1800 Booth Road, Roseville, California. March 15, 2023.

2. Warren Consulting Engineers, Inc. (WCE). 2022. Utility Survey for Dry Creek Wastewater Treatment Plant at 1800 Booth Road, City of Roseville, Placer County, California. November 5, 2023.

This report was prepared for the exclusive use of our client and their consultants for design of this project. If any changes are made in the character, design or layout of the development, we must be contacted to review the conclusions and recommendations contained in this report to evaluate whether modifications are recommended. This document may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without our express written consent.

1.2 PROJECT LOCATION

The proposed operations building will be constructed at the Dry Creek Wastewater Treatment Plant (WWTP), which is located at 1800 Booth Road in Roseville, California, as shown on the Vicinity Map, Figure 1. The Site Plan, Figure 2 shows site boundaries, proposed building and pavement areas, and our exploratory locations.

The proposed operations building will be located on the central-eastern side of the WWTP campus, west of Booth Road and north of an existing operations building within a landscaped area. The proposed operations building is bordered by Booth Road to the east and south, existing buildings to the south and west, and open space to the north.

1.3 PROJECT DESCRIPTION

Based on our discussion with you and review of the 2023 Nineteen Six Architects plans, we understand the project will include the construction of a roughly 12,000-square-foot single-story building supported on shallow foundations with a concrete slab-on-grade floor, parking stalls, sidewalks, picnic tables, shade structures, landscape areas, and demolition of the existing operations building, pavement, flatwork, water fountain, gazebo, and landscaping. No plans or

geotechnical information for the existing operations building to the south of the proposed building footprint were available for reference.

Structural loads and grading have yet to be determined; however, we assume that structural loads will be representative of this type of construction and that only minor grading will be required.

2.0 FINDINGS

2.1 SITE BACKGROUND

We reviewed historical topographic aerial photographs available at www.historicaerials.com and Google Earth Imagery. The Dry Creek WWTP appeared to be under cultivation for orchard trees from 1947 until 1984, when the original operations building and tanks associated with WWTP are visible at the project site. A few remaining orchard trees are shown occupying the majority of the proposed building footprint in 1998.

In 2002, the existing landscaping area and remaining orchard trees are visible in the north of the project site. In 2007, manholes are visible to the west of the existing orchard area and east of the existing operations building. Based on our conversations with you, we understand the manholes are associated with an existing underground duct bank and abandoned sludge line. We approximate the location of the existing underground duct bank and abandoned sludge line on the Site Plan. In 2009, the maintenance building to the west of the project site is visible. No other significant changes are visible from 2010 to 2020.

2.2 PREVIOUS EXPLORATIONS

Anderson Geotechnical Consultants (AGC) prepared the geotechnical report for the City of Roseville Wastewater Treatment Plant Expansion in February 1990, and performed geotechnical testing and observation services during construction of the plant expansion. ENGEO acquired the assets of AGC in 2002. Additionally, ENGEO prepared the following reports at the Dry Creek WWTP site.

- Dry Creek WWTP Cooling Towers, located approximately 1,000 feet to the west of the proposed operations building site, included drilling of six borings to depths of approximately 21½ to 26½ feet (ENGEO, 2003).
- Dry Creek WWTP Maintenance Facility Building, located just northwest of the project site, included the drilling of three borings to depths of approximately 15 to 20 feet (ENGEO, 2006).
- Dry Creek Shop Building Expansion, located approximately 250 feet northeast of the site (ENGEO, 2008), included drilling of two borings to depths of approximately 16½ feet.
- Dry Creek Wastewater Treatment Facility Warehouse, located approximately 500 feet to the north of the project site, included the excavation of two test pits to depths of 6 to 10 feet (ENGEO, 2022).

2.3 FIELD EXPLORATION

Our field exploration included drilling three borings at the locations shown on the Site Plan, Figure 2. We performed our field exploration on April 14, 2023. The location and elevations of our explorations are approximate and were estimated using the 2022 topographic map (WCE, 2022)

and Google Earth Pro; they should be considered accurate only to the degree implied by the method used.

An ENGEO representative observed the drilling and logged the subsurface conditions at each location. We retained a truck-mounted Diedrich D-70 Turbo drill rig and crew to advance the borings using 4 inch-diameter solid-flight auger methods. The borings were advanced to depths ranging from 16½ to 26½ feet below existing grade. We permitted and backfilled the borings in accordance with the requirements of City of Roseville.

We retrieved soil samples at various intervals in the boring using standard penetration tests. The standard penetration resistance blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The 2-inch-O.D. split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration. In addition, the 3-inch-O.D. split-spoon Modified California Sampler was also driven into the soil with the 140-pound hammer previously described. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows to drive the last 1 foot of penetration; the blow counts have not been converted using any correction factors.

The logs depict subsurface conditions at the exploration locations during the exploration; however, subsurface conditions may vary with time. The exploration logs are included in Appendix A.

2.4 GEOLOGY

The site is located in the Great Valley Geomorphic Province. The Great Valley is an elongate, northwest-trending structural trough bound by the Coast Ranges on the west and the Sierra Nevada on the east. The Great Valley has been and is presently being filled with sediments primarily derived from the Sierra Nevada.

As shown on Figure 3, the site is mapped as Pleistocene Turlock Lake Formation (Gutierrez, 2011). The Turlock Lake Formation, estimated to be over 700,000 years old, represents eroded alluvial fans derived primarily from the plutonic rocks of the Sierra Nevada to the east and consists of deeply weathered gravel, sand, silt, and clay. This is consistent with the sand, silt, and clay encountered in our borings. California Geological Survey Map 48 indicates the approximate average shear-wave velocity on the site in the upper 100 feet, Vs30, is 387 meters per second (1,270 feet per second) (Wills, 2015).

2.5 SEISMICITY

As shown on Figure 4, Regional Faulting and Seismicity, the site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone and no known surface expression of active faults is believed to exist within the site. Fault rupture through the site; therefore, is not anticipated. An active fault is defined by the California Geologic Survey as one that has had surface displacement within Holocene time (the last 11,700 years) (CGS, 2018).

Although fault rupture is not anticipated, an earthquake in the region could generate strong ground shaking at the site. Numerous small earthquakes occur every year in the Northern California region, and larger earthquakes have been recorded and can be expected to occur in the future. The Uniform California Earthquake Rupture Forecast (UCERF3) estimates the 30-year probability for a magnitude 6.7 or greater earthquake in Northern California Region at approximately 95 percent (Field et al., 2015).

To determine nearby active faults that are capable of generating strong seismic ground shaking at the site, we utilized the USGS Unified Hazard Tool* and deaggregated the hazard at the peak ground acceleration (PGA) for 2,475-year return period, and Site Class D. The resulting faults are listed in Table 2.5-1, below.

TABLE 2.5-1: Active Faults Capable of Producing Significant Ground Shaking at the Site (Latitude: 38.7374 Longitude: -121.3173)

SOURCE	R_{RUP}		MOMENT MAGNITUDE M_W
	(KM)	(MILES)	
Swain Ravine - Spenceville [3]	25.6	15.9	6.9
Great Valley 04a Trout Creek [2]	65.6	40.8	7.3
Hunting Creek - Berryessa [3]	82.8	51.4	7.5

*USGS Unified Hazard Tool - Edition: Dynamic Conterminous U.S. 2014 (update) (v4.2.0)

2.6 SURFACE CONDITIONS

According to the topographic data provided by WCE (2022), site grades within the proposed operations building footprint range from approximately Elevation 135 feet in the southeast to Elevation 136½ feet in the west (Datum: City of Roseville). At the time of our field exploration, the area for the proposed building was situated adjacent to existing buildings, sidewalks, and paved parking areas within the Dry Creek Wastewater Treatment Plant. The proposed building footprint site was a landscaped area with existing pavement, flatwork, water fountain, and gazebo.

We observed the following site features during our field exploration.

- Gazebo structure with concrete entry pad in the center of the proposed building area.
- Paved walking path with wooden pergola structure in the center of the proposed building area.
- The northern half of the site consisted of mulch-covered landscaping area with mature orchard trees and citrus trees, and water fountain feature.
- The southern half of the site consisted of the existing operations building and associated parking areas, walking paths, and landscaping.
- Irrigation equipment.
- Manholes in the southeast and west.
- Lighting features on the eastern, southern, and western sides of the site.

Please refer to the Site Plan, Figure 2, for more information on site features.

PHOTO 2.6-1: Landscaping and Water Fountain in the North



PHOTO 2.6-2: View from Southeast Looking at the Existing Operations Building, Gazebo Structure, Pergola, and Landscaping



2.7 SUBSURFACE CONDITIONS

We observed fill in Borings 2-B2 and 2-B3 to depths of approximately 2 feet and 3 feet, respectively. The fill consisted of loose silty sand and clayey sand. Laboratory testing of the clayey sand fill resulted in an expansion index of 13. Borings 2-B2 and 2-B3 were performed in an area that was historically used for orchard tree cultivation, identified in the 1947 to 1984 aerial photographs.

No fill was encountered in Boring 2-B1. Laboratory testing of the near-surface native silty sand in Boring B-2 resulted in an expansion index of 0. Below the silty and clayey sand, the borings generally encountered native clayey sand, silty sand, sandy lean clay, and silt with varying sand content to depths of approximately 9 to 13½ feet. Laboratory testing of the silt resulted with a plasticity index of 16. Below the clay, silt, and sand, the borings encountered medium dense poorly graded sand to the terminal depth explored of 26½ feet.

The previous nearby ENGEO borings and test pits generally encountered similar subsurface conditions. We did not encounter any noticeably weak or compressible soil in our exploratory borings.

Consult the Site Plan and boring logs for specific subsurface conditions at each location. We include our exploration logs in Appendix A. The logs contain the soil type, color, consistency, and visual classification in general accordance with the Unified Soil Classification System. The logs graphically depict the subsurface conditions encountered at the time of the exploration.

2.8 GROUNDWATER CONDITIONS

We did not observe static or perched groundwater in our explorations. Additionally, we did not encounter groundwater in our previous nearby borings (ENGEO, 2003-2022).

We reviewed the Department of Water Resources Online Water Data Library for depth to water in the vicinity of the site. The website identified three wells within 1 mile of the site. Well Number 387430N1213121W001 is mapped approximately 1/3 mile northwest of the site and has recorded groundwater measurements since 1948. The most recent measurement recorded was 143.2 feet below ground surface or approximately Elevation 5.64 feet in March 2012 (Datum: NAVG 88).

We also reviewed the Sustainable Groundwater Management Act (SGMA) Data Viewer (https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#gwlevels), a website maintained by the State of California Department of Water Resources, for local groundwater data. The data viewer plotted groundwater contours that indicated groundwater depths in the vicinity generally between depths of 100 to 130 feet from 2017 to 2022, with groundwater flow generally to the northwest.

Fluctuations in the level of groundwater may occur due to variations in rainfall, irrigation practice, and other factors not evident at the time measurements were made.

2.9 LABORATORY TESTING

We performed laboratory tests on selected soil samples to evaluate their engineering properties. For this project, we performed moisture content, dry density, unconfined compression, plasticity index, expansion index, sieve analysis, resistance value, and soil corrosion potential testing. Moisture contents and dry densities are recorded on the boring logs in Appendix A; other laboratory data is included in Appendix B.

3.0 CONCLUSIONS

From a geotechnical engineering viewpoint, in our opinion, the site is suitable for the proposed development, provided the geotechnical recommendations in this report are properly incorporated into the design plans and specifications.

The primary geotechnical concerns that could affect design of the proposed operations building is existing fill. We summarize our conclusions below.

3.1 EXISTING FILL

We encountered existing fill in Borings 2-B1 and 2-B3 to depths of up to 3 feet. We anticipate there may be undocumented fill associated with the existing operations building, gazebo, and pergola structures, flatwork, landscaping, and buried irrigation system. We consider this undocumented fill to be non-engineered. We recommend that the non-engineered fill be removed completely, as described in Section 5.1.2. Excavated material may be used as engineered fill provided it meets the requirements of Section 5.4.

3.2 SEISMIC HAZARDS

Potential seismic hazards resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. Common secondary seismic hazards include ground shaking, liquefaction, and ground lurching. The following sections present a discussion of these hazards as they apply to the site. Based on topographic and lithologic data, the risk of regional subsidence or uplift, soil liquefaction,

lateral spreading, landslides, tsunamis, flooding or seiches is considered low to negligible at the site.

3.2.1 Ground Rupture

Since there are no known active faults crossing the property and the site is not located within an Earthquake Fault Special Study Zone, it is our opinion that ground rupture is unlikely at the subject property.

3.2.2 Ground Shaking

An earthquake of moderate to high magnitude generated within Northern California region could cause considerable ground shaking at the site, similar to that which has occurred in the past. To mitigate the shaking effects, structures should be designed using sound engineering judgment and the latest California Building Code (CBC) requirements, as a minimum. Seismic design provisions of current building codes generally prescribe minimum lateral forces, applied statically to the structure, combined with the gravity forces of dead and live loads. The code-prescribed lateral forces are generally considered to be substantially smaller than the comparable forces that would be associated with a major earthquake. Therefore, structures should be able to: (1) resist minor earthquakes without damage, (2) resist moderate earthquakes without structural damage but with some nonstructural damage, and (3) resist major earthquakes without collapse but with some structural as well as nonstructural damage. Conformance to the current building code recommendations does not constitute any kind of guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake; however, it is reasonable to expect that a well-designed and well-constructed structure will not collapse or cause loss of life in a major earthquake (SEAOC, 1996).

3.2.3 Liquefaction

Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. Soil most susceptible to liquefaction is clean, loose, saturated, uniformly graded, fine-grained sand of Holocene age. The Pleistocene aged sand encountered in our borings was generally medium dense. In addition, groundwater was not encountered to the terminal depth of our borings and is likely over 100 feet below the ground surface, as described in Section 2.8. For these reasons and based upon engineering judgment, it is our opinion that the potential for liquefaction at the site is low during seismic shaking.

3.2.4 Ground Lurching

Ground lurching is a result of the rolling motion imparted to the ground surface during energy released by an earthquake. Such rolling motion can cause ground cracks to form in weaker soil. The potential for the formation of these cracks is considered greater at contacts between deep alluvium and bedrock. Such an occurrence is possible at the site as in other locations in the Northern California region, but based on the site location, it is our opinion that the offset is expected to be minor. We provide recommendations for foundation and pavement design in this report that are intended to reduce the potential for adverse impacts from lurch cracking.

3.2.5 Flooding

Based on site grades and distance from water sources, flooding is not expected at the subject site; however, the civil engineer should review pertinent information relating to possible flood levels for the subject site based on final pad elevations and provide appropriate design measures for development of the project, if recommended.

3.3 SOIL CORROSION POTENTIAL

As part of this study, we obtained a representative soil sample and submitted to a qualified analytical lab for determination of pH, resistivity, sulfate, and chloride. The results are included in Appendix B and summarized in the table below.

TABLE 3.3-1: Corrosivity Test Results

SAMPLE LOCATION	DEPTH	PH	RESISTIVITY (OHMS-CM)	CHLORIDE (MG/KG)	SULFATE (MG/KG)
2-B1	3½	6.9	2,400	22.4	27.8

The 2022 CBC references the 2019 American Concrete Institute Manual, ACI 318-19, Section 19.3.1 for concrete durability requirements. ACI Table 19.3.1.1 provides the following exposure categories and classes, and Table 19.3.2.1 provides requirements for concrete in contact with soil based upon the exposure class.

TABLE 3.3-2: ACI Table 19.3.1.1: Exposure Categories and Classes

CATEGORY	CLASS	CONDITION	
Freezing and thawing (F)	F0	Concrete not exposed to freezing-and-thawing cycles	
	F1	Concrete exposed to freezing-and-thawing cycles with limited exposure to water	
	F2	Concrete exposed to freezing-and-thawing cycles with frequent exposure to water	
	F3	Concrete exposed to freezing-and-thawing cycles with frequent exposure to water and exposure to deicing chemicals	
		WATER-SOLUBLE SULFATE (SO_4^{2-}) IN SOIL, % BY MASS[1]	DISSOLVED SULFATE (SO_4^{2-}) IN WATER MG/KG (PPM)[2]
Sulfate (S)	S0	$SO_4^{2-} < 0.10$	$SO_4^{2-} < 150$
	S1	$0.10 \leq SO_4^{2-} < 0.20$	$150 \leq SO_4^{2-} \leq 1{,}500$ or seawater
	S2	$0.20 \leq SO_4^{2-} \leq 2.00$	$1{,}500 \leq SO_4^{2-} \leq 10{,}000$
	S3	$SO_4^{2-} > 2.00$	$SO_4^{2-} > 10{,}000$
		CONDITION	
In contact with water (W)	W0	Concrete dry in service	
	W1	Concrete in contact with water where low permeability is not required	
	W2	Concrete in contact with water where low permeability is required	
Corrosion protection of reinforcement (C)	C0	Concrete dry or protected from moisture	
	C1	Concrete exposed to moisture but not to an external source of chlorides	
	C2	Concrete exposed to moisture and an external source of chlorides from deicing chemicals, salt, brackish water, seawater, or spray from these sources	

[1] Percent sulfate by mass in soil determined by ASTM C1580
[2] Concentration of dissolved sulfates in water in ppm determined by ASTM D516 or ASTM D4130

Considering a 'Not Applicable' sulfate exposure, there is no requirement for cement type or water-cement ratio; however, a minimum concrete compressive strength of 2,500 psi is specified by the building code. For this sulfate range, we recommend Type II cement and a concrete mix design for foundations and building slabs-on-grade that incorporates a maximum water-cement ratio of 0.50. It should be noted; however, that the structural engineering design requirements for concrete may result in more stringent concrete specifications.

Based on the resistivity measurements, the soil is considered highly corrosive to buried metal piping (Roberge, 2006). Values tested for chloride do not pose a significant impact to metals or concrete.

If desired to investigate this further, we recommend a corrosion consultant be retained to evaluate if specific corrosion recommendations are advised for the project.

3.4 2022 CBC SEISMIC DESIGN PARAMETERS

The 2022 CBC utilizes seismic design criteria established in the ASCE/SEI Standard "Minimum Design Loads and Associated Criteria for Buildings and Other Structures," (ASCE 7-16). Based on the subsurface conditions encountered, we characterized the site as Site Class D.

ASCE 7-16 requires a site-specific ground-motion hazard analysis for Site Class D sites with a mapped S_1 value greater than or equal to 0.2. However, Section 11.4.8 of ASCE 7-16 and Supplement No. 3 provide an exception to this requirement. A site-specific ground-motion hazard analysis is not required where the value of the parameter S_{M1} determined by Equation 11.4-2 and shown in Table 1 is increased by 50 percent for developing the mapped Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response, calculating S_{D1}, and evaluating C_s in accordance with Chapter 12 of ASCE 7-16.

In Table 3.4-1 below, we provide the CBC seismic parameters based on the United States Geological Survey's (USGS') Seismic Design Maps for your use. When using this table, considerations should be given to exceptions in Section 11.4.8 of ASCE 7-16, as described in this letter.

TABLE 3.4-1: 2022 CBC Seismic Design Parameters, Latitude: 38.7374 Longitude: -121.3173

PARAMETER	VALUE
Site Class	D
Mapped MCE_R Spectral Response Acceleration at Short Periods, S_S (g)	0.45
Mapped MCE_R Spectral Response Acceleration at 1-second Period, S_1 (g)	0.22
Site Coefficient, F_a	1.44
Site Coefficient, F_v	2.15
MCE_R Spectral Response Acceleration at Short Periods, S_{MS} (g)	0.65
MCE_R Spectral Response Acceleration at 1-second Period, S_{M1} (g)	0.48
Design Spectral Response Acceleration at Short Periods, S_{DS} (g)	0.43
Design Spectral Response Acceleration at 1-second Period, S_{D1} (g)	0.32
Mapped MCE Geometric Mean (MCE_G) Peak Ground Acceleration, PGA (g)	0.19

PARAMETER	VALUE
Site Coefficient, F_{PGA}	1.42
MCE_G Peak Ground Acceleration adjusted for Site Class effects, PGA_M (g)	0.27
Long period transition-period, T_L (sec)	12

*The parameters above should only be used for calculation of T_s, determination of Seismic Design Category, and, when taking the exceptions under Items 1 and 2 of ASCE 7-16 Section 11.4.8. (Supplement Number 3).

We recommend that we collaborate with the structural engineer of record to further evaluate the effects of taking the exception on the structural design and identify the need for performing a site-specific ground-motion hazard analysis. We can prepare a proposal for a site-specific ground-motion hazard analysis, if requested.

4.0 CONSTRUCTION MONITORING

Our experience and that of our profession clearly indicate that the risk of costly design, construction, and maintenance problems can be significantly lowered by retaining the design geotechnical engineering firm to:

1. Review the final grading and foundation plans and specifications prior to construction to evaluate whether our recommendations have been implemented, and to provide additional or modified recommendations, as needed. This also allows us to check if any changes have occurred in the nature, design or location of the proposed improvements and provides the opportunity to prepare a written response with updated recommendations.
2. Perform construction monitoring to check the validity of the assumptions we made to prepare this report. Earthwork operations should be performed under the observation of our representative to check that the site is properly prepared, the selected fill materials are satisfactory, and that placement and compaction of the fill has been performed in accordance with our recommendations and the project specifications. Sufficient notification to us prior to earthwork is important.

If we are not retained to perform the services described above, then we are not responsible for any party's interpretation of our report (and subsequent addenda, letters, and verbal discussions).

5.0 EARTHWORK RECOMMENDATIONS

As used in this report, relative compaction refers to the in-place dry unit weight of soil expressed as a percentage of the maximum dry unit weight of the same soil, as determined by the ASTM D1557 laboratory compaction test procedure, latest edition. Compacted soil is not acceptable if it is unstable; it should exhibit only minimal flexing or pumping, as observed by an ENGEO representative. The term "moisture condition" refers to adjusting the moisture content of the soil by either drying if too wet or adding water if too dry.

We define "structural areas" as any area sensitive to settlement of compacted soil. These areas include, but are not limited to building pads, sidewalks, pavement areas, and retaining walls.

5.1 EXISTING FILL REMOVAL

Remove existing fill to competent native soil, as evaluated by ENGEO. We assume the approximate lateral extent of existing fill is within the entire footprint of the proposed building within the landscaped and orchard area and recommend that the fill be removed to at least 5 feet laterally beyond the proposed building footprint. The lateral extent and depth of fill are expected to vary. Consult the exploration logs in Appendix A for fill depths at specific locations. Excavated material may be used as engineered fill provided it meets the requirements of Section 5.4.

5.2 GENERAL SITE CLEARING

The proposed building area and new pavement areas should be cleared of surface and subsurface deleterious materials, including existing slabs and footings, buried utility and irrigation lines, pavements, debris, and designated trees, shrubs, and associated roots. The actual depth of tree root removal should be determined by our representative in the field. Clean and backfill excavations extending below the planned finished site grades with suitable material compacted to the recommendations presented in Section 5.6. ENGEO should be retained to observe and test backfilling.

5.3 OVER-OPTIMUM SOIL MOISTURE CONDITIONS

The contractor should anticipate encountering excessively over-optimum (wet) soil moisture conditions during winter or spring grading, or during or following periods of rain. Wet soil can make proper compaction difficult or impossible. Wet soil conditions can be mitigated by:

1. Frequent spreading and mixing during warm dry weather,
2. Mixing with drier materials,
3. Mixing with a lime, lime-flyash, or cement product, or
4. Stabilizing with aggregate or geotextile stabilization fabric, or both.

Options 3 and 4 should be evaluated by ENGEO prior to implementation.

5.4 ACCEPTABLE FILL

On-site soil is suitable as fill material provided it is processed to remove concentrations of organic material, debris, and particles greater than 8 inches in maximum dimension. Imported fill materials should meet the above requirements and have a plasticity index less than 12. Allow ENGEO to sample and test proposed imported fill materials at least 5 days prior to delivery to the site.

5.5 REUSE OF ON-SITE RECYCLED MATERIALS

If desired to reuse asphaltic or Portland Cement concrete as engineered fill, we recommend that it be ground up and thoroughly mixed with on-site or import soil. In general, recycled asphalt or concrete should be ground down to less than 4 inches in greatest dimension, with no more than 25 percent larger than 2½ inches. Recycled material should be thoroughly mixed with a sufficient amount of soil, such that there is no more than 40 percent by weight of recycled material in the final mix.

We recommend that fill containing recycled asphalt and concrete be placed near the bottom of the proposed basement fill and/or spread out evenly across the site. Recycled fill should not be used within 2 feet of finished grade in building or roadway areas.

5.6 FILL COMPACTION

5.6.1 Grading in Structural Areas

Perform subgrade compaction prior to fill placement, following cutting operations, and in areas left at grade as follows.

1. Scarify to a depth of at least 8 inches.
2. Moisture condition soil to at least 1 percentage point above the optimum moisture content.
3. Compact the subgrade to at least 90 percent relative compaction. Compact the upper 6 inches of finish pavement subgrade to at least 95 percent relative compaction prior to aggregate base placement.

After the subgrade soil has been compacted, place and compact acceptable fill as follows.

1. Spread fill in loose lifts that do not exceed 8 inches.
2. Moisture condition lifts to at least 1 percentage point above the optimum moisture content.
3. Compact fill to a minimum of 90 percent relative compaction; Compact the upper 6 inches of fill in pavement areas to 95 percent relative compaction prior to aggregate base placement.

Compact the pavement Caltrans Class 2 Aggregate Base section to at least 95 percent relative compaction (ASTM D1557). Moisture condition aggregate base to or slightly above the optimum moisture content prior to compaction.

5.6.2 Underground Utility Backfill

The contractor is responsible for conducting trenching and shoring in accordance with Cal/OSHA requirements. Project consultants involved in utility design should specify pipe bedding materials.

Place and compact trench backfill in structural areas as follows.

1. Trench backfill should have a maximum particle size of 6 inches.
2. Moisture condition trench backfill at least 1 percentage point above the optimum moisture content. Moisture condition backfill outside the trench.
3. Place fill in loose lifts not exceeding 12 inches.
4. Compact fill to a minimum of 90 percent relative compaction (ASTM D1557).

Where fill or subgrade materials contain more than 30 percent rock retained on a ¾-inch sieve, a performance specification should be used to evaluate compaction. For this condition, we recommend a maximum loose lift thickness of 12 inches. Moisture condition rocky fill such that the moisture content of the matrix soil (minus ¾-inch material) is at or slightly above the optimum moisture content evaluated by visual/manual methods. Compact each lift of rocky fill with at least six passes and eight passes of a Caterpillar 235 or larger excavator with a sheepsfoot wheel attachment for 90 percent and 95 percent relative compaction, respectively. We can develop other performance standards for different compaction equipment.

Where utility trenches cross perimeter building foundations, backfill with native clay soil for pipe bedding and backfill for a distance of 2 feet on each side of the foundation. This will help prevent the normally granular bedding materials from acting as a conduit for water to enter beneath the building. As an alternative, a sand cement slurry (minimum 28-day compressive strength of 500 psi) may be used in place of native clay soil.

Jetting of backfill is not an acceptable means of compaction. We may allow thicker loose lift thicknesses based on acceptable density test results, where increased effort is applied to rocky fill, or for the first lift of fill over pipe bedding.

5.6.3 Landscape Fill

Process, place and compact fill in accordance with Sections 5.6.1 and 5.6.2, except compact to at least 85 percent relative compaction (ASTM D1557).

5.7 SITE DRAINAGE

The project civil engineer is responsible for designing surface drainage improvements. With regard to geotechnical engineering issues, we recommend that finish grades be sloped away from buildings and pavements to the maximum extent practical. The latest California Building Code Section 1804.4 specifies minimum slopes of 5 percent away from foundations. We recommend the following.

1. Discharge roof downspouts into closed conduits and direct away from foundations to appropriate drainage devices.
2. Do not allow water to pond near foundations, pavements, or exterior flatwork.

6.0 FOUNDATION RECOMMENDATIONS

We developed structural improvement recommendations using data obtained from our field exploration, laboratory test results, and engineering analysis.

6.1 CONVENTIONAL FOOTINGS WITH SLAB-ON-GRADE

The proposed operations building can be supported on continuous or isolated spread footings bearing in competent native soil or compacted fill.

6.1.1 Footing Dimensions and Allowable Bearing Capacity

The proposed operations building and shade structures can be supported on continuous or isolated spread footings bearing in competent native soil or compacted fill. We recommend the following minimum footing dimensions in Table 6.1.1-1.

TABLE 6.1.1-1: Minimum Footing Dimensions

FOOTING TYPE	*MINIMUM DEPTH (inches)	MINIMUM WIDTH (inches)
Continuous	18	12
Isolated	18	18

* below lowest adjacent pad grade

Minimum footing depths shown above are taken from lowest adjacent pad grade. The cold joint between the exterior footing and slab-on-grade should be located at least 4 inches above adjacent exterior grade.

Footings recommended above may be designed for a maximum allowable bearing pressure of 3,000 pounds per square foot (psf) for dead-plus-live loads. This bearing capacity may be increased by one-third for the short-term effects of wind or seismic loading.

The maximum allowable bearing pressure is a net value; the weight of the footing may be neglected for design purposes. Footings located adjacent to utility trenches should have their bearing surfaces below an imaginary 1:1 (horizontal:vertical) plane projected upward from the bottom edge of the trench to the footing.

6.2 WATERSTOP

If a two-pour system is used for footings and slab, the cold joint between the exterior footing and slab-on-grade should be located at least 4 inches above adjacent finish exterior grade. If this is not done, then we recommend the addition of a waterstop between the two pours to reduce moisture penetration through the cold joint and migration under the slab. Use of a monolithic pour would eliminate the need for the waterstop.

6.3 REINFORCEMENT

The structural engineer should design footing reinforcement to support the intended structural loads without excessive settlement. Reinforce continuous footings with top and bottom steel to provide structural continuity and to permit spanning of local irregularities. At a minimum, design continuous footings to structurally span a clear distance of 5 feet.

6.4 FOUNDATION LATERAL RESISTANCE

Lateral loads may be resisted by friction along the base and by passive pressure along the sides of foundations. The passive pressure is based on an equivalent fluid pressure in pounds per cubic foot (pcf). We recommend the following allowable values for design.

- Passive Lateral Pressure: 300 pcf
- Coefficient of Friction: 0.35

The above allowable values include a factor of safety of 1.5. Increase the above values by one-third for the short-term effects of wind or seismic loading. Passive lateral pressure should not be used for footings on or above slopes.

6.5 SETTLEMENT

Provided our report recommendations are followed and given the proposed construction (Section 1.3), we estimate total and differential foundation settlements to be less than approximately 1 and ¾ inches, respectively.

7.0 SLABS-ON-GRADE

7.1 INTERIOR CONCRETE FLOOR SLABS

7.1.1 Minimum Design Section

We recommend the following minimum design.

1. Provide a minimum concrete thickness of 6 inches.
2. Place minimum steel reinforcing of No. 3 rebar on 18-inch centers each way within the middle third of the slab to help control the width of shrinkage cracking that inherently occurs as concrete cures.

The structural engineer should provide final design thickness and additional reinforcement for any structural loads, including traffic or rack loads.

7.1.2 Slab Moisture Vapor Reduction

When buildings are constructed with concrete slab-on-grade, water vapor from beneath the slab will migrate through the slab and into the building. This water vapor can be reduced but not stopped. Vapor transmission can negatively affect floor coverings and lead to increased moisture within a building. When water vapor migrating through the slab would be undesirable, we recommend the following to reduce, but not stop, water vapor transmission upward through the slab-on-grade.

1. Construct a moisture retarder system directly beneath the slab on-grade that consists of the following.
   a. Vapor retarder membrane sealed at all seams and pipe penetrations and connected to all footings. Vapor retarders shall conform to Class A vapor retarder in accordance with ASTM E 1745, latest edition, “Standard Specification for Plastic Water Vapor Retarders used in Contact with Soil or Granular Fill under Concrete Slabs.” The vapor retarder should be **underlain by:**
   b. 4 inches of clean crushed rock. Crushed rock should have 100 percent passing the ¾-inch sieve and less than 5 percent passing the No. 4 Sieve.
2. Use a concrete water-cement ratio for slabs-on-grade of no more than 0.50.
3. Provide inspection and testing during concrete placement to check that the proper concrete and water cement ratio are used.
4. Moist cure slabs for a minimum of 3 days or use other equivalent curing specified by the structural engineer.

The structural engineer should be consulted as to the use of a layer of clean sand or pea gravel (less than 5 percent passing the U.S. Standard No. 200 Sieve) placed on top of the vapor retarder membrane to assist in concrete curing.

7.2 EXTERIOR FLATWORK

Exterior flatwork includes items such as concrete sidewalks, steps, and outdoor courtyards exposed to foot traffic only. Provide a minimum concrete flatwork thickness of 4 inches. Construct control and construction joints in accordance with current Portland Cement Association Guidelines.

7.3 TRENCH BACKFILL

Backfill and compact all trenches below building slabs-on-grade and to 5 feet laterally beyond any edge in accordance with 5.7.2.

8.0 RETAINING WALLS

8.1 LATERAL SOIL PRESSURES

Design proposed retaining walls to resist lateral earth pressures from adjoining natural materials and/or backfill and from any surcharge loads. Provided that adequate drainage is included as recommended below, design walls restrained from movement at the top to resist an equivalent fluid pressure of 60 pounds per cubic foot (pcf). In addition, design restrained walls to resist an additional uniform pressure equivalent to one-half of any surcharge loads applied at the surface.

Design unrestrained retaining walls with adequate drainage to resist an equivalent fluid pressure of 40 pcf plus one-third of any surcharge loads.

The above lateral earth pressures assume level backfill conditions and sufficient drainage behind the walls to prevent any build-up of hydrostatic pressures from surface water infiltration and/or a rise in the groundwater level. If adequate drainage is not provided, we recommend that an additional equivalent fluid pressure of 40 pcf be added to the values recommended above for both restrained and unrestrained walls. Damp-proofing of the walls should be included in areas where wall moisture would be problematic.

Construct a drainage system, as recommended below, to reduce hydrostatic forces behind the retaining wall.

8.2 RETAINING WALL DRAINAGE

Construct either graded rock drains or geosynthetic drainage composites behind the retaining walls to reduce hydrostatic lateral forces. For rock drain construction, we recommend two types of rock drain alternatives.

1. A minimum 12-inch-thick layer of Class 2 Permeable Filter Material (Caltrans Specification 68-2.02F) placed directly behind the wall, or
2. A minimum 12-inch-thick layer of washed, crushed rock with 100 percent passing the ¾-inch sieve and less than 5 percent passing the No. 4 sieve. Envelop rock in a minimum 6-ounce, nonwoven geotextile filter fabric.

For both types of rock drains:

1. Place the rock drain directly behind the walls of the structure.
2. Extend rock drains from the wall base to within 12 inches of the top of the wall.
3. Place a minimum of 4-inch-diameter perforated pipe (glued joints and end caps) at the base of the wall, inside the rock drain and fabric, with perforations placed down.
4. Place pipe at a gradient at least 1 percent to direct water away from the wall by gravity to a drainage facility.

ENGEO should review and approve geosynthetic composite drainage systems prior to use.

8.3 BACKFILL

Backfill behind retaining walls should be placed and compacted in accordance with Section 5.6. Use light compaction equipment within 5 feet of the wall face. If heavy compaction equipment is used, the walls should be temporarily braced to avoid excessive wall movement.

8.4 FOUNDATIONS

Retaining walls may be supported on continuous footings designed in accordance with recommendations presented in Section 6.1.

9.0 PAVEMENT DESIGN

9.1 FLEXIBLE PAVEMENTS

We obtained a representative bulk sample of the surface soil from the site and performed an R-value test to provide data for pavement design. The results of the test are included in Appendix B and indicate an R-value of 20, which we judged to be appropriate for design. Using estimated traffic indexes for various pavement loading requirements, we developed the following recommended pavement sections using Chapter 633 of the 2020 Caltrans Highway Design Manual (including the asphalt factor of safety), presented in the table below.

TABLE 9.1-1: Recommended Asphalt Concrete Pavement Sections

TRAFFIC INDEX	SECTION	
	ASPHALT CONCRETE (inches)	CLASS 2 AGGREGATE BASE (inches)
5	3	8
6	3½	10
7	4	12

The civil engineer should determine the appropriate traffic indexes based on the estimated traffic loads and frequencies.

9.2 RIGID PAVEMENTS

Use concrete pavement sections to resist heavy loads and turning forces in areas such as fire lanes or trash enclosures. Final design of rigid pavement sections and accompanying reinforcement should be performed based on estimated traffic loads and frequencies. We recommend the following minimum design sections for rigid pavements.

- Use a minimum section of 6 inches of Portland Cement concrete over 6 inches of Caltrans Class 2 Aggregate Base.
- Concrete pavement should have a minimum 28-day compressive strength of 3,500 psi.
- Provide minimum control joint spacing in accordance with Portland Cement Association guidelines.

9.3 SUBGRADE AND AGGREGATE BASE COMPACTION

Compact finish subgrade and aggregate base in accordance with Section 5.6. Aggregate Base should meet the requirements for ¾-inch maximum Class 2 AB in accordance with Section 26-1.02B of the latest Caltrans Standard Specifications.

10.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report presents geotechnical recommendations for design of the improvements discussed in Section 1.3 for the Dry Creek Wastewater Treatment Plan Operations Building project. If changes occur in the nature or design of the project, we should be allowed to review this report and provide additional recommendations, if any. It is the responsibility of the owner to transmit the information and recommendations of this report to the appropriate organizations or people involved in design of the project, including but not limited to developers, owners, buyers, architects, engineers, and designers. The conclusions and recommendations contained in this report are solely professional opinions and are valid for a period of no more than 2 years from the date of report issuance.

We strived to perform our professional services in accordance with generally accepted principles and practices currently employed in the area; there is no warranty, express or implied. There are risks of earth movement and property damages inherent in building on or with earth materials. We are unable to eliminate all risks; therefore, we are unable to guarantee or warrant the results of our services.

This report is based upon field and other conditions discovered at the time of report preparation. We developed this report with limited subsurface exploration data. We assumed that our subsurface exploration data are representative of the actual subsurface conditions across the site. Considering possible underground variability of soil and groundwater, additional costs may be required to complete the project. We recommend that the owner establish a contingency fund to cover such costs. If unexpected conditions are encountered, ENGEO must be notified immediately to review these conditions and provide additional and/or modified recommendations, as necessary.

Our services did not include excavation sloping or shoring, soil volume change factors, flood potential, or a geohazard exploration. In addition, our geotechnical exploration did not include work to determine the existence of possible hazardous materials. If any hazardous materials are encountered during construction, the proper regulatory officials must be notified immediately.

This document must not be subject to unauthorized reuse, that is, reusing without written authorization of ENGEO. Such authorization is essential because it requires ENGEO to evaluate the document's applicability given new circumstances, not the least of which is passage of time.

Actual field or other conditions will necessitate clarifications, adjustments, modifications or other changes to ENGEO's documents. Therefore, ENGEO must be engaged to prepare the necessary clarifications, adjustments, modifications or other changes before construction activities commence or further activity proceeds. If ENGEO's scope of services does not include on-site construction observation, or if other persons or entities are retained to provide such services, ENGEO cannot be held responsible for any or all claims arising from or resulting from the performance of such services by other persons or entities, and from any or all claims arising from or resulting from clarifications, adjustments, modifications, discrepancies or other changes necessary to reflect changed field or other conditions.

We determined the lines designating the interface between layers on the exploration logs using visual observations. The transition between the materials may be abrupt or gradual. The exploration logs contain information concerning samples recovered, indications of the presence of various materials such as clay, sand, silt, rock, existing fill, etc., and observations of groundwater encountered. The field logs also contain our interpretation of the subsurface conditions between sample locations. Therefore, the logs contain both factual and interpretative information. Our recommendations are based on the contents of the final logs, which represent our interpretation of the field logs.

SELECTED REFERENCES

California Building Code. 2022.

California Geologic Survey. 2008. Special Publication 117A, Guidelines for Evaluating and Mitigating Seismic Hazards in California.

California Geological Survey. 2018. Earthquake Fault Zones – A Guide for Government Agencies, Property Owners / Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California: Special Publication 42 (SP42), available at https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Publications/SP_042.pdf

California Department of Transportation (Caltrans). 2020. Highway Design Manual. Sacramento, California.

Division of Mines and Geology. 1997. Special Publication 117, Guidelines for Evaluation and Mitigating Seismic Hazards in California. Adopted March 13.

ENGEO. 2003. Geotechnical Report for Dry Creek Wastewater Treatment Plant, Cooling Towers, 1800 Booth Road, Roseville, California. February 5, 2003. Project No. 4438.5.051.01.

ENGEO. 2006. Geotechnical Report for Maintenance Facility Building, Dry Creek Wastewater Treatment Plant, 1800 Booth Road, Roseville, California. May 6, 2006. Project No. 4438.5.054.01.

ENGEO. 2008. Geotechnical Report for Wastewater Collection Division Shop, Building Expansion, Dry Creek Wastewater Treatment Plant, Roseville, California. October 24, 2008. Project No. 4438.505.402.

ENGEO. 2022. Foundation Exploration for Dry Creek Wastewater Treatment Facility, 1800 Booth Road, Roseville, California. August 11, 2022. Project No. 4438.000.001.

Field et al. 2015. Long-Term Time-Dependent Probabilities for the Third Uniform California Earthquake Rupture Forecast (UCERF3). Bulletin of the Seismological Society of America, Vol 105, No. 2A, pp. 511-543.

Gutierrez, C.I., California Geological Survey (CGS). 2011. Preliminary Geologic Map of the Sacramento 30’ x 60’ Quadrangle, California [map]. 1:100,000.

Nineteen Six Architects. 2023. Plans for Dry Creek Wastewater Treatment Plant, City of Roseville, 1800 Booth Road, Roseville, California. March 15, 2023.

Roberge, P. 2006. Corrosion Basics: An Introduction, 2nd Edition. National Association of Corrosion Engineers.

Structural Engineers Association of California (SEAOC). 1999. Recommended Lateral Force Requirements and Commentary (Blue Book).

SELECTED REFERENCES (Continued)

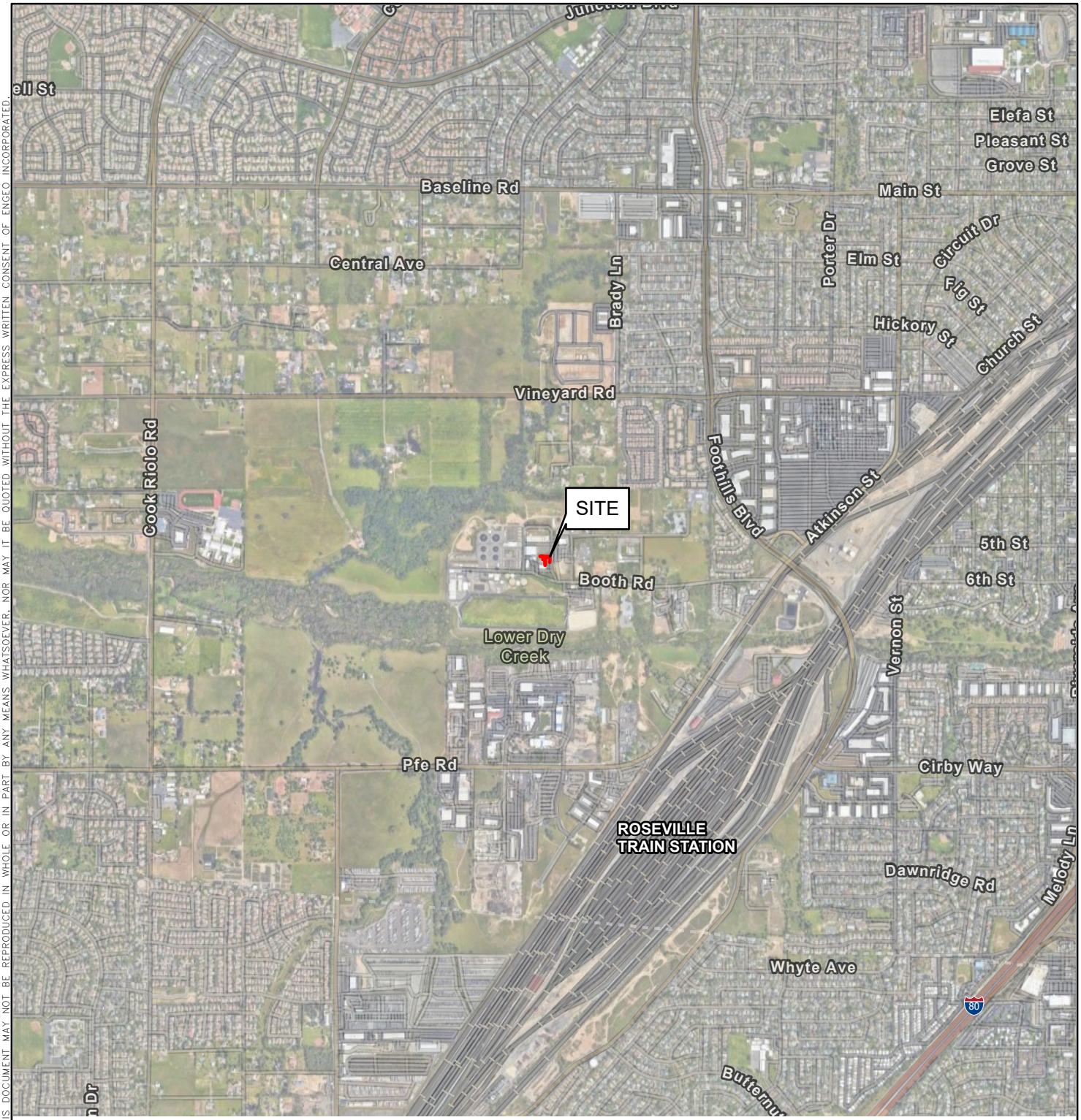
Warren Consulting Engineers, Inc. 2022. Utility Survey for Dry Creek Wastewater Treatment Plant at 1800 Booth Road, City Of Roseville, Placer County, California. November 5, 2023.

Wills. 2015. CGS Map Sheet 48: Shear-wave velocity in Upper 30m of Surficial Geology (Vs30), https://maps-cnra-cadoc.opendata.arcgis.com/datasets/cadoc::cgs-map-sheet-48-shear-wave-velocity-in-upper-30m-of-surficial-geology-vs30/about



FIGURES

FIGURE 1: Vicinity Map
FIGURE 2: Site Plan
FIGURE 3: Regional Geologic Map
FIGURE 4: Regional Faulting and Seismicity



BASEMAP SOURCE: GOOGLE EARTH MAPPING SERVICE 2022

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VICINITY MAP

DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING

ROSEVILLE, CALIFORNIA

PROJECT NO. :	4438.000.002
SCALE:	AS SHOWN
DRAWN BY: QRL	CHECKED BY: MGB

FIGURE NO. 1

PATH: G:\DRAFTING\PROJECTS\4438\4438000002\GEOTECH\GEX\DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING.APRX
LAYOUT: VICINITY USER: QLIANG

ORIGINAL FIGURE PRINTED IN COLOR

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EXISTING UNDERGROUND DUCT BANK

ABANDONED UNDERGROUND 6" SLUDGE LINE

2-B3
6½ ft

2-B2
2 ft

2-B1

EXISTING UNDERGROUND DUCT BANK

CIRCULATION TO S&R

S&R

(N) BLDG
(SEE SEPARATE BLDG PLAN FOR LAYOUT)

75 STALLS
(E)-32 STALLS

TURNOUT - ALT 1

TURNOUT - ALT 2

Booth Rd

MAIN ST.

Dankbar Ln

Bedell Ln

CIR.

PRIMARY

N

0 25 50
FEET

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

PROJECT SITE

BORING WITH FILL THICKNESS (ENGEO, 2023)

BASEMAP SOURCE: NINETEENSIX ARCHITECTS, 2023, GOOGLE EARTH MAPPING SERVICE 2022

ENGEO Expect Excellence

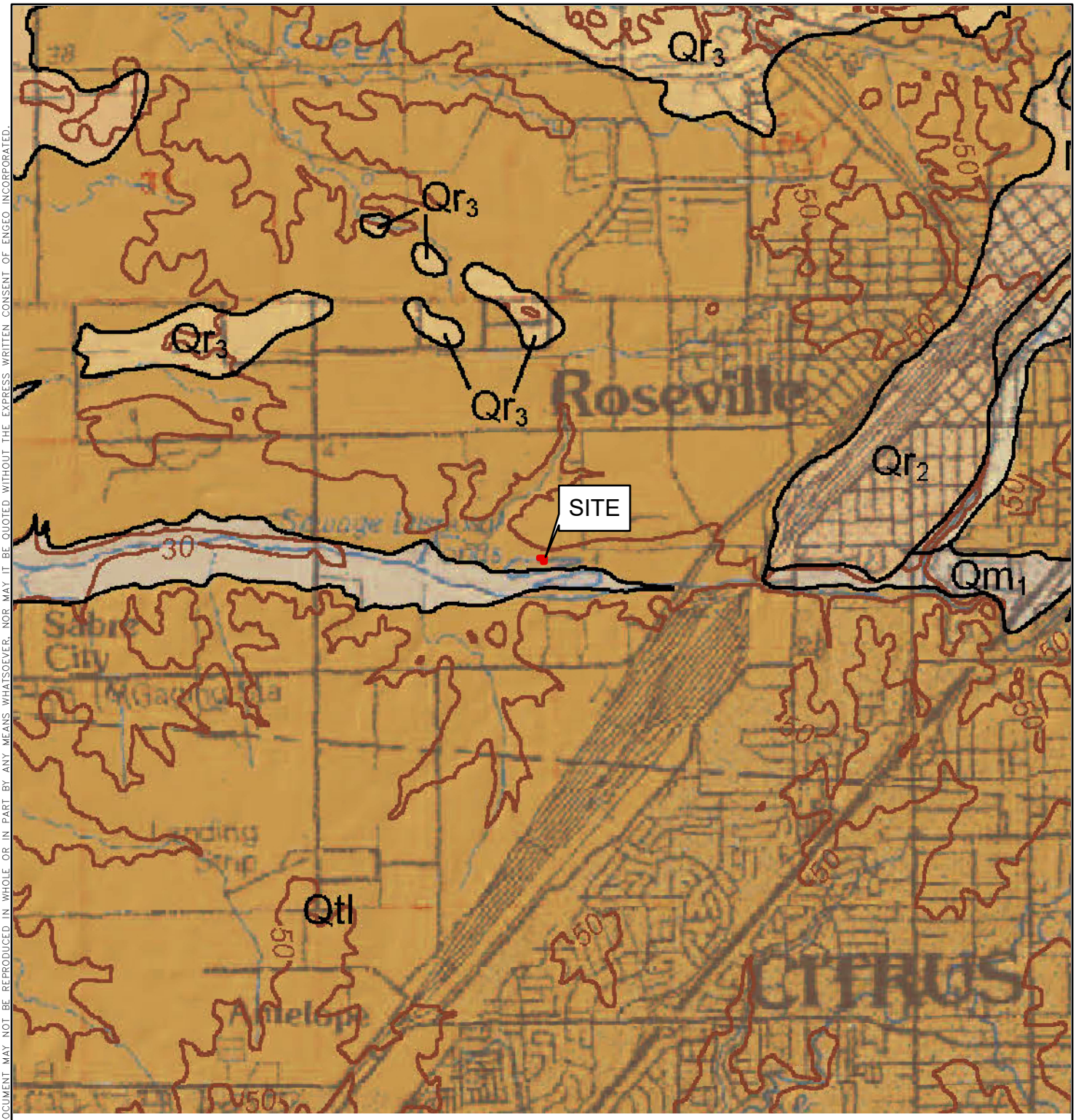
SITE PLAN
DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING
ROSEVILLE, CALIFORNIA

PROJECT NO. : 4438.000.002
SCALE: AS SHOWN
DRAWN BY: QRL CHECKED BY: MGB

FIGURE NO. 2

PATH: G:\DRAFTING\PROJECTS\4438\4438000002\GEOTECH\GEX\DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING.APRX
LAYOUT: SITE PLAN USER: QLIANG

ORIGINAL FIGURE PRINTED IN COLOR



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FEET

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

- Qm1 LOWER MEMBER MODESTO FORMATION
- Qr3 UPPER UNIT RIVERBANK FORMATION
- Qr2 MIDDLE UNIT RIVERBANK FORMATION
- Qtl TURLOCK LAKE FORMATION

BASEMAP SOURCE: GUTIERREZ 2011

ENGEO Expect Excellence

REGIONAL GEOLOGIC MAP

DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING

ROSEVILLE, CALIFORNIA

PROJECT NO. :	4438.000.002
SCALE:	AS SHOWN
DRAWN BY: XX	CHECKED BY: MGB

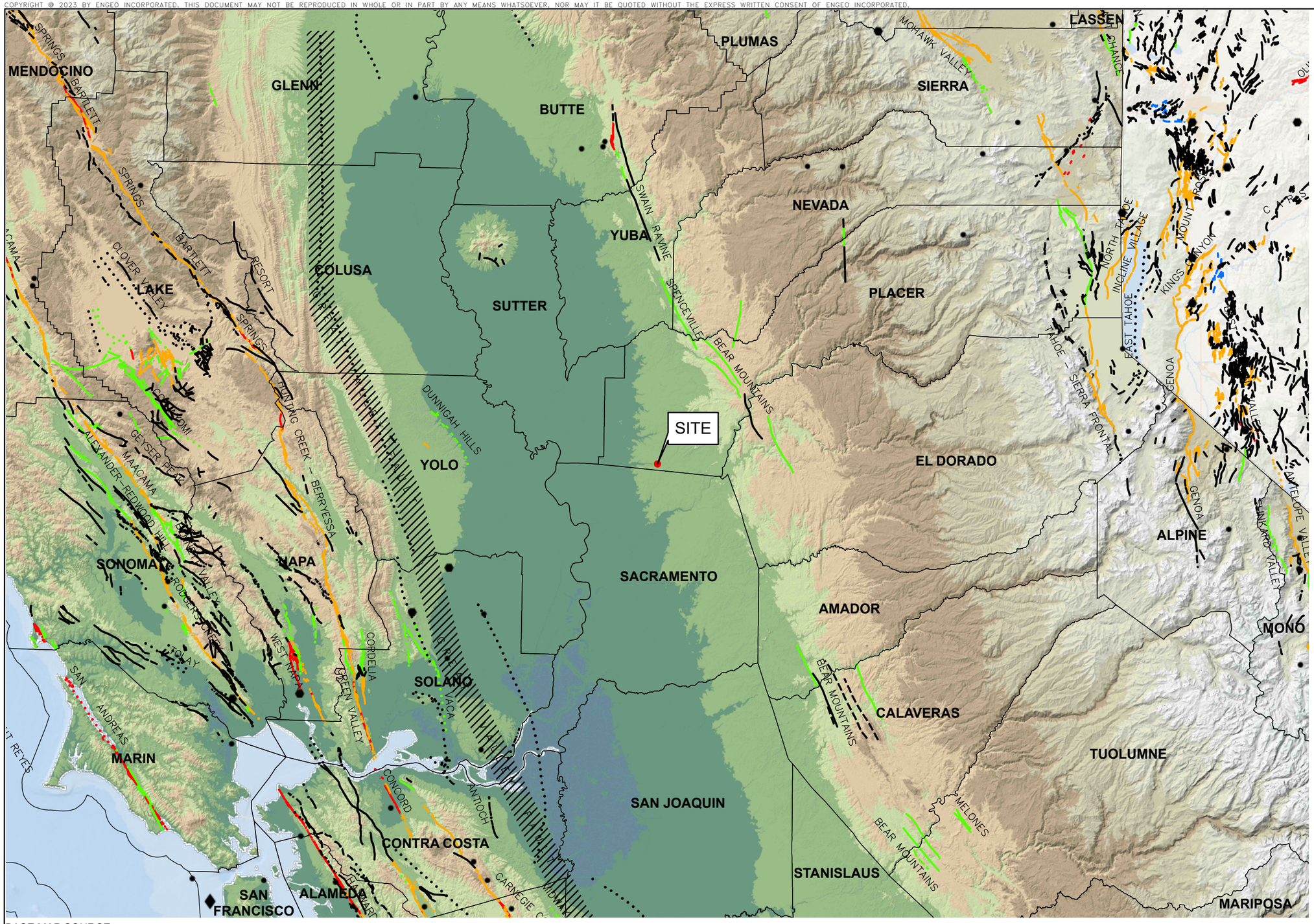
FIGURE NO. 3

PATH: G:\DRAFTING\PROJECTS\4438\4438000002\GEOTECH\GEX\DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING.APRX
LAYOUT: GEOLOGIC USER: QLIANG

ORIGINAL FIGURE PRINTED IN COLOR

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N

0 7.5 15

Miles

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

EARTHQUAKE

- MAGNITUDE 7+
- MAGNITUDE 6-7
- MAGNITUDE 5-6

QUATERNARY FAULTS 2020

BASED ON TIME OF MOST RECENT SURFACE DEFORMATION

- HISTORICAL (<150 YEARS), WELL CONSTRAINED LOCATION
- HISTORICAL (<150 YEARS), MODERATELY CONSTRAINED LOCATION
- HISTORICAL (<150 YEARS), INFERRED LOCATION
- LATEST QUATERNARY (<15,000 YEARS), WELL CONSTRAINED LOCATION
- LATEST QUATERNARY (<15,000 YEARS), MODERATELY CONSTRAINED LOCATION
- LATEST QUATERNARY (<15,000 YEARS), INFERRED LOCATION
- LATE QUATERNARY (<130,000 YEARS), WELL CONSTRAINED LOCATION
- LATE QUATERNARY (<130,000 YEARS), MODERATELY CONSTRAINED LOCATION
- LATE QUATERNARY (<130,000 YEARS), INFERRED LOCATION
- MIDDLE AND LATE QUATERNARY (<750,000 YEARS), WELL CONSTRAINED LOCATION
- MIDDLE AND LATE QUATERNARY (<750,000 YEARS), MODERATELY CONSTRAINED LOCATION
- UNDIFFERENTIATED QUATERNARY(<1.6 MILLION YEARS), WELL CONSTRAINED LOCATION
- UNDIFFERENTIATED QUATERNARY(<1.6 MILLION YEARS), MODERATELY CONSTRAINED LOCATION
- UNDIFFERENTIATED QUATERNARY(<1.6 MILLION YEARS), INFERRED LOCATION
- GREAT VALLEY FAULT ZONE

BASE MAP SOURCE

ESRI, GEBCO, DELORME, NATURALVUE
COLOR HILLSHADE IMAGE BASED ON THE NATIONAL ELEVATION DATA SET (NED) AT 30 METER RESOLUTION
U.S.G.S. QUATERNARY FAULT DATABASE, 2020
U.S.G.S. HISTORIC EARTHQUAKE DATABASE (1800-PRESENT)
U.S.G.S OPEN-FILE REPORT 96-705

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REGIONAL FAULTING AND SEISMICITY MAP

DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING
ROSEVILLE, CALIFORNIA

PROJECT NO. : 4438.000.002		FIGURE NO. 4
SCALE: AS SHOWN		
DRAWN BY: QRL	CHECKED BY: MGB	

PATH: G:\DRAFTING\PROJECTS\4438\4438000002\GEOTECH\GEX\DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING.APRX
LAYOUT: FAULT&SEISMICITY – 2020 USER: QLIANG

ORIGINAL FIGURE PRINTED IN COLOR



APPENDIX A

BORING LOG KEY
EXPLORATION LOGS

KEY TO BORING LOGS

MAJOR TYPES			DESCRIPTION
COARSE-GRAINED SOILS MORE THAN HALF OF MAT'L LARGER THAN #200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LESS THAN 5% FINES	GW - Well graded gravels or gravel-sand mixtures GP - Poorly graded gravels or gravel-sand mixtures
		GRAVELS WITH OVER 12 % FINES	GM - Silty gravels, gravel-sand and silt mixtures GC - Clayey gravels, gravel-sand and clay mixtures
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 5% FINES	SW - Well graded sands, or gravelly sand mixtures SP - Poorly graded sands or gravelly sand mixtures
		SANDS WITH OVER 12 % FINES	SM - Silty sand, sand-silt mixtures SC - Clayey sand, sand-clay mixtures
FINE-GRAINED SOILS MORE THAN HALF OF MAT'L SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50 % OR LESS		ML - Inorganic silt with low to medium plasticity CL - Inorganic clay with low to medium plasticity OL - Low plasticity organic silts and clays
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50 %		MH - Elastic silt with high plasticity CH - Fat clay with high plasticity OH - Highly plastic organic silts and clays
	HIGHLY ORGANIC SOILS		PT - Peat and other highly organic soils

For fine-grained soils with 15 to 29% retained on the #200 sieve, the words "with sand" or "with gravel" (whichever is predominant) are added to the group name.

For fine-grained soil with >30% retained on the #200 sieve, the words "sandy" or "gravelly" (whichever is predominant) are added to the group name.

GRAIN SIZES

U.S. STANDARD SERIES SIEVE SIZE					CLEAR SQUARE SIEVE OPENINGS			
200	40	10	4	3/4 "	3"	12"		
SILTS AND CLAYS	SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE			

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FOOT (S.P.T.)
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CONSISTENCY

SILTS AND CLAYS	STRENGTH*
VERY SOFT	0-1/4
SOFT	1/4-1/2
MEDIUM STIFF	1/2-1
STIFF	1-2
VERY STIFF	2-4
HARD	OVER 4

SAMPLER SYMBOLS

- Modified California (3" O.D.) sampler
- California (2.5" O.D.) sampler
- S.P.T. - Split spoon sampler
- Shelby Tube
- Dames and Moore Piston
- Continuous Core
- Bag Samples
- Grab Samples
- NR No Recovery

MOISTURE CONDITION

DRY	Dusty, dry to touch
MOIST	Damp but no visible water
WET	Visible freewater

LINE TYPES

- ———— Solid - Layer Break
- – – – – – Dashed - Gradational or approximate layer break

GROUNDWATER SYMBOLS

- Groundwater level during drilling
- Stabilized groundwater level

(S.P.T.) Number of blows of 140 lb. hammer falling 30" to drive a 2-inch O.D. (1-3/8 inch I.D.) sampler

* Unconfined compressive strength in tons/sq. ft., asterisk on log means determined by pocket penetrometer

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LOG OF BORING 2-B1

LATITUDE: 38.737178 LONGITUDE: -121.317072

Geotechnical Exploration
Operations Building
Dry Creek WWTP, Roseville, CA
4438.000.002

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 26½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (Roseville): Approx. 135 ft.

LOGGED / REVIEWED BY: A. Hauger / MMG
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Solid Flight Auger
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			SILTY SAND (SM), dark yellowish brown, medium dense, moist, fine- to coarse-grained sand, 34% non-plastic fines, trace fine rounded gravel [NATIVE]			28				34	7.5		
			[Expansion Index = 0]										
			Grades to approximately 25% fines, approximately 10% fine to coarse gravel, trace quartz fragments, contains mica			13							
5	130		Grades to moderately cemented			50							
			SANDY ELASTIC SILT (MH), olive brown, hard, moist, high plasticity, 38% fine-to coarse-grained sand, iron and manganese oxidation, cemented inclusions			46	52	36	16	62	34.1		4.5*
			POORLY GRADED SAND (SP), light brown, medium dense, slightly moist, fine- to medium-grained sand, approximately 5% fines, iron oxidation										
10	125					59					19.3		
15	120		Grades to dark yellowish brown, fine- to coarse-grained sand, contains mica			15					9.9		
20	115												

LOG - GEOTECHNICAL W/ELEV. 4438.000.002 OPERATIONS BUILDING WWTP BORING LOGS.GPJ ENGEO INC.GDT 5/2/23

LOG OF BORING 2-B1

Expect Excellence

LATITUDE: 38.737178 LONGITUDE: -121.317072

Geotechnical Exploration
Operations Building
Dry Creek WWTP, Roseville, CA
4438.000.002

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 26½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (Roseville): Approx. 135 ft.

LOGGED / REVIEWED BY: A. Hauger / MMG
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Solid Flight Auger
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			POORLY GRADED SAND (SP), light brown, medium dense, slightly moist, fine- to medium-grained sand, approximately 5% fines, iron oxidation			14					10.8		
25	110		Grades to very moist, approximately 5% fines			14							
			Boring terminated at depth of approximately 26½ feet. Groundwater not observed.										

LOG - GEOTECHNICAL W/ELEV. 4438.000.002 OPERATIONS BUILDING WWTP BORING LOGS.GPJ ENGEO INC.GDT 5/2/23

LOG OF BORING 2-B2

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LATITUDE: 38.737486 LONGITUDE: -121.317058

Geotechnical Exploration
Operations Building
Dry Creek WWTP, Roseville, CA
4438.000.002

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 16½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (Roseville): Approx. 136 ft.

LOGGED / REVIEWED BY: A. Hauger / MMG
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Solid Flight Auger
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
	135		SILTY SAND (SM), dark reddish brown, loose, very moist, fine- to coarse-grained sand, 40% low plasticity fines, trace fine subangular gravel [FILL]			11				40	16	116	
			SANDY SILT (ML), dark yellowish brown, stiff, moist, low plasticity, approximately 40% fine-grained sand, cemented inclusions, iron oxidation [NATIVE]										1.2
			SILTY SAND (SM), dark yellowish brown, loose, moist, fine- to coarse-grained sand, approximately 30% fines, trace fine rounded gravel			15					7.7		
5			CLAYEY SAND (SC), dark reddish brown, medium dense, moist, fine- to coarse-grained sand, approximately 40% low plasticity fines, trace fine rounded gravel			55							
	130		SILTY SAND (SM), dark yellowish brown, medium dense, moist to slightly moist, fine- to medium-grained sand, approximately 30% fines, contains mica										
			SILT WITH SAND (ML), yellowish brown, hard, moist, approximately 20% fine-grained sand, iron oxidation, weakly cemented			50/6					37.9		4.5+*
10	125												
			POORLY GRADED SAND (SP), light brown, medium dense, slightly moist, fine- to medium-grained sand, approximately 5% non-plastic fines, iron oxidation, cemented inclusions, contains mica			40							
15	120												
			Boring terminated at a depth of approximately 16½ feet. Groundwater not observed.										

LOG - GEOTECHNICAL W/ELEV. 4438.000.002 OPERATIONS BUILDING WWTP BORING LOGS.GPJ ENGEO INC.GDT 5/2/23

LOG OF BORING 2-B3

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LATITUDE: 38.737497 LONGITUDE: -121.317558

Geotechnical Exploration
Operations Building
Dry Creek WWTP, Roseville, CA
4438.000.002

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 26½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (Roseville): Approx. 136½ ft.

LOGGED / REVIEWED BY: A. Hauger / MMG
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Solid Flight Auger
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			SILTY SAND (SM), dark reddish brown, loose, very moist, fine- to coarse-grained sand, approximately 40% low plasticity fines, trace fine subangular to rounded gravel [FILL]										
	135		Grades to moist, contains trace quartz fragments			11					10.3		
			CLAYEY SAND (SC), dark reddish brown, loose, moist, fine- to coarse-grained sand, 35% low plasticity fines, trace fine to coarse rounded gravel, rootlets [NATIVE]			20				35	13.9		
5			[Expansion Index = 13]			16							
	130		SANDY LEAN CLAY (CL), olive brown, very stiff, moist, low plasticity, approximately 30% fine-grained sand, iron and manganese oxidation, contains mica								12.7	112	3.5*
			SANDY SILT (ML), dark yellowish brown, hard, moist, low plasticity, approximately 30% fine-grained sand, mica, weakly cemented			90					31.8		4.5+*
10	125												
			POORLY GRADED SAND (SP), light brown, medium dense, slightly moist, fine- to medium-grained sand, approximately 5% fines, contains mica										
15						18					11.8		
	120												
20													

LOG OF BORING 2-B3

LATITUDE: 38.737497 LONGITUDE: -121.317558

Geotechnical Exploration
Operations Building
Dry Creek WWTP, Roseville, CA
4438.000.002

DATE DRILLED: 4/14/2023
HOLE DEPTH: Approx. 26½ ft.
HOLE DIAMETER: 4.0 in.
SURF ELEV (Roseville): Approx. 136½ ft.

LOGGED / REVIEWED BY: A. Hauger / MMG
DRILLING CONTRACTOR: Geo-Ex Subsurface
DRILLING METHOD: Solid Flight Auger
HAMMER TYPE: 140 lb. Auto Trip

Depth in Feet	Elevation in Feet	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count/Foot	Atterberg Limits: Liquid Limit	Atterberg Limits: Plastic Limit	Atterberg Limits: Plasticity Index	Fines Content (% passing #200 sieve)	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
			POORLY GRADED SAND (SP), light brown, medium dense, slightly moist, fine- to medium-grained sand, approximately 5% fines, contains mica			19							
	115		Grades to dark yellowish brown										
25			Grades to dark brown, very moist			16					23.1		
	110		Boring terminated at a depth of approximately 26½ feet. Groundwater not observed.										

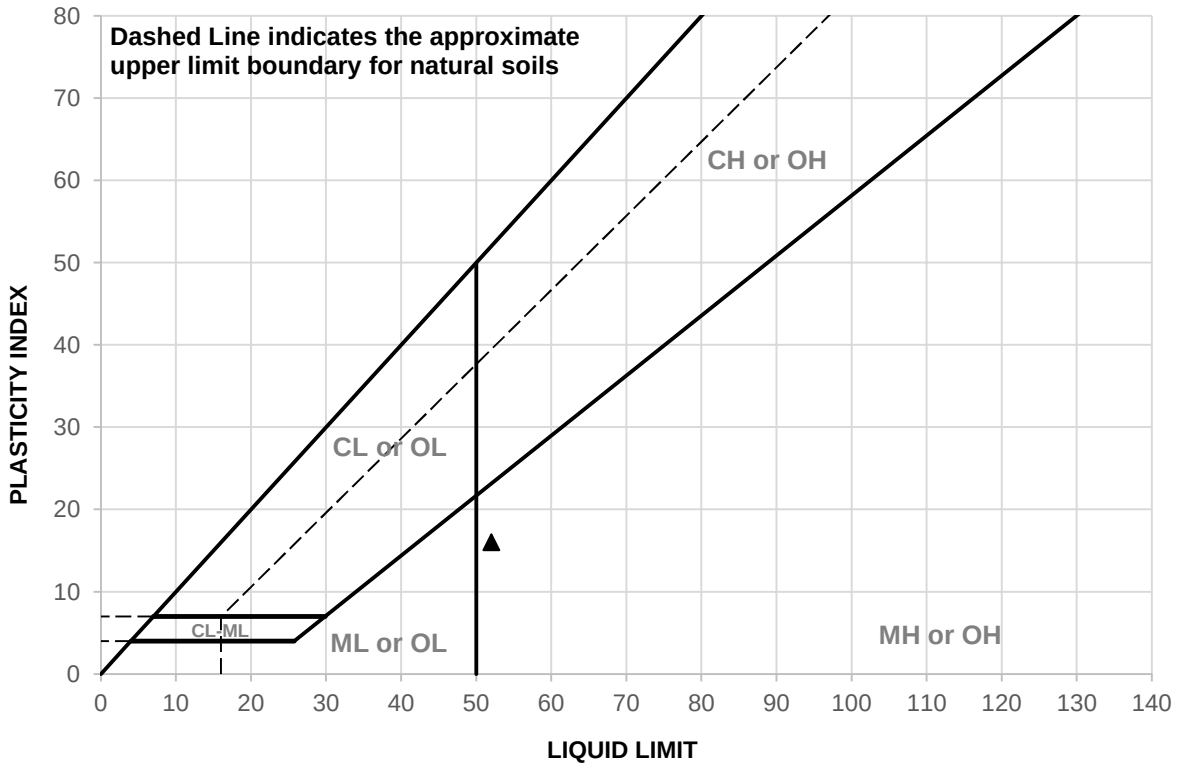


APPENDIX B

LABORATORY TEST DATA

Liquid and Plastic Limits Test Report
Expansion Index Test Report
Unconfined Compression Test
Particle Size Distribution Report
R-Value Test Report
Analytical Results of Soil Corrosion

LIQUID AND PLASTIC LIMITS TEST REPORT
ASTM D4318



	SAMPLE ID	DEPTH (ft)	MATERIAL DESCRIPTION	LL	PL	PI
▲	2-B1@6	6	See exploration logs	52	36	16

	SAMPLE ID	TEST METHOD	REMARKS
▲	2-B1@6	PI: ASTM D4318, Wet Method	

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CLIENT: City of Roseville
PROJECT NAME: Operations Building WWTP
PROJECT NO: 4438.000.002 PH001
PROJECT LOCATION: Roseville, CA
REPORT DATE: 4/27/2023
TESTED BY: L. Schmitz
REVIEWED BY: M. Gilbert

EXPANSION INDEX TEST REPORT
ASTM D4829

SAMPLE ID	SOIL DESCRIPTION	SAMPLE LOCATION	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE CONTENT (%)	FINAL MOISTURE CONTENT (%)	EXPANSION INDEX
2-B1@2	See exploration logs	2-B1 at 2 feet	120.1	7.7	12.5	0

TABLE 1: CLASSIFICATION OF EXPANSIVE SOIL

ASTM D4829

EXPANSION INDEX	POTENTIAL EXPANSION
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
Above 130	Very High

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CLIENT: City of Roseville
PROJECT NAME: Operations Building WWTP
PROJECT NO: 4438.000.002 PH001
PROJECT LOCATION: Roseville, CA
REPORT DATE: 4/26/2023
TESTED BY: M. Ryan
REVIEWED BY: M. Gilbert

EXPANSION INDEX TEST REPORT
ASTM D4829

SAMPLE ID	SOIL DESCRIPTION	SAMPLE LOCATION	INITIAL DRY DENSITY (pcf)	INITIAL MOISTURE CONTENT (%)	FINAL MOISTURE CONTENT (%)	EXPANSION INDEX
2-B3@4	See exploration logs	2-B3 at 4 feet	110.2	9.9	19.0	13

TABLE 1: CLASSIFICATION OF EXPANSIVE SOIL

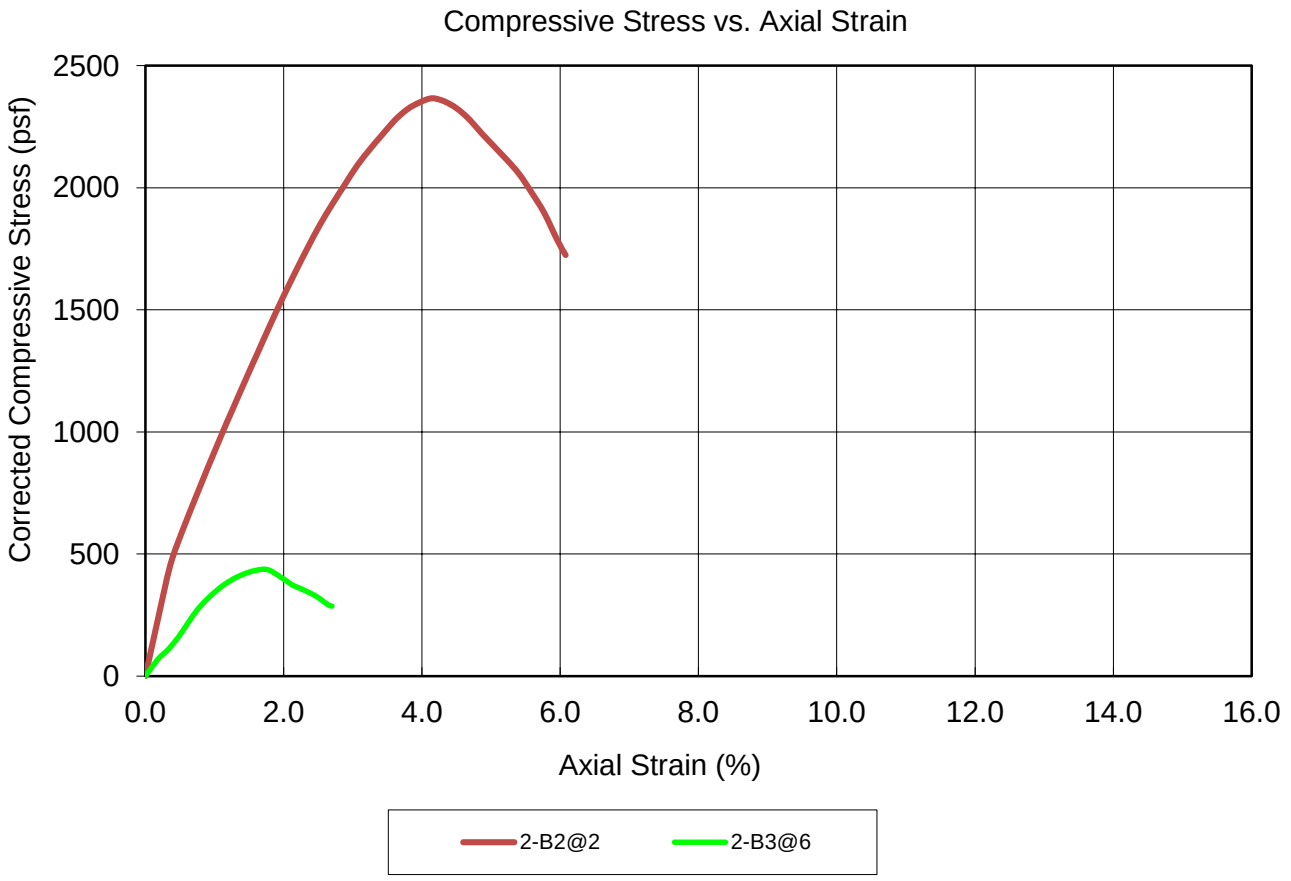
ASTM D4829

EXPANSION INDEX	POTENTIAL EXPANSION
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
Above 130	Very High

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CLIENT: City of Roseville
PROJECT NAME: Operations Building WWTP
PROJECT NO: 4438.000.002 PH001
PROJECT LOCATION: Roseville, CA
REPORT DATE: 4/26/2023
TESTED BY: M. Ryan
REVIEWED BY: M. Gilbert

UNCONFINED COMPRESSION TEST REPORT
(ASTM D2166)



BEFORE TEST	SPECIMEN 2-B2@2	SPECIMEN 2-B3@6
Test Moisture Content (%)	16.01	12.66
Dry Density (pcf)	115.9	111.5
Saturation (%)	93.6	65.8
Void Ratio	0.47	0.52
Diameter (in)	2.397	2.376
Height (in)	5.550	5.673
Height-To-Diameter Ratio	2.32	2.39
TEST DATA		
Unconfined Compressive Strength (psf)	2366	437
Undrained Shear Strength (psf)	1183.18	218.67
Strain Rate (in/min)	0.050	0.050
Specific Gravity (ASSUMED)	2.720	2.720
Strain at Failure(%)	4.14	1.76
Test Remarks	Low unconfined compressive strength caused by seams of sand in sample 2-B3@6	

SPECIMEN	DESCRIPTION
2-B2@2	See exploration logs
2-B3@6	See exploration logs

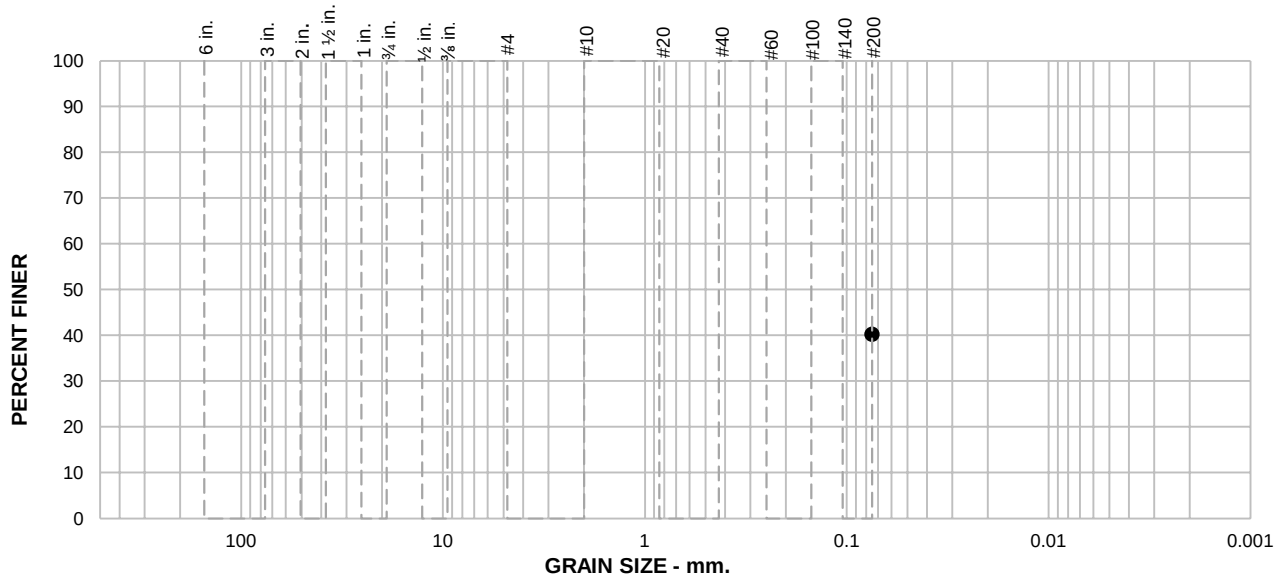
PROJECT NAME: Operations Building WWTP
PROJECT NO: 4438.000.002 PH001
CLIENT: City of Roseville
LOCATION: Roseville, CA

Test Date: 4/27/23
Tested By: L. Schmitz
Reviewed By: M. Gilbert

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PARTICLE SIZE DISTRIBUTION REPORT

ASTM D1140, Method B



SAMPLE ID: 2-B2@1.5

DEPTH (ft): 1.5

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
						40	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	40		

SOIL DESCRIPTION

See exploration logs

ATTERBERG LIMITS

PL = LL = PI =

COEFFICIENTS

D_{90} = D_{85} = D_{60} =
D_{50} = D_{30} = D_{15} =
D_{10} = C_u = C_c =

CLASSIFICATION

USCS =

REMARKS

Soak time = 180 min
Dry sample weight = 828.2 g
Largest particle size ≥ No. 4 Sieve

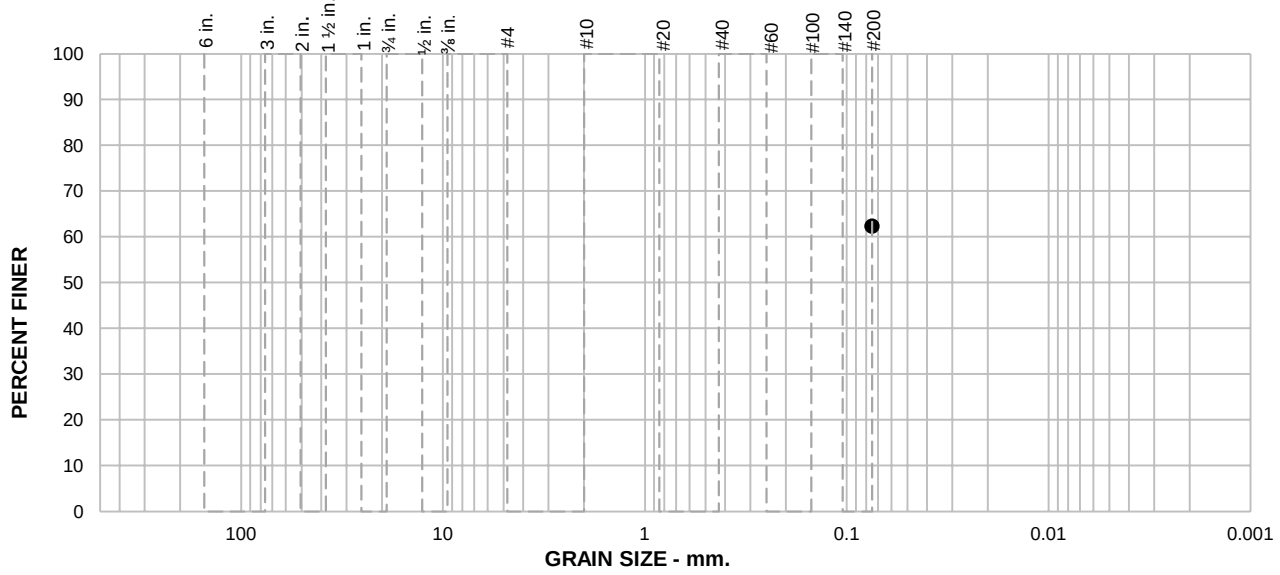
* (no specification provided)

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CLIENT: City of Roseville
PROJECT NAME: Operations Building WWTP
PROJECT NO: 4438.000.002 PH001
PROJECT LOCATION: Roseville, CA
REPORT DATE: 4/26/2023
TESTED BY: L. Schmitz
REVIEWED BY: M. Gilbert

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D1140, Method B



SAMPLE ID: 2-B1@6

DEPTH (ft): 6

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
						62.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	62.3		

SOIL DESCRIPTION

See exploration logs

ATTERBERG LIMITS

PL = 36 LL = 52 PI = 16

COEFFICIENTS

D_{90} = D_{85} = D_{60} =
D_{50} = D_{30} = D_{15} =
D_{10} = C_u = C_c =

CLASSIFICATION

USCS = MH

REMARKS

PI: ASTM D4318, Wet Method

Soak time = 180 min
Dry sample weight = 247.2 g
Largest particle size < No. 4 Sieve

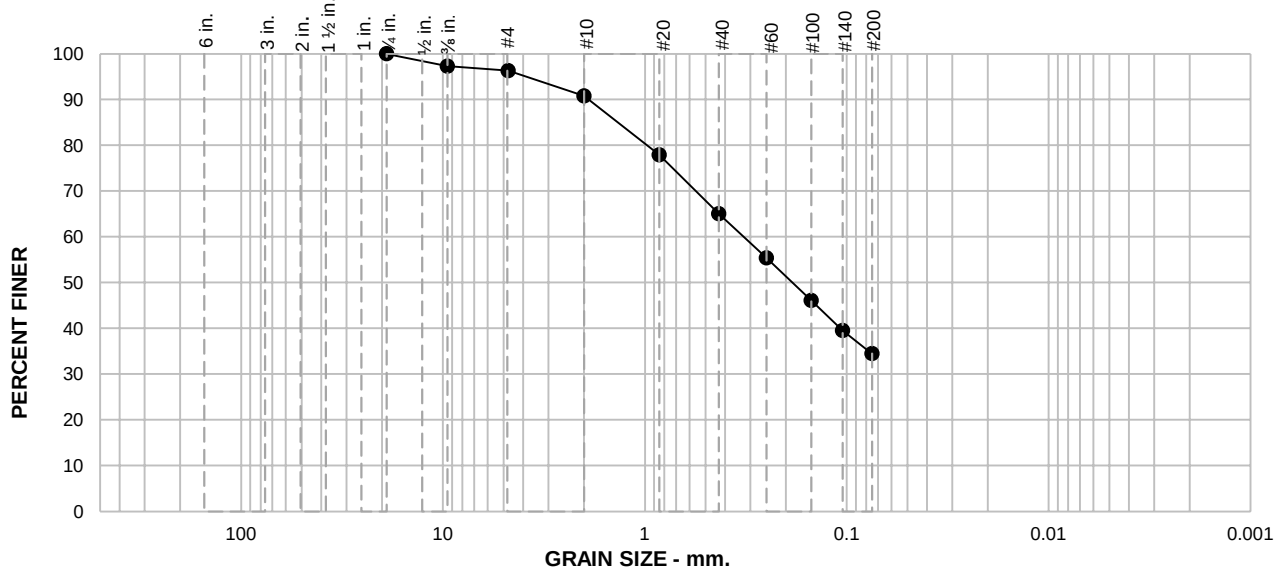
* (no specification provided)

ENGEO
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CLIENT: City of Roseville
PROJECT NAME: Operations Building WWTP
PROJECT NO: 4438.000.002 PH001
PROJECT LOCATION: Roseville, CA
REPORT DATE: 4/27/2023
TESTED BY: L. Schmitz
REVIEWED BY: M. Gilbert

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D6913, Method A



SAMPLE ID: 2-B1@2

DEPTH (ft): 2

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
		4	5	26	31	34	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
¾ in.	100		
⅜ in.	97		
#4	96		
#10	91		
#20	78		
#40	65		
#60	55		
#100	46		
#140	40		
#200	34		

SOIL DESCRIPTION

See exploration logs

ATTERBERG LIMITS

PL = LL = PI =

COEFFICIENTS

D_{90} = 1.8726 mm D_{85} = 1.3475 mm D_{60} = 0.3279 mm

D_{50} = 0.1882 mm D_{30} = D_{15} =

D_{10} = C_u = C_c =

CLASSIFICATION

USCS =

REMARKS

* (no specification provided)

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CLIENT: City of Roseville

PROJECT NAME: Operations Building WWTP

PROJECT NO: 4438.000.002 PH001

PROJECT LOCATION: Roseville, CA

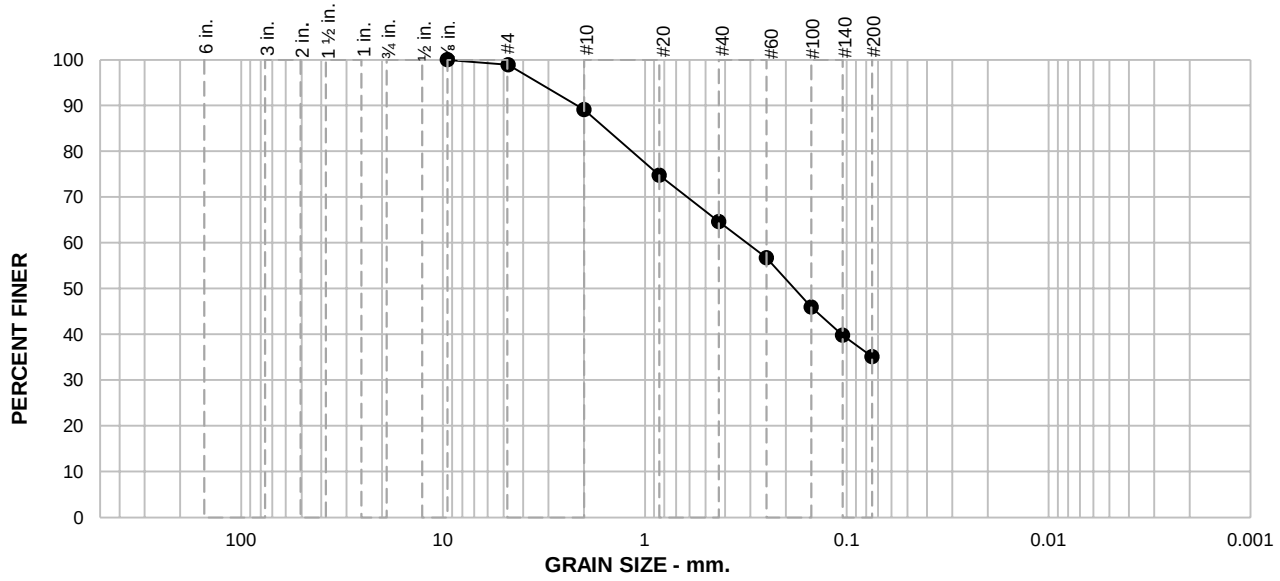
REPORT DATE: 4/26/2023

TESTED BY: L. Schmitz

REVIEWED BY: M. Gilbert

PARTICLE SIZE DISTRIBUTION REPORT

ASTM D6913, Method A



SAMPLE ID: 2-B3@4

DEPTH (ft): 4

% +75mm	% GRAVEL		% SAND			% FINES	
	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
		1	10	24	30	35	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
⅜ in.	100		
#4	99		
#10	89		
#20	75		
#40	65		
#60	57		
#100	46		
#140	40		
#200	35		

SOIL DESCRIPTION

See exploration logs

ATTERBERG LIMITS

PL = LL = PI =

COEFFICIENTS

D_{90} = 2.1807 mm D_{85} = 1.5662 mm D_{60} = 0.3064 mm

D_{50} = 0.1806 mm D_{30} = D_{15} =

D_{10} = C_u = C_c =

CLASSIFICATION

USCS =

REMARKS

* (no specification provided)

ENGEO
Expect Excellence

CLIENT: City of Roseville

PROJECT NAME: Operations Building WWTP

PROJECT NO: 4438.000.002 PH001

PROJECT LOCATION: Roseville, CA

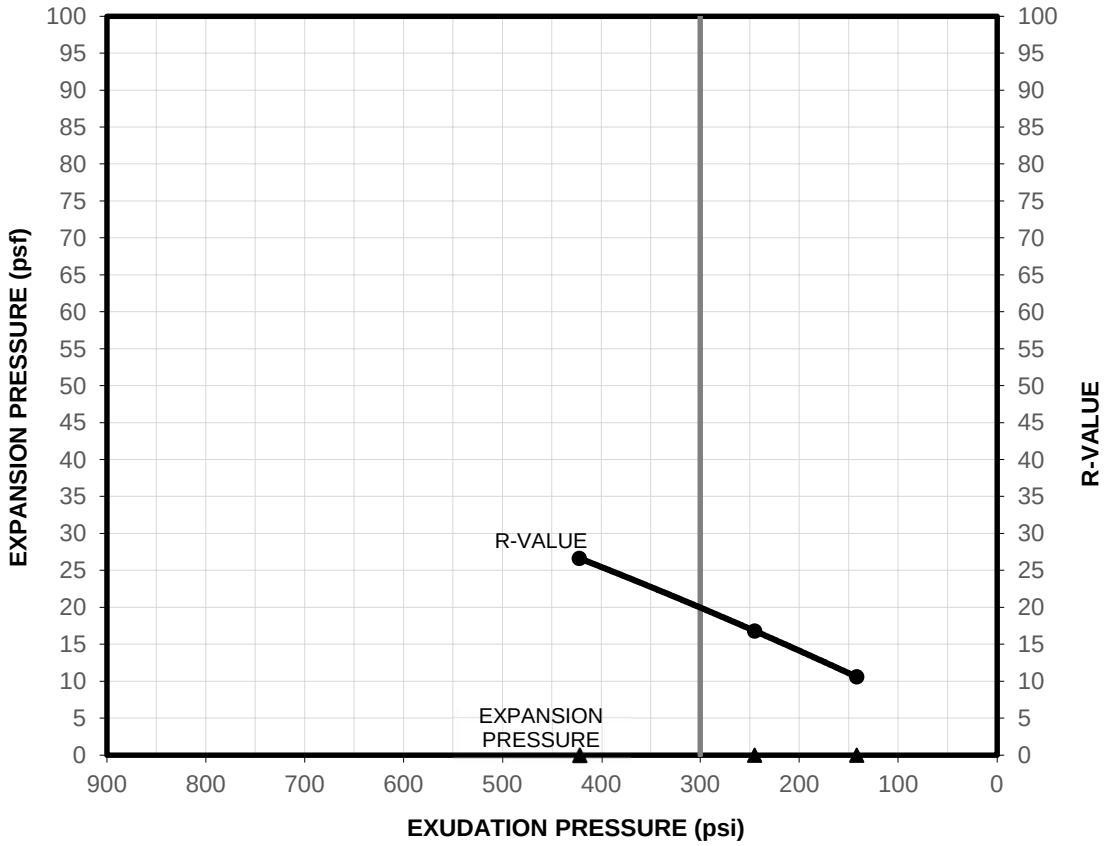
REPORT DATE: 4/26/2023

TESTED BY: L. Schmitz

REVIEWED BY: M. Gilbert

R-VALUE TEST REPORT

CTM 301



SAMPLE ID	MATERIAL DESCRIPTION	SAMPLE LOCATION
2-B3@0-3	See exploration logs	2-B3 at 0-3 feet

SPECIMENS	1	2	3
EXUDATION PRESSURE (psi)	422	245	142
EXPANSION PRESSURE (psf)	0	0	0
R-VALUE	27	17	11
MOISTURE CONTENT (%)	10.8	12.0	12.9
DRY DENSITY (pcf)	124.8	122.3	120.1
EXPANSION PRESSURE (psf) AT EXUDATION PRESSURE OF 300 psi		0	

R-VALUE AT EXUDATION PRESSURE OF 300 psi	TEST RESULT
	20

ENGEO
Expect Excellence

CLIENT: City of Roseville
PROJECT NAME: Operations Building WWTP
PROJECT NO: 4438.000.002 PH001
PROJECT LOCATION: Roseville, CA
REPORT DATE: 4/21/2023
TESTED BY: M. Ryan
REVIEWED BY: M. Gilbert

Sunland Analytical

11419 Sunrise Gold Circle, #10
Rancho Cordova, CA 95742
(916) 852-8557

Date Reported 04/26/2023
Date Submitted 04/20/2023

To: Alli Hauger
Engeo, Inc.
2213 Plaza Dr.
Rocklin, CA 95765

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 4438.00.002 Site ID : 2-B1 @ 3.5.
Thank you for your business.

* For future reference to this analysis please use SUN # 89423-185631.

EVALUATION FOR SOIL CORROSION

Soil pH	6.86		
Minimum Resistivity	2.39 ohm-cm (x1000)		
Chloride	22.4 ppm	00.00224	%
Sulfate	27.8 ppm	00.00278	%

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422m



ENGEO

Expect Excellence

SECTION 01 11 00 – SUMMARY OF WORK

PART 1 - **GENERAL**

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. The work of this contract includes but is not limited to the following:

1. Provide and furnish all labor, material, equipment, transportation, and any additional Professional Engineering Services necessary for installation, on-site construction along with on-site utilities and improvements for:

a. **Site improvements**
b. **Operations and Lab Building**

C. Construction of one building square footages as listed:

1. **12,500+/- sf**
   a. Wood framed walls and roof
   b. Slab on grade, steel vertical structure
   c. Metal siding and CMU exterior walls.
   d. Standing seam metal roof (sloped roofs) and single ply roofing (mechanical well)

D. Construction of On-Site improvements consisting of; but not limited to the following:

1. General earthwork, grading and on-site utilities.
2. A.C. paving and concrete drives, curbs, gutters, ramps and walks as indicated.
3. Concrete block, plaster finished trash enclosures
4. Landscaping and irrigation.

E. Construction Phasing

1. **Demolition Phase 1:**
   a. Demolition of existing Gazebo structure and selective demolition of existing site improvements, utilities and landscape areas in preparation for Construction Phase 2 New Operations and Lab building.
      1. Existing Operations and Lab Building contains SCADA network and Operations Center – all (E) building functions to remain fully operational.
      2. Note: fiber connection is temporarily transferred to Shop building, the connection will be re-routed to MDF room in (N) building.
      3. Existing Operations and Lab Building Lobby access:
         a. Lobby and exterior access shall remain accessible during construction, until demolition existing Operations and Lab Building.
      4. New Operations and Lab Building lobby and exterior access to the lobby to be accessible prior decommissioning of existing Operations and Lab Building.
   b. Site Demolition
      1. Refer to civil and architectural plans for extents and verify in field.

2. Verify in field all utilities, including communication vaults; identify all required utility shut-offs and transfers required to maintain existing buildings and infrastructure fully operational. Scheduling of utility shut-offs and turnovers shall be coordinated and approved by the Owner 72 hours prior to execution.

c. Protection:
   1. In addition to standard site protection procedures, coordinate requirements with the Owner for debris impact on evaporation bed basin.
d. Staging:
   1. An additional staging/laydown area outside of project boundaries is anticipated to be available on site to the North of the project.

2. **Construction Phase 1:**
   a. Construction of New Operations and Lab Building, tenant improvements and associated sitework and utilities.
   b. Functionality of the existing Operations and Lab Building including access to the lobby shall be preserved until the Certificate of Occupancy is issued.
   c. Southern side shade awning – Contractor shall determine appropriate phase for installation of the southern awning.
   d. The following shall be completed prior to Owner's acceptance and Notice of Substantial Completion is issued:
      1. Complete Lab/Operations building shall be ready for occupancy by staff and equipment being relocated from existing Operations and Lab Building.
         a. All building entries shall be accessible.
      2. Certification of Lab operations by Owner's Vendor
         a. Laboratory systems and equipment to be fully completed and operational
            1. Contractors schedule to accommodate up to 4 months for laboratory to be certified by ELAP (lab certification body)
            2. Contractor shall provide 30-day prior notice to Owner of Laboratory readiness to be certified.
      3. SCADA Network and Operations, MDF
         a. To be fully completed and operational prior to demolition of (E) building.

3. **Demolition Phase 2:**
   a. Demolition of Existing Operations and Lab Building and selective demolition of existing site improvements and utilities in preparation of construction for Phase 2 Construction Site Improvements.
      1. New Operations and Lab Building access:
         a. Building shall remain accessible during construction.
   b. Site Demolition
      1. Refer to civil and architectural plans for extents and verify in field.
      2. Verify in field all utilities, including communication vaults; identify all required utility shut-offs and transfers required to maintain existing buildings and infrastructure fully operational. Scheduling of utility shut-offs and turnovers shall be coordinated and approved by the Owner 72 hours prior to execution.

   c. Protection:

1. In addition to standard site protection procedures, coordinate requirements with the Owner for debris impact on evaporation bed basin.

d. Staging:
1. An additional staging/laydown area outside of project boundaries is anticipated to be available on site to the North of the project.

4. **Construction Phase 2:**
a. Construction of site improvements, roadways, utilities and landscape areas.

F. Provide and furnish all labor, material and equipment necessary for site improvements, utilities along with all other alternate bid items approved and accepted for construction by the Owner.

G. Refer to these specifications and the Construction Drawings for detailed description of the work required.

1. All directives and/or changes that affect this project shall come from the Owner to the Architect prior to being included into the project.

H. Related work:

1. Documents affecting work of this Section and Divisions 2 through 49 of Specifications also include, but are not necessarily limited to, General Conditions, and Division 1 of these Specifications.
2. Notices, Instructions, Bid Forms, Agreements and other titled documents are listed in Division 0.

I. Project Contractors:

1. All work shall be performed by California Licensed Contractors.

a. The General Contractor shall coordinate all construction work and control the project and subcontractors, in accord with Contract Documents.

2. General Contractor's work shall also include but not be limited to the following, except as specifically noted, provide and pay for:

a. Water, heat, telephones, and utilities required for construction.
b. Other facilities and services necessary for proper execution and completion of the work.
c. Secure and pay for, as necessary for the proper execution and completion of work, and as applicable at the time of receipts of bills.
d. Give required notices.

3. Construction shall comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities, which govern the performance of the work. Copies shall be retained at all times at the project site by the Construction Superintendent, refer to Section 01 41 00 – Regulatory Requirements and Section 01 42 00 – References.
4. Promptly submit written notice of any observed variances of Contract Documents from legal requirements for Architect's review and interpretation.
5. Enforce strict discipline and good order among employees. Do not employ unfit persons or persons not skilled in assigned task on the work.

J. Sustainability

1. This project is subject to the California Green Building Standards Code
    a. Refer to Division 1 and project specification sections for related requirements.

1.2 CONTRACT METHOD

A. Construct Work under a lump sum Contract or as defined in the proposal, addenda, and including alternates accepted by the Owner.

1.3 GENERAL CONTRACTOR USE OF PREMISES

A. Confine Operations at project site to areas permitted by:
    1. Law
    2. Ordinances
    3. Permits
    4. Contract Documents
    5. Agencies having jurisdiction

B. Do not unreasonably encumber site with materials or equipment.

C. Do not load structure with weight that will endanger it.

D. General Contractor shall assume full responsibility for protection and safekeeping of products stored on premises.

E. Obtain and pay for use of any additional storage or work areas needed for operations.

PART 2 - **PRODUCTS**
Not Used

PART 3 - **EXECUTION**
Not Used

END OF SECTION 01 11 00

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SECTION 01 25 00 SUBSTITUTION & DEVIATION PROCUDRES

PART 1 **- GENERAL**

1.1 WORK INCLUDED

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. Perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Ensure that specified products are furnished and installed in accordance with design intent by following procedures established herein for Substitution and Deviation requests for review by the Architect and their Engineers and consultants.

C. The following forms are included within the scope of this specification section, and shall be used as needed and/or required:

1. During Bidding Phase:

a. Substitution Request Form

1) Electronic File form will be supplied by Architect.
2) For all product substitutions, the General Contractor shall complete all sections of the form and provide for Architect's review within the time frame allowed prior to bid date.
3) All related or supporting work that would be required to change must be identified in the Substitution Request.

a) Design and construction work and costs associated with a Substitution Request shall be included in the proposed substitution.
b) Design and construction work and costs associated with a proposed Substitution which are not identified at time of Architect's acceptance of proposed substitution, but which are subsequently found to be required, shall be provided by the General Contractor at no additional cost to the Owner.

2. During Construction Phase:

a. Deviation Request Form

1) Electronic File will be supplied by Architect.
2) For all proposed deviations, the General Contractor shall complete all sections of the form and provide at the time of submittal Architect's review and consideration.
3) All related or supporting work that would be required to change must be identified in the Deviation Request.

a) Design and construction work and costs associated with a Substitution Request shall be included in the proposed deviation.
b) Design and construction work and costs associated with a proposed Deviation which are not identified at time of Architect's acceptance of proposed deviation, but which are subsequently found to be required, shall be provided by the General Contractor at no additional cost to the Owner.

1.2 QUALITY ASSURANCE

A. During Bidding:

1. Coordination of Substitution Requests:

a. General:

1) Prior to each Substitution Request, the General Contractor shall carefully review and coordinate all aspects of each item being proposed.
2) General Contractor shall verify that each item of the Substitution Request conform in all respects with the specified requirements.
3) General Contractor's signature is required on each Substitution Request, which shall certify that required coordination of all items has been performed.
4) It shall be the General Contractor's responsibility to ensure there is no conflict with other items and to notify the Architect in any case where the General Contractor's Substitution Request may concern work by another Contractor or the Architect. The General Contractor is solely responsible for coordination of Substitution Requests among all related crafts performing the Work.
5) The review of the General Contractor's Substitution Requests shall not relieve the General Contractor of responsibility for any error or of any obligation for accuracy of dimensions and details, for agreement with and conformity to the Contract, or responsibility to fulfill the Contract as prescribed. Nor shall such review be considered as approval of any deviation or conflict unless the Architect has been expressly advised of the same as set forth immediately above, and the Architect has expressly approved such deviation or conflict.
6) Proposed Substitutions shall not reduce the Sustainability Criteria requirements for project as identified in Division 1.

B. During Construction:

1. Coordination of Deviations:

a. General Contractor shall submit a request for Deviations when they deem it necessary to provide a complete submittal, and /or when minor changes are felt needed.

1) Deviations shall be minor in scope and shall not change manufacturers or assemblies.
2) Proposed Substitutions shall not reduce the Sustainability Criteria requirements for project as identified in Division 1.

PART 2 **- PRODUCTS**

2.1 SUBSTITUTIONS

A. General:

1. Use during Bidding.
2. Refer to specific Specification Sections for items not allowing a substitution.

B. Architect's and Owner's review and acceptance required during bidding phase.

1. Contract is based solely on materials, equipment and construction industry standards listed or described in the bid documents (including addenda), and does not contemplate any substitutions.
2. Refer to required Substitution Request Form in this Section.

C. "Or equal" and/or “Equivalent”

1. Where this phrase occurs in the Contract Documents, it refers to a PRODUCT which is equivalent to the specified product in terms of chemical composition, color, finish, configuration, and performance standards, etc.; do not assume that the materials, equipment, or methods will be approved as equal/equivalent unless the item has been specifically so reviewed and approved for this Work.

    a. Any product by a Manufacturer listed as an “Acceptable Manufacturer” is not necessarily considered an “Or Equal” or “Equivalent”. All proposed products which are not the specified product are subject to the equivalency criteria as noted above.

2. The decision of the Architect and Owner shall be final.

D. In making a request for substitution, the General Contractor shall provide the following in accordance with the Substitution Request Form and Bidding requirements set forth in this Section.

1. They have personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified, including size, chemical composition, color, finish, configuration, performance standards, functionality, compatibility with other assemblies and systems, etc.
2. They will provide the same warranty for the proposed substitution as for product or method specified.
3. They will coordinate installation of accepted substitution into work, making such changes as may be required for the work and all associated/supporting trades’ work to be complete in all respects at no additional cost to the Owner.

    a. They shall waive all claims for additional costs related to the substitution which consequently or subsequently become apparent.

4. Cost data is complete and includes all related costs under their Contract.
5. Shall submit detail itemized cost statement showing labor, material installation, overhead and profit for each substitution being requested.

E. Substitutions will not be considered if:

1. Acceptance of substitution shall require substantial revision of Contract Documents by the Architect, Owner and/or their Consultants.

2.2 DEVIATIONS

A. General:

1. Use during Construction.
2. Refer to Specific Specification Sections for items not allowing a deviation.

B. Architect's and Owner’s review and acceptance required during construction phase.

1. Contract is based solely on materials, equipment and construction industry standards listed or described in the bid documents (including addenda), and review of proposed deviations shall be done with understanding that this is done to accommodate unforeseen conditions.
2. Refer to required Deviation Request Form included herein.

C. "Or equal" and/or “Equivalent”

1. Where this phrase occurs in the Contract Documents, it refers to a PRODUCT which is equivalent to the specified product in terms of chemical composition, color, finish, configuration, and performance standards, etc.; do not assume that the materials, equipment, or methods will be approved as equal/equivalent unless the item has been specifically so reviewed and approved for this Work.

    a. Any product by a Manufacturer listed as an “Acceptable Manufacturer” is not necessarily considered an “Or Equal” or “Equivalent”; all proposed products which are not the specified product are subject to the equivalency criteria as noted above.

2. The decision of the Architect and Owner shall be final.

D. In making a request for deviation, the General Contractor shall provide the following in accordance with the Deviation Request Form.

1. They have personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified, including size, chemical composition, color, finish, configuration, performance standards, functionality, compatibility with other assemblies and systems, etc.
2. They will provide the same warranty for the proposed deviation as for product or method specified.
3. They will coordinate installation of accepted deviation into work, making such changes as may be required for work and all associated/supporting trades’ work to be complete in all respects at no additional cost to the Owner.
4. They shall waive all claims for additional costs related to the deviation, which consequently or subsequently become apparent.
5. Cost data is complete and includes all related costs under their Contract.
6. Shall submit detail itemized cost statement showing labor, material installation, overhead and profit for each substitution.

E. Deviations will not be considered if:

1. They are indicated or implied on Shop Drawings or Project Data submittals without formal request submitted in accordance with this Section.
2. Acceptance of deviation shall require substantial revision of Contract Documents by the Architect, Owner and/or their Consultants.
3. The cost of additional submittal services for Architectural review or redesign is not compensated for by the Owner**.**

PART 3 - **EXECUTION**
Not Used

END OF SECTION 01 25 00

SUBSTITUTION REQUEST FORM

TO: **19six Architects**

PROJECT: **Dry Creek Wastewater Treatment Plant Operations and Lab Building**

SPECIFIED ITEM: _____

Section No.: _____
Paragraph No.: _____
Description: _____

Proposed Substitution: _____

Reason for Substitution:

I. Information on changes to Drawings and/or Specifications which proposed Substitution will require: provide written response below or attach responses if additional space is required.

1. Will changes to the building design, including engineering & detailing be caused by this Substitution?

2. What effect does Substitution have on other trades?

3. What are the differences between proposed Substitution & specified item?

4. What are differences in product cost and delivery time?

5. What is manufacturers written warranties / guarantees of proposed Substitution?

II. Attach data which includes: product description, specifications, drawings, photographs, performance and test data required for evaluation of request; with applicable portions of data clearly identified.

III. Attach data which includes a description of changes to Contract Documents that proposed Substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

1. The proposed Substitution does not affect dimensions shown on drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested Substitution.
3. The proposed Substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be readily available for the proposed Substitution.
5. Finishes will not be altered

The undersigned further states that the function, appearance, and quality of the proposed Substitution are equivalent or superior to the specified item.

Submitted by:
Subcontractor Signature: _____

Subcontractor Name & Company (print): _____

SUBSTITUTION REQUEST FORM

Address: _____

_____

Date: _____ Telephone: _____

General Contractor Signature: _____

General Contractor Name & Company (print): _____

Address: _____

_____

Date: _____ Telephone: _____

Attachments: _____

_____

For use by Architect:

[ ] Accepted.
[ ] Not Accepted.
[ ] Accepted as noted.
[ ] Received too late.

By: _____

Date: _____

Remarks: _____

_____

_____

_____

_____

END OF DOCUMENT

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DEVIATION REQUEST FORM

Note: This form used during Construction phase only

TO: **19six Architects**

PROJECT: **Dry Creek Wastewater Treatment Plant Operations and Lab Building**

SPECIFIED ITEM: _____

Section No.: _____
Paragraph No.: _____
Description: _____

Proposed Deviation: _____

Reason for Deviation:

I. Information on changes to Drawings and/or Specifications which proposed Deviation will require: provide written response below or attach responses if additional space is required.

1. Will changes to the building design, including engineering & detailing be caused by this Deviation?

2. What effect does Deviation have on other trades?

3. What are the differences between proposed Deviation & specified item?

4. What are differences in product cost and delivery time?

5. What is the manufacturer's written warranty and/or guaranty of proposed Deviation?

II. Attach data which includes: product description, specifications, drawings, photographs, performance and test data required for evaluation of request; with applicable portions of data clearly identified.

III. Attach data which includes a description of changes to Contract Documents that proposed Deviation will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

1. The proposed Deviation does not affect dimensions shown on drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested Deviation.
3. The proposed Deviation will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be readily available for the proposed Deviation.
5. Finishes will not be altered
6. Proposed deviation shall not alter required compliance with agencies having jurisdiction and/or code requirements.

The undersigned further states that the function, appearance, and quality of the proposed Deviation are equivalent or superior to the specified item.
Submitted by:

Subcontractor Signature: _____

Subcontractor Name & Company (print): _____

Address: _____

DEVIATION REQUEST FORM

Date: _____ Telephone: _____

General Contractor Signature: _____

General Contractor Name & Company (print): _____

Address: _____

Date: _____ Telephone: _____

Attachments: _____

For use by Architect:

[ ] Accepted.
[ ] Not Accepted.
[ ] Accepted as noted.
[ ] Received too late.

By: _____

Date: _____

Remarks: _____

END OF DOCUMENT

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Section 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 **- GENERAL**

1.1 REQUIREMENTS INCLUDED

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Promptly implement change order procedures as required specified for review by the Architect.

1. Provide full written data required to evaluate changes.
2. Maintain detailed records of work done on time-and-material/force account basis.
3. Provide full documentation to Architect on request.

C. Designate in writing, names of authorized members of General Contractor's organization who are authorized to accept changes in Work, and who are responsible for informing others in General Contractor's employ of authorization of changes in Work.

D. Owner will designate person who is authorized to execute Change Orders.

1.2 RELATED REQUIREMENTS

A. Conditions of the Contract:

1. Methods of determining cost or credit to Owner resulting from changes in Work made on time-and-material/force account basis.
2. General Contractor's claims for additional costs.

1.3 DEFINITIONS

A. Proposal Request: See General Conditions & attached document.

B. Change Order: Written order to General Contractor, signed by Owner and Architect, amending Contract Documents as described.

1. Authorizes General Contractor to proceed with change altering Contract Sum, Contract Time or both.

1.4 CLARIFICATION documents for use by General Contractor and Architect;

A. CLARIFICATON: Architect's Supplemental Instructions

1. Clarification form is attached and part of this Section.

a. Architect shall, at their discretion, provide supplemental instructions during the course of construction which can assist the General Contractor in their work, such instructions shall be in writing and/or graphical representation (supplemental drawings) and accompanied by the Clarification form.
b. Clarifications are intended to not increase or decrease the project costs, if the General Contractor determines that the project cost will change, then written notification will be required to be issued and approved by the Owner and Architect prior to implementation of the Clarification.

c. Such change request shall be issued as a Proposed Change Order by the General Contractor for review and approval.

B. RFI: Contractors Request for Information/Interpretation

1. An RFI is a written request prepared by General Contractor asking the Architect to provide additional information they deem necessary to clarify an item which the General Contractor and/or their subcontractor feels is not clearly shown or called for in the Drawings or Specifications, or to address issues which have arisen due to field conditions.

2. The RFI shall reference all the applicable Contract Documents, including specification section, detail, page numbers, drawing numbers, and sheet numbers, etc. and shall be numbered sequentially.

a. The RFI shall include suggestions and/or interpretations of the issue raised by the RFI if possible.
b. An RFI cannot modify the Contract Sum and/or the Contract time.

3. The Architect and their consultants will respond to an RFI in reasonable promptness directly correlated to the complexity of the RFI.

1.5 COST REQUEST BULLETIN – CRB

A. Document: CRB

1. Whether referred to as Cost Request Bulletin, Proposal Request or Request For Proposal, they shall be interchangeable.

B. Owner, via Architect, may initiate changes by submitting a Cost Request Bulletin to the General Contractor. Request will include:

1. Detailed description of Change, Products, and location of change in Project.
2. Supplementary or revised Drawings and Specifications.
3. Projected time span for making change, and specific statement as to whether overtime work is, or is not, authorized.
4. Specific period of time during which requested price would be considered valid.
5. Such request is for information only, and is not an instruction to execute changes, nor to stop Work in progress.

C. Contractor may initiate changes by submitting written Proposal to Owner, via Architect containing:

1. Description of proposed changes.

a. Related contract drawing, detail, etc.
b. Related specification section and item

2. Statement of reason for requested changes.
3. Statement of effect on Contract Sum and Contract Time.
4. Statement of effect on work of separate contractors.
5. Documentation supporting any proposed change in Contract Sum or Contract Time, as appropriate.

a. Itemize list of material unit costs, taxes, profit, etc.

1.6 CONSTRUCTION CHANGE DIRECTIVE - CCD

A. In lieu of Cost Request Bulletin, the Architect may issue a Construction Change Authorization for General Contractor to proceed with a change for subsequent inclusion in a Change Order.

B. Authorization will describe changes in Work, both additions and deletions, with attachments of revised Contract Documents to define details of change, and will designate method of determining any change in Contract Sum and any change in Contract Time.

C. Owner and Architect will sign and date Construction Change Directive as authorization for General Contractor to proceed with changes after General Contractor has provided acceptable cost evaluation.

1.7 DOCUMENTATION OF PROPOSALS AND CLAIMS

A. Support each quotation for a lump-sum proposal and for each unit price which has not previously been established with sufficient substantiating data to allow Owner and Architect to evaluate quotation.

B. On request provide additional data to support time and cost computations. Submit data in itemized format, with breakdowns conforming to standard industry categories of work, and including the following:

1. Labor required.
2. Equipment required.
3. Products required.
    a. Recommended source of purchase and unit cost.
    b. Quantities required.
4. Taxes, insurance and bonds.
5. Credit for work deleted from Contract, similarly documented.
6. Overhead and profit.
7. Justification for any change in Contract Time.

C. Support each claim for additional costs, and for work done on time-and-material/force account basis, with documentation as required for lump-sum proposal, plus additional information:

1. Name of Owner's authorized agent who ordered the work, and date of order.
2. Dates and times work was performed, and by whom.
3. Time record, summary of hours worked, and hourly rates paid.
4. Receipts and invoices for:
    a. Equipment used, listing dates and times of use.
    b. Products used, listing of quantities.
    c. Subcontracts.

D. Document requests for product substitutions shall be completed as specified in Division 1 for substitution, deviation and/or submittal procedures.

1. Substitution of any structural materials will require a Change Order form be processed.

1.8 CHANGE ORDERS - CO

A. Preparation/General:

1. General Contractor will prepare Change Orders for review by Owner and Architect.
2. Change Order form, see herein attached form CO.
3. Change Order will describe changes in Work, both additions and deletions, with attachments of revised Contract Documents to define details of change.
4. Change Order will provide accounting of adjustment in Contract Sum and in Contract Time.

B. Lump-Sum/Fixed Price Change Order

1. Content of Change Orders will be based on, either:

   a. Owner's Cost Request Bulletin and General Contractor's responsive Proposal as mutually agreed between Owner and General Contractor.
   b. General Contractor's Proposal for change, as approved by Owner.

2. Owner and the Architect will sign and date Change Order as authorization for General Contractor to proceed with changes after General Contractor has provided acceptable cost evaluation.
3. General Contractor will sign and date Change Order to indicate agreement with terms therein.

C. Unit Price Change Order

1. Content of Change Orders will be based on, either:

   a. Definition of scope of required changes.
   b. General Contractor's Proposal for change, as approved by Owner, and Architect.
   c. Continuous survey and monitoring by Owner's Representative of all work.

2. Amounts of unit prices to be:

   a. Any stated in Bid Form or Agreement.
   b. Those mutually agreed upon between Owner and General Contractor.

3. When quantities of each item affected by Change Order can be determined prior to start of work:

   a. Owner and the Architect will sign and date Change Order as authorization for General Contractor to proceed with Changes.
   b. General Contractor will sign and date Change Order to indicate agreement with terms therein.

4. When quantities of items cannot be determined prior to start of work; and with pre-approval by the Owner and the Architect.

   a. Owner will issue through the Architect a Construction Change Directive directing General Contractor to proceed with change on basis of unit prices, and will cite applicable unit prices.
   b. General Contractor shall provide continuous on-site monitoring of all work and keeping records of all labor, materials and time required for completion.
   c. At completion of change, Owner and Architect shall review cost of such work based on unit prices and quantities used.
   d. General Contractor shall submit documentation to establish number of units of each item as well as any claim for change in Contract Time.

e. Owner and the Architect shall sign and date Change Order to establish change in Contract Sum and in Contract Time upon approval of General Contractor's breakdown of costs and time frame.
f. General Contractor shall sign and date Change Order to indicate agreement with terms therein.

1.9 CORRELATION WITH CONTRACTOR SUBMITTALS

A. Periodically revised Schedule of Values and Request for Payment forms to record each change as a separate item of Work, and to record adjusted Contract Sum.

B. Periodically revise Construction Schedule to reflect each change in Contract Time.

1. Revise schedules to show changes for other items of work affected by changes.

C. Upon completion of work under Change Order, enter pertinent changes in Record Documents.

PART 2 **- PRODUCTS**
Not Used

PART 3 **- EXECUTION**
Not Used

END OF SECTION 01 26 00

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CLARIFICATION #

Project: City of Roseville
1800 Booth Road, Roseville, CA 95747
Dry Creek Wastewater Treatment Plant
19six #: 210015.01

AHJ Name #: ###

Date: Click or tap to enter a date.

The Work noted on this form and attachments shall be carried out in accordance with the following clarifications issued in accordance with the Contract Documents without change to the Contract Sum or Contract Time.

Item #1: **Brief Description Identifier** Detailed description.

Attachments: List attachments

Distribution:

Name, Company

COST REQUEST BULLETIN #

Project: City of Roseville
1800 Booth Road, Roseville, CA 95747
Dry Creek Wastewater Treatment Plant
19six #: 210015.01
AHJ Name #: ###

Date: Click or tap to enter a date.

Please submit an itemized quote for the adjustment to Contract Sum and Contract Time for the following change in the Work. Be clear and complete to expedite approval. The scope of the Work will be modified only as herein specifically set forth and in all other respects remains unaltered. Your quotation is to be for the complete compensation and time extension including field and office overhead, profit, supervision and any other costs. *You are not authorized to proceed with this change.*

Item #1: **Brief Description Identifier** Detailed description.

Reason: Click or tap here to enter text.

Attachments: List attachments

Distribution:

Name, Company

CONSTRUCTION CHANGE DIRECTIVE #

Project: City of Roseville
1800 Booth Road, Roseville, CA 95747
Dry Creek Wastewater Treatment Plant
19six #: 210015.01
AHJ Name #: ###

Date: Click or tap to enter a date.

You are hereby directed to make the following change in this Contract. The scope of work will be modified only as herein specifically set forth and in all other respects remains unaltered.

Item #1: **Brief Description Identifier** Detailed description.

Reason: Click or tap here to enter text.

Back-up: Click or tap here to enter text.

Change in Contract Sum for this item: Choose an item. $ Value
Change in Contract Time for this item: Choose an item. ### Days

TOTAL OF CONSTRUCTION CHANGE DIRECTIVE **$ Value**

When signed by the Owner and the Architect and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.

Signature by the Contractor indicates the Contractor's agreement with the proposed adjustments in the Contract Sum and Contract Time set forth in this Construction Change Directive.

ARCHITECT	OWNER	CONTRACTOR
19six Architects		
2237 Douglas Blvd, Suite 160 Address	 Address	 Address
Roseville, CA 95661		
BY	BY	BY
DATE	DATE	DATE

CHANGE ORDER #

Project:	City of Roseville 1800 Booth Road, Roseville, CA **Dry Creek Wastewater Treatment Plant** 19six #: 210015.01 Owner #: ###	Contractor:	Enter Contractor Company Name Contractor Street Address Contractor City, State & Zip Code

AHJ Name #: ###

Date: Click or tap to enter a date.

The scope of work will be modified only as herein specifically set forth and in all other respects remains unaltered.

Item #1: **Brief Description Identifier** Detailed description

Reason: Click or tap here to enter text.

Back-up: Click or tap here to enter text.

Change in Contract Sum for this item:	Choose an item.	$	Value
Change in Contract Time for this item:	Choose an item.	###	Days

---

Original Contract Choose an item.:	$	Value
Contract Choose an item. prior to this Change Order:	$	Value
Contract Choose an item. is Choose an item. by this Change Order by:	$	Value
Contract Choose an item. will be Choose an item. to:	$	Value

Original Substantial Completion date:	Click or tap to enter a date.
Completion date prior to this CO:	Click or tap to enter a date.
New Completion date after this Change Order:	Click or tap to enter a date.

Contractor and Owner acknowledge that the change in Contract Sum and Contract Time set forth above constitute the complete compensation and time extension for this change in the work including, but not limited to, Contractor's field and office overhead, profit and supervision and Owner's project expenses, inspection and administration costs.

Accepted by:	Authorized by:
Date	Date
(Print Name and Title) Enter Contractor Company Name CONTRACTOR	(Print Name and Title) Enter Owner Entity Name OWNER

Recommend Approval by:

Click or tap to enter a date

Date

Choose an item., Choose an item.

(Print Name and Title)
19six Architects

SECTION 01 29 73 – SCHEDULE OF VALUES

PART 1 **- GENERAL**

1.1 DESCRIPTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. Submit a schedule of values to the Owner and Architect within 14 days after receiving written Notice to Proceed.

C. Upon request by Owner or Architect, support values given with data substantiating their correctness.

D. Use schedule of values only as basis for General Contractor's application for payment.

E. Revise schedule of values at such time as trade contracts are finalized and/or at the time a Change Order is approved.

1.2 FORM OF SUBMITTAL

A. Submit typed schedule on AIA Form G703 – Most current adopted edition.

1. Format: Table of Contents of this Project Manual, with modifications as approved; identify each line item with number and title of major specification sections.
2. Include a separate line item amount for General Contractor overhead and profit.
3. Revise schedule to list change orders for each Application for Payment.

B. Use table of contents for this Specification as basis for format for listing costs of work specified in Divisions 2 thru 49.

1.3 PREPARING SCHEDULE OF VALUES

A. Make the sum of the costs listed on the original or revised schedule of values, equal to the total contract sum.

B. Separately itemize all approved Change Orders to adjust contract sum.

C. Do not include General Contractor mark-up of line items or trades with the individual line items or trades.

1. Include that mark-up as part of separate line item by itself.

PART 2 **– PRODUCTS**
Not Used

PART 3 **– EXECUTION**
Not Used

END OF SECTION 01 29 73

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SECTION 01 29 76 – PROGRESS PAYMENT PROCEDURES

PART 1 **– GENERAL**

1.1 GENERAL

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

1.2 UNIT PRICES

A. Unless otherwise specified, all unit prices quoted in the Bid Form for additions to or deductions from the Work are the installed costs of products, including overhead and profit, taxes, and other costs, so that they are the complete price to the Owner. These unit prices shall not apply to Work which the General Contractor may elect to do or not to do, for the sake of their own convenience, nor shall they apply to Work required to be performed in order to correct errors committed by the General Contractor.

B. All unit prices shall be valid and in force during the life of the Contract and shall be reconciled with the Contract Sum, in accordance with the GENERAL CONDITIONS, before filing of the Notice of Completion.

1.3 APPLICATIONS FOR PAYMENTS

A. General: Submit notarized Applications for Payment to the Architect in accordance with the schedule established by the GENERAL CONDITIONS and the Agreement between the Owner and General Contractor.

B. Release of Liens: General Contractor shall submit with each Application for Payment a *conditional lien* release warranting that title to all Work, labor, materials and equipment covered by the invoice is free and clear of all liens, claims, security interests or encumbrances. With each subsequent Application for Payment, General Contractor shall submit notarized *unconditional lien releases* for the previous invoice.

C. Format and Data Required: Submit itemized applications typed on AIA Document G702-Most current adopted edition, "Application and Certificate for Payment", and Continuation Sheet G703-Most current adopted edition. *Substitutions of this form will not be accepted.*

1. Line items and dollar values shall be from the schedule of values accepted by the Architect; refer to Division 1 schedule of values requirements.
2. Include names, categories of Work, and amounts for Sub-contractors.
3. Overhead and profit shall be a line item each month for the General Contractor and Subcontractor on their G703 sheets.

D. Preparation of Application for Each Progress Payment: *Substitutions of This Form will not be accepted.*

1. Application Form (AIA Document G702- most current adopted edition, confirm with Architect):
    a. Fill in required information, including that for Change Orders executed prior to the date submittal of application.
    b. Fill in summary of dollar values to agree with the respective totals indicated on the Continuation Sheets.
    c. Execute certification with the notarized signature of a person authorized to bind the contracting firm in such matters.
2. Continuation Sheets (AIA Document G703- most current edition, confirm with Architect):
    a. Fill in total list of scheduled component items of Work, with item number and the schedule dollar value for each item.
    b. Fill in the dollar value in each column for each scheduled line item when Work has been performed or products stored as approved. Round off values to nearest dollar, unless otherwise specified for the schedule of values.
    c. At the end of the Continuation Sheets list each Change Order executed prior to the date of submission. List by Change Order number, description, and breakdown of costs as for an original component item of Work.

E. Substantiating Data for Progress Payments:
1. When substantiating data are required, submit suitable information as specified in Division 1 progress payment procedure requirements with a cover letter identifying:
    a. Project.
    b. Application number and date.
    c. Detailed list of enclosures.
2. Submit one copy of data and cover letter for each copy of application.

F. Preparation of Application for Final Payment:
1. Fill in application form as specified for progress payments.
2. Use Continuation Sheets for presenting the final statement of accounting.
3. Full unconditional lien releases.

G. Submittal Procedure:
1. Submit Applications for Payment for review by Owner's On-Site Representative and certification by the Architect at the times stipulated in the Agreement.
2. Number: Six copies of each application with original wet signature on each.

1.4 CHANGE ORDERS

A. List all Approved Change Orders on AIA Document G702 – most current edition, confirm with Architect (in space provided).

B. Backup data submitted with Applications for Payment may be used as basis for approving or rejecting costs submitted in Change Orders.

PART 2 - **PRODUCTS**
Not Used

PART 3 **- EXECUTION**
Not Used

END OF SECTION 01 29 76

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SECTION 01 31 13 – PROJECT COORDINATION

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Coordination of all aspects of construction, including, but not limited to;

    a. Construction
    b. Testing
    c. Inspections
    d. Mockups

2. Coordination of all aspects of demolition

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC), www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission .

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission.

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

    a. All occupancy types.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Comply with requirements of each specification section.
4. Comply with requirements of drawings.

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Site mock-up: refer to "Mock-Up" heading of each specification section.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Coordinate that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation, testing, mockups, inspections, etc. as required to comply with Contract requirements.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Refer to each specification section.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Construction
2. Demolition

B. Related Sections include, but are not limited to the following:

1. All specification sections

1.11 OPERATION AND MAINTENANCE DATA

A. Coordinate that all documentation is submitted as part of project closeout.

B. Coordinate that commissioning is done and documented to illustrate compliance with design criteria.

C. Comply with Division 1 closeout submittal procedure requirements.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with all trades and commissioning personal, etc.

B. Schedule required testing, inspections, mockup fabrication, etc.

C. General Contractor shall coordinate slab vapor emission and PH testing of concrete floors and ensure that concrete treatment within criteria of finish flooring is complete prior to the installation of finish flooring as herein specified.

1.13 GENERAL SYSTEM DESCRIPTION

A. Duties of the General Contractor:

1. General Contractor shall maintain approved construction drawings, specifications, addendums, change orders and other documents supplied by Architect on site at all times.
2. Coordinate the work of all Subcontractors.
3. Establish on-site lines of authority and communication.

a. Schedule and conduct construction progress meetings at intervals agreed upon in Bidding Documents, but not to exceed monthly.

1) Invited attendees shall include;

a) Owner
b) Architect
c) Subcontractors when needed to address specific issues.

2) General Contractor shall keep minutes of all construction progress meetings and submit to Owner and Architect within 72 hours for review and comment by Architect and Owner.

a) Meeting minutes shall be finalized prior to next meeting.

3) Refer to Section 01 31 19 Project Meetings

b. Submit construction schedule and schedule updates for review by the Architect and Owner at meetings and other times as directed by Division 1 – General Requirements.

4. Construction Schedules:

a. Submit construction schedule and required updates at intervals required by the Owner.
b. Prepare detailed schedule of operations of all subcontractors/trades.

1) Provide list of subcontracts that state company name, address, phone number and specifications section of work.

c. Monitor construction schedules as work progresses:

1) Identify potential variances between scheduled probable completion dates. Submit schedule updates to Architect, once each month with each Application for Payment.
2) Recommend to Owner adjustments in schedule to meet required completion date, and submit schedule updates to Architect.

d. Observe work to monitor compliance with schedule.

1) Verify that labor and equipment are adequate for the work and the schedule.

2) Verify that product deliveries are adequate to maintain schedule.
3) Report noncompliance to Owner, with recommendation for remedy.

e. Comply with requirements of Division 1 – General Requirements.

5. Temporary Facilities:

a. Allocate space as available for each Subcontractor within construction area.
b. Monitor use of temporary utilities.
c. Verify that adequate services are provided to comply with requirements for work and climatic conditions.
d. Verify proper maintenance and operation of temporary facilities.
e. Administer traffic controls where construction operations infringe upon the normal flow of traffic about the site.
f. Refer to Division 1 for temporary facilities and controls requirements.
g. Comply with requirements of Division 1 – General Requirements.

6. Cost Control:

a. Monitor and record actual costs, and estimates for completed work.
b. Incorporate approved changes as they occur.
c. Maintain cost accounting records for authorized work.
d. Develop and implement procedure for review and processing of applications for progress and final payments: Submit Applications for Payment to Architect for certification to Owner for payment.
e. Comply with requirements of Division 1 – General Requirements.

7. Changes:

a. Recommend necessary or desirable changes to Owner and Architect.
b. Review Subcontractor's requests for changes and for substitutions; submit recommendation to Owner and Architect.
c. Process change orders to Subcontractors.
d. Comply with requirements of Division 1 – General Requirements.

8. Permits and Fees: Verify that Subcontractors have obtained required permits for inspections and for temporary facilities.
9. Interpretations of Contract Documents:

a. Consult with Architect to obtain interpretations.
b. Assist in resolution of questions which may arise.
c. Transmit written interpretations to concerned parties.

10. Administer processing of shop drawings, product data and samples.
11. Maintain reports and records at site:

a. Daily log of progress of work, available to Architect and Owner.
b. Records

1) Contracts
2) Purchases
3) Materials and equipment records.

4) Applicable handbooks, codes and standards.

c. Obtain information from Subcontractors, and maintain record documents.
d. At completion of project, deliver all necessary records to Owner.
e. Assemble documentation for handling of claims and disputes.
f. Comply with requirements of Division 1 – General Requirements.

12. Verify that specified cleaning is done during progress of the work and at completion of project.
13. Start-up:
    a. Direct and checkout of utilities, operational systems and equipment.
    b. Assist in the initial start-up and testing.
    c. Record dates of start of operation of systems and equipment.
    d. Coordinate with Division 1 as to approved time to start warranty period for equipment put into service.
        1) Provide to Owner written notice of proposed beginning of warranty period for equipment put into service for review and subsequent approval.
14. Substantial Completion:
    a. Coordinate with Division 1 regarding approved process.
15. Final Completion:
    a. Coordinate with Division 1 regarding approved process.

PART 2 – **PRODUCTS**
Not Used

PART 3 – **EXECUTION**
Not Used

END OF SECTION 01 31 13

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SECTION 01 31 19 – PROJECT MEETINGS

PART 1 **- GENERAL**

1.1 REQUIREMENTS INCLUDED

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. General Contractor shall schedule and administer pre-construction meeting, periodic progress meetings, and specially called meetings throughout progress of the work, and will:

1. Prepare & distribute agenda to all participants 48 hours prior to scheduled meeting.
2. Distribute written notice of each meeting four days in advance of meeting date.
3. Make physical arrangements for meetings.
4. Preside at meetings.
5. Record the minutes; include significant proceedings and decisions.
6. Reproduce and distribute copies of minutes within two working days after each meeting and distribute to:

a. Participants in the meeting.
b. Parties affected by decisions made at meeting.
c. Owner
d. Architect

C. Representatives of General Contractor, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of entity each represents.

D. Project Architect and/or representative of Architect may/shall attend meetings called by Owner to ascertain that Work is expedited consistent with Contract Documents and construction schedules.

1.2 PRE-CONSTRUCTION MEETINGS

A. Timing: Within 14 days after date of Notice to Proceed.

B. Location: Central site, convenient for all parties, approved by Owner.

C. Attendance:

1. Owner representatives.
2. Project Architect and/or representatives and their professional consultants, at Architect's option.
3. General Contractor's Superintendent, Project Manager and Foreman.
4. Major Subcontractors.
5. Major suppliers.
6. Others as appropriate.

D. Suggested Agenda:

1. Use of Premises:

a. Site access
b. Site security

c. Utility hook-up point of connections (POC's)
d. Site specific safety issues
e. Vehicular and pedestrian traffic
f. Emergency vehicle access (ambulance and fire)
g. Material delivery, staging/lay-down area(s)
h. Noise, dust control and SWPPP requirements
i. Other jurisdictional agency requirements
j. Hours of work
k. Project signage

2. Distribution of Project Directory including names, email addresses and phone numbers of all project participants.
3. Distribution of list of major subcontractors and suppliers.
4. Project Construction Schedule:

   a. Timing of submission of Construction Schedule updates.
   b. 3-week look-a-head schedule.

5. Scheduling of subsequent Owner/Architect/General Contractor meetings.
6. Review of all forms of "change" documentation:

   a. Architect's Supplemental Instructions (ASI)
   b. Architect's Request for Clarification (ARC).
   c. Request for Information (RFI).
   d. Change Order (CO).
   e. Construction Change Directive (CCD).
   f. Proposal Request (PR).
   g. Etc.

7. Review of all form templates included in Specifications:

   a. Submittal Cover Sheet.

8. Pay Application:

   a. Level of detail expected in the Schedule of Values to be included with each Pay Application.
   b. Timing for submission of "pencil draft" of Pay Application for preliminary review by Project Inspector, Owner Representative and Architect.

9. Project Coordination

   a. Critical work sequencing.
   b. Major equipment deliveries and priorities.
   c. Designation of responsible personnel.

10. Use of Newforma construction administration software:

    a. Document routing protocols.
    b. Submittal and RFI processes.
    c. Information exchange website.

11. Distribution of Contract Documents.

12. Procedures for maintaining Record Documents.

E. A separate pre-construction meeting shall be held for roofing and other items as identified in Divisions 2 through 49 sections.

1.3 PROGRESS MEETINGS AND SPECIALLY CALLED MEETINGS

A. General Contractor shall schedule regular periodic meetings, as required.

B. Owner or Architect may/shall hold specially called meetings as required by progress of work.

C. Location of meetings: Project field office of General Contractor; except as otherwise required.

D. Special technical meetings: Meetings will be held prior to beginning work under various technical specifications:

1. Called by Owner and/or Architect at their option.

E. Attendance:

1. General Contractor's project representative and job superintendent.
2. Project Architect, and their professional consultant as needed, at their option.
3. Subcontractors as appropriate to agenda.
4. Suppliers as appropriate to agenda.
5. Others.

F. Suggested Agenda:

1. Review and approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to Construction Schedule.
8. Progress, schedule, during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Pending changes and substitutions.
13. Review proposed changes for:

    a. Effect on Construction Schedule and on completion date.
    b. Effect on other contracts of Project.

14. Other business.

1.4 FINAL CLOSEOUT MEETING

A. Refer to Division 1 for protection and cleaning requirements.

PART 2 **- PRODUCTS**

Not Used

PART 3 **- EXECUTION**
Not Used

END OF SECTION 01 31 19

SECTION 01 32 16 – CONSTRUCTION PROGRESS SCHEDULE

PART 1 **- GENERAL**

1.1 DESCRIPTION:

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. Within fifteen (15) days after award of the Contract, submit to the Architect estimated construction progress schedule for the Work, with sub schedules of related activities essential to its progress. Submit revised progress schedules periodically, and with monthly Applications for Payment.

1.2 FORMAT

A. Bar Chart or CPM Schedule: Prepare Progress Schedule as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work-day of each week or as a network analysis system using the critical path method, as outlined in The Associated General Contractors of America (AGC) publication "The Use of CPM in Construction - A Manual for General Contractors".

B. Sequence, Scale and Size: Provide listing in the chronological order of the start of each item of Work. Prepare at a scale to provide space for notations and revisions. Make sheet size appropriate to the size of the project, in multiples of 8-1/2 x 11 inches.

1.3 CONTENT:

A. General: Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction. Coordinate content with Schedule of Values specified in Division 1.

B. Phases: Identify work of separate stages and other logically grouped activities. Provide sub-schedules for each stage of Work as required in Division 1 summary of work. Provide sub-schedules to define critical portions of the entire Schedule.

C. Items of Work: Identify each item by specification Section number. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

D. Required Submittals**:** Provide separate schedule of submittal dates for shop drawings, product data, and samples, and dates reviewed submittals will be required from Architect/Engineer. Indicate decision date for selection of finishes or products.

1.4 REVISIONS TO SCHEDULES:

A. Indicate progress of each activity to date of submittal, and projected completion date of each activity. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

PART 2 **- PRODUCTS**
Not Used

PART 3 - **EXECUTION**

3.1 Submittals: After review, resubmit required revised data within ten (10) days. Submit revised Progress Schedules with each Application for Payment. Provide the number of opaque reproductions which General Contractor requires, plus two (2) copies which will be retained by the Architect and Owner.

3.2 Distribution**:** Distribute copies of reviewed Schedules to project site file, Subcontractors, suppliers, and other concerned parties. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in Schedules.

END OF SECTION 01 32 16

SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 **- GENERAL**

1.1 WORK INCLUDED

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. Perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Ensure that specified products are furnished and installed in accordance with design intent by following procedures established herein for advance submittal of design data for its review by the Architect and their Engineers and consultants.

a. Refer to Division 1 for sustainability, commissioning, and O&M Manual submittal requirements.

C. The following forms are included within the scope of this specification section, and shall be used as needed and/or required:

1. Construction:

a. Submittal Cover Sheet

1) General Contractor shall fill in and provide with all submittals including proper numbering and subsequent numbering.

1.2 QUALITY ASSURANCE

A. Construction

1. Coordination of submittals:

a. General Contractor shall:

1) Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
2) Verify that each item of the submittal conform in all respects with the specified requirements.
3) Place their stamp and signature on each submittal, which shall certify that required coordination of all items has been performed and that the submittal is complete.
4) Make no changes to any submittal after it has been reviewed and the equipment or materials shall not deviate in any way except with written approval by the Architect. Fabrication or other work performed in advance of approval shall be done entirely at the General Contractor's risk.
5) Make it their responsibility to ensure there is no conflict with other submittals and to notify the Architect in any case where the General Contractor's submittal may concern work by another General Contractor or the Architect.

a) The General Contractor is solely responsible for coordination of submittals among all related crafts performing the Work.

b) The General Contractor shall verify that their Sub-Contractors' submittals are complete in every way and meet the requirements of the Contract.

b. The review of the General Contractor's submittals shall not relieve the General Contractor of responsibility for any error or of any obligation for accuracy of dimensions and details, for agreement with and conformity to the Contract, or responsibility to fulfill the Contract as prescribed. Nor shall such review be considered as approval of any deviation or conflict unless the Architect has been expressly advised of the same as set forth immediately above, and the Architect has expressly approved such deviation or conflict.

c. Minimum requirements for submittals are contained in these Specifications. Additional and/or project-specific requirements may be contained in the Contract. The General Contractor is responsible for identifying and providing all required submittals.

1.3 INFORMATION PROVIDED BY DESIGN TEAM

A. PDF format finish drawing files of site, floor and/or roof plans will be provided to General Contractor by Architect using the following process:

1. Written request for specific plans shall be submitted to Architect
2. Upon receipt of request, Architect will issue Electronic File Waiver to General Contractor to be signed and returned.
3. Upon receipt of signed Waiver, Architect will issue requested files via email or our FTP Site (Newforma Information Exchange) to General Contractor who will distribute as needed to their Subcontractors.

B. CAD base files may be provided to General Contractor by Architect using the following process:

1. Written request for specific plans shall be submitted to Architect.

a. CAD files which will be made available upon request: Floor Plans, Roof Plans, Ceiling Plans, and Exterior Building Elevations.
b. Details / Detail sheets will not be made available.

2. Upon receipt of request, Architect will issue Electronic File Waiver to General Contractor to be signed and returned.
3. Upon receipt of signed Waiver, Architect will issue requested files via email or our FTP Site
4. (Newforma Information Exchange) to General Contractor who will distribute as needed to sub-contractors. Sub-contractors shall sign and return waiver to General Contractor prior to being issued the CAD files. Copies of the sub-contractor signed waivers shall be forwarded to Architect for their records.

PART 2 **- PRODUCTS**

2.1 SUBMITTALS / SHOP DRAWINGS

A. Construction:

1. General

a. Shop drawings shall be submitted with sufficient turn-around time to allow adequate time for review and re-submittal and re-review as needed.

1) The General Contractor is solely responsible for monitoring the timing of submittals as related to the Construction Schedule, and delivery to the Architect for review.
2) Reviewed submittals will be returned to the General Contractor via email or Newforma Information Exchange.
    a) One hard copy of reviewed full size shop drawings (as needed) will be returned via overnight courier or other physical delivery method.
3) No work shall proceed without prior review of shop drawings.
    a) Copies of all reviewed shop drawings shall be maintained on file at the job site at all times.
4) No materials or equipment associated with shop drawings requiring review shall be delivered to the job site or installed without Architect's and their Engineer's review.
5) Delay in work caused by late submittals, proceeding with work using un-reviewed shop drawings, or from the necessity of resubmittal shall not affect the contract terms of payment or time.

b. Format
    1) Distribution:
        a) All electronic submittals shall be submitted to the Architect by email or thru project management program/website, as directed by the Architect.
            i. If required otherwise by Owner, submittals could also be required to be submitted via email or another process to Owner.
    2) Electronic:
        a) All submittals – drawings and other content shall be submitted to Architect in PDF format.
            i. One PDF file, which shall include the submittal cover sheet and all submittal pages, shall be provided per Submittal.
            ii. One submittal shall be provided per specification section.
                1 Separate submittals for individual components/items within a specification section will not be accepted.
            iii. If required otherwise by Owner submittals could also be required to be submitted via email or another process to Owner.
    3) Hard copies (Structural Steel, Storefront/Window Wall, or other large-format shop drawings only):
        a. Printed drawings shall be provided when requested by the Architect.
            1. Quantity: Two
        b. Drawing sizes shall be full size for all plans and detail sheets, 30 x 42 unless approved otherwise by Architect.
c. Material samples:
    1) Samples shall be submitted via overnight courier or other physical delivery method.

2) Number of samples submitted shall be: 4 minimum

a) (4) Four samples includes one for Architect, one for Owner, one for General Contractor and one for subcontractor**.**

i. General Contractor shall provide additional samples if they need ones for others not herein listed.

b) Physical samples are required to be provided for any product review which includes color selection or review; color selection/review will not be made from digital files.

B. Submittal package:

1. General:

a. Each page in submittal and all samples shall bear the Submittal Number, in the format herein indicated.
b. A Stamp and signature shall appear on each submittal issued by General Contractor to signify they have provided an initial review to insure submittal is in compliance with contract documents and specifications, change orders, RFI's, etc. and acceptable for distribution. Submittals which do not conform to this procedure will be returned un-reviewed.
c. Unless otherwise noted within individual specification sections, all portions or items required for the submittal of a section shall be submitted simultaneously in one submittal package under one submittal number. Submittals which do not conform to this procedure will be returned to General Contractor un-reviewed.
d. Certain products which work as assemblies or which need to be coordinated, but which are specified under separate specification sections, will be required to be submitted concurrently; refer to the individual specification sections for additional information as to where this condition will apply. Submittals which do not conform to this procedure will be returned to General Contractor un-reviewed.

2. The following items shall be required in all submittal packages:

a. Cover Sheet Transmittal Form

1) As herein supplied or containing the same information and provided by General Contractor.

b. Deviation Request Form if applicable

1) This shall include marked up copy of original Specification section with all areas, items, etc. that deviate from what is being submitted.

3. When identified within a specification section, the following items, as defined below, shall be included in the submittal package:

a. Manufacturer Product & Technical Data

1) Manufacturer's data sheets containing product description, physical properties, performance characteristics, VOC Compliance (for items subject to VOC restrictions to meet CalGreen and LEED requirements), and testing compliance references.

2) Product Data sheets should be annotated with the specific specification section and line item for which the product is being proposed.

b. Manufacturer MSDS Sheets

1) Manufacturer's current Material Safety Data Sheet,

c. Manufacturer Installation Instructions

1) Document including manufacturer's recommended preparation, installation and protection procedures.

d. Manufacturer and/or Contractor Warranty

1) Preliminary copy of manufacturer's or installer's additional warranty showing compliance with warranty requirements within a specification section.

e. Installer / Applicator Qualifications and References

1) List of Projects meeting criteria indicated in specifications, along with contact names, phone numbers and email addresses for use by Architect and Owner.

f. Manufacturer Approved/Trained/Certified Installer/Applicator

1) Copy of certificate, or letter from manufacturer showing compliance with criteria indicated in specifications.

g. Manufacturer Certifications

1) A certificate of compliance from recognized independent testing laboratory, regarding material requirements specified.

h. Manufacturer Test Reports

1) Test reports complying with specific requirements identified in each applicable Specification Section.

i. Weld Procedures

1) Document showing all weld types, materials and procedures applicable to the project.

j. Mix Designs

1) All concrete mix designs proposed for use on the project, stamped by a licensed Civil Engineer, for review and approval; include test data used to establish proportions.

k. Shop Drawings

1) Shop drawings shall include, but not be limited to:

a) Dimensioned and noted plans, elevations, sections and details as required to show all proposed construction; highlight those items which deviate from drawings and those which are added or deleted items.
b) Other items as noted in each specific Specification Section.

l. Engineering Calculations

1) When required by specification section, provide engineering calculations, stamped and signed by a Civil Engineer licensed in the State of California.

m. Panel Lifting Drawings

1) When required by specification section, provide engineered panel lift drawings and details, stamped and signed by a Civil Engineer licensed in the State of California.

n. Isometric Drawing

1) 3-dimensional drawing of structural system.

o. Samples and Mockups

1) Three (3) minimum physical samples of specified products which illustrate materials, color, patterns, equipment, workmanship, etc. and which establish standards by which product(s) and/or work will be judged.

a) Sizes shall be of sufficient size to clearly illustrate functional characteristics of product and material and shall confirm to the list below unless otherwise noted within a specific Specification Section:

i.	Flat or Sheet Products:	Minimum 12"x12" square, maximum 24"x24"
ii.	Linear Products:	Minimum 12", maximum 24" long
iii.	Bulk Products:	Minimum one pint, maximum one gallon
iv.	Tile:	Full set to represent each color / color range
v.	Carpet:	Size to show complete pattern

b) Quantity shall be sufficient to clearly illustrate the full range of finish, color, texture and pattern of the specified product.

i. When an exact finish, color, pattern, or texture is not indicated in the Contract Documents, the submittal shall include the manufacturer's choice of colors for Architect's review and selection.

2) When required by specifications, erect a mockup at Project site at location acceptable to Owner and Architect.

a) Mock up shall be either a "Product" mock-up or an "Assembly" mock-up, refer to individual specification sections for specific requirements.
b) Construct the mockup complete, including work of all trades required in finished work.
c) Architect and Owner shall decide if mockup will be part of finish work.

i. Items and assemblies which will be covered up by finish materials shall be separate and not part of finished building.

p. Other:

1) As noted and defined within individual Specification Sections.

C. The following items shall be required to be submitted as part of Project Closeout; refer to Division 1 project close-out requirements for additional information.

1. Operation & Maintenance Manuals
2. Warranties
3. Extra Material / Spare Parts
4. Training Requirements

D. Deferred Submittals

1. The deferred submittals as indicated in contract documents and/or required by agencies shall be submitted to the appropriate agency by the General Contractor.
2. General Contractor shall provide complete coordination with all agencies.
3. The deferred submittals submitted to the agencies shall be approved by the Agencies Having Jurisdiction prior to purchase, fabrication and construction of said product/material.

E. Requirements for Different manufacturer and/or different Subcontractor.

1. The General Contractor shall provide re-submittal if product and/or Subcontractor is requested to be changed at General Contractor's discretion.
2. Re-submittal initiated by the General Contractor shall not be acceptable unless authorized by the Architect, and such authorization shall include agreement by the General Contractor to pay Architect for their time to review new submittal.
3. Fee for this review shall be $350.00 per hour and payable upon Architect's completion of this review.)

F. Requirements For Commissioning

1. Normal Submittals

a. The Commissioning Agent will review normal General Contractor submittals applicable to systems being commissioned for compliance with commissioning needs concurrently with A/E reviews.

2. Data for Commissioning

a. The Commissioning Agent will identify all specific information needed about each piece of commissioned equipment or system.
b. The General Contractor will include this information along with their normal submittals or include the required information with additional Commissioning submittals.
c. The information requested will typically include detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, full details of any required tests, fan and pump curves, full factory testing reports, and full warranty information, including all responsibilities of the Owner to keep the warranty in force clearly identified. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted for review by the Commissioning Agent.
d. The Commissioning Agent may also request further documentation necessary for the commissioning process, refer to Division 1 for commissioning requirements.
e. The General Contractor may be required to provide this data prior to normal submittals.

PART 3 **- EXECUTION**

3.1 SUBMITTAL SUBMISSION REQUIREMENTS

A. Within 10 business days following the Notice to Proceed, the General Contractor shall submit a Schedule of Submittals showing the anticipated order and number of submittals and the anticipated dates the submittals will be provided for Architect's review.

B. Submittals shall be submitted to Architect after Notice to Proceed and at the earliest possible time to allow the most time possible for the Architect's review, processing, routing and any subsequent resubmittals needed.

1. Standard turn-around for most submittals shall be 10 business working days, excluding weekends and holidays.

a. Submittals for items such as Structural Steel, Storefront, Window Wall and Flashing may take considerably longer than 10 business working days.
b. If a significant number of submittals are provided by General Contractor to Architect at one time, discussions between General Contractor and Architect will determine submittal review priorities as standard 10 business working day turn-around times may not apply.

C. Submittal Routing

1. The time necessary for physical routing via: mail, delivery service, etc. including the day(s) sent and the day(s) received shall not be included in the review time by the Architect and/or their Consultants.

D. All submittals shall be accompanied by letter of transmittal addressed to Architect and include a Submittal Cover Sheet.

1. Cover sheet shall include Architect's project number, Project name, General Contractor's company name, subcontractor's company name and submittal number formatted as specified below.
2. Cover sheet shall include index of items submitted, properly identified with Architectural Document Drawing Numbers, etc.

E. Submittal Numbering

1. Indicate Submittal section, number and revision number, in that order.
2. Numbering examples

a. First submittal for a given section:

1) First Submittal

Section	Number	Revision
03 30 00	01	00

2) Second Submittal

Section	Number	Revision
03 30 00	01	01

3) Third Submittal and not requiring a resubmittal

Section	Number	Revision
03 30 00	01	02

Note: The submittal number must stay the same for all subsequent resubmittals of a submittal package. The only number that changes is the Revision number.

b. When allowed by the Architect, a subsequent submittal for same section number but different item would look like this:

1) First initial Submittal

Section	Number	Revision

03 30 00	02	00

2) Second Submittal

Section	Number	Revision
03 30 00	02	01

3) Third Submittal and not requiring a resubmittal

Section	Number	Revision
03 30 00	02	02

F. Architect shall review submittals for conformance with design concepts of project and review by Architect covers only such conformance.

1. Effort will be made by Architect to discover any errors, but responsibility for accuracy and correctness of all submittals shall be the General Contractor's.

G. Review of submittals will be general and shall not relieve General Contractor from responsibility for proper fitting and construction of Work, nor from furnishing materials and work required by Contract, which may not be indicated on submittals when reviewed.

H. No portion of Work requiring submittals shall be commenced until Architect has reviewed submittal.

1. All such portions of Work shall be in accordance with reviewed submittals.

3.2 SEQUENCE OF SUBMITTALS

A. FIRST SUBMITTAL

1. The General Contractor shall provide first submittal package review by Architect and their Consultants.

a. Unless otherwise noted within individual specification sections, all portions or items required for the submittal of a section shall be submitted simultaneously in one submittal package under one submittal number. Submittals which do not conform to this procedure will be returned un-reviewed.
b. Certain products which work as assemblies or which need to be coordinated, but which are specified under separate specification sections, will be required to be submitted concurrently; refer to the individual specification sections for additional information as to where this condition will apply. Submittals which do not conform to this procedure will be returned to un-reviewed.

B. FIRST RESUBMITTAL (Second overall submittal)

1. The General Contractor shall submit a modified submittal based upon comments derived from "First Submittal."

a. Resubmittals shall address all comments from the Architect, and their Consultants. Resubmittals shall consist of only those portions of the original submittal that have been returned and marked "REVISE AND RESUBMIT" or "REJECTED" and for which the resubmittal is required.
b. Resubmittal of Shop Drawings necessitated by required corrections shall not be a cause for extension of time. The General Contractor shall direct specific attention in writing or

on resubmitted Shop Drawings, Product Data or Samples, to revisions other than the corrections requested on previous submittals.

c. Revised submittal shall maintain same products and manufacturers from "First Submittal" unless requested otherwise by Architect.
d. The first resubmittal review by Architect shall be deemed to be the last. If subsequent submission is required for this specific item, it is due to General Contractor's failure to provide an accurate resubmittal. In this case, the Architect shall consider review of the second resubmittal as an additional service.

    1) The General Contractor is responsible for the Architect's review costs for each resubmittal in excess of the first resubmittal. These costs will be back charged to the General Contractor by the Owner.

C. SECOND RESUBMITTAL (Third overall submittal)

1. The General Contractor shall provide this "Second Resubmittal" only if requested by Architect and/or Architect's consultant.
2. If this "Second Resubmittal" is initiated by the General Contractor, it shall not be acceptable unless authorized by the Architect, and such authorization shall include agreement by the General Contractor to pay Architect for their time to review resubmittal.

    a. A retainer of $750.00 shall be paid prior to Architect's review.
    b. A fee for this review shall be at $250.00 per hour and payable upon Architect's completion of this review.)

END OF SECTION 01 33 00

SECTION 01 41 00 – REGULATORY REQUIREMENTS

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. This section and related attachments are for general use and specific use as herein indicated, as herein specified and as necessary to complete the work required by project conditions, including but not limited to:

1. References to:

a. Building Codes and Regulations.

1) All construction shall be in accordance with:

a) All applicable codes & all local regulations & local agencies having jurisdiction.
b) The Americans with Disabilities Act.
c) State and Federal Regulations and Agencies having jurisdiction.

C. The General Contractor shall obtain and maintain at the project site a copy of the referenced codes as deemed necessary to complete the work.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

1. Part 1 – California Administrative Code - (CAC)
2. Part 2 - Volume 1 & 2 - California Building Code – (CBC)
3. Part 3 – California Electrical Code – (CEC)
4. Part 4 – California Mechanical Code – (CMC)
5. Part 5 – California Plumbing Code – (CPC)
6. Part 6 – California Energy Code –(CEC)
7. Part 7 – (No longer published, refer to Title 8)
8. Part 8 – California Historical Building Code
9. Part 9 – California Fire Code (CFC)
10. Part 11 – California Green Building Standards Code
11. Part 12 – California Referenced Standards Code

B. Current California Code of Regulations (CCR), Office of Administrative Law www.oal.ca.gov/CCR.htm

1. Title 8, CCR, Industrial Regulations, Subchapter 6. Elevator Safety Orders
2. Title 19 CCR, Public Safety

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. NFPA: Including, but not limited to the following; editions as listed, unless jurisdiction recognizes another edition:

1. 2022 NFPA 10 Standard for Portable Fire Extinguishers
2. 2022 NFPA 12 Standard on Carbon Dioxide Extinguishing Systems
3. 2022 NFPA 12A Standard on Halon 1301 Fire Extinguishing Systems
4. 2022 NFPA 13 Installation of Sprinkler Systems
5. 2020 NFPA 13E Recommended Practice for Fire Department Operations in Properties Protected by Sprinkler and Standpipe Systems
6. 2024 NFPA 14 Installation of Standpipe, Private Hydrant and Hose Systems
7. 2022 NFPA 15 Standard for Water Spray Fixed Systems for Fire Protection
8. 2024 NFPA 17 Dry Chemical Extinguishing Systems
9. 2024 NFPA 17A to a UL 300 for Class I Hood Fire Suppression System. (Wet Chemical Extinguishing Systems)
10. 2021 NFPA 18 Standard on Wetting Agents
11. 2022 NFPA 18A Standard on Additives for Fire Control and Vapor Mitigation
12. 2022 NFPA 20 Installation of Stationary Pumps for Fire Protection
13. 2023 NFPA 22 Water Tanks for Private Fire Protection
14. 2022 NFPA 24 Installation of Private Fire Service Mains and Their Appurtenances
15. 2023 NFPA 25 Inspection, Testing, Maintenance of Water-Based Fire Protection Systems
16. 2024 NFPA 30 Combustible and Flammable Liquids Code
17. 2024 NFPA 30A Code for Motor Fuel Dispensing Facilities and Repair Garages
18. 2022 NFPA 72 National Fire Alarm Code
19. 2024 NFPA 75 Standard for the Protection of Information Technology Equipment
20. 2024 NFPA 76 Standard for the Fire Protection of Telecommunications Facilities
21. 2022 NFPA 80 Standard for Fire Doors and Other Opening Protectives
22. 2022 NFPA 80A Recommended Practice for Protection of Buildings from Exterior Fire Exposures
23. 2023 NFPA 85 Boiler and Combustion Systems Hazards Code
24. 2023 NFPA 86 Standard for Ovens and Furnaces
25. 2024 NFPA 90A Standard for the Installation of Air-Conditioning and Ventilating Systems
26. 2024 NFPA 90B Standard for the Installation of Warm Air Heating and Air-Conditioning Systems
27. 2024 NFPA 101 Life Safety Code
28. 2022 NFPA 110 Standard for Emergency and Standby Power Systems
29. 2022 NFPA 2001 Clean Agent Fire Extinguishing Systems

1.3 DATES OF CODES

A. Except where a specific date of issue is mentioned herein, references to specifications issued by the above named and other organizations shall mean the edition current on the date of the issuance of project permit.

1.4 MISCELLANEOUS REQUIREMENTS

A. OSHA Requirements

1. General Contractor must comply with all standards and requirements of the occupational safety and health administration.

a. Notify Owner immediately of items not complying.

PART 2 **- PRODUCTS**
Not used

PART 3 **- EXECUTION**
Not used

END OF SECTION 01 41 00

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SECTION 01 42 00 - REFERENCES

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. This section and related attachments are for general use and specific use as herein indicated as herein specified and as necessary to complete the work required by project conditions, including but not limited to:

1. References to:

a. Standards
b. Associations
c. Definitions
d. Abbreviations
e. Miscellaneous items are intended to provide a central location for reference.

1) This section shall provide assistance with definitions.

C. The General Contractor shall obtain and maintain at the project site a copy of the referenced standards as deemed necessary to complete the work.

1.2 REFERENCE STANDARDS

A. Refer to Section 01 41 00 – Regulatory Requirements

1.3 ASSOCIATIONS

A. Associations shall include, but not be limited to:

1.	AA	Aluminum Association www.aluminum.org
2.	AABC	Associated Air Balance Council
3.	AAC	Aluminum Anodizers Council
4.	AAMA	American Architectural Manufacturers Association www.aamanet.org
5.	AAN	American Association of Nurserymen
6.	AASHTO	American Association of State Highway and Transportation Officials www.transportation.org
7.	AATCC	American Association of Textile Chemists and Colorists
8.	AAU	Amateur Athletic Union
9.	ABMA	American Boiler Manufacturers Association www.abma.com
10.	ACIL	American Council of Independent Laboratories
11.	ACPA	American Concrete Pipe Association
12.	ADA/ ADAAG	Americans with Disabilities www.usdoj.gov/crt/ada/adahom1.htm Act Accessibility Guidelines www.access-board.gov
13.	ADC	Air Diffusion Council
14.	AFPA	American Forest and Paper Association

15.	AGA	American Gas Association www.aga.org
16.	AGC	Associated General Contractors of America www.agc.org
17.	AGMA	American Gear Manufacturers Association www.agma.org
18.	AHA	American Hardboard Association
19.	ACI	American Concrete Institute www.aci-int.org
20.	AHAM	Association of Home Appliance Manufacturers
21.	AI	Asphalt Institute
22.	AIA	American Institute of Architects www.aia.org
23.	AIHA	American Industrial Hygiene Association
24.	AIMA	Acoustical and Insulating Materials Association
25.	AISC	American Institute of Steel Construction www.aisc.org
26.	AISI	American Iron and Steel Institute www.**steel**.org
27.	AITC	American Institute of Timber Construction
28.	ALI	Associated Laboratories, Inc.
29.	ALSC	American Lumber Standards Committee
30.	AMCA	Air Movement and Control Association
31.	ANSI	American National Standards Institute www.ansi.org
32.	AOSA	Association of Official Seed Analysts
33.	APA	American Plywood Association www.apawood.org
34.	API	American Petroleum Institute www.api.org
35.	APWA	American Public Works Association www.apwa.net
36.	ARI	Air-Conditioning and Refrigeration Institute
37.	ARMA	Asphalt Roofing Manufacturers Association
38.	ASA	Acoustical Society of America www.asa.aip.org
39.	ASC	Adhesive and Sealant Council
40.	ASCE	American Society of Civil Engineers www.asce.org
41.	ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers www.ashrae.org
42.	ASME	American Society of Mechanical Engineers(ASME), www.asme.org
43.	ASPA	American Sod Producers Association (ASPA)
44.	ASPE	American Society of Plumbing Engineers (ASPE), www.aspe.org
45.	ASSE	American Society of Sanitary Engineering (ASSE), www.asse- plumbing.org
46.	ASTM	American Society For Testing & Materials www.astm.org
47.	ATIS	Alliance for Telecommunications Industry Solutions
48.	AWG	American Wire Gage
49.	AWI	Architectural Woodwork Institute www.awinet.org
50.	AWPB	American Wood Preservers Bureau www.awpa.com
51.	AWS	American Welding Society www.aws.org
52.	AWWA	American Water-Works Association www.awwa.org
53.	AWPA	American Wood Protection Association
54.	AWPI	American Wood Preservers Institute www.awpai.com
55.	BHMA	Builder's Hardware Manufacturers Association www.buildershardware.com
56.	BIA	Brick Industry Association
57.	BIFMA	The Business and Institutional Furniture Manufacturer's Association
58.	BSI	Building Stone Institute

59.	CAGI	Compressed Air and Gas Institute
60.	CALTrans	State of California, Department of Transportation
61.	CAUS	Color Association of the United States
62.	CBHF	Bureau of Home Furnishings and Thermal Insulation, State of California, Dept. of Consumer Affairs
63.	CBSC	California Building Standards Commission (California Code of Regulations, Title 24) www.bsc.ca.gov
64.	CBM	Certified Ballast Manufactures
65.	CCC	Carpet Cushion Council
66.	CCMTC	California Concrete Masonry Technical Committee
67.	CDA	Copper Development Association
68.	CFFA	Chemical Fabrics and Film Association, Inc.
69.	CGA	Compressed Gas Association
70.	CISCA	Ceilings & Interior Systems Construction Association www.cisca.org
71.	CISPI	Cast Iron Soil Pipe Institute
72.	CLFMI	Chain Link Fence Manufacturing Institute
73.	CPSC	Consumer Product Safety Commission
74.	CRA	California Redwood Association www.calredwood.org
75.	CRI	Carpet and Rug Institute
76.	CRSI	Concrete Reinforcing Steel Institute www.crsi.org
77.	CS	Commercial Standard
78.	CSA	Canadian Standards Association
79.	CSI	Construction Specifications Institute www.csinet.org
80.	CSSB	Cedar Shingle and Shake Bureau
81.	CTI	Ceramic Tile Institute www.ctioa.org
82.	DFPA	Douglas Fir Plywood Association now known as American Plywood Association www.apawood.org
83.	DHI	Door Hardware Institute
84.	DIPRA	Ductile Iron Pipe Research Association
85.	DLPA	Decorative Laminate Products Association
86.	DSA	Division of the State Architect www.dsa.ca.gov
87.	EIA	Electronic Industries Association
88.	EIMAEIFS	Industry Manufacturers Association
89.	EJMA	Expansion Joint Manufacturers Association
90.	ETL	Electrical Testing Laboratory
91.	FCI	Fluid Controls Institute
92.	FCICA	Floor Covering Installation Contractors Association
93.	FGMA	Flat Glass Marketing Association
94.	FM	Factory Mutual Research Corporation www.fmglobal.com
95.	FS	Federal Specifications www.fss.gsa.gov/pub/fedspecs/search.cfm
96.	FSC	Forest Stewardship Council
97.	FTI	Facing Tile Institute
98.	GA	Gypsum Association
99.	GANA	Glass Association of North America
100.	GIS	Germany Institute for Standardization
101.	HEI	Heat Exchange Institute

102.	HI	Hydronics Institute
103.	HMA	Hardwood Manufacturers Association
104.	HMMA	Hollow Metal Manufacturers Association (Division of NAAMM) www.naamm.org/hmma
105.	HPVA	Hardwood Plywood and Veneer Association
106.	HUD	U.S. Dept of Housing and Urban Development
107.	IAPMO	International Association of Plumbing and Mechanical Officials
108.	IBD	Institute of Business Designers
109.	ICC	International Code Council www.iccsafe.org
110.	ICC-ES	International Code Council Evaluation Service
111.	ICEA	Insulated Cable Engineers Association
112.	ICBO	International Conference of Building Officials www.iccsafe.org
113.	ICRI	International Concrete Repair Institute www.icri.org
114.	IEC	International Electro-technical Commission
115.	IEEE	Institute of Electrical and Electronics Engineers www.ieee.org
116.	IESNA	Illuminating Engineering Society of North America www.iesna.org
117.	IFAI	Industrial Fabrics Association International
118.	IGCC	Insulating Glass Certification Council
119.	ILI	Indiana Limestone Institute of America
120.	IMIAC	International Masonry Industry All-Weather Council
121.	IMSA	International Municipal Signal Association
122.	IPCEA	Insulated Power Cable Engineers Association www.icea.net
123.	IPEMA	International Play Equipment Manufacturers Association
124.	IRI	Industrial Risk Insurers
125.	ISA	Instrument Society for Measurement and Control
126.	ISO	International Standards Organization
127.	JICS	Joint Industry Conference Standards
128.	KCMA	Kitchen Cabinet Manufacturers Association
129.	LEED	Leadership in Energy and Environmental Design www.usgbc.org/LEED
130.	LIA	Lead Industries Association, Inc.
131.	LPI	Lightning Protection Institute
132.	LSGA	Laminators Safety Glass Association
133.	MBMA	Metal Building Manufacturers Association www.mbma.com
134.	MCAA	Mechanical Contractors Association of America
135.	MFMA	Maple Flooring Manufacturers Association
136.	MIA	Marble Institute of America
137.	ML/SFA	Metal Lath/Steel Framing Association (Division of NAAMM)
138.	MMSA	Materials and Methods Standards Association
139.	MSS	Manufacturer's Standardization Society of the Valve and Fitting Industry www.mss-hq.org
140.	NAA	National Arborist Association
141.	NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org
142.	NAIMA	North American Insulation Manufacturers Association
143.	NAPA	National Asphalt Pavement Association
144.	NBFU	National Board of Fire Underwriters (American Insurance Assn.) www.nbfu.com

145.	NCAA	National Collegiate Athletic Association
146.	NCCA	National Coil Coaters Association www.coilcoating.org
147.	NCMA	National Concrete Masonry Association
148.	NCPI	National Clay Pipe Institute
149.	NCRPM	National Council on Radiation Protection and Measurements
150.	NCSBCS	National Conference of States on Building Codes and Standards www.NCSBCS.org
151.	NCSPA	National Corrugated Steel Pipe Association
152.	NECA	National Electrical Contractors Association
153.	NEI	National Elevator Industry, Inc. www.neii.org
154.	NEMA	National Electrical Manufacturers Association www.nema.org
155.	NES	National Evaluation Service www.icc-es.org
156.	NETA	International Electrical Testing Association
157.	NFPA	National Fire Protection Agency www.nfpa.org
158.	NHLA	National Hardwood Lumber Association
159.	NISD	National Institute of Steel Detailing www.nisd.org
160.	NIST	National Institute of Standards and Technology
161.	NLGA	National Lumber Grades Authority
162.	NOFMA	National Oak Flooring Manufacturers Association
163.	NOMMA	National Ornamental and Miscellaneous Metals Association
164.	NPA	National Particleboard Association
165.	NPCA	National Paint and Coatings Association
166.	NRB	National Research Board, Council Of American Building Officials
167.	NRCA	National Roofing contractors Association
168.	NRMCA	National Ready-Mix Concrete Association
169.	NSF	National Sanitation Foundation www.nsf.org
170.	NSSEA	National School Supply and Equipment Association
171.	NSWMA	National Sanitation and Waste Management Association
172.	NTMA	National Terrazzo and Mosaic Association
173.	NWWDA	National Wood Window and Door Association
174.	OSHA	Occupational Safety and Health Administration www.osha.gov
175.	OSHPD	Office of Statewide Health Planning and Development
176.	PATMI	Power Actuated Tool Manufacturer's Institute, Inc.
177.	PCA	Portland Cement Association www.cement.org
178.	PCI	Pre-stressed Concrete Institute www.pci.org
179.	PDCA	Painting and Decorating Contractors of America
180.	PDI	Plumbing and Drainage Institute
181.	PEI	Porcelain Enamel Institute
182.	PS	Product Standard of National Bureau of Standards
183.	RFCI	Resilient Floor Covering Institute
184.	RIS	Redwood Inspection Service
185.	RMA	Rubber Manufacturers Association
186.	SAMA	Scientific Apparatus Makers Association
187.	SDI	Steel Deck Institute
188.	SIGMA	Sealed Insulating Glass Manufacturers Association
189.	SFM	State Fire Marshal

190.	SGCC	Safety Glazing Certification Council
191.	SJI	Steel Joist Institute
192.	SMA	Screen Manufacturers Association
193.	SMA	Stucco Manufacturers Association
194.	SMACNA	Sheet Metal and Air Conditioning Contractors, Association www.smacna.org
195.	SPIB	Southern Pine Inspection Bureau
196.	SPR	Simplified Practice Recommendation
197.	SPRI	Single-Ply Roofing Institute
198.	SSMA	Steel Stud Manufacturers Association www.ssma.com
199.	SSPC	Steel Structures Painting Council www.sspc.org
200.	SSPMA	Sump and Sewage Pump Manufacturers Association
201.	STI	Steel Tank Institute
202.	SWI	Steel Window Institute
203.	SWPA	Submersible Wastewater Pump Association
204.	SWRI	Sealant, Waterproofing and Restoration Institute www.swrionline.org
205.	SWRCB	California Environmental Protection Agency, State Water Resources Control Board Water Quality (Stormwater Prevention Plan)
206.	TCNA	The Tile Council of North America, Inc. www.tileusa.com
207.	TIMA	Thermal Insulation Manufacturers Association
208.	TPI	Truss Plate Institute
209.	UL	Underwriters Laboratories, Inc. www.ul.com
210.	UNI	Uni-Bel PVC Pipe Association
211.	USGBC	United States Green Build Council
212.	USP	United States Pharmacopoeial Convention
213.	USPHS	United States Public Health Service www.usphs.gov
214.	USDA	United States Department of Agriculture
215.	USTC & TBA	United States Tennis Court and Track Builders Association
216.	VWDI	Vinyl Window and Door Institute
217.	WA	Wall Coverings Associations
218.	WCLIB	West Coast Lumber Inspection Bureau www.wclib.com
219.	WCMA	Window Covering Manufacturers Association
220.	WCRSI	Western Concrete Reinforcing Steel Institute
221.	WH	Warnock Hersey International, Inc.
222.	WI	Woodwork Institute
223.	WLPDIA	Western Lath, Plaster, Drywall Industries Association
224.	WPS	Welding Procedures Specifications
225.	WRI	Wire Reinforcement Institute
226.	WSC	Water Systems Council
227.	WSFI	Wood and Synthetic Flooring Institute
228.	WWPA	Western Woods Product Association www.wwpa.org
229.	W.I.	Woodwork Institute Manual of Millwork www.woodworkinstitute.com

1.4 DATES OF STANDARDS

A. Except where a specific date of issue is mentioned herein, references to specifications issued by the above named and other organizations shall mean the edition current on the date of the issuance of project permit.

1.5 DEFINITIONS

A. The following are used in specifications and documents in addition to Division 1 as herein defined:

1. Accepted Equal or Accepted Equivalent:

    a. Reviewed and accepted by the Architect as being equal in quality, utility and appearance and within the Design Intent of the documents, but shall not in any way change or delete the original intent of the documents.

2. Approved:

    a. As accepted by the Architect, (shop drawings & Submittals shall be reviewed for design intent but shall not be approved.

        1. Does not include review for items changed but not specifically noted by Contractor.

3. Approved Equal / Approved Equivalent:

    a. As accepted by the Architect, (shop drawings & Submittals shall be reviewed for design intent but shall not be approved.

        1. Does not include review for items changed but not specifically noted by Contractor.

4. As Required:

    a. As required by referenced standards, existing project conditions, Contract Documents or regulatory requirements.

5. Directed:

    a. As instructed by the Architect and/or Owner in writing.

6. Documents:

    a. Includes:

        1. Drawings
        2. Project Manual/Specifications
        3. Owner/Contractor Contract
        4. Addendums
        5. Supplemental Documents in accordance with project manual / specifications.

7. Drawings:

    a. Drawn representation of the scope of work.

8. Furnish (materials):

    a. To supply and deliver to the project site in new condition ready for installation and in operable and new condition.

9. Geotechnical Engineer

    a. A Civil or Geotechnical Engineer licensed in the State of California, who is retained and paid by the Owner to perform services as specified in the Contract Documents.

10. Indicated:

    a. As shown, noted on the drawings and/or specifications or scheduled in the drawings.

11. Install (service or labor):
    a. Anchor, fabricate, connect and/or fasten in place and adjust for use and/or place or apply in proper position & location and/or establish in place for use or service.
    b. To place in final position, complete, anchored, connected, and in operable condition with respect to required codes and/or governing agency requirements.
12. Project Manual:
    a. Is the volume which includes the; Bidding Requirements, Contract Forms, Conditions of the Contract and the Specifications.
13. Provide:
    a. To furnish, install and fabricate complete.
14. Shall:
    a. To be construed as 'mandatory'.
15. Site:
    a. Area to be occupied by the Project.
    b. Any portion directly outside exterior face of exterior walls.
16. Similar:
    a. Shall be interpreted in its general sense and not as necessarily meaning identical, and all details shall be worked out in relationship to their location and to their connection with other parts of the work.
17. Owner:
    a. The Owner of the project, or their authorized agent / on-site representative.
18. Testing Agency:
    a. An organization other than the Testing Laboratory retained and paid by the Contractor to perform tests and reports on whether or not designated items of Work comply with the requirements of the Contract Documents.
19. Testing Laboratory:
    a. An independent commercial testing organization, retained and paid by the Owner to perform tests and report on Work as specified in the Contract Documents, and as otherwise required.
        1. General Contractor shall pay for Testing when they have not provided the appropriate time prior to testing being required to be done.

1.6 ABBREVIATIONS

A. The following is a reference list including basic abbreviations included in Project manual and/or drawings including, but not limited to;
    1. Refer also to drawings and individual specifications for additional abbreviations.

&	and

L	Angle
@	at
CL	Centerline
Ø	Diameter
#	Number
(E)	Existing
(F)	Future
(N)	New
ACOUST	Acoustical
ACP	Asphalt Concrete Paving
ADA	Americans with Disabilities Act
ADDL	Additional
ADO	Automatic Door Opener
ADJ	Adjustable
A.F.F.	Above Finish Floor
A.F.G.	Above Finish Grade
AGGR	Aggregate
ALUM	Aluminum
APPROX	Approximate
ARCH	Architectural
ASSY	Assembly
AV	Audio Visual
BD	Board
BITUM	Bituminous
BKG	Backing
BLDG	Building
BLKG	Blocking
BM	Beam
BMP	Best Management Practices
B.O.	Bottom of / Back of
BR	Backer Rod
BTWN	Between
CAB	Cabinet
CASAM	Cold Applied Self Adhering Waterproof Membrane
CBC	California Building Code
CFCI	Contractor Furnished Contractor Installed
CFOI	Contractor Furnished Owner Installed
CJ	Control Joint
CLG	Ceiling
CLR	Clear
CMU	Concrete Masonry Unit

CNTR	Counter
C.O.	Cased Opening
COL	Column
CONC	Concrete
CONT	Continuous
CORR	Corridor
CR	Card Reader
CTR	Center
CTSK	Countersunk
CUST	Custodial
CW	Cold Water
DBL	Double
DEG	Degree
DEPT	Department
DF	Drinking Fountain
DIA	Diameter
DIM	Dimension
DISP	Dispenser
DN	Down
D.O.	Door Opening
DR	Door
DS	Downspout
DTL	Detail
DWG	Drawing
E	East
EA	Each
EJ	Expansion Joint
EL	Elevation
ELEC	Electrical
ELEV	Elevator
EMER	Emergency
ENCL	Enclosure
EQ	Equal
EQUIP	Equipment
ETC	Et Cetera
EW	Each Way
EXP	Expansion
EXT	Exterior
FA	Fire Alarm
FD	Floor Drain
FND	Foundation

FE	Fire Extinguisher and Bracket Mount with Signage
FEF	Fire Extinguisher and Fully Recessed Cabinet with Signage
FES	Fire Extinguisher and Semi- Recessed Cabinet with Signage
F.F.	Finish Floor
FIN	Finish
FHC	Fire Hose Cabinet
FLG	Flooring
FLR	Floor
FM	Floor Mounted
F.O.	Face of
FRP	Fiber Reinforced Plastic
FT	Foot or Feet
FTG	Footing
FURR	Furring
FURN	Furniture
GA	Gauge
GALV	Galvanized
GC	General Contractor
GD	Garbage Disposal
GLB	Glue Laminated Beam
GR	Grade
GSM	Galvanized Sheet Metal
GYP	Gypsum
HB	Hose Bibb
HC	Hollow Core
HDWR	Hardware
HT	Height
HM	Hollow Metal
HOR	Horizontal
HVAC	Heating, Ventilating, and Air Conditioning
I.D.	Inside Diameter
i.e.	Example
INSUL	Insulation
INT	Interior
IOR	Inspector of Record
IT	Information Technology
JT	Joint

KIT	Kitchen
LAB	Laboratory
LAM	Laminate
LAV	Lavatory
LT	Light / Lighting
LTWT	Lightweight
LVL	Laminated Veneer Lumber
MATL	Material
MAX	Maximum
MECH	Mechanical
MFGR	Manufacturer
MIN	Minimum
MISC	Miscellaneous
M.O.	Masonry Opening
MTD	Mounted
MTL	Metal
N	North
N/A	Not Applicable
NIC	Not in Contract
NOM	Nominal
NTS	Not To Scale
O/	Over
O.C.	On Center
O.D.	Outside Diameter
OF	Overflow
OFCI	Owner Furnished Contractor Installed
OFOI	Owner Furnished Owner Installed
OPNG	Opening
OPP	Opposite
PLAM	Plastic Laminate
PL	Plate
PLYWD	Plywood
PR	Pair
PROP	Property
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PSL	Parallel Strand Lumber
PT	Pressure Treated

PV	Photovoltaic
RAD	Radius
RD	Roof Drain
REF	Reference
REFR	Refrigerator
REINF	Reinforcement/Reinforcing
REQD	Required
RM	Room
R.O.	Rough Opening
RWL	Rain Water Leader
S	South
SAABM	Spray Applied Air Barrier Membrane
SCHED	Schedule
SF	Square Foot/Feet
SHTG	Sheathing
SHWR	Shower
SIM	Similar
SMS	Sheet Metal Screws
SPEC	Specification
SS	Stainless Steel
STD	Standard
STL	Steel
STOR	Storage
STRL	Structural
T	Tread
TBD	To Be Determined
TEL	Telephone
TEMP	Temporary
T&G	Tongue and Groove
T.O.	Top of
TS	Tube Steel
TV	Television
TYP	Typical
UC	Under Counter
UL	Underwriters Laboratory
UON	Unless Otherwise Noted
VERT	Vertical
VEST	Vestibule
VIF	Verify in Field

W	West
W/	With
WC	Water Closet
WDW	Window
WH	Water Heater
W.O.	Where Occurs
W/O	With Out
WRB	Water Resistant Barrier
WT	Weight

1.7 MISCELLANEOUS REQUIREMENTS

A. Prior Use or Occupancy

1. Refer to Division 1 for closeout submittal procedures.

B. Lines &Levels

1. Before starting work, locate all general reference points.
    a. Take such steps as are necessary to prevent their dislocations or destruction.
    b. If disturbed or destroyed, replace as directed.
    c. Employ competent surveyor to lay out work; be responsible for its accuracy.

C. As-Built – Record Drawings

1. Scope of contractors responsibilities, refer to, but not limited to:
    a. Individual specification sections.
    b. Division 1 – General Requirements
    c. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    d. Refer to Division 1 for closeout submittal procedures.

D. Workmanship

1. Refer to individual specification sections
2. Refer to Division 1 general requirements
3. Refer to Division 1 for quality control requirements.
4. All work involved in this project shall reflect the best possible workmanship.
    a. Any work which is not of the best workmanship shall be corrected or redone as is required for approval by the Architect, at no additional cost to the Owner.
5. No trade should apply any finishes or materials to any surfaces until they feel that the surfaces are ready to receive the finish or material and produce the best possible workmanship.
    a. Any trade who does apply the finish or materials to surfaces that are not ready shall remove and correct their work as well as prepare the existing surfaces involved at no additional cost to the Owner.

E. Vendor and Sub-Contractors

1. General Contractor shall provide Architect with a complete list of subcontractors and principal vendors including addresses and telephone numbers. List each under heading of subcontractor category and/or vendor type.
2. The General Contractor is responsible for determination and coordination of union and/or non-union project affiliation.
    a. General Contractor shall prepare and adhere to the Contract Construction Schedule based on required Contract time of completion. In the event of termination by parties hereto, all work performed and materials furnished shall be fairly allocated and apportioned in accordance with good construction practices.

F. Termination by Owner
    1. Refer to but not limited to; General Conditions.

G. Warranties:
    1. Refer to individual specification sections.
    2. Refer to Division 1 for closeout submittal procedures.

H. Maintenance Manuals:
    1. Refer to individual specification sections.
    2. Refer to Division 1 for closeout submittal procedures.

I. Other items not herein listed;
    1. Refer to but not limited to:
        a. Refer to Division 1 for closeout submittal procedures.

PART 2 **- PRODUCTS**
Not used

PART 3 **- EXECUTION**
Not used

END OF SECTION 01 42 00

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SECTION 01 45 00 – QUALITY CONTROL

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with all trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Control quality of installation of materials & systems.
2. Control quality of construction.
3. Control quality of site demolition.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission.

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission.

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:

a. All occupancy types.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.
5. Comply with requirements of specific Specification Section and/or Drawings.

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

1. Coordinate with each specific Specification Section.

B. Refer to Division 1 for sustainability requirements.

C. Mock-ups:

1. Shall be reviewed and approved in field by Architect.

1.5 QUALITY ASSURANCE

A. Refer as herein indicated and as indicated in each specific Specification Section.

B. Hazardous materials:

1. It is illegal to manufacture, sell or use products containing asbestos in the United States.

a. These specifications rely on the product manufacturers and distributors to insure that the products they manufacture and/or distribute comply with all statutes and regulations governing their products.
b. It is understood that there has not been any testing or inspection done to confirm any hazardous materials of the specified products to confirm compliance with these statutes and regulations by the Architect.
c. Therefore, these specifications are done not knowingly including any specified products or materials which contain asbestos and/or any other hazardous material.
d. Any materials suspected of containing hazardous materials shall be brought to the attention of Owner.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Refer as indicated in each specific Specification Section.

B. Field-verify that all components, substrates, backing, mock-ups, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times during testing.

1.9 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Project construction.
2. Project site demolition.
3. Testing & inspection by others.

B. Related Sections include, but are not limited to the following:

1. Division 1.
2. All Drawings and Specification Sections.

1.10 SEQUENCING AND SCHEDULING

A. General Contractor shall schedule all testing & inspections and coordinate attendance by Architect, Owner, and others.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. General Contractor shall coordinate slab vapor emission and PH testing of concrete floors and ensure that concrete treatment within criteria of finish flooring is complete prior to the installation of finish flooring as herein specified; refer to Section 07 28 00 – Concrete Slab Vapor Emission and Alkalinity Control Treatment.

1.11 TESTING AND INSPECTIONS

A. Testing required by Testing Agent / Testing Agency shall be done in accordance with Division 1 Testing Laboratory service requirements and as indicated in the Contract Documents.

B. Testing required by General Contractor shall be done in accordance with this Section and each specific Specification Section requiring field testing and/or inspection.

C. Geotechnical Engineer:

1. Services of a Geotechnical Engineer are required for Work specified in various individual Specification Sections and/or as indicated in drawings and Division 1 Testing Laboratory service requirements.

1.12 GENERAL SYSTEM DESCRIPTION

A. Observation and Supervision:

1. The Architect and Owner or their appointed representatives will review the Work for design intent at appropriate stages, and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review.

a. Owner:

1) The Owner shall have access to the Work wherever it is in preparation or progress for ascertaining that work is in accordance with the Contract Documents. The General Contractor shall provide facilities, hard hats, and access and shall provide assistance for sampling or measuring materials.
2) The Owner will notify the Architect and Engineers of Record, and call to the General Contractor's attention all observed failure of work and/or material not conforming to Contract Documents.

b. General Contractor:

1) Shall comply with all requirements of the Contract Documents (Drawings, Specifications, Owner's General Conditions and Owner–General Contractor Contract). He shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The General Contractor's superintendent shall also inspect all materials as they arrive for compliance with the Contract Documents. He shall reject defective work or materials immediately upon performance or delivery.

B. Testing Laboratory services:

1. Refer to Division 1 for Testing Laboratory service requirements.

C. Field testing not done under Division 1:

1. By General Contractor as required per Drawings and or Specifications.

D. Inspections:

1. Done by product and/or system manufacturer's approved representative for products/systems requiring Inspections.

E. Observations:

1. Done by product and/or system manufacturer's approved representative for products/systems requiring observations for general compliance.

F. Mock-ups:

1. Reviewed for acceptance by Architect and Owner as indicated in specific Specification Sections.

G. Mock-ups

1. Reviewed for acceptance by Architect and Owner as indicated in specific Specification Sections.

1.13 MAINTENANCE

A. Refer to each specific Specification Section for which products and/or assemblies will require follow-up maintenance and/or adjustment after project is complete and has been occupied for a given period of time.

PART 2 **– PRODUCTS**
Not Used

PART 3 **- EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 TESTING, INSPECTIONS AND OBSERVATIONS

A. General

1. Product manufacturer inspections and observations shall be done by authorized representative & observed by General Contractor.
2. The General Contractor shall be responsible for scheduling all required tests and inspections.
    a. Notify the Owner and Architect 48 hours in advance of scheduled performance of any work requiring testing or inspection.
3. The General Contractor shall provide access to Work to be tested, facilitate inspections, observations, tests and furnish incidental labor and facilities.
4. The General Contractor shall orchestrate inspections of work performed, and construction of mock-ups with Architect and Owner.
5. Re-Inspection & Testing
    a. The General Contractor shall pay for:
        1) Tests of materials, inspections, and certifications required by Specifications.
        2) Testing, adjusting, and balancing of equipment and systems required by Specifications.
        3) Re-tests or re-inspections, if required, and tests or inspections required to established Contractor error or missing test data required by Specifications.
        4) Uncovering of work in accordance with Division 1 cutting and patching requirements.
        5) Additional tests directed by the Architect or Owner which establish that materials and installation do not comply with the Contract Document.
6. Testing & Inspection Reports and Certifications
    a. A copy of each General Contractor provided testing, inspection, observation report or certification shall be provided to each of the following:
        1) Owner
        2) Architect
        3) General Contractor

B. General Contractor testing shall be done in accordance with individual Specification Sections and manufacturer's requirements.

3.4 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. General Contractor shall keep the work areas in a clean and safe condition so their testing and inspection services do not interfere with the work of others.

C. General Contractor shall protect work and materials of others testing and protect the installed work and materials of other trades.

D. Perform testing in accordance with listed requirements, industry standards and also as indicated in drawings and other specification sections.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the Owner.

F. After completion of work in this section, remove all equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

END OF SECTION 01 45 00

SECTION 01 45 29 – TESTING LABORATORY SERVICES

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION:

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. Coordinate the work of this Section with General Contractor.

C. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Field inspections.
2. Field testing.
3. Laboratory testing.

D. Owner will employ and pay for services of an independent testing laboratory to perform specified testing unless otherwise specified to be performed and/or paid for by others.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:

a. All occupancy types.

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM – E329 Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as used in Construction.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Comply with Building Code.
2. Job site inspections shall be done as herein specified.
3. Testing shall be done as herein specified.
4. Comply with requirements of specific Specification Section and/or Drawings.

1.4 SUBMITTALS

A. Testing Agent / Agency shall submit schedule list of all testing to Owner, Architect and General Contractor.

1.5 QUALITY ASSURANCE

A. Refer to Section 01 45 00 - Quality Control.

B. Testing Agent/Agency shall have been in business for five (5) years providing inspection services for projects of similar size and complexity.

C. Laboratory is not authorized to release, revoke, alter or enlarge on requirements of Contract Documents, or to perform any duties of General Contractor and/or Subcontractors.

1.6 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

1.7 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Construction by others.
2. Site demolition by others.
3. Testing by General Contractor.
4. Inspections by product/system manufacturers.

B. Related Sections include, but are not limited to the following:

1. Section 01 81 13 – Project Sustainability Requirements
2. Section 01 45 00 – Quality Control
3. Section 01 74 19 – Construction Waste Management and Disposal/Recycling

C. Related Documents include, but are not limited to the following:

1. Section 00 72 00 – General Conditions

1.8 SEQUENCING AND SCHEDULING

A. Schedule testing with General Contractor.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. General Contractor's Responsibilities

1. Refer to Section 01 45 00 Quality Control.

1.9 TESTING AGENT

A. Company: TBD

1. Address: TBD
2. Address: TBD
3. Website: TBD
4. Phone number: TBD

B. The Owner reserves the right to change testing laboratories if the need arises.

1.10 GENERAL SYSTEM DESCRIPTION

A. Testing and inspection performed by Testing Agent/Agency shall include, but not be limited to:

1. Refer to drawings and specifications.
2. Refer to Agency approved Special Testing and Inspections form.

3. Refer to Geotechnical Report
4. Roofing; refer to specification Section 07 54 00.

PART 2 **- PRODUCTS:**
Not Used

PART 3 **- EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which testing and inspection is to be performed.
2. Identify conditions detrimental to proper or timely completion of testing and/or inspection and coordinate with General Contractor to rectify.

3.2 COORDINATION

A. Refer to Section 01 31 13 – Project Coordination.

B. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades is ready for testing and/or inspection.

3.3 TESTING

A. General

1. Testing required by General Contractor shall be done in accordance with Section 01 45 00 - Quality Control and specific sections requiring field testing and/or inspection.
2. Testing Agent/Agency tests shall be in conformance with requirements of the Contract Documents.

    a. Refer to project Structural Tests as indicated in Contract Documents and approved Agency Special Inspections and Testing form.

3. Testing and inspection in connection with earthwork shall be under the direction of the Owner's consulting Geotechnical Engineer, referred to hereinafter as the "Geotechnical Engineer".
4. Testing and inspection of construction materials and workmanship shall be done by a qualified laboratory, referred to hereinafter as the "Testing Laboratory".

    a. The Testing Laboratory shall be under direction of a Civil Engineer registered in the State of California to oversee the work / items being tested and shall conform to, but not be limited to the requirements of ASTM E329, and shall be employed by the Owner.

B. Laboratory Duties:

1. General: Comply with ASTM E329 "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction". Cooperate with Architect, Engineer and Contractor; provide qualified personnel after due notice. Perform specified inspections, sampling and testing of materials and methods of construction. Verify compliance with specified standards. Ascertain compliance of specified materials with

requirements of Contract Documents. Promptly inform Architect and Engineer of observed irregularities or deficiencies of work or products.

2. Reports and Additional Testing:

    a. Submit one (1) pdf copies of each report each to the Owner, Architect and General Contractor.

C. Testing Laboratory:

1. Services of a Testing Agent / Agency are required for Work specified in various individual Specification sections and/or as indicated in drawings.
2. General Contractor's Responsibilities:

    a. Cooperate with Testing Laboratory personnel.
    b. Furnish copies of product test reports as specified.
    c. Furnish incidental labor and facilities:

        1) To provide access to Work to be tested.
        2) To obtain and handle samples at the Project site or at the source of the product to be tested.
        3) To facilitate inspections and tests.
        4) For storage and curing of test samples.

    d. Notify the Owner's Representative sufficiently in advance of operations to allow 48 hours minimum for Testing Laboratory assignment of personnel and scheduling of tests.
    e. If tests or inspections cannot be performed after such notice, reimburse the Owner for the Testing Laboratory personnel and travel expenses incurred.

D. Geotechnical Engineer:

1. Services of a Geotechnical Engineer are required for Work specified in various individual specification sections and/or as indicated in drawings.

3.4 PROTECTION AND CLEAN UP

A. Refer to Section 01 74 00 – Protection and Cleaning.

B. Testing agent/Agency shall keep the work areas in a clean and safe condition, so their testing and inspection services do not interfere with the work of others.

C. Testing agent/Agency shall protect work and materials of others testing and protect the installed work and materials of other trades.

D. Perform testing in accordance with listed requirements, industry standards and also as indicated in drawings and other specification sections.

E. In the event of damage, immediately notify the Owner.

F. After completion of testing and/or inspection remove all equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

END OF SECTION 01 45 29

SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

PART 1 **- GENERAL**

1.1 WORK INCLUDED

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 General Requirements apply to the work of this Section.

B. The General Contractor is responsible for all costs associated with temporary utilities during construction.

C. Temporary facilities and controls required for this Work include, but are not necessarily limited to:

1. Temporary utilities including, but not limited to;

    a. Gas
    b. Water
    c. Electricity
    d. Telephone

2. Field office.
3. Sanitary facilities.
4. Fencing of construction area.
5. Protective fencing for existing vegetation
6. Parking of vehicles.
7. Egress plan.

1.2 RELATED WORK

A. Utility hookups: pertinent Specification Sections.

PART 2 **- PRODUCTS**

2.1 TEMPORARY UTILITIES

A. General: Furnish water, gas and electricity required during construction and extend temporary service lines to construction areas for use of all Subcontractors.

B. Temporary water:

1. General Contractor may connect a temporary line to the existing water service lines at the site.
2. The General Contractor shall be responsible to verify all existing conditions associated with a water connection.
3. Connections to existing water service lines shall be coordinated with and accepted by the Project Inspector.
4. Water used in construction must comply with Section 16 of the Standard Construction Specifications.

5. Provide ample supply of potable water for all purposes of construction at point convenient to Project. Pipe water from source of supply to all points where water will be required.
6. Provide sufficient hose to carry water to every required part of construction and allow use of water facilities to Subcontractors engaged on Work.

C. Temporary electricity:

1. The General Contractor shall arrange for and shall install power service from electrical service provider service lines, or shall provide a portable generator.
2. Electric service: Construct all temporary electric facilities and maintain in accordance with Division of Industrial Safety "Electrical Safety Orders" (ESO), Public Utilities Commission "Rules of Overhead Line Construction" (G.O. 95), and CAL-OSHA. Materials, devices and equipment used for these facilities shall be in good and safe condition but need not be new.

D. Temporary heating: Provide heat, ventilation, fuel and services as required to protect all work and materials and to keep humidity down to extent required to prevent corrosion of any metal and to prevent dampness or mildew which is potentially damaging to materials and finishes. In addition, provide heat and ventilation prior to and during following work operations:

1. Where applicable: At all times during placing, setting and curing of concrete, provide sufficient heat and protection to insure heating of spaces involved to not less than 50ºF.
2. From beginning of application of drywall and during setting and curing period, provide sufficient heat to produce temperature in spaces involved of not less than 55ºF.
3. For period of 7 days previous to placing of interior finish materials and throughout application of finish painting and laying of resilient flooring materials, provide sufficient heat to product temperature of not less than 60ºF.
4. After finishing trades are complete and until final acceptance of Work, provide temperature of not less than 60ºF.

E. Telephone:

1. Maintain telephone in field office for use by Architect and Owner as well as General Contractor.
2. Provide and pay for telephone installation and service for field office. Maintain service for duration of operations under this Contract. Provide gongs, horns or remote control devices so that telephones may be heard throughout construction site.
3. General Contractor shall not have access to phones on site and therefore, shall arrange for their own pager or portable phone if needed for on-site communication.

F. Fax Machine:

1. Maintain fax machine in field office for use by Architect and Owner as well as General Contractor.
2. Provide and pay for fax machine telephone service installation and service for field office. Maintain service for duration of operations under this Contract. Provide gongs, horns or remote control devices so that telephones may be heard throughout construction site.

2.2 FIELD OFFICE

A. General Contractor shall provide at least one temporary field office for use by himself, their Subcontractors, and the Architect.

2.3 SANITARY FACILITIES

A. The General Contractor will provide proper, adequate, sanitary toilet facilities for use of all workers employed on Project, in accordance with State and Local health departments.

2.4 TEMPORARY CONSTRUCTION, EQUIPMENT AND PROTECTION

A. Provide, maintain and remove upon completion of Work, all temporary rigging, trench plates, scaffolding, hoisting equipment, rubbish chutes, ladders, barricades, lights and all other protective structures or devices necessary for safety of workers and public property as required to complete all Work.

B. Walkways and barricades: Provide pedestrian walkway protection and wood barricades conforming to Jurisdiction standards and requirements.

C. Temporary fencing: Provide chain link fencing enclosures around unfenced areas of the site as required to protect pedestrians until project is complete.

D. Protection: Protect all workers and equipment from power lines and maintain safe distances and protective devices as required by Industrial Safety Commission and CAL-OSHA.

E. Temporary construction and equipment: All temporary construction and equipment shall conform to all regulations, ordinances, laws and other requirements of State and other authorities having jurisdiction, including insurance companies, with regards to safety precautions, operation and fire hazard.

F. Pumping: Provide and maintain pumping facilities, including power for keeping site, excavations and structures free of accumulations of water at all times, whether from underground seepage, rainfall, drainage or broken lines. Pond discharge to get rid of sediment prior to discharge into storm drain.

G. Damage or theft: Protect work and materials to be used on Project from damage or loss due to elements, theft, vandalism, malicious mischief, or other causes. General Contractor shall be held responsible for such damages or loss which he shall remedy at their expense.

H. Provide fencing to maintain means of egress in and out of building and site.

2.5 PARKING OF VEHICLES

A. General Contractor shall be responsible for job site vehicle parking of their Subcontractor's vehicles.

PART 3 **- EXECUTION**

3.1 MAINTENANCE AND REMOVAL

A. Maintain all temporary facilities and controls as long as needed for safe and proper completion of Work; remove all such temporary facilities and controls as rapidly as progress of Work will permit.

END OF SECTION 01 50 00

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SECTION 01 58 13 – TEMPORARY PROJECT SIGNAGE

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the job site for placement of temporary signage.

D. Wood framing, including posts, sheathing.

E. Finishing, including painting of substrate and letters and numerals for signage.

F. Framing hardware.

G. Concrete Footings with integral gravel base.

H. Disposal of sign assembly after Owner occupation of building.

1.2 QUALITY ASSURANCE

A. Lumber and plywood source quality control: Provide materials graded under one of the following:

1. Rules 17, Standard Grading Rules for West Coast Lumber, current edition - WCLIB.
2. Standard Grading Rules for Western Lumber, current edition - WWPA.
3. Plywood Specification and Grade Guide of American Plywood Association, current edition - APA.

B. Grade mark each piece of lumber. Marking must be done by recognized agency. Lumber Manufacturer's Association Certificates may be accepted in lieu of such grade and trademarks.

C. Plywood sheathing: Each panel shall be legibly identified as to type, grade and species by APA grade, comply with PS-1 (ANSI A199.1).

1.3 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. List of materials: Submit list of materials proposed to be used including posts, sheathing & hardware.

C. Submit: Shop drawings of sign & anchorage. Sign layout shall indicate character sizes, style & spacing, type.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Division 1 product delivery, storage and handling requirements.

B. Provide, ship to project site, and install.

PART 2 **- PRODUCTS**

2.1 FRAMING LUMBER

A. Lumber: Coast Region Douglas Fir (DF), unless otherwise noted. Lumber designated DF South by WWPA not acceptable. All lumber new with no re-use.

1. Grades not less than following:

a. Posts: No. 1, Pressure treated Douglas fir - free of heart center.
b. Plywood: Group II Exterior APA 303 Siding EXT, Smooth Face.

B. All wood other then plywood shall be pressure treated, per building code, Chapter 23 and shall bear an AWPB stamp for P.T.D.F.

1. Wood posts set into ground.

a. Treat all cut ends of P.T.D.F. with approved preservative.

2.1 ROUGH HARDWARE

A. FASTENERS: Galvanized for exterior use, in accordance with ASTM A153. Select fasteners for the fastening of the plywood substrate sign to the support posts.

1. Standard bolts and nuts: Carriage head type, ASTM A307, Grade A.
2. Plain washers: Round, general assembly grade carbon steel, FS FF-W-92.
3. Lock washers: Helical spring type carbon steel, FS FF-W-84.

2.2 SIGNAGE DESIGN

A. General

1. Size of sign panel: 4'-0" x ¾" thick x 8'-0" long
2. Supporting Posts: 4" x 4" x 10'-0"

B. Sign design:

1. General:

a. Refer to Drawings detail.

2. Characters:

a. Style: Helvetica
b. Type: Capitals
c. Border: Install characters, logos, etc. such that an equal clear border of 2" occurs around perimeter.
d. Character height::

1) Project Name: 4" tall x two lines & spaced to span sign width
2) Project Address: 3" tall x full width of sign less perimeter clearance
3) Owner, Architect & General Contractor name: 2" tall
4) Owner, Architect & General Contractor address: 1-1/2" tall

e. Line spacing:

1) 1" between name & address, type.
2) Equally spaced between Project name/address & Owner name/address, etc.

3. Color:

a. Background: TBD
b. Characters: Jet Black
c. Paint Type: Alkyd Enamel
d. Finish: High Gloss

PART 3 **– EXECUTION**

3.1 INSTALLATION

A. General:

1. Install posts straight, true, level, plumb, and place 4'-0" into 12" diameter x 3'-8" deep concrete footing. - extend 4" of post into clean gravel at base of footing.
2. Fasten sign panel to posts with (3) carriage bolts each post & spaced evenly from bottom of sign to top.
3. Install sign assembly such that top of posts are located 2" below top of sign panel & 2" measured from side of sign panel.

B. Bracing:

1. Provide temporary bracing sufficient to keep structure stable, plumb, and in line until completed.

END OF SECTION 01 58 13

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SECTION 01 66 00 PRODUCT DELIVERY, STORAGE AND HANDELING REQUIREMENTS

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Transport, deliver, handle and store materials and equipment at the site in a manner to prevent the intrusion of foreign matter or moisture, and to prevent damages. In all cases comply with:

1. Material and equipment manufacturer's instructions regarding temperature limitations.
2. Other environmental conditions, which are required to maintain the original quality of the materials and equipment.
3. Minimize packaging materials to maximum extent possible while still ensuring protection of materials during delivery, storage, and handling.

D. Packaging:

1. Provide packaged material in manufacturer's original containers with seals unbroken and labels intact until incorporating into the work.
2. Deliver materials in recyclable or in reusable packaging such as cardboard, wood, paper, or reusable blankets, which will be reclaimed by supplier or manufacturer for recycling.
    a. Reusable Blankets: Deliver and store materials in reusable blankets and mats reclaimed by manufacturers or suppliers for reuse where program exists or where program can be developed for such re-use.
    b. Pallets: Where pallets are used, suppliers shall be responsible to ensure pallets are removed from site for re-use or for recycling.
    c. Corrugated Cardboard and Paper: Where paper products are used, recycle as part of construction waste management recycling program, or return to material's manufacturer for use by manufacturer or supplier.
    d. Sealants, Paint, Primers, Adhesives, and Coating Containers: Return to supplier or manufacturer for re-use where such program is available.
3. Unacceptable Packaging Materials: Polyurethane, polyisocyanate, polystyrene, polyethylene, and similar plastic materials such as "foam" plastics and "shrink-fit" plastics.
4. Wrapped or bundled material shall bear the name of the manufacturer and the product.

E. Remove all damaged or otherwise unsuitable material and equipment promptly from the site.

F. Storing:

1. Delineate locations for lay down, recycling, and disposal areas; using paved areas for staging activities. Construction staging and materials storage will be at areas agreed with by Owner.
2. Locate storage piles, stacks or bins so as to avoid being disturbed and barricade to protect from damage of any kind.
3. Store all materials and equipment:

a. In accordance with manufacturer's instructions.
b. Above grade.
c. Properly protected from weather and construction activities.

G. Protection:

1. Protect all finished surfaces, including jambs and soffits of all openings used as passageways or through which materials and equipment are handled.
2. Protect all finished floor surfaces in traffic areas before moving any material and equipment over these finished surfaces.

H. Maintain clean and unmarred all finished surfaces to the date of acceptance. Repair of damage shall be made to the satisfaction of the Architect and Owner.

I. Consult individual specification sections for additional specific product handling and protection requirements.

J. Safeguards:

1. During construction General Contractor shall provide safeguards in accordance with, but not limited to CBC Chapter 33.

1.2 RELATED SECTIONS

A. Refer to Division 1 for construction waste management and disposal/recycling requirements.

B. Refer to Division 1 for sustainability requirements

PART 2 **- PRODUCTS**
Not Used

PART 3 **- EXECUTION**
Not Used

END OF SECTION 01 66 00

SECTION 01 71 23 – FIELD ENGINEERING

PART 1 - **GENERAL**

1.1 DESCRIPTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Provide and pay for field engineering services required for Project.

1. Survey Work required in execution of Project.
2. Land Surveyor, Civil, or other professional engineering services specified, or required to execute Contractor's construction methods.

C. Provide field staking of site improvements; identify existing survey reference points and property line corner stakes indicated on Drawings, as required.

D. Locate and be aware of all existing on-site utility lines and improvements.

E. Comply with all conditions of the Contract.

1.2 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. Qualified state registered professional engineer or registered land surveyor, acceptable to General Contractor, Owner and Architect.

B. A registered professional engineer of discipline required for specific service on Project, licensed in State of California.

1.3 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit name, address and California license of surveyor and professional engineer for Architect's and Owner's review.

C. At substantial completion of project, submit for review by the Owner and Architect, Certificate documentation to verify accuracy of field engineering work.

1. Submit certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.

a. If Contractor should fail to meet technical or design requirements embodied in this document and on the applicable plans, they shall make necessary readjustments until all work is deemed satisfactory as determined by the Architect and Owner.
b. No deviation from the specifications shall be made except upon written approval of the Architect and Owner.

PART 2 - **PRODUCTS**
Not Used

PART 3 - **EXECUTION**

3.1 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical survey reference points for Project are those designated on Drawings.

B. Locate and protect survey reference points prior to staking site work, and preserve all permanent reference points during construction.

1. Make no changes or reallocations without prior written notice to Owner or Architect for review and interpretation.
2. Report to Owner when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
3. Require surveyor to replace Project survey reference points which may be lost or destroyed. Establish replacements based on original survey control.

3.2 PROJECT SURVEY REQUIREMENTS

A. Establish and safeguard minimum of two permanent benchmarks on project site, referenced to data established by survey reference points. Record locations, with horizontal and vertical data, on Project Record Documents.

B. Establish and maintain lines and levels, locate and layout, by instrumentation and similar appropriate means, but not limited to, the following:

1. Site improvements:

a. Stakes for grading, fill and topsoil placement.
b. Utility slopes and invert elevations.

2. Batter boards for structures.
3. Building foundation, column locations and floor levels, as required for specific conditions.
4. Controlling lines and levels required for mechanical and electrical trades.

C. From time to time or at Owner's request, verify layouts by same methods.

D. Preserve and protect all on-site underground utilities lines and existing on-site improvements in the area of construction.

3.3 RECORDS

A. Maintain complete, accurate log of all control and survey work as it progresses.

B. On completion of foundations and major site improvements, prepare certified survey showing all dimensions, locations, angles, and elevations of construction.

C. Incorporate all revisions, new work, etc. into record drawings.

END OF SECTION 01 71 23

SECTION 01 73 29 – CUTTING AND PATCHING

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Verify applicable dimensions, clearances and heights at the jobsite.

C. Demolition:

1. Coordinate the work of this Section with related trades.

    a. Refer to Section 02 41 13 – Selective Site Demolition & Protection

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Execute cutting, fitting or patching of work, require to:

    a. Make parts fit properly.
    b. Make flatwork, paving, etc. fit properly.
    c. Uncover work to provide for installation of ill-timed work.
    d. Remove and replace work not conforming to requirements of Contract Documents.
    e. Remove and replace defective work.
    f. Remove samples of installed work as specified for testing.
    g. Do not endanger any work by cutting or altering work or any part of it.
    h. Cut existing flatwork, paving, etc. to fit properly with new work.

2. In addition to Contract requirements, upon written instructions of Architect:

    a. Uncover work to provide for Architect's and/or Inspector's observation of covered work.
    b. Remove samples of installed materials for testing, when required.

3. The Contractor with structural responsibility within their scope of work shall solely execute structural cutting and patching required for this project.
4. Cutting:

    a. Minor cutting will be performed by both the General and Trade Subcontractors where required for the execution of their work. Locations of all trade cutting (core boring, etc.) shall be reviewed and approved by the General Contractor, Owner and Inspector where required.

5. Patching:

    a. Minor patching will be performed by both the General and Trade Subcontractors where required for the execution of their work. Locations of all trade cutting (core boring, etc.) shall be reviewed and approved by the General Contractor, Owner and Inspector where required.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:

a. All occupancy types.

F. American Concrete Institute (ACI), www.aci-int.org

G. American Institute of Steel Construction (AISC), www.aisc.org

H. American Iron and Steel Institute (AISI), www.steel.org

I. American National Standards Institute (ANSI), www.ansi.org

J. American Society of Mechanical Engineers (ASME) www.asme.org

K. American Society For Testing and Materials (ASTM), www.astm.org

L. American Welding Society (AWS), www.aws.org

M. American Water-Works Association (AWWA), www.awwa.org

N. Factory Mutual (FM), www.fmglobal.com

O. National Electrical Manufacturers Association (NEMA), www.nema.org

P. National Fire Protection Agency (NFPA), www.nfpa.org

Q. Occupational Safety and Health Administration (OSHA), www.osha.gov

R. Sheet Metal and Air Conditioning Contractors, Association (SMACNA), www.smacna.org

S. Sealant, Waterproofing and Restoration Institute (SWRI), www.swrionline.org

T. US Environmental Protection Agency, www.epa.gov

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit Manufacturer's data and shop drawings.

1. Prior to cutting which affects structural safety, submit written notice to Architect and Structural Engineer requesting consent to proceed with cutting.
2. Prior to cutting which affects Aesthetics, submit written notice to Architect requesting consent to proceed with cutting.

C. Submit 48-hour advance written notice to Architect and Owner. and designating time work will be uncovered.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer/ Fabricator shall have been in business for five (5) years providing/installing/finishing projects of similar size and complexity.

C. Patching of openings that are cut in any fire rated walls or membranes shall be sealed tightly using approved materials only.

1. Verify that fire rating envelopes are maintained or inspections provided prior to concealing work.
2. Cutting and patching, if required by Agencies to verify adequacy of protection after concealment, shall be performed at no additional cost or time extension to the Owner.

D. Stipulations:

1. Should conditions of work or schedule indicate change of materials or methods, submit written recommendation to Architect and Owner. including:
2. Conditions indicating change.
3. Recommendations for alternative materials or methods.
4. SUBMITTALS as required for substitutions.
5. Quotations of charges or credits.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial one (1) year written warranty signed by General Contractor agreeing to repair and/or replace work (patching) which has failed as a result of defects in materials or workmanship.

1. Upon notification of Owner within the warranty period, such defects shall be repaired and replaced at no cost to the Owner.

1.10 RELATED WORK/SECTIONS

A. Related Sections include, but are not limited to the following:

1. Refer to Division 1 for sustainability requirements.
2. Refer to Division 1 for construction waste management and disposal/recycling requirements.
3. Divisions 2 through 49.

B. Related Documents include, but are not limited to the following:

1. Refer to Division 1 for General Conditions.

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout.

1. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with General Contractor.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. Each Subcontractor shall make the field measurements necessary for their work and be responsible for its accuracy.

1. Should any structural difficulties prevent a Subcontractor or tradesman from installing their material properly, the General Contractor shall be promptly notified so that the Architect may be consulted as to how best to resolve the difficulty.
2. Cutting into the walls and floors, if necessary, shall be carefully and neatly performed and then be repaired in an approved manner.
3. The Architect and Structural Engineer shall be consulted in all cases where cutting into a structural portion of the building is either desirable or necessary so that satisfactory reinforcement or other work may be provided or installed.

D. Patching of all exposed architectural finishes shall be performed under the supervision of the General Contractor, but executed by the affected finish trade Subcontractor.

1. Cutting and patching of existing architectural finishes shall be minimized to the extent possible through careful routing and placement of new work.
2. The Architect shall have the authority to reject substandard or unacceptable patching.

E. General Contractor shall coordinate slab vapor emission and PH testing of concrete floors which have been sawn cut to remove portions of slab and ensure that concrete treatment within criteria of finish flooring is complete prior to the installation of finish flooring as herein specified.

1.13 VAPOR EMISSION AND ALKALINITY CONTROL COMPLIANCE

A. Refer to Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment

1.14 GENERAL SYSTEM DESCRIPTION

A. Refer to drawings typically for scope of cutting and patching.

B. Cut and patch as require to complete scope of work.

1. Concrete slab on grade:

a. Refer to drawings and details.
b. Saw cut floor to remove extent of slab, but not damage existing vapor barrier.

1) Replace /patch damaged vapor Barrier.

a) Refer to Concrete Notes on structural drawings.

c. Sawn cut extent/widths shall be done as indicated and at a minimum to provide room to allow room to drill and install dowels into existing slab prior to install of new concrete.
d. Sawn cut extents of concrete/masonry shall be done to an extent necessary to remove piping, conduit, etc.
e. If water or moisture is discovered at sub base notify Architect immediately.
f. Schedule:

1) Construction:

a) Drill holes and install rebar dowels.

i. Refer to structural drawings for typical criteria.

a. Minimum standards, unless noted otherwise:

1. Length" 12"
2. Spacing: 12"
3. Size:

a. 4" thick slab: 1/2" diameter
b. 5" thick slab: 5/8" diameter
c. 6" thick slab: 3/4" diameter

b) Install waterstop bar at side of sawn cut concrete face, typical.

i. Refer to Section 03 15 13 – Hydrophilic Waterstops and Specialty Waterproofing

c) Vapor Barrier:

i. Replace and repair any damaged vapor barrier membrane including taping new to existing.
ii. Refer to Concrete Notes on structural drawings and Section 03 30 00 – Cast-In-Place Concrete.

d) Place new concrete

i. Refer to Concrete Notes on structural drawings and Section 03 30 00 – Cast-In-Place Concrete.

2) Demolition:

a) Schedule:

i. Remove concrete only.

a. Refer to Section 02 41 19 – Selective Building Demolition & Protection
b. Refer to drawings.

2. Exterior Concrete Paving:

a. Refer to drawings and details.
b. Saw cut concrete to remove extent of paving, but not damage existing sub base.
c. Sawn cut extent/widths shall be done as indicated and at a minimum to provide room to drill and install dowels into existing slab prior and reinforcing at new extent to place new concrete.
d. Sawn cut extents of concrete/masonry shall be done to an extent necessary to remove piping, conduit, etc.
e. If water or moisture is discovered at sub base notify Civil Engineer, Owner and Architect immediately.
f. Schedule:

1. Construction:

a. Drill holes and install rebar dowels.

1. Refer to structural drawings for typical criteria.

a. Minimum standards, unless noted otherwise:

1. Length" 12"
2. Spacing: 12"
3. Size:

a. 4" thick slab: 1/2" diameter
b. 5" thick slab: 5/8" diameter
c. 6" thick slab: 3/4" diameter
d. 7" thick slab: 7/8" diameter
e. 8" thick slab: 1" diameter

b. Install reinforcing:.

1. Refer to civil and structural drawings

c. Place new concrete and finish

1. Refer to drawings
2. Refer to Section 32 13 13 – Concrete Paving

2. Demolition:

a. Schedule:

1. Remove concrete, drill and install dowels, reinforcing and place new concrete and finish as indicated in drawings.

a. Refer to civil and structural drawings
b. Refer to Section 02 41 13 – Selective Site Demolition & Protection

3. Exterior Concrete Flatwork:

    a. Refer to drawings and details.
    b. Saw cut concrete to remove extent of flatwork, but not damage existing sub base.
    c. Sawn cut extent/widths shall be done as indicated and at a minimum to provide room to drill and install dowels into existing flatwork prior and reinforcing at new extent to place new concrete.
    d. Sawn cut extents of concrete/masonry shall be done to an extent necessary to remove piping, conduit, etc.
    e. If water or moisture is discovered at sub base notify Civil Engineer, Owner and Architect immediately.
    f. If water or moisture is discovered at sub base notify Civil Engineer, Owner and Architect immediately.
    g. Schedule:

        1. Construction:

            a. Drill holes and install rebar dowels.

                1. Refer to structural drawings for typical criteria.

                    a. Minimum standards, unless noted otherwise:
                        1. Length" 12"
                        2. Spacing: 12"
                        3. Size:
                            a. 4" thick slab: 1/2" diameter
                            b. 5" thick slab: 5/8" diameter
                            c. 6" thick slab: 3/4" diameter

            b. Install reinforcing:.

                1. Refer to Civil Drawings and structural drawings

            c. Place new concrete

                1. Refer to Section 32 13 13 – Concrete Paving

        2. Demolition:

            a. Schedule:

                1. Remove concrete, drill and install dowels, reinforcing and place new concrete and finish as indicated in drawings.

                    a. Refer to civil and structural drawings
                    b. Refer to Section 02 41 13 – Selective Site Demolition & Protection
                    c. Refer to Section 32 13 13 – Concrete Paving

4. Exterior Asphalt Paving:

    a. Refer to drawings and details.
    b. Saw cut asphalt to remove extent of paving, but not damage existing sub base.
    c. Sawn cut extent/widths shall be done to allow room to drill and install dowels into existing slab prior to install of new concrete.

d. Sawn cut extents of concrete/masonry shall be done to an extent necessary to remove piping, conduit, etc.
e. Schedule:
    1. Construction:
        a. Refer to Civil and Architectural drawings.
        b. Place new asphalt
            1. Refer to Section 32 12 16 – Asphalt Paving
            2. Refer to Civil drawings.
    2. Demolition:
        a. Schedule:
            1. Remove asphalt and place new asphalt and finish as indicated in drawings.
                a. Refer to Civil and Structural drawings
                b. Refer to Section 02 41 13 – Selective Site Demolition & Protection
                c. Refer to Section 32 12 16 – Asphalt Paving

PART 2 - **PRODUCTS**

2.1 MATERIALS

A. Materials for replacement of work removed: comply with specifications for type of work to be done.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the General Contractor subject to the approval of the Architect Owner.

PART 3 **- EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:
    1. Examine areas and conditions under which work is to be performed.
    2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.
B. Surface:
    1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.
C. Inspect existing conditions of work, including elements subject to movement or damage during cutting and patching.
D. After uncovering work, inspect conditions affecting installation of new products.

3.2 COORDINATION

A. Refer to Section 01 31 13 – Project Coordination.

B. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Provide shoring, bracing and support as required to maintain structural integrity of work.

C. Provide protection for other portions of work.

D. Provide protection from elements.

E. Each Subcontractor shall make the field measurements necessary for their work and be responsible for its accuracy.

1. Should any structural difficulties prevent a Subcontractor or tradesman from installing their material properly, the General Contractor shall be promptly notified so that the Architect may be consulted how best to resolve the difficulty.
2. Cutting into the walls and floors, if necessary, shall be carefully and neatly performed and then be repaired in an approved manner.
3. The Architect and Structural Engineer shall be consulted in all cases where cutting into a structural portion of the building is either desirable or necessary so that satisfactory reinforcement or other work may be provided/installed.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

a. Proceed and provide cutting and patching as herein specified and as indicated in drawings.

B. Performance:

A. Execute fitting and adjustment of products to permit finished installation to comply with specified tolerances and finishes.

B. Perform cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

C. Patching of openings that are cut in any fire rated walls or membranes shall be sealed tightly using approved materials only.

a. Verify that fire rating envelopes are maintained or inspections provided prior to concealing work. Cutting and patching, if required by Agencies to verify adequacy of protection after concealment, shall be performed at no additional cost or time extension to the Owner.

3.5 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so their rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

E. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

F. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the Owner.

G. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the Architect after he receives the General Contractor's Notice of "Certificate of Substantial Completion".

END OF SECTION 01 73 29

SECTION 01 74 00 – PROTECTION AND CLEANING

PART 1 **- GENERAL**

1.1 REQUIREMENTS INCLUDED

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Execute protection and cleaning daily, during progress of Work, and at completion of Work, as required by General Conditions and specifications.
2. Building: Keep areas of work in building free from accumulated debris, rubbish and waste materials as work progresses.
3. Site: Keep areas of work within site free from accumulated debris, rubbish and waste materials as work progresses.
4. Protect work and materials of each Section prior to and during installation, and protect the installed work and materials of other trades.
5. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the Owner.
6. After completion of work in this Section, remove all equipment, tools, cleaning supplies, etc. from site.
7. Provide product information, instruction manuals & warrantees.

D. Coordinate protection and cleaning with each specific specification section.

E. Coordinate protection and cleaning with demolition work.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission.

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission.

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:

a. All occupancy types.

F. National Demolition Association, www.demolitionassociation.com

1.3 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. General Contractor shall have been in business for Five (5) years providing/installing/finishing similar size projects and complexity.

1.4 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

B. Disposal operations shall be in compliance with General Contractor's Construction Waste Management plan as approved by the Owner.

1. Refer to Division 1 for construction waste management and disposal/recycling requirements.

1.5 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. All construction.

B. Related Sections include, but are not limited to the following:

1. Refer to Division 1 for sustainability requirements.
2. Refer to Division 1 for construction waste management and disposal/recycling requirements.
3. Division 2-49.

PART 2 **- PRODUCTS**

2.1 MATERIALS

A. Cleaning and Maintenance Products:

1. Provide data on manufacturers' recommended maintenance, cleaning, refinishing and disposal procedures for materials and products.

a. Where chemical products are recommended for these procedures, provide documentation to indicate that no component present in the cleaning product at more than 1% of the total mass of the cleaning product is a carcinogen or reproductive toxicant as defined in the lists in this specification section.
b. For purposes of reporting, identification of product VOC contents shall not be limited to those regulated under Clean Air Act (CAA) but shall also include compounds exempted from the CAA definition and listing of VOCs.
c. California EPA and local air district definitions of VOCs based on CAA are not sufficient as they exempt compounds based on non-reactivity for outdoor air pollution control but still important for indoor air quality.
d. Avoid cleaning products containing alpha-pinene, d-limonene or other unsaturated carbon double bond alkenes due to chemical reactions with ozone to form aldehydes, acidic aerosols, and ultra-fine particulate matter in indoor air.

1. The State of California Department of General Services has published specifications for Environmentally Preferable Janitorial Chemicals and a list of cleaning/maintenance products meeting these specifications. Both are available on the internet at:

a. http://www.ciwmb.ca.gov/greenbuilding/Specs/Janitorial.doc
b. http://www.resd.dgs.ca.gov/BPM/lists.htm

B. These procedures are for final General Contractor cleaning of the project prior to substantial completion and for provided materials and products as required by the specific specification sections.

C. Use only those cleaning materials and methods recommended by manufacturer of surface material to be cleaned and which will not damage surfaces.

D. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

2.2 CHEMICALS OF CONCERN

A. Chemicals of Concern include but are not limited to those chemicals listed below as toxic air contaminants, carcinogens, teratogens, reproductive toxins, and chemicals with established Chronic Reference Exposure Levels (REL):

B. Carcinogens: Chemicals listed as probable or known human carcinogens in the latest published edition of the following two lists:

1. California Environmental Protection Agency, Air Resources Board (ARB), list of Toxic Air Contaminants (California Air Toxics).http://www.arb.ca.gov/toxics/summary/summary.htm.
2. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html.

C. Reproductive Toxicants: Chemicals known to cause reproductive toxicity including birth defects or other reproductive harm in the latest published edition of the following list: California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). http://www.oehha.ca.gov/prop65/prop65_list/Newlist.htm.
Chemicals with established Chronic Reference Exposure Levels (REL): Chronic RELs have been developed for 65 hazardous airborne substances as of January 2001. A chronic REL is an airborne concentration level that would pose no significant health risk to individuals indefinitely exposed to that level. RELs are based solely on health considerations, and are developed from the best available data in the scientific literature. The California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) establishes and publishes RELs.

D. Chronic Reference Exposure Levels for organic chemicals with possible indoor sources, based on the California OEHHA list.

1. Do not use any of the chemicals listed in the list.
2. The most recent list may be found at: http://www.oehha.org/air/chronic_rels/allChrels.html

PART 3 **– EXECUTION**

3.1 DURING CONSTRUCTION & DEMOLITION

A. Construction work, cleaning and protection refer also to the following section and the most restrictive shall govern:

1. Refer to Division 1 for construction waste management and disposal/recycling requirements.

B. Demolition work, cleaning and protection refer also to the following sections and the most restrictive shall govern;

1. Refer to Division 1 for construction waste management and disposal/recycling requirements.
2. Section 02 41 13 – Selective Site Demolition & Protection.
3. Section 02 41 19 – Selective Building Demolition & Protection.

C. Execute periodic cleaning to keep Work, site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

D. Provide on-site containers for collection, disposal and/or recycling of waste materials, debris and rubbish in compliance with General Contractor's Construction Waste Management Plan as approved by Owner.

1. Refer to Division 1 for construction waste management and disposal/recycling requirements.

E. Protect material and work as recommended by manufacturer, drawings and as specified.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.
2. Remove masking tape immediately after tooling joints, leaving finished work in neat and clean condition.
3. Clean all surfaces, materials, etc. free of dust and dirt.
4. Clean up and leave premise broom clean and vacuum cleaned; clean adjoining work spotted or otherwise defaced by work of this Section.

F. Moisture Protection:

1. Moisture Stains:

a. Materials with evidence of moisture damage, including stains, are not acceptable, including both stored and installed materials;

1. Immediately remove from site and properly dispose.
2. Take special care to prevent accumulation of moisture on installed material and within packaging during delivery, storage, and handling to prevent development of molds and mildew on packaging and on products.

b. Immediately remove from site and properly dispose of materials showing signs of mold and signs of mildew, including materials with moisture stains.
c. Replace moldy materials with new, undamaged materials.
d. Mitigate and remove all mold and mildew discovered.

2. Ducts:

a. Seal ducts during transportation, delivery, and construction to prevent accumulation of construction dust and construction debris inside ducts.

3. Protect interior materials from water intrusion or penetration; where interior products not intended for wet applications are exposed to moisture, immediately remove from site and dispose of properly.
4. Protect installed products using methods that do not support growth of molds and mildews.

a. Immediately remove from site materials with mold and materials with mildew.

G. Dust Protection:

1. Clean interior spaces prior to start of finish painting and continue cleaning on as-needed basis until painting is finished.
2. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.2 FINAL CLEANING

A. Employ skilled workers for final cleaning.

B. Comply with specific requirements as indicated in each specification section.

C. Comply with applicable regulatory requirements during the conduct of cleaning, disposal and recycling operations and in compliance with General Contractor's Construction Waste Management Plan as approved by Architect and Owner.

D. Use cleaning materials which will not create hazards to health or property or cause damage to products or Work.

1. Refer to Table 1, Part 2 as herein specified for disallowed chemicals.

E. Use cleaning materials and methods recommended by the manufacturers of the products to be cleaned and as described in Part 2 of this specification section.

1. Most restrictive shall govern.

F. Cleaning:

1. Using cleaning and maintenance products as described in Part 2 of this Section and as specifically required per each applicable specification section, including, but not limited to;

a. General:

1. Remove dust, dirt, grease, stains, fingerprints, labels, spilled and spattered, and other foreign materials from interior and exterior surfaces exposed to view.
2. Polish transparent and glossy surfaces to a clear shine.
3. Vacuum dust and dirt from all surfaces.

b. Flatwork and Paving:

1. Clean hard surface flatwork and paving.
2. Power wash all exposed flatwork and paving.

a. Stained and/or polished finish floors shall be cleaned and polished in accordance with related specification section for floor finish.

3. Demolition – unless otherwise noted, all flatwork and paving shall be demolished as indicated in drawings and/or specified.

a. Refer to Section 02 41 13 – Selective Site Demolition & Protection

c. Flooring:

1. Clean hard surface finish flooring, such as, but not limited to; tile, stone, VCT, linoleum, cork, hardwood, etc., in accordance with manufacturer's cleaning, polishing and maintenance recommendations.

2. Broom, vacuum and wet mop all exposed concrete floors.
    a. Stained and/or polished finish floors shall be cleaned and polished in accordance with related specification section for floor finish.
3. Vacuum carpeted and soft surfaces with high efficiency particulate arrestor (HEPA) vacuum.
    a. Final cleaning shall be “Vacuum Clean”.

d. Walls:
1. Clean surface of finish wall materials in accordance with manufacturer’s cleaning and maintenance recommendations.
2. Remove all fingerprints, scuff marks, etc. from painted gypsum board.
    a. Repaint all area’s that cannot be cleaned to like new appearance.
3. Demolition – unless otherwise noted, all walls shall be demolished as indicated in drawings and/or specified.
    a. Refer to Section 02 41 19 – Selective Building Demolition & Protection

e. Ceilings:
1. Clean surface of finish wall materials in accordance with manufacturer’s cleaning and maintenance recommendations.
2. Remove all fingerprints, scuff marks, etc. from painted gypsum board.
    a. Repaint all area’s that cannot be cleaned to like new appearance.
3. Demolition – unless otherwise noted, all ceilings shall be demolished as indicated in drawings and/or specified.
    a. Refer to Section 02 41 19 – Selective Building Demolition & Protection

f. Exterior Wall Glazing:
1. Wash and shine glazing and mirrors to be free of streaks.

g. Interior Wall Glazing:
1. Wash and shine glazing and mirrors to be free of streaks.

h. Electrical Fixtures:
1. Clean surface of finish lighting fixtures to be free of dust, finger prints etc. to a new appearance.
2. Clean out debris, bugs, etc. which have accumulated inside fixture lens.
3. Vacuum and wipe insides of electrical and low voltage panels, racks and cabinetwork.

i. Fixtures:
1. Clean equipment and fixtures to sanitary condition.
2. Demolition – unless otherwise noted, all fixtures shall be removed and disposed of as indicated in drawings and/or specified.
    a. Refer to Section 02 41 19 – Selective Building Demolition & Protection
    b. Refer to Section 02 41 13 – Selective Site Demolition & Protection

j. HVAC and ventilation system and components:

1. If ducts were not sealed during construction, and contain dust or dirt, clean ducts using HEPA vacuum immediately prior to Substantial Completion and prior to using ducts to circulate air.
2. Replace all air filters installed at air handling units and ducts before and during construction.
3. Oil film on sheet metal shall be removed before shipment to site.
    a. However, ducts shall be inspected to confirm that no oil film is present.
        1. Remove oil using cleaning and maintenance products as described in Part 2 of this Section.
4. Demolition – unless otherwise noted, all ductwork, brackets, etc. shall be removed and disposed of as indicated in drawings and/or specified.
    a. Refer to Section 02 41 19 – Selective Building Demolition & Protection
5. Demolition – Ductwork: unless otherwise noted, all ductwork, brackets, etc. shall be removed and disposed of as indicated in drawings and/or specified.
    a. Refer to Section 02 41 19 – Selective Building Demolition & Protection
6. Demolition –HVAC units: refer to drawings for scope of removal of units.
    a. Refer to Section 02 41 19 – Selective Building Demolition & Protection

2. Recycled materials:
    a. Remove and properly recycle materials removed during construction work, refer also to;
        1. Refer to Division 1 for construction waste management and disposal/recycling requirements and as described in General Contractor's Construction Waste Management Plan as approved by the Owner.
    b. Demolition - Remove and properly recycle materials removed during demolition work, refer also to;
        1. Waste management program, refer to;
            a. Refer to Division 1 for construction waste management and disposal/recycling requirements and as described in General Contractor's Construction Waste Management Plan as approved by the Owner.
3. Demolished materials:
    a. Remove and properly dispose of all demolished materials during demolition work, refer also to;
        1. Section 02 41 13 – Selective Site Demolition & Protection
        2. Section 02 41 19 – Selective Building Demolition & Protection
        3. Refer to Division 1 for construction waste management and disposal/recycling requirements and as described in General Contractor's Construction Waste Management Plan as approved by the Architect and Owner.
4. Waste materials:

a. Remove and properly dispose and recycle all waste materials during construction work, refer also to;

1. Refer to Division 1 for construction waste management and disposal/recycling requirements and as described in General Contractor's Construction Waste Management Plan as approved by the Owner.

b. Demolition - Remove and properly dispose and recycle all materials during demolition work, refer also to;

1. Refer to Division 1 for construction waste management and disposal/recycling requirements and as described in General Contractor's Construction Waste Management Plan as approved by the Owner.
2. Section 02 41 13 – Selective Site Demolition & Protection
3. Section 02 41 19 – Selective Building Demolition & Protection

5. Exterior:

a. Clean site and roof areas of sticks, rubbish, and other debris.
b. Broom and power wash all flatwork and paving.
c. Clean all finish paving materials such as brick, interlocking pavers, etc. in accordance with the specific manufacture.
d. Broom-clean exterior paving.
e. Rake clean ground surfaces.
f. Coordinate cleaning, protection and maintenance with all Division 2 sections.

G. Prior to final inspection or Owner occupancy, General Contractor shall conduct inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that entire Work is clean.

END OF SECTION 01 74 00

SECTION 01 74 19 – CONSTRUCTION WASTE MGMT. AND DIPOSAL-RECYCLING

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Construction Waste Management Plan

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

C. Title 24, Chapter 11 – California Green Building Standards Code:

1. Non-residential new construction:

a. All occupancy types.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Comply with "Construction Waster Management Plan".

B. Construction Monitoring/Observations by others:

Item	**Name of Test**	**Performance Results**	**By Whom**
As indicated in Waste Management Plan	Const. Waste Management	Comply	As herein indicated and in Waste Management Plan document

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for five (5) years providing/installing/finishing projects of similar size and complexity.

C. Regulatory Requirements: Comply with all applicable federal, state, and local ordinance and regulation requirements for recycling and waste management.

D. Disposal Sites, Recyclers, and Waste Management Processors: Use only facilities properly permitted by State and Local authorities.

E. Construction Waste Management Plan

1. The General Contractor shall prepare a Construction Waste Management Plan and submit to the Owner and Architect for review within 21 days after the date of the Notice to Proceed.
2. The Construction Waste Management Plan shall identify the means and methods by which the Contractor will achieve the project's recycling goals.
3. Make any revisions to the Construction Waste Management Plan per Architect's review comments. Submit the revised plan to the Owner and Architect for final approval.

F. Implementation of Construction Waste Management Plan:

1. Designate an on-site party responsible for instructing workers and implementing the Construction Waste Management Plan.
2. Distribute copies of the Construction Waste Management Plan to the job site foreman, superintendent, and each subcontractor.
3. Include Waste Management and recycling in worker orientation.
4. Provide instruction on appropriate separation, handling, recycling and salvaging methods to be used by all parties at the appropriate stages of the work at the site.
5. Prominently display Construction Waste Management Plan. If on-site separation is used, clearly mark all containers and areas on site dedicated to each type of recyclable material.
6. Include waste management and recycling discussion in pre-fabrication meetings with subcontractors and fabricators.
7. Also include discussion of waste management and recycling in regular job meetings and job safety meetings conducted during the course of work at the site.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Salvage Materials: Provide protective handling and storage as required for all items identified for salvage and reuse by the Owner.

C. Recyclable Waste: Remove all recyclable materials, as identified in the Waste Management Plan, from the work location to approved containers daily. Failure to remove waste materials will be considered cause for withholding payment.

D. Provide containers as required to comply with Construction Waste Management Plan and to prevent contamination of materials, including protection from rain and snow as applicable.

E. Replace loaded containers with empty ones as demand requires.

F. Handling: Deposit all materials in the containers in a clean (no mud, adhesives, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.

G. If contamination chemically combines with the material so that it cannot be cleaned, do not deposit into the containers.

1.7 JOB CONDITIONS

A. Environmental Requirements: Transport waste materials from the Work Area to the recycle containers and carefully deposit in the containers in a manner to minimize noise and dust. Close container covers immediately after materials are deposited. Do not place recyclable waste materials on the ground adjacent to a container.

B. Existing Conditions: Coordinate with "Instructions to Bidders" and Supplementary Conditions".

1.8 PROTECTION

A. Protect finish surfaces at all times from work under this section.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Demolition.

B. Related Sections include, but are not limited to the following:

1. Refer to Division 1 for sustainability requirements.
2. Refer to Division 1 for quality control requirements.
3. Refer to Division 1 for closeout submittal procedures.
4. Refer to Division 1 for protection and cleaning requirements.
5. Section 02 41 13 – Selective Site Demolition & Protection.
6. Section 02 41 19 – Selective Building Demolition & Protection.

1.11 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with General Contractor.

1.12 DEFINITIONS

A. Waste Materials: Construction materials that are excess to the contract requirements and which cannot be effectively used in the Work.

B. Salvaged (or Reused) Materials:

1. Construction materials recovered from existing buildings or construction sites and reused in other buildings or new building.
2. Common salvaged materials include structural beams and posts, flooring, doors, cabinetry, brick and decorative items.

C. Recyclable Waste: Waste materials that are existing on-site or are generated during the construction process that can be recycled/remanufactured into another material.

D. Categories of Salvageable or Recyclable waste include the following, but are not limited to;

1. General:

a. Cardboard:

1) Clean, corrugated cardboard such as used for packaging, etc.

b. Chemical Waste:

1) Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic chemicals.

c. Co-Mingled:

1) Several types of construction waste that are combined in a single container.
2) Co-mingling of recycling waste must be approved by the identified recycling facility.

d. Hazardous Waste:

1) Any substance whose handling and/or disposal is regulated as hazardous waste by local, state or federal authorities.

e. Paper Goods:

1) Office paper: Includes any paper, such as manufacturer instructions, specification sheets, files, correspondence, packaging, stiffeners, etc.
2) Newsprint: Shredded or whole newspaper goods.

f. Plastic:

1) Beverage containers, packaging materials (such as polystyrene "peanuts" and expanded polystyrene), containers (other than those used for hazardous materials), vinyl products, etc.

g. Sanitary Wastes:

1) Garbage: Refuse and scraps resulting from preparation, cooking, distribution or consumption of food.
2) Sewage: Domestic sanitary sewage.

h. Source Separated:

1) Materials that are separated on-site by Category.

i. Other:

1) Any additional materials identified on-site to be valued for salvage, reuse, or recycling by the Contractor and Owner.

2. Site:

a. Asphalt, Concrete, rock, brick

1) Concrete, brick, rock, broken up asphalt pavement, clay, and other inert (non-organic) materials.

b. Fill - Inert:

1) A permitted facility that accepts inert waste such as asphalt and concrete exclusively.

c. Landfill – Class III and soil:

1) A landfill that accepts non-hazardous waste such as household, commercial, and industrial waste, including construction, remodeling, repair and demolition operations.

d. Land Clearing Debris:

1) Solid Waste Generated from land clearing operations, such as stumps, woody debris, limbs and brush, clean soil, etc.
2) Does not include rock, concrete or chemically treated landscape timbers.

e. Vegetation - Existing:

1) Includes sod, shrubs, plants, and trees that will be disturbed or removed during construction.

3. Building:

a. Concrete & Masonry

1) Concrete, clay, and other inert (non-organic) materials.

b. Carpet and padding:

1) Face fiber, backing, padding and carpet cushion scrap.

c. Fabric:

1) Uncontaminated fabric scraps.

d. Glass:

1) Includes glass beverage containers, glazing and recyclable glass building materials.

e. Gypsum Wallboard:

1) Excess drywall construction materials including cuttings, other scrap and excess materials.

f. Insulation:

1) Rigid foam, batt and loose fill insulation materials.

g. Metals:

1) Metal Ferrous and Non-ferrous including;

a. Iron
b. Steel
c. Copper
d. Brass
e. Aluminum

2) Note: Includes beverage containers, packaging materials (such as metal banding) fencing, reinforcing bar, wiring, plumbing, etc.

h. Paints:

1) Unused portions of paints, primers and coatings applied on site.

i. Rubber:

1) Uncontaminated rubber scraps, including but not limited to recycled-content rubber flooring, rubber edging, tires that are no longer serviceable, etc.

j. Wood – clean & untreated:

1) Dimensional lumber
2) Wood edging
3) Wood shipping pallets
4) Wood misc. components/materials

k. Wood – clean & engineered products:

1) Plywood
2) Oriented strand board
3) Masonite
4) Particleboard
5) Manufactured trusses and beams
6) Glue-laminated timbers.
7) Rough sawn lumber/timber

4. Exclusions:

a. As herein listed

1.13 GENERAL SYSTEM DESCRIPTION

A. The Construction Waste Management goal for this project is:

1. Minimum of percentage of total Project waste shall be diverted from landfill.

B. The Contractor shall develop a Waste Management Plan as defined in this Section and submit for review by the Owner and Architect.

C. Contractor shall implement procedures to minimize the creation of construction and demolition waste on the job site. As many of the waste materials as economically feasible shall be reused, salvaged or recycled. Waste disposal in landfills shall be minimized.

D. The Contractor shall provide and submit documentation throughout construction that waste management, recycling and re-use of recyclable and re-useable materials are being maximized.

PART 2 **- PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Products are acceptable to use as intended for waste management work.

2.2 MATERIALS

A. As necessary by contractor to complete their work and used for the purpose of demolition, etc. as herein specified and additionally as indicated in contract documents.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for complete and proper demolition activities, as selected by the General Contractor subject to the approval of the Architect.

2.4 CONSTRUCTION WASTE MANAGEMENT PLAN

A. References for Additional Information:

1. California State Agency Buy Recycled Campaign, The Department of General Services and the California Integrated Waste Management Board www.ciwmb.ca.gov/buyrecycled/stateagency
2. Refer to Division 1 for sustainability requirements.

B. Construction Waste Management Plan:

1. Contractor shall develop a construction waste management plan indicating proposed methods for collection, segregation, and removal of all construction wastes and debris produced by the work of this Contract.
2. Those waste materials produced during the course of this Contract that can be recycled cost-effectively, shall be.
3. The Waste Management Plan shall include, at a minimum, the following:

    a. Provide an analysis of jobsite waste to be generated, including types and quantities.
    b. Provide strategies for salvage, reuse, or recycling for a minimum of all materials listed below. Include additional waste materials that are deemed cost-effective to salvage, re-use or recycle. See "Definitions" above for material categories.
    c. Provide documentation to justify decision not to recycle any items listed below.
    d. Contractor may choose on-site separation or co-mingled with off-site separation.

        1. Method chosen shall be documented.

    e. Show compliance with applicable State and Local ordinances and regulations.
    f. Identify and document construction waste haulers and recyclers which will handle the designated material.
    g. Include participation in and procedures for recycling/re-use program.
    h. Include participation in and procedures for rebate programs.
    i. Identify materials that are not recyclable or otherwise conservable that must be disposed of in a landfill or other means acceptable under governing State and Local regulations.
    j. Indicate any instances where compliance with requirements of this Section does not appear to be possible and request resolution from Owner.

4. Contractor shall submit Construction Waste Management Plan for review and approval as part of Submittal process.
5. Review of Contractor's Waste Management Plan shall not relieve Contractor of responsibility for control of pollutants and other environmental protection measures.

C. Waste Materials: The following materials shall be salvaged and/or recycled according to this specification and the other specific product specifications.

1. Strategies for salvage and recycling shall be identified in the Waste Management Plan as required.

2. Salvage Materials: Identify materials existing on site that are candidates for salvage and re-use, either on this Project or through sale or donation to local organizations.
3. Recyclable Materials: Materials including, but not limited to the following shall be considered for salvage or recycling.

    a. Schedule: Applies to all waste materials produced during the course of this Contract, as listed in drawings and as specified in other sections to include, but not be limited to:

        1) General:

            a. Cardboard
            b. Paper Goods
            c. Chemical Waste
            d. Co-Mingled materials
            e. Hazardous Waste
            f. Plastic
            g. Sanitary Wastes
            h. Source Separated Materials
            i. Other material valued for salvage, reuse and/or recycling

        2) Site:

            a. Sand
            b. Asphalt
            c. Concrete
            d. Masonry
            e. Brick
            f. Rock
            g. Rebar
            h. Fill - Inert:
            i. Landfill – Class III and soil
            j. Land Clearing Debris
            k. Vegetation - Existing

        3) Building:

            a. Concrete
            b. Precast concrete
            c. Masonry
            d. Brick
            e. Rebar
            f. Glass
            g. Gypsum board
            h. Insulation
            i. Metal
            j’ Paint
            k. Rubber
            l. Wood – clean and untreated
            m. Wood – clean & engineered products

        4) Exclusions:

a. Pressure treated or creosote treated wood
b. Non-Recyclable Waste:

1. All waste materials that cannot be recycled, due to contamination, lack of recycling facilities or salvage options or high-cost.

D. Delivery Receipts: Maintain copies of all delivery receipts for waste materials sent to permitted waste materials processors or recyclers that indicate the location and name of firm accepting recyclable waste materials, types of materials, net weights of each type, which materials have been recycled, and date of delivery.

E. Maintain working copy of Construction Waste Management Plan at site for review by Owner, Architect and all Trades involved in Project.

F. Participation in Recycling/Re-Use and/or Rebate Programs: Rebates, Tax Credits, and other savings obtained for recycled or re-used materials shall accrue to the General Contractor.

PART 3 **- EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

1. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work in accordance with Waste Management Plan.

3.4 INSTALLATION/IMPLEMENTATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Waste Management

1. General: Implement waste management procedures in accordance with Construction Waste Management Plan as approved by Owner**.** Maintain procedure throughout the life of this Contract.
2. On-Site Source Separation (when this method is used by the General Contractor). Separate, store, protect, and handle at the project site all identified recyclable and salvageable waste products to prevent contamination of materials and maximize recycling and salvage of

materials. Clearly label all recycling containers and list acceptable and unacceptable materials.

3. Collection: Arrange for timely pickups from the site or deliveries to approved recycling facilities of designated waste materials to keep construction site clear and prevent contamination of recyclable materials. Maintain records accessible to the Owner for verification of construction waste materials recycling.
4. Delivery Receipts: Keep and maintain records of all deliveries to recycling facilities and all pickups of waste materials at the site by others as specified above.
5. Salvage and Re-use: Identify salvage and re-use options for all materials that are deemed to be re-usable, but will not be re-used on this Project.
6. Non-Recyclable Waste: Collect and segregate non-recyclable waste for delivery to a permitted landfill site.
7. Hazardous Waste: Control and dispose of hazardous waste in accordance with local, state, and federal regulations.

3.5 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so their rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the Owner.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Refer to Division 1 for closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the Architect after he receives the General Contractor's NOTICE of "Certificate of Substantial Completion".

END OF SECTION 01 74 19

SECTION 01 78 00 – CLOSEOUT SUBMITALS

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. General Contractor shall furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. As-Built Documents: (Record of As-Built conditions during construction)

a. Keeping and recording of progress As-Built Drawings and Specifications during construction.

1) Includes record keeping for site demolition work

b. Distribution of Draft As-Built Drawings and Specifications at project closeout for review by Architect and Owner.
c. Distribution to Architect and Owner of final As-Built drawings and Specifications once contractor has addressed all comments by Owner and Design team.

2. O & M Manuals:

a. Compilation of O&M Manuals in hard copy format and distribution to the Owner and Architect as a Submittal for review and comment.
b. Application of Architect and Owner revisions and re-submittal for final review.
c. Upon reviewed approval, issuance of finalized O&M manuals in the following formats:

1) One (1) PDF File
2) One (1) hard copy set

3. Project Closeout

a. Punch Lists / Corrective Construction:

1) Initiate project closeout by providing a comprehensive list of all items to be completed and corrected.

b. Testing, Inspections and adjusting:

1) Perform all tests and inspections in accordance with plans and specifications.

c. California Energy Code Compliance:

1) Observe all testing, document and complete all forms for compliance.

d. Commissioning and Balancing:

1) Check all mechanical equipment, electrical lighting, etc. for compliance with design, codes and standards.

e. Operation, Maintenance and System Demonstration:

1) Train Owner personnel in operation and maintenance of all equipment, mechanical equipment, hardware, etc.

f. Green Building Standards, California:

1) Document that all required, specified and indicated California Green Building Standards have been addressed.
2) All documentation shall be included in O&M manual.

g. Warrantees / Guarantees / Bonds:

1) Before final payment, furnish to the Owner, through the Architect, all written warranties of work and equipment installed under the contract.
2) Obtain specified bonds.

h. Insurance

1) Notify the Owner of any changes in insurance coverage requirements.

i. CALGreen Documentation:

1) Provide documentation as covered in Division 1 sustainability requirements and in individual sections.

j. Certificate of Occupancy:

1) Obtain this and similar releases that permit the Owner's full and unrestricted use.

k. Extra Stock & Spare parts
l. Final Cleaning
m. Keying and Keying Schedule
n. Certificates, Affidavits and Records
o. Agency related submittals

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:

a. All occupancy types.

1.3 PARTIAL OCCUPANCY

A. The Owner has the right to use or occupy the building or any part thereof, or to use equipment installed under the contract, prior to final acceptance.

B. Substantially completed portions of Work shall be designated and authorized with Certificate of Substantial Completion (AIA Document G704) for Owner's occupancy prior to completion of entire Work.

1. Refer to document herein attached.
2. Owner shall use or occupy the building site following issuance of Certificate of Substantial Completion (AIA Document G704).

C. Owner will occupy designated areas for purpose of installing Owner-furnished items.

D. Contractor shall allow:

1. Access for Owner personnel.
2. Owner use of parking facilities.

E. Upon occupancy the following shall be provided by General Contractor unless otherwise approved and contracted to be provided by Owner;

1. Maintenance
2. Security
3. Insurance

1.4 AS-BUILT DRAWINGS / DOCUMENTS

A. As-Built Drawings / Documents

1. General:

a. Show materials, size and depth from surface of said installations, as well as line followed
b. In addition the General Contractor shall keep accurate record of all dimensioned items including such things as walls, ceilings, etc., where installed items differ in location from where dimensioned on the Drawings.
c. Do not permanently conceal any work until required information has been recorded.
d. Ensure entries are complete and accurate.

1) All information entered on As Built documents during course of project shall be neat, legible and emphasized by drawing "clouds" around changed items. Format of changed items on drawings shall be acceptable to Architect.
2) Actual information must be entered in documents, just a note as to the ASI, RFI number, etc. is not acceptable.
3) All symbols and designations used in preparing As Built documents shall match those used in Contract Drawings and Specifications.

e. Keep record information current (within 7 days) with construction progress.
f. Label each document "Progress As-Built Documents" in large, neat, printed letters and store separate from those used for construction.
g. Architect and their consultants will not release electronic files to any parties unless agreed upon in writing.

1) Architect shall issue waiver release of liability form for signatures prior to release of any electronic files agreed upon.

2. Documentation:

a. As-Built Conditions: Maintain on the construction site, one hard copy set of the following to record as-built conditions, (which record actual revisions to the work to generate final As-Built documents), including, but not limited to;

1) Drawings
2) Specifications / Project Manual
3) Addenda
4) Requests for Information (RFIs)
5) Architects Supplemental Instructions (ASIs)
6) Construction Change Directives (CCDs)
7) Change orders (CO) and other modifications to the contract
8) Reviewed shop drawings, product data & samples
9) Manufacturer's instruction for assembly, installation, operation and maintenance.
10) Storm Water Pollution Prevention Plan
11) Mock ups

b. Underground Work: At the time of installation General Contractor shall record, to scale where possible or by figured dimensions, installed locations of all underground or concealed work, including but not limited to:

1) Plumbing
2) Electrical
3) HVAC
4) Low voltage
5) Controls
6) Fire alarm

c. Site demolition: During demolition, record conditions of found items and/or items discovered to differ from design understanding documentation, including but not limited to:

1) Utilities & termination points
2) Line voltage cabling and conduits
3) Low voltage cabling and conduits
4) Abandoned utilities, man holes, etc.

3. Standards

a. Drawings:

1) Legibly mark and record the following kinds of actual construction (as-built) information including, but not limited to:

a) Changes made by Change Orders, CCD's, RFI's, ASI's, verbal confirmations and other modifications described in these Specifications, General Conditions, Addenda, and Owner accepted non-conforming work during the construction period.
b) Locations of Work buried under and outside the building, such as plumbing, gas, sewer and electrical lines and conduits.
c) Locations of significant Work concealed inside the building whose general locations have been changed from those shown on the Contract Documents.

d) Locations of items, not necessarily concealed, which have been changed with the Owner's prior acceptance, from the location shown on the Contract Documents.

i. Locate main runs of piping, conduit, ductwork, and similar items by dimensions.
ii. Locate other items either by dimensions or in relation to spaces within the building.
iii. Note any changes to grades and or elevation changes.
iv. Furnish additional drawings as necessary for clarification of relocated work by General Contractor.
v. Record deviations from the sizes, locations, and other features of installation shown in the Contract Documents.

a. Establish locations of underground Work by dimension to column lines or walls, locating turns, and by referenced centerline and invert elevations and rates of fall.

vi. Indicate field changes in dimensions and detail.

e) Exact dimensioned location of all utilities underground within the construction limit lines inside and outside the building.
f) Depth of various elements of the foundation in relation to the ground level.
g) Locate and dimension all work including stubs for future connections, with reference to permanent landmarks or buildings and indicate depth below finish grade.

b. Project Manual / Specifications:

1) Note all manufacturers, model numbers, quantities, etc. which have been changed and/or added.
2) Legibly mark and record at each product section a description of the actual products installed, including the following:

a) Manufacturer's name, product model & number, finish & color
b) Product substitutions or alternates utilized.
c) Changes made by addenda and modifications.

4. Preliminary As-Built Documents – Review/Preliminary

a. At time of acceptance of the Work and prior to final payment, formalize the Progress As-Built Documents (drawings and specifications) kept during the course of construction to prepare and issue a "Preliminary As-Built Documents" package consisting of drawings, specifications, and other items necessary in PDF format.

1) PDF file(s) shall be supplied to Owner and Architect on a CD / DVD or uploaded to the Williams + Paddon FTP site (Newforma Information Exchange).

5. Final As-Built Documents – Final Submission

a. After incorporating Owner, Architect and Project Consultants review comments and prior to final payment, formalize the Documents (drawings and specifications) to prepare a "Final As-Built Documents" package consisting of drawings, specifications, and other items necessary in PDF format.

1) PDF file(s) shall be supplied to Owner and Architect on a DVD or uploaded to the 19six Architects FTP site (Newforma Information Exchange).

b. Additionally, General Contractor will deliver one (1) hard copy of the Final As-Built Documents to the Owner.
c. Sign and date package of "Final As-Built Documents" and submit them to the Owner and Architect at time of final acceptance of the Work.
d. Contract shall not be deemed to be completed, nor shall final payment become due until the above requirements have been complied with.

1.5 O & M (Operation and Maintenance) MANUALS

A. General:

1. All items with moving parts shall be included in the O & M Manuals.
2. All electrical and low voltage items/devices shall be included in the O & M Manuals.
3. All HVAC components shall be included.
4. All controls shall be included.
5. All specific specification sections which require O & M Manuals shall be included.
6. Cleaning recommendations shall be included for the following:

a. Finish flooring
b. Glass and glazing
c. Plastics
d. Laminates
e. Wall finishes, including, but not limited to;

1) Wall covering
2) Ceramic tile, stone and porcelain tile
3) Pre-finished materials

f. Ceiling finishes
g. Finish hardware
h. HVAC filters - replaced

B. Manuals shall include for each specific item, product, assembly, etc:

1. Record data, maintenance and operating instructions.

C. O&M Manuals shall be submitted to the Architect in hard copy format for review and comment as part of the Submittal review / Closeout process.

1. General Contractor shall submit initial O&M manual(s) for review and comment.
2. Owner, Architect and design team shall review manual(s) and return with comments for inclusion into final O&M manual(s).
3. General Contractor shall incorporate any required changes and re-submit for final review by Architect.
4. Upon approval, General Contractor will issue final O&M manuals as follows:

a. Owner:

1) One hard copy set
2) One DVD with the entire manual in PDF format.

b. Architect:

1) One DVD with the entire manual in PDF format.

D. Format:

1. PDF Document

a. General:

1) Compile all of the required data into one PDF file.
2) DF file shall include, but not be limited to:

a) Cover Sheet

i. Title: "Operation and Maintenance Manual"
ii. Project name
iii. Date
iv. General Contractor name and contact information

a. Company
b. Project manager
c. Superintendent
d. Engineer

b) Table of Contents

i. List each specification section in numerical order and embed links to each section of the PDF file.

c) Data

i. Cover Sheet for each specification section and miscellaneous scope of work not part of a specific section

a. Use and fill in herein attached Cover Page (document 01700o&m)

ii. Operation:

a. Complete instructions regarding operation of equipment.
b. Prepare and include additional data as required for the instruction of the Owner's operating and maintenance personnel.

iii. Maintenance:

a. Complete instructions regarding maintenance of equipment, materials, etc.

iv. Parts:

a. Complete nomenclature of replaceable parts, materials, paints, etc., their part and product numbers and name, website, email and address of nearest source of parts/materials.

v. Extra material:

a. Complete list of material verified and signed by Owner.

vi. Warranty:

a. Copy of each guarantee/warranty and service contract issued for equipment, materials, work, etc.
b. It is allowed to have these come in later if their availability is affected by commissioning etc.

vii. Extraneous Data:

a. When manufacturer's catalog pages are included, clearly indicate the items included in this installation and delete or otherwise clearly indicate data which is not applicable to this installation.

viii. Training:

a. Description of training of personnel.

1. General Contractor to provide documentation indicating who was trained, who conducted the training and what the subject/equipment was. Refer also to applicable specification sections.

2. Hard copy manuals:

a. Compile all the data for each specification section into multiple volumes

1) 6" x D type, three-ring binders, in durable plastic sized for 8-1/2" x 11" with exterior slide in sleeves for cover sheets for each binder.

b. Binders shall include, but not be limited to;

1) Cover Sheet on front of each binder

a) Title: "Operation and Maintenance Manual"
b) Project name
c) Date
d) General Contractor name and contact information

i. Company
ii. Project manager
iii. Superintendent
iv. Engineer

a) Volume indicated on bottom of each cover

i. One, two, three, etc. as required to include all specifications.

2) Table of Contents page in front of each Binder

a) List each specification section in numerical order.

3) Divider tabs for each division

a) Mechanical, electrical and low voltage shall be provided in separate binders

4) Data

a) Cover Sheet for each specification section and miscellaneous scope of work not part of a specific section

i. Use and fill in herein attached Cover Page

b) Operation:

i. Complete instructions regarding operation of equipment.
ii. Prepare and include additional data as required for the instruction of the Owner's operating and maintenance personnel.

c) Maintenance:

i. Complete instructions regarding maintenance of equipment, materials, etc.

d) Parts:

i. Complete nomenclature of replaceable parts, materials, paints, etc., their part and product numbers and name, website, email and address of nearest source of parts/materials.

e) Extra Material:

i. Complete list of material verified and signed by Owner

5) Warranty:

a) Copy of each guarantee/warranty and service contract issued for equipment, materials, work, etc.
b) It is allowed to have these come in later if their availability is affected by commissioning etc.
c) Extraneous Data:

i. Where contents of manuals include manufacturer's catalog pages, clearly indicate the items included in this installation and delete or otherwise clearly indicate data which is not applicable to this installation.

d) Training:

i. Description of training of personnel.

1.6 PROJECT CLOSEOUT

A. General

1. Project closeout shall be initiated by the General Contractor.

a. Project must be ready for Beneficial Occupancy by the Owner**.**

2. Project Closeout procedures shall comply with this section, all other specification sections, General Conditions, Division 1 and the Owner / General Contractor contract.

B. General Contractor shall provide and/or coordinate the following:

1. Punch Lists / Corrective Construction:

a. Restoration of damaged and defective work

1) Restore or replace, as specified or determined by the Architect, material and finishes damaged during construction activities at no additional expense to the Owner.

a) This period of time shall continue until Owner has taken complete occupancy unless agreed upon otherwise.

2) Restoration shall be equal to the original Work, and finishes shall match the appearance of existing adjacent Work.

a) Owner and Architect shall review for acceptance and/or rejection of remedial work.

b. Remedial work

1) Remedial Work necessary owing to faulty workmanship or materials shall add no additional expense and/or time extension to contract with Owner.
2) Work shall be coordinated with the Owner and performed at such time and in such manner to cause minimal interruption and inconvenience to the Owner's operations.

2. Testing, Inspections and Adjusting:

a. Conduct operational tests as required to demonstrate that all systems, controls, devices, window walls, roofs, etc. have been completed and are in compliance with all requirements.
b. Furnish a written record of test results using recording type instruments where applicable and as directed, and label everything with appropriate specification section numbers.

1) These shall be included in O&M manual

c. Submit required certificates of inspection.
d. Adjust all equipment, operating devices etc. to function in accordance with their design and required operation.

1) Adjust as directed and required per commissioning.

e. All documentation shall be included in O&M manual.

3. California Energy Code Compliance:

a. Observe all testing, document and complete all forms for compliance.
b. Refer to applicable drawings and specifications and as herein specified.
c. All documentation shall be included in O&M manual.

4. Commissioning and Balancing:

a. Check all mechanical equipment, electrical lighting, etc. for compliance with design, codes and standards.
b. Refer to applicable drawings and specifications and as herein specified.

5. Operation, Maintenance and System Demonstration:

a. Systems demonstration

1) Prior to Final Inspection, furnish qualified personnel for on-the-job instruction and demonstrate operation of each system to Owner's Maintenance Staff.

a) Instruct personnel in operation, adjustment, and maintenance of equipment and systems, using operation and maintenance data as basis of instruction.
b) All training documentation shall be included in O&M manual.

2) Refer to each specification section for additional information.
3) Refer also to Division 1.

6. Warranties / Guarantees / Bonds:

a. General:

1) Manufacturer's, Contractor's and Installer's warranties notwithstanding, warrant the entire Work against defects in materials and workmanship for periods as indicated in specifications at a minimum from the date Certificate of Substantial Completion (AIA Document G704) is issued and extended as indicated in each specification section and/or as specifically noted in Division One.
    a) Guaranty/Warranty periods shall be increased in accordance with specific Specification Sections.
    b) Include this information in the O & M Manual.
2) Guarantee/warrant or bond Work as required in the individual Specification Sections.
3) Warranties between the General Contractor and manufacturers, and the General Contractor and suppliers, shall not affect guarantees/warranties between the General Contractor and the Owner.
4) Review guarantees/warranties and bonds to verify compliance with Contract Documents.
5) Compile specified bonds.
6) Compile specified guarantees/warranties using forms included in this section
    a) "General Contractor Warranty/Guarantee" (See attached 01 78 00WG form)
    b) "Sub-Contractor Guarantee" (See attached 01 78 00GSC form)
7) Co-execute as required.
8) Submit to the Architect and Owner for review.
    a) Owner and Architect will review & issue all relative comments for General Contractor to address.
    b) General Contractor will deliver guarantees/warranties and bonds to the Owner after incorporation of any Architect and Owner comments and acceptance of the Work.
    c) These warrantees and bonds shall be included in O&M manuals.

7. Insurance:
    a. Notify the Owner of any changes in insurance coverage requirements.
        1) Especially noteworthy is the transfer from the General Contractor's builder's risk policy to the Owner's comprehensive general liability policy.
    b. Provide all certificates.
8. CALGreen documentation:
    a. Provide documentation as covered in Division 1 sustainability requirements and in individual sections.
9. Certificate of Occupancy:
    a. Obtain this and similar releases that permit the Owner's full and unrestricted use.
    b. In some jurisdictions, the Owner must obtain a certificate of occupancy or occupancy permit, as required by a building code or zoning ordinance, before occupying the project. Apply for and show compliance with all construction requirements and inspections needed to obtain the certificate of occupancy.
    c. A copy of the Certificate of Occupancy shall be included in O&M manual.

10. Extra Stock and Spare parts:
    a. Deliver replacement and maintenance stock of material as specified as part of each portion of work and product.
    b. Deliver spare parts.
    c. Itemize all materials and have Owner validate and sign indicating receipt of said materials.
11. Final Cleaning:
    a. Refer to all specification sections and to Division 1 protection and cleaning
    b. Basic cleaning:
        1) General: (Interior and Exterior)
            a) Upon completion of the work, remove all waste materials, debris, rubbish, tools, construction equipment and machinery and surplus material from and about the project.
            b) Dispose of in a manner specified also in individual specification sections.
            c) Leave Project clean and ready for occupancy
            d) Thoroughly clean construction debris from all areas.
            e) Use only cleaning materials recommended by manufacturer of the material and/or surface to be cleaned.
                i. Ensure cleaning materials meet VOC and other associated criteria.
                ii. Confine cleaning to area's only requiring the specific cleaning to protect adjacent surfaces and materials.
        2) Interior:
            a) Replace all air filters in equipment.
    c. Cleaning:
        1) General:
            a) Perform a final complete professional cleaning service, using experienced and/or professional cleaners, for all features and trades, except as otherwise set forth in the specifications under the work of the specific trade as follows;
                i. Interior:

a.	Plumbing fixtures:	Washed, cleaned and labels removed
b.	Electrical equipment:	Cleaned and labels removed
c.	Electrical Fixtures:	Cleaned and labels removed
d.	Equipment:	Visible surfaces cleaned
e.	Hardware:	Cleaned and polished
f.	Finishes surfaces:	Cleaned and spots, blemishes and foreign material removed.
g.	Finish Metals:	Cleaned and polished
h.	Cabinets/Millwork:	Dusted and cleaned, including interior of cabinets/ drawers.
i.	Carpeting:	Vacuumed and spots removed
j.	Resilient flooring and base:	Broomed, spots removed, washed, waxed and polished.

1. Refer to material manufacturer's recommend practices

k. Rubber flooring and base: Broomed, spots removed, washed, waxed and polished.

1. Refer to material manufacturer's recommend practices

l. Paved surfaces: Broom, vacuum and wash
m. Concrete exposed: Broom, vacuum and wash
n. Typical: Dust everything prior to additional cleaning methods.
o. Windows/glazing: Washed and cleaned without dust and water spots

ii. Exterior: (Building)

a. Plumbing fixtures: Washed, cleaned and labels removed.
b. Electrical equipment: Cleaned and labels removed.
c. Equipment: Visible surfaces cleaned.
d. Hardware: Cleaned and polished.
e. Finishes surfaces: Cleaned and spots, blemishes and foreign material removed.
f. Finish Metals: Cleaned and polished.
g. Structural steel exposed: Washed and cleaned without water spots.
h. Architectural steel exposed: Washed and cleaned without water spots.
i. Paved surfaces: Power washed.
j. Concrete exposed: Broom, vacuum and wash.
k. Windows/glazing: Washed and cleaned without dust and water spots.
l. Roof: Remove and debris and wash.

ii. Exterior: (Site)

a. Plumbing fixtures: Washed, cleaned and labels removed.
b. Electrical equipment: Cleaned and labels removed.
c. Equipment: Visible surfaces cleaned.
d. Finishes surfaces: Cleaned and spots, blemishes and foreign material removed.
e. Finish Metals: Cleaned and polished.
f. Structural steel exposed: Washed and cleaned without water spots.
g. Architectural steel exposed: Washed and cleaned without water spots
h. Paved surfaces : Remove debris, broom and power wash.
i. Concrete exposed: Remove debris, broom and power wash..
j. Planters: Remove debris.
k. Lawn: Remove debris.

d. Owner's Right to Clean-up:

1) Should the Contractor fail to perform the Basic clean-up and specified detail clean-up, the Owner may do so and charge the associated costs thereof to the Contractor in accordance with the General Conditions.

12. Keying

a. Complete the keying schedule, delivering it to the Owner with properly tagged master, sub-master, and room and special keys. Make final changes to lock cylinders and plan for shifting the responsibility for security to the Owner.
b. Keying Schedule shall be included in O&M manual.
c. Refer also to Section 08 71 00 – Door Hardware.

13. Certificates, Affidavits and Records

a. Upon completion of the Work, the Contractor shall submit the following to the Architect and Owner:

1) Weigh-master's affidavit for concrete as set forth in Division 1 quality control and Division 2 and 49 specification sections.
2) Record of concrete placement pours.
3) Certifications specifically indicated in individual specification sections and/or Division 1.
4) Certificates of inspection for:

a) Elevators
b) Mechanical and Plumbing work
c) Electrical work

b. This documentation shall be included in O&M manual.

14. Agency related submittals

a. In addition to Submittals required by each specification section, also provide submittals as required by governing agencies, authorities and utilities and submit a final accounting of all these submittals.

1.7 SUBSTANTIAL COMPLETION:

A. The Architect's issuance of the punch list(s) and Certificate of Substantial Completion (AIA Document G704) establishes the date of Substantial Completion.

1. The date of Substantial Completion is the stage in the progress of the work when the work or designated portion thereof is sufficiently complete in accordance with the contract documents that the Owner can occupy or utilize the work for its intended use and Owner approves this date for issuance of certificate.

a. The General Contractor, when satisfied that the project is substantially complete according to the contract, shall prepare a punch list (comprehensive list of items to be completed and corrected) and submit it to the Architect and Owner along with the Contractor's Certificate of Substantial Completion.

1) Upon receipt of the General Contractor's editable (Excel format) Punch List and General Contractor's Certificate of Substantial Completion, the Architect and Owner's Representative will observe the work to determine if it is substantially compete and

generate a punch list or punch lists, to be used in addition to General Contractor's punch list.

a) General Contractor's may combine the two punch lists at Architect's discretion.

2) The General Contractor shall correct items, (whether or not they are on the punch list), that the Architect and Owner find not in accordance with the contract documents.

b. If the Architect and Owner determine that the Contractor's Certificate of Substantial Completion and punch list have been issued prematurely, a "to do" list will be issued to the General Contractor, and an additional "final" observation and punch list issuance by the Architect will be required.

1) This is an unanticipated service on the Architect's part, and will be charged to the General Contractor as an additional service.

c. When the Architect and Owner feel that the work is substantially complete in accordance with design intent and construction documents, the Architect will issue the Certificate of Substantial Completion (AIA Document G704) along with the Architect's punch list.

1) The "Substantial Completion Agreement" indicates the time allowed for completion or correction of the items, the date on which the Owner will occupy the work or designated portion thereof, and a description of the responsibilities for maintenance, heat, utilities, and insurance.

1.8 FINAL COMPLETION

A. After the General Contractor's and Architect's punch list items are corrected and all other contract requirements have been satisfied as determined by the General Contractor, the General Contractor shall submit a request for the Architect's and Owner's final observation of the work and a final application for payment using "Contractor's Certificate of Final Completion" form.

1. The final application for payment shall be prepared in accordance with The General Conditions provided the Architect has received the following assurances:

a. An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the work for which the Owner might in any way be responsible, have been paid or otherwise satisfied.

1) Contractor's Affidavit of Payment of Debts and Claims shall be used for this purpose.

b. Consent of surety, if any, to final payment. If there is a surety company involved in the project, the General Contractor shall submit documents in accordance with the General Conditions, Consent of Surety, signed by an authorized official of the surety company.

B. The General Conditions and contract associated documents require the General Contractor to list specifically under "exceptions" any indebtedness or known claims that have arisen in connection with the construction contract and have not been paid or otherwise satisfied. The General Contractor must furnish a lien bond or indemnity bond to protect the Owner with respect to each exception.

C. Final payment nor any of the remaining retained percentage shall become due until the General Contractor, submits to the Architect "other data establishing payment or satisfaction of all

obligations, such as receipts, and releases and waivers of liens arising out of the contract to the extent and in such form as may be designated by the Owner."

D. General Contractor shall file the "Notice of Completion" to the governing agency's Clerk.

1.9 FINAL PAYMENT

A. After the General Contractor submits the final application for payment supported by the documents and data required under the General Conditions, the Architect with the Owner's assistance shall make a final check to ascertain the following:

1. The work called for by the contract has been completed.
2. The Owner's interests have been protected with respect to the filing of liens as required by the general conditions and by the mechanics lien laws of the jurisdiction involved.
3. The accounts between the Owner and the General Contractor have been adjusted, including original contract sum, additions and deductions as included in change orders and unit prices, cash allowances, deduction for uncorrected work, and any adjustments for liquidated damages.
4. Written warranties and guarantees (such as those for roofing), as well as all certificates of inspection (such as for mechanical. Plumbing and/ or electrical work), have been delivered to the Architect or Owner as required.
5. Other conditions of the Contract have been met.
6. Once the Architect and Owner are satisfied that everything is in order, the Architect will issue the final certificate for payment.

1.10 CALIFORNIA ENERGY CODE COMPLIANCE

A. Comply with California Energy Code Standards.

B. Comply with California Energy Code Acceptance requirements including but not limited to;

1. The installing contractor shall act as the Acceptance Agent who shall be responsible for documenting the inspection and testing results of the acceptance requirement procedures on the Acceptance Test forms.
2. The installing contractor shall be responsible for:

a. Reviewing the plans and specifications and assure they conform with the acceptance requirements.

1) This shall be done prior to the signing of the "Certificate of Compliance"

b. Performing a construction inspection prior to testing, including all necessary instrumentation, measurement and monitoring.

1) Purchasing equipment with calibration certificates reduces the amount of required site calibration and may keep overall costs down.
2) The purpose of the construction inspection is to assure that the equipment that is installed is capable of complying with the requirements of the Standards.
3) Construction inspection also assures that the equipment is installed correctly and is calibrated.

c. Undertaking all required acceptance requirement procedures.

1) They shall be responsible for identifying all performance deficiencies, ensuring that they are corrected and again implementing the acceptance requirement procedures until all specified systems and equipment are performing in accordance with the Standards.

d. Correcting all performance deficiencies and again implementing the acceptance requirement procedures until all specified systems and equipment are performing in accordance with the standards.
e. Documenting the results of the acceptance requirement procedures including paper and electronic copies of all measurement and monitoring systems.
f. Performing data analysis, calculation of performance indices and cross-checking results with the standards.
g. Issuing a Certificate of Acceptance.

1) Building departments shall not release a final Certificate of Occupancy until a Certificate of Acceptance is submitted.

a) Certificate of Acceptance must demonstrate that the specified systems and equipment have been shown to be performing in accordance with the Standards.
b) The General Contractor, Engineer of Record, or Owner shall record their State of California Contractor's License number or their State of California Professional Registration License Number on each Certificate of Acceptance that they issue.

3. Observation of all testing
4. Documentation of all forms per California Energy Code and as noted on drawings.

1.11 CALIFORNIA GREEN BUILDING STANDARDS CODE COMPLIANCE

A. Comply with California Green Building Standards Code. (CAL Green)

B. Comply with Commissioning requirements.

PART 2 **- PRODUCTS**

Not used

PART 3 **- EXECUTION**

3.1 PERFORMANCE

A. All work shall be done in compliance with drawings, specifications, codes and authorities having jurisdictions.

END OF SECTION 01 78 00

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CONTRACTOR'S CERTIFICATE OF FINAL COMPLETION

	OWNER	**ARCHITECT**
TO:	**City of Roseville** **311 Vernon Street** **Roseville, CA 95768**	**19six Architects** **2237 Douglas Blvd., Suite 160** **Roseville, CA 95661**

PROJECT: **Dry Creek Wastewater Treatment Plant Operations and Lab Building**

ATTENTION: Architect: **19six Architects**

FROM: _____
(Firm or Corporation)

This is to certify that I, _____ am an authorized official
(Name of Individual)

of _____ working in the capacity of _____ and have
(Firm or Corporation) (Role)

been properly authorized by said firm or corporation to sign the following statements pertaining to the subject contract:

I know of my own personal knowledge, and do hereby certify, that the work of the contract described above has been substantially performed, and materials used and installed to date in accordance with, and in conformity to, the contract drawings, specifications, General Contractor "Punch List" and Architect's "Punch List".

The contract work is now complete in all parts and requirements, excepting the attached list of minor deficiencies and the reasons for each being incomplete to date, for which exemption from final payment requirements is requested (if no exemptions requested, write "none") _____. The work is now ready for your final inspection. The following items required from the General Contractor prior to application for final payment (such as O&M Manuals, record drawings, etc.) are submitted herewith, if any:

_____

I understand that neither the issuance by the Architect of a Notice of Completion, nor the acceptance thereof by the Owner, shall operate as a bar to claim against the General Contractor under the terms of the guarantee provisions of the contract documents.

Signature: _____

Date: _____

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SUB–CONTRACTOR GUARANTEE

GUARANTY FOR _____
(List Scope of Work)

We hereby guarantee the work which we have furnished and/or installed in the _____ project located in _____ for _____ year, but not less than listed in each specific section, from the Certified Date of Substantial Completion. We agree to repair or replace any or all such work, together with all or any other work which may be displaced in so doing, that may be defective in workmanship or material within the period from date of acceptance without expense whatsoever to the **Owner**, ordinary wear and tear and unusual abuse or neglect excepted. This guarantee shall be in addition to and not in limitation of any other warranty or remedy required by law or by the contract documents.

In the event of our failure to comply with the above-mentioned conditions within a reasonable time after being notified in writing, we, collectively, or separately, do hereby authorize said **Owner** to proceed to have the defects repaired and made good at our expense and will pay the costs and damages therefore immediately upon demand.

Subcontractor/Material Supplier

_____
By - Title

_____
Signature

_____
Date

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O&M Manual Specification Section Cover Page

Project Name: **City of Roseville**
Dry Creek Wastewater Treatment Plant
Operations and Lab Building

Project Address: **1800 Booth Road**
Roseville, CA 95747

Specification Section Name/Number:

Drawing Name/Number:

Scope of work description:

Subcontractor
Company Name/Address:

Contact Name:
Phone Number:
E-mail Address:

Supplier
Company Name/Address:

Contact Name:
Phone Number:
E-mail Address:

Warranty Period: ____Years

Notes:

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GENERAL CONTRACTOR'S CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER	**ARCHITECT**
TO: **City of Roseville** **311 Vernon Street** **Roseville, CA 95768**	**19six Architects** **2237 Douglas Blvd., Suite 160** **Roseville, CA 95661**

PROJECT: **Dry Creek Wastewater Treatment Plant Operations and Lab Building**

ATTENTION: Architect: **19six Architects**

FROM:_____

This is to certify that I, _____ am an authorized official of _____ working in the capacity of _____ and have been properly authorized by said firm or corporation to sign the following statements pertaining to the subject contract:

I know of my own personal knowledge, and do hereby certify, that the work of the contract described above has been substantially performed, and materials used and installed to date in accordance with, and in conformity to, the contract drawings and specifications. A list of all incomplete work is attached (Punch list).

The General Contractor hereby releases the Owner and its agents from all claims of and liability to the General Contractor for anything done or furnished for or relating to the work, as specified in the Project Manual, except demands against the Owner for the remainder of progress payments retained to date, and unresolved written claims prior to this date.

The contract work is now substantially complete, ready for its intended use, and ready for your inspection.

Signature: _____

Date: _____

Accepted By

Firm Name: _____

Signature: _____

Date: _____

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GENERAL CONTRACTOR'S AT RISK WARRANTY/GUARANTEE

WARRANTY/GUARANTEE for

PROJECT: **Dry Creek Wastewater Treatment Plant Operations and Lab Building**

We hereby warrant/guarantee that the _____
which we have provided in the _____
has been completed in accordance with the requirements of specification SECTION _____ and the Contract Documents.

We agree to repair or replace any or all of our Work, together with any other adjacent Work which may be displaced by so doing, that may prove to be defective in its workmanship or material within a period of _____ months from the date of acceptance of the above-named Project by the Owner; and we also agree to repair any and all damages resulting from such defects, all without any expense to the Owner, ordinary wear and tear and unusual abuse or neglect excepted. This period of time shall be adjusted to be a longer period as indicated in each specific specification section.

In the event of our failure to comply with the above-mentioned conditions; within sixty (60) days after being notified in writing by the Owner to proceed to have such defective Work repaired or replaced and made good at our expense, and we will honor and pay the costs and charges therefore upon demand.

Signed _____ Date
Subcontractor's name, address and license number

Countersigned _____ Date
Manufacturer's name and address

((OR))

Signed _____ Date
General Contractor's name, address and license number

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SECTION 01 79 00 – DEMONSTRATION AND TRAINING

PART 1 **- GENERAL**

1.1 REQUIREMENTS INCLUDED

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Section includes: Provide equipment and systems demonstration and instruction in accordance with Contract Documents

1. Videotape seminars and system demonstrations.

1.2 RELATED SECTIONS

A. Refer to Division 1 for sustainability requirements

B. Refer to Division 1 for project coordination requirements

C. Refer to Division 1 for closeout submittal procedures

D. Refer to Division 1 for Commissioning requirements

E. Divisions 21 through 28

1.3 DESCRIPTION

A. Seminar Agenda and Outline:

1. Prepare a seminar agenda and outline in consultation and cooperation with Owner. Include following:

a. Equipment and systems which will be included in seminars.
b. Name of companies and representatives presenting at seminars.
c. Outline of each seminar's content.
d. Time and date allocated to each system and item of equipment.

2. Submit a preliminary seminar agenda and outline for review and comment by Owner.

a. Revise and resubmit Agenda and outline until all seminar requirements have been satisfied and seminar dates and presenters have been finalized.

3. Submit a final seminar agenda and outline no later than eight weeks before date of Acceptance of Work.

B. Seminar organization:

1. General Contractor's presentation leaders shall chair seminars.

a. Coordinate qualification of training personnel, seminar contents and presentations with Owner.

2. Coordinate individual presentations and ensure manufacturer's representatives scheduled to be at training seminars are present.

3. Arrange for presentation leaders familiar with design operation, maintenance and troubleshooting of equipment and systems.
    a. Where a single person is not familiar with all aspects of equipment or system, arrange for specialists familiar with each aspect.
4. Coordinate proposed seminar dates with Owner and select mutually agreeable dates.
5. Videotaping: arrange for videotaping of training seminars and system demonstrations, including seminar and demonstration questions and answers.

C. Seminar Content:

1. Commissioning Agent will explain design philosophy of primary systems.
2. Include following information in presentations dealing with specific systems:
    a. An overview of how system is intended to operate.
    b. Describe design parameters, constrains and operational requirements.
    c. Describe system operation strategies.
    d. Provide information to help in identifying and troubleshooting problems.
3. Include following information in presentations dealing with equipment.
    a. Explanation of how equipment of how equipment operates.
    b. Recommended preventative and routine maintenance.

D. System Demonstration:

1. Demonstrate operation of equipment and systems when specified in individual technical sections. Include following in demonstration.
    a. Start-Up and shut down.
    b. Operation.
    c. Scheduled and preventative maintenance.
    d. Troubleshooting.
2. Demonstration may be conducted at time of original starting with Owner's prior approval.

E. Seminar and Demonstration Questions:

1. Be prepared to answer questions raised by Owner's personnel at demonstrations and seminars.
2. If unable to satisfactorily answer question immediately, provide written response within three days.

F. Use manufacturer's operation and maintenance data as basis of instruction.

1.4 CONTRACTOR START-UP REPORT FORMS

A. Videotapes: Submit two copies of each videotape; include label on each tape and on each container identifying Project and Seminar content.

PART 2 **- PRODUCTS**

Not used

PART 3 **- EXECUTION**
Not used

END OF SECTION 01 79 00

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SECTION 01 81 13 – PROJECT SUSTAINABILITY REQUIREMENTS

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to as herein specified.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Code of Regulations, Title 24, Part 6.

C. Title 24, Chapter 11 – California Green Building Standards Code.

1. Non-residential new construction:

a. All occupancy types.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Title 24, Chapter 11 – California Green Building Standards Code.

B. Standards:

1. Refer to Drawings and as herein specified.
2. General Contractor shall be responsible for full implementation of Construction BMP's, testing and monitoring in the project Storm Water Prevention Plan (SWPPP)

a. Plan Number: WDID [Fill in number]
b. Note: Including required reporting to the States Web site

1. https://smarts.waterboards.ca.gov/.

C. Construction Testing:

1. Refer to Drawings and as herein specified.

1.4 SUMMARY

A. This section lists requirements and procedures for compliance with certain Green Building Standards as set forth in the California Code of Regulations, Title 24 Part 11.

1.5 MEETINGS

A. Refer to Division 1 project meeting requirements.

1.6 RELATED WORK/SECTIONS

A. Related Sections include, but are not limited to:

1. Division 1
2. Division 1 substitution, deviation and/or submittal procedures
3. Division 1 Construction Waste Management and Disposal-Recycling requirements.

B. Divisions 2 through 49 Sections for sustainability requirements specific to the Work of each of those Sections.

C. The General Contractor shall refer to Division 1 commissioning requirements.

1.7 GENERAL REQUIREMENTS

A. The General Contractor shall designate an on-site field staff person to act as the General Contractor's Sustainability Project Coordinator for the duration of the project.

1. The General Contractor's Sustainability Project Coordinator shall have the following qualifications:

a. Experience on at least 2 prior projects for:

1) Preparation and implementation of Construction Waste Management Plan
2) Building Commissioning

2. The General Contractor's Sustainability Project Coordinator shall facilitate the implementation and documentation of all sustainability requirements assigned to the General Contractor, including coordination with sub-contractors on preparation of related construction submittals.

B. The General Contractor shall prepare a Construction Waste Management Plan and submit to the Owner and Architect within 30 days after the date of the Notice to Proceed and prior to the start of any work on site indicating how the following requirements will be met:

1. Refer to Division 1 for construction waste management and disposal/recycling requirements
2. Diversion of required percentage of construction and demolition debris from disposal in landfills and incinerators in compliance with the requirements of reference standards and as herein indicated.

a. Recycled amount:

1) 50%
2) Note that diversion may include donation of materials to charitable organizations and salvage of materials on site.

b. Identify the materials to be diverted from disposal: provide an analysis of jobsite waste to be generated, including types and quantities.

1) Identify a specific area on the construction site for collection of recyclable materials.
2) Identify how and where these materials will be sorted.

3) Identify how these materials are to be diverted: provide strategies for salvage, reuse or recycling.
4) Identify where these materials will be diverted: include a list of recycling facilities to which indicated recyclable materials will be distributed for disposal.
5) Identify methodology for maintaining records of recycling efforts throughout construction process.
6) Identify construction haulers and recyclers to handle the designated materials.

c. Identify materials that are not recyclable or otherwise conservable that must be disposed of in a landfill or other means acceptable under governing State and Local regulations.
d. Indicate any instances where compliance with requirements of this section does not appear to be possible and request resolution from Owner and Architect.
e. Include participation in and procedures for recycling/re-use programs.

1) Participation in Re-Use Programs: Rebates, Tax Credits, and other savings obtained for recycled or re-used materials shall accrue to the General Contractor.

f. Include participation in and procedures for rebate programs.

1) Participation in Re-Use Programs: Rebates, Tax Credits, and other savings obtained for recycled or re-used materials shall accrue to the General Contractor.

3. Show Compliance with applicable State and Local ordinances and regulations.
4. The Construction Waste Management Plan shall be subject to review and approval by Owner and Architect.
5. Review of General Contractor's Waste Management Plan shall not relieve General Contractor of responsibility for control of pollutants and other environmental protection measures.

C. The General Contractor shall submit sustainability related documentation as part of construction submittals for:

1. Items defined within Division 1 sustainability requirements
2. All materials specified in Divisions 2 through 49

1.8 CALIFORNIA GREEN BUILDING STANDARDS CODE REQUIREMENTS

A. General:

1. The General Contractor is responsible for maintaining all records relating to the California Green Building Standards Code sections noted herein.
2. Verification of compliance with the California Green Building Standards Code sections noted herein shall be provided by the General Contractor to the enforcing agency upon request.

B. California Building Standards Related Mandatory Measures Requirements:

1. Storm Water Soil Loss prevention Plan (Cal Green 5.106.1)
2. Construction Waste Reduction, Disposal & Recycling (CalGreen 5.408)

a. Requirements:

1) Prepare and implement the Construction Waste Management Plan as identified under Section 1.08 General Requirements. Update the waste management plan as may be required during construction.

2) General Contractor shall recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction and demolition debris, or meet a local construction and demolition waste management ordinance, whichever is more stringent.

a. General Contractor shall maintain waste haul tickets or other such records identifying the diversion rate achieved by the project.
b. Material diversion rate shall be calculated by weight or volume, but not by both in the same project.
c. Material diversion calculations shall exclude excavated soil and land-clearing debris.

3) General Contractor shall reuse or recycle 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing. For a phased project, such material may be stockpiled on site until the storage site is developed
4) General Contractor shall provide final summary of construction waste diversion to Owner and Building Official at the end of the project.

3. Commissioning (CalGreen 5.410.2)

a. Requirements:

1) Refer to Division 1 Commissioning requirements.

4. Duct Protection (CalGreen 5.504.3)

a. Requirements:

1) At the time of rough installation, during storage on the construction site and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of dust or debris which may collect in the system.

5. Finish Material Pollutant Control – Adhesives, Sealants and Caulks (CalGreen 5.504.4.1)

a. Requirements:

1) Adhesives, sealants and caulks used on the project shall meet the requirements of the following standards:

a. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits as shown in CalGreen Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene, dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified below.
b. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weight more than one pound, and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.

6. Finish Material Pollutant Control – Paints and Coatings (CalGreen 5.504.4.3)
    1) Requirements:
        a. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in CalGreen Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in CalGreen Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Non-flat, or Non-flat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 or the 2007 California Air Resources Board Suggested Control Measure and the corresponding Flat, Non-flat or Non-flat-High Gloss VOC limit in CalGreen Table 5.504.4.3 shall apply.
        b. Aerosol paints and coating shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522 (c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.
7. Finish Material Pollutant Control – Carpet Systems (CalGreen 5.504.4.4)
    a. Requirements:
        1) All carpet installed in the building interior shall meet the testing and product requirements of one of the following:
            a. Carpet and Rug Institute's Green Label Plus Program
            b. California Department of Public Health Standard Practice for the testing of VOC's (Specification 01350)
            c. NFS/ANSI 140 at the Gold Level
            d. Scientific Certifications Systems Sustainable Choice
        2) All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program.
        3) All carpet adhesive shall meet the requirements of Table 5.504.4.1.
8. Finish Material Pollutant Control – Composite Wood Products (CalGreen 5.504.4.5)
    a. Requirements:
        1) Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17CCR 93120 et. seq.), by or before the dates specified in those sections as shown in CalGreen Table 5.504.4.5.
9. Finish Material Pollutant Control – Resilient Flooring Systems (CalGreen 5.504.4.6)
    a. Requirements:

1) For 50% of floor area receiving resilient flooring, install resilient flooring complying with the VOC-emission limits defined in the 2009 Collaborative for High Performance Schools (CHPS) criteria and listed on its Low-emitting Materials List (or product registry) or certified under the Resilient Floor Covering Institute (RFCI) FloorScore program.

10. Filters (CalGreen 5.504.5.3)

a. Requirements:

1) In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a Minimum Efficiency Reporting Value (MERV) of 8.

PART 1 - **PRODUCTS**
NOT USED

PART 2 - **EXECUTION**

3.1 FIELD EXECTUTION OF SUSTAINABILITY REQUIRMENTS

A. The General Contractor is responsible for ensuring proper field execution of all sustainability requirements, communication with Subcontractor's of all requirements and submission of all documentation in a timely manner.

B. Refer also to Part 1 of this Specification Section.

3.2 CONSTRUCTION VENTILATION AND PRECONDITIONING

A. General Contractor shall execute the Owner/Architect approved Construction IAQ Management Plan.

B. Temporary Construction Ventilation: General Contractor shall maintain sufficient temporary ventilation of areas where materials are being used that emit VOC's, and maintain ventilation continuously during installation, and until emissions as described below dissipate after installation. If continuous ventilation is not possible via the building's HVAC system(s) then ventilation shall be supplied via open windows and temporary fans, sufficient to provide no less than three air changes per hour.

1. General Contractor shall ensure that:

a. Where odorous and/or high VOC emitting products are applied on-site, apply prior to installation of porous and fibrous materials. Where this is not possible, protect porous materials with polyethylene vapor retarders.
b. The period after installation shall be sufficient to dissipate odors and elevated concentrations of VOCs. Where no specific period is stated in these Specifications, a time period of 72 hours shall be used.
c. All areas shall be vented directly to outside. Areas shall not be vented to other enclosed areas.

C. During dust producing activities (e.g. drywall installation and finishing) ventilation system shall be off, and openings in supply and return HVAC system shall be protected from dust infiltration. Provide temporary ventilation as required.

D. Preconditioning: Prior to installation, General Contractor shall allow products which have odors and VOC emissions to off-gas in dry, well-ventilated space outside of building for 14 calendar days, in order to allow for reasonable dissipation of odors and emissions.

3.3 PROTECTION

A. Protect stored on-site and installed absorptive materials from moisture damage. Where absorptive materials not intended for wet applications are exposed to moisture, immediately remove from site and dispose of properly.

B. Protect installed materials using methods that do not support growth of molds and mildews.

C. Immediately remove from site and properly dispose of materials showing signs of mold and signs of mildew, including materials with moisture stains.

END OF SECTION 01 81 13

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SECTION 01 91 13 – GENERAL COMMISSIONING REQUIREMENTS

PART 1 **- GENERAL**

1.1 REQUIREMENTS INCLUDED

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. The requirements of this section include building commissioning requirements.

D. Coordinate with Mechanical and Electrical Requirements.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission.

C. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission.

D. Title 24, Chapter 11 – California Green Building Standards Code.

1. Non-residential new construction:

a. All occupancy types.

1.3 RELATED SECTIONS

A. Division 1 sustainability requirements.

B. Division 1 demonstration and training requirements.

C. Divisions 22 through 28.

1.4 DESCRIPTION

A. Following Definitions apply to all Contract Documents:

1. Contractor Start-Up: Sub-Phase of Contractor's work ending with Acceptance of Work, during which the Contractor performs a pre-planned program of activities including starting, testing, inspecting, adjusting, balancing and correcting Contract Deficiencies, and other similar activities.

a. During this period, the Commissioning Agent or their representative shall be on site to observe, inspect and identify deficiencies in system operation.

2. Completion of Start-Up: When entire work, including Contractor Start-up and Fine Tuning, except those items arising from warranty provisions of Contract Documents, has been performed to requirements of Contract Documents and is so declared, in writing, by Commissioning Agent.
3. Fine Tuning: Sub-phase of Contractor's work, commencing after occupancy and ending twelve months later, during which Commissioning Agent identifies Contract deficiencies

arising under normal operating conditions, after user occupancy, and Contractor corrects such Contract deficiencies.

a. Fine Tuning is a period of time after occupancy of facility by Owner/User during which systems are optimized under "live" operating conditions and any outstanding construction or design deficiencies are corrected.
b. For purposes of these documents, "Fine Tuning" shall extend from date of actual Owner/User occupancy of building to a date twelve months after date of actual Owner/User occupancy.

4. Acceptance of Work: When pre-requisites to Acceptance of Work required by Contract Documents are fulfilled and Work is ready for use or is being used for purpose intended and state of work is so declared, in writing by Owner.

B. Commissioning Schedule

1. Provide schedules for Contractor Start-Up work.
2. Incorporate into overall construction schedule.
3. Contractor's activities, which will be performed as specified under Fine Tuning, shall be completed within 12 months from date of occupancy by Owner/User.

PART 2 **- EXECUTION**

2.1 CONTRACTOR START-UP REPORT FORMS

A. Prepare and submit one copy of report forms to be used in preparation of system reports for following:

1. Each System specified in Division 22 through 28.

B. Each system report shall include following:

1. Project Name
2. Name of system.
3. Index of report's content.
4. List of equipment in system.
5. Adjacent to list of equipment, columns to indicated status of equipment operation, to date and to sign off equipment start-up.
6. Space to record equipment and operational problems which cannot be corrected within Contractor's Start-Up program, and which may delay Acceptance of Work.
7. Manufacturer's equipment start-up reports.
8. Systems' testing, balancing, and adjusting reports.
9. Equipment report forms, which shall include:

a. Project name.
b. Name of equipment.
c. Starting and testing procedures to be performed.
d. Observations and test results to be recorded.

C. Submittals:

1. Submit draft report forms for Commissioning Agent's review and comment prior to final submission. Coordinate draft submissions with Commissioning Agent.

2. Submit final report forms, acceptable to Commissioning Agent as scheduled in specifications, including but not limited to;

    a. Divisions 22 through 28

2.2 PRE-FACILITY START-UP MEETINGS

A. Pre-Facility Start-Up meetings shall be held from start of Work until Contractor Start-Up schedules and Contractor Start-Up report forms have been approved by Commissioning Agent.

B. Purpose: to monitor development of Contractor Start-Up schedule and Contractor Start-Up forms.

C. Frequency: As directed by Commissioning Agent until Contractor Start-Up schedule and Contractor Start-Up report forms are approved by Commissioning Agent.

D. Location: Contractor's site office or other on-site location agreed to between Commissioning Agent and Contractor.

E. Attendees:

1. Contractor's Representatives: Contractor's site superintendent, mechanical and electrical subcontractors, and when so requested by Commissioning Agent, Sub-subcontractors, suppliers and other parties involved in Work. Contractor's representatives shall be qualified and authorized to act on behalf of party each represents.
2. Commissioning Agent's representatives.

F. Agenda:

1. Review of progress of Contractor Start-Up schedule preparation.
2. Review of progress of Contractor Start-Up report form preparation.
3. Identification of problems impeding progress.
4. Other business.

G. Minutes:

1. Contractor shall record minutes and distribute copies to all attendees within seven (7) working days after meeting.

2.3 FACILITY START-UP PROGRESS MEETINGS

A. Facility start-up progress meetings shall be held during Contractor Start-Up.

B. Purpose: To monitor Contractor Start-Up progress and to identify problems and action required for their resolution; to expedite Contractor Start-Up.

C. Frequency: Every two (2) weeks or as directed by Commissioning Agent.

D. Location: Same as Pre-Facility Start-Up meetings.

E. Attendees: Same as Pre-Facility Start-Up meetings.

F. Agenda:

1. Review of Contractor Start-Up progress.
2. Identification of problems impeding progress towards achievement of Contractor Start-Up milestones.
3. Review of outstanding business.
4. Review of Change Orders and Requests for Proposals.

5. Other business.
6. Minutes: Same as Pre-Facility Start-Up meetings.

2.4 FACILITY START-UP

A. Contractor Responsibilities: During Facility Start-Up (not necessarily in order listed):

1. Start Equipment and systems as specified in Divisions 22 through 28.
2. Test, adjust and balance equipment and systems as specified in Divisions 22 through 28.
3. Demonstrate equipment and systems as specified in Divisions 22 through 28
4. Complete and submit Contractor Start-Up reports including:

   a. Contractor's system and equipment start-up reports.
   b. Testing, adjusting and balancing reports.
   c. Manufacturer's equipment start-up reports.

5. Review Contract Documents and inspect Work to ensure completeness of Work and compliance with requirements of Contract Documents.
6. Correct Contract deficiencies identified as a result of foregoing and as may be identified by Owner.
7. Execute Change Orders issued by Owner.
8. Perform other work and activities required for fulfillment of prerequisites to Acceptance of Work.

B. Commissioning Agent Responsibilities during Facility start-up:

1. Carry out the pre-interim inspections as necessary.
2. Witness manufacturers' equipment start-up.
3. Verify starting, testing, adjusting and balancing by Contractor.
4. Review and approve Contractor Start-Up reports.
5. Cooperate in systems and equipment demonstration and instruction.

C. Owner Responsibilities:

1. Initiate Chang Orders as required.
2. Verify correction of Contract deficiencies by Contractor.
3. Verify execution of Change Orders by Contractor.

D. Ongoing Cycle of Facility Start-Up Includes:

1. Commissioning Agent's inspections.
2. Documentation of results.
3. Diagnosis of problems.
4. Correction of Contract deficiencies and execution of Change Orders as required.
5. Verification of results.

2.5 FINE TUNING

A. Fine Tuning will commence upon Acceptance of Work.

B. Contractor Responsibilities During Fine Tuning:

1. Correct Contract Deficiencies previously outstanding and those identified during Fine Tuning.
2. Execute Change Orders issued by Owner.

3. Where Contractor start-up has been properly implemented construction and design deficiencies left to be resolved during this period should be relatively minor.
    a. Ensure expedient correction of minor problems, which are identified during initial occupancy.
    b. Attend regular weekly meetings with Building Manager and Building Engineer to review any operational problems.
    c. Make necessary environmental measurements and survey users to quickly identify problems and establish necessary trade inputs for resolution.
    d. Monitor and manage prompt correction of Contract deficiencies identified during initial user occupancy.
    e. Find and eliminate deficiencies in systems and equipment performance.
    f. Complete work on all fine tuning issues within first 12 months from the date of completion.

C. Commissioning Agent Responsibilities during Fine tuning:
1. Carry out a series of systems and equipment operating tests under conditions simulating, to extent possible, full and partial operating loads.
2. Record Test results.
3. Diagnose Problems.
4. Repeat tests as required following correction of Contract deficiencies and execution of Change Orders by Contractor and verify results.

D. Ongoing Cycle of Fine Tuning Includes:
1. Performance testing.
2. Documentation of results.
3. Diagnosis of problems.
4. Correction of Contract deficiencies and execution of Change Orders as required.
5. Verification of results.

2.6 CONTRACT ACCEPTANCE PROCESS

A. Process for Owner's Acceptance of Work:
1. Acceptance of Work:
    a. Fulfillment of prerequisites to Acceptance.
    b. Inspection for Acceptance.
    c. Issuance of Letter of Acceptance.
2. Completion of Fine Tuning:
    a. Fulfillment of prerequisites to Completion of Fine Tuning.
    b. Inspection for Completion of Fine Tuning.
    c. Issuance of Letter of Completion of Fine Tuning.

2.7 PARTIAL ACCEPTANCE OF WORK

A. When partial utilization of Work is required and Acceptance of Work is a condition of such partial utilization, applicable requirements specified in this Section shall apply to parts of Work to be utilized.

2.8 PREREQUISITES TO ACCEPTANCE

A. Following to be completed prior to requesting Owner's inspection for Acceptance.

B. Perform Contractor Start-Up Activities.

1. Obtain and submit evidence of compliance with regulatory requirements as specified, including following:

a. Occupancy permits.
b. Inspection/operating certificates.

2. Remove from Project site temporary facilities as specified, along with construction tools, equipment, mock-ups and similar items.
3. Complete starting of systems and equipment as specified.
4. Complete testing, adjusting and balancing of systems and equipment as specified.
5. Complete equipment and systems demonstration and instruction as specified.
6. Complete final cleaning as specified.
7. Submit Project Record Documents as specified.
8. Submit operation and maintenance materials as specified.
9. Provide spare parts and maintenance materials as specified.
10. Submit product warranties and certificates of assurance as specified.
11. Make final changeover of locks and transmit keys to Owner as specified.
12. Ensure Work is ready for use for purpose intended.
13. Review Contract Documents and inspect Work to confirm that prerequisites to Acceptance of Work have been fulfilled and that Work is ready for inspection for Acceptance.

2.9 INSPECTION FOR ACCEPTANCE

A. Submit written request to Owner for inspection for Acceptance of Work, certifying prerequisites specified have been fulfilled and indicating known exceptions in list of items to be completed, corrected or submitted.

B. Owner will, within a reasonable time after receipt of Contractor's request, proceed with inspection, or advise Contractor prerequisites are not adequately fulfilled.

C. Results of Owner's inspection for Acceptance will form initial Contract deficiency list.

2.10 ACCEPTANCE OF WORK

A. Following inspection, Owner will:

1. Issue a Letter of Acceptance stating effective date of Acceptance of Work, with a copy of Contract Deficiency list attached thereto, or
2. Advise Contractor that prerequisites to Acceptance are not fulfilled and repeat inspection for Acceptance as necessary.

B. Upon Issuance of Letter of Acceptance, Owner will assume responsibility for care, custody and control of Work, including responsibility for:

1. Facility operation, including all systems and equipment.
2. Maintenance.
3. Security.
4. Property insurance.
5. Utility costs.

2.11 PREREQUISITES TO COMPLETION OF START-UP FINE TUNING

A. Prerequisites to Completion of Fine Tuning Work are:

1. Prior to Acceptance of Work.
2. Completion of Fine Tuning activities by Commissioning Agent and Contractor as specified.
3. Contract deficiencies identified during Fine Tuning testing and previously identified but outstanding Contract deficiencies shall have been corrected by Contractor or addressed adequately by Contractor so a course of action can be established by Commissioning Agent.
4. Ensure entire work, except items arising from warranty provisions of Contract Documents, has been performed to requirements of Contract Documents.

2.12 INSPECTION FOR COMPLETION OF START-UP FINE TUNING

A. Submit written request to Owner for inspection, including copy of Owner's most recent Contract Deficiency list, certifying each Contract deficiency has been corrected or otherwise resolved in a manner agreed to between Owner and Contractor.

1. List known exceptions, if any, in request.

B. Owner will within a reasonable time after receipt of Contractor's request:

1. Proceed with inspections, or
2. Advise Contractor prerequisites are not adequately fulfilled.

C. Following inspection**,** Owner will:

1. Issue a Letter, stating effective date of completion of start-up Fine Tuning.
2. Advise Contractor of Contract deficiencies to be corrected prior to issuance of Letter completion of start-up Fine Tuning.

PART 3 **- EXECUTION**
Not used

END OF SECTION 01 91 13

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SECTION 02 41 13 – SELECTIVE DEMOLITION AND PROTECTION

PART 1 **- GENERAL**

1.1 WORK INCLUDED THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable extents of work and dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. General:

    a. Pay all disposal fees
    b. Coordinate all recycling procedures and documentation
    c. Obtain all permits
    d. Coordinate and get approval for demolition of all existing utilities with **Owner** and appropriate utility company/governmental jurisdiction.

2. Scope:

    a. Demolition:
    b. Removal and Disposal:
    c. Removal and Storage for Owner use:
    d. Removal and Storage for Future Installation:
    e. Record Drawings / As-built information:
    f. Protect and maintain existing vegetation designated to be saved.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission.

C. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission.

D. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:

    a. All occupancy types.

E. American National Standards Institute (ANSI), www.ansi.org

F. American Society For Testing and Materials (ASTM), www.astm.org

G. Industrial Accident Commission of the State of California

H. National Demolition Association, www.demolitionassociation.com

I. Occupational Safety and Health Administration (OSHA), United States Department of Labor, www.osha.gov

1. OSHA – Regulations Standards – 29 (CFR) as approved by State of California
2. OSHA – Regulations Standards – 29 (CFR), Section 1926 Occupational Safety and Health Standards for Construction as approved by State of California

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Comply with manufacturer's standards.
2. Comply with Building Code.

B. Sustainability:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

C. Refer to Division 1 for construction waste management and disposal/recycling requirements.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit a written list of all items to be submitted as indicated below and organized in a spread sheet;

1. Demolition items/material
2. Removed and disposed of items/materials
3. Removed and stored items by **Contractor** and supplied at later date to **Owner**.
4. Removed and stored items to be installed at a later date by **Contractor** as directed by **Owner.**
5. Acknowledgment of AS-Demolished Record Drawings to include markup of drawings and pdf files named specific to each drawing sheet for all final record keeping.
6. Protection and maintenance plan for existing vegetation.

E. Submit As-built site drawings indicating the capped off locations for all utilities.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. **Contractor** shall have been in business for five (5) years providing demolition services for projects of similar size and complexity.

C. **Contractor** shall be a member of the National Demolition Association in good standing.

D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field-verify that all work by others is installed correctly prior to proceeding with demolition work under this specification and drawings.

B. Retain and have all applicable permits obtained prior to commencing with work.

C. Hazardous materials:

1. Any known or presumed hazardous material discovered shall be brought to the **Owner's** attention immediately.
2. It is the **Contractor's** responsibility to comply with the pertinent sections, as they apply to this project, of the "Construction Safety Orders" issued by the State of California lasts edition and all OSHA requirements.
3. The **Architect,** Structural Engineer and **Owner** do not accept any responsibility for the **Contractor's** failure to comply with agency having jurisdiction, building code and/or State of California requirements.
4. The **Contractor** shall be responsible for adequate design and construction of all formwork, bracing and shoring required.

D. Safety Precautions:

1. Perform demolition work in such a manner as to prevent damage to existing facilities to remain or to be salvaged and to prevent injury to public and workmen engaged on site under this or other contracts.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

D. Protect and maintain existing vegetation as herein specified and/or indicated in contract documents.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

1.10 RELATED WORK / SECTIONS

A. The following is related work including, but not limited to the following;

1. New Site Work
2. Coordination with Utility Companies
3. Coordination with Agencies
4. Acquisition of permits
5. Coordination with **Owner**
6. Surveying

E. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 01 25 00 – Substitution and Deviation Procedures
3. Section 01 33 00 – Submittal Procedures
4. Section 01 50 00 – Temporary Facilities and Controls
5. Section 01 73 29 – Cutting and Patching
6. Section 01 74 00 – Protection and Cleaning
7. Section 01 74 19 – Construction Waste Management and Disposal/Recycling
8. Section 01 78 00 – Closeout Submittals
9. Section 01 81 13 – Project Sustainability Requirements
10. Section 31 00 01 – Site Work General Requirements
11. Section 31 11 00 – Clearing and Grubbing
12. Section 31 22 00 – Grading
13. Section 31 23 00 – Trenching and Backfill
14. Section 31 25 00 – Erosion and Sedimentation Control
15. Section 32 12 16 – Asphalt Paving
16. Section 32 13 13 – Concrete Paving

1.11 OPERATION AND MAINTENANCE DATA

A. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. General:

1. Schedule work and sequence with **General Contractor**.

a. Schedule required investigation, shutoff of utilities, etc., prior to commencing with demolition, etc.
b. Coordinate work with **Owner's** representative including, but not limited to:

1. Divisions 2 - 33

B. Existing Utilities:

1. Coordinate work of disconnecting & capping existing utilities including, but not limited to;

a. Gas
a. Domestic water
b. Fire service water
c. Sewer
d. Electrical
e. Cable TV
f. Low voltage cabling,
g. Etc.

C. Existing Vegetation:

1. Coordinate work of protecting and watering (maintaining) existing vegetation to remain with the following, but not limited to;

a. Site work, including but not limited to;

1) AC Paving
2) Concrete curbs
3) Flatwork
4) Vehicular paving
5) Ramps
6) Underground utilities

b. Excavation for underground devices, piping, etc.
c. Erosion control
d. Landscape documents
e. Civil documents

D. Notices:

1. **General Contractor** shall make the following notices to **Owner** in addition to Specifications and Division 1 including, but not limited to;

a. 72 hours prior to interruption of utilities.
b. 48 hours prior to demolishing and/or removing items/materials not specific all noted in drawings and/or specifications.

PART 2 **– PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Products are acceptable to use as intended for demolition work.

B. Refer to Division 1 for substitution, deviation and/or submittal procedures

2.2 MATERIALS

A. As necessary by **Contractor** to complete their work and used for the purpose of demolition, etc. as herein specified and additionally as indicated in contract documents.

2.3 COORDINATION

A. Refer to Division 1 for project coordination requirements.

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for complete and proper demolition activities, as selected by the **General Contractor** subject to the approval of the **Architect** and **Owner**.

PART 3 **- EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which demolition work is to be performed.

2. Identify conditions detrimental to proper or timely completion of demolition work and coordinate with **General Contractor** to rectify.

B. Hazardous materials:

1. Any known or presumed hazardous material discovered shall be brought to the **Owner's** attention immediately.

3.2 COORDINATION

A. **General Contractor** shall coordinate demolition work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

B. Protect all existing installations from damage.

C. Coordinate scope of work with, but not limited to; civil documents and landscape documents.

D. Take measures to prevent damage to existing items indicated to remain during the course of work under this specification.

E. All dimensions given to existing structure are approximate. Verify by field measurements the dimensions of the existing structure. Where actual conditions deviate from details shown on the drawings, notify the Structural Engineer for instructions before proceeding with work.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with required demolition practices.

3.4 DEMOLITION, DISPOSAL, REMOVAL, STORAGE, PROTECTION AND RECORD DRAWINGS

A. General:

1. Perform work in accordance with accepted demolition practices, as herein specified and in compliance with contract documents.
2. Pay all disposal fees
3. Coordinate all recycling procedures and documentation
4. Coordinate and get approval for demolition of all existing utilities with **Owner** and appropriate utility company/governmental jurisdiction.
5. Codes, regulations, agencies and jurisdictions:

a. Obtain all permits
b. Demolition work shall comply with;

1) Local ordinances having jurisdiction.
2) Appropriate utility company/governmental jurisdiction.
3) Safety Codes of State of California.
4) Rules and regulations of Industrial Accident Commission of State of California.

6. Perform demolition work in such manner as to prevent damage to existing facilities to remain or to be salvaged, and to prevent injury to students, public and workmen engaged on site under this or other contracts.

a. Roofs and walls, or other building elements, shall be demolished in such manner that materials or units thereof shall fall within foundation lines of building being removed.
b. Demolition debris shall not be allowed to accumulate on site.

c. Hazardous work shall not be left standing or hanging overnight or weekends, but shall be knocked or pulled down at end of each day to avoid damage or injury to persons or existing facilities due to toppling or falling of such hazardous elements.

7. Wherever cutting and removal of portions of existing work is indicated, such work shall be sawn in manner that will produce neat and straight lines, parallel to adjacent surfaces or plumb for vertical surfaces.

   a. Grind smooth resulting edges of concrete slabs or walks.
   b. Neatly remove existing finish materials back to clean straight line or nearest support patches or repairs.
   c. Execute cutting and demolition by methods which will prevent damage to other work, and which will provide proper surfaces to receive installation of repairs and new work.

8. Any conflicting items not specifically shown (such as underground pipes, conduits, etc.) shall be brought to the attention of the Structural Engineer prior to further demolition.

B. Demolition:

1. General:

   a. Demolished items are to become the property of the **General Contractor** and removed from premises at **Contractor's** expense (typical, U.N.O.).

2. Remove and dispose of all items indicated in documents, including but not limited to;

   a. Concrete:

      1) Flatwork
      2) Curbs and gutters
      3) Vehicular paving

   b. Electrical;

      1) Wiring
      2) Conduit
      3) Light Fixtures

   c. Utilities

      1) Piping
      2) Abandon Piping

   d. Vegetation

      1) Trees
      2) Shrubs
      3) Ground Cover
      4) Lawn
      5) Etc.

   e. Miscellaneous

      1) Signage (Excluding existing Operations and Lab Building identification signage which is to be removed and stored for re-use at new Operations and Lab Building)
      2) Items indicated in documents
      3) Any other items required to facilitate new construction

4) Existing Pavement Marking:
5) Remove rubber deposits, existing markings and other coatings adhering to pavement with scrapers, wire brushing, sandblasting, approved chemicals or mechanical abrasion.

a. Where oil or grease exist, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application.

1) After cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through new paint.
2) Paint new markings and striping in accordance with and under Section 32 17 23 – Pavement Markings.

C. Removal and Disposal

1. All materials resulting from demolition work, except those items specifically listed or shown to be retained by **Owner** or reinstalled, shall become property of **General Contractor** and shall be removed from premises.
2. HAUL ROUTES:

a. Establish haul routes in advance and post flagmen to assure safety of visitors, public and workers.
b. Keep streets and parking areas free of mud, rubbish, debris, etc.

1. **General Contractor** will assume responsibility for any damage resulting from hauling operations and hold **Owner** free and clear of any liability in connection therewith.

3. Appropriate utility company/governmental jurisdiction.

a. Coordinate with utility companies for and removed items that might be the property of said utility company.

D. Removal and Storage for **Owner** use:

1. Items to be retained for **Owner** shall be safely stored until said time the **Owner** requires delivery of items.

E. Removal and Storage for future Installation:

1. Items to be retained for **Owner** shall be safely stored until said time the **Owner** requires the items be installed.

F. As-Built Drawings:

1. **General Contractor** shall carefully document, photograph and provide hard copy of As-Built Drawings and Specifications of all removed items, capped off utilities and terminated utilities, conduits, etc. for as-built conditions after demolition is complete.
2. Keep record drawings in accordance with Section 01 78 00 – Closeout Submittals.

G. Protection and Maintenance of Existing Vegetation:

1. Prior to any construction or grading activities, contractor shall install vegetation & tree protection fencing, which will consist of four-foot tall plastic mesh fencing installed on six-foot poles spaced a maximum of 20 feet apart.

a. The poles shall be installed with two feet of length below ground and four feet above ground.

2. The fencing shall encompass an area 150% of the drip line of the tree or as appropriate where curbs, walks or drive ways are installed within drip lines.
    a. In those cases, install fencing no more than 18" off back of curb or walk, and in no cases shall be less than 85% of the drip line of the tree being protected as approved by Landscape Architect.
    b. Tree protection fencing shall be installed and inspected by staff from the **Owner** prior to issuance of a permit.
3. Watering of Existing Trees
    a. Irrigation shall be applied to all existing vegetation & trees as required to maintain good health.
        1. **General Contractor** will be responsible for the health of the vegetation & trees and all materials and facilities to provide adequate water. **General Contractor** shall contact the **Owner** to determine a watering schedule and any specific care required.
        2. **General Contractor** will be liable for the replacement of like vegetation & trees in the event of death due to neglect or lack of protection by the **General Contractor**. In the event that any of the vegetation and trees begin to suffer, contact the Landscape Architect and **Owner** immediately.

3.5 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator
    1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
    2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Protection and maintenance of Existing Vegetation.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so their rubbish, waste, and debris do not interfere with the work of others and are removed from project.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 02 41 13

SECTION 03 00 51- CONCRETE CLEANING

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable extents of work and dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Field cleaning of surfaces of concrete by use of concrete cleaning compounds as herein scheduled.

a. New concrete surfaces

1) Exterior
2) Interior

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Concrete Institute (ACI), www.aci-int.org

E. International Concrete Repair Institute (ICRI), www.icri.org

F. Refer to standards herein listed with specific products/materials.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

1. Products shall comply with all Federal, State, and local environmental regulations.
2. Handling and disposal of products shall be done in compliance with all Federal, State, and local environmental regulations including testing, handling, treatment, containment, collection, transport, disposal, and discharge of hazardous wastes and cleaning effluents

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing**:

1. Cleaning Products for use on new concrete substrates shall be tested prior to start of final concrete cleaning work.

    a. Before full-scale application, review manufacturer's product data sheets to determine the suitability of each product for the specific surfaces. Apply each concrete cleaner to test surface to determine dilution rates, dwell times, number of applications, compatibility, effectiveness, application procedures, effects of pressure rinsing, and desired results.
    b. Apply concrete cleaners to test sections in accordance with manufacturer's written instructions. Allow time frame as directed by Manufacturer and when panels are thoroughly dry before evaluating final appearance and results. Do not begin full-scale application until test panels are inspected and approved by the **Architect**.
    c. Test Panel shall be 4' x 4' minimum; location and quantity of test panels shall be determined by the **Architect**.
    d. Test all cleaning effluents generated by the concrete cleaning of the test panels to determine any hazardous characteristics.
    e. Retain and protect test panels approved by the **Architect** in undisturbed condition during the work of this section, to be used as a standard for judging the concrete cleaning work

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Technical information and cleaning agent label analysis with application instructions for each material proposed for use.

    a. List each material and cross-reference to specific cleaning material for finish system and application.

        1) Identify by manufacturer's catalog number and general classification.

2. MSDS for each product
3. Submit description for application procedures of concrete cleaners.

4. Submit description for testing, handling, treatment, containment, collection, transport, disposal, and discharge of hazardous wastes and cleaning effluents.
    a. Describe any hazardous materials to be cleaned from substrates.
    b. Submit applicable local environmental regulations.
5. Submit qualifications of applicator.
    a. Certification stating applicator is experienced in the application of the specified products.
6. Submit description for protecting surrounding areas, landscaping, building occupants, pedestrians, vehicles, and non-concrete surfaces during the work from contact with concrete cleaners, residues, rinse water, fumes, wastes, and cleaning effluents.
7. Provide written description of proposed final actions to clean site and to remove materials used.
8. Submit description for surface preparation of substrates to be completed before application of concrete cleaners.
9. Schedule:
    a. Provide a written schedule indicating locations, substrates, and work sequence of concrete restoration cleaning and paint stripping, if not indicated on the drawings.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer/ Applicator shall have been in business for five (5) years providing/installing/finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for five (5) years providing/installing/finishing projects of similar size and complexity.

D. Pre-Application Meeting: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
    1. Agenda for meeting shall include, but not be limited to;
        a. Review surfaces to be cleaned, environmental regulations, test panel procedures, protection of surrounding areas and non-concrete surfaces, surface preparation, application, field quality control, final cleaning, and coordination with other work.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Comply with Division 1 product delivery, storage and handling requirements.

B. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

C. Store containers upright in a cool, dry, well ventilated place, out of the sun.
    1. Store away from all other chemicals and potential sources of contamination.
    2. Keep lights, fire, sparks, and heat away from containers.
    3. Do not drop containers or slide across sharp objects.

4. Keep containers tightly closed when not in use.
5. Store and handle materials in accordance with manufacturer's written instructions.

1.7 JOB CONDITIONS

A. Do not clean concrete surfaces when temperatures are below freezing or will be overnight, to avoid harm to concrete.

1. Clean concrete surfaces only when air and concrete surface temperatures are 40°F and above.

a. Confirm with manufacturers written specifications

2. Allow adequate time for concrete to thaw if freezing conditions exist before application.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect surrounding areas, landscaping, building occupants, pedestrians, vehicles, and non-concrete surfaces during the work from contact with concrete cleaners, residues, rinse water, fumes, wastes, and cleaning effluents in accordance with manufacturer's written instructions.

D. Avoid wind drifting of spray of cleaning products, residues, and rinse water.

E. Protect open joints.

F. Clean interior concrete surfaces before installation of interior finishes, doors, hardware, metal fixtures, and all other interior non-concrete materials.

G. Clean site of all unused cleaning products, residues, rinse water, wastes, and cleaning effluents in accordance with environmental regulations.

H. Remove and dispose of all materials used to protect surrounding areas and non-concrete surfaces, following completion of the work of this section.

I. Repair, restore, or replace to the satisfaction of the **Architec**t and/or **Owner**, all materials, landscaping, and non-concrete surfaces damaged by exposure to the cleaning process.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish one (1) year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Topical Applied Treatments

2. Site paving and flatwork
3. Slab on grade concrete
4. Cast in place concrete

B. Related Sections include, but are not limited to, the following:

1. Division 1
2. Section 02 41 19 – Selective Building Demolition & Protection
3. Section 32 13 13 – Concrete Paving
4. Section 03 30 00 – Cast in Place Concrete
5. Section 07 19 00 – Water Repellant Coatings
6. Section 07 92 00 – Sealants and Caulking
7. Section 09 90 00 – Paintings & Coatings

1.11 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. ProSoCo, Inc., www.prosoco.com
2. Professional Products of Kansas, Inc. www.watersealant.com
3. US MIX Products Co. / US SPEC (303) 778-7227
4. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. Water:

a. Clean, potable, and free of oils, acids, alkalis, salts, and organic matter. Use to rinse concrete surfaces and dilute concentrated cleaners.

B. Products:

1. Cleaner and Degreaser

a. Mfgr: ProSoCo
b. Product Line: Consolideck®
c. Product: Cleaner / Degreaser

1) Low hazard / low toxicity, non-flammable and water soluble. Contains readily biodegradable ingredients. Does not contain chlorinated, fluorinated, aromatic or hydrocarbon solvents; does not contain phosphates.
2) For removal of widespread oil & grease films, adhesive tape residues, rubber tire marks and scuffs, fuel & oil residues, paint and sealer residues and or daily maintenance cleaning.
3) Can etch concrete. Not for use in removing embedded oil and/or grease stains.

d. Prepare, Dilute, Mix and Apply in compliance with manufacturer's written instructions.

2. Light Duty Concrete Cleaner

a. Mfgr: ProSoCo
b. Product Line: Sure Klean®
c. Product: Light Duty Concrete Cleaner

1) General purpose, non-etching acidic cleaner. Does not contain muriatic acid.
2) For removal of common construction stains and atmospheric dirt, mortar smears, mud, efflorescence stains, localized rust and other metallic staining.
3) Acidic contents may damage polished masonry, some non-masonry and acid-sensitive surfaces. May remove some surface-applied accent colors. Not for use on treated low-E glass, acrylic and polycarbonate sheet glazing, and glazing with surface applied reflective, metallic or other synthetic coatings and films.

d. Prepare, Dilute, Mix and Apply in compliance with manufacturer's written instructions.

3. Heavy Duty Concrete Cleaner

a. Mfgr: ProSoCo
b. Product Line: Sure Klean®
c. Product: Light Duty Concrete Cleaner

1) Concentrated general-purpose acidic cleaner. Does not contain muriatic acid. May etch concrete. Designed for use with pressure water rinsing.
2) For removal of concrete splashes, excess mortar, retarders, heavy efflorescence, embedded stains, rust and surface soiling.
3) Do not use on polished surfaces. Not for use on treated low-E glass, acrylic and polycarbonate sheet glazing, and glazing with surface applied reflective, metallic or other synthetic coatings and films.

d. Prepare, Dilute, Mix and Apply in compliance with manufacturer's written instructions.
e. Limitations:

1) Do not use on concrete which will be left exposed, unless approved by **Architect**.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
3. Verify by examination that concrete surfaces are acceptable to receive the specified concrete cleaners. Notify the **Architect** if surfaces are not acceptable to receive the specified products.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Coordinate application of sealants and caulking with cleaning process.

C. Verify with substrate manufacturer the allowable & required surface preparation of each substrate prior to cleaning.

D. Apply all specified sealants and caulking and allow to cure before cleaning process begins.

E. Verify with substrate manufacturer the allowable & required surface preparation of each substrate prior to cleaning.

3.4 TESTING

A. General:

1. Perform tests witnessed by **Owner** and **Architect**.
    a. Refer to procedures specified in Part 1.

3.5 INSTALLATION

A. General:
    1. Dilute cleaners in accordance with manufacturers written instructions for each type of contaminant.
    2. Apply concrete cleaners to substrates in accordance with manufacturer's written instructions, environmental regulations, and application procedures determined from test panel results approved by the **Architect**.
    3. Consult manufacturer's written instructions for information on application equipment to be used and precautions to be taken with the specified products.

B. Schedule:
    1. Exterior concrete
        a. Flatwork
        b. Vehicular paving
        c. Exterior concrete pads
        d. Concrete walls
    2. Interior concrete vertical and horizontal
        a. Cast in Place Concrete
            1) Floors

C. Products:
    1. Cleaner / Degreaser:
        a. Interior and Exterior Surfaces:
            1) Dilute Cleaner/Degreaser in accordance with Manufacturer’s instructions for each intended use.
            2) Remove loose debris and heavy buildups.
            3) Apply diluted cleaning solution liberally. If spraying, do not atomize.
            4) Let solution dwell 1-3 minutes.
            5) Reapply and scrub vigorously.
            6) Water rinse thoroughly to remove all residues.
    2. Light Duty Concrete Cleaner:
        a. Interior and Exterior Surfaces:
            1) Dilute Cleaner/Degreaser in accordance with Manufacturer’s instructions for each intended use.
            2) Always prewet surface with fresh water. When cleaning vertical surfaces, keep lower areas wet to avoid streaks.

3) Apply diluted cleaning solution directly to surface with recommended masonry brush or low-pressure spray.
4) Let cleaner stay on the surface for 3-5 minutes or until stains are gone.
5) Reapply cleaner and rinse thoroughly with fresh water to get all residues off the surface.

3. Heavy Duty Concrete Cleaner:

a. Interior and Exterior Surfaces:

1) Dilute Cleaner/Degreaser in accordance with Manufacturer's instructions for each intended use.
2) Working from bottom to top, prewet surface with fresh water. On vertical surfaces, keep lower areas wet to avoid streaks.
3) Apply diluted cleaning solution to surface with recommended masonry brush or low-pressure spray.
4) Let the cleaner stay on the surface 2-3 minutes or until stains are gone.
5) Reapply cleaner and scrub or scrape surface using wood blocks or other nonmetallic scraping devices.
6) Working from bottom top, rinse thoroughly with fresh water to get all residue off the surface.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Inspect the concrete cleaning work with the **General Contractor**, **Architect**, applicator, and product representative, and compare with test panel results approved by the **Architect**. Determine if the substrates are suitably clean.

D. Manufacturer's Field Services: Provide the services of a manufacturer's authorized field representative to verify specified products are used, and protection, surface preparation, and application of concrete cleaners are in accordance with the manufacturer's written instructions and the test panel results approved by the **Owner**.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so their rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

G. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives **the General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 03 00 51

SECTION 03 00 61 – CONCRETE FLOOR LEVELING, PATCHING AND GROUTING

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Apply 100% cementitious Concrete Floor Leveling products to level and to correct unsatisfactory conditions at concrete floors:

a. New concrete floors treated in accordance with Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment.
b. New concrete not treated or not required to be treated per Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. Published specifications, standards tests and recommended methods of trades, industry or governmental organizations apply to work of this section.

E. American Concrete Institute (ACI), www.aci-int.org

F. American Society For Testing and Materials (ASTM), www.astm.org

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings, including data sheets, MSDS sheets and manufacturer installation instructions for each product to be used on the project.

E. Provide Certification of compatibility of proposed floor leveling, patching and/or grouting compound(s) with applied Concrete Vapor Emission and Alkalinity Control Treatment(s).

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing/installing/ finishing similar size projects and complexity.

1. Provide at least one person, present at all times during execution of this portion of the work, who is thoroughly familiar with the type of materials being installed and the best methods for their installation. They shall direct all work performed under this Section.

C. Manufacturer shall have been in business for **five (5**) years providing/installing/finishing similar size projects and complexity.

D. Coordinate installation of these products with work performed per Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK / SECTIONS

A. The following is related work including, but not limited to the following;

1. Floor Substrate
2. Remedial Floor Vapor and Alkalinity Control Treatment
3. Finish Flooring
4. All notes on the structural drawings are included in this specification.

B. The following are related sections including, but not limited to the following:

1. Division 1
2. Section 03 00 51 – Concrete Cleaning
3. Section 03 30 00 – Cast in Place Concrete
4. Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment.

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. **General Contractor** shall coordinate the testing of concrete floors per Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment and ensure that concrete treatment within the area of finish flooring is complete and floor vapor emission rate, PH and relative humidity tests show the slab is in compliance with each flooring manufacturer's requirements prior to the installation of finish flooring.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturer/fabricator/installer shall meet the requirements as herein specified and also as indicated in the drawings.

1. Refer to documents and as herein specified.
2. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturer's specifications/recommendations.

2.2 MATERIALS

A. Leveling Compound:

1. Application:

a. Horizontal Floor slab repair and leveling
b. Areas requiring leveling as approved by **Architect** and not deemed defective.
c. Installed after floor has been tested and treated for Vapor Emissions and Alkalinity per Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment.

2. Manufacturer & Product:

a. L & M Const. Chemicals, Inc., www.lmcc.com

1) Underlayment: LEVELEX
2) Primer: Levelex Primer

b. U.S. Spec, www.usspec.com

1) Underlayment: SLU – Self-Leveling Underlayment
2) Primer: Self-leveling underlayment primer.

3. Material: Self leveling, Polymer Reinforced blend of Portland cements, polymers, aggregates and proprietary admixtures, contains no gypsum.
4. Properties:

a.	Compressive Strength:	4,500 psi in 28 days	ASTM C109
b.	Minimum Bond Strength:	400 psi	ASTM C234
c.	Minimum Flexural Strength:	12,500 psi in 28 days	ASTM C348
d.	Flam Spread:	0	ASTM C119
e.	Fuel Contributed:	0	ASTM C119
f.	Smoke Density:	0	ASTM C119

5. Limitations:

a. Refer to manufacturer's product data sheets, specifications and installation instructions.

6. Installation: Install per manufacturer's recommendations

B. Resurface Coating - Horizontal:

1. Application:

a. Resurface/repair coating to be applied over interior and exterior exposed concrete surfaces.

b. Installed after floor has been tested and treated for Vapor Emissions and Alkalinity per Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment.

2. Up to 1/2" maximum thickness:

   a. Application:

      1) Feathered edge at non-treated floors
      2) 1/4" min. at floors treated per Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment

   b. Manufacturer/Product:

      1) US MIX Products Co., Thinpatch
      2) L & M Const. Chemicals, Durathin

   c. Material:

      1) Polymer Modified Repair Mortar

   d. Properties:

      1) Compressive Strength: Comply with ASTM C109
      2) Rate of Set: Comply with ASTM C266
      3) Bond Strength: Comply with ASTM C882
      4) Flexural Strength: Comply with ASTM C78

   e. Substrates:

      1) Concrete flatwork
      2) Concrete stairs and ramps
      3) Exposed horizontal face of concrete site walls
      4) Exposed horizontal face of concrete curbs
      5) Concrete vehicular paving

   f. Limitations:

      1) Refer to manufacturer's product data sheets, specifications and installation instructions.
      2) Do not use for building slabs; refer to Leveling Compound heading
      3) Do not use on seatwalls; these conditions shall be replaced if deemed defective by **Architect**.

3. Up to 3" deep patch:

   a. Application:

      1) Resurface/repair coating to be applied over interior and exterior exposed concrete surfaces.
      2) Add pea gravel per manufacturer's recommendation's for thick applications

   b. Manufacturer/Product:

      1) US MIX Products Co., V/O Patch
      2) BASF, Master Builders, Emaco R 350 CI

3) Dayton Superior, Conspec, SPECIAL PATCH

c. Substrates:

1) Concrete flatwork
2) Concrete stairs and ramps
3) Exposed horizontal face of concrete site walls
4) Exposed horizontal face of concrete curbs
5) Concrete vehicular paving

d. Limitations:

1) Refer to manufacturer's product data sheets, specifications and installation instructions.
2) Do not use for building slabs; refer to Leveling Compound heading
3) Do not use on seatwalls; these conditions shall be replaced if deemed defective by **Architect**.

e. Installation: Install per manufacturer's recommendations

C. Patching And Resurface Coating – Vertical Surface

1. Application:

a. Resurface/repair coating to be applied over interior and exterior exposed concrete surfaces.

2. Manufacturer & Product:

a. Patching/resurfacing and crack/spalling filler: US SPEC, VTU Resurfacer
b. Resurfacer/sealer: US SPEC, Permasil

3. Properties:

a. Compressive Strength: Comply with ASTM C109
b. Rate of Set: Comply with ASTM C266
c. Bond Strength: Comply with ASTM C882
d. Flexural Strength: Comply with ASTM C78

4. Substrates:

a. Seatwalls – vertical and horizontal surfaces

1) Coordinate with sandblasting

b. Concrete light pole bases
c. Exposed face of concrete foundation walls
d. Exposed face of concrete retaining walls

D. Non-Shrink Grout: (Non-metallic, no chlorides, no aluminum powder)

1. Application: Typical all conditions including but not limited to;

a. Anchor bolts, reinforcing dowels and rods
b. Grouting of structural and non-structural building members
c. Machinery bases
d. Coordinate with structural drawings

2. Manufacturer & Product:

    a. US SPEC, Premium Grout
    b. L & M Construction Chemicals, Inc., Crystex Grout
    c. BASF, Master Builders Masterflow 713 or 928

3. Material: A high flow, High strength, pre-packaged compound consisting of non-metallic aggregates, cement, water reducing and plasticizing agents.
4. Properties:

a.	Compressive Strength:	13,400 psi in 28 days	ASTM C109
b.	Material:	Comply with ASTM C1107	

5. Installation: Install per manufacturer's recommendations

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 INSTALLATION

A. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Inspect floor surfaces within project limits with **Owner**, **Architect** & **Structural Engineer** to determine unacceptable conditions, and before commencing demolition construction to repair unsatisfactory conditions in the concrete substrate.

C. Apply concrete floor patching and leveling materials at unsatisfactory locations in accordance with manufacturer's application instructions. Finish and cure to meet product requirements and to produce a uniform substrate to receive all new work and final floor finishes.

3.5 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer / Applicator.

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.

B. The Applicator shall be responsible for the proper application of the materials.

C. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

G. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 03 00 61

03 10 00
CONCRETE FORMING AND ACCESSORIES
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Formwork for cast-in-place concrete, with shoring, bracing and anchorage.
B. Openings for other work.
C. Form accessories.
D. Form stripping.

1.03 RELATED REQUIREMENTS

A. Section 03 20 00 - Concrete Reinforcing.
B. Section 03 30 00 - Cast-in-Place Concrete.
C. Section 05 12 00 - Structural Steel Framing.

1.04 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
   1. ACI 117 - Specification for Tolerances for Concrete Construction and Materials.
   2. ACI 301 - Specifications for Concrete Construction.
   3. ACI 303R - Guide to Cast-In-Place Architectural Concrete Practice.
   4. ACI 318 - Building Code Requirements for Structural Concrete.
   5. ACI 347R - Guide to Formwork for Concrete.

1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements for submittal procedures.
B. Product Data: Provide data and installation requirements for the following:
   1. Tie rods and spreaders.
   2. Formwork for exposed concrete.
   3. Form coatings and release agents.

1.06 QUALITY ASSURANCE

A. Perform work of this section in accordance with all requirements of ACI 347R and ACI 318 Chapter 26.
B. Delegated Designer Qualifications: Design formwork under direct supervision of a Professional Engineer experienced in design of concrete formwork and licensed in the State in which the Project is located.
C. Concrete formwork shall be designed and constructed to safely support fluid concrete and superimposed construction loads without excessive deflection or concrete leakage. Provide bracing to maintain accurate alignment and to resist all anticipated lateral loads. Forms shall conform with drawings as to shape, line, and dimension. Design, engineering, and construction of forms shall be the Contractor's responsibility. Formwork for exposed concrete shall be constructed to tolerances indicated in ACI 303R.
D. Cooperate and coordinate with other trades who furnish and/or install piping, conduit, reglets, anchors, inserts, sleeves, hangers, etc., as their work requires, including provisions for recesses and chases.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.
B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.
C. Protect plastic foam products from damage and exposure to sunlight.

PART 2 - PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.
C. Chamfer outside corners of beams, joists, columns, and walls, unless otherwise noted.
D. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.
E. Comply with relevant portions of ACI 347R, ACI 301, and ACI 318.
F. Use the following form types:
    1. Concrete not exposed to view: APA Plyform, steel, or clean and sound 1x8 sawn lumber.
    2. Smooth Concrete exposed to view: APA Plyform or steel
    3. Fiber Forms: Tubular column type spirally constructed of laminated plies of fiber
    4. Elevated Floor/Roof Slabs: At discretion of the Contractor.
    5. Extruded Polystyrene Foam: board or shaped as required.
    6. Form types for concrete exposed to view shall be submitted to and reviewed by the Architect.

2.02 WOOD FORM MATERIALS

A. Plywood: 5/8-inch minimum APA Plyform.
B. Lumber: Douglas-Fir species; Standard grade; with grade stamp clearly visible.

2.03 FIBER FORMS

A. Manufacturers:
    1. Sonoco Products Company, Sonotube.
    2. Burke Company, Burke Smoothtube.
    3. Substitutions: See Division 01 - Product Requirements.
B. Material shall be of round, spirally wound laminated fiber using a non-water sensitive adhesive and surface wax impregnated for moisture protection, surface treated with release agent, non-reusable, of sizes indicated. Forms shall give a smooth and seamless appearance to the cast concrete. Provide reveals as shown on the Drawings.

2.04 EXTRUDED POLYSTYRENE FOAM FORMWORK

A. Manufacturers: Comply with ASTM C578 type IV
    1. Dow Chemical Corp., Styrofoam.
    2. UC Industries, Foamular.
    3. Substitutions: See Division 01 - Product Requirements.

2.05 FORMWORK ACCESSORIES

A. Form Ties:
    1. Concrete exposed to view: Snap ties allowing full 1-inch back break.
    2. Concrete not exposed to view: Snap ties or wire.
    3. Verify special spacing requirements with architectural drawings at exposed concrete.
B. Form Clamps:
    1. Assembly to have cone washers allowing full 1-inch back break; 3/8" center rod.
C. Spreaders: metal (no wood)
D. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
    1. Do not use materials containing diesel oil or petroleum-based compounds. Form coating containing mineral oils or other non-drying materials will not be permitted for any concrete work.
    2. Composition: Colorless, reactive, water-based compound.
    3. Products:
        a. Kaufman Products Inc., FormKote Emulsion.
        b. Nox-Crete Inc., BIO-NOX.

c. SpecChem, LLC, Bio Strip WB (water-based).
d. W. R. Meadows, Inc., Duogard II (water-based).
e. Substitutions: See Division 01 - Product Requirements.

E. Dowel Sleeves: Plastic sleeve and nailable plastic base for smooth, round, steel load-transfer dowels.
1. Manufacturers:
a. BoMetals, Inc.
b. Substitutions: See Division 01 - Product Requirements.

F. Filler Strips for Chamfered Corners: Rigid plastic or wood type; 3/4 x 3/4 inch size unless noted otherwise on the Drawings.

G. Joint tape: Plastic film tape 3 inches wide.
1. Manufacturers:
a. 3M Company, No. 471 plastic film tape.

H. Expansion Joint Filler (preformed): 1/2" thick
1. Manufacturers:
a. W.R. Meadows, Inc., Sealtight Fiber Expansion Joint.

I. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

J. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 12 00.

K. Waterstops:
1. Configuration: As indicated on the Drawings.
2. Size: As indicated on the Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions and elevations agree with drawings.

3.02 EARTH FORMS

A. Earth forms are not permitted, except as specifically indicated on approved drawings and as indicated below.
1. Concrete footings may be poured directly against cut earth where excavations are deemed stable by a representative of the geotechnical engineer.
2. See Structural drawings for requirements for placing concrete footings directly against earth without forms.

B. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads. Ensure forms are tied, clamped, and braced to prevent spreading, shifting, or settling.

C. Install permanent insulated foam panel formwork per manufacturer's recommendations.

D. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

E. Align joints and make water-tight. Keep form joints to a minimum.

F. Obtain approval before framing openings in structural members that are not indicated on drawings.

G. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.

H. Coordinate this section with other sections of work that require attachment of components to formwork.

I. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect before proceeding.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.
B. Locate and set in place items that will be cast directly into concrete. All such items shall be secured into position before the concrete is placed.
C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
    1. The Contractor shall ensure that sleeves have been installed and other provisions have been made for the installation of mechanical, electrical and other equipment.
    2. Coordinate with all trades to ensure proper placement of all items in forms and to provide proper blockouts wherever required.
D. Position recessed anchor slots for brick veneer masonry anchors to spacing and intervals as required for the specified product.
E. Install accessories in accordance with manufacturer's instructions so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
F. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement. Heat seal joints so they are water-tight.
G. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
H. Close temporary openings with tight fitting panels flush with inside face of forms and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.06 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.
B. Clean and protect permanent foam panel formwork per manufacturer's recommendations.
C. Clean formed cavities of debris prior to placing concrete.
    1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
    2. No wooden ties or blocking shall be left in concrete except where indicated for attachment of other work.

3.07 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.
B. Construct permanent insulated foam panel formwork to maintain tolerances required by ACI 301.
C. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.
D. Camber slabs and beams in accordance with ACI 301.

3.08 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Division 01 - Quality Requirements.
B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.
    1. Notify the Architect at least 48 hours in advance of the beginning of pouring operations and at the completion of formwork and location of all construction joints. An inspection of forms and joints will be made for approval of finished work and general layout only. The foregoing inspection shall in no way relieve the Contractor of responsibility of design and safety of formwork, bulkheads and shoring.

a. Concrete work out of alignment, level or plumb will be cause for rejection of the whole work affected and, if so rejected, such work shall be removed and replaced, as directed by Architect, with no additional cost to the Owner.

C. Thoroughly clean and patch all holes in formwork and re-coat as required before reusing. Forms not suited to obtain concrete surfaces and tolerances in conformity with Contract requirements will be rejected by Architect.
   1. Reuse of forming materials shall be limited only as required to produce the finishes as specified, free from blemishes and other defects unless covered by other building materials in which case blemish free concrete is not required.

3.09 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
   1. Concrete must be allowed to cure long enough to avoid damage during form removal. Contractor or his representative in charge of concrete construction shall be present during removal of forms and shores, and shall be personally responsible for safety of this operation at all times and under all conditions.
   2. As a minimum, formwork and shoring shall remain in place for the following periods:
      a. Concrete on grade: 24 hours
      b. Walls and Columns: 3 days
      c. Formwork may be removed and reshores installed before the times indicated above, provided the concrete has cured sufficiently to avoid damage when formwork is removed. Shores must be immediately replaced with reshores in a sequence designed to avoid inducing stress in the concrete member.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

D. Surfaces to be painted shall be smooth and free of substances such as dirt, wax, excessive laitance, grease or materials that would prevent proper bonding of finishes.
   1. Removal of foregoing contaminants and complete removal of parting and curing compounds affecting proper paint bond, shall be responsibility of this Section of Work. Sandblast cleaning shall not be employed without specific approval of Structural Engineer.

E. Upon completion of this Work, clean up and remove from Site all equipment and debris resulting from this work.

END OF SECTION

03 20 00
CONCRETE REINFORCEMENT
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.02 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete and/or concrete unit masonry.
B. Supports and accessories for steel reinforcement.

1.03 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories.
B. Section 03 30 00 - Cast-in-Place Concrete.
C. Section 04 22 00 – Concrete Masonry Units.

1.04 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
    1. ACI 117 – Specification for Tolerances for Concrete Construction and Materials
    2. ACI 301 - Specifications for Concrete Construction.
    3. ACI 315R - Guide to Presenting Reinforcing Steel Design Details.
    4. ACI 318 - Building Code Requirements for Structural Concrete.
    5. ACI SP-66 - ACI Detailing Manual.
    6. ASTM A82 - Cold Drawn Wire for Concrete Reinforcement.
    7. ASTM A184 - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement.
    8. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
    9. ASTM A704 - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
    10. ASTM A706 - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
    11. ASTM A767 - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
    12. ASTM A775 - Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
    13. ASTM A884 - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
    14. ASTM A1035 - Standard Specification for Deformed and Plain, Low-Carbon, Chromium, Steel Bars for Concrete Reinforcement.
    15. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
    16. ASTM D3963 - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars.
    17. AWS B2.1 - Specification for Welding Procedure and Performance Qualification.
    18. AWS D1.4 - Structural Welding Code - Steel Reinforcing Bars.
    19. CRSI (DA4) - Manual of Standard Practice.
    20. CRSI (P1) - Placing Reinforcing Bars.
    21. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Prepare in accordance ACI 315 and ACI SP-66. Indicate bending diagrams, assembly diagrams, splicing and laps of bars and shapes, dimensions and details of bar reinforcing and assemblies.

1. Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in the State in which the Project is located.
2. Correctness of all reinforcing requirements and work is the responsibility of Contractor.
    a. Identify such shop drawings with reference thereon to sheet and detail numbers from Contract Drawings.
    b. Direct copies of the contract documents are not acceptable as a submission from the Contractor.
    c. Do not use scaled dimensions from Contract Drawings in determining the lengths of reinforcing bars.
    d. No reinforcing steel shall be fabricated without approved shop drawings.
    e. Any deviations from the contract documents must be clearly indicated as a deviation on the shop drawings.
    f. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Include any welding to be done.
    g. Shop drawings shall make it clear where each bar is located. Beams, grade beams and walls shall be shown in elevation. On elevations show locations of sleeves and penetrations.
    h. Check architectural, structural, mechanical, and electrical and other contract documents for anchor bolt schedules and locations, anchors, inserts, conduits, sleeves, and any other items which are required to be cast in concrete, and make necessary provisions as required so that reinforcing steel will not interfere with the placement of such embedded items.
    i. Show all areas of congestion. Identify where reinforcing steel will interfere with the placement of embedded items such as anchor bolts, anchors, inserts, conduits, sleeves and any other items which are required to be cast in concrete.

C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
    1. Reinforcing Bars
    2. Welded Wire Fabric
    3. Welding Electrodes
D. Product Data:
    1. Manufacturer's specifications and installation instructions for splice devices.
    2. Bar Supports.
E. Certificates of Compliance with specified standards:
    1. Reinforcing bars.
    2. Welded Wire Fabric.
    3. Welding electrodes.
F. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1 and dated no more than 12 months before start of scheduled welding work.
G. Reports: Submit certified copies of mill test report of reinforcement material chemical and physical analysis.
    1. Tensile and bend tests shall be performed by the mill in accordance with ASTM A615 or A706, as applicable to reinforcing type.
H. Samples: Only as required by Architect.

1.06 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301.
    1. Maintain one copy of each document on project site.
B. Tests and Inspections:
    1. Provide Architect and Special Inspection Agency with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.
    2. A testing program is required prior to start of construction. Testing program to be done in compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building

enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.

3. All reinforcing steel whose properties are not identifiable by mill test reports shall be tested in accordance with ASTM A615. One Series of tests for each missing report to be borne by the Contractor.
4. When inspections are indicated for reinforcement placement on the Structural drawings, a special inspector shall be employed to inspect reinforcing placement per CBC Chapter 17.
5. When tests are indicated for reinforcing steel on the structural drawings, the reinforcing steel used shall be tested in accordance with ASTM A615. One tensile and one bend test for each 2-1/2 tons of steel or fraction thereof, shall be made.
6. Inspect shop and field welding in accordance with AWS D1.4, including checking materials, equipment, procedure and welder qualification as well as the welds. Inspector will use non-destructive testing or any other non-destructive aid to visual inspection that Inspector deems necessary to assure the adequacy of the weld.
7. Tests and inspection shall be performed by Owners testing agency except when needed to justify rejected work, in which case the cost of retests and reinspection shall be paid by the Owner and back-charged to the Contractor.

C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.4 and no more than 12 months before start of scheduled welding work.
D. Product Delivery, Storage and Handling
   1. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.
   2. Handle and store materials to prevent contamination.
      a. Store reinforcement in a manner that will prevent excessive rusting or coating with grease, oil, dirt, and other objectionable materials. Storage shall be in separate piles or racks so as to avoid confusion or loss of identification after bundles are broken.
   3. Deliver and store welding electrodes in accordance with AWS D1.4.

PART 2 - PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615, Grade 60 (60,000 psi) for all bars unless otherwise indicated.
   1. Plain billet-steel bars.
   2. Unfinished.
B. Reinforcing Steel: ASTM A706, deformed low-alloy steel bars for bars to be welded.
   1. Unfinished.
C. Reinforcing Steel: Dual grade ASTM A615/A706, Grade 60 (60,000 psi) may be used in lieu of A615 or A706, Grade 60 (60,000 psi).
   1. Unfinished.
D. Reinforcing Steel: ASTM A706, Grade 60 (60,000 psi) for bars used in special seismic systems as indicated in drawings.
   1. Unfinished.
   2. ASTM A615 Grade 60 bars meeting the following requirements of ACI 318 may be used in lieu of A706 Grade 60 in special seismic systems.
      a. Actual yield strength based on mill tests does not exceed more than 78,000 psi.
      b. Ratio of the actual tensile strength to the actual yield strength is at least 1.25.
      c. Minimum fracture elongation in 8 in. shall be at least 14% for bar sizes #3 through #6, at least 12% for bar sizes #7 through #11, and at least 10% for bar sizes #14 and #18.
E. Minimum uniform elongation shall be at least 9% for bar sizes #3 through #10, and at least 6% for bar sizes #11 through #18.Reinforcing Steel: Plain or deformed bars; ASTM A1035, Grade 100 (100,000 psi), Type CL.
F. Stirrup and Tie Steel: ASTM A615 grade 60 for all bars, unfinished.
G. Steel Dowels: Same grade as bars to which dowels are connected.
H. Steel Welded Wire Reinforcement (WWR): Plain type; ASTM A1064. Spacing and size of wire as indicated in drawings.
I. Reinforcement Accessories:

1. Tie Wire: FS-QQ-W-461, annealed, minimum 16-gauge, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   a. Wire supports: CRSI class 2.
   b. Do not use wood, brick, or other objectionable materials.
   c. Do not use galvanized supports.
   d. Supports placed against ground: Pre-cast concrete blocks not less than 4 inches square with embedded wire.
3. Provide stainless steel components for placement within 1-1/2 inches of weathering surfaces.

J. Welding Electrodes: AWS D1.4, low hydrogen, E70XX series.

2.02 REINFORCING BAR SPLICING:

A. Coupler Systems: Mechanical devices for splicing reinforcing bars; capable of developing full steel reinforcing design strength in tension and compression. Comply with ACI 318 Chapter 25.
   1. Manufacturers:
      a. Headed Reinforcement Corporation (HRC): hrc-usa.com.
      b. nVent Lenton: nvent.com
      c. Dayton Superior Corporation: www.daytonsuperior.com.
      d. Splice Sleeve North America, Inc; NMB Splice Sleeve System: www.splicesleeve.com.
      e. Substitutions: See Division 01 - Product Requirements.

B. Form Savers: Mechanical devices for connecting dowels and reinforcing bars at construction joints; capable of developing full steel reinforcing design strength in tension and compression.
   1. Manufacturers:
      a. nVent Lenton: nvent.com
      b. Substitutions: See Division 01 - Product Requirements.

C. Taper Tie Hole Plug: Mechanical device for plugging tie holes; anchors optional flush or recessed grout.
   1. Manufacturers:
      a. Dayton Superior Corporation: www.daytonsuperior.com.
      b. Substitutions: See Division 01 - Product Requirements.

D. Grout: Cementitious, non-metallic, non-shrink grout for use with manufacturer's grout sleeve reinforcing bar coupler system.
   1. Manufacturers:
      a. Dayton Superior Corporation: www.daytonsuperior.com.
      b. Substitutions: See Division 01 - Product Requirements.

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice and to meet requirements of Drawings.

B. Fabricate reinforcement in accordance with the requirements of ACI 315R where specific details are not shown or where Drawings and Specifications are not more demanding.

C. Steel reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the Drawings shall not be used. Heating of bars for bending will not be permitted.

D. Reinforcing shall not be field bent or straightened without structural engineer’s review.

E. Provide offsets in rebar (1:6 maximum) where required to maintain clearances.

F. Fusion welding of preassembled cages shall be permitted only under the following conditions:
   1. Fusion welding of holding wires to ties, stirrups, and hoops in beams, columns, and grade beams to preassemble reinforcing cages is permissible. The holding wire area shall not exceed 5% of the beam, column, or grade beam cross sectional longitudinal steel area. Fusion welding is not allowed to longitudinal reinforcing steel in any beam, column, or grade beam.
   2. Fusion welding of holding wires to the ends of the reinforcing steel placed in mats (spread footings, slab reinforcement, etc.) is permitted provided the fusion weld occurs within 6 bar diameters of the free end of the bar (e.g. no allowed at the end of coupled, T-headed, or weld splice bars).

3. Fusion welding of holding wires shall not occur on a bent portion of a reinforcing bar. Bars may not be bent where a fusion weld occurs.
4. Holding wires shall conform to ASTM A496.
5. All reinforcing steel to be welded shall comply with ASTM A706.
6. Submit complete structural plans indicating which members will use fusion welding process for assembly. Provide complete structural details indicating the size of stirrups and holding wires and welding requirements. Submit a complete shop welding program which includes the following:
    a. Type of the specific fusion welding machine
7. Periodic inspection protocol of the in-plant welding. This information shall be submitted to the Structural Engineer (SEOR) and the Owner's Testing Agency for approval. Fusion welding and fabrication is not permitted until approved by the SEOR.

PART 3 - EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position. All reinforcement shall be accurately set in place, lapped, spliced, spaced rigidly and securely held in place and tied with specified wire at all splices and crossing points. All wire tie ends shall point away from the form. Carefully locate all dowel steel to align with wall and column steel.
    1. Bars shall be in long lengths with laps and splices as shown. Offset laps in adjacent bars. Place steel with clearances and cover as shown. Bar laps shall be as indicated on the Drawings. Tie all laps and intersections with the specified wire.
    2. For horizontal reinforcement, maintain clear space between parallel bars not less than 1 times nominal reinforcement diameter, but in no case shall clear space be less than 4/3 times maximum size concrete aggregate.
    3. For vertical reinforcement, maintain clear space between parallel bars not less than 1-1/2 times nominal reinforcement diameter, but in no case shall clear space be less than 4/3 times maximum size concrete aggregate.
    4. Reinforcing dowels for slabs shall be placed as detailed. Sleeves may be used if reviewed by the Structural Engineer before installation. Install dowel through all construction and expansion joints for all slabs on grade.
B. Bar Supports: Support and securely fasten bars with chairs, spacers and ties to prevent displacement by construction loads or placement of concrete beyond the tolerances specified. Conform to CRSI as a minimum standard.
C. Steel Adjustment:
    1. Move within ACI 117 specified allowable tolerances to avoid interference with other reinforcing steel, conduits, or embedded items.
    2. Do not move bars beyond allowable without concurrence of Structural Engineer.
    3. Do not heat, bend, or cut bars without concurrence of Structural Engineer.
    4. Reinforcement shall not be bent after being embedded in hardened concrete.
D. Splices:
    1. Splice reinforcing as shown.
    2. Lap Splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
    3. Splice Devices: Install in accordance with manufacturer's written instructions. Obtain Structural Engineer's review before using.
    4. Do not splice bars except at locations shown without concurrence of Structural Engineer.
        a. Where splices in addition to those indicated are required, indicate location on shop drawings clearly and highlight "for Engineer's approval".
E. Do not displace or damage vapor barrier.
F. Accommodate placement of formed openings.
G. Refer to Structural Drawings for concrete cover requirements over reinforcement.
H. Concrete shown without reinforcing shall be reinforced as similar parts shown with reinforcing except where concrete is specifically noted to be unreinforced.

I. Examine surfaces and conditions receiving or affecting the work. Do not proceed until unsuitable conditions have been corrected.
J. Welding:
   1. Welding is not permitted unless specifically detailed on Drawings or approved by Engineer.
   2. Employ shielding metal-arc method and meet requirements of AWS D1.4.
   3. Welding is not permitted on bars where the carbon equivalent is unknown or is determined to exceed 0.55.
   4. Welding shall not be done within two bar diameters of any bent portion of a bar which has been bent cold.
   5. Welding of crossing bars is not permitted.
K. Welded Wire Fabric: Install in long lengths, lapping 24 inches at end splices and one mesh at side splices. Offset laps in adjacent widths. Place fabric in approximately the middle of the slab thickness unless shown otherwise on the Drawings by dimension. Wire tie lap joints at 12-inch centers. Use concrete blocks to support mesh in proper position.
L. Reinforcement shall be free of mud, oil or other materials that may reduce bond at the time concrete is placed. Reinforcement with tightly adhered rust or mill scale will be accepted without cleaning provided that rusting has not reduced dimensions and weights below applicable standards. Remove loose rust.
M. Protection against rust:
   1. Where there is danger of rust staining adjacent surfaces, wrap reinforcement with impervious tape or otherwise prevent rust staining.
   2. Remove protective materials and clean reinforcement as required before proceeding with concrete placement.
N. Refer to notes on Drawings for additional reinforcement requirements.
O. Refer to Mechanical and Electrical Drawings for formed concrete requiring reinforcing steel. All such steel shall be included under the work of this Section.

3.02 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Division 01 - Quality Requirements, will inspect installed reinforcement for compliance with contract documents before concrete placement.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.02 SECTION INCLUDES

A. Cast-in-place concrete building elements.
B. Concrete for composite floor construction.
C. Elevated concrete slabs.
D. Slabs on grade.
E. Concrete foundations.
F. Grouting of steel base plates.
G. Joint devices associated with concrete work.
H. Concrete curing.

1.03 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories.
B. Section 03 20 00 - Concrete Reinforcing.
C. Section 04 22 00 – Concrete Unit Masonry
D. Section 05 12 00 – Structural Steel
E. Section 05 30 00 – Metal Decking
F. Section 05 50 00 – Metal Fabrications

1.04 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
    1. ACI 117 - Specification for Tolerances for Concrete Construction and Materials.
    2. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
    3. ACI 211.2 – Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
    4. ACI 301 - Specifications for Concrete Construction.
    5. ACI 302.1R - Guide to Concrete Floor and Slab Construction.
    6. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
    7. ACI 305R – Guide to Hot Weather Concreting.
    8. ACI 306R – Guide to Cold Weather Concreting.
    9. ACI 308R - Guide to External Curing of Concrete.
    10. ACI 318 - Building Code Requirements for Structural Concrete.
    11. ACI 360R – Guide to Design of Slabs-On-Ground.
    12. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field.
    13. ASTM C33 - Standard Specification for Concrete Aggregates.
    14. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
    15. ASTM C42 – Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
    16. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
    17. ASTM C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
    18. ASTM C143 – Standard Test Method for Slump of Hydraulic Cement Concrete.
    19. ASTM C150 - Standard Specification for Portland Cement.
    20. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete by the Volumetric Method.
    21. ASTM C192 – Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.
    22. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
    23. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

24. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
25. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
26. ASTM C567 – Standard Test Method for Determining Density of Structural Lightweight Concrete.
27. ASTM C618 – Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
28. ASTM C685 – Standard Specification for Volumetric Batching and Continuous Mixing.
29. ASTM C989 – Standard Specification for Slag Cement for Use in Concrete and Mortars.
30. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete.
31. ASTM C1157 – Standard Performance Specification for Hydraulic-Cement.
32. ASTM C1582 - Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete.
33. ASTM E1155 - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers.

1.05 SUBMITTALS

A. See Division 01 - Administrative Requirements for submittal procedures.
B. General:
   1. Review of submittals is of a general nature only, and the responsibility for conformance with intent of drawings shall remain with the Contractor. Review does not imply or state that the fabricator has correctly interpreted the construction documents.
   2. All submissions shall be in accordance with the submission schedule developed and agreed between the Architect and Contractor at the commencement of the project. Submission shall include dates of order and delivery of materials to the shop and the site.
   3. Shop drawing schedule shall allow adequate time for reviews. Reinforcing steel shall not be fabricated or placed before the shop drawings have been reviewed by the Architect and returned.
C. Concrete Design Mixtures: Each concrete mix design to be used on the project shall be reviewed and approved by the Testing Agency prior to concrete being delivered to site. Owner's Testing Agency shall review all mix designs prior to submittal. Submit proposed mix designs for each class of concrete listed on drawings. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
   1. For each concrete mixture, the following information shall be included: where the mix is to be used, all materials and admixtures including their source and proportions in the mix; Water content, water-to-cement ratio, slump, and aggregate grading; whether the mixture is appropriate for pumping; and total chloride content.
   2. Indicate compressive strength and method used to determine strength. The compressive strength of the concrete shall be proportioned per ACI. Include all calculations and tests required by ACI 318 Chapter 5. Laboratory test data must be submitted along with calculations that show with each mix design meets the strength requirement. Mix design number must match the mix design number shown on the test data. Include all test results or past history back up data specific as part of the submittal. Test results within the past two years shall be used to indicate performance in accordance with past history.
   3. Indicate amounts of mixing water to be withheld for later addition at Project site.
D. Transit-mix delivery slips.
   1. Keep record at the Site showing time and place of each pour of concrete, together with transit mix delivery slip certifying contents of the pour per ASTM C94. Include the time water was added to dry mix.
   2. Make the record available for inspection at the Site and to the Architect for his review upon request.
   3. Upon completion of this portion of the Work, deliver the record and the delivery slips to the Architect.
E. Reinforcement: Comply with submittal requirements in Section 03 20 00.
F. Welding certificates and welding procedures for all reinforcement welding. Comply with submittal requirements in Section 05 12 00.
G. Layout drawings for construction, control, and expansion joints.

H. Certificates of Compliance from manufacturer or supplier:
   1. Material Test Reports:
      a. Cement Certificates per CBC Chapter 17.
         1) Cement without a certificate shall not be used.
      b. Aggregates: Material test reports for the following, from a qualified testing agency, indicating compliance with requirements:
         1) Light weight aggregate (per ASTM C330).
         2) Normal weight aggregate (per ASTM C33). Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity. Include evaluation of reactivity.
   2. Product Test Reports and Certificates: Include ICC-ES or IAPMO reports where available. Provide for each of the following, signed by manufacturers.:
      a. Cementitious materials, per ASTM C150, ASTM C595, ASTM C618, ASTM C989, and/or ASTM C1240, as applicable.
      b. Admixtures. Where more than one admixture is used, include certification that admixtures are compatible. Per ASTM C494 for each type used; include chloride ion content.
      c. Fiber reinforcement.
      d. Curing compounds. Also include data on method of removal in the event of incompatibility with floor covering adhesives.
      e. Floor and slab treatments.
      f. Non-shrink grout, per ASTM C1107 Grade B.
      g. Bonding agents.
      h. Vapor retarders.
      i. Semirigid joint filler and joint-filler strips
      j. Waterstops.
      k. Post-installed concrete anchors.
      l. Repair materials.
I. Hardeners and sealers: Provide manufacturer's data.
J. Grout samples for sacked surface textures and colors upon Architect's request only.
K. Field quality-control test and inspection reports.
L. Sustainable Design Submittals:
   1. If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace cement, submit a letter indicating the total volume of concrete cast in place, mix design(s) used showing the quantity of cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used.
   2. Submit environmental assessment report for concrete mix. Compare concrete mix submitted with a conventional or reference concrete mixture that meets the specified performance requirements. Include:
      a. Energy consumption.
      b. Emissions.
      c. Potential toxicity.
      d. Potential risk.
      e. Raw material consumption.
      f. Land use.
      g. Third-party validation of comparison methodology.
   3. MSDS or product data showing VOC content data for concrete curing compounds, admixtures and form release agents used in concrete poured interior to the waterproofing membrane. Demonstrate compliance with California Air Resources Board (CARB), Architectural Coatings Suggested Control Measure 2008 and VOC emissions data in compliance with the California Department of Public Health Standard Method v1.1–2010, data must show exposure scenario, and range of VOC's after 14 days.
   4. MSDS or product data showing VOC content data for sealants used interior to the waterproofing membrane. Demonstrate compliance with the South Coast Air Quality Management District (SCAQMD) Rule 1168 AND VOC emissions data in compliance with the California Department of Public Health Standard Method v1.1–2010, data must show exposure scenario, and range of VOC's after 14 days.

M. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.06 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318 and applicable standards listed in the Reference Standards section.
   1. Maintain one copy of ACI 301 and ACI 318 on site.
B. Follow recommendations of ACI 305R when concreting during hot weather.
C. Follow recommendations of ACI 306R when concreting during cold weather.
D. For slabs required to include moisture vapor reducing admixture (MVRA), do not proceed with placement unless manufacturer's representative is present for every day of placement except when waived by owner.
E. For slabs indicated to receive membrane-forming, moisture emission-reducing, curing and sealing compound, do not proceed with application unless manufacturer's representative is present for every day of placement except when waived by owner.
F. Installer Qualifications:
   1. Concrete: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
   2. Reinforcing Steel: Installation shall be done only by an installation firm normally engaged in this business. All work shall be performed by qualified mechanics working under an experienced supervisor.
G. Manufacturer Qualifications:
   1. Concrete: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94 requirements for production facilities and equipment.
      a. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
   2. Steel Reinforcing: A firm regularly engaged in the manufacture of steel bar and welded wire fabric reinforcing.
H. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated, as documented according to ASTM E548.
   1. Personnel conducting field tests shall be qualified as ACI Concrete FieldTesting Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
   2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
   3. Shop and field testing and inspection of steelwork shall be performed by an inspector currently certified as an AWS Certified Welding Inspector.
I. Testing Agency: Shall be selected and paid for by the Owner, unless otherwise specified; re-testing paid for by the Contractor.
J. Contractor’s Quality Control Plan: Quality Control includes the functions performed by the Contractor to ensure that the material and workmanship of concrete construction meets the project specifications and applicable standards. The Contractor shall submit a Quality Control Plan that addresses all inspection issues, including testing and inspection per ACI. The verification testing and inspection carried out by the Testing Agency does not relieve the contractor of the responsibility for conducting their own quality control/inspection program to ensure the requirements of the Contract Documents have been met. The Contractor’s Quality Control Plan will be reviewed by the Testing Agency.
K. Quality Control Inspector Qualifications: Along with Quality Control Plan, Contractor shall submit written qualifications for all inspectors to be assigned Quality Control functions for concrete work.
L. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
M. Mechanical Bar Couplers shall have a current ICC-ES or IAPMO Evaluation Report that indicates compliance with requirements of these specifications.

N. Steel Reinforcing Allowable Tolerances (ACI 117):
   1. Fabrication:
      a. Sheared length: 1 inch.
      b. Depth of truss bars: Plus or minus ½-inch.
      c. Ties: Plus or minus ½-inch.
      d. All other bends: Plus or minus 1 inch.
   2. Placement:
      a. Concrete cover to form surfaces: Plus or minus ¼-inch.
      b. Minimum spacing between bars: Plus or minus ¼-inch.
      c. Crosswise of members: Spaced evenly within 2 inches of stated separation.
      d. Lengthwise of members: Plus or minus 2 inches.
   3. Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 2 bar diameters.

O. Unidentifiable Reinforcing Steel: Tested by testing agency; paid for by Contractor:
   1. Test reinforcing delivered to site which cannot be properly identified by heat number and mill mark for compliance with ASTM A615 as follows:
      a. No. 8 Bar and Smaller: One tensile test and one bend test of each size per 7-1/2 tons, or portion thereof.
      b. No. 9 Bar and Larger: One tensile test of each size per 10 tons, or portion thereof.

P. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."
   1. Welders whose work fails to pass inspection shall be requalified before performing further welding.
   2. Firm specializing in furnishing and installing reinforcement shall have a minimum of 5 years experience on projects with requirements similar to this project and shall have sufficient production capacity.
   3. All welding shall be performed by operators who are qualified for the types of welds used. Each operator shall have been qualified within the preceding one year as prescribed by AWS.
   4. Require welders to retake the qualification test if, as determined by the Architect, there is a reasonable doubt as to the proficiency of the welder. If the welder does not requalify, they shall not perform any welding on the project.

Q. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to test concrete mixtures. When mixes are proportioned by trial batch method, engage a Laboratory conforming to ASTM E329 and under direction of a Professional Engineer licensed in the State in which the Project is located.

R. Mockups: As required by the Owner and Architect, cast concrete slab-on-grade and formed-surface panels to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship. Mock-up shall be constructed using the same mixes, materials, products, procedures and methods as will be used for the permanent construction.
   1. Build panel(s) a minimum of 32 sq. ft. (4 ft. x 8 ft. panel) for slab-on-grade and formed surface in the location(s) indicated or, if not indicated, as directed by the Architect. Maintain sample panel exposed to view for duration of concrete work.
   2. Obtain Architect’s acceptance of visual qualities.
   3. Approved panels may become part of the completed Work if undisturbed at time of Completion.

S. Formwork:
   1. Concrete formwork shall be designed and constructed to safely support fluid concrete and superimposed construction loads without excessive deflection or concrete leakage. Provide bracing to maintain accurate alignment and to resist all anticipated lateral loads. Forms shall conform with drawings as to shape, line, and dimension. Design, engineering and construction of forms shall be Contractor's responsibility. Formwork for exposed concrete shall be constructed to tolerances indicated in ACI 303R.
   2. Cooperate and coordinate with other trades who furnish and/or install piping, conduit, reglets, anchors, inserts, sleeves, hangers, etc., as their work requires; including provisions for recesses and chases.

T. Prefabrication and Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mix concrete manufacturer.
   d. Concrete subcontractor.
2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

U. Tests and Inspections:
1. Provide special inspections and testing as described in the “Statement of Structural Special Inspections and Testing” within the structural drawings, and/or TIO form, and as required by this section.
2. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
3. The following tests shall be made by a recognized testing laboratory selected by the Owner and approved by the governing agency. All tests shall be in accordance with the previously mentioned standards and ACI 318 Section 26.12. A complete record of all tests and inspections shall be kept per CBC Section 1704.5.
   a. Compressive Strength: Make and cure in accordance with ASTM C-31. Test in accordance with ASTM C-39 and ACI 318 Section 26.12. Standard cure testing shall be utilized. Supplementary field cure testing shall occur where required by SEOR and/or AHJ.
      1) A record shall be made of time and of locations of concrete from which samples were taken.
      2) A minimum of five identical cylinders shall be taken from each pour of 150 cubic yards or 5000 square feet or part thereof, being placed each day per ACI 318 Section 26.12.2. One cylinder shall be tested at age 7 days, and a minimum of three at age 28 days unless otherwise specified. Preserve a minimum of one remaining cylinder for future use.
   b. Drying Shrinkage: (applies only to lightweight concrete only unless noted otherwise)
      1) A record shall be made of time cylinders and of locations of concrete from which samples were taken.
      2) Three identical 4" x 4" x 11" specimens shall be made from same concrete as used in structure. Percent of shrinkage shall be reported at 21 days after 7 day moist curing period. Average results of 3 specimens shall be used as the accepted value. The value for laboratory cast specimens shall not exceed .075%. If field test specimens are used in lieu of laboratory specimens, a tolerance of +33% may be used.
      3) Test specimens in accordance with ASTM C157.
   c. Concrete consistency (slump) shall be tested in accordance with ASTM C143.
4. Provide full time inspection per CBC Section 1705.3 during the taking of test specimens and during the placing of all concrete and embedded steel.
5. See Section 03 20 00 for reinforcing steel tests and inspections.
6. Provide concrete batch plant inspections per ASTM C685.

1.07 DELIVERY, STORAGE AND HANDLING

A. Steel Reinforcement:
1. Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement where occur.

2. Deliver reinforcing to Site properly bundled and tagged. Use tags that indicate bar size, lengths and marks corresponding to markings shown on shop drawings. Segregate so as to maintain identification after bundles are broken.
3. Store reinforcement in a manner that will prevent excessive rusting or fouling with/ grease, oil, dirt, and other bond weakening materials.
4. Do not use damaged, reworked, or deteriorated material.

B. Deliver and store welding electrodes in accordance with AWS D1.4.
C. Formwork: Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.
D. Concrete Materials:
1. Protect cement from moisture and rotate stock to ensure fresh materials.
2. Protect aggregates as necessary to maintain saturated condition when batched.
3. Storage methods should comply with ACI 301 4.1.4.

E. Contractor to coordinate with owner and/or testing laboratory to provide facilities for job curing of test cylinders and transporting to Testing Laboratory.
F. Comply with all local building and fire codes for fire safety during construction.

PART 2 - PRODUCTS

2.01 CONCRETE MIXES

A. Concrete mixes shall be as stated in the Structural Documents with strength, maximum aggregate size, maximum water to cement ratio, and use as documented.
1. Cement content as required by mix design (ACI 318 Section 26.4.3).
2. Admixtures: Water Reducing
3. Weight
a. Normal Weight Concrete (NWC): 150 lbs. per cubic foot maximum
4. Air Entrainment
a. As required for UL rating (4%-7% for LWC)
b. As required for Durability Requirements per ACI 318 Chapter 19
c. As required in Construction Documents

2.02 FORMWORK

A. Comply with requirements of Section 03 10 00.

2.03 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 20 00.

2.04 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
1. Portland Cement: ASTM C150, Type II, II/V, Type V, or ASTM C595 Type 1L. One brand of cement shall be used throughout to maintain uniform color for all exposed concrete.
2. Supplement Portland Cement with the following Supplementary Cementitious Materials (SCM):
a. Fly Ash Pozzolan: ASTM C618, F as required.
b. Blast-Furnace Slag: ASTM C989-10
c. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.
3. The SCM producer shall have a minimum of 5 years' experience in the production of acceptable SCM and shall practice an effective quality control program to guard against contamination of the SCM.
4. Cementitious material used shall have at least 2 years of use with proposed aggregates without detrimental reaction.
5. Alkali content shall not exceed 0.6% when tested in accordance with ASTM C114.
6. The temperature of cement delivered to the plant shall not exceed 150 degrees F.

B. Normal-Weight Aggregates: ASTM C33, fine and coarse aggregate, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in

similar applications and service conditions using similar aggregates and cementitious materials. Aggregate shall be crushed granite or Perkins type.

1. Select coarse-aggregate size from three options in subparagraph below; add gradation requirements if preferred. Aggregate size limits relate to spacing of steel reinforcement, depth of slab, or thickness of concrete member.
2. Coarse Aggregate:
   a. Aggregate shall contain no thin or elongated pieces. Any piece having a major dimension more than 2-1/2 times the average thickness shall be considered thin or elongated.
   b. If shrinkage-controlled concrete, Coarse Aggregate shall be crushed limestone, granite, or accepted equal.
   c. The maximum size used in a particular location shall be consistent with the form and dimensions of the section being placed, with the location and spacing of the reinforcing steel and with the method of vibration. The aggregate sizes shall be such as will produce dense, uniform concrete, free of rock pockets, honeycombs, or other irregularities.
   d. Combined aggregate gradation for slabs and other designated concrete shall be 8% to 18% for large top size aggregates (1-1/2-inch) or 8% - 22% for smaller top size aggregates (1-inch or 3/4-inch) retained on each sieve below the top size and above the No. 100.
3. Fine Aggregate: Uniformly graded, clean sand, free from excessive fines, organic materials or other deleterious materials. Free of materials with deleterious reactivity to alkali in cement.

C. Lightweight Aggregate: ASTM C330, to be specified between 1-inch and 3/8-inch nominal maximum aggregate size.
   1. Lightweight cellular and granular inorganic materials, free from oil, organic matter, or other deleterious substances.
   2. Uniformly graded from 1/4-inch to maximum size. The combined grading shall be such that the percentage of weight of the combined aggregates shall fall within the limits established by ASTM C330.
   3. Dry weight of lightweight concrete shall be as specified above. Comply with ASTM C567 for oven dry density testing if specifically required by code or jurisdiction. Contractor to verify density of concrete meets the requirements of the UL rating.
   4. Lightweight Aggregates Rotary Kiln Produced: Expanded shale slate, clay or slag aggregate, the maximum size used in a particular location shall be consistent with the form and dimensions of the section being placed, with the location and spacing of the reinforcing steel and with the method of vibration. The aggregate sizes shall be such as will produce dense, uniform concrete, free of rock pockets, honeycombs, or other irregularities.

D. Recycled (Reclaimed) Aggregates:
   1. Use only in below grade work where covered in its final condition. Do not use in integrally colored concrete.
   2. Maximum 20% of total aggregates by weight.
   3. Use one source for each required type throughout the project.
   4. Testing per latest edition of Greenbook Standard Specifications for Public Works Construction.

E. Water: Clean and free from injurious amounts of oil, acids, alkali, organic matter and other deleterious substances; suitable for domestic consumption.

2.05 ADMIXTURES

A. General: Where more than one is used, admixtures shall be compatible. Use of admixtures shall be consistent throughout Work.
   1. Use of alternate admixtures may only be used with the written acceptance of the Architect. See Substitutions Division 01 – Product Requirements.
   2. Admixtures to be in accordance with ACI 318 Section 26.4.1.4.
   3. Prohibited Admixtures: Admixtures containing more than 0.05 percent chloride ions, fluorides, sulphites, thiocyanates, and/or nitrates are not permitted. Do not use admixtures that will negatively impact the visual finish of concrete exposed to view. Calcium chloride is not permitted.
   4. Limit VOC content per IEQc2.

B. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other admixtures.
   1. Available Products:
      a. Grace Construction Materials; Darex AEA or Daravair.
      b. Master Builders, Inc.; MB-VR or Micro Air.
      c. Euclid Chemical Company (The); Air Mix.

C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
   1. Water-Reducing (Plasticizing) Admixture: ASTM C494, Type A for use in cool weather. Available Products:
      a. Grace Construction Products, W. R. Grace & Co.; "WRDA with Hycol".
      b. Master Builders, Inc.; "Pozzolith 220N".
      c. Euclid Chemical Company (The); “WR-75, WR-91 or Eucon MR”.
   2. Retarding Admixture: ASTM C494, Type B.
   3. Water-Reducing and Retarding Admixture: ASTM C494, Type D for use in hot weather. Available Products:
      a. Sika Corporation; “Sikament 30”.
      b. Euclid Chemical Company (The); “Eucon Retarder-75”.
   4. Mid-Range, Water-Reducers ASTM C494. Available Products:
      a. Master Builders “Polyheed.”
   5. Plasticizing and Retarding Admixture: ASTM C1017, Type II.
   6. Non-Chloride, Non-Corrosive Accelerating Admixture: ASTM C494, Type C or E. Manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least a year’s duration) using an acceptable accelerated corrosion test method. Available Products:
      a. Euclid Chemical Company (The); “Accelguard 80, 90, or NCA”.
   7. Shrinkage Reducing Admixture: ASTM C494, Type S.
      a. Euclid Chemical Company; Eucon SRA Floor; Eucon SRA-XT.
      b. GCP Applied Technologies; Eclipse Floor 200; Eclipse 4500.
   8. Waterproofing Admixture: Admixture formulated to reduce permeability to liquid water, with no adverse effect on concrete properties.
      a. Admixture Composition: Crystalline, functioning by growth of crystals in capillary pores.
      b. Admixture Composition: Hydrophobic polymer waterproofing and corrosion inhibitor, functioning by closing concrete pores and chemical bonding.
      c. Permeability of Cured Concrete: No measurable leakage when tested in accordance with COE CRD-C 48 at 200 psi (1.38 MPa); provide test reports.
      d. Potable Water Contact Approval: National Science Foundation (NSF) certification for use on structures holding potable water, based on testing in accordance with NSF 61 and NSF 372.
      e. Available Products:
         1) Euclid Chemical Company; Eucon Vandex AM-10.
         2) W. R. Meadows, Inc; ADI-CON CW Plus.
         3) Xypex Chemical Corporation; XYPEX Admix C-500.

D. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C494, Type C.
   1. Available Products:
      a. Euclid Chemical Company (The); Eucon CIA.
      b. Grace Construction Products, W. R. Grace & Co.; DCI.
      c. Master Builders, Inc.; Rheocrete CNI.
      d. Sika Corporation; Sika CNI.

E. Color Pigment: ASTM C979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
   1. Color: As selected by Architect from manufacturer's full range.
   2. Concentration: Base dosage rates on weight of Portland cement, fly ash, silica fume, and other cementitious materials but not aggregate or sand.

2.06 ACCESSORY MATERIALS

A. Underslab Vapor Retarder:
   1. Sheet Material: ASTM E 1745, Class A, not less than 15 mils thickness. Suitable for installation in contact with soil or granular fill under concrete slabs. Single-ply polyethylene is prohibited. Include manufacturer's recommended adhesive or pressure-sensitive tape. Plastic Vapor Retarder shall have a water-vapor transmission rate (WVTR) no greater than .008 perms (grain/h xft2 in x Hg) when tested in accordance with ASTM E96. Include manufacturer's recommended tape with water vapor transmission rate no greater than 0.3 perms when tested in accordance with ASTM E96. Tape shall be: a minimum of 6-mils thick, a minimum of 3 ¾ inches wide, manufactured from high density polyethylene, and have pressure sensitive adhesive. Include manufacturer's recommended vapor resistant mastic.
      a. Sheet Products:
         1) Alumiseal Corporation; Zero Perm Vapor Barrier.
         2) Henry Company (Fortifiber); Moistop Ultra 15.
         3) Raven Industries Inc.; Vapor Block 15.
         4) Reef Industries, Inc.; Griffolyn Type-65G or 105.
         5) W.R. Meadows, Inc.; PERMINATOR Class A - 15 mils.
         6) STEGO Industries LLC; Stego Wrap Vapor Barrier.
         7) Substitutions: See Section 01 60 00 - Product Requirements.
      b. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
         1) Vapor Retarder Tape:
            (a) Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower
            (b) Minimum 6-mils thick
            (c) Minimum 3 3/4 inches wide
            (d) Manufactured from High Density Polyethylene
            (e) Pressure Sensitive Adhesive

B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents. Acceptance by Architect required before using.
   1. Grout: Comply with ASTM C1107.
   2. Height Change, Plastic State; when tested in accordance with ASTM C827:
      a. Maximum: Plus 4 percent.
      b. Minimum: Plus 1 percent.
   3. When placed at a flowable consistency there shall be at least 95% bearing under an 18 inches x 36 inches base plate.
   4. Minimum Compressive Strength at 48 Hours: 3,000 pounds per square inch.
   5. Minimum Compressive Strength at 28 Days, ASTM C109: 7,000 pounds per square inch
   6. Flowable Products:
      a. Euclid Chemical Company; Hi-Flow Grout.
      b. W. R. Meadows, Inc; 588-10K; 1428 HP.
      c. BASF Construction Products; Masterflow 713 or 928.
      d. SIKA Corporation; Sika Grout 328.

e. SpecChem; SC Precision Grout
f. Metallic grout equivalent to Master Builders "Embeco" may be used only where covered by earth, concrete, or masonry.
g. Substitutions: See Division 01 - Product Requirements.

7. Low-Slump, Dry Pack Products:
   a. Dry Pack products may only be used where approved by Architect or otherwise indicated in Drawings.
      1) Euclid Chemical Company; DRY PACK GROUT.
      2) Five Star Products, Inc; Five Star Grout.
      3) L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; Duragrout.
      4) SpecChem, LLC; SC Multipurpose Grout.
      5) W. R. Meadows, Inc; PAC-IT.
      6) Substitutions: See Division 01 - Product Requirements.

C. Non-Shrink Epoxy Grout: For anchor reinforcing steel or threaded rods in concrete. Moisture-insensitive, two-part; consisting of epoxy resin, non-metallic aggregate, and activator.
   1. Composition: High solids content material exhibiting positive expansion when tested in accordance with ASTM C827.
      a. Maximum Height Change: Plus 4 percent.
      b. Minimum Height Change: Plus 1 percent.
   2. Minimum Compressive Strength at 7 days, ASTM C579: 12,000 pounds per square inch (82.7 MPa).
   3. Products:
      a. BASF Construction Products; Masterflow MP
      b. Sika Corporation; Sikadur 32 Hi-Mod
      c. Euclid Chemical Company; Epoxy 452 or E3G.
      d. Five Star Products, Inc; Five Star DP Epoxy Grout.
      e. SpecChem, LLC; SpecPoxy Grout.
      f. Substitutions: See Division 01 - Product Requirements.

D. Floor Leveling and Fill Materials
   1. Epoxy Concrete Mortar (where areas to fill are less than ¼-inch thick): Floor leveling, non-shrink trowel applied epoxy concrete mortar.
   2. Concrete Mortar (where areas to fill are greater than ¼-inch thick): Floor leveling, patching and repair, non-shrink trowel applied concrete mortar.
   3. Cementitious Floor Leveling Material: Shall be self-leveling or trowelable with a minimum 28 day compressive strength of 3000 psi in accordance with ASTM C-109.
      a. The Quikrete Companies; Quikrete No. 1249.
      b. Ardex; V-1200.
      c. Mapei; "UltraFlex".
      d. Substitutions: See Division 01 - Product Requirements.

2.07 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059, Type II acrylic emulsion or styrene butadiene.
   a. Euclid Chemical Company; AKKRO-7T; Wuco-Weld.
   b. W. R. Meadows, Inc; ACRY-LOK.
   c. Sonneborn; Sonobond.
   d. Larsen Products; Weld-Crete.
   e. Substitutions: See Division 01 - Product Requirements.

B. Epoxy Bonding System:
   1. Complying with ASTM C881 and of Type required for specific application. Two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
      a. Types I and II, non-load bearing or IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
         1) CTS Cement Manufacturing Corporation; Fast Anchoring and Repair Adhesive.
         2) Euclid Chemical Company; DURAL FAST SET LV.

3) Mapei Corporation; Planibond AE, Planibond 3C.
4) Substitutions: See Division 01 - Product Requirements.

C. Waterproofing Admixture Slurry: Slurry coat of Portland cement, sand, and crystalline waterproofing additive, mixed with water in proportions recommended by manufacturer to achieve waterproofing at cold joints in concrete.
   1. Products:
      a. W. R. Meadows, Inc; ADI-CON CW Plus.
      b. Xypex Chemical Corporation; XYPEX Concentrate.
      c. Substitutions: See Division 01 - Product Requirements.

D. Waterstops:
   1. Rubber, complying with COE CRD-C 513.
   2. PVC, complying with COE CRD-C 572.
   3. Bentonite and butyl rubber, complying with NSF 61 and NSF 372.
   4. Synthetic rubber; swells to 1000 percent of original size in clean water.
   5. Configuration: As indicated on drawings.
   6. Size: As indicated on drawings.
   7. Products:
      a. Penetron; Penebar SW-55.
      b. CETCO, a division of Minerals Technologies Inc; WATERSTOP RX.
      c. Kryton International, Inc; Krytonite Swelling Waterstop.
      d. Substitutions: See Division 01 - Product Requirements.

E. Reglets: Formed steel sheet, galvanized, not less than 26 gauge, with temporary filler to prevent concrete intrusion during placement.

F. Slab Expansion and Isolation Joint Filler: Preformed non-extruded resilient filler.
   1. Material:
      a. ASTM D1751, cellulose fiber.
      b. ASTM D1752, sponge rubber (Type I).
      c. ASTM D8139, semi-rigid, closed-cell polypropylene foam.
   2. Products:
      a. Burke; Fiber Expansion Joint.
      b. W.R. Meadows; Fibrated Expansion Joint Filler with Snap-Cap; Deck-O-Foam Joint Filler with pre-scored top strip.
      c. Nomaco, Inc; Nomaflex Expansion Joint Filler with Void Cap Option.
      d. Substitutions: See Division 01 - Product Requirements.

G. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.

H. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.
   1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
   2. Height: To suit slab thickness.

2.08 CURING MATERIALS

A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
   a. Products:
      1) Euclid Chemical Company ; EUCOBAR.
      2) Kaufman Products Inc; VaporAid.
      3) W. R. Meadows, Inc ; Evapre or Evapre-RTU.
      4) Substitutions: See Division 01 - Product Requirements.

B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309:
   1. Type 1, Class A and B, and AASHTO Specification M-148;
   2. Type 1, Class A and B requirements, and State of California Air Resources Board VOC Regulations.

3. Sodium Silicate compounds are prohibited.
4. Certified by curing compound manufacturer to not interfere with bonding of floor covering.
5. Product dissipates within 4 to 6 weeks.
6. Products:
    a. Euclid Chemical Company; COLOR-CRETE CURE AND SEAL VOC.
    b. W. R. Meadows, Inc; 1100-Clear.
    c. Substitutions: See Division 01 - Product Requirements.

C. Curing Agent, Water-Cure Equivalent Type: Clear, water-based, non-film-forming, liquid-water cure replacement agent.
1. Compressive Strength of Treated Concrete: Equal to or greater than strength after 14-day water cure when tested according to ASTM C39.
2. Conform with State of California Air Resources Board VOC Regulations.

D. Resin Curing Compound: Solvent-based liquid, white pigmented, membrane-forming.
1. For use on exterior slabs. When slab will be painted, sealed, topped, or receive other applied finish, completely remove curing compound after curing is complete and before finish coatings are applied.
2. Comply with ASTM C309, Type 2, Classes A and B.
3. Conform with State of California Air Resources Board VOC Regulations.
4. VOC Content: Less than 200 g/L.
5. Solids Content: 20 percent, minimum.
6. Products:
    a. Euclid Chemical Company; KUREZ DR-VOX; KUREZ DR-100.
    b. Kaufman Products Inc; Thinfilm 450 Resin Base.
    c. Substitutions: See Division 01 - Product Requirements.

E. Curing and Sealing Compound, Moisture Emission-Reducing, Membrane-Forming: Clear, liquid sealer for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
3. Conform with State of California Air Resources Board VOC Regulations.
4. VOC Content: Less than 100 g/L.
5. Solids Content: 25 percent, minimum.
6. Sodium silicate compounds prohibited.
7. Products:
    a. Euclid Chemical Company; Diamond-Clear VOX
    b. Floor Seal Technology, Inc; VaporSeal 309 System.
    c. Spec Chem; Cure & Seal WB.
    d. ShawContract; Moisture Shield
    e. Substitutions: See Division 01 - Product Requirements.

F. Curing and Sealing Compound, Moisture Emission-Reducing, Penetrating: Clear, water-based, non-film-forming curing agent; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission, moisture vapor emission, and alkalinity.
1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
2. Compressive Strength of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C39.
3. Chloride Ion Resistance of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C1202.
4. Comply with ASTM C309 and ASTM C1315 Type I Class A.
5. Conform with State of California Air Resources Board VOC Regulations.
6. Products:
    a. W.R. Meadows; Pentreat 244.
    b. Substitutions: See Division 01 - Product Requirements.

G. Curing and Densifying Compound, Membrane-Forming: Lithium polysilicate-based, clear, liquid densifier for application to newly-placed concrete.

1. Comply with ASTM C309.
2. Conform with State of California Air Resources Board VOC Regulations.
3. Solids Content: 25 percent, minimum.
4. Products:
   a. BASF; Sonosil.
   b. Euclid Chemical Company; Eucosil.
   c. Substitutions: See Division 01 - Product Requirements.

H. Moisture-Retaining Sheet/Cover: ASTM C171.
1. Provide in a thickness of 42 mils; standard weight of 53 lbs./1000 ft2; tensile strength (machine direction) of 36 lbs./in.; and puncture resistance of 70 lbs.
   a. Fiber reinforced asphaltic vapor barrier building paper, regular.
   b. Polyethylene film, white opaque.
   c. White-burlap-polyethylene sheet.

I. Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

J. Water: Potable, not detrimental to concrete.

2.09 FLOOR AND SLAB TREATMENTS

A. Abrasive Aggregate for non-slip finish: Fused aluminum oxide grits, graded 12/30. Use factory graded rustproof and non-glazing material that is unaffected by freezing, moisture and cleaning materials.

B. Concrete Hardener/Sealer: Clear, water soluble, sprayable in-organic silicate-based hardener/sealer or acrylic co-polymer resin. Shall conform to State of California Air Resources Board VOC Regulations.

C. Concrete Sealer: Conforming to ASTM C-309, Type I, Class B requirements, and conforming to State of California Air Resources Board VOC Regulations.

D. Sealer for Colored Concrete: Clear, penetrating, water-based, low-luster sealer recommended by the pigment manufacturer. It shall be compatible with colored concrete components and will not adversely affect concrete color or slip resistance.

2.10 POST-INSTALLED CONCRETE ANCHORS

A. Expansion Anchors:
1. As indicated on Drawings.

B. Adhesive Anchors:
1. As indicated on Drawings.

C. Screw Anchors:
1. As indicated on Drawings.

D. Grouted Dowels / Grouted Anchors: High strength non-shrink grout to anchor reinforcing steel or threaded rods in concrete.
1. Master Builders; Masterflow 928.
2. Sika Corporation; Sika Grout 212.
3. Substitutions: See Division 01 - Product Requirements.

2.11 REPAIR MATERIALS

A. High Strength Flowing Repair Mortar: For forming and pouring structural members, or large horizontal repairs, provide the flowable one-part, high strength microsilica modified repair mortar with 3/8” aggregate. The product shall achieve 9000 psi @ 28-days at a 9-inch slump.

B. Concrete Patching Mortar:
1. Horizontal repairs, ASTM C1059, Type II. Available Products:
   a. Euclid Chemical Co.; Euco Thin Coat, Concrete Coat.
   b. Sika Chemical Corp.; Sikatop 121 or 122.
   c. Substitutions: See Section 01 60 00 - Product Requirements.
2. Vertical or Overhead repairs, ASTM C1059, Type II. Available Products:
   a. Euclid Chemical Co.; Verticoat.
   b. Sika Chemical Corp.; Sikatop 123.
   c. Master Builders; Emaco R300, 310 or R350.

d. Substitutions: See Division 01 - Product Requirements.

C. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than specified strength at 28 days when tested according to ASTM C109.
5. Bond Strength: Not less than specified strength at 28 days when tested according to ASTM C1042.
6. Available Products:
   a. Euclid Chemical Co.; Flo-Top.
   b. Master Builders; UnderLayment 110.
   c. Substitutions: See Division 01 - Product Requirements.

D. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than specified strength at 28 days when tested according to ASTM C109.
5. Product shall exhibit the following properties: Chaplin Abrasion Test – 0.0079-inches maximum at 28 days.
6. Available Products:
   a. Euclid Chemical Co.; Thin Top SL.
   b. Master Builders; Topping 112.
   c. Substitutions: See Division 01 - Product Requirements.

2.12 CONCRETE MIX DESIGN

A. General:
1. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
   a. Procurement of concrete mix design is responsibility of Contractor.
   b. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
   c. Contractor shall notify the Testing Laboratory and Architect of intent to use concrete pumps to place concrete so that mix designs can be modified accordingly.
2. Supplementary Cementitious Materials (SCM): Fly ash shall not exceed 25% of the total cementitious material, unless otherwise indicated by Architect and Structural Engineer. Where slag is used to replace cement, slag shall not exceed 25% of the total cementitious material by mass. Ternary systems where more than one supplementary cementitious material is used are prohibited without consent of SEOR.
3. Limit water-soluble, chloride-ion content in hardened concrete to specified percent by weight of cement.
4. Admixtures: Use admixtures according to manufacturer's written instructions.
   a. Use admixtures in concrete, as required, for placement and workability.
   b. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

c. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
d. Use corrosion-inhibiting admixture in concrete mixtures where required.

5. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

B. Mixtures:
1. Initial mix design shall be prepared for all concrete in accordance with ACI 318 Section 26.4.3. Mix proportions shall be determined in accordance with ACI 318 Section 26.4.3 or 26.4.4. In the event that additional mix designs are required due to depletion of aggregate sources, aggregate not conforming to Specifications or at request of Contractor, these mixes shall be prepared as above.
2. Definition of Mix Properties to be specified for each mix:
a. Concrete density, either normal or light weight concrete.
b. Concrete strength (f'c) as the minimum compressive strength at a specified number of days, tested in accordance with ASTM C39.
c. Aggregate size as the largest of the coarse aggregate.
d. Slump limit. Slump shall be measured at the point of delivery in accordance with ASTM C143 prior to the addition of superplasticizer (if used). Slump tolerance shall meet the requirements of ACI 117 and shall be 4 inch plus or minus 1 inch for general concrete placement. Mixes employing the specified mid-range water reducer shall provide a measured slump not to exceed 7 inch ±1 inch after dosing, 2 inch ±1 inch before dosing. Use water reducing admixtures as required to provide a workable consistency for pump mixers. Water shall not be added at the jobsite without written review by the structural engineer.
e. Air entrainment: Provide 6% air entrainment typical for exterior concrete exposed to freeze-thaw cycles. Provide required air entrainment to meet the exposure categories listed in the concrete general notes per ACI 318, Chapter 19.
f. Air content by volume and may be plus or minus 1.5 percent at point of delivery.
g. Water/cement ratio is a maximum and specified by weight.
h. SCM cement replacement ratio as a %.
i. Drying shrinkage limit (where required) as a percentage change in length after 21 days of drying when tested as per ASTM C157 with 4 inches x 4 inches x 11 inches specimen moist cured 7 days prior to drying.
j. Fiber reinforcement (where used) specified as weight/volume of concrete.

2.13 MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 or ASTM C685 and ASTM C 1116 (fiber reinforced concrete when applicable), and furnish batch ticket information.
1. The batching plant shall be equipped with an electric metering device capable of determining moisture content of sand.
2. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.
3. After mix water has been added, concrete shall be mixed not less than 1-1/2 minutes nor more than 1-1/2 hours. Concrete shall be rejected if not deposited within the time specified.

B. Project-Site Mixing: Use only if method of storing material, mixing of material and type of mixing equipment is approved by Architect. Approval of site mixing does not relieve Contractor of any other requirements of Specifications. Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.

3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

C. Lightweight Concrete: Mix lightweight concrete in accordance with the directions of the approved lightweight aggregate manufacturer.

D. Admixtures:
   1. Air entrained and chemical admixtures shall be charged into mixer as a solution and shall be dispensed by an automatic dispenser or similar metering device. Powdered admixtures shall be weighed or measured by volume as recommended by manufacturer. Accuracy of measurement of any admixture shall be within plus or minus 3%.
   2. Two or more admixtures may be used in same concrete, provided such admixtures are added separately during batching sequence, and provided further that admixtures used in that combination retain full efficiency and have no deleterious effect on concrete or on properties of each other.
   3. All admixtures are to be approved by Structural Engineer prior to commencing this work.

E. Re-tempering:
   1. Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall be discarded, not re-tempered.
   2. Indiscriminate addition of water to increase slump is prohibited.
   3. When concrete arrives at project with slump below that suitable for placing, water may be added only if neither maximum permissible water-cement ratio nor maximum slump is exceeded. Water shall be incorporated by additional mixing equal to at least half of total mixing time required. Any addition of water above that permitted by limitation of water-cement ratio shall be accompanied by a quantity of cement sufficient to maintain proper water-cement ratio. Such additions shall only be used if approved by Architect. In any event, with or without addition of cement, not more than 2 gallons of water per cubic yard of concrete, over that specified in design mix, shall be added.

F. Cold Weather Batching:
   1. When average of the highest and lowest air temperature falls below 40 degrees F for more than three consecutive days, provide adequate equipment for heating concrete materials. No frozen materials or materials containing ice shall be used. When placed in forms, concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed per ACI 301.

G. Hot Weather Batching:
   1. Concrete deposited in hot weather shall have a placing temperature below 95 degrees F per ACI 301. If necessary, ingredients shall be cooled to accomplish this.

H. Do not use shrinkage-reducing admixture (SRA) in same concrete batch with a moisture vapor reduction admixture (MVRA) or porosity inhibiting admixture (PIA).

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Prior to Work specified in this Section, carefully inspect the installed Work of other trades and verify that such Work is complete to the point where this installation may properly commence.

B. Formwork: Comply with requirements of Section 03 10 00.

C. Reinforcement: Comply with requirements of Section 03 20 00.

D. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

E. Notify the Architect at least 48 hours in advance of the beginning of pouring operations and at the completion of formwork and location of all construction joints. An inspection of forms and joints will be made for approval of finished work and general layout only. The foregoing inspection shall in no way relieve the Contractor of responsibility of design and safety or formwork, bulkheads and shorings.

F. Ensure Excavations are sufficient to permit placement, inspection, and removal of forms. The entire place of deposit shall have been cleaned of wood chips, sawdust, dirt, debris, hardened concrete and other foreign matter. No wooden ties or blocking shall be left in the concrete except where indicated for attachment of other work.
G. Concrete surfaces to which fresh concrete is to be bonded shall be brush cleaned to remove all dust and foreign matter and to expose the aggregate, and then coated with the bonding adhesive herein specified.
H. Prior to placing concrete for any slabs on grade, the moisture content of the subgrade below the slabs shall be adjusted to at least optimum moisture.
I. Verify geotechnical engineer has approved all foundation excavations.
J. No concrete shall be placed until formwork and reinforcement has been approved by Architect. Clean forms of all debris and remove standing water. Thoroughly clean reinforcement and all handling equipment for mixing and transporting concrete. Concrete shall not be placed against reinforcing steel that is hot to the touch.
K. Coordinate:
    1. Obtain necessary information for coordination of formwork with items to be embedded in concrete.
    2. Coordinate size and location of openings in concrete. Obtain Architect’s approval for openings not shown on Structural Drawings.
L. Discrepancies:
    1. Notify the Architect of any discrepancies or inconsistencies.
    2. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.
M. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
    1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
    2. Use latex bonding agent only for non-load-bearing applications.
N. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions. Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.
O. Concrete Slabs on Grade:
    1. Bases below exterior and interior slabs on grade shall be accurately leveled and compacted prior to placing of concrete.
    2. Unless otherwise indicated, interior slabs on grade shall be poured over a minimum of four (4 inch) inches of compacted crushed rock, over a vapor retarder. Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
    3. Protect slab on grade subbase from moisture prior to placing concrete. Avoid wetting rock layer to allow adequate concrete curing and avoid future vapor transmission. If the subbase has been wet excessively, verify that water has been eliminated prior to placement of concrete.

3.03 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded. Ensure that embedded items are placed and held, during placing of concrete, to tolerances consistent with other items that will be attached to them.
    1. Install anchor rods, accurately located, to elevations required and complying with tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges."
    2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3. Install dovetail anchor slots in concrete structures as indicated.
4. Install concrete accessories in accordance with manufacturer's recommendations: straight, level, and plumb.

B. Provide pipe sleeves when pipes pass through concrete. Fill voids in sleeves, inserts and anchor slots with readily removable material to prevent entry of concrete into voids. The Contractor shall also see that sleeves have been installed and other provisions have been made for the installation of mechanical, electrical and other equipment.
C. No conduit shall be cast in concrete unless specifically indicated on the Structural Drawings.
D. Coring of concrete after placement is not permitted without prior approval by the Engineer of Record.

3.04 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.
E. Post-Installed Concrete Anchors
   1. Install in accordance with the manufacturer's recommendations and ICC-ES (or IAPMO) reports.
   2. Use washers on all bolts.
   3. Use care to avoid cutting or damaging reinforcing bars.
   4. When exposed to view in the final structure, bolts shall be of a length that will extend entirely through but not more than 1/4-inch beyond the nuts unless otherwise shown on the Drawings.

3.05 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
B. Existing Concrete to New Concrete Joints
   1. Chip keys and roughen existing concrete surfaces where new concrete abuts. Roughen surface by bush-hammering, chipping or sandblasting to remove surface mortar and expose clean aggregate.
   2. Drill and install dowels using epoxy grout in accordance with manufacturer's printed recommendations.
   3. Prime surface with 10-mil layer of epoxy adhesive using a stiff brush. Place concrete while the epoxy adhesive is still tacky. Re-prime if necessary.
C. Construction Joints: Install only as indicated and noted on Drawings. Joints not indicated on Drawings shall be so located, when approved, as to least impair strength of structure, and shall conform to typical details. Construction joints shall have level tops, vertical sides. Horizontal construction joints shall be thoroughly cleaned and roughened by removing entire surface film and exposing clean aggregate solidly embedded in mortar matrix. Joints between concrete and masonry shall be considered construction joints. Vertical construction joints need not be roughened unless noted otherwise. See Drawings for doweling and required keys. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
   1. Place joints perpendicular to main reinforcement unless otherwise indicated. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
   2. In walls, do not space construction joints more than 60 feet apart in horizontal direction and maximum 20 feet apart in vertical direction unless otherwise shown. In framed slabs and beams, and on metal deck slabs, do not space construction joints more than 120 feet apart. Place

construction joints perpendicular to main reinforcement except as otherwise shown. Continue reinforcement across construction joints except as otherwise shown.

3. Form keyed joints at indicated locations. Embed keys at least 1-1/2 inches into concrete.
4. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
6. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
7. Roughen surface at all construction joints where key is not used and under baseplates. Roughen concrete surface while concrete is still green where possible. Do not leave laitance, loosened particles of aggregate or damaged concrete at surface. Forms and reinforcing shall be cleaned of drippings. Dampen contact surfaces of construction joints, leaving them free of standing water, before placing fresh concrete. Roughen construction joints by any of following methods:
    a. By sand-blasting joint.
    b. By thoroughly washing joint, using a high-pressure hose, after concrete has taken initial set. Washing shall be done not less than 2 hours nor more than 4 hours after concrete has been poured, depending upon setting time.
    c. By chipping and wire brushing.
8. All decisions pertaining to adequacy of construction joint surfaces and to compliance with requirements pertaining to construction joints shall be reviewed with the Structural Engineer.
9. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
10. Before placing regular concrete mix, horizontal construction joint surfaces shall be covered with a layer of mortar composed of cement and fine aggregate of same proportions as that used in prescribed mix, but omitting coarse aggregate.

D. Control Jointing in Slabs-on-Grade: Joints shall be in locations indicated on Drawings, or as directed by Architect. Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints as follows:
    1. Construct interior slab control joints as follows:
        a. By use of construction joints laid out in checkerboard pattern; pour and allow alternate slabs to set; fill out balance of checkerboard pattern with second pour.
        b. By use of dummy groove joints at least 1/4 depth of slab, and at least 1/8 inch wide. These joints may be sawcut as soon as wet concrete can support the weight of the equipment and operator. Delaying saw-cutting past this point will make jointing ineffective. Use power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
    2. Slab reinforcing need not be terminated at control joints.
    3. Construction and expansion joints shall be counted as control joints.

E. Isolation/Expansion Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
    1. Unless otherwise indicated, use 3/8 inch thick expansion joint filler.
    2. Joints in interior slabs on grade shall be only in locations indicated.
    3. Edges of concrete at joints shall be edger finished to approximately 3/8 inch radius.
    4. Interrupt reinforcing at all expansion joints.
    5. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
    6. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 are indicated.
    7. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

F. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

G. Joint Filling:
   1. Prepare, clean, and install joint filler according to manufacturer's written instructions.
      a. Defer joint filling until concrete has aged at least a specified length of month(s). Do not fill joints until construction traffic has permanently ceased.
   2. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
   3. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.06 PLACING CONCRETE

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Ensure that all foreign material has been removed from surfaces, including reinforcement and embedded items, against which concrete will be placed.
B. Contractor shall notify the Testing Laboratory and Architect of intent to use concrete pumps to place concrete. Mix designs shall be modified accordingly as required.
C. The addition of water to the mix after leaving the plant is permitted only when the added water would not cause the mix design water/cement ratio to be exceeded. The addition of water at the site is contingent upon full time inspection of the process by the owners testing laboratory and the acceptance of the Inspector. Comply with ACI 301, section 4.3.2.1.
D. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
E. Method: Convey concrete as rapidly and directly as practicable to preserve quality and to prevent segregation. Deposit concrete in forms as nearly as practicable at its final position in a manner which will ensure that required quality is obtained. Chutes shall slope not less than 4 inches and not more than 6 inches per foot of horizontal run.
   1. Do not deposit concrete that has initially set. Retempering of concrete, which has partially set, is not permitted.
   2. Maximum time for discharge of concrete shall be per ASTM C94.
F. Sequence: Pour all walls and columns full height to designated construction joints. Pour all beams, and horizontal structures to designated construction joints. Construction joints to be made in walls only where indicated on the Drawings.
G. Placement: Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete. Deposit concrete to avoid segregation.
   1. Once placing is started, carry it on as a continuous operation until placement of the panel or section is complete. Construction joints to be made only where indicated on the Drawings or on approved shop drawings. Prevent the formation of cold joints at other locations.
   2. Deposit concrete in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. Deposit concrete in a manner to avoid inclined construction joints.
   3. Particular care shall be used when starting a concrete pour to maintain the continuity of appearance. Use all means necessary to avoid blemishes, imperfections, or changes in the finish.
   4. Maintain reinforcement in position on chairs during concrete placement.
   5. Deposit concrete into forms in horizontal layers not exceeding 24 inches in thickness around building, proceeding along forms at a uniform rate and consolidating into previous pour. In no case shall concrete be poured into an accumulation of water ahead of pour, nor shall concrete be flowed along forms to its final place of deposit. Fresh concrete shall not be permitted to fall from a height greater than 6 feet without use of adjustable length pipes or, in narrow walls, of adjustable flexible hose sleeves. Concrete shall be scheduled so that placing is a continuous operation for the completion of each section between predetermined construction joints. If any concreting operation, once planned, cannot be carried on in a continuous operation, concreting shall stop at temporary bulkheads, located where resulting construction joints will least impair the strength of the structure. Location of construction joints shall be as shown on the drawings or

as approved by Structural Engineer. The rate of rise in walls shall not be less than 2 feet per hour.

H. Consolidation: Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners. Concrete shall be thoroughly compacted and worked to all points with solid continuous contact to forms and reinforcement to eliminate air pockets and honeycombing.
   1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301. Use and type of vibrator shall conform to ACI 309, Guide for Consolidation of Concrete.
   2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. Place vibrating element directly in concrete and not attached to either inside or outside of forms or to reinforcing steel.
   3. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate. Do not over-vibrate concrete.

I. Initial Finishing:
   1. Screed slab surfaces with a straightedge and strike off to correct elevations.
   2. Where floor drains or floor slopes are indicated, slope slabs uniformly to provide even fall for drainage.
   3. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

J. Concrete Slabs on Grade:
   1. Exterior and interior concrete slabs on grade shall be poured as required under this Section. Base shall be accurately leveled and compacted prior to placing of concrete.
   2. Typically, interior slabs on grade shall be poured over a minimum of four (4 inch) inches of clean crushed rock, unless otherwise indicated, over a vapor retarder. Base section shall meet the requirements within the Geotechnical Engineering report.
   3. Protect slab on grade subbase from moisture prior to placing concrete. Avoid wetting rock layer to allow adequate concrete curing and avoid future vapor transmission. If the subbase has been wet excessively, verify that water has been eliminated prior to placement of concrete.
   4. Screed slab surfaces with a straightedge and strike off to correct elevations.

K. Concrete Over Metal Deck:
   1. At floor slabs, increase fill thickness as required to compensate for deflection of beams and deck at no additional cost to Owner. Obtain specified fill thickness at high points of the deck. Finish floor to specified tolerances for floor flatness, including at concrete over metal deck floors. Refer to 05 30 00 Metal Decking Specification.
   2. At roof, maintain specified thickness of concrete uniformly over deck. Slab need not conform to flatness and levelness tolerances

L. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed as shown in ACI 301. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   1. When concrete is expected to be placed at air temperatures of less than 40 deg F, contractor shall review with Architect all special procedures that will be used including mix design modifications and methods of protection. This review shall occur prior to the expected extreme temperatures.
   2. Provide sufficient protection material and equipment on the Project site in advance of the time when the mean daily temperatures are expected to drop below 40 degrees F.
   3. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301. In addition, take precautions including, but not limited to:
      a. Use non-chloride, non-corrosive accelerating admixture in accordance with previously accepted submittals.

b. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
c. Do not use calcium chloride, salt, or other materials containing antifreeze agents unless otherwise specified and approved in mixture designs.

M. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1 and as follows:
1. When concrete is expected to be placed at air temperatures of greater than 75 deg F, contractor shall review with Architect all special procedures that will be used including mix design modifications and methods of protection. This review shall occur prior to the expected extreme temperatures.
2. Provide sufficient protection material and equipment on the Project site in advance of the time when the mean daily temperatures are expected to rise above 75 degrees F.
3. When air temperature exceeds 75 deg F, take special precautions to prevent slump loss, rapid setting, and plastic shrinkage; including but not limited to:
a. Maintain concrete temperature below 95 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
b. Keep aggregate piles continuously moist by sprinkling with water. Temperature of Concrete: The temperature of the concrete mix at the time it is being placed in the forms shall not exceed 95 degrees F per ACI 301. The method employed to provide this temperature shall in no way alter or endanger the design mix or the design strength required.
c. Use set retarding admixture in accordance with previously accepted submittals.
d. Convey, deposit, finish and commence curing of concrete as rapidly as practicable.

N. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

O. Minimize evaporation from concrete in place by providing shade and windbreaks. Maintain such protection in place for 14 days minimum.

3.07 FINISHING FORMED SURFACES

A. Rough-Formed Finish: Surfaces shall be reasonably true to line and plane with no specified requirements for selected facing materials. Tie holes and defects shall be patched and fins exceeding 1/4 inch in height shall be rubbed down with wooden blocks. Fins and other rough spots at surfaces to receive membrane waterproofing shall be completely removed and the surfaces rubbed smooth. Otherwise, remove fins and other projections exceeding a specified height agreed with Architect. Rough finish shall be used for the following areas:
1. Below grade and unexposed surfaces.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

C. Smooth Plywood Form Finish: Finish shall be true to line and plane. Tie holes and defects shall have been patched and ground with surface fins removed. Arrangement of plywood sheets shall be orderly, symmetrical, as large as practical and free of torn grain or worn edges. Surface concrete shall be treated with 1 part muriatic acid, in three parts water solution, followed immediately by a thorough rinsing with clear water. Surfaces which are glazed, have efflorescence, or traces of form oil, curing compounds or parting compounds shall be cleaned or treated to match other formed surfaces, except as otherwise indicated or specified.
1. Smooth Plywood Form Finish shall be used for the following areas:
a. All surfaces above grade unless otherwise specified.
b. At Contractor's option, may also be used in lieu of rough form finish.

D. Smooth Plastic Liner Finish: Surface shall be smooth, concrete free of honeycombing, air pockets larger than 1/8 inch in diameter, and fins.
1. This finish shall be used only where indicated on the Drawings.

E. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

F. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

G. Sacked Surfaces: Exposed surfaces that are unacceptable in appearance to the Architect shall be sacked.
1. Prepare concrete surfaces in accordance with the referenced standards. Remove any form release materials by stoning by hand, power grinding or other method approved by the Architect.
2. Prepare concrete surfaces to receive sack finishing with a light sand blasting.
3. For best results, grout application and rubbing should be performed when areas to be treated are shaded and during cool, damp weather. When work is to be performed in hot and dry weather, a fog spray should be available for continuous use.
4. Prepare grout samples for matching of concrete surfaces for approval by the Architect. These shall be made in the following proportions of gray cement to white cement to sand: 1:1:2, 1:2:3, and 2:1:3, etc. until the correct matching color is obtained on the test areas. Sand should be fine enough to pass the Number 30 sieve. Mixes should be made to a good workable consistency in a clean container and the mix with the best color chosen, or modified if needed.
5. Provide sufficient qualities of sand and cement from the same source for the complete work at the job site.
6. Mixing Application:
    a. Mixing of grout on the job should be timed for it to be used up within 1 to 1-1/2 hours.
    b. Let the grout stand 20 to 30 minutes after mixing, and then remixed before applying.
    c. Soak the concrete surface thoroughly with water at least 15 minutes before applying grout and again just before application so that the surface is adequately wet during the operation.
    d. Apply grout with plasterer's trowel or sponge rubber float in sweeping strokes from the bottom up. Brush or spray gun applications may be used when approved by the Architect.
    e. Work in freshly applied grout vigorously with a sponge rubber float, then let sit until some of its plasticity is gone but not until it loses its damp appearance. At this point it shall be rubbed with clean, dry burlap to remove the excess grout, leaving no visible film on the surface but filling all air holes.
    f. Keep the surface wet for a day after grouting and sack rubbing are completed.
7. Alternate methods of application and materials shall be subject to the approval of the Architect.

H. Schedule of Concrete Finish Types shall be coordinated with the Architect and indicated on Drawings.

3.08 FINISHING FLOORS AND SLABS (FLATWORK)

A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Unless otherwise indicated or specified, flatwork shall have an integral monolithic finish.

C. Integral Monolithic Finish: Apply as soon as freshly poured concrete slabs will bear weight of workers. Pour slabs full thickness to finish floor elevations indicated. At proper time, tamp surface repeatedly with a wire mesh or grid tamper in a manner to force aggregate down below surface and to bring sufficient mortar to surface to provide for a smooth coating of cement mortar over entire surface. Allow surface mortar to partially set, then float with wooden floats and finish with one of following, as required.

1. Broom Finish: Steel trowel surface to a smooth dense surface free of lines, tool marks, cat faces and other imperfections. After troweling, and before final set, give surface a broom finish, brushing in direction noted on Drawings, or as directed. Broom finish shall be used typically on exterior flatwork except as otherwise indicated or specified and shall be "medium" texture as approved by Architect.
2. Smooth Steel Trowel Finish: Apply 2 steel trowelings to obtain hard, smooth surface. All lips, irregularities, uneven levels, etc. shall be worked out before last troweling. All interior flatwork shall have a smooth steel trowel finish unless specified otherwise.

D. Slip-Resistive Finish: Before final floating, apply slip-resistive finish. Apply according to manufacturer's written instructions.
E. Dry-Shake Floor Hardener Finish: After initial floating, apply dry-shake floor hardener to surfaces according to manufacturer's written instructions.

3.09 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. For tolerances not indicated, refer to ACI 117.
B. Slabs on grade – Comply with FF Floor Flatness & FL Floor Levelness as specified by Architect or Structural Engineer, or at a minimum shall be sufficiently even to contact a 10' long straightedge with a tolerance of 1/8 inch.
C. Concrete over metal deck – Refer to Section 05 30 00 for minimum requirements.
D. Elevated slabs – Comply with Architectural or Structural Engineer requirements.
E. Comply with flatness and levelness tolerances per ASTM E 1155 for randomly trafficked floor surfaces. Measure FF Floor Flatness and FL Floor Levelness within 48 hours after slab installation; report both composite overall values and local values for each measured section.
F. Slabs supporting modular office partitions, adhered flooring systems, or compact storage shelving must also comply with the manufacturer’s tolerance requirements.
G. Slabs scheduled to receive wood flooring must also comply with tolerances required for installation of wood flooring.
H. Finished surfaces of exterior integral finished flatwork shall not vary more than 1/4 inch from a 10' long straightedge, except at grade changes.
I. Fill or grind completed slabs as necessary to achieve specified finish tolerances. Fill shall be with a self-leveling cementitious product capable of being tapered to a feathered edge.
    1. Repair any slab section measuring below either the minimum local F-number or the minimum local L-number.

3.10 SHORES AND RESHORES

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.
    1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.
    2. As a minimum, shoring shall remain in place for the following periods:
        a. Walls and Columns: 2 days
B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.
C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.11 CONCRETE SURFACE REPAIRS

A. Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval. Repair and replacement work will be done at Contractor’s expense.
B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
C. Slabs on Grade: After entire slab is finished, shrinkage cracks that may appear shall be patched as follows:
    1. Where slab is not exposed or where appearance is not important, cracks larger than 1/32 inch wide shall be filled with cement grout and struck off level with surface.

2. Where slab is exposed and appearance is important, unsightly cracks shall be repaired in a manner satisfactory in appearance to Architect. If this cannot be accomplished, concrete shall be considered defective.

D. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
   1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
   2. Honeycombed areas shall be removed down to sound concrete, coated with a bonding grout or approved compound and patched using a low shrinkage high bond mortar. Patched areas shall be cured by being kept damp for at least 5 days.
   3. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
   4. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

E. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
   1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
   2. After concrete has cured at least 14 days, correct high areas by grinding.
   3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
   4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
   5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
   6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
   7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

F. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

G. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.12 CURING AND PROTECTION

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing. Concrete shall be maintained at not less than 50 degrees F nor more than 100 degrees F for a period of 72 hours after being deposited.

B. Protection: Contractor shall be responsible for protection of finished concrete against injury by rain, cold, vibration, animal tracks, marking by visitors, vandalism, etc.

C. Provide additional curing agents or compounds, not necessarily listed herein, but as recommended and or required for use with shake type hardeners or other special coatings and coverings by their manufacturers for a complete and proper installation.

D. Where supplementary cementitious materials are used, extra precautions shall be taken to prevent premature drying.

E. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

F. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period. Forms heated by sun shall be kept moist during curing period.

G. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

H. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven (7) days with the following materials:
    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven (7) days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
    a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
    b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
    a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
5. Interior slabs to receive adhesive-applied or resilient flooring: Cure only with moisture retaining cover. Do not cure with curing compound.

6. Interior slabs to receive thin set of tile: Cure only with moisture retaining cover. Do not cure with curing compound.

I. Flatwork: Flatwork to be exposed, stained, or painted shall have curing process submitted and approved by the architect prior to construction.
   1. Initial Curing Process:
      a. Mist Spraying: As soon as troweling of concrete surfaces is completed, exposed concrete shall be sprayed continuously with a special atomizer spray nozzle, capable of producing a fine mist. Spraying shall be done without any dripping of water from nozzle. Amount of spraying shall be such as to maintain surface of concrete moist without any water accumulating on surface. Maintain spraying for a minimum of 12 hours, or until such time as hereinafter described curing process is applied. Mist spraying will not normally be required when the ambient air temperature is below 90 degrees F.
   2. Final Curing Process:
      a. Water Curing: Concrete shall be kept wet by mechanical sprinklers or by any other approved method which will keep surfaces continuously wet.
      b. Saturated Burlap Curing: Finished surfaces shall be covered with a minimum of two layers of heavy burlap which shall be kept saturated during the curing period.
      c. Curing Compounds: Membrane curing compounds of chlorinated rubber or resin type conforming to ASTM C309 may be used only if specifically approved by Architect. Use of membrane curing compound will not be permitted on surfaces to be painted, or to receive ceramic tile, membrane water-proofing or hardeners and sealers. Membrane curing compound may be used in areas to receive resilient floor tile, provided it is wax-free, compatible with adhesive used and approved by adhesive manufacturer. Agitate curing compounds thoroughly by mechanical means continuously during use and spray or brush uniformly in accordance with manufacturer's recommendations. Apply immediately following final finishing operation. All curing compounds shall conform to State of California Air Resources Board VOC Regulations.
      d. Waterproof paper conforming to ASTM C 171, or opaque polyethylene film, may be used. Concrete shall be covered immediately following final finishing operation. Anchor paper or film securely and seal all edges in such a manner as to prevent moisture escaping from concrete.

J. Refer to Drawings for areas of concrete slab not to receive curing compounds or hardening compounds. Where concrete floors are to receive heavy duty coatings, waterproof coatings and the like, verify with coating installer the type of finish required for specified coating.

3.13 SURFACE HARDENER AND SEALER

A. Seal all interior exposed flatwork with clear sealer, except surfaces receiving ceramic tile, quarry tile, poured flooring or other special finishes specified, or as scheduled on the Drawings.
   1. Apply sealer in 2 or 3 coats, in accordance with manufacturer's directions, using the maximum quantity recommended.
      a. Concrete floors must be thoroughly cured for a minimum of 30 days and completely dry before treatment.
      b. Surfaces to be treated must be clean, free of membrane curing compounds, dust, oil, grease and other foreign matter.
      c. Upon completion, concrete surfaces shall be clean and without discoloration or traces of excess hardener left on the surface.

B. Apply sprayable hardener/sealer at locations as scheduled or as indicated on the Drawings. Apply in accordance with the manufacturer's favorably reviewed application instructions and recommendations.

3.14 GROUTING

A. Prepare and place grout materials at locations as indicated on the Drawings in accordance with the manufacturer's recommendations and installation instructions.

B. Pack grout materials solidly between bearing surfaces and bases or plates as indicated and to ensure no voids.

3.15 DEFECTIVE CONCRETE

A. Defective concrete shall mean any of the following:
   1. Concrete not meeting 100 percent of the specified 28 day compressive strength.
   2. Concrete exhibiting rock pockets, voids, spalls, streaks, cracks, honeycombing, that has any sawdust, wood, or debris embedded in it, or is otherwise defective, and in the Architect's judgment these defects impair the proper strength or appearance of the work
   3. Exposed reinforcing to extent that strength, durability, or appearance is adversely affected.
   4. Concrete significantly out of place, line, or level.
   5. Concrete not containing the required embedded items.
   6. Any concrete work not in accordance with the Specification and Drawings.

B. Upon determination that concrete strength is defective:
   1. Should cylinder tests fall below minimum strength specified, concrete mix for remainder of work shall be adjusted to produce required strength. Core samples shall be taken and tested from cast-in-place concrete where cylinders and samples indicate inferior concrete with less than minimum specified strength.
      a. Cores of hardened concrete shall be taken and tested in accordance with ASTM C 42 and C 39. Number and location of such cores shall be subject to the approval of Architect.
      b. Cost of core sampling and testing will be paid for by the Contractor.
      c. “85 percent” reduction in ACI 318 Section 26.12.4 will not justify low cylinder tests.

C. Upon determining that concrete surface is defective, Contractor may restore concrete to acceptable condition by cutting, chipping, pointing, patching, grinding, if this can be done without significantly altering strength of structure. Permission to patch defective areas will not be considered a waiver of the right to require removal if patching does not, in the opinion of the Architect, satisfactorily restore quality and appearance.

D. If core tests indicate that concrete is below the strength specified, or if patching does not restore concrete to specified quality and appearance, the concrete shall be deemed defective, and shall be removed and replaced without additional cost to the Owner.

E. No repair work shall begin until procedure has been reviewed by the Architect and Structural Engineer.

3.16 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:
   1. Steel reinforcement placement.
   2. Steel reinforcement welding.
   3. Headed bolts and studs.
   4. Post-installed concrete anchors, per ICC-ES or IAPMO recommendations.
   5. Verification of use of required design mixture.
   6. Concrete placement, including conveying and depositing.
   7. Curing procedures and maintenance of curing temperature.
   8. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Provide special inspections and testing as described in the “Statement of Structural Special Inspections and Testing” within the structural drawings and as required by this section.
   1. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
   2. The following tests shall be made by a recognized testing laboratory selected by the Owner and approved by the governing agency. All tests shall be in accordance with the previously mentioned standards and ACI 318 Section 26.12. A complete record of all tests and inspections shall be kept per CBC Section 1903.1.
      a. Compressive Strength: Make and cure in accordance with ASTM C31. Test in accordance with ASTM C39 and ACI 318 Section 26.12.

1) A record shall be made of time and of locations of concrete from which samples were taken.
2) Four identical cylinders shall be taken from each pour of 150 cubic yards or 5000 square feet or part thereof, being placed each day per ACI 318 Section 26.12.2. One cylinder shall be tested at age 7 days, and two at age 28 days unless otherwise specified. Preserve remaining cylinder for future use.

b. Drying Shrinkage: (applies to lightweight concrete only unless noted otherwise).
1) A record shall be made of time cylinders and of locations of concrete from which samples were taken.
2) Three identical 4" x 4" x 11" specimens shall be made from same concrete as used in structure. Percent of shrinkage shall be reported at 21 days after 7 day moist curing period. Average results of 3 specimens shall be used as the accepted value. The value for laboratory cast specimens shall not exceed .075%. If field test specimens are used in lieu of laboratory specimens, a tolerance of +33% may be used.
3) Test specimens in accordance with ASTM C157.

c. Concrete consistency (slump) shall be tested in accordance with ASTM C143. Perform one slump test for each set of test cylinders taken.

3. Provide full time inspection per CBC Section 1704.3 during the taking of test specimens and during the placing of all concrete and embedded steel.

D. Reinforcing Steel
1. Notify the testing agency and the Architect at least 48 hours before concrete is to be poured or reinforcing is covered up.
2. Before any concrete is poured on any particular portion of the building, the reinforcing steel and form dimensions will be inspected by the Testing Agency. Any errors or discrepancies shall be corrected before concrete is placed.
3. A testing program is required prior to start of construction. Testing program to be done in compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
4. All reinforcing steel whose properties are not identifiable by mill test reports shall be tested in accordance with ASTM A615. One Series of tests for each missing report shall be made and costs shall be borne by the Contractor.
5. When tests are indicated for reinforcing steel on the structural drawings, the reinforcing steel used shall be tested in accordance with ASTM A615. One tensile and one bend test for each 2-1/2 tons of steel or fraction thereof, shall be made.
6. In addition to other required inspections, the following are subject to Special Inspection as per the CBC:
a. Placement of Reinforcing Steel
b. Welding of Reinforcing Steel
7. A special inspector from the Testing Agency shall be present during all field bending of reinforcement.
8. Installation of deformed bar anchors to be tested in accordance with Section 7.1 of AWS D1.1.
9. Welding of Reinforcement: There shall be continuous inspection during all welding of reinforcement. All butt welds to be inspected using radiographic testing. At the Owners option recognized non-destructive tests such as resistance, Magnetic Particle Examination, and Liquid Penetrant Inspection may be used to inspect the welds. Inspect shop and field welding in accordance with AWS D1.4, including checking materials, equipment, procedure and welder qualification as well as the welds. Inspector will use non-destructive testing or any other aid to visual inspection that he deem necessary to assure the adequacy of the weld.
10. Comply with ICC-ES or IAPMO approvals with respect to special inspection required during installation.
11. Testing and inspection of mechanical splices and reinforcing couplers to conform to manufacturer's recommendations and ICC-ES or IAPMO approval.

E. Survey and Adjustment: Continuously observe formwork operations, record such observations on a daily basis, and submit reports of the results. Instrument check forms before and during concrete

placement to assure no movement has taken place. Make appropriate corrections to reposition displaced forms.

1. Measure floor and slab flatness and levelness as specified in “Floor Flatness and Levelness Tolerances” Section.
2. Certify, by written report submitted on a weekly basis, for each level and story that the elevations, finish lines and building lines of the hardened concrete are within tolerances, as substantiated by transit survey; also that all embeds and inserts have been installed within tolerance.

F. Slab Testing: Cooperate with manufacturer of specified moisture vapor reducing admixture (MVRA) to allow access for sampling and testing concrete for compliance with warranty requirements.

G. Permeability Test: Test concrete with waterproofing admixture according to COE CRD-C 48.

3.17 ADJUSTING AND CLEANING

A. Remove all debris, excess materials, tools and equipment resulting from or used in this operation at completion of this work.

B. Surfaces to be painted shall be smooth and free of substances such as dirt, wax, excessive laitance, grease or materials that would prevent proper bonding of finishes.

1. Removal of foregoing contaminants, and complete removal of parting and curing compounds affecting proper paint bond, shall be responsibility of this Section of Work. Sandblast cleaning shall not be employed without specific approval of Structural Engineer.

END OF SECTION

SECTION 03 35 43 – POLISHED AND DYED CONCRETE

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Grinding and polishing of interior concrete slabs/floors to aggregate exposure as herein specified
2. Joint filler
3. Joint edge spall repair
4. Crack repair
5. Surface defect repair including pop-outs, chips, spalls and pitting
6. Apply sealer and hardener, and polishing to specified sheen level and aggregate exposure

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

F. American Concrete Institute (ACI), www.aci-int.org

1. ACI302.1R Guide for Concrete Floor and Slab Construction.

G. American Society For Testing and Materials (ASTM), www.astm.org

1. Refer to Section 03 30 00 – Cast in Place Concrete for additional ASTM reference standards
2. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete
3. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete

4. ASTM C1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method

H. Definitions:

1. Floor Slab Joints: Joints deliberately created in regular, grid pattern intervals during construction.
    a. Construction Joints and Closure Strip Joints: Formed joints between adjacent slab panels, where panels are separate concrete pours.
    b. Shrinkage Joints (also called control or contraction joints): Saw-cuts installed after slab troweling to control slab breaks caused by concrete shrinkage, and keep cracks in straight lines under the saw-cuts.
2. Cracks in Floor Slab: Random, uncontrolled breaks in the floor slab.
    a. Shrinkage Cracks: Cracks that are the result of overall concrete shrinking beyond the capacity of the construction joints to contain.
    b. Slab Curl Cracks: Caused by concrete shrinking faster at the slab top than the bottom, with resulting curl at pour edges, breaking may be from wheeled vehicle impact.
3. Slab Spalls: Locations where slab surface has delaminated, chipped or broken off, exposing aggregate in the mix.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Concrete substrate	Floor levelness	• Refer to Section 03 30 00 – Cast in Place Concrete • Concrete must have an average Floor Flatness rating of at least 50, with a minimum of 35. • Concrete must have an average Floor Levelness rating of at least 50, with a minimum of 35.	Polishing system mfgr.
Polished floor assembly		• Concrete must be cured a minimum of 28 days or as directed by the manufacturer before application of polishing can begin. • Application of polishing shall take place 10 days prior to installation of equipment and substantial completion, thus providing a	

		complete, uninhibited concrete slab for application. • Finish concrete area shall be closed to traffic during finish floor application and after application for the time as recommended by the manufacturer.	
	Slip Resistance Coefficient of Friction: Level	0.6 min level to 5%	ASTM C 1028
	Slip Resistance Coefficient of Friction: sloped	0.8 min > than 5%	ASTM C 1028

Grinding	Aggregate exposure	• **Light Grind** ▪ Grind into concrete "cream" only to remove +/- 1/32nd inch. • **Medium Grind – Some Sand Exposed** ▪ Grind into the concrete to remove +/- 1/16th to 1/8th inch ▪ Exposed some small aggregate • **Heavy Grind – Some Aggregate Exposed** ▪ Grind into the concrete to remove +/- 1/8th to 1/4th inch ▪ Exposes some large aggregate in compliance with approved mockup	Mfgr.
	Type	Planetary type (Terrazzo type grinders not allowed)	Mfgr.
Polished floor Sheen/ shine	Sheen/shine	• Class I Low Reflectivity x Grit 400 • Class 2 Medium Reflectivity x Grit 800 • Class 3 High Reflectivity x Grit 1500	Mfgr
	Edges	• Match floor	N/A
Dyed finish	Type	Solvent Based	Provided by same mfgr. grinding and polishing floor
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing**:

Item	**Name of Test**	**Performance Results**	**Testing Std.**

Polished concrete	Slip Resistance Coefficient of Friction	0.6 min (from dead level to 5%)	ASTM C 1028
Polished concrete	Slip Resistance Coefficient of Friction	0.8 min (greater than 5%)	ASTM C 1028
Water Vapor Emissions per mfgr's recommendations and acceptance of existing substrate			

E. **Construction Testing / Inspection by others**:

Item	**Name of Test**	**Performance Results**	**By Whom**
Polishing of concrete	Installation compliance	Comply with written instructions	Polishing mfgr. representative
Sheen/shine	Compliance of Mockup	Meet visual inspection	**Architect**

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturer's product data.
   1. Concrete finish manufacturers' product data sheets, specifications, MSDS, and test data sheets.
      a. Include data for all products to be used to achieve polished concrete system as herein described.
      b. Include descriptive data, curing time, and application requirements
   2. Concrete finish manufacturers' recommended installation procedures, which when approved by the **Architect** will become the basis for accepting or rejecting actual installation procedures used on the work.

E. Submit Shop Drawings
   1. Coordinate joint layout pattern with Slab Joints per Section 03 30 00 – Cast in Place Concrete. One Joint layout submittal covering the joint requirements herein, shown on the architectural and structural drawings will be acceptable.

F. Submit samples.
   1. Three (3) of each color and finish specified.

G. Mock-Up Field Sample:
   1. Erect at location approved by **Architect**.
   2. Building slab mock up:
      a. One mock-up shall be provided for each color and sheen level combination specified.
         1) Size: 8'-0" x 8'-0"

b. Polished Concrete slab/floor mock-up may not be part of final construction.

1) Concrete slab mock-up shall be constructed from same concrete pour(s) as building slab, and be cured, protected and prepared to receive Polished Concrete Finish in exact manner of building slab.
2) Mock-up shall comprise of all components and finishes as specified and indicated in Drawings and shall include expansion and construction joints, saw cuts, edges at walls, hardeners, sealers, joint fill, sealants, chamfers, etc. and finish as specified and detailed.
3) Concrete Slab Mock-Up shall be removed upon completion and acceptance of final building slab with Polished Concrete Finish installation.
4) Notify **Architect** seven days in advance of dates and times when mock-ups will be constructed.
5) Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.

3. **Architect** will review and accept mock-up, when it is determined that it represents the design intent before construction begins.

a. Obtain from the **Architect** approval of mock-ups before starting construction.
b. If the **Architect** determines that mock-ups do not meet requirements, demolish and remove them from the site and cast new mock-ups until mock-ups are approved.
c. After completion of the contract, demolish and remove mock-up.

H. Certification:

1. Provide certified test reports, prepared by an independent testing laboratory, confirming compliance with specified performance criteria.
2. Provide a letter of acknowledgement from both the equipment and chemical manufacturer stating that the installer is a trained applicator and is familiar with proper procedures and installation requirements recommended by the manufacturer.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **ten (10)** years providing / installing / finishing projects of similar size and complexity.

1. Use a certified installer and adequate number of skilled workmen who are thoroughly trained and experienced in the necessary craft.
2. The special concrete finish manufacturer shall certify applicator.

a. Contact manufacturer for list of Certified Applicators.

C. Manufacturer shall have been in business for **ten (10)** years providing / installing / finishing similar size projects and complexity.

1. Provide letter of certification from concrete finish manufacturer stating that installer is certified applicator of special concrete finishes, and is familiar with proper procedures and installation requirements required by the manufacturer.

D. Stipulations:

1. Concrete Design:

a. Coordinate with Concrete Mix Designs specified in Section 03 30 00 – Cast-In-Place Concrete.
b. Aggregate selected must be tested to ensure it will accept polish.
c. Calcium chloride accelerators should not be utilized if acid stains are to be applied to the concrete floor.

2. Concrete shall be cleaned and all bond breaker material shall be removed.
3. Floor slab shall be placed and prepared as herein specified.
4. Installer/finisher shall be trained by system manufacturer and certified by same.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Curing of concrete
b. Manufacturer's recommendations

1) Protection of Concrete prior to finishing
2) Polishing of Concrete
3) Protection of Concrete after finishing (prior to substantial completion)
4) Mock-Ups

2. **General Contractor** shall request meeting 5 days in advance of construction. Recommended attendees shall include **General Contractor**, Testing Agency, Ready-Mix Concrete manufacturer, Cast in Place concrete subcontractor, Concrete Finish (concrete polishing) Subcontractor.

F. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and provide in writing a letter stating that polishing was done properly.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver materials in original containers, with seals unbroken, bearing manufacturer labels indicating brand name and directions for storage.

C. Store in compliance with Manufacturer instructions.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, etc. by others are installed correctly to proceed with installation/application of products as herein specified.

B. Environmental Limitations:

1. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation and other conditions affecting topping performance and as herein specified.

C. Close areas to traffic during floor application and after application, for time period recommended in writing by manufacturer.

D. Removal of contamination of the slab by soil, foot prints, drag marks, welding marks, hydraulic fluids, or any other outside contaminant shall be performed under this specification.

1. Refer to Section 03 00 51 – Concrete Cleaning.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1. All hydraulic powered equipment must be diapered to avoid staining of the concrete.
2. No trade will park vehicles on the inside slab. If necessary to complete their scope of work, drop cloths will be placed under vehicles at all times.
3. No pipe cutting machine will be used on the inside floor slab.
4. Steel will not be placed on interior slab to avoid rust staining.
5. All equipment must be equipped with non-marking tires.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. The following is related work including, but not limited to the following;

1. Concrete floor mix design
2. Concrete floor curing
3. Floor recessed items
4. Floor joints

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 03 30 00 – Cast in Place Concrete
3. Section 07 92 00 – Sealants and Caulking

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of polished concrete surface.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product and equipment type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings and all components shall be supplied from single source:

1. Concrete Dye System

a. L.M. Scofield, www.scofield.com
b. RetroPlate System, www.retroplatesystem.com
c. Ameripolish

2. Concrete Stain System

a. L.M. Scofield, www.scofield.com
b. Prosoco, www.prosoco.com

C. Reviewed Equivalent by **Architect**.

1. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
2. Refer to Division 1 for substitution, deviation and/or submittal procedures.
3. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

D. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

E. Refer to drawings, details, and other related specification section whether listed or not.

F. Details shall set basic requirements for size and configuration of systems.

2.2 GENERAL SYSTEM DESCRIPTION

A. Step 1: Place Concrete Slab / Floor Deck:

B. Step 2: Grind Concrete

C. Step 4: Hone and Polishing Concrete

2.3 MATERIALS

A. Concrete Slab/Floor:

1. Refer to Section 03 30 00 – Cast in Place Concrete

a. Concrete Slab

2. Joint Filler/Saw Cut Filler

a. Product as recommended by Concrete polishing manufacturer and subcontractor

3. Crack & Spall Repair:

a. Product as recommended by Concrete polishing manufacturer and subcontractor

B. Floor Protection:

1. Manufacturer: L.M. Scofield Company
2. Product:

a. Floor Protection Material: Proguard Duracover
b. Seaming Tape: Proguard Heavy Duty Seaming Tape

1) Do not apply the heavy duty seaming tape to bare or finished floors or wall surfaces at any time. It will permanently damage the floor.

3. Install products per manufacturer's published installation procedures.

C. Polished Concrete System:

1. Manufacturer: L.M. Scofield Company, www.scofield.com
2. Products:

a. Lithium Densifier: Formula One Lithium Densifier

1) High performing hardening and dust proofing compound.
2) Chemically reactive
3) Permanent bond to concrete
4) Formulated to be used in conjunction with integrally colored and uncolored concrete.

b. Final Finish: Formula One Guard-W

1) Water-borne acrylic penetrating material
2) Protects of polished concrete from normal staining
3) Enhances Gloss

D. Concrete Grind/Polishing:

1. Planetary grinding equipment must be capable of providing a multiple step process starting with course metal bond diamonds and ending with fine resin bond diamonds.

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect.**

B. Polishing Equipment

1. Floor grinding machines, dust extraction system, grinding heads, grinding pads for edges, hand grinders, etc. as required and approved by installation manufacturer.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Installer and **General Contractor** shall examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

a. Verify that base slab meet finish and surface profile requirements in Division 3 Section "Cast-In-Place Concrete," and Project Conditions above.
b. Do not proceed until unsatisfactory conditions are corrected.

3. Visually examine the floor joints and cracks in the slab observing the following:

a. Where semi-rigid joint filler is most appropriate material.
b. Where spall and crack repair mortar is most appropriate.
c. Notify the **Architect** where other defective areas are observed and not indicated for repair work, but where repair is appropriate.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 PROTECTION

A. The General Contractor is responsible for using Temporary Floor Protection throughout project construction to safeguard the surface quality of concrete slabs to receive polished finish before and after the application of these decorative finishes. The concrete slab must be treated as a finished floor at all times during construction.

1. Temporary Floor Protection will be removed only while finish work to the concrete is being performed and will be replaced after the final finish has cured sufficiently.

B. All concrete floors that will not be covered by other materials

3.3 COORDINATION

1. Refer to Division 1 for project coordination requirements.

2. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.4 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Installer shall examine and approve concrete substrate for conditions affecting performance of finish.

1. **General Contractor** shall correct conditions that are found to be out of compliance with the requirements of this section.
2. Repairs are not acceptable unless specifically approved on a case-by-case basis by the **Architect**.

C. Verify that base slab meets finish and "floor levelness" surface profile requirements and correct.

D. Provide floor clean of materials and debris.

E. Protect adjacent surfaces as required to prevent damage by the concrete polishing procedure.

F. Setup grinding machine, dust extraction system, tooling, and generator.

G. Ensure floor is cured to accept polishing application.

3.5 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
2. Sequence:
    a. Place Concrete Slab
        1) Refer to Section 03 30 00 – Cast in Place Concrete
    b. Grind to desired depth:
        1) Grind concrete floor with metal bond diamonds removing construction debris until the specified Grade is obtained. The first cut must be performed with a metal bond diamond.
            a) Medium Grind @ Grade Level Floors
    c. Joint & crack repair
        1) General:
            a) Install in accordance with manufacturer's recommendations.
            b) Fill construction joints and cracks with filler products as specified in accordance with manufacturer's instructions colored to match (or contrast) with concrete color as specified by **Architect.**
        2) Shrinkage and construction joint repairs

a) Joints where overall width of joint and edge spall is 1/2" or less.

i. Where narrow joint conditions exist with little to no edge spalling, clean both joint sidewalls to full original depth utilizing a diamond blade equipped dust free saw.
ii. Where minor edge raveling or spalling exists, prepare joint by making 3/4" minimum depth (1 3/4" preferred) vertical saw cuts at spall edges, then remove material to provide a channel to accept repair material.
iii. Where necessary, clean dry silica sand can be placed at the bottom of the joint (1/4" maximum layer) to seal off any opening and prevent excessive filler seepage or run through.
iv. Following Manufacturer's mixing and installation instructions fill the joint and monitor top to assure fill remains crowned.
v. After product has cured, cut smooth and flush with the finish floor surface or may be polished smooth with the floor using the specified polishing process.

b) Joints where overall width of joint and edge spall is more than 1/2"

i. Prepare joint by making straight, vertical saw cuts at spall edges, then remove delaminated material and deteriorated concrete surface material.
ii. Where necessary, clean dry silica sand can be placed at the bottom of the joint (1/4" maximum layer) to seal off any opening and prevent excessive filler seepage or run through.
iii. Blend repair mortar per manufacturer's requirements. Fill area with the repair mortar. Trowel top of repair mortar to be flush with concrete surfaces on both sides.
iv. After repair mortar has cured, use a flexible grinding wheel to grind top and edges to be flush and smooth with concrete floor on both sides.
v. If spalled repair area is over a control joint create a relief cut through the center of the repair mortar by re-cutting the joint. The relief cut should extend down through the structural mortar repair following the original saw cut in the slab.
vi. Re-fill the relief cut with control joint sealer in accordance with Manufacturer's installation instructions.
vii. After product has cured, cut smooth and flush with the finish floor surface or may be polished smooth with the floor using the specified polishing process.

3) Slab and Crack repair:

a) Random cracks not subject to movement, which are specifically identified to be repaired:

i. Utilizing dust-free cleanout and crack chasing saws cut along the crack to a depth of approximately 3/4" (1/2" minimum) creating a straight, clean vertical edge. Ensure that this defining cut has removed all previously adhered fillers, and any loose or weak concrete from the crack edge.
ii. Follow manufacturer's mixing and installation instructions and fill the crack with repair material.

iii. After repair material has cured, polish smooth with the floor using the specified polishing process.

4) Surface defect repair, including pop-outs, chips, spalls, and pitting:

a) Clean defect section with angle grinder equipped with wheel to remove all dirt/laitance. Wheel should be run over defects in multiple directions to insure proper cleaning.
b) Vacuum prepared pitting sections.
c) Dispense low viscosity Crack or Spall Repair material generously in and around pitted areas. Sand Filler, Grit size from 12 to 60, may be added to mixed components and then placed into area to be repaired. See Manufacturer's comprehensive installation guidelines for more information regarding use.
d) Immediately trowel repair material flush with slab surface. If material sticks to the trowel clean with denatured alcohol.
e) After repair material is fully cured, surface may be ground smooth or polished using the specified polishing process.

d. Hone and Polish Concrete

1) Finish Honing and Polishing the floor to the desired Class.
2) Class I Low Reflectivity x Grit 400
3) After the polishing process has been completed, apply protection guard material according to the products current technical bulletin. Allow to cure for 2-4 hours.
4) Using a high-speed burnishing machine and diamond impregnated pads, burnish the surface to the desired gloss level.
a) The exact number of grinding and polishing steps required will be determined by the flatness achieved by the concrete finisher, along with the desired look that is specified.
5) Finish to within 1/2" of vertical surfaces where practical.
6) Achieve waterproofing, hardening, dust-proofing, and abrasion resistance of the surface without changing the natural appearance of the concrete, except for the sheen.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

   1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

   2. Remove spatter from adjoining surfaces, as necessary.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. **General Contractor** shall protect polished floor until project is turned over to **Owner**.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 03 35 43

04 05 16
MASONRY GROUTING
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Grout for masonry.

1.03 RELATED REQUIREMENTS

A. Section 04 05 13 – Masonry Mortaring.
B. Section 04 22 00 – Concrete Unit Masonry

1.04 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
   1. ASTM C5 - Standard Specification for Quicklime for Structural Purposes.
   2. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
   3. ASTM C150 - Standard Specification for Portland Cement.
   4. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
   5. ASTM C476 - Standard Specification for Grout for Masonry.
   6. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.
   7. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
   8. ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry.
   9. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength.
   10. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
   11. ASTM E518 - Standard Test Methods for Flexural Bond Strength of Masonry.
   12. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data:
   1. Include mix design.
   2. Include required environmental conditions and admixture limitations.
C. Reports: Submit reports on grout indicating compliance of component grout materials to requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C1019.
D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements. Submit documentation on all materials including but not limited to:
   1. Aggregates.
   2. Cement.
   3. Admixtures.
E. Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

1.06 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
   1. Maintain one copy of each on the Project site.

1.07 PRECONSTRUCTION TESTING

A. A testing program is required prior to start of construction. Testing program to be done in Compliance with the current building design code requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of

building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.

B. Testing will be conducted by an independent test agency, in accordance with provisions of Section 01 40 00 - Quality Requirements.
C. Sample panel construction: For masonry governed by Level 2 or 3 Quality Assurance, construct sample panels of masonry walls per TMS 602. The specifier has the option of permitting a segment of the masonry construction to serve as a sample panel or requiring a separate stand-alone panel.
D. Grout Mixes: Test grout batches in accordance with ASTM C1019 procedures.
   1. Test results will be used to establish optimum grout proportions and establish quality control values for construction testing.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.09 FIELD CONDITIONS

A. Cold Weather Construction to be in accordance with TMS 602.
B. Hot Weather Construction to be in accordance with TMS 602.

PART 2 - PRODUCTS

2.01 GROUT APPLICATIONS

A. At Contractor's option, grout may be field-mixed from packaged dry materials, made from factory premixed dry materials with addition of water only, or ready-mixed.
B. Grout Mix Designs:
   1. Provide premixed type in accordance with ASTM C476.
   2. Grout shall have a 28-day compressive strength of 2000 psi or f'm as indicated in the Drawings, whichever is greater. Grout shall conform to TMS 602.
   3. Fine Grout or Coarse Grout: The contractor is to determine the proper application of Fine Grout or Coarse Grout based on the grout pour height used and the clear grout space width for multi-wythe construction or clear grout space dimensions for hollow units in accordance with TMS 402 Table 3.2.1.
   4. Add grout admixture in accordance with the manufacturer's recommendations. Calcium Chloride cannot be used in grout mixes.

2.02 MATERIALS

A. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
   1. Type: Fine or Coarse.
B. Portland Cement: ASTM C150, Type I or II, low alkali; natural gray.
C. Quicklime: ASTM C5, non-hydraulic type.
D. Grout Aggregate: ASTM C404.
E. Water: Clean and potable.
F. Water-Reducing Admixture: expanding, retarding, and water-reducing.
   1. Product: Sika Grout Aid.
G. Bonding Agent: Latex type.
H. Integral Water-Repellent and Efflorescence-Control Admixture: Polymeric liquid admixture added to grout at the time of manufacture.
   1. Use only in combination with masonry units produced with integral water-repellent admixture.
   2. Product: Master Builders MasterPel 240MA.
I. Bond Beam Mesh: Barrier to stop grout when filling block wall cells
   1. Manufacturers:
      a. Grout Stop: www.wirebond.com/products/grout-stop
      b. Mortar/Grout Screen: www.h-b.com
      c. Mortar Mesh: www.bontool.com/mortar-mesh-100-x-4-81-118

2.03 GROUT MIXING

A. Mix grout in accordance with ASTM C476.
B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.
C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.
D. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 - EXECUTION

3.01 PREPARATION

A. Apply bonding agent to existing concrete surfaces.
B. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

3.02 INSTALLATION

A. Install grout to requirements of section(s) in which masonry is specified.
B. Work grout into masonry cores and cavities to eliminate voids.
C. Do not install grout in lifts greater than 16 inches without reconsolidating.
D. Do not displace reinforcement while placing grout.

3.03 GROUTING

A. General Requirements:
   1. All cells shall be grouted solid as indicated on the Drawings.
   2. Use of grout lifts above or below 4’-0” or 5’-4” for 10 inch nominal or wider hollow unit masonry at Contractor's option.
   3. Use grout pump, hopper or bucket to place grout.
   4. Place grout in final position within 1 1/2 hours after introduction of mixing water.
   5. Stop grout approximately 1½ inches below top of last course; except at top course bring grout to top of wall. Do not form grout keys within beams.
B. Grout pours less than 4’-0” or 5’-4” for 10 inch nominal or wider hollow unit masonry:
   1. Do not lay units higher than 4’-0" before grouting or 5’-4” for 10 inch nominal or wider hollow unit masonry.
   2. If mortar has been allowed to set prior to grouting, remove all fins protruding more than ½ inch into grout space.
   3. Conform to requirements of CBC Section 2104.2.4.1.
   4. Consolidate each lift with mechanical vibration twice per Article 3.5 E of TMS 602. Once while placing grout and once more after initial absorption of water but before set.
C. Grout pours greater than 4’-0” or 5’-4” for 10 inch nominal or wider hollow unit masonry:
   1. Conform to requirements of TMS 602 CBC Section 2104.2.4.2.
   2. Layup walls, subject to maximum height limitations of Table 6 under Article 3.5 of TMS 602.
   3. Provide clean out holes at the bottom of every pour in cells containing vertical reinforcement. Construct clean out courses with open bottom bond beam units inverted to permit cleaning of all cells by flushing. Cleanouts shall be not less than 3x4 inch openings cut from one face shell. Do not plug clean out holes until masonry work, reinforcement, and final cleaning of the grout spaces have been completed and inspected.
   4. Clean mortar droppings from the bottom of the grout space and from reinforcing steel. Remove mortar fins protruding more than ½ inch into the grout space by dislodging the projections with a rod or stick as the work progresses or by washing the grout space at least twice a day during erection using a high-pressure stream of water.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 40 00 - Quality Requirements.
B. Test and evaluate grout in accordance with ASTM C1019 procedures.
   1. Test with same frequency as specified for masonry units.

3.05 DEFECTIVE GROUT

A. Should the strength of grout fall below that specified, remainder of Work shall be adjusted to reach required strength. Work in place representing inferior grout and indicating a strength less than the minimum specified shall be tested by taking and testing core samples. Number and location of cores shall be determined by Structural Engineer.
B. Should compression tests of cores fail to meet required strength, masonry shall be deemed to be defective and shall be removed and replaced at no cost to Owner.
C. Costs relative to taking and testing of core samples shall be paid by Owner and will be deducted from Contract Amount. Cost of patching core holes shall be borne by Contractor.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Concrete block.
B. Reinforcement.
C. Bolts and Post-Installed Anchors.
D. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories.
B. Section 03 20 00 - Concrete Reinforcing.
C. Section 03 30 00 - Cast-in-Place Concrete.
D. Section 04 05 13 - Masonry Mortaring.
E. Section 04 05 16 – Masonry Grouting.
F. Section 05 50 00 - Metal Fabrications.

1.03 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
   1. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   2. ASTM A480 - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
   3. ASTM A580 - Standard Specification for Stainless Steel Wire.
   4. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
   5. ASTM A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
   6. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   7. ASTM A706 - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
   8. ASTM A951 - Standard Specification for Steel Wire for Masonry Joint Reinforcement.
   9. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
   10. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
   11. ASTM C140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
   12. ASTM C150 - Standard Specification for Portland Cement.
   13. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
   14. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
   15. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
   16. ASTM E514 - Standard Test Method for Water Penetration and Leakage Through Masonry.
   17. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and masonry accessories.
C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners.
D. Samples: Submit four samples of decorative block units to illustrate color, texture, and extremes of color range.

E. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
F. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture where utilized.
G. Manufacturer's Qualification Statement.
H. Installer's Qualification Statement.
I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
   1. Maintain one copy of each on the Project site.
B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with a minimum of three years of documented experience.
C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.07 MOCK-UPS

A. Sample panel construction: For masonry governed by Level 2 or 3 Quality Assurance, construct sample panels of masonry walls per TMS 602. The specifier has the option of permitting a segment of the masonry construction to serve as a sample panel or requiring a separate stand-alone panel.
B. Locate where directed.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.
B. Store masonry units off the ground in a dry location, covered and protected from absorbing moisture.
C. Store masonry accessories, including metal items, in such a way as to prevent corrosion or accumulation of dirt and oil.

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: 8" wide by 8" high x 16" long unless as otherwise indicated on the Drawings.
   2. Special Shapes: Provide bond beam units, open end units, lintel units and other special units as indicated. Use open end units at cells containing vertical reinforcement wherever possible.
   3. Load-Bearing Units: ASTM C90.
      a. Weight: As indicated in the Drawings.
      b. Hollow block, as indicated in the Drawings.
      c. Exposed Faces: Manufacturer's standard color and texture where indicated in the Drawings.
      d. Exposed Faces: Special color and texture where indicated in the Drawings.
   4. Pre-Faced Units: ASTM C90, hollow block, with smooth resinous facing complying with ASTM C744.
      a. Colors and styles: As indicated on the Drawings.
         1) Substitutions: See Section 01 60 00 - Product Requirements.
   5. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
      a. Performance of Units with Integral Water Repellent:
         1) Water Permeance: When tested per ASTM E514 and for a minimum of 72 hours.
            (a) No water visible on back of wall above flashing at the end of 24 hours.
            (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
            (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
         2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
         3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.

b. Use only in combination with mortar that also has integral water repellent admixture.
c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

2.02 REINFORCEMENT

A. Reinforcing Steel: Type as specified in Section 03 20 00; size as indicated on the Drawings.

2.03 BOLTS AND POST-INSTALLED ANCHORS

A. Anchor Bolts:
   1. As indicated on the Drawings.
B. Expansion Anchors:
   1. As indicated on the Drawings.
C. Adhesive Anchors:
   1. As indicated on the Drawings.
D. Screw Anchors:
   1. As indicated on the Drawings.
E. Anchor Finish:
   1. Interior Exposure: All anchors, nuts and washers for use in interior environments free of potential moisture shall be manufactured from carbon steel and zinc coated.
   2. Exterior or Exposed Use: All anchors, nuts, and washers for use in exposed or potentially wet environments, or for attached of exterior cladding materials shall be galvanized or stainless steel. Galvanized anchors, nuts and washers shall conform to ASTM A153. Stainless steel anchors shall be manufactured from 300 series stainless steel. and nuts and washers from 300 series or Type 18-8 stainless steel.

2.04 ACCESSORIES

A. Non-Metallic Expansion Joint Strips: Premolded, flexible cellular neoprene rubber filler strips complying with ASTM D1056, Grade RE 41E1, capable of compression up to 35% of width and thickness indicated.
B. Premolded Control Joint Strips: Material as indicated below, designed to fit standard sash block and maintain lateral stability in masonry wall; size and configuration as indicated.
   1. Premolded PVC Control Joint Strips. Strips shall be polyvinyl chloride complying with ASTM D 2287, Type PVC 654-4 with a durometer hardness or 90.
   2. Manufacturers:
      a. Blok-Lok Limited: www.blok-lok.com.
      b. Hohmann & Barnard, Inc: www.h-b.com.
      c. WIRE-BOND: www.wirebond.com.
      d. Substitutions: See Section 01 60 00 - Product Requirements.
C. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; in maximum lengths available.
   1. Manufacturers:
      a. Hohmann & Barnard, Inc: www.h-b.com.
      b. WIRE-BOND: www.wirebond.com.
      c. Substitutions: See Section 01 60 00 - Product Requirements.
D. Drainage Fabric: Polyester or polypropylene mesh bonded to a water and vapor-permeable fabric.
   1. Manufacturers:
      a. Advanced Building Products, Inc; Mortairvent: www.advancedbuildingproducts.com.
      b. Mortar Net Solutions; DriPlane: www.mortarnet.com.
      c. York Manufacturing, Inc; Weep Armor Weep Vent Protection: www.yorkmfg.com.
      d. Substitutions: See Section 01 60 00 - Product Requirements.
E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.05 JOINTS

A. All joints to be tooled per Architectural Requirements.

2.06 SEALER

A. Contractor shall provide and install minimum two coats, BASF MasterProtect H107 masonry sealer, or equal, at all CMU walls. BASF MasterProtect H107 product, or equal, shall meet all state vapor requirements. Sealer shall be clear and non-gloss product.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive masonry and verify following:
   1. That foundation surface is level to permit bed joint with range of 1/4 inch minimum to 3/4 inch maximum for partially grouted or 1-1/4 inch maximum for fully grouted.
   2. That edge is true to line to permit projection of masonry to less than 1/4 inch.
   3. That projecting dowels are free from loose scale, dirt, concrete, or other bond inhibiting substances and properly spaced and located.
   4. Do not begin work before unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean concrete surfaces to receive masonry. Remove laitance or other foreign material lodged in surfaces by sandblasting or other means as required. Joints between concrete and masonry shall be considered construction joints. See Concrete specifications.
B. Ensure masonry units are clean and free from dust, dirt, or other foreign materials before laying. Do not use damaged masonry units, damaged components of structure, or damaged packaged materials.
C. Establish lines, levels, and coursing. Protect from disturbances.
D. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.
E. Direct and coordinate placement of metal anchors supplied for installation under other sections.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Cold Weather Construction to be in accordance with TMS 602.
B. Hot Weather Construction to be in accordance with TMS 602.

3.04 COURSING

A. Place masonry to lines and levels indicated to the specified tolerances.
B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
C. Preserve the vertical continuity of cells in concrete unit masonry per Article 3.3E of TMS 602.
D. Concrete Masonry Units:
   1. Bond: Running, unless otherwise indicated on the Drawings.
   2. Coursing: One unit and one mortar joint to equal 8 inches, unless otherwise indicated on the Drawings.
   3. Mortar Joints: Concave.

3.05 PLACING AND BONDING

A. Do not install cracked, broken or chipped masonry units.
B. Lay only dry concrete masonry units. Do not wet concrete masonry prior to laying up units unless written permission is obtained from the Engineer.
C. Lay hollow masonry units with face shell bedding on head and bed joints.
   1. Block Cap: Lay with full mortar coverage on horizontal and vertical joints.
   2. Install grout cap where and as indicated.
D. Fully bond intersections and external and internal corners.
E. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
F. Remove excess mortar and mortar smears as work progresses.
G. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
H. Interlock intersections and external corners, except for units laid in stack bond.

I. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
J. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges. Install cut units with cut surfaces and, where possible, cut edges concealed.
K. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.
L. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
M. Step back unfinished work for joining with new work. Do not use toothing.
N. Provide cleanouts as indicated in "grouting" below.
O. Matching Existing Masonry Work: Match coursing, bonding, color and texture of new masonry work with existing work wherever possible.

3.06 JOINTS

A. Horizontal and vertical joints at masonry units shall be 3/8 inch wide and as follows:
   1. Point joint tight in unpurged masonry below ground.
   2. All end joints shall be fully filled with mortar and joints squeezed in bed joints shall be held back approximately ½ inch from cell to provide positive bond with grout.
   3. Joints shall be struck flush at all areas to receive plaster, stucco and any other finish material other than paint.

3.07 REINFORCEMENT

A. Place reinforcement in accordance with TMS 602.
B. Reinforcing steel shall not be bent or straightened in a manner that will damage the material. Bars with kinks or bends not shown on the plans shall not be used. Heating of bars for bending is not permitted.
   1. Bars shall conform accurately to the sizes, shapes, lines and dimensions shown on drawings and with hooks and beds made as detailed. Bars shall be placed as indicated on the Drawings.
   2. At the time grout is place around it, reinforcing steel shall be clean of mill scale or other coatings that will destroy or reduce bond.
C. Foundation dowels that interfere with unit webs are permitted to be bent to a maximum of 1 inch horizontally for every 6 in of vertical height.
D. Reinforcing steel shall be secured to all foundation dowels and held in place at spacing not to exceed 192 bar diameters.

3.08 GROUTING

A. General Requirements:
   1. Refer to 04 05 16 Masonry Grouting.

3.09 CONTROL AND EXPANSION JOINTS

A. See the Drawings for type and location of expansion and/or control joints.
B. Where control joints are not indicated on the drawings the Contractor shall submit a proposed control joint layout for Architect and Engineer approval. General guidelines for control joint locations are as follows:
   1. At major changes in wall height.
   2. At changes in wall thicknesses.
   3. At corresponding control joints in foundations, floors, or roof construction.
   4. Near wall intersections.
   5. At column centerlines.
C. Maximum Spacing: Maximum control joint spacing in concrete masonry construction shall be such that the ratio of wall length to height shall not exceed 1.5 with a maximum spacing of 25 feet.
D. Form expansion joint as detailed on drawings.

3.10 BOND BEAMS

A. Bond beams shall be located where shown and detailed on the drawings, and shall be reinforced as indicated and as herein after specified.

3.11 BUILT-IN WORK

A. Miscellaneous Embedded Items: All items indicated to be embedded in masonry shall be carefully located and anchored to prevent movement during grouting operations. Solidly grout spaces around built-in items. Consult other trades in advance and make provisions for installation of their work to avoid cutting and patching. Install chases minimum of one full masonry unit length for jambs
B. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.
C. Install built-in items plumb, level, and true to line.
D. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
E. Do not build into masonry construction organic materials that are subject to deterioration.

3.12 TOLERANCES

A. Install masonry within the site tolerances found in TMS 402/602.
B. Maximum Variation from Alignment of Columns: 1/4 inch.
C. Maximum Variation from Unit to Adjacent Unit: 1/16 inch.
D. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
F. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
G. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
H. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.13 CUTTING AND FITTING

A. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape, and location.
B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.14 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140 for compliance with requirements of this specification.
C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.15 REPAIR, POINTING, AND CLEANING

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damage, or if units do not match adjoining units.
B. Pointing: During the tooling of joints, enlarge any voids or holes and completely fill with mortar.
C. Dry brush masonry surface after mortar has set, at each day's work and after final pointing.
D. Remove excess mortar and mortar droppings.
E. Replace defective mortar. Match adjacent work.
F. Clean soiled surfaces with cleaning solution.
G. Use non-metallic tools in cleaning operations.
H. Upon completion of masonry installation, repair all holes. Defective joints shall be cut out and rejointed. Exposed masonry surfaces shall be cleaned free of mortar, green stain and efflorescence.

3.16 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

3.17 DEFECTIVE MASONRY

A. Materials or workmanship not conforming to appearance or strength specified, will be deemed defective and shall be removed and replaced at no cost to Owner.

B. Defective mortar or grout, as defined under Section 04 05 13 and Section 04 05 16 shall constitute defective masonry.

END OF SECTION

SECTION 04 22 00 – CONCRETE UNIT MASONRY

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Load bearing concrete unit masonry (U) with Integral Water Repellent Additive
2. Mortar with Integral Water Repellent Additive
3. Grout
4. Mortar
5. Reinforcement
6. All required accessories

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Concrete Institute (ACI), www.aci-int.org

1. ACI 530.1 Specification for Masonry Structures

E. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
2. ASTM C 33 - Standard Specification for Concrete Aggregates
3. ASTM C 55 - Standard Specification for Concrete Building Block
4. ASTM C 90 - Standard Specification for Solid Load Bearing Concrete Masonry Units
5. ASTM C 129 - Standard Specification for Non-Load Bearing Concrete Masonry Units and Related Units
6. ASTM C140 - Standard Test Methods for Sampling and Testing of Concrete Masonry

Units and Related Units

7. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar
8. ASTM C150 - Standard Specification for Portland Cement
9. ASTM C270 - Standard Specification for Mortar for Unit Masonry
10. ASTM C331 - Standard Specification for Lightweight Aggregates for Concrete Masonry Units
11. ASTM C426 - Standard Test Method for Drying Shrinkage Concrete Block.
12. ASTM C476 - Standard Specification for Grout for Masonry
13. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units
14. ASTM C1019 - Method of Sampling and Testing Grout

F. Concrete Reinforcing Steel Institute (CRSI), www.crsi.org

G. International Code Council Evaluation Service (ICC-ES), www.icc-es.org

H. International Masonry Industry All-Weather Council (IMIAC)

1. IMIAC - International Masonry Industry All-Weather Council (IMIAC): Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
2. IMIAC - International Masonry Industry All-Weather Council (IMIAC): Recommended Practices and Guide Specifications for Hot Weather Masonry Construction.

I. National Concrete Masonry Association (NA), www.na.org

1. NA TEK Bulletin #8-2A - Removal of Stains from Concrete Masonry.
2. NA TEK Bulletin #8-3A - Control and Removal of Efflorescence.
3. NA TEK Bulletin #10-1 - Design of Concrete Masonry for Crack Control.
4. NA TEK Bulletin #19-4 - Flashing - Concrete Masonry.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code, Building Official.
3. Job site inspections shall be done as herein specified and as listed in drawings.
    a. A special inspector shall be employed per CBC 1705.4 to inspect the placement of all units, placement of all reinforcing steel, during all grouting operations and during taking of all test specimens.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	Name of Test	Performance	Testing Standard
CMU	Compressive Strength at 28 days and Design	1900 psi, min. and comply with design criteria	ASTM C50, ASTM C90, ASTM C140 & ASTM C1093 CBC Chapter 17 & 21, including but not limited to sections;

			2101, 2102, 2103, 2104, 2105, 2105.2, 2105.3, 2105.4, 2106 & 2107
	Weight	Normal Medium Light	ASTM C90 CBC chapter 17
	Documentation	Comply	ASTM E548
	Installation	Install concrete unit masonry when temperature in area surrounding work is 40°F or above. • Maintain temperature of work above 40°F for at least 48 hours after installation. Grout shall not be placed when air temperatures fall below 20°F.	
Grout	Compressive Strength	2000 psi, min.	ASTM C 476, ASTM C 1586 & ASTM C 1019 CBC Chapter 17 & 21
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing / Inspection by others**:

Item	Name of Test	Performance Results	By Whom
CMU	Compressive Strength	1900 psi, min. Units will be tested for compressive strength on both the net and gross.	Special Inspector
Grout	Compressive Strength ASTM C 476	2000 psi, min. Three sample units will be tested during construction for each 5,000 square feet of wall area and at a minimum one for a fraction of 5,000 square feet. Test also three sample prism units prior to construction.	Special Inspector
	Linear Shrinkage ASTM C 426	Pass	Special Inspector

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Masonry
2. Mortar
3. Grout
4. Additives
5. Copies of manufacturer's product information and information and installation instructions for each item and accessory.
6. Control joint materials. Provide samples and catalogue data.
7. Water repellant additive for:

    a. Masonry
    b. Mortar

8. Texture options
9. Color Options

E. Submit samples.

1. Masonry, qty. 3 each type, color, etc
2. Mortar color samples
3. Masonry color samples

F. Site mock-up, refer to "Mock-Up" heading.

G. Certification:

1. Certificate of compliance: Submit certificate of compliance from recognized independent testing laboratory, regarding material requirements specified herein.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor /Installer / Fabricator shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to:

a. Review of specifications, materials lists, drawings, and material application requirements.
b. Masonry patterns, colors, etc.
c. Verification that all parties understand the meaning and intent of the contract documents.

2. **General Contractor** shall request meeting 5 days in advance of construction.

F. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and certify all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

G. Miscellaneous Criteria:

1. Measurements: Use suitably calibrated devices to accurately measure materials.

a. Shovel measurements will not be permitted.
b. One 94-pound sack of cement will be considered to be one cu. ft. if full sack batches are made. Allow for bulking of sand and aggregate.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Comply with Division 1 product delivery, storage and handling requirements.

B. Packing and Shipping

1. Transport and handle masonry units in such a manner as to prevent chipping and breakage.
2. Mortar, sand & cement admixtures shall be delivered to the job site in manufacturer's original containers with seals unbroken and labeled with manufacturer's batch number.

C. Storage and Protection

1. Store masonry units off the ground in a dry location, covered and protected from absorbing moisture
2. Locate storage piles, pallets, stacks or bins to avoid or protect material from heavy or unnecessary traffic.
3. Store packaged materials in original, unopened containers in compliance with manufacturer's printed instructions.
4. Do not store water repellent in areas where temperature will fall below 20° F.

D. Scaffolding, runways and ladders required for work under this Section shall be provided by masonry contractor, and shall be heavy trades type substantially built and in compliance with State labor laws, safety codes and other regulatory agencies as applicable to this project.

E. Package Materials to be delivered and stored in original packages until ready for use. Store cement, admixtures and aggregates in a manner, which prevents deterioration or contamination.

F. Do not use materials, which is caked, lumpy, partially set or otherwise deteriorated.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **five (5)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner.**

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Waterproofing
2. Wall plumbing and electrical
3. Roof framing / construction
4. Footings and foundations
5. Veneer finishes

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 02 41 13 – Selective Site Demolition & Protection
3. Section 03 30 00 – Cast in Place Concrete
4. Section 03 20 00 – Concrete Reinforcing
5. Section 05 12 00 – Structural Steel Framing
6. Section 07 19 00 –Water Repellent Coatings
7. Section 07 92 00 – Sealants and Caulking

C. Related Documents include, but are not limited to the following:

1. Refer to Division 1 for Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

1.13 TESTING AGENT

A. Refer to Division 1 for testing laboratory service requirements.

1.14 GENERAL SYSTEM DESCRIPTION

A. Installation of U, reinforcing, Mortar and grout walls

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings.

1. Masonry
   a. Basalite (www.basalite.com)
   b. ORCO Block Company (www.orco.com)
2. Water Repellent Admixture:
   a. ACM Chemistries, Inc., www.acmchem.com
   b. BASF, www.master-builders-solutions.basf.us
3. Lime Substitute
   a. GIBCO www.gibco-usa.com
4. Masonry Reinforcement and Anchors:
   a. Hohmann & Barnard, www.h-b.com
5. Metal Lath:
   a. Amico, http://www.amico-lath.com/lath/self_furring_metal_lath.htm
6. Reviewed Equivalent by **Architect**.
   a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
   b. Refer to Division 1 for substitution, deviation and/or submittal procedures.

c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Concrete Masonry Units:

1. General:

a. Weight: Normal, Light, Medium [Specifier, select and coordinate with Structural Engineer]

b. Type: Load bearing,

1) CBC Section 2103

c. Maximum lineal shrinkage: .065% from saturated to oven dry condition.
d. Manufacturer: Basalite
e. Moisture controlled units. Yes

2. Schedule:

a. Size:

1) Standard Unit:

a) 8" x 8" x 16" nominal (w x h x length)

2) Solid Veneer Unit:

a) 2" x 8" x 16" nominal (w x h x length)

b. Shapes:

1) Provide required shapes such as corner, end units, radius, bases, bond beams, lintels, etc.
2) Provide units open one or both ends, as required. Use open end units at cells containing vertical reinforcement wherever possible.

c. Block Product Finish: Provide the following types of concrete masonry units

1) Standard Unit: Ground Face
2) Solid Veneer: Ground Face

d. Color: Block colors shall be as follows or selected from manufacturer's standard colors.

1) 490 (Basalite)

B. Mortar and Grout:

1. General:
   a. Type: S
      1) 28-day compressive strength of not less than 1800 psi.
      2) Conform to CBC Section 2103.8, & ASTM C270
   b. Cement:
      1) Cement shall be Portland cement conforming to ASTM C150, Type I or II
   c. Aggregates:
      1) Aggregates for mortar conform to: ASTM C144
      2) Aggregates for grout conform to: ASTM C404
   d. Lime substitute:
      1) Mfgr: Gibco Industries
      2) Product: MRF
      3) Compliance: ICC Report No. 3213, ASTM C207, Type S, ANSI A 42.2 and ANSI A42.3 Type C
   e. Integral Water Repellent admixture:
      1) Mfgr: BASF
      2) Product: MasterPel 240MA
   f. Water: Clean and free from deleterious substances.
   g. Sand: Comply with the "Standard Specifications for Aggregate for Masonry Mortar", ASTM C144, except provide natural sand graded from coarse to fine within the following limits:
2. Pea Gravel: Graded with 100% passing the 3/8" sieve and not more than 5% passing the No. 8 Sieve.

C. Mortar (In joints)
1. Mix Design:
   a. Component: — Proportions of parts
      1) Portland Cement: 1 bag
      2) Lime Substitute: 3 ounces
      3) Sand (Aggregate): 3 – 3-1/2 cubic feet
         a) ASTM C144
         b) Natural or manufactured sand
         c) Fresh water washed and free of deleterious materials.
         d) Locally available sand.
         e) Do not use frozen aggregate.
      4) Water: Per mfgr. recommendations
         a) Clean potable water

5) Admixtures: Per mfgr. recommendations

2. General:
   a. Mortar shall be Type S having a 28 day compressive strength of not less than 1800 psi.
      1) Conform to CBC Section 2103.8, & ASTM C270
   b. Mortar shall be made with admixtures that are proportioned, added and mixed in strict accordance with manufacturer's directions.
3. Color: To be selected by **Architect**.

D. Grout – cell fill
1. Grout shall have a 28-day compressive strength as herein listed. Proportion by volume, and with sufficient water to produce consistency for pouring without segregation so that grout will flow into masonry joints.
   a. Grout shall conform to CBC Section 2103.12 & Table 2103.12 & ASTM C 476.
   b. Sufficient water shall be added to make a workable mix that will flow into joints of the masonry without separation or segregation. When grout is to be placed in masonry units with typical rates of absorption the slump of the grout should be approximately 8 to 10 inches depending on temperature and humidity conditions.
2. Fine Grout: (1) one part Portland cement, to which may be added not more than 1/10 part lime putty, and 2-1/4 to 3 times the sum of the volumes of the cementitious materials with sand.
   a. Fine grout shall be used for all grout spaces less than 3" wide.
3. Coarse Grout: (1) one part Portland cement, to which may be added not more than 1/10 part lime putty, 2-1/4 to 3 times the sum of the volumes of the cementitious materials with sand 1-2 times the sum of the volumes of the cementitious materials with 3/8" max. diameter pea gravel.
   a. Coarse grout shall be used in grout spaces 3" wide or more
4. Add "Sika Grout Aid" admixture to grout at the rate of 1 pound per 100 pounds cementitious material.

2.3 OTHER MATERIALS

A. Reinforcing Bars, Tie Wire & Spacers:
1. Refer to Section 03 21 00 – Concrete Reinforcing

B. Anchor Bolts: All anchor bolts cast in masonry shall be headed bolts with cut threads conforming to ASTM A307 or ASTM A36 or ASTM A572.50 as indicated on drawings.

C. Expansion Anchors:
1. General:
   a. All expansion bolts installed in masonry shall be Kwikbolt 3 sleeve expansion bolts as manufactured by Hilti.

1) See Structural Drawings for;

a) Installation requirements and tension testing requirements as applicable.
b) Special head requirements as needed.

2) Substitution of other brands or anchors shall proceed only after written approval from the Structural Engineer and the Building Official has been obtained.

D. CMU veneer wall ties:

1. Mfgr: Hohmann & Barnard
2. Type:

a. Adjustable Veneer Anchor

1) Product: HB-213

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
3. That foundation surface is level to permit bed joint with range of 1/4 to 3/4 inch.
4. That edge is true to line to permit projection of masonry to less than 1/4-inch.
5. That projecting dowels are free from loose scale, dirt, concrete, or other bond-inhibiting substances and properly located.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

C. Cooperate with other trades for embedded items, furnished under those Sections and herein installed.

D. Supervise setting of dowels for masonry furnished and installed under Section 03 20 00 –Concrete Reinforcing.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Clean concrete surfaces to receive masonry.

1. Remove latence or other foreign material lodged in surfaces by sandblasting or other means as required.

C. Ensure masonry units are clean and free from dust, dirt, or other foreign materials before laying.

D. Establish lines, levels, and coursing and protect from disturbances.

E. Provide temporary bracing during erection of masonry work. Maintain in place until masonry has set to provide permanent bracing.

3.4 MOCK-UP

A. Erect at location approved by **Architect**.

1. Mock-up shall be part of final construction once approved by **Architect**.
2. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings

B. Mock-up

1. One panel shall be constructed to simulate the condition of concrete masonry walls. The panel shall be 8 feet long by 4 feet high and shall show the proposed color, texture, bond, pattern, mortar joints and workmanship for concrete masonry. Mock-up panel shall be constructed on "pallets" so it may be relocated as directed.

2. Upon approval by the **Architect**, the sample panels shall become the standard of comparison for concrete masonry construction. After concrete masonry construction has been completed, remove sample panels and dispose of debris off the site.

3.5 INSTALLATION

A. Mixing Mortar and Grout:

1. Measure ingredients of mortar and grout according to specified portions for batch and mix in mechanically-operated batch mixer. Use of continuous mortar mixer will not be permitted. Mixer shall intermingle all ingredients by cutting, slicing and rubbing of mass within itself. Drum must be completely emptied before succeeding batch of materials is placed therein.
2. Grout shall be stirred or worked at frequent intervals to prevent separation of materials. High-lift grout must be plant-mixed.
3. Consistency of mortar shall be adjusted to satisfaction of mason, but only as much water shall be added as is compatible with convenience in using mortar. Mortar and grout shall not be used after cement has begun its final set, and in no case shall it be used more than 1 hour after original mixing or retemper mortar.
4. No partial sack batches are permitted.

B. Coursing:

1. Erect masonry in accordance with CBC Chapter 21 including, but not limited to Section 2104.1.2.

2. Place masonry to lines and levels indicated to the following tolerances:

a. Variation from Unit to Adjacent Unit: 1/32-inch max.
b. Variation from Plane of Wall: 1/4-inch in 10 feet.
c. Variation from Plumb: 1/4-inch.

d. Variation from Level Coursing: 1/8-inch in 3 feet; 1/4-inch in 10 feet; ½-" max.
e. Variation of Joint Thickness: 1/8-inch in 3 feet.

3. Bond: Unless noted otherwise in Drawings, lay concrete masonry units in stacked bond with vertical joints aligned.

4. Maintain masonry courses to uniform width.

   a. Make vertical and horizontal joints equal and of uniform thickness.

5. Preserve the vertical continuity of cells in concrete unit masonry.

   a. The minimum clear horizontal dimensions of vertical cores shall be 3 x 3 inches for 8-inch wide block.

C. Placing and Bonding:

1. Do not install cracked, broken or chipped masonry units.
2. Lay only dry concrete masonry units.
3. Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.

   a. Block Cap: Lay with full mortar coverage on horizontal and vertical joints.
   b. Install grout cap where required and as indicated.

4. Fully bond intersections and external and internal corners.
5. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
6. Remove excess mortar.
7. Perform job-site cutting with proper tools to provide straight un-chipped edges. Take care to prevent breaking masonry unit corners or edges.
8. Step back unfinished work for joining with new work.

   a. Do not use toothing.

9. Provide cleanouts as indicated in "grouting" below.

D. Joints:

1. Exposed vertical and horizontal joints shall be solidly filled as the work progresses. After interior and exterior joints are thumb print firm, they shall be tooled to a tight, smooth surface that is well bonded to unit at edges with an approved tool.

   a. Tool joints behind room base, switches, and outlet plates to produce a smooth dense joint flush with the face of adjacent masonry units, where occurring on the job.
   b. Cut joints flush on concealed interior surfaces and surfaces to be plastered.

2. Horizontal and vertical joints at masonry units shall be 3/8-inch wide and as follows: (½" for slump block)

   a. Point joint tight in un-purged masonry below ground.
   b. All end joints shall be fully filled with mortar and joints squeezed in bed joints shall be held back approximately 1/2-inch from cell to provide positive bond with grout.

c. Joints shall be struck flush at all areas to receive plaster finish.

3. Joints shall be 3/8″ wide.
4. Joint Type:

   a. Concave

5. Control joints:

   a. Shall be continuous through the mortar and masonry, at locations indicated on the drawings and at a maximum of 24′-0″.

      1) Linear Shrinkage testing shall be done, refer to PERFORMANCE, TESTING AND INSPECTION″ heading as herein specified.

3.6 MASONRY REINFORCEMENT

A. Place reinforcement in accordance with ACI 315, to a tolerance of +/- ½-inch from specified location.

B. Reinforcing steel shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the plans shall not be used. Heating of bars for bending will not be permitted.

1. Bars shall conform accurately to the sizes, shapes, lines and dimensions shown on drawings and with hooks and beds made as detailed. Bars shall be placed as indicated on the drawings and centered on grout space.
2. At the time grout is place around it, reinforcing steel shall be clean of mill scale or other coatings that will destroy or reduce bond.
3. All vertical reinforcing steel shall be installed in one piece, full height of wall, and braced throughout its height in a manner that will retain the steel in proper position and provide the proper clearance.

C. Reinforcing steel shall be secured to all foundation dowels and held in place at spacing not to exceed 192 bar diameters.

3.7 EMBEDMENT AND ANCHORAGE

A. Coordinate masonry work with work of other trades. Items furnished by others and embedded under this Section include sleeves for pipes through walls, bolts, toggles, anchors, metal brackets, and frames.

B. Bolts embedded in masonry shall be grouted in place with not less than 1 inch of grout between bolt and masonry. Accurately set bolts with templates.

3.8 GROUTING

A. General Requirements:

1. All cells shall be grouted solid.
2. Use low lift or high lift grouting at **General Contractor's** option.
3. Use grout pump, hopper or bucket to place grout.
4. Place grout in final position within 1-1/2 hours after introduction of mixing water.

5. Place grout and rod with a 3/4-inch flexible cable vibrator sufficiently to cause it to flow into all voids between the cells and around the reinforcing steel. Slushing with mortar will not be permitted.
6. Stop grout approximately 1½ inches below top of last course; except at top course bring grout to top of wall.

B. Low Lift Grouting:

1. Do not lay units higher than 48 inches before grouting.
2. If mortar has been allowed to set prior to grouting, remove all fins protruding more than ½-inch into grout space.
3. Conform to requirements of CBC Chapter 21, Section 2104.1.2.7
4. Consolidate each lift twice. Once while placing grout and once more after initial absorption of water but before set.

C. High Lift Grouting:

1. Conform to requirements of CBC Chapter 21, Section 2104.1.2.
2. Provide clean out holes at the bottom of every pour in cells containing vertical reinforcement. Construct clean out courses with open-bottom bond beam units inverted to permit cleaning of all cells by flushing. Cleanouts shall be not less than 3x4-inch openings cut from one face shell. Do not plug clean out holes until masonry work, reinforcement, and final cleaning of the grout spaces have been completed and inspected.
3. Clean mortar droppings from the bottom of the grout space and from reinforcing steel. Remove mortar fins protruding more than ½-inch into the grout space by dislodging the projections with a rod or stick as the work progresses or by washing the grout space at least twice a day during erection using a high pressure stream of water.
4. Do not place grout in hollow unit masonry until mortar joints have set for at least 72 hours and clean out plugs have cured 48 hours.
5. Place grout in lifts not to exceed 4 feet in height, with a waiting period between lifts, dependent on weather and absorption rate of the masonry, in order to place the succeeding lift after the preceding lift becomes plastic but prior to initial set. The first lift shall be consolidated using mechanical vibrators. After the required waiting period, place the second lift and consolidate with the vibrator, reconsolidating the lift below to a depth of 12 to 18 inches. Repeat the waiting, placing and consolidating process until the top of the grout pour is reached. Reconsolidate the top lift after the required waiting period. The high-lift grouting of any section of wall between lateral flow barriers shall be completed to the top of a pour in one working day unless a new series of clean out holes is established and the resulting horizontal construction joint cleaned.

3.9 CONTROL JOINTS

A. See drawings for type and location of joints.

1. 24’-0” o.c. unless approved otherwise by **Architect** and **Structural Engineer**.

3.10 BOND BEAMS

A. Bond beams shall be located where shown and detailed on the drawings, and shall be reinforced as indicated and as herein after specified.

3.11 BUILT-IN WORK

A. Miscellaneous Embedded Items: All items indicated to be embedded in masonry shall be carefully located and anchored to prevent movement during grouting operations. Avoid cutting and patching.

1. Install all anchor bolts and anchors furnished under other sections for wood nailers, ledgers, etc.

3.12 CUTTING AND FITTING

A. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of masonry work may be impaired.

3.13 CURING

A. Top of grout pour should be kept damp to prevent too rapid drying during hot or drying weather and drying winds.

B. Give special attention to proper curing of mortar joints.

3.14 REPAIR, POINTING AND CLEANING

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damage, or if units do not match adjoining units.

B. Pointing: During the tooling of joints, enlarge any voids or holes and completely fill with mortar.

C. Dry brush masonry surface after mortar has set, at each day's work and after final pointing.

D. Leave work and surrounding surface clean and free of mortar spots and droppings.

E. Cleaning:

1. Upon completion of masonry installation, repair all holes.
2. Defective joints shall be cut out and rejointed.
3. Exposed masonry surfaces shall be cleaned free of mortar, green stain and efflorescence.

a. Refer to Section – 04 01 20 – Masonry, Stone and Tile Cleaning.

3.15 FINISHING

A. Exposed Surface:

1. Exterior: **General Contractor** shall provide and install clear water repellent coating. Refer to Section 07 19 00.

3.16 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Monitor work to insure installation and assembly are in accordance with applicable standards.

D. Coordinate with attachment and installation of CMU veneer, refer to this section for CMU veneer work, drawings and structural details.

3.17 TESTING

A. Refer to Division 1 for testing laboratory service requirements.

3.18 DEFECTIVE MASONRY, GROUT AND MORTAR

A. Materials or workmanship not conforming to appearance or strength specified, will be deemed defective and shall be removed and replaced at no cost to **Owner**.

B. Defective mortar and grout shall be determined by engineer when mortar and grout are not in compliance with design and/or installation requirements as herein specified.

3.19 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 04 22 00

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Structural steel framing members.
B. Structural steel support members, plates, and bracing angles.
C. Bolts, washers, and other steel accessories.
D. Base plates, shear stud connectors and expansion joint plates.
E. Grouting under base plates.
F. Prime coat painting and touch up.
G. Templates for cast-in-place anchor bolts.

1.03 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications.
B. Division 07 - Applied Fire Protection: Fireproof protection to framing and metal deck systems.
C. Division 09 - “Paintings and Coatings” for surface-preparation and priming requirements.

1.04 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by American Institute of Steel Construction (AISC) 303, "Code of Standard Practice for Steel Buildings and Bridges."
B. Heavy Sections: Rolled and built-up sections as follows and subjected to special notch toughness, fabrication, welding and inspection requirements as defined in this specification:
   1. Shapes included in ASTM A6 with flanges thicker than 2 inches.
   2. Welded built-up members with plates thicker than 2 inches.
   3. Column base plates thicker than 2 inches.
   4. All ASTM A6 shapes with flange thickness greater than 1-1/2 inches that are part of the Seismic Force Resisting System.
   5. Welded built-up members with plates thicker than 1-1/2 inches if part of the Seismic ForceResisting System.
C. Seismic Force Resisting System (SFRS): These elements are those which resist seismic loads and include braced frames, moment frames and collector elements and are indicated on the drawings.
D. Protected Zone: Areas of critical members in the Seismic Force Resisting System that are expected to behave inelastically during a seismic event. Refer to the Structural Drawings for designation of the Protected Zones. Within the Protected Zones, the following shall apply:
   1. Discontinuities created by fabrication or erection operations such as tack welds, erection aids, air-arc gouging and thermal cutting shall be repaired as required by the Structural Engineer.
   2. No welded shear studs and decking attachments (excluding decking arc spot welds) shall be placed on beam flanges.
   3. No welded, bolted, screwed, or shot-in attachments for edge angles, exterior facades, partitions, duct work, piping and other construction.
E. Demand Critical Welds (DCW): Welds in the Seismic Force Resisting System which invoke special welding and inspection requirements in this specification. Welds shall be considered DCW on this project as defined for each SFRS indicated in AISC 341 and as otherwise indicated on the Drawings as DCW.

1.05 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed Governing Building Code or material standard. If no specific edition is adopted, use the latest edition.
   1. AISC 360 - Specification for Structural Steel Buildings
   2. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges.
   3. AISC 341 - Seismic Provisions for Structural Steel Buildings.

4. AISC 358 - Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications.
5. ASTM A36 - Standard Specification for Carbon Structural Steel.
6. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
7. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
8. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
9. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
10. ASTM A449 - Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use.
11. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
12. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
13. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nut.
14. ASTM A572 - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
15. ASTM A913 - Standard Specification for High-Strength Low-Alloy Steel Shapes of Structural Quality, Produced by Quenching and Self-Tempering Process
16. ASTM A992 - Standard Specification for Structural Steel Shapes.
17. ASTM A1085 - Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS)
18. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
19. ASTM E94 - Standard Guide for Radiographic Examination Using Industrial Radiographic Film.
20. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments.
21. ASTM E165 - Standard Practice for Liquid Penetrant Testing for General Industry.
22. ASTM E709 - Standard Guide for Magnetic Particle Testing.
23. ASTM F436 - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions.
24. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners.
25. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
26. AWS D1.1 - Structural Welding Code.
27. AWS D1.8 - Structural Welding Code – Seismic Supplement.
28. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections.
29. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
30. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).
31. SSPC-SP 1 - Solvent Cleaning.
32. SSPC-SP 2 - Hand Tool Cleaning.
33. SSPC-SP 3 - Power Tool Cleaning.
34. SSPC-SP 6 - Commercial Blast Cleaning.
35. UL (FRD) - Fire Resistance Directory Current Edition.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Shop Drawings:
   1. Direct copies (including electronic versions) of SEOR plans and details are not allowed. Using SEOR plans as a background for the development of the submittal plans is acceptable.
   2. Submit shop drawings to Architect for review and obtain Architect's acceptance prior to start of fabrication. Where shop drawings are resubmitted, the Contractor shall cloud and identify all changes made due to additions, deletions, and corrections to the shop drawing. Shop drawings resubmitted without each change being clouded and identified will be returned for resubmission.

3. Shop drawings shall include complete details and schedules for fabrication and assembly of structural steel members, procedures, and diagrams.
4. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed by others.
5. Include layout, member size, and weights, materials used, and beam marks as well as orientation and relation of members to appropriate grid lines and setting elevations for column bases. Reference shop drawings to specific location and detail number on the Structural Drawings.
6. Include details of cuts, connections, splices, camber, holes, openings, doubler plates, stiffeners and other pertinent data, including bolt hole sizes, connection materials, and welded joint designations.
7. Include embedment drawings.
8. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
9. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pre-tensioned and slip-critical high-strength bolted connections.
10. Indicate surface preparation and finishes.
11. Submit plans of all levels locating the edge of slab at perimeter and at interior openings at locations where bent plate closure occurs.
12. Identify members and connections of the Seismic-Force-Resisting System (SFRS).
13. Indicate locations and dimensions of protected zones.
14. Identify welds that are part of the SFRS.
15. Identify Demand Critical Welds.
16. Shop drawings shall include connection details drawn to scale for members of the Seismic Force-Resisting System.
17. Dimensions required to locate structural steel for manufactured items such as mechanical equipment, electrical equipment, dock levelers, etc., shall be coordinated and provided by the General Contractor. General Contractor shall also coordinate and provide dimensions to locate structural steel for window washing supports such as davits, tie-backs, etc.
18. Connections required but not specifically referenced.

C. Erection Procedures:
   1. Submit procedures, methods, sequences of erection, temporary shoring and guying, and equipment proposed for erecting structural steel. Erection procedures are submitted for record only and therefore will not be returned to the Contractor.

D. Bearing Assemblies:
   1. Submit shop drawings and technical specifications for the slide bearing assemblies used in the project.

E. Jacking and Tensioning Procedures:
   1. Submit procedures, methods, sequences of jacking and tensioning, instrumentation and monitoring devices if implemented within the project.

F. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1, "Structural Welding Code - Steel," AWS D1.8, “Structural Welding Code – Seismic Supplement,” and AISC 341 for each welded joint whether prequalified or qualified by testing, including items listed below. All submitted Procedures shall be reviewed by the Testing Agency prior to use on the project. The Procedures will be submitted to the Engineer for review after review by the testing agency is complete.
   1. The WPSs and PQRs shall include all essential variables and parameters required by AWS D1.1 and AWS D1.8.
   2. Where backgouging is required provide back gouging criteria (e.g. smoothness, grinding, gouge shape, inspection by the welder, etc.) per AISC 341, AWS D1.1, and AWS D1.8.
   3. Explicitly note which WPSs will be used for welding of members and connections of the SFRS and Demand Critical Welds.
   4. For multi-pass welds define sequence and layering of passes.

5. Welding Procedure Qualification Record (WPQR) Tests: For WPSs that are not pre-qualified per AWS D1.1, submit the supporting WPQR tests results conducted in accordance with AWS D1.1 along with the corresponding WPS.
6. When the required effective throat thickness of flare groove welds is larger than allowed by Table J2.2 of AISC “Steel Construction Manual”, submit data establishing by qualification the consistent production of such larger effective throat thickness. Qualification of effective throat thickness shall be as required by the AISC specification.
7. For non-prequalified, complete butt or grove welds of the SFRS, include CVN weld test records.
8. In addition to the WPS submit fabrication and erection procedures where needed to control shrinkage, fabrication tolerances, or to insure proper inspections.
9. Include CVN tests, requirements and procedures in compliance with AWS D1.1, AWS D1.8 and the requirements of the contract documents. Test temperature shall be specified herein. Where specified CVN properties in the contract documents exceed the minimum requirements in AWS D1.1 / AWS D1.8, CVN tests shall be performed to the properties in the contract documents.
10. All welds for the SFRS are according to AWS D1.8 as a minimum.
11. WPS and WPQR's shall include specific reference to the manufacturers make and model of weld material. Provide manufacturer's data sheet for all weld material indicating recommended welding parameters and variables.

G. Weld Shrinkage and Distortion Procedures: Submit weld shrinkage and distortion procedures for all welded connections where distortion due to weld shrinkage may cause damage to the steel material. The welding sequence and procedures are to minimize the effect of weld shrinkage, residual stresses, and to maintain erection tolerances. These procedures shall be reviewed by Testing Agency, and then used by Testing Agency to verify conformance. As a minimum, procedures shall be submitted for the following connections:
   1. Welding of continuity plates and doubler plates into the WF columns.
   2. Field welding beam-to-column connection (include beam flange welds, rib welds, connection plate bolting and weld).
   3. Welding columns to base plates.

H. Fastener Installation Procedures: Submit written procedures for the pre-installation testing, installation snugging, pre-tensioning, and post-installation inspection of fasteners. The procedures shall meet all requirements of the Research Council on Structural Connections (RCSC) "Specification for Structural Joints Using ASTM A325 or A490 Bolts" and the Contract Documents. Provide installation procedure and inspection for direct tension indicator washers detailed in supplemental specifications provided by the manufacturer for approval.

I. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.

J. Mill test reports for structural steel, including chemical and physical properties, regardless of thickness or use. Reports shall comply with ASTM A6 and be submitted to the Owner’s Quality Assurance Agency.
   1. Submit a mill report for each heat of steel used, and certified fastener reports for all fasteners, including nuts, washers and direct tension indicators prior to the start of fabrication. For unsatisfactory mill test report, retest steel.
   2. Include Charpy test results for heavy sections and for materials where Charpy values are specified. Testing required per AISC 360 section A3.1c and AISC 341 section A3.3 and as specified herein.
   3. Mill test reports shall include ladle analysis and tensile elongation.
   4. Mill reports shall be traceable to individual pieces of steel used.
   5. In addition to other requirements mill reports shall address the following elements: copper, columbium, chromium, nickel, molybdenum, silicone, and vanadium.
   6. Provide mill reports for all welding consumables used on this project.

K. Fabricator Test Reports: Comply with ASTM A1011.

L. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1 and dated no more than 12 months before start of scheduled welding work. Submit to welding special inspector for approval. Submit final copies to Architect for review.

M. General Contractor Verification of Compliance for Materials: General Contractor’s review and acceptance shall be included with each submittal stating that the Contractor has reviewed the submitted manufacturer’s test reports and certifications, and that the materials being furnished for

the project are in conformance with the applicable standards and project documents. The review shall be submitted along with the manufacturer's test reports and certifications for structural steel, fasteners, welding filler metals, and shear studs.

N. Product Test Reports and Certifications: Submit manufacturer's test reports and certifications as listed below. Test Reports and Certifications are submitted for record only and therefore will not be returned to the Contractor. A copy of the test reports and certifications shall be sent to the owners Quality Assurance Agency. The Contractor Certificate of Compliance letter shall accompany the Manufacturer's Certifications.
   1. Bolts, nuts, and washers including mechanical properties and chemical analysis. Certifications for high strength bolts shall conform to certification requirements contained in ASTM A325, A490, F1852, F2280.
   2. Direct-tension indicators.
   3. Tension-control, high-strength bolt-nut-washer assemblies.
   4. Shear stud connectors. Shear studs, as supplied, shall meet the requirements of AWS D1.1, Sections 7.2 and 7.3.
   5. Shop primers.
   6. Nonshrink grout.
   7. Welding electrodes, fluxes and shielded gas products. Certifications shall satisfy the applicable AWS A5 and project requirements.
   8. Spray-on fireproofing. Submit certificate issued by paint manufacturer ensuring compatibility between the primer and the spray-on fireproofing.
O. Submit fabricators identification mark system to Testing Agency prior to fabrication.
P. Fabricator's Qualification Statement.
Q. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
R. As-Built Drawings: At the end of the work included in this Section submit a complete set of reproducible drawings incorporating all changes, additions and deletions to the Construction Drawings due to revisions, change orders, field conditions, or any other reason.

1.07 QUALITY ASSURANCE

A. Comply with the referenced ASTM standards for materials.
B. Verification of accuracy:
   1. Engage and pay for a registered Professional Engineer or licensed Land Surveyor to check the alignment, plumbness, elevation, and overall accuracy of the erected framing at appropriate stages during construction and at completion of erection. Prior to erection, a survey shall be made of the as-built locations of all anchor rods and other embedded items associated with the attachment of structural steel. The party providing the survey shall submit written verification that the entire installation is in accordance with the contract documents and meets the allowable erection tolerances as set forth in the AISC "Code of Standard Practice for Steel Buildings and Bridges".
   2. Columns shall be verified at each lift. Column shim details and procedures shall be submitted for review.
C. Tests and Inspections: Provide special inspections and testing as described in the "Statement of Structural Special Inspections and Testing" within the structural drawings and as required by this section.
   1. Unless waived in writing by the Architect and the Authority Having Jurisdiction, all materials, work, methods and equipment shall be subject to inspection at the mill, fabricating plant and at the building site. Material or workmanship not complying fully with the Contract Documents will not be accepted. The Contractor shall give the Testing Laboratory reasonable notice when ready for inspection and shall supply samples and test pieces and all facilities for inspection without extra charge.
D. Testing Agency: Shop and field testing and inspection of steelwork specified in this document or requested by the Owner will be performed by an independent agency engaged by the Owner.
   1. The Testing Agency shall be furnished with the following:
      a. One complete set of fabrication and erection drawings.
      b. Material bills, cutting lists, order sheets and mill test reports.

c. Information regarding time, place of rolling and shipment of materials to shop.
d. If requested, representative sample pieces for testing.
e. Full and ample means and assistance for testing materials.
f. Access and facilities, including scaffolding, temporary work platforms, etc., for testing and inspection at all places where materials or components are stored, fabricated or erected in the mill, shop or field.
g. Complete set of welding procedures.
h. Welder qualifications.
i. AISC fabricator certification documents, QA/QC manual and most recent AISC audit, unless waived by the SEOR.
j. Reports for all Contractor tests and inspections.

2. In addition to the work specified elsewhere in the Contract Documents, the Testing Agency shall review the following for compliance with project specifications:
   a. Fastener Installation Procedures.
   b. WPSs and WPQRs.
   c. Manufacturer's Test Reports and Certifications.
   d. Welder qualification.

E. Comply with applicable provisions of the governing building code, reference standards, specifications, and documents, except where more stringent requirements are shown or specified.
F. Structural steel members designated as architecturally-exposed structural steel (AESS) to also comply with Section 05 12 13.
G. All work shall be performed by qualified operators experienced in their field of work and as otherwise required by these specifications.
H. Fabricator Qualifications: Unless waived by the SEOR, a qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD, unless waived by SEOR.
I. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category ACSE.
J. Shop-Painting Applicators: A qualified applicator with a minimum of 12 months prior experience working with the fabricator.
K. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1 for each process, position and joint configuration. Each operator shall have been qualified as prescribed by AWS and shall be approved by the Testing Agency. Qualification performed more than six months prior to the start of the welding by the welder is acceptable, provided written documentation is submitted showing that the welder has continued to use the applicable welding process on an ongoing basis since the test was conducted, with no lapse in service exceeding six months.
   1. Welder Certificates shall be submitted to Testing Agency prior to welding.
   2. Welders shall be checked by welding inspector. Those not doing satisfactory work may be removed, and may be required to pass qualification tests again. All qualification testing shall be at the Contractor's expense.
   3. Require welders to retake the qualification test if, as determined by the Architect or Testing Agency, there is a reasonable doubt as to the proficiency of the welder. If the welder does not requalify, he shall not perform any welding on the project.
   4. In addition to AWS D1.1 requirements on welder Qualification, qualify welders making welds with restricted access (such as welding the bottom flanges of girders to column flanges through cope or access holes in the girder webs) by using a mock-up assembly identical to the actual conditions of producing weldments in the field, using the approved WPS.
   5. Welder qualification shall include passing the bend test.
   6. Welders and welding operators performing work on Demand Critical Welds, beam bottom flange to column welds, or welds that must be made by welding through a beam access hole shall pass the supplemental welder qualification testing, as required by AWS D1.8.
      a. Supplemental Qualification test shall be in accordance with AWS D1.8. The qualification test specimens shall be made with the same electrodes, processes and welding procedures that will be used on this project and also using the highest weld deposition rate allowed by the WPS.

b. Documentation showing that a welder has passed a similar qualification test within the last 36 months will be acceptable if in the opinion of the Testing Agency the test meets the criteria.
c. Testing Agency will perform and/or witness the tests on the qualification test specimen.
d. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

L. Contractor's Quality Control Plan: Quality Control includes the functions performed by the Contractor to ensure that the material and workmanship of structural steel construction meets the project specifications and applicable standards. The Contractor shall submit a Quality Control Plan that addresses all inspection issues, including fabrication/erection testing and inspection per AWS D1.1, AWS D1.8 and AISC 341 Chapter J. The verification testing and inspection carried out by the Testing Agency does not relieve the contractor of the responsibility for conducting their own quality control/inspection program to ensure the requirements of the Contract Documents have been met. The Contractor's Quality Control Plan will be reviewed by the Testing Agency.

M. Protected Zone: The Contractor's Quality Control Plan shall include procedures that will be followed to ensure the Protected Zone is clearly identified on the required elements of the Seismic Load Resisting System and all necessary subcontractors are made aware of the requirements of this section.

N. Quality Control Inspector Qualifications: Along with Quality Control Plan, Contractor shall submit written qualifications for all inspectors to be assigned Quality Control functions for structural steel work, including general inspection, bolting inspection, welding inspection, and non-destructive testing. Qualifications for welding inspectors shall show evidence of ability to monitor all WPS variables, check weld sizes, and visually detect weld defects.

O. Prefabrication and Preinstallation Conference: Prior to performing fabrication or erection work, there shall be a pre-fabrication and pre-erection meeting to review welding procedures, bolting procedures, and inspection requirements for all welding and bolting operations. The meeting shall include the following individuals: Owner's Representative, Testing Agency, Special Inspector, Steel Fabricator and Erector personnel supervising the shop, field and Quality Control work.

P. Paint:
1. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use thinners approved by paint manufacturer, and use within recommend limits.
2. Coordination of Work: Review other Sections in which prime paints are to be provided to ensure compatibility of coatings system for various substrates. Upon request, furnish information or characteristics of finish materials to be used.
3. Requirements of Regulatory Agencies: Comply with applicable rules and regulations of governing agencies for air quality control.

Q. Maintain one copy of each document on site.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification.
B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
C. Requirements for storage and handling of electrodes shall be per AWS D1.1 and AWS D1.8. Additional requirements include:
1. Long term storage of weld consumables shall be indoors, where moisture or dew does not collect, and in undamaged manufacturer's shipping bags, boxes, and containers.
2. Open Flux Cored Arc Welding (FCAW) electrodes shall be completely covered during hours of non-use (i.e., weekends, nights of nonuse, days of nonuse, etc.). Where rain or dew could be expected to collect (i.e., open floors of erection site, open shop bays, etc.), electrodes shall also be covered.
3. Electrode Storage and Exposure Limits for Demand Critical Welds: The exposure time limit for electrodes shall be in conformance with AWS D1.8 Section 6.4.

1.09 COORDINATION

A. Surveys: Contractor shall conduct field surveys and field verification as required to incorporate existing conditions from previous works, such as foundations and existing buildings, to the work before shop drawings are produced.
B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions for installation.
C. Notify the Owner's Representative in sufficient time prior to shop or field fabrication or erection to permit testing and inspection without delaying work.
D. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All hot rolled steel shapes, plates, and bars shall be new steel conforming to ASTM A6, unless otherwise noted in the Drawings. Structural steel shall be as follows:
   1. Wide Flange and WT Shapes: ASTM A992.
   2. M- and S- Shapes: ASTM A36.
   3. C- and MC- Shapes: ASTM A992.
   4. L- Shapes: ASTM A572 Grade 50.
   5. Round HSS: ASTM A500 Grade C (Fy = 46 ksi).
   6. Rectangular HSS: ASTM A500 Grade C (Fy = 50 ksi).
   7. Pipe: ASTM A53, Grade B (Fy = 35 ksi).
   8. Base Plates up to 4" thick: ASTM A572 Grade 50.
   9. All other Plate Material: ASTM A572 Grade 50.
   10. Built-Up Columns: ASTM A572 Grade 50.
   11. Plate Girders: ASTM A572, Grade 50.
   12. Connection Material:
      a. Column Continuity Plates and Doubler Plates: ASTM A572 Grade 50.
      b. Brace Frame Gusset Plates: ASTM A572 Grade 50.
B. Heavy sections as defined in this specification: ASTM A36 and/or ASTM A572 Grade 50 with supplementary requirements S5 Charpy V-Notch Impact Test and ASTM A6 with supplementary requirements S91 Fine Austenitic Grain Size. For location of Charpy V-Notch test, see ASTM A6 Supplementary Requirement S30. Charpy V-Notch test shall be per ASTM A673, frequency P and shall meet a minimum average value of 20 ft-lbs absorbed energy at 70 degrees Fahrenheit.
C. Steel using complete joint penetration groove welds that fuse through the thickness of the flange or web that is part of the SFRS shall have a minimum Charpy V-notch impact testing value of 20 ft-lbs at 70 degrees Fahrenheit.
D. Heavy Sections in the Seismic Force-Resisting System shall be supplied with Charpy V-notch (CVN) testing in accordance with AISC 341 requirements.
E. Welding Materials
   1. Welding Material: Filler metal requirements shall conform to AWS D1.1, and AISC "Specification for Structural Steel Buildings". Filler metal used in welds designated as part of the SFRS or as Demand-Critical shall comply with AWS D1.8. Minimum classified tensile strength of 70 ksi (E70). Use low hydrogen electrodes as defined by AWS D1.1, unless noted otherwise. For all CJP welds used on Heavy Structural Sections that are not part of the Seismic Load Resisting System the filler metal shall have a Charpy V-Notch (CVN) toughness of at least 20 ft-lb at 70 degrees Fahrenheit.
   2. Welding Materials for Seismic Force Resisting System:
      a. All filler metal used in the Seismic Load Resisting System shall have a Charpy V-Notch (CVN) toughness not less than of 20 ft-lb at 0 degrees Fahrenheit, using AWS A5 classification test methods.
      b. Filler metal for welds defined as Demand Critical Welds (DCW) shall have a Charpy V-Notch (CVN) toughness of 20 ft-lb at minus 20 degrees Fahrenheit as determined by the

appropriate AWS classification test method and 40 ft-lb at 20 degrees above the lowest anticipated service temperature of the structure as determined by AISC 341 and AWS D1.8.

c. Refer to AISC 341 and AWS D1.8 for additional filler metal requirements.

F. Bolts, Connectors, and Anchors

1. High-Strength Bolts, Nuts, and Washers: ASTM A325, Type 1, heavy-hex steel structural bolts unless noted otherwise; ASTM A563, Grade C heavy-hex carbon-steel nuts or equal per ASTM A325-10 Section 3.2; and ASTM F436, Type 1, hardened carbon-steel washers; all with plain finish. ASTM F1852 Twist-Off Type Torque Control Bolts are a suitable alternative to ASTM A325 bolts.
2. High-Strength Bolts, Nuts, and Washers: ASTM A490, Type 1, heavy-hex steel structural bolts, where noted on drawings; ASTM A563, Grade DH, heavy-hex carbon-steel nuts or equal per ASTM A490-10 Section 3.2; and ASTM F436, Type 1, hardened carbon-steel washers with plain finish. ASTM F2280 Twist-Off Type Torque Control Bolts are a suitable alternative to ASTM A490 bolts.
3. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers.
   a. Finish: Hot-dip zinc coating.
   b. Zinc-Coated ASTM F1852 Twist-Off Type Torque Control Bolts are a suitable alternative to ASTM A325 bolts.
4. Unfinished Bolts and Nuts (Machine Bolts) and Threaded Rods: ASTM A307, Grade A, low carbon steel bolts and nuts; ASTM F436, Type 1, hardened carbon-steel washers.
5. Shear Studs: ASTM A108, Grades 1015 or 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B and conform to requirements of AWS D1.1 Section 7.
   a. Tensile strength, 60,000 psi.
   b. Elongation in 2 inches, 20 percent
   c. Reduction of area, 50 percent.
6. Unheaded Anchor Rods: ASTM F1554 Grade 36, Grade 55 (weldable per S1 Supplementary Requirements), or Grade 105, where noted on drawings.
   a. Configuration: Straight
   b. Nuts: ASTM A563 heavy-hex carbon steel.
   c. Plate Washers: ASTM A572 Grade 50 carbon steel.
   d. Washers: ASTM F436, Type 1, hardened carbon steel.
   e. Finish: Plain or Hot-dip zinc coating, ASTM A153, Class C.
7. Headed Anchor Rods: ASTM F1554 Grade 36, ASTM F1554 Grade 55, weldable where notes on drawings, or ASTM F1554 Grade 105.
   a. Nuts: ASTM A563 heavy-hex carbon steel.
   b. Plate Washers: ASTM A572 Grade 50 carbon steel.
   c. Washers: ASTM F436, Type 1, hardened carbon steel.
   d. Finish: Plain or Hot-dip zinc coating, ASTM A153, Class C.
8. Threaded Rods: ASTM A36 or A572, Grade 50.
   a. Nuts: ASTM A563 heavy-hex carbon steel.
   b. Plate Washers: ASTM A572 Grade 50 carbon steel.
   c. Washers: ASTM F436, Type 1, hardened carbon steel.
   d. Finish: Plain or Hot-dip zinc coating, ASTM A153, Class C.
9. Williams 150 KSI All-Thread-Bars.
   a. Nuts: ASTM A29 or A576 hex.
   b. Plate Washers: ASTM A572 Grade 50 carbon steel.
   c. Washers: ASTM F436, Type 1, hardened carbon steel.
   d. Finish: Plain or Hot-dip zinc coating, ASTM A153, Class C.
   e. Williams 150 ksi All-Thread-Bar is not to be subjected to the heat of a torch, welding or used as a ground.
10. Tie Rods: ASTM A36 or A572, Grade 50.
    a. Nuts: ASTM A563 heavy-hex carbon steel.
    b. Washers: ASTM F436, Type 1, hardened carbon steel.
    c. Finish: Plain or Hot-dip zinc coating, ASTM A153, Class C

11. Clevises and Turnbuckles: Made from cold-finished carbon steel bars, ASTM A108, Grade 1035. Dimensions and minimum capacities to conform to the values listed in AISC "Steel Construction Manual".
12. Eye Bolts and Nuts: Made from cold-finished carbon steel bars, ASTM A108, Grade 1030.
13. Sleeve Nuts: Made from cold-finished carbon steel bars, ASTM A108, Grade 1018. Minimum proof load of sleeve nuts shall be such that when loaded axially the sleeve nut shall be stronger than the ultimate capacity of the connected parts.
14. Structural Slide Bearings: Low-friction assemblies, of configuration indicated, that provide vertical transfer of loads and allow horizontal movement perpendicular to plane of expansion joint while resisting movement within plane of expansion joint.
    a. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following manufacturers:
        1) Amscot Structural Products Corp.
        2) Fluorocarbon Company Limited.
        3) R.J. Watson Bridge & Structural Engineered Systems.
        4) Seismic Energy Products, L.P.
    b. Mating Surfaces: to be specified.
    c. Coefficient of Friction: to be specified.
    d. Design Load: to be specified.
    e. Total Movement Capability: to be specified.

G. Primer
1. Comply with Division 09.
2. Primers and paints shall meet all federal and state environmental and air quality requirements.
3. Primer Paint shall comply with all applicable SSPC requirements and shall be compatible with finish paints and spray-on fireproofing specified elsewhere.
4. Galvanizing Repair Paint: MPI#18, MPI#19, or SSPC-Paint 20 per ASTM A780.
5. Primer:
    a. Typical Interior Primer: SSPC-Paint 25, Type II or SSPC-Paint 23. Primer shall comply with the requirements called out in the "Green Seal Standard for Anti-Corrosive Paints" (GC-03).
    b. Typical Exterior Primer: SSPC-Paint 20, Type II, Organic.

H. Grout
1. Grout shall have a minimum 6,000 psi compressive strength in 3 days and 10,000 psi compressive strength at 28 days.
2. Metallic, Shrinkage-Resistant Grout: ASTM C1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
3. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.02 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303 and AISC 360.
1. Camber structural-steel members where indicated. Fabricate beams and girders with natural camber upward, unless noted otherwise on the drawings.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel according to ASTM A6 and maintain markings until structural steel has been shop erected.
4. Mark and match-mark materials for field assembly. Members shall be fabricated for delivery in a sequence that will expedite erection and minimize field handling of structural steel.
5. Splice members only where indicated on Structural Drawings or where accepted by the Structural Engineer.
6. All hollow members exposed to weather shall be sealed with continuous welds, incorporating structural welds where shown or required, or provide weep holes where water may accumulate.
7. Grind burrs, sharp arises and ragged edges that would prevent solid seating of the connected parts.

8. AISC Group 4 and 5 shapes and built up members shall meet the requirements for joints in AISC Sections J1.5, J1.6, J2.7 and M2.2.
9. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Holes and attachments to structural steel in areas designated as the Protected Zone are not allowed except as explicitly shown or noted on structural drawings.

C. Tolerances: Except as noted as follows, maintain fabrication tolerances of structural steel within the tolerances specified on the drawings and AISC's "Code of Standard Practice for Steel Buildings and Bridges."

D. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible. An unguided torch may be used provided the cut is within 1/8 inch of the required line.
1. Plane thermally cut edges to comply with requirements in AWS D1.1.

E. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
1. Use standard holes unless otherwise indicated on the Drawings. Holes shall be drilled or punched at right angles to the surface of the metal. Making or enlarging holes by burning is prohibited.
2. Flame cut holes for fasteners are not acceptable.
3. Holes in column baseplates shall be within the limits of Table 14.2 of AISC “Steel Construction Manual”.

F. Bending Steel Plate:
1. Bend plates perpendicular to the rolling direction.
2. Grind flame cut plate edges transverse to the bend line.
3. Grind out nicks in plate edges transverse to the bend line.
4. Round sharp corners on plate edges transverse to the bend line.
5. Bent plate deck edge closure may be excluded from Items 1-4 above.

G. Heat Straightening: Will be permissible by the use of properly controlled heat, skilled personnel, proper equipment and in accordance with documents prepared by the fabricator and accepted. Reject materials that contain kinks or sharp angles. Material straightened prior to fabrication shall be rejected where it shows signs of distress or defects.

H. Planing and Milling:
1. Bearing surfaces of columns and base plates shall be finished and constructed in accordance with AISC 360 Section M2.6, M2.8 and M4.4.
2. Bearing surfaces of column end cuts shall meet a surface roughness of 500 micro inches or better.

I. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 1, "Solvent Cleaning” or SSPC-SP 2, "Hand Tool Cleaning or SSPC-SP 3, "Power Tool Cleaning."

J. End-Welded Studs:
1. Automatic end-welded studs: Automatically end-weld in accordance with the manufacturer's recommendations in such a manner as to provide complete fusion between the end of the stud and the plates. There shall be no porosity or evidence of lack of fusion between the welded end of the stud and the plate. The stud shall decrease in length during welding approximately 1/8 inch for 5/8 inch, and 3/16 inch for 3/4 inch diameter. Stud sizes indicated on drawings represent the finish stud height.
2. Fillet-end welded studs: Studs may be welded using prequalified FCAW, GMAW, or SMAW processes provided the requirements of the AWS D1.1 Chapter 7 Section 7.5.5 are met as well as any other pertinent requirements of D1.1.

K. Bolt Holes and Holes for Other Work: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.
1. Provide holes, slots and openings together with necessary reinforcing as shown on the Drawings required for securing work of other trades to the work specified here. Where openings are shown on the Drawings no change shall be permitted without prior approval. Openings shall be done in the shop.
2. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.
4. Unless noted otherwise, make holes 1/16 inches larger than the nominal bolt diameter.

L. The Contractor shall cooperate fully with requests form inspection and testing personnel for access to the connections and joints to be inspected and tested. This includes beam and column turning in shop, weld backing removal when nondestructive examination indicates rejectable conditions, and access to platforms or scaffolding as required to perform the work safely.
M. Any technique not covered by this section shall be submitted to the SEOR for approval.

2.03 FINISH

A. Prepare structural component surfaces in accordance with SSPC-SP 3.
B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted, and where enclosed within the building finish and thereby protected from exterior exposure.
C. Galvanize structural steel members to comply with ASTM A123. Provide minimum 1.7 oz/sq ft galvanized coating.

2.04 SOURCE QUALITY CONTROL

A. Testing Agency: Testing Agency to perform shop tests and inspections as defined by AWS, AISC and these specifications. Testing Agency shall summarize their finding in inspection and testing reports. Reports shall identify any findings that are not in compliance with requirements of the project specifications.
    1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
B. See Part 1 of this specification for additional testing and inspection requirements. As a minimum the inspector will make all tests and inspections as required by the Special Inspection provisions of the governing building code. Testing Agency will make all the tests and inspections indicated in the Contract Documents.
C. Contractor shall correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
    1. Owner’s Representative reserves right, at any time before final acceptance, to reject material not complying with requirements.
    2. Any tests that may be necessary to reconfirm any noncompliance of original work, and as may be necessary to show compliance of corrected work, shall be at Contractor's expense.
D. Each person installing connections shall be assigned an identifying symbol or mark and all shop and field connections shall be so identified so that the Inspector can refer back to the person making the connection.
E. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
    1. High Strength Bolted Connections: Furnish certified test reports for each lot of bolts in accordance with Section 9 of ASTM A325 and A490. Install bolts under the supervision of a qualified inspector in accordance with Section 9, Research Council "Specifications for Structural Joints using ASTM A325 or A490 Bolts". High strength bolts specified as Snug-Tight (ST) need not be inspected for bolt tension. For high strength bolts specified as Slip-Critical (SC), verify that 10% or a minimum of 2 bolts per connection are tensioned in accordance with the RCSC Specification.
    2. If high strength bolting inspection is indicated on the structural drawings or required by the applicable referenced standards, the testing laboratory shall provide inspection in accordance with AISC 360 Section N.
    3. High Strength Bolted Connections in the Seismic Force Resisting System will, in addition, comply with the required inspection in AISC 341 Section J.
    4. Tension Calibrator: A tension measuring device shall be required at all job sites where bolts in slip-critical joints are being installed and tightened. The tension measuring device shall be used to confirm: (1) the suitability to satisfy the requirements of AISC for the complete fastener assembly, including lubrication if required to be used in the work, (2) calibration of wrenches, if applicable, and (3) the understanding and proper use by the bolting crew of the method to be used. The frequency of confirmation testing, the number of tests to be performed and the test procedure shall be as specified in 1.d. below, as applicable. The accuracy of the tension

measuring device shall be confirmed through calibration by an approved testing agency at least annually.

5. Direct Tension Indicators: Observe all Direct Tension Indicators to see if proper tightness was achieved.
6. Joint Assembly and Tightening of Shear/Bearing Connections: Bolts in connections not within the slip-critical category shall be installed in properly aligned holes, but need only be tightened to the snug tight condition. The snug tight condition is defined as the tightness that exists when all plies in a joint are in firm contact. This may be attained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. If a slotted hole occurs in an outer ply, a flat hardened washer or common plate washer shall be installed over the slot.
7. Joint Assembly and Tightening of Connections Requiring Full Pre-tensioning. Slip-critical connections shall be installed in properly aligned holes and tightened by one of the following methods.
    a. Turn-of-nut Tightening: When turn-of-nut tightening is used, hardened washers are not required except as specified in the AISC. A representative sample of not less than three bolts and nuts of each diameter, length and grade to be used in the work shall be checked at the start of work in a device capable of indicating bolt tension. The test shall demonstrate that the method of estimating the snug-tight condition and controlling turns from snug tight to be used by the bolting crews develops a tension not less than five percent greater than the tension required for slip-critical connections.
    b. Installation of Alternate Design Bolts: A representative sample of not less than three bolts of each diameter, length and grade shall be checked at the job site in a device capable of indicating bolt tension. The test assembly shall include flat hardened washers, if required in the actual connection, arranged as in the actual connections to be tensioned. The calibration test shall demonstrate that each bolt develops a tension not less than five percent greater than the tension required by AISC. Manufacturer's installation procedure shall be followed for installation of bolts in the calibration device and in all connections. When alternate design features of the fasteners involve an irreversible mechanism such as yield or twist-off of an element, bolts shall be installed in all holes of the connection and initially brought to a snug tight condition. All fasteners shall then be tightened, progressing systematically from the most rigid part of the connection to the free edges in a manner that will minimize relaxation of previously tightened fasteners prior to final twist-off or yielding of the control or indicator element of the individual fasteners. In some cases, proper tensioning of the bolts may require more than a single cycle of systematic tightening.
8. Mark bolts that have been completely tightened with an identifying symbol.
9. Standard Bolted Connections: Testing Agency shall inspect the installation of A307 bolts to verify that 10% of all bolts or a minimum of 2 bolts per connection are installed properly and tightened to a Snug-Tight (ST) condition.

F. Welded Connections:
1. Testing Agency shall be present during welding operations as necessary to perform required testing and inspections.
2. Welding equipment: Welding equipment to be used in each case shall be acceptable to welding inspector. Use equipment with suitable devices to regulate speed, and manually adjust operating amperage and voltage. The amperage capacity shall be sufficient to overcome line drop, and to give adequate welding heat.
3. Welded Joint Details as Part of the SFRS:
    a. Weld in accordance with AWS D1.8.
    b. Weld Backing: The use of weld backing shall be in accordance with AWS D1.1. Weld backing shall be removed where required by the Contract Documents or for the WPS by AWS D1.1.
        1) Connections of the SFRS in which backing is not removed: backing shall be attached to the member or plate that does not have its surface prepared for the groove weld. Attachment shall be by either a 5/16” fillet or 3/16” groove weld along the complete bar length on the side of the bar opposite the groove weld.
        2) Beam-Column Connection Joints Requiring Removal of Weld Backing: Conform with AWS D1.8. Perform MT on the fillet weld and the immediately adjacent area.

4. Visual Inspection of Welding: Testing Agency shall visually inspect shop and field welding of structural steel in accordance with the governing building code and AWS D1.1. Visual inspection of welds shall include but not be limited to the following:
   a. Verify: Welding Procedure Specification (WPS) sheet has been provided and has been reviewed with each welder making the weld, welder qualification and identification, fit-up meets tolerances of WPS and mark joint prior to welding, welding consumables are per the Contract Documents and the WPS, amperage and voltage at the arc with hand-held meters, meters on welding equipment are functioning and accurate.
   b. Observe preheat and interpass temperatures, weld pass sequence and size of weld bead.
   c. Multi-pass shop and field welds shall be inspected as required per the governing building code, AWS D1.1, AWS D1.8, AISC 360 Table N5.4 and AISC 341 Table J6.
   d. Visually inspect welds of heavy structural sections, or plates of 1-1/2 inch minimum thickness, as follows:
      1) Columns – visually inspect first two (2) production columns 48 or more hours after completion of welding. If columns successfully pass inspection, no additional 48 hour delayed visual inspections are required.
      2) Plate Girders – visually inspect all plate girders 48 or more hours after completion of welding for presence of cracks.
   e. Visually inspect areas where backing bars and welds tabs are removed for conformance with the surface roughness criteria of the specifications.
   f. Verify that the effective throat thickness of flare groove welds is consistently obtained when flush to bar or section. This verification shall be based on test sections where necessary.
5. Nondestructive Testing Requirements: Testing Agency shall perform non-destructive testing of shop and field welding in accordance with the project specifications, governing building code, and AWS D1.1. Extent of non-destructive testing shall be as follows:
   a. Complete Joint Penetration (CJP) welds: UT 100% CJP welds greater than 5/16-inch. MT 25% all DCW CJP welds. MT 100% of all DCW CJP weld ends.
   b. Partial Joint Penetration (PJP) welds: UT 100% of PJP welds greater than 5/16-inch. UT 100% PJP in column splices.
   c. Column Web Material at Continuity Plate: MT the WF column webs 3-inches above and below the weld terminations at the first 50 continuity plates and doubler plates installed. Test shall be conducted when weld has cooled to ambient temperature. If no web cracks are found, then no more testing required. This test shall also be conducted for all locations where the Contractor has welded into the “no weld” zone shown on the Drawings for continuity plates.
   d. Access holes at splices in Heavy Structural Sections – MT or PT 100%.
6. Special non-destructive testing for welds in the Seismic Force Resisting System shall have additional testing per AISC Seismic Provisions, AWS D1.8 and the governing building code, and as follows:
   a. Backing Bars Removed - MT 20% of the locations where the backing bars and weld tabs are removed after the roughness criterion is attained.
   b. Reinforcing Fillet Weld placed where backup bars are removed - MT 100% of the welds.
   c. Access holes and copes in SMRF beams – MT or PT 100%.
   d. Heavy Structural Section flanges and/or plate thicker than 1-1/2 inches where subject to through-thickness weld shrinkage strains (including column flanges and base plates) – UT flange or plate material for lamellar discontinuities 3” to each side of CJP weld prior to CJP weld (this includes base plates). If rejectable defects are found then beam shall not be welded to the flange or plate at this location. This test should be conducted in the shop. In addition, UT material after weld for discontinuities behind and adjacent to such welds. The test procedure and acceptance criteria shall be per ASTM A898 Level I or ASTM A435.
   e. Fillet Welds: Fillet welds of gusset plates to beams, columns and base plates - MT 10% of the following fillet welds and reduce to 5% if no significant cracks are found in the first 50 tested: a) gusset plate fillet welds to beam and columns; b) base plate fillet welds.
7. All full penetration groove welds will be subject to ultrasonic testing, as per AWS D1.1, Clause 6 "Inspection, Part "F", Ultrasonic Testing (UT) of Groove Welds. All defective welds shall be repaired and retested with ultrasonic equipment at the Contractor's expense.

8. Box columns and built-up members shall have ultrasonic testing before and after welding.
9. Column Flanges: An area extending 6 inches above and below point where girder flanges are attached will be inspected. Column flange edges will be inspected visually and entire area ultrasonically for lamination, plate discontinuities, and non-metallic inclusions.
10. When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the Engineer will be notified. The Engineer may require the removal of backing strip. The backing strip will be removed at the expense of the Contractor, and if no root defect is visible the weld will be retested. If no defect is indicated on this retest, and no significant amount of base and weld metal have been removed, no further repair of welding is necessary. If a defect is indicated, it will be repaired and retested at Contractor's expense.
11. The ultrasonic instrumentation will be calibrated by the technician to evaluate the quality of the welds in accordance with AWS D1.1.
12. Other methods of inspection, for example, X-Ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the inspection laboratory, and with the approval of the Engineer.
13. Base metal thicker than 1-1/2 inches, when subjected to through thickness weld shrinkage strains, shall be ultrasonically inspected for discontinuities directly behind such weld before and after joint completion.
14. At the discretion of the owner's testing agency, except for Demand Critical Welds as per AISC 341 Section J6.2g, the ultrasonic testing frequency may be reduced but may not be less than the following:
    a. Initially, all welds requiring ultrasonic testing will be tested at the rate of 100 percent in order to establish the qualifications of each individual welder. If the reject rate is demonstrated to be less than 5 percent of the welds tested for each welder, then the frequency of testing for that welder may be reduced to 25 percent. If the reject rate increases to 5 percent or more, 100 percent testing will be re-established until the rate is reduced to less than 5 percent. The percentage of rejects will be calculated for each welder independently.
    b. A sampling of a least 40 completed welds will be made for such reduction evaluation. Reject rate is defined as the number of welds containing rejectable defects divided by the number of welds completed. For evaluating the reject rate of continuous welds over 3 ft in length where the effective throat is 1” or less, each 12 inch increment or fraction thereof shall be considered as one weld. For evaluating the reject rate of continuous welds over 3 ft in length where the effective throat is greater than 1”, each 6 inch of length or fraction thereof shall be considered one weld.

G. In addition to visual inspection, shop-welded shear studs will be tested and inspected according to requirements in AWS D1.1 and the governing building code for stud welding and as follows:
    1. The type and capacity of the welding equipment shall be in accordance with the manufacturer's recommendations and shall be checked and approved.
    2. At the beginning of each day's work, a minimum of 2 test stud welds shall be made, with the equipment to be used, to metal which is the same as the actual work piece. The test studs shall be subjected to a 90-degree bend test by striking them with a heavy hammer. After the above test, the weld section shall not exhibit any tearing or cracking.
    3. Bend tests will be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
    4. Tests will be conducted on additional shear studs if weld fracture occurs on shear studs already tested, according to requirements in AWS D1.1.
H. Inspection Records
    1. The inspector will maintain a daily record of the work that has been inspected and its disposition. One copy of each report will be submitted to the Owner on a weekly basis. Test reports will be made on the form suggested in the AWS D1.1 “Structural Welding Code”.
    2. Make systematic record of all shop welds, including:
        a. Date of inspection.
        b. Location and type of weld.
        c. Identification marks of welders.
        d. List of defective welds.
        e. Manner of correction of defects.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify, with steel Erector present, locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
   1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Discrepancies: In the event of discrepancy, immediately notify the Owner's Representative in writing. Do not proceed with construction in the region of the discrepancy until all such discrepancies have been resolved.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.
   1. The Contract Drawings indicate the completed structure. The Contractor is fully responsible for all temporary measures necessary for erection, except where specific sequences and requirements are specified on the Drawings.
   2. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

B. Furnish templates for exact locations of items to be embedded in concrete and any setting instructions required for installation.

3.03 CONNECTIONS

A. General Bolting:
   1. Product containers must be marked with lot numbers and traceability information so that correspondence with mill reports can be established. Manufacturer's symbol and grade markings shall appear on all bolts, nuts, through-hardened washers and direct tension indicators.
   2. Bolts shall be of a length that will extend to a point at least flush with the surface of the nuts, though not more than a length equal to the height of the nut, beyond the nuts unless otherwise noted.
   3. Bolts shall be installed with threads excluded from the shear plane.
   4. Washers shall be used on all bolts. Use beveled washers where bolts bear on sloping surface.

B. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts" for type of bolt and type of joint specified. Contact surfaces of bolted parts shall as a minimum comply with the Class A requirements.
   1. Joint Type shall be as noted on drawings.
   2. Direct tension indicator (load indicating washers or "Tension-Set" bolts) method shall be used at slip-critical connections. "Turn-of-Nut" methods are not an acceptable alternative.
   3. When connection has bolts and welds, fully tighten bolts prior to welding with the exception that in moment connections the flange welds shall be completed prior to final tightening of high strength bolts.
   4. When already tensioned bolts have had their tension relaxed, replace the bolt and tension indicator and re-tighten.

C. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work. Quality of materials and design and fabrication of all welded connections shall conform to AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Building," "AWS Code for Welding in Building Construction," and requirements of this section.
   1. Location and type of all welds shall be as shown. Make no other welded splices, except those shown on drawings, without prior approval of the Structural Engineer.
   2. Automatic Welding: Use electrode wire and flux for automatic and semi-automatic welding acceptable to Structural Engineer. All methods, sequences, qualification and procedures, including preheating, and post heating if necessary, shall be detailed in writing and submitted to the Structural Engineer for review.

3. Preparation of surface: Surfaces to be welded shall be free of loose scale, slag, rust, grease, paint, and any other foreign material.
4. Shop welds shall be inspected in the shop before the work is painted or shipped.
5. Control cooling process after weld is completed by either step down post heat or thermal blankets as determined by procedures and prequalification.
6. Weld sizes where shown shall be assumed to be effective weld sizes.
7. All groove or butt welds shall be full penetration unless noted otherwise on the Drawings.
8. Where structural steel members are to remain exposed in the finished work, welds exposed to view shall be uniformly made and ground smooth.
9. Remove runoff tabs and grind surfaces smooth where the tabs would interfere with architectural finishes.
10. Weld tabs shall be in accordance with AWS D1.1. In addition, weld tabs shall extend beyond the edge of the joint a distance not less than 1-inch except at access holes in beam/girder webs and at continuity plate clips. Weld tabs shall be oriented parallel to the joint preparation and to the weld direction. Weld dams are not allowed.
11. Remove weld tabs and backup plates and grind surfaces smooth as required for inspection or testing. Where tabs or backup bars interfere with architectural treatment or are exposed to view in the final structure, remove and grind smooth.
12. Splices of members in tension, all members of moment frames and all members of braced frames that are made from heavy steel sections shall be made in conformance with Section J1.5 of AISC 360.
13. Weld variables shall be consistent with the recommendations of the electrode manufacturer.
14. Do not weld into column flange-to-web intersection as defined the AISC “k” and “k1” distances except for the doubler plate to column welds. Continuity plate welds shall stay clear of this area as noted on the drawings.
15. Sequence the work as necessary to accommodate testing.
16. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.
17. Welding Procedures:
    a. Weld only in accordance with the Welding Procedure Specifications. WPS shall be readily available to all welders, inspectors, and supervisors during the production process.
    b. Consider toughness and notch sensitivity of steel in formation of the welding procedures to prevent brittle and premature fracture during fabrication and erection. Toughness requirements are to match those of the parent metal.
    c. Weld in a manner to minimize accumulation and concentration of through-thickness strains due to weld shrinkage. Sequence welds in a manner to reduce residual stresses (caused by welding) to a minimum value. Welding procedures shall incorporate measures necessary to eliminate cracking.
    d. Do not mix different electrodes in the same weld joint unless the interactions have been shown not to cause problems.
    e. Stringer passes only, no weaving or wash passes. Manipulation of the electrode for vertical welds (oscillation) shall be kept to a maximum movement of 4 to 5 electrode diameters.
    f. Welding shall not begin until joint elements are bolted or tacked in intimate contact and adjusted to dimensions shown in the Drawings, with proper allowance for any weld shrinkage.
    g. All tack welds shall be of the same quality as final welds. Tack welds within Demand Critical welds at Seismic Force Resisting System members shall be per AWS D1.8; all other tack welds shall be per AWS D1.1.
18. Additional Welding Requirements:
    a. Weld Access Holes shall be in accordance with AISC Specification J1.6 and AWS D1.1 except as otherwise noted in the Construction Documents. The access hole shall be ground smooth to a surface roughness not to exceed 500 micro-inches, and shall be free of notches and gouges. For this purpose, a notch of gouge is any depression deeper than the overall surface roughness.
    b. Limit oscillation of FCAW electrodes to 3d, for d >= 3/32 inches, and to 5d, for d < 3/32 inch (d = wire diameter).

c. Pay increased attention to uniform and adequate preheat.
d. Maximum interpass temperature not to exceed 550 degrees F when notch toughness properties are specified.
e. Complete individual weld layers prior to applying portions of subsequent layers. Ends of interrupted passes to be staggered. Minimize starts and stops within body of the weld.
f. Where required by specifications and/or contract drawings, remove backing bars and apply reinforcing fillet weld per note J of figure 3.4 of AWS D1.1 and AWS D1.8 section 6.7 and 6.8. Remove backing bar with air carbon arc cutting, grinding, chipping or thermal cutting. The process shall be controlled to minimize gouging and removal of base metal except for material immediately adjacent to the weld. After removal of backing the root shall be backwelded with a reinforcing fillet weld with a minimum leg of 5/16-inch.
g. At continuity plate to column welds, the backing bars do not need to be removed.
h. At Demand Critical Welds: Cut off weld tabs 1/8-inch (1/4-inch at continuity plates) from the edge and grind to a surface roughness of 500 micro-inches or better.
i. Where bottom cover plates are acting as back-up plates, welds in the vicinity of the web cope area shall be carefully checked by ultrasonic inspection. Any indication of weld discontinuities shall be cause to remove suspect portions of welds by cut-outs. The cut-out areas shall be ground smooth to sound bright metal for visual inspection. If visual inspection is inconclusive or questionable, verify by magnetic particle testing. If weld defects, slag inclusions, etc. are present, remove them by air arcing and clean up by grinding. Repair welds and add a reinforcing fillet weld at least 1/4 of the bottom flange thickness but need not be greater than 5/16 inch. If there are no defects, clean up by grinding and reinforce with fillet weld. Ultrasonic testing (UT) inspection shall be conducted from both sides of the flange to ensure sound welds.
j. Flame cut surfaces at weld access holes within heavy sections shall be ground per AISC 360 Section M2.2.

D. Refer to the Structural Drawings for additional requirements.

3.04 SHOP PRIMING

A. Shop prime all steel surfaces exposed to weather or not completely concealed by interior finishes unless noted otherwise and excepting the following:
1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded and areas within 4 inches on each side of field welds.
3. Top surfaces of beams to receive metal deck.
4. Surfaces to be high-strength bolted except surfaces painted with Type B Primer. Areas with high-strength bolts exposed to the weather shall receive a primer coat compatible with slip-critical type connections.
5. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
6. Galvanized surfaces.
7. Machined surfaces.
8. Welded shear studs.
9. Where enclosed within the building finish and thereby protected from exterior exposure.

B. Steel members not otherwise painted shall be painted when subjected to condensation from piping, are in shower or steam rooms, are exposed to chemical fumes or are exposed to other conditions of potentially aggressive corrosion

C. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the applicable SSPC specification requirements for each primer. As a minimum, all surfaces shall be prepared according to the following specifications and standards:
1. SSPC-SP1 “Solvent Cleaning”
2. SSPC-SP 2, "Hand Tool Cleaning"
3. SSPC-SP3, “Power Tool Cleaning”
4. Where jobsite exposure is expected to exceed 6 months, SSPC-SP6 Commercial Blast Cleaning is required.

D. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness as recommended by manufacturer. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
   1. Material: Type A Tnemec Company, Inc., Series V10; Sherwin Williams Steel Spec Universal; Metal Case 94-231 Series or approved equal.
   2. Number of Coats: One.
   3. Volume Solids: 56.0 +/- 2.0% minimum.
   4. Generic Description: Modified Alkyd.
   5. Stripe paint corners, crevices, bolts, welds, and sharp edges.
   6. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

E. Unless noted otherwise in subsection G, use the following Type B shop painting systems on all exterior steelwork and interior steelwork subjected to wet conditions or fumes (see subsection G for additional requirements)
   1. Surface Preparation: SSPC-SP6 Commercial Blast Cleaning
   2. Application: Follow coating manufacturer's printed directions.
   3. Material: Type B Tnemec 90-97 Tneme-Zinc primer or approved equal
   4. Number of Coats: One
   5. Dry Film Thickness: 2.5 to 3.5 mils
   6. Volume Solids: 63% +/- 2%
   7. Generic Description: Zinc-Rich Urethane

F. Unless noted otherwise in subsection G, use the following finish painting systems on all exterior steelwork and interior steel work subjected to wet conditions or fumes (see subsection G for additional requirements):
   1. Application: Follow coating manufacturer’s printed directions. Apply over Type B primer system above.
   2. Material: Tnemec Series 750 UVX paint or approved equal
   3. Number of Coats: One
   4. Dry Film Thickness: 2.5 to 5 mils
   5. Volume Solids: 72% +/- 2%
   6. Generic Description: Polyfunctional Hybrid Polyurethane

G. All exterior steelwork and all interior steelwork subjected to wet conditions or fumes, including all welds, bolts, washers and other connection components, shall be primed and painted or hot-dip galvanized, as specified by the Architectural finish specifications. In the absence of Architectural finish specifications, all exterior steelwork and all interior steelwork subjected to wet conditions and fumes, including all welds, bolts, washers and other connection components, shall be hot-dip galvanized, conforming to the requirements set forth in ASTM A123 and ASTM A153.

H. All steel exposed to weather in the final structure shall be galvanized or painted.

I. Use special care if steel is fabricated, cleaned, and painted in damp weather to remove moisture from mill scale cracks.

J. Clean contact surfaces of high strength bolts of all burrs and material which might prevent solid seating of the parts. Steel to receive bolts shall be primer painted except beneath the contact area of slip-critical bolts.

3.05 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A123 and to bolts, nuts, and washers according to ASTM A153. Galvanize all items noted on Drawings to be galvanized and fasteners that connect galvanized components, except that ASTM A490 bolts shall not be hot-dip galvanized. Where ASTM A490 bolts connect galvanized components, use A490 Type 3 bolts.
   1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with engine freeze/core plugs installed per manufacturer’s recommendations.
   2. Galvanize lintels and shelf angles attached to structural-steel frame and located in exterior walls.

3. Roughen faying surfaces of slip-critical high-strength bolted connections to achieve Class C surface accordance with the RCSC Specifications.

3.06 ERECTION

A. Structural steel erection: Comply with AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Building", latest edition.
B. Erection Sequence: Erect steel in accordance with special erection sequences where special erection sequences are indicated on the contract documents.
C. Mark each member with erection identification corresponding to mark shown on erection drawings. Carefully plan erection of structural steel so that no cutting and removal of material will be necessary. Do not torch burn in the field, unless specifically permitted by Engineer.
D. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360. Check plumbness after erection of each tier.
E. Dimensions shown on drawings are based on an assumed design temperature of 70 degree Fahrenheit. Fabrication and erection procedures shall take into account the ambient temperature range at the time of the respective operations.
F. Care shall be taken to protect work already installed from damages resulting from structural steel erection.
G. Base Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates. Remove any templates used for the setting of anchor bolts.
    1. Set plates for structural members on wedges, shims, or setting nuts as required.
    2. Weld plate washers to top of baseplate at locations that are specified per the structural design details.
    3. Snug-tighten or Pretension anchor rods after supported members have been positioned and plumbed. If used, do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
    4. Grout solid under plates with a flowable non-shrink grout per Section 03 30 00 prior to placement of concrete fill over metal deck at any floor level. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
H. Maintain erection tolerances of structural steel within AISC 303.
I. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
    1. Level and plumb individual members of structure.
    2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
    3. Shimming or other adjustments not indicated on drawings shall be approved by the Engineer prior to installation. Column shimming shall be ¼ inch.
J. All welds shall be full and clean, and conform to AISC and AWS specifications.
K. Splice members only where indicated.
L. Do not use thermal cutting during erection unless approved by SEOR. Finish thermally cut sections within smoothness limits in AWS D1.1.
M. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts. Where a hole is required to be enlarged by more than 3/32-inch ream to and use next larger bolt size.
N. Shear Studs: Prepare steel surfaces as recommended by manufacturer of shear studs. Use automatic end welding of headed-stud shear studs according to AWS D1.1 and manufacturer's written instructions.
O. Temporary Shoring and Bracing:
    1. The Contract Drawings indicate the completed structure. The Contractor is fully responsible for all temporary measures necessary for erection, except where specific sequences and requirements are specified on the Drawings. See the Drawings for erection sequence notes and minimum requirements.

2. Contractor is responsible for identifying need for temporary construction and for the design, installation and use of all temporary bracing and supports necessary to stabilize the framing until complete.
3. Provide temporary works as necessary to erect the structure and achieve proper alignment as erection proceeds. In addition, provide temporary bracing and shoring to brace the incomplete structure against loads such as wind and seismic forces comparable in intensity to the design loads for the completed structure.
4. Make all necessary provisions for temporary bracing and for completion of erection where structural members are temporarily left out for erection at a later time.

P. Temporary Flooring:
1. Provide planking and scaffolding necessary in connection with erection of structural steel, support of erection machinery, and construction materials. Temporary floors and use of steel shall be as required by applicable regulatory requirements.
2. If steel decking is used as a working platform, it shall be temporarily tack-welded to supports to extent necessary for such use in accordance with applicable regulatory requirements. The concentrated loading from welding machines and other heavy machinery required for steel erection shall be distributed by planking or other approved means. Metal decking that becomes damaged as the result of being used as a working platform shall be replaced at no additional cost to the Owner.

Q. Hoisting and Bracing:
1. Provide all hoisting and erecting equipment and power.
2. Provide and maintain any and all safety railings, etc., required for the erection of steel framing and metal decking or as directed by the General Contractor.
3. Brace the erected frame in a manner which will assure safety and proper alignment to receive the metal decking in accordance with Contractor's approved erection procedure.
4. Erect building frame true and level. Erect columns in a manner to allow for movement due to welding shrinkage and thermal expansion and contraction of framing. Check plumbness after erection of each level. Maintain structural stability of frame during erection. Provide temporary bracing where necessary to maintain frame stability and to support required loads, including equipment and its operation.

R. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

S. Shop Drawings for temporary works located within the building envelope shall be submitted to the Engineer of Record for review and approval. Temporary works Shop Drawings shall show fabrication of structural-steel components, including details of layout and connections, fabrication of all members, and element and erection plans, and erection sequence. Shop Drawings shall identify temporary works members to remain in the permanent structure. Review of Shop Drawings by the Engineer of Record is of a general nature only.

3.07 FIELD CONNECTIONS

A. Field connection requirements shall be as a minimum equal to those specified in Part 2 of this document.

B. Erection bolts for welded connection shall be tightened securely and left in place, unless noted otherwise.

C. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts" for type of bolt and type of joint specified.

D. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or weld tabs where required by specifications or contract drawings, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

4. Weld in manner to prevent warping or distortion of finished product. Use jigs which will not restrain piece from moving during welding or cooling after welding. Sequence weld passes at a joint to prevent excessive heat build-up or cause shrinkage cracks to form.
5. Auxiliary Member Connections and Temporary Welds shall be per AWS provided that preheating may be omitted on ASTM A36 steel for single pass fillet welds with low hydrogen electrodes under the following conditions: Air temperature is 60 degrees Fahrenheit or over, steel is dry, and welds to structural base material are more than 1" away from corners or ends of plates.
6. Preheat and post-heat procedures for welded joints shall be utilized to prevent rapid cooling of welds, particularly in cold weather. Procedures are Contractor's responsibility.

E. Shear Studs: The shear studs shall be automatically end welded in accordance with AWS D1.1 and the manufacturer's recommendations in such a manner as to provide complete fusion between the end of the stud and the plate.
1. There should be no porosity or evidence of lack of fusion between the welded end of the stud and the plate.
2. Shear studs through metal deck shall be welded through the deck within 1 day of laying the deck.

F. Bearing Pads: Install bearing pads in accordance with manufacturer's recommendations.

3.08 FIELD QUALITY CONTROL

A. Field quality control shall, as a minimum, conform to the requirements specified under Source Quality Control in Part 2.

B. Erection Tolerances: Unless otherwise noted, level and plumb individual members of the structure as per AISC 303 Section 7.13 'Erection Tolerances'. Make level and plumb based on the mean operating temperature of the structure, allowing for the difference in temperature at time of erection and the mean temperature of the structure when completed and in service. Base measurements relating to tolerances on the theoretical centerline of the columns.
1. Columns: Gaps exceeding 1/8 inch between milled ends not permitted. Shim acceptable gaps with non-tapered mild steel shim stock.
2. In order to provide a true, flat plane for the exterior elevations, install perimeter steel deck edge closure such that the vertical face does not vary from its intended alignment more than +/- 3/4" at any location.
3. All columns and beams shall adhere to Section M2.7 of the referenced "Specification for Structural Steel for Buildings" which states that completed members shall be free of twists, bends, and open joints. Take special care that column base plates are parallel and perpendicular to faces of columns and that bolt holes are accurately placed.

C. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

D. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

E. Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
1. The Inspector shall observe all Direct Tension Indicators to see if proper tightness is achieved.

F. Welded Connections: Field welds will be visually inspected according to AWS D1.1, the governing building code, and Part 2 of this document, by the Testing Agency.

G. Defective Work:
1. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents. Work deemed defective will be removed from the site at the Contractor's expense.
2. Any special tests not specifically covered by this specification that are proposed by the Contractor as a result of failure to comply with this Section shall be at the Contractor's expense. The Contractor shall be responsible for any consequential costs or delays.
3. The results of those tests will be accepted, at the discretion of the Architect, as proof of adequate materials or workmanship.

3.09 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A780.

B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

C. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections.

D. Repair of Openings: For all members exposed to view in the final structure, close all lifting holes, access openings, etc. in such a manner that no visual evidence of the opening remains.

END OF SECTION

05 40 00
COLD-FORMED METAL FRAMING
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Formed steel stud interior wall and exterior wall framing.
B. Formed steel joist and purlin framing and bridging.

1.03 RELATED REQUIREMENTS

A. Section 03 30 00 – Cast In Place Concrete.
B. Section 05 12 00 – Structural Steel Framing.

1.04 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
   1. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.
   2. AISI S202 – Code of Standard Practice for Cold-Formed Steel Framing.
   3. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing.
   4. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing.
   5. AISI S400 - North American Standard for Seismic Design of Cold-Formed Steel Structural Systems.
   6. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   8. ASTM A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.
   9. ASTM A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
   10. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing.
   11. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
   12. AWS B2.1 - Specification for Welding Procedure and Performance Qualification.
   13. AWS D1.1 - Structural Welding Code - Steel.
   14. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.
   15. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations, and accessories.
C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.

1. Provide elevations of each building surface showing layout, spacing, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
2. Provide details of all conditions whether shown on the Contract Documents or not. Where engineering of specific conditions is not shown in the Contract Documents, submit details of similar character of those shown using sound engineering practice and preferred means and methods. Details shall be reviewed by the Structural Engineer of Record who will provide comments to the Contractor as necessary.

E. Manufacturer's Installation Instructions: Indicate special procedures, and conditions requiring special attention.
F. Manufacturer's Qualification Statement.
G. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1 and dated no more than 12 months before the start of scheduled welding work.
H. SSMA Manufacturer Qualification: Submit documentation of manufacturer association membership.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.
B. Manufacturer Qualifications:
   1. Member of Steel Stud Manufacturers Association (SSMA): www.ssma.com.
   2. Member of Steel Framing Industry Association (SFIA): sfia.memberclicks.net.
C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1 and AWS D1.3 and dated no more than 12 months before start of scheduled welding work.
D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.
E. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect metal framing units from rusting and damage.
B. Deliver to Project site in manufacturer's unopened containers or bundles, identified with name, brand, type and grade.
C. Store off ground in a dry ventilated space or protect with suitable waterproof covering.

1.09 PROJECT CONDITIONS

A. Prior to Pre-installation Conference, review areas of potential interference and conflicts, and coordinate layout and support provisions for interfacing work.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing:
   1. CEMCO: www.cemcosteel.com.
   2. ClarkDietrich: www.clarkdietrich.com.
   3. SCAFCO Corporation: www.scafco.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.
B. Framing Connectors and Accessories:
   1. ClarkDietrich: www.clarkdietrich.com.
   2. Simpson Strong-Tie: www.strongtie.com.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

C. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.

1. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
2. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

D. Shop fabricate framing system to the greatest extent possible.
E. Deliver to project site in largest practical sections.
F. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.02 FRAMING MATERIALS

A. Studs and Track: ASTM C955; studs formed to channel, C- or Sigma-shaped with punched web; U-shaped track in matching nominal width and compatible height.
   1. Gauge and Depth: As indicated on Drawings and as required to meet specified performance levels.
   2. Galvanized in accordance with ASTM A653, G60 coating.
   3. Products:
      a. Comply with ICC ES 3064P or ICC ES 4205.
         1) CEMCO: www.cemcosteel.com
         2) SCAFCO Corporation: www.scafco.com
         3) Substitutions: See Section 01 60 00 - Product Requirements.
B. Jamb Studs: Engineered, C-shaped with wide flanges, designed to replace conventional built-up, multiple stud framing at openings.
   1. Products:
      a. SCAFCO Corporation; Kwik-Jamb Studs: www.scafco.com
      b. Substitutions: See Section 01 60 00 - Product Requirements.
C. Header: Engineered one-member or two-member assembly, with wide flanges, designed to replace conventional box or nested header framing at openings.
   1. Jamb Mounting Clips: Manufacturer's standard.
   2. Cripple Stud Clips: Manufacturer's standard.
   3. Products:
      a. SCAFCO Corporation; HD Header: http://www.scafco.com.
      b. CEMCO; ProX Header: www.cemcosteel.com
      c. Substitutions: See Section 01 60 00 - Product Requirements.
D. Joists and Purlins: Fabricated from ASTM A653 steel sheet, with G60 hot dipped galvanized coating.
   1. Base Metal: As indicated on Drawings and as required to meet specified performance levels within maximum depths indicated.
   2. Gauge and Depth: As required to indicated on Drawings and as required to meet specified performance levels.
   3. Products:
      a. CEMCO: www.cemcosteel.com
      b. SCAFCO Corporation: www.scafco.com
      c. Substitutions: See Section 01 60 00 - Product Requirements.
E. Framing Connectors: Factory-made, formed steel sheet.
   1. Material: ASTM A653 SS Grade 33 and 40 (minimum), with G90 hot dipped galvanized coating for base metal thickness less than 10 gauge, 0.1345 inch (3.42 mm), and factory punched holes and slots.
   2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100 and AISI S400 as required.
   3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.

a. Where continuous studs bypass elevated floor slab, connect stud to slab in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
b. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
c. Products:
1) ClarkDietrich; Drift FastClip Slide Clip D-FCSC: www.clarkdietrich.com
2) ClarkDietrich; FastClip Slide Clip FCSC: www.clarkdietrich.com
3) Simpson Strong-Tie; SCB Side-Clip Connector: www.strongtie.com

4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
a. Products:
1) Simpson Strong-Tie: www.strongtie.com
2) Substitutions: See Section 01 60 00 - Product Requirements.
5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.
6. Products:
a. ClarkDietrich; Spazzer 5400 Bridging Bar: www.clarkdietrich.com
b. ClarkDietrich; FastBridge Clip: www.clarkdietrich.com
c. Simpson Strong-Tie; SUBH Bridging Connector: www.strongtie.com
d. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 FASTENERS

A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Screws shall comply w/ ASTM C1513. Exterior applications shall be Type 316 Stainless Steel or Hot Dip Galvanized per ASTM A153, Class C.
1. Products:
a. Grabber Construction Products Inc. per ESR 1271: www.grabberpro.com
b. Primesouce Building Products per ESR 1408: www.primesourcebp.com
c. ITW Commercial Construction North America; ITW CCNA-Buildex Teks Select Series per ESR 1976 or 3223: www.ITWBuildex.com
d. Hilti per ESR 2196: www.hilti.com
e. Brighton Best International Inc. per ESR 3231: www.brightonbest.com
f. Elco Construction Products per ESR 3294: anchors.dewalt.com
g. Simpson Strong-Tie Company per ESR 3006: www.strongtie.com
h. Substitutions: See Section 01 60 00 - Product Requirements.

B. Anchorage Devices: As indicated on the Drawings.
C. Welding: Comply with AWS D1.1.

2.04 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components unless otherwise noted.
B. Plates, Gussets, Clips: Formed Sheet Steel, thickness determined for conditions encountered; finish to match framing components unless otherwise noted.
C. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
D. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.
B. Verify field measurements and adjust installation as required.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.
C. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud locations to ensure a uniform bearing surface on supporting concrete or masonry construction.

3.03 INSTALLATION OF FRAMING, GENERAL

A. Install components in accordance with manufacturers' instructions and AISI S200 - Code of Standard Practice for Cold-Formed Steel Framing.
B. Install cold-formed metal framing and accessories plumb, level, square, and true to line, and with connections securely fastened.
C. Install framing members at 16-inches on center unless otherwise shown. Framing at sink and toilet carriers may be installed at 24 inches on center where the span rating for the attached sheathing can accommodate the increased spacing.
D. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members. Install load-bearing studs full length in one piece. Splicing of studs is not permitted.
E. Align floor and ceiling tracks; locate to wall layout. Coordinate installation of sealant with floor and ceiling tracks.
F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
H. Install insulation, specified in Division 07 Section "Thermal Insulation" in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable non-cumulative tolerance variation of 1/8 inch in 8 feet (1:768) and as follows:
    1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
K. Touch-up field welds and damaged galvanized surfaces with primer.

3.04 WALL FRAMING INSTALLATION

A. Install movement joints at corners and intersections to allow for differential movement of wall planes.
B. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as indicated.
    1. Fasten bottom track to concrete floor slab with power actuated fasteners or expansion anchors sized and spaced as shown on Drawings or as required by structural performance.
    2. Fasten top compensation channel to structure as indicated on the Drawings.
C. Squarely seat studs against top and bottom tracks with gap not exceeding of 1/8 inch between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs as indicated.
D. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar configurations.

E. Align load bearing studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.
F. Align floor and roof framing over load bearing studs. Where framing cannot be aligned, continuously reinforce track to transfer loads or as shown in approved engineering shop drawings.
G. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as required.
H. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates as shown in approved engineered shop drawings.
    1. Frame wall openings with jamb studs per the schedule(s) on the Drawings at each jamb of frame. Fasten jamb members together to uniformly distribute loads as shown in approved engineered shop drawings.
    2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs as shown in the drawings.
I. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.
    1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.
    2. Provide backing plate support for each point of fastening of every unit to be anchored. Coordinate requirements and locations with work of related sections.
J. Install horizontal bridging in stud system, spaced at (vertical distance) not more than four feet on center and as indicated; fasten at each stud intersection. Horizontal bridging may be omitted at interior wall framing where gypsum board sheathing is required on both sides for the full height of the wall.
    1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of 2 screws into each flange of the clip angle for framing members up to 6 inches deep.
K. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system as shown in the drawings.
L. Install strap bracing and blocking at unsheathed sides of walls as indicated on the Drawings.

3.05 INSTALLATION OF JOISTS AND PURLINS

A. Install framing components in accordance with manufacturer's instructions.
B. Make provisions for erection stresses. Provide temporary alignment and bracing.
C. Place joists with spacing as indicated on the Drawings; not more than 2 inches from abutting walls, and connect joists to supports using fastener method.
D. Set floor and ceiling joists parallel and level, with lateral bracing and bridging.
E. Locate joist end bearing directly over load-bearing studs or provide load distributing member to top of stud track.
F. Provide web stiffeners at reaction points as required by the Drawings.
G. Touch-up field welds and damaged galvanized surfaces with primer.

3.06 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports in accordance with Division 01.
B. Field and shop welds will be subject to testing and inspecting.
C. Testing agency will report test results promptly and in writing to Contractor and Architect.
D. Remove and replace work where test results indicate that it does not comply with specified requirements.
E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.07 REPAIRS AND PROTECTION

A. Painting Repairs: Use compatible primer for prime coated surfaces.
B. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to manufacturer's written instructions.
C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensures that cold-formed metal framing is without damage or deterioration at time of Completion.

END OF SECTION

SECTION 05 50 00 – METAL FABRICATIONS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the job site.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Shop fabricated metal items and miscellaneous metal work, refer to as herein scheduled.
2. Painting finish

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society for Testing and Materials (ASTM)

1. ASTM A36 - Specifications for Structural Steel
2. ASTM A53 - Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
3. ASTM A120 – Welded Steel Pipes, Galvanized Threaded and Coupled
4. ASTM A123 – Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
5. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
6. ASTM A307 – Standard specification for carbon steel bolts and studs, 60 ksi tensile strength
7. ASTM A500 - Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
8. ASTM A513 - Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing
9. ASTM A569 - Specification for Steel, Carbon (0.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality
10. ASTM A615 - Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
11. ASTM A653 – Hot Dip Galvanized Coils & Sheets - quality norms
12. ASTM A780 - Specification for Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings

13. ASTM E303 - Method of Measuring Surface Frictional Properties Using the British Pendulum Tester

E. American Institute of Steel Construction (AISC)

1. AISC - ASD Manual of Steel Construction
2. AISC - Manual of Steel Construction

F. American Welding Society (AWS)

1. AWS - D1.1 Structural Welding Code - Steel
2. AWS - D1.3 Structural Welding Code - Sheet Steel
3. Welding Procedure and Performance Qualification

G. National Ornamental and Miscellaneous Metals Association (NOMMA)

1. NOMMA - Guideline 1 - Joint Finishes

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. Sustainability:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Submit complete shop drawings indicating profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories for all fabricated items included hereunder. Include erection drawings, elevations and details where applicable. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
2. Descriptive data: Submit complete data for manufactured items.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

D. Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Coordination with associated construction

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver all parts ready for erection; store in close proximity to final locations.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish one (1) year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Floor Construction
2. Wall Construction
3. Ceiling Construction
4. Roof Construction
5. Asphalt Concrete
6. Cast-in-Place Concrete
7. Concrete Paving and Flatwork

B. Related Sections include, but are not limited to, the following:

1. Division 1
2. Section 02 41 13 – Selective Site Demolition & Protection

3. Refer to structural drawing notes for Cast in Place Concrete
4. Refer to structural drawing notes for Structural Steel Framing
5. Section 07 62 00 – Sheet Metal Flashing & Trim
6. Section 09 90 00 – Paintings and Coatings

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding operation of any operable equipment or assemblies.
2. Complete instructions regarding maintenance of the equipment, materials, and finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturer and fabricator shall be one of the following and as herein listed and in Drawings:

1. Refer to documents and as herein specified.

2. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. Steel sections: ASTM A36, unless otherwise noted on drawings.
2. Galvanizing: Hot-dip process ASTM A123 typical and ASTM A153 for threaded fasteners performed after fabrication into largest practical section. Weight of coating not less than 2 oz. per sq. ft. of surface. Where

damaged, repair surface with one coat of hot process galvanizing repair compound, "Galvalloy", "Galvweldalloy", or approved equal.

3. Hot-dipped, zinc-coating on assembled steel products: ASTM A653, galvanized in accordance with G90 coating designation.
4. Steel pipe: ASTM A53 or ASTM A120, size per drawings, hydrostatic tests not required; or standard ASTM A36 steel pipe, size per drawings.
5. Steel bolts, nuts, and washers: ASTM A307
6. Welding materials: AWS D1.1, type required for materials being welded
7. Primer: Comply with Section 09 90 00 – Paintings & Coatings
8. Painted finish: Comply with Section 09 90 00 – Paintings & Coatings

B. Schedule:

1. General:

   a. The following Schedule lists principal items only; refer to drawings for items not specifically scheduled herein.

      1) Provide, design, provide shop drawings and install items listed in Schedule and shown on Construction Drawings with anchorage and attachments necessary for installation.
      2) Provide Steel support angles and channels not included in other section.
      3) Provide Steel angle edge protection not included in other section.
      4) Provide corner, ledge and shelf angles, channels and plates not attached to structural steel; complete with anchorage for embedment in concrete where required. Hot dip galvanized items embedded in concrete or masonry.

2. Bollards - Traffic Barriers:

   a. Extra Strong galvanized steel pipe, typical; size and height as noted on drawings.
   b. Fill traffic barriers with 3000 psi concrete with domed finished top.
   c. Prime & paint steel - custom finished color to match **Architect's** sample after fabrication; refer to Section 09 90 00 – Paintings & Coatings.
   d. Provide sleeves for setting where shown on drawings - prime & paint steel to match pipe bollard.

3. Posts for Site Signage:

   a. Aluminum 6061-T6 alloy square structural tubing by Julius Blum & Co. or equal; clear brushed satin finish.
   b. Fully welded assembly.
   c. Stainless Steel fasteners, typical.

4. Steel Support Frame – Counters:

   a. Support frame with wall brackets & counter top angle supports at each end of counter and spaced equally in between (not to exceed 3'-0" o.c.)
   b. Welded construction and wall stud brackets with pre-drilled holes for fasteners.
   c. Field verify all dimensions prior to fabrication.
   d. Assembly shall be primed & painted a custom color as directed by **Architect**; refer to Section 09 90 00 – Paintings & Coatings.

5. Tube Steel Canopy Assembly:

   a. Columns and horizontal support members with attachment to foundations, attachment to building with flashing and weathertight seal at penetrations through building skin and generally providing overhead rain protection.
   b. For assembly components not specified herein, refer to architectural and structural drawings and Section 05 12 00 – Structural Steel Framing.

      1. Perimeter Framing: Refer to drawings
      2. Intermediate Framing: Refer to drawings
      3. Framing at Wall: Refer to drawings
      4. Diagonal Braces: Refer to drawings
      5. Miscellaneous plates, bolts, etc.: Refer to drawings
      6. Metal Roofing: Match building metal roofing

   c. All welds shall be continuous and ground smooth unless otherwise noted.
   d. Provide flashing to building per Specification Section 07 62 00 – Sheet Metal Flashing and Trim.
   e. Assembly shall be primed & painted a custom color as directed by **Architect**; refer to Section 09 90 00 – Paintings & Coatings.

6. Escutcheons:

   a. Application: Pipe penetrations thru ceiling panels
   b. Mfgr: Plumbing Supply Co., www.plumbingsupply.com
   c. Product: Heavy Gauge Escutcheons with Springs
   d. Type: Two piece with springs
   e. Material: Chrome plated
   f. Size: To accommodate pipe diameter
   g. Model: To accommodate pipe diameter

7. Boots – Pipe penetrations:

   a. Application: Pipe penetrations thru walls and ceiling
   b. Mfgr: PIPETITE, www.pipetite.us, www.csdiesigns.com, 800.654-5635
   c. Description: White silicone boot & 316 stainless steel ring with predrilled holes
   d. Features:

      1) Self-sealing
      2) 500° temperature rating
      3) Hygienic white silicon boot
      4) Boots accommodates movement

   e. Model: PIPETITE Standard
   f. Size: To accommodate pipe diameters from 3/16" – 7" pipe diameter
   g. Model: To accommodate pipe diameter

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions.

1. Prior to all work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this work may properly commence.
2. Examine areas and conditions under which work is to be performed.
3. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Obtain **Architect's** approval prior to site cutting or making adjustments not scheduled.

B. Clean and strip primed steel items to bare metal where site welding is scheduled.

C. Make provision for erection loads with temporary bracing. Keep work in alignment.

D. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation under appropriate Sections.

3.4 FABRICATION

A. General:

1. Verify dimensions on site prior to shop fabrication.
2. Fabricate items with joints tightly fitted and secured.
3. Fit and shop assemble in largest practical sections, for delivery to site.
4. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.
5. Exposed mechanical fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.
6. Make exposed joints butt tight, flush, and hairline.
7. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.
8. All exterior assemblies & members shall be fabricated watertight.
9. All steel tube and pipe connections shall be continuously welded water tight and ground smooth.
10. All aluminum tube and pipe connections shall be continuously welded watertight and ground smooth.

B. Install items plumb and level, accurately fitted, free from distortion or defects.

C. Field Welding:

1. Perform field welding in accordance with AWS D1.1.
2. Where field welding is applied to existing flexural members involving application of significant amounts of heat to member, provide temporary shoring to prevent deflections.

D. Finishing

1. Clean surfaces of rust, scale, grease, and foreign matter.
2. Touch-up field welds, scratched or damaged surfaces with primer, except repair exposed galvanized work with hot process field galvanizing, in accordance with manufacturer's published directions.
3. Prepare, prime and paint in accordance with Sections 09 90 00 – Paintings and Coatings unless product comes pre-finished from manufacturer.
    a. Do not prime surfaces in direct contact bond with concrete or where field welding is required, these areas will be primed and field painted after completion of work.
    b. All exposed fabrications shall be primed and finish painted.
    c. All semi-exposed fabrications shall be primed at a minimum.

3.5 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer’s recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor’s** NOTICE of “Certificate of Substantial Completion”.

END SECTION 05 50 00

SECTION 05 51 33 – METAL LADDERS - PREFABRICATED

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the job site.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work to fabricate, finish and install pre-fabricated access ladders;

1. Access ladder and attachment.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:

a. All occupancy types.

F. American National Standards Institute (ANSI)

1. ANSI A 14.3

G. Occupational Safety and Health Administration (OSHA)

1. Type 1 Industrial Metal Ladders

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Sustainability**:

1. Refer to Section 01 81 13 – Sustainable Design Requirements.
2. Refer to Part 2 herein.

1.4 SUBMITTALS

A. Refer to Section 01 25 00 – Substitutions and Deviation Procedures.

B. Refer to Section 01 81 13 – Project Sustainability Requirements for sustainability related submittal requirements.

C. Shop drawings: Submit complete shop drawings indicating profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories for all fabricated items included hereunder. Include erection drawings, elevations and details where applicable. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.

D. Descriptive data: Submit complete data for manufactured items.

1.5 QUALITY ASSURANCE

A. Refer to Section 01 45 00 - Quality Control.

B. **Contractor** /Installer/Fabricator shall have been in business for **five (5)** years. providing/installing/finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Section 01 66 00 - Product Delivery, Storage and Handling Requirements.

B. Deliver all parts ready for erection; store in close proximity to final locations.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.8 PRODUCT DESCRIPTION

A. The systems are aluminum assembly ladders, designed to be permanently attached top, middle & bottom.

1.9 GUARANTEE / WARRANTY

A. Refer to Section 01 78 00 – Closeout Submittals for as-built drawings and record documents.

B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK / SECTIONS

A. Related work includes, but is not limited to the following:

1. Wall construction
2. Roof construction
3. Floor construction

B. Related Sections include, but are not limited to the following:

1. Section 01 74 19 – Construction Waste Management and Disposal-Recycling
2. Section 01 81 13 – Project Sustainability Requirements
3. Section 05 50 00 - Miscellaneous Metal Fabrications
4. Section 07 72 33 - Roof Hatches, Safety Railings and Curbs
5. Section 09 22 16 – Non-Structural Metal Framing

PART 2 – **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable Manufacturer shall be one of the following and as herein listed and in drawings:

1. O'KEEFE Inc., www.okeeffes.com, (888) 653-3333
2. ALACO Ladder Company, www.alacoladder.com (909) 591 – 7561
3. PRECISION Stair Corp., www.precisionladders.com (800) 225 - 7814
4. Reviewed Equivalent by Architect**.**

a. Substitutions and Deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to specifications Section 01300 – Submittals, Substitutions and Deviations
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturer's specifications and recommendations and as required in accordance with OSHA standards.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Fixed Access Ladder – Interior

1. Manufacturer: O'Keefe, Inc.

2. Product Model: 500, with safety post extension
3. Type: Access to roof access hatch
4. Angle: Vertical, 90°
5. Extent: To underside of roof at roof hatch
6. Height: ±14′-0″ (field verify)
7. Construction:
    a. Material: Aluminum Alloy 6063-T6
    b. Rungs: 1-1/4″ sq. x 18-3/8″ extruded serrated aluminum
    c. Mounting brackets:
        1. Floor: (2) 4″ x 1-3/8″ x 3/16″ aluminum angles
        2. Wall: (2) 5-1/2″ x 4-3/4″ x 9″ wide x 3/16″ thick aluminum wall brackets
    d. Channel Side Rails: 3″ x 1″ x 1/8″ thick aluminum channel
        1. Extension: Verify in field to fit below hatch
    e. Finish: Mill Finish Aluminum

PART 3 – **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Section 01 31 13 – Project Coordination

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Obtain **Architect's** approval prior to site cutting or making adjustments not scheduled.

C. Make provision for erection loads with temporary bracing. Keep work in alignment.

D. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation under appropriate Sections.

3.4 FABRICATION

A. Verify dimensions on site prior to shop fabrication.

B. Fabricate items with joints tightly fitted and secured.

C. Fit and shop assemble in largest practical sections, for delivery to site.

D. Grind exposed welds flush and smooth with adjacent finished surface.

1. All edges shall be smooth to small uniform radius.

E. Exposed mechanical fastenings:

1. Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.

F. Make exposed joints butt tight, flush, and hairline.

G. Supply components required for anchorage of metal fabrications.

1. Fabricate anchorage and related components of same material and finish as metal fabrication, except where specifically noted otherwise.

3.5 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects & in strict accordance with mfg.'s recommendations.

3.6 FIELD QUALITY CONTROL

A. Monitor work to insure installation and assembly are in accordance with applicable standards.

3.7 PROTECTION AND CLEAN UP

A. Refer to Section 01 74 00 - Protection and Cleaning.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner.**

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Section 01 78 00 – Closeout Procedures.

H. Provide record drawings in accordance with Section 01 78 00 – Closeout Procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** Notice of "Certificate of Substantial Completion".

END SECTION 05 51 33

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Structural dimension lumber framing.
B. Exposed timber structural framing.
C. Nonstructural dimension lumber framing.
D. Rough opening framing for doors, windows, and roof openings.
E. Sheathing.
F. Preservative treated wood materials.
G. Fire retardant treated wood materials.
H. Miscellaneous framing and sheathing.
I. Communications and electrical room mounting boards.
J. Concealed wood blocking, nailers, and supports.
K. Drilling, saw cuts, knock-outs and framing for ventilation.
L. Wood sheathing backing at tile walls.
M. Miscellaneous wood nailers, furring, and grounds.
N. Steel hardware and attachment brackets

1.03 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 03 30 00 - Cast-in-Place Concrete: Setting anchors in concrete.
C. Section 05 12 00 - Structural Steel Framing: Prefabricated beams and columns for support of wood framing.
D. Section 05 50 00 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
E. Section 06 17 00 – Shop-Fabricated Structural Wood
F. Section 06 17 33 - Wood I-Joists.
G. Section 06 17 53 - Shop-Fabricated Wood Trusses.
H. Section 06 18 00 - Glued-Laminated Construction.

1.04 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
    1. ASTM A36 - Standard Specification for Carbon Structural Steel.
    2. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
    3. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
    4. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
    5. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
    6. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.AWPA - Wood Preservative: American Wood-Preservers’ Association:
        a. U1, Use Category System: User Specification for Treated Wood.
        b. M4, Standard for the Care of Preservative-Treated Wood Products.
    7. AWS B2.1 - Specification for Welding Procedure and Performance Qualification.
    8. AWS D1.1 - Structural Welding Code - Steel.
    9. ICC (CBC) –California Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
    10. ICC (IECC) - International Energy Conservation Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

11. NDS – National Design Specification for Wood Construction
12. SDPWS - Special Design Provisions for Wind & Seismic
13. PS 1 - Structural Plywood.
14. PS 2 - Performance Standard for Wood Structural Panels.
15. PS 20 - American Softwood Lumber Standard.
16. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber.
17. WCLIB - Standard Grading Rules for West Coast Lumber No. 17.
18. WWPA - Western Lumber Grading Rules.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
B. Certification:
   1. Preservative Treated Wood: Certification for waterborne preservative and that moisture content was reduced to 19 percent maximum, after treatment.
C. Shop-fabricated structural wood: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if shop-fabricated structural wood is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.
D. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.
E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
F. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1 and dated no more than 12 months before start of scheduled welding work.[PS1]

1.06 QUALITY ASSURANCE

A. General:
   1. Coordinate the work of all trades to ensure proper placement of all materials, anchors, etc., as well as providing for openings and anchors for the installation of surface mounted materials and equipment.
   2. Qualifications for Workers: Provide sufficient skilled workers and supervisors who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.
   3. Rejection: In the acceptance or rejection of rough carpentry, no allowance will be made for lack of skill on the part of the workers.
B. Tests and Inspections:
   1. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1 and no more than 12 months before start of scheduled welding work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
B. Protection:
   1. After delivery, store all materials off the ground, covered, and in such a manner as to ensure proper ventilation and drainage and to protect against damage and the weather. Maintain wood at the maximum moisture levels indicated in Materials Section.
   2. Keep all material clearly identified with all grade marks legible; keep all damaged material clearly identified as damaged, and separately store to prevent its inadvertent use. Do not allow installation of damaged or otherwise non-complying material.
   3. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

4. Use all means necessary to protect the installed work and materials of all other trades.
5. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
B. Correct defective work within a two-year period commencing on Date of Substantial Completion.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber:
   1. Meet requirements of following minimum grades. All grades shall be per WCLIB Grading Rules No. 17 or WWPA Western Lumber Grading Rules. Species Combination shall be Douglas Fir – Larch. Douglas Fir – Larch (North) and Douglas Fir (South) are not permitted without approval from the structural engineer.
   2. Furnish S4S unless otherwise noted.

2.02 SOURCE QUALITY CONTROL

A. Grade Mark each piece of lumber. Marking must be done by recognized agency.
   1. Douglas Fir shall bear WCLIB or WWPA grade stamp.
   2. Pressure treated Douglas Fir shall bear AWPA Quality mark.
B. Wood Sheathing: Each panel shall be legibly identified as to type, grade and species by APA grade. If plies are spliced, the slope of the scarf shall not be steeper than 1:8. White pockets will not be permitted in face plies.

2.03 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Western Wood Products Association; WWPA or West Coast Lumber Inspection Bureau; WCLIB.
B. Sizes: Size to conform to rules of governing standard. Sizes shown are nominal unless otherwise noted.
C. Materials:
   1. Dimensional Lumber and Timbers:
      a. Maximum Moisture Content at Initial Use: As indicated on the Drawings
      b. Species: As indicated on the Drawings.
      c. Grade: As indicated on the Drawings.
D. Maximum Moisture Content “at Initial Use” shall be that point at which nails, screws, bolts, split rings, shear plates or other fasteners or the holes for said fasteners are placed in the wood.
E. All dimension lumber is assumed to be enclosed in the dry building envelope in the final service condition, unless noted otherwise, and free to dry to moisture content less than 19%.
F. All studs, plates, joists, rafters and beams 3x and thicker shall be free of heart center in accordance with the specified grading standards.

2.04 DIMENSION LUMBER FOR EXPOSED EXTERIOR APPLICATIONS

A. Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.
B. Sizes: Size to conform to rules of governing standard. Sizes shown are nominal unless otherwise noted.
C. Materials:
   1. Dimensional Lumber and Timbers:
      a. Maximum Moisture Content at Initial Use: As indicated on the Drawings.
      b. Species: As indicated on the Drawings.
      c. Grade: As indicated on the Drawings.
D. All studs, plates, joists, rafters and beams 3x and thicker shall be free of heart center in accordance with the specified grading standards.

2.05 SHOP-FABRICATED STRUCTURAL WOOD

A. At Contractor's option, shop-fabricated structural wood may be substituted for concealed dimension lumber and timbers.
B. Shop-fabricated structural wood: Factory fabricated beams, headers, and columns, of sizes and types indicated on drawings; structural capacity as published by manufacturer.
   1. Columns: Use laminated veneer lumber, laminated strand lumber, or parallel strand lumber with manufacturer's published modulus of elasticity, E: 1,800,000 psi, minimum.
   2. Beams: Use laminated veneer lumber, laminated strand lumber, or parallel strand lumber with manufacturer's published modulus of elasticity, E: 1,800,000 psi, minimum.
   3. Headers Not Longer Than 48 inches: Use laminated veneer lumber, laminated strand lumber, or parallel strand lumber.
   4. Products:
      a. Boise Cascade Company: www.bc.com.
      b. RedBuilt LLC: www.redbuilt.com.
      c. Weyerhaeuser Company: www.weyerhaeuser.com.
      d. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 WOOD SHEATHING

A. Floor Sheathing : PS 1 or PS 2 APA rated sheathing.
   1. Thickness and Type: As indicated on Drawings.
   2. Glue: Exterior
   3. Edges: Tongue and groove.
B. Roof Sheathing : PS 1 or PS 2, APA rated sheathing.
   1. Thickness and Type: As indicated on Drawings.
   2. Glue: Exterior
   3. Edges: Square.
C. Wall Sheathing : PS 1 or PS 2, APA rated sheathing.
   1. Thickness and Type: As indicated on Drawings.
   2. Glue: Exterior
   3. Edges: Square.
D. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
E. Other Applications:
   1. Where indicated on the Architectural Drawings as interior wall backing behind tile and in all toilet rooms behind sheet rock, to be C-C APA rated sheathing with exterior glue. Thickness shall be 5/8-inch at all locations.
   2. Flooring: C-C APA Performance rated tongue and groove with exterior glue. Thickness type and grade shall be as indicated on the Drawings.
   3. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
   4. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
   5. Other Locations: PS 1, C-D Plugged or better.

2.07 ACCESSORIES

A. Rough Hardware Fastenings and Connections: All types including bolts, lag screws, nails, spikes, screws, washers and other rough hardware, of kinds that may be purchased and that require no further fabrication, shall be furnished and installed for all finish and rough carpentry and shall conform to NDS Standards and dimensions. All hardware exposed to weather shall be hot-dipped galvanized per ASTM A153 Standards. All nails used into pressure treated lumber shall be hot-dipped galvanized per ASTM A153 or stainless steel.
   1. Common wire nails or spikes shall be used unless noted otherwise on the Drawings. Box nails and sinker nails are not permitted. Vinyl coating is permitted on nails when not exposed to weather. Nails and staples shall conform to the requirements of the CBC.
   2. Bolts: Bolt material shall conform to ASTM A307, Grade A. Bolt dimensions shall conform to ANSI/ASME B18.2.1 with hex head of sizes indicated.

3. Lag Screws: Lag screws shall conform to ASTM 307, Grade A. All lag screws shall have hex heads where exposed.
4. Washers: Standard flat washers shall conform to ANSI B18.22.1, Type A, Wide Pattern. Steel plate washers shall be Simpson BP or BPS or equivalent. Malleable iron washers shall be standard malleable iron washers.
5. Power-Actuated Fasteners: Tempered steel pins with special corrosive resistant plating or coating. Pins shall have guide washers to accurately control penetration. Fastening shall be accomplished by low-velocity piston-driven power activated tool. Pins and tool shall be as manufactured by Hilti Fastening Systems or equivalent. See Drawings for size, type and embedment.
6. Expansion Anchors: See Section 03 30 00 for anchors to concrete and Section 04 20 00 for anchors to masonry.
7. Adhesive Anchors: See Section 03 30 00 for anchors to concrete and Section 04 20 00 for anchors to masonry.
8. Fabricated Metal Timber Framing Connectors: Connectors shall be punched for nailing and bolting. Nails and nailing shall conform to the manufacturer's instructions with a nail provided for each punched hole. All connectors must have specific ICC approval. Types as noted on Drawings are Simpson Strong-Tie. Hardware suppliers other than Simpson shall submit a comparative material list itemizing product designation, load rating and supported member size for review by the enforcement agency and the Structural Engineer.
    a. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653.
9. Steel Connections and Brackets: ASTM A36 weldable quality, galvanize per ASTM A123 or ASTM A666, Type 304 stainless steel where indicated on the Drawings.
    a. Fabricate steel hardware and connections with joints neatly fitted, welded, and ground smooth
    b. Welding: Perform welding in accordance with AWS D1.1.
10. Anchor Bolts: ASTM F3125, Type 1 heavy hex high strength bolts and ASTM A563 nuts; hot-dip galvanized to meet requirements of ASTM A153, matching washers.

B. Building Paper: Fed. Spec. UU-B-790a, Type I, Grade B (15 lb. min. unless noted elsewhere).
C. Subfloor Adhesives: Gap-filling construction adhesive for bonding wood structural panels to wood-based floor system framing; complying with ASTM D3498.
D. General Purpose Construction Adhesives: Comply with ASTM C557.
E. Radiant Barrier: Aluminum radiant barrier; designed for factory laminating to roof sheathing.
    1. Products:
        a. Louisiana-Pacific Corporation; TechShield: www.lpcorp.com/#sle.
        b. Substitutions: See Section 01 60 00 - Product Requirements.

2.08 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
    1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
    2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
B. Fire Retardant Treatment:
    1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
        a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
        b. Treat exterior rough carpentry items.

c. Treat exposed exterior rough carpentry items, including stairways, balconies, and covered walkways
d. Do not use treated wood in direct contact with the ground.

2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
   a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
   b. Interior rough carpentry items are to be fire retardant treated.
   c. Treat rough carpentry items as indicated.
   d. Do not use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:
1. All wood in contact with concrete or masonry shall be preservative treated.
2. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
   a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
3. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
   a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
4. Preservative Pressure Treatment of Lumber in Contact with Soil: AWPA U1, Use Category UC4A, Commodity Specification A using waterborne preservative.
   a. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.
   b. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.

PART 3 - EXECUTION

3.01 PREPARATION

A. Inspection:
1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly proceed.
2. Verify that rough carpentry may be performed in strict accordance with the original design and all pertinent codes and regulations.

B. Discrepancies: In the event of discrepancy, immediately notify Architect. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Protect all work in progress and all work installed, as well as the work of all other trades. Any work damaged as a result of the work under this section shall be corrected to its original condition or replaced if directed by the Architect at no increase in cost to the Owner.

B. Ventilation: Contractor shall include all labor and materials necessary to provide ventilation requirements of roof overhangs, eaves, attics, and all other components of the building required by codes to be ventilated. Work shall include removing knock-outs in wood I-joists for cross ventilation, drilling of blocking, wood sheathing, and other wooden components of the structure necessary to comply with requirements of the CBC for ventilation of buildings.

C. Select material sizes to minimize waste.

D. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

E. General: All rough carpentry shall produce joints true, tight, and well nailed with all members assembled in accordance with the Drawings and with all pertinent codes and regulations.

F. Selection of Lumber Pieces: Carefully select all members. Select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing or making proper connections. Cut out and discard all defects which will render a piece unable to serve its intended function.
G. Lumber may be rejected by the Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.
H. Shimming: do not shim any framing component.
I. Care shall be taken that notching and boring of members is in strict conformance with the Drawings and that there are no over-cuts.
J. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 INSTALLATION - FRAMING AND ROUGH CARPENTY

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
C. Sills: Shall be in long lengths of sizes shown, fastened with anchor bolts as indicated, a minimum of two anchor bolts per piece. Place steel plate washers (but not standard flat or malleable iron washers) under nuts bearing on wood. Set sills level and true.
D. Studs, Posts and Columns: Shall be full length. Corners shall be as detailed. Partitions or walls containing plumbing, heating or other piping shall be so formed as to give proper clearance for materials. Cut members as required to provide full bearing at ends. Connect to structure as indicated.
E. Plates: Shall be full length of wall segment or 12-foot minimum and spliced as shown.
F. Joists and Beams: Shall be full span length and spliced over bearings unless shown otherwise. Install with crown side up. Beams or headers indicated to be built up of two or more joists shall be fabricated on the job using full length members. For two piece 2x members, stitch nail pieces together with 16d common nails spaced not over 12 inches c.c. and staggered. Clinch nails protruding through members. For three or more piece members, stitch bolt pieces together with ½" bolts spaced not over 12 inches c.c. and staggered.
    1. Provide double joists and headers at all openings through roof unless otherwise shown on Drawings.
    2. Provide typical headers at all openings through walls where one or more studs are required to be cut. For penetration through walls narrower than stud spacing, provide solid blocking on all sides for fastening finish materials.

3.04 INSTALLATION - BLOCKING, NAILERS, AND SUPPORTS

A. Blocking: Blocking shall be same thickness and width of studs or joists unless shown otherwise. Blocking shall not be spaced over 8'-0" c.c. Install fire blocking in accordance with CBC. Horizontal fire blocking in walls shall be placed at floor lines and ceiling lines unless noted otherwise. Install blocking at all sheathing joints where noted on the Drawings. Install wall width full height solid blocking at floor joists beneath all posts in walls. Blocking shall be installed around all wall, floor and roof penetrations.
B. Provide the following specific nonstructural framing and blocking:
    1. Cabinets and shelf supports.
    2. Wall brackets.
    3. Handrails.
    4. Grab bars.
    5. Towel and bath accessories.
    6. Wall-mounted door stops.
    7. Chalkboards and marker boards.
    8. Wall paneling and trim.
    9. Joints of rigid wall coverings that occur between studs.

3.05 INSTALLATION - SHEATHING

A. Wood Sheathing: Install to pattern indicated and provide blocking at joints where noted on the Drawings. Center all joints over bearing supports. Nail to framing as indicated. Install wood sheathing with face plies perpendicular to joists unless indicated otherwise. Wall wood sheathing shall continue uninterrupted by ceilings or soffit from floor to floor or floor to roof unless specifically detailed on the Structural Drawings.

3.06 INSTALLATION - FASTENERS

A. Nailing: Except as otherwise indicated on Drawings or specified, all nailing shall be as required by CBC Table 2304.10.2 - Fastening Schedule.
   1. Nails or Spikes shall be common wire unless noted otherwise. Penetration of nails or spikes shall be one-half the length of the nail or spike into the piece receiving the point. However, to connect pieces 2" in thickness, 16d nails shall be used unless noted otherwise.
      a. Bore holes for nails wherever necessary to prevent splitting.
      b. Use finish or casing for finish work.
      c. Use of machine nailing is subject to a satisfactory installation of nails. Minimum edge distances shall be maintained. Nails installed through sheathing with nail guns shall not penetrate into the outer plies deeper than hand nailing. Submittal of guns and nails is required.
      d. All nailing into Pressure-Treated lumber shall utilize hot-dipped zinc coated galvanized nails or stainless steel nails per CBC.

B. Bolts and Lag Screws: Bolts shall be sizes indicated on Drawings. Holes for bolts shall be 1/16-inch larger than the bolt diameter. Malleable, Steel plate or standard flat washers shall be used where heads or nuts would otherwise bear directly on wood surfaces. Malleable or plate washers shall be used on all anchor bolts. Cut washers are not permitted. Lag screws shall be screwed (not driven) into place. For the shank, holes shall be bored the same depth and diameter as shank. For threaded portion, holes shall be pre-drilled to 50% of the shank diameter, except as follows:
   1. 7/8” Diameter Lag Screw: Pre-Drill 1/2” diameter hole.
   2. 1” Diameter Lag Screw: Pre-Drill 5/8” diameter hole.
   3. Soap Lag screws prior to installation.
   4. Tighten all bolts and screws before closing in.

C. Framing Devices: Install according to the manufacturer’s instructions unless otherwise noted.

3.07 INSTALLATION, MISCELLANEOUS

A. Install all items under other sections specified to be furnished and installed in other sections which relate to the rough carpentry work.

B. Miscellaneous Carpentry Work not included under other sections but, indicated or required yet not specified elsewhere shall be furnished and installed hereunder, including appropriate fastening devices. Contractor shall provide miscellaneous carpentry work for all sections and divisions of work identified.

C. Wood Furring, Stripping: Install as shown or required to provide nailing materials or passage of pipes, conduits, etc., not otherwise accommodated including ceiling stripping for gypsum drywall construction.

D. Bridging: Space not over 8'-0" c.c. for spans over 16'-0". Joists 8 inches or less in depth shall not require bridging unless specifically indicated.

E. Solid Wood Backing: Solid wood backing shall be provided for all wall and ceiling finishes and for supporting of mounted items for all trades, including but not limited to metal toilet partitions, toilet room accessories, frames, cabinets, casework, mirrors, trim, applied wall finishes, athletic equipment, food service equipment, piping, conduit, ducts, etc. Contractor shall coordinate placement of backing and supports with Subcontractor supplying mounted items.

F. Building Paper: Install in all locations indicated except where included in other sections of the specifications.

G. Cant Strips and Crickets: Shape to sizes shown. Rigidly fasten to construction. Form neat mitered corners.

H. Wood Sheathing Backing: All toilet rooms, restrooms, single or joint occupancy shall have all walls backed with 5/8-inch thick wood sheathing with no surface voids. Install sheathing between the

framing members and wallboard. The same wood sheathing shall also be provided and installed at all tile locations. At tile locations wood sheathing shall be installed between the framing members and the resin-cement backing board.

I. Wood Curbs for Equipment: Construct all wood curbs for roof mounted equipment as detailed. Provide all miscellaneous blocking, bracing, supports, and other wood items as shown or required to complete the work.

J. Plywood Backing for Electrical, telephone, and similar types of wall mounted equipment shall be provided hereunder where required. Plywood shall be 3/4-inch thick exterior A-C plywood with 'A' face exposed.

K. Fire/Draft Stops: Construct fire and drafts stops in furred attic spaces where indicated or required by CBC code. Unless otherwise indicated on Drawings construct of not less than 5/8-inch Type 'X' gypsum wallboard or ½" wood sheathing, adequately supported by 2x4's at 24 inches c.c., braced diagonally to the roof structure. Draft stop and installation work shall conform to code requirements.

L. Shoring and Bracing: Shore or brace for temporary support of all work as required during the construction period except any shoring and bracing specified and included under other sections of these specifications.

Temporary Enclosures: Provide and maintain all barricades and enclosures required to protect the work in progress.

M. Protect all work in progress and all work installed, as well as the work of all other trades. Any work damaged as a result of the work under this section shall be corrected to its original condition or replaced if directed by the Architect at no increase in cost to the Owner.

N. Ventilation: Contractor shall include all labor and materials necessary to provide ventilation requirements of roof overhangs, eaves, attics, and all other components of the building required by codes to be ventilated. Work shall include removing knock-outs in wood I-joists for cross ventilation, drilling of blocking, wood sheathing, and other wooden components of the structure necessary to comply with requirements of the CBC for ventilation of buildings.

3.08 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

B. Allow preservative to dry prior to erecting members.

3.09 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.10 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

3.11 CLEANING

A. Waste Disposal: See Section 01 74 19 - Construction Waste Management and Disposal.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

3.12 SCHEDULES

A. Lower Level Floor Joists: MSR Lumber.

B. Upper Level Floor and Ceiling Joists, Rafters: Spruce-Pine-Fir, No. 2 Grade.

C. Exposed Beams: Western Cedar, Select Structural Grade.

END OF SECTION

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06 17 00
SHOP-FABRICATED STRUCTURAL WOOD
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Shop-fabricated structural wood (SFSW).
B. All blocking, bridging, etc., for the installation of members.
C. Clips, angles, straps, hangers, etc., incidental to installation of members.
D. Nails, bolts, washers and other fasteners used for erecting and securing members.

1.03 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 06 10 00 – Rough Carpentry.
C. Section 06 17 13 – Wood I-Joists.
D. Section 06 17 53 – Shop-Fabricated Wood Trusses.
E. Section 06 18 00 – Glued-Laminated Construction

1.04 REFERENCE STANDARDS

A. AITC 117 - Standard Specifications for Structural Glued Laminated Timber of Softwood Species.
B. AITC A190.1 - American National Standard for Wood Products - Structural Glued Laminated Timber.
C. ASTM D2559 - Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions.
D. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
F. AWPA U1 - Use Category System: User Specification for Treated Wood.
G. AWS B2.1 - Specification for Welding Procedure and Performance Qualification.
H. AWS D1.1 - Structural Welding Code - Steel.
I. FM (AG) - FM Approval Guide Current Edition.
J. NDS – National Design Specification for Wood Construction
K. SDPWS - Special Design Provisions for Wind & Seismic
L. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber.
M. UL (DIR) - Online Certifications Directory Current Edition.
N. UL (FRD) - Fire Resistance Directory Current Edition.
O. WCLIB - Standard Grading Rules for West Coast Lumber No. 17.
P. WWPA - Western Lumber Grading Rules.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide technical data on wood preservative materials, application technique and resultant performance information.
C. Shop Drawings: Indicate framing system, sizes and spacing of members, loads and cambers, bearing and anchor details, bridging and bracing, and framed openings.
    1. Show large scale details of connections, connectors and other accessories.
    2. Indicate species and laminating combination, adhesive type, and other variables in required work.
D. Manufacturer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturing facility shall be approved by an independent inspection agency approved by the International Accreditation Service, Inc. (IAS).
B. Each Shop-fabricated structural wood member shall be stamped with an identifying mark. Mark shall include all pertinent data, such as grade and species of lumber, plant number, independent inspection agency, logo, ICC ES report number and other such information as may be required.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver undamaged products to site in manufacturer's protective wrappings with legends intact. Store on site secure from weather, soil and physical damage.
B. Transport, handle and store in strict accordance with the manufacturer's recommendations. Use padded, non-marring slings.
C. Architectural Appearance Grade members shall be shipped, handled and stored with complete weather and damage protection wrapping. Maintain wrappings in place until immediately prior to deck installation.
D. Industrial Appearance Shop-fabricated structural wood members shall be wrapped in a water resistant covering during transit. Contractor shall be responsible for protection during hauling and unloading at job site.
E. If members must be stored prior to erection, they shall be stored in a vertical position off the ground, covered and protected from weather.
F. Protect members to AITC requirements for not wrapped.
G. Leave individual wrapping in place until finishing occurs.
H. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 - PRODUCTS

2.01 SHOP-FABRICATED STRUCTURAL WOOD (SFSW)

A. SFSW members shall be of the types and sizes indicated on Drawings and as specified here. Shop-fabricated structural wood shall have specific ICC approval, and shall meet all specified structural design properties. Proposed SFSW members may be used only if equivalent, in the Architect's opinion, to the SFSW specified.

2.02 MATERIALS

A. Lumber:
   1. Laminated Veneer Lumber (LVL): LVL shall be manufactured in accordance with the manufacturer’s ICC-ES Report and have properties equal to or greater than as specified on the Drawings. Lumber species, thickness, etc. shall be such that the nailing capacity is equal to or better than that specified.
   2. Parallel Strand Lumber (PSL): PSL shall be manufactured in accordance with the manufacturer’s ICC-ES Report and have properties equal to or greater than as specified on the Drawings. Lumber species, thickness, etc. shall be such that the nailing capacity is equal to or better than that specified.
   3. Laminated Strand Lumber (LSL): LSL shall be manufactured in accordance with the manufacturer’s ICC-ES Report and have properties equal to or greater than as specified on the Drawings. Lumber species, thickness, etc. shall be such that the nailing capacity is equal to or better than that specified.
   4. Various SFSW products shall only be used where specifically indicated on the Drawings. No substitutions shall be made without written approval.
B. Adhesive:
   1. According to manufacturers ICC ES Report.
C. Types:
   1. Sizes, properties and additional information as shown on the Drawings.
D. Laminating Adhesive: Tested for wet/exterior service in accordance with ASTM D2559.

2.03 FABRICATION

A. Fabrication shall be in compliance with manufacturer’s ICC ES Report.
   1. Fabrication shall be in accordance with best practices with adequate plant equipment and under supervision of properly qualified personnel.
   2. Moisture content of components at time of gluing shall comply with the manufacturer’s ICC ES Report.
B. Boring of holes in members shall be in strict conformance with the Drawings. Notching is prohibited except where specifically detailed.

C. Verify dimensions and site conditions prior to fabrication.
D. Cut and fit members accurately to length to achieve tight joint fit.
E. Field cuts and holes in preservative treated members shall be preservative treated and sealed.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of the work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
B. Verify that specified items may be installed in accordance with the approved design.
C. In the event of a discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 PROTECTION

A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.04 HANDLING

A. Use equipment and methods that avoid damages that may impair strength of SFSW members. Sharp instruments and unprotected wire rope, chain slings and the like shall not be permitted.

3.05 ERECTION

A. Shop-fabricated structural wood members are to be erected and installed in accordance with the Drawings and manufacturer's recommendations.
B. Set structural members level and plumb, in correct positions or sloped where indicated.
C. Provide temporary bracing and anchorage to hold members in place until permanently secured.
D. Fit members together accurately without trimming, cutting, splicing, or other unauthorized modification.
E. Swab and seal the interior wood surfaces of field drilled holes in members with primer.

3.06 TOLERANCES

A. Framing Members: 1/2 inch maximum from true position.

3.07 CLEANUP

A. Keep premises free from accumulated waste materials, rubbish and debris resulting from this work. Upon completion, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said Work, and legally dispose of off the site.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Wood I-joists for roof and floor framing.
B. Bridging, bracing, and anchorage.
C. Framing for openings.
D. Preservative treatment of wood.

1.03 RELATED REQUIREMENTS

A. Section 05 12 00 – Structural Steel Framing
B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
C. Section 06 10 00 - Rough Carpentry
D. Section 06 17 00 – Shop-Fabricated Structural Wood
E. Section 06 17 36 – Metal-Web Wood Joists
F. Section 06 17 53 – Shop-Fabricated Wood Trusses
G. Section 06 18 00 – Glued-Laminated Construction

1.04 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
    1. ASTM D2559 - Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions.
    2. ASTM D5055 - Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists.
    3. AWPA U1 - Use Category System: User Specification for Treated Wood.
    4. PS 1 - Structural Plywood.
    5. PS 2 - Performance Standard for Wood Structural Panels.

1.05 DESIGN REQUIREMENTS

A. As indicated on the Drawings.

1.06 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's literature describing materials, dimensions, allowable spans and spacings, bearing and anchor details, bridging and bracing requirements, and installation instructions; identify independent inspection agency.
C. Shop Drawings: Where indicated on Drawings, show erection plans, sizes, types, and location of wood I-joists. Drawings shall also indicate sizes and location of blocking, hangers, etc., with sufficient detailing to ensure correct installation.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
B. Manufacturing facility shall be approved by an independent inspection agency approved by the International Accreditation Service, Inc. (IAS).
C. All joists shall bear a stamp indicating the plant number, independent inspection agency, logo and ICC ES Report number.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in manufacturer's original packaging with manufacturer's name and product identification intact and legible.
B. Protect products from damage due to weather and breakage.
C. Protect joists from warping or other distortion by stacking in upright position, braced to resist movement, with air circulation under coverings and around stacks.
D. Handle individual joists in the upright position.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Wood I-Joists:
   1. Boise Cascade Company: www.bc.com/#sle.
   2. RedBuilt LLC; Redbuilt I-Joist: www.redbuilt.com//#sle.
   3. Weyerhaeuser Company: www.weyerhaeuser.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

A. Wood I-Joists: Solid lumber top and bottom flanges and oriented strand board (OSB) webs bonded together with structural adhesive, with published span rating to meet project requirements.
   1. Span Rating: Established and monitored in accordance with ASTM D5055 by independent inspection agency.
   2. Oriented Strand Board: Comply with PS 2.
   3. Plywood: Comply with PS 1.
   4. Adhesive: Tested for wet/exterior service in accordance with ASTM D2559 and as indicated in the manufacturer's ICC ES Report.
   5. Depth: As indicated on Drawings.
   6. Fabrication Tolerances: Shall be in compliance with manufacturer's ICC ES Report.
   7. Marking: Mark each piece with depth, joist spacing, and allowable span for joist spacing.
   8. Provide bearing stiffeners if required by span rating or joist hanger manufacturer.
B. Joist Hangers: As indicated on the Drawings.
C. Joist Bridging: Type, size and spacing recommended by joist manufacturer or as indicated on the Drawings.
D. Wood Blocking, Plates, and Miscellaneous Framing: As specified in Section 06 10 00 or 06 17 00.
E. Fasteners: Electrogalvanized steel, type to suit application.
F. Bearing Plates: Electrogalvanized steel, unfinished.

2.03 WOOD TREATMENT

A. Factory-Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
B. Surface-Applied Wood Preservative: As specified in Section 06 10 00.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that supports and openings are ready to receive joists.
B. Verify that field measurements are as indicated on the Drawings.
C. Verify that items are installed in accordance with the approved Drawings.
D. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 PROTECTION AND HANDLING

A. Protect work and materials of this Section during installation, and protect the installed work and materials of other trades.
B. Use equipment and methods that avoid damages that may impair strength of wood I-joists. Sharp instruments and unprotected wire rope, chain slings and the like shall not be permitted.

3.04 ERECTION

A. Install joists in accordance with the Drawings and manufacturer's instructions.
B. Set structural members level and plumb, in correct position.
C. Make provisions for erection loads and for sufficient temporary bracing to maintain structure plumb and in true alignment until completion of erection and installation of permanent bracing.
D. Do not field cut or alter structural members without approval of Architect.
E. Install permanent bridging and bracing.
F. Install headers and supports to frame openings required.
G. Frame openings between joists with lumber in accordance with Section 06 10 00.
H. Coordinate installation of sheathing/decking with work of this section.

3.05 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment in accordance with manufacturer's instructions.
B. Brush apply one coat of preservative treatment on wood in contact with cementitious materials and roofing and related metal flashings. Treat site-sawn cuts.
C. Allow preservative to dry prior to erecting members.

3.06 TOLERANCES

A. Framing Members: 1/2 inch maximum, from true position.

3.07 CLEANUP

A. Keep premises free from accumulated waste materials, rubbish and debris resulting from this Work. Upon completion, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said Work, and legally dispose of off the site.

END OF SECTION

06 17 53
SHOP-FABRICATED WOOD TRUSSES
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Shop-fabricated wood trusses.
B. Truss bridging.
C. Fire-retardant treatment of wood.
D. Preservative treatment of wood.

1.03 SCOPE

A. Furnish all material, equipment and labor necessary for the prefabrication, delivery and temporary setting of the wood trusses on plate line as shown on the drawings. It shall also include all the miscellaneous parts, including bridging, temporary and permanent bracing, and all related items of hardware.

1.04 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 06 10 00 - Rough Carpentry.
C. Section 06 17 00 – Shop-Fabricated Structural Wood
D. Section 06 18 00 – Glued-Laminated Construction.

1.05 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
    1. ANSI/TPI 1 - National Design Standard for Metal-Plate-Connected Wood Truss Construction.
    2. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
    3. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
    4. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
    5. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
    6. AWPA U1 - Use Category System: User Specification for Treated Wood.
    7. NDS – National Design Specification for Wood Construction
    8. SDPWS - Special Design Provisions for Wind & Seismic
    9. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber.
    10. SBCA (BCSI) - Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses.
    11. TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses.
    12. WCLIB - Standard Grading Rules for West Coast Lumber No. 17.
    13. WWPA - Western Lumber Grading Rules.

1.06 DESIGN REQUIREMENTS

A. As indicated on the Drawings.

1.07 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, bridging and bracing requirements, and metal bracing components.

C. Shop Drawings: Submit shop drawings prior to fabrication or erection. Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
   1. Include identification of engineering software used for design.
   2. Provide shop drawings stamped or sealed by design engineer.
   3. Structural calculations proving capacity to carry the loads shown on the drawings. Calculations shall be signed by a Professional Engineer registered in the State in which the Project is located
D. Designer's Qualification Statement.
E. Fabricator's Qualification Statement.

1.08 QUALITY ASSURANCE

A. Designer Qualifications: Perform design by or under direct supervision of a Professional Engineer experienced in design of this Work and licensed in the State in which the Project is located.
B. Fabricator Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
C. All trusses shall be marked with the manufacturers name and truss type keyed to the erection plans.
D. All connector plates shall be marked with the manufacturer's name.
E. All trusses shall bear TPI Quality Control marks.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Handle trusses in accordance with SBCA (BCSI).
B. Store trusses in vertical position resting on bearing ends.
C. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying work of other trades whose work must follow erection of trusses.
D. Fire-Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 - PRODUCTS

2.01 TRUSSES

A. Wood Trusses: Design and fabricate trusses in accordance with ANSI/TPI 1 and to achieve specified design requirements indicated.
   1. Design and fabricate temporary bracing in accordance with TPI DSB-89.
   2. Structural Design:
      a. Comply with applicable code for structural loading criteria.
      b. Design shall account for all loads indicated and all mechanical units in conformance with the referenced codes.
      c. Design and construction of connections shall be in accordance with published approvals by ICC. Heel joint design shall consider the effects of eccentric loading.
      d. Truss layout shall be as shown on the Structural Drawings. Do not deviate without obtaining written approval from the Structural Engineer prior to preparing shop drawings.
      e. Design Trusses in accordance with the design loads and criteria as indicated on the Drawings.
   3. Fire Retardance: Comply with applicable codes.
   4. Decay Resistance: Factory preservative-treated wood.

2.02 MATERIALS

A. Lumber:
   1. Species and Grade: Douglas Fir, WWPA Grade No. 2 and better.
   2. Moisture Content: The moisture content of all lumber shall not exceed 19% nor be less than 7% at the time of fabrication.
B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653 Structural Steel (SS) Grade 33, with G90 coating; die stamped with integral teeth; thickness shall be 20 gauge minimum.
   1. ASTM A666, Type 304 stainless steel sheet may be used in lieu of Hot-dipped galvanized steel sheet.
C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.03 ACCESSORIES

A. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: As specified in Section 06 10 00.
B. Fasteners: Electrogalvanized steel, type to suit application.
C. Bearing Plates: Electrogalvanized steel.

2.04 WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
B. Fire-Retardant Treatment, Exterior Type: AWPA U1, Use Category UCFB, Commodity Specification H, chemically treated and pressure impregnated, maximum flame spread index of 25 when tested in accordance with ASTM E84 and with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898; kiln dried after treatment to maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    1. Marking: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
C. Fire-Retardant Treatment, Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated, maximum flame spread index of 25 when tested in accordance with ASTM E84 and with no evidence of significant combustion when test is extended for an additional 20 minutes; kiln dried after treatment to maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    1. Marking: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
D. Preservative Pressure Treatment of Lumber: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
    1. Kiln dry after treatment to maximum moisture content of 19 percent.
    2. Marking: Mark each piece with stamp of an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
E. Preservative Pressure Treatment of Plywood: AWPA U1, Use Category UC3B using waterborne preservative to 0.25 lb/cu ft retention.
    1. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
    2. Marking: Mark each piece with stamp of an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
F. Surface-Applied Wood Preservative: As specified in Section 06 10 00.

2.05 FABRICATION

A. All items specified to be fabricated hereunder shall be accurately cut or fitted, and rigidly fastened to produce quality trusses in accordance with designs and criteria contained in these specifications and the Structural Drawings.
B. Cut truss members to accurate lengths, angles and sizes to produce close fitting joints with proper wood-to-wood bearing in assembled units.
C. Fabricate metal connector plates to proper size, configuration, thickness and anchorage details required for types of joint designs indicated.
D. Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly with close fitting joints. Position members to produce design camber as required.
E. Truss designer shall oversize connector plates for chord members to account for wood defects like knots, knotholes and greatly distorted grains. Maximum allowable defect size per member shall be 2 square inches. No defects allowed under plates for web members.
F. Built up girder trusses shall be laminated. Laminating requirements shall be according to the Structural Drawings.
G. Gable end trusses shall be 2x verticals at 16" cc typical unless noted otherwise.
H. All hardware required for connecting trusses (Truss to bearing wall or beam, Jack to Hip, Hip to Girder, or Girder to Girder, etc.) shall be designed, detailed and provided by truss fabricator.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated on the Drawings.
B. Verify that supports and openings are ready to receive trusses.
C. In the event of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 PROTECTION

A. Protect work and materials of this Section during installation, and protect the installed work and materials of other trades.
B. In the event of damage, make all repairs and replacement necessary to the approval of the Architect at no additional cost to the Owner.

3.04 ERECTION

A. Hoist units in place by means of proper lifting equipment suited to sizes and types of trusses required, applied at proper lift points as recommended by Fabricator, exercising care not to damage truss members or joints by out-of-place bending or other causes.
B. Install trusses in accordance with manufacturer's instructions, SBCA (BCSI); maintain a copy of applicable documents on site until installation is complete.
C. Erect trusses with planes of truss webs vertical (plumb) and parallel to each other, locate accurately at design spacings indicated.
D. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.
E. Do not field-cut, alter structural members, or remove trusses without approval of the Architect and the Structural Engineer of Record.
F. Install permanent bracing, end pieces, blocking and related components to enable trusses to maintain design spacing, withstand live and dead loads including lateral loads, and to comply with other indicated requirements.
G. Anchor trusses securely at all bearing points to comply with methods and details indicated.
H. Install headers and supports to frame openings required.
I. Frame openings between trusses with lumber in accordance with Section 06 10 00.
J. Coordinate placement of decking with work of this section.
K. After erection, touch-up primed surfaces with primer consistent with shop coat.

3.05 SITE-APPLIED WOOD TREATMENT

A. Treat all site-sawn cuts of pressure-treated wood using same type of treatment (i.e. preservative or fire-retardant).
B. Apply preservative treatment to non-pressure-treated wood wherever it will come into contact with cementitious materials, roofing, asphaltic materials, or metals.
C. Apply fire-retardant treatment to all exposed surfaces after erection where required.
D. Apply treatment in accordance with manufacturer's instructions.
E. Allow field-applied treatment to dry prior to erecting members.

3.06 TOLERANCES

A. Framing Members: 1/2 inch maximum, from true position.

3.07 CLEANUP

A. A. Keep premises free from accumulated waste materials, rubbish and debris resulting from this work. Upon completion, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said Work, and legally dispose of off the site.

END OF SECTION

06 18 00
GLUED-LAMINATED CONSTRUCTION
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

A. Glue laminated wood beams and purlins.
B. Preservative treatment of wood.
C. Fire retardant treatment of wood.

1.03 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 06 10 00 – Rough Carpentry.
C. Section 06 17 00 – Shop-Fabricated Structural Wood
D. Section 06 17 13 – Wood I-Joists.
E. Section 06 17 53 – Shop-Fabricated Wood Trusses.

1.04 REFERENCE STANDARDS

A. Utilize the edition of the listed document as identified in the “Design Criteria Notes” in the structural drawings. If not listed in the “Design Criteria Notes”, use the edition adopted or referenced by the listed governing building code or material standard. If no specific edition is adopted, use the latest edition.
    1. AITC 117 - Standard Specifications for Structural Glued Laminated Timber of Softwood Species.
    2. AITC A190.1 - American National Standard for Wood Products - Structural Glued Laminated Timber.
    3. ASTM D2559 - Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions.
    4. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
    5. ASTM D3737 - Standard Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam).
    6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
    7. AWPA U1 - Use Category System: User Specification for Treated Wood.
    8. FM (AG) - FM Approval Guide Current Edition.
    9. NDS – National Design Specification for Wood Construction
    10. SDPWS - Special Design Provisions for Wind & Seismic
    11. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber.
    12. UL (DIR) - Online Certifications Directory Current Edition.
    13. UL (FRD) - Fire Resistance Directory Current Edition.
    14. WCLIB - Standard Grading Rules for West Coast Lumber No. 17.
    15. WWPA - Western Lumber Grading Rules.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide technical data on wood preservative materials, application technique and resultant performance information.
C. Shop Drawings: Indicate framing system, sizes and spacing of members, loads and cambers, bearing and anchor details, bridging and bracing, and framed openings.
    1. Show large scale details of connections, connectors and other accessories.
    2. Indicate species and laminating combination, adhesive type, and other variables in required work.
D. Manufacturer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer/Fabricator Qualifications: Company specializing in manufacture of glue laminated structural units with three years of documented experience and certified by AITC in accordance with AITC A190.1.
B. Each structural glued-laminated member shall be stamped with an identifying mark. Mark shall include all pertinent data, such as grade and species of lumber, type of glue, extremes of moisture content and other such information as may be required.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver undamaged products to site in manufacturer's protective wrappings with legends intact. Store on site secure from weather, soil and physical damage.
B. Transport, handle and store in strict accordance with the manufacturer's recommendations. Use padded, non-marring slings.
C. Architectural Appearance Grade members shall be shipped, handled and stored with complete weather and damage protection wrapping. Maintain wrappings in place until immediately prior to deck installation.
D. Industrial Appearance Grade glued laminated timber members shall be wrapped in a water resistant covering during transit. Contractor shall be responsible for protection during hauling and unloading at job site.
E. Protect members to AITC requirements for not wrapped.
F. Leave individual wrapping in place until finishing occurs.
G. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 - PRODUCTS

2.01 GLUED-LAMINATED UNITS

A. Glued-Laminated Units: Fabricate in accordance with AITC 117 Industrial grade.
   1. Verify dimensions and site conditions prior to fabrication.
   2. Cut and fit members accurately to length to achieve tight joint fit.
   3. Fabricate member with camber built in.
   4. Do not splice or join members in locations other than those indicated without permission from the Architect and Structural Engineer of Record.
   5. After end trimming, seal with penetrating sealer in accordance with AITC requirements.

2.02 MATERIALS

A. Lumber:
   1. Lumber used for laminating structural members shall be well manufactured and shall conform to requirements of WCLIB Standard Grading and Dressing Rules No. 17, or WWPA - Western Lumber Grading Rules. Such lumber shall be inspected, identified by individual piece, and certified as meeting requirements of said standard specifications by an approved lumber grading agency. It is assumed that each lamination is graded on basis of requirement for nominal size of individual lamination. When lumber is resawn, it shall be regraded on basis of new size.
B. Type: Glued Laminated Timber Protected from Weather
   1. Species: Douglas Fir or Western Larch
   2. Stress Grade: AITC Combination 24F-V4 for simple beams, 24F-V8 for cantilever or continuous beams.
   3. Extreme fiber bending - Fb = 2400 psi
   4. Adhesives: Wet use
   5. Appearance Grade: AITC Industrial for concealed uses, Architectural appearance at exposed uses.
   6. Preservative Treatment: Portions of beams exposed to weather shall be preservative treated.
   7. Laminations: Provide outer tension laminations or proof load testing as required by ANSI/AITC A190.1.
   8. Sealing: Shop seal all surfaces with 2 coats of clear penetrating sealer.
C. Type: Glued Laminated Timber Exposed to Weather

1. Species: Alaskan Yellow Cedar
2. Stress Grade: AITC Combination 20F-V12 for simple beams, 20F-V13 for cantilever or continuous beams.
3. Extreme fiber bending - Fb = 2000 psi
4. Adhesives: Wet use
5. Appearance Grade: Architectural
6. Laminations: Provide outer tension laminations or proof load testing as required by ANSI/AITC A190.1.
7. Sealing: Shop seal all surfaces with 2 coats of clear penetrating sealer.

D. Laminating Adhesive: Tested for wet/exterior service in accordance with ASTM D2559.

2.03 WOOD TREATMENT

A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.

B. Fire Retardant Treatment:
   1. Exterior Type: AWPA U1 Use Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; maximum flame spread index of 25 when tested in accordance with ASTM E84 and with no evidence of significant combustion when test is extended for an additional 30 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent prior to lamination.
   2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; maximum flame spread index of 25 when tested in accordance with ASTM E84 and with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent prior to lamination.
      b. Do not use treated wood in applications exposed to weather or where the wood may become wet.
   3. Marking: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   4. Products:
      a. Blaze FRT Chemicals by Viance, Inc. (ESR-2645)
      b. Pyro-Guard FRT by Hoover Treated Wood Products, inc. (ESR-1791)
      c. b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Preservative Pressure Treatment:
   1. Preservative Pressure Treatment of Glued-Laminated Structural Units: AWPA U1, Use Category UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry lumber after treatment and before lamination to maximum moisture content of 19 percent.
   2. Marking: Marked each piece with stamp of an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

D. Surface-Applied Wood Preservative: As specified in Section 06 10 00.

E. Shop treat wood materials in accordance with manufacturer's instructions.

2.04 FABRICATION

A. Fabricate glue laminated structural members in accordance with AITC Industrial grade.

B. Laminations shall be machine finished to a smooth surface, but not sanded, and to a uniform thickness with a maximum allowable variation of 1/64 inch. Warp, twist, or other characteristics which will prevent intimate contact of adjacent glued faces or interfere with uniform bending to a required curvature when under clamping pressure shall not be permitted. Surfaces to be glued shall be clean and free from oil, dust and other foreign material which would be detrimental to satisfactory gluing.

C. Moisture content of lumber at time of gluing shall be not less than 7 percent nor more than 12 percent.
D. Slips, misses, and wane are not permitted.
E. Boring of holes in members shall be in strict conformance with the Drawings. Notching is prohibited except where specifically detailed.
F. Verify dimensions and site conditions prior to fabrication.
G. Cut and fit members accurately to length to achieve tight joint fit.
H. Fabricate member with camber built in.
I. Do not splice or join members in locations other than those indicated without permission.
J. After end trimming, seal with penetrating sealer in accordance with AITC requirements.
K. Field cuts and holes in preservative treated members shall be preservative treated and sealed.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of the work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
B. Verify that specified items may be installed in accordance with the approved design.
C. In the event of a discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 PROTECTION

A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.04 ERECTION

A. Glued Laminated members are to be erected and installed in accordance with the Drawings and manufacturer's recommendations.
B. Lift members using protective straps to prevent visible damage.
C. Set structural members level and plumb, in correct positions or sloped where indicated.
D. Provide temporary bracing and anchorage to hold members in place until permanently secured.
E. Fit members together accurately without trimming, cutting, splicing, or other unauthorized modification.
F. Swab and seal the interior wood surfaces of field drilled holes in members with primer.

3.05 TOLERANCES

A. Framing Members: 1/2 inch maximum from true position.

3.06 CLEANUP

A. Keep premises free from accumulated waste materials, rubbish and debris resulting from this work. Upon completion, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said Work, and legally dispose of off the site.

END OF SECTION

SECTION 06 20 00 – FINISH CARPENTRY

PART 1 - **GENERAL**

1.01 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.
B. Coordinate the work of this Section with related trades.
C. Verify applicable dimensions at the jobsite.
D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:
    1. Finish and/or set required standard for all wood and plastic finishes not associated with other sections.
    2. Install casework and trim not associated with other sections.
    3. Provide such other incidental finished carpentry and materials required to complete the work.
    4. Furnish, install & finish:
        1. Interior
            1. Particle board
            2. Plastic Laminate Clad Architectural Cabinets; refer to Section 06 41 16

1.02 **REFERENCE STANDARDS**

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.
B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code
    1. Non-residential new construction
        a. All occupancy types
C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.
D. American National Standards Institute (ANSI), www.ansi.org
    1. ANSI A209.1 – 1999
    2. ANSI A208.2 - 2002
E. Forest Stewardship Council (FSC)
F. Underwriters Laboratory (UL)
    1. As herein listed
G. Woodwork Institute Manual of Millwork (W.I.), www.woodworkinstitute.com, and shall include the following:
    1. All references herein to Certification, bulletins, detailing, details, standards, etc are to the "Woodwork Institute" Manual of Millwork.
    2. Certified Compliance Program

1.03 **PERFORMANCE, TESTING AND INSPECTION**

A. **General:**
    1. Comply with manufacturer's standards.
    2. Comply with Building Code.
    3. Job site inspections shall be done as herein specified and as listed in drawings.

1.04 **SUBMITTALS**

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.
B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.
C. Refer to Division 1 for sustainability requirements
D. Submit Manufacturers data and shop drawings.
    1. Submit list of materials proposed to be used, including, but not limited to:
        a. Wood
        b. Wood finish material
        c. Fasteners
        d. Sealants
        e. Adhesives

1.05 **QUALITY ASSURANCE**

A. Refer to Division 1 for quality control requirements.
B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years. Providing / installing / finishing projects of similar size and complexity.
C. Manufacturer shall have been in business for **five (5)** years providing/installi**n**g/finishing projects of similar size and complexity.
D. Lead Time**s:**
    1. **General Contractor** shall coordinate with supplier to verify product lead times during bids and at award of contract, and account for such lead times in their costs and schedules.
    2. **General Contractor** shall provide an itemized list of materials which might have or are confirmed to have a lead time problem and what the anticipated lead time is.
    3. **General Contractor** shall certify in writing that all materials have acceptable lead times as they relate to availability for sub contractor and **General Contractor** to meet construction schedule and sequence of construction.
E. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid
F. Stipulations:
    1. All work shall be in compliance with W.I. standards and certified per W.I. guidelines.

1.06 **PRODUCT DELIVERY, STORAGE AND HANDLING**

A. Refer to Division 1 for product delivery, storage and handling requirements.
B. Do not deliver millwork to job until building is in proper condition and arrangements have been made to properly handle, store and protect such work.

1.07 **JOB CONDITIONS**

A. Field-verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.08 **PROTECTION**

A. Protect finish surfaces at all times from surfaces and material adjacent to them.
B. Finish work defaced with other materials on surface shall be replaced.
C. Protect work under this section from damage by other trades.

1.09 **GUARANTEE / WARRANTY**

A. Refer to Division 1 for closeout submittal procedures.
B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.
   1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 **RELATED WORK / SECTIONS**

A. Related work includes, but is not limited to the following:
   1. Electrical Wiring, Conduit and Accessories
   2. Low Voltage Wiring, Conduit and Accessories
B. Related Sections include, but are not limited to the following:
   1. Division 1
   2. Section 06 10 00 – Rough Carpentry
   3. Section 06 41 16 – Plastic Laminate Clad Architectural Cabinets
   4. Section 06 64 13 – Fiberglass Reinforced Plastic Wall Panels (FRP)
   5. Section 08 14 00 – Wood Doors

1.11 **OPERATION AND MAINTENANCE DATA**

A. Submit as part of project closeout:
   1. Complete instructions regarding maintenance of the materials, finishes, etc.
   2. Refer to Division 1 for closeout submittal procedures.

1.12 **SEQUENCING AND SCHEDULING**

A. Schedule work and sequence with **General Contractor**.
B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.
B. Acceptable manufacturers fabricator shall be one of the following and as herein listed and in Drawings:
   1. Refer to documents and as herein specified
   2. Reviewed Equivalent by **Architect**.
      1. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
      2. Refer to Division 1 for substitution, deviation and/or submittal procedures.
      3. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.
C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.
D. Refer to drawings, details, and other related specification section whether listed or not.
E. Details shall set basic requirements for size and configuration of systems.

2.02 MATERIALS

A. Accessories:
1. Fasteners:
1. Bolts, Nuts & Washers: Machine bolts, unless noted otherwise, for attaching or anchoring wood items.
2. Draw bolts
3. Finish nails
4. Screws
1. Including, but not limited to;
a. Wood secured into metal stud framing (20 gauge or heavier)
1. Type: Square Top head wood screws
2. Size: #7 x 2-1/4" or size to penetrate metal framing by 3/8" minimum.
5. Nail hole filler
1. Stainable at stained finish
2. Paintable at painted finish

B. Schedule
1. INTERIOR
1. General
1. Material Grades: WI Custom Grade complying with "Manual of Millwork" of the Wood Institute, unless otherwise noted.
2. Lumber and plywood shall be kiln-dried to equilibrium moisture content suitable for fabrication in shop and suitable for use intended.
a. Back prime all fabrications at locations that are concealed from view.
3. Size and profiles shown in drawings and herein specified shall be installed.
4. Back Prime all casework which is concealed from view.
5. Install with adhesive type as recommended by manufacturer for locations and materials shown.
6. Install with fasteners type and size to ensure tight, secure assembly and concealed fasteners.
7. Species:
a. As indicated on drawings & herein scheduled
b. Plastic laminate:
1. Mfgrs:
a. Nevamar www.nevamar.com
b. Wilsonart www.wilsonart.com
c. Formica www.formica.com
d. Refer to drawings
2. Standard: LD-3 by NEMA.
c. M.D.O.:
1. Factory lacquer primed for field finishing.

2. Materials:
1. Particleboard
a. General:

1. Stamped, suitable to receive plastic laminate finish, wood veneer or paint as noted. Comply with ANSI A208.1, Table 1, Grade 1-M-3 with the following additional requirements:

b. Specifications:
   1. Modulus of Elasticity: 4,000,000 psi, min
   2. Internal Bond: 80 psi, min
   3. Screw Holding: Face; 250 lbs. & Edge; 225 lbs., min

c. Product(s):
   1. Mfgr: Arauco
   2. Schedule:
      a. Duraflake VESTA NAF — No added urea-formaldehyde resin
      b. Duraflake Fire Rated — UL approved, Class A/Class 1 fire rated particleboard
      c. Duraflake Moisture Resistant ULEF — Moisture resistant particle board

2. MDF Board
   a. General:
      1. Stamped, suitable to receive plastic laminate finish, wood veneer or paint as noted. Comply with ANSI A208.1, Table 1, Grade 1-M-3 with the following additional requirements:
   b. Specifications:
      1. Modulus of Elasticity: 4,000,000 psi, min
      2. Internal Bond: 80 psi, min
      3. Screw Holding: Face; 250 lbs. & Edge; 225 lbs., min
   c. Product(s):
      1. Mfgr: Arauco
      2. Schedule:
         a. Trupan NAF — No added urea-formaldehyde resin
         b. Trupan Fire Rated ULEF — No added urea-formaldehyde resin and fire-rated - UL approved, Class A
         c. Trupan Plus MDF — No added urea-formaldehyde resin

3. Melamine
   a. General
      1. Stamped, suitable to receive plastic laminate finish, wood veneer or paint as noted. Comply with ANSI A208.1, Table 1, Grade 1-M-3 with the following additional requirements:
   b. Specifications:
      1. Modulus of Elasticity: 4,000,000 psi, min
      2. Internal Bond: 80 psi, min
      3. Screw Holding: Face; 250 lbs. & Edge; 225 lbs., min
   c. Product:
      1. Mfgr: Flakeboard
      2. Schedule:
         a. WRM — Wear resistant melamine

4. Miscellaneous Trim & Moldings

a. Size: As indicated on Drawings and to match like conditions.
b. Material: Match like conditions, unless noted otherwise.

2. EXTERIOR
    1. General
        1. Material Grades: APA Grade
        2. Lumber and plywood shall be kiln-dried to equilibrium moisture content suitable for fabrication in shop and suitable for use intended.
        3. Size and profiles shown in drawings and herein specified]
        4. Install with adhesive type as recommended by manufacturer for locations and materials shown.
        5. Install with fasteners type and size to ensure tight, secure assembly and concealed fasteners.
        6. Species:
            a. As indicated on drawings & herein scheduled, including but not limited to:
            b. Clear Fir
            c. M.D.F. with factory lacquer primed finish, type.

    2. **Schedule:**
        1. Veneer Plywood Laminate: Refer to other specification sections as indicated on Drawings.

C. Milling
    1. Mill to dimensions and profiles shown. Except where exact length can be determined, material shall be provided long for cutting and fitting in field.

2.03 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - EXECUTION

3.01 INSPECTION/EXAMINATION

B. Verification of Conditions:
    1. Examine areas and conditions under which work is to be performed.
    2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

3.02 COORDINATION

A. Refer to Division 1 for project coordination requirements.
B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.03 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.04 FABRICATION

A. Preparation:
   1. Verify measurements at job site.
   2. Verify details and dimensions of equipment and fixtures integral with finish carpentry for proper fit and accurate alignment.
   3. Coordinate details with other work supporting, adjoining, or fastening to finish carpentry items.
B. General:
   1. Fabricate finish carpentry in accordance with W.I. Premium and Custom Grade and as indicated.
   2. Shop-fabricate and assemble work in complete units insofar as dimensions permit shipment and installation.
   3. Conceal nailing typical and set nail heads for putty in exposed portions.
   4. Thoroughly sand wood surfaces.
      1. Take care that cross sanding is removed by final sanding in direction of grain; ease "knife-edge" corners by sanding.
      2. Wood surfaces shall be free from dust, glue, stains, and other foreign matter and in proper condition to receive finish.
   5. Perform corrective measures necessitated by nonconformance with WI Standards.
      1. The **Architect's** opinion will govern discrepancies.
   6. End joints shall be cut at 45 degree angle and fit tight (square butt joints not allowed).
   7. Back prime all concealed wood in accordance with WI recommendations.

3.05 INSTALLATION

A. General:
   1. Do not install casework or millwork until wet operations are completed and concrete, work has thoroughly dried out, and millwork has been primed or sealed under "Painting Work". Reseal cut edges, surfaces and ends in approved manner.
   2. Trim members: Install level, plumb and true, with members neatly and accurately scribed in place. Install standing trim in single lengths, running trim in as long lengths as practical for species specified.
      1. Butt joints beveled at 45 degree angle.
      2. Exterior angles coped.
      3. Miter all outside and inside corners unless indicated otherwise.
   3. Nailing: Install at concealed conditions, typical at locations that are not concealed; set nails (countersink) and fill with matching filler prior to final finishing.
   4. Workmanship: Exposed surfaces of finish carpentry shall be free from nailheads, tool marks, torn grain, cross sanding, or any workmanship defects that cannot be concealed by specified painter's finish.
   5. Scribe to wall all finish materials including but not limited to:
      1. Moldings
      2. Window trim
      3. Door trim
B. Casework and Counter Tops
   1. General:
      1. Install casework and counter tops securely, plumb, level, true and straight with no distortions. Shim as required using concealed shims.

2. Where casework and counter tops abuts other finished work, scribe and cut for accurate fit. Before making cutouts, drill pilot holes at corners.
3. Install finish hardware in accordance with its manufacturer printed instructions.

2. Counters shall be one piece 3/4 inch thick particle board with plastic laminate overlay with 4 inch high top mount splash and self edge front, unless otherwise indicated. Shall comply with Premium Grade construction, refer to WI Manual of Millwork.
3. Repair damaged or defective work as directed. Adjust and lubricate hardware for proper operation.
4. Clean exposed interior and exterior surfaces. Touch-up finish as required and remove and refinish damaged or soiled areas of finish.
5. Back prime all wood that will be concealed and or against the wall surface.

C. Wood doors: Refer to Section 08 14 00 – Wood Doors
D. Building Specialties
1. Install all items in accordance with the drawing details and manufacturer's printed instructions.

3.06 FIELD QUALITY CONTROL

A. Monitor work to insure installation and assembly are in accordance with applicable standards.

3.07 ADJUSTING

A. Test operation of equipment and adjust as needed to produce fully functioning units that comply with requirements.

3.08 PROTECTION AND CLEAN UP

B. Refer to Division 1 for protection and cleaning requirements.
C. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.
D. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

E. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
F. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.
G. After completion of work in this section, remove all erection equipment and implements of service, and debris.
1. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.
I. Provide record drawings in accordance with Division 1 closeout submittal procedures.
J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 06 20 00

SECTION 06 41 16 – PLASTIC LAMINATE CLAD ARCHTECTURAL CASEWORK

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Wood casework with specified veneer
2. Hardware
3. Structural supports incorporated into casework
    a. Coordinate with Section 05 50 00 – Metal Fabrications
4. Solid surface counters
5. Accessories:
    a. As herein specified and/or listed in drawings
    b. Shelving standards
    c. Shelving standard brackets

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:
    a. All occupancy types.

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Plywood Association (APA), www.apawood.org

E. American National Standards Institute (ANSI), www.ansi.org

1. ANSI A208.1
2. ANSI A208.2
3. ANSI A209.1

F. American Society for Testing and Materials (ASTM), www.astm.org

1. ASTM C501 – Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by Taber Abraser

2. ASTM C1378 – Stain Resistance
3. ASTM D3203 – Stain Resistance

G. National Sanitation Foundation (NSF), www.nsf.org

H. The Association of Electrical and Medical Imaging Equipment Manufacturers (NEMA), www.nema.org

1. NEMA LD3 for Chemical Resistance
2. NEMA LD3-3.13 for Chemical Resistance
3. NEMA LD3.7 for Chemical Resistance

I. Scientific Equipment & Furniture Association (SEFA)

1. SEFA #3 – Recommendations for Work Surfaces

J. Woodwork Institute, (WI), www.woodworkinstitute.com

1. All references herein to Certification, bulletins, detailing, details, standards, etc., are to the Woodwork Institute (WI), North American Architectural Woodwork Standards 4.0 manual,.

a. Certified Compliance Program

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Millwork (casework)	Moisture Content	Wood and Composite Materials shall be kiln-dried to equilibrium moisture content suitable for fabrication in shop and suitable for use intended	Woodwork Institute (WI), Architectural Woodwork Standards (AWS)
	Compliance Program	Pay fees, coordinate with WI and comply with requirements of the WI Quality Control program **CERTIFIED COMPLIANCE PROGRAM:** - Review and certification of Shop drawings prior to issuance to **Architect** by WI. - Issuance of WI Certified Compliance Certificate by WI - Certified Compliance stamp on cover of shop Drawings by WI - Inspection(s) of installed casework/millwork at project site by WI	WI, Architectural Woodwork Standards & Quality Assurance Program

	Style	Style 1 – Flush Overlay	
	Type	A	
	Grade	Premium	
Laminate Plastic	Manufacturing	- Horizontal surfaces: Countertops and splashes - use 1/16" thick (0.0625"). - Vertical surfaces and edge banding: (0.035"). - Backer and liner: (0.020").	LD-3 by NEMA
	Type	HGS (H-5) Grade (high pressure laminate)	NEMA
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing**:

Item	**Name of Test**	**Performance Results**	**Testing Std.**
Hardware	Operation – During construction	All hardware operates properly without binding.	WI, Architectural Woodwork Standards
Hardware	Operation – 6 – 7 months after Substantial Completion	All hardware operates properly without binding.	WI, Architectural Woodwork Standards

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturers data and shop drawings.

1. Submit shop drawings for the work of this Section in compliance with Manual of Millwork.
    a. The shop drawings shall bear the Certified Compliance Label.

E. Submit samples.

1. Casework Materials
    a. Each type of substrate board
        1) 8-1/2” x 11”
    b. Each type of laminate plastic
    c. Hardware
    d. Accessories

F. Site mock-up, refer to “Mock-Up” heading.

1. Provide full-size mockup of all reveal and panel conditions (not part of final construction).

G. Certification:

1. Woodwork Institute Certified compliance label on first page of shop drawings after WI review.
2. Woodwork Institute compliance program written review letters.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Stipulations:

1. Lumber moisture content not to exceed levels as herein specified.
    a. Woodwork Institute compliance program.
2. Grades of materials shall not be less than those herein specified and as indicated in drawings.
    a. Better grade shall govern.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
Agenda for meeting shall include, but not be limited to;

1. Woodwork Institute compliance program and parameters.
    a. Certified Compliance Program (CCP) as herein specified.
        1) The **Owner** reserves the right to request an inspection by a representative of the Woodwork Institute at any time during the work of this Section to verify that all work of this Section has been performed in accordance with the referenced standards at any time during the work of this Section.
2. Scheduling of installation.
3. **General Contractor** shall request meeting 5 days in advance of construction.

F. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

G. Miscellaneous criteria:

1. Field-measure (at project site) all casework locations prior to drafting shop drawings.
    a. Report discrepancies between Architectural drawings and field dimensions on shop drawing submitted for review.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Do not deliver casework to job until building is in proper condition and arrangements have been made to properly handle, store and protect such work.

C. Comply with Recommended Care and Storage of Architectural Woodwork Standards (AWS).

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK / SECTIONS

A. The following is related work including, but not limited to the following;

1. Finish Flooring and Base
2. Plumbing and Accessories
3. Wall Finish
4. Wall backing

B. Related sections include, but are not limited to the following:

1. Division 1
2. Section 06 61 16 – Solid Polymer Fabrications
3. Section 09 91 00 – Painting & Coatings

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplemental Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, hardware, etc.

2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required inspection under Woodwork Institute requirements.

1.13 GENERAL SYSTEM DESCRIPTION

A. Casework/Millwork fabrication with laminate plastic veneer and installation

PART 2 **- PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as listed herein and in Drawings:

1. Casework/Millwork

a. In compliance with drawings, specifications and WI-Woodwork Institute Standards.

2. Hardware:

a. Operating hardware, standards, brackets, specialty, etc.:

1) Accuride International, Inc., www.accuride.com
2) Sugatsune, LAMP, www.sugatsune.com
3) Knape & Vogt Manufacturing Co., www.knapeandvogt.com
4) Hafele, www.hafele.com/us
5) CompX National, www.compx.com
6) Fulterer USA, Inc., wwww.fultererusa.com
7) Hettich America, L.P., www.hettichamerica.com
8) Olympus Lock, Inc., www.olympus-lock.com
9) Precision Works Products
10) Pride Industrial, LLC., www.prideindustrial.com
11) RPC-Terry Hinge and Hardware Co., www.terryhinge.com
12) STAND Off Systems, www.standoffsystems.com
13) As herein specified and/or listed
14) In accordance with WI standards

b. Pulls

1) Hafele, www.hafele.com/us
2) As herein specified and/or listed

3. Wood:

a. As herein specified and/or listed
b. In accordance with WI standards

4. Laminate Plastic:

c. Abet Laminati, www.abetlaminati.com
d. Arborite, www.arborite.com
e. Formica, www.formica.com
f. Nevamar, www.nevamar.com
g. Pionite, www.pionite.com
h. Wilsonart Contract, www.wilsonartcontract.com
i. As herein specified and/or listed
j. In accordance with WI standards

5. Solid Surface:

a. As herein specified and/or listed
b. Refer to drawings
c. Refer to Section 06 61 16 – Solid Polymer Fabrications

6. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. Schedule:

a. Substrates for Laminate Veneer – Typical except adjustable shelving:

1) Option 1:

a) Mfgr: Roseburg Forest products, www.roseburg.com
b) Product: Sky Blend
c) Material: Stamped, suitable to receive, laminate veneer.
d) Certified:

i. FSC Forest Stewardship Council
ii. NAUF No added Urea Formaldehyde
iii. ECC Eco-Certified Composite Panel
iv. CAR Air Toxic Control Measure

e) Compliance: California 93120 Phase 2 Formaldehyde Emission Limits
f) Size: 49" x 97"
g) Thicknesses: 1/2" – 1-1/8"
h) Density: 47-50 PCF

i) MOE: 290,100
j) Internal Bond: 58psi
k) Standards: ANSI A208.1, M-3
l) Flame Spread: Class C or Class III
m) Recycled content: 100% recycled and/or recovered content

2) Option 2:

a) Mfgr: Flakeboard, www.flakeboard.com
b) Product: Duraflake® MR
c) Material: Stamped, suitable to receive, laminate veneer.
d) Certified:

i. FSC Forest Stewardship Council
ii. NAUF No added Urea Formaldehyde
iii. ECC Eco-Certified Composite Panel
iv. CAR Air Toxic Control Measure

e) Compliance: California 93120 Phase 2 Formaldehyde Emission Limits
f) Thickness: 3/8" – 1-1/8"
g) Density: 45-48 PCF
h) MOE: 400,000
i) Internal Bond: 80psi
j) Standards: ANSI A208.1, M-3
k) Recycled content: 100% recycled and/or recovered content

b. Adjustable Shelving Substrates for Laminate Veneer:

1) Mfgr: Roseburg Forest products
2) Product: Sky Ply FSC Veneer Core Panel
3) Panel: HyBrid
4) Core: Plywood, SkyPly
5) Veneer: Hardwood veneer over particle board core
6) Certified:

a) FSC Forest Stewardship Council
b) NAUF No added Urea Formaldehyde

7) Size:

a) 48" x 96"
b) 48" x 120"

8) Thicknesses: 1/4" – 1"

2. Adhesives: Type as recommended by manufacturer for locations and materials.
3. Plastic Laminate: Refer to Drawings, and comply with the requirements of LD-3 by NEMA

B. Casework/Millwork:

1. General:

a. Type:

1) Style 'A', Frameless construction and associated supplements

b. Grade: Premium
c. Substrate:

1) Material: As herein specified and in accordance with WI Standards
2) Thickness: 3/4" minimum, unless specified and/or indicated otherwise in specifications and/or drawings

d. Veneer: As herein scheduled and noted in drawings

1) Color/pattern of Laminate Plastic, refer to drawings.

2. Finish Schedule: (Refer also to documents)

a. Exterior: (exposed)

1) Cabinet: Laminate Plastic
2) Doors: Laminate Plastic
3) Drawers:(front & edges) Laminate Plastic
4) Shelves: Laminate Plastic

b. Interior:

1) Cabinet: Laminate Plastic
2) Doors: Laminate Plastic
3) Drawers: Laminate Plastic
4) Shelves cabinets: Laminate Plastic

3. Countertop:

a. Top:

1) Solid Polymer – refer to Section 06 61 16

b. Splash:

1) Solid Polymer – refer to Section 06 61 16

c. Nosing:

1) Solid Polymer – refer to Section 06 61 16

4. Doors:

a. Shall be constructed in accordance with specified Grade and in accordance with WI standards.

1) Flush-face panels with total perimeter thick applied square edge band trim to match face material.

5. Drawers:

a. Shall be constructed in accordance with specified Grade and in accordance with WI standards.

1) Flush-face panels with total perimeter thick applied square edge band trim to match face material.

6. Adjustable Cabinet Shelves:

a. Application: Wall hung type not part of a cabinet

1) Type: Adjustable

a) Standards and brackets

2) Shelves:

a) Grade: Premium
b) Veneer: As herein scheduled
c) Matching: N/A, Whole piece
d) Core: WI standards approved for specified grade

i. Thickness: 1"
ii. Construction: Veneer on all sides and full edge banding.
iii. Material: Plywood

3) Pilaster Standards: As herein specified
4) Brackets: As herein specified

F. Paint:

1. Paint backside of all casework cabinets which back up against;

a. Exterior walls
b. Masonry walls

2. Use VOC compliant paint
3. Refer to Section 09 91 00 - Painting

2.3 MATERIALS – CASESWORK and HARDWARE

A. Hardware shall be furnished and installed as required to provide a complete casework installation.

B. Hardware shall be unless specified otherwise.

1. Mfgr's standard color as herein specified

C. Hardware Schedule:

1. Hinges:

a. Casement swing hinge

1) Mfgr: Blum (Salice, Grass and Hafele acceptable alternates)
2) Type: Concealed Adjustable x 120 degree opening x self closing
3) Product: CLIP Top series
4) Mount: recessed, INSERTA
5) Application/Model: (adjust type for specific application-Including, but not limited to;)

a) Full overlay: B71T559 (Type "A")

6) Fastening: Screw-in & Knock-in

7) Accessories: Wing baseplates

b. Concealed Hinges

1) Mfgr: SUGATSUNE www.sugatsune.com , LAMP
2) Model: Load Capacity: Door/panel thickness:

a) HES3D-190 154 lbs. 1-7/16″
b) HES3D-160 99 lbs. 1-3/8″
c) HES3D-V135 88 lbs 1-3/16″

3) Type: Concealed x three way adjustable

2. Bumpers:

a. Door Bumpers:

1) Felt type in accordance with Woodwork Institute standards.
2) Color: Black or gray

3. Door & Drawer Pulls:

a. Mfgr: Hafele
b. Type: Stainless Steel Handles
c. Finish: Matte
d. Schedule:

Designation	Length (overall)	Model No:
Pull 1	146mm / 5.75″	117.05.600
Pull 2	178mm / 7″	117.05.610
Pull 3	242mm / 9.53″	117.05.620
Pull 4	274mm / 10.78″	117.05.630
Pull 5	370mm / 14.56	117.05.640
Pull 6	530mm / 20.86″	117.05.650
Pull 7	722mm / 28.4″	117.05.660
Pull 8	946mm / 37.2″	117.05.670
Pull 9	1202mm / 47.3″	117.05.680
Pull 10	1456mm / 57.32″	117.05.690

4. Magnetic Touch Latches:

a. Application: Typical, UNO
b. Mfgr: Sugatsune, LAMP
c. Model: ML120
d. Color: BLK (Black)
e. Mount: Surface

5. Non-Magnetic Touch Catches:

a. Application: Use where indicated
b. Mfgr: Sugatsune, LAMP
c. Model: LSMC37
d. Color: BLK (Black)
e. Mount: Surface

6. Drawer Slides:

a. Mfgr: KNAPE & VOGT (Accuride, Grass and Blum are acceptable alternates if they match type, capacity and function)

b. Type: Full extension and +1.5" extension, ball bearing captured slides
c. Application:
    1) Drawer
        a) Application: 4" tall or less up to 23" wide drawer
            i. Model: KV 8250 / 75lbs.
            ii. Capacity: 75 pounds per pair
            iii. Mounting: Under

7. Drawer & Cabinet Door Locks:
    a. Mfgr: Sugatsune, LAMP
    b. System: Million Locks
    c. Model: 6830-30MK
    d. Mounting: Mortised
    e. Application: Install type for door and/or drawer condition.
    f. Finish:
        1) Stainless Steel x polished
    g. Accessories:
        1) Removable core
        2) Separate lock body and lock cores
        3) Key same & differently per **Owner's** instructions
        4) Grand Master key for all locks
        5) Master for each group of locked cabinets/drawers.
    h. Application:
        1) Provide locks on all drawers and doors regardless of location.
8. Adjustable Casework/Cabinet Shelving:
    a. Pilaster Standards:
        1) Mfgr: Knape & Vogt
        2) Type:
            a) Recessed
            b) Horizontal slot for support clips
        3) Material: Aluminum
        4) Color:
            a) To be selected by **Architect** from the following during shop drawing review:
                i. Mill finish aluminum
                ii. Brass look
                iii. Brown
                iv. Walnut
        5) Model: No. 255
        6) Fasteners: Countersunk screws

7) Schedule for standards:

a) Full height of cabinet at shelves
b) Recessed into wall of casework
c) Dado cut into cabinet wall
d) Set standards at 4" from front and from back of cabinet.

b. Support Clips::

1) Mfgr: Knape & Vogt
2) Type: Boxed with cushion pad
3) Model: No256R
4) Material: Aluminum or steel based on color
5) Color: To match Pilaster standards

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

B. Items not specifically identified as to "Type" shall be constructed as indicated on the drawings and specifications to meet or exceed herein specified Grade construction standards.

1. Surface finish: As selected by **Architect**.
2. Back priming paint, refer to Section 09 91 00 - Painting.

PART 3 **– EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Take all necessary measurements in the field to ensure proper dimensions for cabinets and countertops.

3.4 FABRICATION

A. General

1. Fabricate in accordance with WI Architectural Woodwork Standards and specified Grade.
2. Fabricate in accordance with drawings.
3. Make cutouts required for equipment and accessories mounted in or on casework items.
4. Fabricate filler panels for all gaps that occur at face of casework, i.e. gap at sides of "Below Counter Dishwashers" and similar conditions.
5. Back prime woodwork on all surfaces which will be concealed.
    a. Prime with one coat of wood primer.
    b. Schedule delivery to allow time for application and drying of back prime coat before installation of the woodwork for those items that have not been back primed in the shop.
6. Shop fabricate items and deliver to job in largest unit sections as possible.
    a. Where field joining is required, accurately fit and align in shop and make all provisions for rigid and permanent joining in field.
    b. Allow sufficient material to permit accurate scribing to adjacent walls and related work.

B. Drawers:

1. All drawers shall operate on metal slides.
2. Provide security panels over locked drawers and doors except where fixed top serves same purpose.

C. Doors:

1. Provide security panels over locked drawers and doors except where fixed top serves same purpose.

D. Hardware:

1. Install hardware at shop, prior to delivery.
    a. Remove hardware for finish application and reinstall after finishing.

E. Casework Shelves:

1. Make all shelves adjustable, unless otherwise indicated.
2. Install adjustable shelves on metal hardware recessed flush.

F. Adjustable wall shelves

1. Install thru wall finish into solid blocking
2. Make all shelves adjustable, unless otherwise indicated.
3. Install adjustable shelves on metal hardware.

3.5 INSTALLATION

A. General:

1. Install Casework/Millwork and counter tops securely, plumb, level, true and straight with no distortions.
    a. Shim as required using concealed shims.
2. Where casework and counter tops abuts other finished work, scribe and cut for accurate fit.
    a. Before making cutouts, drill pilot holes at corners.
3. Install finish hardware in accordance with manufacturer's printed instructions.
4. Repair damaged or defective work as directed.
    a. Adjust and lubricate hardware for proper operation.
5. Clean exposed interior and exterior surfaces.
    a. Touch-up finish as required and remove and refinish damaged or soiled areas of finish.
6. Back prime all wood that will be concealed and or against an exterior wall surface and/or a masonry or concrete wall surface.
7. Repair damaged or defective work as directed. Adjust and lubricate hardware for proper operation.
8. Clean exposed interior and exterior surfaces. Touch-up finish as required and remove and refinish damaged or soiled areas of finish.

B. Blocking, Backing, Bracing and fasteners:

1. Ensure that in-wall blocking is properly located before wall finish is installed. Set casework in place, scribe plumb, square and level, and secure to structure in position indicated with required fastenings, clip angles, bases, anchors, nailing, blocking, shimming and other fittings.
2. Minimum horizontal anchorage along top and bottom edges of wall mounted and top edge of floor mounted casework shall be #12 x length to suit (minimum 2-1/2" teks), wood or sheet metal screws (plated) at 12" o.c. and 3" from each end into solid backing or metal backing plate. Minimum three (3) fasteners each along top and bottom edges.
    a. At masonry or concrete walls secure with 1/4" diameter x length to suit (minimum 1-1/8" penetration) wedge anchors.
3. Furnish miscellaneous metal support and bracing required for installation.
    a. Deliver these items to trades responsible for adjacent work and designate exact location for their installation.

C. Casework/Millwork:

1. Provide closures and fillers, and scribe strips required to provide a neat and finished installation. All such exposed items shall match casework.
2. Install casework and counter tops securely, plumb, level, true and straight with no distortions. Shim as required using concealed shims.
3. Where casework and counter tops abuts other finished work, scribe and cut for accurate fit. Before making cutouts, drill pilot holes at corners.

D. Furnish miscellaneous metal support and bracing required for installation.

1. Deliver these items to trades responsible for adjacent work and designate exact location for their installation.
2. Install finish hardware in accordance with its manufacturer printed instructions.

E. Hardware and accessories:

1. Install in accordance with WI standards and manufacturer's recommendations.

F. Adjusting:

1. Adjust doors, drawers, and other moving parts to operate freely without binding or sticking.
    a. Adjacent items shall be level, vertical lines plumb and aligned with clearances uniform.

3.6 ADJUSTING

A. Prior to final inspection and acceptance by the **Architect**, completely check each installed item and adjust for proper operation.

1. Adjust doors, drawers, and other moving parts to operate freely without binding or sticking.
    a. Adjacent items shall be level, vertical lines plumb and aligned with clearances uniform.

3.7 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives **the General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 06 41 16

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SECTION 06 61 00 – SOLID POLYMER FABRICATIONS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work.

1. The work covered by this Section shall include all material, labor, equipment and services necessary for the complete installation of Solid Polymer fabrications, as indicated on the Drawings and herein specified:

a. Solid Polymer Counters
b. Counter Splashes

2. Furnish and install miscellaneous items as indicated, including but not necessarily limited to the following major items:

a. Counters, sinks in sizes as listed, support angles, closures, necessary items required to complete the work as detailed.
b. Anchors, attachment and fasteners for work in this section.
c. Cut holes and openings in the polymer counters in accordance with the requirements specified in this Section and as required for faucets, soap dispensers, etc.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Plywood Association (APA), The Engineered Wood Association, www.apawood.org American Society for Testing and Materials (ASTM):

1. ASTM C501 - Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abrader
2. ASTM D256 - Impact Resistance of Plastics and Electrical Insulating Materials.
3. ASTM D570 - Water Absorption of Plastics
4. ASTM D638 - Tensile Properties of Plastics

5. ASTM D696 - Coefficient of Linear Thermal Expansion of Plastics
6. ASTM D2583 - Indentation Hardness of Rigid Plastics by Means of a Barcol Compressor
7. ASTM E84 - Surface Burning Characteristics of Building Materials

E. National Electrical Manufacturers Associations (NEMA):

1. LD.3-3.9: Test method to confirm no lasting effect after exposure to 29 common reagents.

F. National Sanitation Foundation (NSF)

1. Tested and approved.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Solid Polymer	Stain & Chemical Resistance	No lasting effect when exposed to 29 reagents	NEMA LD3-3.9
	Construction	Comply	ANSI Z124, Type 6 and Fed. Spec. WW-P-541/GEN
	Thickness	3/4"	Mfgr.
	Width x length	52" x 118"	Mfgr
	Flame Spread	25 or less	ASTM E84 & UL 723
	Stain & Chemical Resistance	No lasting effect when exposed to 29 reagents	NEMA LD3-3.9
Backing	Type	APA, A-A G-1 W Exposure 1-APA PS1-83 000	APA
Refer to drawings and as herein specified			

C. **Sustainability**:

1. General:

a. Refer to Division 1 sustainability requirements.
b. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Indicate dimensions, component sizes, fabrication details, attachment provisions and coordination requirements with adjacent work.
2. Indicate product description, fabrication information and compliance with specified performance requirements.

E. Manufacturer's data:

1. Submit manufacturer's detailed technical data for materials, fabrication and installation. Include catalog cuts of hardware, anchors, fastenings, and accessories.
2. Submit manufacturer's care and maintenance data, including repair and cleaning instructions and include in project close-out documents.

F. Samples: Submit complete range of color samples 12" x 12" for selection by **Architect**.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Fabricator/Installer Qualifications: Fabrication and Installation of Solid Polymer shall be by a firm that is authorized by manufacturer to fabricate and install material, and that can demonstrate successful experience in installing finish carpentry items similar in type and quality to those required for this Project.

C. Fabricator/installer shall be subject to approval by **Architect**.

1. Fabricator/installer must have adequate physical facilities and sufficient production capacity to produce, transport, deliver, and install the required units without causing delay in the work.

D. Allowable Tolerance:

1. Variation in component size: plus or minus 1/8".
2. Location of openings: plus or minus 1/8" from indicated location.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver and store products suitable wrapped or packaged to protect against damage. Do not remove protective coverings until time of installation.

1. Protect finish and edges in accordance with manufacturer's recommendations.
2. Store material in accordance with manufacturer's recommendations.

C. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.7 JOB CONDITIONS

A. Obtain and comply with manufacturer's advice for optimum temperature and humidity conditions for material during its storage and installation.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Wall framing / backing
2. Wall sheathing and finish
3. Plumbing
4. Casework/millwork

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 06 41 16 – Plastic Laminate Clad Architectural Cabinets

1.10 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.11 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **initial one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **ten (10)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as listed herein and in Drawings:

1. Hi-Macs, as manufactured by LX Hausys, www.lxhausys.com
2. Dupont, www.dupont.com
3. Formica, www.formica.com
4. Silestone, www.silestone.com
5. Avonite, Foundations, www.avonite.com
6. Corian, as manufactured by Du Pont. www.corian.com
7. Wilsonart, Gilbraltar Series www.wilsonart.com
8. Staron by Samsung/Cheil Industries www.staron.com
9. Reviewed Equivalent by **Architect**.

    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. All solid polymer fabrications shall conform to standards as herein listed.

    a. Solid polymer fabrications shall be cast, not coated, laminated or of composite construction.
    b. Homogeneous blended Acrylic & Fillers
    c. Homogeneous blended Acrylic/Polyester & Fillers

2. Slab: Solid polymer counter fabrications shall conform to, but not limited to:

    a. Dimensions and thickness's as herein specified and as indicated in the Drawings, to within tolerances specified herein.
    b. Counter Edge Nosing:

        1) As detailed

    c. All seams not indicated on the Drawings shall be unexposed and adhesively joined.
    d. Provide backsplashes at sides and backs of all counters that back up to walls.

        1) All splashes shall be 4" high, unless noted and/or indicated otherwise.
        2) All splashes shall have half rounded top-edges, and shall be radiused down to counter front edge, unless noted/indicated otherwise)
        3) Splashes shall be butt edge at the counters connection.

B. Slab: Counter and splash:

1. Schedule:
    a. Item 1: (SS-1)
        1) Mfgr: Silestone
            a) Same as countertop manufacturer
        2) Product: Square Edge
        3) Color: White Storm 14
    b. Item 2: (SS-2)
        1) Mfgr: Hi-Macs
            a) Same as countertop manufacturer
        2) Product: Strato
        3) Color: Z003 Strato Wind

2.3 MATERIALS - ACCESSORY PRODUCTS

A. Joint Adhesive: Manufacturer's standard two-part adhesive kit to create inconspicuous, non-porous joints.

B. Panel Adhesive: Manufacturer's standard neoprene-based panel adhesive meeting ANSI A136.1-1967 and UL(R) listed.

C. Sealant:

1. For conditions exposed to moisture; Manufacturer's standard mildew-resistant, FDA/UL(R) recognized silicone sealant in colors matching components.
2. For conditions not exposed to moisture; Manufacturer's standard silicone sealant in colors matching components.

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 FABRICATION

A. General:

1. Material shall be fabricated and installed by an authorized installer by the solid polymer manufacturer.
2. Factory-fabricate components to greatest extent practicable of sizes and shapes indicated, in accordance with approved shop drawings.
3. Ease top and front edges and corners.
4. Material shall be fabricated to field measurements.
    a. Seams shall be located where shown on approved shop drawings.
    b. Provide seam blocks under all seams in accordance with manufacturer's recommendations.
5. Form joints between components using manufacturer's standard joint adhesive; without conspicuous joints.
6. Cut and finish component edges with clean, sharp returns. Route radii and contours to template. Repair or reject defective and inaccurate work.

B. Countertops and splashes:

1. Shall be thickness as indicated, one piece wherever possible, and with flush joints sealed with joint adhesive where required.
2. Use sheets in consecutive order as numbered by manufacturer, whenever possible.
3. Shop fabricate in largest sections possible for transporting and building access.
4. Exposed edge details shall be as detailed in Drawings.
5. Backsplash height shall be according to detail provided.
    a. Coves:
        1) Provide shop fabricated, integrally molded 3/8" radius between top and splash straight coves at back and ends where against walls or other vertical surfaces.

3.5 MOCK-UP

A. Erect at location approved by **Architect**.

1. Mock-up shall not be part of final construction once approved by **Architect**.

2. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.

B. Mock-up

1. Size: 12" square minimum with nose and splash

3.6 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
2. Install components plumb and level, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
3. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
4. Provide backsplashes and side splashes as indicated on the drawings.
5. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Keep clean until Date of Substantial Completion. Replace stained components.
6. Make plumbing connections to sinks in accordance with Division 15, Mechanical.
7. Protect surfaces from damage until Date of Substantial Completion. Repair work or replace damaged work that cannot be repaired to **Architect's** satisfaction.
8. Adhere under-mount sinks/bowls to counter tops using manufacturer's recommended adhesive and mounting hardware.

3.7 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Monitor work to insure installation and assembly are in accordance with applicable standards.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

E. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

F. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

G. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 06 61 00

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SECTION 06 64 13 – FRP WALL PANELS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work, including, but not limited to:

1. Fabrication and installation of custom sized and shaped configurations including but not limited to:

a. Fiberglass Reinforced Wall Panel system (FRP)

1. Trim and associated accessories
2. Adhesive
3. Sealants for "Fiberglass Reinforced Plastic" (FRP)
4. Fasteners

b. Base Molding – Per Finish Schedule

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American National Standards Institute (ANSI)

1. ANSI/AHA A135.5 - Prefinished Hardboard Paneling; most current edition.

E. American Society For Testing and Materials (ASTM)

1. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 1997
2. ASTM D523 - Standard Test Method for Specular Gloss; 1989 (Reapproved 1994).
3. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998.
4. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 1997.
5. ASTM D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C with a Vitreous Silica Dilatometer; 1998
6. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and

Reinforced Plastics and Electrical Insulating Materials; 1997

7. ASTM D792 - Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement; 1998
8. ASTM D968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive; 1993
9. ASTM D1037 - Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials; 1996a
10. ASTM D1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes; 1987 (Reapproved 1998).
11. ASTM D2197 - Standard Test Methods for Adhesion of Organic Coatings by Scrape Adhesion; 1998
12. ASTM D2486 - Standard Test Method for Scrub Resistance of Wall Paints; 1996.
13. ASTM D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor; 1995.
14. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 1998
15. ASTM numbers as herein listed.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Fiberglass Reinforced Panel	Sanitary	As herein noted	As herein noted
		Comply	USDA/FSIS
	Fire rating	As herein noted	ASTM – E84
	Sizes: W x H x Thk	48" x 96" x 3/32" 48" x 120" x 3/32"	Mfgr.
Surface Properties	Abrasion	Complies	ASTM D968-81 ASTM D2197-91 ASTM D3002
	Cleanability/Stain Resistance		NEMA LD 3-2000 sec 3.4
			NEMA LD 3-2000 Sec 3.5
Adhesive	VOC compliant	2.6 g/l max	MSDS #3989
Refer to drawings and as herein specified			

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturers data and shop drawings.

1. Data: Submit manufacturer's descriptive data and detailed shop drawings for systems, including finish systems.

a. Include copy of I.C.B.O. report.

2. Drawings shall show installation layout including location of all joints and accessories.

E. Samples:

1. Submit colors and textures as herein specified and as listed in drawings.
2. Submit 12"W x 12"H (minimum) sample of panel in color(s) and texture(s) indicated; utilize tools and techniques proposed for installation.
3. Submit samples of trim and accessories

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for Five (5) years providing / installing / finishing similar size projects and complexity.

C. Manufacturer shall have been in business for Five (5) years providing/installing/finishing similar size projects and complexity.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Store products in manufacturer's unopened packaging until ready for installation.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

D. Building shall be fully enclosed and temperature at 70 degrees with code compliant ventilation.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1. Panels shall be allowed to acclimate to room temperature of 70 degrees for a minimum of 48 hours prior to installation.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.

1. Do not install products under environmental conditions outside manufacturer's absolute limits.

C. Ensure wall has Level 3 finish per Section 09 29 00 prior to commencing installation.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Floor finish
2. Wall construction and finish

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 09 22 16 – Non-Structural Metal Framing
3. Section 09 29 00 – Gypsum Board & Sheathing Substrates

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplemental Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 MANUFACTURER

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as listed herein and in Drawings:

1. Koroseal, www.koroseal.com

2. Marlite 330.343-6621, www.marlite.com
3. Kemlite by Crane Composites, www.kemlite.com
4. Reviewed Equivalent by **Architect**.

    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Schedule:

1. Panels:

    a. Mfgr: Koroseal
    b. Material: Acrylic Modified Vinyl Plastic
    c. Sizes: Use longest size to minimize butt joints
    d. Model(s):

        1. Standard:

            a. Fire rating:

                1. Class I/A: Pebbled texture

                    a. Flame spread: < 25
                    b. Smoke developed: < 450

            b. Sanitary: USDA/FSIS approved, ASTM D3273-94 and 95
            c. Color: Simply White (TE)
            d. Finish: As noted

2. Trim:

    a. Mfgr: Koroseal
    b. Lengths: 8'-0" a 10'-0' – use lengths to minimize joints
    c. Schedule:

        1. Extruded PVC Trim

            a. Components:

                1. M 083 Inside Corner
                2. M 085 Outside Corner
                3. M 087 Division
                4. M 370 Edge

            b. Finish / Color:

1. Simply White

5. Sealants:

   a. Mfgr:
   b. Application: Install in accordance with manufacturer's recommendations.
   c. Schedule:

      1. Clear Silicone

6. Adhesives:

   a. Mfgr: Koroguard
   b. Product: Water resistant, non-flammable adhesive
   c. Model: XT2000+ Mastic

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION /EXAMINATION

A. Verification of Conditions:

   1. Examine areas and conditions under which work is to be performed.
   2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Examine surfaces to receive panels for:

   1. Substrates contrary to recommendations of system manufacturer.
   2. Miss aligned substrate that will adversely affect execution and quality of work.
   3. Deviation tolerance for installed substrate shall not exceed for both vertical and horizontal 1/8 inch in 20'-0". Tolerance deviation shall not be collective.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Take panels out of cartons and allow to acclimatize to room conditions for at least 48 hours prior to installation.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

D. Clean surfaces thoroughly prior to installation.

E. Protect existing surfaces from damage due to installation.

3.4 FABRICATION

A. Verify dimensions on site prior to shop fabrication.

B. Fabricate panels to size and shape required for tightly fitted joints or as required by manufacturer.

C. Ease all exposed edges to small uniform radius.

D. No exposed mechanical fastening shall be permitted other than trim moldings.

E. Supply all accessories required for installation.

3.5 INSTALLATION

A. Perform work in accordance with manufacturer’s recommendations, as herein specified and in accordance with drawings.

B. Install panels in accordance with manufacturer's instruction and these specifications, and reviewed shop drawings.

1. Refer to installation instructions for Marlite Brand FRP panels and fire rated panels

C. Use the adhesives recommended by the panel manufacturer unless prohibited by local regulations; obtain manufacturer's approval of alternative adhesives.

D. Install continuous bead of silicone sealant in each joint and trim groove and between trim and adjacent construction, maintaining 1/8 inch (3 mm) expansion space.

1. Panels shall be installed to accommodate 1/8″ of movement.

E. All panels shall be installed to a horizontal and vertical tolerance of 1/8 inch in 20 ft.

1. Tolerance deviation shall not be collective.
2. Seal total perimeter and at all joints with manufacturer's approved materials as detailed and shown on shop drawings.
3. Avoid contamination of panel faces with adhesives, solvents, or cleaners; clean as necessary and replace if not possible to repair to original condition.
4. Protect installed products until completion of project.
5. Touch-up, repair or replace damaged products after Substantial Completion.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 06 64 13

SECTION 07 13 26 COLD APPLIED SELF-ADHERING MEMBRANE

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable extents, dimensions, clearances and other associated materials at the jobsite.

D. Furnish materials and perform labor per each specific scope of work required to execute this work as indicated on the drawings, as specified herein, and as indicated in each specification section referred to herein and as necessary to complete the work required by project conditions, including, but not limited to:

1. Cold Applied Self Adhering Membrane (CASAM) flexible flashing for above grade conditions.
2. Coordinate with Water Resistant Barrier
    a. Refer to Section 07 26 00 – Water Resistant Barrier (WRB)

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction
    a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society for Testing and Materials (ASTM), www.astm.org

1. ASTM C920 - Specifications for Elastomeric Joint Sealants
2. ASTM D412 - Test Methods for Rubber Properties in Tension
3. ASTM D570 - Test Methods for Water Absorption of Plastics
4. ASTM D903 - Test Methods for Peel or Stripping Strength of Adhesive Bonds
5. ASTM D1004 - Test Method for Initial Tear Resistance of Plastic Film and Sheeting
6. ASTM D1876 - Test Methods for Peel Resistance of Adhesives (T-Peel Test)
7. ASTM D1938 - Test Method for Tear Propagation Resistance of Plastic Film and Sheeting
8. ASTM D1970 - Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
9. ASTM D3767 - Practice for Rubber-Measurement of Dimensions
10. ASTM D4263 - Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
11. ASTM D4541 - Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers
12. ASTM D5034 - Test Method for Breaking Strength and Elongation of Textile Fabrics

13. ASTM E96 - Test Methods for Water Vapor Transmission of Materials
14. ASTM E154 - Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover
15. ASTM E1186 - Practice for Air Leakage Site Detection in Building Envelopes and Air Retarder Systems
16. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials
17. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
18. ICC AC 38 - Water Resistance: AC 38; Acceptance Criteria for Water-Resistive Barrier

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Detail Membrane	Water Vapor Transmission	2.9 ng/m2sPa (0.05 perms) max.	ASTM E96 Method B
	Air Permeance	0.0006 L/(s.m2) (0.00012 cfm/ft2) max.	ASTM D412 at 75Pa (0.3 in. water) pressure difference
	Puncture Resistance	178 N (40 lbs.) min.	ASTM E154
	Lap Adhesion at -4°C (25°F)	880 N/m (5.0 lbs./in.) of width	ASTM D1876
	Low Temperature Flexibility	Unaffected to -43°C (-45°F)	ASTM D1970
	Tensile Strength	min. 2.7 MPa (400 psi)	ASTM D412, Die C Modified
	Elongation, Ultimate Failure of Rubberized Asphalt	min. 200%	ASTM D412, Die C
Wall Flashing	Water Vapor Transmission	2.9 ng/m2sPa (0.05 perms) max.	ASTM E96 Method B
	Water Absorption	max. 0.1% by weight	ASTM D570
	Puncture Resistance	356 N (80 lbs.) min	ASTM E154
	Tear Resistance Initiation	min. 58 N (13.0 lbs.) M.D.	ASTM D1004
	Tear Resistance Propagation	min. 40 N (9.0 lbs.) M.D.	ASTM D1938
	Lap Adhesion at -4°C (25°F)	880 N/m (5.0 lbs./in.) of width	ASTM D1876
	Low Temperature Flexibility	Unaffected to -43°C (-45°F)	ASTM D1970
	Tensile Strength	min. 5.5 MPa (800 psi)	ASTM D412, Die C Modified
	Elongation, Ultimate Failure of Rubberized Asphalt	min. 200%	ASTM D412, Die C
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Monitoring by others:**

Item	Name of Test	Performance Results	By Whom
Assembly	Installation	Installation is in accordance with manufacturer's standards & warranty criteria	Product Manufacture's Representative

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Specification Cut sheets for each product
2. Installation instructions for each product
3. Surface preparation instructions for each product

E. Submit samples.

1. 12" x 12" for each membrane and flexible flashing product/material

F. Mock Up:

1. Erect at location approved by **Architect**.

a. Mock-up shall be part of final construction once approved by **Architect**.
b. Mock-up of wall, corners & horizontal conditions shall comprise of all underlayment, flexible flashing, internal metal flashing components as specified and indicated in Drawings.

2. Size:

a. Wall Membrane: 3'-0" long, 3'-0" square, minimum.
b. One door opening
c. One window opening
d. One of any other detail condition

G. Certification:

1. Provide manufacturer's certification that materials meet specified requirements.

a. Certification List: Shall be reviewed by **Owner** at the time of delivery.

1. Item not certified by supplier shall not be unloaded.
2. Check list for accuracy.
3. Substitutions at the time of delivery are not permitted and shall not be unloaded, but shall be taken off site; Refer to Division 1 for substitution, deviation and/or submittal procedures.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer shall have been in business for **five (5)** years installing/finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **five (5)** years manufacturing underlayment and flexible flashings and the production and sales of self-adhesive sheet membrane waterproofing.

D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Review of submittals.
b. Review of surface preparation, minimum curing period and installation procedures.
c. Review of special details and flashings.
d. Sequence of construction, responsibilities and schedule for subsequent operations.
e. Review of mock-up requirements.
f. Review of inspection, testing, protection and repair procedures.

E. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during membrane waterproofing work to review installation procedures.

1. Manufacturer's representative shall review and certify all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

F. Miscellaneous criteria:

1. Monitor work to insure installation and assembly are in accordance with applicable standards.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. The membrane and accessory products must be handled properly.

1. Read all product labels and Material Safety Data Sheets (MSDS) for proper handling and disposal.
2. Deliver all materials in manufacturer's unopened packages and store all materials under cover.
3. Do not double stack palletized material.

C. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations, and material safety data sheets. Protect from damage from sunlight, weather excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.

1. Do not double-stack pallets of membrane on the job site. Provide cover on top and all sides, allowing for adequate ventilation.
2. Protect primer and mastic form moisture and potential sources of ignition.

D. Sequence deliveries to avoid delays, but minimize on-site storage.

E. Proceed with installation only when substrate construction and preparation work is complete and in condition to receive sheet membrane waterproofing.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, substrates, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's **five (5)** year warranty that air barrier and accessories are free of defects at time of delivery and are manufactured to meet manufacturer's published physical properties and material specifications.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Wall, sill, parapet and soffit sheathings
2. Wall openings
3. Roof assembly
4. Roof openings
5. Exterior wall finish
6. Metal flashing
7. Gutters and drainage systems
8. Substrate

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 02 41 19 – Selective Building Demolition & Protection
3. Section 04 22 00 – Concrete Unit Masonry
4. Section 06 10 00 – Rough Carpentry
5. Section 07 26 00 – Water Resistant Barrier (WRB)
6. Section 07 41 13 – Metal Roof Panels
7. Section 07 46 19 – Metal Siding and Soffit Assembly
8. Section 07 62 00 – Sheet Metal Flashing and Trim

9. Section 07 92 00 – Sealants and Caulking
10. Section 08 11 13 – Steel Doors & Frames
11. Section 08 41 00 – Entrances, Window Wall, Storefront System and Curtain Walls
12. Section 08 51 13 – Aluminum Windows
13. Section 09 29 00 – Gypsum Board & Sheathing Substrates

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. Coordinate with the installation of other waterproof sheet membranes as an integral part of this scope.

D. Coordinate with installation of sheet metal flashing by others.

1.13 GENERAL SYSTEM DESCRIPTION

A. Flexible flashing in accordance with manufacturer's installation instructions and as detailed.

B. Flashing at wall openings:

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturers shall be the following:

1. GRACE Construction Products, www.gcpat.com/en/solutions
2. Henry, us.henry.com
3. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Flexible Flashing:

1. General:

    a. Widths: As required to meet design criteria and as needed to build up multiple strips with 3" overlap to meet overall width criteria.

2. Mfgr: Grace Construction Products

    a. Application: Through-wall flashing detailing

        1. Product: Perm-A-Barrier Wall Flashing
        2. Type: Heavy Duty, fully adhered membrane
        3. Available widths: 12", 18", 24", 36"
        4. Description: 32 mil (0.8 mm) of self-adhesive rubberized asphalt integrally bonded to 8 mil (0.2 mm) of cross-laminated, high-density polyethylene film to provide a min. 40 mil (1.0 mm) thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed.

    b. Application: Detail Flashing

        1. Product: Perm-A-Barrier Detail Membrane
        2. Type: Heavy Duty, fully adhered membrane
        3. Available widths: 6", 9", 12"
        4. Primer: 36 mil (0.9mm) of self-adhesive rubberized asphalt integrally bonded to 4 mil (0.1 mm) of cross-laminated, high-density polyethylene film to provide a min. 40 mil (1.0 mm) thick membrane. Membrane shall be interleaved with disposable silicone-coated release paper until installed

B. Primers:

1. Product: Perm-A- Barrier WB Primer (or as recommended by CASAM mfgr.)
2. Type: Water-based primer which imparts an aggressive, high tack finish on the treated substrate.

    a. Flash Point: No flash to boiling point
    b. Solvent Type: Water
    c. VOC Content: Not to exceed 10 g/L
    d. Application Temperature: -4°C (25°F) and above
    e. Freezing point (as packaged): -7°C (21°F)

C. Penetrations & Termination Sealant

1. Liquid Membrane for Details and Terminations:

    a. Bituthene Liquid Membrane manufactured by GCP Applied Technologies; a two-part, elastomeric, trowel grade material designed for use with self-adhered membranes and tapes. 10 g/L max. VOC content.

2. Substrate Patching Membrane:

    a. Bituthene Liquid Membrane manufactured by GCP Applied Technologies; a two- part, elastomeric, trowel grade material designed for use with self-adhered membranes and tapes. 10 g/L max. VOC content.

3. Joint Sealant:

    a. Refer to sealant manufacturer's recommendations and Section 07 92 00 – Sealants and Caulking

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

    a. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants detrimental to the adhesion of the membranes. Fill voids, gaps and spalled areas in substrate to provide an even plane.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

C. Coordinate work with Water Resistant Barriers (WRB) addressed under other specifications.

3.3 PREPARATION

A. Prepare area if work in accordance with manufacturer's recommendations.

B. Refer to manufacturer's literature for requirements for preparation of substrates.

1. Surfaces shall be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Repair deck and/or wall area's before installing the membrane; use repair materials and methods which are acceptable to manufacturer.

    a. Remove dust, dirt, loose nails, loose stone, old roofing materials and debris.
    b. Remove contaminates such as grease, oil, wax from exposed surfaces.
    c. Remove protrusions, fill voids, and repair damaged, or unsupported areas.

2. Prime substrates as recommended by manufacturer for each membrane & flexible flashing type.

C. Masonry Substrates: Apply membrane over concrete block and brick with smooth trowel-cut mortar joints or parge coat.

1. Confirm with manufacturer for primer requirements.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified, and in accordance with drawings and details.
    a. Flexible flashing membranes shall be fully adhered, typical.
    b. Install additional layers of CASAM as detailed.
2. Install in coordination with water resistant barrier, and wall and roof material manufacture's recommendations.
3. Prime substrates, typically in accordance with membrane manufacturer's recommendations.
4. Apply membrane only in fair weather when the air, substrates, and membrane are at temperatures in accordance with those specified in membrane manufacturer's product data and installation instructions.
5. Install membrane on vertical and horizontal substrates in accordance with manufacturer's recommendations.
6. Consistent with good roofing and wall assembly practice, install the roof and wall membranes/flashing membrane such that all laps shed water.
    a. Always work from the low point to the high point of the roof wall.

B. Flexible Flashing:

1. Windows:
    a. Install in accordance with manufacturer's written installation instructions.
    b. Install additional layers of CASAM as detailed to tie in other flashing and sheet metal flashing.
    c. Coordinate with wall finish specifications.
    d. Coordinate with window type, flanged or not flanged and door types, flanged and not flanged.
2. Dissimilar Material:
    a. Install strip of membrane over the top of water resistant barrier and substrate at all edge conditions where wall material such as, but not limited to plaster adjoins a dissimilar material.
    b. Allow for 3" width of adhesion of cold applied self adhering waterproof membrane to substrate sheathing, unless required otherwise by manufacturer.
    c. Install in continuous strips as is physically capable.
    d. Install in shiplap fashion typically.

C. Primers, Sealants, and Termination Accessories

1. Per manufacturer's written instructions.

3.5 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Do not leave flexible flashings permanently exposed to sunlight longer then 90% of the maximum allowable time frame as specified by the membrane manufacturer for each product.

D. Do not install Waterproof membrane underlayments directly under roof coverings especially sensitive to corrosion, such as zinc, without providing proper ventilation.

E. Repair holes, fish mouths, tears, and damage to membrane with a patch of membrane with a patch of membrane extending (6") in all directions.

1. If fasteners are removed leaving holes in the waterproof membrane underlayment, and easing the membrane must be patched.

F. Do not install fasteners through the membrane over unsupported membrane areas of the Substrate.

G. Do not install low temperature membranes under metal roofing.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 07 26 00

SECTION 07 19 00 – WATER REPELLANT COATINGS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable extents of work at the jobsite and coordinate with **General Contractor.**

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Field application of clear water repellant/anti-graffiti coating applied in two coats to protect above-grade, vertical and horizontal surfaces of exterior and interior surfaces of all exposed, and semi-exposed surfaces.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

F. American Society For Testing and Materials (ASTM)

G. American Association of State Highway and Transportation Officials (AASHTO)

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	Name of Test	Performance	Testing Std.
Water Sealant	Effects of accelerated weathering on Silicone Rubber	After 4000 hours, no signs of weathering (Accelerated weathering is equivalent of 30 years actual weathering in field)	ASTM 793-75
	Effects of hydrostatic pressure on Water Sealant	Withstand up to 2.8 atmospheres of hydrostatic pressure before compromise	ASTM D751-95
	Surface frictional properties of concrete treated with Water Sealant	No significant change in the frictional properties of concrete	ASTM E-303
	Permeability of Water Sealant	Permeance between 10 and 14 perms	
		Comply	21 CFR 177.2600
Masonry	Water penetration and leakage through masonry surfaces treated with Water Sealant	Allow no water penetration through masonry	ASTM E-514
Concrete	Permeability of concrete sealed with Water Sealant	Retain 41% of original water vapor transmission capability	ASTM E-96
Concrete Refer to drawings and as herein specified	Cured compressive strength of freshly poured concrete treated with Water Sealant	13.7% increase in compressive strength over untreated concrete after a 28 day curing cycle	
	Changes in gas permeability and water transmission of concrete treated with Water Sealant	"Breathe" or pass water vapor through the sealant (91.7% less than that of untreated concrete)	N/A
	Changes in gas permeability and water transmission of concrete treated with Water Sealant	Chloride Ion content 15 times less than untreated concrete	
			AASHTO T-259

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

E. Submit: Manufacturer's data: Including Manufacturer's technical information including product label analysis with application instructions for each material proposed for use.

1. List each material and cross-reference to specific finish system and application. Identify by manufacturer's catalog number and general classification.

F. Samples:

1. Install mock up test panels for each substrate, refer to Heading 1.07.
2. Provide listing of material and application for each finish sample.

G. Product Data: Submit manufacturer's product data sheets on all products to be used for the work.

1. Submit description for protection of surrounding areas and non-masonry surfaces, surface preparation, application, and final cleaning.

H. Applicator Qualifications: Submit qualifications of applicator.

1. Certification stating applicator is experienced in the application of the specified products and has done this work for a minimum of (3) years.
2. List of recently completed concrete cleaning products used and substrates, applicable local environmental regulations, and application procedures.

I. Environmental Regulations: Submit description for testing, handling, treatment, containment collection, transport, disposal, and discharge of hazardous wastes and cleaning effluents. Describe any hazardous materials to be cleaned from substrates. Submit applicable local environmental regulations.

J. Protection: Submit description for protecting surrounding areas, landscaping, building occupants, pedestrians, vehicles, and non-concrete and non-masonry surfaces during the work from contact with concrete cleaners, residues, rinse water, fumes, wastes, cleaning effluents and Water Repellents.

K. Surface Preparation: Submit description for surface preparation of substrates to be completed before application of water repellents.

L. Application: Submit description for application procedures of water repellents.

M. Applicator Qualifications: Submit qualifications of applicator

1. Certification stating applicator is experienced in the application of the specified products.
2. List of recently completed water repellent projects, including project name and location, names of **Owner** and **Architect**, and description of products used substrates, applicable local environmental regulations, and application procedures.

N. Environmental Regulations: Submit applicable local environmental regulations

O. VOC Certification: Submit certification that water repellents furnished comply with regulations controlling use of volatile organic compounds (VOC).

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Applicator shall meet or exceed the following Qualifications:

1. Experienced in the application of the specified products for a period of not less than (3) years.
2. Employs persons trained for the application of the specified products with a minimum of (2) years experience with work per this specification.

C. Pre-Application Meeting: Convene a pre-application meeting (2) weeks before the start of application of water repellents. Require attendance of parties directly affecting work of this section, including the **General Contractor**, **Architect**, applicator, and product manufacturers' representative. Review environmental regulations, test panel procedures, protection of surrounding areas and non-masonry surfaces, surface preparation, application, field qualify control, final cleaning, and coordination with other work. *

D. Water repellant/anti-graffiti coating will not significantly alter the appearance or vapor transmission of treated surfaces.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver materials to site in manufacturer's original, tightly sealed, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

C. Verify that the product matches that of the original sample applied on the test panel.

D. Store containers upright in a cool, dry, well ventilated place, out of the sun.

1. Store away from all other chemicals and potential sources of contamination.
2. Keep lights, fire, sparks, and heat away from containers.
3. Do not drop containers or slide across sharp objects.
4. Keep containers tightly closed when not in use.
5. Store and handle materials in accordance with manufacturer's written instructions.

E. Use product within (8) hours of opening container.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Surface Preparation: **General Contractor** or Applicator shall be responsible for providing a clean, dry substrate free from oil, dirt, grease, efflorescence or any other coating, which may inhibit penetration and adhesion of water repellent. This requirement applies to new construction, renovation or remedial projects. Substrate must be completely dry prior to applying product.

C. Environmental Requirements:

1. Temperature: Product may be applied at any temperature providing that there is no frozen moisture present in the substrate. When applied at temperatures below 40ºF the product may cure at a slower rate. Optimal temperatures should be above 40ºF (5ºC) or below 95ºF (35ºC).
2. Do not apply material if the substrate is wet or contains frozen moisture.
    a. Allow substrate to dry for a minimum of 48 hours after rain or 96 hours after power washing.
3. Do not apply material during inclement weather or if precipitation is expected within 12

hours.

4. Do not use spray methods of application under windy conditions.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

D. Special precautions shall be taken to avoid fumes from entering the building being treated. Ventilation systems and fresh air intakes shall be turned off and covered.

E. Protect shrubs, metal, glass, vehicles, and other building hardware from overspray.

1.9 ENVIRONMENTAL REGULATIONS

A. Comply with applicable federal, state, and local environmental regulations & contact product manufacturer for additional information.

1.10 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **five (5)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner.**

1.11 RELATED WORK/SECTIONS

A. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 02 41 13 – Selective Site Demolition & Protection
3. Section 04 22 00 – Concrete Unit Masonry

B. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.12 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.13 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as listed herein and in Drawings:

1. Professional Products of Kansas, Inc., 4456 S. Clifton, Wichita, KS 67216, (800) 676-7346, (316) 522-9300, Fax (316) 522-9346, www.watersealant.com
2. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

1. Products must be penetrating, permanent waterproofing treatment using a silicone rubber base and not contain any paraffin waxes, urethanes or polysiloxanes.
2. Silane and siloxane based products will not be considered because of their lack of elongation (400%), allowing for thermal expansion and contraction.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 WATER REPELLANT / ANTI-GRAFFITI COATING

A. General:

1. Refer to Professional® product data sheets & contact a Professional® representative to confirm the appropriate types and applications to be used prior to issuance of submittals.
2. Characteristics:

a. Material: Penetrating silicone rubber water repellant / anti-graffiti coating.
b. Coating can alter color, install on test panels to determine color change for review and approvals.
c. Will not form a surface film or gloss.
d. Inorganic, it is not affected by UV rays, salts, acid rain, etc.
e. Breathable, it allows moisture vapor to escape while preventing liquid penetration.
f. Flexible, it bridges hairline cracks and allows for building movement.

3. Submit to **Architect** the proposed material for final acceptance prior to purchasing and commencing with installation.
4. Application procedure and coverage rates must be in conformance with effectiveness of

testing samples submitted, recommendation of application rates suggested, approved manufacturers standards and as a minimum, that specified herein.

B. Products/Schedule:

1. First Coat @ all Vertical and Horizontal surfaces:

a. Professional® Water Sealant Super Strength

1. Composition:

a.	Form:	Liquid
b.	Color:	Clear
c.	Active Substance:	RTV Silicone Rubber
d.	Percent Active Material:	15%
e.	Flash Point:	105º

2. Second Coat @ Vertical Surfaces:

a. Professional® Water Sealant Super Strength

1. Composition:

a.	Form:	Liquid
b.	Color:	Clear
c.	Active Substance:	RTV Silicone Rubber
d.	Percent Active Material:	15%
e.	Flash Point:	105º

2. Application: Concrete Masonry Units, including veneer

2.3 CURED PROPERTIES

A. Sealant must penetrate the surface of the material to which it is applied to be effective. The solvent portion evaporates. The active ingredients react to form silicone rubber, which remains below the surface and prevents water from penetrating while permitting water vapor transmission. The silicone rubber retains its characteristic 400% elongation, which allows for bridging of hairline cracks, expansion and contraction, building movement and extremes of temperature.

B. Sealant is unaffected by ultraviolet light, ozone, water, deicers and acids. It allows moisture vapor to escape while preventing liquid penetration. It cures to a clear, flat finish, which is extremely durable.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verify by examination the following:

1. That surfaces are acceptable to receive the specified water repellant / anti-graffiti coatings.
2. The required joint sealants have been installed.
3. New masonry, mortar and concrete have cured a minimum of 28 days.
4. Surface to be treated is clean, dry, and contains no frozen moisture.

5. Environmental conditions are appropriate for application.

B. Notify the **Architect** if surfaces are not acceptable to receive the specified products.

C. Comply with State & local agencies having jurisdiction, that conditions are acceptable to receive the water repellant / anti-graffiti coatings.

3.2 COORDINATION

A. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

B. Apply water repellant / anti-graffiti coatings after installation of windows, doors, sealant, etc.

1. Install when possible prior to installation of items which overlap onto substrate including, but not limited to flashing.

3.3 PREPARATION

A. Refer to Division 1 for project coordination requirements.

B. Clean all dirt, dust, oil, grease, mold, mildew, efflorescence, or any other coating or material from surfaces that interfere with penetration, performance, adhesion, or aesthetics of water repellents.

1. Use appropriate cleaners approved by the water repellents manufacturer where necessary. Rinse thoroughly, using pressure water spray to remove cleaner residues.
2. Allow surfaces to dry completely before application of water repellents.

C. Repair, patch, and fill all cracks, voids, defects, and damaged area in surface as approved by the **Architect**. Allow repair materials to cure completely before application of water repellents.

D. Apply specified sealants and caulking and allow to cure completely before application of water repellents.

E. Seal all open joints.

F. Allow new masonry and concrete construction and repointed surfaces to cure for minimum of 28 days before application of water repellents.

3.4 MOCK UP - TEST PANELS

A. Before full-scale application, review manufacturer's product data sheets to determine the suitability of each product for the specific surfaces.

B. Apply water repellant/anti-graffiti coating to test panels (mock-ups) to determine appropriate strength, number of applications, coverage rates, compatibility, effectiveness, surface preparation, application procedures, and desired results.

C. Apply water repellant/anti-graffiti coating to test panels (mock-ups) in accordance with manufacturer's written instructions.

1. Allow 120 hours (5 days) or until test panels are thoroughly dry before applying graffiti paint.

a. Allow graffiti paint to dry for 24 hours prior to removing with cleaner.

1) Professional Phase II Cleaner

b. Repeat cycles of cleanings and document until all graffiti paint is removed.

2. Do not begin full-scale application until test panels are inspected and approved by the **Architect**.

D. Test Panel Requirements:

1. Size: Minimum 4 feet by 4 feet each.
2. Locations: Adjacent to job trailer.
3. Number: As required to completely test each water repellent with each type of substrate to be protected.

E. Retain and protect test panels approved by the **Architect** in undisturbed condition during the work of this section, to be used as standard for judging the water repellent work.

3.5 SCHEDULE

A. Provide a schedule indicating building locations, substrates, water repellents to be used and sequence of water repellent work.

3.6 INSTALLATION

A. Apply water repellant/anti-graffiti coating to substrates in accordance with manufacturer's written instructions, environmental regulations, and application procedures determined from test panel results approved by the **Architect**.

1. Graffiti protection requires a two-coat application.

B. Apply to clean, dry cured, and properly prepared surfaces approved by the **Architect**.

C. Consult manufacturer's written instructions for information on application equipment to be used and precautions to be taken with the specified products.

D. Do not dilute or alter water repellents, unless otherwise specified.

E. Do not apply to below-grade surfaces.

F. Do not apply to asphalt, or polystyrene, which may be affected by the solvent carrier.

G. Do not apply to painted surfaces.

H. Do not apply to compensate for structural or material defects in substrates.

I. Avoid overspray, wind drift, and splash of water repellant/anti-graffiti coating.

J. Apply material as shipped by the manufacturer and do not dilute.

K. Apply material using a high-volume, low pressure, pump-up sprayer (between 40-50 psi), with solvent resistant fittings, foam roller, or brush of natural bristle or foam.

1. Vertical Applications: Apply in a flood coat, from top to bottom, being sure to obtain a 4 to 6 inch rundown of product from the point where the spray makes contact with the surface. Work all the way down the building covering the rundown as you go. Avoid excessive overlapping.

3.7 FIELD QUALITY CONTROL

A. Inspections: Inspect the water repellant/anti-graffiti coating work with the **General Contractor**, **Architect**, applicator, and Professional Products of Kansas representative after a test area in an

inconspicuous location has been applied, and compare with test panel results approved by the **Architect**. Determine if the substrates are suitably protected by the water repellant/anti-graffiti coating.

B. Manufacturer's Field Services: Provide the services of a manufacturer's authorized field representative to verify specified products are used, and protection, surface preparation and application of water repellant/anti-graffiti coating are in accordance with the manufacturer's written instructions and the test panel results approved by the Architect.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Protect surrounding areas, landscaping building occupants, pedestrians, vehicles, and non-masonry surfaces during the work from contact with water repellents, masonry or concrete cleaners if used, residues, rinse water, fumes, wastes, and effluents in accordance with manufacturer's written instructions.

C. Divert and protect pedestrian and auto traffic.

D. Comply with State & local agencies having jurisdiction, requirements for protecting the surrounding areas and all non-masonry surfaces during the water repellant/anti-graffiti coating.

E. Special precautions shall be taken to prohibit fumes from entering the building being treated. Ventilation systems and fresh air intakes shall be turned off and covered.

F. Clean site of all unused water repellant/anti-graffiti coating, residues, rinse water, wastes, and effluents in accordance with environmental regulations.

G. Remove and dispose of all materials used to protect surrounding areas and non-masonry surfaces, following completion of the work of this section.

H. Repair, restore, or replace to the satisfaction of the **Architect**, all materials, landscaping, and non-masonry surfaces damaged by exposure to water repellents.

I. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

J. Provide record drawings in accordance with Division 1 closeout submittal procedures.

K. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 07 19 00

SECTION 07 21 00 – BUILDING INSULATION

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Thermal, Rigid and Acoustical insulation at, but not limited to: exterior & interior walls, soffit framing, and ceilings, and as indicated on the documents & as specified herein.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society for Testing Materials (ASTM)

1.	ASTM E84	Surface Burning Characteristics of Building Materials
2.	ASTM E96	Water Vapor Transmissions of Materials
3.	ASTM E136	Behavior of Materials in a Vertical Tube Furnace at 750°C
4.	ASTM C423	Sound Absorption and the Sound Absorption Coefficient by the Reverberation Room Method
5.	ASTM C553	Specification for Mineral Fiber Blanket and Felt Insulations
6.	ASTM C612	Specification for Mineral Fiber Block and Board Thermal Insulation
7.	ASTM C665	Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.

B. **Standards**:

1. Insulation Manufacturer test data shall be in compliance with ASTM C1289 US Test method to determine LTTR (Long Term Thermal Resistance) R-Values.

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturer's data and MSDS sheets for each product intended for use.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Stipulations:

1. Comply with insulation requirements as herein specified and as indicated in drawings.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include extent of insulation for all insulation types specified for project.
2. General **Contractor** shall request meeting 5 days in advance of construction.

F. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

G. Miscellaneous criteria:

1. Insulation shall be placed and secured in place as herein specified, indicated in drawings and in compliance with manufactures instructions, most restrictive shall apply.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Protect insulation from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

C. Label insulation packages to include material name, production date and/or product code.

D. Deliver insulation to site in original, unbroken and unopened containers. Store material off ground in dry, protected areas.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Wall Construction
2. Ceiling and Soffit Construction
3. Attics and Cavities
4. Roof Construction

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 05 40 00 – Cold-Formed Metal Framing
3. Section 07 84 00 – Fire Stopping
4. Section 09 22 16 – Non-Structural Metal Framing
5. Section 09 29 00 – Gypsum Board & Sheathing Substrates

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 DEFINITIONS

A. "Friction Fit" implies that insulation is installed full height fully within the wall cavity and in complete contact with all surfaces within the cavity.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Thermal and Acoustical Insulation:

a. Owens Corning, www.owenscorning.com
b. KNAUF Insulation, www.knaufinsulation.us/
c. Certain Teed, www.certainteed.com
d. Dow Building Solutions, www.building.dow.com/en-us/

2. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require Architect's approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

2.2 MATERIALS – BUILDING ENVELOPE

A. Thermal Batt Insulation

1. General:

a. Provide at all exterior walls, furring walls at inside face of exterior walls, roofs, ceilings, soffits, and inside header assemblies, to provide complete and continuous building thermal envelope.

2. Concealed Conditions:

a. Manufacturer: Owens Corning

b. Type: Unfaced fiberglass batt insulation

1) Meets ASTM C665 Type I, Class A

2) Meets ASTM C1338 Mold/mildew resistant
3) Meets ASTM E136 Non-Combustible

c. Product: EcoTouch® Pink® Fiberglas™ Insulation with PureFiber® Technology

1) Exception: Refer to Fire Rated Assembly details and notes for specific insulation requirements for insulation to be used at each rated assembly.

d. Installation: Friction Fit to fill cavity
e. Application: Fully enclosed and concealed within wall, ceiling, soffit or header cavities
f. R-Value, ASTM C518:

1) Wood stud framing:

a) 2x6 walls: R-21 5-1/2" thick
b) 2x8 walls: R-22 6-3/4" thick

2) Wood roof framing:

a) Roof trusses: R-21 5-1/2" (where indicated on drawings)
b) Roof trusses: R-38 12" (where indicated on drawings)

g. Surface Burning Characteristics, ASTM E84:

1) Flame Spread: 10
2) Smoke Developed: 10

h. Do not install on top of or within 3" of recessed light fixtures unless the fixtures are approved for such use.

B. Rigid Foam Continuous Insulation (CI)

1. General:

a. Provide at all exterior walls behind exterior wall finish as part of exterior wall assembly, exterior rainscreen assembly, and/or as part of cavity wall assembly.

2. Product:

a. Manufacturer: Owens Corning
b. Type: Rigid Extruded Polystyrene Insulation

1) Meets ASTM C578 Type IV
2) Meets ASTM E119 Fire Resistance Rated Wall Assemblies; refer to manufacturer website for details.
3) UL Classified:

c. Product: Foamular CW25 Extruded Polystyrene Insulation

1) Board Size: 16" x 96"
2) Edge Profile: Square
3) Thickness / R Value: 2" (R-10)

a) R-Value, ASTM C518

4) Compressive Strength, ASTM D 1621: 25 psi minimum
5) Flexural Strength, ASTM C203: 50 psi minimum
6) Water Absorption, ASTM C272: 0.10% maximum by volume
7) Water Vapor Permeance, ASTM E96: 1.10 perm, maximum
8) Dimensional Stability, ASTM D2126: 2.0% maximum linear change
9) Flame Spread, ASTM E84: 5
10) Smoke Developed, ASTM E84: 45-175 (actual number dependent on thickness)

d. Application:

1) Installed over Water Resistant Barrier (WRB) and behind exterior wall finish as part of exterior wall assembly.

e. Installation: Install using corrosion resistant, self-drilling wafer head screws. Screws shall have a length to penetrate the wall framing with 3 fastener threads minimum

C. Roof Rigid Foam Insulation

1. Specified as part of roofing assembly; refer to Roofing Specifications:

a. Section 07 41 13 – Metal Roof Panels

2.3 MATERIALS – INTERIOR

A. Acoustic Insulation:

1. General:

a. Provide acoustic batt insulation at all interior walls, framed ceilings, framed soffits, and inside header assemblies, unless otherwise noted.

2. Concealed Conditions

a. Manufacturer: Owens Corning
b. Type: Unfaced Fiberglass Acoustic Batt Insulation

1) Meets ASTM C665 Type I, Class A
2) Meets ASTM E136 Non-Combustible

c. Product: Sound Attenuation Batt Insulation
d. Installation: Friction Fit to fill cavity
e. Application: Fully enclosed and concealed within wall, ceiling, soffit or header cavities
f. Surface Burning Characteristics, ASTM E84:

1) FlameSpread: 10
2) Smoke Developed: 10

g. Do not install on top of or within 3" of recessed light fixtures unless the fixtures are approved for such use.

2.4 OTHER MATERIAL

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Remove, or protect against, projections in construction framing which may damage or prevent proper installation of insulation.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

C. Coordinate installation of insulation that needs to be installed prior to the erection of wall and/or ceiling framing.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer’s recommendations.

3.4 INSTALLATION

A. General:

1. Install the work of this Section in strict accordance with the original design, requirements of governmental agencies having jurisdiction, and the manufacturer's recommended installation procedures as submitted to and reviewed by the **Architect**, anchoring all components as indicated into position.
2. Install thermal insulation with snug fit at sides and firmly butted ends with no open space existing at perimeter or in between.
3. ANCHOR AND INSTALL LOCATIONS AS REQUIRED BY CONSTRUCTION TYPE & IN ACCORDANCE WITH MFGR'S RECOMMENDATIONS:

a. For additional installation methods & details of installation, refer to manufacturer’s standard details & specifications.
b. Install insulation product such that insulation fits full width between framing members.
c. At enclosed roof / ceiling structures install in compliance with CBC
d. Provide insulation with extended nailing flanges where framing members are shallower than insulation.

4. Where wall framing width differs, install sufficient insulation thickness (or combination of multiple layers) to entirely fill cavity and header by width and height.
5. Install insulation full cavity fill inside all metal stud headers and jambs.
6. For additional installation information, refer to Part 2 schedule of materials as herein specified.

3.5 FIELD QUALITY CONTROL

A. Monitor work to insure installation and assembly are in accordance with applicable standards.

3.6 PROTECTION AND CLEAN UP

B. Refer to Division 1 for protection and cleaning requirements.

C. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

D. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

E. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

F. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

G. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 07 21 00

SECTION 07 26 00 – WATER RESISTANT BARRIER

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Water Resistant (air/vapor) barrier assembly
    a. Base Layer
    b. Top Layer
2. Accessories
3. Coordinate with Flexible Flashing
    a. Refer to Section 07 13 26 – Cold Applied Self Adhering Waterproof Membrane

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction
    a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM C920 Standard Specification for Elastomeric Joint Sealants
2. ASTM D779 Water Vapor Resistance
3. ASTM D828 Tensile Strength
4. ASTM D903 Standard Test Method for Peel or Stripping Strength Testing of Adhesive Bonds
5. ASTM D1004 Tear Strength
6. ASTM D1938 Standard Test method for Tear Propagation Resistance
7. ASTM D3786 Bursting Strength
8. ASTM D5034 Dry Tensile Strength
9. ASTM D5736 Thickness
10. ASTM E84 Flame Spread and Smoke Developed
11. ASTM E96(A) Water Vapor Transmission Rate (perm rating)

12. ASTM E283 Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors
13. ASTM E1677 Air Porosity (seconds)
14. ASTM E2178 Air Permeance
15. ASTM E2357 Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies

E. National Fire Protection Association

1. NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components

F. International Code Council

1. ICC-AC38 Acceptance Criteria for Water-Resistive Barriers

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Water Resistant Membrane (air/vapor)	Basis Weight	3.12 oz/yd^2 or 21.66 lb/msf	TAPPI T410
	Thickness	14.5 mil	ASTM D5736
	Bursting Strength	66 psi	ASTM D3786
	Air Porosity	>4000 sec	TAPPI 460
	Air Permeance of Building Materials	.0047 L/s/m^2	ASTM E2178
	Air Retarder Material or System for Low Rise Framed Building Walls	.01 cfm/ft^2 @ 75 Pa	ASTM E1677 (ASTM E283)
	WVTR (AC38)	91.24 f/m^2/24 hrs	ASTM E96 (A)
	Water Vapor Permeance (AC38)	13 Perm	ASTM E96 (A)
	Water Resistance (Hydrostatic Pressure Resistance)	959 cm	AATCC 127-2003
	Water Resistance (AC38 3.3.2)	Pass	ASTM D-779 (Boat Test)
	Tear Strength (Trapezoidal Tear)	MD – 13.1 lbs CD – 17.0 lbs	ASTM D1117 (ASTM D5733)
	Tensile Strength (AC38 3.3.1)	MD – 30 lbs CD – 30 lbs/in	ASTM D828
	Dry Tensile Strength (AC38 3.3.1)	MD – 59 lbs CD – 56 lbs	ASTM D5034
	Flame Spread	0 Class A	ASTM E84
	Smoke Developed	70 Class A	ASTM E84
	Pliability (AC38)	Pass	AC-38
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. Construction Monitoring/Observations by others:

Item	Name of Test	Performance Results	By Whom
Assembly	Wall opening installation compliance	Comply with installation requirements of mfgr. and drawings	Product representative

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturer's data and shop drawings.

1. Membrane
2. Tape
3. Product info. / data sheets

E. Submit samples

1. Membrane
2. Tape

F. Mock Up

1. Erect at location approved by Architect.
    a. Mock-up shall be part of final construction once approved by Architect.
    b. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.
2. Mock-ups
    a. Wall surface, wall corners, door opening, and window opening
    b. Create as part of overall Wall Assembly and Flexible Flashing mockups.
        1. Mock-up of wall, corners & horizontal conditions shall comprise of all underlayment, flexible flashing, internal metal flashing components as specified and indicated in Drawings.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Water Resistant Barrier (Section 07 26 00) and Cold Applied Self-Adhering Membrane (CASAM) specified herein shall be provided through a single source and from a single manufacturer.

C. Contractor /Installer/Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

D. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

E. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation membrane installation work to review installation procedures.

1. Manufacturer's representative shall review and certify all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the Architect by the manufacturer's representative.

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Review of submittals.
b. Review of surface preparation, minimum curing period and installation procedures.
c. Review of special details and flashings.
d. Sequence of construction, responsibilities and schedule for subsequent operations.
e. Review of mock-up requirements.
f. Review of inspection, testing, protection and repair procedures.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. After delivery, be responsible for storage, protection and placing of all items to be installed under this Section. Repair or replace damaged work, as directed by **Architect**. All work must be clean and free of soil, grease, dirt, finger or tool marks after installation.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.8 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's **five (5)** year warranty that water resistant barrier and accessories are free of defects at time of delivery and are manufactured to meet manufacturer's published physical properties and material specifications.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.9 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Wall framing
2. Wall sheathing
3. Windows
4. Doors

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 06 10 00 – Rough Carpentry
3. Section 07 13 26 – Cold Applied Self-Adhering Membrane – CASAM
4. Section 07 21 00 – Building Insulation
5. Section 07 41 13 – Metal Roof Panels
6. Section 07 46 19 – Metal Siding and Soffit Assembly
7. Section 07 54 00 – Thermoplastic Membrane Roofing
8. Section 07 62 00 – Sheet Metal Flashing and Trim
9. Section 07 92 00 – Sealants and Caulking

1.10 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.11 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Grace Construction Products, www.gcpat.com/en/solutions
2. Henry, us.henry.com
3. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 WATER RESISTANT MEMBRANE

A. Provide membrane wrap (wall wrap, window, door opening & header wrap) in accordance with manufacturer's specifications:

1. Coordinate the installation of material with other window and door waterproof membrane installation.

B. Membrane:

1. **Type:** **Water Resistant Membrane – Base Layer**

a. Mfgr.: Grace Construction Products
b. Product: Perm-A-Barrier VPS 30
c. Description: Primerless, self-adhering vapor permeable air and water barrier membrane consisting of a breathable carrier film with a specially designed adhesive.
d. Accessories:

1. Perm-A-Barrier NPS detail membrane
2. Perm-A-Barrier Aluminum Flashing
3. Perm-A-Barrier Detail Membrane

a. Refer to Section 07 13 26 – Cold Applied Self-Adhering Membrane (CASAM)

4. Perm-A-Barrier Wall Flashing

a. Refer to Section 07 13 26 – Cold Applied Self-Adhering Membrane (CASAM)

5. Perm-A-Barrier S100 Sealant
6. Bituthene Mastic
7. Bituthene Liquid Membrane
8. Sealants

a. Refer to Section 07 92 00 – Sealants and Caulking

C. Penetrations & Termination Sealant:

1. Liquid Membrane for Details and Terminations:

a. Bituthene Liquid Membrane manufactured by GCP Applied Technologies; a two-part, elastomeric, trowel grade material designed for use with self-adhered membranes and tapes. 10 g/L max. VOC content.

2. Substrate Patching Membrane:

a. Bituthene Liquid Membrane manufactured by GCP Applied Technologies; a two- part, elastomeric, trowel grade material designed for use with self-adhered membranes and tapes. 10 g/L max. VOC content.

3. Joint Sealant:

    a. Refer to sealant manufacturer's recommendations and Section 07 92 00 – Sealants and Caulking

2.3 AIR/VAPOR MEMBRANE

A. Provide membrane wrap (wall wrap, window, door opening & header wrap) in accordance with manufacturer's specifications:

1. Coordinate the installation of material with other window and door waterproof membrane installation.

B. Product:

1. **Type:** **Reinforced Air/Vapor Membrane**

    a. Model: Commercial wrap, Header wrap & Accessories
    b. Mfgr.: Tyvek
    c. Accessories:

        1. Tape:

            a. Tyvek Housewrap Tape
            b. 3M 8086 Cont. Sheathing Tape
            c. Venture Tape #1585 CW
            d. Clipper Tape, mfg. = Cantech Industries

        2. Attachment to substrates:

            a. Window & door flanges substrate:

                1. Latex or polyurethane based sealants or building wrap manufacturer's approved tape

            b. Masonry substrate:

                1. Adhesives or caulking with latex or polyurethane base

            c. Wood or insulated sheathing board:

                1. Nails with large heads or nails with plastic washer heads

    d. Installation:

        1. Install using manufacturer's Energy saving system
        2. Apply paper with horizontal overlaps & tape
        3. Install per mfg.'s standard details

2. Options:

    a. Griffolyn: Type: 65
    b. Raven Industries: FORTRESS WRAP

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 INSTALLATION

A. General:

1. Install all vapor membrane membranes straight, true, and firmly anchored in place.
2. Install in accordance with manufacturer's recommendations, at locations indicated on Construction Documents

B. Water Resistant Barrier (WRB) Membrane

1. Prime substrate to receive air barrier membrane as required per manufacturers written instructions
2. Precut pieces of WRB into easily handled lengths.
3. Remove release linear and position membrane carefully before placing against the surface.
4. Install two separate water-resistant barrier layers over entire substrate sheathing and overlap seams.
    a. Lap horizontal joints 4 inches min.; vertical joints 6 inches min.
    b. Building paper around corners at least 24 inches before making lap.
    c. All vertical joints shall be made only over vertical framing member.
5. Install the water-resistant barrier layers in shiplap fashion.
6. Install self-adhering cold applied self-adhering waterproof membrane strips at all openings in conjunction with the water resistant barrier and fit together in shiplap fashion.
7. Install over Cold applied self-adhering waterproof membrane and flexible flashing tight, smooth and without breaks behind trim accessories.
8. Coordinate with details for conditions that require cold applied self-adhering waterproof membrane and flexible flashing to be installed over water resistant barrier.
9. Coordinate with details for conditions that require cold applied self-adhering waterproof membrane and flexible flashing to be installed over control joints, expansion joints, casing beads and/or drip molds, etc.

10. Coordinate the installation of WRB with roof installer to ensure continuity of membrane with roof air barrier.
11. At end of each working day seal top edge of WRB to substrate with termination sealant.
12. Do not expose WRB to sunlight for more than 150 days prior to enclosure.
    Inspect installation prior to enclosing and repair punctures, damaged areas and inadequately lapped seams with a patch of the membrane sized to extend 6 in. in all directions from the perimeter of the affected area.

3.5 COMMISSIONING

A. Provide factory-certified field service engineer to a site visit to ensure proper system installation and operation under following parameters:

   1. Mock ups of window and door openings

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

   1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
   2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

   1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** Notice of "Certificate of Substantial Completion".

END OF SECTION 07 26 00

SECTION 07 28 00 – CONCRETE SLAB VAPOR EMISSION AND ALKALINITY CONTROL TREATMENT

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the Owner's General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable extents of work at the jobsite as dictated by areas of concrete tested to exceed acceptable vapor emission levels and alkalinity levels.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Porous or non-porous slab testing to determine and verify substrate conditions and values for:

    a. Vapor emission
    b. Humidity
    c. Ph

2. Provide remedial liquid applied reduction slab treatment to concrete to bring vapor emissions, relative humidity and alkalinity levels within herein listed levels for slab areas tested to be defective.

    a. Two component epoxy (refer to levels reduced to and product), solvent free, water-reduced, concrete moisture vapor, alkalinity moisture and Alkalinity salt suppression barrier for prepared substrates for the application of applied flooring to meet listed criteria.
    b. Two coats minimum unless listed to be three per specific manufacturers.

        1. Single coat systems are not acceptable

    c. Provide unit cost for remedial slab treatment in accordance with Section 01 22 00 – Unit Prices.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

    a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Concrete Institute (ACI), www.aci-int.org

1. ACI 302 The Guide for Concrete Floor and Slab Construction

E. American Society for Testing and Materials (ASTM), www.astm.org

1. ASTM C33 Standard Specification for Concrete Aggregates
2. ASTM D1308 Chemical Resistant to Alkali
3. ASTM D4541 Pull-off Adhesion Strength of Coatings Using Portable Tester
4. ASTM E96 Water Vapor Transmission of Materials
5. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
6. ASTM F 1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
7. ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Slabs Using *in-situ* Probes"

F. Ceramic Tile Institute (TCA), www.ctioa.org

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Concrete preparation	Shot Blasting	#4 profile (CSP)	ICRI
Properties of concrete after treatment	Water Vapor Transmission (WRT)	3.0 lbs max. (tested up to 20lbs)	ASTM E96
	Water Vapor Permeance (WVP)	8.1 Grams/Pa-s-m^2 x 10-8 max	ASTM E96
	Chemical resistant	Tolerant to14pH alkali exposure, 30 day resistance	ASTM D1308 ASTM F710
	VOC levels	50g / liter	EPA, SCAQMD Method 24
	Relative Humidity	Tolerant to 100% RH exposure	ASTM F2170
	Concrete adhesion	(10% of compressive concrete design strength as herein listed) psi min.	ASTM D4541 & D7234
Adhesion to concrete	Cohesive pull off adhesion	359 psi or 100% substrate failure	ASTM D4541 ASTM D7234
Interior room conditions –	Temperature during treatment	45-90 degrees for a 24 hour period before and after	ASTM F1869

during topical treatment application	Cured time	24 hours at 70 degrees F, min. unless more restrictive by specific product mfgr.	
	Humidity	Less than 60%RH	
Refer to drawings and as herein specified			

C. **Construction Testing by Others:**

Item	**Name of Test**	**Performance Results**	**Testing Std.**
Concrete Floor Slab substrate	Calcium chloride vapor emissions	Not to exceed 3.0lbs	ASTM F1869
	Concrete pH levels	Not to exceed 9.0pH	
	Relative humidity of concrete substrate	Not to exceed 75%RH	ASTM F2170
Adhesion of topical treatment	Cohesive adhesion	Pass at 100% concrete failure	ASTM D4541 & D7234

Test entire floor areas.

- All concrete floors shall be tested in accordance with listed standards and as herein specified.
- Testing shall be done per manufacturer's recommendations.
- Testing shall be done by an independent testing lab hired by General Contractor
- Install and test in compliance with herein listed ASTM standards
  - Three (3) test kits are required in areas up to 1,000 square feet to be evenly spaced throughout the initial 1000 sq. ft. area.
  - One (1) additional test kit for each additional 1,000 square feet thereafter shall be used.
- Levels exceeding the values herein listed shall require remedial floor treatment to bring PH, relative humidity and Vapor emissions levels within allowing levels.

Provide testing report to the Architect and Owner including, but not limited to the following:

- Provide written Test Report for the slab area tested, report shall include Slab Vapor Emission, relative humidity, pH and Adhesion results.
- All testing locations shall be indicated on a full size floor plan drawing for all floors and listed in numerical order.
- All testing results shall be written in permanent black marker on the concrete floor slab at all locations in numerical order to match full size drawing markup.
- Written documentation of interior temperature and humidity for each location during testing.
- Name and model of all testing equipment used.
- Name(s) of personnel performing each test.
- Digital pictures of prepared test site and installed equipment at each test kit location.
- Tested results labeled to coincide with full size plans.
  Test results will not be accepted if testing is done when the mechanical HVAC system is not running at required values and environment is not at required temperature and relative humidity levels.

D. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Warranty/Guarantee

    a. Manufacturers letter authorizing project warranty period

2. Provide current ASTM laboratory testing third party reports for all listed and applicable ASTM standards

    a. Third party testing information and drawings with testing results as herein specified

3. Field Acceptance: Written acceptance of onsite conditions for specified system installation

4. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

5. Treatment:

    a. System: Descriptive literature / product data and installation details.
    b. Safety information: Current material data safety sheets
    c. Submit method for cleaning and bead blasting surface of concrete for treatment.
    d. Standard product data sheets and testing reports as it will appear when issued upon completion of work, demonstrating compliance with this section.
    e. Provide a letter from manufacturer's full time installation supervisor accepting and warranting installer's workmanship and that criteria of this section has been met.

E. Submit samples.

1. Not applicable

F. Certification:

1. Manufacturer's Product Liability Insurance Certificate

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer:

1. Manufacturer's trained personal shall have a minimum of five (5) years installation experience of the specific herein listed concrete emission and pH control treatments.

    a. Provide list of 5 projects of similar size and complexity that have been completed for a period of four (4) years and performing to required standards.
    b. Provide project references consisting of Owner, installer, General Contractor, contact information, vapor emission levels encountered and date completed.

2. Performance Guarantee: Refer to GUARANTEE / WARRANY heading.
3. Install and test per manufacturer's written instructions and in strict accordance with listed and applicable ASTM standards.

C. Manufacturer:

1. Shall have a minimum of five (5) years producing vapor emission and pH control systems.
2. Provide full time on site technical supervision during all installations.
3. Provide warranty as herein listed.
4. Provide performance references of five (5) successful projects that are a minimum of two (2) years of age.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid.

E. Stipulations:

1. Testing Contractor:

a. Testing shall be performed by an independent testing agencies that is not associated with the slab installer or any of the flooring installers and/or flooring manufacturers & in accordance with ASTM standards.
b. Retesting done after all applications until specified levels is achieved.

2. Products:

a. Shall be directly compatible with products to be installed on top of it including;

1. Flooring adhesives
2. Thin sets
3. Mortar beds
4. Cement overlayments for floor surface smoothing.

3. Regulatory requirements: Materials and equipment used for this project shall comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA).
4. Treatment shall be placed over exposed cast-in-Place concrete, not over any floor leveling products.
5. Treatment shall not be placed over any gypsum materials.
6. Contractor shall determine if floor slab is a Porous slab or non-porous slab.
7. Product used shall be able per their specifications accommodate the tested vapor admission rate, otherwise an alternate product as herein specified shall be used.

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. How testing is done
b. Where testing shall be done
c. What area's do and do not require testing
d. Schedule of work
e. Review of the testing methods.

f. Documentation of testing
g. Treatment manufacturer's observations and acceptance of site and treatment.

2. General Contractor shall request meeting 35 days in advance of scheduled finish flooring installation.

G. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during testing and treatment to review procedures.

1. Manufacturer shall review and accept all testing prior to product installation.
2. Manufacturer's representative shall review and observe all phases of construction to accept the site and complete work meets specification requirements for warranted installation.

H. Miscellaneous criteria:

1. Test results will not be accepted if testing is done when the mechanical HVAC system is not running at required values and environment is not at required temperature and relative humidity levels.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Store materials in a dry, cool location.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1. Field-verify that concrete slabs have cured sufficiently for testing and for treatments.

B. Building Enclosure and Environment Limitations:

1. Building to be conditioned as described within ASTM standards.
2. Space must be fully enclosed with permanent HVAC in operation.

C. Surface conditions:

1. Do not apply system when water is accumulated on the surface of concrete.
2. Do not install over any gypsum materials.
3. Self-leveling material shall be 100% cement based and have a compressive value of 4,100 psi as approved by Remedial Treatment manufacturer and installed on top of treatment at a nominal 1/4" thickness.

a. Refer to Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious

D. Room conditions:

1. Do not apply system when room temperature is less than 50 degrees F and humidity exceeds 55% RH.

a. Provide continuous air movement in room during treatment.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial one (1) year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of Owner within the warranty period, such defects shall be repaired and replaced at no cost to the Owner.

C. Furnish manufacturer's additional warrantees as indicated below agreeing to repair and/or replace remedial treatment work and the applied finish flooring material which has failed as a result of defects in materials or workmanship of remedial treatment.

1. Manufacturer's Installation Warranty:

a. Manufacturer to provide a standard installation warranty covering installer's installation workmanship and treatment of concrete slab to maintain the values as herein listed for both the Vapor Emissions and the alkalinity levels for a period of **Ten (10)** years starting from the date of Substantial Completion.

1. In the event of treatment failure by concrete cohesive failure, concrete originated vapor emission, in concrete relative humidity and alkalinity (pH), manufacturer and installer shall provide materials and installation labor for replacement of remedial treatment and then the destroyed flooring system at no charge to the **Owner**.
2. The warranty will cover re-testing and new treatment of the floor slab to bring levels back into those herein listed.

b. Warrants covering manufacturing defects
c. Does not exclude concrete cohesive failure unless surface is plagued by an (ASR) Alkali-Silica Reaction and/or Alkali-Aggregate Reaction (AAR) issue.

2. Manufacturer's Product Liability Insurance Certificate:

a. Manufacturer shall provide evidence of a product liability insurance policy. Insurer shall have no less than an "A" rating from one of the four major rating services. A certificate of insurance shall be delivered to the Owner and shall name the Owner, Architect and General Contractor as co-insured.
b. Warrants covering manufacturing defects
c. Does not exclude concrete cohesive failure unless surface is plagued by an (ASR) Alkali-Silica Reaction and/or Alkali-Aggregate Reaction (AAR) issue.

D. Warranty exclusions shall be limited to:

1. Topical flooding over finish flooring that destroys adhesion of finish flooring to substrate.
2. Treatment damage from flooring demolition or removal.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Concrete floor slab curing
2. Floor leveling treatment
3. Finish flooring

B. Related sections include, but are not limited to the following:

1. Division 1
2. Section 03 30 00 – Cast-in-Place Concrete
3. Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious
4. Division 9 Finish Flooring Sections

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the treatment, materials, finish, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with General Contractor.

B. Schedule required testing and remedial treatment with curing of concrete and installation of finish flooring.

1. Schedule testing far enough in advance of flooring installation to provide ample time to install remedial treatment of slab, test, and re-treat as required.

1.13 TESTING AGENT

A. Refer to Division 1 for Testing Laboratory service requirements

B. Independent testing lab to test vapor emission and alkalinity levels before and after treatment and continually until acceptable levels are met.

1. Refer to Testing under Part 3 of this specification

1.14 GENERAL SYSTEM DESCRIPTION

A. Test concrete slabs as herein specified.

B. Slab treatment:

1. Shot blast
2. Vacuum and pre-dampen surface
3. Treatment installation
4. Primers
5. Cement topcoat
6. Cementitious floor leveling by others as required.

a. Refer to Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious

C. Retest slabs to determine if more treatment is required.

D. Retreat and test until specified values are met.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as herein listed and in Drawings:

1. Treatment:

a. Synthetics, Intl. www.syntheticsintl.com
b. MaiPei, www.maipei.com/us-en
c. Koster, www.kosterusa.com/us_en

2. Testing equipment:

a. American Moisture Test, www.americanmoisturetest.com

3. Reviewed Equivalent by Architect.

a. Substitutions and deviations shall require Architect's approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS - TESTING

A. Concrete Testing:

1. Application: Test concrete slabs, typically at all conditions
2. Products:

a. Concrete Moisture Vapor Test Kit:

1) Product:

a) Mfgr: American Moisture Test, Inc., www.americanmoisturetest.com
b) Product: AMT Dome Test
c) Method: Anhydrous Calcium Chloride
d) Limitations: Typical
e) Notes: Conduct test on the slab in the environment that closely matches that of which the finish-flooring environment will be in.

b. AlkalinityTest Kits (pH)

1) Application: Test concrete slab typical at all conditions and in conjunction with Vapor Emission tests.
2) Product:

a) Mfgr: American Moisture Test, Inc., www.americanmoisturetest.com
b) Product: Factory pre-calibrated probes, RH probe accuracy of 2%-3%
c) Notes: Factory pre-calibrated probes, RH probe accuracy of 2%-3%

c. Relative Humidity Emission Test Kits:

1) Application: Test concrete slab typically at all conditions
2) Product:

a) Mfgr: American Moisture Test, Inc., www.americanmoisturetest.com
b) Product: RH test
c) Method: In-Situ Relative Humidity
d) Limitations: Typical

2.3 MATERIALS – REMEDIAL TREATMENT

A. Moisture and Alkalinity Treatment Schedule, materials and components:

1. General:

a. Application: Typical all conditions when slab does not meet vapor emission, relative humidity, and/or alkalinity levels, and as directed by Architect, no exception taken.

2. Remedial Treatment Schedule:

a. Synthetics International:

1) Schedule:

a) Slab tests up to 20 lbs or less and up to 100% relative humidity:

i. Mfgr: Synthetics International
ii. Product: Synthetic 30 – factory mixed

a. Restricts 30 lbs of vapor per ASTM F1869
b. Controls 14pH alkalinity per ASTM F710
c. Tolerant to 100% RH per ASTM F2170

iii. Components: Two & water reducible epoxy
iv. Coats: Two, min.
v. Slab Preparation: Shotblast per manufacturer's recommendations
vi. Performance: As herein specified
vii. Standards: As herein specified
viii. Recoat time: Per manufacturer's standards
ix. Foot traffic time: Per manufacturer's standards

b. Alternate 1:

1) Slab tests at 20 lbs or less and up to100% relative humidity:

a) Mfgr: Koster

b) Product: VAP I® 2000 Zero VOC
c) Components: Two-component, epoxy resin
d) Coats: One, min.
e) Slab Preparation: Shotblast per manufacturer's recommendations
f) Performance: As herein specified
g) Standards: As herein specified
h) Recoat time: Per manufacturers standards
i) Foot traffic time: Per manufacturer's standards

c. Alternate 2:

1) Slab tests at 20 lbs or less and up to 100% relative humidity:

a) Mfgr: MaiPei
b) Product: Planiseal EMB
c) Components: T wo-component, epoxy
d) Slab Preparation: Shotblast per manufacturer's recommendations
e) Application Thickness: One coat, min., 18 mil. Min.
f) Performance: As herein specified
g) Standards: As herein specified
h) Recoat time: Per manufacturer standards
i) Foot traffic time: Per manufacturer standards

3. Remedial treatment surfacing:

a. Application: Install over remedial treatment per treatment manufacturer's recommendations

1) Cement Top coat:

a) Refer to Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious

4. Remedial treatment primers and floor leveling materials:

a. Application: Install primers and/or cementitious floor leveling materials over remedial vapor emission and alkalinity control treatment per treatment manufacturer's recommendations

1) Refer to Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the General Contractor subject to the approval of the Architect.

B. Leveling cement in accordance with treatment manufacturer's requirements and Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious

1. Coordinate with finish flooring materials for compatibility with surface finish of treatment.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

C. Treatment shall be installed in all areas not meeting herein specified criteria.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with material treatment criteria.

B. Prior to installation, mask or otherwise protect all walls, equipment and other items from the effects of shot blasting and application.

C. Diamond Grind, Shot blast, sand or scarify concrete surface to insure bonding of remedial treatment to concrete in accordance with manufacturer's written instructions.

1. Shot blast surfaces using #390 to #420 shot to insure remedial treatment penetration into concrete.
2. Diamond grind near wall base, edges and columns.

D. Sweep, broom and vacuum all surfaces to control dust and possible treatment contamination.

E. Treat all cracks, control joints as required for a warranted assembly.

F. Clean and fill all divots, chips voids and other surface irregularities with Portland based cementitious fill only after remedial treatment application is complete.

1. Gypsum based materials are not acceptable under any circumstances.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Prepare concrete surface and apply treatment system in accordance with manufacturer's instructions for a warranted system.

1. Maintain air movement and ventilation during process by using box and floor fans in accordance with floor treatment manufacturer.

C. Provide remedial treatment system as a final finishing surface in all areas except:

1. Ceramic, quarry and Porcelain tile flooring
2. As indicated in documents

D. Treatment:

1. Treat all floors which exceed the specified limits of either Vapor emissions and/or Alkalinity.
2. Install product over CIP concrete and into all cracks and joints.
3. Install per manufacturer's written instructions and in strict accordance with indicated and required ASTM standards.

    a. Provide written documentation of interior temperature and humidity during testing
    b. Provide digital pictures of prepared test site and installed equipment
    c. Provide name of testing equipment
    d. Provide name(s) of personnel performing tests
    e. Provide topical treatment manufacturers acceptance letter for testing and treatment to meet warranty and insurance criteria.

4. Retreat all areas that fail testing until said testing shows compliance with specified levels.

3.5 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator General Contractor and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.

1. The Applicator shall be responsible for the proper application of the materials.

B. Pre-flooring Installation:

1. Conduct testing of on the slab prior to finish flooring installation and after mechanical HVAC system is operating so the environment closely matches that of which the finish-flooring environment will be in.
2. Testing shall be performed in accordance with listed and applicable ASTM standards.

E. After Slab Treatment – Compliance Testing:

1. After remedial treatment is done, test floor in the same locations as initial test to ensure that levels are attained for maximum Vapor Emissions, pH and adhesion.
2. Retreat all areas that fail and retest until levels are met.
3. Retest and retreat until levels are achieved.

3.6 CONCRETE TESTING (Typical)

A. Testing:

1. Initial:

    a. Install and test all concrete slabs / all levels:

1) 1st:
    a) Porous slab or non-porous concrete
2) 2nd.
    a) Vapor Emission
    b) Humidity
    c) Ph

b. Install and test per manufacturer's written instructions and in strict accordance with listed ASTM standards.
    1) Provide written Test Report for the slab area tested.
    2) Testing shall be done per manufacturer's recommendations and coordinated with this Section.
        a) A shop drawing shall be submitted identifying the locations for all the test kits, values and numerically listed.
            i. This drawing shall be used for Compliance testing after remedial treatment is complete.
        b) Floor slab shall be marked in permanent black marker for tested values and numerically noted to match full size drawing with testing locations documented.
    3) Interior temperature and humidity during testing
    4) Digital pictures of prepared test site and installed equipment
    5) Name of testing equipment
    6) Personnel performing tests.

2. Schedule:
    a. 1st: Testing
        1) Testing contractor shall coordinate with General Contractor and each flooring contractor to make determination if floor is considered a Porous or Non-Porous concrete slab.
    b. 2nd Testing:
        1) Moisture vapor:
            a) Testing will be performed using prepackaged calcium chloride dome test kits according to following test schedule.
                i. Use minimum of 3 kits for area up to 1,000 square feet.
                    a. Use additional test kit for each additional 1,000 square feet or portion thereof.
                ii. Place tests a minimum of 5 feet from exterior walls and away from UV light.
                iii. Mark each test location and number on the concrete surface using a marker and submit each test location on a reduced floor plan.
                iv. Calculate test results and expressed in pounds of moisture vapor emitted per 24 hours in 1,000 square foot area.

b) pH:

i. Digital Alkalinity-pH testing:

a. Directly within moisture dome area, apply a 1 inch x 1 inch amount of water and allow to soak into surface for 60 seconds.
b. Expose flat tip meter to water and allow to calculate pH level for 10 seconds.
c. Document pH reading.

c) Humidity:

i. In-Situ Relative Humidity testing:

a. When installing moisture vapor tests, prepare each relative humidity test location adjacent to the calcium chloride test locations.
b. Using a 5/8 inch drill bit, drill into concrete to the required depth.
c. Vacuum and blow out debris.
d. Install manufacturer provided plastic sleeves and air tight cap.
e. After 72 hours of acclimation, expose RH probe and allow to acclimate for 30 minutes.
f. Document the RH readings, temperature and required data for review.

c. Submit all test results, locations and flooring tolerance to Owner and Architect.

3.7 CONCRETE TREATMENT (Typical**)**

A. Treatment:

a. Proceed with vapor reduction system in areas exceeding the following:

1) Maximum level shall not exceed: 3.0 pounds/ 9.0pH/ 75% RH

2. Treat all floors which exceed the specified limits in Vapor and pH.

a. At a minimum the entire room within the wall boundaries where a Vapor emissions test and/or a pH test exceeds the maximum levels shall be treated

3. Install per manufacturer's written instructions and in strict accordance with ASTM standards.

a. Provide written documentation of all testing and conditions.

1) Interior temperature and humidity during testing
2) Digital pictures of prepared test site and installed equipment
3) Name of testing equipment
4) Personnel performing tests

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the Owner.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the Architect after he receives the General Contractor's NOTICE of "Certificate of Substantial Completion".

END OF SECTION 07 28 00

SECTION 07 41 13 – METAL ROOF PANELS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Metal Roofing System, roof penetration boots and flashings, downspouts, copings, gutters, and flashing:

a. Provide a preformed, full length, standing seam prefinished Exterior Metal Roofing System of panels, preformed flashing, custom flashing, complete and weather-tight as specified and as indicated in the details and drawing documents.

1. Flat panels

b. Trim, clips, support angles, splines, stiffeners, fasteners and other devices required for secure anchorage of panel system, flashings, etc. to building roof deck, structure, parapets, etc.
c. Accessory clips for securing items to standing seem roof – standing seams.
d. System design and installation shall incorporate continuous support cleats for rake and ridge flashing and support clats to secure roofing panels, and other devices required for secure anchorage of roofing system and accommodating expansion and contraction of the material

1. Fasteners shall be compatible with all materials they come in contact with.

e. Provide System, which provides for waterproof infiltration and air infiltration resistance comprised of a manufacturer's standard components.
f. Provide engineering calculations.
g. Provide System comprised of complete fully sealed joints and seams with interlocking flashing assemblies for all joints indicated and where required by roofing panel manufacturer.
h. Panel system must be mechanically fastened and be designed to allow thermal expansion / contraction to eliminate imposing inordinate stress to the panels.
i. System shall be designed as 'silent' in that panels can move without snapping and / or popping during expansion and / or contraction.
Installation of Metal Roofing assembly and flashing.

2. Work of this Section includes, but is not limited to materials, flashing, copings, gutters, downspouts and incidentals necessary to provide fastening of Roofing panels to substrate **and accessories for attachment/separation of roofing panels to dissimilar material and gasketing** as shown and/or indicated on the Drawings.

3. Work shall also include fabrication and installation of all other sheet metal coping work.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. Aluminum Association (AA), www.aluminum.org

E. Architectural Aluminum Manufacturers Association (AAMA):

1. AAMA 501.2 Field Check of Metal Curtain Walls for Water Leakage.

F. American Society for Testing and Materials

1. ASTM A-653 / A-653M. Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

a. Minimum yield 40,000psi

2. ASTM A 924/A-792: Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

a. Minimum yield 40,000psi
b. Coating Class AZ50Zincalume, 55% zinc-aluminum coating

3. ASTM A792/A792M Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot Dip Process.
4. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. ASTM D 828: Standard Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus

a. Machine Direction (Slip Sheet)
b. Cross machine direction (Slip Sheet)

6. ASTM D 1735: Method for Water Fog Testing of Organic Coatings.
7. ASTM D2247 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
8. ASTM E-1592: Standard Test Method for Structural Performance of Sheet Metal Roof and Siding systems by Uniform Static Air Pressure Difference

a. Wind uplift

9. ASTM E-1646-95 Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

a. Water Penetration

10. ASTM E-1680-95 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.
    a. Air Infiltration
11. ASTM G90 Standard Practice for Performing Accelerated Outdoor Weathering of Non-Metallic Materials Using Concentrated Natural Sunlight.

G. Factory Mutual (FM), www.fmglobal.com

H. International Code Council (ICC), www.iccsafe.org

I. National Coil Coating Association, www.**coil**coating.org

J. Sheet Metal and Air Conditioning Contractors, Association (SMACNA), www.smacna.org

K. Sealant, Waterproofing and Restoration Institute (SWRI), www.swrionline.org

L. Underwriters Laboratory (UL), www.ul.com

1. UL 263: Non-Combustible
2. UL 256: Insulated metal deck construction assemblies -
   a. Construction #120 & #123
3. UL 790: Class A, B & C metal roof covering

M. CAN/ULC

1. CAN/ULC S770 LTTR, Long-term thermal resistance values

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Assembly	Uplift	Rated up to 90 mph	CBC UL 580
Panels	Finish	Weathering-No checking, blistering or adhesion loss when tested for 2000 hours in accordance with	ASTM G23-69
	Finish	Chalking-Will not chalk greater than #8 rating when tested for 2000 hours	ASTM D659
	Finish	Fading-Color change will not exceed 5 NBS units when tested for 2000 hours.	ASTM D2244
	Finish	Humidity-Shall be less than 5% of #8 blister when tested for 2000 hours in 100% humidity at 100° F.	ASTM D2247

	Finish	Salt spray-No more than 3/16" creep or tape off from scribe and less than 5% of #8 blister when tested for 1000 hours in 5% salt fog at 95°F	ASTM B117
	Formability-	No rupture or removal of coating when subjected to 180° bend around a 1/8" mandrel and Scotch 610 tape test	ASTM D1737
	Finish	Hardness-Will be F-2H pencil hardness when tested	ASTM D3363
	Finish	Abrasion Resistance-Coating system shall withstand a minimum of 80 liters of falling sand before appearance of base metal per	ASTM D968
	Finish thickness	Coating Thickness: (Ceramic Pigments only) Painted: Exterior surface:0.2 mil corrosion resistant primer and 0.8mil mil finish coating = dry film thickness of 1.0 mil (baked on system) Interior surface: 0.15 mil corrosion resistant primer and 0.35 mil off-white backer = dry film thickness of 1.0 mil (baked on system)	
Finish	Color and fading	No cracking, peeling, blistering or loss of adhesion. Color change, after removal of surface deposits such as dirt or chalk, maximum 5 NBS units.	ASTM G90
	Humidity resistance	No blistering, peeling or loss of adhesion after 1000 hours	ASTM D2247
Assembly	Panel deflection	Maximum deflection panel system L/180 over total panel span	
	Air Infiltration	Air Infiltration: maximum 0.06 cfm kg/m (0.33m^3/hr kg/m) of seam at static pressure of 6.24 psf (3 kPa) when tested per	ASTM E1680.
	Water Penetration	No uncontrolled water penetration through joints	AAMA 501.2
	Water Penetration	No uncontrolled water penetration through the joints at a static pressure of 6.24 psf (3.0 kPa).	ASTM E1646
	Panel tolerances	• No panel shall be constructed with any bow allowance in panel face or edges. • All panel systems shall be back supported as required to meet deflection standards specified herein. • All panel systems shall be constructed and installed to prevent "oil canning". • Face of panels shall not vary in plane to any adjacent panel.	Project requirement

		• Allowable lateral tolerances: 1/8 inch in 10 feet for plumb, level, warp and bow. TOLERANCES VARIATION SHALL NOT BE COLLECTIVE**.**	
Roof	Slope	• 2:12 minimum	Mfgr
Refer to drawings and as herein specified			

C. **Sustainability:**
   1. Refer to Division 1 sustainability requirements.
   2. Refer to product criteria identified herein.

D. **Construction Monitoring/Observations by others:**

Item	**Name of Test**	**Performance Results**	**By Whom**
Roofing assembly Installation	Warranty compliance certification	Substrate shall be inspected and approved/certified. Sheet membrane assembly shall be inspected and approved/certified. Final roof installation shall be inspected and approved/certified.	Manufacturer's representative

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturers data and shop drawings.

   1. Submit detailed shop drawing that explicitly shows, indicates and demonstrates all general connection types including but not limited to corresponding details that match plan document details indicating:

      a. Indicate layout of panels and panel sizes, including custom-fabricated panels if indicated; indicate each item of trim and accessories.
      b. Indicate in detailed drawings profile and gauge of interior and exterior sheets, and locations and types of fasteners; indicate locations, gas, shapes and methods of attachment of panels, trim and accessory items.
      c. Indicate products/materials required for construction activities of this section not supplied by manufacturer of products of this section.
      d. Submit signed Structural calculations confirming uplift requirements.
      e. Product literature including but not limited to:

         1. Roofing Panels
         2. Flashing
         3. Waterproof Membrane
         4. Fasteners
         5. Roof penetration boots and flashing
         6. Accessory attachment clips
         7. Flexible flashing, CASAM

8. Copings
9. Gutters
10. Downspouts
11. Insulation

f. Detail and location of, but not limited to:

1. Manner of forming
2. Joining
3. Securing of metal panels and cleats to structural deck
4. Waterproof connections
5. Interlocking roof panel to flashing joints
6. Interlocking roof panel to gutter joints
7. Interlocking joints at transition conditions
8. Expansion/contraction joints necessary to accommodate thermal movement.
9. Design calculations determining maximum thermal expansion used for assembly design.
10. Details for separation of roofing material from dissimilar materials.
11. Flashing and continuous cleats
12. Roof penetration boots and flashing
13. Copings

E. Samples: Submit samples of the following:

1. Roofing Panel Assembly: Two samples each of

a. Two – 12" long roofing panel sections in specified color
b. Gutter assembly X 6" long
c. Downspout X 12" long
d. Copings section x 6" long
e. Stainless steel cleats
f. Stainless steel fasteners
g. Flashing
h. Gasketing
i. Sealant
j. Waterproof Membrane underlayment, CASAM
k. Cold applied self-adhering, cross laminated polyethylene film coated on one side with a layer of butyl rubber adhesive membrane.
l. Roof penetration boots and flashing

2. Site mock up, refer to "Field Samples / Mock Up" heading.

F. Submit Affidavit certifying: Parts and Material meet requirements specified.

1. Submit independent test reports for the performance of the specified system including:

a. Air.
b. Water.
c. Structural.

G. Quality Assurance Submittals: Submit the following:

1. Contractor Certificates: **General Contractor's** certification that:

a. Manufacturer of products of this section meets specified qualifications.
b. Installer of products of this section meets specified qualifications.

2. Manufacturer Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
3. Manufacturer's Instructions: Manufacturer's installation instructions.
4. Manufacturer's Field Reports: Manufacturer's field reports.

H. Closeout Submittals: Submit the following:

1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals, Maintenance Data and Operation Data Sections. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
2. Warranty: Warranty documents specified herein.
3. Record Documents: Project record documents for installed materials in accordance with Division Closeout Submittals (Project Record Documents) Section.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing similar size projects and complexity.

1. Fabricator / Installer shall be acceptable to installed Roofing Panel Manufacturer.
2. Panel manufacturer shall have single source capability to and will perform all engineering, panel fabrication, fastening and assembly.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

D. Industry Standards: Except as otherwise shown or specified, comply with applicable recommendations and details of building code, manufacturer's specifications and conform to dimensions and profiles shown.

E. Obtain field measurements prior to completion of shop drawings and prior to manufacturing and installation.

F. Design and install a free and noiseless lateral thermal movement system using components and parts, for an ambient temperature range of 20ºF to 180ºF.

G. Buckling, opening of joints, undue stress on fasteners and/or cleats, failure of solder joints, sealants or any other detrimental effects due to the thermal movement of component parts will not be permitted.

H. Fabrication and erection procedures shall take into account the ambient temperature range at the time of the respective operations. Provide additional clearance as required accommodating erection tolerance.

I. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Substrate inspection and certification
b. Water proof membrane inspection and certification
c. Flashing inspection and certification
d. Mock up

2. **General Contractor** shall request meeting 5 days in advance of construction.

J. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation membrane waterproofing work to review installation procedures.

1. Manufacturer's representative shall review and certify all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Identify fabricated components with UL 90 label where appropriate.

C. Packing, Shipping, Handling and Unloading:

1. Bundle roofing panels in waterproof wrapping paper.
2. Package trim and accessories in waterproof wrapping paper.

D. Storage and Protection: Store materials protected from exposure to harmful conditions. Store material in dry, above-ground location.

1. Stack prefinished material to prevent twisting, bending, abrasion, scratching and denting. Elevate one end of each skid to allow for moisture runoff.
2. Store products of this section in manufacturer's unopened packaging until installation of products.
3. Maintain dry, heated storage area for products of this section until installation of products.

1.7 JOB CONDITIONS

A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **20 year** unlimited penal sum material failure and finish failure warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.
2. Emergency repairs will be made within 24 hours of notice of leakage or defect by the **Owner**. As soon as weather permits, affected areas will be permanently restored to standards of quality; workmanship, durability and appearance called for in the original Contract Documents. Emergency and permanent repairs will be made without any charge to the **Owner** for labor and materials. The value of this Agreement is not limited to a specific maximum sum. **Owner** maintenance will not be required as a condition to continuation of this Agreement in force for two (2) years.

D. Furnish manufacturer's **20 year** water-tightness and weather-tightness warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Emergency repairs will be made within 24 hours of notice of leakage or defect by the **Owner**. As soon as weather permits, affected areas will be permanently restored to standards of quality, workmanship, durability and appearance called for in the original Contract Documents. Emergency and permanent repairs will be made without any charge to the **Owner** for labor and materials. The value of this Agreement is not limited to a specific maximum sum.

1.10 RELATED SECTIONS

A. Related work includes, but is not limited to the following:

1. Structural Substrate
2. Flashing by Others
3. Roofing by Others
4. Roof Penetrations

B. Related Sections include but are not limited to:

1. Division 1
2. Section 06 10 00 – Rough Carpentry
3. Section 07 21 00 – Building Insulation
4. Section 07 13 26 – Cold Applied Self-Adhering Waterproof Membrane (CASAM)
5. Section 07 92 00 – Sealants & Caulking
6. Section 07 62 00 – Flashing & Sheet Metal

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

1.13 GENERAL SYSTEM DESCRIPTION

A. Assembly

1. Wood Deck assembly: (Rigid insulation installed over roof deck)

a. First: Plywood sheathing over framing, by others.
b. Second: Vapor barrier (WRB) installed over entire substrate.
c. Third: Rigid insulation.
d. Fourth: Preformed metal roofing system installed last and secure to structural deck.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturers shall be one of the following and as listed herein and in Drawings:

1. Roofing Panels, flashing and accessories:

a. Metal Sales, www.metalsales.us.com
b. Berridge, www.berridge.com 800.231-8127, 800.669-0009
c. AEP SPAN, Division of ASC Profiles, Inc. www.aep-span.com
d. Merchant & Sons, Inc., www.ziprib.com
e. IMSA Building Products (BHP), Fontana, CA (800) 726-2727
f. McELROY METAL, www.mcelroymetal.com, Paula Grider, (310) 977-3665
g. UNA-CLAD by Firestone, www.UNACLAD.com
h. Custom-Bilt Metals, www.custombiltmetals.com 800.826-7813

2. Rigid Insulation:

a. R MAX, www.rmax.com
b. Atlas Roofing Corporation, www.atlasroofing.com
c. GAF www.gaf.com

3. Self-adhering Waterproof Membrane:

a. WR Grace www.grace.com

1) Refer to Section 07 26 00 – Water Resistant Barrier (WRB)

4. Underlayment:

a. WR Grace

b. Tamko

5. Sheathing:
   a. Georgia Pacific (GP), www.gp.com
6. Accessory Attachment Clips:
   a. S-5, www.S-5.com, 888.825-3432
7. Reviewed Equivalent by **Architect**.
   a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
   b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
   c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Panel Assembly

1. Panel:
   a. Material: Steel
   b. Mfgr: Metal Sales
   c. Panel:
      1) Flat: 1.5" Mini-Batten
   d. Size:
      1) Thickness:
         a) 24 gauge
      2) Rib Height: 1-1/2"
      3) Coverage width:
         a) Flat: 18"
      4) Length of Panel: Full length without joints
   e. Type:
      1) Standing Seam
   f. Panel surface: Striated
   g. Seaming: Machine seamed in field
   h. Finish:
      1) Product: Fluoropolymer finish – Kynar 500 or Hylar 5000

a) Ceramic Pigments only

2) Finish: Factory
3) Base Material: Galvalume
4) Color Preweathered galvalume – Metallic

i. Miscellaneous Materials:

1) Provide materials and types of fasteners, protective coatings, separators, sealants and accessory items as recommended by roofing manufacturer and fabricator for roofing work, except as otherwise indicated.
2) Provide accessories and/or miscellaneous items as and where necessary to complete Work required.
3) Provide anchors, bolts, and other fastenings and materials necessary to construction and secure Work into place.

a) Fasteners: Non-corrosive/concealed fasteners recommended by panel manufacturer.
b) Provide gaskets, backer-rod and sealant required for joint installation.
c) Panel finish maintenance requirements and paint touch-up material shall be furnished to the **Architect** for review and acceptance.

j. Underlayment Membrane:

1) Material: Cold-applied self-adhering, rubberized asphalt/polyethylene

a) Refer to Section 07 26 00 – Water Resistant Barrier

k. Flexible Flashing:

1) Refer to Section 07 26 00 – Water Resistant Barrier

l. Tape Sealant:

1) For hooked-type expansion joints, which must be free to move, provide non-setting, non-hardening, non-migrating, heavy bodied polyisobutylene mastic sealant.

m. Sheet

1) Butyl Type

n. Roofing Panel Accessories:

1) Except as indicated as work of another specification Section, provide roofing manufacturers components required for complete roof system, including but not limited to; trim, copings, fascias, ridge closures, clips, cleats, seam covers, flashings, gutters, roof penetration boots, roof penetration flashing, downspouts, copings, louvers, battens, sealants, gaskets and closure strips.

o. Bituminous Coating:

1) Cold applied asphalt mastic, SSPC paint 12, compounded for 15-mil dry film thickness per coat, except as otherwise indicated. Provide inert-type noncorrosive compound, nominally free of sulfur components and other deleterious impurities.
2) Ensure that coating does not come in contact with PVC roofing membranes, install mfr.'s approved isolation slip-sheet between materials.

p. Weatherseals: Provide at end conditions with Sanoprene or EPDM weatherseals.

1) Other internal seals shall be silicone, meeting ASTM 1543A.

q. Fasteners:

1) Nails: Galvanized, 0.109" min. x 7/8" long barbed with large head.
2) Screws & Bolts: Install type as recommended by Roofing mfgr.
3) Clips: UL 90 rated 18 gauge "Zincalumne" steel, 40ksi yield strength, 3-1/2" long triple fastener type.
4) Solder: ASTM Specification B-32, 50% tin & 50% lead.
5) Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.
6) Rivets: 1/8" - 3/16" diameter, with solid mandrels and washers.
7) Fasteners:

a) Provide fasteners, of size, length and quantity as required to resist negative pull-off and meet structural requirements and to penetrate rigid insulation layers into metal deck.
b) Provide fastener types that resist Galvanic Corrosion action and are approved by Roofing Panel manufacturer.

r. Flashing, Copings and Gutters

1) Material: Match roofing material
2) Gauge: Comply with SMACNA guideline
3) Size:

a) Thickness: Conform to SMACNA guidelines
b) Width: As detailed and in conformance with SMACNA guidelines

4) Length: Lengths with expansion joints in compliance with SMACNA guidelines without joints
5) Joint type: Conform with SMACNA guidelines.
6) Refer to Section 07600 for additional information and requirements.

B. Shop Fabricated Units

1. General Metal Fabrication:

a. Provide a preformed and prefinished factory rolled Exterior Metal roofing System of flat panels complete, weather-tight and sealed to withstand insect intrusion as specified and as indicated in the details and drawing documents.

1) Site roll-forming is not acceptable unless approved by **Architect**.

b. Shop-fabricate work to greatest extent possible. Comply with details shown in Drawings and with and roofing panel manufacturer's details and recommendations other recognized industry practices.
c. Fabricate for waterproof and weather-resistant performance with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work.
d. Form work to fit substrate.
e. Comply with material manufacturer's instructions and recommendations for forming material.

f. Form work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems and folded hems fully soldered to provide watertight assembly.

2. Seams:

a. Fabricate nonmoving seams in sheet with flat-lock seams and per manufacturer's approved details.
b. Rivet joints for additional strength per manufacturers approved details.

3. Expansion/Contraction Provisions:

a. Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1: deep, filled with polyisobutylene mastic sealant. (concealed within joints)

4. Sealant Joints:

a. Where movable, non-expansion-type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with roofing manufacturer's standards.
b. Refer to Section 07 92 00 for additional information and requirements.

5. Separations:

a. Provide for separation of roof panels from non-compatible metal or corrosive substrate by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

2.3 OTHER MATERIALS

A. Schedule:

1. Standing Seam Mounting Clips:

a. Mfgr: S-5
b. Series: S-5 Series:
c.

Products:	Roof type / Assembly type:	Duty:	Install:	Material:
1) S-5-E	Metal roofing x Dbl.- folded seam	heavy	Horz.	Aluminum
a) Application(s):				
2) S-5-E Mini	Metal roofing x Dbl.- folded seam	light	Horz.	Aluminum
a) Application(s):				
3) S-5-U	Metal roofing x Vert. or 90deg. seams	heavy	Vert. & Horz.	Aluminum
a) Application(s):				
4) S-5-U Mini	Metal roofing x Vert. or 90deg. seams	light	Horz.	Aluminum

a) Application(s):

5) S-5-PV Kit Solar panel mounting assembly Horz. Aluminum

a) Application(s):

b) Use attachment clips required for the specific standing seam roof

d. Installation: In accordance with mfgr's recommendations.

PART 3 - **EXECUTION**

3.1 INSPECTION /EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.
2. Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

a. Verification of Conditions:

1. Panel support systems are ready for construction activities of this section and within specified tolerances.
2. Rough-in utilities are in correct locations.

3. Installer's Examination:

a. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
b. Transmit 2 (two) copies of installer's report to **Architect** within 24 hours of receipt.
c. Delay construction activities of this section until unacceptable conditions have been corrected.
d. Beginning construction activities of this section indicates installer's acceptance of conditions.

C. Verify that specified items may be installed in accordance with the approved design.

D. In the event of discrepancy, immediately notify the **Architect**.

1. **DO NOT PROCEED UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.**

E. Reinforce ends with end clips, steel hangers, steel angle clips, steel stud section, or as otherwise recommended manufacturer.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

C. Coordinate roofing with rain drainage work, copings, gutters, downspouts and flashing, trim and construction of decks, parapets, walls and other adjoining work to provide a permanently leak proof, secure and noncorrosive installation.

3.3 PREPARATION

A. Clean surfaces to receive roofing. Substrate to be smooth and free of defects. Drive all projecting nails, screws and other fasteners flush with substrate.

B. Dissimilar Metals: Prevent galvanic action of dissimilar metals.

3.4 MOCK-UP

A. Erect at location approved by **Architect**.

1. Mock-up shall be part of final construction once approved by **Architect**.
2. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.

B. Schedule

1. Before proceeding with final purchase of materials and fabrication of roofing and flashing components, prepare a mock-up of work. Incorporate materials and methods of fabrication and installation identical with project requirements. Install mock-up at roof area location directed by **Architect**. Retain accepted mock-up as quality standard for acceptance of completed roofing and flashing. When accepted, mock-up shall be incorporated as part of roofing work.

    a. Include eave, ridge, valley, gable and hip conditions.
    b. Mock-Up Size:

        1. Three (3) full length panels at a rake, ridge and valley.
        2. Maintenance: Maintain mock-up during construction for workmanship comparison.

3.5 INSTALLATION

A. General:

1. Installed Roofing panels, flashing, roof penetration boots and flashing, separation sheets, waterproof membrane, frames and accessories in accordance with Drawings, reviewed Shop Drawings and manufacturer's data/specifications, and as herein specified.

    a. Construction in accordance with SMACNA recommendations.

2. Compliance: Comply with manufacturer’s product data, recommendations and installation instructions for substrate verification, preparation requirements and installation.

    a. Strippable Film: Remove manufacturer’s protective film, if any, from surfaces of roofing panels.

3. The Metal Panel Roofing System shall be fastened so that panels are secure, and able to accommodate movement (free floating joints) from thermal and seismic expansion/contraction without buckling or causing undue stress on panel fasteners, or failure of internal seals.

4. Panel joints shall have manufacturers standard joint system and be fastened with cleats allowing for movement of panels.
5. The joinery shall be mechanically fastened and flashing transitions shall be interlocking type allowing for expansion and providing positive shedding of water and allowing for panel movement and sustain the weatherability specified.
6. The Metal Roofing System shall be Snap-on panel type secured into structural deck with cleats fastened such that panels are secure and able to accommodate expansion/contraction movement from thermal and seismic expansion/contraction without buckling or causing undue stress on panel fasteners, flashing joints and failure of internal seals.
    a. Panels shall be full length without any end joints.
    b. Provide supports, design, inspection & installation as needed to mitigate "oil canning".
7. Insect infiltration resistant.

B. Manufacturer's Recommendations:
    1. Except as otherwise shown or specified, comply with recommendations and instructions of manufacturer of metal roofing being fabricated and installed.

C. Separate dissimilar metals by applying rubberized asphalt underlayment to each metal surface.

D. Erect panels plumb and true.
    1. Permit No offset from True Alignment of adjacent Roofing panels installed butting and/or in line.
    2. Panel to Roofing panel joints shall not vary greater than 1/16 inch from the required joints size indicated on the reviewed shop drawings over its total length. Tolerance variation shall not be collective.

E. Rigid Insulation Substrate Assembly
    1. Install multiple layers of rigid insulation in accordance with manufacturer’s recommendations.
    2. Install tapered insulation in accordance with manufacturer’s recommendations.

F. Underlayment Schedule:
    1. First:
        a. Install Waterproof Membrane Underlayment over substrate sheathing and wrap over edge of roof down face and up the face of walls.
        b. Extend membrane up walls and around all edges in ship-lap fashion and maintain membrane is concealed from sun light.
    2. Second:
        a. Provide slip sheet separation between PVC products and Underlayment. Use non-asphaltic type adhesive for temporary anchorage, where possible, to minimize use of mechanical fasteners under roofing.
            1) Lap all joints 6" minimum.
        b. Slip Sheet shall provide complete separation between roofing material, Underlayment and Waterproofing Membrane and all other dissimilar materials.

G. Specialty Waterproof Membrane
    1. Install self-adhering material at all areas indicated.

2. Install at all valley, ridges and edges.

H. Form and fabricate the following, but not limited to and other components of roofing to profiles, patterns and drainage arrangements shown and as required for permanently leakproof construction:

1. Sheets
2. Seams
3. Strips
4. Valleys
5. Edge treatment
6. Integral flashings
7. Copings
8. Roof penetration boots and flashing
9. Gutters
10. Downspouts

I. Provide for thermal expansion and contraction of the work and as indicated. Seal joints as shown and as required for leak proof construction. Shop-fabricate materials to greatest extent possible.

J. Anchor Roofing panels securely in place in accordance with manufacturers' reviewed shop drawings and manufacturers specifications.

1. Install any required concealed support cleats required for a complete and adequate Roofing panel attachment.
2. All panels shall be attached with concealed fasteners and cleats conforming to panel manufacturer's instruction for installation of concealed fasteners.

K. Sealant-Type Joints:

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1" into sealant.
2. When ambient temperature is moderate at time of installation, 40º to 70ºF, set joint members for 50% movement either way. Adjust setting proportionately for installation at higher temperature. Do-not install sealant-type joints at temperatures below 40ºF.
3. Comply with requirements of Division 7 Sealant Specification for handling and installation of sealants

L. Fabricate and install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks considering temper and reflectivity of metal. Provide uniform, neat seams with minimum exposure of solder, welds and sealant. Except as otherwise shown, fold back sheet metal to form a hem on concealed side of exposed edges.

M. Conceal fasteners and expansion provisions in exposed work, and locate so as to minimize possible leakage. Cover and seal fasteners and anchors as required for a tight installation.

1. At exposed metal decking locations including, but not limited to:

a. Acoustical decking
b. Exterior roof overhangs

2. Install fasteners such that they only penetrate the top flute of the deck and do not penetrate through the exposed face of pan deck.

N. Protect Roofing panel surfaces in contact with cementitious materials and other dissimilar materials with bituminous paint and/or non-metallic shims in accordance with manufacturers specifications.

O. "Pinning"

1. The panels must be "pinned" at the top of the panel at three locations to resist "drag" load caused by the weight of the panel, live loads and snow loads.
2. Appendix "C" shall be used to coordinate fastener types and resistance to drag loads.

P. Accessory Attachment Clips:

1. Install complete in accordance with manufacturer's recommendations.
2. Coordinate with drawings for what is being attached with the clips.

Q. Rake and ridge flashing cleats:

1. Cleats shall be continuous and have a 2" overlap at joints
2. Underlayment shall continue over the face of the cleats to the extend of the vertical face of cleat.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.

    a. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Inspections

1. Site Tests (Post-Installation Testing): **Owner** reserves right to perform post-installation testing of installed metal panel installation.
2. Manufacturer's Field Services: **General Contractor** shall provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 07 41 13

SECTION 07 46 19 – METAL SIDING AND SOFFIT ASSEMBLY

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Metal Siding System and Flashing

    a. Copings
    b. Gutters
    c. Downspouts

2. Metal Soffit System and Flashing.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC), www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission

C. CBC Energy Code, California Code of Regulations, Title 24, Part 6

D. Aluminum Association (AA), www.aluminum.org

E. American Iron & Steel Institute (AISI), www.steel.org

F. American National Standards Institute (ANSI), www.ansi.org

G. American Society for Testing and Materials (ASTM), www.astm.org

1. ASTM A 653 Square Grade A (Fy = 33 ksi min.)
2. ASTM A 792 Grade 33 (Fy = 33 ksi min.)
3. ASTM D1735 Method for Water Fog Testing of Organic Coatings.

H. American Welding Society (AWS), www.aws.org

I. Factory Mutual (FM), www.fmglobal.com

J. Federal Test Method Standards (FSC 8010)

1. 141A/6152 Accelerated Weathering (Enclosed Arc Apparatus).
2. 141A/6160 Conducting Exterior Exposure Tests of Paints and Metals.

K. International Code Council Evaluation Service (ICC-ES), www.icc-es.org

L. National Coil Coating Association (NCCA), www.**coil**coating.org

1. NCCA 11-6 Test Method for Measurement of Impact Resistance of Painted Aluminum, Steel and Galvanized Steel.
2. NCCA 11-12 Specification for Determination of Relative Pencil Hardness.
3. NCCA 11-16 Test Method for Determination of Film Adhesion by "Cross Hatch" Tape After Reverse Impacting.

M. Underwriters Laboratory (UL), www.ul.com

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Wall Panel Assembly	Wind loading resistance	Pass -(Based on "f") by 1.33	Building Code / UL
Soffit Panel assembly	Wind loading resistance	Pass - (Based on "f") by 1.33	Building Code / UL
Assembly	Air Infiltration	Not to exceed 0.06 cfm/sq. ft. air leakage under static pressure of 6.24 psf	ASTM E 1680 ASTM E 283
	Water Penetration	No uncontrolled water penetration through the joints at a static pressure of 6.24 psf	ASTM E 1646 ASTM E 331
	Water Penetration	No uncontrolled water penetration through Joints	AAMA 501.2
	Deflection	L/180 of total span	-
	Tolerances	1/8" in 10 feet for plumb, level, warp and bow. Tolerances variation shall not be collective.	-
Panel Finish	Coating Thickness	1.0 mil (+/- 0.2 mil)	ASTM A 653
	Hardness	F minimum using Damascus # 6610	NCCA 11-12
	Impact	Gardner Variable Impact Tester with ½" mandrel: Coating shall withstand direct and reverse impact of 1.5 in-pounds per mil substrate thickness. Coating shall adhere tightly to metal when subjected to #600 Scotch Tape pick-off test. Slight micro-cracking permissible. No star cracking shall occur.	NCCA 11-6
	Adhesion	Coating shall not pick off when subjected to an 11" x 11" x 1/16" grid with reverse impact of 1.5 inch-pound per mil substratethickness and taped with #600 Scotch Tape. (Perform at room temp. and at 32°)	NCCA 11-16

	Humidity Resistance	No formation of blisters when subjected to condensing water flog at 100° F for 3000 hours.	ASTM D 2247
	Salt Spray Resistance	Expose single coat system to 3000 hours, using 5% NaCl solution. Corrosion creepage from scribe line: 1/16".	ASTM B 117
	Outdoor Weather Exposure	Five year exposure at 45° angle, facing south, Florida Exposure. No checking, crazing, adhesion loss.	ASTM A141
		Maximum chalk rating of 8.	ASTM D 659
		Maximum color change of 5 delta E units	ASTM D 2244
	Accelerated Weather Exposure	1000 hours in Atlas Type D.M.S. Weatherometer, using cycle of 102 minutes light and 18 minutes diminished light and demineralized water.	ASTM D 822
		No checking, crazing, adhesion loss.	-
	Chemical Resistance	24-hour immersion in mineral spirits, 0.5% Tide solution, 2.0% trisodium phosphate and 2.0% Ivory Soap solution. (Allow 24 hour recovery period before evaluation.) No loss of adhesion or gloss and no color change.	-
	Coating Thickness	1.0 mil (± 0.2 mil)	ASTM A653
Weatherseals	Material	Comply	ASTM A 1543
Refer to drawings and as herein specified			

C. **Sustainability:**
   1. Refer to Division 1 sustainability requirements.
   2. Refer to product criteria identified herein.

D. **Construction Testing:**

Item	Name of Test	Performance Results	Testing Std.
Wall panel assembly	Hose stream test	Hose stream test a 10'x10' minimum area prior to installation of wall insulation and gypsum board to insure no water leakage.	Per mfgr. stds.
Soffit panel assembly	Hose stream test	Hose stream test a 10'x10' minimum area prior to installation of wall insulation and gypsum board to insure no water leakage.	Per mfgr. stds.

E. **Construction Monitoring by others:**

Item	Name of Test	Performance Results	By Whom
Metal material	Const. Waste Management	Comply	Refer to Division 1 for construction waste management and disposal/recycling requirements

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Submit detailed shop drawing that explicitly shows, indicates and demonstrates all general connection types including but not limited to corresponding details that match plan document details indicating:

a. Indicate layout of panels and panel sizes, including custom-fabricated panels if indicated; indicate each item of trim and accessories.
b. Indicate in detailed drawings profile and gauge of interior and exterior sheets, and locations and types of fasteners; indicate locations, gas, shapes and methods of attachment of panels, trim and accessory items.
c. Indicate products/materials required for construction activities of this section not supplied by manufacturer of products of this section.
d. Thickness and dimension of parts
e. Fastening and anchoring methods
f. Indicate thickness and dimension of parts.
g. That explicitly shows, indicated and/or demonstrates all general connection types including but not limited to corresponding details that match plan document details for review and acceptance by the Architect.
h. Detail and location of:

1) Manner of forming
2) Joining
3) Gaskets
4) Thermal movement joints
5) Securing of copper to substrate
6) Waterproof connections
7) Interlocking siding panel to flashing joints
8) Interlocking siding panel to gutter joints
9) Interlocking joints at transition conditions
10) Expansion/contraction joints necessary to accommodate thermal movement.
11) Design calculations determining maximum thermal expansion used for assembly design.
12) Details for separation of metal material from dissimilar materials.
13) Flashing

E. Site mock up, refer to "Field Samples / Mock Up" heading.

F. Submit samples including the following:

1. Siding Panel and accessories, underlayments, fasteners, etc.

a. Panel: 12" long x 4 pieces

2. Soffit Panel and accessories, underlayments, fasteners, etc.
    a. Panel: 12" long x 4 pieces

G. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

1. Fabricator / Installer shall be acceptable to preformed metal panel manufacturer.
2. Panel manufacturer shall have single source capability to and will perform all engineering, panel fabrication, welding, fastening and assembly.

D. Field measurements should be taken prior to completion of shop manufacturing and finishing.

E. Comply with manufacturer's product data, recommendations and installation instructions for substrate verification, preparation requirements and installation.

1. Strippable Film: Remove manufacturer's protective film, if any, from surfaces of roofing panels.

F. Assembly:

1. Provide for free and noiseless vertical and horizontal thermal movement of component parts, for an ambient temperature range of 20ºF to 180ºF.
    a. Buckling, opening of joints, glass breakage, undue stress on fasteners, failure of sealants or any other detrimental effects due to the thermal movement of component parts will not be permitted.
    b. Fabrication and erection procedures shall take into account the ambient temperature range at the time of the respective operations.
    c. Provide additional clearance as required to accommodate erection tolerance, slab and beam deflection and long term creep of structural frame.
    d. Structural superimposed dead loads and live load deflections are expected to be as follows:
    e. Dead load including 25 lbs./sf curtain wall weight + 1/2".
2. No panel shall be constructed with any bow allowance in panel face or edges.
3. All panel systems shall be back supported as required to meet deflection standards specified herein.
    a. All panel systems shall be constructed and installed to mitigate "oil canning".
4. Face of panels shall not vary in plane to any adjacent panel.
5. Panel lines, breaks, and angles shall be sharp, true and surfaces free from warp or buckle.

6. The Metal Panel System shall be fastened so that panels are secure, and able to accommodate movement (free floating joints) from thermal and seismic expansion/contraction without buckling or causing undue stress on panel fasteners, or failure of internal seals.
7. Panel joints shall have manufacturer's standard joint system.
8. The jointery shall allow for panel movement and sustain the weatherability specified.
9. Panel system joints shall be of steel with specified finish.

G. Insect infiltration resistant

1. Provide system panels complete, weathertight and sealed to withstand insect intrusion.

H. Pre-installation Meetings:

1. **General Contractor** and metal panel installer shall conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.
2. Comply with Division 1 meeting requirements.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

1. Identify fabricated components with UL 90 label where appropriate.
2. Bundle roofing panels in waterproof wrapping paper.
3. Package trim and accessories in waterproof wrapping paper.

C. Store materials in dry, above-ground location protected from exposure to harmful conditions.

1. Stack prefinished material to prevent twisting, bending, abrasion, scratching and denting. Elevate one end of each skid to allow for moisture runoff.
2. Store products of this section in manufacturer's unopened packaging until installation of products.
3. Maintain dry, heated storage area for products of this section until installation of products.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **twenty (20)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

D. Furnish manufacturer's additional **twenty (20)** year water-tightness warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.
2. Emergency repairs will be made within 24 hours of notice of leakage or defect by the **Owner**. As soon as weather permits, affected areas will be permanently restored to standards of quality; workmanship, durability and appearance called for in the original Contract Documents. Emergency and permanent repairs will be made without any charge to the **Owner** for labor and materials. The value of this Agreement is not limited to a specific maximum sum.

E. Furnish manufacturer's additional **twenty (20)** year unlimited Penal Sum warrantee for material failure and finish failure which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Substrate assembly
2. Framing
3. Flashing by others

B. Related Sections include but are not limited to:

1. Division 1
2. Section 05 12 00 – Structural Steel Framing
3. Section 05 21 19 – Open Web Steel Joist Framing
4. Section 05 41 00 – Cold Formed Metal Framing
5. Section 06 10 00 – Rough Carpentry / Plywood Sheathing
6. Section 06 17 33 – Wood I-Joist
7. Section 07 21 00 – Building Insulation
8. Section 07 13 26 – Cold Applied Self-Adhering Waterproof Membrane (CASAM)
9. Section 07 62 00 – Sheet Metal Flashing & Trim
10. Section 07 92 00 – Sealants & Caulking
11. Section 08 11 13 – Steel Doors & Frames
12. Section 08 41 00 – Entrances, Window Wall, Storefront System & Curtain Wall

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturers shall be one of the following:

1. Panels, flashing and Accessories:

a. Metal Sales, www.metalsales.us.com
b. Merchant & Sons, Inc., www.ziprib.com
c. IMSA BUILDING PRODUCTS Steel Building Products, USA Inc. (800) 726 – 2727
d. Berridge www.berridge.com
e. McElroy Metal, www.mcelroymetal.com , Paula Grider, (310) 977-3665

2. Waterproof Membrane Underlayment and Flexible Flashing:

a. Refer to Section 07 13 26 – Cold Applied Self-Adhering Waterproof Membrane (CASAM)

3. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. System:

1. Wall Panel assembly:
a. Schedule:

1) Mfgr.: Metal Sales

2) Panel Type: Concealed fastened
3) Model: EM15-1224
4) Finish: As herein specified
5) Dimensions:
    a) Width: 12″
    b) Gauge: 24 ga.
    c) Overall depth: 1-1/2″
6) Fasteners:
    a) Provide TYPE 304 stainless steel fasteners, of size and quantity as required to resist negative pull-off and meet structural requirements.
7) Weatherseals:
    a. Provide aluminum extrusion to accommodate insertion of formed Sanoprene or EPDM weatherseals, to include top and bottom of walls/panels, doors and louver frame conditions and locations indicated on manufacturer's standard details.
8) Other internal seals shall be silicone, meeting ASTM 1543A.
9) Accessories:
10) Flashing, mounting clips, corner pieces, closures, and trim shall be of same material, color, finish and thickness as main panels.

2. Soffit Panel assembly:
    a. Schedule:
        1) Mfgr.: Metal Sales
        2) Panel Type: Concealed fastened
        3) Model: Soffit panel – V-Groove
        4) Finish: As herein specified
        5) Dimensions:
            a) Width: 12″
            b) Gauge: 24 ga.
            c) Overall depth: 1″
        6) Fasteners:
            a) Provide TYPE 304 stainless steel fasteners, of size and quantity as required to resist negative pull-off and meet structural requirements.
        7) Weatherseals:
            a) Provide aluminum extrusion to accommodate insertion of formed Sanoprene or EPDM weatherseals, to include top and bottom of walls/panels, doors and louver frame conditions and locations indicated on manufacturer's standard details.
        8) Internal seals shall be silicone, meeting ASTM 1543A.
        9) Accessories:
        10) Flashing, mounting clips, corner pieces, closures, and trim shall be of same material, color, finish and thickness as main panels.

B. System Finish

1. Coated **KYNAR 500** based polyvinylidene fluoride (PVDF) resin, Coated Zincalume with clear acrylic (Zincalume Plus and ceramic pigments)

    a. Color: As indicated on drawing A-301 Exterior Elevations
    b. Coating Thickness: 1.0 mil (+/- 0.2 mil) in conformance with ASTM A653

2.3 OTHER MATERIALS

A. Accessories and miscellaneous items

1. Provide accessories and/or miscellaneous items as necessary and where necessary to complete Work required.
2. Provide anchors, toggles bolts, and other fastenings and materials necessary to construction and secure Work into place.

    a. Fasteners: Non-corrosive/concealed fasteners recommended by panel manufacturer.
    b. Provide gaskets, backer-rod and sealant required for joint installation.
    c. Panel finish maintenance requirements and paint touch-up material shall be furnished to the **Architect** for review and acceptance.
    d. Copings, gutters and downspouts.

        1. Match siding panel material and finish.

B. Waterproof Membrane and Underlayment

1. Material

    a. Refer to and coordinate with Specification Section 07301.

2. Cold-applied self-adhering, rubberized asphalt/polyethylene
3. Installation / Coordination:

    a. Ensure that membrane does not come in contact with PVC roofing membranes and/or roofing materials, install manufacturer's approved isolation slip-sheet between dissimilar materials.

C. Metal Fabrication

1. Accurately form panels system to required size and profiles. Shop-fit and assemble, whenever practical.

    a. Site assembled units shall be constructed meeting all requirements of factory assembled units and/or panels.
    b. Construction joints shall meet requirements of panel system manufacturer's requirements.
    c. All joints shall occur exactly and only as indicated on the drawings as reviewed on the shop drawings.
    d. Apply all internal seals per seals and panel manufacturer's recommendations.
    e. Panel stiffeners shall be structurally bonded to the panel.
    f. Panels shall have only "sharp 90 degree" angle edges at flat panels and sharp edges at "rolled" curved panels as required by details, drawings and to meet requirements as indicated on drawings.
    g. Flashing which is compatible with all materials it comes in contact with.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with
3. Verify that panel support systems are ready for construction activities of this section and within specified tolerances.
4. Verify that rough-in utilities are in correct locations.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

C. Installer's Examination:

1. Have installer of this work examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
2. Transmit 2 (two) copies of installer's report to **Architect** within 24 hours of receipt.
3. Delay construction activities of this section until unacceptable conditions have been corrected.
4. Beginning construction activities of this section indicates installer's acceptance of conditions.

D. Verify that specified items may be installed in accordance with the reviewed design.

E. In the event of discrepancy, immediately notify the **Architect**.

1. Do not process until unsatisfactory conditions are corrected.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

C. Coordinate metal panels with rain drainage work, flashing, trim and construction of decks, parapets, walls and other adjoining work to provide a permanently leakproof, secure and noncorrosive installation.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Clean surfaces to receive materials.

C. Substrate to be smooth and free of defects.

1. Drive all projecting nails, screws and other fasteners flush with substrate and below intect waterproof membranes.

D. Dissimilar Metals: Prevent galvanic action of dissimilar metals.

3.4 MOCK-UP

A. Erect at location approved by **Architect**.

1. Mock-up shall not be part of final construction once approved by **Architect**.
2. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.

B. Mock-up

1. Size: **[Fill in]**

3.5 INSTALLATION

A. General:

1. Installed panels systems, flashing, frames and accessories in accordance with reviewed Shop Drawings and manufacturer's data, and as herein specified.
2. Installed metal panels, flashing, roof penetration boots and flashing, separation sheets, waterproof membrane, frames and accessories in accordance with Drawings, reviewed Shop Drawings and manufacturer's data/specifications, and as herein specified.
    a. Construction in accordance with SMACNA recommendations, as herein indicated, and per Drawings.
3. Erect panels plumb, level, and true.
    a. **Permit no offset from True Alignment** of adjacent panels installed butting and/or in line.
    b. Panel to panel joints shall not vary greater than 1/16 inch from the required joints size indicated on the reviewed shop drawings over its total length. Tolerance variation shall not be collective.
4. Anchor panels securely in place in accordance with manufacturers' reviewed shop drawings.
    a. Install any required support clips and continuous subgirts required for a complete and adequate panel attachment.
    b. All panels shall be attached with concealed fasteners conforming to panel manufacturer's instruction for installation of concealed fasteners.
5. Protect panel systems surfaces in contact with cementitious materials and other dissimilar materials with bituminous paint and/or non-metallic shims.
    a. Separate dissimilar metals by applying rubberized asphalt underlayment to each metal surface.
6. Erect panels plumb and true.
    a. Permit No offset from True Alignment of adjacent Roofing panels installed butting and/or in line.
    b. Panel to Roofing panel joints shall not vary greater than 1/16 inch from the required joints size indicated on the reviewed shop drawings over its total length. Tolerance variation shall not be collective.

7. Provide for thermal expansion and contraction of the work and as indicated. Seal joints as shown and as required for leakproof construction. Shop-fabricate materials to greatest extent possible.

B. Manufacturer's Recommendations:

1. Except as otherwise shown or specified, comply with recommendations and instructions of manufacturer of metal roofing being fabricated and installed.

C. Underlayment / Waterproof Membrane

1. First: Install Underlayment over substrate sheathing and wrap over edge of roof down face and up the face of walls.

a. Extend membrane up walls and around all edges in ship-lap fashion and maintain membrane is concealed from sun light.

2. Second:

b. Provide slip sheet separation between PVC products and Underlayment.

1) Use non-asphaltic type adhesive for temporary anchorage, where possible, to minimize use of mechanical fasteners under roofing.
2) Lap all joints 6" minimum.

c. Slip Sheet shall provide complete separation between PVC roofing material, Underlayment and Waterproofing Membrane and all other dissimilar materials.

D. Form and fabricate the following, but not limited to and other components of roofing to profiles, patterns and drainage arrangements shown and as required for permanently leakproof construction:

1. Sheets / Panels
2. Seams
3. Strips
4. Edge treatment
5. Integral flashings
6. Penetration boots and flashing
7. Outside and inside corners
8. Copings (coordinate with Section 07 62 00 – Sheet Metal Flashing & Trim)
9. Gutters
10. Downspouts

E. Anchor panels securely in place in accordance with manufacturers' reviewed shop drawings and manufacturers specifications.

1. Install any required concealed support cleats required for a complete and adequate Roofing panel attachment.
2. All panels shall be attached with concealed fasteners and cleats conforming to panel manufacturer's instruction for installation of concealed fasteners.

F. Sealant-Type Joints:

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1" into sealant.

2. When ambient temperature is moderate at time of installation, 40º to 70ºF, set joint members for 50% movement either way. Adjust setting proportionately for installation at higher temperature.

    a. Do-not install sealant-type joints at temperatures below 40ºF.

3. Comply with requirements of Division 7 Sealant Specification for handling and installation of sealants

G. Fabricate and install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks considering temper and reflectivity of metal. Provide uniform, neat seams with minimum exposure of solder, welds and sealant. Except as otherwise shown, fold back sheet metal to form a hem on concealed side of exposed edges.

H. Conceal fasteners and expansion provisions in exposed work, and locate so as to minimize possible leakage. Cover and seal fasteners and anchors as required for a tight installation.

3.6 FIELD QUALITY CONTROL

A. Site Tests (Post-Installation Testing): **Owner** reserves right to perform post-installation testing of installed metal panel installation.

B. Manufacturer's Field Services: **General Contractor** shall provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Keep areas of work free from debris as work progresses.

1. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

E. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

F. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

G. Provide record drawings in accordance with Division 1 closeout submittal procedures.

H. Close out, on-site, inspection will be at the discretion of the **Architect** after he received the **General Contractor's** NOTICE **-** Certificate of Substantial Completion.

END OF SECTION 07 46 19

SECTION 07 54 00 – THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Complete thermoplastic (TPO) single ply roof system

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM)

1. Membrane:

a. ASTM C1371 Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers
b. ASTM C1549 Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer
c. ASTM D471 Standard Test Method for Rubber Property – Effect of Liquids
d. ASTM D573 Standard Test Method for Rubber—Deterioration in an Air Oven
e. ASTM D751 Standard Test Methods for Coated Fabrics
f. ASTM D1079 Standard Terminology Relating to Roofing and Waterproofing
g. ASTM D1149 Standard Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment
h. ASTM D1204 Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature
i. ASTM D2137 Standard Test Methods for Rubber Property—Brittleness Point of Flexible Polymers and Coated Fabrics
j. ASTM D6878 Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing
k. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials
l. ASTM E903 Standard Test Method for Solar Absorptance, Reflectance, and

Transmission of Materials Using Integrating Spheres

m. ASTM G155 Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

2. Rigid Insulation (Polyiso):

a. ASTM C209 Standard Test Methods for Cellulosic Fiber Insulating Board
b. ASTM C1289 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
c. ASTM D1621 Standard Test Method for Compressive Properties of Rigid Cellular Plastics
d. ASTM D2126 Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
e. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
f. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials
g. UL 1256 Standard for Fire Test of Roof Deck Constructions
h. UL 790 Standard for Standard Test Methods for Fire Tests of Roof Coverings
i. UL 263 Standard for Fire Tests of Building Construction and Materials

E. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

1. Architectural Sheet Metal Manual

F. National Roofing Contractors Association (NCRA)

1. Roofing and Waterproofing Manual definitions of roofing terms

G. American Society of Civil Engineers (ASCE)

H. Underwriters Laboratory (UL)

1. Roofing Systems and Materials Guide (TGFU R1306)
2. Insulation:

a. Uplift:

1) UL 1897 - Uplift Tests for Roof Covering Systems:

a) Intended to provide uplift resistance data for the evaluation of the attachment of roof covering systems to roof decks by using differential air pressures.

2) UL 580 - Tests for Uplift Resistance of Roof Assemblies

b. Rated conditions:

1) Polyisocyanurate Insulation:

a) UL Standard 1256 Classification
b) UL Standard 790 Classification (ASTM E108)
c) UL Standard 263 Classification (ASTM E119)

I. ENERGY STAR

J. Cool Roof Rating Council (CRRC)

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Roof System	Uplift	90lbs.	CBC 1504.1, 1504.3, 1609 UL 580 or UL 1897 ICC-ES ESR-1597 (GAF)
	Assembly	Comply	CBC 1507.13 ICC-ES/ESR-1597 (GAF)
	Fire Classification	General Comply	CBC 1505.1 & ASTM E108 or UL 790
		UL Class C	CBC 1505.4
	Slopes	1/4" per foot minimum main roof slope; • Refer to drawings for more restrictive slopes at main roof, crickets and valleys	CBC 1507.13.1
	Roof Classification	System 3	ICC-ES ESR-1597, Table 1
	Attachment of Membrane for Wind Classification	System 1a	ICC-ES ESR-1597, Table 2
Roof Membrane **(60 mil Smooth TPO)**	Material	Comply	CBC 1507.13.1, ASTM D4434, D6754 & D6878
	Nominal Thickness	60 mil membrane –(0.060")	ASTM D751: 0.039" min
	Breaking Strength	305 lbf/ x 290 lbf	ASTM D751 Grab Method: 220 lbf/in. min.
	Factory Seam Strength	135 lbf (membrane failure)	ASTM D751: 66 lbf, min
	Elongation at Break	30%	ASTM D751: 15% min
	Heat Aging	100%	ASTM D573: 90% retention of breaking strength and elongation at break, min

	Tear Strength	75 lbf x 130 lbf	ASTM D751 8" x 8" sample: 55 lbf, min
	Puncture Resistance	380 lbs or greater	FTM 101C Method 2031: Not Established
	Cold Brittleness	-40degrees C	ASTM D2137: -40 degrees C, min
	Permeance	0.08 perms	ASTM E96: Not Established
	Dimensional Change	0.4%	ASTM D1204 @ 158 F, 6 hrs.: ± 1%, min.
	Water Absorption	0.7%	ASTM D471 @ 158F, 1 week: ± 3.0% (top coating only), min
	Hydrostatic Resistance	430 psi or greater	ASTM D751 Method D: Not Established
	Ozone Resistance	No visible deterioration @ 7 x magnification	ASTM D1149: No visible deterioration @ 7x magnification
	SRI (Solar Reflectance Index) Initial / Aged	94/81 83 Aged Title 24	N/A
	Reflectivity (white)	0.76 / 0.68 81.9% Reflectance	ASTM C1549: N/A ASTM E903: N/A
	Emissivity (white)	0.90 / 0.83 0.94	ASTM C1371: N/A ASTM E403: N/A
	Weather Resistance	>25,000 KJ//(m^2-nm) at 340 nm	ASTM G155 / D6878: 10,080 KJ/(m^2-nm) at 340 nm
	Heat Aging	60 weeks	ASTM D573: 240 degrees F for 32 weeks
	Thickness Above Scrim	22.1 mil (nominal)	ASTM D7635: Min. 30% of Total Thickness
Rigid Insulation (Polyiso)	Material	Comply	UL 1256
	Water Absorption, % by Volume – 2 hours (under 1" water)	1.5 max	ASTM C209
	Dimensional Stability Change, 7 days @ 158°F, 97% RH - Length + Width	<2%	ASTM D2126
	Compressive Strength	25 psi nominal (Type II, Class 1, Grade 3)	ASTM C1289 ASTM D1621
	Tensile Strength	≥500	ASTM C209

	Moisture Vapor Transmission	<1.5 perm	ASTM E96
	Flame Spread Index	<75	ASTM E84
	Service Temperature	-100 to 200 degrees F	
	Metal deck (gauge)	22 gauge, min. & yield strength of 33 or 80 ksi.	
	Concrete (Compressive Strength)	2500 psf, min.	
Fasteners	-	Roofing mfgr's approved types, spacing's, etc. for roof substrate	ICC-ES ESR-1597 (GAF) Table 2 and Table 3

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submittals:

1. Product / Technical Data:

a. Submit the following for each product being proposed as part of the roof assembly including, but not limited to, primers, adhesives, fasteners, accessories, boots, flashing, rigid insulation and/or cover boards, sheathing, membrane, walkway pads, etc.

1) Manufacturer Product & Technical Data Sheets
2) Manufacturer MSDS Sheets
3) Manufacturer Installation Instructions
4) Manufacturer and/or Contractor Warranty

2. Certifications, Test Reports, and other information:

a. Installer / Applicator Qualifications and References
b. Manufacturer Approved/Trained/Certified Installer/Applicator
c. Manufacturer Certifications
d. Manufacturer Test Reports

1) Uplift approvals for specific assembly
2) Fire Classification for specific assembly

3. Shop Drawings:

a. Shop drawings shall include, but not be limited to:

1) Dimensioned roof plans showing membrane layout and fastening, cross section(s) showing each roof assembly condition, rigid insulation and/or cricket layout and fastening, walkway layout, and details.

4. Samples:

a. Provide samples, as noted in Section 01 33 00 – Submittal Procedures, for the following:

1) Roof Membrane
2) Walkway Membrane
3) TPO Coated flashing

5. Mockups:

a. When required by specifications, erect a mockup at Project site at location acceptable to **Owner** and **Architect**.

1) Mock up shall be either a "Product" mock-up or an "Assembly" mock-up, refer to individual specification sections for specific requirements.
2) Construct the mockup complete, including work of all trades required in finished work.
3) **Architect** and **Owner** shall decide if mockup will be part of finish work.

a) Items and assemblies which will be covered up by finish materials shall be separate and not part of finished building.

E. Closeout Submittals:

1. Refer to Section 01 33 00 – Submittal Procedures.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing/finishing similar size projects and complexity.

1. Installer shall be classified as a ***Master*** or ***Master Select*** contractor as defined and certified by GAF.

C. Manufacturer shall have been in business for **ten (10)** years providing/installing/finishing similar size projects and complexity.

1. Manufacturer shall provide a roofing system that meets or exceeds all criteria listed in this section.

D. General Criteria:

1. All components listed in this section shall be provided by a single manufacturer or approved by the primary roofing manufacturer. All materials shall be physically and chemically compatible when installed in accordance with manufacturer's current application requirements.

2. Contractor shall provide an installed roofing membrane and base flashing system that does not permit the passage of water, and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7.
3. More restrictive requirements as herein specified and/or as indicated in architectural drawings shall govern provided the roof manufacturer allows per their standard details and/or warranty criteria.
4. Roof manufacturer's field reports shall be copied to **Architect** with 5 working days of site visit.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to:

   a. Substrate preparation
   b. Inspections by roofing manufacturer representative during construction, including punchlist completion and project closeout procedures.
   c. Schedule
   d. Special detailing

2. **General Contractor** shall request meeting 5 days in advance of construction.

F. Manufacturer's Representative: Make arrangements necessary to have a representative employee of the roofing manufacturer on-site periodically during installation work to review installation procedures and during project closeout.

1. Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements and warranty/guarantee requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.
3. Warranty compliance certification with Inspections report(s).

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Do not expose materials to moisture in any form before, during, or after delivery to the site. Reject delivery of materials that show evidence of contact with moisture.

C. Discard rolled goods, which have been contaminated, creased or otherwise, damaged and replace with same materials at no additional cost to **Owner**.

D. Delivery:

1. Deliver materials in original unopened manufacturer's containers and within their specified temperature range, with labels intact and legible. Deliver materials in sufficient quantity to allow continuity of work, each day.

E. Handling:

1. Handle rolled goods so as to prevent damage to material. Select and operate material handling equipment so as not to damage existing construction or applied roofing.

F. Storage:

1. Use "breathable" type covers such as canvas tarpaulins to allow venting and protection from weather and moisture. Cover and protect materials at the end of each work day. Do not remove any protective tarpaulins until immediately before the material will be installed.

1.7 JOB CONDITIONS

A. Field verify that all components, backing, substrate, etc. by others are installed correctly to proceed with installation of products as herein specified.

B. Environmental Requirements:

1. Proceed with roofing only when existing and forecasted weather conditions permit.

a. Allow sufficient time for moisture from previous precipitation, rain, fog, or dew to evaporate before proceeding with roofing work. Forced drying methods may be used as permitted by the roofing manufacturer.

2. Ambient temperatures must be within Manufacturer's stated temperature ranges when applying hot asphalt or water based adhesives.
3. Do not allow roofing membrane or other appurtenant materials to come in contact with any materials that might be harmful or degrading to roofing products.

1.8 PROTECTION

A. Protect work under this section at all times from work on surfaces and materials adjacent to them.

B. Protect work under this section from damage by other trades; work under this section damaged or defaced by adjacent work shall be replaced at no additional cost to the **Owner**.

C. Adjacent work damaged or defaced by work performed under this section shall be repaired or replaced at no additional cost to the **Owner**.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's **20 Year Diamond Pledge NDL Guarantee** agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.
2. All costs/premiums for this guarantee shall be fully paid by the **General Contractor**.

D. Furnish manufacturer's additional **EverGuard TPO Puncture Resistance Limited Warranty** to the original building owner that EverGuard TPO roof membrane will provide puncture and tear resistance when installed and maintained in accordance with GAF's requirements. **[Specifier: only applies to fully adhered systems with 60 or 80 mil membranes and system must include a ½" minimum hard cover board]**

E. Furnish manufacturer's additional **EverGuard TPO Reflectivity Limited Warranty** to the original building owner that EverGuard TPO white roof membrane will meet or exceed the initial and "aged" ENERGY STAR reflectivity requirements for the low slope roofing membranes (65% initial, 50% aged) when installed and maintained in accordance with GAF's requirements. The aged reflectivity shall meet or exceed these requirements when measured after cleaning the membrane in accordance with GAF recommendations.

1.10 RELATED WORK/SECTIONS

A. The following is related work including, but not limited to the following:

1. Roof structure
2. Roof substrate
3. Roof penetrations
4. Roof curbs
5. Roof drains and plumbing
6. Flashing by others
7. Parapet wall construction
8. Wall and parapet openings, including but not limited to doors, windows, and louvers.

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 03 30 00 – Cast in Place Concrete
3. Section 06 10 00 – Rough Carpentry
4. Section 06 17 13 – Laminated Veneer Lumber
5. Section 06 17 23 – Parallel Strand Lumber
6. Section 06 17 53 – Shop Fabricated Wood Trusses
7. Section 06 18 13 – Glue Laminated Construction
8. Section 07 13 26 – Cold Applied Self-Adhering Membrane (CASAM)
9. Section 07 21 00 – Building Insulation
10. Section 07 41 13 – Metal Roofing Panels
11. Section 07 62 00 – Sheet Metal Flashing & Trim
12. Section 07 72 00 – Attic, Soffit and Roof Vents
13. Section 07 72 33 – Roof Hatches & Safety Railings
14. Section 08 62 00 – Unit Skylights
15. Section 07 92 00 – Sealants and Caulking
16. Section 07 95 13 – Expansion Control
17. Section 09 24 00 – Portland Cement Plastering
18. Section 09 29 00 – Gypsum Board and Sheathing Substrates

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.

a. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

1.13 EXTRA MATERIAL

A. Submit as part of project closeout:

1. Provide extra Roofing Membrane and Walkway Membrane material for each product type and color as installed product.

a. 20 linear feet of Roofing Membrane

2. Furnish written documentation that extra materials supplied have been inspected and reconfirmed to be the same as those used in the Work.
3. Furnish in factory packaged and labeled cartons and identify cartons with project name and address.
4. Deliver materials to project premises just prior to substantial completion and store at location directed by the **Owner**.

1.14 GENERAL SYSTEM DESCRIPTION

A. System Schedule:

1. Fully Adhered

a. Class C (as required by CBC Section 1505, Table 1505.1)

1) Plywood Deck

a) Batt Insulation

2. **Single Ply (Thermoplastic) roofing system – FULLY adhered**

a. **System:**

1) **FA-1: Insulated New**

b. Schedule – Thermal Insulation below roof deck and Rigid Insulation Crickets:

1) Wood Decking Substrate:

a) Prime substrate as recommended by roofing mfgr.
b) Single ply Membrane Assembly
c) Assembly:

i. Exposed wood deck:

a. Single ply Membrane over
b. Gypsum sheathing over
c. Wood deck

ii. Rigid Insulation:

a. Single ply membrane over
b. Tapered rigid insulation crickets over
c. Wood deck

PART 2 - **MATERIALS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Entire system, including membrane, cover board, slip sheet, insulation, accessories, etc. unless otherwise noted:

a. GAF, www.gaf.com
b. Johns Manville, www.johnsmanville.com
c. Carlisle, www.carlisle-syntec.com
d. Sarnafil, www.sarnafilus.com

2. Extruded Polystyrene Insulation

a. Owens Corning, www.owenscorning.com/insulation/commercial

3. Flashing:

a. Fry Reglet, www.fryreglet.com
b. As approved by roofing manufacturer.

4. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Roof deck substrate (provided by others):

1. Plywood

B. Roof Board (Deck)

1. Mfgr: Georgia Pacific
2. Product: Dens Deck Prime
   a. Surface material: Fiberglass Mat with Non-Asphaltic Coating
   b. Applications:
      1) Over plywood to protect membrane
   c. Thickness:
      1) Over plywood: 1/4"
   d. Installation: Method as specified herein and in accordance with roofing and sheathing manufacturer's recommendations.

C. Roof Board (Roof Curbs and/or Roof Parapets):

1. Mfgr: Georgia Pacific
   a. Product: Dens Deck Prime
   b. **Surface material:** **Fiberglass Mat with** Non-Asphaltic Coating
   c. Thickness:
      1) 1/4"
   d. Installation: Fully adhere membrane to parapet wall and vertical face of roof curb with adhesive and fasteners in accordance with roofing manufacturer's specifications.

D. Rigid Insulation: **[Specifier include when applicable]**

1. Tapered Insulation Board:
   a. Polyisocyanurate (Polyiso) Insulation:
      1) Mfgr: GAF
      2) Product: EnergyGuard Polyiso Insulation
      3) Board Size: 4'x'4' and 4'x8'
      4) Capacity: 25 psi min
      5) Application:
         a) Attachment:
            i. Fully adhered with adhesive –as required by roof mfgr. for system
         b) Joints: Stagger joints between each layer

E. Roofing Membrane:

1. Smooth Membrane:
   a. Mfgr: GAF

1) Product: Everguard TPO 60 mil Membrane

b. Material: Thermoplastic Polyolefin
c. Color:

1) Roof membrane:

a) White

2) Membrane coated flashing:

a) Refer to Flashing heading

F. Walkway Pads - Membrane:

1. Schedule:

a. Mfgr: Same as roof membrane
b. Product: Walkway pad
c. Texture: Embossed
d. Thickness: 125 mil
e. Color: Grey
f. Roll Size: 34.5" wide x 50' long

1) Cut to size

g. Application: Heat welded in accordance with manufacturer installation instructions.

G. Membrane coated sheet metal flashing:

1. Schedule:

a. Mfgr: Same as membrane
b. Product: Membrane coated sheet metal
c. Material:

1) Sheet metal: 25gauge
2) Membrane: 40mil min.

a) Provided heavier flashing assembly when recommended by manufacturer.

d. Color:

1) White

H. Sheet Metal Flashing (non-membrane coated):

1. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim

I. Slip Sheet – separation roll goods:

1. Separate Sheet

a. Manufacturer: GAF
b. Product: Versashield Solo

c. Material: Fiberglass Coated Mat
d. Fire Resistant: Yes
e. Application:

1) Use when required for Fire Rated Assembly
2) Use when required to meet required Roof Classification
3) Use between single ply membrane and all products containing asphalt and/or asphalt type products to provide separation)

J. Vapor Retarder

1. Separate Sheet

a. Manufacturer: GAF
b. Product: SA Vapor Retarder
c. Material: SBS modified bitumen
d. Installation: Self Adhered
e. Accessories: GAF SA Primer

2.3 OTHER MATERIALS

A. Provide other materials, typically manufactured and supplied by room membrane manufacturer, approved for use for assemblies by roofing manufacturer and/or required for system warranty, subject to the approval of the **Architect**, including but not limited to:

1. Flashing accessories:

a. Preformed Vent Boots with stainless steel clamping bands
b. Preformed corners for reinforcement of inside and outside corners
c. Fluted corners
d. Corner curb wrap
e. Square tube wrap
f. Joint cover patches

2. Installation components

a. Pourable sealer pocket
b. Scupper
c. Vent

3. Rolled accessories

a. Cover tape
b. UN 55 detailing membrane
c. RTA strip
d. Dual HW 5’-0” wide flashing

4. Primers:

a. Roofing mfgr’s recommended product

5. Adhesives, Sealants and Solvents:

a. Roofing mfgr's recommended VOC compliant products:

1) Solvents: Solvent Welding solution
2) Seam Sealant: Sealant- liquid, Sealing compound
3) Lap Sealant: Sealant- liquid, Sealing compound
4) Caulk: Polyurethane – single component, non-sag, elastomeric.
5) Temporary Sealant: Polyurethane foam for temporary conditions
6) Bonding Adhesive: Membrane adhesive (use to bond flashing to vertical substrates of wood, metal and concrete.)
7) Roofing asphalt: ASTM-D 312, Type III or Type IV
8) Membrane Cleaner: Roofing manufacturers approved
9) Penetration Pan Filler: 2-Part Pourable Sealer – polyurethane sealant.
10) Water Cut-Off Mastic. Roofing manufacturers approved

6. Termination Bars

a. 3/32" thick extruded Aluminum bar (use to terminate edge of Membrane at indicated conditions and required conditions)

7. Wood Nailers and Cant Strips:

a. #2 or better Douglas fir pressure treated using "Wolmanization" or equal process for fire and decay prevention.

1) Creosote, asphaltic processes, or pentachloric are not permissible

8. Fasteners:

a. General:

1) Membrane fasteners and plates as required by manufacturer's ICC-ES report and other requirements.

B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor, subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.
3. Confirm quality and condition of roof decking by visual inspection, and by fastener pullout testing.

a. Secure all loose decking.
b. Remove and replace all deteriorated decking.

4. Examine and Verify that all roof openings or penetrations through the roof are solidly set, and that all flashings are tapered.
5. Confirm that height of equipment supports will allow the installation of full-height flashings.
6. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify. Do not proceed until unsatisfactory conditions have been corrected.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

C. Coordinate application of the roofing system with other trades in such a manner that the complete installation is weathertight and in accordance with manufacturer's recommendations.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations and specifications for specific substrate(s).

B. Clean substrate of debris and deleterious material.

C. Remove standing water and let dry in accordance with manufacturer's recommendations.

D. Prime roof substrate as recommended by roofing manufacturer.

E. Roof Penetrations

1. Perform work in accordance with manufacturer's recommendations, as herein specified, and in accordance with the drawings.
2. Flashing, whether sheet metal or membrane, shall be provided at all roof penetrations in accordance with manufacturer's recommendations and as indicated on drawings, and shall provide a complete, waterproof installation.

3.4 FABRICATION

A. Fabricate all components in according to with manufacturer's recommendations.

B. Membrane clad metal flashing shall be fabricated to standard and custom shapes and sizes.

3.5 INSTALLATION

A. General:

1. Install pressure-treated wood nailers to the deck at perimeter edge conditions, expansion joints, and at all locations where coated metal flashing flanges will be installed.

a. Wood nailers shall be firmly secured to the deck, or to existing sound wood blocking from which all existing roofing materials have been removed. Nailers shall be secured a minimum of 2 ft. on center, to withstand an applied load of 250 lbs./lin. Ft. applied in any direction.

B. Roof Board

1. General:

a. Roof Board shall be provided when herein required, when indicated in drawings, and/or when required to meet fire rated roof assembly or Roof Classifications per Code..

2. Installation:

a. Butt roof boards together with a 1/4" maximum space between adjoining boards. Fit roof boards around penetrations and perimeter with a 1/4" maximum space between board and penetration.
b. Install roof board in pieces a minimum of 2' x 2' in size.
c. Roof boards that are wet, warped or buckled shall not be installed and must be discarded. Roof board that become wet or damaged after installation must be removed and replaced
d. Roof boards that are broken, cracked, or crushed shall not be installed unless the damaged area is first removed and discarded.
e. Install no more roof board than can be properly covered by the end of each day with roofing membrane.

3. Securement

a. Install roof board to the deck. Use appropriate type and length of approved fastener for structural deck type. Install required number of fasteners in accordance with the Insulation Attachment Table.
b. Install fasteners such that the fastener plate is pulled slightly below the roof board surface.

C. Vapor Retarder Installation:

1. General

a. Insulation must be installed over the air/vapor barrier sheet and mechanically attached to the deck.

2. Application:

a. Fully adhered:

1) Apply compatible adhesive to the structural deck or gypsum board at the rate of ½ gallon per 100 square feet, applied in approximate ½" wide ribbons.
2) Install air/vapor barrier sheet into the adhesive applied to the deck or fire barrier board so that wrinkles and buckles are not formed Broom air/vapor barrier sheet to ensure full embedment into the adhesive.
3) Overlap air/vapor barrier sheet a minimum of 6" for side and end laps. Adhere laps together with compatible adhesive.
4) Seal perimeter and penetration areas with foam sealant.

D. Rigid Insulation – Fully Adhered assembly

1. General

a. Install in accordance with roofing manufacturer's recommendations.

b. Prime substrate as recommended by roofing mfgr.
c. Tapered insulation shall be used for all crickets.

2. Placement

a. Butt insulation boards together with a ¼" maximum space between adjoining boards. Fit insulation boards around penetrations and perimeter with a ¼" maximum space between board and penetration.
b. Install insulation boards in pieces a minimum of 2' x 2' in size.
c. Insulation boards installed in multiple layers shall have the joints between boards staggered a minimum of 6" between layers.
d. Insulation shall be tapered to provide a sump area a minimum of 36" x 36" at all drains.
e. Insulation boards that are wet, warped or buckled shall not be installed and must be discarded. Insulation boards that become wet or damaged after installation must be removed and replaced.
f. Insulation boards that are broken, cracked, or crushed shall not be installed unless the damaged area is first removed and discarded.
g. Do not install more insulation than can be properly covered by the end of each day with roofing membrane.

3. Adhered Securement - Adhesive

a. Installation:

1) Prime substrate as recommended by roofing manufacturer.
2) Use appropriate adhesive for substrate surface and apply as specified by manufacturer's installation instructions.
3) Fully adhere insulation boards to substrate with urethane adhesive as specified in roofing manufacturer's installation instructions.

a) A greater quantity of urethane adhesive may be required based upon the substrate surface condition.

4) Alternatively, ribbon adhere insulation boards with urethane adhesive with continuous beads of adhesive. The width and spacing of adhesive beads/ribbons shall comply with roofing manufacturer's installation instructions.
5) Place insulation boards into urethane adhesive immediately following adhesive application, and press into place.

E. Membrane Installation – Fully adhered

1. Placement

a. Start the application of membrane plies at the low point of the roof at the drains, so that the flow of water is over or parallel to, but never against, the laps.
b. Place roof membrane so that wrinkles and buckles are not formed.

1) Any wrinkles or buckles must be removed from the sheet prior to permanent securement.

2) Roof membrane shall be fully adhered immediately after it is rolled out, followed by welding to adjacent sheets.

c. Full-width rolls shall be installed in the field and perimeter regions of the roof.
d. Overlap roof membrane a minimum of 3" for side laps, and for end laps of fully adhered systems that utilize smooth backed reinforced membrane unless otherwise noted in the roofing manufacturer's installation instructions.
e. All exposed sheet corners shall be rounded a minimum of 1".
f. Membrane laps shall be heat-welded together.

1) All welds shall be continuous, without voids or partial welds.
2) Welds shall be free of burns and scorch marks.

g. Weld width shall be a minimum 1-1/2" in width for automatic machine welding.

1) Weld width shall be a minimum 2" in width for hand welding.

h. All cut edges of reinforced membrane must be sealed with roofing manufacturers Cut Edge Sealant.

i. See "Membrane Surface Preparation" for membrane cleaning requirements.

2. Securement

a. Roof membrane must be mechanically secured at the perimeter, at the base of internal walls and curbs, and at all penetrations.

1) Membrane may be heat welded to coated metal flanges.
2) Alternatively, membrane may be secured to the roof deck within 6" of the base of walls and curbs with roofing manufacturers Membrane Fasteners and Plates at a 12" on center maximum spacing.
3) Alternatively, membrane may be extended vertically 3" up walls and curbs and secured to the wall/curb substrate within 2" of the plane of the roof with roofing manufacturers Membrane Fasteners and inverted Termination Bar at a 12" on center maximum spacing.

b. Roofing membrane must be secured to the roof deck with screws and plates at all penetrations unless the insulation substrate is fully adhered in place.
c. Mechanically attach membrane with screws and plates to the roof deck at locations of deck angle changes in excess of 5 angle degrees (1" in 12") in accordance with manufacturer's requirements.
d. Fasteners must be installed to achieve the proper embedment depth.

1) Install fasteners vertical to the deck, or horizontal to the wall/curb without lean or tilt.

e. Install fasteners so that the plate is drawn down tightly to the membrane surface.

1) Properly installed fasteners will not allow the plate/termination bar to move (underdriving), but will not cause wrinkling of the membrane (overdriving).

3. Cold Bonding Adhesive-Smooth Reinforced Membrane

a. Prime substrate as recommended by roofing mfgr.

b. Use appropriate bonding adhesive for substrate surface, applied with a solvent-resistant roller, brush or squeegee.
c. Fully adhere membrane sheets with bonding adhesive at the rates required by roof membrane manufacturer.
    1) Apply bonding adhesive to both the underside of the membrane and the substrate surface.
    2) A greater quantity of bonding adhesive may be required based upon the substrate surface condition.
d. Prevent seam contamination by keeping the adhesive application a few inches back from the seam area.
e. Adhere approximately one half of the membrane sheet at a time.
    1) One half of the sheet's length shall be folded back in turn to allow for adhesive application.
f. Lay membrane into adhesive once the bonding adhesive is tacky to the touch.
g. Broom membrane to ensure complete bonding between adhesive and membrane.

F. Flashing Installation
1. General
a. Flash all the following, but not limited to;
    1) Perimeters
    2) Roof edges and fastened
    3) Penetrations such as;
        a) Pipes
        b) Conduits
        c) Vent
        d) roof hatch
        e) Skylights
        f) Penetration conditions with coated metal, membrane flashing, and flashing accessories as appropriate to the site condition.
    4) Curbs
    5) Roof drains and overflows
    6) Scuppers
    7) Expansion joints
    8) Reglets
        a) At wall flashings or the like, membrane coated metal flashing shall be fixed and covered by a suitable reglet, or other approved method, as shown on roofing manufacturer's approved detail drawings.
            i. Refer to drawing Sheet Detail for acceptable reglet configuration, no substitutions.

b. All coated metal and membrane flashing corners shall be reinforced with preformed corners or unreinforced membrane.
c. Heat weld all flashing membranes, accessories, and coated metal together to achieve a minimum 2" wide (hand welder) weld.
d. All cut edges of reinforced membrane must be sealed with Roofing manufacturers TPO Cut Edge Sealant.
e. See "Membrane Surface Preparation" for membrane cleaning requirements. (Material Installation Section)

2. Coated Metal Flashings

a. Coated metal shall be formed in accordance with construction details and SMACNA guidelines.
b. Coated metal sections used for roof edging, base flashing, and coping shall be butted together with a ¼" gap to allow for expansion and contraction.

1) Heat weld a 6" wide reinforced membrane flashing strip to both sides of the joint, with approximately 1" on either side of the joint left unwelded to allow for expansion and contraction. 2" wide aluminum tape can be installed over the joint as a bond-breaker, to prevent welding in this area.

c. Coated metal used for sealant pans and scupper inserts, and corners of roof edging, base flashing and coping shall be overlapped or provided with separate metal pieces to create a continuous flange condition, and pop-riveted securely.

1) Heat weld a 6" side reinforced membrane flashing strip over all seams that will not be sealed during subsequent flashing installation.

d. Provide a ½" hem for all exposed metal edges to provide corrosion protection and edge reinforcement for improved durability.
e. In addition, provide a ½" hem for all metal flange edges whenever possible to prevent wearing of the roofing and flashing membranes at the flange edge.
f. Coated metal flashings are nailed to treat wood nailers or otherwise mechanically attached to the roof deck, or to the wall or curb substrate, in accordance with construction detail requirements.

3. Reinforced Membrane Flashings

a. The thickness of the flashing membrane shall be the same at the thickness of the roofing membrane.
b. Membrane flashing may either be installed dry, or fully adhered to the substrate surface.
c. Apply bonding adhesive to both the substrate surface and the underside of the flashing membrane, at the rate of 120 sq. ft./gal. per surface for solvent-based bonding adhesives, and at the rate of 200 sq. ft./gal. per surface for water-borne bonging adhesive.

1) The bonding adhesive must be allowed to dry until tacky to the touch before flashing membrane application.

d. Apply the adhesive only when the outside temperature is above 40° F. Recommended minimum application temperature is 50° F to allow easier adhesive application.

e. The membrane flashing shall be carefully positioned prior to application to avoid wrinkles and buckles.

4. Unreinforced Membrane Flashings

   a. Unreinforced membrane is used as a field-fabricated penetration/reinforcement flashing only where preformed corners and pipe boots cannot be properly installed.
   b. Penetration flashings constructed of unreinforced membrane is typically installed in two sections, a vertical piece that extends up the penetration, and a horizontal piece that extends onto the roofing membrane.

      1) The two pieces are overlapped and heat-welded together.

   c. The unreinforced membrane flashing shall be adhered to the penetration surface.

      1) Apply bonding adhesive to both the penetration surface and the underside of the flashing membrane, at the rate of 120 sq. ft./gal. per surface for solvent-based bonding adhesives, and at the rate of 200 sq. ft./gal. per surface for water-borne bonding adhesive.
      2) The bonding adhesive must be allowed to dry until tacky to the touch before flashing membrane application.

5. Roof Edging

   a. Rood edge flashing is applicable for both gravel stop/drip edge conditions and exterior edges of parapet walls.
   b. Flash roof edges with coated metal flanged edging nailed 4″ on center to pressure-treated wood nailers, and heat weld roof membrane to metal flanges.
   c. Coated metal roof edging must be provided with a continuous hook strip to secure the lower fascia edge if the fascia width is 4″ or greater.

      1) The continuous hook strip must be secured to the building a minimum of 12″ on center.

   d. Alternatively, flash roof edges with a 2-piece snap-on fascia system, adhering roof membrane to metal cant with bonding adhesive and face nailing the membrane 8″ on center prior to installing the snap-on fascia.
   e. Flash roof edge scuppers with a scupper insert of coated metal that is mechanically attached to the roof edge and integrated as part of the metal edging.

6. Parapet and Building Walls

   a. Flash walls with membrane flashing adhered to the wall substrate with bonding adhesive and with coated metal flashing nailed 4″ on center to pressure-treated wood nailers.
   b. Secure membrane flashing at the top edge with a termination bar.

      1) Water cut-off mastic shall be applied between the wall surface and membrane flashing underneath all exposed termination bars.
      2) Exposed termination bars shall be mechanically fastened 8″ on center; termination bars that are counter flashed shall be fastened 12″ on center.
      3) Membrane shall continue under parapet coping, typical, u.n.o.

c. Roof membrane must be mechanically attached along the base of walls that are flashed with membrane flashing with screws and plates/termination bar with a 12″ on center maximum spacing.

d. All coated metal wall flashings and dry applied membrane flashings must be provided with separate metal counter flashings, or metal copings.

e. Metal counter flashings are optional with fully adhered membrane wall flashings.

1) Exposed termination bars must be sealed with caulking.

f. Flash wall scuppers with a scupper insert of coated metal that is mechanically attached to the wall and integrated as part of the wall flashing.

7. Round and Square Tube Penetrations

a. Flash penetrations with preformed vent boots provided that the penetrations are accessible from the top.

1) Otherwise, field-fabricate flashing with two-piece field fabricated flashings of unreinforced membrane.

b. All flashings require the installation of a stainless steel draw band around the top of the flashing.

1) Seal the top edge of the draw band with caulking.

c. Roof membrane must be mechanically attached at the base of each penetration with screws and plates a minimum of 12″ on center, with a minimum of three fasteners per penetration.

8. Irregularly-Shaped Penetrations

a. Flash irregularly shaped penetrations with flanged sealant pans of coated metal, secured to the deck through the roof membrane with screws 6″ on center, a minimum of two per side.

b. Strip in metal flanges with 8″ wide membrane flashing strips heat welded to both the roof membrane and the metal flanges.

c. Fill sealant pans with 2-part pourable sealant.

1) Alternatively, fill sealant pans with non-shrink quick-set grout, and top off sealant pans with a 2″ minimum thickness of 2-part pourable sealant.

9. Curbs and Ducts

a. Flash curbs and ducts with membrane flashing adhered to the curb substrate with bonding adhesive, or with coated metal flashing nailed 4″ on center to pressure-treated wood nailers.

b. Secure membrane flashing at the top edge with a termination bar.

1) Water cut-off mastic shall be applied between the curb/duct surface and membrane flashing underneath all exposed termination bars.

2) Exposed termination bars shall be mechanically fastened 8″ on center; termination bars that are counter flashed shall be fastened 12″ on center.

c. Roof membrane must be mechanically attached along the base of walls that are flashed with membrane flashing with screws and plates/termination bar with a 12″ on center maximum spacing.
d. All coated metal curb flashings and dry applied membrane flashings must be provided with separate metal counter flashings, metal copings, or flashed with equipment flanges.
e. Metal counter flashings are optional with fully adhered membrane curb and duct flashings.
f. Exposed termination bars must be sealed with caulking.

10. Expansion Joints

    a. Install prefabricated expansion joint covers at all flat type and raised cant/curb type expansion joint conditions.

        1) All metal nailing strips must either be nailed to pressure-treated wood nailers, cants or curbs, or secured to walls with screws or expansion anchors appropriate to substrate type.
        2) Weld membrane flaps to roofing/flashing membrane.

    b. Roof membrane must be mechanically attached along the base of raised cant/curb expansion joints with screws and plates a minimum of 12″ on center.
    c. Expansion joint bellows must be twice the width of the expansion joint opening to allow for proper expansion/contraction.

11. Roof Drains

    a. Roof drains must be fitted with compression clamping rings and strainer baskets.

        1) Both original-type cast iron and aluminum drains are acceptable.

            a) Retrofit-type cast aluminum and molded plastic drains are acceptable only when approved by **Architect**.

    b. Roof drains must be provided with a min. 36″ x 36″ sumped area or larger as indicated in drawings at all drains..

        1) Slope of tapered insulation within the sumped area shall not exceed 4″ in 12″.

    c. Extend the roofing membrane over the drain opening.

        1) Locate the drain and cut a hole in the roofing membrane directly over the drain opening.
        2) Provide a ½″ of membrane flap extending past the drain flange into the drain opening.
        3) Punch holes through the roofing membrane at drain bolt locations.

    d. For cast iron and aluminum drains, the roofing membrane must be set in a full bed of water cut-off mastic on the drain flange prior to securement with the compression clamping ring.

        1) Typical mastic application rate is one 10.5 oz. cartridge per drain.

    e. For fleece-backed roof membrane applications, the fleece-backed membrane is cut just short of the drain flange.

1) A separate smooth reinforced membrane drain flashing sheet is heat welded to the roofing membrane and the drain flange, and secured as above.

f. For compatible drain inserts, the drain insert is installed on top of the roofing membrane and secured to the roof deck.

1) A separate reinforced membrane drain flashing sheet is heat welded to both the roofing membrane and the drain flange.

g. Lap seams shall not be located within the sump area.

1) Where lap seams will be located within the sump area, a separate roof membrane drain flashing a minimum of 12" larger than the sump area must be installed.
2) The membrane flashing shall be heat welded to the roof membrane.

h. Tighten the drain compression clamping ring in place.

G. Traffic Protection – Walkway pads:

1. Install walkway pads/rolls at all roof access locations and other designated locations including roof-mounted equipment work locations and areas of repeated rooftop traffic.

a. Access walkway pads shall all continue from roof hatch and/or access points.

2. Walkway pads must be spaced apart to allow for drainage between the pads.

3. Fully adhere walkway pads/rolls to the roof membrane with solvent-based bonding adhesive, applied at the rate of 1 gal. per 100 sq.ft. to both the walkway and roof membrane surfaces.

a. Press walkway in position once adhesive is tacky to the touch.

4. Heat-weld walkway pads/rolls to the roof membrane surface.

a. A minimum 2" wide x continuous heat welded seam around the entire pad.
b. Set walkway pads 3" apart.

H. Temporary Closures – Water Cut-off:

1. The roofing installation must be made watertight at the end of each day's activity to prevent water infiltration into the completed roofing system installation.
2. Complete all flashings and terminations as the roofing installation progresses.
3. At the edge of the completed roofing system installation, extend the roofing membrane a minimum of 6" beyond the edge. Seal the roofing membrane to the surrounding deck or substrate surface with hot asphalt or foam sealant.
4. Remove all temporary night seal materials prior to continuing with the roof installation.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

3. Manufacturer's representative shall visit site at the following times, but not limited to;

    a. Substrate preparation and approval
    b. Membrane installation
    c. Warranty Punchlist
    d. Warranty punchlist follow-up to confirm compliance with Punchlist

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Roofing contractor shall Inspect completed roof sections on a daily basis.

D. Immediately correct all defects, irregularities, and deficiencies identified during inspections.

E. Remedial work shall be performed with materials and in a manner consistent with the balance of the roofing installation so as to minimize the number of repair patches.

F. Excessive patchwork will require replacement of the entire affected membrane section, from lap to lap.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.
2. Remove all containers, debris and other material from roof area.
3. Pick up all loose fasteners.
4. Insure the water-tightness of all roof items and detail work for proper inspection.
5. Protect all roof surfaces from damage or contamination by other trades.
6. Remove bonding adhesive, bituminous markings and other contaminants from finished surfaces. In areas where finished surfaces are soiled by asphalt or any other source of soiling caused by work of this or other sections, consult manufacturer of surfaces for cleaning advice and conform to those instructions.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor NOTICE** of "Certificate of Substantial Completion".

3.8 MAINTENANCE

A. Upon completion of the roofing system, provisions should be made to establish a semi-yearly inspection and maintenance program in accordance with guarantee requirements.

B. Repair cuts, punctures and other membrane damage by cleaning membrane with Roofing manufacturers cleaner, followed by heat welding a membrane repair patch of sufficient size to extend a minimum of 2" beyond the damaged area.

C. Any damage to adhered membrane areas or at locations of mechanical attachment shall be repaired so that the repaired area remains fully adhered or mechanically attached.

END OF SECTION 07 54 00

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SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Flashing
2. Transition flashing
3. Copings
4. Perimeter edge flashing
5. Gutters and Downspout assemblies

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. Aluminum Association (AA), www.aluminum.org

E. American Architectural Manufacturers Association (AAMA), www.aamanet.org

F. American Society For Testing and Materials (ASTM), www.astm.org

G. American National Standards Institute (ANSI), www.ansi.orgAmerican Welding Society (AWS), www.aws.org

H. American Society of Mechanical Engineers (ASME) www.asme.org

I. American Welding Society (AWS), www.aws.orgNational Coil Coating Association, www.**coil**coating.org

J. National Coil Coating Association, www.**coil**coating.org

K. Sealant, Waterproofing and Restoration Institute (SWRI), www.swrionline.org

L. Sheet Metal and Air Conditioning Contractors, Association (SMACNA), www.smacna.org

1. Architectural Sheet Metal Manual

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Flashing - premanufacturerd	Installation	Comply	Specific manufacturers recommendations
Flashing – custom shapes	Installation	Comply	SMACNA and as detailed, comply with most restrictive
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Monitoring/Observations by others**:

Item	**Name of Test**	**Performance Results**	**By Whom**
Pre-manufactured Copings	Installation compliance	Comply	Manufacturer's representative
Flashing	Waste and recycling	Comply	Refer to Division 1 for construction waste management and disposal/recycling requirements

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Data:

a. Manufacturers data for each specific pre-manufactured flashing components
b. Fasteners
c. Sealants

d. Adhesives

2. Shop Drawings;

a. Provide detailing with all dimensions and field verified dimensions and indicate on all these the applicable detail number from contract documents.

1) Illustrating the following, but not limited to:

a) Layout, joining, profiles, expansion joints and anchorage of fabricated work
b) Layout, joining, profiles, expansion joints and anchorage of pre-manufactured components, copings, etc.
c) Boot flashing
d) Counter-flashings, trim/fascia units
e) Wall to coping transition boot flashing assemblies
f) Gutters, downspouts, and expansion joint systems with related calculations indicating required gutter design.

b. All details shall be a minimum of 3" = 1'-0" scale
c. All plan layouts shall be at 1" = 1'-0" scale
d. Details shall be at numbered and referenced to match Architectural details.

E. Submit samples.

1. Soldered boot flashing to illustrate welding

F. Site mock-up, refer to "Mock-Up" heading.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor /Installer/Fabricator shall have been in business for **five (5)** years minimum providing/installing/finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Copings
b. Roof flashing and counter flashing
c. Boot flashings, i.e. wall to roof, wall to coping, etc.

E. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the pre-manufactured copings, etc. on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and provide written review that work meets specification requirements.
2. Written reviews shall be sent to the **Architect** by the manufacturer's representative.

F. Miscellaneous criteria:

1. All work shall conform to the recommended practices of the most current adopted edition of the Architectural Sheet Metal Manual by SMACNA (Sheet Metal and Air Conditioning Contractors National Association, Inc) and details whichever is most restrictive.
2. Oil – Canning in excess of that allowed by SMACNA is not acceptable, and all conditions shall be replaced and/or repaired prior to completion & review for acceptance.
3. All flashing conditions in direct contact with roofing material shall have homogeneous soldered seams, typical.
4. Fabricator shall be qualified fabricator whose work is in compliance with SMACNA guidelines and specifications as herein specified and in Drawings

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial one (1) year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **[five] (5)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

D. Furnish installing contractors additional **[five] (5)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Roofing
2. Walls
3. Openings

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 02 41 19 – Selective Building Demolition & Protection
3. Section 04 22 00 – Concrete Unit Masonry
4. Section 05 50 00 – Metal Fabrications
5. Section 06 10 00 – Rough Carpentry
6. Section 06 17 13 – Laminated Veneer Lumber
7. Section 06 17 23 – Parallel Strand Lumber
8. Section 06 18 13 – Glue Laminated Construction
9. Section 07 13 26 – Cold Applied Self-Adhering Waterproof Membrane
10. Section 07 26 00 – Water Resistant Barrier
11. Section 07 41 13 – Metal Roof Panels
12. Section 07 46 19 – Metal Siding & Soffit Assembly
13. Section 07 53 00tpo – TPO Membrane Roofing
14. Section 07 92 00 – Sealants and Caulking
15. Section 08 11 13 – Steel Doors & Frames
16. Section 08 41 00 – Entrances, Window Wall, Storefront System & Curtain Wall
17. Section 09 29 00 – Gypsum Board & Sheathing Substrates
18. Section 09 90 00 – Paintings & Coatings

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. Schedule work and sequence with other trades affected or affecting work under this specification.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS/FABRICATORS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as listed herein and in Drawings:

1. Pre-manufactured copings, flashings, etc:

a. Fry Reglet, www.fryreglet.com
b. SBC Industries, Roof flashings, www.sbcflashings.com
c. Metal-Era, www.metalera.com
d. Lane-Aire Manufacturing Corp., www.lane-aire.com

2. Flashing

a. Refer to documents and as herein specified.

3. Fasteners::

a. Steeler, Inc., www.steeler.com

4. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. Zinc-Coated Steel: Commercial quality with 0.20% copper, ASTM A 525 except ASTM A 527 for lock forming, G90 hot-dip galvanized, mill phosphatized where indicated for painting; 0.0239" thick (24 gage) except as otherwise indicated.
2. Metal Accessories:

a. Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed non-corrosive, size and gage required for performance.
b. Solder: ASTM B32, Class A1
c. Flux: Muriatic acid. Asphaltic primer: ASTM D41

3. General Accessories:

    a. Plastic cement: Asphaltic, FS SS-C-153, Type I
    b. Sealant: Refer to Section 07 92 00

4. Flashing Reglets:

    a. Comply with flashing requirements: Gauge as required by SMACNA.
    b. Flashing:

        1) Galvanized Steel: 22 gauge min. and as required by SMACNA

            a) 16ga at gutter straps

    c. Waterproof membrane and flexible flashing – roll goods:

        1) Material: Cold-applied self-adhering high density, cross laminated polyethylene film coated on one side with a layer of butyl rubber adhesive sheet membrane

    d. Refer to Section 07 13 26 – Cold Applied Self-Adhering Membrane (CASAM)
    e. Isolation membrane / Slip Sheet:

        1) Material: 4lb. Rosin paper
        2) Manufacturer: Atlas
        3) Product: FR-50

    f. Gutters, Straps, Brackets, etc.:

        1) Comply with SMACNA guidelines
        2) Shop fabricate all items where a gauge is required that is not available pre-manufactured.

B. Schedule:

1. Flashing

    a. General:

        1) Flashing typically shall be designed and installed as herein specified, and indicated on Drawings unless noted and/or specified otherwise.
        2) Flashing shall typically be provided under this specification section, unless noted and/or specified otherwise.
        3) Flashing shall be repaired prior to finishing.
        4) Flashing shall be prepared to be painted.

    b. <u>Metal Siding and Soffit Assembly – Section 07 46 19:</u>

        1) Flashing material, color and finish shall match metal siding.

            a) Provide and install under “Metal Siding and Soffit Assembly” section.
            b) Fabricate in accordance with this specification and “Metal Siding and Soffit Assembly” section.
            c) Install in accordance with this specification section and “Metal Siding and Soffit Assembly” section.

c. Entrances, Window Walls, Storefront Systems & Curtain Wall Systems – Section 08 41 00:

1) Flashing's shall be aluminum break shapes to match mullion material, finish and color.

a) Provide and install under "Entrances, Window Walls, Storefront Systems & Curtain Wall Systems" section.
b) Fabricate in accordance with this specification and "Entrances, Window Walls, Storefront Systems & Curtain Wall Systems" section.
c) Install in accordance with this specification section and "Entrances, Window Walls, Storefront Systems & Curtain Wall Systems" section.

d. Single Ply Roofing – Section 07 54 00:

1) Flashing shall be provided by and installed by single ply roofing manufacturer in accordance with roofing specification section.

e. As indicated in documents and in details.

1) Refer to drawings
2) Reglet & skirt flashing to cover single ply surface applied at walls

a) Mfgr: Fry Reglet
b) Model: SM

i. Refer to Schedule as herein specified for other models for different conditions

c) Components – two part

i. Reglet
ii. Skirt flashing
iii. Prefabricated inside & outside corners
iv. fasteners

d) Finish: Painted

i. Factory applied Kynar 500/Hylar 500 finish
ii. Color: TBD

e) Material: Galvanized Steel

2. Copings:

a. General:

1) Copings typically shall be designed and installed as herein specified, and indicated on Drawings unless noted and/or specified otherwise.
2) Copings shall typically be provided under this specification section, unless noted and/or specified otherwise.

b. Metal Siding and Soffit Assembly – Section 07 46 19:

1) Coping material, color and finish shall match metal siding.

a) Provide and install under "Metal Siding and Soffit Assembly" section.

b) Fabricate in accordance with this specification and "Metal Siding and Soffit Assembly" section.
c) Install in accordance with this specification section and "Metal Siding and Soffit Assembly" section.

c. Metal Roofing Panels – Section 07 46 19:

1) Coping material and finish shall match metal siding.

a) Provide and install under "Metal Roof Panels" section.
b) Fabricate in accordance with this specification and "Metal Roof Panels" section.
c) Install in accordance with this specification and "Metal Roof Panels" section.

d. Entrances, Window Walls, Storefront Systems & Curtain Wall Systems – Section 08 41 00:

1) Copings shall be aluminum break shapes to match mullion material, finish and color.
a) Provide and install under "Entrances, Window Walls, Storefront Systems & Curtain Wall Systems" section.
b) Fabricate in accordance with this specification and "Entrances, Window Walls, Storefront Systems & Curtain Wall Systems" section.
c) Install in accordance with this specification section and "Entrances, Window Walls, Storefront Systems & Curtain Wall Systems" section.

e. Single Ply Roofing – Section 07 54 00:

1) Flashing shall be provided by and installed by single ply roofing manufacturer in accordance with roofing specification section.

f. As indicated in documents and in details.

3. Wall penetration flashing, window & door flashing & counterflashing

a. General:

1) Flashing typically shall be designed and installed as herein specified, and indicated on Drawings unless noted and/or specified otherwise.
2) Flashing shall typically be provided under this specification section, unless noted and/or specified otherwise.
3) Flexible cold applied waterproof membrane and flexible flashing, refer to Section 07 13 26 - Cold Applied Self-Adhering Membrane (CASAM)

b. Metal Siding and Soffit Assembly – Section 07 46 19:

1) Flashing material, color and finish shall match metal siding.

a) Provide and install under "Metal Siding and Soffit Assembly" section.
b) Fabricate in accordance with this specification and "Metal Siding and Soffit Assembly" section.
c) Install in accordance with this specification section and "Metal Siding and Soffit Assembly" section.

c. Entrances, Window Wall, Storefront System & Curtain Wall – Section 08 41 00:

1) Flashings shall be aluminum break shapes to match mullion material, finish and color.
    a) Provide and install under "Aluminum Entrance, Window Wall and Window wall Systems" section.
    b) Fabricate in accordance with this specification and "Aluminum Entrance, Window Wall and Window Wall Systems" section.
    c) Install in accordance with this specification section and "Aluminum Entrance, Window Wall and Window wall Systems" section.

d. Single Ply Roofing – Section 07 54 00:
    1) Flashing shall be provided by and installed by single ply roofing manufacturer in accordance with roofing specification section.

e. As indicated in documents and in details.

4. Wall and Parapet: roofing to wall transition - Flashing & Counterflashing
    a. General:
        1) Flashing typically shall be designed and installed as herein specified, and indicated on Drawings unless noted and/or specified otherwise.
        2) Flashing shall typically be provided under this specification section, unless noted and/or specified otherwise.
    b. Metal Siding & Soffit Assembly – Section 07 46 19:
        1) Flashing material and finish shall match metal siding.
            a) Provide and install under "Metal Siding & Soffit Assembly" section.
            b) Fabricate in accordance with this specification and "Metal Siding & Soffit Assembly" section.
            c) Install in accordance with this specification and "Metal Siding & Soffit Assembly" section.
    c. Single Ply Roofing – Section 07 54 00
        1) Flashing shall be provided by and installed by single ply roofing manufacturer in accordance with roofing specification section.
    d. As indicated in documents and in details.
5. Gutters and downspouts:
    a. General:
        1) Gutters and Downspouts typically shall be designed and installed as herein specified, and indicated on Drawings unless noted and/or specified otherwise.
            a) Shop fabricate for required gauge where pre-fabricated items are not available.
            b) Shop fabricate for items requiring the use of matching material and/or finishes to match other materials.

b. Metal Siding & Soffit Assembly – Section 07 46 19:

1) Gutters and downspout material, finish and color shall match metal siding.

a) Provide and install under "Metal Siding & Soffit Assembly" section.
b) Fabricate in accordance with this specification section and "Metal Siding & Soffit Assembly" section.
c) Install in accordance with this specification and "Metal Siding & Soffit Assembly" section.

6. Waterproof Membrane

a. Shall be provided and installed by who is responsible for the specific components; Gutters and Downspouts, Copings, etc.
b. **General Contractor** will need to coordinate products and application of membranes.

7. Fasteners/Soldering

a. General:

1) Fasteners typically shall be installed as herein specified, and indicated on Drawings unless noted and/or specified otherwise.
2) Fasteners shall typically be provided under this specification section, unless noted and/or specified otherwise.
3) Fasteners shall be compatible with all material they penetrate and/or come in contact with.

b. Fasteners shall be provided by and installed under the scope of work as herein listed.
c. Solder where indicated and when required by assembly.

2.3 SCHEDULE

A. General:

1. Flashing type shall be compatible with metals that it is in contact with and installed to eliminate galvanic corrosion.
2. Flashing shall match finish of adjacent metal, U.N.O.
3. Coordinate material, finish and color with wall, roof and parapet conditions.
4. Dissimilar materials shall be isolated from each other.

B. Material Types:

1.	Flashing, U.N.O.	Galvanized steel
2.	Typical, U.N.O.:	Galvanized steel
3.	Single Ply TPO:	TPO coated flashing and galvanized steel
4.	Metal Roof Panels:	Preformed metal roofing material
5.	Metal Siding & Soffit Assembly:	Preformed metal siding material

6. Specific conditions not included in a specific associated Specification Section: as noted
7. Gutters and Downspouts
8. Material:

a. Galvanized Steel: Typical unless herein scheduled otherwise and/or required by roofing and/or siding manufacturer.

9. Material Gauge / thickness:
    a. Comply with SMACNA requirements.
10. Coping
11. Galvanized Steel: Typical unless herein scheduled otherwise and/or required by roofing and/or siding manufacturer
12. Aluminum: Aluminum
13. Aluminum Windows: Aluminum

C. Fasteners:
1. Install type as approved by product manufacturer whose material is being fastened through and material type that is compatible with flashing and other materials which fastener comes in contact with.
2. Exposed conditions, fasteners shall include neoprene washers, typical.
3. Solder in accordance with materials requirements.

D. Gutters:
1. Gutter Profile
    a. Assemblies: SMACNA Manual, guidelines and drawings.
        1) Rectangular:
            a) Refer to drawings
2. Expansion Joints;
    a. Assembly: SMACNA Manual, Chapter 1 and associated information
        1) Lap joint type: Refer to drawings
            a) Allowances for gutter expansion: refer to SMACNA Table 1-7 and other associated information.
    b. Material: Match gutter, material and finish & per SMACNA guidelines unless noted to be heavier gauge in Drawings.
3. Gutter Brackets and Straps
    a. Material:
        1) Same material as gutter
    b. Gauge and Size: Refer to SMACNA guidelines and Table 1-8 recommended sizes.
        1) Gutter brackets or straps.

E. Downspouts
1. Assembly: Refer to SMACNA guidelines

a. Downspout

1) Shape:

a) Plain rectangular

2) Size:

a) Size: 2”x3”

b. Hanger

1) Rectangular downspout: Figure 1-35D

c. Connection to Gutter

1) Orientation: Figure 1-33B
2) Connection: Detail 1, Figure 1-33
3) Fastening: Rivet and solder
4) Accessories:

a) Downspout sleeve: Figure 1-24C
b) Splash diverter at inside/outside corners x 4” tall: Figure 1-24A

2. Materials: Match gutter, material, and finish & per SMACNA guidelines
3. Gauge/ounce:

a. Match gutter

F. Coping

1. Materials: As herein scheduled
2. Gauge/ounce:

a. 20 gauge steel minimum and in accordance with SMACNA Guidelines, coordinate with siding and/or roofing section.

1) Use heavier gauge if required by SMACNA guidelines.

3. Conditions:

a. Joints, typically: Joint “J12” per SMACNA Table 3-1 Coping Design
b. Corner: “C1” per SMACNA Table 3-1 Coping Design
c. Edge Style: “E1” per SMACNA Table 3-1 Coping Design
d. Cavity wall Intersection: Figure 3-8, Detail Figure 3-8D
e. Expansion Joint: Per SMACNA standards

4. Profile:

a. Figure 3-4a Formed Metal Copings, SMACNA Manual – similar, refer to Drawings.
b. Specialty conditions, per SMACNA & refer to Drawings.

G. Wall to roof Transition Flashing:

1. Type: Two piece assembly:
    a. Reglet
    b. Skirt flashing with prefabricated inside and outside corners
2. Material:
    a. Galvanized steel, 24ga.
3. Finish:
    a. Galvanized steel, 24ga: Painted
        1) Refer to Section 09 90 00 for paint type

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:
    1. Examine areas and conditions under which work is to be performed.
    2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
B. Surface:
    1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.
B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.
C. Coordinate application of all flexible waterproof membrane flashings
    1. Refer to Section 07 13 26 – Cold Applied Self-Adhering Waterproof Membrane

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 FABRICATION

A. General:
    1. Fabricate in compliance with SMACA guidelines and contract documents
        a. Most restrictive shall govern
B. Assemblies:

1. Flashings and counter flashings:
    a. Install wherever detailed and as necessary to make building watertight. Lap joints at least 6 inches and fill with sealant. Coordinate installation with other trades involved. Attach with material compatible screws, neoprene washers and cap with bead of sealant.
2. Caps and closures:
    a. Provide miscellaneous caps and closures; profiles and gauges as shown on Drawings.
3. Expansion joints:
    a. Per SMACNA Standards.
    b. Locate per SMACNA standards & details. (Coordinate with joints indicated on documents.)
4. Gutters and downspouts:
    a. All joints at gutters & downspouts shall be secured by means of continuous soldering, unless at expansion joint condition.
5. All flashing and counterflashing at inside & outside corners shall be continuously soldered for watertight assembly.
    a. At pre-manufactured assemblies such as Transition Flashing, the specifiedtwp piece 'Springlok' - reglet and snap in skirt flashing,shall be installed with manufacturers pre-manufactured inside and outside corners.
6. Roof drains, overflow drains and rainwater piping
    a. When concealed within the construction of the building; shall be tested in conformity with the provisions of the applicable building code . for testing drain, waste and vent system.
7. Lead flashing
    a. Shall be coated with a bituminous coating prior to direct contact with uncured concrete or mortar.
8. All connections to lead shall be soldered.
    a. Soldering:
        1) Use appropriate flux and solder
        2) Neutralize flux after soldering
9. Waterproof flexible flashings and membranes
    a. Cold-applied self-adhering waterproof membrane shall be installed in accordance with manufacturer's instructions.
    b. Install membrane in shiplap fashion such that membrane overlaps substrate barrier material.
    c. Insure that Waterproof Membrane is compatible with other materials it comes in contact with and notify **Architect** of any compatibility problems.

d. Insulate, separate sheet metal work and install approved fasteners that will be in contact with dissimilar metals or other material that would produce electrolytic action.

3.5 MOCK-UP

A. Erect at location approved by **Architect**.

1. Mock-up shall not be part of final construction once approved by **Architect**.

a. When approved by **Architect** some mock-ups can be part of final construction

2. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.

B. Assembly:

1. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings and as herein specified to include;

a. Boot flashing
b. Coping(s)
c. Roof flashing and skirt counter flashing, inside & outside corners
d. Refer to drawings

2. Size:

a. Boot flashing:

1) One installed and can be part of final construction

b. Coping:

1) 10’-0” section with outside corner

c. Roof flashing and skirt counter flashing, inside & outside corners:

1) 3’- 0” minimum with an inside and outside corner

3.6 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer’s recommendations, as herein specified and in accordance with drawings.
2. Fabricate in compliance with SMACA guidelines and contract documents.

a. Most restrictive shall govern

B. Workmanship

1. Specifications herein are minimum required; provide such extra materials and workmanship as necessary to obtain required results. Install work in accordance with recognized standards and best trade practices.

2. Finish shapes true and straight as shown or as required to match existing adjoining sheet metal.

3. Where members intersect each other, cope to precise fit and securely solder; solder slowly with well-heated coppers; neat and with full flowing joints; thoroughly clean materials at joints before soldering; scrape exposed soldering on finished surfaces smooth; make lock seam work flat and true to line and sweated full of solder; thoroughly wash acid fluxed work with soap suds and water solution after soldering.
4. Install sheet metal work to provide allowances for expansion and contraction and weather tightness throughout and as hereinafter specified.
5. Clean and coat with asphaltic primer all surfaces that will be in contact with roofing materials or that will not be exposed after installation.
6. Allow to dry thoroughly before installation.
7. Touch up painting
    a. Where new or existing galvanizing is damaged by fabrication or installation, repair surfaces with "Galvalloy" or "Galvweldalloy," or Zincalume compatible material, applying in accordance with manufacturer's printed directions.
        1) Float full, grind, and buff smooth.
    b. Touch up material shall be compatible with substrate.

3.7 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator
    1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
    2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Touch up:
    1. Where new or existing galvanizing is damaged by fabrication or installation, repair surfaces with "Galvalloy" or "Galvweldalloy," or Zincalume compatible material, applying in accordance with manufacturer's printed directions. Float full, grind, and buff smooth.
    2. Touch up material shall be compatible with substrate.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 07 62 00

SECTION 07 72 33 – ROOF HATCHES AND SAFETY RAILINGS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work including, but not limited to;

1. Roof Hatches with integral curb
2. Roof Hatch Safety Railing

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. Occupational Safety and Health Administration (OSHA), United States Department of Labor, www.osha.gov

1. OSHA – Regulations Standards – 29 (CFR) as approved by State of California
2. OSHA – Regulations Standards – 29 (CFR), Section 1926 Occupational Safety and Health Standards for Construction as approved by State of California

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Product information
2. Sizes for each unit
3. Railing assembly type

E. Submit samples.

1. Color samples for;

a. Roof hatches
b. Safety Railings

F. Certification:

1. OSHA compliance for Safety Railing

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Roof Hatch Railing System: Furnish manufacturer's additional **seven (7)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

D. Roof Hatches: Furnish manufacturer's additional **five (5)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Roof Construction
2. Access Ladder and Accessories
3. Roofing
4. Flashing

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 07 54 00tpo – TPO Membrane Roofing

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding operation of the equipment.
2. Complete instructions regarding maintenance of the equipment, materials, finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Roof Hatches with integral curb:

a. Bilco www.bilco.com
b. Babcock-Davis, www.babcock-davis.com
c. Acudor www.acudor.com

2. Hatch Safety Railings:

a. KeeHatch, www.keehatch.com, www.keesafety.com

C. Reviewed Equivalent by **Architect.**

1. Substitutions and Deviations shall require **Architect's** approval and shall be given in letterform.
2. Refer to Division 1 for substitution, deviation and/or submittal procedures.
3. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

D. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

E. Refer to drawings, details, and other related specification section whether listed or not.

F. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS - HATCHES

A. Hatches:

1. General

a. Hatches shall be as indicated and required in the drawings.

1) Full welded corner joints; insulated hatch lids and integral support curbs; complete with integral counterflashings to roof flashing system and flanges on support curbs for anchorage to roof deck.

b. Hatch Opening hardware: Manufacturer's standard manually operating type capable of ensuring effortless control and smooth operation without causing damage to hatch and roofing system; capable of being opened from inside and outside; complete with hold-open mechanism and padlock hasp(s).

2. Hatches:

a. ROOF HATCH AT FIXED WALL MOUNTED LADDERS.

1) Manufacturer: Bilco
2) Type: Roof Access Hatch & Curb
3) Size: 2'-6" x 3'-0"
4) Model:

a) Type S-20

i. Frame & Cap Flashing:

a. 14 gauge G-90 paint bond galvanized Steel
b. Fully welded corners

ii. Cover:

a. 14 gauge G-90 paint bond galvanized Steel
b. 3" beaded, overlapping flange
c. Fully welded corners
d. Internally reinforced for 40 psf live load

iii. Cover Liner: 14 gauge P.B. Steel
iv. Cover insulation: 1" Fiberglass
v. Finish: Custom color as selected by the **Architect**

5) Curb:

a) 6" min. high with integral capflashing
b) 1" fiberboard insulation
c) Fully welded corners
d) 3-1/2" mounting flange with 7/16" holes provided for securing frame to the roof deck

6) Gasket:

a) Extruded EPDM rubber gasket permanently adhered to cover

7) Hinges:

a) Heavy duty pintle hinges with 3/8" Type 316 stainless steel hinge pins

8) Latch:

a) Slam Latch with interior and exterior turn handles and padlock hasps

9) Lift Assistance:

a) Compression spring operators enclosed in telescopic tubes. Automatic hold-open arm with grip handle release.

10) Finish:

a) Steel: Galvanized

11) Hardware:

a) Steel: All hardware is zinc plated/chromate sealed

12) Safety post: None

a) See safety railing system as herein specified

2.3 MATERIALS - SAFETY RAILINGS

A. Roof Hatch Safety Railing:

1. RAILING.

   a. Manufacturer: KeeHatch, Kee Industrial Products, Inc.
   b. Size: Size to fit hatch
   c. Model:

      1) Exit Forward:

         a) Hatch hinges at back of railing system directly behind railing gate opening

   d. Compliance: OSHA Standard CFR 29 1910.23 and CFR 29 1910.27(c)(7) or most current

      1) Loading: 200lbs

   e. Materials:

      1) Flat Bar: A36 mild steel
      2) Pipe: 1-1/4" ID A53 Grade B seamed steel
      3) Weld Filler: Metal NR211 e70XX (AWS)
      4) Gate: Self Closing
      5) Pipe Caps: Weather and light resistant vinyl 1-1/2" deep and to fit snugly over pipe ends
      6) Finish: Galvanized – hot dipped
      7) Bolts and Washers: Hex head bolts 3/8" x 2 ½" grade Z, zinc plated. Fender washers for inside of hatch curb and standard flat washers outside
      8) Railing: KeeKlamp fittings for pipe

   f. Installation: Install per manufacturers instructions.

2.4 FABRICATION

A. Fabricated roof hatches and curbs watertight, and free of visual distortions and defects.

B. Safety railing secured to curb.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.

2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 INSTALLATION

A. Install roof hatches, Safety Railings and curbs in accordance with manufacturer's recommendations.
   1. Coordinate with installation of roofing system and related flashings.
   2. Provide weather-tight installation.
   3. Adjust opening hardware for proper operation.
   4. Coordinate with Access Ladder work.

B. Apply paint on primed steel surface of roof hatch; refer to Section 09 90 00.
   1. Paint Color as selected by **Architect**.

3.5 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator
   1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
   2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
   1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 07 72 33

SECTION 07 84 00 - FIRESTOPPING

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Verify applicable dimensions at the jobsite.

C. Furnish materials and perform labor required per this specification to execute this work as indicated on the drawings, as specified, as required by local and state codes and regulations and as necessary to complete the work and fireproofing including the following but not limited to:

1. Through penetration, edge treatment and other firestop and smoke stop treatment for all fire-rated walls, floors and roofs, including, but not limited to:

a. HVAC duct penetrations
b. Pipe penetrations
c. Conduit penetrations
d. Structural member penetrations
e. Slab edge
f. Roof edge

2. Edge bonding and core material for fire-resistant/fire rated door and window assemblies.
3. Bottom of wall fire stopping and top of wall firestopping

a. Fire stopping at fire rated walls
b. Construction joint firestops within walls, or the intersection of top of walls to structure

4. Duct wrap assembly

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC), www.bsc.ca.gov current edition at time of permit issuance.

1. Including, but not limited to;

a. CBC Chapter 7 including but not limited to;

1)	Wall penetrations	Section 712 and its sub sections
2)	Fire resistive Joint Systems	Section 713 and its sub sections
3)	Opening Protectives	Section 715 and its sub sections
4)	Ducts and Air Transfer Openings	Section 716 and its sub sections
5)	Concealed spaces	Section 717 and its sub sections
6)	Thermal and Sound-insulating Materials	Section 719 and its sub sections
7)	Prescriptive Fire Resistance	Section 720 and its sub sections
8)	Calculated Fire Resistance	Section 721 and its sub sections

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Bldg Materials
2. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Firestops
3. ASTM E119 - Standard Test Method for Fire Tests of Building Construction Materials
4. ASTM E1399 - Standard Test Method for Cyclic Movement and Measuring of Joint Systems
5. ASTM E1725 - Standard Test Methods for Fire Tests of Fire-Resistive Barrier Systems Electrical Systems Components
6. ASTM E1966 - Standard Test Methods for Fire Tests of Joints
7. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale Multi-Story Test Apparatus

E. International Fire Council guidelines for evaluating Firestop Systems Engineering judgments.

F. National Fire Protection Agency (NFPA), www.nfpa.org

1. NFPA 80 Standard Fire Door and Window Assembly Tolerances
2. NFPA 252 Standard Fire Test for Fire Rated Doors (not specified for positive or Negative furnace test pressure)
3. NFPA 257 Standard Fire Test for Fire Rated Windows (not specified for positive or negative furnace test pressure)
4. NFPA 101 Life Safety Code
5. NEC 70 National Electrical Code

G. Underwriters Laboratory (UL), www.ul.com

1. UL 723 - Surface Burning Characteristics of Building Materials
2. UL 1479 - Fire Tests of Through-Penetration Firestops, including optional air leak test
3. UL 2079 - Fire Tests of Building Joint Firestop Systems
4. UL Fire Resistance Directory (Component Listing Test Criteria)
   a. HW designs: Volume 2A
5. F – Ratings, UL designs: ASTM E 814 & UL 1479
6. T – Ratings, UL designs: ASTM E 814 & UL 1479
7. L - Ratings, UL designs: ASTM E 814 & UL 1479

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	Name of Test	Performance	Testing Std.
Firestopping design	F-Rated Systems: (fire)	Provide firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance ratings of the construction assemblies listed.	ASTM E814
	T-Rated Systems: (temperature)	Provide firestop systems with T-ratings indicated, where systems protected penetrating items exposed to potential contact with adjacent materials in occupiable floor areas.	ASTM E814 and ASTM E119,
	L-Rated Systems	Provide firestop systems with L-ratings indicated, where systems maintain a barrier to cold smoke at all: penetrations, connections with other surfaces, separations required to permit building movement, sound or vibration absorption, and other construction gaps	UL2079,ASTM EB99 and ASTM E814,
	Flame Spread	25 or less	ASTM E84
	Smoke developed	450 or less	
Construction joint/gap systems	cyclic movement	meet or exceed 500 cycles at 10 cycles per minute.	UL 2079 and ASTM E1399
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing / Inspection by others:**

Item	Name of Test	Performance Results	By Whom
Firestopping systems and assemblies	Design compliance	Comply	Special Inspector Inspection service as approved by agency having jurisdiction
Cost for independent inspections shall be borne by **General Contractor**			

E. **Construction Monitoring/Observations by others**:

Item	Name of Test	Performance Results	By Whom
Firestopping systems and assemblies	Const. Waste Management	Comply	Refer to Division 1 for construction waste management and

			disposal/recycling requirements

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified

C. Refer to Division 1 for sustainability requirements Submit Manufacturer's data and shop drawings.

1. Manufacturer's product literature for each type of firestop material as follows:

a. Product characteristics, typical uses, installation procedures, performance and limitation criteria
b. Material Safety Data Sheets (MSDS)
c. Firestop system products bear classification marking of qualified testing and inspecting agency
d. Firestop systems correspond to those indicated by reference to firestop system designations listed in these specifications and/or in the drawings by the following:

1) Assembly type
2) UL in "Fire Resistance Directory"
3) ITS (Warnock Hersey) in "Directory of Listed Products"
4) Omega Point Laboratories
5) Factory Mutual

e. Local and State regulatory requirements: Submit forms of acceptance for proposed assemblies not conforming to specific UL Firestop System numbers or UL classified devices.

2. Submit manufacturer's installation procedure for each type of product.

a. For each firestop system show construction conditions, relationships to adjoining construction, dimensions, description of materials and finishes, component connections, anchorage methods, hardware and installation procedures, plus the following:

1) Firestop design designation of testing and inspecting agency acceptable to authorities having jurisdiction that confirms compliance with requirements for each condition indicated.

b. Documentation, including illustrations, from a qualified testing and inspection agency that is applicable to each firestop system configuration for construction and penetrating items. Factory 2nd/ or manufacturer furnished installation details are not acceptable in lieu of published documents by approved testing agencies (UL, OPL, Warnok Hersey, etc).
c. Where Project conditions require modification of a qualified testing and inspecting agency's illustration to suit a particular firestop condition, submit illustration, with modifications marked, approved by firestop system manufacturer's fire-protection engineer.

d. Submit manufacturer's drawings for all non - standard applications where no UL tested system exists. All drawings must indicate the "Tested" UL system upon which the judgment is based so as to asess the relevance of the judgment to some known performance.
e. Engineering judgment drawings must follow requirements set forth by the International Firestop Council.

3. List of 3M supplied assembly Identification labels

D. Submit samples.

1. Coordinate with Inspector

E. Site mock-up, refer to "Mock-Up" heading.

F. Certification:

1. For firms and persons specified in "Quality Assurance" Section to demonstrate their capabilities and experience, include a list of names and addresses of completed projects, **Architects** and **Owners** and other information specified.
2. **Product Certificates:** Signed by manufacturers of firestop system products certifying that products furnished, comply with requirements.
3. **Product Test Reports:** From a qualified testing agency indicating that firestop system complies with requirements, based on comprehensive testing of current products.
4. **Engineering Judgments:** Submit manufacturer's drawings for all non-standard applications where no UL tested system exists. All drawings must indicate the "Tested" UL system upon which the judgment is based so as to assess the relevance of the judgment to some known performance.
5. **Approved Applicator:** Submit document from manufacturer wherein manufacturer recognizes the installer as qualified or submit a list of past projects to demonstrate capability to perform intended work.
6. Certification upon completion, installer shall provide written certification that materials were installed in accordance with the manufacture's installation instructions and details.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Stipulations:

1. Firestopping systems (materials & design):

a. Shall conform to both Flame (F) and Temperature (T) ratings as required by local building codes and as tested by nationally accepted test agencies per ASTM E814 or UL 1479 fire tests in a configuration that is representative of field conditions. The (F) rating must be a minimum of one (1) hour but not less than the fire rating of the assembly being penetrated.

b. Shall conform to assembly rating per UL2079
c. Firestopping materials shall be asbestos and lead free and shall not incorporate nor require the use of hazardous solvents.
d. Firestopping materials shall not shrink upon drying as evidenced by cracking or pulling back from contact surfaces.
e. Firestopping materials shall be moisture resistant, and shall not dissolve in water after curing.
f. Provide firestop systems that are produced and installed to resist the spread of fire according to requirements indicated, resist passage of water, smoke and other gasses, and maintain original fire-resistance rating of constructed assembly.

2. **Fire Protection Installer's Qualifications:** Engage an experienced installer, (including individual traded people such as: electrical, mechanical, insulators, etc.) who is qualified by having the necessary experience, staff, and training to install manufacturer's products per specified requirements, plus the following:

   a. Acceptable to or licensed by manufacturer, state or local authority
   b. Established a record of successful in-service experience with firestop systems or completion of manufacturer's certified product installation training.
   c. Installation of firestopping systems shall be performed by a contractor (or contractors) trained or approved by the firestop manufacturer.
   d. Submit document from manufacturer wherein manufacturer recognizes the installer as qualified or submit a list of past projects to demonstrate capability to perform intended work.

3. Source Limitations:

   a. Obtain firestop systems for each kind of penetration and construction condition indicated, from a single manufacturer.

4. **Fire-Test-Response Characteristics:** Provide firestop systems that comply with the following requirements and those specified in "Performance Requirements".

   a. Firestopping tests and follow-up inspection services for firestop systems are performed by qualified testing and inspection agency acceptable to authorities having jurisdiction.
   b. Firestop systems are identical to those tested as herein listed and comply with the appropriate requirements:
   c. Firestop system products shall bear classification marking of a qualified testing and inspecting agency

      1) Firestop systems correspond to those indicated by reference to firestop system designations listed by the following:

         a) UL in "Fire Resistance Directory"
         b) ITS (Warnock Hersey) in "Directory of Listed Products"
         c) Omega Point Laboratories
         d) Factory Mutual

   d. Local and State regulatory requirements: Submit forms of acceptance for proposed assemblies not conforming to specific UL Firestop System numbers or UL classified devices.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include, but not be limited to;

1. All locations to receive protection assemblies and/or treatment
2. Assemblies that have been altered from design
3. Inspection schedule **General Contractor** shall request meeting 5 days in advance of construction.

F. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

G. Miscellaneous criteria:

1. For firestop systems exposed to view, traffic, moisture, sunlight and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction. Firestopping materials shall not shrink upon drying as evidenced by cracking or pulling back from contact surfaces.
2. Firestopping materials shall be asbestos and lead free and shall not incorporate nor require the use of hazardous solvents.
3. Firestopping materials shall not shrink upon drying as evidenced by cracking or pulling back from contact surfaces.
4. Firestopping materials shall be moisture resistant, and shall not dissolve in water after curing.
5. Installation of firestopping systems shall be performed by a contractor (or contractors) trained or approved by the firestop manufacturer.
6. All top of wall conditions, penetrations, etc. will need to be installed to withstand vertical and lateral movement.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver firestop system products to project site in original, unopened containers or packages with intact and legible manufacturer's labels identifying product and manufacturer, date of manufacture, lot number, shelf life, qualified testing and inspection agency's classification marking, curing time, and mixing instructions.

C. Store and handle materials for firestop systems to prevent their deterioration or damage according to manufacturer's instructions.

D. All firestop materials shall be installed prior to expiration of shelf life.

E. Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

1.7 JOB CONDITIONS

A. Existing Conditions:

1. Verify the condition of the substrates and correct unsatisfactory conditions before installing firestop system products; follow manufacturer's instructions.

B. Environmental Limitations:

1. Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestop systems.

C. Ventilation:

1. Ventilate firestop systems during installation per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

1. Provide masking and drop clothes to prevent contamination of surfaces by firestop system materials.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

D. Provide masking and drop clothes to prevent contamination of surfaces by firestop system materials.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Wall construction
2. Roof construction

B. Related sections include, but are not limited to the following:

1. Division 1
2. Section 03 30 00 - Cast-in-Place Concrete
3. Section 04 22 00 – Concrete Unit Masonry

4. Section 05 40 00 – Cold Formed Metal Framing
5. Section 06 10 00 – Rough Carpentry
6. Section 07 21 00 – Building Insulation
7. Section 07 92 00 – Sealants and Caulking
8. Section 08 11 13 – Steel Doors & Frames
9. Section 08 11 16 – Interior Aluminum Doors and Frames
10. Section 08 41 00 – Entrances, Window Walls, Storefront System and Curtain Walls
11. Section 09 22 16 – Non-Structural Metal Framing
12. Section 09 29 00 - Gypsum Board and Sheathing Substrates
13. Divisions 21 through 28

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

1.13 GENERAL SYSTEM DESCRIPTION

A. This Section Includes, but not limited to these as typical conditions and installations;

1. Firestop systems for **through-penetrations** of the following fire-resistance-rated assemblies, including both empty openings and openings containing penetration items:

a. Walls and partitions
b. Smoke barriers
c. Construction enclosed compartmentalized areas.

2. Firestop systems for **construction joints/gaps** occurring between the following fire-resistance rated assemblies:

a. Walls and the intersection of the top of walls to structure
b. Smoke barriers

3. Firestop systems for **containment of fire, heat and smoke for pipes and conduits** passing through the following fire-resistance-rated areas:

a. Occupied rooms and storage spaces
b. Mechanical/electrical rooms, shafts and closets
c. Construction enclosed compartmentalized areas:

4. Firestop systems for **composition edge banding and care materials** for fire-resistance-rated door/window styles and rails to seal joints and gaps, helping to retain fire-resistant components within their frames and retard the spread of flames, smoke and hot gases.

a. Fire-resistance-rated door and window assemblies to comply with UBC7-2-1997 ("positive pressure" requirements).
b. Special limitations apply to the entire fire-resistance-rated door/window assembly being specified for "positive pressure" (assembly includes the door/window, frame and hardware).

1.14 DEFINITIONS

A. Including the following, but not limited to:

1. **Assembly**: Particular arrangement of materials specific to a given type of construction defined in referenced documents.
2. **Barrier:** Any bearing or non-bearing floor, wall, or ceiling assembly that has an hourly fire or smoke rating.
3. **Construction Gap:** Any joint or opening, whether static or dynamic, within or between adjacent sections of interior or exterior walls, floors, ceilings or roof decks.
4. **Engineering judgment:** Evaluations that are developed by a manufacturer for a new firestop system that complies with similar UL approved designs or tests that are acceptable to the code enforcing authorities.
5. **Drawings:** Must follow requirements set forth by the International Firestop Council, most current edition.
6. **Firestopping:** Methods and materials applied in penetrations and unprotected openings to limit the spread of heat, fire, gasses, water and smoke.
7. **Firestop Systems:** The use of a specific firestop material or combination of materials in conjunction with a specific wall, floor, or ceiling construction type and a specific penetrating material(s) to achieve a rated fire barrier.
8. **Intumescent:** Materials that expand with heat to seal around objects threatened by fire.
9. **Penetration:** Opening or foreign material(s) is breached either in total or in part. Any item passing completely through a wall or floor.
10. **Sleeve:** Metal fabrication or pipe section that is part of a system that extends through a barrier.
11. **Annular Space:** The distance between a penetrating item and the surrounding opening.
12. **Percent Fill:** The cross-sectional area of an opening that is occupied by a penetrating item.

1.15 TESTING AGENT

A. Refer to Division 1 for Testing Laboratory service requirements.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer's fabricator shall be one of the following and as herein listed and in Drawings:

1. 3M Fire Protection Products/Dow Corning, St. Paul, MN www.3m.com
2. Hilti, Inc., Tulsa, OK (800) 879-8000 www.us.hilti.com

3. Specified Technologies Inc. / GE Pensil (STI), Somerville, NJ 08876, (800) 992–1180 www.stifierstop.com
4. Passive Fire Protection Partners (PFPP), www.firestop.com
5. Reviewed Equivalent by **Architect**.

    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIAL

A. General

1. Firestopping materials and systems shall meet the requirements specified herein.
2. Conditions are typical for all project conditions regardless if specifically noted or not.
3. All firestop products and systems shall be designed and installed so that the basic sealing system will allow the full restoration of the thermal and fire resistance properties of the barrier being penetrated with minimal repair if penetrations are subsequently removed.
4. **Owner** must approve in writing any alternates to the firestop systems and materials specified herein.
5. Compatibility: Provide firestop systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through the firestop system, under conditions of service and application, as demonstrated by the firestop system manufacturer based on testing and field experience.
6. Accessories: Provide components for each firestop system that is needed to install fill materials and to comply with "Performance Requirements". Use only components specified by firestop systems manufacturer and approved by the qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:

    a. Permanent forming/damming/backing materials, including the following:

        1) Slag/rock-wool-fiber insulation
        2) Sealant used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state
        3) Fire-rated form board
        4) Fillers for sealant

    b. Temporary forming materials
    c. Substrate primers
    d. Collars and steel sleeves

2.3 MATERIAL - THROUGH-PENETRATION FIRESTOP SYSTEMS

A. Systems or devices listed in the UL Fire Resistance Directory under categories XHCR (firestop devices) and XHEZ (firestop systems) may be used, providing that they conform to the separate instance, and that the system symmetrical for wall applications.

B. Additional requirements: Withstand the passage of cold smoke either as an inherent property of the system, or by the use of a separate product included as a part of the UL system or devise, and designed to perform this function.

C. All through-penetration firestop system products must be from a single manufacturer.

1. All trades will use products from the same manufacturer.

D. **Acceptable products:** Those listed in the UL Fire Resistance Directory for the UL System involved and defined in the attached Systems and Applications Schedule or approved equal.

E. Design Schedule:

1. **1 & 2 Hour walls:**

a. Pipe penetrations - metallic

1) Size: 12″ dia or smaller
2) Material:

a) Schedule 10 or heavier
b) Service weight or heavier cast iron soil pipe
c) Class 50 or heavier ductile iron pressure pipe

3) Design Number: W-L-1001
4) Mfgr: 3M
5) Product: CP 25WB+

b. Conduit penetrations – metallic

1) Size: 6″ dia. or smaller
2) Material:

a) Steel conduit
b) Type L or heavier copper tubing

3) Design Number: W-L-1001
4) Mfgr: 3M
5) Product: CP 25WB+

c. Conduit penetrations – metallic

1) Size: 4″ dia. or smaller
2) Material:

a) Steel electrical metallic tubing

3) Design Number: W-L-1001
4) Mfgr: 3M

5) Product: CP 25WB+

d. Conduit penetrations – metallic

1) Size: 1" dia. or smaller
2) Material:
   a) Flexible steel conduit
3) Design Number: W-L-1001
4) Mfgr: 3M
5) Product: CP 25WB+

e. Pipe penetrations – non metallic

1) Size: 6" dia. or smaller
2) Material:
   a) Schedule 40 PVC pipe
   b) solid- core polyvinyl chloride
3) Design Number: W-L-2002
4) Mfgr: 3M
5) Product: FS – 195+, PPDs

f. Pipe penetrations – non metallic

1) Size: 4" dia. or smaller
2) Material:
   a) Schedule 40 PVC pipe
   b) Cellular core polyvinyl chloride
3) Design Number: W-L-2002
4) Mfgr: 3M
5) Product: FS – 195+, PPDs

g. Pipe penetrations – non metallic

1) Size: 4" dia. or smaller
2) Material:
   a) Schedule 40 ABS pipe
   b) Solid core acrytonitrile-butadiene-styrene (ABS)
3) Design Number: W-L-2002
4) Mfgr: 3M
5) Product: FS – 195+, PPDs

h. Pipe penetrations – non metallic

1) Size: 4" dia. or smaller
2) Material:

a) Schedule 40 ABS pipe
b) Fire retardant polypropylene (FRPP)

3) Design Number: W-L-2002
4) Mfgr: 3M
5) Product: FS – 195+, PPDs

i. Conduit penetrations – non metallic

1) Size: 4" dia. or smaller
2) Material:

a) Rigid non-metallic conduit formed of PVC

3) Design Number: W-L-2002
4) Mfgr: 3M
5) Product: FS – 195+, PPDs

j. Tubing penetrations – non metallic

1) Size: 1" dia. or smaller
2) Material:

a) Electrical non-metallic tubing formed of PVC

3) Design Number: W-L-2002
4) Mfgr: 3M
5) Product: FS – 195+, PPDs

k. Pipe penetrations – non metallic

1) Size: 6" dia. or smaller
2) Material:

a) Schedule 40 CPVC
b) Chlorinated polyvinyl chloride pipe (CPVC)

3) Design Number: W-L-2002
4) Mfgr: 3M
5) Product: FS – 195+, PPDs

l. Duct penetrations –metallic

1) Refer to mechanical documents and details for Fire/Smoke damper at this location.

m. Cable Tray penetrations –metallic

1) General:

a) Refer to pipe penetrations and electrical drawings.
b) Cable trays stop short of wall below access floor and continue thru wall via pipes.

2) Design No.:
3) Mfgr: 3M

4) Product:

n. Top of wall

1) Design Number:

a) Wall design: Gypsum Association, GA File No. ASW 1100
b) Top of Wall: As herein specified

o. Bottom of wall

1) Design Number:

a) Wall design: Gypsum Association, GA File No. ASW 1100
b) Bottom of Wall: Fire caulk between floor deck and gypsum board edge, refer to documents and details.

p. Wall Box protection

1) Size: 4" x4" max.
2) Material: Steel box
3) Design Number: CLIV
4) Mfgr: 3M
5) Product: Fire Putty

2.4 MATERIAL - CONSTRUCTION JOINT/GAP FIRESTOP SYSTEMS FOR FIRE-RATED ASSEMBLIES

A. General:

1. Fill, void or cavity materials listed in the UL Fire Resistance Directory under category XHHW may be used, providing it conforms to the construction type and fire rating involved in each separate instance.
2. Forming materials listed in the UL Fire Resistance Directory under category XHKU may be used, providing it conforms to the construction type and fire rating involved in each separate instance and meets UL 2079, ASTM E1966 and ASTM E2307.
3. Additional requirements: Withstand the passage of cold smoke either as an inherent property of the system, or by the use of a separate product included as a part of the UL system or devise, and designed to perform this function.
4. All construction joint/gap firestop system products must be from a single manufacturer. All trades will use products from the same manufacturer.
5. Acceptable products: Those listed in the UL Fire Resistance Directory for the UL System involved and defined in the attached Systems and Applications Schedule or approved equal.

B. Schedule of Top of Wall and Bottom of Wall, refer to heading 2.3.

2.5 MATERIAL - COMPOSITION EDGE BANDING AND CORE MATERIAL FIRESTOP SYSTEMS FOR FIRE-RESISTANT- FIRE-RATED DOORS/WINDOWS

A. General:

1. Fire-resistive rated door and window fire seal material listed and tested in compliance with UBC 7-2 (positive pressure), and UL 10C standards.
2. Additional requirements: withstand the passage of cold smoke either as an inherent property of the system, or by the use of a separate product included as a part of the UL system or devise, and designed to perform this function.
3. All composition edge banding and core material firestop system products must be from a single manufacturer. All trades will use products from the same manufacturer.
4. Acceptable products: Those listed in the UL Fire Resistance Directory for the UL system involved and defined in the material schedule below:

B. Schedule:

1. Fire resistive seal

a. 3M Graphite Intumescent Seal (GIS), 1/16" thick by ½" wide, flexible, adhesive backed, fiber/latex mat, containing highly expandable graphite.

1) Form: Supplied in roll form with adhesive backing and release liner

2. Color: Gray, black, dark brown as selected by **Architect**
3. Mfgr: 3M

2.6 MATERIAL - FIRESTOP SYSTEMS FOR ELECTRICAL POWER/LOW VOLTAGE PASSING THOUGH FIRE-RESISTANT-RATED WALLS.

A. General:

1. Electrical systems protection material listed in UL-classified systems UL-classified systems UL 1709, ASTM E119, ASTM E1529 and ASTM E1725.
2. All electrical firestop system products must be from a single manufacturer.
   a. All trades will use products from the same manufacturer.
3. **Acceptable products:** Those listed in the UL Fire Resistance Directory for the UL System involved and defined in the material schedule below:

1) Fire resistive mats: 3M Interam Endothermic Mats, .3" or .4" thick, 24.5" or 49" wide x 16'. 20', or 25; long rolls, foil encapsulated with 3M logo
2) Smoke and Flame Sealant: 3M FireDam 150 Caulk or Hilti FS-One Firestop sealant
3) Foil tape: 3M Interam T-49 Aluminum Foil Tape – used as a vapor barrier, radiant heat reflector, and installation aid
4) General Purpose Tape: Scotch 898 Filament Tape – used as installation aid
5) Composite Sheet: 3M Fire Barrier CS-195+ Composite Sheet – used to cover openings and as a collar at the termination of the fire protection envelopes
6) Firestoppoing Caulk: 3M Fire Barrier CP 25WB+ Caulk – used as a smoke and flame sealant
7) Firestopping Blocks: Hilti FS675 Fire Blocks

B. Schedule of Wall Penetrations, refer to heading 2.3

2.7 MATERIAL - WALLS SYSTEMS FOR FIRE-RATED ASSEMBLIES

A. General:

1. Assemblies:

   a. Top of Walls
   b. Bottom of Walls
   c. Construction Joints
   d. Construction Gaps
   e. Firestopping

2. Forming Material – Mineral Wool Fire Safing materials listed in the UL Fire Resistance Directory which conform to the construction type and fire rating involved in each separate instance.

   a. Density of material as dictated by UL Design requirements.

3. Forming materials listed in the UL Fire Resistance Directory under category XHKU may be used, providing it conforms to the construction type and fire rating involved in each separate instance and meets UL 2079 and ASTM E1966.
4. Fill, void or cavity Material – Spray applied "Fire Spray" material listed in the UL Fire Resistance Directory which conform to the construction type and fire rating involved in each separate instance and in accordance with listed product and manufacturer.
5. Additional requirements: Withstand the passage of cold smoke either as an inherent property of the system, or by the use of a separate product included as a part of the UL system or devise, and designed to perform this function.
6. Acceptable products: Those listed in the UL Fire Resistance Directory for the UL "HW-D" System involved and defined in the attached Systems and Applications Schedule or approved equal.

B. Schedule:

1. Top of wall

   a. Wall design:

      1) 1 Hour: Gypsum Association, GA File No. WP 1072

   b. Schedule:

1) UL Design:	Sealant	Mineral Wool:	Firespray:
a) HW-D-0024	PFPP, 4100NS, 4800DW, 3600EX	None	None
b) HW-D-0077	Hilti CP606	None	None
c) HW-D-0103	SpecSeal ES	None	None
d) WH-D-0111	3M FD-150+	None	None
e) HW-D-0144	WR Grace FS 900+	None	None
f) HW-D-0144	WR Grace FS 1900	None	None
g) HW-D-0256	TREMCO TREMstop	None	None

2. Bottom of Wall

   a. Design Number:
   b. Wall design:

1) 1 Hour: Gypsum Association, GA File No. WP 1072
2) 2 Hour: Gypsum Association, GA File No. WP 1522

c. Schedule:

1) UL Design: _____

a) BW-S-0004 – PFPP sealant
b) BW-S-0007 – 3M sealant

2) Sealant/Caulking:

a) Passive Fire Protection Partners (PFPP)

i. 4100NS
ii. 4800DW
iii. 3600EX

b) 3M

i. FB 1000 NS
ii. FB-2000
iii. FB-2000+
iv. FB-3000 WT sealant
v. FireDam 150+
vi. IC 15WB+
vii. CP 25WB+

d. Bottom of Wall: Fire caulk between floor deck and gypsum board edge, refer to documents and details.

2.8 MATERIAL – AIR DUCT WRAP SYSTEM

A. General:

1. Rating: 2-hour fire-resistive rated air duct enclosure materials listed in the UL Fire Resistance Directory under.
2. Product:

a. Mfgr: 3M

1) Hilti is optional mfgr.

b. Materials:

1) Wrap: 615+
2) Tape:

a) Model: 5A

i. High performance filament tape.
ii. Aluminum foil tape: Minimum 3” wide to seal cut blanket edges

3) Banding Material:

a) Carbon steel banding for < 1 – hour ratings; ½" to ¾" wide x 0.015" thick minimum
b) 304 Stainless Steel banding for 2-hour ratings; ½" to ¾" wide x 0.015" thick minimum

4) Insulation pins/washers:

a) Pins: 10 gauge, 4" to 5" long, copper coated steel; washers: 1.5" x 1/5" or 1.5" diameter galvanized steel speed clip

5) Through-penetration fire stop materials:

a) Packing material: Scrap pieces, 3M FireMaster Duct Wrap, 1.5" thick or 3 pcf mineral wool
b) 3M FB-2000+ Silicone Sealant

6) Grease duct access door:

a) Single angle opening frame
b) Access cover, minimum 16 gauge
c) Insulation pins
d) Speed clips, minimum 1.5" x 1.5" or 1.5" diameter galvanized steel

7) Hardware:

a) Threaded rods: 4" to 5" long, ¼" diameter galvanized steel with 1/4" wing nuts and 1/4" metal washers
b) 4" long steel hollow tubing to fit threaded rods

c. UPC #: As listed for each product and size
d. Compliance:

1) Testing:

a) ASTM:

i. ASTM C 518
ii. ASTM C 1338
iii. ASTM E 84
iv. ASTM E 119
v. ASTM E 136
vi. ASTM E 814
vii. ASTM E2336 grease duct standards

b) NFPA:

i. NFPA 92A
ii. NFPA 92B
iii. NFPA 96
iv. NFPA 101
v. NFPA 252 (UL 910)

c) ISO: ISO 6944 air duct test standard
d) ICC:

i. ICC ES AC101
ii. ICC-ES, ESR-1255

e) California State Fire Marshall
f) Third party:

i. Air Duct:

a. Intertek:

i). 3MU/FRD 120-15: Rectangular, 24" x85"
ii). 3MU/FRD 120-04: Round, 40" diameter

ii. UL: HNLJ.V-27

2) Surface burning and smoke compliance:

a) Flame Spread: <25 ASTM E 84
b) Smoke developed: <50 ASTM E 84

3. Design:

a. Air Duct:

1) Duct system:

a) Duct type:	Testing organization:	Design #:	Rating:
i. Rect. or round	UL	V-27	1 or 2 hour

2) Details:

a) General: UL Testing
b) Schedule:

i. Condition:	Type	Design #:	Rating:
a. 2hr.Metal stud wall	85" x 24" max	W-L-7180	2hr. – F & T
b. Conc./U wall	85" x 24" max	W-J-7104	2hr. – F & T
c. 1hr.Floor/Clg. – wd.	48" x 20" max	F-C-7054	1hr. – F & T
d. 2hr.Metal stud wall	10"dia. stl,sched 10 min	W-L-132340	2hr. – F & T
e. 2hr.Metal stud wall	10"dia. cast/ductile iron	W-L-132340	2hr. – F & T
f. 2hr.Metal stud wall	4"nom.dia. max.	W-L-132340	2hr. – F & 1.25 hr. T
1. Type L or heavier copper			
g. 2hr.Metal stud wall	4"nom.dia. max.	LW-L-132340	2hr.F & 1.25 hr. T
1. Regular type or heavier copper			

2.9 MATERIALS- SCHEDULE GENERAL

A. General:

1. Comply with design criteria.

B. Schedule:

1. Materials including these and as indicated in specific designs including, but not limited to;

a. Intumescent Firestop Sealants and Caulks:

1) 3M Fire Barrier Caulk CP25WB+
2) Hilti FS-One Firestop Sealant
3) STI SpecSeal S100 and S500 Sealant

b. Latex/Acrylic Firestop Sealant: (CP606 is an acrylic based firestop sealant)

1) STI SpecSeal LC150 Sealant
2) Hilti CP606 Flexible Firestop Sealant

c. Silicone Firestop Sealants and Caulks:

1) 3M Fire Barrier Silicone Sealant
2) Hilti CP601S Elastomeric Firestop Sealant
3) STI SpecSeal Pensil 100 and 300

d. Firestop Putty:

1) 3M Fire Barrier Moldable Putty
2) Hilti CP617/CP618 Putty Pads & Putty Stick
3) STI SpecSeal Firestop Putty Bars and Pads

e. Firestop Spray (head of wall joint):

1) Hilti CP 672 Firestop Joint Spray

a) Color: White
b) Paintable: yes

2) STI SpecSeal Elastomeric Acrylic Firestop Spray

f. Firestop Collars:

1) 3M Fire Barrier PPD's
2) Hilti CP642/643 Firestop Collars
3) STI SpecSeal Firestop Collars

g. Wrap Strips:

1) 3M Fire Barrier FS195 Wrap Strip
2) Hilti CP 645 Firestop Wrap Strip
3) STI SpecSeal Pensil 200

h. 2- Part Silicone Firestop Foam:

1) 3M Fire Barrier 2001 Silicone Foam
2) STI SpecSeal Pensil 200
3) CP 620

i. 2-Part Polyurethane Firestop Foam

1) Hilti CP 620 Fire Foam

j. Firestop Mortar:

1) STI SpecSeal Mortar
2) Hilti CP 637 Firestop Mortar

k. Composite Board:

1) 3M Barrier Sheet Material

l. Accessories:

1) Forming / Damming Materials: Mineral fiberboard or other type as per manufacturer recommendations.

m. Fire Safing and clip fasteners (Use Weight "pcf" as required by fire rated design)

1) Owens Corning, Safing Insulation, Mineral Wool

n. Hilti, Speed Plugs, CP 772 x 2" and/or CP 777 x 3" (Fire Safing at metal deck flutes)Firestop Blocks/Bags/Pillows

1) Hilti FS657 Fireblock

o. Cast-in-Place Firestop Devices

1) Hilti CP 680 Cast-in-Place Firestop Devices

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

C. Examine areas and conditions under which firestop system is to be installed and notify the **Architect** of conditions detrimental to proper or timely completion of the work.

D. Examine substrates to determine they are satisfactory to receive firestop system materials.

1. Conduct tests according to firestop systems manufacturer's written recommendations to verify that substrates are free of oil, grease, rolling compounds, incompatible primers, loose mill scale, dirt or other foreign substances capable of impairing bond of fire-resistive materials.

2. Verify objects penetrating firestop materials, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
3. Verify substrates are not obstructed by ducts, piping, equipment, and other suspended construction that will interfere with applying fire-resistive materials.

E. Do not proceed with installation of firestop system until unsatisfactory conditions have been corrected by the **General Contractor** in a manner acceptable to the **Architect**.

F. Where necessary, cleaning of surfaces to receive firestopping shall be the responsibility of the **General Contractor**.

1. Remove incompatible materials, which affect bond.

G. Insure that all clips, hanger supports, and other attachments for items that affect the firestopping material have been placed in their final position.

H. Verify that environmental conditions are safe and suitable for installation of firestop products.

I. Verify that all pipe, conduit, cable, and other items, which penetrate fire - rated construction, have been permanently installed prior to installation of firestops.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

C. Coordinate construction and sizing of sleeves, openings, core-drilled holes, cut openings and penetrating items to ensure that firestop systems are installed according to specified requirements.

D. Notify **Owner,** inspecting agency, General Contractor, and subcontractor at least seven days in advance of firestop system installations; confirm dates and times on days preceding each series of installations.

E. Do not cover-up or conceal firestop system installations behind other construction until **Owner,** inspecting agency and building inspector, if required by authorities having jurisdiction, have examined each installation.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Clean and repair substrates that could impair the adhesion or proper fitting of firestop materials, including oil, grease, rolling compounds, incompatible primers, and loose mill scale.

C. Secure all pipes, conduit, cable and other items, which penetrate firestop materials.

D. Provide masking and temporary covering, as required, to prevent contamination of adjacent surfaces by firestop materials.

3.4 CONDITIONS REQUIRING FIRESTOPPING - GENERAL

A. General:

1. Provide and install firestopping for conditions specified whether or not firestopping is indicated, and if indicated, whether such material is designed as insulation, safing, or otherwise.

B. Through - Penetrations:

1. Firestopping shall be installed in all open penetrations and in the annular space in all penetrations in any bearing or non-bearing fire - rated barrier.

C. Construction Joints / Gaps:

1. Firestopping shall be provided and installed:

a. Between the head of walls and the underside of structure above.
b. At intersection of rated wall partitions and walls.

D. Smoke - Stopping:

1. As required per ASTM E-814 testing and in accordance with building and fire codes:

a. As required by the other Sections, Smoke - Stops shall be provided for Through - Penetrations, Membrane - Penetrations, Construction Gaps and edge of floor to wall conditions with a material/system approved.

3.5 INSTALLATION

A. General:

1. Installation of firestops shall be performed by an applicator/installer qualified and trained by the manufacturer.
2. Installation shall be performed in strict accordance with manufacturer's detailed instruction procedures.
3. Apply firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installations, and manufacturer's recommendations.
4. Unless specified and approved and retested, all insulation used in conjunction with through - penetrations shall remain intact and undamaged and may not be removed.
5. In high traffic, protect firestopping materials from damage.

a. If the opening is large, install firestopping materials capable of supporting the weight of a human.

6. All combustible penetrates (e.g. non - metallic pipes) shall be firestopped using products and systems tested in a configuration representative of the field conditions.

B. Dam Construction:

1. When required to properly contain firestopping materials within openings, damming or packing materials may be utilized.

a. U.L. approved combustible backer rod material may be used when part of tested assembly.
b. Noncombustible damming materials may be left as permanent component of the firestop system.

C. Extend firestop material in full thickness over entire area of each substrate or opening to be protected.

D. Protect firestop material from damage on surfaces subject to traffic/construction.

E. Consult with mechanical engineer, project manager and damper manufacturer prior to installation of UL Firestop systems that might hamper the performance of fire dampers as it pertains to duct work.

3.6 INSTALLATION -THROUGH-PENETRATION FIRESTOP SYSTEMS

A. General:

1. Install through-penetration firestop systems to comply with "Performance Requirements" and firestop systems manufacturer's written installation instructions and published drawings for products and applications indicated. (See "Through-penetration Firestop Systems Schedule")
2. Install forming/damming/backing materials and other accessories or types required to support fill material during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

    a. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop system.

3. Install fill materials for firestop systems by proven techniques to produce the following results:

    a. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items as required to achieve fire-resistance ratings indicated.
    b. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
    c. For fill materials that will remain exposed after completing work, finish to produce smooth, uniform surfaces that are flush with adjoining surfaces.

B. Field Quality Control

1. Proceed with inclosing through-penetration firestop systems with other construction only after inspection and approval by code authorities.
2. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.
3. Inspection Agency: If required, **Owner** will engage a qualified independent inspecting agency to inspect through-penetration firestop systems comply with or deviate from requirements.

C. Identification

1. Typical:

    a. Type: Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels.
    b. Installation: Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems.
    c. Supplied by: Label shall be as supplied by 3M
    d. Exposed conditions shall be coordinated with **Architect** and **Owner** for application.

D. Cleaning and Protection

1. Clean off excess fill materials adjacent to openings as work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop systems manufacturer and that do not damage materials in which openings occur.
2. Provide final protection and maintain conditions during and after installation that ensure through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce through-penetration firestop systems complying with specified requirements.

3.7 INSTALLATION OF CONSTRUCTION JOINT FIRESTOP SYSTEM

A. General:

1. Install construction joint firestop systems to comply with "Performance Requirements" and firestop systems manufacturer's written installation instruction and published drawings for products and applications.
2. Install forming/damming/backing materials and other accessories of types required to support fill material during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
    a. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop system.
3. Install fill "Forming Materials" for firestop systems by proven techniques to produce the following results:
    a. Fill voids and cavities formed by openings, forming materials, and accessories as required achieving fire-resistance ratings indicated.
    b. Apply materials so they contact and adhere to substrates formed by openings.
    c. For fill materials that will remain exposed after completing work, finish to produce smooth, uniform surfaces that are flush with adjoining surfaces.

B. Field Quality Control

1. Proceed with enclosing construction joint firestop systems with other construction only after inspection and approval code authorities.
2. Where deficiencies are found, repair or replace construction joint firestop systems so they comply with requirements.
3. Inspection Agency: If required, **Owner** will engage a qualified independent inspecting agency to inspect construction joint firestop systems comply with or deviate from requirements.

C. Cleaning and Protection

1. Clean off excess fill materials adjacent to openings as work progresses by methods and with cleaning materials that are approved in writing by construction joint firestop systems manufacturer and that do not damage materials in which openings occur.
2. Provide final protection and maintain conditions during and after installation that ensure constriction joint firestop systems are without damage or deterioration at time of substantial completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated construction joint firestop systems immediately and install new

materials to produce construction joint firestop systems complying with specified requirements.

3.8 INSTALLATION OF DUCT WRAP FIRESTOP SYSTEMS – AIR AND GREASE

A. General:

1. Install Grease Duct and Air Duct wrap firestop system to comply with firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.
2. Install in accordance with listed and approved testing designs.
3. Install duct wrap firestop system in direct contact with the duct type and size that is enclosed.
    a. Protect every portion of duct with no less than listed layers of wrap.
    b. Overlap both perimeter and longitudinal joints with listed dimensional requirements.
4. Locate grease duct access doors at horizontal cleanouts are required by local codes.
    a. Protect with layers of duct wrap firestop system material as listed and overlapping previous layers on all sides and in accordance with manufacturer's instructions.
5. Protect floor and wall penetrations with an approved through-penetration firestop system having an F and T hourly rating not less than that of the assembly penetrated and installed in accordance with manufacturer's instructions as follows:
    a. **Grease Ducts (1 or 2-hour enclosure**):
        1) Option A: 2 layers of duct wrap firestop system material per manufacturer's installation instructions, maintaining 3" transverse and longitudinal overlaps continuous through the penetration.
        2) Option B: Tightly butt duct wrap firestop system material to the floor or wall on both sided of the assembly. Fill remaining annular space (3" minimum) between the wrapped duct (Option A) or bare steel duct (Option B) and periphery of the opening with 4 ¼" thickness of scrap duct wrap firestop opening. Apply ¼" minimum 2000+ Silicone over packing material, within the annulus, flush with top surface of floor or both surfaces of wall.
    b. **Air Ducts (1-hour enclosure):**
        1) Option A: 1 layer duct wrap firestop system material per manufacturer's installation instructions, maintaining 3" transverse and longitudinal overlaps or optional 3" perimeter overlap with longitudinal butt joints plus duct wrap firestop system collar over exterior layer joints.
        2) Option B: Tightly butt duct wrap firestop system material to the floor or wall on both sides of the assembly. Fill remaining annular space between the wrapped duct (Option A) or bare steel duct (Option B) and periphery of the opening with 4 ¼" thickness of scrap duct wrap firestop material or 4 1'4" pcf material wool batt firmly packed into opening. Apply ¼" minimum 2000+ Silicone over packing material within the annulus, flush with top surface of floor or both surfaces of wall.
    c. **Air Ducts (2-hour enclosure):**

1) Same as 1-hour air duct enclosure system except apply 2 layers of duct wrap firestop system material per manufacturer's installation instructions.

B. Repair Procedure

1. Repair damaged duct wrap firestop system material in accordance with manufacturer's instructions.
2. Remove damaged section. Apply a new section of the same dimension. Place and fit ensuring same overlap that existed previously. Place banding around new duct wrap firestop system material and tension to sufficiently hold in place.
3. If damage has penetrated to interior layer, remove affected sections and reinstall inb accordance with manufacturers written specifications.

3.9 INSTALLATION OF COMPOSITION EDGE BANDING AND CORE MATERIAL FIRESTOP SYSTEMS

A. Preparation

1. Clean surfaces to be in contact with adhesive face of intumescent seal material of dirt, grease, oil, loose materials, rust or other substances that may affect proper fitting and adhesion.

B. Installation

1. Peel off release liner and press graphite intumescent seal (GIS) into place around door/window frame (head and jamb) at point of contact between door and frame
2. Trim off excess and paint to match the frame

3.10 FILL AND FORMING MATERIALS

A. Installation

1. Forming Material:

a. Install and repair endothermic mats in accordance with manufacturer's published installation guidelines and drawing packages
b. Compression fit in accordance with UL Design and product manufacturer's recommendations.
c. Fit between flutes for tight fit prior to application of Fill Material – Fire Spray.

2. Fill Material:

a. Install in accordance with product manufacturer's recommendations.
b. Spray applied products shall be install in accordance with UL Design and product manufacturer's recommendations.
c. Install with proper overlap onto gypsum wallboard and metal deck and/or concrete deck in accordance with UL Design and manufacturer's recommendations.

3. General:

a. See Through Penetration Firestop System Schedule for penetrating items for UL approved systems

3.11 FIELD QUALITY CONTROL

A. Prepare and install firestopping systems in accordance with manufacturer's printed instructions and recommendations.

B. Follow safety procedures recommended in the Material Safety Data Sheets.

C. Finish surfaces of firestopping, which are to remain exposed in the completed work to a uniform and level condition.

D. All areas of work must be accessible until inspection by the applicable Code Authorities.

E. Correct unacceptable firestops and provide additional inspection to verify compliance with this section.

3.12 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer’s recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.
Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of “Certificate of Substantial Completion”.

END OF SECTION 07 84 00

SECTION 07 92 00 – SEALANTS AND CAULKING

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Furnish and install primers, sealant, caulking and back-up material where required, as indicated and as herein specified to provide a weather-tight building, including, but not limited to**:**

a. Sealant joints
b. Lap joints
c. Troweled sealant bed below thresholds, sill flashings, etc.
d. Sealant bed under door thresholds
e. Sealant at wall to floor and wall to deck / structure, acoustical and non-acoustical assemblies

1) Rated conditions; refer to Section 07 84 00 – Firestopping

f. Sealant around all wall penetrations, acoustical and non-acoustical assemblies

1) Rated conditions; refer to Section 07 84 00 – Firestopping

2. Furnish and install two side adhesive tapes and primers.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Architectural Manufacturers Association (AAMA)

1. AAMA 850 - Voluntary Specifications and Test Methods for Sealants

E. American Concrete Institute (ACI)

1. ACI 302.1R - Guide for Concrete Floor and Slab Construction.

F. American Society for Testing and MATERIALS (ASTM):

1. ASTM C412 - Standard Specification for Concrete Drain Tile
2. ASTM C510 - Multi Component Joint Sealants
3. ASTM C603 - Standard Test Method for Extrusion Rate and Application Life of Elastomeric Sealants
4. ASTM C639 - Standard Test Method for Rheological (Flow) Properties of Elastomeric Sealants
5. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer
6. ASTM C719 - Adhesion & Cohesion of Elastomeric Joint Sealants under Cycle Movement
7. ASTM C790 - Guide for Use of Latex Sealants.
8. ASTM C792 - Effects of Heat Aging on Weight Loss, Cracking & Chalking of Elastomeric Sealants
9. ASTM C794 - Adhesion and Peel of Elastomeric Sealants
10. ASTM C804 - Practices for Use of Solvent - Release Type Sealants.
11. ASTM C834 - Specifications for Latex Sealing Compounds.
12. ASTM C881 - Specifications for Epoxy - Resin Bonding Systems for Concrete.
13. ASTM C919 - Practices for Use of Sealants in Acoustical Applications.
14. ASTM C920 - Specification for Elastomeric Joint Sealants.
15. ASTM C1135 - Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants
16. ASTM C1184 - Specification for Structural Sealants.
17. ASTM C1193 - Standard Guide for Use of Joint Sealants.
18. ASTM C1247 - Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids
19. ASTM C1248 - Staining of Porous Substrates by Joint Sealants
20. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension
21. ASTM D614 - Tear strength
22. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
23. ASTM D1149 - Standard Test Method for Rubber Deterioration-Surface Ozone Cracking in a Chamber
24. ASTM D1850 - Specification for Concrete Joint Sealer Cold-Application Type
25. ASTM D2240 - Standard Test Method for Rubber Property - Durometer Hardness
26. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
27. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials

G. Federal Specifications (FS):

1. SS-S-200E Sealants, joint, Two - Component, Jet - Blast - Resistant, Cold - Applied, for Portland Cement Paving

2. TT-S-001657 Sealing Compound: Single Component, Butyl Rubber Based, Solvent ReleaseType (For Buildings and Other Types of Construction)
3. TT-S-00227E All multi-component, cold applied formulations for sealing, glazing, etc. in buildings
4. TT-S-1543A One-part silicone based cold applied non-sag formulations for sealing, glazing, etc. in buildings

H. Sealant, Waterproofing and Restoration Institute (SWRI) - Sealant and Caulking Guide Specification. www.swrionline.org

I. Underwriters Laboratories (UL):

1. UL 263

J. Dow Corning:

1. Technical Manual
2. Accelerated Weathering and Heat Stability of Various Perimeter Sealants
3. Application and Maintenance Guide, ALLGuard Silicone Elastomeric Coating
4. Waterproofing Sealant Guide

K. Laticrete installation instructions and literature for System Warranty assemblies and sealant applications.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Sealant	Refer to Materials Heading(s)	Refer to Materials Heading(s)	Refer to Materials Heading(s)
Primers	Refer to Materials Heading(s)	Refer to Materials Heading(s)	Refer to Materials Heading(s)
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Monitoring/Observations by others:**

Item	**Name of Test**	**Performance Results**	**By Whom**
Sealant and backer rod	Const. Waste Management	Comply	Refer to Division 1 for construction waste management and disposal/recycling requirements

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit the following items for **Architect's** review; refer to Section 01 33 00 – Submittal Procedures for definitions, specific requirements for each type of submittal, and minimum quantities.

1. Manufacturer's Product & Technical Data
2. Manufacturer MSDS Sheets
3. Manufacturer Installation Instructions
4. Samples:

a. Digital samples will not be accepted for any product requiring color selection by **Architect**.
b. When indicate by these specifications, drawings or associated specifications, provide sample of required Custom color for **Architect's** review.

1.5 MOCK-UPS:

A. Erect an Assembly Mockup at Project site at location acceptable to **Owner** and **Architect**.

1. Refer to individual specification sections for coordination with other Assembly components.
2. Refer to Section 01 33 00 – Submittal Procedures for additional information relating to Mock-Ups.

1.6 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

C. **Manufacturer** shall have been in business for **ten (10)** years providing/installing/finishing similar size projects and complexity.

D. Sealants, which come in contact with each other, shall be of same manufacturer and sealant type to ensure that materials, which come in contact with one another, will be compatible. Installer shall supply a letter from the manufacturer certifying the compatibility of all sealants with one another, and with all construction materials with which they will come in contact on the project.

E. Lead Times**:**

1. **General Contractor** shall coordinate with supplier to verify product lead times during bids and at award of contract, and account for such lead times in their costs and schedules.
2. **General Contractor** shall provide an itemized list of materials which might have or are confirmed to have a lead time problem and what the anticipated lead time is.

3. **General Contractor** shall certify in writing that all materials have acceptable lead times as they relate to availability for sub-contractor and **General Contractor** to meet construction schedule and sequence of construction.

F. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

G. Stipulations:

1. All work must be installed in accordance with SWRI Guide Specifications and ASTM C1193.
2. Perform acoustical sealant application work in accordance with ASTM C919.

H. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
Agenda for meeting shall include, but not be limited to;

1. Substrate preparation
2. Colors and where applied
3. Sequence of sealant installation and other paints, sealers, etc.
4. **General Contractor** shall request meeting 5 days in advance of construction.

I. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.
Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements.
Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

J. Miscellaneous criteria:

1. Manufacturer to instruct applicator in procedure for intersecting sealants.
2. Workmanship shall be of the highest quality in accordance with the best practice, an in strict

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver materials in factory sealed containers with manufacturer's original labels attached.

1.8 JOB CONDITIONS

A. Field verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Do not apply sealants at temperatures below 40ºF (4ºC) unless additional steps are taken to prevent freezing and frost buildup.

C. Apply waterproofing, water repellents, and preservatives after application of sealants unless manufacturer's approval is obtained prior to applying sealant.

1.9 PROTECTION

A. Protect finish surfaces at all times from concrete adjacent to them.

B. Inspect forming against such work and establish tight leak proof seal before concrete is placed within or against the forming.

C. Finish work defaced with concrete on surface shall be replaced.

D. Concrete to be left exposed: Do not place materials such as Visqueen or Burlap, etc. on concrete, which might leave a pattern and/or imprint.

1.10 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **twenty (20)** year "Weather Seal" warranty/warrant agreeing to replace sealant material work which has failed as a result of defects in materials or workmanship.

1. Upon notification of Owner within the warranty period, such defects shall be repaired and replaced at no cost to the Owner.

1.11 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Water tight wall penetrations
2. Air tight wall penetrations
3. Wall construction
4. Floor construction
5. Ceiling construction
6. Roof construction
7. Windows, doors, etc.
8. Site work / flatwork and paving
9. Flashing
10. Door thresholds

B. Related sections include, but are not limited to the following:

1. Division 1
2. Section 07 84 00– Firestopping

1.12 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.13 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

1.14 EXTRA MATERIAL

A. Submit as part of project closeout:

1. Provide extra material for each product type, color, finish, etc. in same lot as installed product.
    a. Furnish written certification that extra materials supplied have been inspected and Re-confirmed to be the same as those used in the work.
2. Provide extra material in unopened fully labeled containers.
    a. Do not supply anything less the full carton containers.
    b. Furnish in factory packaged and labeled cartons and identify cartons with Project name.
    c. Deliver materials to project premises just prior to substantial completion, and store in the location directed by the **Owner**.
3. Provide the following:
    a. 6 tubes/ sausages of each type and color of sealant used.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturer shall be one of the following and as herein listed and in Drawings:

1. Exterior: Dow Corning, www.dowcorning.com
2. Interior at specific locations: Pecora Corporation, www.pecora.com
3. Interior typical unless indicated otherwise: Dow Corning, www.dowcorning.com
4. Interior Tile installation, Typical Laticrete, www.laticrete.com or Merkrete
    a. Refer to Section 09 30 00 – Tile and Stone for warranty criteria for assembly
5. Two sided adhesive tapes: 3M, http://solutions.3m.com
6. Mastic / Sealant to set door thresholds in: Tremco, www.trimcosealants.com
7. Reviewed Equivalent by **Architect**.
    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures

c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.
d. No acceptable substitutions for exterior 100% silicone sealants, unless herein otherwise indicated.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS – SEALANT JOINT SCHEDULE

A. **Sealant- Exterior Joints:**

1. General:

a. Intent is that buildings be rendered weathertight in every respect.
b. Intent is that wall and roof assemblies be rendered watertight at sealant joints.
c. Render wall penetrations airtight.
d. Render bottom of wall conditions airtight.
e. Workmanship shall be of the highest quality in accordance with the best practice, an in strict compliance with the recommendations of the manufacturer of the material being used.

2. Horizontal and Vertical joints, typ. u.o.n., including but not limited to:

a. Concrete, Masonry, Natural Stone, Simulated Stone, Terra Cotta and Wood:

1) Dow Corning: 795 Type 3

b. Painted Metals, Anodized Aluminum, Mill Finish Aluminum, PVC, Glass, Ceramic and/or Porcelain Tile, Glazed Terra Cotta, Glazed Ceramic and/or Porcelain tile:

1) Dow Corning: 795 Type 3

c. Concrete Flatwork:

1) Dow Corning SL (Self Leveling) Type 6 – Level Conditions
2) Dow Corning NS (Non Sag) Type 6 – Sloped conditions

3. Metal Coping: (Cross joints)

a. Dow Corning: 795 Type 3

4. Vertical concealed joints in:

a. Metal curtain wall, lapped joints, and metal building panels:

1) Dow Corning: 795 Type 3

b. Exterior Gypsum Sheathing:

1) Dow Corning: 795 Type 3

c.	Vehicular drives:	Dow Corning	FC (Fast Cure)	Type 5 – Extreme movement conditions
d.	Dow Corning	SL (Self Leveling)		Type 5 – Level conditions
e.	Dow Corning	NS (Non Sag)		Type 6 – Sloped conditions

B. **Sealant - Interior Joints – Horizontal and Vertical:**

1. Expansion and control joints, typ. u.o.n.:
   a. Non – Sanitary conditions:
      1) Pecora Dynatred 40+ Type 10
   b. Horizontal traffic surfaces
      1) Pecora Dynatred 40+ Type 10
   c. Subject to heavy traffic loads or point loading such as high heel traffic:
      1) Pecora Dynatred 40+ Type 10
   d. Warehouse Floors
      1) Sonneborn EPOLITH - P Type 12 Horizontal applications
      2) Sonneborn EPOLITH - G Type 12 Vertical applications
2. Trim or finish joints subject to minimal movement:
   a. Pecora AC-20 + Silicone Type 9
3. Concealed applications:
   a. Requiring acoustical seal:
      1) Pecora AC-20 + Silicone Type 9
      2) Pecora AC-20 FTR Type 9 (Rated conditions)
   b. Base of wall between gypsum board and concrete floor:
      1) Pecora AC-20 + Silicone Type 9
      2) Pecora AC-20 FTR Type 9 (Rated conditions)
   c. Wall penetrations seal:
      1) Pecora AC-20 + Silicone Type 9
      2) Rated conditions: refer to Section 07 84 00 – Firestopping
4. Horizontal and vertical joints exposed to harsh chemicals:
   a. Pecora GC-2 Synthacalk Type 13

2.3 MATERIALS – SEALANT SPECIALTY SCHEDULE

A. Below Door Thresholds:
   1. Application: Set threshold in full bed of sealant also indicated as mastic

2. Product options:

    a. Mfgr: Tremco
    b. Type: One part polyurethane
    c. Model: Vulkem 116
    d. Color: Black
    e. Application: 1/2" thick maximum bed prior to compressing down with threshold

B. Below Storefront and/or Curtainwall Sill Mullions:

1. Application: Set sill in full bed of sealant also indicated as mastic

2. Product options:

    a. Mfgr: Tremco
    b. Type: One part polyurethane
    c. Model: Vulkem 116
    d. Color: Black
    e. Application: 1/2" thick maximum with bed prior to compressing down with threshold

2.4 MATERIALS - SEALANTS / CAULKING TYPES

A. Schedule and Data:

1. **Sealant Type 1:**

    a. Type: Single component, ultra low modulus, silicone rubber sealant;
    b. Standards

        1) ASTM: C661, C679, C719, C794, C1135, C1248, D412, D624, D2240, D3960
        2) VOC: 43g / liter max.

    c. Movement capability: 100% extension, 50% compression.
    d. Mfgr: Dow Corning
    e. Product: **790** Silicone Building Sealant – H.P.
    f. Features: USDA approved
    g. Primer: Refer to Table I of Spec-Data sheet for sealant, to include:

        1) 1200 Prime Coat
        2) 1593 Cleaner/Primer

    h. Backer rod / Tape:

        1) Closed-cell polyethylene, non-gasing polyolefin, polyethylene tape
        2) Open-cell polyurethane required at nonporous substrates
        3) Open-cell polyurethane required at double joint conditions

    i. Colors:

        1) **Architect** to pick color(s) from mfgr's full line of colors.

2. **Sealant Type 2:**

   a. Type: Single component, medium modulus, elastomeric silicone sealant;
   b. Standards
      1) ASTM: C603, C639, C679, C794, C1135, C1248, D624, D2240, D3960
      2) VOC: 46g / liter max.
   c. Movement capability: 50% extension, 50% compression.
   d. Manufacturer: Dow Corning
   e. Product: **791** Silicone Perimeter Sealant
   f. Features: Appropriate for End-dams and Internal seals
   g. Primer: Confirm with sealant manufacturer and test surface for adhesion
   h. Backer rod / tape:
      1) Closed-cell polyethylene foam
      2) Open-cell Polyurethane
      3) Polyethylene tape
      4) Open-cell polyurethane required at nonporous substrates
      5) Open-cell polyurethane required at double joint conditions
   i. Color:
      1) **Architect** to pick color(s) from mfgr's full line of colors.

3. **Sealant Type 3:**

   a. Type: Single component, silicone rubber sealant;
   b. Standards
      1) ASTM: C510, D412, D624, D1149, D2240, D3960, E119
      2) UL: 263
      3) VOC: 28g / liter max.
   c. Movement capability: 50% extension, 50% compression.
   d. Manufacturer: Dow Corning
   e. Product: **795** Silicone Building Sealant
   f. Features: Structural, non-structural and weatherproofing
   g. Primer:
      1) Confirm with sealant manufacturer and test surface for adhesion
      2) Use recommended primer
   h. Backer rod / tape types:
      1) Closed-cell polyethylene foam
      2) Open-cell Polyurethane
      3) Polyethylene tape
      4) Mineral Wool – Fire rated assemblies
      5) Compression Gasket

6) Open-cell polyurethane required at nonporous substrates
7) Open-cell polyurethane required at double joint conditions
8) Color:

a) **Architect** to pick color(s) from mfgr's full line of colors.

4. **Sealant Type 4**:

a. Type: Two part, ultra-low modulus, cold applied, self-leveling, fast-cure silicone rubber;
b. Condition: Extreme movement
c. Standards

1) ASTM: C719, C1135, D412, D2240, D3960
2) VOC: 30g / liter

d. Movement capability: 100% extension, 50% compression.
e. Slope: Up to 6%
f. Manufacturer: Dow Corning
g. Product: **FC**
h. Features: Fast cure, parking structure sealant
i. Primer: 950 PDX, 1205 Prime Coat
j. Backer Rod: Open-cell
k. Color:

1) Dark Grey

5. **Sealant Type 5:**

a. Type: One-part, ultra-low modulus, cold applied, self-leveling silicone rubber;
b. Condition: Level Conditions
c. Standards

1) ASTM: C719, C1135, D412, D2240, D3960
2) VOC: 30g / liter max.

d. Movement capability: 100% extension, 50% compression.
e. Slope: Up to 6%
f. Manufacturer: Dow Corning
g. Product: **SL**
h. Features: Fast cure, parking structure sealant – cures with air moisture
i. Primer: Confirm with sealant manufacturer
j. Backer Rod: Closed-cell polyethylene foam
k. Color: Grey

6. **Sealant Type 6:**

a. Type: One-part, low modulus, cold applied, silicone rubber;
b. Condition: Sloped or vertical Condition

c. Standards

1) ASTM: C661, C719, C794, C1135, D412, D3960
2) VOC: 37g / liter max.

d. Movement capability: 100% extension, 50% compression.
e. Slope: Horizontal and Vertical
f. Manufacturer: Dow Corning
g. Product: **NS**
h. Features: Non-sagging, cures with air moisture
i. Primer: Confirm with sealant manufacturer
j. Backer Rod: Closed-cell polyethylene foam
k. Color: Grey

7. **Sealant Type 7:**

a. Type: Single component, ultra-low modulus, elastomeric silicone sealant;
b. Standards

1) FED TT-S-001543A & TT-S-00230C Class A
2) ASTM: D3960
3) VOC: [fill in]

c. Movement capability: 100% extension, 50% compression.
d. Manufacturer: Dow Corning
e. Product: **890 SL** Silicone Building Sealant
f. Features: Self leveling & tooling not required
g. Primer: Not required
h. Backer Rod: Closed cell
i. Color: Dark Grey

8. **Sealant Type 8:**

a. Type: Single component sealant;
b. Standards

1) ASTM: D412, D624, D2240, D3960
2) VOC: 40g / liter max.

c. Movement capability: 25% extension, 25% compression.
d. Manufacturer: Dow Corning
e. Product: **999-A** Silicone Building & Glazing Sealant
f. Features: FDA & USDA approved
g. Primer: Refer to "Surface Preparation Guide, No. 61-182"
h. Backer rod / tape:

1) Closed-cell polyethylene foam
2) Polyurethane

3) Polyethylene tape

i. Color:

1) **Architect** to pick color(s) from mfgr's full line of colors.

9. **Sealant Type 9:**

a. Type: (Type II) Single component, acrylic latex sealant;
b. Standards

1) ASTM: C834, D3960
2) VOC: 31g / liter

c. Movement capability: 7.5% extension and 7.5% compression.
d. Manufacturer: Pecora
e. Product: **AC-20 + Silicone** (AC-20 FTR rated conditions)
f. Features: Non-sag (FTR designation at fire rated conditions)
g. Backer Rod: Soft Polyethylene or Denver Foam (Ultra block at fire rated conditions)
h. Primer: Refer to manufacturer's product data
i. Color:

1) **Architect** to pick color(s) from mfgr's full line of colors.

10. **Sealant Type 10:**

a. Type: (Type II) Two component, non-sag polyurethane rubber;
b. Paintability: Yes
c. Standards

1) ASTM: C920, C1247, D1850, D3960
2) VOC:

a) Activator: 104g / liter
b) Base: 14g / liter

d. Movement capability: 25% extension and 25% compression.
e. Manufacturer: Pecora
f. Product: Dynatread 40+
g. Features: Traffic sealant
h. Backer Rod: Closed-cell Polyethylene
i. Primer: Refer to manufacturer's product data
j. Color:

1) **Architect** to pick color(s) from mfgr's full line of colors.

11. **Sealant Type 11:**

a. Type: (Type I) Two component urethane
b. Standards
    1) ASTM: C920, D1850, D3960
    2) VOC: 0g / liter
c. Movement capability: 25% extension and 25% compression
d. Manufacturer: Pecora
e. Product: NR-200 Urexpan
    1) Activator
    2) Base
f. Features: Traffic grade sealant
g. Backer Rod: Closed-cell Polyethylene
h. Primer: Refer to manufacturer's product data
i. Color:
    1) **Architect** to pick color(s) from mfgr's full line of colors.

12. **Sealant Type 12:**

a. Type: (Type II) Two component, 100% solids epoxy
b. Standards
    1) ASTM: D638, D3960
    2) VOC:
        a) Epolith P: < 3g / liter
        b) Epolith G: 0g / liter
c. Movement capability: 75% elongation.
d. Manufacturer: Sonneborn
e. Product
    1) Horizontal: **Epolith-P**
    2) Vertical: **Epolith-G**
f. Backer rod / tape: Refer to manufacturer's product data
g. Primer: Refer to manufacturer's product data
h. Color: Grey

13. **Sealant Type 13:**

a. Type: Two component, polysulfide rubber sealant;
b. Standards
    1) ASTM: C920, C510, D3960
    2) VOC: 20g / liter
c. Movement capability: 12.5% extension and 12.5% compression.

d. Manufacturer: Pecora
e. Product: Synthacalk GC-2+
f. Features: Not self leveling
g. Backer Rod: Closed-cell Polyethylene
h. Primer: Refer to manufacturer's product data
i. Color: Dark Grey

14. **Sealant No. 14:**

a. Type: One part Butyl Rubber compound
b. Standards

1) ASTM: C1085, D3960
2) VOC: < 250g / liter

c. Movement capability: 5% extension and 5% compression
d. Manufacturer: Pecora
e. Product: **BC-158**
f. Features: USDA Approved
g. Backer rod / tape:

1) Pecora #92 Green rod
2) #91 Denver Foam
3) Bond break or tape

h. Primer: Not required
i. Color:

1) **Architect** to pick color(s) from mfgr's full line of colors.

15. **Sealant No. 15:**

a. Type: Two part, non-sag, security grade polyurethane sealant;
b. Paintability: Yes
c. Standards

1) ASTM: C920, D3960
2) VOC: 15 g / liter

d. Movement capability: 12.5% extension and 12.5% compression
e. Manufacturer: Pecora
f. Product: **Dynaflex**
g. Features: Physical abuse tolerant
h. Backer Rod: Closed cell Polyethylene
i. Primer: P-75, P-120
j. Temp. range: -20º – 180º
k. Color:

1) **Architect** to pick color(s) from mfgr's full line of colors.

16. **Sealant No. 16:**

a. Type: (Type II) Single component, acrylic latex sealant;
b. Standards
    1) ASTM: C834, D3960
    2) VOC: 31g / liter
c. Movement capability: 7.5% extension and 7.5% compression.
d. Manufacturer: Pecora
e. Product: **AC-20 + Silicone** (AC-20 FTR rated conditions)
f. Features: Non-sag (FTR designation at fire rated conditions)
g. Backer Rod: Soft Polyethylene or Denver Foam (Ultra block at fire rated conditions)
h. Primer: Refer to manufacturer's product data
i. Color:
    1) **Architect** to pick color(s) from mfgr's full line of colors.

2.5 MATERIALS – TAPES

A. Schedule and Data:

1. **Tape:**

a. General:

1) Mfgr: 3M
2) Series: VHB and as noted
3) Reference: 3M Design Guide for Metal Fabrication
4) Coordinate with Section 10 14 00 - Signage

b. Schedule:

1) **Painted metal to painted metal:**

a) Material: Closed cell acrylic foam

i. Product: 4979F

a. Width: 1″
b. Thickness: 1.6 mm (± 1/16″)
c. Adhesive: Acrylic
d. Liner Type: B (5 mil clear polyethylene film)
e. Color: Black

2) **Painted metal to bare painted metal:**

a) Material: Closed cell acrylic foam

i. Product: 5962

a. Width: 1″
b. Thickness: 1.6 mm (± 1/16″)
c. Adhesive: Synthetic

d. Liner Type: D (5 mil red polyethylene film)
e. Color: Dark Grey

3) **Powder coated metal to powder coated painted metal:**

a) Material: Closed cell acrylic foam

i. Product: 4645

a. Width: 1″
b. Thickness: 1.6 mm (± 1/16″)
c. Adhesive: Acrylic
d. Liner Type: D (5 mil red polyethylene film)
e. Color: Dark Grey

4) **Bare metal to bare metal:**

a) Material: Closed cell acrylic foam

i. Product: 4955

a. Width: 1″
b. Thickness: 2.0 mm (± 5/64″)
c. Adhesive: Synthetic
d. Color: White

5) **Plastics and powder coated metals:**

a) Material: Closed cell acrylic foam

i. Product: 5962

a. Width: 1″
b. Thickness: 62 mil
c. Adhesive: Adhesive 300 Acrylic & polyester carrier
d. Liner Type: Densified Kraft
e. Colors:

i). White
ii). Black
iii). Red

2.6 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

1. Primers, Solvents and Backing Material

a. General:

1) Use acceptable type as recommended by each specific sealant used and the respective manufacturer.

2) Material shall be manufactured by manufacturer of sealant being used, unless approved otherwise by sealant manufacturer.
3) Materials shall be delivered to the job in sealed containers with manufacturer's original labels attached and associated installation instructions.
4) Materials shall be used according to manufacturer's printed instructions.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.

2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify. Prior to all work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this work may properly commence.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. General:

1. Prepare work, substrates, etc. in accordance with manufacturer’s recommendations.

B. Joint Preparation:

1. Preparation, cleaning, priming and installation shall be performed in strict accordance with sealant manufacturer’s recommendations.
2. Refer to REFERENCE STANDARDS heading for sealant manufacturers guidelines.

C. Surface Preparation

1. Sealants

a. General:

1) Typically seal joints before painting, coordinate with wall finish type, material and manufacturer’s written recommendations for all exceptions.

2) Joints and surfaces, which are to be caulked or sealed, shall be clean, dry, frost free, free of dust, loose mortar, and other foreign materials.
3) Temperature Installation Requirements: 40ºF minimum application temperature for joint sealant installations because of the possibility of moisture and/or frost contamination on sealing surfaces: (Comply with sealant manufacturer's written recommendations)
    a) However, it is recognized that applications may have to be made at lower temperatures. When this is necessary, steps must be taken to assure dry, frost-free surfaces and is the responsibility of the caulking subcontractor. Additionally these procedures must be in compliance with sealant manufacturer's written recommendations.
4) Clean ferrous metals of all rust, mill scale and temporary coatings by wire brushing, grinding, or sandblasting.
5) Remove oil and grease with high performance cleaners as approved by sealant manufacturer.
6) On joints adjacent to porous substrates install appropriate primer prior to application of sealant.
7) Joint dimensions for sealant should be reviewed and installed in accordance with sealant manufacturer's printed instructions. In no case should the sealant application be less than 1/4" wide and 1/2" deep, except in specific metal-to-metal curtainwall applications and then as recommended by the sealant manufacturer.
8) Precast concrete, cast-in-place concrete, or masonry joint surfaces shall be wire brushed, then brushed clean or blown clean with dry, oil free compressed air.
    a) The joint interface must be free of form release agents, curing and sealing compounds or chemical retarders which may interfere with sealant cure, adhesion and performance.
9) Sealants shall not be applied to masonry joints where a water repellent or masonry preservative has been applied prior to caulking.
    a) Waterproofing treatments shall be applied after caulking.
10) Do not caulk joints until they are in compliance with requirements of the approved manufacturers of the materials, the details as shown on the drawings, and the specific requirements of other sections of this Specification.

b. Silicone Sealants:

1) Basic steps for proper joint preparation:
    a) Clean – Joint surfaces must be clean, dry, dust free, and frost free.
    b) Prime – If required, primer is applied to the surface(s). (Refer to Sealant Manufacturer's written recommendations.
    c) Pack – Backer rod or bond breaker as required for sealant joint and in accordance with manufacturer's written instructions.
    d) Shoot – Sealant is applied by "pushing the bead" into the joint cavity.

e) Tool – Dry tooling techniques are used to strike a flush joint and make certain the sealant has the proper configuration and fully contacts the joint walls.

2) Clean – Substrate Cleaning Procedures

a) General procedures for porous and non-porous substrates key to good sealant adhesion is a clean surface. Always check with the supplier of the substrate to ensure that the cleaning procedures and solvents are compatible with the substrate.

i. Organic Solvent Usage

a. Not every contamination is effectively removed by every solvent, and some substrates can be seriously damaged by certain solvents. Please follow the solvent manufacturer's safe handling recommendations and local, state and federal regulations regarding solvent usage.

ii. Non-Porous Substrates

a. Non-porous surfaces must be cleaned with a solvent before the sealant is applied.
b. Use the "two-cloth" cleaning method explained later in this section.

iii. Porous Substrates

a. Building materials such as EIFS, cement board panels, concrete, granite, limestone and other stones or cementitious materials that absorb liquid are considered porous substrates.
b. Dusting alone may be sufficient cleaning for new porous substrates. Depending on the condition of the surface, porous substrates may require abrasion cleaning, solvent cleaning or both. Laitance and surface dirt must be completely removed. Concrete form-release agents, water repellents and other types of surface treatments, protective coatings, and old sealant all affect sealant adhesion. Removal of these treatments, coatings or sealants by abrasion cleaning may be required to obtain acceptable adhesion.
c. Abrasion cleaning involves grinding, saw cutting, sand or water blasting, mechanical abrading or a combination of these methods. Remaining dust and loose particles should be removed by dusting the surface with a stiff brush, vacuuming, or blowing the joints with oil-free compressed air. Once the abraded surface is clean and dry, the sealant can be applied. If the surface is dirty, it must be solvent cleaned with the "two-cloth" method explained later in this section. Some porous materials will trap solvents after cleaning or priming. Allow this solvent to evaporate before sealant is applied.
d. Please note sealant recommendations for removal of existing sealants, substrate cleaning, joint preparation and installation of sealants are not intended and may not be appropriate for remedial work involving

existing sealants and/or joints containing PCB's, asbestos, or other potentially hazardous substances. If you know or suspect that the existing sealants and/or joints contain PCB's or other hazardous substances, contact project Owner **General Contractor** and a knowledgeable authority on appropriate removal, handling and disposal procedures.

iv. Masking

a. Silicone primers and sealants cannot be removed with organic solvents. It is imperative that uncured silicone primers and sealants do not contact non-abradable surfaces where the silicone is not intended. Mask these surfaces or use extreme care to prevent any silicone contact with the surface during priming and sealant application.

v. "Two Cloth" Cleaning/Priming Method

a. (Using DOW CORNING P5200 Cleaner/Primer)

i). Clean, soft, absorbent, lint-free cloths must be used. The two-cloth cleaning method consists of a solvent wipe followed by a dry cloth wipe.
ii). Thoroughly clean all surfaces of loose debris. Mask or tape joints before applying Cleaner/Primer. If a bond breaker tape will be used instead of backer rod, the tape should be applied before the cleaner/primer.
iii). Clean and apply Cleaner/Primer product in accordance with manufacturer's written recommendations.

2. Tapes

a. Prepare per manufacturer's recommendations.
b. Prime as required by manufacturer for each specific tape.

3.4 INSTALLATION

A. Sealant

1. General:

a. Clean, prime and apply materials in accordance with printed recommendations of manufacturer of material used.
b. Insure that if two sealant-curing types are used which have different curing times, that the first installed sealant is fully cured prior to the application of the second sealant.

1) Confirm application with sealant manufacturer.

c. Insure that if two different sealant composition types are used, that the proper sealant is installed first to insure adhesion between the two different sealants.

1) Confirm application with both sealant manufacturers.

d. Install joint backing with a blunt instrument so as not to puncture the surface skin.

1) Size of closed cell joint backing should be determined by adding 25% to the joint width to assure proper compression of the rod.
2) With other types of joint backing, consult manufacturer's printed instructions for proper use.

e. Apply sealant with a caulking gun, using proper nozzles. Use sufficient pressure to properly fill the joints with sealant to the backup material.

1) After joints have been completely filled, they shall be neatly tooled to eliminate air pockets or voids and to provide a smooth, neat finish in intimate contact with interfaces. Dry tooling is preferred.
2) After tooling, surface of sealant shall be free from ridges, wrinkles, sags, air pockets and embedded impurities.

f. Immediately clean adjacent materials, which have been soiled. Leave work in a neat, clean condition.

g. Joint Dimensions

1) Size and shape as shown on Drawings but not to exceed joint size recommended by sealant manufacturer.

a) Typically install backer rod at all joints unless specified to be bond breaker tape, other material as specified and /or detailed or no backer material in accordance with sealant manufacturer's printed directions.

i. Sealant depth to width ratio shall be installed in accordance with sealant manufacturer’s written instructions.

2. Silicone:

a. General:

1) Apply materials in accordance with printed recommendations of manufacturer of material used.

b. Schedule:

1) Prime – Primer Application Procedure

a) DOW CORNING P5200 Cleaner/Primer Coat should be applied as follows:

i. Joint surfaces should be clean and dry.
ii. Apply masking tape to the surfaces next to the joint to keep excess primer and sealant off areas where they are not intended.
iii. Apply Cleaner/Primer in accordance with manufacturer’s written recommendations.

2) Pack – Packing with Backer rod / tape

a) Moving Joint Considerations

i. When designing moving joints, the following points also need consideration:

a. A minimum ¼" joint width is recommended. Wider joints accommodate more movement than narrow joints. (Refer to Drawings for design intent joint widths)
b. Three-sided adhesion limits the amount of movement that a joint accept without inducing a tear. Three-sided adhesion can be eliminated by the addition of a bond breaker tape or backer rod. With three-sided adhesion, no more than +15% movement can be accommodated.
c. A thin sealant joint (1/4" + 1/8" depth) will absorb more movement than a thick joint. Sealants are designed to deliver optimum performance when the joints are shaped like an hourglass
d. As a practical matter, as the sealant joint width becomes larger than 1", the depth should be held at approximately 3/8". There is no need to increase the depth beyond 3/8".

b) Movement During Cure

i. One-part sealants cure by taking moisture out of ambient air. Joint movement during cure can cause unsightly aesthetics due to joint wrinkling. Premature adhesion loss can also occur because the adhesive characteristics of the sealant are obtained after the sealant has cured. Adhesion loss due to movement during cure can be minimized by the use of a primer. Primers can decrease the adhesion cure time lag. Minimize wrinkling by following these suggestions:

a. Use open-cell polyurethane backer rod / tape in non-EIFS or vertical applications.
b. Seal when the joint surface is cool and will experience minimum temperature changes, typically in the late afternoon or early evening.
c. Place no more than 1/4" of sealant over the backer rod / tape at the center.

3) Shoot – Sealant Application Procedure

a) It is critical that the sealant fills the entire joint or cavity and firmly contact all surfaces intended to receive sealant.
b) To obtain full adhesion, sealants require a clean, dry, frost-free surface.
c) Sealant shall be applied as follows:

i. As previously indicated, masking tape should be used to keep excess sealant from contacting adjacent areas where it is not intended to ensure an aesthetically-pleasing job.
ii. Apply the sealant in a continuous operation using a caulking gun or pump. A positive pressure, adequate to fill the entire joint width, should be used. This can be accomplished by "pushing" the sealant ahead of the application nozzle. Care must be taken to ensure complete fill of the sealant cavity.

4) Tool

a) Tool the sealant with light pressure before a skin begins to form (typically 10 to 20 minutes). Tooling forces the sealant against the back-up material and the joint surfaces. Do not use liquid tooling aids such as water, soap or alcohols; i.e. These materials may interface with sealant cure and adhesion and create aesthetic issues.
b) Remove the masking tape before the sealant skins over (within about 15 minutes of tooling).

B. Polyurethane and Butyl Rubber:

1. Storefront and/or Curtainwall Sills & Door Thresholds

a. Clean substrate and underside of threshold
b. Installation:

1) 1st. Prime substrate with mfgr's approved primer
2) 2nd. Install full bed of sealant to substrate x ½" maximum thickness
3) 3rd. Install full bed of sealant to underside of threshold x 3/8" and set together.
4) 4th. Trim sealant that pushes out from under threshold.
5) 5th. Install mechanical fasteners.

C. Tape

1. Clean surfaces as herein listed.
2. Prime substrates per manufacturer's recommendations.
3. Install per manufacturer's written instructions.

3.5 COMMISSIONING

A. Provide factory-certified field service engineer to a site visit to ensure proper system installation of exterior sealant.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator.

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. The sealant applicator shall certify in writing that the sealant application is in accordance with the sealant manufacturer's recommendations

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

   1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 07 92 00

SECTION 08 11 13 – STEEL DOORS AND FRAMES

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. STEEL DOORS: (fully welded assembly)
    a. Interior:
        1) Non-rated
    b. Exterior:
        1) Non-rated
        2) Door vision panel frames
            a. Rated proprietary design and manufacturers
2. STEEL DOOR FRAMES: (fully welded assembly)
    a. Interior:
        1) Non-rated
    b. Exterior:
        1) Non-rated
3. GLASS:
    a. Door lites: As herein specified
    b. Framed windows: Refer to Section 08 80 00 – Glass and Glazing

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code
1. Non-residential new construction
    a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American National Standards Institute (ANSI), www.ansi.org

1. ANSI/SDI A250.3 Test Procedure & Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors & Frames
2. ANSI/SDI A250.4 Test Procedure & Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors & Hardware Reinforcing
3. ANSI/SDI A250.6 Recommended Practice for Hardware Reinforcing on Standard Steel Doors & Frames
4. ANSI/SDI A250.7 Nomenclature for Standard Steel Doors & Steel Frames
5. ASNI/SDI A250.8 SDI 100 Recommended Specifications for Standard Steel Doors & Frames
6. ANSI/SDI A250.11 Recommended Erection Instruction for Steel Frames

E. American Society for Testing and Materials (ASTM), www.astm.org

F. Factory Mutual (FM), www.fmglobal.com

G. Hollow Metal Manufacturers Association (HMMA), www.naamm.org/hmma

1. Hollow Metal Technical and Design Manual, latest edition of the following:

a.	Manufacturing:	HMMA 802	Manufacturing of Hollow Metal Doors and Frames
b.	Doors:	HMMA 810	Hollow Metal Doors
c.	Frames:	HMMA 820	Hollow Metal Frames
d.	Hardware:	HMMA 830	Hardware Preparation and Locations for Hollow Metal Doors and Frames
e.	Installation:	HMMA 841	Reserved for Tolerances and Standard Practices for Hollow Metal Doors and Frames
f.	Continuous Fully Welded Frames:		HMMA 820-TN02-03
g.	Defining Door Undercuts:		HMMA-810 TN01-03
h.	Grouting Hollow Metal Frames:		HMMA-820 TN01-03
i.	Guidelines for Glazing, Windows & Sidelights:		HMMA-820 TN03-07
j.	Painting Hollow Metal Frames:		HMMA-840 TN01-07
k.	Maintenance of Installed Hollow Metal Frames:		HMMA-840 TN02-10
l.	Grouting Door Frames:		HMMA-862

H. National Association of Architectural Metal Manufacturers (NAAMM) www.naam.org

I. National Fire Protection Association (NFPA), www.nfpa.org

1. NFPA 80 Labeled Protective assemblies
2. NFPA 105 Installation of Smoke and Draft Control of 20 minute labeled door assemblies
3. NFPA 252 Smoke and Draft Control of 20 minute labeled door assemblies
4. NFPA 257 Glazing in Fire Rated Door Assemblies
5. NFPA 288 Floor Fire Door Assemblies

J. Steel Door Institute (SDI), www.steeldoor.org

1. Steel Door Institute Technical Data Series Guidelines
2. Steel Door Institute 110-09

K. Underwriters Laboratory (UL), www.ul.com

1. UL 10A
2. UL 14B
3. UL 14C

4. UL 1784 – Smoke and Draft control
5. Provide door assembly with "S" label

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	Name of Test	Performance	Testing Std.
Door Frames	Anchorage	Jambs: Anchors shall be located on each jamb starting from 4" from top and 24" on center maximum on down with floor anchor at base	NAAMM Standards HMMA 840, 861 & 830
		Head: Provide anchors at head not more than 24 inches on center and not less than two per door head.	
	Anchors	Jamb and Head: Anchors shall be 14 gauge galvanized steel of size and length or shape required by construction.	HMMA 830 & 863
		Floor: 12 gauge galvanized angles welded to bottom of each door jamb and vertical mullions with two holes in bottom leg for ¼ inch wedge anchor each.	
		Concrete Block Wall: UL approved wedge anchor at dimpled holes centered on stop face of frame jambs and/or head.	
	Hardware Reinforcing	Comply	HMMA 830 Hardware Preparation Standard HMMA 861 Guide Specification
	Grout Slump	4" max. slump Pump into frame jambs and head	HMMA 820 TH01-03 HMMA 862
	Grout type	Mortar, not plaster	HMMA 862
Door Frames	Assembly	Non Rated	HMMA 820 & 861
		Rated, UL or FM Labeled	HMMA 850 & 861
	Types	Security	HMMA 862
		Detention	HMMA 863
		Acoustical (STC 44 min, u.n.o.)	HMMA 865
	Gauge/thickness	Typical: 0.053" / 16 gauge	NAAMM Standards
		4'-0" or greater opening: 0.067" / 14GA	
Door Glazing	Type	Safety & fire protected	CBC, Section 715.4.7.4

Door Frame Plinths (Splats)	Assembly	Shall be same thickness as frame and flush with all jamb surfaces. (not a wrap-around surface applied component)	NAAMM Standards HMMA 820
Doors	Core	22 gauge steel stiffeners with insulation core	NAMM Standards
	Assembly	Non Rated:	HMMA 810
		Rated, UL or FM Labeled	HMMA 850
	Types	Security	HMMA 862
		Detention	HMMA 863
		Acoustical (STC 44 min, u.n.o.	HMMA 865
	Face	Interior: 0.042" / 18 gauge	HMMA 861
		Exterior: 0.053" / 16 gauge	HMMA 861
	Edges		HMMA 861
	U-Value	0.18 max	SDI-113-79
HMMA 861 Guide Specification	HMMA 861 Guide Specification	HMMA 861 Guide Specification	HMMA 861 Guide Specification
Door Openings	Typical	Install 16 gauge channel within door body at all sides of opening	
	Vision panel frames	0.032" / 20gauge	
	Louver frames	0.0432" / 18 gauge	SDI-100-91
Steel Frames & Doors	Painting	Comply	HMMA-840 TN01-07 & Section 09 90 00
Steel Sheets	Hot Dipped Galvanized	Comply	ASTM A653-96 coating designation A60 mill phosphatized
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturer's data and shop drawings.

1. Indicate construction, configuration, jointing methods, reinforcements, and locations of cut-outs of steel doors and frames.
2. Submit catalog cuts or other data indicating details of construction, gauges of metals, dimensions, hardware preparation, core, label compliance, profiles and specifications for shop priming.
3. Label Construction Certification:

a. For door assemblies required to be fire-rated and exceeding sizes of tested assemblies, submit manufacturer's certification for that each door and frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

4. Identify each door and frame with Metal labels indicating similar applicable fire-rating.
5. Schedule:
    a. Submit a schedule of doors and frames using the same reference numbers for details and openings as indicated on the Contract Drawings.
    b. Indicate coordination of glazing frames and stops with glass and glazing requirements.
6. Secure templates from finish hardware supplier for specified hardware and mounting locations.

E. Submit samples.

1. One 6" x 6" of each glass type
2. Glazing tape

F. Certification:

1. Fire rating of glass, doors, frames and glass lite frames

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for five (5) years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for five (5) years providing/installing/finishing projects of similar size and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

E. Stipulations:

1. Manufacture all labeled frames in strict accordance with the specifications and procedures of Underwriters Laboratories, Inc. (UL).

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;
2. Preparation for hardware
3. Electrified hardware, power supply, conduit and wiring

G. Miscellaneous criteria:

1. Templates shall be furnished by hardware supplier for preparing shop drawings and for preparing and reinforcing hollow metal work to receive hardware.
2. Where fire-resistance classification is shown or scheduled, provide fire-rated assemblies.
    a. Identify each door, frame and vision lite with UL labels, indicating applicable fire-rating.

b. Provide approved fill material within door frame at acoustically labeled door/frame assemblies.

3. Fire Rated Door Assemblies: Meet the requirements of CCR Title 24 Part 2, CBC Chapter 7 – Fire Resistant Materials and Construction for the fire resistive ratings indicated, and which are labeled by Warnock Hershey International. Fire doors and frames to comply with UBC 7-2-1997 (UL 10C) positive pressure part 1 and/or part 2 where applicable.

   a. Temperature Rise Rating: At stairwell enclosures, provide doors which are labeled for a maximum transmitted temperature end point not to exceed 250° above the ambient at the end of 30 minutes of fire exposure.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Store doors and frames at building site under cover. Place units upright on at least 4 inch high wood sills in a manner that will prevent rust and damage.

1. Avoid the use of non-vented plastic or canvas shelters which could create a humidity chamber.
2. If cardboard wrapper on door or frames becomes wet, remove the carton immediately.
3. Provide a space between stacked doors to promote air circulation.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Wall Construction and finish
2. Hardware supplied by others
3. Hardware preparation and installation
4. Electrified hardware

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 08 71 00 – Door Hardware
3. Section 08 80 00 – Glazing

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. Preparation and painting of frames and doors

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Doors, Door frames and Window frames

a. Metal Manufacturing Company, Sacramento, CA, metalmfgco1@lycos.com 916-922-3484
b. Stiles Custom Metal, Inc., www.hollowmetal.com 209-538-3667
c. Forderer Cornice Works, San Francisco, CA, (415) 431-4100
d. Titan Metal Products, Inc., Sacramento, CA., www.titanmetalproducts.com 916-920-2555
e. Door Components Inc., Fontana, CA, www.doorcomponents.com, 866-989-3667, 909-770-5700
f. Security Metal Products Corp, www.seet.com 310-641-6601

2. Door Lite Assembly Frame & Glazing Compound

a. Anemostat, www.anemostat.com 213-775-7441

3. Door Lite Assembly Frame Glazing

a. TGP, Technical Glass Products, www.tgpamerica.com www.fireglass.com

4. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

1. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

C. Refer to drawings, details, and other related specification section whether listed or not.

D. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General

1. Hot Dip Galvanized Steel Sheets
2. Honeycomb Core Material
3. Polystyrene Core Material
4. Mineral Fiberboard Core Material
5. Shop Applied Primer: Rust-inhibitative enamel or paint, either air drying or baking, suitable as a base for specified finish paints.

B. Doors

1. General:

a. Comply with NAAMM Standards, most current published edition as herein specified.

1) Unless otherwise indicated, provide fire ratings as indicated on the drawings, and as required by building code.
2) Glazing shall be as approved for rated assemblies and in accordance with glazing specifications.
3) Glazing shall be as approved for safety assemblies and in accordance with glazing specifications.

C. Door Frames

1. General:

a. Comply with NAAMM Standards, most current published edition as herein specified.
b. Shop assembled where possible, size as scheduled or indicated, gauges as herein specified.
c. Except at fire assemblies, furnish and install three rubber silencers for strike jambs of single frames and two for heads of double frames, U.N.O., in hardware groups.
d. All glazing stops shall have miter corners as standard requirement.
e. Fabricate as "fully & continuously" welded assembly.
f. Fabricate with continuous watertight 2” wide nailing flange at jamb and head – exterior side of frame.

2. Comply with NAAMM Standards, most current published edition;

a. Hollow metal frames: Refer to standards as herein specified
b. Hardware prep for hollow metal frames: Refer to standards as herein specified
c. Guide Specifications – Commercial: Refer to standards as herein specified

3. Anchors:

a. Comply with HMMA 861, including, but not limited to Article 2.05 A, B, C.
b. Three at jambs, min. and one floor anchor per jamb, typical unless required differently per frame type application.

D. Hardware reinforcement

1. Comply with NAAMM Standards, most current published edition;

   a. HMMA 830 Hardware Preparation Standard
   b. HMMA 861 Guide Specification

E. Glass lites in doors

1. Glazing:

   a. Mfgr: TGP, Technical Glass Products, www.tgpamerica.com www.fireglass.com
   b. Size: Maximum size, refer to frame maximum lite size criteria
   c. Color: Clear
   d. Tempered: Yes
   e. Testing: ANSI Z97.1 – 2004
   f. Schedule:

Rating:	**Product:**	**Thk:**	**Description:**
1) None	Fireglass20	1/4"	Impact/safety rated

2. Frame:

   a. Mfgr: Anemostat
   b. Material: 20ga. cold rolled steel
   c. Color: Factory grey primer for field painting – as selected by **Architect**
   d. Attachment: Self attaching
   e. Profile: Low profile
   f. Door thickness:

      1) Typical: 1-3/4"
      2) LoPro-IS-G: Refer to door schedule for door thickness

   g. Ratings Schedule: Rating as required, refer to drawings and door schedule.

Rating:	**Maximum visible lite size**
1) 20 min.	3204 sq.in
2) 45/60 min.	2772 sq.in
3) 90 min.	1296 sq.in.
4) 180 min.	100 sq.in.

   h. Schedule:

Profile:	**Product:**	**Size:**	**Glass thickness**
1) Rectangular	LoPro	Refer to drawings	1/4", 3/16" & 5/16"
2) Custom	LoPro-CS	Refer to drawings	1/4", 3/16" & 5/16"

3. Tape:

   a. Glazing tape:

      1) Mfgr: Anemostat
      2) Product: Fire Rated Glazing Tape
      3) Series: GT
      4) Rating: 20/45/60/90/180 minute
      5) Listing: UL, WHI, BS-476.22 & EN-1634

6) Material:

a) Use thickness as required for frame opening and glass thickness
b) Schedule:

i. GT-132: 1/32" thick x 3/8" wide
ii. GT-116: 1/16" thick x 3/8" wide
iii. GT-18: 1/8" thick x 3/8" wide

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION (comply with HMMA 820, 830)

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

C. Hardware supplier / contractor shall supply hardware templates for preparing shop drawings and for preparing and reinforcing hollow metal work to receive hardware to hollow metal frame and door contractor.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 FABRICATION

A. Fabricate doors, frames, concealed stiffeners, anchors, hardware reinforcement, edge channels, louvers, moldings, stops and vision panel frames from the following commercial qualify carbon steel. (maintain minimum standards per each tested assembly)

1. Hot-rolled steel sheets and strips, pickled and oiled, complying with ASTM A569.
2. Cold-rolled steel sheets, complying with ASTM A366.
3. Galvanized steel sheets, complying with ASTM A526, G90 zinc coating.

4. Inserts, bolts and fasteners shall be standard manufacturer's units, except hot-dip galvanized items to be built into walls, complying with ASTM A153, Class C or D as applicable.
5. Comply with NAAMM Standard, current published edition;

    a. Guide Specifications – Commercial:

        1) Hollow metal frames, Typical: HMMA 861
        2) Hollow metal frames, Security: HMMA 862
        3) Hollow metal frames, Detention: HMMA 863
        4) Hollow metal doors, Acoustical: HMMA 865

    b. Manufacturing Standard: MMMA 802

B. Steel doors, door frames and window frames shall be "Machine-Mitered and Full-Welded" joint construction, rigid, neat in appearance and free from defects, warp or buckle.

1. Full welded mitered joints, continuously, grind, dress, and make smooth, flush and invisible.
2. Install Knock-Down Window frames at locations that prohibit built-in place conditions where fully welded window assembly is feasible.

C. Accurately form metal to required size and profiles.

1. Shop-fit and assemble wherever practical
2. Site assembled units shall be of welded construction meeting all requirements of factory assembled units.
3. Construction joints shall be reinforced and machine-mitered at corners.
4. Exposed fasteners shall be provided countersunk pre-fitted holes at through bolting on doors.
5. Concealed fasteners at face of frame and glazing molding stops shall be pre-drilled countersunk or dimpled holes.

    a. Supply flat head Phillips machine or Teks screws pre-fitted for field applied glazing putty.

6. Reinforce doors and frames to receive surface-applied hardware, and shall be as follows.

    a. Drilling and tapping for surface-applied hardware may be done at project site. Door shall have internal reinforcing at all surface-applied hardware.
    b. Provide drilled holes for door silencers when required by Section 08 71 00 - Door Hardware.
    c. Hinges; 10 gauge x 1 1/2 inches wide x 6 inches longer than hinge; full perimeter fillet weld at bearing each end.
    d. Strike plate clips; 10 ga. x 1 1/2 inches wide x 3 inches long; full perimeter fillet weld at bearing.
    e. For Surface-applied closers; 10 gauge x required width and length, secured in both doors and frames whether or not closers are indicated. Spot welded in place. For future and/or required closer.

D. Paint all steel frames:

1. General:

    a. Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before applying shop primer.
    b. Apply pretreatment to clean metal surfaces, using cold phosphate solution (SSPC-PT 2), hot phosphate solution (SSPC-PT 4) or basic zinc chromate-vinyl butyl solution (SSPC-PT3).

c. Install barrier coating at inside of all frames including the ones to be fully grouted with mortar.

2. Primer:

a. Apply shop primer within time limits recommended by pretreatment manufacturer.
b. Apply a smooth primer coat of even consistency to provide a uniform dry film thickness of not less than 2 mils, on all hollow metal surfaces.

1) Door primer surface shall be completely smooth to the touch and visual.

3. Painting:

a. Shop paint 1st. coat when possible
b. Finish painting shall be in accordance with Paint Specification Section 09 90 00.
c. Paint frame and doors custom color as directed by **Architect**.

3.5 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

a. Installed metal doors, door frames and window lite frames and accessories in accordance with drawings, reviewed Shop Drawings, manufacturer's data, and as specified here.
b. Hang with clearance indicated in Section 08 71 00 - Door Hardware. Install in accordance with HMMA 840 and 861.

2. All interior metal frames shall be;

a. Filled with insulating foam at non rated conditions

1. Brace frames to eliminate any potential bowing of frame.

b. Filled with mineral wool at rated conditions

3. All exterior metal frames shall be;

a. Painted inside frame with barrier coating.
b. Holes in frame filled, bondo filled, sanded smooth and finished after grouting.

4. Prime coat touch-up;

a. Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer in accordance with Section 09 90 00.

5. Finish paint frames after installation, refer to Painting Section 09 90 00.
6. Except for frames located at in-place concrete or concrete block which can be installed after wall is placed, place frames prior to construction of enclosing walls and ceilings.

a. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.

1) After wall construction is completed, frames are grouted or filled with appropriate material, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

B. Anchorage:

1. Frame anchors shall be located on each jamb starting 4" from top and 24" on center maximum on down with floor anchor at base. Provide anchors at head not more than 24 inches on center and not less than two per door head.
2. Anchors shall be 14 ga. galvanized steel of size and length or shape required by construction.
3. Anchor to floors:

    a. 12 gauge galvanized angles welded to bottom of each door jamb and vertical mullions with two holes in bottom leg for 1/4 inch wedge anchor each.

4. Comply with NAAMM Standard, HMMA 840, current published edition.

C. Install Metal Doors

1. Inspection:

    a. Examine door frames and verify that they are of the correct type and have been installed as required for proper hanging of corresponding doors.

        1) Correct conditions detrimental to the proper and timely installation of plastic faced wood doors; do not proceed with installation until unsatisfactory conditions have been corrected.

2. Installation:

    a. Install doors and fit hardware to doors in accordance with manufacturer's instructions.
    b. Fit doors to frames and machine for hardware to whatever extent not previously worked at factory as required for proper fit and uniform clearance at each edge.
    c. Replace doors which have been improperly prepared at factory and which cannot be adjusted without damage to surfaces.
    d. Clearances: (Unless otherwise required by testing labeling of rated doors and mfgr. to be different)

        1) For non-fire-rated doors provided clearances of;

            a) 1/8" at jambs and head
            b) 1/8" at meeting stiles for pairs of door
            c) 1/2" from bottom of door to top of decorative floor finish or covering.

                i. Except where threshold is shown or scheduled provided 1/4" clearance from bottom of door to top of threshold.

    e. Operation:

        1. Re-hang or replace doors which do not swing or operate freely.
        2. Replace doors damaged during installation.

    f. Folding, Bi-parting, sliding and other specialty door shall be installed in accord with indicated details, reviewed shop drawings and manufacturer’s recommendations.
    g. Location of finishes and hardware as listed and detailed shall be used as a guide and shall be field verified to achieve a smooth and effortless operation.

3.6 ADJUSTING

A. Hardware adjustment shall be done by others under hardware specifications section.

3.7 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END SECTION 08 11 13

SECTION 08 11 16 – INTERIOR ALUMINUM DOORS AND FRAMES

PART 1 - **GENERAL**

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pre-finished aluminum door frames for interior use.
2. Pre-finished aluminum framing systems for interior use.
3. Pre-finished aluminum doors for interior use.

B. Related Sections:

1. Division 01 Section “Sustainable Design Requirements” for additional LEED documentation and requirements.
2. Division 08 Section "Glazing" for glass view panels in interior aluminum doors.
3. Division 08 Section "Aluminum Entrances and Storefront" for glazed aluminum doors and framing used in exterior walls and vestibule enclosures.
4. Division 08 Sections "Flush Wood Doors", "Clad Wood Doors”, and "Stile and Rail Wood Doors" for wood doors used in interior aluminum frames.
5. Division 08 Sections "Door Hardware" and "Access Control Hardware" for door hardware used on interior aluminum doors and frames.
6. Division 26 "Electrical" Sections for electrical connections including conduit and wiring for door controls and operators installed on interior aluminum frames.
7. Division 28 Section "Access Control" for access control devices installed at interior aluminum frame openings and provided as part of a security access system.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. AAMA 603.8 Performance Requirements and Test Procedures for Pigmented Organic Coatings on Extruded Aluminum.
2. AAMA 607.1 Guide Specification and Inspection Methods for Clear Anodize Finishes for Architectural Aluminum.
3. AAMA 608.1 Guide Specification and Inspections Methods for Electrolytically Deposited Color Anodic Finished for Architectural Aluminum.
4. AAMA 609 & 610-02 Cleaning and Maintenance Guide for Architecturally Finished Aluminum.
5. ASTM B221 Standard Specification for Aluminum and Aluminum-alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
6. ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

7.	ASTM E413	Classification of Sound Rating Insulation.
8.	NAAMM	"Metal Finishes Manual for Architectural and Metal Products".
9.	ANSI/NFPA 80	Standard for Fire Doors and Fire Windows; National Fire Protection Association.
10.	NFPA 252	Standard Method of Fire Tests of Door Assemblies.
11.	ANSI A117.1	Accessible and Usable Buildings and Facilities.
12.	ICC/IBC	International Building Code.

1.3 SUBMITTALS

A. Submit under the provisions of Section 01 33 00-Submittal Procedures.

B. Product Data: For each type of product indicated. Include construction details, material descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

C. Templates: Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the interior aluminum door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

D. Shop Drawings: Include the following:

1. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
2. Locations of reinforcement and preparations for hardware.
3. Details of each different wall opening condition. Include requirements for steel framing at partitions for fit and securing of frames, partition widths and tolerances, direction of framing members, clips and attachments.
4. Details of anchorages, joints, field splices, and connections.
5. Details of accessories.
6. Details of moldings, removable stops, and glazing.
7. Elevations of each door design.
8. Details of doors, including vertical and horizontal edge details and metal thicknesses.
9. Details of preparations for power, signal, and control systems.

E. Samples for Verification: Provide at the request of architect, prepared Samples as indicated below:

1. Framing Member: 12 inches long.
2. Corner Fabrication: 12-by-12-inch-long, full-size window corner, including full-size sections of extrusions with factory-applied color finish.
3. Aluminum chips in full range manufacturer's standard finishes for architect's color selection.

F. Interior Aluminum Door and Frame Schedule: Use same designations indicated on Drawings. Coordinate with Door Hardware schedule and glazing.

G. Informational Submittals

1. Certificates of Compliance: Submit any product test report or information necessary to indicate compliance with this specification section.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain interior aluminum frames and doors through one source from a single qualified manufacturer.

B. Manufacturer Qualifications: A firm experienced in the manufacturing of interior aluminum framing systems and doors with a minimum five (5) years successful in-service performance providing product similar to those indicated for this project, including pre-engineering and pre- fabricating all components of aluminum framing systems and doors.

C. Installer Qualifications: An experienced installer with a minimum five years (5) experience who has completed aluminum framing systems and door installations similar in material, design, and extent to those indicated for this project and whose work has resulted in construction with a record of successful in-service performance.

D. Aesthetic Effects: Do not modify intended aesthetic effects, as judged solely by **Architect**, except with **Architect's** approval. If modifications are proposed, submit comprehensive explanatory data to **Architect** for review.

E. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 (neutral pressure at 40" above sill) or UL 10C.

1. Provide labels permanently fastened on each frame or door within size limits established by NFPA and the testing authority.

F. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Label each individual glazed lite.

G. Smoke-Control Door Assemblies: Comply with NFPA 105.

H. Pre-Installation Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing interior aluminum frames and doors and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver interior aluminum frames and doors individually protective wrapped within cartons and marked for the corresponding scheduled opening. Do not bulk pack frames.

B. Inspect frames upon delivery for damage.

1. Repair minor damage to pre-finished products as recommended by manufacturer.
2. Replace frames that cannot be satisfactorily repaired.

C. Store interior aluminum frames and doors at Project site under cover and as near as possible to final installation location. Do not use covering material that will cause discoloration of aluminum finish.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of interior aluminum frame openings by field measurements before fabrication and indicate measurements on Shop Drawings submittals.

B. Do not install aluminum frames and doors until area of work has been completely enclosed and interior is protected from the elements.

C. Maintain temperature and humidity in areas of installation within reasonable limits, as close as possible to final occupancy standards. If necessary, provide artificial heating, cooling and ventilation to maintain required environmental conditions.

1.7 WARRANTY

A. Provide manufacturer's written warranty against defects in materials and workmanship upon final completion and acceptance of Work in this section.

1. Warrant framing and door finishes against defects and excessive fading and non- uniformity in color for a period of 5 years.

PART 2 - **PRODUCTS**

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Frameworks Manufacturing.
2. Raco.
3. Versatrac Frames, a Division of American Door Products Inc.
4. Western Integrated Materials, Inc.

B. Substitutions: Material from alternate interior aluminum framing system and door fabricators will not be accepted on jobsite without prior written and sample approval in accordance with requirements specified in Section 01 25 00 - Substitution and Deviation Procedures and at the discretion of **Architect** and their designated openings consultant.

2.2 MATERIALS

A. Extruded Aluminum: ASTM B 221 alloy 6063-T5 or alloy and temper required to suit structural and finish requirements.

B. Recycled Content of Aluminum Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 50 percent.

C. INTERIOR ALUMINUM FRAMES

1. Provide interior aluminum framing components complying with dimensions, profiles, and relationships to adjoining work of components as indicated on Drawings. Provide frames that are adjustable for partition types and throat openings, or that are fitted to each partition type,

meeting the throat opening and required clearances per frame manufacturer's recommendations. Reinforce for specified hinges, strikes, and closers.

2. Type I Framing System: Provide frames with the following characteristics:
    a. Rectilinear design.
    b. 1-1/2 inch face profile, 9/32 inch return.
    c. .062 inch rabbet wall thickness.
    d. Throat sizes (drywall partition thickness): 3-3/4", 4-7/8".
3. Type II Framing System: Provide frames with the following characteristics:
    a. Rectilinear design.
    b. 1-1/2 inch face profile.
    c. Snap on trim:
        1) 1-1/4 inch.
        2) 1-1/2 inch.
        3) 2 inch.
    d. .062 inch rabbet wall thickness.
    e. Standard throat sizes (drywall partition thickness): 3-1/2", 3-3/4", 4-5/8", 4-7/8", 5- 1/4", 5-1/2", 6-1/8" and 7-1/4".
    f. Adjustable throat frames expandable from 2-7/8" up to 8-3/8".
4. Glass Trim: Extruded aluminum, not less than 0.062 inch thick, designed for glass thickness indicated with removable snap-in casing trim, glazing stops, and door stops without exposed fasteners.
5. Fire Rated Frames: Fabricate frames in accordance with NFPA80, listed and labeled by a qualified testing agency. Maximum fire rating required is 20 minutes (without hosestream test).

D. INTERIOR ALUMINUM DOORS

1. General: Provide 1-3/4 inch doors of type and design indicated, not less than 0.062 inch thick material.
2. Aluminum Stile & Rail Type Swinging Doors: Door stiles and rails to have tubular design with the following characteristics:
    a. Stiles:
        1) Wide Stile (6").
    b. Rails:
        1) 6" Top Rail.
        2) 12" Bottom Rail.
3. Snap-in stops with factory applied glazing gaskets for 1/4", 3/8", or 1/2" thick glass.

2.3 ACCESSORIES

A. Fasteners: Aluminum, nonmagnetic, stainless-steel or other noncorrosive metal fasteners compatible with frames, stops, panels, reinforcement plates, hardware, anchors, and other items being fastened.

B. Door Silencers: Manufacturer's standard continuous mohair, wool pile, or vinyl seals.

C. Glazing Gaskets: Manufacturer's standard extruded or molded plastic, to accommodate glazing thickness indicated.

D. Glazing: Comply with requirements in Section 08 80 00 - Glazing.

E. Hardware: As specified in Section 08 71 00 - Door Hardware.

2.4 FABRICATION

A. FRAME CONSTRUCTION

1. Factory pre-engineer and pre-cut interior aluminum frame components to the greatest extent practical. Linear glazing components fabricated in the field are not allowed. Allow for 2 inches excess vertical length for scribing to suit floor conditions. Face trim to be pre-cut to match jamb lengths. Machine jambs and prepare for hardware, with concealed plates, drilled and tapped as required, fastened in frame with concealed screws.
2. Provide concealed corner reinforcements and alignment clips for precise joints at butt or mitered connections.
3. Hardware Preparation: Factory interior aluminum frames to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates as specified in Division 08 Section, "Door Hardware."
    a. Reinforce frames to receive surface mounted door hardware. Machine jambs and prepare for hardware, with concealed reinforcement plates, drilled and tapped as required and fastened within frame with concealed screws.
    b. Locate hardware as indicated.
4. Fabricate frames for glazing with removable stops to allow glazing replacement without dismantling frame.
5. Fabricate all components to allow secure installation without exposed fasteners.

B. DOOR CONSTRUCTION

1. Factory pre-engineer aluminum doors and components to the greatest extent practical.
2. Hardware Preparation: Factory interior aluminum doors to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates as specified in Section 08 71 00 - Door Hardware.
    a. Reinforce doors to receive surface mounted door hardware. Machine and prepare for hardware, with concealed reinforcement plates, drilled and tapped as required and fastened within door with concealed screws.
    b. Locate hardware as indicated.
3. Clearances for Non-Fire-Rated Door Frames: Not more than 1/8 inch at jambs and heads, not more than 1/4 inch between pairs of doors. Not more than 3/4 inch at bottom.

4. Fabricate kits for glazing with removable stops to allow glazing replacement without dismantling.

2.5 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products' for recommendations for apply and designated finishes. Exposed surfaces to be free of scratches and other serious blemishes.

B. Factory finish extruded frame components so that any part exposed to view upon completion of installation will be uniform in finish and color.

C. Polyester Finish: Comply with AAMA 603.8; multiple-stage electrostatically applied thermoset polyester finish, baked to assure hardness.

1. Color: Custom paint color to match architect sample.
2. Color: Manufacturer's standard bronze.
3. Color: Manufacturer's standard gray.
4. Color: Manufacturer's standard black.
5. Color: Manufacturer's standard white.

D. Clear anodic coating: Comply with AAMA 607.1.

1. Class 2, AAM12C22A31 clear anodized coating, 0.4-.07 mill thickness minimum.

E. Color anodic coating: Comply with AAMA 608.1.

1. Class 2, AAM12C22A34 color coating electrolytically deposited, 0.4-0.7 mill thickness minimum.

a. Color: Bronze anodized.
b. Color: Black anodized.

2. Class 2, AAM12C22A44 color coating electrolytically deposited, 0.4-0.7 mill thickness minimum.

a. Color: Bronze anodized.
b. Color: Black anodized.

PART 3 - **EXECUTION**

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify wall thickness does not exceed standard tolerances allowed by specified frame throat sizes.

C. General Contractor to verify the accuracy of dimensions given to frame and door manufacturer for pre-cut openings.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install and set interior aluminum frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Install frame components in the longest possible lengths with no component less than 48 inches.

1. Fasten to suspended ceiling grid at 48 inches on center maximum, using #6 sheet metal screws or other fasteners approved by frame manufacturer.
2. Use concealed installation clips to produce tightly fitted and aligned splices and connections.
3. Secure clips to extruded main-frame components and not to snap-in or trim members.
4. Do not use screws or other fasteners exposed to view when installation is complete.

3.3 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition.

B. Clean exposed frame surfaces promptly after installation, using cleaning methods recommended by frame manufacturer and according to AMMA 609 & 610.

C. Touch up marred areas so that touch up is not visible from a distance of 48 inches. Remove and replace frames that cannot be satisfactorily repaired.

3.4 PROTECTION

A. Provide protection as required to assure that frames will be without damage or deterioration upon substantial completion of the project.

END OF SECTION 08 11 16

SECTION 08 14 00 – WOOD DOORS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Door schedule:

a. Interior
b. Door vision panel frames

2. Glass:

a. Door lites:

1) As herein specified
2) As provided by door manufacturer

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American National Standards Institute (ANSI), www.ansi.org

1. ANSI/WDMA I.S.1-A SERIES (Latest edition) Industry Standard for flush wood doors

E. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM E152 - Methods of fire tests for wood doors
2. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies (to Standard Grade 30)

F. Forest Stewardship Council (FSC) www.fsc.org

G. International Code Council Evaluation Service (ICC-ES), www.icc-es.org

H. National Fire Protection Agency (NFPA), www.nfpa.org

1. NFPA 80 – Labeled Protective assemblies
2. NFPA 105 – Installation of Smoke and Draft Control of 20 minute labeled door assemblies
3. NFPA 252 – Smoke and Draft Control of 20 minute labeled door assemblies
4. NFPA 257 – Glazing in Fire Rated Door Assemblies
5. NFPA 288 - Floor Fire Door Assemblies

I. Warnock-Hersey International (WH)

J. Window and Door Manufacturers Association, (WDMA), www.wdma.org

1. WDMA Quality Standard: I.S.1A "Architectural Wood Flush Doors", of Window and Door Manufacturers Association (WDMA).
2. WDMA Quality Standard: I.S.1A "Architectural Wood Flush Doors", of Window and Door Manufacturers Association (WDMA).

K. Woodwork Institute, (WI), www.woodworkinstitute.com.

1. WI Manual of Millwork, Section 12, Architectural Flush Wood Doors

L. Underwriters Laboratory (UL), www.ul.com

1.3 PERFORMANCE

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Door / Frame Assembly: Rated Assembly	General	Comply	UL 10A, 10C, 14B, 14C & WDMA I.S.1A, Item C-8
	Positive Pressure	"S" Label compliance – (After 5 minutes into test, the neutral pressure plane should be at 40" Temperature rise at 250 degrees)	UL, CBC
	Smoke & Draft Control	Comply	UL 1784 & WDMA I.S.1A, Item P-3
	Fire Rated Assembly	Comply	CBC 711.8, 715.4 & table 715.4 & WDMA I.S.1A, Item P-3
	Fire Rated Corridors and Smoke Barriers / Smoke Control	Comply	CBC 715.4.3 & 715.4.3.1

	Fire Rated Assemblies, Exit Enclosures & Exit Passageways	Comply	CBC 715.4.4 & 715.4.4.1
	Glazing in Doors	Comply	CBC 715.4.4.1
	Labeling of Protective Openings	Comply	CBC 715.4.5 & 715.4.5.1 & 715.4.5.3
Door Construction	Construction Performance Testing	Comply	WDMA IS 1A
	Construction type	Heavy Duty construction	
	Dimensional Tolerances	Width: +/-1/16" not prefit +/-1/32" factory prefit Height:: +/-1/16" Thickness: +/-1/16"	WDMA I.S.1A, Item P-3
	Hardware matching tolerances	Comply	
	Vertical & Horizontal Edge material	Wood veneer to match face of door	WDMA I.S.1A, Item C-4 & P-1
	Vertical & Horizontal Edge bonding	Bonded assembly	WDMA I.S.1A, Item C-5
	Adhesive	Type II, minimum	WDMA I.S.1A, Item C-6
	Core and Wood Blocking	Wood veneer Particleboard Core: PC-5 & HB-3 & HB-8 Wood veneer Fire Resistant Core: FD-45/60/90-5 & HB-3 & HB-8	WDMA I.S.1A, Item C-10
		Wood veneer HPDL Particleboard Core: PC-5 & HB-3 & HB-8 Wood veneer HPDL Fire Resistant Composite Core: FD-45/60/90-5 & HB-3 & HB-8	WDMA I.S.1A, Item C-11
Face Veneer:	Grade: Transparent Finish	Premium Grade Door: Veneer for Transparent finish • Veneer is required to be of sufficient thickness (minimum 1/50" at 12% MC) to preclude sand-through, show-through of core, and glue bleed. • UV set sealers applied twice and sanded in between • Finish coat applied last • Protective peel off film applied for protection	WDMA I.S.1A, Item A-8 & C-1 WI – Woodwork Institute
	Grade: Designation	Grade A: (All species except as herein listed) • The Veneer shall be smooth, tight-cut and full-length.	

		• When the face consists of more than one Veneer component or piece, the edge shall appear parallel and be edge matched. • Species specified for natural color will allow color contrasts, but must be book matched, unless otherwise specified. • The components of plain-sliced (flat-cut) will be book matched, unless otherwise specified with a running, balanced, or center matched arrangement. • Unless otherwise specified, components in plain-sliced faces will have a matching arrangement selected by the manufacturer. • Plain-sliced faces will consist of two or more components with no component less than 152mm (6 inches) wide except for outside components which may be less than 152mm (6 inches) to allow for certain types of matching or panel edge trim loss. • No plain-sliced components will have a split heart. • Not full quarter-cut is allowed in plain-sliced faces. • The width of any single component in quarter-cut, rift-cut or comb grain faces shall not be less than 76mm (3 inches) except for outside components which may be less than 76mm (3 inches) to allow for certain types of matching or door edge trim loss.	
		Grade B: White Maple	
	Matching Spliced veneers	Running & Continuous	WDMA I.S.1A, Item A-5
		Matching • Plain Sliced (flat cut): Book match • Quarter Cut Sliced: Slip match • Rift Cut: Center match	WDMA
	Appearance of doors in pairs - single	Pair Match	WDMA I.S.1A, Item A-6
	Appearance of pairs of doors in sets	Set Match	

SECTION 08 31 00 – ACCESS DOORS AND PANELS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Providing and installing rated and/or non-rated access doors at all ceiling and wall locations for access to, but not limited to;

   a. Plumbing and fire sprinkler valves and such.
   b. Mechanical fire damper controls, dampers, etc.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

   a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. Underwriters Laboratories (UL), www.ul.com

1. UL 10A, UL 14B and UL 14C
2. UL 1784 – Smoke and Draft control

E. National Fire Protection Agency (NFPA), www.nfpa.org

   a. NFPA 80 Labeled Protective assemblies
   b. NFPA 105 Installation of Smoke and Draft Control of 20 minute labeled door assemblies
   c. NFPA 252 Smoke and Draft Control of 20 minute labeled door assemblies
   d. NFPA 257 Glazing in Fire Rated Door Assemblies
   e. NFPA 288 Floor Fire Door Assemblies

F. Provide door assembly with "S" label

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Access Panels	Fire Ratings	Where fire-resistance classification is shown or scheduled, provide fire-rated metal door and frames. Identify each door and frame with UL Labels, indicating applicable fire-rating.	UL
Labeled doors and glazing:	Floor Fire Door Assemblies	Comply	CBC, Section 715.4.1, 715.4.2, 715.4.3, 715.4.4, 715.4.5, 715.4.6.2, 715.4.8, 715.4.8.1, 715.4.8.2 & 715.4.8.3
	Fire Door and Shutter Assemblies		CBC, Section 715.4
	Fire Door and Fire Shutter Fire Protection Ratings		CBC, Table 715.4
	Door Assemblies in Corridors and Smoke Barriers		CBC, Section 715.4.3
	Smoke and Draft Control		CBC, Section 715.4.3.1 & 715.4.6.3
	Doors in Exit Enclosures and Exit Passage ways		CBC, section 715.4.4
	Labeled Protective Assemblies		CBC, Section 715.4.6, 715.4.6.1 & 715.4.6.4
	Fire Door Labeling Requirements		CBC, Section 715.4.6.1
	Fire Door Labeling Requirements		CBC, Section 715.4.6.1
Refer to drawings and as herein specified			

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Indicate construction, configuration
2. Confirm and list all sizes and locations
3. Submit manufacturer's literature
4. Submit schedule of doors and frames using the same reference numbers for details and openings as indicated on the Contract Drawings.

E. Submit samples.

1. Finishes

F. Site mock-up, refer to "Mock-Up" heading.

G. Certification:

1. Label Construction Certification:

a. For door assemblies required to be fire-rated and exceeding sizes of tested assemblies, submit manufacturer's certification that each door and frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Stipulations:

1. Manufacture all labeled frames in strict accordance with the specifications and procedures of Underwriters Laboratories, Inc. (UL).

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
Agenda for meeting shall include, but not be limited to;

1. Locations of access doors
2. Size of doors
3. Items being accessed
4. Rated conditions
5. **General Contractor** shall request meeting 5 days in advance of construction.

F. Miscellaneous criteria:

1. Access doors at rated conditions shall be UL Labeled.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Store access doors at building site under cover.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Wall and Ceiling Framing
2. Wall and Ceiling Sheathing
3. Wall and Ceiling Finishing
4. Mechanical, Plumbing and Electrical Equipment and components requiring access.

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 05 40 00 – Cold-Formed Steel Framing
3. Section 06 10 00 – Rough Carpentry
4. Section 09 22 16 – Non-Structural Metal Framing
5. Section 09 29 00 – Gypsum Board & Sheathing Substrates
6. Section 09 30 00 – Tile and Stone
7. Section 09 90 00 – Paintings and Coatings

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding operation of the equipment.
2. Complete instructions regarding maintenance of the equipment, materials, finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Acudor Access Doors, (201) 857 – 1800 www.acudor.com
2. Babcock-Davis, www.babcock-davis.com
3. Elmdor, www.elmdor.com
4. JL Industries, www.buyjlindustriesonline.com
5. KARP Associates, Inc. 800.888-4212, www.karpinc.com
6. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Schedule

1. General

a. Manufacturer: Acudor
b. Construction: (unless noted otherwise on specific door)

1) Door and Trim: 14 ga. steel or aluminum, see specific model
2) Return Frame: 16 ga. steel or aluminum, see specific model
3) Insulation
    a) If applicable: 1-7/8" thick mineral wool between 22 ga. steel
4) Hinges: Continuous concealed piano with 90 deg. min. opening.
5) Latches/Locks: Mortise cylinder typ. & Self-latching at rated doors.
6) Automatic Panel Closer: At all doors
7) Inside Panel Release: At all doors
8) Finish:
    a) Steel: Baked prime coat final color as selected by **Architect**.
    b) Aluminum: Mill finish

2. Applications:
    a. WALLS:
        1) Schedule:
            a) Tile:
                i. Schedule:
                    a. **Flush recessed with taping flange and cement board insert for tile finish**
                        i). Application: Typical, uno.
                        ii). Model: Bauco Plus II, Tile access door
                        iii). Finish: Factory primed
                        iv). Options: Cement board insert for tile finish.
                        v). Size: General
                            a. 12″ x 12″
                            b. Required size per code, agency having jurisdiction and as required to provide full access to valves, equipment, dampers, etc.
                        vi). Criteria:
                            a. 12″ x 12″ for access to valves
            b) Security: (flush,exposed trim)
                i. Model: SD-6000
                    a. Size:
                        i). General:
                            a. Required size per code, agency having jurisdiction and as required to provide full access to valves, equipment, dampers, etc.

b. Submit available sizes for selection by **Architect**.

ii). Criteria:

a. 12" x 12" for access to valves

b. CEILINGS AND SOFFITS:

1) Schedule:

a) **Flush recessed with taping flange and gypsum board insert**

i. Application: Typical, uno.
ii. Model: Bauco Plus, Drywall access door
iii. Finish: Factory primed
iv. Options: Drywall insert for tile finish.

a. Match wall gypsum board type

v. Size: General

a. 24" x 24"
b. Required size per code, agency having jurisdiction and as required to provide full access to valves, equipment, dampers, etc.

vi. Criteria:

a. 24 x 36 where physical access by a person is required thru door

c. SECURITY: (flush,exposed trim)

1) Model: SD-6000

d. VALVE BOXES:

1) Model:

a) Non Rated: ARVE
b) Rated: N/A

2) Finish: Stainless Steel

2.3 ANCHORAGE

A. Frame anchors shall be located & installed per by manufacturer's recommendations.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.

2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 INSTALLATION

A. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

B. Installed Access Doors and frames and accessories in accordance with reviewed Shop Drawings and manufacturer's data, and as specified here.

C. Prime coat touch-up; Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

3.5 ADJUSTING

A. Test operation of equipment, components, etc. and adjust as needed to produce fully functioning units that comply with requirements.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

   1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **District**.

F. After completion of work in this, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 08 31 00

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SECTION 08 41 13 – ENTRANCES, WINDOW WALLS, STOREFRONTS AND CURTAIN WALLS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Window wall systems:
    a. Storefront:
2. Doors:
    a. Aluminum Storefront Doors
3. Flashing/Accessories:
    a. Coordinate with Section 07 62 00 – Sheet Metal Flashing and Trim.
    b. Sill Extension/Stool:
        1) Aluminum with watertight end dams
            a) Extruded when an accessory to specified system.
        2) Fastening clip
4. Glazing:
    a. Provide for and install glass and glazing supplied under Section 08 80 00
5. Hardware:
    a. Provide and prepare for Finish Hardware supplied under Section 08 71 00, unless noted otherwise to be supplied under this specification.
6. Accessories/Specialty Items:
    a. Provide and install fasteners, weather-stripping, sealant and other necessary components.
    b. Brake shape transition component to be installed between glass and end of interior walls.
    c. Integral steel reinforcing at window mullions.
    d. Sealants

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

C. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

D. Aluminum Association (AA) www.aluminum.org

1. Aluminum Standards and Data.
2. Specifications for Aluminum Structures.
3. Designation System for Aluminum Finishes.
4. Standards for Anodized Architectural Aluminum.

E. American Architectural Manufacturers Association (AAMA) www.aamanet.org

1. AAMA 101 Aluminum, Poly(Vinyl Chloride) (PVC) and Wood Windows and Glass Doors
2. AAMA 502 Specification for Field Testing of Windows and Sliding Glass Doors
3. AAMA 503 Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems
4. AAMA 605.2 High Performance Organic Coatings on Architectural Extrusions and Panels
5. AAMA 1302.5 Forced Entry Resistance
6. AAMA 1502.7 Condensation Resistance Factor
7. AAMA 1503.1 Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections

F. American Institute of Steel Construction (AISC) www.aisc.org

1. Manual for Steel Construction

G. American Iron and Steel Institute (AISI) www.steel.org

1. Cold Formed Steel Design Manual

H. American National Standards Institute (ANSI) www.ansi.org

1. ANSI Z97.1 Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings.

I. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM A36 Standard Specification for Structural Steel
2. ASTM A123 Zinc Coating on Fabricated Products.
3. ASTM A165 Standard Specification for Electrodeposited coatings of Cadmium on Steel.
4. ASTM B633 Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel (replaced A164)
5. ASTM C509 Standard Specification for Cellular Elastomeric Preformed Gasket and Sealing Material
6. ASTM C864 Standard Specification for Dense Elastomeric Compression Seal Caskets, Setting Blocks and Spacers
7. ASTM C920 Standard Specification for Elastomeric Joint Sealants
8. ASTM C1036 Standard Specification for Flat Glass

9. ASTM C1048 Standard Specification for Heat Treated Flat Glass
10. ASTM C1193 Standard Guide for use of Elastomeric Joint Sealants
11. ASTM D659 Evaluating Degree Of Chalking Of Exterior Paints
12. ASTM D773 Seal Durability of Sealed Insulating Glass Units
13. ASTM D774 Sealed Insulating Glass Units
14. ASTM E28 Softening Point Of Resins Derived From Naval Stores By Ring And Ball Apparatus
15. ASTM E283 Rate Of Air Leakage Through Exterior Windows, Curtain Walls, And Doors Under Specified Pressure Differences Across The Specimen
16. ASTM E283 Static Air
17. ASTM E330 Structural Performance Of Exterior Windows, Doors, Skylights And Curtain Walls By Uniform Static Air Pressure Difference
18. ASTM E331 Static Water
19. ASTM E546 Frost Point of Sealed Insulating Glass Units
20. ASTM E1105 Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors and Curtain Walls by Uniform or Cyclic Static Air Pressure Differential.

J. American Welding Society (AWS), www.aws.org

1. AWS 01.0 Structural Welding Code

K. Consumer Product Safety Commission (CPSC) www.cpsc.gov

L. Flat Glass Marketing Association (FGMA), www.glasswebsite.com

1. Glazing Manual.
2. Sealant Manual.

M. Glass Association of North America (GANA) www.glasswebsite.com

N. International Code Council (ICC), www.iccsafe.org

1. ICC – Evaluation Service
2. ICC ES: ER-4780 Metal Fasteners
3. ICC ES: ESR-2427 Concrete Anchors

O. II Evaluation Service National Fenestration Rating Council, NFRC, www.nfrc.com

P. National Glass Association (NGA), www.glass.org

Q. Storefront manufacturer's written instruction manuals

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	Name of Test	Performance	Testing Std.
Aluminum	Recycled Content	45% minimum	Third party confirmation
Aluminum Window System	Air infiltration	Not to exceed 0.06 CFM. Per sq. ft. of fixed area at 6.24 PSF	ASTM E-283
	Water infiltration-Curtain Wall	No water at 12psf	AAMA-501 / ASTM E331
	Water infiltration-Storefront	No water at 8 psf	AAMA-501 / ASTM E331
Design Criteria	Wind Loading	Comply	CBC Section 1609
Glazing	Refer to Section 08 80 00		
Doors - Single	Air infiltration	Not to exceed 0.50 CFM per linear foot of perimeter crack at 6.24 PSF pressure differential	ASTM E283 for single doors
Doors - Double	Air infiltration	Not to exceed 1.00 CFM per linear foot of perimeter crack at 1.567 PSF pressure differential	ASTM E283
System Design Criteria	Wind exposure	Refer to Structural drawings for Exposure Category	Building Code, ASCE 7-16
	Design Wind Pressure	Per storefront window manufacturer and structural engineer stamping the shop drawings	Building Code, ASCE 7-16 ASTM E330
	Min. basic wind speed	Refer to Structural drawings for Wind Speed ("V")	Building Code, ASCE 7-16 ASTM E330
Fasteners	Types and design	Self drilling structural fasteners	ICC Evaluation Service, ER-4780
		Concrete expansion anchors	ICC Evaluation Service, ESR-2427

Window / Door System	Deflection and stress design	Normal to the plane of the wall vertical deflection of framing members at design pressure shall • not exceed L/175 of span length or ¾" per individual pane of glass	AAMA TIR-A11-1996 or most current adopted edition
		Normal to the plane of the wall horizontal deflection of framing members at design pressure shall not exceed L/360 of span length or 1/8" maximum, whichever is less. Door head shall not exceed L/360 at 1/16" maximum	
		In the plane of the wall deflection of framing members when carrying their full design deadload shall not reduce the glass or panel bite below 75% of the design dimension, and shall not reduce the glass or panel edge clearance below 25% of the design dimension or 1/8", whichever is greater. Restrict deflection further if required for proper assembly and fit of components.	
		At connection points of framing members to anchors: Anchor deflection in any direction shall not exceed 1/16".	
		Stresses must take into account interaction and shall not exceed the allowable values established by the specifications listed under References. In no case shall allowable values exceed the yield stress.	
		At one and one-half times design pressure, permanent deflections of framing members must not exceed 1/1000 of span length, and components must not experience failure or gross permanent distortion. At connection points of framing members to anchors, anchor deflection in any direction shall not exceed 1/8" and permanent set shall not exceed 1/16".	
	Thermal Design	Provide for free and noiseless vertical and horizontal thermal movement of component parts, for an ambient temperature range of 20ºF to 180ºF. Buckling, opening of joints, glass brakeage, undue stress on fasteners, vibration harmonics, wind whistles, failure of sealants or any other detrimental effects due to the thermal movement of component parts will not be permitted. Fabrication and erection procedures shall take into account the ambient temperature range at the time of the respective operations	
	Seismic Design	• The system and its attachments to the structure shall comply with the seismic	

		lateral force requirements established by the applicable building code and the limitations described below and herein. • No failure or deterioration of any kind may occur when the system is displaced in the amount corresponding to the maximum allowable story drift as indicated on drawings. • At twice the above displacement, wedge gaskets may disengage and perimeter weather seals may experience adhesive or cohesive failure, but no other failure or deterioration of any kind may occur. • Glass contact with the system framing members may not occur during either displacement. • Story drift, refer to also to structural drawings	
Aluminum Finish, U.N.O.	Type	Kynar 500 Finish: Color: Custom Standard color as selected by **Architect** Class: Class 1 Product: Fluropon 70% Kynar 500 or Hylar 5000	AAMA 605.2
Hardware- Hand Activated	Operation	Comply	CBC 1133B, 1133B.2 & 1133B.2.5.2

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing**:

Item	Name of Test	Performance	Testing Std.
Storefront assembly	Water infiltration; Perform testing as herein specified in Part 3 – Execution	No water at 8psf	ASTM E1105 Procedure B
Sill can assembly	Water infiltration; Perform testing as herein specified in Part 3 – Execution	No water leakage	AAMA 511

Threshold assembly	Water infiltration; Perform testing as herein specified in Part 3 – Execution	No water leakage	ASTM E1105 Procedure B

E. **Construction Testing / Inspection by others**:

Item	Name of Test	Performance Results	By Whom
System installation	General compliance with manufacturers written installation instructions and warranty criteria	Comply	Authorized window manufacturer representative

F. **Construction Monitoring/Observations by others**:

Item	Name of Test	Performance Results	By Whom
Aluminum	Const. Waste Management	Comply	Refer to Division 1 for construction waste management and disposal/recycling requirements

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturer's data and shop drawings.

1. Data:

a. Submit manufacturer's data for all components.
b. Schedule of all materials including fasteners, anchors, sealants, primers, back-up materials, tapes, gaskets, separators, and related items including the location where each material is to be used, methods of application, special instructions, cross-references to the shop drawings, and explanatory details as required to insure and appraise the complete application of all sealants.
c. Detailed instruction for the installation and reglazing of glass units including explanatory details indicating the sequence of installation, method of installation for all materials, location of specific items and any special instructions as may be required.
d. In addition to complying with pertinent regulations of governmental agencies having jurisdiction. Submit ICC report certifying the following compliance with ASTM standards herein listed.
e. Precautionary instructions which will prevent damage to and prolong the life of the system components.
f. Detailed instructions for cleaning the various materials, including methods and acceptable cleaning products, as well as those which should not be used.
g. Instructions for the removal and replacement of glazing materials.

2. Design calculations:

a. Prepare and submit (with shop drawings) structural calculations for all work of this Section, including mock-up. Comply with current design rules of the Aluminum Association, AISC, AISI, and ACI. Include analysis for wind, dead load and seismic load on framing members and anchors. Show section property computations for framing members and submit full-size die drawings.

    1) Existing test reports shall not be an acceptable substitute for calculations.

    2) In no case shall glass be considered as a lateral brace for framing members.

    3) Anchor clips with slotted holes shall be calculated in the most extended conditions.

    4) Calculations shall dimensionally limit the stacking of shims in regard to bending stresses in bolts, clips, etc.

    5) Calculations shall be signed and sealed by a registered licensed structural engineer in the State of California.

    6) In addition, provide the following:

        a) Cross-references to the shop drawings.
        b) Certification that the responsible engineer has reviewed the shop drawings and that the structural performance requirements of this specification have been met and properly interpreted on the shop drawings.

            i. Certification shall be by letter to the **Owner** and by engineer's signature on shop drawings.

    7) Each specific manufacturer's Storefront, Window Wall and Curtain Wall Systems may require additional internal steel reinforcing which is integral to their specific system and provided as a component of their specific system.

        a) This reinforcing shall be furnished under this section of Work and completely detailed and included in shop drawings.

a. Submittal to be signed & stamped by a California Licensed Structural Engineer.
b. Indicate all steel reinforcing to be replaced in mullions by storefront manufacturer per storefront manufacturer's design requirements.
c. Submit wind loads and deflection calculations that prove frame systems shall support and resist listed loads required by this specification.
d. Wind resistance loads and deflection maximums.
e. Water resistance test standards listed.
f. Provide test reports from AAMA accredited laboratories certifying the performance.

3. Shop drawings:

    a. Submit a detailed diagram to the glass manufacturer indicating how his product will be used in the system, as well as written information describing application and/or installation techniques, wind load, wall and building movement, magnitude of thermal expansion, blocking and sealing and any other procedures, operations or exposures which may affect the performance of his product.

        1) Glass manufacturer shall review and approve in writing, this submittal for responsible use of his product relative to the specific application based on the information supplied

therein, and shall note on the submittal any procedures he believes will not allow his product to perform.

2) Review of this submittal by the manufacturer shall not relieve the **General Contractor** from responsibility for the performance of the system.
3) Submit elevation drawings and sections for all windows and incorporate architectural reference for window types and details in shop drawings.
4) Coordinate with Section 08 80 00 - Glazing.

b. Provide and incorporate in the shop drawings data indicating pertinent dimensioning, general construction, steel reinforcing, anchorage methods and locations, slab edge attachment, hardware locations and job specific details (manufacturer's standard details not acceptable).
c. Details showing journey techniques, provision for horizontal and vertical expansion, glass and metal thicknesses, framing and anchor member profiles.
d. Identify all materials, including adjacent materials and substrates.
e. Show relative layout of all adjacent walls, beams, columns and slabs, all correctly dimensioned to each other and grid lines.
f. Dimension position of glass edge relative to face of frame, channel and face of stud.
g. Include provisions for containing and draining to the exterior any water which accesses window internal cavities.
h. Indicate and specifically note any deviations from contract drawings and specifications.
i. Hardware mounting heights and indication of coordination with hardware specified in Section 08 71 00 – Door Hardware.
j. All related flashing, bituminous membrane and vapor / moisture barrier membrane.
k. Include all steel reinforcing to be installed integral to mullions.
l. Submit shop drawings and any other pertinent data to the manufacturer of the proposed sealant for his use in preparing a written recommendation for the proper, specific material for each application. The written recommendations shall be provided with the shop drawings when submitted.

E. Submit samples

1. The following samples shall be submitted for review, sized to provide a true representation of color, flatness, texture and workmanship, properly identified with labels and in quantities to be determined by the **Owner**:

   a. Aluminum, extruded and / or sheet, with specified finish.
   b. Cured sealants for color selection and manufacturer's data sheets.
   c. All door and frame metal, with specified finish.
   d. All flashing metal, with finish to match frame finish.

F. Submit Warranty

1. Submit in a form acceptable to the **Owner**, a warranty to be executed by an authorized officer of the subcontractor, subject to the conditions herein set forth.

G. Certification:

1. Provide written certification that the following materials conform to the specifications, including the responsibility for ensuring that all items required for the complete and proper

functioning installation are included, even though not specifically indicated herein, and at no additional cost to the **Owner**:

a. Aluminum alloys and finishes (including test reports for anodic finish).
b. Steel alloys and finishes.
c. Sealants.
d. Glass.
e. Glazing Materials.
f. Fasteners.
g. Window and door hardware.
h. Recycled content of aluminum

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer shall have been in business for **five (5)** years providing / finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **ten (10)** years providing/installing/finishing similar size projects and complexity.

D. Test reports shall be accompanied by the window manufacturer's letter of certification stating that the tested window meets or exceeds the referenced criteria for the appropriate ANSI/AAMA 101 window type.

E. Perform water testing as herein specified and witnessed by **Owner** or **Architect**.

F. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid.

G. Stipulations:

1. **General Contractor's** Responsibilities:

a. The responsibility for the system is totally that all designs and resolutions proposed in the shop drawings, calculations and related documentation and certification must be demonstrated, not only in the test procedure but also throughout the warranty periods herein specified. No compensation for omission and errors on the part of the Subcontractor in the execution of this contract will be awarded.
b. Perform any actions required to fulfill the intent of this specification even though not specifically called for in this document. Included in this responsibility are instances of overlapping (or shared) duties with other sections of the project specification, in which case the **General Contractor** must coordinate and insure that all materials, labor, etc., are furnished to the extent required for completing the installed system.
c. Design and Engineering of entire window and door system, and related flashings.
d. Submit written notification of any deficiencies or discrepancies that would affect the proper or timely installation of the work in this section. Obtain written authorization for any modification to the system caused by deficiencies, discrepancies, or other conflicts with approved documents.

e. Advise **Owner** where supplemental bracing of beams may be required if system requires bracing to bottom flange of beams, etc. This notification must occur prior to the fabrication of the entrance, storefront and window system and the structural steel framing members.
f. Coordinate and verify, by measurement at the jobsite, lines, location, details and dimensions affecting his work.
g. Compliance with the codes and regulations of all governing agencies having jurisdiction.
h. Coordinate hardware with requirements and products specified in Section 08 71 00 - Door Hardware.

H. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Review areas of potential interference and conflicts, and coordinate layout, sequencing, and support provisions for interfacing work.
b. At meeting, the attendees shall review the installation procedures and assemble & install an actual sample window installation, including moisture barrier, kraft paper, bituminous waterproof sheet flashing, metal flashing, and cementitious backer board.

1) **General Contractor** shall provide all materials, pieces, parts, tools and labor to install sample.

a) The purpose of the sample is to insure understanding of the system, the related parts and the sequencing.
b) The sample shall not be part of the finished complete installation, and shall be removed as directed by the **Owner**.

c. Coordinate sealants used in window system with those specified and used at window system perimeter at cementitious backer board, stone veneer, plaster, concrete tilt-up and steel door frames, to insure complete compliance with and compatibility of the sealants and all the systems and products.

2. Attendees recommended for meeting are;

a. **General Contractor, Owner, Architect**, Window Consultant, System installer, installers of other work including door, metal support systems, wall substrates and finishes, flashing, moisture barrier, sealants and electrical work.

I. Manufacturer's Representative: Make arrangements necessary to have a representative of the window manufacturer on-site periodically during installation of window wall systems to review installation procedures and installed windows.

1. Sheet membrane:

a. Make arrangements necessary to have a representative of the sheet membrane manufacturer on-site periodically during installation of waterproof membrane at window openings to review installation procedures prior to installing windows.

b. Manufacturer's representative shall review and advise in writing if they find anything in their general observation that appears to not meet manufacturer's written instructions and/or not in accordance with warranty criteria.

1) Written Observation review shall be sent to the **Architect** by the manufacturer's representative.
2) Observation by window manufacturer does not constitute an inspection and/or supervision of installation which is the responsibility of installer and **General Contractor.**

J. Miscellaneous criteria:

1. System

a. The system shall be provided in accordance with the drawings, approved shop drawings, test reports, product data and submittals.
b. System proposed by the **General Contractor** must be equal to or better in design, performance and material standards than as described on the drawings and specified in this specification.
c. In addition to meeting the required design, performance and material criteria, the system must also:

1) Incorporate the "pressure equalization" concept, and provide details on drawings.
2) Have a positive method of preventing rotation of horizontal members without restricting thermal movement.
3) Allow for drainage to the exterior through the systems and to weeps and weep tubes.
4) Provide for the replacement of glazed materials from the exterior without modification of the system or adjacent materials and without projecting exterior stops
5) Accommodate acceptable construction tolerances.
6) Not utilize snap-engaged components as structural members.
7) Include butt joint mullions and glazing where indicated on the drawings and per the requirements of Section 08 80 00 - Glass and Glazing.

d. Deviations from the drawings and specifications must be specifically documented on the submittals for review by the **Owner**, who will be the sole judge as the acceptance or rejection of any or all deviations.
e. Any steel members and connections required to support or connect the system are to be designed, furnished and installed by the **General Contractor**, unless specifically indicated on the structural drawings as being the responsibility of others.
f. System shall be installed correctly so all water intrusion drains to the exterior of the building.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver all parts ready for erection; store in close proximity to final locations.

C. Package and store materials in a manner that will prevent surface damage, contamination, distortion, brakeage or structural weakening. Adhesive papers or sprayed-on coatings which bond when exposed to sunlight or weather are not permissible.

D. Replace any materials damaged during manufacture, shipping, storage or installation.

E. Protect stored and /or in place materials from contamination and damage.

F. Follow glass manufacturer's instructions for receiving, storing, handling and cleaning glass, as well as treatment of insulated (dual glazed) units which have air space pressure compensation provision for shipping.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial one (1) year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional five (5) year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

D. Under the terms of these warranties, the **General Contractor** agrees to repair or replace defective materials, workmanship or failures, in a timely, satisfactory manner, at no cost to the **Owner**. Defective materials /workmanship include (but are not necessarily limited to) the following:

1. Any abnormal deterioration, aging or weathering.
2. Water or air leakage exceeding the limits herein specified, including that caused by shifted glass lites.
3. Structural failure resulting from wind loads or forces not exceeding design criteria.
4. Adhesive failure, cohesive failure, cracking or discoloration of sealants.
5. Disengagement of gaskets or weatherstrips under conditions not exceeding specified design criteria.
6. Glass lites which:

a. Experience brakeage due to nickel sulfide inclusions, shifting of glass, or wind pressures and forces not exceeding design criteria.
b. When heat-treated, have a surface compression stress greater than 6000 psi.
c. Experience cracking, peeling or discoloration of reflective coating or contain coating flaws in excess of those outlined in PPG Coating Quality Criteria.
d. Experience deterioration of insulating glass edge seal due to causes other than brakeage which results in intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coating, and any other visual evidence of seal failure or performance.

7. Damage to other materials caused by falling glass which has broken due to defects.
8. Hi-Performance organic coating and anodic coating not in compliance with:

a. Coating thickness requirements
b. Coating weight requirements
c. Performance requirements for stain resistance

9. Malfunctioning of entrance doors.
10. Material, Craftmanship, etc. warranty periods as herein listed: (not for finish)

a. Storefront: 5 year
b. Entrances: Limited Lifetime
c. Thermal barrier: 10 year
d. Operable Windows: 2 year

E. Finish Warranties:

1. Kynar 500

a. Film integrity 20 years,(No change)
b. Chalk Resistance 20 years. @ value 6 (ASTM D659)
c. Color change 20 years @ 7NBS max.
d. Salt spray, air pollution & smog without any adverse affect = 5yrs.
e. Adhesion to aluminum: 20 years

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Floor Slab
2. Wall Framing and Finish
3. Finish Caulking
4. Support head frame at building storefront glazing, manufacturer & installer per this section shall coordinate their work with others to insure that proper support and framing is provided for window wall system.
5. Structural framing.
6. Intermediate floor slab edges.

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 05 50 00 – Miscellaneous Metal Fabrications

3. Section 07 92 00 – Sealants and Caulking
4. Section 08 71 00 – Door Hardware
5. Section 08 80 00 – Glass and Glazing

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

1.13 GENERAL SYSTEM DESCRIPTION

A. System Design Criteria

1. The system shall be weather-tight, structurally sound, self-draining and will allow no water infiltration (infiltration is defined as the appearance of uncontrolled water other than condensation on the indoor face of any portion of the system).
2. The details shown indicate the preferred profiles and dimensions to achieve the design concept. Dimension and profile adjustments to those shown may be made, provided that the visual design concept and intent of the specifications are maintained.
3. All components, assemblies and completed work shall conform to the following performance criteria and comply with the applicable codes of governing agencies. Except when applicable codes make other provisions, or as noted herein, loads shall act in combinations that provide the most unfavorable conditions. Wind loading need not be considered as additive to seismic loading.

a. System shall be designed for flexural, shear and torsional stresses resulting from positive and negative wind pressures of a magnitude established. Refer to "General Manufacturing Requirements" heading.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as listed herein and in Drawings:

1. Storefront / Window Wall system & Entrances

a. Arcadia, www.arcadiainc.com, Vernon, CA

b. Oldcastle Glass (Vistawall Products), www.oldcastleglassbe.com ,Terrell, TX
c. Kawneer Company, Inc., www.alcoa.com Phone No. (916) 638-5744. Kawneer Company, Inc., www.alcoa.com Phone No. (916) 638-5744.
d. Efco, www.efco.com

2. Sealant (concealed)

a. CR Laurence CO., Inc., www.CRLaurence.com

3. Reviewed Equivalent by **Architect.**

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of aluminum extrusion thickness, load capabilities, chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related sections whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General

1. Aluminum:

a. Alloy for aluminum extrusions shall satisfy requirements for 6063-T5. Provide a minimum nominal well thickness as required for structural members; 1/16" for nonstructural.

1. Manufacturer shall provide notarized certification letter that substantiates how much recycled billet is used and submit to **Architect** during submittal phase.

b. Alloy for clear anodized formed aluminum shall be equal to 5005 or 5052 and 3003 for non-exposed material. Provide a minimum nominal thickness which best suits application.
c. Provide alloy and temper recommended by the manufacturer for strength, corrosion resistance, and application of required finish; comply with ASTM B221 for extrusion, bars, wires and rods and ASTM B209 for sheet or plate.
d. Aluminum Sheets and Brakeshapes: Minimum 0.032" thickness. Provide alloy and temper as recommended by the producer or finisher for type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B209 for 5005-H15.
e. Standard commercial tolerances as listed in "Aluminum Standards and Data" shall apply to finished, fabricated and assembled materials except where stricter ones are required for proper function of system.
f. Recycled Content: As herein specified.

2. Steel:

a. Hot-rolled shapes and plate shall comply with ASTM A36.
b. Cold-formed steel shall conform to one of the material specifications listed in the AISI "Specification for the Design of Cold-Formed Steel Structural Members" and ASTM A611.
c. All steel plates and shapes shall be prime painted, hot dipped galvanized or electro-galvanized. Any damage to protective coatings shall be touched up in the field with an appropriate coating.
d. Hot-rolled sheet and strip shall comply with ASTM A570.
e. Integral steel reinforcing at mullions

3. Glass:

    a. Shall conform with requirements specified in Section 08 80 00 - Glass and Glazing.

        1) Glass for doors is specified in sub sections below.

4. Glazing Materials:

    a. Shall conform to requirements specified in Section 08 80 00 - Glass and Glazing.
    b. Provide glazing sealants, gaskets, splines, and other glazing materials which are recommended and guaranteed by the manufacturer to remain permanently elastic, non-shrinking, non-migrating and weatherproof for the life of the building. Comply with recommendations of sealant, gasket and glass manufacturers for selection of glazing materials which have performance characteristics suitable for the applications indicated and for conditions at the time of installation. Select materials which are compatible with surfaces contacted in the installation, as demonstrated by testing and field experience.
    c. Gaskets and weather seals: (weatherseals)

        1) It is the responsibility of the Subcontractor to provide gaskets of a hardness and design such that they will be in contact at all times with adjacent elements during dynamic loading, building and thermal movements and provide a watertight seal as required to meet the performance criteria. They shall be sized in length to prevent pull-back at corners.

            a) Sponge gaskets shall be extruded black neoprene with a hardness of 50+ /-5 durometer shore A and conforming to ASTM C509-70.

                i. Design sponge gaskets to provide 20%-30% compression.

        2) Dense gaskets shall be extruded black neoprene with a shore A hardness of 75+ / -5 for hollow profiles and 60+ /-5 for solid profiles, and conforming to ASTM C864.

            a) Dense gaskets of EPDM are also acceptable, provided the material conforms to all requirements, of ASTM C864 except for flame propagation.

        3) Mold all corners of all gaskets, where compatible with installation procedure.

5. Sealants:

    a. General Sealant requirements:

        1) Locate and identify all sealants by product name on shop drawings.
        2) Sealants and joint fillers, both for joints within the entrance storefront and window system construction and for joints at the interface of entrance, storefront and window

system construction and other work, shall comply with requirements specified in Section 07 92 00 – Sealants and Caulking and Section 08 80 00– Glass and Glazing.

3) Structural glazing sealant shall be Silicone Glazing Sealant specifically designed and tested for structural glazing, as specified in Section 07 92 00 – Sealants and Caulking and approved by glazing manufacturer.
4) Perimeter and flashing sealant shall be Silicone Sealant as specified in Section 07 92 00 – Sealants and Caulking.

6. Entry Doors

a. Storefront Doors:

1) Profile as herein specified
2) Constructed of tubular extruded aluminum sections.
3) Structurally joined at corners with heavy concealed reinforcement brackets secured with fasteners and deep penetration welds.
4) Accurately prepared and reinforced for hardware, specified in this section and for hardware specified in Section 08 71 00 - Door Hardware.
5) Glass for aluminum framed entry doors shall be fully tempered.

a) Glass color to match window vision glass, except where note on drawings to be clear.

6) Weatherstripped to meet specified performance criteria.
7) Fabricated to facilitate replacement of glass or panels, without disassembly of stiles and rails. Furnished with snap-on extruded aluminum stops also mechanically attached requiring special tool for removal.
8) Without exposed screws.
9) Adjustable after installation for frame/door clearance.
10) Welded corner construction.

7. Miscellaneous Materials:

a. Fasteners:

1) Type, size, alloy, quantity and spacing of all fasteners and anchorage devices shall be as required for performance.
2) All screws, bolts, nuts, washers and rivets in wetting locations, window and door assembly and hardware fasteners in non-wetting locations can be stainless steel or an approved equal. Identify wetting and non-wetting areas on drawings.
3) Exposed fasteners will be permitted only where approved by the Owner and shall be stainless steel with countersunk oval head, Phillips drive, finished to match adjacent finish.
4) All anchor bolts and nuts shall have self-locking devices incorporating nylon insets or patches similar to those manufactured by USM Corporation, Nylock Fastener Division.
5) "TEK" screws / fasteners are not allowed for any use or at any location.

b. Inserts for anchorage in concrete shall be steel with integral or welded projections for embedment, and be prime painted, hot dip galvanized rolled steel, or hot dip galvanized formed steel complying with ASTM A386.

c. Weep hole baffles shall be 45 pore per inch open cell plastic coated clear urethane foam, compressed 30%-50%.
d. Slip pads:
    1) Provide eel slip, nylatron, high impact polystyrene or approved equal slip pads between moving parts at all dynamic connections.
    2) Provide minimum thickness of 1/16" for nylatron and polystyrene, and 1/8" for eel slip.
    3) Do not use nylatron or polystyrene in close proximity to a field weld.
e. Flashings in direct relationship with the aluminum framing system shall be of 24 gauge galvanized steel or aluminum meeting the requirements of Section 07 62 00 - Flashing and Sheet Metal.
    1) Exposed flashings shall have hemmed edges where exposed to view to provide stiffness and a retainer for splice sleeves.
    2) Flashings shall be finished to match finishes for aluminum framing system in this specification.
f. Brake-shapes glazed into the System shall be of 1/8" plate aluminum.
    1) Provide stiffeners as required and pocket reducer / retainers as required to install brake-shape.
    2) Brake-shape shall be finished in accordance with the aluminum framing system in this specification.
g. Shims, blocking and spacers:
    1) Unless otherwise noted on the drawings, metals used for shims, blocking and spacers shall be zinc chromate painted steel, incorporating separators for dissimilar materials and at dynamic connections.
    2) Do not use aluminum or plastic shims at structural connections or horseshoe (U) shaped shims at dynamic or other connections where they may work free.
    3) Shims of wood or other organic materials are not acceptable.
h. Prime Paint:
    1) All steel and unpainted aluminum in contact with steel, masonry or concrete shall be painted with zinc chromate.
    2) All unpainted aluminum flashing installed at sills shall be painted with zinc chromate.
    3) Prime paint steel part of anchors, reinforcement and supports with zinc chromate. After field welding, remove weld slag and touch up primed surface.
    4) Provide minimum dry film thickness of one mil for zinc chromate, and 30 mils for bituminous paint.
        a) Zinc chromate primer shall conform to Fed. Spec. TT-P-645.
i. Kraft Paper: Kraft paper with reinforcing mesh.

8. Bituminous Waterproof Membrane Flashing: Provide a cold-applied, self-adhering membrane composed of high-strength polyethylene film coated on one side with a layer of adhesive-consistency rubberized asphalt.

a. Refer to Section 07 13 26 – Cold Applied Self-Adhering Membrane (CASAM).

9. Coordinate all requirements, including type of switch, wire leads and location on door with control system and security **General Contractor** prior to submittals, fabrication and installation.

B. General Manufacturing Requirements

1. Submit ICC certified report of the following:

a. Component parts and accessories shall be double-plated steel, aluminum, polycarbonate, or other corrosion resistant materials.
b. Provide bolts or screws min. as required by manufacturer.

1) Fasteners shall be sized and spaced to resist the tensile & shear loads imposed, with no exposed screws and/or bolts beads; no aluminum fasteners.
2) Exterior aluminum flashing system shall comply with the shape as shown on drawings and may be either extrusion or bent shaped.

2. Metal alloy and coating shall be verified by manufacturer with required submittal of an ANSI/AAMA Report.
3. Provide aluminum window systems and aluminum doors as dimensioned and shown on the Drawings, complete with anchors of the type needed for installation and complying with the following standard as defined in ANSI A134.1.

2.3 MATERIALS - PRODUCTS SCHEDULE

A. STOREFRONT SYSTEM

1. Shall be:

a. System: Series 3000 Thermal Multiplane
1) Type: SF Type 01
2) Mfgr: Oldcastle Glass (Vistawall Products)
3) Glazing:

a) Installation: Outside Glazed
b) Glass joints: Captured
c) Glass Location at Mullion- Options:

i. Center

d) Glass Type:

i. Vision: 1" Insulated
ii. Refer to Section 08 80 00 – Glass and Glazing

4) Profiles: 2" x 4-1/2"
5) Construction:

a) Integral steel reinforcing to accommodate spans & wind loads
b) Thermally broken frame
c) Sill: As indicated on drawings

6) Accessories: (as required & filler extrusions as required for complete installation, including, but not limited to;)

a) Head Receptor: M0-678/M0-224 with seals

B. SEALANT

1. Exposed Conditions:

a. Refer to Section 07 92 00 – Sealants and Caulking

2. Mastic bed below sills:

a.	Manufacturer:	Tremco
b.	Product:	Vulkem 116
c.	Type:	One part polyurethane
d.	Color:	Black or approved alternate

3. Concealed fasteners:

a.	Manufacturer:	CR Laurence Co., Inc.
b.	Product Type:	Silicone
1.	Model:	No. 33 S

4. Miscellaneous conditions:

a.	Manufacturer:	CR Laurence Co., Inc. (confirm with window wall mfgr.)
b.	Product Type:	Silicone
c.	Model:	No. 33 S (confirm with window wall mfgr.)
d.	Applications:	Pressure Plates, Shear Blocks, locations as directed by Mfgr.

5. Door thresholds:

a. Refer to Sealants, Caulking & Adhesive Tape Specification Section

2.4 ENTRANCES – (Aluminum Storefront Entrance doors)

A. Options:
1. Mfgr: Oldcastle Glass (Vistawall Products)
2. **#500** Wide style doors

a. Vertical Stiles:

1.	Meeting Stile:	5 3/4" overall	D-70 and D-25
2.	Jamb Stiles:	5 3/4" overall	D-13

b.	Top Rails:	8 3/4" overall	D-71
c.	Bottom Rails:	10 3/4" overall	D-61

1. Construction:
a. Provide square glazing receptor & seals for glass.
2. Provide Muntins at glass for true divided lites. Refer to Storefront Window Types as indicated on Drawings.

3. Hardware:

a. Provided under Section 08 71 00 Door Hardware (unless noted otherwise)

1. Doors shall be prepared for all specified hardware and all other necessary associated hardware for a complete assembly.
2. Automatic door bottoms:

a. Preparation of door bottom for Automatic Door Bottom;(Refer to Hardware Specifications)
b. Prepare door for Automatic Door Bottom (supplied under hardware specification) - remove portion of hinge side vertical stile web to accommodate height of automatic door bottom such that mechanism extends to extent of door edge at hinge side.
c. Prepare door Vertical stile at strike side same as above if door is not supplied w/ concealed vertical rods, if door is to have Concealed Vertical Rods, then Strike Side vertical stile shall remain its standard integrity.
d. Provide written manufacturers warrantee for doors after factory modifications.

2.5 GLAZING

A. Refer to Section 08 80 00 - Glass and Glazing.

2.6 OTHER MATERIALS

A. Provide aluminum entrance and fixed window wall and storefront system as dimensioned and shown on the Drawings, complete with anchors of the type needed for installation.

1. Provide anchor bolts or screws minimum as required by manufacturer. Fasteners shall be sized and spaced to resist the tensile and shear loads imposed, with no exposed screws and/or bolts beads, no aluminum fasteners.
2. Exterior flashing system shall comply with the shape as shown on drawings and may be either extrusion or bent shaped aluminum.
3. All members shall be extruded aluminum alloy 6063-T5. Component parts and accessories shall be double-plated steel, aluminum, and polycarbonate.
4. Provide flashing components as detailed and as required to provide a weathertight assembly.

B. Integral & concealed steel reinforcing within mullions.

1. Supplied and installed under scope of work of this section.

C. Brake shape transition components to be installed between glass and end of interior walls:

1. Material: Aluminum
2. Finish: Match window mullions
3. Size: Full height between horizontal mullions x finish wall width.
4. Attachment: Two sided neoprene tape

a. Color: Black
b. Size: Full width and length of brake shape where it butts against glass

D. Copings, flashings, etc.

1. Material: Aluminum
2. Finish: Match window mullions

3. Size: Refer to documents.
4. Attachment: Refer to documents
5. Construction:

    a. Provided as part of this section.
    b. Installed under this section scope of work.
    c. Design to be in compliance with this section and Section 07 62 00 – Sheet Metal Flashing and Trim

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 MOCK-UP

A. Erect at location approved by **Architect**.

1. Mock-up shall be part of final construction once approved by **Architect and Owner Representative**.
2. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.

B. Mock-up

1. Size: One window with mullions

3.5 INSTALLATION

A. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Install framing, glazing and adjust the work of this Section in strict accordance with the manufacturer's recommendations as reviewed by the **Architect**, anchoring all units firmly into position square, plumb, straight and true.

C. Dissimilar materials:

1. Where aluminum surfaces come in contact with metals other than stainless steel, zinc, or white bronze, then isolate the aluminum by one of the following methods:

a. Paint the dissimilar metal with a prime coat of zinc-chromate primer, followed by two coats of aluminum metal-and-masonry paint.
b. Apply a good quality sealant material between the aluminum and the dissimilar metal complies with "Sealants & Caulking" specifications.

D. Sills

1. Install full bed of sealant below sill in conjunction with shims, press down firmly and remove sealant that presses out past sill mullion.
2. Install finish backer rod & sealant at outer edge of sill.
3. Isolate the dissimilar metals with non-absorptive tape or gaskets.

E. Face caps when applied to mullions shall be installed such that no deformations are evident on face of cap face - all locations with imperfections shall be replaced by **General Contractor** at no additional cost.

F. Test all window installations at jambs & sills for water penetration with hose spray test after installation.

G. Copings, flashings and other brake shapes associated with the windows shall be installed and provided under this section and coordinated with Section 07 62 00 – Sheet Metal Flashing and Trim.

H. Sealant:

1. Exterior:

a. Sealant exposed face shall be set flush with face of mullion, unless noted or detailed otherwise.
b. Sealant shall be tooled with smooth concave face in compliance with sealant manufacturer's recommendations.
c. Install at all locations as indicated on manufacturers details and as directed by manufacturer and their specifications.

2. Interior:

a. Sealant at sill mullions at floor shall be set back ½" from face of mullion to allow floor covering material to fit below mullion.
b. Jamb and head sealant shall be flush with face of mullion, unless noted or detailed otherwise.

1) Sill sealant at floor mounted mullions shall typically be inset ¼" minimum to allow floor finish to pass under mullion.

c. Sealant shall be tooled with smooth concave face in compliance with sealant manufacturer's recommendations.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.7 TESTING

A. Storefront Windows:

1. General:

a. Perform tests witnessed by **Owner** and **Architect**.
b. Failing opening assemblies shall be removed and replaced / repaired to meet test requirements at no additional cost to **Owner.**

2. Type: Spray Rack test
3. Scope: **General Contractor** shall spray test the openings with water to ensure that the assembly is watertight.

a. **General Contractor** shall provide required lifts, apparatus and such to perform tests.
b. Coordinate with sill can assembly testing.

4. Description:

a. **General Contractor** shall spray test with water to ensure that the assembly is watertight and protects against water intrusion.
b. Involves a rectangular, calibrated piping system with spray nozzles every 12 inches to cover the building component with a uniform spray pattern.

1) The unit is placed 12 inches away from the building component and is pressurized with pumps to provide adequate pressure according to listed standards.

5. Quantity: 3 locations per building

a. **Owner**, **Architect**, and **General Contractor** shall select locations which represent the combination of storefront types, storefront conditions/details, and surrounding building materials, and weather exposures found in the project.

6. Duration: 15 minutes
7. Failure: Should testing result in leakage, eliminate the causes of such leakage at no additional cost to the **Owner.**

a. Remedial measures must maintain standards of quality and durability and are subject to approval.

1) Leakage, in this specification, is defined as being any appearance of uncontrolled water other than condensation on the indoor face of any part of the wall.

a. Provide sill can assembly testing as specified herein.
b. Provide threshold assembly testing as specified herein.

B. Thresholds:

1. General:

a. Perform threshold assembly testing at no additional cost to the **Owner** when initial storefront water infiltration testing results in leakage.
b. Perform tests witnessed by **Owner** and **Architect**.
c. Failing windows shall be replaced and repaired to meet test requirements at no additional cost to **Owner**.

2. Type: Spray Rack test
3. Scope: **General Contractor** shall spray test the openings with water to ensure that the assembly is watertight.

a. **General Contractor** shall provide required lifts, apparatus and such to perform tests.
b. Coordinate with sill can assembly testing.

4. Description: **General Contractor** shall spray test with water to ensure that the assembly is watertight and protects against water intrusion.

a. Involves a rectangular, calibrated piping system with spray nozzles every 12 inches to cover the building component with a uniform spray pattern.

1) The unit is placed 12 inches away from the building component and is performed at a specified air pressure differential while simultaneously spraying water onto the exterior face of the assembly at 5gph/ft2 according to listed standards.

5. Quantity: Test one single door opening and one double door opening.
6. Duration: 15 minutes
7. Failure: Should testing result in leakage, eliminate the causes of such leakage at no additional cost to the Owner**.**

a. Remedial measures must maintain standards of quality and durability and are subject to approval.

1) Leakage, in this specification, is defined as being any appearance of uncontrolled water other than condensation on the indoor face of any part of the wall.

C. Sealant:

1. General:

a. Perform tests witnessed by Sealant mfgr's representative**.**
b. Failing sealant assemblies shall be removed and replaced.

2. Type: Pick and adhesion test
3. Scope: **General Contractor** shall periodically test sealants in place for adhesion, using methods recommended by sealant manufacturer.

a. **General Contractor** shall provide required lifts, apparatus and such to perform tests.

4. Description:

a. Comply with sealant mfgr's recommendations.

5. Quantity: Test one 36" long section at one location for each exterior building elevation and floor level, min.
6. Failure: Should testing result in adhesion failure, remove, clean, prime and reinstall sealant at no additional cost to the **Owner.**

a. Remedial measures must maintain standards of quality and durability and are subject to approval.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this section prior to and during installation, and protect the installed work and materials of other trades.

D. Labels:

1. Leave all labels in place, intact and legible, until reviewed and approved by the Architect.
2. Do not at any time remove required AAMA labels.

E. Prior to completion of the work, thoroughly clean all exposed surfaces and glazing.

1. Use only the cleaning materials and techniques recommended by the manufacturer of the material being cleaned.
2. Do not scratch or otherwise damage the glass, screen, or aluminum finish.

F. Institute protective measures and other precautions required to assure that aluminum entrances and storefronts will be without damage or deterioration, other than normal weathering, at time of acceptance.

G. All damaged fabrications, including but not limited to damaged mullions, muntins and face caps caused by fastener read through shall be replaced at no cost to Owner.

H. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

I. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

J. Provide record drawings in accordance with Division 1 closeout submittal procedures t.

K. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 08 41 13

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SECTION 08 51 13 – ALUMINUM WINDOWS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work including but not limited to:

1. Aluminum full lite nail flange windows:
    a. Custom sizes
    b. Standard or specified anchorages, trim and attachments to substrates.
    c. Including the following types:
        1) Single Hung Window Units
2. Provide insulated glazing units
3. Provide accessories, weather stripping, latching & locking mechanisms, etc.
4. Provide dual concealed flashing at all window and door openings.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

C. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction
    a. All occupancy types

D. American Society for Testing and Materials (ASTM):

1. ASTM E283 - Standard Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors
2. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference
3. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential
4. ASTM E774 - Specification for Sealed Insulating Glass Units
5. ASTM C 1036 - Standard Specification for Flat Glass

E. Test samples shall comply with requirements in AAMA 101V -86 for test samples size and methods.

F. ANSI/AAMA 101-88 F-R25

1. Wind loading = 95 m.p.h. Basic Wind Speed
2. Exposure = C

G. National Glass Association (NGA), www.glass.org

1.3 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturers data and shop drawings.

E. Shop Drawings: Submit shop drawings with specified finish for each type of window specified and detailing for building substrate.

F. Samples:

1. Submit corner section with specified finish.
2. Include 12" x 12" samples of all glazing types along with literature of quality of construction, and specified finish.

G. Product Data:

1. Submit manufacturer's product specifications, technical support data, installation and maintenance recommendations and standard details for each type of window unit required. Include finishing methods, hardware and accessories.
2. Window flashing components and design.

H. Quality Control Submittals:

1. Certificates: Submit manufacturer's certifications indicating compliance with specified performance and design requirements, certification shall be by recognized, independent testing laboratory certifying that each required type of window complies with performance requirements indicated.

1.4 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Air Infiltration: Not more than 0.15 cfm per square foot of overall frame area at an inward test pressure of 1.57 psf.

C. Water Penetration: No water penetration as defined in the test method at an inward test pressure of 3.0 psf.

D. Structural Performance: No glass breakage, damage to hardware, permanent deformation that

would impair operation of the unit, or residual deflection at a positive (inward) and negative (outward) test pressure of 37.5 psf.

E. Material:

1. Frame & Sash – extruded aluminum alloy 6063-T5
2. Components & Accessories – stainless steel

1.5 DELIVERY, STORAGE, AND PRODUCT HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver in original packaging, store off the ground, and protect from weather.

C. Store units in an upright position in a clean and dry storage area.

D. Prime or seal wood surfaces, including surfaces to be concealed by wall construction, if more than 30 days will expire between delivery and installation.

1.6 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures. Submit a written warranty, executed by the window manufacturer, agreeing to repair or replace units that fail in materials or workmanship for a period of 3 years after substantial completion. Materials and labor are to be covered in full by the manufacturer. Insulated glass units are 10-year pro-rated warranty.OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding operation of the equipment.
2. Complete instructions regarding maintenance of the equipment, materials, finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer shall be subject for compliance with all requirements, provide products from the following list:

1. Windows:
   a. Milgard Windows
2. Window Flashing:
   a. Fortifiber www.fortifiber.com
   b. WR Grace www.grace.com
3. Reviewed Equivalent by Architect.
   a. Substitutions shall require **Architect's** approval and shall be given in letterform.

b. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. All specified materials indicated are as manufactured by: Milgard and shall be installed according to current listed specification requirements.

C. Refer to drawings, details, and other related specification section whether listed or not. Details shall set requirements for size and configuration of systems.

2.2 MATERIALS

A. General: Comply with requirements of ANSI/AAMA 101 - 88

B. Aluminum Structural Components:

1. Extruded aluminum alloy shall be 6063-T5 for strength, corrosion resistance and application of required finish.

2. Extrusion members are to be 0.060" in thickness for structural walls.

C. Fasteners:

1. Provide aluminum, non-magnetic steel, epoxy adhesive, or other materials warranted by the manufacturer to be non-corrosive and compatible with window members, trim, hardware, anchors and other components of the window units.

2. Where fasteners screw-anchor into aluminum frame members less than 0.125" thick, reinforce the interior with aluminum to receive screw threads, or provide standard, non-corrosive, pressed-in, splined grommet nuts.

D. Anchors, Clips and Window Accessories:

1. Fabricate anchors, clips and window accessories of aluminum or non-magnetic stainless steel.

2. Anchor clips and window accessories fabricated of hot-dip zinc coated steel or iron may be used for concealed work.

E. Hardware:

1. Provide the mfgr's standard hardware fabricated from a corrosive-resistant material and of sufficient strength to perform its intended function.
2. For application of exposed hardware, use fasteners that match the finish of the hardware being fastened.
3. Rollers shall have stainless steel wheels with ball bearings encased within a polycarbonate housing.
4. Lock shall be injection-molded polycarbonate with a spring-activated latch mounted in the meeting stile.
5. Secondary lock shall be a two position concealed friction secured deadbolt mounted in the vent lock stile. The primary position locks the window vent fully closed. The secondary position locks the window vent open 2 inches for ventilation.

F. Weather-stripping:

1. Provide the mfgr's compressible weatherstripping at each edge of each operating sash.
2. Weatherstripping shall be concealed when sash is closed.

G. Glazing Stops:

1. Provide glazing stops (beads) coordinated with glass section indicated. **(beveled snap on stop not acceptable)**
2. Finish glazing stops to be same finish and color as exterior window frame finish.

H. Insect Screens:

1. Provide removable insect screen panel for each operable sash, with 18" x 16" replaceable mesh and vinyl retainer spline.

I. Glass & Glazing:

1. Provide the mfgr's standard:
   a. Sealed insulated dual pane unit: (provide design to accommodate wind loading)
      1) Thickness: 3/4" overall
         a) 3/16" low - E exterior
         b) 3/16" clear interior
      2) Standards:
         a) Complies with ASTM E774 Level A and is at least 3/4" in overall thickness.
2. Glass types / Glazing specifications:
   a. Select from mfgr's standard options:

Type:	Gas Fill	U-Value	SHGC	VLT
1. SunCoat /clear	air	0.41	0.32	0.58
2. SunCoat /clear	Argon	0.37	0.31	0.58
3. SunCoat Max/clear	air	0.40	0.24	0.54
4. SunCoat Max/clear air 0.	Argon	0.36	0.23	0.54

   b. Safety glass at locations indicated and in compliance with applicable local codes & CBC.

J. Mullion types: (submit with shop drawings for Architects review and approval)

1. Full lite design:
   a. Single hung – Series 1520
      1) Frame: 2-5/8"

K. Finishes:

1. Select from one of the following standard mfgr's finishes:
   a. Clear Anodized
      1) 0.4 mills thick, typ. & min.

L. Window flashing

1. Three Component assembly:

a. Schedule:

1) 1st:

a) Mechanically attached first layer at jambs and sill of window opening;

i. Mfgr: Fortifiber
ii. Product: Moistop Flashing
iii. Width: 9″
iv. Fasteners: As approved by product manufacturer.

2) 2nd:

a) Sealant

i. Mfgr: Fortifiber
ii. Product: Moistop Sealant
iii. Width: 12″
iv. Fasteners: As approved by product manufacturer.

3) 3rd:

a) Self adhering waterproof membrane flashing installed over nail flange at jambs and head in shiplap fashion.

i. Mfgr: Fortifiber
ii. Product: E-Z Seal Flashing
iii. Width: 12″
iv. Fasteners: As approved by product manufacturer.

4) 4th:

a) Wall membrane installed over entire wall and butted to window.

i. Refer to wall material specification.

2.3 CONSTRUCTION

A. All window frames shall be a minimum of 2 1/8″ deep, with corners mortised and securely joined with double plated steel screws engaging integral extruded screw races. All frame joints shall be sealed.

B. Window vents and fixed panels shall be assembled around the glass utilizing full channel vinyl gaskets. The frame corners are to be rigidly held with double plated steel screws engaging integral extruded screw races in the horizontal members. Vent weather-stripping shall be a single plane, and shall be polypropylene pile.

C. Locking device of window shall be able to withstand a force of 300 pounds in any direction.

2.4 ACCESSORIES AND TRIM

A. Installation Accessories:

1. Nailing Fin: Typical at jambs, sill and head.

B. Weep System:

1. Provide rectangular weep holes located in the frame sill for effective drainage and moisture control.

C. Screen:

1. Provide bug screens at all operable vent locations, typ.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions: Before installation, verify that openings are plumb and square and of proper dimension. Report frame defects or unsuitable conditions to the **General Contractor** before proceeding.

B. Acceptance: Beginning of installation means acceptance of existing conditions.

3.2 FABRICATION

A. General: Fabricate window units to comply with indicated standards.

B. Preglaze: Fabricate units at the factory for applications indicated.

3.3 INSTALLATION

A. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, accessories and other window components.

B. Comply with reviewed shop drawings.

C. Install sealant and related backing materials at perimeter of assembly in accordance with Section 07 92 00 – Sealants and Caulking. Do not use expansive foam sealant.

D. Windows shall be factory sized to fit in framed opening.

E. Windows shall be fabricated to rough opening size with ½" deductions automatically made, so that no calculations will be required.

F. Opening panels must be closed and locked during installation. Windows must be installed level, plumb and square with ¼" clearance on all sides with weep holes at bottom.

G. All windows shall be installed by skilled workmen, trained for this type of work.

H. All openings shall be fully prepared to receive windows. Any shoring or debris must be removed and any corrective work completely finished prior to the start of window installation.

I. Windows shall be installed level, square and plumb without bind. The vents shall be aligned and adjusted for optimum weathering contact to the frame and ease of operation. After installation the primary and secondary locks shall be checked and adjusted for proper function.

J. Nail fin windows shall be securely attached t the framing with #6d or larger galvanized nails or other corrosion resistant fasteners.

K. Headers:

1. Must not be nailed.

L. Fastening:

1. Nail through fin into framing along sides and base.
2. At the head, nails may be placed ½" above fin and bent down over fin to allow for header deflection, but shall not interfere with siding, sheathing, trim, etc.
3. Install fastener screws such that operable panel cannot be lifted from window assembly.

M. Adjust operating sash and hardware to provide tight fit at contact points and weatherstripping.

N. Lubricate hardware and moving parts.

O. Install flashing and building paper and building wrap at window opening in shiplap fashion.

P. Install window opening multiple flashing assembly in accordance with manufacturer's recommendations with components as herein specified.

3.4 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Cover windows during spray painting or other construction operations that might cause damage.

C. Protection of all installed window shall be the responsibility of the **General Contractor**.

D. Labels:

1. Leave all labels in place, intact and legible, until reviewed and approved by the Architect.
2. Do not at any time remove required AAMA labels.

E. Promptly after, thoroughly clean all exposed surfaces and glazing interior and exterior.

1. Use only the cleaning materials and techniques recommended by the manufacturer of the material being cleaned.
2. Do not scratch or otherwise damage the glass, screen, or aluminum finish.

F. Institute protective measures and other precautions required to assure that aluminum entrances and storefronts will be without damage or deterioration, other than normal weathering, at time of acceptance.

G. Repair all minor damage to finishes as approved by Architect, replace all other.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

END OF SECTION 08 51 13

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SECTION 08 62 00 – UNIT SKYLIGHTS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with roof construction and related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work including, but not limited to:

1. Aluminum metal framed skylight design, engineering and fabrication of the extruded aluminum framing, integral closures, trim and perimeter flashing as shown on the contract drawings and as herein specified.
2. Fasteners, anchors and related reinforcement.
3. Glass and glazing materials including gaskets, sealants, spacers, blocking and related materials.
4. Installation of entire Skylight System.

E. Coordinate work and materials with Division 16 and Electrical Drawings for required power, switching and wiring connection to lighting controls.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Architectural Manufacturers Association (AAMA), www.aamanet.org

1. AAMA/WDMA/CSA 101I.S.2/A440-05 – Series/Model 800MD Double Hip Sunoptics skylight

E. Aluminum Association (AA), www.aluminum.orgUnderwriters Laboratory (UL)

F. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM D 1003 – Transmission Haze Measurements (Procedure A)

G. Architectural Testing, INC, (ATI), www.archtest.com

1. ATI - Code Compliance Research Report CCRR-0113, 07.24.07, 717.764.7700

H. International Code Council (ICC)

I. National Fenestration Rating Council, NFRC, www.nfrc.com

1. Report: Sim. Report #: A2457.01-301-45

J. Occupational Safety and Health Administration (OSHA), United States Department of Labor, www.osha.gov

1. OSHA – Regulations Standards – 29 (CFR) as approved by State of California
2. OSHA – Regulations Standards – 29 (CFR), Section 1926 Occupational Safety and Health Standards for Construction as approved by State of California

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Acrylic lens plastic	Construction	Pass	ATI – CCRR-0113
Skylight assembly – Structural Performance, Durability & Burning			ATI – Report No: 89255.01-301-18, test date 02.03.09 & ATI, AAMA/WDMA/CSA 101/I.S.2/A440-05, Test date 12.22.09
Glazing:	Shading coefficient	Pass	Tait Solar Co., Inc test No. 93074-A
	Transmission Haze	Comply	ASTM D1003 and tested per ASTM E167
	Heat Transfer Coefficient – 3/16" Clear prismatic lens	Pass	Tait Solar Co., Inc test No. 93074-A
Glazing integrity	Withstand 200lb. weight dropped from 2'-0" above glazing	Pass	Mfgr.
	Withstand 500lb. concentrated load placed on glazing	Pass	Mfgr.
Refer to drawings and as herein specified			

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Schedule of all skylights including, but not limited to:

a. Designation to match drawings
b. Glazing types and layers
c. Sizes

2. Installation instructions for skylights

E. Submit samples.

1. N/A

F. Certification:

1. Testing agency report(s)

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **ten (10)** years providing / installing / finishing similar size projects and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

E. Stipulations:

1. One lens as part of glazing assembly shall be diffuse type

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include, but not be limited to:

1. Curbs and roofing
2. Framed openings at roof
3. **General Contractor** shall request meeting 5 days in advance of construction.

G. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures and operation at project closeout.

1. Provide complete calibration of all motorized operations, photo cells and interconnect wiring with controls, line and low voltage control and monitoring system.

H. Miscellaneous criteria:

1. Separate dissimilar metals from each other by painting each metal surface at area of contact with a bituminous coating.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver all components ready for erection; store above grade, blocked and under cover to prevent warping.

C. Keep protective covering on skylight until installation is complete and in accordance with manufacturer's recommendations.

1.7 JOB CONDITIONS

A. Field verify that all roof openings, roofing, components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **ten (10)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of Owner within the warranty period, such defects shall be repaired and replaced at no cost to the Owner.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Roof construction
2. Roof curbs
3. Finish work inside skylight well

B. Related Sections include, but are not limited to the following:

1. Division 1

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding operation of the equipment.
2. Complete instructions regarding maintenance of the equipment, materials, finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as herein listed and in Drawings:

1. SUNOPTICS, www.sunoptics.com (800) 289 – 4700, An Acuity Brands Company, www.acuitybrands.com

2. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General: All skylights shall be factory fabricated extruded aluminum framed units, in locations as shown and as detailed on the Contract documents. All skylights shall be designed to carry all tributary roof loads as specified in Building Code (20 psf min.)

B. Sizes: As indicated on the Contract documents and herein specified.

C. Assembly Construction:

1. Skylights shall be factory assembled with glazing ready for installation.
2. Skylight frame shall have integral condensate and weepage gutter which drain interior moisture to outside.
3. Corners shall be mitred and welded.
4. Skylight frames shall be insulated and thermally broken.
5. The acrylic glazing shall be separated from the skylight frame with an EPDM rubber aire seal gasket.

D. Materials:

1. Skylight frame:

a.	Framework:	Extruded aluminum, 6063T5
b.	Aluminum finish:	Mill finish - AA-C22-A41
c.	Gaskets:	Extruded neoprene strips as recommended by skylight manufacturer.
d.	Fasteners:	As recommended by skylight manufacturer.

2. Skylight Glazing:

a. Skylights – typical, u.n.o.

1) Double Hip and/or Pyramid skylights shall be triple-glazed

a) Schedule: Prismatic Acrylic Lenses

i.	Outer:	SR 60 Clear Acrylic
ii.	Middle:	SR 25 UVA White Acrylic
iii.	Inner:	SR 20 Clear Acrylic

b) Properties

i.	Visible light transmittance:	0.63
ii.	SHGC:	0.42
iii.	Winter U-value shall be:	0.62
iv.	Light Diffusion:	100%

3. Sealants: In accordance with Section 07920.

2.3 MATERIALS – SKYLIGHTS SCHEDULE

A. Fixed skylights

1. Model No. 800 MB

a. Profile:

1) Pyramid profile: square size

b. Curb: Fixed curb mounted type
c. Glazing:

1) Refer to Materials heading
2) Structurally Domed by: "Sunoptics"
3) Triple glazed

d. Frame: Insulated Thermal Break
e. Accessories:

1) Safety / Security grill

2. Sizes: (as herein scheduled and indicated on Drawings)

a. Nominal:	Outside curb:	Inside Curb:	Designation:
1) 4′-0″ x 4′-0″	49-1/2″ x 49-1/2″	46-1/2″ x 46-1/2″	4040

2.4 OTHER MATERIALS

A. Provide all miscellaneous fasteners, brackets, supports, connectors and accessory items as indicated on the Contract documents and as required by the product manufacturer for a complete & proper installation of the materials, products, systems specified herein.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Inspect curb framing & roof flashing to assure that installation can proceed in accordance with reviewed shop drawings & Contract documents.

C. Installation to be by the skylight manufacturer or approved authorized representative of the skylight mfg. in strict accordance with reviewed shop drawings & Contract documents.

D. Install perimeter frames on pre-installed walls/curbs using 6" x 3/16" foam rubber gaskets.

1. Cut foam rubber gasket to match width of curb/wall

2. Securely fasten frames to curb by approved mechanical fasteners.

E. Install glazing, gaskets and retaining rings for a complete watertight assembly.

F. After other trades have completed work on adjacent materials, carefully inspect skylight installation and make adjustments necessary to ensure proper installation and weather-tight conditions.

G. Clean all exposed surfaces and materials of adhesives, smear, and stain at completion of installation.

3.5 ADJUSTING

A. Adjust all louvers and other moving parts to operate smoothly, quietly & without binding or jamming.

3.6 COMMISSIONING

A. Provide factory-certified field service engineer to a site visit to ensure proper system installation and operation under following parameters:

1. Skylight louver and photocell operation and integration with building controls.

3.7 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.

2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.8 DEMONSTRATING

A. Provide factory-certified field service engineer to a site visit to instruct user in proper system operation.

3.9 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 08 62 00

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SECTION 08 62 23 – TUBULAR DATLIGHT DEVICES

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein, and as necessary to complete the work required by project conditions including, but not limited to:

1. Tubular daylight devices and accessories.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM), www.astm.org

1.	ASTM A463/A463M	Standard Specification for Steel Sheet, Aluminum Coated, by the Hot Dip Process.
2.	ASTM A653/A653M	Standard Specification for Steel Sheet, Zinc Coated (Galvanized), by the Hot Dip Process.
3.	ASTM A792/A792M	Standard Specification for Steel Sheet, Zinc Coated (Galvanized), by the Hot Dip Process
4.	ASTM B209	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5.	ASTM D635	Test Method for Rate of Burning and/or Extent of Time of Burning of Self-Supporting Plastics in a Horizontal Position.
6.	ASTM D1929	Test Method for Ignition Properties of Plastics.
7.	ASTM D2843	Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics.
8.	ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials
9.	ASTM E108	Standard Test Methods for Fire Tests of Roof Coverings.

10. ASTM E283 — Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
11. ASTM E308 — Standard Practice for Computing the Colors of Objects by Using the CIE System.
12. ASTM E330 — Structural Performance of Exterior Windows, Curtain Walls and Doors.
13. ASTM E547 — Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain walls by Cyclic Air Pressure Difference.
14. ASTM E1886 — Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
15. ASTM E1996 — Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricane.
16. ASTM F1642 — Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loading.
17. ASTM F2912 — Standard Specification for Glazing and Glazing Systems Subject to Airblast Loading.
18. American Architectural Manufacturers Association (AAMA), www.aamanet.org
    a. AAMA/WDMA/CSA 101/I.S.2/A440 - Standard/Specification for Windows, Doors, and Unit Skylights
19. FM Standard 4431 - The Approval Standard for Skylights
20. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes
21. International Code Council (ICC)
    a. ICC 500 - Standard for the Design and Construction of Storm Shelters
22. UL 2108 - Low Voltage Lighting Systems
23. GSA-TS01-2003: Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings
24. Unified Facilities Criteria (UFC) 4-010-01, Change October 2013, DoD Minimum Antiterrorism Standards for Buildings
25. CSA C22.2 No. 250.0 – Luminaires
26. ICC-ES AC-16 - Acceptance Criteria for Plastic Skylights
27. IBC Section 1710 - Load Test Procedure for Wind Load Testing on Rooftop Daylight Collecting System - Structural Performance Testing - Devised by ATI PE)
28. IBC Section 2606.7.2 - Installation - Diffuser Fall Out Test (Devised by PE
29. Occupational Safety and Health Administration (OSHA), United States Department of Labor, www.osha.gov
    a. OSHA 29 CFR - 1910.23 (e)(8) (Guarding Requirements for Skylights); 1926 Subpart M (Fall Protection); 1926.501(b)(4)(i); 1926.501(i)(2); 1926.501(b)(4)(ii)
30. California State OSHA Fall Protection Code of Regulations, Title 8, Section 3212 (e)(1)

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

1. Daylight Reflective Tubes:

   a. Spectralight Infinity with INFRAREDuction Technology combines ultra-high Visible Light reflectance with Ultra-low Infrared (IR) reflectance.
   b. Patented spectrally-selective optical surface yields an average total- and specular-reflectance greater than 99.5 percent for the Visible Light spectrum (400 nm to 700 nm) providing maximized visible light transmission and less than 25 percent reflectance for Infrared (IR) heat wavelengths (750 nm to 2500 nm) for minimized heat transmission, resulting in a spectrally-selective Total Solar Spectrum (250 nm to 2500 nm) reflectance less than 37 percent, as measured using a Perkin Elmer Lambda 1050 spectrophotometer with a Universal Reflectance Accessory.
   c. Color: a* and b* (defined by CIE L*a*b* color model) shall not exceed plus 2 or be less than minus 2 as determined in accordance to ASTM E 308.

2. Performance Requirements:

Item	**Name of Test**	**Performance**	**Testing Std.**
SolaMaster 750 DS-C (Closed Ceiling) and SolaMaster 750 DS-O (Open Ceiling)	-	Class CW-PG70, 21" dia.: Type TTDDCC Type TDDOC	AAMA/WDMA/CSA 101/IS2/A440
	Air Infiltration Test:	Air infiltration will not exceed 0.30 cfm/sf aperture with a pressure delta of 1.57 psf across the tube when tested in accordance with ASTM E 283.	ASTM E 283
	Water Resistance Test:	Passes water resistance; no uncontrolled water leakage with a pressure differential of 10.7 psf (512 Pa) or 15 percent of the design load (whichever is greater) and a water spray rate of 5 gallons/hour/sf for 24 minutes.	ASTM E 547 ASTM E331

	Uniform Load Test	All units tested with a safety factor of (3) for positive pressure and (2) for negative pressure, acting normal to plane of roof.	ASTM E 330
		No breakage, permanent damage to fasteners, hardware parts, or damage to make daylighting system inoperable or cause excessive permanent deflection of any section when tested at a Positive Load of 150 psf (7.18 kPa) or Negative Load of 70 psf (3.35 kPa).	
	Fall Protection Performance	Passes fall protection test: No penetration of dome or curb cap when subject to 400 lb (160 Kg)/42 inch (1066 mm) impact drop test	OSHA 29 CFR 1926.506(c) Safety Net Systems
		Passes fall protection test	California State OSHA Fall Protection Code of Regulations, Title 8, Section 3212 (e)(1) Skylight Screens
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit:

1. Manufacturer Product & Technical Data
2. Manufacturer Installation Instructions
3. Shop Drawings:
    a. Schedule of all skylights with designations to match the Drawings
    b. Solatube layout: Reflected Ceiling Plan, Roof Plan, and Sections including rough opening and framing dimensions

c. Details showing product components, anchorage, flashing, and accessories.

E. Certifications:

1. Manufacturer Approved/Trained/Certified Installer/Applicator

F. Test Reports:

1. Independent testing agency or evaluation service reports verifying compliance with specified performance requirements.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor /Installer/Fabricator shall have been in business for **fifteen (15) years** providing/installing/finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **twenty (20) years** manufacturing tubular daylighting devices.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to:

a. Roof Framing
b. Roof Curbs
c. Roofing
d. Ceiling

2. **General Contractor** shall request meeting 5 days in advance of construction.

F. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures and operation at project closeout.

1. Provide complete calibration of all motorized operations including but not limited to photo cells, wiring, line and/or low voltage control and monitoring system.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver products in manufacturer's original containers, dry, undamaged, seals and labels intact.

C. Store products in manufacturer's unopened packaging until ready for installation.

1.7 JOB CONDITIONS

A. Field verify that all roof openings, roofing, components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1) year** written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **ten (10)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Roof construction / framing / substrate
2. Roof curbs
3. Suspended acoustical ceilings

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 05 12 00 – Structural Steel Framing
3. Section 06 10 00 – Rough Carpentry
4. Section 07 41 13 – Metal Roof Panels
5. Section 07 54 00tpo – Thermoplastic Polyolefin (TPO) Membrane Roofing
6. Section 07 62 00 – Sheet Metal Flashing and Trim
7. Section 07 9 2 00 – Sealants and Caulking
8. Section 09 51 00 – Acoustical Ceiling Suspension System and Tile

1.11 OPERATION AND MAINTENANCE DATA

A. Refer to Division 1 for closeout submittal procedures.

B. Submit as part of project closeout:

1. Complete instructions regarding operation of the equipment.
2. Complete instructions regarding maintenance of the equipment, materials, finishes, etc.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as herein listed and in Drawings:

1. Solatube, www.solatube.com
2. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.

b. Refer to Division 1 for substitution, deviation and/or submittal procedures.

c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General: Transparent roof-mounted skylight dome and self-flashing curb, reflective tube, and ceiling level diffuser assembly, transferring sunlight to interior spaces; complying with ICC AC-16.

B. Tubular Daylight Device Assembly:

1. Manufacturer: Solatube
2. Series: SolaMaster
3. Model:

a. 750 DS-O Open Ceiling

1) AAMA Type TDDOC

2) 21″ diameter

4. Capture Zone:
   a. Roof Dome Assembly: Transparent, UV and impact resistant dome with flashing base supporting dome and top of tube.
      1) Outer Dome Glazing
         a) Type DA, 0.125 inch (3.2 mm) minimum thickness injection molded acrylic classified as CC2 material; UV inhibiting (100 percent UV C, 100 percent UV B and 98.5 percent UV A), impact modified acrylic blend.
            i. Raybender 3000: Variable prism optic molded into outer dome to capture low angle sunlight and limit high angle sunlight.
      2) Tube Ring: 0.090 inch (2.3 mm) nominal thickness injection molded high impact PVC. Prevents thermal bridging between base flashing and tubing and channel condensed moisture. Attached to base of dome ring with butyl glazing rope 0.24 inch (6 mm) diameter; to minimize air infiltration.
      3) Dome Seal: Adhesive backed weatherstrip, 0.63 inch (16 mm) tall by 0.28 inch (7 mm) wide.
5. Dome Options:
   a. Dome Edge Protection Band for Curb Cap: Type PBC, for fire rated Class A, B or C roof applications with 750 DS Domes on Curb Cap Flashing installations. Galvanized steel. Nominal thickness of 0.039 inch (1 mm). For use with Curb Cap Flashing (Type FC), only.
6. Flashings:
   a. Roof Flashing Base:
      1) Two Piece: Two-piece, inverted flange Metal Roof Flashing for Standing Seam Rib roof profile with greater than 14-3/8 inch (365 mm) minimum distance between ribs permitting a required greater than 2 inch (51 mm) clearance between flashing and rib: Type FSM. Aluminum 1060 Alloy, corrosion resistant conforming to ASTM B 209, 0.059 inch (1.5 mm) thick.
   b. Flashing Options: **[Specifier: following flashing components are optional. Select those required and delete those not required. Flashing insulator is intended to seal the roof opening and prevent condensation forming on the flashing interior from exposure to humid air in unventilated spaces. Note Curb Cap Insulation (CCI) is required for applications requiring FEMA P-361 and ICC 500 Compliance.]**
      1) Flashing Insulator: Type FI, Thermal isolation material for use under flashing.
      2) Curb Insulator: Curb Insulator, Type CI, Thermal isolation. **[Specifier: For use with Flashing Type FC.]**
      3) Curb Cap Insulation: Type CCI, Nominal 1-inch thick thermal insulation pad to reduce thermal conduction between curb-cap and tubing and thermal convection between

room air and curb-cap. Rated R-6 ($^{O}Fxft^{2}xhr/Btu$) Insulation is Polyisocyanurate foam utilizing CFC, HCFC, and HFC free blowing agent. Type-1 Class-1 per ASTM C 1289; Passes UL 1715 (15-minute thermal barrier per IBC 2603.4); Attic ventilation may be required per IBC 1203.2($^{O}Fxft^{2}xhr/Btu$). **[Specifier: For use with Flashing Type FC.]**

4) Roof Flashing Turret Extensions: Provide manufacturer's standard extension tubes for applications as required: **[Specifier: The following turret extension components are optional. Select those required and delete those not required. If more than one size is required indicate locations on the Drawings. Roof Flashing Turret Extension are used to raise the height of the dome above roof level. This extends the height of the turret found on the curb cap or self-flashing. Must order additional tubing to include the added height of turret.]**

a) Type T12: Additional lengths of 12 inches (305 mm) extension

b) Type T24: Additional lengths of 24 inches (610 mm) extension

c) Type T36: Additional lengths of 36 inches (914 mm) extension

d) Type T48: Additional lengths of 48 inches (1219 mm) extension

5) Membrane Counter Flashing: Type MCF, one piece, seamless, spun Aluminum Alloy 1100, functioning as a counter flashing for use with F8 or F11 Flashings, only, when applied to membrane roofs. Corrosion resistant conforming to ASTM B 209, 0.059 inch (1.5 mm) thick. **[Specifier: Select for use with Self Mounted flashing Types F8 or F11; delete if not applicable.]**

7. Transfer Zone:

a. Extension Tubes: Aluminum sheet, thickness 0.018 inch (0.5 mm) conforming to ASTM B 209.

1) Reflective Tubes.

a) Reflective extension tube, Type EXX and Type EL with total length of run as indicated on the Drawings.

b) Interior Finish: Spectralight Infinity with INFRAREDuction Technology combining ultra-high Visible Light reflectance with Ultra-low Infrared (IR) reflectance.

2) Tube Options: **[Specifier: Select the following optional Extension Tube and Angle Adapters as required. Delete options not required. Note that at least one 24 inch extension tube is required for diffuser.]**

a) Extension Tube Angle Adapter: Provide manufacturer's standard adapters for applications requiring:

i. Type A1 one 0 to 90 degree extension tube angle adapter.

ii. Type A2 two 0 to 90 degree extension tube angle adapters.

b) Top Tube Angle Adapter, Type TA: Reflective 45 degree adjustable Top Tube Angle Adapter, 16 inches (406 mm) long.

c) Thermal Insulation Panel: Type TIP, high-performance dual-glazed, thermally-broken tube insulation system.

d) Open ceiling trim ring: Type R, ABS Plastic, White; nominal thickness of 0.04 inch (1 mm).

8. Delivery Zone:

a. Diffuser Assemblies for Tubes Not Penetrating Ceilings (Open Ceiling): Solatube Model 750 DS-O. 21 inch (530 mm) diameter diffuser attached directly to bottom of tube.

1) Lens: Type L1, OptiView Fresnel lens design to maximize light output and diffusion. Visible Light Transmission shall be greater than 90 percent at 0.022 inch (0.5 mm) thick. Classified as CC2.

2) Diffuser Seal: Open cell foam, acrylic adhesive backed, 0.75 in (19 mm) wide by 0.125 in (3.2 mm) thick to minimize condensation and bug, dirt and air infiltration per ASTM E 283.

3) Diffuser Trim Ring: Injection molded acrylic. Nominal wall thickness 0.172 inches (4.4 mm).

2.3 ACCESSORIES

A. Fasteners: Same material as metals being fastened, non-magnetic steel, non-corrosive metal of type recommended by manufacturer, or injection molded nylon.

B. Suspension Wire: Steel, annealed, galvanized finish, size and type for application and ceiling system requirement.

C. Sealant: Polyurethane or copolymer based elastomeric sealant as provided or recommended by manufacturer.

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Verify that substrate conditions have no defects or errors which would result in poor or potentially defective application or cause latent defects in workmanship.
3. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
4. Do not proceed with work until unsatisfactory conditions are corrected.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Clean surfaces thoroughly prior to installation.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
2. Coordinate installation with substrates, air and vapor retarders, roof insulation, roofing membrane, and flashing to ensure that each element of the Work performs properly and that finished installation is weather tight.
3. Install flashing to produce weatherproof seal with curb and overlap with roofing system termination at top of curb.
4. Provide thermal isolation when components penetrate or disrupt building insulation. Pack fibrous insulation in rough opening to maintain continuity of thermal barriers.
5. Coordinate attachment and seal of perimeter air and vapor barrier material.
6. Install required tubular shaft transition components to engage skylight at roof down to lens at ceiling.
7. Where metal surfaces of tubular unit skylights will contact incompatible metal or corrosive substrates, including preservative-treated wood, provide permanent separation as recommended by manufacturer
8. Align device free of warp or twist, maintain dimensional tolerances
9. After installation of first unit, field test to determine adequacy of installation. Conduct water test in presence of Owner, Architect, or Contractor, or their designated representative. Correct if needed before proceeding with installation of subsequent units.
10. Inspect installation to verify secure and proper mounting. Test each fixture to verify operation, control functions, and performance. Correct deficiencies.
11. After other trades have completed work on adjacent materials, carefully inspect solotube installation and make adjustments necessary to ensure proper installation and weather-tight conditions.
12. Clean exposed surfaces according to manufacturer's written instructions. Touch up damaged metal coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

3.5 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Installer shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

E. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

F. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

G. After completion of work in this section, remove all erection equipment and implements of service, and debris; leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 08 62 23

SECTION 08 71 00 – DOOR HARDWARE

PART 1 - **GENERAL**

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions of Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following, but is not necessarily limited to:

1. Door Hardware, including electric hardware.
2. Storefront and Entrance door hardware.
3. Gate Hardware.
4. Digital keypad access control devices.
5. Power supplies for electric hardware.
6. Thresholds, gasketing and weather-stripping.
7. Door silencers or mutes.

C. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.

1. Division 8: Section - Steel Doors and Frames.
2. Division 8: Section - Wood Doors.
3. Division 8: Section - Aluminum Storefront
4. Division 28: Section - Fire/Life-Safety Systems & Security Access Systems.

1.3 REFERENCES (USE DATE OF STANDARD IN EFFECT AS OF BID DATE.)

A. 2022 California Building Code, CCR, Title 24.

B. BHMA – Builders' Hardware Manufacturers Association

C. CCR – California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.

D. DHI – Door and Hardware Institute

D. NFPA - National Fire Protection Association.

1. NFPA 80 - Fire Doors and Other Opening Protectives
2. NFPA 105 - Smoke and Draft Control Door Assemblies

E. UL - Underwriters Laboratories.

1. UL 10C - Fire Tests of Door Assemblies

2. UL 305 - Panic Hardware

F. WHI - Warnock Hersey Incorporated

G. SDI - Steel Door Institute

1.4 SUBMITTALS & SUBSTITUTIONS

A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.

B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Submit six (6) copies of schedule organized vertically into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Include a Cover Sheet with;

a. Job Name, location, telephone number.
b. Architects name, location and telephone number.
c. Contractors name, location, telephone number and job number.
d. Suppliers name, location, telephone number and job number.
e. Hardware consultant's name, location and telephone number.

2. Job Index information included;

a. Numerical door number index including; door number, hardware heading number and page number.
b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
c. Manufacturers' names and abbreviations for all materials.
d. Explanation of abbreviations, symbols, and codes used in the schedule.
e. Mounting locations for hardware.
f. Clarification statements or questions.
g. Catalog cuts and manufacturer’s technical data and instructions.

3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number – HW -1)						
			(a) 1 Single Door #1 - Exterior from Corridor 101	(b) 90°		(c) RH
			(d) 3' 0"x7' 0" x 1-3/4" x (e) 20 Minute (f) WD x HM			

(g) 1	(h)	(i) ea		(j) Hinges - (k) 5BB1HW 4.5 x 4.5 NRP (l) ½ TMS	(m) 626		(n) IVE
2	6AA	1 ea		Lockset - ND50PD x RHO x RH x 10-025 x JTMS	626		SCH

(a) - Single or pair with opening number and location. (b) - Degree of opening (c) - Hand of door(s) (d) - Door and frame dimensions and door thickness. (e) - Label requirements if any. (f) - Door by frame material. (g) - (Optional) Hardware item line #. (h) - Keyset Symbol. (i) - Quantity. (j) - Product description. (k) - Product Number. (l) - Fastenings and other pertinent information. (m) - Hardware finish codes per ANSI A156.18. (n) - Manufacture abbreviation.

D. Make substitution requests in accordance with Division 1. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.

E. Wiring Diagrams: Provide product data and wiring and riser diagrams for all electrical products listed in the Hardware Schedule portion of this section.

F. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

G. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

H. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.

I. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.

1.5 QUALITY ASSURANCE

A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

1. Responsible for detailing, scheduling and ordering of finish hardware.
2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing. To maintain the integrity of patented key systems provide a letter of authorization from the

specified manufacturer indicating that supplier has authorization to purchase the key system directly from the manufacturer.

3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.

C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.

D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.

1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

1.6 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.

B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.

C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.

D. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.

1.7 WARRANTY

A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:

1. Locksets: "ND" Ten (10) years.
2. Electronic: One (1) year.
3. Closers: Thirty (30) years
4. Auto Operators: Two (2 years)
4. All other hardware: Two (2) years.

1.8 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.9 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference at least one week prior to beginning work of this section.

B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key Owner Personnel, and Project Inspector.

C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review Owner's keying standards.

PART 2 - **PRODUCTS**

2.1 MANUFACTURERS

Item	Manufacturer	Acceptable Substitutes
Hinges	Ives	Hager, Stanley, McKinney
Locks, Latches & Cylinders	Schlage	Or Approved Equal
Exit Devices	Von Duprin	Or Approved Equal
Closers	LCN	Or Approved Equal
Push, Pulls & Protection Plates	Ives	Trimco, BBW, DCI
Flush Bolts	Ives	Trimco, BBW, DCI
Dust Proof Strikes	Ives	Trimco, BBW, DCI
Coordinators	Ives	Trimco, BBW, DCI
Stops	Ives	Trimco, BBW, DCI
Overhead Stops	Glynn-Johnson	Or Approved Equal
Thresholds	Zero	Pemko, National Guard
Seals & Bottoms	Zero	Pemko, National Guard

2.2 MATERIALS

A. Hinges: Exterior out-swinging door butts shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.

1. Hinges shall be sized in accordance with the following:

a. Height:

1) Doors up to 42" wide: 4-1/2" inches.
2) Doors 43" to 48" wide: 5 inches.

b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
c. Number of Hinges: Furnish 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.

2. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.

B. Continuous Hinges: As manufactured by Ives, an Allegion Company. UL rated as required.

C. Schlage "L" Series as scheduled with "06" Style Lever and "A" Style Rose.

1. Locksets to comply with ANSI A156.13, Series 1000, Operational Grade 1 and Security Grade 1 with all standard trims. Locksets shall also comply with UL10C Positive Pressure requirements
2. Lock case shall be manufactured with heavy 12 gauge steel with fully wrapped design. Lock cases with exposed edges are not acceptable. Lock case shall be multi-functional allowing transformation to a different function without opening lock case.
3. Latchbolt shall have ¾" throw and be non-handed, field reversible without opening the lock case. Solid latchbolts and / or plastic anti-friction devices are not acceptable.
4. The deadbolt, when used, shall be 1" throw stainless steel with a ¾" internal engagement when fully extended.
5. All trim shall be through-bolted with the spring cages supporting the trim attached to the lock cases to prevent torqueing.
6. Levers to have independent rotation in both directions. Exterior lever assembly to be one-piece design attached by threaded bushing. Interior lever assembly shall be attached by screwless shank
7. Thru-bolt lever assemblies through the door for positive interlock. Locks using a through the door spindle for attachment are not acceptable. Spindles shall be independent, designed to "break-away" at a maximum of 75psi torque.
8. Hand of lock chassis to be changeable by simply moving one screw from one side to the case to the other and pulling and reversing the latchbolt.
9. Cylinders to be secured by a cast stainless steel, dual retainer. Locks utilizing screws and / or stamped retainers are not acceptable.

D. Exit devices: Von Duprin as scheduled.

1. Provide certificate by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 2001 standards.
2. All internal parts shall be of cold-rolled steel with zinc dichromate coating.
3. Mechanism case shall have an average thickness of .140".
4. Compression spring engineering.
5. Non-handed basic device design with center case interchangeable with all functions.
6. All devices shall have quiet return fluid dampeners.
7. All latchbolts shall be deadlocking with ¾" throw and have a self-lubricating coating to reduce friction and wear.
8. Device shall bear UL label for fire and or panic as may be required.
9. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.

10. Lever Trim: "Breakaway" design, forged brass or bronze escutcheon with a minimum of .130" thickness, match lockset lever design.
11. Removable Mullions: Removable with single turn of building key. Securely reinstalled without need for key.
12. Furnish glass bead kits for vision lites where required.
13. All Exit Devices to be sex-bolted to the doors.
14. Panic Hardware shall comply with CBC Section 11B.404.2.7 and shall be mounted between 34" and 44" above the finished floor surface.

    a. The unlatching force shall not exceed 5 lbs. applied in the direction of travel.

E. Closers: LCN as scheduled. Place closers inside building, stairs, room, etc.

1. Door closer cylinders shall be of high strength cast iron construction with double heat treated pinion shaft to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.
2. All door closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16 inch and piston diameter of 1 inch to ensure longevity and durability under all closer applications.
3. All parallel arm closers shall incorporate one piece solid forged steel arms with bronze bushings. 1-9/16" steel stud shoulder bolts, shall be incorporated in regular arms, hold-open arms, arms with hold open and stop built in. All other closers to have forged steel main arms for strength, durability, and aesthetics for versatility of trim accommodation, high strength and long life.
4. All parallel arm closers so detailed shall provide advanced backcheck for doors subject to severe abuse or extreme wind conditions. This advanced backcheck shall be located to begin cushioning the opening swing of the door at approximately 45 degrees. The intensity of the backcheck shall be fully adjustable by tamper resistant non-critical screw valve.
5. Closers shall be installed to permit doors to swing 180 degrees.
6. All closers shall utilize a stable fluid withstanding temperature range of 120 degrees F. to -30 degrees F. without requiring seasonal adjustment of closer speed to properly close the door.
7. Provide the manufactures drop plates, brackets and spacers as required at narrow head rails and special frame conditions. NO wood plates or spacers will be allowed.
8. Maximum effort to operate closers shall not exceed 5 lbs., such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the closer may be increased but shall not exceed 15 lbs. when specifically approved by fire marshal. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. Per 11B-404.2.8.1, door shall take at least 5 seconds to move from an open position of 90 degrees to a position of 12 degrees from the latch jamb.

F. Flush Bolts & Dust Proof Strikes: Automatic Flush Bolts shall be of the low operating force design. Utilize the top bolt only model for interior doors where applicable and as permitted by testing procedures.

1. Manual flush bolts only permitted on storage or mechanical openings as scheduled.
2. Provide dust proof strikes at openings using bottom bolts.

G. Door Stops:

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (CBC Section 11B-307).
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

H. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10" high and 2" LDW. Sizes of armor and mop plates shall be listed in the Hardware Schedule. Furnish with machine or wood screws of bronze or stainless to match other hardware.

I. Thresholds: As Scheduled and per details.

1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope.
2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 “Thermal and Moisture Protection”.
3. Use ¼” fasteners, red-head flat-head sleeve anchors (SS/FHSL).
4. Thresholds shall comply with CBC Section 11B-404.2.5.

J. Seals: Provide silicone gasket at all rated and exterior doors.

1. Fire-rated Doors, Resilient Seals: UL10C Classified complies with NFPA 80 & NFPA 252. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements.
2. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C Classified complies with NFPA 80 & NFPA 252. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.
3. Smoke & Draft Control Doors, Provide UL10C Classified complies with NFPA 80 & NFPA 252 for use on “S” labeled Positive Pressure door assemblies.

K. Door Shoes & Door Top Caps: Provide door shoes at all exterior wood doors and top caps at all exterior out-swing doors.

L. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.3 KEYING

A. Furnish a Proprietary Schlage masterkey system as directed by the owner or architect. Key system to be designated and combinated by the Schlage Master Key Department even if pinned by the Authorized Key Center, Authorized Security Center or a local authorized commercial dealer.

B. A detailed keying schedule is to be prepared by the owner and/or architect in consultation with a representative of Allegion or an Authorized Key Center or Authorized Security Center. Each keyed

cylinder on every keyed lock is to be listed separately showing the door #, key group (in BHMA terminology), cylinder type, finish and location on the door.

C. Extend the original Schlage masterkey system established for the project

D. Furnish all cylinders in the Full Size Interchangeable Core (FSIC). Pack change keys independently (PKI).

E. Furnish construction keying for doors requiring locking during construction.

F. Furnish all keys with visual key control.

1. Stamp key “Do Not Duplicate”.
2. Stamp (BHMA) key symbol on key.

G. Furnish all cylinders with visual key control.

1. Stamp (BHMA) key symbol on face of cylinder plug (VKC).

H. Furnish mechanical keys as follows:

1. Furnish 2 cut change keys for each different change key code.
2. Furnish 1 uncut key blank for each change key code.
3. Furnish 6 cut masterkeys for each different masterkey set.
3. Furnish 3 uncut key blanks for each masterkey set.
4. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
5. Furnish 1 cut control key cut to each SKD combination.

I. Furnish Schlage Padlocks and the cylinders to tie them into the masterkey system for gates, storage boxes, utility valve security, roof hatches and roll-up doors keyed as directed in the keying schedule.

1. Furnish KS43D2200 padlock for use with non-I/C Schlage cylinders. Furnish 47-413 (conventional) or 47-743-XP (PrimusXP) with above.
2. Furnish KS43G3200 padlock for use with FSIC Schlage cylinders. Furnish 23-030 (Classic / Everest) or 20-740 (PrimusXP) with above.
3. Furnish KS41D1200 padlock for use with SFIC Schlage cylinders. Furnish 80-037 (Everest-B) with above.

J. Furnish one Schlage cabinet lock for each cabinet door or drawer so designated on the drawings or keying schedule to match the masterkey system.

1. Furnish CL100PB for use with non-I/C Schlage cylinders.
2. Furnish CL77R for use with FSIC Schlage cylinders.
3. Furnish CL721G for use with SFIC Schlage cylinders.

2.4 FINISHES

A. Generally to be satin chrome US26D (626 on bronze and 652 on steel) unless otherwise noted.

B. Furnish push plates, pull plates and kick or armor plates in satin stainless steel US32D (630) unless otherwise noted.

C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.

D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.5 FASTENERS

A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.

B. Screws for butt hinges shall be flathead, countersunk, full-thread type.

C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.

D. Provide expansion anchors for attaching hardware items to concrete or masonry.

E. All exposed fasteners shall have a phillips head.

F. Finish of exposed screws to match surface finish of hardware or other adjacent work.

G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - **EXECUTION**

3.1 INSPECTION

A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.

B. Beginning of installation means acceptance of existing conditions.

C. Fire-Rated Door Assembly Inspection: Upon completion of the installation, all fire door assemblies shall be inspected to confirm proper operation of the closing device and latching device and that only the manufacturer's furnished fasteners are used for installation and that it meets all criteria of a fire door assembly per NFPA 80 (Standard for Fire Doors and Other Opening Protectives) 2013 Edition. A written record shall be maintained and transmitted to the Owner to be made available to the Authority Having Jurisdiction (AHJ). The inspection of the swinging fire doors shall be performed by a certified FDAI (Fire Door Assembly Inspector) with knowledge and understanding of the operating components of the type of door being subjected to the inspection. The record shall list each fire door assembly throughout the project and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.2 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.

B. Use the templates provided by hardware item manufacturer.

C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 34" and 44" AFF.

D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Set thresholds for exterior doors in full bed of butyl-rubber sealant.

G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

H. Hardware Installer shall coordinate with security contractor to route cable to connect electrified locks, panic hardware and fire exit hardware to power transfers or electric hinges at the time these items are installed so as to avoid disassembly and reinstallation of hardware.

I. Hardware Installer shall also be present with the security contractor when the power is turned on for the testing of the electronic hardware applications. Installer shall make adjustments to solenoids, latches, vertical rods and closers to insure proper and secure operation.

J. All wiring for electro-mechanical hardware mounted on the door shall be connected through the power transfer and terminated in the interface junction box specified for in the Electrical Section.

K. Conductors shall be minimum 18 gage stranded, multicolored. A minimum 12 in. loop of conductors shall be coiled in the interface junction box. Each conductor shall be permanently marked with its function.

L. If a power supply is specified in the hardware sets, all conductors shall be terminated in the power supply. Make all connections required for proper operation between the power supply and the electro-mechanical hardware. Provide the proper size conductors as specified in the manufacturer’s technical documentation.

3.3 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Clean adjacent surface soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.

E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or

installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.4 HARDWARE LOCATIONS

A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.5 FIELD QUALITY CONTROL

A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.6 SCHEDULE

A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.

C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Abbreviation	Name
GLY	Glynn-Johnson Corp
IVE	H.B. Ives
LCN	LCN Commercial Division
SCH	Schlage Lock Company
VON	Von Duprin
ZER	Zero International Inc

GROUP NO. 01

1	EA	CONT. HINGE	112XY TWP	628	IVE
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-98-NL-OP-110MD	626	VON
1	EA	LONG DOOR PULL	9264F 36" 20" O	630	IVE
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	SET	SEAL SET	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 02

1	EA	CONT. HINGE	700 TW8	630	IVE
1	EA	ELEC FIRE EXIT HARDWARE	RX-PA-AX-98-L-F-M996-06-FSE	626	VON
1	EA	RIM CYLINDER	20-057	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 03

1	EA	CONT. HINGE	700 TW8	630	IVE
1	EA	ELEC PANIC HARDWARE	RX-PA-AX-98-L-M996-06-FSE	626	VON
1	EA	RIM CYLINDER	20-057	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 04

1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PANIC HARDWARE	PA-AX-98-EO	626	VON
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	SET	SEAL SET	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER

GROUP NO. 05

4	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	PA-AX-98-L-NL-06	626	VON
1	EA	RIM CYLINDER	20-057	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER

GROUP NO. 06

1	EA	CONT. HINGE	700 TW8	630	IVE
1	EA	EU MORTISE LOCK	L9092REU 06A RX CON 12/24 VDC	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 07

4	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	L9080R 06A	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER

GROUP NO. 08

2	EA	CONT. HINGE	112XY EPT	628	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-9849-EO-LBL	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-9849-NL-OP-110MD-LBL	626	VON
1	EA	RIM CYLINDER	20-057	626	SCH
2	EA	LONG DOOR PULL	9264F 36" 20" O	630	IVE
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	SET	SEAL SET	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 09

1	EA	CONT. HINGE	112XY TWP	628	IVE
1	EA	EU STOREROOM LOCK	ND80RDEU RHO RX CON 12V/24V DC	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	FLOOR STOP	FS439	682	IVE
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 10

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	EU STOREROOM LOCK	ND80RDEU RHO RX CON 12V/24V DC	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	FLOOR STOP	FS439	682	IVE
1	EA	GASKETING	188SBK OR BY AL FRAME MFR	BK	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 11

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	EU STOREROOM LOCK	ND80RDEU RHO RX CON 12V/24V DC	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	FLOOR STOP	FS439	682	IVE
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 12

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50RD RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	FLOOR STOP	FS439	682	IVE
1	EA	GASKETING	188SBK OR BY AL FRAME MFR	BK	ZER

GROUP NO. 13

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50RD RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	GASKETING	188SBK OR BY AL FRAME MFR	BK	ZER

GROUP NO. 14

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50RD RHO	626	SCH
1	EA	FLOOR STOP	FS439	682	IVE

GROUP NO. 15

4	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	FLOOR STOP	FS439	682	IVE

GROUP NO. 16

4	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401/402CVX	626	IVE

GROUP NO. 17

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ND80RD RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE

GROUP NO. 18

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ND80RD RHO	626	SCH
1	EA	FLOOR STOP	FS439	682	IVE

GROUP NO. 19

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	ND40S RHO OS-OCC	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	WALL STOP	WS401/402CVX	626	IVE

GROUP NO. 20

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MANUAL FLUSH BOLT	FB358	626	IVE
1	EA	STOREROOM LOCK	ND80RD RHO	626	SCH
2	EA	OH STOP	450S	630	GLY

END OF SECTION 08 71 00

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SECTION 08 81 00 – GLASS AND GLAZING

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Glass and glazing.
    a. Vision
2. Mirrors
3. Glazing Accessories

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:
    a. All occupancy types.

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Architectural Manufacturers Association (AAMA), www.aamanet.org

1. AAMA – "Metal Curtain Wall, Window Storefront and Entrance Guide Specifications Manual"

E. American National Standards Institute (ANSI), www.ansi.org

F. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM C1036 Flat Glass
2. ASTM C1048 Heat-Treated Flat Glass – Kind HS, Kind FT Coated and Uncoated Glass
3. ASTM E119 Fire Tests of Building Construction and Materials
    a. Fire barriers over 25% of wall area
4. ASTM E283 Rate of Airflow Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen
5. ASTM E330 Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference
6. ASTM E331 Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference

7. ASTM E774 Sealed Insulating Glass Units
8. ASTM E2010 Positive Pressure Fire Tests of Window Assemblies.
9. ASTM E2074 Fire Tests of Door Assemblies, including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies

G. Glass Association of North America (GANA), www.glasswebsite.com

H. Flat Glass Marketing Association, "Glazing Manual", most current adopted edition.

I. National Fenestration Rating Council, NFRC, www.nfrc.com

J. National Glass Association (NGA), www.glass.org

K. Window and Door Manufacturers Association, (WDMA), www.wdma.org

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Safety Glazing	Human Impact Loads	Comply	CBC 2406
	Identification		CBC Section 2406.3
	Hazardous Locations		CBC Section 2406.4
Glazing	General	Comply	CBC Section 2401
	Definitions		CBC Section 2402
	General Requirements		CBC Section 2403
	Wind, Snow, Seismic and Dead Loads on glass		CBC Section 2404
Mirrors	Human Impact Loads	Comply	CBC Section 2406
	Identification		CBC Section 2406.3
	Hazardous Locations		CBC Section 2406.4
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing**:

Item	**Name of Test**	**Performance Results**	**Testing Std.**
Framed glazing system	Hose stream test	Comply	Refer to specific window section

E. **Construction Monitoring/Observations by others**:

Item	**Name of Test**	**Performance Results**	**By Whom**
Window system installation	Periodic observation by window mfgr.	Comply	Refer specific window system section

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Schedule of all glass types with all listed performance criteria

a. Technical data substantiating compliance with these specifications.

2. Submit technical data for all sealants and other materials use in completing the work in this section.

E. Submit samples:

1. Five (5) 6" square samples for each required glass and construction type.

F. Certification:

1. Safety rating of glass
2. Fire ratings of glass
3. Technical values of glass

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid.

E. Stipulations:

1. Glazing in fired rated assemblies shall be labeled for the required fire protection rating and installed in accordance with their listing.
2. Glazing at tempered required locations and designated locations shall bear appropriate designation on glass

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to:;

a. Frames to receive glazing
b. Glazing types

2. **General Contractor** shall request meeting 5 days in advance of construction.

G. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

H. Miscellaneous criteria:

1. Protect glass from edge damage at all times during handling, and installation.
2. Comply with combined recommendations of glass manufacturer and manufacturer of sealants and other materials used in glazing, except where more stringent requirements are shown or specified.
3. Comply with "Reference Standards" specified above except as shown and specifically recommended otherwise by the manufacturers of the glass and glazing materials.
4. Inspect each piece of glass immediately before installation, and eliminate any, which have observable edge damage or face imperfections.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver glass crated to the jobsite to protect it against scratches, discoloration, breakage, or other damage. Deliver glazing compounds to jobsite in manufacturers factory sealed containers, bearing the brand name. Store materials under cover until their installation.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Do not proceed with installation of liquid sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **five (5)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and

replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Door lites
2. Window Frames

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 08 11 13 – Steel Doors and Frames
3. Section 08 12 16 – Knock Down Aluminum Frames
4. Section 08 14 00 – Wood Doors
5. Section 08 41 00 – Entrances, Window Walls, Storefronts and Curtain Walls

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

1.13 TESTING AGENT

A. Refer to Division 1 for Testing Laboratory service requirements.

B. Refer to specific window frame system specifications.

PART 2 **- PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as listed herein and in Drawings:

1. Glazing:

a. PPG, www.ppg.com,
b. Cardinal Glass Corporation, www.cardinalcorp.com
c. Viracon, www.viracon.com
d. As herein specified

2. Window Films:

a. 3M, 800.480-1704, www.glassscapes.com/3m

3. Fire glazing tapes:

a. Pemko, www.pemko.com

4. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS – GLAZING: INTERIOR VISION GLASS TYPES

A. Monolithic:

1. Application:

a. **Metal Framed Windows**

1) Schedule:

a) Mfgr: PPG www.ppg.com, PPG Glass Configurator
b) Type: Clear Glass (un- coated)
c) Product:
d) Color: Clear
e) Assembly: Single glazing
f) Thickness: 1/4"
g) Performance Data Requirements:

i. Rating: None
ii. Shading Coefficient: Not applicable
iii. U-value: Not applicable

h) Coordinate: Refer to Section(s)

2) Fully tempered safety glass at all locations.

b. **Framed Door Vision Lites**

1) Schedule:
a. Mfgr: PPG
b. Type: Clear laminated Glass (un- coated)
c. Product:
d. Color: Clear
e. Assembly: Laminated glazing
f. Thickness:
g. Performance Data Requirements:

1. Rating: None
2. Shading Coefficient: Not applicable

3. U-value: Not applicable

h. Coordinate: Refer to Section 08 14 00 – Wood Doors

2. Fully tempered safety glass at all locations.

c. **Storefront locations:**

1) Schedule:

a) Manufacturer: PPG , PPG Glass Configurator
b) Type: Clear Glass (un- coated)
c) Product:
d) Color: Clear
e) Performance Data Requirements:

i. Rating: None
ii. Shading Coefficient: Not applicable
iii. U-value: Not applicable

f) Coordinate: Refer to Section 08 41 00

2.3 MATERIALS – GLAZING: EXTERIOR VISION GLASS TYPES

A. Insulated

1. Application:

a. **Storefront Windows**

1) Type: Insulated units
2) Schedule:

a) Thickness:

i. Insulated: 1" overall with 1/2" airspace

b) IG spacer

i. Spacer® from Edgetech unless unit is not available with this spacer

3) Specifications: Refer also to 1.3 PERFORMANCE, TESTING AND INSPECTION

a) Insulated Glazing: (Values for glass unit, not overall window

i. Product:

a. Mfgr: Cardinal, www.cardinalcorp.com
b. Product: LoE^3 366, LoE^2 - 272
c. Color: Clear
d. Coating: Low E
e. Type:

i). Tempered at doors
ii). Fully tempered safety glass at all locations indicated and as required by CBC.

f. Fill: Insulated with Argon Fill
g. Performance:

Product (One lite)	U Factor-winter	Solar Blockage	Visible Light			Solar Heat Gain Coeff.	Shading Coeff.	Fading Transmission		
			Trans	Refl. Ext	Refl Int			UV	TDW-K	TDW
Insulating Glass										
LoE³ - 366 #2	0.24 Argon filled	73%	65%	11%	12%	0.27	0.31	0.05	N/A	0.43
Refer to drawings and as herein specified.										

b. **Storefront Doors**

1) Type: Insulated units
2) Schedule:

a) Thickness:

i. Insulated: 1" overall with ½" airspace

b) IG spacer

i. Spacer® from Edgetech unless unit is not available with this spacer

1) Specifications: Refer also to Performance heading 1.03.

a) Insulated Glazing: (Values for glass unit, not overall window)

i. Product: Match Storefront Windows
ii. Product:

a. Mfgr: Cardinal
b. Product: LoE³ 366, LoE² - 272
c. Color: Clear
d. Coating: Low E
e. Type:

i). Tempered at doors
ii). Fully tempered safety glass at all locations indicated and as required by CBC.
iii). Tempered at all windows and doors

f. Fill: Insulated with Argon Fill
g. Performance:

Product (One lite)	U Factor-winter	Solar Blockage	Visible Light			Solar Heat Gain Coeff.	Shading Coeff.	Fading Transmission		
			Trans	Refl. Ext	Refl Int			UV	TDW-K	TDW
Insulating Glass										
LoE³ - 366 #2	0.24 Argon filled	73%	66%	11%	12%	0.27	0.31	0.05	N/A	0.43
LoE² - 272 #2	0.25	59%	72%	11%	12%	0.41	0.470	0.16	0.33	0.55

c. **Metal Framed Windows**

1) Type: Insulated units
2) Schedule:

a) Thickness:

i. Insulated: 1" overall with ½" airspace

b) IG spacer

i. Spacer® from Edgetech unless unit is not available with this spacer

3) Specifications: Refer also to Performance heading 1.03.

a) Insulated Glazing: (Values for glass unit, not overall window)

i. Product:

a. Mfgr: Cardinal
b. Product: LoE^3 366, LoE^2 - 272
c. Color: Clear
d. Coating: Low E
e. Type:

i). Tempered at doors
ii). Fully tempered safety glass at all locations indicated and as required by CBC.

f. Fill: Insulated with Argon Fill
g. Performance:

Product (One lite)	U Factor-winter	Solar Blockage	Visible Light			Solar Heat Gain Coeff.	Shading Coeff.	Fading Transmission		
			Trans	Refl. Ext	Refl Int			UV	TDW-K	TDW
Insulating Glass										
LoE^3 - 366 #2	0.24 Argon filled	73%	66%	11%	12%	0.27	0.31	0.05	N/A	0.43
LoE^2 - 272 #2	0.25	59%	72%	11%	12%	0.41	0.470	0.16	0.33	0.55
Refer to drawings and as herein specified.										

2.4 MATERIALS – MIRRORS

A. Schedule:

1. Mfgr: Arch Armour, www.archarmour.net 800.432-8132
2. Type: Clear Glass coated
3. Product: Mirror
4. Color: Mirror reflective
5. Performance Data Requirements:

a. Color: Clear
b. Finish: High luster, highly reflective mirror finish

6. Type: Clear float glass
7. Standards: ASTM C1503-01 Std. Spec. for Silvered Flat Glass Mirror
8. Size: Fabricate from mfgr's standard sheet sizes.
9. Assembly:

a. Edges: Square unless noted otherwise on drawings.
b. Butt joints: Square
c. Construction: Install all indicated and required drilled holes, face patterns,

1) beveling, edge grinding, etc.

d. Accessories: Provide appropriate devices to mount/hang mirror to

1) substrate with hidden fasteners.

10. Construction:

a. Assembly: (from exposed side)

1) 1st. Glass
2) 2nd. Tin
3) 3rd. Silver
4) 4th. Copper
5) 5th. Roll Coat
6) 6th. Curtain coat

2.5 MATERIALS - ACCESSORIES

A. Sealant: Refer to Section 07 92 00 – Joint Sealants

B. Compounds:

1. Provide hardness of materials recommended by the manufacturer for the required application and condition of installation in each case.
2. Provide only compounds which are known (proven) to be fully compatible with contact surfaces.

a. Extra care shall be used in the selection and use of structural rated sealant.

C. Setting blocks: Neoprene, 70-90 durometer hardness, with proven compatibility with sealants used.

D. Spacers: Neoprene 40-50 durometer hardness, with proven compatibility with sealants used.

E. Compressible filler rod: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with 5-10 psi compressive strength for 25% deflection. Confirm compatibility with sealants, refer to Section 07 92 00.

F. Cleaners, primers, and sealers: Type recommended by sealant and gasket manufacturer.

G. Glazing gaskets:

1. Use for interior glazing only.
2. Extruded, flexible DuPont Neoprene gaskets of the profile shown.
3. Confirm compatibility with sealant manufacturer.

H. Glazing - Fire tape:

1. Mfgr: Pemko
2. Schedule:

a.	FG3000S45	20minute openings	7/16” x 3/64” thick
b.	FG3000S90	90minute openings	7/16” x 5/64” thick

2.6 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect** or **Owner**.

PART 3 **- EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Preparation for Glazing

1. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings, which are not firmly bonded to the substrate.
2. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer.

C. Glazing

1. Install setting blocks or setting bed of proper size quarter points of sill rabbet. Set blocks or bed material in thin course of the heel-bead compound, if used.
2. Provide spacers inside and out, and of proper size and spacing, for all glass sizes larger than 50 united inches, except where gaskets and pre-shimmed tape are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape. Glass to be 3/16" clear of frame, frame lap to be 5/16" minimum.

3. Voids and filler rods: Prevent exudation of sealant or compound by forming voids or installing filler rods in the channel at the heel of jambs and head (do not leave voids in the sill channels) depending on light size, thickness and type of glass, and complying with manufacturer's recommendations.
4. Do not attempt to cut, seam, or abrade glass, which is tempered, heat strengthened, or coated. Do not nip glass.
5. Force sealants into channel to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.
6. Glazing of interior window frames:
    a. Use pressure or foamed tape and sealant as noted to eliminate rattle and reduce sound transmission.
    b. Coordinate with window frame manufacturer.
7. Tool exposed surfaces of glazing liquids and compounds to provide a substantial "wash" away from the glass. Install pressurized tapes and gaskets to protrude slightly out of the channel, so as to eliminate innate dirt and moisture pockets.
8. Clean and trim excess glazing materials from the glass and stops or frames promptly after installation, and eliminate stains and discolorations.
9. Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gaskets will not "walk" out when subjected to dynamic movement. Anchor gasket to stop with matching ribs, or by proven adhesives, including embedment of gasket tail in cured heel head.

D. Cure

1. Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.7 TESTING

A. Testing shall be done under each specific window frame specification.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Remove and replace glass which is broken, chipped, cracked, and abraded or damaged in other ways during the construction period, including natural causes, accidents and vandalism.

C. Maintain glass in a reasonably clean condition during construction, so that it will not be damaged by corrosive action and will not contribute (by wash-off) to the deterioration of glazing materials and other work.

D. Wash and polish glass on both faces not more than 4 days prior to **Owner's** Beneficial Occupancy Date.

E. Keep areas of work and building free from accumulated debris, rubbish and waste materials as work progresses.

F. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.
2. Remove masking tape immediately after tooling joints, leaving finished work in neat and clean condition.
3. Clean up and leave premise broom clean. Clean adjoining work spotted or otherwise defaced by work of this Section.

G. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

H. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

I. After completion of work in this section, remove all erection equipment and implements of service, and debris. Leave entire area in a neat, clean, acceptable condition.

J. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

K. Provide record drawings in accordance with Division 1 closeout submittal procedures.

L. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END SECTION 08 80 00

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SECTION 09 22 16 – NON-STRUCTURAL METAL FRAMING

PART 1 – **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Metal wall framing – when not included as part of Section 05410

a. Non-load bearing steel wall framing
b. Non-load bearing steel soffit framing
c. Non-load bearing steel ceiling framing
d. Non-load bearing exterior metal soffit framing
e. Miscellaneous metal backing, bridging and metal backing for wall hung items
f. Non-load bearing custom fabricated sheet metal assemblies
g. Non-load bearing prefabricated headers as applicable
h. Non-load bearing metal framing at door frames
i. Non-load bearing metal framing at window frames
j. Insulate inside all built-up headers
k. Painting of all welds
l. Non-load bearing prefabricated metal headers

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

C. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

D. American Institute of Steel Construction (AISC):

1. Manual of Steel Construction, 9th edition

E. American Iron and Steel Institute (AISI)

1. Specifications for the "Design of Cold Formed Steel Structural Members," most current edition.

F. American Society for Testing and Materials (ASTM):

1. ASTM 446 Standard Specification for Nickel Chromium
2. ASTM A525 General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
3. ASTM A553 Standard Specification for Pressure Vessel Plates, Alloy Steel, Quenched and Tempered 8 and 9 Percent Nickel
4. ASTM A570 Standard Specification for Structural Steel, Sheet and Strip, Carbon, Hot-Rolled
5. ASTM A591 Steel sheet, cold-rolled, electrolytic Zinc-Coated.
6. ASTM A653 Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
7. ASTM C754 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
8. ASTM C840 Specification for Application and Finishing of Gypsum Board
9. ASTM C1396 Specification for Gypsum Board

G. American Welding Society (AWS):

1. D.1.3, 1981 Structural Welding Code – Sheet Steel
2. Electrodes for Welding

H. Gypsum Association (GA), except where conflicts with drawing requirements, whereas drawings shall govern.

1. Including, but not limited to:

a. GA-600 Fire Resistive Design Manual

I. International Code Council (ICC)

1. ICC Report No. ESR-1663 Hilti Powder Actuated Fasteners
2. ICC Report No. 4943P Bearing and Non-Bearing Steel Studs, Joists And Tracks

J. Materials and Methods Standards Association (MMSA), www.mmsa.ws

1. MMSA Bulletins 1 – 16

K. Steel Stud Manufacturers Association (SSMA)

1. Standardization brochures, except where conflicts with drawing requirements, whereas drawings shall govern.

a. ICC # ER-4943P
b. Industry Technical Note, Cold formed Steel Construction, Document 3, April 2000 – Track within a Track Deflection Assembly.
c. Industry Technical Note, Cold formed Steel Construction, Document 1, January 2000 – Steel Deflection Track Selection.
d. Industry Technical Note, Cold formed Steel Construction, Document 2, March 2000 – Unsheathed Flange Bracing.
e. Industry Technical Notes, Cold Formed Steel Construction:

1) No.1, January, 2000 – Single Deflection Track Selection.
2) No.2, March 2000 – Unsheathed Flange Bracing
3) No.3, April 2000 – Track Within A Track Deflection Assembly

2. Specifications for the "Design of Cold Formed Steel Structural Members", most current edition.

L. Underwriters Laboratory (UL)

1. Listed UL Design Numbers

M. United States Gypsum Co. (USG Building Systems)

1. Steel framing systems

a. AS-510 Systems folder, except where conflicts with drawing requirements, whereas drawings shall govern.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Walls (Design unless noted in drawings to be more restrictive)	Deflection	Interior: L/240	CBSC
	Wall Loading	Interior: 5 psf	Design
	Wall Type	Interior: • Typical: Flexible • Stone or tile veneer: Brittle	Design
Framing	Tolerance	1/8" in 10'-0" non-accumulative	Design
Ceiling framing – damp – wet & damp areas	Construction	Comply	ICC #ER 4943P
	Spacing	12" o.c. maximum	CBSC/ Design
Studs	Lengths	Full height of wall extent w/o splices	Design
	Gauge Spacing	As indicated in contract documents, but never less than required by stud mfgr. for application requirements	Design and Mfgr. Refer also to listed wall designs
Framing and accessories	Gauge	20 gauge minimum if not listed otherwise.	Design
Metal	Recycled content	35% minimum	
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.

2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Submit typed list of all material and products proposed for use, which shall include manufacturer's published technical literature.
2. Framing components:
    a. Gauges, widths, flange dimensions, etc.
    b. Tracks, runners, backing, etc.
3. Wedge anchor and shot-in anchor capacity to resist lateral and tension loads.
4. Fasteners
5. Welded assemblies
6. Accessories
7. Detailed drawings that explicitly show, indicate and demonstrate all general connection types, profiles and fastening for review and acceptance.
    a. Supplemental strapping, bracing, splices, bridging, accessories, and details required for proper installation.

E. Submit samples.

1. N/A

F. Site mock-up, refer to "Mock-Up" heading.

G. Certification:

1. Stud manufacturers written tables for framing heights, loads, spans, etc
2. Provide Certification for percentage of total and post-consumer recycled content.
3. ICC and other applicable reports.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

D. Stipulations:

1. At proprietary assemblies use specified and tested manufacturer and specific products, including but not limited to the gypsum board, fastening, etc.
2. Framing shall be installed and finished by persons regularly engaged in this type of work.

a. Supervision:

1) Provide the services of a qualified and experienced superintendent who shall constantly be in charge of the work of this section and who shall remain at the site at all times that work is in progress.
2) He shall direct all work performed under this Section.

b. Qualifications for workmen:

1) Provide persons at all times during execution of this portion of the work who are thoroughly familiar with the type of materials being installed and the best methods for their installation.

c. Damp and wet locations:

1) Framing shall not exceed 12" o.c.

d. Assemblies:

1) Wall system shall provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperatures.
2) Wall system shall accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

3. Welders: Qualified for welding in horizontal, vertical, and overhead positions in accordance with AWS D1.3.
4. Perform work in accordance with, but not limited to:

a. Gypsum Association GA-203
b. ASTM C754.
c. SSMA, Steel Stud Manufacturer's Association, ICC ER-4943P Technical Manual or most current edition
d. Contract Documents and Details
e. ANSI/ASTM A591 - Steel sheet, cold-rolled, electrolytic Zinc-Coated.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include, but not be limited to:

1. Building expansion joints
2. Skin system
3. Wall openings
4. Specialty framing
5. Damp area ceiling framing

F. Miscellaneous Criteria:

1. Inspections

a. As directed **Owner's** testing agency may inspect the maintenance of a quality control program including spot checking welds and welding procedures in accordance with AWS. Standards.
b. Full responsibility for quality control shall remain with the **General Contractor**.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Protect metal framing units, components, etc., from rusting, deformation, and other damage.

1. Deliver to project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade.

a. Store off ground in a dry ventilated space or protect with breathable waterproof tarpaulins.

1.7 JOB CONDITIONS

A. Field verify that all components, backing, etc provided by others are installed correctly before proceeding with installation of products as herein specified

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

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1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following,

1. Wall sheathing and finish
2. Seismic Control
3. Wall assemblies
4. Wall sheathing
5. Attachment to floors and structure
6. Acoustical and fire stopping
7. Ceiling construction
8. Insulation
9. Electrical & low voltage wiring, devices, etc.
10. Electrical work, conduit, etc.
11. Mechanical work, ducts, devices, etc.
12. Recessed components in walls, soffits and ceilings
13. Surface mounted components to walls
14. Wall Backing

B. Related sections include, but are not limited to, the following:

1. Division 1
2. Section 02 41 19 – Selective Building Demolition & Protection
3. Section 05 12 00 – Structural Steel Framing
4. Section 05 50 00 – Metal Fabrications
5. Section 06 10 00 – Rough Carpentry
6. Section 06 17 23 – Parallel Strand Lumber
7. Section 06 17 33 – Wood I-Joist
8. Section 06 18 13 – Glue Laminated Construction
9. Section 08 11 13 – Steel Doors and Frames
10. Section 08 11 16 – Interior Aluminum Doors and Frames
11. Section 09 29 00 – Gypsum Board and Sheathing Substrates

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 MANUFACTURERS

A. Manufacturers shall be subject for compliance with all requirements, provide products from the following list:

1. Stud Manufacturers:

a. Clark Dietrich Metal Framing, www.clarkdietrich.com
b. SCAFCO Steel Stud Manufacturer www.scafco.com
c. Studco Systems, www.studcosystems.com
d. Steeler Construction Supply, www.steeler.com
e. Cemco Steel, www.cemcosteel.com

2. Custom Fabrications:

a. B&R Metal Specialties, www.br-metal.com

3. Fasteners

a. Hilti, www.hilti.com
b. Steeler Inc., www.steeler.com

4. Prefabricated Headers

a. ProX Header by Cemco Steel, www.cemcosteel.com

5. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
b. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

B. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

C. Refer to drawings, details, and other related specification section whether listed or not.

D. Details shall set basic requirements for size and configuration of systems

2.2 MATERIALS

A. System Components:

1. With each type of metal framing required, provide and install per manufacturer's standard details and specifications, including but not limited to:

a. Standard steel studs, joists, angles, straps, steel runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, fasteners, and accessories as recommended by manufacturer for applications indicated, as needed to provide a complete metal framing system.
b. Custom fabricated channels, angles, etc.
c. Fasteners

1) Mechanical Fasteners: Corrosion-resistant coated, self-drilling, self-threading steel drill screws.

a) Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2) Welded Electrodes: Comply with AWS standards.

B. System Design:

1. Comply with size, gauge and spacing as indicated on the Drawings, conforming with manufacturer's design tables and in accordance with ICC and or other approved tested systems design as indicated.

C. Materials and Finishes:

1. General:

a. For 20-gauge and lighter units, fabricate metal framing components of commercial quality steel sheet with a minimum yield point of 33,000 psi; ASTM A446, A570, or A611.
b. Provide galvanized finish to metal framing components complying with ASTM A525 for minimum G60 coating.

D. Framing Components:

1. Studs:

a. Manufacturer's standard load-bearing steel Studs of size, shape, and gauge indicated on drawings & in conformance with manufacturer's Structural Property tables.

b. Designator section as required to comply with manufacturer's Structural Property tables.

2. Joists:

a. Manufacturer's standard Joist sections of size shape, and gauge indicated on drawings & in conformance with manufacturer's Structural Property tables.
b. Designator section as required to comply with manufacturer's Structural Property tables.
c. Damp and wet locations:

1) Framing shall not exceed 12" o.c.

3. Tracks:

a. Straight conditions:

1) General:

a) Manufacturer's standard load-bearing steel tracks of size, shape, and gauge indicated on drawings and in accordance with rated wall design requirements
b) Sizes as indicated in contract drawings
c) Custom leg lengths as indicated in drawings and/or details

2) Size:

a) Typical Tracks:

i. Width: To accommodate wall framing
ii. Flange: 1.5" min. length unless indicated otherwise
iii. Gauge: 20, min. unless noted to be heavier

b) Deflection Tracks:

i. Width: To accommodate wall framing
ii. Flange: 2" length, unless indicated otherwise
iii. Gauge: 18 min., unless noted to be heavier

c) Slotted Track:

i. Width: To accommodate wall framing
ii. Flange: 2.5"
iii. Gauge: 18 min. unless noted to be heavier

4. Channel Stud: (Coordinate with structural documents for alternate material, profiles, gauges, etc., structural documents shall govern.)

a. Manufacturer's standard load-bearing steel Channel studs of size, shape, and gauge indicated on drawings.

5. Furring Channel: (Hat channel)

a. "FC" Channel: (sizes – unless noted otherwise on drawings)

1. Width: 2.5"
2. Depth: 7/8"
3. Flange: 1/2"

b. Manufacturer's standard load-bearing Furring Channels of size, shape, and gauge indicated on drawings & in conformance with manufacturer's Structural Property tables.

c. Designator section as required to comply with manufacturer's Structural Property tables.

6. Resilient Channel:
   a. "RC" Channel: (sizes – unless noted otherwise on drawings)
      1) 2.5" overall width
      2) 1/2" deep
      3) 1.5" face width
   b. Manufacturer's standard load-bearing Resilient Channels of size, shape, and gauge indicated on drawings & in conformance with manufacturer's Structural Property tables.
7. Cold-Rolled Channel:
   a. "CR" Channel: (sizes – unless noted otherwise on drawings)
      1) Typical application, uno in specifications and/or drawings:
         a) 1.5" wide x 1/2" flange x 16 ga.
      2) Wall bracing @ 1-5/8" Studs
         a) 3/4" web x 1/2" flange x 16 ga.
      3) Window opening blocking:
         a) 2-1/2" x 1/2" flange x 16GA
         b) 3-5/8" x 1" flange x 20GA
         c) As indicated in details
   b. Manufacturer's standard load-bearing Cold-Rolled Channels of size, shape, and as indicated on drawings.
8. Z-Furring Channel:
   a. "ZF" Channel: (sizes – unless noted otherwise on drawings)
      1) 7/8" flange for securing to wall
      2) 1", 1.5", 2" or 3" depth
      3) 1.25" face width
   b. Manufacturer's standard Z-Furring Channels of size, shape, and gauge indicated on drawings.
9. Angle:
   a. Straight conditions:
      1) "AN" Angle: (sizes – unless noted otherwise on drawings)
         a) Standard sizes:
            i. 2' x 2"
            ii. 2.5" x 2.5"
      2) Custom sizes and gauges as indicated in drawings.
      3) Manufacturer's standard Angle of size, shape, and gauge indicated on drawings.
10. Flat stock:

a. "FS" Flat Stock:

1) Size as indicated and required.

b. Manufacturer's Flat Stock of size, shape, and gauge indicated on drawings.

11. Adjustable Wall Furring Bracket:

a. "AWFB" Bracket:

1) 20 ga. galvanized steel material with corrugated edges.
2) 1" wide x 3" long adjustable section x 2" fastening flange.

b. Manufacturer's standard load-bearing Adjustable Wall Furring Bracket of size, shape, and gauge indicated on drawings.

12. Header Assembly:

a. Straight conditions:

1) Assembly:

a) Built-up assembly, refer to Drawings and details
b) Prefabricated:

i. Mfgr: Brandy
ii. Series: Pro X Header
iii. Assembly:

a. Single component assembly for desired length and loads.
b. Multiple component assembly for desired length and loads
c. Clips for securing to jamb framing

iv. Performance:

a. Spans up to 14'-0"

E. Material Thickness: All sections are to be roll formed in various depths with the following minimum bare metal thicknesses: (Refer also to Structural Drawings)

Minimum Thickness (inch)	Minimum Design Thickness (inch)	Gauge	Mils
0.0179	0.0188	25	18
0.0329	0.0346	20	33
0.0428	0.0451	18	43
0.0538	0.0566	16	54
0.0677	0.0713	14	68
0.0966	0.1017	12	97
0.1180	0.1240	10	118

F. See Drawings for section properties and details.

G. Studs, tracks and joists shall be of the size, shape, and gauge indicated, with a flange and flange return lip as shown on the Structural Drawings. If gauge, flange size, etc. are more restrictive than manufacturer's guidelines, then Structural Drawings shall govern.

2.3 OTHER MATERIALS

A. Galvanized Repair Paint:

1. Mfgr: ZRC Worldwide, www.zrcworldwide.com, 800.831-3275
2. Product: ZRC ZERO VOC Water-Based Galvanizing Compound
3. Type: Two-pack Water-Based Galvanizing Compound
4. Standards: (Meets or exceeds)

a. ISO 9001 registered
b. MIL-P-26915A (USAF Zinc dust Primer)
c. SSPC-Paint 20 (Specification for Zinc Rich Primer)
d. ASTM Des. A239 Preece Test for hot dipping galvanizing
e. ASTM Des B117 10,000 salt spray without failure

5. Material:

a. 93% Zinc in the dry film using Type III "ultra pure" ASTM-D-520 zinc

6. Preparation:

a. Grease & Oils: Solvent clean to SSPC-SP1
b. Rust Scale: Power tool clean to SSPC-SP3 or SSPC-SP11 (SIS St. 2 or 3)

1) Sand blast (SSPC-SP6) at exterior exposed conditions.

c. Mill Scale: Sandblast to SSPC-SP6
d. Water Immersion: (100 degree F max.) Sandblast to SSPC-SP10 (near-white)

B. Welding Electrodes: E60XX

C. Metal Backing Plates

1. Horizontal 'C'- Studs 6" x 18 gauge x distance between vertical supporting studs 3 studs minimum). Refer to indicated details (for surface mounted items furnished by others).
2. Alternate when approved is 6" x 16 gauge steel plate continuous and spanning minimum two (2) studs past mounting location to each side.

2.4 METAL FRAMING AT DOOR & WINDOW JAMBS & HEADS

A. Comply with all requirements of 2.02 in addition to those listed here.

1. Jambs:

a. Provide double stud framing at all jambs, 20-gauge min. metal studs unless wall type requires a heavier stud and shall be spot-welded together at 6" O.C. (stud gauge shall not be less than wall stud framing gauge)
b. Jamb framing shall frame full height of wall such that jamb framing incorporates and attaches to built-up header.
c. Where cutouts are required at door jambs for hardware, etc., then install a third jamb stud to reinforce jamb framing.

2. Header:
    a. Provide built-up double joist header at all heads conditions.
        1. 20 gage min. metal studs and shall be fastened together (stud gauge shall not be less than wall stud framing gauge.
            a) Heavier gauge where noted in drawings.
            b) Heavier gauge when required by manufacturer for specific condition.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:
    1. Examine areas and conditions under which work is to be performed.
    2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
    3. Do not proceed until unsatisfactory conditions are corrected.

B. Surface:
    1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 FABRICATION

A. General:
    1. Fabricate panels plumb, square, true to line and braced against racking with joints welded.
    2. Perform lifting of prefabricated panels in a manner to prevent damage or distortion

B. Fastenings:
    1. Attach similar components by welding or screw fasteners as indicated on structural drawings.

C. Fabrication Tolerances:
    1. Fabricate framing not to exceed a maximum allowable tolerance variation from plumb, level and true to line of 1/8" in 10'-0".

D. Install as detailed, herein specified and in accordance with manufacturers recommendations.

3.5 INSTALLATION

A. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Accurately layout partition and wall lines from the dimensions shown on Contract Drawings.

C. Install metal studs (NOT TO EXCEED 24 INCHES O.C. SPACING.) and accessories in strict accordance with manufacturer's recommendations, unless otherwise shown or specified; anchoring all components firmly into position.

D. Furring and bracing members: Same material and finish as studs, thickness to suit purpose.

E. Extend partition through suspended ceiling line to structural deck above, unless specifically noted otherwise.

F. Isolation of partitions: Provide slip or cushion-type joint between metal framing and structure to prevent transfer of structural loads or movements to partitions, except as otherwise indicated.

G. Studs: Use full-length studs between runner tracks. Friction fits studs to runner tracks by positioning and rotating into place. Provide positive attachment to runner tracks for studs; using #10x20x3/8" min. Pan Head self-tapping screws in both flanges of studs top and bottom.

1. Size and spacing: Use studs of the sizes and spacing indicated.
2. Provide additional studs to support inside corners at partition intersections and corners, and to support outside corners, termination of partitions and both sides of control joints.
3. Provide rough framing at openings, except doors, consisting of full-length studs adjacent to jambs, and horizontal header and sill tracks. Cut horizontal tracks to length and split flanges and bend webs at ends for flange overlap and screw to jamb studs. Install cut-to-length, intermediate studs above and below openings, at same spacing as full-length studs.
4. At door frames, provide two 18 gauge structural studs continuous at each side of openings and provide one additional stud located not more than 6" from jamb stud. Fasten jamb studs to metal frames with anchor clips using 2 self-tapping screws or bolts one each side. (3 clips minimum per jamb each side; 2 clips minimum at head). Clips not to exceed 24 inches on center.
5. At electrical cabinets and panel boards, provide one 18 gauge H.D.S. structural stud continuous at end side of opening for mounting fixture.
6. Where partitions will support ceramic tile, fixtures and wall cabinets, use 18 gauge "C"-studs, unless otherwise noted.
7. Shaft walls, install per listed design and in accordance with manufacturers system.

H. Provide rigid metal furring channels where gypsum board is to be applied over concrete substrates, except where full size studs are indicated.

1. Install channels at 16" O.C. maximum and provide additional framing at openings, cutouts, and corners. Fasten to concrete with concrete nails or power-driven fasteners not more than 24" O.C. and stagger on opposite flanges of hat-shaped channels.

I. Where connections of metal framing are indicated to be welded, all such welding shall be performed by certified welders and then tested in accordance with Code requirements.

J. Metal Backing Plates: Shall be applied as detailed and in locations as indicated on Drawing floor plans and interior room elevations.

K. Prepare and paint all welds with galvanized paint as herein specified.

3.6 TOLERANCES

A. Install members to provide surface plane with maximum variations of 1/8 inch in 10 feet in any direction.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

1. Galvanizing Repairs:

a. Prepare and repair damaged galvanized coatings on fabricated and installed metal framing with galvanizing repair paint according to ASTM A780 and the manufacturer's instructions.
b. Prepare and repair galvanized coatings on welds as part of fabricated and installed metal framing with galvanizing repair paint according to ASTM A780 and the manufacturer's instructions.

2. Touch-up painting:

a. Wire brush, clean, and paint scarred areas, welds, and rust spots on fabricated and installed prime-painted metal framing.

1. Touch-up painted surfaces with same type of shop paint used on adjacent surfaces.

F. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer to ensure that metal framing is without damage or deterioration at the time of Substantial Completion.

G. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END SECTION 09 22 16

SECTION 09 29 00 – GYPSUM BOARD AND SHEATHING SUBSTRATES

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the job site.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Gypsum wallboard and sheathing
2. Joint treatment
3. Surface treatment
4. Sealants and Backer rod
5. Drywall Primer / Sealer
6. Related accessories

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society for Testing and Materials (ASTM) www.astm.org

1. ASTM C 36 Specification for Gypsum Wallboard
2. ASTM C 79 Specification for Gypsum Sheathing - Paper faced (Glass mat faced, see ASTM C1177)
3. ASTM C 473 Standard Test Methods for Physical Testing of Gypsum Panel Products
4. ASTM C 475 Standard Spec for Joint Compound & Joint Tape for Finishing Gypsum Board
5. ASTM C 518 Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
6. ASTM C 840 Standard Spec for Application and Finishing of Gypsum Board

a. Comply with applicable requirements including recommendations of manufacturer, and comply with more restringent specifications as herein specified.

7. ASTM C 931 Specification for Exterior Gypsum Soffit Board
8. ASTM C 1177 Standard Spec for Glass Mat Gypsum Substrate for Use as Sheathing

9. ASTM C 1178 Standard Spec for Glass Mat Water-Resistant Gypsum Backing Panel
10. ASTM C1396 Specification for Gypsum Board
11. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
12. ASTM E 72 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
13. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials

E. Gypsum Association (GA) www.gypsum.org

1. GA-214 Recommended Levels of Gypsum Board Finish
2. GA-216 Specifications for the application and Finishing of Gypsum Board
3. GA-220 Gypsum Board Winter Related Installation Recommendations
4. GA-221 Repair of Gypsum Board Joint Ridging
5. GA-223 Gypsum Panel Products Types, Uses, Sizes, And Standards
6. GA-224 Installation of Predecorated Gypsum Board
7. GA-225 Repair of Fire-Rated Gypsum Board Systems
8. GA-226 Application of Gypsum Board To Form Curved Surfaces
9. GA-229 Shear Values for Screw Application OF Gypsum Board On Walls
10. GA-231 Assessing Water Damage to Gypsum Board
11. GA-232 Painting New Gypsum Board
12. GA-234 Control Joints For Fire-Resistant Rated Systems
13. GA-235 Gypsum Board Typical Mechanical and Physical Properties
14. GA-238 Guidelines for Prevention Of Mold Growth On Gypsum Board
15. GA 253 Application Of Gypsum Sheathing
16. GA-254 Fire-Resistant Gypsum Sheathing
17. GA-276 Gypsum Board Roof Underlayment Systems
18. GA-290 Gypsum Board Area Separation Walls
19. GA-530 Design Data - Gypsum Board
20. GA-600 Fire resistant Design Manual
21. GA-605 Proprietary Gypsum Panels Products For Use In UL Classified Systems
22. GA-610 Fire resistance Provided By Gypsum Board Membrane Protection
23. GA-618 Building and Inspecting Smoke Barriers
24. GA-620 Gypsum Area Separation Firewalls
25. GA-801 Handling and Storage of Gypsum Panel Products

F. International Code Council (ICC), www.iccsafe.org

G. United States Gypsum (USG) www.usg.com

1. SA927 Application And Finishing Of Gypsum Panel Products
2. SA923 Drywall/Steel Framed Systems
3. SA924 Drywall/Wood Framed Systems
4. SA925 USG Area Separation Fire Wall/Party Wall Systems
5. SA926 USG Cavity Shaft Wall Systems
6. SA933 “Sheetrock” Brand Textures and Finish Products

H. Federation of Societies for Coating Technology (FSCT) www.coatingssocietiesinternational.org

1. Coatings Encyclopedic Dictionary

I. Painting and Decorating Contractors of America (PDCA) www.pdca.org

1. Standard P1-92 Touch Up Painting and Damage Repair
2. Standard P4-94 Responsibility for Inspection and Acceptance of Surface Prior to Painting and Decorating
3. Standard P5-94 Benchmark Sample Procedures for Paint and Other Coating System
4. Glossary of Terms, Painting and Decorating Contractors of America, Fairfax, VA.

J. Drywall Finishing Council Incorporated (DWFC) www.dwfc.org

1. Recommended Specification for Preparation of Gypsum Board Surfaces Prior to Texture Application.
2. Interior Job Condition Specifications for the Application of Drywall Joint Compounds, Drywall Textures, and Paint/Coatings.

K. National Evaluation Report (NER)

1. NER 458 Code Compliance for Exterior Ceiling Sheathing (Soffit sheathing)

1.3 PERFORMANCE

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Gypsum Board / Sheathing & Sound Board	Flatness Tolerance	1/8" offsets between planes of board faces and 1/8" in 10 feet or plumb, level, warp and bow. Tolerance variation shall not be collective.	Gypsum Association
Gypsum Board / Sheathing	Recommended Levels of Gypsum Board Finish	Comply or as herein specified, whichever is more restrictive	GA-214-07 ANSI A98-7.1
	Application and Finishing of Gypsum Panel Products		GA-216-07
	Gypsum Board Winter Related Installation Recommendations		GA-220-06
	Repair of Gypsum Board Joint Ridging		GA-221-00
	Repairing Screw or nail Pops		GA-222-08
	Gypsum Panel Products Types, Uses, Sizes and Standards		GA-223-04
	Installation of Pre-decorated Gypsum Board		GA-224-08
	Repair of Fire-Rated Gypsum Board Systems		GA-225-08

	Application of Gypsum Board to Form Curved Surfaces		GA-226-08
	Shear Values for Screw Application of Gypsum Board on Walls		GA-229-08
	Assessing Water Damage to Gypsum Board		GA-231-06
	Painting New Gypsum Board		GA-232-04
	Control Joints for Fire-Resistance Rated Systems		GA-234-08
	Gypsum Board Typical Mechanical and Physical Properties		GA-235-05
	Joint Treatment Under Extreme Weather Conditions		GA-236-00
	Guidelines for Prevention of Mold Growth on Gypsum Board		GA-238-03
	Water-Resistant Gypsum Backing Board For Ceramic Tile in Wet Areas		GA-239-04
	Application of Gypsum Sheathing		GA-253-07
	Fire-Resistant Gypsum Sheathing		GA-254-07
	Gypsum Board Roof Underlayment Systems		GA-276-05
	Gypsum Board – Area Separation Walls		GA-290-02
	Fire Resistance Design Manual		GA-600-06
	Proprietary Gypsum Panel Products For Use in UL Classified Systems		GA-605-08
	Fire Resistance Provided by Gypsum Board Membrane Protection		GA-610-02
	Building and Inspecting Smoke Barriers		GA-618-04
	Handling and Storage of Gypsum Panel Products: A Guide for Distributors, Retailers, and Contractors		GA-801-07
Exposed interior Gypsum Sheathing	Smooth Wall		
Smooth Wall / Level 5	Smooth Wall with Darby full surface float		
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Definitions**:

1. Levels of gypsum board finish: (Typical)

a. **Scope.** The required level of finish of gypsum board wall and the ceiling surfaces is described with typical applications and is listed as a minimum allowable standard. All proposed deviations from these herein specifications shall be in written form of a request and approved by the **Architect** prior to installation.

b. **Terminology.** The following definitions are applicable to this document.

1. Accessories: Metal or plastic beads, trim or molding used to protect or conceal corners, edges or abutments of the gypsum board construction.
2. Back Roll: Rolling a spray painted surface with a paint roller immediately following spray application.
3. Coat: Paint, Varnish, or lacquer applied to a surface in a single application (one Layer) to form a properly distributed film when dry –ASTM

   Note: Shall be applied as installed per Painting specification.

4. Critical (Severe) Lighting: A condition whereby interior surfaces are flooded by natural or artificial lighting at an oblique angle; such as lighting from large expanses of windows, glass curtain walls, skylights, or surface mounted light fixtures. Strong side lighting from windows or surface-mounted light fixtures. - ASTM

   Note: See "comments" section of this document.

5. Drywall Primer: A paint material specifically formulated to fill the pores and minimize suction differences between gypsum board surfaces paper and the compound used on finished joints, angles, fastener heads, accessories, and over skim coating.

   Note: this shall be applied as part of gypsum board specification

6. Gloss: A subjective term used to describe the relative amount and nature of mirror like (specular) reflection.

   Note: FSCT

7. Joint Photographing (Telegraphing): The shadowing of the finished joint areas through the surface decoration and/or Smooth Wall

   Note: Syn telegraphing. – GA-214-96

8. Paint: Any pigmented liquid, liquefiable, or mastic composition designed for application to a substrate as a thin layer which is converted to an opaque solid film after application. Used for protection, decoration or identification or to serve some functional purpose, such as filling or concealing surface irregularities.

   Note: FSCT, shall be applied as part of painting specification

9. Properly Painted Surfaces: A surfaces that is uniform in appearance, color and sheen. It is one that is free of foreign material, lumps skins, runs, sags, holidays, misses, strike-through, or insufficient coverage. It is a surface, which is free of drips, spatters, spills, or overspray, which were caused by the **General Contractor's** work force. Compliance to meeting the criteria of a "Properly painted surface" shall be determined when viewed without magnification at a distance of five feet or more under normal lighting conditions and form a normal viewing position.

Note: A surface uniform in appearance, color and sheen may not be achieved with a coat of primer or a single coat of topcoat. Shall be applied as part of Painting specification. – PDCA

10. Prime/Sealer: A gypsum board prime/sealer manufactured by company explicitly for priming gypsum board and formulated to fill the pores and equalize the suction difference between gypsum board surface paper and the compound used on finished joints, angles, fastener heads, and accessories, and over skim coatings. See "comments" section of this document.

    Note: Primer shall be provided by Gypsum board mfgr. and installed by gypsum board finisher in addition to "primer and finish paint as installed under separate specification Section 09 90 00."

11. Skim Coat: A thin coat of herein listed joint compound installed over the entire surface of the gypsum board to fill imperfections in the joint work, smooth the paper texture, and provide a uniform surface for a Smooth Wall appearance. Compound will be installed with Steel Trowel or Knife blade.

    Note: Spray application is not allowed

12. Spotting: To cover fastener head with joint compound.
13. Texture: A decorative treatment of gypsum board surfaces.
14. Texturing: Regular or irregular patterns typically produced by applying a mixture of joint compound and water, or proprietary texture materials including latex base texture paint, to a gypsum board surface previously coated with primer/sealer.

    Note: Refer to Heading 2.05

15. Top Coat: The finish coat(s) of a coating system, formulated for appearance and or environmental resistance.

    Note: shall be applied as part of painting specification – PDCA

16. Wall covering: Any type of paper, vinyl, fabric, or specialty material that is pasted onto a wall or ceiling in a wide array of colors, patterns, textures, and performance characteristics, such as washability and abrasion resistance.

    Note: shall be applied as part of wall covering specification - FSCT

17. Wall covering Primer: Coatings formulated to seal the porosity of new drywall, joint compounds, and most surfaces. Also formulated to promote adhesion and serviceability under wall covering products.

    Note: Shall be applied as part of wall covering specification.

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Drywall products
2. Joint tapes for Interior and Exterior applications
3. Joint topping material
4. Skim coat joint compound material – Smooth wall Level 5
5. Fasteners
6. Tools for product application
7. Texturing products

E. Submit samples.

1. Three (3) each 20" square portable mockups on gypsum board that include:

a. Finish taping, mud and primer
b. Butt joint treatment
c. Edge treatment
d. Specific required finishes

F. Site mock up, refer to "Field Samples / Mock Up" heading.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

D. Lead Times:

1. **General Contractor** shall coordinate with supplier to verify product lead times during bids and at award of contract, and account for such lead times in their costs and schedules.
2. **General Contractor** shall provide an itemized list of materials which might have or are confirmed to have a lead time problem and what the anticipated lead time is.
3. **General Contractor** shall certify in writing that all materials have acceptable lead times as they relate to availability for sub-contractor and **General Contractor** to meet construction schedule and sequence of construction.
4. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must me documented at time of bid.

E. Stipulations:

1. At proprietary assemblies use specified and tested manufacturer and specific products, including but not limited to the gypsum board, fastening, etc.

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to; review of Smooth wall, taping for various wall coverings and texture of wall.

2. **General Contractor** shall request meeting 5 days in advance of construction.

G. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation membrane waterproofing work to review installation procedures.

1. Manufacturer's representative shall review and certify all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Comply with manufacturers recommendations

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Environmental:

1. Interior: Do not install gypsum board, joint compounds, skim coats and textures if building temperature is below 55ºF or if proper ventilation is not provided to eliminate excessive moisture from building.

a. Temperature shall be maintained after installation.

2. Exterior: Do not install gypsum board, joint compounds, skim coats and textures if the exterior temperature is below 45ºF.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Wall Framing

2. Electrical/Low Voltage Wiring & Devices
3. Wall Finish for Mechanical Work
4. Wall coverings
5. Rated wall penetrations
6. Acoustical wall assemblies and penetrations

B. Related Sections include, but are not limited to, the following**:**

1. Division 1
2. Section 05 40 00 – Cold-Formed Metal Framing
3. Section 05 50 00 – Miscellaneous Metal Fabrications
4. Section 09 22 16 – Non-Structural Metal Framing
5. Section 09 90 00 – Paints and Coatings

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 – **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Gypsum sheathing (Interior):
   a. Typical and as indicated:
      1) Georgia Pacific (GP), www.gp.com
      2) U.S Gypsum (USG), www.usg.com
      3) National Gypsum, Gold Bond www.national-gypsum.com
   b. Where indicated:
      1) U.S Gypsum (USG), www.usg.com
   c. Alternates where allowed:
      1) National Gypsum, Gold Bond & GridMarx, www.national-gypsum.com
      2) Pabco Gypsum, www.pabcogypsum.com
2. Joint treatment & finishing
   a. U.S Gypsum (USG), www.usg.com

b. National Gypsum, Gold Bond www.national-gypsum.com
c. Georgia Pacific (GP), www.gp.com
d. Bead-Ex www.usg.com
e. Hamilton www.hamiltonnw.com

3. Accessories:

a. U.S Gypsum (USG), www.usg.com
b. National Gypsum, Gold Bond & GridMarx, www.national-gypsum.com
c. Superior Metal Trim www.superiormetaltrim.com
d. Flannery, Inc., 818 837-7585, www.flannerytrim.com
e. Fry Reglet www.fryreglet.com
f. MILGO/BUFKIN, www.milgo-bufkin.com

4. Sealants:

a. Pecora, www.precora.com
b. Refer also to Sealant Specification Section 07 92 00.

5. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General

1. Conform to American National Standards Institute Specifications and Gypsum Association for Gypsum Wallboard finishes.
2. Sheathing type as herein specified and in accordance with manufacturer's recommendations.
3. Wall board shall be fire-rated typical, Type "X" typical, U.N.O. and comply with specified and detailed wall construction types.

B. Wallboard & Ceiling Board Sheathing

1. INTERIOR SCHEDULE:

a. General:

1) Type X Core, Fire Code C and/or Type XXX regarding if application is a rated assembly

b. Interior walls, U.N.O.:

1) Mfgr:

a) Typical: Georgia Pacific
b) Alternate 1: US Gypsum
c) Alternate 2: Pabco
d) Alternate 3: Nation Gypsum, Gold Bond

2) Brand:

a) Typical: ToughRock® Fireguard Type X
b) Alternate 1: Sheetrock
c) Alternate 2: Pabco
d) Alternate 3: Fire Shield

3) Product:

a) Typical: Type "X" Core
b) Alternate 1: Firecode "C" Core (if specific to approved design)
c) Alternate 2: Flame Curb

4) Size:

a) Thickness:

i. 5/8" typical
ii. 1/2" as indicated per plan details

b) Width x Length: 4'-0" wide x 8', 9', 10', 12' or 14' (size to minimize quantity of joints)

5) Material: Paper faced gypsum core board
6) Edge: Tapered
7) Standard: ASTM C36
8) Finish: As herein specified and indicated in drawings
9) Limitations:

a) See body of this specification for specific product types for specific conditions.
b) At interior face of Exterior walls use Dens Armour Plus Fireguard, High Performance Interior Panel as herein specified unless herein in indicated otherwise or an herein approved alternate.

c. Interior Face of Exterior Walls:

1) Application: Wall Sheathing

a) Full height from floor to underside of roof decking.
b) Exposed and concealed conditions

2) Schedule: Full Height

a) Material:

i. Schedule:

a. Mfgr: Georgia Pacific
b. Product: DensArmor Plus® Fireguard® Type X, High Performance Interior Panel
c. Size: 5/8"x 4'-0"x 8' & 10' (size to minimize quantity of joints)

d. Material: Gypsum sheathing with inorganic coated glass fiber mats on each face
e. Edge: Tapered
f. Rating: Type "X"

ii. Alternate product:

a. Mfgr: National Gypsum
b. Product: Gold Bond Fire-Shield
c. Size: 5/8" x 4'-0" x 8' & 10' (size to minimize quantity of joints)
d. Material: Gypsum sheathing with inorganic coated glass fiber mats on each face
e. Edge: Tapered
f. Rating: Type "X"

b) Limitations:

i. Do not use at the following locations requiring other sheathing as herein specified under the 'Wallboard & Ceiling Board for Interior conditions.

a. Curved walls – Specialty board - Non rated:
b. Curved walls – Non rated:
c. Shaft wall sheathing:
d. Abuse-resistant Impact locations – Moderate Duty:
e. Abuse-resistant Impact locations – Heavy Duty:
f. Wet locations – Showers:
g. Shaft wall sheathing:
h. Veneer wall and ceiling – non shower locations
i. Cement Plaster substrate:
j. Fully adhered Natural Stone substrate
k. Sound Damping Wall board:
l. Sound Damping Ceiling board:
m. Modular Brick Substrate

3) Finish: As herein specified and indicated in drawings including skim coat over entire surface prior to finishing.

d. Damp locations: (Non tile veneer conditions)

1) Application:

a) Toilet room walls & ceilings
b) Janitor room walls & ceilings
c) Locker rooms
d) Lounges and other rooms within the extents of Shower/Locker rooms

2) Schedule: Full Height

a) Material:

i. Mfgr: Georgia Pacific
ii. Product: DensArmor Plus® Fireguard® Type X, High Performance Interior Panel

iii. Size: 5/8"x 4'-0"x 8' & 10'(size to minimize quantity of joints)
iv. Material: Gypsum sheathing with inorganic coated glass fiber mats on each face
v. Edge: Tapered
vi. Rating: Type "X"
vii. Joints: Self adhering fiberglass mesh tape and approved tapping compound

3) Limitations:

a) Maximum ceiling framing not to exceed 12" o.c.
b) Do not use at shower ceilings, use Dens Shield Tile Guard (Backer Board)
c) Do not use at shower walls, use Dens Shield Tile Guard (Backer Board)

4) Standards: ASTM C630
5) Finish: As herein specified and indicated in drawings

e. Wet locations – Showers and water walls:

1) Applications:

a) Shower room walls and ceilings with Tile veneer

i. Schedule:

a. Mfgr: Georgia Pacific
b. Product: DensShield® Fireguard® Type X Tile Backer
c. Size: 5/8" x 4'-0" wide x 4'', 5', & 8' (size to minimize quantity of joints)
d. Material: Surface coated fiberglass and silicone-treated core
e. Edge: Square
f. Joints: Self adhering fiberglass mesh tape and approved tapping compound
g. Rating: Type X, UL approved for 1-hour wall construction
h. Joints: Self adhering fiberglass mesh tape and approved tapping compound

ii. Note: Waterproof liquid applied membrane, joint mesh and accessories; refer to Tile specifications.

b) Shower ceilings without Tile veneer

i. Schedule:

a. Mfgr: Georgia Pacific
b. Product: DensShield Tile Guard (Backer Board)
c. Size: 5/8" x 4'-0" wide x 4'', 5', & 8' (size to minimize quantity of joints)
d. Material: Surface coated fiberglass and silicone-treated core
e. Edge: Square
f. Joints: Self adhering fiberglass mesh tape and approved tapping compound
g. Rating: UL approved for 1-hour wall construction
h. Finish: Skim Coat for Level 5 finish

i. Note: Water proof liquid applied membrane, joint mesh and accessories; refer to Tile specifications.

f. Thin Veneer Wall and Ceiling Sheathing – non shower locations

1) Application:

a) Ceramic Tile veneer

2) Schedule Options:

a) Option 1:

i. Mfgr: Georgia Pacific
ii. Product: DensShield® Fireguard® Type X Tile Backer
iii. Size: 5/8" x 4'-0" wide x 4'', 5', & 8' (size to minimize quantity of joints)
iv. Material: Surface coated and silicone-treated core
v. Edge: Square
vi. Rating: Type X, approved for 1-hour wall construction
vii. Limitations: Maximum 16" o.c. framing spacing at Restroom ceilings
viii. Finish: Level 4
ix. Joints: Self adhering fiberglass mesh tape and approved tapping compound

b) Option 2:

i. Mfgr: USG
ii. Product: Fiberock Aqua Tough Interior Panel
iii. Size: 5/8" x 4'-0" wide x 4'', 8', & 12' (size to minimize quantity of joints)
iv. Material: High density paperless gypsum and cellulose wall panel
v. Edge: Tapered
vi. Tape: Sheetrock® brand joint tape – heavy use type
vii. Rating: UL approved for 1-hour wall construction
viii. Finish: Level 4 finish
ix. Joints: Self adhering fiberglass mesh tape and approved tapping compound

2.3 OTHER MATERIALS

A. Accessories: Trim accessories, including, but not limited to:

1. Joint treatment: Refer to Heading 2.04
2. Outside edge:

a. Mfgr: USG
b. Product: DUR-A-BEAD Corner Bead
c. Material: Standard galvanized steel units
d. Model: No.103 1-¼" x 1-¼"

3. Inside corner:

a. Mfgr: USG
b. Product: Sheetrock Brand
c. Material: Paper Faced Metal Trim x 90-degree angle
d. Model: Tape on Trim No. B2

4. Offset Inside corner:

    a. Mfgr: USG
    b. Product: Sheetrock Brand
    c. Material: Paper Faced Metal Trim x greater than 90 degree angle
    d. Model: B2 OS

5. "Z" shape trim for edge of board at step back reveal:

    a. Mfgr: USG
    b. Product: Sheetrock Brand
    c. Material: Paper Faced Metal Trim Tape on trim x "Z" profile
    d. Model: B4 NB

6. "L" shape trim for edge of board at Acoustical tile ceiling:

    a. Mfgr: USG
    b. Product: Sheetrock Brand
    c. Material: Galvanized Metal Trim x "L" shape 90-degree angle
    d. Model: No. 200 – B x ½" and/or ⅝"

7. "J" shape trim for edge of board, typical:

    a. Mfgr: USG
    b. Product: Sheetrock Brand
    c. Material: Galvanized Metal Trim
    d. Model: No. 200 – A x ½" and/or ⅝"

8. Control Joint:

    a. Mfgr: USG
    b. Product: Sheetrock Brand
    c. Material: Zinc
    d. Model: No. 093
    e. Profile: ¼" opening x $^{7}/_{16}$" depth x 10'-0" length

9. Drywall "L" trim:

    a. Mfgr: Flannery,
    b. Product: Drywall "L"
    c. Model: DWL
    d. Material: Mil Finish Aluminum



    e. Size:

        1) Width: ¼" thru 4-3/'4"

            a) Size to fit field condition

        2) Length: 10'-0"
        3) Tape flange: 7/8" wide

B. Substrate Fasteners

1. Nails: (Wood framing)

a. Size (1-1/2") (1-3/4")

1) 11-gauge, hot-dipped galvanized roofing nails with nominal 7/16" diameter head for wood framing.

2. Screws: (Metal stud framing)

a. 1" Type S-12 Bugle Head Corrosion-Resistant Screws for application of sheathing to steel studs.
b. 1-1/4" Type S-12 Pancake Head Corrosion-Resistant Screws for application of self-furring metal lath or brick ties through sheathing to steel studs.

C. Joint Treatment and Skim Coat Treatment - Interior

1. Schedule:

a. Applications:

1) Typical, interior dry conditions, U.N.O

a) Type:

i. Drying: water evaporation type unless application is;

a. In cold weather
a. Required to be Setting Compound by type of tape such as mesh fiberglass
b. Required by application
c. Required by sheathing mfgr.

b) Mfgr: USG
c) Brand: Sheetrock
d) Tape Product: Joint Tape – Heavy
e) Treatment Compound:

i. Product:

a. Initial installation of tape:

i). Product: Taping Compound

b. Secondary and final finishing compound:

i). Product: Toping Compound or Plus Three Compound

c. Skim Coat:

i). Product: Plus Three Compound

2) Interior Face of All Exterior Walls:

a) Substrate: DensArmor Plus

i. Mfgr: Georgia Pacific

b) Tape Product: Self adhering 10x10 x 2" wide woven glass mesh tape over all joints, inside corners and outside corners

i. Mfgr: Georgia Pacific
ii. Model: ToughRock, Fiberglass mesh tape

c) Treatment Compound:

i. Mfgr: USG
ii. Type: Setting Compound (chemical hardening)
iii. Product:
iv. Installation: Per manufacturers recommendations
v. Finish: Level 5

a. Includes as herein specified with the entire surface of sheathing skim coated.

3) Wet conditions - Interior: Tile veneer finish

a) Substrate: DensShield Tile Backer Board

i. Mfgr: Georgia Pacific

b) Tape Product: Self adhering 10x10 x 2" wide woven glass mesh tape over all joints, inside corners and outside corners

i. Mfgr: Georgia Pacific
ii. Model: ToughRock, Fiberglass mesh tape

c) Treatment Compound:

i. Mfgr: USG
ii. Type: Setting Compound (chemical hardening)
iii. Product:
iv. Installation: Per manufacturers recommendations

4) Wet conditions - Interior: Non tile veneer finish

a) Substrate: DensShield Tile Guard

i. Mfgr: Georgia Pacific

b) Tape Product: Self adhering 10x10 x 2" wide woven glass mesh tape over all joints, inside corners and outside corners

i. Mfgr: Georgia Pacific
ii. Model: ToughRock, Fiberglass mesh tape

c) Treatment Compound:

i. Mfgr: USG
ii. Type: Setting Compound (chemical hardening)
iii. Product:
iv. Installation: Per manufacturers recommendations
v. Finish: Darby float Skim coat for level 5 finish and paint

5) Damp conditions – Interior: Non-shower areas

a) Substrate: Aqua Tough

i. Mfgr: USG

b) Tape Product: Self adhering 10x10 x 2" wide woven glass mesh tape over all joints, inside corners and outside corners

i. Mfgr: Georgia Pacific
ii. Model: ToughRock, Fiberglass mesh tape

c) Treatment Compound:

i. Mfgr: USG
ii. Type: Setting Compound (chemical hardening)
iii. Product:
iv. Installation: Per manufacturers recommendations
v. Finish: Darby float Skim coat for level 5 finish and paint

D. Wall finish, Texture Products and Schedule - Interior

1. General: Comply with USG Design Guidelines SA923
2. Finish Schedule:

a. Finish Texture:

1) Standard Texture:

a) Mfgr: USG
b) Texture designation:

i. Textured walls: Fine Orange Peel
ii. Smooth Wall Level Five: No texture

c) Schedule: At all walls and ceilings, U.N.O
d) Product Schedule:

i. Sealer / Primer:

a. Material: Gypsum board sealer/primer
b. Product: First Coat, Sheetrock brand
c. Application: Spray applied over entire surface Material

ii. Texture:

a. Material: Red Bag Wall Texture
b. Application: Spray applied
c. Coverage: Apply at rate of 20-40 pounds per square foot

2) Smooth Wall / Level 5 – Skim Coat

a) Mfgr: USG
b) Texture Designation: Smooth Wall, Level 5 - Darby
c) Schedule:

i. Locations indicated on Drawings, including , as herein listed:

a. Showers without tile veneer
b. Public spaces – walls and ceilings

ii. As herein specified

a. Public spaces – walls and ceilings

i). Lobbies
ii). Corridors
iii). All conditions

d) Product Schedule:

i. Skim Coat – Smooth Wall Level 5

a. Material: Plus Three
b. Application: Steel Trowel applied over entire surface of board.

ii. Sealer /Primer Coat: Level 4 and 5 finish

a. Material: Gypsum board sealer/primer
b. Product: First Coat, Sheetrock brand
c. Application: Spray applied over entire surface
d. Note: This is in addition to painters primer to be installed per Section 09 90 00 – Painting and Coatings.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 MOCK-UP

A. Erect at location approved by **Architect**.

1. Mock-up shall be part of final construction once approved by **Architect**.
2. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.
    a. Texture
    b. Level 5 finish

B. Mock-up

1. Size: 6' x 6'
2. Qty: One (1) each for each wall surface condition and finish

3.5 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
2. Perform work in accordance with herein listed standards.
3. Install with fiberglass tape at gypsum board requiring it as herein specified and required by mfgr.

B. Sheet arrangement layout: Conform to layouts and requirements indicated; use long sheets to restrict joints to minimum.

1. Edges of sheathing shall not align with the vertical and/or horizontal edges of window and/or door openings.

C. Interior Joints:

1. Perform work in accordance with gypsum board mfgr's requirements and to meet smooth wall and/or textured wall surface
2. Perform work in accordance with gypsum board mfgr's requirements and in accordance with wall veneer including, but not limited to;
    a. Tile

D. Typical:

1. Fasteners:
    a. Place fasteners 3/8 inch from edges of boards, except when using washers or clips with fasteners in joint.
    b. Install fasteners with heads dimpled slightly below surface; do not cut through skin.
    c. Space fasteners in accordance with ASTM C840 and manufacturer's recommendations, except as otherwise required by CBC.
    d. Install type of fastener and length in accordance with sheathing manufacturer.
    e. All ends and edges of all gypsum wallboard shall occur over framing members, except when joints are at right angles to framing members.
2. Ceilings:
    a. General:
        1. Place boards with long dimension at right angles to supports and end joints occurring over supports.
        2. Place perimeters of ceilings and edges of openings over solid bearing members.

b. Maximum joist spacing shall not exceed 12" O.C.

3. Partitions: Place boards with long dimension either vertical or horizontal (but not combination of both) on studs. Stagger joints on opposite sides of partitions. Locate joints at least 12 inches from jambs of openings. Keep end joints to minimum. Fasten double layer gypsum board as required by code, stagger joints in second layer.
4. Caulking: Using double bead of specified material, install at floors, wall intersections, where walls abut other materials and at all electrical boxes. Install wherever caulking materials is indicated in connection with gypsum board. Apply in accordance with manufacturer's printed directions.
5. Cutting and scribing: Cut neatly to fit around outlets, switch boxes and other protrusions, using keyhole saw or specially designed cutting tool for opening of exact shape and size needed.
6. Trim: Edge exterior corners with bead set to true, plumb line. Where gypsum board joins or abuts any material other than gypsum board, cover end of board with metal casing, leaving joint sufficient for installation of caulking (refer to Article 3.03 F above).

E. Finishing

1. Matrix: Joint treatment and Skim coat treatment:

a. USG matrix of materials and level of finish

1) For other products indicated, match that manufacturer's installation recommendations.

		Ready-Mixed Joint Compounds				Drying-Type Joint Compounds				Setting-Type Joint Compounds	
	First Coat	Taping	Topping	All-Purpose	Plus 3	Taping	Topping	All-Purpose	AP Lite	Durabond ®	Easy Sand™
Level 0											
Not Used											
Level 1											
Embedding		■		■	■	■		■	■	■	■
Level 2											
Embedding		■		■	■	■		■	■	■	■
Fill			■	■	■		■	■	■	■	■
Level 3											
Embedding		■		■	■	■		■	■	■	■
Fill			■	■	■		■	■	■	■	■
Primer	■										
Level 4											
Embedding		■		■	■	■		■	■	■	■
Fill			■	■	■		■	■	■	■	■

Finish			■	■	■		■	■	■	■	■
Primer	■										
Level 5											
Embedding		■		■	■	■		■	■	■	■
Fill			■	■	■		■	■	■	■	■
Finish			■	■	■		■	■	■	■	■
Skim/Darby				■	■						
Primer	■										

2. Levels Schedule

   a. **Levels of Finish.** The following levels of finish are established as a guide for specific final decoration and/or Smooth Wall finish and are a minimum standard for each condition.

      1) Level 0:

         a) Not Used

      2) **Level 1**:

         a) Schedule:

            i. Plenum areas above ceilings, in attics, in areas where the assembly including, but not limited to;

               a. Joints
               b. Fastener heads
               c. Around all wall penetrations

            ii. All joints, exterior angles, reveals and interior angles shall have tape embedded in joint compound.

               a. Surface shall be free of excess joint compound.
               b. Tool marks and ridges are acceptable.

      3) **Level 2**:

         a) Schedule:

            i. Use where water resistant tile backing board is used as a substrate for tile.
            ii. All joints, fasteners, exterior angles, reveals and interior angles shall have fiberglass mesh tape embedded in joint compound and one additional separate coat of joint compound applied over all joints, angles, fastener heads, and accessories. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
            iii. Primer/Sealer: yes, entire gypsum board surface including treated joints, exterior angles, interior angles, reveals, fasteners, etc. shall be coated with a primer/sealer prior to the application of final finishes.

iv. Gypsum board primer/sealer must be applied as a requirement of this specification section in addition to any and all requirements of primer and paint specified and installed under Section 09 90 00 – Painting and Coatings.

4) **Level 3:**

a) Schedule:

i. Use at conditions where a material will be adhesively applied to gypsum board.

a. Not for use at tile applications.

ii. Texture: None
iii. Applications:

a. Where indicated in drawings
b. FRP panel substrate

b) Application:

i. All joints and angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and angles.

a. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.

ii. All fasteners heads and accessories shall be covered with a coat of joint compound and wiped with a joint knife leaving a thin coating of joint compound.
iii. Surface shall be free of excess compound.
iv. Tool marks and ridges are acceptable.
v. Primer/Sealer: yes, entire gypsum board surface including treated joints, exterior angles, interior angles, reveals, fasteners, etc. shall be coated with a primer/sealer prior to the application of final finishes.

a. Gypsum board primer/sealer must be applied as a requirement of this specification section in addition to any and all requirements of primer and paint specified and installed under Section 09 90 00 – Painting and coatings.

5) **Level 4:**

a) Schedule:

i. Use at all conditions unless noted and/or specified to be Smooth Wall, Level 5 as specified herein, refer to "Level 5 (Smooth Wall) heading and Drawings.
ii. Texture; refer to Heading 2.05 for required texture.

b) Application:

i. All joints, fasteners, exterior angles, reveals and interior angles shall have tape embedded in joint compound and **three** separate coats of joint compound applied over all joints, fasteners, angles, fastener heads, and accessories. All joint compounds shall be smooth and free of tool marks and ridges. Refer to Heading 2.04 for schedule of specific products.

a. Taping Compound width schedule:

i). First coat: 8" wide
ii). Second coat: 10" wide
iii). Third coat: 12" wide

b. Primer/Sealer: yes, entire gypsum board surface including treated joints, exterior angles, interior angles, reveals, fasteners, etc. shall be coated with a primer/sealer prior to the application of final finishes.

i). Gypsum board primer/sealer must be applied as a requirement of this specification section in addition to any and all requirements of primer and paint specified and installed under Section 09 90 00 – Painting and Coatings.

c) Limitations:

i. At un-backed vinyl wall covering apply a Level 5 finish to wall substrate

6) **Level 5: (Smooth Wall / Skim Coat)**

a) Schedule:

i. Use this level of finish at:

a. All locations herein listed (walls, ceilings and soffits)
b. All locations with G.P. DensArmor Plus sheathing
c. All locations herein listed as indicated in drawings, including but not limited to;

i). Shower Ceilings without tile veneer
ii). Conference rooms
iii). Lobbies
iv). Corridors.
v). Other locations indicated on Drawings
vii). Locations herein specified

d. All High gloss painted surfaces

b) Application:

i. All joints, fasteners, exterior angles, reveals and interior angles shall be embedded in joint compound and three separate coats of specified compound applied over these conditions and one final "Skim Coat" of specified compound trowel applied over entire surface of gypsum board.

a. Taping Compound width schedule:

i). First coat: 8" wide
ii). Second coat: 10" wide
iii). Third coat: 12" wide
iv). Fourth: 12" wide to both sides of "Third coat"
v). Skim coat: Entire surface of board.

b. The thin "Skim Coat" of specified compound shall be applied to the entire gypsum board surface after the three separate applications of tapping compound have been installed at all joints, fasteners, exterior angles, reveals and interior angles.

i). Sand only taped joints prior to application of thin skim coat.
ii). Skim coat shall be applied prior to any sanding of non-taped board surface

c. Skim coat must be applied with a "Darby" steel trowel or knife blade.

i). Install mud to thickness as required to fill imperfections in surface using "Darby" method to fill surface up to ¼" in thickness.
ii). Use a minimum 4'-0" wide blade.

d. The surface shall be smooth and free of tool marks and ridges.

ii. Primer/Sealer: yes, entire gypsum board surface including treated joints, exterior angles, interior angles, reveals, fasteners, etc. shall be coated with a primer/sealer prior to the application of final finishes.

a. Gypsum board primer/sealer must be applied as a requirement of this specification section in addition to any and all requirements of primer and paint specified and installed under Section 09 90 00 – Painting and Coatings.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END SECTION 09 29 00

SECTION 09 30 00 – TILE AND STONE

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Interior floor and wall applications with the following requirements as herein specified and as indicated on Documents, including but not limited to:

a. Liquid applied Waterproof and Crack protection floor and base assembly
b. Shower room waterproof floor, base, wall and ceiling assembly

2. Grouts
3. Tile and Grout Sealers
4. Adhesives and Sealants
5. Transitions and Accessories

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Iron and Steel Institute (AISI) www.steel.org

1. Specification for the Design of Cold Formed Steel Structural Members

E. American Society for Testing and Materials (ASTM) www.astm.org

1. ASTM A82 Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
2. ASTM A185 Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
3. ASTM C144 Standard Specification for Aggregate for Masonry Mortar
4. ASTM C150 Standard Specification for Portland Cement

5. ASTM C157 and — Standard Test Method for Length Change of Hardened Cement Mortar and Concrete
6. ASTM C270 — Standard Specification for Mortar for Unit Masonry
7. ASTM C482 — Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement Paste
8. ASTM C627 — Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester
9. ASTM C794 — Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
10. ASTM C847 — Standard Specification for Metal Lath
11. ASTM C920 — Standard Specification for Elastomeric Joint Sealants
12. ASTM C1028 — Evaluating the Static Coefficient of Friction of Ceramic Time and Other Like Surfaces by the Horizontal Dynamometer Pull Method.
13. ASTM D751 — Standard Test Method for Coated Fabrics
14. ASTM D4068 — Standard Specification for Chlorinated Polyethylene (CPE) Sheeting for Concealed Water-Containment Membrane
15. ASTM D4263 — Standard Test Method for Determining Moisture in Concrete by the Plastic Sheet Method
16. ASTM E84 — Standard Test Method for Surface Burning Characteristics of Building Materials
17. ASTM E96 — Standard Test Methods for Water Vapor Transmission of Materials

F. American Society of Mechanical Engineers (ASME) www.asme.org

1. ASME A112.6.3 — Floor and Trench Drains

G. American National Standards Institute (ANSI) www.ansi.org

1. ANSI A108/A118/A136.1 — American National Specifications for the Installation of Ceramic Tile

H. Tile Council of North America (TCNA), www.tcnatile.com

1. Handbook for Ceramic, Glass and Stone Tile Installation

I. Materials and Methods Standards Association (MMSA), www.mmsa.usa

1. MMSA Bulletins 1 – 16

J. International Organization for Standardization (ISO), www.iso.org

1. ISO 13007 — Ceramic Tiles Grouts and Adhesives
2. ISO/TS 11665 — Measurement of Radioactivity within the Environment (Radon)

1.3 PERFORMANCE, TESTING AND INSPECTION

A. General:

1. Comply with manufacturer's standards.
2. Job site inspections shall be done as herein specified and as listed in drawings.
3. Testing shall be done as herein specified and as listed in drawings.

B. Standards:

1. **General:**

Item	Name of Test	Performance	Testing Std.
Subsurface	Subsurface level tolerance, typical	1/8″ in 10′-0″ non-cumulative	ANSI standards
		1/16″ in 1′-0″ non-cumulative	
	Subsurface level tolerance between adjoining edges of same or dissimilar materials	1/32″ max	
	Moisture level	Dry	ASTM D4263 and Section 07260
Flooring Installation	Slip Resistance Coefficient of Friction	0.6 min level to 5%	ASTM C 1028
	Slip Resistance Coefficient of Friction	0.8 min greater than 5%	
Movement Joints	Locations	Interior: not to exceed 24′-0″ to 36′-0″ in each direction over floor.	TCNA EJ171-07
Floor and Wall Finishes	Interior Surface Finishes	Materials shall be smooth, hard, non-absorptive material within boundaries indicated in building code and as revised to be more inclusive as indicated in contract documents.	CBC 1210.2
Wall to floor transition	Type	3/8″ min. radius cover of smooth, hard, non-absorptive material.	Health dept. having jurisdiction
Refer to drawings and as herein specified			

2. **Wall and Ceiling Sheathing**

   a. Refer to Section 09 29 00 - Gypsum Board & Sheathing Substrates.

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing:**

Item	Name of Test	Performance Results	Testing Std.
Sealers	Appearance of substrate not altered	Mockup on samples of tile shall be provided with submittal for visual approval by **Architect** prior to installation of tile.	

Shower Pan, Sauna and Steam room floor Assemblies	Flood Test	No leaks visible after 36 hours CPC, Section 411.8.1	Laticrete TDS 169 Flood Testing Procedures

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit product information, samples, and shop drawings in one complete submittal package:

1. Manufacturer Product & Technical Data for all assembly components.
2. Manufacturer MSDS Sheets
3. Manufacturer Installation Instructions
4. Manufacturer and Contractor Warranties
5. Manufacturer Certifications
6. Product Samples:

a. Provide three (3) of each type, color, size, and finish included in the work, noted with designation herein, and noted in the drawings, including:

1) Full size tile and trim shapes (without sealer)

a) Where tile has color or pattern variation, provide samples which represent the full potential range of variation.

2) Grout color samples
3) Sealant color samples
4) Prefabricated joints / transitions

b. Provide one (1) additional tile sample of each type, color, size, and finish included in the work, noted with designation herein, and noted in the drawings with sealer applied to the tile sample.

7. Shop drawings:

a. Submit drawings (plans, elevations) showing location for each type of tile and clearly indicating pattern, color, expansion joints, soft joints (sealant), and tile start points.

1) **Contractor** shall use as a guide the TCNA Manual, drawings and specifications, most current editions for expansion and sealant joint locations.

8. Mock-Ups:

a. Erect at locations approved by **Architect**.

1) Size: 4’-0” x 4’-0” minimum or as required to show color, texture, and pattern variations.
2) Mock-up shall be part of final construction once approved by **Architect** and **Owner**.

b. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.

1) Install a fully finished mock-up for each tile type and installation type for review and approval, including all components for the complete assembly, including but not limited to:

a) Floor tile
b) Base tile or transition
c) Wall tile
d) Outside corners
e) Inside corners
f) Trim pieces including at top edge of wall tile
g) Grout
h) Sealant
i) Sealer on grout mock-up shall be done in field in a non-conspicuous location for review by **Architect.**
j) Tile sealer mock-up shall be provided on tile as part of samples submittal.

c. Tile and grout mock-up will be reviewed for layout, color range, pattern, lippage, joint quality and consistency, and workmanship.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer shall have been in business for **five (5)** years providing/finishing similar size projects and complexity.

C. Installation System Manufacturer specializing in adhesive, mortar, grout and other tile assembly installation materials shall have minimum **ten (10)** years' experience and ISO 9001 certification.

1. Obtain installation materials from single source manufacturer to ensure consistent quality, full compatibility, and compliance with specified warranty requirements.

D. Lead Times:

1. Bidders and **General Contractor** shall coordinate with supplier to verify product lead times during bid and at award of contract, and account for such lead times in their costs and schedules.

a. Bidders shall certify in writing that all materials have acceptable lead times as they relate to availability for sub-contractor and **General Contractor** to meet construction schedule and sequence of construction.

1) Bidders shall provide an itemized list of materials which might have or are confirmed to have a lead time problem and what the anticipated lead time is.
2) Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid.

2. **General Contractor** and **Subcontractor** shall be responsible for preparing submittals and obtaining Architects review and acceptance of submittal, and for ordering materials in time to meet the construction schedule.

    a. Additional time required of **Architect** to reselect materials or review alternate proposed materials due to the failure of the **General Contractor** and **Subcontractor** to accommodate sufficient time for these activities, including the potential for submittal revision and resubmittals, may be back charged to the **General Contractor** by the **Owner**.

E. Stipulations

1. Installation materials including adhesive, thin set, grout and sealant shall be used from a single manufacturer in order to provide specified extended system warranty.
2. All finish floor surface material shall meet or exceed the minimum "ADA" Minimum Coefficient of Friction.
3. Tile contractor, by commencing the work of this section, assumes overall responsibility to assure that all assemblies, components and parts shown or required within the work of this section comply with contract documents and are compatible with each other and with the conditions and expected use.
4. Floors to receive tile finish shall not be leveled with gypsum- or asphalt-based compounds.

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to:

    a. Substrate preparation
    b. Substrate vapor emission & alkalinity testing and compliance
    c. Adhesion testing
    d. Flooring transitions
    e. Crack and waterproofing application to substrates
    f. Wall penetrations
    g. Caulking and sealing
    h. Joints – expansion and control
    i. Grout types
    j. Mock up

2. **General Contractor** shall request meeting at least three weeks prior to commencing work.

G. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

H. Installation of tile shall be done under finished (not temporary) lighting conditions to ensure tile is properly spaced, flush, and true.

I. Comply with ANSI Standard for Tile Installation Material and current Tile Council of America Handbook for products and materials indicated for setting and grouting.

J. Refer to drawings and to these specifications for criteria related to control joints at walls and floors.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver materials to building site in manufacturer's labeled, unbroken containers.

C. Store tile and installation system materials in a dry location; handle in a manner to prevent chipping, breakage, and contamination.

D. Protect latex additives, organic adhesives, epoxy adhesives and sealants from freezing or overheating in accordance with manufacturer's instructions; store at room temperature when possible.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

B. Comply with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during and after installation.

C. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

D. Maintain minimum and maximum temperature limits as recommended by manufacturers.

E. Illuminate the work area during installation providing the same level and angle of illumination as will be available for final inspection.

F. Do not apply materials on wet or damp surfaces.

G. Defer laying tile until other work that might cause damage to flooring has been completed.

H. Concrete surfaces shall be:

1. Cured a minimum of 28 days at 70° F, including an initial seven (7) day period of wet curing.
2. Wood float finished, or better, if the installation is to be done by the think bed method.
3. All curing compounds or topical vapor emissions treatments shall be removed and/or concrete floor scarified for proper adhesion of adhesives, mortars, membranes, etc.

I. Advise **General Contractor** of any surface or substrate conditions requiring correction before tile work commences.

1. Beginning of work constitutes acceptance of substrate or surface conditions.

J. Maintain ambient temperature not less than 50°F or more than 100°F during installation and for a minimum of seven (7) days after completion.

1. There should be no ice in/on slab.

a. Freezing after installation will not damage latex Portland cement mortars.

2. Protect Portland Cement based mortars and grouts from direct sunlight, radiant heat, forced ventilation (heat & cold) and drafts until cured to prevent premature evaporation of moisture.
3. Epoxy mortars and grouts require surface temperatures between 60°F and 90°f at time of installation.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish additional **25-year** System Warranty which is in addition to initial manufacturer and Contractor product and installation warranty.

1. Warranty shall cover the replacement of Finish tile material, all installed materials, sealants, adhesives, mortar bed, grout, etc. for a period as herein listed:

a. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner** by product manufacturer.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Concrete slab substrate
2. Concrete deck substrate
3. Wood deck substrate
4. Wall and ceiling framing
5. Wall sheathing and substrates
6. Wall, floor & ceiling penetrations
7. Plumbing
8. Electrical

B. Related Sections include, but are not limited to:

1. Division 1
2. Section 03 30 00 – Cast-in-Place Concrete
3. Section 05 40 00 – Cold-Formed Metal Framing
4. Section 06 10 00 – Rough Carpentry
5. Section 07 26 00 – Concrete Slab Vapor Emission Control Treatment
6. Section 07 92 00 – Sealants and Caulking
7. Section 09 22 16 – Non-Structural Metal Framing
8. Section 09 29 00 – Gypsum Board & Sheathing Substrates
9. Section 10 28 00 – Toilet Accessories

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. Proceed with tile work only after curbs, vents, drains, piping, and other projections through substrate have been installed and when substrate construction and framing of openings have been completed.

D. **General Contractor** shall coordinate slab vapor emission and PH testing of concrete floor treatments, or removal thereof, prior to the installation of finish flooring as herein specified. Coordinate with Section 07 28 00 Concrete Slab Vapor Emission and Alkalinity Control Treatment.

1.13 EXTRA MATERIAL

A. Submit as part of project closeout:

1. Provide extra material for each product type, color, finish, etc. in same lot as installed product.

   a. Furnish written certification that extra materials supplied have been inspected and confirmed to be the same as those used in the Work.

2. Provide extra material in unopened fully labeled containers

   a. Do not supply anything less the full cartons / containers.
   b. Furnish in factory packaged and labeled cartons and identify cartons with Project name, location(s) within building (room names/numbers).
   c. Deliver extra materials to location directed by the **Owner** just prior to substantial completion.

3. Provide the following:

a. 10% minimum of installed quantity of each full-size floor, wall, or coved base tile for each product, color, texture, etc. installed.

1) Provide material in sealed boxes and clearly labeled with:

a) Tile designation per drawings
b) Material manufacturer, product, color, finish, and texture

b. 10% minimum of each grout used labeled with:

1) Grout designation per drawings
2) Grout manufacturer, product type, product name, and color

c. 2 gallons of each cleaner and sealer used labeled with:

1) Sealer manufacturer and product names

d. 2 tubes of each sealant color labeled with:

1) Sealant manufacturer, product name, and color names

1.14 GENERAL SYSTEM DESCRIPTION

A. Tile and stone installation integral with membranes, adhesives, grouts, sealants, etc.

B. Installation of products from single manufacturer as required to meet extended system warranty specified herein.

1. Use of products from multiple manufacturers is not acceptable.

C. **Tile Assemblies, typical U.N.O.:**

1. TCNA F122 - Thin Set Tile Floor Assembly

a. Tile and Grout o/
b. Latex Portland Cement Mortar Bond Coat o/
c. (Bonded) Waterproofing / Anti-Fracture Membrane o/
d. Concrete or cured mortar bed

2. TCNA W245 – Thin-set Tile Interior Wall Assembly

a. Tile and Grout o/
b. Latex Portland Cement Mortar Bond Coat o/
c. Coated Glass Mat Water Resistant Gypsum Backer Board (per Section 09 29 00) o/
d. Wood or Metal Studs

D. **Shower Tile Assembly**

1. TCNA F121 – Cement Mortar Bed Tile Floor Assembly, typical @ showers in conjunction with TCNA B420 Shower Receptor **[requires a depressed slab]**

a. Tile and Grout o/
b. Latex Portland Cement Mortar Bond Coat o/
c. Reinforced Mortar Bed (1-1/4" min. to 2" max.) o/

d. Shower Pan o/
e. Sloped Concrete slab on grade or Sloped Concrete fill

2. TCNA W245 – Thin-set Tile Interior Wall Assembly

a. Tile and Grout o/
b. Latex Portland Cement Mortar Bond Coat o/
c. Bonded Waterproof Membrane o/
d. Coated Glass Mat Water Resistant Gypsum Backer Board (per Section 09 29 00) with Flexible Sealant joint between b.o. Backer Board and Mortar Bed o/
e. Wood or Metal Studs

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single-source responsibility specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers and installers shall be one of the following, and as listed herein and in Drawings:

1. Tile:

a. Refer to Drawings for specifications and manufacturer name(s).

2. Tile installation assembly products (all products from one manufacturer as required to meet specified warranties):

a. Laticrete, www.laticrete.com
b. MerKrete, www.merkrete.com
c. Custom Building Products, www.custombuildingproducts.com

3. Transition Trims

a. Schluter www.schluter.com
b. Blanke Corp., www.blankecorp.com

4. Sealers and Cleaners:

a. Laticrete, www.laticrete.com
b. MerKrete, www.merkrete.com
c. Custom Building Products, www.custombuildingproducts.com
d. Miracle Sealants, www.rustoleum.com/pages/miracle-sealants

5. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. **Wall and Ceiling Sheathing**

1. Refer to Section 09 29 00 – Gypsum Board and Sheathing Substrates

B. **Grout:**

1. Application: Typical, U.N.O.

a. Mfgr: Laticrete
b. Product: PermaColor
c. Material: High performance, fast setting polymer fortified grout featuring built-in Microban Anti-Microbial Protection
d. Standards:

1) ANSI A118.6
2) ANSI A118.7
3) EN 13888
4) ISO 13007

e. Properties:

1) Tensile Strength: 510 psi (3.5 MPa)
2) Compressive Strength: 4750 psi (32.8 MPa)
3) Flexural Strength: 1400 psi (9,65 MPa)
4) Linear Shrinkage: 0.065%
5) Water Absorption: 3.25%

f. Testing:

Test	Test Method	ISO 13007-3 CG2WA Specification	Results
28 Day Cure Abrasion Resistance	ISO 13007-4 4.4	Less than or equal to 1,000 mm3 (0.061 in3)	121–132 mm3 (0.0074– 0.0081 in3)
28 Day Cure Flexural Strength	ISO 13007-4 4.1.3	Greater than 2.5 MPa (362 psi)	8.5–9.2 MPa (1226–1340 psi)
6 Day 21 Day Water Soak 25 Freeze/Thaw Cycle Flexural Strength	ISO 13007-4 4.1.3	Greater than 2.5 MPa (362 psi)	3.31–3.79 MPa (480–550 psi)
28 Day Cure Compressive Strength	ISO 13007-4 4.1.4	Greater than 15 MPa (2175 psi)	35.7–36.8 MPa (5,176– 5,339 psi)

6 Day 21 Day Water Soak 25 Freeze/Thaw Cycle Compressive Strength	ISO 13007-4 4.1.4	Greater than 15 MPa (2175 psi)	30.4–31.2 MPa (4,408– 4,518 psi)
28 Day Cure Shrinkage	ISO 13007-4 4.3	Less than 3 mm/m (0.12 in./3.28 ft)	0.51–0.62 mm/m (0.02–0.024 in/3.28 ft)
28 Day Water Absorption Soaked 30 Minutes	ISO 13007-4 4.2	Less than 2 g (0.0044 lb)	0.09–0.14 g (0.0002–0.0003 lb)
28 Day Water Absorption Soaked 240 Minute	ISO 13007-4 4.2	Less than 5 g (0.011 lb)	0.54–0.7 g (0.0012–0.0015 lb)

C. **Latex Portland Cement Mortar Bond Coat, Mortar Bond Coat and/or Bond Coat:**

1. Mfgr: Laticrete
2. Product: 254 Platinum
3. Material: One-step, polymer fortified, thin-set mortar
4. Standards:
    a. ANSI A118.4
    b. ANSI A118.11
    c. ANSI A118.15
    d. EN 12004
    e. ISO 13007-1
5. Properties:

Test	Test Method	Results	Specification
28 day Cure Porcelain Tile Shear Strength	ANSI A118.15 7.2.5	475-575 psi (3.3-4.0 MPa)	>400 psi (2.76 MPa)
Shear Bond Porcelain Tile Water Immersion	ANSI A118.15 7.2.4	250-300 psi (1.7-2.4 MPa)	>200 psi (1.38 MPa)
28 day Heat Aging Tile Shear Strength	ANSI A118.15 7.2.7	600-700 psi (4.1-4.8 MPa)	>400 psi (2.76 MPa)
28 day Cure Quarry Tile to Plywood Shear Bond	ANSI A118.11 4.1.2	250-300 psi (1.7-2.1 MPa)	>150 psi (1.0 MPa)
28 Day Cure Tensile Adhesive Strength	ISO 13007-2 4.4.2	1 MPa (145 psi)	1.8 – 2.6 MPa (261-377 psi)
7 Day Cure 21 Day Water Immersion Tensile Adhesive Strength	ISO 13007-2 4.4.3	1 MPa (145 psi)	1.3-1.5 MPa (174-221 psi)
14 Day Cure 14 Day Heat Age Tensile Adhesive Strength	ISO 13007-2 4.4.4	1 MPa (145 psi)	2.4-3.0 MPa (345-438 psi)
7 Day Cure 21 Day Water Immersion 25 Freeze/Thaw Cycle Tensile Adhesive Strength	ISO 13007-2 4.4.5	1 MPa 145 psi)	2-1.7 MPa (171-247 psi)
Open Time After 30 Minutes	ISO 13007-2 4.1	0.5 MPa (73 psi)	1.3-1.9 MPa (190-283 psi)

Slip	ISO 13007-2 4.2	Less than or equal to 0.5 mm (0.02 inches)	0.5 mm (0.02 inches)
Transverse Deformation	ISO 13007-2 4.5	Greater than or equal to 2.5 mm (0.1 in.) and less than 5 mm (0.2 in.)	3.2-3.6 mm (0.13-0.14 in.)

D. **Bonded Membrane and/or Bonded Anti-Fracture Waterproofing Membrane:**

1. Application: Typical, U.N.O.

   a. Mfgr: Laticrete
   b. Product: HydroBan
   c. Properties:

Physical Property	Test Method	Results
7-day Hydrostatic Tes	ANSI A118.10	Pass
7-day Breaking Strength	ANSI A118.10	265–300 psi (1.8– 2.1 MPa)
7-day Water Immersion	ANSI A118.10	95–120 psi (0.7–0.8 MPa)
7-day Shear Bond	ANSI A118.10	200–275 psi (1.4– 1.9 MPa)
28-day Shear Strength	ANSI A118.10	214–343 psi (1.5– 2.3 MPa)
System Crack Resistance Test	ANSI A118.12.5.4	Pass (High)
Water Vapor Transmission	ASTM E 96– 00E1 Procedure B	0.515 grains/h • ft2 (0.3602 g/h • m2)
Water Vapor Permeance	ASTM E 96– 00E1 Procedure B	1.247 perms 71.21 (ng/Pa • s • m2)
System Performance	ANSI A118.10; ASTM C627; TCA Rating	cycles 1–14 "Extra Heavy"
Potability of Water Applicable to Waterproofing Systems	NBR 12170:2009 (Technical Norm from Brazil)	Pass
Tensile Strength for Elongation		250%
Thickness (Dried)		20–30 mils (0.5–0.8 mm)

2. Application: Showers

   a. Mfgr: Laticrete
   b. Product: HydroBan
   c. Properties:

Physical Property	Test Method	Results
7-day Hydrostatic Test	ANSI A118.10	Pass
7-day Breaking Strength	ANSI A118.10	265–300 psi (1.8– 2.1 MPa)
7-day Water Immersion	ANSI A118.10	95–120 psi (0.7–0.8 MPa)
7-day Shear Bond	ANSI A118.10	200–275 psi (1.4– 1.9 MPa)
28-day Shear Strength	ANSI A118.10	214–343 psi (1.5– 2.3 MPa)
System Crack Resistance Test	ANSI A118.12.5.4	Pass (High)
Water Vapor Transmission	ASTM E 96– 00E1 Procedure B	0.515 grains/h • ft2 (0.3602 g/h • m2)

Water Vapor Permeance	ASTM E 96– 00E1 Procedure B	1.247 perms 71.21 (ng/Pa • s • m2)
System Performance	ANSI A118.10; ASTM C627; TCA Rating	cycles 1–14 "Extra Heavy"
Potability of Water Applicable to Waterproofing Systems	NBR 12170:2009 (Technical Norm from Brazil)	Pass
Tensile Strength for Elongation		250%
Thickness (Dried)		20–30 mils (0.5–0.8 mm)

E. **Shower Pan:**

1. Application: Typical Shower Pan, u.o.n.

   a. Mfgr: Laticrete
   b. Product: HydroBan Sheet Membrane
   c. Material: Single component, self-curing liquid rubber polymer that forms a flexible, seamless waterproofing / crack isolation membrane that does not require the use of a fabric in the field.
   d. Standards:

      1) ANSI 118.10
      2) ANSI A118.12
      3) IAPMO PS106 approved

   e. Properties:

Physical Property	Test Method	Results
Seam Strength	ASTM D751	32.7 lbs/in. (0.6kg/mm)
Breaking Strength Transverse	ASTM D751 Procedure B	1298 psi (9.0 MPa)
Breaking Strength Longitudinal	ASTM D751 Procedure B	1867 psi (12.9 MPa)
Waterproofness	ASTM D4068	Pass
7-Day Dry Shear Strength	ASTM C482	175 psi (1.2 MPa)
7-Day Water Immersion Shear Strength	ASTM C482	107 psi (0.7 MPa)
4-Week Shear Strength	ASTM C482	103 psi (0.7 MPa)
12-Week Shear Strength	ASTM C482	105 psi (0.7 MPa)
100-Day Water Immersion Shear Strength	ASTM C482	113 psi (0.8 MPa)
Permeance	ASTM E96 Procedure E	0.06 Perm (inch-lb)
Water Vapor Transmission	ASTM E96 Procedure E	0.104 grain/hrft 2
Service Requirement	ASTM C627	Rated Extra Heavy (TCNA)
Resistance to Temperature:		min./max. -22°F / +194°F (- 30°C / + 90°C)

Total Thickness (approximate)	Physical measurement	20-30 mils (0.5-0.7 mm)

F. **Shower Accessories:**

1. Sealant and backer rod and/or bond breaker tape:

   a. Application: Expansion & Control Joints, typical
   b. Manufacture: Laticrete
   c. Product: Latasil
   d. Standards:

      1) ASTM C794
      2) ASTM C920
      3) Backer rod: As approved by sealant mfgr. and in accordance with details and TCNA
      4) Bond Breaker Tape: As approved by sealant mfgr. and in accordance with details and TCNA

   e. Properties:

Service Temperature Range	-40°F (-40°C) to +350°F (177°C)
Sag or Slump	None
Tack Free Time at 77° F (25° C), 50% RH	17 minutes
Tooling Time	7 – 10 minutes
Durometer Hardness -Shore A	27
Tensile Strength	280 psi (1.9 Mpa)
Dynamic Joint Movement	+/- 25%
Weatherability, 10,000 hours QUV Weatherometer	No change

   f. Joint Size: Match Grout Width, U.N.O.
   g. Color: As Selected by **Architect** for each Grout Color Condition
   h. Primer: Latasil 9118 Primer

2. Sealer - Floor Sealer & Slip Protection & Grout Sealer:

   a. Application: Typical, U.N.O.
   b. Manufacturer: Miracle Sealants & Abrasive Co.
   c. Product: 511 Impregnator – Natural look penetrating sealer
   d. Material: Polymerized Silicone
   e. Standard: Static coefficient of friction as herein specified

3. Sealer - Wall and Ceiling Grout Sealer:

   a. Application: Typical, U.N.O
   b. Manufacturer: Miracle Sealants & Abrasives Co.
   c. Products:

      1) Typical, u.o.n.: 511 Impregnator – Natural look penetrating sealer

2) Porous surfaces: 511 Porous Plus – Natural look penetrating sealer

a) Use for Sanded Grout

d. Material: Polymerized Silicone
e. Standard: 0.6 max "Static Coefficient of Friction"

4. Cleaner - Surface:

a. Application: Typical
b. Manufacturer: Miracle Sealants & Abrasives Co.
c. Product: Mira Clean #1

G. **Accessories:** **[Specifier, select from the following]**

1. Floors - Same Height Transitions:

a. Application: Tile to Carpet and Tile to Tile

1) Manufacturer: Schluter
2) Model: Schiene

a) Provide Schluter Schiene-R at radius conditions

3) Finish:

a) AE Satin Aluminum Anodized
b) A Aluminum
c) E Stainless Steel 304
d) EB Brushed Stainless Steel 304
e) M Solid Brass

[Specifier, additional finishes available in select heights; refer to website for available options and coordinate with tile height]

4) Height: To match finish height of tile when installed

b. Application: Tile to Carpet and Tile to Tile – with Edge Capture **[Specifier, this is a "T" shaped which can be used at retrofit applications where a transition flange cannot be placed under the tile]**

1) Manufacturer: Schluter
2) Model: Reno-T
3) Finish:

a) AE Satin Aluminum Anodized
b) AT Satin Nickel Anodized Aluminum
c) AK Satin Copper Anodized Aluminum
d) AM Satin Brass Anodized Aluminum
e) E Stainless Steel 304
f) EB Brushed Stainless Steel 304
g) M Solid Brass

4) Height: 11/32″ (9 mm)

2. Floors - Different Height Transitions:

a. Application: Tile to lower flooring materials (adjustable slope):

1) Manufacturer: Schluter
2) Model: Reno-V
3) Finish: AE Anodized Aluminum
4) Height: To match finish height of tile when installed
5) Slope Leg:

a) 3/4″
b) 1-3/16″
c) 1-9/16″

b. Application: Tile to lower flooring materials (fixed height)

1) Manufacturer: Schluter
2) Model: Reno-TK

a) Provide Schluter Reno-TK-R at radius conditions **[Specifier, not available in stainless steel]**

3) Finish:

a) AE Satin Aluminum Anodized
b) E Stainless Steel 304
c) EB Brushed Stainless Steel 304
d) M Solid Brass
e) ACB Bright Chrome Anodized Aluminum
f) AT Satin Nickel Anodized Aluminum
g) ATGB Brushed Nickel Anodized Aluminum
h) ABGB Brushed Antique Bronze Anodized Aluminum

4) Height: To match finish height of tile when installed

3. Cove Shaped Profile - Wall Tile to Floor tile:

a. Application: Aluminum Tile Wall to Tile Floor coved transition

1) Manufacturer: Schluter
2) Model: DILEX-AHK
3) Finish:

a) AE Satin Anodized Aluminum

4) Height: To match finish height of floor tile when installed

5) Accessories:

a) Outside Corner
b) Inside Corner

c) Connector
d) End Cap

b. Application: Stainless Steel Tile Wall to Tile Floor coved transition

1) Manufacturer: Schluter
2) Model: DILEX-EHK
3) Finish:

a) E Stainless Steel 304
b) EB Brushed Stainless Steel 304
c) EV4A Stainless Steel 316 L

4) Height: To match finish height of floor tile when installed
5) Accessories:

a) Outside Corner
b) Inside Corner
c) Connector
d) End Cap

4. Cove Shaped Profile - Wall Tile to Concrete or Top of Existing Floor:

a. Application: Tiled Wall to Concrete or Top of Existing Floor coved transition

1) Manufacturer: Schluter
2) Model: DILEX-AHKA
3) Finish:

a) AE Satin Anodized Aluminum
b) AT Satin Nickel Anodized Aluminum
c) ATGB Brushed Nickel Anodized Aluminum
[Specifier, additional finishes available; refer to website]

4) Height: To match finish height of floor tile when installed
5) Accessories:

a) Outside Corner
b) Inside Corner
c) Connector
d) End Cap

5. Wall Trim:

a. Application: Vertical Outside Corners, End Cap, and T.O. Tile Trim

1) Manufacturer: Schluter
2) Model: Jolly

a) Provide Schluter Jolly-R at radius wall t.o. tile trim conditions

3) Finish:

a) AE Satin Anodized Aluminum

b. Application: Vertical Mitered Outside Corners, End Cap, and T.O. Tile Trim

1) Manufacturer: Schluter
2) Model: Finec
3) Finish:

a) AE Satin Anodized Aluminum

H. Portland Cement Mortar Floor Bed: Consisting of uniform mortar thickness 1-1/4" min. to 2" max, conforming to ASTM C150, Type 1 and ASTM C144
I. Portland Cement: ASTM C150 Type 1
J. Sand: ASTM C144
K. Water: Potable

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Examine substrates where tiles will be installed for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   a. Verify that substrates for setting tile are well cured; structurally sound dry, clean, and free from oil or waxy films, and curing compounds.
   b. Verify that substrate is clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale.
   c. Verify that substrate is level and true to within ¼" in 10' from the required plane and no more than 1/16" in 12" when measured from the high points in the surface for applications by the thin bed method or for installation of veneer work over thin waterproofing membrane.
   d. Verify that substrate is not leveled with gypsum or asphalt-based compounds.
   e. Very substrate is dry per ASTM D4263 – Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method.
3. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
   a. Do not proceed with installation until unsatisfactory conditions have been corrected. Commencement of work signifies acceptance of substrate and installation conditions.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.
2. Confirm all surface treatments, including but not limited to waterproofing and crack isolation membranes, are installed properly before proceeding.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations

B. Prepare as follows, but not limited to:

1. Remove protrusions, bumps, and ridges by grinding or chipping.
2. Repair, fill, and level cracks, holes, depressions and rough or chipped areas in substrate using patching material recommended by setting materials manufacturer.
3. Concrete slab to have steel trowel or light broom finish when tile is installed by the thin-set method.
    a. Level floors in accordance with Section 03 00 61 - Concrete Floor Leveling, Patching and Grouting – Cementitious.
        1) Gypsum material is not allowed.
    b. Surfaces shall be clean and well cured.
4. Ensure substrate is within level tolerances:

3.4 INSTALLATION

A. General:

1. Perform work in accordance with ANSI standards, TCNA methods, manufacturer's installation instructions, and in accordance with the drawings; where in conflict, the most stringent shall apply.
2. Provide threshold trim strips or other edging material where tile terminates at dissimilar finishes, U.N.O.

B. Pre-Treatment

1. Cracks & Joints
    a. Fill all substrate cracks, cold joints and control joints to a smooth finish using a Laticrete latex-fortified thin-set.
2. Coves and Floor/Wall Intersections

a. Fill all substrate coves, floor/wall transitions and changes in plane to a smooth finish using a Laticrete latex-fortified thin-set.

3. Drains

a. Drains must be of the clamping ring type, with weepers as per ASME A112.6.3.
b. Waterproof membranes shall connect at the clamping ring (or the integrated bonding flange where specified by TCNA design) to manage water from floor into drain.

4. Penetrations

a. Allow for a minimum 1/8" space between drains, pipes, lights, or other penetrations and surrounding ceramic tile, stone or brick. Pack any gaps around pipes, lights or other penetrations with a Laticrete latex-fortified thin-set.

5. Main Application:

a. Allow any pre-treated areas to dry to the touch prior to proceeding.

C. Placement

1. Place tile material in accordance with patterns indicated or as directed by Architect; carefully plan tile layouts, ensure pattern is uninterrupted from one surface to the next and through doorways.
2. Neatly cut tile around fixtures and drains; accurately from corners, base, intersections and returns.

a. Use tile cutting saw to cut tile, typ.
b. Hone edges of all cut tiles to eliminate rough-cut edges.
c. At wall tile penetrations install hole cutout, do not notch.
d. Use inside and outside tile trim units as herein specified and/or indicated in Drawings.

3. Ensure tile joints are uniform in width, subject to normal variance in tolerance allowed in tile size. Ensure joints are tight, without voids, cracks, excess mortar or grout; spacers shall be used to set joints between tiles, typical.
4. Install metal edge trim at transitions to door frames.
5. **Back butter** all tile during installation
6. Sound tile after setting, remove and replace hollow sounding units.
7. Allow tile to set for a minimum 48 hours prior to grouting.

a. Provide and install required sealants and caulking at areas around through wall pipes, plumbing, and other wall penetrations.
b. Provide sealant joint where tile butts against other wall finishes.

D. Accessories

1. Install metal inside corner transition trim at floor to wall tile condition.
2. Internal wall angles, external angles and exposed edges shall be made with pre-formed trim shapes as herein specified and/or indicated in Drawings.

E. The word "tile" is used as general name for all floor, wall and counter top materials.

F. Floor area & wall base – Typical, u.n.o.

1. Slab shall be well cured, level and free of cracks
2. Sheet and Liquid Membranes:
    a. Install thin set mortar as slurry bond coat over substrate prior to installation of thick bed mortar.
    b. Install Crack Protection / Thin-set Sheet Waterproofing membrane over entire floor substrate and up face of wall 8" at tile base, typ.
    c. Install Shower Pan Sheet membranes at all shower floors and shower bases in accordance with TCNA and manufacturer's recommendations.
    d. Install waterproof membrane and backerboard at all shower walls and ceilings in accordance with TCNA design identified herein and manufacturer's recommendations.
    e. Test Waterproofing system/assembly with EFVM method or other measure as approved by **Architect**. Replace / repair all defective conditions discovered by testing.
    f. Install per manufacturer's recommendations.
3. Bond coat mortar:
    a. Install per manufacturer's recommendations, TCNA standards and as herein specified and modified.
4. Grout with color as selected by **Architect**.
5. Joints: Expansion, construction, isolation, contraction and perimeter joints
    a. Refer to most current TCNA Handbook, Method EJ171-07 for recommendations on locating, treating and detailing various types of construction joints.
        1) Joints not to exceed in spacing beyond 25'-0" for interior wall tile
        2) Install sealant with bond breaker tape at transitions to dissimilar material
        3) Install sealant with bond breaker tape at changes in plane of tile.
        4) Install using primer as recommended by sealant manufacturer.
        5) Install sealant with backer rod at expansion joints.
6. Tile installation
    a. General
        1) Custom cutting required to provide curved and miscellaneous special shapes use "Water Jet" cutting method exclusively.
        2) Jobsite Blending: blend tiles before installing in accordance with reference standards to produce an even range and distribution of color and finish.
    b. Installing Tile:
        1) Install tile in pattern indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size.
            a) Adjust to minimize tile cutting and to avoid tile less than half size.
        2) Smooth cut edges of tile and/or use appropriate cutter or wet saw to produce smooth cuts.

a) Provide straight cuts which align with adjacent materials.

3) Extend tile into recesses and under equipment and fixtures to form a complete covering without interruption.
4) Terminate tile neatly at obstructions, edges, and corners, without disruption of pattern or joint alignment.
5) Provide tile joints uniform in width, subject to variance in tolerance allowed in tile size.
    a) Make joints smooth and even, without voids, cracks, or excess mortar or grout.
6) Mix mortar in strict accordance with manufacturer's recommendations.
7) Apply setting material in accordance with manufacturer's directions and install tile before bonding mortar has started initial cure.
    a) For thin set mortar application, use a notch trowel that will achieve the recommended coverage of mortar after tiles have been installed.
    b) Reference standard coverage information and follow manufacturer's recommendations for trowel size when using mortars.
8) Do not spread more material than can be covered within 10 to 15 minutes. If "skinning" occurs, remove bonding mortar and spread fresh material. Spread bonding mortar with notches running in one direction, which shall be perpendicular to the pressing, pushing and pulling of tile during placement.
9) Place tile in fresh bonding mortar, press, push and pull the tile slightly to achieve as near 100% coverage and contact of tile with setting material and substrate as possible.
    a) The coverage shall be no less than 85% and be sufficiently distributed to give full support of the tile.
    b) Make sure that all corners and edges are well supported with mortar. Leave no hollow corners or edges.
        i. NOTE: 95-100% coverage is mandatory for wet or exterior areas.
    c) A small amount of bonding mortar can be placed onto the entire back of the tile using a trowel in order to assist in optimum adhesion and coverage of the bonding mortar being used.
10) Ensure there is a minimum 1/8" of bonding mortar between tile and substrate after proper bedding.
    a) Installer must periodically remove sheets or individual tiles to assure proper bond coverage consistent with industry specifications.
    b) If coverage is found to be insufficient, use a larger size notch trowel.
11) Use a beating block and hammer or rubber mallet so that faces and edges of individual tiles are flush and level with faces and edges of adjacent tiles, and to reduce slippage.

7. Thin Set Method:
    a. Install thin set mortar in compliance with herein specified standards and manufacturers recommendations.

b. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected.

1) Work the thinset mortar into good contact with the substrate and comb with notched side of trowel.
2) Spread only as much thinset mortar as can be covered while the mortar surface is still wet and tacky.
3) When installing tile/stone, rib/button, lug back tiles, pavers or sheet mounted ceramics/mosaics, spread thin set mortar onto the back of (back-butter) each piece/sheet in addition to troweling thinset mortar over the substrate.

a) Beat each piece/sheet into the thinset mortar with a beating block or rubber mallet to insure full bedding and flatness.
b) Allow installation to set until firm.
c) Clean excess thinset mortar from tile or stone face and joints between pieces.

3.5 INSTALLATION – GROUT AND SEALANT JOINTS

A. Grouting:

1. Install grout in accordance with manufacturer's written instructions.
2. Follow manufacturer's recommendations for minimum cure time prior to grouting.
3. Remove spacers and debris in grout joints; remove dust/dirt off tile faces using a wet sponge. Do not leave water standing in joints.
4. Spread using a sharp edged, firm rubber grout float; work grout diagonally across joints, packing them full.
5. Cut excess grout of the tile surface using the edge of the float held at a 90degree like a squeegee stroking diagonally to avoid pulling grout out of filled joints.
6. Initial cleaning of the remaining film/haze can begin approximately at the manufacturer's specified time after grouting (wait slightly longer at colder temperatures).

a. Dip a clean sponge into the bucket and then wring out cleaning solution until sponge is damp.
b. Wipe grout joints and tile surface in a light circular motion, loosening grout residue while keeping the joints smooth and full.
c. Drag a clean sponge diagonally over the scrubbed surfaces to remove any remaining grout residue.
d. Rinse sponge frequently and change wash water at least every 50 s.f.
e. Discard sponges as they become "gummy" with residue.
f. Check work as you clean. If necessary, repair any low spots with additional grout.

7. Final Cleaning

a. Allow cleaned areas to dry as with initial cleaning and inspect tile/stone surface.
b. Begin final cleaning when grout joints are hard to the touch, depending upon the size of the grout joint and the ambient temperature.

c. Use only clean water and simply dunk the white nylon scrub or scouring pad in the water and let all the water pour out – it should be nearly dry and then start to break up the grout haze left from the initial wash on the surface of the tiles.
d. Rinse scrub pad frequently, letting all water escape before continuing to clean.
e. Then, use a clean cloth to the scrubbed surfaces to remove any residue.
f. Allow cleaned areas to dry and inspect tile/stone surface.
    1) Make certain to check tile surface with adequate lighting after the tile surface is dry.
    2) Continue cleaning until all film/haze has been removed.
g. Inspect grout joint for pinholes/voids and repair them with freshly mixed grout.

8. Cautions:
    a. Do not use undiluted white vinegar on polished marble or limestone unless a test spot in an inconspicuous area indicates no change in finish appearance;
    b. Do not use acid cleaners on epoxy grout less than 7 days old.

B. Expansion and Control Joints:

1. Provide control joints (CJ), expansion joints (EJ) and transition joints as located in contract drawings and in full conformity, especially in width and depth, with architectural details and to include the following locations, but not limited to:
    a. Wall penetrations
    b. Edges of tile abutting dissimilar materials.
    c. Floor penetrations.
    d. Inside horizontal and vertical corners

2. Installation shall incorporate the following:
    a. Substrate joints must carry through, full width, through the tile & stone material.
    b. Install expansion joints in tile or stone over construction/cold joints or control joints in substrates.
    c. Install expansion joints where tile or stone abut restraining surfaces (such as perimeter walls, curbs, columns), changes in plane and corners.
    d. Joint width and spacing depends on application - follow TCNA "Handbook for Ceramic Tile Installation" Detail "EJ-171 Expansion Joints" and refer to grout assembly schedule.
        1) Joint width: ≥ ⅛" and ≤ 1".
        2) Joint width: depth ~2:1 but joint depth must be ≥ ⅛" (3mm) and ≤ ½".
    e. Layout (field defined by joints):
        1) 1:1 length: width is optimum but must be ≤ 2:1.
        2) Remove all contaminants and foreign material from joint spaces/surfaces, such as dirt, dust, oil, water, frost, setting/grouting materials, sealers and old sealant/backer.
        3) Use Laticrete Latasil™ 9118 Primer for underwater and permanent wet area applications, or for porous stone (e.g. limestone, sandstone etc…) installations.
        4) Install appropriate Backing Material (e.g. closed cell backer rod) based on expansion joint design and as specified in Section 07 92 00.

5) Apply masking tape to face of tile, brick or stone veneer.
6) Use caulking gun, or other applicator, to completely fill joints with sealant.
    a) Within 5-10 minutes of filling joint, 'tool' sealant surface to a smooth finish.
    b) Remove masking tape immediately after tooling joint.
    c) Wipe smears or excess sealant off the face of non-glazed tile, stone or other absorptive surfaces immediately.
7) Floor and wall grout joints shall align from floor to wall when same sizes are used.
8) Use spacers of width specified to set tile and maintain proper grout width.
9) Tool joints to be uniform and within tile edges, remove all grout from face of tile and at inside and outside corners.
10) Tool grout so surface of grout is even with tapered edge of tile.

3.6 INSTALLATION – SEALERS AND SLIP PROTECTION

A. Seal all grout with product as herein specified.

B. Install sealer in accordance with manufacturers.

1. After tile has been grouted, ensure that all grout residues is removed from the surface of the tile with a clean sponge and approved cleaner as herein specified and approved by tile manufacturer.
2. Clean surface to ensure that tile is free of lime and water spots in addition to oil, grease, etc.
3. Allow grout to dry for a minimum of 24 hours.
4. Once tile area has been cleaned and dried, proceed with the sealing of the grout and tile with a sealer as herein specified and approved by tile manufacturer and with manufacturer's approved applicators.
5. Install sealer per manufacturer's coverage chart.
6. Install sealer at minimum room temperature of 65ºF.
7. Wipe off excess sealer with a clean towel prior to drying.
8. Allow sealer to dry 60 minutes prior to foot traffic being allowed on the treated surface.

3.7 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.8 FLOOD TESTING

A. Refer to Division 1 for testing requirements.

B. Shower Pan, Sauna Floor and Steam room floor assemblies:

1. Description:

a. Consists of damming the shower drain followed by independent introduction of water into the shower to test the shower pan assembly for water leakage according to such Plumbing Code standards.

2. Duration: 24 hour

3.9 CLEANING AND PROTECTION OF INSTALLATION

A. If one has been used, remove grout release and clean tile surfaces so they are free of grout residue and foreign matter, in accordance with manufacturer's instructions. If a grout haze or residue remains, use a suitable grout haze remover or cleaner and contact grout manufacturer for recommendations. Flush surface with clean water before and after cleaning. Do not use harsh hydrochloric, muriatic or sulfuric acid or acid-based cleaners to clean glazed tiles or tiles grouted with latex modified grout.

B. When necessary, acceptable tile cleaning acids or heavy cleaning of grouted with Portland cement grout shall not be done sooner than 10 days after grouting. Tile and grout shall be soaked with water before cleaning. In the absence of a recommendation from the grout manufacturer, acid cleaning may be done with a saturated solution of phosphoric or sulfuric acid, mixed in accordance with manufacturer's recommendations.

C. After cleaning, provide protective covering and maintain conditions to protect tile work from damage or deterioration. Where tiled surfaces will be subject to equipment or wheel traffic or heavy construction traffic, and during move-in of furniture and equipment, cover protective covering with ¼" hardboard, plywood, or similar material.

D. Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

E. Consult most current manufacturers "Care & Maintenance" for information on post installation cleanup and routine maintenance.

F. Keep floors installed with epoxy adhesive closed to foot traffic for 24 hours @ 70ºF, and to heavy traffic for 48 hours @ 70ºF unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in swimming pools, fountains and other continuous immersion applications for 10 days @ 70ºF for epoxy grout and 14 days @ 70ºF for latex Portland Cement based grout before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60ºF, and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

G. Protect Crack Protection / Thin-set Waterproofing Membrane Assembly during construction prior to installation of tile.

3.10 MAINTENANCE

A. Product shall be installed, cleaned, and sealed as herein specified and in accordance with each specific flooring manufacturers recommendations to maintain the following of their installed product, but not limited to:

1. Slip Resistance
2. Published (ADA approved) Slip Resistance Coefficient of Friction
3. Warrantee requirements

B. Product shall be maintained by **Owner** after occupancy to maintain the Slip Resistance and coefficient of friction rating.

C. Refer also to PROTECTION AND CLEAN UP heading.

3.11 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition, so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the Architect after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 09 30 00

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SECTION 09 51 00 – ACOUSTICAL CEILING SUSPENSION SYSTEM AND TILE

PART 1 **- GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Suspended metal tee-bar grid system complete with wall trim, hanger wire, fasteners, seismic clips, compression posts, etc. and as specified and detailed.
2. Acoustical ceiling tile panels.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction:

a. All occupancy types.

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society for Testing and Materials (ASTM)

1.	ASTM C423	Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
2.	ASTM C635	Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
3.	ASTM C636	Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels
4.	ASTM E84	Surface Burning Characteristics Classification.
5.	ASTM E119	Fire Tests of Building Construction and Materials.

E. Ceilings & Interior Systems Construction Association, www.CISCA.org

F. International Code Council, ICC

1. ICC-ES Evaluation Reports

G. Underwriters Laboratory (UL)

1. Fire Resistance Directory, Acoustical Materials (BYIT)

H. Ceilings & Interior Systems Construction Association (CISCA)

1. Ceiling Systems Installation Handbook, most current edition

I. Abbreviations:

1. AC: Articulation Class.
2. CAC: Ceiling Attenuation Class.
3. LR: Light Reflectance Coefficient.
4. NRC: Noise Reduction Coefficient.
5. HRC: Recycled Content
6. Recycled Content: Average percentage based on weight of component materials. Material recovered or diverted from the solid waste stream, either during the manufacturing process (pre-consumer) or after consumer use (post-consumer).

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General**:
1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards**:

Item	**Name of Test**	**Performance**	**Testing Std.**
Tee Bar Grid Assembly	Evaluation Report for construction	Comply	• ICC Evaluation Service, ICC-ES Evaluation Report, ESR-1308 • ASCE7 -05 to ASCE7-10 Seismic Technical Guide
	Grid Flame Spread	Class I, 25 or less	UL
	Main TEE load capacity	16 lbs./lf.	ASTM C635, CBC, ASCE/SEI 7 and CISCA Guidelines
	Cross TEE load capacity		TEE Bar grid mfgr.
	System Installation	Comply	CISCA Handbook and ASTM C636 Building code, Section 808
Compression Posts	Spacing	12'-0" x 12'-0" spacing	CBC Sect. 803.9, ASTM C-635 & 636 ESR-1222 DONN/USG
	Out of Plumb	1 horizontal x 6 vertical max	
	Slenderness Ratio	(kl/R) 200 or less	
	Attachment to main runner	Attach within 2" of cross member	
	Framing	Approved EMT	Suspension mfgr's assembly
		Stud framed posts	Refer to drawings

Assembly Seismic Rating	Design category	Heavy Duty Design Category D	Building Code chapter 16, ASCE7-05, CISCA, ASTM C-635, Structural drawings
	Earthquake Loads	Comply	Building Code, ASCE7-05, CISCA, ASTM C-635
Wires	Splayed wires angle	45 degrees max and taut	ASTM C-635 & 636
	Gauge	12 Ga.	
	Diagonal wire - Attachment turns	4 tight turns over a distance of 1.5" max	CBC Sect. 803.9, ASTM C-635 & 636
	Vertical wire - Attachment turns	3 tight turns over a distance of 1.5" max	
Seismic Clips	Seismic assembly and compliance	Comply	CBC and mfgr's design and product requirements
Attachment lag screws	Type	I type Lag Screws	ICC ER-5397 & Building code Section 808
Light fixtures	Hanging requirements	Min. 12ga. hanger wires must be attached to the supporting Cross Tee within 3" of the each corner of the fixture	CBC, ASCE/SEI 7 and CISCA Guidelines
Lay-In Panels	Sag Resistant	Comply for 30 years	ASTM C367
	Mold Growth	No growth for 30 years	
	Fire Rating	25 or less	ASTM E84
	Smoke Developed	Index 50	
Refer to drawings and as herein specified			

C. **Sustainability**:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Catalog cuts or standard drawings showing details of system with project conditions clearly identified and manufacturer's recommended installation instructions.
2. Reflected ceiling plans:

a. Contractors shall submit a layout arrangement of ceiling design, dimensions and locations of related integrated lighting and air distribution components.

3. Installation drawings:
    a. Detail complete installation including suspension system, installation of related lighting and air distribution components, access requirements, sound absorption requirements, and fire rating requirements when applicable.
4. Compression posts assembly, compliance guidelines and details for assembly and attachment.

E. Submit samples.

1. (6) 6”x6” sample of each color and finish of all exposed materials.
2. (6) pieces of each type of Grid x 12” long
3. (6) Angle moldings pieces x 12” long
4. (6) Seismic clips

F. Certification and Test Reports:

1. UL Acoustical Compliance:
    a. For acoustical performance, each carton of material must carry Underwriters Laboratories certification for AC (if applicable), CAC and NRC.
2. UL Suspension System Load Compliance:
    a. Manufacturer must certify that the metal suspension system is UL Classified to be load compliant per ASTM C635. For load compliance, each carton of main tees must carry Underwriters Laboratories certification for load compliance.
3. Test reports: Manufacturer will provide test certification for minimum requirements as tested in accordance with applicable industry standards and/or to meet performance standards specified by various agencies.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for five (5) years providing / installing / finishing similar size projects and complexity.

C. Manufacturer shall have been in business for five (5) years providing / installing / finishing similar size projects and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid.

E. Stipulations:

1. Standard for terminology and performance: Applicable publications by Acoustical and Insulating Materials Association (AIMA), including "Performance Data, Architectural Acoustical Materials".

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. **General Contractor** shall request meeting 5 days in advance of construction. Agenda for meeting shall include, but not limited to:

1. Ceiling mounted fixtures, etc.
2. Ceiling penetrations

3. Sprinkler heads
4. HVAC ducting and grills
5. Compression posts – assembly/construction

G. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the Architect by the manufacturer's representative.

H. Miscellaneous criteria:

1. Changes from system: System performance following any substitution of materials change in assembly design must be certified by the manufacturer.
2. Seismic Bracing: Provide as required by Code and specific herein.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements.

C. Storage time of materials at the jobsite should be as short as possible, and environmental conditions should be as near as possible to those specified for occupancy, refer to "Environmental Conditions" heading.

1. Excess humidity during storage can cause expansion of materials and possible warp, sag, or poor fit after installation.
2. Chemical changes in the mat and/or coatings can be aggravated by excess humidity and cause discoloration during storage, even in unopened cartons.
3. Cartons should be removed from pallets and stringers to prevent distortion of material.
4. Long-term (6-12 months) storage under uncontrolled environmental conditions should be avoided.

D. Damaged or deteriorated materials should be removed from the premises.

1. Immediately before installation, to stabilize tile and panels, store them at a location where temperature and humidity conditions duplicate those ambient during installation and anticipated for occupancy.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Installation of acoustical panels shall not begin until building is enclosed, permanent heating and cooling equipment is in operation, and residual moisture from plaster, concrete, or other work as dissipated.

C. Do not use ceiling panels in extreme or continuous high humidity, or areas exposed directly to weather or water.

1. Ceiling panels are sized and designed for use within the standard occupancy range of temperature and humidity, 65-85°F (18-29°C), no more than 70% RH (relative humidity).
2. Humidity can greatly affect product dimensional stability and sag resistance.
3. Sag can become noticeable during periods of high humidity lasting only a few hours.

D. Allow time for dimensional changes in ceiling panels stored at temperature/humidity conditions well outside of those recommended for service.

1. With increases in temperature/humidity, these products expand (up to 1/64 in./ft. (4.3 mm/m) at 85°F (29°C)/90% RH) and may not fit into a fixed grid.
2. Conversely, with decreases, these products will be undersize, but expand to normal when standard ambient conditions return.

E. For some pattern edge details, if perimeter panels must be cut smaller, the cut edge must be field-rabbetted, or the wall angle must be lowered by (1/4") (3/8") (Reveal Depth).

F. Environmental requirements for interior installation:

1. Building shall be enclosed with windows and exterior doors in place and glazed, and roof watertight before installation of ceiling system and related ceiling components.
2. Climatic condition range of 60-85°F (16-29°C) with a max 75% RH.

G. Coordination with other work:

1. Mechanical work: Ductwork above ceiling shall be complete and permanent heating and cooling systems operating to climate conditions prior to installation of ceiling components.
2. Electrical work: Installation of conduit above ceiling shall be complete before installation of ceiling components.
3. Fire protection work: Fire protection lines and/or equipment occurring above ceiling shall be completed and tested before ceiling components are installed.

H. Protection: Protect completed work above ceiling system from damage during installation of ceiling components.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **thirty (30)** year warranty agreeing to repair and/or replace Suspension material that has had an occurrence of 50% or more of Red Rust as defined by ASTM test procedure work and has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner.**

D. Furnish manufacturer's additional **thirty (30)** year warranty agreeing to repair and/or replace lay in panels which show visible sag as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner.**

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Overhead Construction
2. Wall Construction
3. All Recessed/Attached Components, including, but not limited to:
    a. Sprinkler Heads
    b. Lighting – recessed and suspended
    c. Low Voltage Devices
    d. HVAC grills/diffusers
    e. Speakers
    f. Security camera's
    g. Floor or roof structure above
    h. Wall framing and finish
    i. Wall backing
    j. Ceiling framing

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 09 22 16 – Non-Structural Metal Framing
3. Section 09 29 00 – Gypsum Board & Sheathing Substrates

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

1.13 EXTRA MATERIALS

A. Submit as part of project closeout:

1. Provide extra material for each product type, color, finish, etc. in same lot as installed product.
    a. Furnish written certification that extra materials supplied have been inspected and reconfirmed to be the same as those used in the Work.

2. Provide extra material in unopened fully labeled containers.
    a. Do not supply anything less the full carton containers.
    b. Furnish in factory packaged and labeled cartons and identify cartons with Project name.
    c. Deliver materials to project premises just prior to substantial completion, and store at location directed by the **Owner**.
3. Provide the following
    a. 5% of total panels installed for each type

PART 2 **- PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as herein listed and in Drawings:

1. Acoustical Tile & Standard Grid:
    a. DONN/USG Interiors, Inc. www.usg.com
    b. Armstrong www.armstrong.com
    c. Linder, www.linderusa.com
2. Accessories:
    a. Flannery, Inc., www.flannerytrim.com
3. Fasteners:
    a. I-LAG Brand Screws
    b. Approved equivalent that meets ESR report herein listed
4. Reviewed Equivalent by **Architect**.
    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Acoustical Tiles:

1. Schedule:
    a. Type: **CL3** (Refer to Drawings)
        1. Mfgr: Armstrong

2. Type: Layin
3. Material: Wet-formed mineral fiber
4. Edges: Square
5. Model: Calla
6. Color: White
7. Standards:
    1. Fire Rating: No
    2. NRC: 0.85
    3. Light Reflect: 0.84
    4. CAC: 35
    5. R Factor:
        1. 2.9 (BTU units)
        2. 0.445 (WATTS units)
    6. Classifications:
        1. Type IV, Form 2, Pattern E (ASTM E 1264)
8. Item No. 2820
9. Size: 24" x 24" x 1"
10. Features:
    1. Recycled Content: 51% min.
    2. Sag Resistant: HumiGuard®
    3. VOC: Meets CA Dept. of Health Services Standard Practice
    4. Anti-Mold/Mildew: BioBlock® Plus
    5. Scrubs: 10,000 (withstand up to)
11. Warranty: 30 year system
12. Grid Options: 15/16"

B. Suspended Grid Systems:

1. General:
    a. Type:
        1. Restrained system
        2. Direct suspension, supported and braced by connections to overhead structures.
        3. Heavy-duty, meeting requirements Building Code Standards, and as specified.
    b. Components:
        1. Factory fabricated, punched, and otherwise prepared to facilitate rapid installation with minimum Field Work for typical conditions.
        2. Items of like type and size shall be readily interchangeable without modifications.
    c. Grid Runners:
        1. Type: Double-web section type, formed from steel strip in thickness required to meet heavy-duty classification.
    d. Exposed-grid Accessories:

1. Perimeter angles molding, reveals, and other items detailed; roll formed from electro galvanized steel strip to sizes indicated or required for Project conditions, and as accepted.
2. For fixed connection of runner ends to wall angels, 1/8-inch-diameter steel pop rivets, color matched to grid system.
3. Finish exposed components to meet requirements specified for grid system with which used.

e. Panel Hold-Down Clips:

1. Provide for panels less than typical field size, and panels within 20-feet radius of an exterior door.

f. Seismic Clips.

1. Mfgr's building code compliant clips.

2. Schedule:

a. Standards:

1. Fire Rating: None
2. Type: Heavy Duty
3. Recycled Content: Yes (HRC)

b. Finishes:

1. Flat White Standard Painted Metal - Manufacturer's factory finish

c. System:

1. Main TEE:

a. Manufacturer: Armstrong World Industries
b. Model No: 7301WH
c. Size: 15/16" face x 12'-0" long
d. Duty: Heavy
e. Recycled Content: Up to 63%

2. Cross TEE:

a. Manufacturer: Armstrong World Industries

b. Model No:	Length:	Height:	Recycled Content:
1. XL7328WH	2'-0"	1-11/16""	up to 63% total
2. XL7330WH	3'-0"	1-11/16"	up to 63% total
3. XL7340WH	4'-0"	1-11/16"	up to 63% total
4. Face Size:	Match Main Tee		

d. Accessories:

1. Including, but not limited to;

a. Perimeter wall angles & accessories:

1. Wall angle:

a. Mfgr: Armstrong World Industries

b. Type: Hemmed Angle Wall Moldings
c. Horizontal leg: 2″
d. Model: 7808WH

2. Seismic Clip – Main beam

a. Mfgr: Armstrong
b. Model: SJMR15

3. Seismic Clip – 4 way

a. Mfgr: Armstrong
b. Model: SJCG

4. Light Fixture Clip

a. Mfgr: Armstrong
b. Model: LFC

C. Suspension Materials & Fastenings:

1. General:

a. Comply with requirements of building code
b. Comply with standards as herein specified
c. Comply with mfgr's standards

2. Wire:

a. General: ASTM A641, galvanized steel, regular coating soft temper; factory pre-straightened units.
b. Hanger and Safety Wires: 12 gauge.
c. Ceiling and Partition Bracing Wires: 10 gauge

3. Turnbuckles: As required for leveling grid assemblies, of adequate size, electroplated.
4. Fastenings for Accessories:

a. General:

1. Bolts or screws or adequate size, in type appropriate for conditions and materials involved, and made corrosion-resistant materials or coated as accepted.
2. Concealed only, unless otherwise indicated or accepted.

b. I Lag Screws:

1. Mfgr: I-LAG Brand Screws or approved equivalent
2. Model:

1. Wood framing: 150 SD

3. Type: Self Tapping
4. Length: 2-3/4″
5. Material: Galvanized 1018 steel
6. Heat treated: Yes
7. Wire attachment hole: Round
8. Approvals: ICC ESR-5367

D. Miscellaneous Products

1. Perimeter Trim:

a. Steel channel type trim, color keyed to grid system.
b. White color closely keyed to tile color.
c. Required for each installation area, unless otherwise indicated.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 **- EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Field dimensions must be verified prior to installation.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
2. Except as modified by this Section, install suspension system and acoustical tiles in accordance with manufacturer's instruction.
3. Layout acoustical ceilings to provide symmetrical borders not less than half the size of the tile or panel specified.
4. Install suspension systems and tile so that tile joints are aligned, perpendicular and parallel to room or space in which they are installed as indicated in the drawings. Install tiles with pattern runner in one direction.

5. Install the work of this Section so that completed ceilings will be level within 1/8" in 12 ft. of the ceiling line. Printed instructions; comply with governing regulations, requirements as indicated, and industry standards applicable work.

B. Standard reference:

1. Install ceiling panels and suspension system, including necessary hangers, grillage, splines, and other supporting hardware, in accordance with ASTM C636, CISCA Installation Stds., (UL Design) and any applicable code requirements.

C. Manufacturer's reference:

1. Install ceiling panels in exposed grid systems, supported on all edges, in accordance with manufacturer's current printed recommendations and in compliance with code and agency criteria.

D. Drawing reference:

1. Install ceiling panels in accordance with approved shop drawings and manufacturer's requirements.

E. Installation of Suspension System:

1. 12 ga. (min.) Hanger wires may be used for up to and including 4'-0" x 4'-0" grid spacing. Splices will not be permitted in any hanger wires.
2. Provide hanger wires within 8" of the ends of all main and cross runners or at 1/4 of the length of the end tee, whichever is least at the perimeter of the ceiling area.
3. Provide trapeze or other supplementary support members at obstructions to maintain hanger spacing. Provide addition hangers, struts or braces as required at all ceiling breaks, soffits of discontinuous areas. Hanger wires that are more than 1 in 6 out of plumb are to have counterbraced wires.
4. Ceiling grid members may be attached to not more than 2 adjacent walls.
    a. Ceiling grid members should be at least 1/2 inch free of other walls.
    b. If walls run diagonally to ceiling grid system runners, one end of main and cross runners should be free and a minimum of 1/2 inch clear of wall.
5. At the perimeter of the ceiling area where main or cross runners are not connected to the adjacent wall, provide interconnection between the runners at the free end to prevent lateral spreading. Where the perpendicular distance from the wall to the first parallel runner is 12" or less, this interlock is not required.
6. Provide sets of 4-#12 ga. splayed bracing wires oriented 90 degrees from each other and compression strut at the following spacing, and scope:
    a. Place sets of splay wires with compression strut at a spacing not more than 12 feet by 12 feet on center, and not more than 6 feet from all perimeter walls.
    b. Provide splay wires at the edge of vertical ceiling offsets.
    c. The slope of splayed wires should not exceed 45 degrees from the plane of ceiling and should be taut without causing the ceiling to lift. Splices in bracing wires are not permitted.
7. Fasten hanger wires with not less than 3 tight turns.
    a. Fasten splay wires with 4 tight turns.
    b. Make all tight turns within a distance of 1-1/2 inches.

c. Hanger or bracing wire anchors to the structure should be installed in such a manner that the direction of the work aligns as closely as possible with the direction of the forces acting on the wire.

8. Separate all ceiling hanging and bracing wires at least 6 inches from all unbraced ducts, pipes, conduits, etc.

   a. It is acceptable to attach lightweight items, such as single electrical conduit not exceeding 3/4-inch nominal diameter, to hanger wires using connector acceptable to manufacturer.

9. Attach all light fixtures to the ceiling grid runners (Or to the floor or roof structure above, in the case of pendent fixtures) to resist a horizontal force equal to the weight of the fixtures.
10. Flush or recessed light fixtures and air terminals or services weighing less than 56 pounds may be supported directly on the runners of a heavy duty grid system but, in addition, they must have a minimum of 2 - #12 ga. slack safety wires attached for diagonal corners and anchored to the structure above.

    a. All 4 ft. x 4 ft. light fixtures must have slack safety wires at each corner.

11. All flush or recessed light fixtures and air terminals or services weighing more than 56 pounds must be independently supported by not less than 4 #12 ga. taut wires attached to the structure above regardless of the type of ceiling grid system used.

    a. The 4 taut #12 ga. wires including their attachment to the structure above must be capable of supporting 4 times the weight of the unit.

12. Support surface mounted light fixtures by at least two positive devices which surround the ceiling runner and which are supported from the structure above by a #12 ga. wire.

    a. Spring clips or clamps that connect only to the runner are not acceptable.

13. Support pendant mounted light fixtures directly from the structure above with hanger wires or cables passing through each pendant hanger and capable of supporting 4 times the weight of the fixtures.

F. Installation of Acoustical Tile:

1. All cut edges of tile shall meet the following criteria;

   a. Cut new Tegular edge to match existing at Tegular tile.
   b. Paint edges of exposed cut tile with factory paint to match tile color.

G. Radius Components

1. General

   a. Attach the wall angle to the wall through metal hanger strap to insure a snug fit.

2. Outside Radius Installation

   a. A heat gun is required for outside radius installations.
   b. Attach one end of wall angle to wall with any standard fastener system, including industrial adhesives.

      1. However, if adhesives are used, a mechanical fastener must also be used.

c. Continue to 'walk' down the wall with any standard fastener, every 1 – 3" (depending on the radius) until entire wall angle section is installed.
d. To size length of wall angle, install as instructed above until the radius ends. Take a utility knife and SCORE the wall angle where you want the radius to run. Break the wall angle at the scored lines.

3.5 MAINTENANCE

A. Cleaning: Panels can be cleaned easily with a soft brush, vacuum, or dry chemical sponge.

B. Repainting:

1. Spray a thinned, non-bridging vinyl-acrylic flat wall paint.

a. The type of paint selected and the method of application can alter the acoustical performance and fire ratings of any acoustical product.

2. Clean exposed surface of acoustical ceilings, including trim, edge moldings and suspension member; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage.

a. Remove and replace work, which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.6 ADJUSTING

A. Adjust any sags or twists, which develop in ceiling systems, and replace any part, which is damaged or faulty.

3.7 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END SECTION 09 51 00

SECTION 06 65 13 – RESILIENT BASE AND ACCESSORIES

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Moldings

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. Aluminum Association (AA), www.aluminum.org

E. American Society for Testing and Materials (ASTM), www.astm.org

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
2. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
3. ASTM E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
4. ASTM F710 - Standard Practice for Preparing Concrete to Receive Resilient Flooring
5. ASTM F1861 - Standard Specification for Resilient Wall Base
6. ASTM F386 - Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces

F. National fire Protection Association (NFPA), www.nfpa.org

1. NFPA 253 - Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source
2. NFPA 258 - Test Method for Specific Density of Smoke Generated by Solid Materials

3. NFPA 255 - Test Method of Test of Surface Burning Characteristics of Building Materials

G. International Code Council (ICC), www.iccsafe.org

H. National Sanitation Foundation (NSF), www.nsf.org

I. Occupational Safety and Health Administration (OSHA), www.osha.gov

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Installed Moldings	Accessible, change in level	Are accessible	ADA, Section 4.5.2 (Change in Level) & Section 4.5.3 (Carpet-Edge Trim Compliance)
Moldings	Flammability	Class 1, FS = 110 SDD = 870 Fuel Contribution = 55	ASTM E 648
Moldings	Fire Rating	Class 1	ASTM E 648
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Primers
2. Cut sheet of each product type with color selections
3. Adhesive for each product type

E. Submit samples.

1. Of each product type x 6" long

F. Site mock-up, refer to "Mock-Up" heading.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

D. Lead Times**:**

1. **General Contractor** shall coordinate with supplier to verify product lead times during bids and at award of contract, and account for such lead times in their costs and schedules.
2. **General Contractor** shall provide an itemized list of materials which might have or are confirmed to have a lead time problem and what the anticipated lead time is.
3. **General Contractor** shall certify in writing that all materials have acceptable lead times as they relate to availability for sub-contractor and **General Contractor** to meet construction schedule and sequence of construction.

E. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

F. Stipulations:

1. Products shall be approved for each application

G. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Various heights of finish flooring and compliance with accessibility criteria related to slopes, changes in heights, etc.

2. **General Contractor** shall request meeting 5 days in advance of construction.

H. Miscellaneous criteria:

1. Installation of transition trim, moldings, etc. shall not be installed until shop drawing of layout is reviewed.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **two (2)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship for all moldings.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Substrate
2. Finish Flooring
3. Finish Base

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 03 30 00 – Cast-in-Place Concrete
3. Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious
4. Section 07 26 00 – Concrete Slab Vapor Emission Control Treatment
5. Section 09 30 00 – Tile and Stone
6. Section 09 65 16 – Resilient Sheet Flooring
7. Section 09 65 19 – Resilient Tile Flooring
8. Section 09 68 13 – Carpet Tile

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. Schedule slab vapor emission and PH testing of concrete floors prior to the installation of finish flooring.

1.13 EXTRA MATERIAL

A. Submit as part of project closeout:

1. Provide extra material for each product type, color, finish, etc. in same lot as installed product.

a. Furnish written certification that extra materials supplied have been inspected and reconfirmed to be the same as those used in the Work.

2. Provide extra material in unopened fully labeled containers

a. Do not supply anything less the full carton containers.
b. Furnish in factory packaged and labeled cartons and identify cartons with Project name.
c. Deliver materials to project premises just prior to substantial completion, and store at location directed by the **Owner**.

3. Provide the following (Include paint name, drawing designation, type and sheen)

a. Four (4) 12'-0" lengths of each molding type & color.

1.14 VAPOR EMISSION AND ALKALINITY CONTROL COMPLIANCE

A. Refer to Section 07 26 00 – Concrete Slab Vapor Emission Control Treatment

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as herein listed and in Drawings:

1. Roppe, www.roppe.com
2. Burke Mercer, www.burkemercer.com
3. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. Resilient Base: **B1**

1. Product Name: **Pinnacles**, as manufactured by Roppe, www.roppe.com,
2. Material Specification: ASTM F1861 Type TS – rubber, vulcanized thermoset Group 1 – solid, (homogenous) Style A – Straight, Style B – Cove, Style C – Butt-to
3. Material Height: **4"** (101.6 mm)
4. Material Thickness: **1/8"** (3.2 mm) per ASTM F 386
5. Material Length: **48"** sections (1.22 m), 120' (36.58 m)
6. Limited Warranty: 1 year, Manufacturing Only
7. Material & Composition: 100% vulcanized homogenous rubber compound comprised of a premium blend & SBR rubber materials.
8. Color: **150 Dark Grey**
9. Surface Burning: ASTM E84/NFPA 255 Class B
10. Flammability/Critical Radiant Flux: ASTM E648 / NFPA 253 Class 1 (>0.45 Watts per sq. cm.), .082 W/cm2
11. Smoke Density: ASTM E662/NFPA 258 Passes (<450), 157 (flaming) - 197 (non-flaming)
12. Surface Burning: CAN/ULC-S102.2 FSR 50, SDS 175
13. Substrate Preparation: Per ASTM F710 and Roppe Technical Data Sheet

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

B. Installation Acrylic Adhesives:

1. Product Name: WB-600
2. Product Description: Acrylic Wall Base Adhesive
3. Product Usage: For standard, interior wall base installations over porous substrates only.
4. Product Name: AW-510
5. Product Description: Acrylic Wet-Set Adhesive
6. Product Usage: For interior wall base installations that require a more aggressive bond over porous substrates only
7. Product Name: C-630
8. Product Description: Water-Based Contact Adhesive
9. Product Usage: For interior wall base installations that require a more aggressive bond over porous or non-porous substrates.

C. Maintenance Cleaners:

1. Product Name: NC-900

2. Product Description: All-Purpose pH Neutral Cleaner
3. Product Usage: For initial, daily or routine maintenance and spot cleaning.
4. Product Name: PR-930
5. Product Description: Performance Finish Remover
6. Product Usage: For removal of finish that has been accidentally or erroneous applied to material.

PART 3 - **PART 3 - EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

3.5 MAINTENANCE

A. Product shall be installed, cleaned and sealed as herein specified and in accordance with each specific flooring manufacturers recommendations to maintain the following of their installed product, but not limited to;

1. Slip Resistance
2. Slip Resistance Coefficient of Friction of 0.6.
3. Warrantee requirements

B. Product shall be maintained by **Owner** after occupancy to maintain the Slip Resistance and coefficient of friction rating.

C. Refer also to PROTECTION AND CLEAN UP heading.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. The sealant applicator shall certify in writing that the sealant application is in accordance with the sealant manufacturer's recommendations

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 09 65 13

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SECTION 09 65 16 – RESILIENT SHEET FLOORING

PART 1 - **GENERAL**

1.1 DESCRIPTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the job site.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Linoleum sheet resilient flooring
2. Transition Trims and Accessories
3. Primers, adhesive and cleaners

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM E 1643 - Standard Practice for Installation of Water Vapor Retarders Used in Concrete with Earth or Granular Fill Under Concrete Slabs
2. ASTM F 137 - Standard Test Method for Flexibility of Resilient Flooring Materials
3. ASTM F 710 - Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring.
4. ASTM F 970 - Test Method for Static Load Limit.
5. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
6. ASTM F 2034 - Standard Specification for Linoleum Sheet Flooring, Type 1.

E. National Fire Protection Association (NFPA), www.nfpa.org

1. NFPA 253 - Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Energy Source.
2. NFPA 258 - Test Method for Specific Density of Smoke Generated by Solid Materials.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Flooring	Slip Resistance Coefficient of Friction	0.6 min level to 5%	ASTM D 2047
	Slip Resistance Coefficient of Friction	0.8 min greater than 5%	ASTM D 2047
Movement Joints	Locations	Interior: not to exceed 24'-0" to 36'-0" in each direction over floor. Exterior: not to exceed 8'-0" to 12'-0" in each direction over floor.	TCNA EJ171-07
Floor and Wall Finishes	Interior Surface Finishes	Material shall be smooth, hard, non-absorptive material within boundaries indicated in building code and as revised to be more inclusive as indicated in contract documents.	CBC 1115B.3, Item 6
Concrete substrate	Vapor emission and alkalinity levels	Levels shall be acceptable to specific product manufacturers criteria as herein specified and indicated drawings.	Refer to Section 07 26 00
Linoleum	Standard spec for linoleum	Meets of exceeds	ASTM F 2034, Type 1
	Flexibility	Meets or exceeds	ASTM F 137
	Static load limit	0.002" compression with 250 psi static load	ASTM F 970
	Slip resistance	Meets or exceeds >0.5 for flat surfaces	ASTM D 2047
	Critical Radiant Flux (CRF)	Meets or exceeds Class 1 reqmts.	ASTM E 648, NFPA 253
	Smoke density	<450 smoke developed	ASTM E 662, NFPA 258
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Section 01 81 00 – Project Sustainability Requirements
2. Refer to Part 2 herein.

1.4 SUBMITTALS

A. Refer to Section 01 33 00 – Submittal Procedures

B. Submit O&M (Operation and Maintenance) manuals in accordance with Section 01700 – Record Documents and Project Closeout, and as herein specified.

C. Refer to Section 01 81 13 – Project Sustainability Requirements

D. Submit Manufacturer's data and shop drawings.

1. Components:

a. Submit cutsheet for each product

1) Flooring
2) Base
3) Primer
4) Adhesive
5) Adhesive cleaner

2. Maintenance Instructions:

a. Submit manufacturer's recommended maintenance practices for each type of flooring, base and accessory required to be included in maintenance manuals.

3. Product Data:

a. Submit manufacturer's technical information including application instructions for primers, adhesives, sealants, floor finishing compounds, and leveling compounds for all materials.

4. Compatibility:

a. Submit letter from each manufacturer that the material adhesive and moisture vapor emission membrane system are compatible with each other and compatible with floor curing compound, cure & seal compound and floor sealer/coating.

E. Submit samples.

1. Submit the following samples of each type, color and pattern of resilient flooring and flooring accessory required, showing full-range of color and pattern variations.

a. 12-inch long section of each resilient flooring accessory
b. 12-inch long section of base
c. 12-inch long section of all transition trim products

F. Site mock-up, refer to "Mock-Up" heading.

G. Certification:

1. Submit manufacturer's certificate stating that materials furnished comply with specified requirements. Include supporting certified laboratory-testing data indicating that material meets specified test requirements.

1.5 QUALITY ASSURANCE

A. Refer to Section 01 45 00 - Quality Control.

B. **Contractor** /Installer/Fabricator shall have been in business for **five (5)** years providing/installing/ finishing projects of similar size and complexity.

C. **Manufacturer** shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid.

E. Stipulations:

1. Shop drawing showing flooring and indicating all transitions shall be reviewed to meet design intent prior to installation proceeding.

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include, but not limited to:

1. Flooring thicknesses and transition trim types and locations to be installed.
2. **General Contractor** shall request meeting 5 days in advance of construction.

G. Miscellaneous criteria:

1. Installation of transition trim, moldings, etc. shall not be installed until shop drawing of layout is reviewed.

a. Primer shall be applied over existing substrate as needed to fully adhere new material and meet all warranty criteria.
b. Adhesion testing shall be done to confirm compatibility of assembly.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Section 01 66 00 - Product Delivery, Storage and Handling Requirements

B. Deliver materials in good condition to the jobsite in the manufacturer's original unopened containers that bear the name, model, color and brand of the manufacturer, project identification, and shipping and handling instructions.

C. Store materials in a clean, dry, enclosed space off the ground, and protected from the weather and from extremes of heat and cold.

1. Protect adhesives from freezing.
2. Store flooring, adhesives and accessories in the spaces where they will be installed for at least 48 hours before beginning installation.

1.7 JOB CONDITIONS

A. Field verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Maintain a minimum temperature of 70ºF (21ºC) in spaces to receive flooring and base for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation.

C. Subsequently, maintain minimum temperature of 55ºF (13ºC) in areas where work is completed. Do not install resilient flooring until they are at the same temperature as the space where they are to be installed.

D. Install flooring, base and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's recommended bond and moisture test.

E. Maintain minimum temperature of 65ºF (18ºC) in spaces to receive vapor emission membrane system for a minimum of 48 hours prior to application. Concrete floors shall be surface dry and free from loose dirt or other contaminating materials including concrete curing compounds.

F. Subfloor Moisture Conditions: Moisture emission rate of not more than 3 lb/100 sq. ft./24 hours (14.6 kg/1000 sq. m./24 hours) when tested by calcium chloride moisture test in compliance with CRI 104, 6.2.1, with subfloor temperatures not less than 55ºF (12.7ºC).

   1. Refer to Section 07 28 00 – Concrete Slab Vapor Emission and Alkalinity control Treatment for additional information.

G. Coordinate schedule and sequence of installation of resilient base and accessories with other flooring and wall finish installations.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Section 01 78 00 – Closeout Submittals

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

   1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner** .

C. Furnish manufacturer's additional warrantees as herein scheduled agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

D. Furnish installing contractors additional warrantees as herein scheduled agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

E. Schedule:

1. Linoleum sheet: 5 year
2. Transition Trim: 5 year

1.10 RELATED WORK / SECTIONS

A. The following is related work including, but not limited to the following:

1. Floor substrate
2. Vapor emissions of substrate
3. Wall finish

B. The following are related sections, including, but not limited to the following:

1. Section 01 83 00 – Project Sustainability Requirements
2. Section 01 74 19 – Construction Waste Management and Disposal/Recycling
3. Section 03 30 00 – Cast in Place Concrete.
4. Section 07 28 00 – Concrete Slab Vapor Emission and Alkalinity Control Treatment
5. Section 09 65 13 – Resilient Base and Accessories

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Comply with Section 01 78 00 – Closeout Submittals.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. **General Contractor** shall coordinate slab vapor emission and PH testing of concrete floors and ensure that concrete treatment within criteria of finish flooring is complete prior to the installation of finish flooring as herein specified.

1.13 EXTRA MATERIAL

A. Submit as part of project closeout:

1. Provide extra material for each product type, color, finish, etc. in same lot as installed product.
2. Provide extra material in unopened fully labeled containers.
3. Provide the following:

a. Furnish five percent (5%) of total installed area/length of each type of flooring, base and accessory from same lot as used in work.

4. Mark containers of material with manufacturer's name, color pattern and label "Extra Stock".

1.14 VAPOR EMISSION AND ALKALINITY CONTROL COMPLIANCE

A. Refer to Section 07 28 00 – Concrete Slab Vapor Emission and Alkalinity Control Treatment

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from manufacturer specified.

B. Acceptable manufacturer/fabricator/installer shall meet the requirements as herein specified and also as indicated in the drawings.

1. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Section 01 25 00 – Substitution & Deviation Procedures and Section 01 33 00 – Submittals, Substitutions and Deviations.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIAL SCHEDULE

A. Single source responsibility, specified items shall be from manufacturer specified.

1. **Linoleum**: **RF3** – See plan document for finish materials and as herein listed:

a. Schedule:

1)	Mfgr:	Forbo Flooring, Inc.
2)	Product:	**Marmoleum**
3)	Sheet Width:	79" (2 meters)
4)	Length:	105' (32 meters)
5)	Gauge:	1/10" (2.5 meters)
6)	Backing:	Jute fabric
7)	Material:	Homogeneous floor covering made from natural ingredients including flax seed oil, rosin binders, wood flour, limestone and dry pigments mixed and then calendared onto a natural jute backing.
8)	Color:	**5249 Stonehenge**
9)	Adhesive:	As approved and recommended by manufacturer
10)	Trim:	**ArmorCove** prefabricated cove backing

2. **Transition Trim/Accessories** - See plan document for finish materials and as herein listed:

a. General:

1) For patching, smoothing, and leveling monolithic subfloors, provide manufacturer's recommended and approved products.
2) Provide transition/reducing strips tapered to meet abutting materials.
3) Provide threshold of thickness and width as shown on the drawings.
4) Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring. Provide units of maximum available length to minimize the number of joints. Use butt-type metal edge strips for concealed anchorage, or overlap-type metal edge strips for exposed anchorage. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

2.3 PRIMERS, SEALERS, AND ADHESIVES

A. Type as recommended by manufacturer for conditions of installation.

B. Schedule:

1. Linoleum sheet resilient flooring: Adhesive as recommended by manufacturer

a. Adhesive: Forbo Sustain 1195, Forbo Sustain 100, Forbo L 885 or Forbo 600

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect Owner**

B. Type as recommended by manufacturer for conditions of installation.

C. Adhesives and fasteners not specifically described but required for a complete and proper installation of resilient flooring, shall be only as recommended by the manufacturer of the material to which it is applied, and shall be subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.
2. Examine substrate prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.

3. Inspect subfloors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; and other foreign materials that might prevent adhesive bond.
    a. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.
4. Concrete Subfloors: Verify that concrete slabs comply with American Society of Testing and Materials (ASTM) F 710 and the following:
    a. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials whose presence would interfere with installation of vapor emission membrane system and bonding of adhesive. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by vapor emission membrane system and resilient flooring manufacturer.
    b. Finishes of subfloors comply with tolerances and other requirements specified in Section 03 30 00 - Cast-in-Place Concrete for slabs receiving resilient flooring.
    c. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits of any kind.
        1) Comply with Section 07 28 00 – Concrete Slab Vapor Emission and Alkalinity Control Treatment
5. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing compounds as recommended by vapor emission membrane system and flooring manufacturer. Provide 1 Calcium Chloride test in every 1,000 sq. ft. area or fraction thereof.
6. Do not proceed with installation until unsatisfactory conditions have been corrected. Proceeding with the work signifies that the **General Contractor** accepts the substrate, surfaces & conditions and any problems related to the substrate shall be repaired to the satisfaction of the **Owner's** Representative without any additional cost to the **Owner.**

C. Work of all other trades, including painting, shall be substantially completed before start of laying flooring and permanent heating system must be in operation.

D. Failure to call attention to defects or imperfections will be construed as acceptance and approval of the subfloor. Installation indicates acceptance of substrates with regard to conditions existing at the time of installation.

3.2 COORDINATION

A. Refer to Section 01 31 13 – Project Coordination.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. General area and each room where resilient flooring is scheduled for installation shall have **ALL** debris, rubbish and waste materials removed before any finish flooring is installed.

C. Immediately Prior to Installation of Resilient Flooring:

1. Provide subflooring surfaces thoroughly dry, broom clean, free of grease, oil, paint, varnish, curing compounds, hardeners, sprinkled cement, dirt, crumbly or scaly surfaces and any foreign matter that will impair adhesion, or show through finish flooring surface if covered over.

D. Subflooring surfaces shall be between 68ºF +/- 5ºF and level with on more than 1/8 inch in 10 feet variation from level.

1. Variation shall not be collective.

a. Fill holes, cracks and all other irregularities in subfloor with patching, leveling compounds before proceeding.

2. Submit resilient floor manufacturers recommended filling, patching and leveling compounds for required subfloor to **Architect's** Review before proceeding with the work.

a. Thickness as required to provide level transition between sheet goods and carpet.

3. Patching and leveling compounds supplied shall be warranted to meet the following requirements.

a. Recommended by manufacturer as the appropriate product that will bond to the surface material for which it is being applied. Bond strength 150 - 200 psi./Meet or exceed compressive strength of 2,500 psi.

4. Steel troweled (slick) finished concrete floors shall be properly roughened to ensure adhesion.
5. All concrete subfloors shall be prepared according to American Society of Testing and Materials (ASTM) F710-82, preparing concrete floors and other monolithic floors to receive resilient flooring.
6. All curing, hardening and breaking compounds must be removed.

E. Remove paint, varnish, oils, release agents, sealers, and waxes. Remove residual adhesives as recommended by the flooring manufacturer. Remove curing and hardening compounds not compatible with the adhesives used, as indicated by a bond test or by the compound manufacturer's recommendations for flooring. Avoid organic solvents.

F. Starting of work shall be construed as acceptance of the condition of the underflooring by Installer.

G. Perform subfloor "Vapor Emission and Alkalinity Testing"/Calcium Chloride Tests (and Bond Tests) as herein specified and described in manufacturer's publications to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring.

1. Refer to and coordinate with Section 03 30 00 – Cast in Place Concrete

H. Vacuum or broom-clean surfaces to be covered immediately before the application of flooring. Make subfloor free from dust, dirt, grease, and all foreign materials.

I. Prime subfloors before installing resilient flooring. Submit manufacturer's complete catalog and/or brochure for each type of subfloor primer to be used.

3.4 INSTALLATION

A. General:

1. Install materials in strict compliance with detailed instructions issued by manufacturer of material, considering the use of "should" as indicating mandatory requirements. Work of all other trades, including painting, shall be substantially completed before start of laying flooring and permanent heating system must be in operation.
2. Install materials in compliance with;

    a. RFCI, “Recommended Work Procedures for Resilient Floor Coverings.”

3. Where different colored materials occur in adjoining rooms or spaces, make color change on a line centering, under door when closed, unless indicated/noted otherwise.
4. Lay materials true to line, level, and with tight joints. Cut materials to and around permanent fixtures, equipment and bases.
5. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
6. Coordinate installation to maintain pattern and colors indicated in the drawings and schedules.

B. Areas to be Covered: For spaces schedule to receive flooring, include closets and similar openings, toe spaces, door reveals, alcoves or recesses opening off these spaces. Covering required under permanently built-in furniture.

C. Linoleum Sheet Resilient Flooring:

1. Install with adhesives, assuring solid contact with subflooring and producing smooth, even finished surfaces with tightly jointed, accurately aligned manner, all in accordance with installation directions.
2. Seal joints around pipes and other vertical surfaces with adhesive.
3. Flooring shall be free from blisters, cracks, protruding particles, embedded foreign materials or other physical defects affecting its appearance or serviceability, and accurately cut with straight edges, corners.

D. Edging Strips: Except where thresholds are noted, where covered by rubber base, provide adhesive applied edging reducer strips at all exposed resilient flooring edges. Where flooring terminates at door opening, center strip under door when door is in a closed position, U.N.O.

E. Rubber/Resilient Base:

1. Adhesive:

    a. Use extreme care not to spread adhesive above top of base.
    b. Base material shorter than 48" in length shall not be used unless wall length from corner to corner is less.
    c. Do not install base until backing material is thoroughly dry.

d. Where voids are found to exist at top of base because of wall irregularities, fill neatly flush to top of base.
e. Install base so as to obtain full adhesion to the backing over 100% of base contact surface.

2. Where rubber base or resilient is scheduled, provide around entire perimeter or space, including casework, pilasters, or other projections.
3. Apply top set wall base to walls, columns, casework, and other permanent fixtures in areas where top-set base is required. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitered coped. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.

   a. Install inside and exterior corners before installing straight pieces.
   b. On irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
   c. Place resilient accessories so that they are butted to adjacent materials of type indicated and bond to substrates with adhesive.
   d. Cut base into accurate lengths to minimize the number of joints/seams and double cut ends. Install butt joint ends tightly so that joint width is not greater than 1/64.
   e. Scribe base accurately at adjacent materials. Press firmly into adhesive and downward so that bottom edge follows floor profile. Do not cause top edge or seam to gap or pull away from the wall.
   f. Miter internal corners. Backcut running base and form exterior corners. Install preformed end stops at exposed ends of base. Edges, seams and surface of base and corners shall conform to wall, adjacent base and flooring without gaps.

4. Fill voids with plastic filler along the top edge of the resilient wall base or integral cove cap on masonry surfaces or on similar irregular substrates.

3.5 INSTALLATION OF ACCESSORIES

A. Place edge strips/transition trims tightly butted to flooring, and secure with adhesive recommended by the edge strip manufacturer.

   1. Install edge strips at edges of flooring that would otherwise be exposed.

B. Apply metal edge strips where shown on the drawings and as specified.

   1. Section units to the substrate, complying with the edge strip manufacturer's recommendations.

3.6 ADJUSTING, CLEANING AND FINISHING

A. Cleaning: After flooring and base materials have set sufficiently to become seated, that welded seams have cured, wash with neutral cleaner to remove excess mastic/adhesive. Leave floor clean, free of debris, waste & defects.

B. When work of all trades is 100% complete, replace damaged flooring/base material with new. Immediately prior to final inspection (not sooner than 5 days following installation), have floor thoroughly cleaned with neutral cleaner, dried and apply finishing material in accordance with

manufacturer's recommendations. Polish thoroughly. Delay cleaning and finishing until just prior to occupancy by **Owner**.

C. Clean floor substrate with manufacturers recommended material.

D. Polish floor with manufacturers recommended products and quantity of coats for "High Traffic" areas.

E. Apply sealer to flooring in accordance with manufacturers recommendations.

F. Polish base with manufacturers approved liquid emulsion polish in accordance with manufacturer's written instructions.

3.7 PROTECTION AND CLEAN UP

A. Refer to Section 01 74 00 – Protection and Cleaning.

B. Keep areas of work and building free from accumulated debris, rubbish and waste materials.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or VOC compliant solvent as necessary, avoiding damage to other materials.
2. Remove masking tape after tooling joints, leaving finished work in neat and clean condition.
3. Clean-up and leave premise broom clean. Clean adjoining work spotted or otherwise defaced by work of this Section.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Section 01 78 00 – Closeout Submittals.

H. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 09 65 16

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SECTION 09 65 19 – RESILIENT TILE FLOORING

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Resilient Solid Vinyl Tile material and installation
2. Adhesives

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM), www.astm.org

1.	ASTM E 648	Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
2.	ASTM E 662	Standard Test Method for Specific Optical Density of 450 Smoke Generated by Solid Materials
3.	ASTM F 1700	Standard Specification for Solid Vinyl Tile
4.	ASTM F 1869	Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
5.	ASTM F 2170	Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-situ Probes

E. Refer to standards herein listed with specific products/materials.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.

2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Vinyl material surface	Class III, Type B – Embossed Surface.	Comply	ASTM F 1700
Vinyl material	resistance to heat and resistance to light	resistance to heat and resistance to light	ASTM F 1700
Vinyl tile	Installation procedures	Comply	Armstrong Guaranteed Installation System", F-5061.
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing:**

Item	**Name of Test**	**Performance Results**	**Testing Std.**
Final Substrate as provided by **General Contractor**	Moisture – Vapor Emissions level (MVER)	MVER shall not exceed 7 lbs./1000 sq. ft./24 hrs.	• Section 07 28 00 – Concrete Slab Vapor Emission And Alkalinity Control Treatment • ASTM F 1869,"Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride"
Final Substrate as provided by **General Contractor**	Relative humidity	Relative humidity shall not exceed 90%.	• Section 07 28 00 – Concrete Slab Vapor Emission And Alkalinity Control Treatment • ASTM F 2170, "Standard Test Method for Determining Relative Humidity in Concrete

			Slabs Using *in-situ* Probes"
Final Substrate as provided by **General Contractor**	Bond strength	Comply	• Section 07 28 00 – Concrete Slab Vapor Emission And Alkalinity Control Treatment • Bond Tests as described in publication F-5061, "Armstrong Guaranteed Installation System Chloride"
Water Vapor Emissions per mfgr's recommendations and acceptance of existing substrate			

E. **Construction Testing / Inspection by others:**

Item	Name of Test	Performance Results	By Whom
Substrate	Vapor and alkalinity levels	Comply with adhesive used for vinyl tile	Refer to Section 07 28 00 – Concrete Slab Vapor Emission And Alkalinity Control Treatment
Substrate	Moisture – Vapor Emissions level (MVER) and Relative humidity	• MVER shall not exceed 7 lbs./1000 sq. ft./24 hrs. • Relative humidity shall not exceed 90%.	Section 07 28 00 – Concrete Slab Vapor Emission And Alkalinity Control Treatment

F. **Construction Monitoring/Observations by others:**

Item	Name of Test	Performance Results	By Whom
Vinyl Tile	Const. Waste Management	Comply	Refer to Division 1 for construction waste management and disposal/recycling requirements

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Submit shop drawings including, but not limited to;

a. Layout plan with starting points
b. Seaming plan
c. Coving details
d. Manufacturer's technical data, installation and maintenance instructions.

1) Latest edition of "Armstrong Guaranteed Installation System," F-5061 for flooring and accessories.

E. Submit samples.

1. Samples of all colors and finishes indicated in drawings
2. Accessories

F. Certification:

1. Sustainability criteria
2. Manufacturer's certification that the flooring has been tested by an independent laboratory and complies with the required fire tests.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

E. Stipulations:

1. Installer shall be competent in the installation of Armstrong solid vinyl tile and plank flooring.

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Substrate preparation
b. Substrate treatment for vapor emissions and/or alkalinity control
c. Layout

2. **General Contractor** shall request meeting 5 days in advance of construction.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Store materials in a clean, dry, enclosed space off the ground, and protected from the weather and from extremes of heat and cold. Protect adhesives from freezing. Store flooring, adhesives and accessories in the spaces where they will be installed for at least 48 hours before beginning installation.

C. Maintain a minimum temperature in the spaces to receive the flooring and accessories of least 48 hours before, during, and for not less than 48 hours after installation. At;

1. 65ºF (18ºC) minimum
2. 100ºF (38ºC)] maximum temperature
    a. 85ºF (29ºC) for Epoxy Adhesive
3. Thereafter the 48 hours after installation, maintain a minimum temperature of 55ºF (13ºC) in areas where work is completed.
    a. Protect all materials from the direct flow of heat from hot-air registers, radiators, or other heating fixtures and appliances.

D. Install flooring and accessories after the other finishing operations, including painting, have been completed. Close spaces to traffic during the installation of the flooring. Do not install flooring over concrete slabs until they are sufficiently dry to achieve a bond with the adhesive, in accordance with the manufacturer's recommended bond and moisture tests.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish **fifteen (15)** year written commercial warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Floor slab
2. Raised deck floor slabs
3. Vapor emissions and alkalinity control treatment

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 03 00 51 – Concrete Cleaning
3. Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious
4. Section 03 30 00 – Cast-In-Place Concrete
5. Section 07 28 00 – Concrete Slab Vapor Emission and Alkalinity Control Treatment
6. Section 09 65 13 – Resilient Base and Accessories

C. Related Documents include, but are not limited to the following:

1. Division 1 - Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. **General Contractor** shall coordinate slab vapor emission and PH testing of concrete floors and ensure that concrete treatment within criteria of finish flooring is complete prior to the installation of finish flooring as herein specified.

1.13 EXTRA MATERIAL

A. Submit as part of project closeout:

1. Provide extra material for each product type, color, finish, etc. in same lot as installed product.

a. Furnish written certification that extra materials supplied have been inspected and reconfirmed to be the same as those used in the Work.

2. Provide extra material in unopened fully labeled containers.

a. Do not supply anything less the full carton containers.
b. Furnish in factory packaged and labeled cartons and identify cartons with Project name.
c. Deliver materials to project premises just prior to substantial completion, and store at location directed by the **Owner**.

3. Provide the following

    a. 5% of tile installed
    b. Enough of adhesive to install a minimum of 5% additional tiles

1.14 VAPOR EMISSION AND ALKALINITY CONTROL COMPLIANCE

A. Refer to Section 07 28 00 – Concrete Slab Vapor Emission and Alkalinity Control Treatment

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as listed herein and in Drawings:

1. Armstrong World Industries, www.armstrong.com/commflooringna
2. Reviewed Equivalent by **Architect**.

    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. Luxury Vinyl Tile: **RF1**

B. Tile:

1. Mfgr: CityWide LVT
2. Series: No pad
3. Color: **CW 12001 Wilshire Boulevard**, or as selected by **Architect**

    a. Refer also to drawings Finish Schedule for additional information

4. Thickness: 0.0787 in. (2.0 mm) gauge nominal total thickness
5. Size:

    a. 7 in. x 48 in.
    b. Refer to drawings, Finish Schedule

6. Composition:

a. Tough, clear, unfilled, polyurethane-coated, 12 mil thick wear layer composed of polyvinyl chloride resins, plasticizers, stabilizers, and processing aids over a printed film on an intermediate layer over a filled vinyl backing.

1) Flooring shall meet composition, size, thickness, squareness, flexibility, residual indentation, resistance to chemicals, resistance to heat and resistance to light requirements of ASTM F 1700, "Standard Specification for Solid Vinyl Tile," Class III, Type B – Embossed Surface.

C. Base:

1. Refer to Section 09 65 13 – Resilient Base & Accessories

D. Adhesive:

1. Mfgr: Metroflor
2. Products: **Prevail 6000 adhesive**

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

B. Accessories:

1. For patching, smoothing, and leveling monolithic subfloors (concrete, terrazzo, quarry tile, ceramic tile, and certain metals), provide;
2. For sealing joints between the top of wall base or integral cove cap and irregular wall surfaces such as masonry, provide plastic filler applied according to the manufacturer's recommendations.
3. Provide transition/reducing strips tapered to meet abutting materials.
4. Provide threshold of thickness and width as shown on the drawings.
5. Provide resilient edge strips of width shown on the drawings, of equal gauge to the flooring, homogeneous vinyl or rubber composition, tapered or bullnose edge, with color to match or contrast with the flooring, or as selected by the **Architect** from standard colors available.
6. Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring.

a. Provide units of maximum available length to minimize the number of joints.
b. Use butt-type metal edge strips for concealed anchorage, or overlap-type metal edge strips for exposed anchorage.
c. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Field measure and examine substrates, supports, and other conditions under which work is to be performed.

B. Examine subfloors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.

C. Inspect subfloors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; and other foreign materials that might prevent adhesive bond.

   1. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.

D. Report conditions contrary to contract requirements that would prevent a proper installation.

   1. Do not proceed with the installation until unsatisfactory conditions have been corrected.

E. Failure to call attention to defects or imperfections will be construed as acceptance and approval of the subfloor.

   1. Installation indicates acceptance of substrates with regard to conditions existing at the time of installation

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, and other defects with filler as herein specified and as recommended by the flooring manufacturer.

C. Remove paint, varnish, oils, release agents, sealers, and waxes.

   1. Remove residual adhesives as recommended by the flooring manufacturer.
   2. Remove curing and hardening compounds not compatible with the adhesives used, as indicated by a bond test or by the compound manufacturer's recommendations for flooring.
   3. Avoid organic solvents.

D. Moisture – Vapor emissions and alkalinity testing and remedial treatment shall be performed and treated by others in accordance with Section 07 28 00 – Concrete Slab Vapor Emission And Alkalinity Control Treatment

   1. Perform subfloor moisture testing in accordance with herein listed standards to floor substrate as provided for final installation of flooring to determine if substrate is acceptable.

2. Perform subfloor humidity testing in accordance with herein listed standards to floor substrate as provided for final installation of flooring to determine if substrate is acceptable.
3. Perform subfloor bond strength testing in accordance with herein listed standards to floor substrate as provided for final installation of flooring to determine if substrate is acceptable.
    a. Determine if surfaces are dry; free of curing and hardening compounds, old adhesive, other coatings and if substrate if treated under separate section is ready to receive flooring
4. Perform subfloor pH tests on concrete floors regardless of their age or grade level.
5. All test results shall be documented and retained.

E. Broom clean and vacuum surfaces to be covered immediately before the application of flooring.

1. Make subfloor free from dust, dirt, grease, and all foreign materials.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer’s recommendations, as herein specified and in accordance with drawings.

B. Flooring:

1. Install flooring in strict accordance with the latest edition of flooring manufacturer’s written instructions.
2. Install flooring wall to wall before the installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings as shown on the drawings.
3. If required, install flooring on pan-type floor access covers. Maintain continuity of color and pattern within pieces of flooring installed on these covers. Adhere flooring to the subfloor around covers and to covers.
4. Scribe, cut, and fit to permanent fixtures, columns, walls, partitions, pipes, outlets, and built-in furniture and cabinets.
5. Install flooring with adhesives, tools, and procedures in strict accordance with the manufacturer's written instructions. Observe the recommended adhesive trowel notching, open times, and working times.

C. Accessories:

1. Apply top set wall base to walls, columns, casework, and other permanent fixtures in areas where top-set base is required if included under this scope of work.
    a. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitered or coped.
    b. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.
2. Fill voids with plastic filler along the top edge of the resilient wall base or integral cove cap on masonry surfaces or other similar irregular substrates if included under this scope of work..

3. Place resilient edge strips tightly butted to flooring, and secure with adhesive recommended by the edge strip manufacturer. Install edge strips at edges of flooring that would otherwise be exposed if included under this scope of work.
4. Apply butt-type and/or overlap metal edge strips where shown on the drawings,[before and/or after flooring installation.
    a. Secure units to the substrate, complying with the edge strip manufacturer's recommendations.

3.5 MAINTENANCE TREATMENT

A. Perform initial maintenance in accordance with flooring manufacturer’s recommendations.
    1. Refer to Armstrong Guaranteed Installation System," F-5061.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator
    1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer’s specifications.
    2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades, or the placement of fixtures and furnishings.
    1. See Finishing The Job in "Armstrong Guaranteed Installation System," F-5061.

3.7 TESTING

A. Refer to Testing Heading, Part one of this specification.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
    1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer’s recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's** NOTICE of "Certificate of Substantial Completion".

END OF SECTION 09 65 19

SECTION 09 68 13 – CARPET TILE

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. **Tile Carpet** and necessary accessories as specified, indicated in drawings and/or or not to complete this section, including but not limited to:

    a. Carpet tiling
    b. Adhesive & tapes
    c. Carpet tiling edge guards, trim, and accessories as indicated and required to provide finished product, transitions to concrete, carpet tile, resilient flooring and comply with applicable codes and acts.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

    a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM)

E. ASTM

1.	ASTM F 710	Standard Practice for Preparing Concrete to Receive Resilient Flooring
2.	ASTM E 1643	Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
3.	ASTM F 1869	Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
4.	ASTM F 2170	Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In-situ Probes

F. Carpet tile and Rug Institute (CRI), www.**carpet tile**-**rug**.org

1. California Law for Carpet tile Stewardship, AB 2398

a. Carpet tile America Recovery Effort

G. National Fire Protection Agency (NFPA)

H. Refer to standards herein listed with specific products/materials.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Carpet tile Mfgr's	Carpet tile Stewardship Program	Comply and have a written plan	California Law for Carpet tile Stewardship, AB 2398 Carpet tile America Recovery Effort
Substrate Testing	Moisture Vapor Transmission Rate (MVER)	Comply	Refer to Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment
Substrate Testing	Alkalinity	Comply	Refer to Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment
Substrate Testing	Relative Humidity	Comply	Refer to Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment
Carpet tile Installation	Environment	Temperature: (Outdoor) • Air temperature shall not be less than 65° F and a maximum of 95° F • Substrate temperature	CRI

		shall between 65° F and 85° F	
Carpet tile Installation	Environment	Temperature: (Indoor) Maintain at 50° F or better	CRI
Carpet tile Installation	Carpet tile relaxing	Indoor: Allow carpet tile to relax a minimum of 24 hours at allowable room temperature Outdoor: All carpet tile to relax when air temperature is maintained between 55° F and 95° F	CRI and carpet tile mfgr.
Carpet tile Installation	CRI Carpet tile Installation Standard	Comply	CRI
Carpet tile Installation	Self tacky carpet tile (Carpet tile over substrate)	Comply	CRI and carpet tile mfgr.
Carpet tile Installation	Direct Glue-Down (Carpet tile over substrate)	Comply	CRI and carpet tile mfgr.
Carpet tile Installation	Adhesive application	Comply	CRI and carpet tile mfgr.
Carpet tile	Stability	Dimensional stability within .10%	ISO 2551
	Soil Propensity	Minimum value of 6	AATCC Test Method 123 SMF evaluated by AATCC Method 121
	Static	3.0 kv when tested under the Standard Shuffle Test 70°F – 20% R.H.	
	Flammability	Passes	DOC-FF-1-70 Pill Test
	Smoke Density	Less than 450 flaming mode	NFPA-258 NBS Smoke Chamber
	Smoke rating	Less than 450	CBC Section 804, 804.4.1 ASTM E 84
	Flooring Radiant Panel Test	Meets Criteria	NFPA Class 1 per ASTM E648 glue down
	General	Comply	CBC Section 804.1
	Classification	Comply	CBC Section 804, 804.2 - 804.4.1

		Comply	NFPA 253
	Testing & Certification	Comply	CBC Section 804.3 & NFPA 253
	Requirements	Comply	CBC Section 804.4
	Total VOCs	0.5 mg/m^2/hr	Carpet tile and Rug Institute Green Label Testing Program Standards
	4-Phenylcyclohexene	0.05 mg/m^2/hr	Carpet tile and Rug Institute Green Label Testing Program Standards
	Formaldehyde	0.05 mg/m^2/hr	Carpet tile and Rug Institute Green Label Testing Program Standards
	Styrene	0.4 mg/m^2/hr	Carpet tile and Rug Institute Green Label Testing Program Standards
Carpet tile – Occupancy Group A, B, E, H, I-4, M, R-1, R-2 & S	Classification – Minimum critical radiant flux in exit enclosures, exit passageways and corridors	Class II minimum in non-sprinklered and sprinklered buildings	CBC Section 804, 804.4.1 NFPA 253 ASTM E84 & E648
Adhesives	Total VOCs	10.0 mg/m^2/hr	(CRI) Carpet tile and Rug Institute Green Label Testing Program Standards
	Formaldehyde	0.05 mg/m^2/hr	(CRI) Carpet tile and Rug Institute Green Label Testing Program Standards
	2-Ethyl-1-Hexanol	3.0 mg/m^2/hr	(CRI) Carpet tile and Rug Institute Green Label Testing Program Standards
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing:**

Item	Name of Test	Performance Results	Testing Std.
Water Vapor Emissions per mfgr's recommendations and acceptance of existing substrate			

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturer's data and shop drawings:

1. Manufacturer's certification that carpet tile other than specified items (identified by mill registration numbers) are in compliance with Contract Documents stating quantity and materials used.

2. Manufacturer's specifications and installation instructions.

   a. Building address
   b. Date of drawing
   c. Scale
   d. Floor number and location in building
   e. Compass direction on each sheet
   f. Drawing for each area to be carpeted (color coding is preferable)
   g. Construction of substrate for each area
   h. Required floor preparation, materials and quantities.
   i. Type of installation for each area
   j. Quantities of carpet tile needed for each area, including roll length requirements, pattern repeat, manufacturer installation sequencing and cut list.
   k. Exact notations where dye lot changes occur
   l. Excess material in each area and how it is to be used
   m. Seam layout of each area
   n. Allow tolerance by cutting carpet tile 3-4 inches (75-100 mm) longer than the area measurement
   o. Carpet tile pile direction for each area
   p. Name of manufacturer, style, backing system and color of carpet tile for each area.
   q. Large scale drawings showing treatment of step areas or other detail work
   r. Location and type of expansion joints and edge transitions.
   s. Type of wall base in each area.

3. Product literature for accessories, including but not limited to:

   a. Primers
   b. Adhesive

c. Adhesive cleaner
d. Tape

E. Submit samples:

1. Six (6) 18" x 18" minimum size samples of each carpet tile type

F. Submit Maintenance Manual:

1. Cleaning techniques and care of carpet tile shall be defined in writing.

G. Site mock up, refer to "Field Samples / Mock Up" heading.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

D. Lead Times**:**

1. **General Contractor** shall coordinate with supplier to verify product lead times during bids and at award of contract, and account for such lead times in their costs and schedules.

2. **General Contractor** shall provide an itemized list of materials which might have or are confirmed to have a lead time problem and what the anticipated lead time is.

3. **General Contractor** shall certify in writing that all materials have acceptable lead times as they relate to availability for Subcontractor and **General Contractor** to meet construction schedule and sequence of construction.

E. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Substrate acceptance

1) Vapor emissions and alkalinity levels of substrate

G. Miscellaneous criteria:

1. Do not use sweeping compounds on substrate

a. Primer shall be applied over existing substrate as needed to fully adhere new material and meet all warranty criteria.
b. Adhesion testing shall be done to confirm compatibility of assembly.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver and store products suitable wrapped or packaged to protect against damage. Do not remove protective coverings until time of installation.

1. Protect finish and edges in accordance with panel manufacturer's recommendations.
2. Store material in accordance with panel manufacturer's recommendations.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Do not install materials unless ambient temperature of 70ºF is maintained 24 hours prior to and during laying and until all materials have been stored at site for 24 hours at that temperature.

C. Do not apply materials on wet or damp surfaces.

D. Defer laying until other work that might cause damage to flooring has been completed.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish each carpet tile manufacturer’s additional Lifetime Commercial Limited Warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.
2. Manufacturer will guarantee the long term performance of the product, judged by comparison to an appearance standard, whereby the Manufacturer will replace carpet tiling that does not live up to said standard.
3. Furnish additional warranties as herein listed for each specific carpet tile type.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Floor substrate
2. Floor cleaning
3. Concrete floor Vapor emission and alkalinity testing and treatment
4. Base
5. Other flooring types and materials

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 03 00 51 – Concrete Cleaning
3. Section 03 00 61 – Concrete Floor Leveling, Patching and Grouting – Cementitious
4. Section 03 30 00 – Cast-In-Place Concrete
5. Section 07 28 00 – Concrete Slab Vapor Emission and Alkalinity Control Treatment
6. Section 09 65 13 – Resilient Base and Accessories

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

C. Coordinate with the slab vapor emission and PH testing of concrete floors prior to the installation of finish flooring.

1.13 EXTRA MATERIAL

A. Submit as part of project closeout:

1. Provide extra material for each product type, color, finish, etc. in same lot as installed product.

a. Furnish written certification that extra materials supplied have been inspected and reconfirmed to be the same as those used in the Work.

2. Provide extra material in unopened fully labeled containers

a. Do not supply anything less the full carton containers of carpet tile
b. Furnish in factory packaged and labeled cartons and identify cartons with Project name.
c. Deliver materials to project premises just prior to substantial completion, and store at location directed by the **Owner**.

3. Provide the following :

a. 5% of installed square yards of each carpet tile type, color & lot number.

1.14 VAPOR EMISSION AND ALKALINITY CONTROL COMPLIANCE

A. Refer to Section 07 28 00 – Concrete Slab Vapor Emission Control Treatment

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable Manufacturers shall be one of the following, and as listed herein and in drawings.

1. Carpet Tile:

a. As herein specified and as noted in documents

2. Reviewed Equivalent by **Architect.**

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. All materials shall be new and of domestic manufacture.

a. Carpet tile is to be of "first" quality and from the same dye lot for each type and color to be installed.
b. No seconds, imperfects or special runs will be accepted.
c. Materials, construction and appearance, are based on the following specifications.

B. Carpet Tile

1. Schedule:

a. Item: **C1** Shaw Habitat Tile 5T390

1) Specifications:

a) Manufacturer: Shaw Contract
b) Collection: Canopy
c) Product Name: Habitat Tile

d) Product Number: 5T390
e) Color/Number: Deep Sky/88485
f) Recycled Content (Certified by independent third party, scientific certification system)

i. Total recycled content: 59%
ii. Total post consumer content: 0 %

g) Construction: Multi-Level Pattern Loop
h) Gauge: 1/12 inch
i) Stitches: 9.0 per inch
j) Finished Pile Thickness: 0.248 inch
k) Face Yarn: Ecosolution Q100™ Nylon
l) Dye System: 100% Solution Dyed
m) Backing Materials:

i. Primary: Synthetic
ii. Secondary: Ecoworx Tile

n) Total Weight: 19 oz/yd^2

o) Size: 9" x 36"

2) Warranties**:** Lifetime Commercial Limited Warranty

C. Accessories:

1. Tape: As approved by carpet tile manufacturer
2. Adhesive: As approved by carpet tile manufacturer and with zero VOCs.

a. Types:

1) Seams
2) Carpet tile body

b. Manufacturer(s): As approved by specific carpet tile manufacturer
c. Product(s): As approved by specific carpet tile manufacturer

3. Miscellaneous Materials: Provide types of adhesives, and other items recommended by carpet tile manufacturer for the conditions of installation and use.
4. Shims:

a. Transition (or approved equal) shim to adjust for pile height difference between carpet tiles to establish flush/level transition.

5. Floor Patching/Leveling Compound

a. Refer to Section 03 00 61 – Concrete Floor Leveling, Patching & Grouting - Cementitious

D. Transition Components

1. At resilient flooring, refer to Section 09 65 13 - Resilient Base & Accessories.
2. At Ceramic Tile, Porcelain and/or Stone - Refer to Section 09 30 00 – Tile and Stone.
3. At carpet tile to carpet tile:

a. Refer to details for transition components
b. Butt carpet tile to carpet tile where transition components not called out and/or specified.
c. Refer to other flooring sections for conditions where carpet tile abuts other flooring materials.
d. Refer to Section 09 65 13 - Resilient Base & Accessories.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
3. Vapor emissions and alkalinity levels of substrate shall be acceptable prior to installing carpet tile.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Take all necessary measurements in the field to ensure proper dimensions.

C. Subfloor:

1. Vacuum and wet mop substrate immediately prior to carpet tile installation, and remove all deleterious substances, which could interfere with the installation or be harmful to the work.

a. Repair minor irregularities in subfloor surface.
b. Surface shall be dry prior to installation

2. Sub flooring surfaces shall be smooth and level with no more than 1/8 inch in 10 feet variation from level, fill holes, cracks and all other irregularities in subfloor with patching, leveling compounds before proceeding.

a. All concrete slabs shall be leveled to 1/8" in 10' with applied leveling compound.
b. Do not proceed until unsatisfactory conditions have been corrected.

3. **General Contractor** shall notify **Architect** in writing of any condition deemed adverse to satisfactory carpet tile installation.

a. Starting of installation shall constitute acceptance of substrate surface conditions, and **General Contractor** shall be held responsible to furnish satisfactory carpet tile installation.
b. Any carpet tile work not acceptable shall be replaced at no cost to **Owner**.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
2. Carpet tile shall be laid out and allowed to relax in accordance with CRI standards and carpet tile manufacturer's standards.
3. Seal edges of all carpet tile.
4. Roll all carpet tiles after adhered to substrate.
5. Finish clean along all walls.
6. Use appropriate trowel notch size for installation type, adhesive and carpet tile types.
7. Install tack strips where reviewed acceptable during submittal phase.
8. Install cushion where applicable and in accordance with reviewed submittal.
9. Seam all carpet tile seams in accordance with applicable standards.

B. System of Installation:

1. Carpet tile Tiles:

a. Carpet tile tiles adhered to substrate

1) Direct Glue Down

a) Carpet tile is glued directly to subfloor

C. Carpet tile Edge Strips or Edgings:

1. Provide wherever carpet tiling abuts other types of floors, floor covering & exposed concrete. Install straight and true. Fasten to floors using adhesive and fasteners in accordance with manufacturer's directions. Where carpet tile terminates at door openings, center strips under doors.

D. Transition Components

1. In compliance with flooring & transition manufacturers.

3.5 MAINTENANCE

A. Product shall be installed, cleaned and treated as herein specified and in accordance with each specific flooring manufacturers recommendations to maintain the following of their installed product, but not limited to;

1. Warrantee requirements

B. Refer also to PROTECTION AND CLEAN UP heading.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.

2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

C. The sealant applicator shall certify in writing that the sealant application is in accordance with the sealant manufacturer's recommendations.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After installation is complete, clean adhesive, dirt, and debris from carpet tile surfaces.

1. Clean spots with approved spot remover.

2. Cleaning techniques and care of carpet tile shall be defined in writing and submitted to the **Architect** for review.

G. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 09 68 13

SECTION 09 90 00 – PAINTING AND COATINGS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, Division 0, and Division 1 requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable extents of work at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Surface preparation, priming and coats of paint specified are in addition to shop priming and surface treatment specified under other Sections of Work.

2. Painting in any room in which finishing work is performed, including painting new surfaces as specified and repainting all existing painted surfaces one coat same as last coat specified for similar new work.

3. Painting of all exposed and semi-exposed surfaces.

4. Painting of all surfaces indicated in Drawings, and as herein specified.

5. Painting the primer for wall finish (in addition to and) after Drywall primer/sealer is installed per Section 09 29 00.

6. Work includes sandblasting of all interior and exterior steel to be painted, refer to Section 04 01 80.

7. Stencil painting for pipe identification.
   a. Refer to Divisions 21 through 28

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

   a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. Leadership in Energy and Environmental Design (LEED), www.usgbc.org/LEED (United States Green Building Council (USGBC)

1. Refer to Division 1 for version of LEED Rating System and Reference Guide applicable to project.

E. Collaborative for High Performance Schools (CHPS), www.chps.net

F. American Society for Testing and Materials:

1. ASTM D523 Standard Test Method for Specular Gloss

G. Gypsum Association (GA)

1. GA-232 Painting New Gypsum Board

H. National Fire Protection Agency (NFPA), www.nfpa.org

1. NFPA 703 - Standard for Fire-Retardant Treated Wood and Fire-Retardant Coatings for Building Materials

I. The Society for Protective Coatings (SSPC), www.sspc.org

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Refer to Division 1 for additional requirements for DSA projects

B. **Standards:**

Item	Name of Test	Performance	Testing Std.
Interior Applied Paints	V.O.C.	Comply with California Criteria and as herein required when more restrictive.	California Air Resources Board (CARB) or local AHJ whichever is more stringent
			South Coast Air Quality Management District Rule 1113
Refer to drawings and as herein specified			

C. **Sustainability:**

2. Refer to Division 1 sustainability requirements.
3. Refer to product criteria identified herein.

1.4 SUBMITTALS AND MOCKUPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Refer to Division 1 for sustainability requirements

C. Submittals:

1. Product & Technical Data
2. MSDS Sheets
3. Manufacturer Installation Instructions

D. Samples:

1. Brush Outs:
   a. On 8 x 12 inch heavy cardstock paper, provide four (4) samples of each color, paint type and sheen.
   b. Samples shall be labeled with paint designation number as indicated in drawings and paint type as herein indicated.
   c. Resubmit each sample as requested until acceptable sheen and color is achieved.
2. Physical Samples of Wood Stain / Penetrating Finish:
   a. Three (3) 2'-0" long sections of each type and species of wood substrate with proposed Stain and Finish Coat, and/or Oil Based Penetrating finish for review and approval prior to field application.

E. Mock-Ups:

1. Erect at location approved by **Architect**.
   a. Size:
      1) Exposed Steel: 4'-0" long section
      2) Gypsum Board: 4'-0" square
   b. Mock-up shall not be part of final construction once approved by **Architect**.
   c. Mock-up shall comprise of all components and finishes as specified and indicated in Drawings.

F. O&M Manuals

1. As part of O&M (Operation and Maintenance) manual submittals per Division 1 requirements, provide the following:
   a. Two (2) copies of coating maintenance manual, equivalent to Sherwin Williams' "CUSTODIAN"; maintenance manual shall include the following:
      1) Location of manufacturer's paint store closest to the project site
      2) Area summary with finish schedule
      3) Area detail designating where each product, color and finish was used
      4) Product Data Sheets and MSDS sheets for each product used

5) Color formulations for each color used
6) Cleaning instructions
7) Touch up procedures
8) Color samples of each color and finish used

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer shall have been in business for **five (5)** years providing/installing/finishing similar size projects and complexity.

C. Manufacturer shall have been in business for **ten (10)** years providing similar size projects and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid.

E. Stipulations:

1. Steel preparation shall comply with SSPC (Steel Structures Painting Council) guidelines and as herein required when more stringent.
2. Provide finish coats which are compatible with prime paints used.
    a. Review other Sections of these Specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates.
3. Number of coats specified herein are minimum; uniform coverage, free from defects or blemishes is required.

F. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. **General Contractor** shall request meeting **5 days** in advance of construction. Agenda for meeting shall include, but not be limited to;

1. Substrate preparation
2. Colors

G. Manufacturer's Representative: Make arrangements necessary to have a trained employee of the manufacturer on-site periodically during installation work to review installation procedures.

1. Manufacturer's representative shall review and certify in writing all phases of construction to verify the complete work meets specification requirements.
2. Written certification of all phases of construction shall be sent to the **Architect** by the manufacturer's representative.

H. Miscellaneous criteria:

1. Upon request from other subcontractors, furnish information on characteristics of finish materials proposed for use, to ensure that compatible prime coats are used.
    a. Provide barrier coats over incompatible primers or remove and re-prime as required.
    b. Notify **Architect** in writing of any anticipated problems using coating systems as specified with substrates primed by others.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver all materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and the following information, including but not limited to:

1. Product Information:
    a. Paint type
    b. Manufacturer's name, stock number and date of manufacture
    c. Contents by volume, for major pigment and vehicle constituents (VOC)
    d. Thinning instructions
    e. Application instructions
    f. Manufacturer’s color name and number
2. Designation Information:
    a. Project paint designation, ie: “P1”, “P2”, “P3”, etc.
    b. Sheen type

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, substrates, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Apply water-based paints only when temperature of surfaces to be painted and surrounding air temperatures are between 55ºF and 90ºF unless otherwise permitted by paint manufacturer's printed instructions.

C. Apply VOC compliant solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45ºF and 95ºF, unless otherwise permitted by paint manufacturer's printed instructions.

D. Do not apply primers, paint and/or stain in rain, fog, and/or mist, when relative humidity exceeds 85%, or to damp or wet surfaces, unless otherwise permitted by paint manufacturer's printed instructions.

E. Painting may be continued during inclement weather only if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **five (5)** year warranty agreeing to repair and/or replace paint which has failed as a result of defects in materials or workmanship including fading, chipping, rust bleed thru, cracking and chalking.

1. Upon notification of Owner within the warranty period, such defects shall be repaired and replaced at no cost to the Owner.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Wall substrates
2. Floor substrates
3. Component substrates
4. Metal substrates
5. Railings and Assemblies
6. Stairs
7. Coordinate with surfaces which might be finished by and/or shop painted, including but not limited to: **[Specifier review, edit and add to as necessary]**

a. Texturing of gypsum board

b. Interior and/or Exterior Flashing

c. Chimney Flue Caps

d. Railings – Prefinished

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 03 30 00 – Cast in Place Concrete
3. Section 03 47 13 – Tilt-Up Concrete
4. Section 04 01 80 – Masonry Shot & Sandblasting
5. Section 04 22 00 – Concrete Unit Masonry
6. Section 05 12 00 – Structural Steel Framing
7. Section 05 31 00 – Steel Decking
8. Section 05 50 00 – Metal Fabrications
9. Section 05 52 00 – Metal Railings
10. Section 06 10 00 – Rough Carpentry
11. Section 06 18 13 – Glue Laminated Construction
12. Section 06 20 00 – Finish Carpentry
13. Section 06 46 00 – Exterior Wood Trim
14. Section 07 62 00 – Sheet Metal Flashing and Trim
15. Section 07 81 23 – Intumescent Fireproofing
16. Section 09 24 00 – Portland Cement Plaster Assembly
17. Section 09 29 00 – Gypsum Board & Sheathing Substrates
18. Section 09 96 53 – Elastomeric Coatings

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required cleaning of substrates prior to the installation of materials, components, etc.

1.13 EXTRA MATERIAL

A. Submit as part of project closeout:

1. Provide Three (3) 1-gallon containers of extra material in each finish paint type, color, sheet, etc. and in same lot as installed product.
    a. Provide in factory packaged and labeled containers; identify containers with project name, manufacturer's paint system, color name and number, and paint sheen as indicated in documents and in accordance with specifications.
    b. Do not supply anything less the full containers.
    c. For paint that is available only in 5-gallon containers provide one (1) 5-gallon container.
    d. Deliver materials to project premises just prior to substantial completion, and store at location directed by the **Owner**.

1.14 PAINTING EXCLUSIONS AND CLARIFICATIONS **[SPECIFIER, COORDINATE THIS WITH SHOP FINISHED AND/OR SHOP PAINTED ITEMS]**

A. Following categories of work are not included as part of field-applied finish work, or are included in other Sections of these Specifications:
    1. Shop priming: Unless otherwise specified, initial shop priming of metal items is included under various Sections for structural steel, miscellaneous metal items, hollow metal work, and similar items, and for such fabricated components, wood casework, and shop-fabricated or factory-built mechanical and electrical equipment or accessories.
        a. This shop priming shall not replace the final priming required as herein specified.
        b. Shop priming shall be compatible with priming and painting as herein specified.
        c. Steel which will be welded in the field shall be primed and painted after erection and shop priming material shall be compatible with painting products as herein specified.
    2. Pre-finished items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) toilet partitions, finish hardware, plastic laminate casework, exterior insulation system, carpeting, ceramic tile, louver blinds, knock-down steel or aluminum drywall frames, finished electrical equipment including light fixtures, and finished mechanical equipment.
    3. Concealed surfaces: Unless otherwise indicated, painting is not required on wall or ceiling surfaces in concealed areas and generally inaccessible areas, such as foundation spaces, furred areas, pipe spaces and duct shafts.
        a. Mechanical and Electrical rooms are to be painted.
        b. Back side of all casework shall be painted.
    4. Finished metal surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.

5. Operating parts and labels: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts will not require finish painting unless otherwise indicated.
    a. Do not paint over any code-required labels, such as Underwriter's Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

B. "Paint" as used herein means all coating systems materials, which includes primers, emulsions, enamels, stain, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

C. Paint all exposed surfaces whether or not colors are designated in any "schedule", except where natural finish of material is specifically noted as surface not to be painted.
    1. Where items or surfaces are not specifically mentioned, use paint systems of adjacent similar materials in color/finish selected by **Architect**.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each paint type.

B. Acceptable manufacturers shall be one of the following, as herein listed and in Drawings:
    1. General Paint:
        a. Sherwin Williams, www.sherwinwilliams.com
        b. Dunn Edwards, www.dunnedwards.com
        c. Benjamin Moore, www.benjaminmoore.com
    2. Specialty Touch-up paint for galvanized framing
        a. ZRC Worldwide, www.zrcworldwide.com
    3. Elastomeric Paint: **[Specifier, choose between this and Elastomeric Coating such as Dryvit or Omega per Section 09 96 53. If using Elastomeric Paint noted here, Cement Plaster Section must be adjusted to include the 3rd finish coat within the plaster assembly section.]**
        a. Sherwin Williams, www.sherwinwilliams.com
    4. Exterior Wood – Penetrating Oil Based Finish:
        a. Flood, www.flood.com
    5. Interior Fire Retardant wood paint
        a. Flame Control Coatings, LLC www.flamecontrol.com

6. Anti-Slip paint / coating
    a. Wooster Products, www.wooster-products.com
7. Reviewed Equivalent by **Architect.**
    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

2.2 PRODUCT SCHEDULE - EXTERIOR SURFACES [SPECIFIER, EDIT OUT SUBSTRATES THAT DO NOT APPLY]

A. **General:**

1. Application: Typical for specified type/substrate unless otherwise noted.

B. **Exterior Masonry (Painted)**

1. Substrates: Concrete Masonry Units (CMU) **[Specifier: where standard exterior paint is final finish]**
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	16.0 wet 8.1 dry	<50	ConFlex Block Filler CF01 Series	Smooth BLOCFIL Select SBSL00	UltraSpec Hi-Build Block Filler #571
2nd & 3rd Coats	Finish	Flat Gloss Low Sheen Satin **[Specifier – select desired sheen]**	4.0 wet 1.5 dry	<50	A-100 Exterior Latex A6 Series (Flat) A12 Series (Low Sheen)	Spartashield SSHL10 (Flat) SSHL40 (Low Sheen) SSHL30	Ultra Spec EXT #447 (Flat) #455 (Low Lustre)

					A82 Series (Satin) A8 Series (Gloss)	(Egg Shell) SSHL60 (Gloss)	#448 (Satin) #449 (Gloss)

C. **Exterior Masonry (Elastomeric Paint)**

1. Substrates: Concrete Masonry Units (CMU) **[Specifier: where elastomeric paint is final finish]**
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	16.0 wet 8.8 dry	<50	Loxon Acrylic Block Surfacer LX01 Series	Smooth BLOCFIL Select SBSL00	Ultra Spec Masonry Sealer #608
2nd Coat	Finish	Flat	13.0-16.0 wet 6.0-7.5 dry	<50	ConFlex XL Elastomeric High Build Coating CF11 Series	ENDURA-LASTIC 5 EDLV10	Ultra Spec Elastomeric Waterproof Coating #359
3rd Coat	Finish (Smooth)	Flat	13.0-16.0 wet 6.0-7.5 dry	<50	ConFlex XL Elastomeric High Build Coating CF11 Series	ENDURA-LASTIC 5 EDLV10	Ultra Spec Elastomeric Waterproof Coating #359
3rd Coat	Finish (Smooth, Sand, or Medium, Texture) ***[Specifier, if texture is desired delete smooth 3rd coat as well as the non-***	Flat	20-23 wet 8.8-10.1 dry	<100	ConFlex XL Elastomeric High Build Coating CF12 Series	ENDURA-LASTIC 5 EDLV10	Coronado Texcrete #3194 (Smooth Texture) #3192 (Sand Texture) #3196 (Medium Texture)

	desired textures in this cell]						

D. **Exterior Concrete (Paint)**

1. Substrates:
   a. Cementitious Siding, Paneling and Trim
   b. Tilt-Up Concrete Construction
   c. Pre-Cast Concrete
   d. Cast-in-Place Concrete
2. Application: Typical, u.o.n.
   a. Do not use @ cast-in-place concrete elements including, but not limited to, concrete seat walls
   b. Do not use @ cast-in-place concrete exposed foundation walls and curbs @ b.o. exterior walls unless noted on the drawings
3. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	5.3-8.0 wet 2.1-3.2 dry	<50	Loxon Concrete & Masonry Primer LX02 Series	EFF-STOP Select ESSL00	Ultra Spec High Build Masonry Primer #609
2nd & 3rd Coats	Finish	Flat Gloss Low Sheen Satin **[Specifier – select desired sheen]**	4.0 wet 1.5 dry	<50	A-100 Exterior Latex A6 Series (Flat) A12 Series (Low Sheen) A82 Series (Satin) A8 Series (Gloss)	Spartashield SSHL10 (Flat) SSHL40 (Low Sheen) SSHL30 (Egg Shell) SSHL60 (Gloss)	Ultra Spec EXT #447 (Flat) #455 (Low Lustre) #448 (Satin) #449 (Gloss)

E. **Exterior Concrete / Cementitious Substrates (Elastomeric Paint)** **[Specifier: WP preference is the inclusion of Section 09 96 53 – Elastomeric Coatings rather than the use of Elastomeric Paint as specified herein]**

1. Substrates:
   a. Tilt-Up Concrete Construction
   b. Pre-Cast Concrete
   c. Cast-in-Place Concrete
   d. Cement Plaster (scratch, brown, & finish coat) **[specifier: coordinate with Cement Plaster section 09 24 00 – verify that the 3rd coat/finish coat is included therein]**
2. Application: Typical, u.o.n.
   a. Do not use @ cast-in-place concrete elements including, but not limited to, concrete seat walls
   b. Do not use @ cast-in-place concrete exposed foundation walls and curbs @ b.o. exterior walls unless noted on the drawings
3. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mils)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	8.0 wet 3.2 dry	<50	Loxon Concrete & Masonry Primer LX02 Series	EFF-STOP Select ESSL00	Ultra Spec High Build Masonry Primer #609
2nd Coat	Finish	Flat	13.0 – 16.0 wet 6.0 - 7.5 dry	<50	ConFlex XL Elastomeric High Build Coating CF11 Series	ENDURA-LASTIC 5 EDVL 10	Ultra Spec Elastomeric Waterproof Coating #359
3rd Coat (smooth)	Finish	Flat	13.0 – 16.0 wet 6.0 - 7.5 dry	<50	ConFlex XL Elastomeric High Build Coating CF11 Series	ENDURA-LASTIC 5 EDVL 10	Ultra Spec Elastomeric Waterproof Coating #359
3rd Coat (textured)	Finish (Fine, Medium, Extra Coarse) ***[Specifier,***	Flat	13.0 – 16.0 wet 6.0 - 7.5 dry	<50	ConFlex XL Elastomeric High Build Coating CF12 Series	ENDURA-LASTIC 5 EDVL 10	Coronado Texcrete #3194 (Smooth Texture)

	if texture is desired delete smooth 3rd coat as well as the non-desired textures in this cell]						#3192 (Sand Texture) #3196 (Medium Texture)

F. **Exterior Concrete / Cementitious Substrates (Elastomeric Coating)** **[Specifier: this is for Elastomeric Coating per 09 96 53, i.e. DryVit or Omega finish coats]**

1. Substrates:
   a. Tilt-Up Concrete Construction
   b. Pre-Cast Concrete
   c. Cast-in-Place Concrete
   d. Cement Plaster (scratch & brown) **[specifier: coordinate with Cement Plaster section 09 24 00 – verify that the 3rd coat/finish coat has been deleted in favor of the Dryvit coating within Section 09 96 53 – Elastomeric Coatings]**
2. Refer to Section 09 96 53 – Elastomeric Coatings
3. Application: Typical, u.o.n.
   a. Do not use @ cast-in-place concrete elements including, but not limited to, concrete seat walls
   b. Do not use @ cast-in-place concrete exposed foundation walls and curbs @ b.o. exterior walls unless noted on the drawings

G. **Exterior Ferrous Metal (Non-Exposed Steel)**

1. Substrates: Exterior ferrous and non-galvanized metals, typical u.o.n.
2. Application: Non-exposed conditions, typical u.o.n.
3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	5.0-10.0 wet 1.9-3.8 dry	<50	Pro-Industrial Pro-Cryl	ENDURA-PRIME ENPR00	Ultra Spec HP Acrylic Metal

					Universal Acrylic Primer B66 Series		Primer #HP04
2nd & 3rd Coats	Finish	Semi-Gloss	6.0-12.0 wet 2.2-4.2 dry	<50	Pro-Industrial Acrylic B66 Series	ENDURA-PRIME ENPR00	Ultra Spec HP Acrylic DTM #HP29

H. **Exterior Ferrous Metal (Architectural Features / Exposed Steel)**

1. Substrates: Exterior Architecturally Exposed Structural Steel (AESS) and other exposed exterior ferrous metals.
2. Application: Exposed conditions, typical, u.o.n.
3. Exceptions:
   a. Flashing:
      1) Associated with storefront, curtain wall and/or window wall, Section 08 41 00 shall be provided by storefront / curtain wall manufacturer and have same finish as storefront / curtain wall, U.N.O. **[Specifier, select for storefront conditions]**

   b. Reveals, expansion joints, etc.**[Specifier, include note if reveals/joints are included in Section 09 24 00]**
      1) Finish: **[Specifier, Select which one]**
         a) Manufacturer finish per Section 09 24 00 – Portland Cement Plaster Assembly
         b) Painted per Section 09 90 00 – Painting and Coatings
         c) Painted per Section 09 96 53 – Elastomeric Coatings
4. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	Low Sheen	5.0-10.0 wet 1.8-3.6 dry	<100	ProIndustrial ProCryl Universal Acrylic Primer B66-310	US Coatings EpoxyGrip 2300	Acrylic Metal Primer #HP04
2nd & 3rd Coats	Finish	Semi-Gloss Gloss	4.0-5.0 wet 1.4-1.7 dry	<50	ProIndustrial Waterbased Alkyd Urethane	US Coatings UreGrip 3000 HS VOC	Ultra Spec HP D.T.M. system:

					B53-1150 Series (Semi-Gloss) B53-1050 Series (Gloss)		Semi-Gloss #HP29 Gloss #HP28

Specifier: As an alternate, more robust system you could specify the following in lieu of the system above (more expensive, but more 'bulletproof')

	Application				***Manufacturer's Product***		
	Product Type	***Sheen***	***Dry Film Thickness (mil)***	***VOC Limit (g/L)***	***Sherwin Williams***	***Alternate: Dunn Edwards***	***Alternate: Benjamin Moore***
1st Coat	*Primer*	*Semi-Gloss*	*7.0-13.5 wet 5.0-10.0 dry*	*< 100*	*Macropoxy 646-100 Fast Cure Epoxy*	-	*Corotech 100% Solids Epoxy Pre Primer #V155*
2nd & 3rd Coats	*Finish*	*Semi-Gloss (Part A)*	*3.6-4.8 wet 3.0-4.0 dry*	*< 100*	*Hi-Solids Polyurethane B65 Series*	-	*Corotech Aliphatic Acrylic Urethane #V500*
Hardener	*Finish*	*Gloss (Part B)*	*3.6-4.8 wet 3.0-4.0 dry*	*< 100*	*Hi-Solids Polyurethane Hardener B65 Series*	-	*Corotech Aliphatic Acrylic Urethane V500 Catalyst*

I. **Exterior Galvanized Metal & Aluminum, typical u.o.n.**
   1. Substrates:
      a. Exterior Galvanized Metals, typical u.o.n. (includes reveals and expansion joints unless specifically noted not to be painted)
      b. Aluminum
   2. Application: Typical u.o.n., excluding galvanized handrail and guardrail assemblies
   3. Exceptions:
      a. Flashing:

1) Associated with storefront, curtain wall and/or window wall, Section 08 41 00 shall be provided by storefront / curtain wall manufacturer and have same finish as storefront / curtain wall, U.N.O. **[Specifier, select for storefront conditions]**

b. Reveals, expansion joints, etc.**[Specifier, include note if reveals/joints are included in Section 09 24 00]**

1) Finish: **[Specifier, Select which one]**

a) Manufacturer finish per Section 09 24 00 – Portland Cement Plaster Assembly

b) Painted per Section 09 90 00 – Painting and Coatings

c) Painted per Section 09 96 53 – Elastomeric Coatings

4. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	5.0-10.0 wet 1.9-3.8 dry	<50	Pro-Industrial Pro-Cryl Universal Acrylic Primer B66 Series	ULTRA-SHIELD Galvaninzed Metal Primer ULGM00	Ultra Spec HP Acrylic Metal Primer #HP04
2nd & 3rd Coats	Finish	Semi-Gloss	6.0-12.0 wet 2.2-4.2 dry	<50	Pro-Industrial Acrylic B66 Series	ENDURA-COAT ENCT50	Ultra Spec HP Acrylic D.T.M. #HP29

J. **Exterior Galvanized Handrail and Guardrail Assemblies**

1. Substrates: Galvanized metal handrail & guardrail assemblies
2. Application: Typical @ galvanized handrail and guardrail assemblies
3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	Semi-Gloss	7.0-13.5 wet 5.0-10.0 dry	<100 (un-reduced)	Macropoxy 646-100 Fast Cure Epoxy	US Coatings EpoxyGrip 2300	Corotech 100% Solids Epoxy Pre Primer #V155
2nd & 3rd Coats	Finish	Semi-Gloss (Part A)	3.6-4.8 wet 3.0-4.0 dry	<100	Hi-Solids Polyurethane	US Coatings	Corotech Aliphatic

					B65 Series	UreGrip 3000 HS VOC	Acrylic Urethane #V500
Hardener	Finish	Gloss (Part B)	3.6-4.8 wet 3.0-4.0 dry	<100	Hi-Solids Polyurethane Hardener B65 Series	US Coatings UreGrip 3000 HS VOC	Corotech Aliphatic Acrylic Urethane V500 Catalyst

K. **Exterior Wood – Painted**

1. Substrates: Exterior wood including, but not limited to Glu-Lam and Sawn Timber beams, columns, and diagonal members, shingles, decking, sheathing, trim, and fascia boards

2. Application: Typical, u.o.n.

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	4.0 wet 1.4 dry	<100	Exterior Latex Wood Primer B42 Series	EZ-PRIME EZPR00	Insl-X Blockout Primer #TB-1100
2nd & 3rd Coats	Finish	Flat Gloss Low Sheen Satin **[Specifier – select desired sheen]**	4.0 wet 1.5 dry	<50	A-100 Exterior Latex A6 Series (Flat) A12 Series (Low Sheen) A82 Series (Satin) A8 Series (Gloss)	Spartashield SSHL10 (Flat) SSHL40 (Low Sheen) SSHL30 (Egg Shell) SSHL60 (Gloss)	Ultra Spec EXT #447 (Flat) #455 (Low Lustre) #448 (Satin) #449 (Gloss)

L. **Exterior Wood – Stained (Semi-Transparent)**

1. Substrates: Exposed exterior natural wood surfaces including, but not limited to Glu-Lam and Sawn Timber beams, columns, and diagonal members, shingles, decking, sheathing, trim, and fascia boards

2. Application: Typical, u.o.n.

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Finish	-	-	<50	Duckback SuperDeck Exterior Waterborne Semi-Transparent Stain SD3 series	GEMINI TWP Total Wood Preservative 1500 Series	Arborcoat Waterborne Exterior Semi Transparent Stain #638
2nd Coat	Finish	-	-	<50	Duckback SuperDeck Exterior Waterborne Semi-Transparent Stain SD3 series	GEMINI TWP Total Wood Preservative 1500 Series	Arborcoat Waterborne Exterior Semi Transparent Stain #638

M. **<u>Exterior Wood – Penetrating Oil Based Finish (Transparent)</u>**

1. Substrates: Exposed exterior natural wood surfaces including, but not limited to Glu-Lam and Sawn Timber beams, columns, and diagonal members, shingles, decking, sheathing, trim, and fascia boards.
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				Manufacturer's Product
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**FLOOD**
1st Coat	Cleaner	-	-	-	Manufacturer's for substrate condition: New Wood: Flood Dekswood Cleaner and Brightener Previously Finished: FloodPro Series Stripper/Cleaner Weathered Wood: Flood Dekswood Cleaner and Brightener

2nd & 3rd Coats	Finish	-	-	<350	CWF UV-5 Oil

4. Preparation:
    a. Clean with Manufacturer's product for substrate condition
    b. When mildew is present the wood to receive Oil Based Finish:
        1) Clean with a solution of:
            a) 4 ounces of non-ammoniated detergent (TSP) +
            b) 1 quart of outdoor bleach +
            c) 3 quarts of fresh potable water
        2) Let solution set on surface for 10-15 minutes then rinse thoroughly with potable water.
        3) Refer to mfgr's instructions for additional information.
        4) Lightly sand any area where the grain has been raised with a maximum of 80 grit paper.
5. Installation:
    a. Typical
        1) Apply two coats of Flood's finish with sprayer
            a) Air-less sprayer .011 - .015 fluid tip / 700 - 800 psi or less
                i. Refer to mfgr's instructions for additional information.
            b) Touch-up with high quality synthetic stain brush.
            c) Back roll to insure penetration.
        2) Where the finish is not absorbed, wipe excess with a clean cloth.
            a) Cloth type shall be woven material that will not leave material residue on the beams.

2.3 PRODUCT SCHEDULE - INTERIOR SURFACES **[SPECIFIER, EDIT OUT SUBSTRATES THAT DO NOT APPLY]**

A. **Interior Concrete (Painted)**

1. Substrates:
    a. Tilt-Up Concrete Construction
    b. Pre-Cast Concrete
    c. Cast-in-Place Concrete
    d. Cementitious Siding, Paneling and Trim

2. Application: Typical, u.o.n.

3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	5.3-8.0 wet 2.1-3.2 dry	<50	Loxon Concrete & Masonry Primer LX02 Series	EFF-STOP Select ESSL00	Ultra Spec Acrylic High Build Masonry Primer #609
2nd & 3rd Coats	Finish	Eg-Shel Gloss Semi-Gloss Low-Gloss Eg-Shel Low Sheen Eg-Shel Flat **[Specifier – select desired sheen]**	4.0 wet 1.4-1.7 dry (depending on sheen)	<50	ProMar 200 Zero VOC Interior Latex B20 Series (Eg-Shel) B30 Series (Flat) B24 Series (Low Sheen Eg-Shel) B41 Series (Low Gloss Eg-Shel) B31 Series (Semi-Gloss) B21 Series (Gloss)	SPARTA Series SWLL30 (Egg Shell) SZRO10 (Flat) SWLL40 (Low Sheen) SWLL50 (Semi-Gloss) SSHL60 (Gloss)	Ultra Spec 500 Zero VOC Interior Latex #538 (Eggshell) #536 (Flat) #537 (Low Sheen) #539 (Semi-Gloss) #540 (Gloss)

B. **Interior Masonry (Painted)**

1. Substrates:
   a. Concrete Masonry Units (CMU)
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	5.3-8.0 wet 2.1-3.2 dry	<50	PrepRite Block Filler B25 Series Or ConFlex Block Filler CF01 Series	Smooth BLOC-FIL Select SBSL00	Ultra Spec Hi-Build Block Filler #571
2nd & 3rd Coats	Finish	Eg-Shel Gloss Semi-Gloss Low-Gloss Eg-Shel Low Sheen Eg-Shel Flat **[Specifier – select desired sheen]**	4.0 wet 1.4-1.7 dry (depending on sheen)	<50	ProMar 200 Zero VOC Interior Latex B20 Series (Eg-Shel) B21 Series (Gloss) B31 Series (Semi-Gloss) B41 Series (Low Gloss Eg-Shel) B24 Series (Low Sheen Eg-Shel) B30 Series (Flat)	SPARTA Series SWLL30 (Egg Shell) SZRO10 (Flat) SWLL40 (Low Sheen) SWLL50 (Semi-Gloss) SSHL60 (Gloss)	Ultra Spec 500 Zero VOC Interior Latex #538 (Eggshell) #540 (Gloss) #539 (Semi-Gloss) #537 (Low Sheen) #536 (Flat)

C. **Interior Aluminum, Ferrous Metal (Non-exposed), and Galvanized Metal**

1. Substrates:
   a. Aluminum
   b. Interior ferrous metals, typical u.o.n.
   c. Galvanized metals, typical u.o.n. (excluding handrail and guardrails)

2. Application: Non-exposed conditions, typical u.o.n.
3. Exceptions:
   a. Flashing:
      1) Associated with storefront, curtain wall and/or window wall, Section 08 41 00 shall be provided by storefront / curtain wall manufacturer and have same finish as storefront / curtain wall, U.N.O. **[Specifier, select for storefront conditions]**
   b. Reveals, expansion joints, etc.**[Specifier, include note if reveals/joints are included in Section 09 29 00]**
      1) Finish: **[Specifier, Select which one]**
         a) Manufacturer finish per Section 09 29 00 – Gypsum Board & Sheathing Substrates
         b) Painted per Section 09 90 00 – Painting and Coatings
4. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	5.0-10.0 wet 1.9-3.8 dry	<50	Pro-Industrial Pro-Cryl Universal Acrylic Primer B66 Series	ENDURA-PRIME Metal Primer ENPR00	Ultra Spec HP Acrylic Metal Primer #HP04
2nd & 3rd Coats	Finish	Semi-Gloss Eg-Shel Satin Flat **[Specifier – select desired sheen]**	4.0 wet 1.7 dry	<50	Solo A76 (Semi-Gloss) Solo A75 (Eg-Shel) Solo A74 (Flat) Solo A75 (Satin)	SPARTA Series SWLL30 (Egg Shell) SZRO10 (Flat) SWLL40 (Low Sheen) SWLL50 (Semi-Gloss) SSHL60 (Gloss)	Ultra Spec 500 Zero VOC Interior Latex #538 (Eggshell) #536 (Flat) #537 (Low Sheen) #539 (Semi-Gloss)

							#540 (Gloss)

D. **Interior Galvanized Handrail and Guardrail Assemblies**

1. Substrates: Galvanized metal handrail & guardrail assemblies
2. Application: Typical @ galvanized handrail and guardrail assemblies
3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	Semi-Gloss	7.0-13.5 wet 5.0-10.0 dry	<100 (un-reduced)	Macropoxy 646-100 Fast Cure Epoxy	US Coatings EpoxyGrip2 300	Corotech 100% Solids Epoxy Pre Primer #V155
2nd Coat	Finish	Semi-Gloss (Part A)	3.6-4.8 wet 3.0-4.0 dry	<100	Hi-Solids Polyurethane B65 Series	US Coatings UreGrip 3000 HS VOC	Corotech Aliphatic Acrylic Urethane #V500
3rd Coat	Finish	Semi-Gloss (Part A)	3.6-4.8 wet 3.0-4.0 dry	<100	Hi-Solids Polyurethane B65 Series	US Coatings EpoxyGrip2 300	Corotech Aliphatic Acrylic Urethane #V500
Hardener	Finish	Gloss (Part B)	3.6-4.8 wet 3.0-4.0 dry	<100	Hi-Solids Polyurethane Hardener B65 Series	US Coatings UreGrip 3000 HS VOC	Corotech Aliphatic Urethane V500 Catalyst

E. **Interior DryFall Systems**

1. Substrates: Galvanized and non-galvanized metal
2. Application: Interior face of exposed metal roof deck, typical u.o.n. **[Specifier: consider this option for areas with high roofs such as multi-purpose rooms, stages, etc. Advantage is that the paint overspray turns to "dust" before it hits the floor allowing easy clean up via sweeping or vacuuming]**
3. Exceptions:

a. Do not use Dryfall Systems when temperature and humidity do not meet criteria set forth in manufacturer's product data / installation instructions.

4. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	5.0-10.0 wet 1.9-3.8 dry	<50	Pro-Industrial Pro-Cryl Universal Acrylic Primer B66 Series	N/A	Ultra Spec HP Acrylic Metal Primer #HP04
2nd & 3rd Coats	Finish	Semi-Gloss Flat Eg-Shel **[Specifier: select desired sheen and delete the others]**	6.0-9.0 wet 2.0-3.0 dry	<50	Pro-Industrial Waterborne Acrylic DryFall B42 Series	AQUAFALL Dry Fall AQUA10 AQUA 30	Latex Dryfall #397 Semi-Gloss #395 Flat #396 Eggshell

F. **Gypsum Board Walls and Ceilings**

1. Substrates: Gypsum Board substrates per Section 09 29 00 – Gypsum Board & Sheathing Substrates.
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	4.0 wet 1.0 dry	<50	ProMar 200 Zero VOC Latex Primer B28 Series	VINYLASTIC Select VNSL00	Ultra Spec 500 Latex Primer #534

2nd & 3rd Coats	Finish	Eg-Shel Gloss Semi-Gloss Low-Gloss Eg-Shel Low Sheen Eg-Shel Flat **Or** Refer to Interior Finish Legend **[Specifier – select desired sheen or reference interior finish legend]**	4.0 wet 1.4-1.7 dry (depending on sheen)	<50	ProMar 200 Zero VOC Interior Latex B20 Series (Eg-Shel) B21 Series (Gloss) B31 Series (Semi-Gloss) B41 Series (Low Gloss Eg-Shel) B24 Series (Low Sheen Eg-Shel) B30 Series (Flat) **[Specifier – if referencing interior finish legend, remove references to sheet series, ie B20, B31, etc.]**	SPARTA Series SSLL30 (Egg Shell) SZRO10 (Flat) SSLL20 (Velvet) SWLL40 (Low Sheen) SWLL50 (Semi-Gloss) SSHL60 (Gloss)	Ultra Spec 500 Zero VOC Interior Latex #538 (Eggshell) #536 (Flat) #537 (Low Sheen) #539 (Semi-Gloss) #540 (Gloss)

G. **Gypsum Board Walls & Ceilings @ Showers, Locker Rooms, and other High-Humidity Rooms**

1. Substrates: Gypsum Board substrates per Section 09 29 00 – Gypsum Board & Sheathing Substrates.
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**

1st Coat	Primer	-	4.0 wet 1.0 dry	<50	ProMar 200 Zero VOC Latex Primer B28 Series	VINYLASTIC Select VNSL00	Ultra Spec 500 Latex Primer #534
2nd & 3rd Coats	Finish	Refer to Interior Finish Legend **[Specifier: Eg-Shel and Gloss are only options; coordinate with Interiors]**	5.0-12.0 wet 2.0-5.0 dry	<50	Pro-Industrial Water Based Catalyzed Epoxy Part A B73 Series	US Coatings AquaGrip 2600	Corotech Pre Catalyzed Waterborne Epoxy V341
4TH Coat	Hardener		5.0-12.0 wet 2.0-5.0 dry	<50	Pro-Industrial Water Based Catalyzed Epoxy Part B B73 Series	US Coatings AquaGrip 2600	Single component

H. **Gypsum Board Walls & Ceilings @ Utility Rooms (Janitor, Storage, Electrical, Equipment, IDF/MDF, and Mechanical Rooms and Kitchens)**

1. Substrates: Gypsum Board substrates per Section 09 29 00 – Gypsum Board & Sheathing Substrates.
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	4.0 wet 1.0 dry	<50	ProMar 200 Zero VOC Latex Primer B28 Series	VINYLASTIC Select VNSL00	Ultra Spec 500 Latex Primer #534
2nd & 3rd Coats	Finish	Refer to Interior Finish Legend **[Specifier: Eg-Shel and Gloss are only options;**	5.0-12.0 wet 2.0-5.0 dry	<50	Pro-Industrial Water Based Catalyzed Epoxy Part A B73 Series	US Coatings AquaGrip 2600	Corotech Pre Catalyzed Waterborne Epoxy V341
4TH Coat	Hardener		5.0-12.0 wet 2.0-5.0 dry	<50	Pro-Industrial Water Based Catalyzed Epoxy Part B	US Coatings AquaGrip 2600	Single component

		coordinate with Interiors]			B73 Series		

I. **Interior Wood (Painted)**

1. Substrates: Interior wood including, but not limited to Glu-Lam and Sawn Timber beams, columns, and diagonal members, wood decking and sheathing, trim, and back of casework.
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	4.0 wet 1.4 dry	<50	Premium Wall & Wood Latex Primer B28 Series	Interkote IKPR00	Fresh Start All Purpose Primer #046
2nd & 3rd Coats	Finish	Eg-Shel Gloss Semi-Gloss Low-Gloss Eg-Shel Low Sheen Eg-Shel Flat **Or** Refer to Interior Finish Legend **[Specifier – select desired sheen or**	4.0 wet 1.4-1.7 dry (depending on sheen)	<50	ProMar 200 Zero VOC Interior Latex B20 Series (Eg-Shel) B21 Series (Gloss) B31 Series (Semi-Gloss) B41 Series (Low Gloss Eg-Shel) B24 Series (Low Sheen Eg-Shel) B30 Series (Flat)	SPARTA Series SSLL30 (Egg Shell) SZRO10 (Flat) SSLL20 (Velvet) SWLL40 (Low Sheen) SWLL50 (Semi-Gloss) SSHL60 (Gloss)	Ultra Spec 500 Zero VOC Interior Latex #538 (Eggshell) #540 (Gloss) #539 (Semi-Gloss) #537 (Low Sheen) #536 (Flat)

		reference interior finish legend]					

J. **Interior Wood (Painted Flame Retardant)**

1. Substrates: Interior backer boards, panel boards, and other locations noted in drawings.
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				**Manufacturer's Product**
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Flame Control Coatings, LLC**
1st Coat	Sealer	-	-	-	Not required
2nd Coat	Finish	Flat	7.6 wet 3.9 dry	45 g/L	Flame Control No. 20-20A Intumescent Fire Retardant (Waterbased) Paint

K. **Interior Wood – Stained**

1. Substrates: Exposed exterior natural wood surfaces including, but not limited to Glu-Lam and Sawn Timber beams, columns, and diagonal members, and interior trim / finish carpentry.
   a. Not for use on wood floors.
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Conditioner	-	-	<100	MinWax Waterbased Pre-Stain Wood Conditioner	N/A	Lenmar Interior Waterborne Wiping Stain #1WB.1300 UNTINTED
2nd Coat*	Stain	-	-	<250	MinWax Performance Series Tintable	GEMINI Craftsman Collection 240 VOC Wiping Stain	Lenmar Interior Waterborne Wiping Stain #1WB.1300

					Wood Stain 250 VOC		
3rd & 4th Coats	Clear Topcoat	Satin Gloss Semi-Gloss **[Specifier – select desired sheen and delete others]**		<275	MinWax Water Based Oil-Modified Polyurethane	GEMININ TITANIUM High Solids Urethane Modified Waterborne WB-02X0	Benwood Stays Clear Acrylic Polyurethane Flat #425 Low Lustre #423 High Gloss #422

*=Additional Coats may be necessary to achieve desired color.

L. **Interior Wood Floor – Stained and/or Clear Coated**

1. Substrates: Exposed interior natural wood floor surface.
2. Application: Dance floors, typical, u.o.n.
3. Product Schedule:

	Application				**Manufacturer's Product**		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Conditioner	-	-	<100	MinWax Waterbased Pre-Stain Wood Conditioner	N/A	Lenmar Interior Waterborne Wiping Stain #1WB.1300
2nd Coat*	Stain	-	-	<250	MinWax Performance Series Tintable Wood Stain 250 VOC	GEMINI Craftsman Collection 240 VOC Wiping Stain	Lenmar Interior Waterborne Wiping Stain #1WB.1300

3rd & 4th Coats	Clear Topcoat	Satin Semi-Gloss Gloss **[Specifier – select desired sheen and delete others]**		<275	MinWax Water Based Oil-Modified Polyurethane	GEMININ TITANIUM High Solids Urethane Modified Waterborne WB-02X0	Benwood Stays Clear Acrylic Polyurethane Flat #425 Low Lustre #423 High Gloss #422

*=Additional Coats may be necessary to achieve desired color.

M. **Interior Wood – Penetrating Oil Based Finish (Transparent)**

1. Substrates: Exposed interior natural wood surfaces when noted to match penetrating oil based finish @ exterior wood.
2. Application: Typical, u.o.n.
3. Product Schedule:

	Application				Manufacturer's Product
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**FLOOD**
1st Coat	Cleaner	-	-	-	Per manufacturer for substrate condition
2nd & 3rd Coats	Finish	-	-	<350	CWF UV-5 Oil

N. **Interior Pipe Identification**

1. Substrates: Metal Piping
2. Application: Typical where pipes are not specified to receive insulated pipe wraps, u.o.n.; coordinate with Mechanical drawings and specifications.
3. Product Schedule:

	Application				Manufacturer's Product		
	Product Type	**Sheen**	**Dry Film Thickness (mil)**	**VOC Limit (g/L)**	**Sherwin Williams**	**Alternate: Dunn Edwards**	**Alternate: Benjamin Moore**
1st Coat	Primer	-	4.0 wet 1.0 dry	<50	Pro-Industrial Pro-Cryl	ENDURA-PRIME	Ultra Spec HP Acrylic

					Universal Acrylic Primer B66 Series	Metal Primer ENPR00	Metal Primer #HP04
2nd & 3rd Coats	Finish	Gloss	4.0-5.0 wet 1.4-1.7 dry	<50	Pro-Industrial Waterbased Alkyd Urethane B53 Series	ENDURA-COAT ENCT60	Ultra Spec HP D.T.M. Gloss HP28

O. **Interior TRAFFIC MARKING**

1. Substrate:
   a. Concrete
   b. Asphalt
   c. Brick
2. Specified in "Pavement Markings Section 32 17 23"
3. VOCs: Compliant with current SCAQMD and LEED v4 VOC requirements.

P. **Interior GALVANIZED REPAIR PAINT**: (Coordinate with Specifications containing galvanized metal)

1. Mfgr: ZRC Worldwide, www.zrcworldwide.com, 800.831-3275
2. Product: ZRC ZERO VOC Water-Based Galvanizing Compound
3. Type: Two-pack Water-Based Galvanizing Compound
4. Standards: (Meets or exceeds)
   a. ISO 9001 registered
   b. MIL-P-26915A (USAF Zinc dust Primer)
   c. SSPC-Paint 20 (Specification for Zinc Rich Primer)
   d. ASTM Des. A239 Preece Test for hot dipping galvanizing
   e. ASTM Des B117 10,000 salt spray without failure
   f. VOCs: Compliant with current SCAQMD and LEED v4 VOC requirements
5. Material:
   a. 93% Zinc in the dry film using Type III "ultra-pure" ASTM-D-520 zinc
6. Preparation:
   a. Grease & Oils: Solvent clean to SSPC-SP1
   b. Rust Scale: Power tool clean to SSPC-SP3 or SSPC-SP11 (SIS St. 2 or 3)
      1) Sand blast (SSPC-SP6) at exterior exposed conditions.

c. Mill Scale: Sandblast to SSPC-SP6

d. Water Immersion: (100 degree F max.) Sandblast to SSPC-SP10 (near-white)

2.4 SPECIALTY PAINTS AND COATINGS

A. Anti-Slip Paint / Coating:

1. Schedule: Interior

a. As indicated in drawings

b. Stair tread contrasting stripe **[Specifer: select desired system and delete others]**

Manufacturer	Material	Name	VOCs	Color	Installation	Composition
Wooster – Products	Epoxy	WALK-A-SURED	Compliant with current SCAQMD and LEED v4 VOC requirements	Clear Black Grey **[Specifer: select desired color and delete others]**	Roll-on	2-part
					Trowel-on	2-part
	Acrylic Paint	SAFE & STRIDE		Black Grey Safety Yellow **[Specifer: select desired color and delete others]**		1-part
	Oil Paint	SAFE & STRIDE		Grey		1-part

2. Schedule: Exterior

a. As indicated in drawings

b. Stair tread contrasting stripe

Manufacturer	Material	Name	VOCs	Color	Installation	Composition
Wooster – Products	Epoxy – Heavy Duty (application – heavy duty, high traffic) EPOXY WP-70		Compliant with current SCAQMD and LEED v4 VOC requirements	Black Grey Safety Yellow Brown	Trowel & squeegee	2-part

2.5 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** and subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Applicator must examine areas and conditions under which painting work is to be performed and notify **General Contractor** in writing of conditions detrimental to proper and timely completion of work.

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.
2. Confirm water vapor emission of concrete surfaces to be painted do not exceed manufacturer's recommendations.
3. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of durable paint film
4. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to applicator.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

1. General:
    a. Perform all preparation and cleaning procedures in strict accordance with paint/stain manufacturer's instructions and as herein specified, for each particular substrate condition.
    b. Remove all hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items by workmen skilled in trades involved.
    c. Clean surfaces to be painted before applying material.

1) Remove oil and grease with clean cloths and cleaning solvents prior to mechanical cleaning. Program cleaning and painting so that dust and other contaminants from cleaning process will not fall in wet, newly painted surfaces.

2) Shot blast all area's to remove rust and other contaminants in accordance with SSPC guidelines.

2. Wood:

a. Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off.

b. Prime, stain, or seal wood required to be job painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, etc; interior and exterior trim, fascia, wood doors and plywood.

c. When transparent finish is required, use spar varnish for backpriming.

d. Seal tops, bottoms and cut-outs and all edges not covered with veneer of wood doors with heavy coat of varnish or equivalent sealer immediately upon delivery to job.

e. Scrape and clean small, dry, seasoned knots and apply thin coat of white shellac or other recommended knot sealer, before application of priming coat.

f. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

3. Metal / Steel:

a. Ferrous metals:

1) Clean non-galvanized, ferrous surfaces that have not been shop-coated of all oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning, complying with Steel Structures Painting Council (SSPC)-SP3.

2) Sand blast all non-galvanized, ferrous surfaces that have not been shop-coated of all rust and other foreign substances by mechanical blast cleaning, complying with Steel Structures Painting Council (SSPC)-SP6.

3) Comply with SSPC guidelines in addition to these instructions.

b. Galvanized surfaces

1) Clean free of oil and surface contaminates with acceptable non-petroleum based solvent.

2) Comply with SSPC guidelines in addition to these instructions.

c. Metal Decking

1) Factory Primed:

a) Field fog finish painted for acoustical deck locations, coordinate with metal deck manufacturer.

2) Factory Finish Painted:

a) Field tough up in accordance with this specification and paint in accordance with metal decking Section.

4. Exposed Architectural Steel: (Structural and non-structural components included)

a. All steel that is exposed to view at interior & exterior shall be cleaned, prepared and primed for an Architectural painted finish.

1) Ferrous metals:

a) Clean non-galvanized, ferrous surfaces that have not been shop-coated of all oil, grease, dirt, loose mill scale and other foreign substances by solvent and mechanical cleaning, complying with Steel Structures Painting Council (SSPC)-SP3.

b) Sandblast all non-galvanized, ferrous surfaces that have been shop-coated of all rust and other foreign substances by mechanical blast cleaning, complying with Steel Structures Painting Council (SSPC)-SP6.

c) Clean all non-galvanized, ferrous surfaces that have been shop-coated of all foreign substances by chemical cleaning, complying with Steel Structures Painting Council (SSPC)

d) Comply with SSPC guidelines in addition to these instructions.

e) Remove all burrs / scratches, etc.

f) Prepare all surfaces to be smooth – fill voids & imperfections to achieve smooth surfaces.

b. Galvanized surfaces

1) Clean free of oil and surface contaminates with acceptable non-petroleum based solvent.

2) Prepare all surfaces to be smooth – fill voids & imperfections to achieve smooth surfaces.

3) Remove all burrs / scratches, etc.

4) Fill all gaps left where welding occurs between two items to achieve a continuous & even joint.

5) Comply with SSPC guidelines in addition to these instructions.

5. Concrete:

a. Clean concrete surfaces to be painted of dirt, oil, or other foreign substances with scrapers, VOC compliant cleaners, and sandpaper, as required.

b. Prime concrete as required by paint manufacturer.

c. Tape the locations for stair tread stripes to install true and straight edges of contrasting stripes.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
2. Apply paint by brush, roller, spray, or other acceptable practice in accordance with manufacturer's directions.
    a. Use brushes best suited for type of material being applied. Use rollers of carpet, velvet back, or high pile sheep's wool as recommended by paint manufacturer for material and texture required.
        1) Roll apply 1st coat of paint typical at all wall and ceiling applications.
        2) Install finish coats with sprayer at all interior and exterior exposed Architectural/structural steel locations.
3. Number of coats and paint film thickness required is same regardless of application method. Do not apply succeeding coats until previous coat has completely dried and inspected. Sand between each enamel or varnish coat application with fine sandpaper or rub surfaces with pumice stone where required to produce even, smooth surface in accordance with manufacturer's directions.
4. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive film thickness equivalent to that of flat surfaces.
5. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts, where visible through registers or grilles, and other surfaces indicated on Drawings with flat non-specular black paint, before final installation of equipment.
7. Paint back sides of access panels, removable or hinged covers to match exposed surfaces.
8. Finish exterior doors on tops, bottoms, and side edges same as exterior faces, unless otherwise indicated.
9. Painting of mechanical and electrical work is limited to those items exposed in Mechanical Equipment Rooms and in occupied spaces.
10. Doors: Finish tops, bottoms and edges of doors to provide same appearance as balance of door; re-seal all trimmed edges and mortising on factory sealed doors immediately after fitting by the finish carpenter.
11. Provide "Wet Paint" signs as required to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

B. Mechanical items to be painted include, but are not limited to, following:

1. Piping, pipe hangers, and supports, when exposed in finished spaces.
2. Motors, mechanical equipment, and supports.
3. Accessory items.

C. Electrical items to be painted include, but are not limited to, following:

1. Conduit and fittings.
2. Switchgear.

D. Minimum coating thickness: Apply each material at not less than manufacturer's recommended spreading rate, to provide total dry film thickness as indicated.

E. Prime coats: Recoat primed and sealed walls and ceilings where there is evidence of suction spots or unsealed areas in first coat, to assure finish coat with no burn-through or other defects due to insufficient sealing.

F. Scheduling painting: Apply first-coat material to surfaces that have been cleaned, pre-treated, primed and/or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. All materials shall be applied and cut in neatly to ensure uniform drying to the color and sheen specified, free from runs, sags, wrinkles, shiners, streaks and brush marks.
2. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of under coat.
3. Each coat of paint or finish must be inspected and approved before application of the succeeding specified coat, failure to comply with the inspection and approval requirements for successive coats will necessitate recoating at the painting contractor's expense wherever work is not properly credited. The painting contractor must furnish a report of each coat applied when completed for inspection and approval to comply with the above. Notify the **Architect** in advance of completed coats to be inspected.

G. Pigmented (opaque) finishes: Completely cover to provide opaque, smooth surface of uniform finish, color, appearance, and coverage.

1. Vary each coat of paint in shade from the preceding coat in a manner which renders each coat readily distinguishable without affecting finish color. Touch up all blemishes.

H. Transparent (clear) finishes: On exposed portions, use multiple coats to produce glass-smooth surface film continuity of even luster. Provide finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

I. Brush application: Brush-out and work all brush coats onto surfaces in even film. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable. Neatly draw all glass and color break lines.

J. Mechanical applicators: Use mechanical methods for paint application when permitted by governing ordinances and trade union regulations. If permitted, limit to only those surfaces impracticable for brush applications.

1. Limit roller application (generally) to interior wall and ceiling finishes for second and third coats. Apply each roller coat to provide equivalent hiding as brush-applied coats.

2. Where spray application is used, apply each coat to provide equivalent hiding of brush-applied primer. Do not double back with spray equipment for purpose of building up film thickness of two coats in one pass.

3.5 FIELD QUALITY CONTROL

A. Product Manufacturer shall provide field service support as requested by the Installer/Applicator

B. **General Contractor** and the Product Manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications. The Applicator shall be responsible for the proper application of the materials.

C. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 09 90 00

SECTION 10 14 00 - SIGNAGE

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, Division 0 and Division 1 requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work required by project conditions, including, but not limited to:

1. Code and ADA required signage:

a. All signage shall meet with standards and codes as herein listed, whether listed or not, and comply with the most restrictive requirements.

2. Accessories:

a. Adhesives, fasteners and accessories, as required for complete installed assembly, specified or not.
b. Posts and concrete footings.
c. Gravel

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. International Code Council (ICC), www.iccsafe.org

E. Refer to standards herein listed with specific products/materials.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Refer to Division 1 for additional requirements for DSA projects

4. Comply with Building Code, ADA, and CBC Title 24 most restrictive requirements and in accordance with DSA interpretations.

B. **Standards:**

Item	Name of Test	Performance	Testing Standard
Signage and Identification	General	Comply	California Building Code including, but not limited to CBC 11-B Division 7, and CBC Chapter 10 & ATBCB ADAAG.
Raised Characters	Depth	Comply	CBC 11B-703.2.1
	Case	Comply	CBC 11B-703.2.2
	Style	Comply	CBC 11B-703.2.3
	Proportions	Comply	CBC 11B-703.2.4
	Character height	Comply	CBC 11B-703.2.5
	Stroke thickness	Comply	CBC 11B-703.2.6
	Character spacing	Comply	CBC 11B-703.2.7
	Line spacing	Comply	CBC 11B-703.2.8
	Format	Comply	CBC 11B-703.2.9
Braille	Type	Comply	CBC 11B-703.3
	Dimensions & capitalization	Comply	CBC 11B-703.3.1 Table 11B-703.3.1
	Position	Comply	CBC 11B-703.3.2
Installation height and placement	Tactile signs (except for tactile characters at elevator car controls)	Comply	CBC 11B-703.4.1
	Location	Comply	CBC 11B-703.4.2
Visual Characters (non-Tactile signs)	Finish and Contrast	Comply	CBC 11B-703.5.1
	Case	Comply	CBC 11B-703.5.2
	Style	Comply	CBC 11B-703.5.3
	Character Proportions	Comply	CBC 11B-703.5.4
	Character Height	Comply	CBC 11B-703.5.5
	Height from finish floor or ground	Comply	CBC 11B-703.5.6
	Stroke thickness	Comply	CBC 11B-703.5.7
	Character spacing	Comply	CBC 11B-703.5.8
	Line spacing	Comply	CBC 11B-703.5.9
Pictograms	Pictogram field	Comply	CBC 11B-703.6.1
	Finish and contrast	Comply	CBC 11B-703.6.2
	Text descriptors	Comply	CBC 11B-703.6.3

Symbols of Accessibility	Finish and Contrast	Comply	CBC 11B-703.7.1
	Symbols	International Symbol of Accessibility	CBC 11B-703.7.2.1
		International Symbol of TTY	CBC 11B-703.7.2.2
		Volume Control Telephones	CBC 11B-703.7.2.3
		Assistive Listening Systems	CBC 11B-703.7.2.4
		Cleaner Air Symbol	CBC 11B-703.7.2.5
		Toilet & Bathing Facility geometric symbols	CBC 11B-703.7.2.6
Sign Body	Thickness	1/4", U.N.O.	
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
    a. Refer to product criteria identified herein.

1.4 SUBMITTALS AND MOCK-UPS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit the following for **Architect's** review:

1. Manufacturer product data and technical data sheets
2. Product MSDS sheets
3. Shop drawings
    a. Floor plan showing each sign location
    b. Sign Schedule with sign type, room/location, sign message
    c. Drawings showing each sign configuration, including raised characters, braille and pictograms and colors
    d. Drawings showing poles/posts and footings (for exterior pole mounted signage)
4. Samples:
    a. Samples of each type of cast, cut or engraved signs including, but not limited to, Braille, Pictorial symbols, and raised characters
    b. 4" x 6" size color samples for selection of signage colors by **Architect**

E. Mock-up

1. Provide mockup of exterior and interior signs in each mounting configuration / location, i.e. door mounted, wall mounted, post mounted, adhesively applied, mechanically fastened, etc.
    a. Erect at location approved by **Architect**.
2. Mock-up shall be part of final construction once approved by **Architect**.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver and store products suitable wrapped or packaged to protect against damage. Do not remove protective coverings until time of installation.

1. Protect finish and edges in accordance with panel manufacturer's recommendations.
2. Store material in accordance with panel manufacturer's recommendations.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **Lifetime** warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Building walls, windows and doors

2. Site parking, flatwork, paving, footings, etc.

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 02 41 13 – Selective Site Demolition and Protection
3. Section 02 41 19 – Selective Building Demolition and Protection
4. Section 03 30 00 – Cast in Place Concrete
5. Section 04 22 00 – Concrete Unit Masonry
6. Section 08 11 13 – Steel Doors and Frames
7. Section 08 14 00 – Wood Doors
8. Section 08 41 00 – Entrances, Window Wall, Storefront and Curtain Walls
9. Section 08 80 00 – Glass and Glazing
10. Section 09 29 00 – Gypsum Board and Sheathing Substrates
11. Section 09 30 00 – Tile and Stone
12. Section 09 90 00 – Painting and Coating

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.
2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Signage Manufacturer:

a. Advance Corporation, Braille-Tac™ Division, www.advancecorp.com
b. Apco www.apcosigns.com
c. Gemini Incorporated, www.signletters.com
d. In-Pro Signscape, www.inprocorp.com
e. Interface Architectural Signage, Inc., www.interfacedesign.com
f. Mohawk Sign Systems, www.mohawksign.com
g. ProAd Signs, www.proadsigns.com
h. Takeform Architectural Graphics, www.takeform.net

2. Fire Extinguisher Signage:
    a. Seton, www.seton.com
3. Plastic Material:
    a. Rowmark, www.rowmark.com
4. Reviewed Equivalent by **Architect**.
    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS – SITE VEHICULAR, EXITING AND ACCESSIBILITY SIGNAGE

A. General:
1. Refer to details for additional information, design criteria and posts and footing requirements.
2. Coordinate with Section 03 30 00 – Cast-in-Place Concrete
3. Coordinate with Section 05 50 00 – Metal Fabrications.

B. Material:
1. Sign: Stainless steel
2. Text: Powder coated

C. Post Mounted:
1. Posts:
    a. Galvanized steel pipe
2. Footings: Concrete
3. Fasteners:
    a. Type: Tamper resistant machine bolt, washer, lock washer & tamper proof nut
    b. Material: Stainless steel
    c. Size: 1/4" dia. X length required

D. Wall Mounted:
1. Fasteners:
    a. Metal and wood stud framing
        1) Type: Self taping with washer and lock washer

2) Material: Stainless steel
3) Size: 1/8" dia. x length to penetrate framing 1" min.

E. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**

2.3 MATERIAL – EXTERIOR BUILDING MOUNTED SIGNAGE

A. General

1. Refer to documents for additional information and design criteria
2. Signage Type:

a. Partial Inlay, uno.

B. Material

1. Acrylic – Face of Sign
2. Vinyl – Raised Characters, Visual Characters and Pictograms

C. Raised Characters

1. Partial inlay
2. Raised 1/32"
3. Beveled edges

D. Visual Characters and Pictograms

1. Partial inlay

E. Braille

1. Partial inlay
2. Raised

a. Contracted Grade 2 California Braille

F. Configuration

1. Size: Refer to details
2. Sign Edges: Beveled Straight

G. Installation:

1. Door mounted signs shall be installed with 1" wide x 62 mil thick 3M VHB 5962 Conformable Tape applied continuously along all four sides of sign and set ¼" clear of outside edge of sign.

2. Wall mounted signs shall be installed with tamper resistant stainless steel fasteners at all four sides of sign, typical u.o.n.

a. Masonry/Stone: Drilled expansion anchors x 1-1/2" embedment
b. Metal Studs: Self taping x 1" embedment
c. Wood studs: Self taping x 1" embedment

d. Wall mounted signs shall be installed with 1" wide x 62 mil thick 3M VHB 5962 Conformable Tape applied continuously along all four sides of sign and set ¼" clear of outside edge of sign.

3. Glass mounted signs shall be installed with 1" wide x 62 mil thick 3M VHB 5962 Conformable Tape applied continuously along all four sides of sign and set ¼" clear of outside edge of sign.

a. Install blank sign on opposite side of glass which matches size & color of informative

H. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**

2.4 MATERIAL – INTERIOR SIGNAGE

A. Material:

1. Acrylic – Face of Sign
2. Vinyl – Raised Characters, Visual Characters and Pictograms

B. Raised Characters

1. Partial inlay
2. Raised 1/32"
3. Beveled edges

C. Visual Characters and Pictograms

1. Partial inlay

D. Braille

1. Partial inlay
2. Raised

a. Contracted Grade 2 California Braille

E. Configuration

1. Size: Refer to details

F. Sign Edges: Beveled Straight

G. Installation:

1. Door mounted signs shall be installed with 1" wide x 62 mil thick 3M VHB 5962 Conformable Tape applied continuously along all four sides of sign and set ¼" clear of outside edge of sign.
2. Wall mounted signs shall be installed with tamper resistant stainless steel fasteners at all four sides of sign, typical u.o.n.

a. Metal Studs: Self taping x 1" embedment
b. Wood studs: Self taping x 1" embedment

c. Wall mounted signs shall be installed with 1" wide x 62 mil thick 3M VHB 5962 Conformable Tape applied continuously along all four sides of sign and set ¼" clear of outside edge of sign.

3. Glass mounted signs shall be installed with 1" wide x 62 mil thick 3M VHB 5962 Conformable Tape applied continuously along all four sides of sign and set ¼" clear of outside edge of sign.

a. Install blank sign on opposite side of glass which matches size & color of informative sign.

H. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**

2.5 SIGN SCHEDULE:

A. General:

1. Refer to drawings for sign schedules, details, and other information, including but not limited to:

a. Sign size
b. Text size
c. Mounting height

2. Final sign colors shall be selected by **Architect** at time of submittal.

2.6 MATERIAL – FIRE EXTINGUISHER SIGNAGE

A. Fire Extinguisher Signage:

1. Mfgr: Seton
2. Model: 39429
3. Type: Luminous
4. Shape: 2-sided with fastening flanges
5. Size: 7.5" wide x 18" tall overall
6. Material: Glow-in-the-dark Contrasting Color with letters and graphics
7. Text: "Fire Extinguisher"
8. Graphics:

a. Symbol: Arrow pointing down with text in arrow
b. Location: Install centered above fire extinguisher; confirm height with Fire Department

9. Braille: None
10. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

C. Backing:

1. Coordinate that appropriate backing is installed for sign mounting.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Take all necessary measurements in the field to ensure proper dimensions.

3.4 FABRICATION

A. Fabricate signs in compliance with drawings, applicable codes, agencies having jurisdiction and ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines.

3.5 INSTALLATION

A. General:

1. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.
2. Verify that specified items may be installed in accordance with the approved design.
3. All pole mounted sign poles shall be installed in concrete footing and in compliance with plan details.
4. Signage Mounting:

   a. Locations of all signs must be approved by the **Architect** prior to installation.
   b. Refer to specific sign type for mounting requirements.
   c. Coordinate with Drawings

B. Fastening

1. Use fasteners as herein specified.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 10 14 00

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SECTION 10 14 19 – DIMENSIONAL LETTER SIGNAGE

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, Division 0 and Division 1 requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Exterior address signage

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. Title 24, California Code of Regulations, California Building Standards Commission

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. CBC Energy Code, California Code of Regulations, Title 24, Part 6, California Building Standards Commission

E. Title 24, Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Job site inspections shall be done as herein specified and as listed in drawings.
4. Testing shall be done as herein specified and as listed in drawings.

B. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit the following for **Architect's** review:

1. Manufacturer product data and technical data sheets
2. Shop drawings:
    a. Plans, sections, and elevation views of all sides; information to include, but not be limited to:
        1) Overall Size
        2) Letters – style/text type, size, color and finish
        3) Numbers – style/text type, size, color and finish
        4) Text schedule
        5) Mounting and Installation Instructions
3. Samples:
    a. 6" & 8" high samples of each type of individual letter, number and general sign surface materials and finishes
        1) Where color selection is required, provide color samples for **Architect's** selection of signage colors.
    b. Samples of each type of cast, cut or engraved letters, numbers, or monolithic sign

E. Mock-up

1. Provide mockup of dimensional letter signage in each type and mounting configuration.
    a. Erect at location approved by **Architect**.
2. Mock-up shall be part of final construction once approved by **Architect**.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver and store products suitable wrapped or packaged to protect against damage. Do not remove protective coverings until time of installation.

1. Protect finish and edges in accordance with panel manufacturer's recommendations.
2. Store material in accordance with panel manufacturer's recommendations.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Metal canopy construction.

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 05 50 00 – Metal Fabrications
3. Section 09 90 00 – Painting and Coating

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, finishes, etc.

2. Refer to Division 1 for closeout submittal procedures.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Signage Manufacturer:
    a. Western Sign Company, Inc, www.westernsign.com, Diamond Springs, CA
    b. Signs and Graphic Design, www.singsandgraphic.com, Chico, CA
    c. Pacific Neon, www.pacificneon.com, Sacramento, CA
2. Reviewed Equivalent by **Architect**.
    a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
    b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
    c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS – DIMENSIONAL LETTERS

A. **Sign Type BI-1**

B. Materials:

1. Clear Anodized Aluminum
2. Painted Aluminum
3. Aluminum Frame with Acrylic Face
4. Bronze
5. Brass
6. Stainless Steel
7. Copper

C. Lighting:

1. None

D. Character style (letters and numerals):

1. Flat Cutout characters – dimensional character cut from sheet or plate stock

E. Sign Schedule:

1. Sign "BI-1"
    a. To read: "1800"
    b. Font Style: Arial
    c. Height: 8"
    d. Depth/Thickness: 1"

e. Font Style, Size and Text to be verified with **Architect** and **Owner** prior to fabrication.

f. Mounting:

1) Individual Pin Mounted Letters

a) Cast-in
b) Welded
c) Mechanically Fastened

2) Pin Mounted connected letters/numerals

a) Cast-in
b) Welded
c) Mechanically Fastened

3) Refer to drawings for location and substrate information.

2. Sign "BI-2"

a. To read: "DRY CREEK WASTEWATER TREATMENT PLANT"

b. Font Style: Arial

c. Height: 6"

d. Depth/Thickness: 1"

e. Font Style, Size and Text to be verified with **Architect** and **Owner** prior to fabrication.

f. Mounting:

1) Individual Pin Mounted Letters

a) Cast-in

b) Welded

c) Mechanically Fastened

2) Pin Mounted connected letters/numerals

a) Cast-in

b) Welded

c) Mechanically Fastened

3) Refer to drawings for location and substrate information.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective installation or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

B. Take all necessary measurements in the field to ensure proper dimensions, layout and location of sign.

C. Coordinate work under this Section with other trades whose work adjoins, combines, or aligns with it including, but not limited to:

3.4 INSTALLATION

A. Prior to installation, carefully inspect and verify that the installed work of other trades is complete to the point where this installation may properly commence.

B. Verify that specified items may be installed in accordance with the approved design.

C. Sign shall be constructed in accordance with reviewed Shop Drawings.

3.5 ADJUSTING AND CLEANING

A. Remove all dust, dirt, finger marks, etc. from finishes, characters and numerals, as recommended by manufacturer.

B. Keep area / site free from accumulated waste materials, rubbish and debris resulting from work identified herein.

1. Upon completion of said work, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said work, and legally dispose of off-site.

3.6 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

G. Leave entire area in a neat, clean, acceptable condition.

H. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

I. Provide record drawings in accordance with Division 1 closeout submittal procedures.

J. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 10 14 19

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SECTION 10 21 18 – SOLID PLASTIC TOILET AND SHOWER COMPARTMENTS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Solid Plastic (HDPE) Ceiling Hung Partitions

a. Toilet Compartments
b. Urinal Screens

2. Hardware & Accessories

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American National Standards Institute (ANSI), www.ansi.org

1. ANSI A117.1 – Accessible and Usable Buildings and Facilities

E. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM E84 Surface Burning Characteristics of Building Materials

F. National Fire Protection Agency (NFPA)

1. NFPA 286 Standard Methods of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

G. National Sanitation Foundation (NSF), www.nsf.org

H. Underwriters Laboratory (UL), www.ul.com, www.ulstandardsinfoet.ul.com

I. Refer to standards herein listed with specific products/materials.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	Name of Test	Performance	Testing Std.
Panels	Flame Spread Index	Class "C" – 76 – 200 for panels, doors and stiles	ASTM E84
	Smoke Developed Index	Class "C" – 0 to 450 for panels, 95 for doors and stiles	
	Interior vertical or horizontal compartment finishes or materials	Comply with referenced standard	NFPA 286
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing:**

Item	Name of Test	Performance Results	Testing Std.
Doors	Swing and latching	Swing min. 90° & latch	
	Self-closing	All accessible stalls shall have self-closing door	

E. **Construction Monitoring/Observations by others:**

Item	Name of Test	Performance Results	By Whom
Panels	Const. Waste Management	Comply	Refer to Division 1 for Construction Waste Management and Disposal/Recycling requirements

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturer's data and shop drawings.

1. Data sheets for each product specified and indicated in drawings.
2. Shop drawings for each product specified, including the following:
    a. Plans, elevations, details of construction and attachment to adjacent construction.
    b. Show anchorage locations and accessory items.

c. Verify dimensions with field measurements prior to final production of toilet compartments.

E. Submit samples.

1. 4″ x 4″ in each color/texture combination specified.

F. Certification:

1. USA certificate of origin

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **ten (10)** years providing/installing/finishing projects of similar size and complexity.

D. Material with lead times in question or confirmed to be in conflict with meeting the schedule and sequence of construction must be documented at time of bid

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1. Agenda for meeting shall include, but not be limited to;

a. Toilet and bath accessories
b. Solid Plastic Ceiling Hung Partitions

2. **General Contractor** shall request meeting 5 days in advance of construction.

F. Stipulations:

1. Panels, hardware and accessories shall all be fabricated and assembled in USA.

G. Miscellaneous criteria:

1. ZAMAC chrome plated metal, aluminum and/or plastic will not be accepted.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Partitions must be delivered to the job site in the manufacturer's original packages and marked to correspond with the approved shop drawings.

1.7 JOB CONDITIONS

A. Field-verify that all components, substrates, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional **fifteen (15)** year warranty for HPDE partitions against breakage, corrosion, delamination, and defects in factory workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to the following:

1. Wall framing
2. Wall backing
3. Wall finish
4. Floor substrate
5. Floor finish
6. Ceiling framing
7. Ceiling finish

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 09 22 16 – Non-Structural Metal Framing
3. Section 09 29 00 – Gypsum Plaster
4. Section 09 30 00 – Tile and Stone
5. Section 10 28 00 – Toilet Accessories

C. Related Documents include, but are not limited to the following:

1. Division 1 - Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding maintenance of the materials, components, finishes, etc.

2. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as listed herein and in Drawings:

1. Scranton Products, www.scrantonproducts.com
2. ASI Global Partitions, www.globalpartitions.com
3. Hadrian, www.hadrian-inc.com
4. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. Mfgr: Scranton Products
2. Type: Solid plastic (HDPE)
3. Color: Grey
4. Finish Texture: Orange Peel
5. Material:

a. Doors, panels and pilasters to be 1" thick with homogeneous color throughout, constructed from high density polyethylene (HDPE) resins, which are waterproof non-absorbent and have a self-lubricating surface that resists markings from pens, pencils and other writing instruments.

6. Construction:

a. Doors, panels and pilasters shall be 1″ thick with uniformly machined edges.
b. Doors and panels shall be 55″ high and mounted at 14″ above the finished floor.
c. Doors and panels to have an extruded aluminum heat sink strip attached to the lower edge.
d. Pilasters are ceiling hung mounted with hardware provided by Scranton Products.

7. Hardware:

   a. Door hardware shall be as noted:

      1) Heavy-duty diecast (vault) zamac hinge shall have gravity-acting cams and are fabricated from a die cast aluminum alloy with a brushed finish and wrap around flanges. The cam is constructed from a ¾″ diameter nylon rod and a 3/8″ stainless steel pin. Slide latch, strike/keeper and hinges are through-bolted onto doors and pilasters using stainless steel vandal-resistant through bolts. Hinges are easily adjusted at the jobsite to a full close or partially open position, as required. Keeper provides for emergency access into the stall by lifting up on the bottom of the door.

      2) Optional: Heavy-duty 8″ aluminum hinge shall have gravity-acting cam. Slide latch, strike/keeper and hinges are through bolted onto doors and pilasters using stainless steel, vandal-resistant through bolts. Keeper provides for emergency access into the stall by lifting up on the bottom of the door

      3) Optional: Continuous stainless steel hinge. Slide latch, strike/keeper and hinges are through bolted onto doors and pilasters using stainless steel, vandal-resistant through bolts.

      4) Optional: Integral hinges shall be fabricated into the door and the pilaster with no exposed metal parts. The hinge mechanism is integrated into the door and pilaster with a ½″ diameter nylon gravity cam unit with a 3/16″ stainless steel center pin (at bottom) and a ½″ nylon rod (at top). Integral hinges are not factory set and are installed at the job site. (NOTE: Pilaster must be a minimum of 5″ wide.) Slide latch and strike/keeper are through bolted onto doors and pilasters using stainless steel vandal-resistant through bolts.

   b. Panel and pilaster brackets shall be as noted:

      1) Aluminum stirrup brackets shall be 2″ long made of heavy-duty anodized extruded aluminum (6063-T5 Alloy). Stirrup brackets shall be 1/8″ thick and mounted with stainless steel, vandal-resistant screws. Panels shall be attached with stainless steel, vandal-resistant through bolts. The attachment of brackets to the adjacent wall construction shall be accomplished with 2 ½″ stainless steel vandal-resistant screws and plastic anchors.

      2) Optional: Continuous heavy duty anodized extruded aluminum (6063-T5 alloy) wall brackets are pre-drilled. Wall brackets are mounted with stainless steel, vandal-resistant screws. The attachment of brackets to the adjacent wall construction shall be accomplished with 2 ½″ stainless steel vandal resistant screws and plastic anchors.

3) Optional: Continuous heavy duty stainless steel wall brackets are pre-drilled. Wall brackets are mounted with stainless steel, vandal-resistant screws. The attachment of brackets to the adjacent wall construction shall be accomplished with 2 ½" stainless steel vandal resistant screws and plastic anchors.

c. Headrail shall be made of heavy-duty anodized extruded aluminum (6063-T5 alloy). Headrail is anti-grip and attaches to the top of the pilaster with stainless steel, tamper-resistant screws. Headrail is attached to the adjacent wall construction with a headrail bracket.

d. Headrail brackets shall be made from a die cast aluminum alloy and shall be attached to the adjacent wall construction with 2 ½" stainless steel, tamper-resistant screws and plastic anchors.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.

2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

1. Including but not limited to blocking and supports in walls and ceilings at points of attachment using methods recommended by the manufacturer for achieving the best result for the substrates under the project conditions.

a. Inspect areas scheduled to receive compartments for correct dimensions, plumbness of walls, and soundness of surfaces that would affect installation of mounting brackets.
b. Verify spacing of plumbing fixtures to assure compatibility with installation of compartments.

B. If preparation is the responsibility of another installer, notify **Architect** in writing of deviations from manufacturer's recommended installation tolerances and conditions.

C. Do not proceed with installation until substrates have been properly prepared with blocking and supports in walls and ceilings at points of attachment and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Verify blocking and supports in walls and ceilings has been installed properly at points of attachment.

C. Verify location does not interfere with door swings or use of fixtures.

D. Use fasteners and anchors suitable for substrate and project conditions

E. Install units rigid, straight, plumb, and level.

F. All doors and panels to be mounted at 14" above the finished floor.

G. Conceal evidence of drilling, cutting, and fitting to room finish.

H. Test for proper operation.

3.5 ADJUSTING

A. Test operation of equipment, components, etc. and adjust as needed to produce fully functioning units that comply with requirements.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.7 TESTING

A. Refer to Testing Heading, Part one of this specification.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 10 21 18

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SECTION 10 28 00 – TOILET ACCESSORIES

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions, clearances and heights at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Toilet and/or restroom, janitor room, shower, etc. accessories as indicated on drawings, as herein specified and as needed for a complete installation.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society for Testing and Materials (ASTM), www.astm.org

E. Aluminum Association (AA), www.aluminum.org

F. Energy Star, www.energystar.gov

G. Green Spec, www.greenspec.com

H. National Association of Architectural Metal Manufacturer's, (NAAMM) www.naamm.org

1. Architectural Metal Products Division

I. National Fire Protection Agency (NFPA)

1. NFPA 101 Life Safety Code

J. The Association of Electrical and Medical Imaging Equipment Manufacturers (NEMA), www.nema.org

K. Underwriters Laboratory (UL), www.ul.com

L. Unites States Food and Drug Administration (FDA), www.fda.gov

M. Refer to standards herein listed with specific products/materials.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturers standards
2. Comply with Building Code.

B. **Standards:**

Item	**Name of Test**	**Performance**	**Testing Std.**
Electric Hand Dryer	UL Listed	Comply	UL
Automatic Soap Dispenser	Operation	Flow amount adjusted and sensitivity adjusted	Mfgr
Materials	Type	100% Stainless Steel x 304 or 304L	Mfgr.
	Finish: Accessories	Satin No. 4	
	Finish: Grab Bars	Peened, non-slip	
Mounting Heights and clearances	Accessibility	Comply	CA Title 24 & ADA (most restrictive shall govern) Refer also to drawings
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

D. **Construction Testing:**

Item	**Name of Test**	**Performance Results**	**Testing Std.**
Accessory Locks	Lock functions with key	Functions / comply	N/A
Soap Dispensers	Soap filled and dispenses fluid correctly	Functions / comply	N/A
Automatic Soap Dispensers	Power source connected/installed and sensitivity and flow amount adjusted	Comply	Mfgr.
Refer to drawings and as herein specified			

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings.

1. Schedule of all accessories and indicated with designation to match Architectural drawings.
2. Cut sheets of all accessories
3. Warranty information
4. Finish options

E. Submit samples.

1. N/A

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **ten (10)** years providing/installing/finishing projects of similar size and complexity.

D. Stipulations:

1. Set toilet tissue dispenser in the proper location as the recessed unit is not dual handed.
2. The use of manufacturer's product numbers establishes required minimum standards and does not preclude other manufacturers.

a. Other manufacturers shall be assembly criteria and function criteria.
b. Refer to SUBMITTALS section/heading
c. Paper towel dispensers shall be Universal paper type, non proprietary type.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
Agenda for meeting shall include, but not be limited to;

1. Layout both laterally and vertically of components at walls
2. Required recess depths for equipment / accessories
3. Coordination with plumbing fixture actually sizes which could affect layout and locations of accessories such as, but not limited to; toilet tissue dispensers.

F. Miscellaneous criteria:

1. Mounting heights for all accessories shall be confirmed and coordinated with drawings, building code and ADA.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Confirm all wall openings are set at proper locations to insure wall recessed accessories will comply with accessible heights and locations.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish initial **one (1)** year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

C. Furnish manufacturer's additional warranties agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Schedule:

a. Toilet, Bath & Shower accessories: 3 years
b. Mechanical Soap Dispensers: 3 years
c. Mirrors: 15 years

1) Against silver spoilage

d. Electric Hand Dryers:

1) 3 years: motor brushes
2) 10 years: all other parts/components

e. Automatic Soap Dispensers: Lifetime

2. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK/SECTIONS

A. Related work includes, but is not limited to, the following:

1. Wall framing
2. Wall substrate and backing
3. Wall finish
4. Electrical wiring
5. Plumbing fixture layout and sizes

B. Related Sections include, but are not limited to, the following:

1. Division 1
2. Section 07 92 00 – Sealants and Caulking
3. Section 09 29 00 – Gypsum Board and Sheathing Substrates (includes and cement backer boards)
4. Section 09 30 00 – Tile and Stone
5. Section 09 90 00 – Painting

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding operation of the equipment.
2. Complete instructions regarding maintenance of the equipment, materials, finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer for each product type.

B. Acceptable manufacturers shall be one of the following and as listed herein and in Drawings:

1. Accessories:

a. Bobrick Washroom Equipment, Inc., www.bobrick.com
b. Gamco, www.gamcousa.com
c. Bradley Washroom Accessories, www.bradleycorp.com

2. Electric Hand Dryers

a. Bobrick Washroom Equipment, Inc.

3. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. General:

1. Refer to Drawings for product type, model, locations & quantities, uno. and/or herein indicated
2. Manufacturer: As herein specified and/or indicated in drawings
3. Any substitutions shall be building code and ADA accessible and meet standards and features of listed mfgr. & product.

B. Schedule::

1. **Washroom/Shower Accessories, typ. U.N.O.:**

a. Manufacturers:

1) Specified

a) Bobrick

i. Series:

a. Typical: Contura
b. If Contura not manufactured: Classic

ii. Models: Refer to drawings

2) Alternate No. 1

a) Manufacturer: Gamco
b) Models: Equal to specified Bobrick item

3) Alternate No. 2

a) Manufacturer: Bradley
b) Series: Brandex
c) Models: Equal to specified Bobrick item

b. Material: As herein specified

c. Accessories:

1) Fasteners, and finish hardware shall be 100% stainless steel.
2) Full length concealed piano hinges.
3) Doors shall be pan type with 1/4" rigid fiberboard core.
4) Trim shall be one piece seamless construction.
5) Keying, all service keys shall be keyed alike.

2.3 PRODUCTS

A. **Recessed Seat Cover Dispenser / Toilet Tissue Dispenser:**

1. Material: 100% stainless steel construction
2. Mfgr: Bobrick or approved equivalent
3. Model: B-3474

B. **Partition Mounted Toilet Tissue / Seat Cover Dispenser:**

1. Material: 100% stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-347

C. **Recessed Seat Cover Dispenser & Toilet Tissue Dispenser - Women's:**

1. Material: 100% stainless steel construction
2. Mfgr: Bobrick or approved equivalent
3. Model: B-35745

D. **Partition Mounted Toilet Tissue / Seat Cover Dispenser – Women's:**

1. Material: 100% stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-3571

E. **Grab Bars: Water Closets**

1. Material: 100% stainless steel construction.
2. Mfgr: Bobrick or approved equivalent
3. Models: B-6806 x 42 & B-6806 x 24
4. Size:
    a. Diameter: 1-1/2 inch outside diameter
    b. Gauge: 18 gauge
    c. Material: Stainless steel
    d. Mounting: With concealed mounting flange and fastened into backing
5. Offset: 1-1/2 inch clear offset from well surface.
6. Mounting:
    a. Concealed mounting plate secured with minimum three 1/4 inch diameter stainless steel (teks) self-drilling or machine screws. Note concealed mounting plates shall have snap flange covers.
        1) Mounting: Grab bar manufacturer's mounting system and components
        2) Flange: 13 gauge
7. Notes:
    a. Refer also to drawings for additional information

F. **Folding Utility Shelf:**

1. Material: 100% stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-287

G. **Coat Hook: Accessible Stall:**

1. Material: 100% stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-2116

H. **Door Bumper:**

1. Material: Stainless steel & black nylon post with black neoprene bumper
2. Mfgr: Bobrick or approved equivalent
3. Model: B-687

J. **Coat Hook: Standard Stall**

1. Material: Solid aluminum with rubber bumper
2. Mfgr: Bobrick or approved equivalent
3. Model: B-212

K. **Surface Mounted Seat Cover / Toilet Tissue Dispenser:**

1. Material: 100% stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-3479

L. **Recessed Paper Towel Dispenser / Waste Receptacle:**

1. Material: 100% stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-3944

M. **Electric Hand Dryer:**

1. Mfgr: Mitsubishi Electric
2. Series: Jet Towel
3. Model: JT-SB116EH-G-UL
4. Power requirement: 120 volt
5. Operation: Hands free sensor
6. Color:
    a. Front: Silver
    b. Sides: Gray
    c. Body: White
    d. Bottom (Air Filter): Black
7. Mounting: Concealed steel mounting plate
8. Features:
    a. Dual Jet Drying
    b. Brushless DC motor
    c. Heat Storage for Instant Warm Air

d. Top and bottom sensors
e. Open side design
f. Independent Air Ducts

N. **Recessed Sanitary Napkin Dispenser:**

1. Material: Satin-finish stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-3706C

O. **Recessed Sanitary Napkin Disposal:**

1. Material: Satin-finish stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-353

P. **Countertop-Mounted Circular Waste Shute**

1. Material: 100% stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-529

Q. **Wall Mounted Soap Dispenser:**

1. Owner Furnish Contractor Installed

R. **NOT USED**

S. **Wall Mounted Baby Changing Station:**

1. Material: Polypropylene
2. Mfgr: Koala Kare or approved equivalent
3. Model: KB300-00

T. **Framed Mirror & Wardrobe Mirror:**

1. Material: Polished steel channel frame, mounted with concealed hangers/fasteners
2. Mfgr: Bobrick or approved equivalent
3. Model: B-165 18 x 30 (framed mirror)
   B-165 24 x 60 (wardrobe mirror)

U. **Two-Wall Horizontal Grab Bar: Shower**

1. Material: 100% stainless steel construction.
2. Mfgr: Bobrick or approved equivalent
3. Models: B-58616
4. Size:

   a. Diameter: 1-1/4 inch outside diameter,
   b. Gauge: 18 gauge
   c. Material: Stainless steel
   d. Mounting: With concealed mounting flange and fastened into backing

5. Offset: 1-1/2 inch clear offset from well surface.
6. Mounting:
    a. Concealed mounting plate secured with minimum three 1/4 inch diameter stainless steel (teks) self-drilling or machine screws. Note concealed mounting plates shall have snap flange covers.
        1) Mounting: Grab bar manufacturer's mounting system and components
        2) Flange: 13 gauge
7. Notes:
    a. Refer also to drawings for additional information

V. **Folding Shower Seat:**

1. Manufacturer: Bobrick or approved equivalent
2. Model: B-5181
3. Requirements:
    a. Width: 18" – 22"
    b. Depth: 16"
    c. Mounting Height: 18" above highest finish floor height

W. **Recessed Heavy Duty Soap Dish:**

1. Material: Stainless steel, matte polished finish
2. Mfgr: Bobrick or approved equivalent
3. Model: B-4380

X. **Extra-Heavy-Duty Shower Curtain Rod:**

1. Material: Polished steel channel frame, mounted with concealed hangers/fasteners
2. Mfgr: Bobrick or approved equivalent
3. Model: B-6047 x length req'd.

Y. **Shower Curtain:**

1. Material: Opaque, matte white vinyl, .oo8" (0.2mm) thick w/ white HDPE grommets
2. Mfgr: Bobrick or approved equivalent
3. Model: B-204-3

Z. **Double Robe Hooks:**

1. Material: Bright-polished stainless steel
2. Mfgr: Bobrick or approved equivalent
3. Model: B-672

AA. **Surface-Mounted Towel Shelf w/ Bar:**

1. Material: Stainless steel, 6-1/4" wide consisting of (4) 5/16" square tubes & 5/16" square tube bar below the shelf
2. Mfgr: Bobrick or approved equivalent

3. Model: B-676 x 24

AB. **Mop Rack w/ Shelf**

1. Material: Satin finished stainless steel w/ three anti-slip mop holders & four hooks
2. Mfgr: Bobrick or approved equivalent
3. Model: B-239 x 34

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.
3. Do not proceed until unsatisfactory conditions are corrected.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.
2. Examine all wall recesses are in proper location and proper depths.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. The **General Contractor** shall provide recesses, anchorage and back-up blocking in sizes and in locations as shown on approved Shop Drawings.

1. Coordinate with other trades where necessary to make provisions for installation.

B. Securely anchor all items in place in locations and at mounting heights indicated. Where specified dimensions are not noted, install as directed by **Architect**.

3.4 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.
    a. Comply with accessibility required mounting heights and horizontal locations.
2. Install the work of this Section in strict accordance with the manufacturer's recommendations as reviewed by the Architect, anchoring all units firmly into position square, plumb, straight and true.
3. Seal with backer rod and sealant for a watertight assembly at all penetrations through walls.
    a. Refer to Section 07 92 00 – Sealants and Caulking
4. Seal with backer rod and sealant for a watertight assembly at all penetrations through Shower walls, floors and ceilings.
    a. Refer to Section 07 92 00 – Sealants and Caulking
5. Install products with tamper proof mounting.
    a. Provide exact type of concealed mounting device and fasteners required by conditions of installation.
        1) Products shall be complete with items necessary to provide secure mechanical attachment as approved. Attachment with adhesives not permitted.

B. Provide and install grab bar manufacturers anchor plates for "in wall" anchor plates or approved equal for mounting specific manufacturer's grab bars.

1. Bobrick 256 series "in-wall" anchor plates
2. Bradley "in-wall" anchor plates
3. Approved equal for mounting specific manufacturer's grab bars.

3.5 ADJUSTING

A. Test operation of equipment, components, etc. and adjust as needed to produce fully functioning units that comply with requirements.

B. Adjust all components to manufacturer's standards.

C. Adjust such that all heights and clearances are met.

3.6 FIELD QUALITY CONTROL

A. Product manufacturer shall provide field service support as requested by the Installer/Applicator

1. **General Contractor** and the product manufacturer shall make periodic on-site inspections to ensure that the materials are being installed in strict accordance with manufacturer's specifications.
2. The Applicator shall be responsible for the proper application of the materials.

B. The Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship is in accordance with project specifications and manufacturer's instructions.

3.7 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 10 28 00

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SECTION 10 44 00 – FIRE EXTINGUISHERS AND FIRE EXTINGUISHER CABINETS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the job site.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Wall Recessed Fire Extinguisher Cabinets and Fire Extinguishers:

a. As indicated on Drawings
b. As herein specified

E. Provide and install Fire Extinguisher signage above all wall mounted fire extinguishers and Fire Extinguisher cabinets.

1. Refer to Section 10 14 00 – Signage.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction

a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. National Fire Protection Agency (NFPA), www.nfpa.org

1. NFPA – 10 Table H.2
2. NFPA – 13

E. Underwriters Laboratory (UL), www.ul.com, www.ulstandardsinfoet.ul.com

1. UL 8 – Standard for Foam Fire Extinguishers
2. UL 154 – Standard for Carbon Dioxide Fire Extinguishers
3. UL 299 – Standard for Dry Chemical Fire Extinguishers
4. UL 626 – Standard for 2-1/2 Gallon Stored-Pressure, Water-Type Fire Extinguishers
5. UL 711 – Standard Rating for testing of Fire Extinguishers
6. UL 1803 – Standard for Factory Follow-up on Third Party Certified Portable Fire Extinguishers

7. UL 1093 – Standard for Halogenated Agent Fire Extinguishers.
8. UL 2129 – Standard for Halocarbon Clean Agent Fire Extinguishers

F. Conform to all applicable standards, local governing Fire Marshall & Building official for fire extinguisher types, sizes, locations and construction.

G. Refer to standards herein listed with specific products/materials.

1.3 PERFORMANCE, TESTING AND INSPECTION **[SPECIFIER, THIS PORTION NEEDS TO BE COMPLETED]**

A. General:

1. Comply with manufacturer's standards.
2. Comply with Building Code.

B. Standards:

Item	**Name of Test**	**Performance**	**Testing Std.**
Fire Extinguisher Agent	ABC, Multi-purpose dry-chemical	An effective agent in extinguishing class A, B, and C fires. The agent base is ammonium phosphate.	NFPA & UL
Fire Extinguisher Agent	Dry-Chemical – BC	An effective agent in extinguishing class B and C fires. The agent base is sodium bicarbonate.	NFPA & UL
Fire Extinguisher Agent	Purple-K Dry-Chemical	An effective agent in extinguishing class B and C fires. It is more effective than conventional dry-chemical agents. The agent base is potassium bicarbonate.	NFPA & UL
Refer to drawings and as herein specified			

C. Sustainability:

1. Refer to Division 1 sustainability requirements.
2. Refer to product criteria identified herein.

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements

D. Submit Manufacturer's data and shop drawings

E. Submit product data

F. Submit installation instructions and drawings

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for **five (5)** years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for **five (5)** years providing/installing/finishing projects of similar size and complexity.

D. Catalog Standards:

1. Manufacturer's catalog numbers may be included on Drawings for convenience in identifying specified items. Unless modified by notation on Drawings or specified, catalog description for indicated number constitutes requirements for the item specified.

E. Labeling

1. The identification of the listing and labeling organization, the fire test, and the performance standard that the fire extinguisher meets or exceeds shall be clearly marked on each fire extinguisher.

2. An organization listing fire extinguishers used to comply with the requirements of this standard shall utilize a third party certification program for portable fire extinguishers that meets or exceeds ANSI/UL 1803.

3. Identification of Contents. A fire extinguisher shall have a label, tag, stencil, or similar indicator attached to it providing the following information:

a. The contents' product name as it appears on the manufacturer's Material Safety Data Sheet (MSDS)
b. Listing of the hazardous material identification in accordance with hazardous materials identification systems (HMIS) [in Canada, workplace hazardous materials identification systems (WHMIS)] developed by the National Paint & Coatings Association.
c. List of any hazardous materials that are in excess of 1.0 percent of the contents.
d. List of each chemical in excess of 5.0 percent of the contents.
e. Information as to what is hazardous about the agent in accordance with the Material Safety Data Sheet (MSDS).
f. Manufacturer's or service agency's name, mailing address, and phone number.

F. Extinguishers

1. The classification of fire extinguishers shall consist of a letter that indicates the class of fire on which a fire extinguisher has been found to be effective, preceded by a rating number (Class A and Class B only) that indicates the relative extinguishing effectiveness.
2. Fire extinguishers shall not be exposed to temperatures outside of the listed temperature range shown on the fire extinguisher label.

G. Fire Extinguisher Classifications Schedule:

Fire Classifications			
	Class A Fires in wood, paper, cloth, trash and other ordinary combustibles	Class B Fires in Flammable liquids.	Class C Fires that involve energized electric equipment
Letter Symbol			
Picture Symbol			
Agents:	See Below	See Below	See Below
Multi-Purpose Dry- Chemical	Yes	Yes	Yes
Water	Yes	No	No
FFFP	Yes	Yes	No
Regular Dry-Chemical	No	Yes	Yes
Purple-K Dry Chemical	No	Yes - Kitchens	Yes - Kitchens
Carbon Dioxide	No	Yes	Yes

H. Miscellaneous criteria:

1. All units shall be portable, rechargeable fire extinguishers with stainless steel discharge lever and fixed carry handle.

   a. Valve body shall be heavy-duty 'Dot' Steel cylinder.
   b. All units shall have a short hose/horn unless specified otherwise and visual pressure gauge.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

B. Deliver undamaged products to site in manufacturer's sealed containers or wrappings with legends intact. Store on site secure from weather, soil and physical damage.

1.7 JOB CONDITIONS

A. Field-verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish one (1) year written warranty signed by manufacturer and installer agreeing to repair and/or replace cabinets, brackets and fire extinguishers which has failed as a result of defects in materials or workmanship.

C. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK / SECTIONS

A. Related work includes, but is not limited to, the following:

1. Wall Substrate
2. Wall Framing

B. Related Sections include, but are not limited to, the following:

1. Division 1
2. Section 09 22 16 – Non-Structural Metal Framing
3. Section 09 29 00 – Gypsum Board & Sheathing Substrates
4. Section 10 14 00 – Signage

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding operation of the equipment.
2. Complete instructions regarding maintenance of the equipment, materials, finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Coordinate scheduling of required testing with **General Contractor**.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturer shall be one of the following and as listed herein and in Drawings:

1. Cabinets / Extinguishers:

a. Potter – Roemer, (800) 366–3473, www.potterroemer.com
b. Larsen, (612) 571–1181, www.larsensmfg.com
c. J.L. Industries, (213) 726–9070, www.jlindustries.com

2. Signage: Refer to Section 10 14 00

3. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.
c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS - FIRE EXTINGUISHER TYPES

A. Schedule:

1. Corridors, Open Office & Laboratory:

a. Rating: 3A:40B:C
b. Manufacturer: Potter – Roemer
c. Model: **3006** x 5" diameter x 16" tall
d. Type: ABC Multi-purpose dry chemical
e. Capacity: 6 lbs.
f. Mounting: Cabinet:

1) Match with options below for appropriate size accommodation

g. FM Approved: Yes

2. MDF Room

a. Rating: 10B:C
b. Manufacturer: Potter – Roemer
c. Model: **3410** x 7" diameter x 24" tall
d. Type: Carbon Dioxide
e. Capacity: 10 lbs
f. Accessories: Discharge Horn
g. Mounting:

1) Cabinet where indicated: Match with options below for appropriate size accommodation

h. FM Approved: Yes

3. Kitchen:

a. Rating: 60B:C High Hazard
b. Class: K
c. Manufacturer: Potter – Roemer
d. Model: **3352**
e. Size: 5-1/4″ x x 18-1/2″ tall x 10-3/4″ overall width
f. Type: Purple-K Cartridge Dry Chemical x foam
g. Capacity: 9 pounds
h. Mounting:

1) Cabinet: Typical

i. FM Approved: Yes

2.3 MATERIAL - FIRE EXTINGUISHER CABINETS

A. Semi Recessed	Potter – Roemer	Potter – Roemer
1. Series:	7062 – DV	7067 – DV
2. Model:	Alta	Alta
3. Size: (inside cab)	9″ wide x 24″ tall x 5-3/4″ deep	12″ wide x 27″ tall x 8″ deep
4. Finish:	Stainless Steel, 304 - #4	Stainless Steel, 304 - #4
5. Door Style:	Duo-Vertical Panel	Duo-Vertical Panel
6. Glazing:	Obscure Tempered Safety	Obscure Tempered Safety
7. Lettering:	None	None
8. Extinguisher type:	**3006**	**3410**, **3352**
9. Fire rated cabinet:	Yes – FRC option at rated walls	Yes – FRC option at rated walls
10. Signage:	Refer to Signage specifications	Refer to Signage specifications
11. Trim:	2″ deep	3″ deep
12. Fin. Opening depth:		
a. Non rated:	4", verify with mfg.	5-1/4″, verify with mfgr.

2.4 MATERIAL - FIRE EXTINGUISHER SIGNAGE

A. Surface mounted Two-sided sign

1. Mount: On wall centered and directly above extinguisher / cabinet
2. Model: Refer to Section 10 14 00.

PART 3 - **EXECUTION**

3.1 INSPECTION/EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 INSTALLATION

A. Install in accordance with manufacturers instructions

B. Install using fire rated cabinets at all fire rated walls.

C. Install fire extinguishers where indicated and/or approved by **Architect**.

D. Install so that center of handle of fire extinguisher cabinet is 48" above finished floor line.

E. Fire extinguishers mounted in cabinets or wall recesses shall be placed so that the fire extinguisher operative instructions face outward.

1. The location of such fire extinguishers shall be marked conspicuously.

3.5 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

1. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

D. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

E. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

F. After completion of work in this section, remove all erection equipment and implements of service, and debris.

   1. Leave entire area in a neat, clean, acceptable condition.

G. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

H. Provide record drawings in accordance with Division 1 closeout submittal procedures.

I. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 10 44 00

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SECTION 10 51 13 – METAL LOCKERS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the job site.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified herein and as necessary to complete the work required by project conditions, including but not limited to:

1. Metal wardrobe locker types as indicated on Drawings and herein specified, and as needed for a complete and proper installation.

    a. Provide accessible locker(s) with appropriate hardware, shelf heights, locker heights, etc.

2. Accessories:

    a. Latching
    b. Locking
    c. Integral side panel caps/fillers
    d. Integral Channel Sill
    e. Integral sloping top (roof) – cut to fit with integral end panels, splicers, mitered inside corner transitions, etc.
    f. Trim at wall recess locations.

1.2 REFERENCE STANDARDS

A. 2022 California Code of Regulations (CCR), Title 24, California Building Standards Commission (CBSC) www.bsc.ca.gov current edition at time of permit issuance.

B. (CCR) Title 24, (CBSC) Chapter 11 – California Green Building Standards Code

1. Non-residential new construction.

    a. All occupancy types

C. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines, current version.

D. American Society For Testing and Materials (ASTM), www.astm.org

1. ASTM – A1008/A1008M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.

1.3 PERFORMANCE, TESTING AND INSPECTION

A. **General:**

1. Comply with manufacturer's standards.
2. Comply with Building Code.
3. Testing shall be done as herein specified and as listed in drawings.

B. **Standards:**

Item	Name of Test	Performance	Testing Std.
Sheet metal material	Grade and coating	Comply	ASTM – A653/A653M
Doors, frames, shelves, tops, bottoms and exposed sides	Gauge	16	Mfgr.
Refer to drawings and as herein specified			

C. **Sustainability:**

1. Refer to Division 1 sustainability requirements
2. Refer to product criteria identified herein

D. **Construction Testing:**

Item	Name of Test	Performance Results	Testing Std.
Doors	Hinges work properly and doors latch	Comply	N/A
Locking	Doors lock properly	Comply	N/A

1.4 SUBMITTALS

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Submit O&M (Operation and Maintenance) manuals in accordance with Division 1 requirements and as herein specified.

C. Refer to Division 1 for sustainability requirements.

D. Submit Manufacturer's data and shop drawings.

1. Materials list of items proposed to be provided under this Section.
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
3. Manufacturer's recommended installation procedures which, when approved by the **Architect**, will become the basis for accepting or rejecting actual installation procedures used on the Work.
4. Layout elevations and sections for each location

E. Submit samples.

1. Color chips showing the standard and optional colors available in the proposed products, and showing extra cost to the **Owner** should the **Architect** select optional colors.

1.5 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

B. Contractor / Installer / Fabricator shall have been in business for five (5) years providing / installing / finishing projects of similar size and complexity.

C. Manufacturer shall have been in business for five (5) years providing/installing/finishing projects of similar size and complexity.

D. Stipulations:

1. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

E. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
Agenda for meeting shall include, but not be limited to;

1. Wall backing is in place at correct heights and locations.
2. Floor and wall finish extents and installation are coordinated.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

1.7 JOB CONDITIONS

A. Field verify that all components, backing, etc. provided by others are installed correctly before proceeding with installation of products as herein specified.

B. Verify location of 18 gauge gal. steel backing plates for locker anchorage

1.8 PROTECTION

A. Protect finish surfaces at all times from surfaces and material adjacent to them.

B. Finish work defaced with other materials on surface shall be replaced.

C. Protect work under this section from damage by other trades.

1.9 GUARANTEE / WARRANTY

A. Refer to Division 1 for closeout submittal procedures.

B. Furnish one (1) year written warranty signed by manufacturer and installer agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner.**

C. Furnish manufacturer's additional **[five] (5)** year warranty agreeing to repair and/or replace work which has failed as a result of defects in materials or workmanship.

1. Upon notification of **Owner** within the warranty period, such defects shall be repaired and replaced at no cost to the **Owner**.

1.10 RELATED WORK / SECTIONS

A. The following is related work including, but not limited to the following;

1. Finish Floor
2. Wall Backing
3. Wall Finish
4. Ceiling/Soffit finish

B. Related Sections include, but are not limited to the following:

1. Division 1
2. Section 09 22 16 – Non-Structural Metal Framing
3. Section 09 29 00 – Gypsum Board and Sheathing Substrates (includes tackable wall sheathing and cement backer boards)
4. Section 09 30 00 – Tile and Stone

C. Related Documents include, but are not limited to the following:

1. Division 1 Supplementary Conditions

1.11 OPERATION AND MAINTENANCE DATA

A. Submit as part of project closeout:

1. Complete instructions regarding operation of the lockers.
2. Complete instructions regarding maintenance of the equipment, materials, finishes, etc.
3. Refer to Division 1 for closeout submittal procedures.

1.12 SEQUENCING AND SCHEDULING

A. Schedule work and sequence with **General Contractor**.

B. Schedule required testing, prior to the installation of materials, components, etc.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

A. Single source responsibility, specified items shall be from one manufacturer.

B. Acceptable manufacturers shall be one of the following and as herein listed and in Drawings:

1. Sentinel lockers by Tiffin Metal Products, www.sentinellockers.com
2. Reviewed Equivalent by **Architect**.

a. Substitutions and deviations shall require **Architect's** approval and shall be given in letterform.
b. Refer to Division 1 for substitution, deviation and/or submittal procedures.

c. Proposed alternate products must be equal in terms of chemical composition, color, finish, configuration, performance standards, etc.

C. All products and materials indicated shall be installed according to current listed specification requirements and manufacturers specifications/recommendations.

D. Refer to drawings, details, and other related specification section whether listed or not.

E. Details shall set basic requirements for size and configuration of systems.

2.2 MATERIALS

A. LOCKER SCHEDULE

1. General:

a. Construction: (rivet installation and spot welding per manufacturers' standard construction)

1) Door: 14 ga. Single piece formation shall be box formed stiffeners on the hinge side and latch side. Both formations shall have a ½" return flange spot welded to the face of the door. Top and bottom flanges shall have one 90° bend. **[Specifier, louvers in face of door an option]**

2) Door frame: 16 ga. Formed into 1" wide face channel shape with a continuous vertical door strike integral with the frame on both sides of the opening. Double and triple tier cross members to be 16 gauge.

3) Body: 24 ga. Steel uprights, backs, tops, bottoms, and compartment dividers.

4) Base: 6" H x 14 ga. Metal "Z" base.

5) Shelves: 24 ga. & flanged on (4) sides

a) Disabled accessible lockers: hasp **[Specifer – this is side reach design, confirm configurations and indicate accessible lockers on plans]**

i. Install additional shelf at 9" above finish floor at bottom of two tier locker arrangements.

ii. Install additional shelf at 9" above finish floor at bottom of single tier locker arrangements.

iii. Three tier locker shelves are acceptable.

6) Top: (Sloped) 24 ga. & flanged on (4) sides

7) Sloped Top / Ends: 18 ga. continuous

8) Fillers: 20 ga.

9) Hooks: Zinc plated steel coat hooks

10) Handle:

a) Lockers:

i. Typical:

a. Recessed padlock compatible.

ii. Disabled accessible:

a. Recessed stainless steel locking handle w/ padlock hasp **[Specifer, confirm that we have 1 for every 10 lockers ADA/Title 24 accessible]**

i). Disabled accessible handle at 1 per 10 lockers unless noted otherwise.

a. Location as directed by **Architect.**

11) Locking/Latching:

a) 11 gauge lug welded to the locker frame, located midway up the door. Door Handle to be 20 gauge drawn stainless steel, secured to the door with a slotless screw and nylon nut, includes a spring loaded latch to hold the door closed when not locked.
b) Frame Hook
c) Spot welded hinge reinforcing
d) Padlock hasp
e) Accessible operating hardware at handicap accessible locker(s)

i. Install Handicap accessible signage on accessible locker(s)

a. Model: #8690

12) Venting: Full perimeter opening, plus air flow slots in the top and bottom flanges of the door.
13) Hinges: 16 ga. continuous – riveted to frame full height of door.
14) Interior Equip: Manufacturers standard X zinc plated finish.
15) Identification: ½" tall black text on polished aluminum plates.
16) Arrangement: As indicated on Drawings, field verify opening prior to fabrication
17) Finish: Electrostatically applied powder coat enamel baked on at 350 – 400°.
18) Color **[Specifier, select]** Refer to Drawings finish schedule.

2. Locker Types:

a. Model: Configuration: Size:

1)	Guardian Defiant	Four Tier:	12" wide x 12" deep x 18" high	x 72" overall
2)	Guardian Defiant	Triple Tier:	12" wide x 15" deep x 24" high	x 72" overall
3)	Guardian Defiant	Double Tier:	12" wide x 15" deep x 36" high	x 72" overall
4)	Guardian Defiant	Single Tier:	12" wide x 15" deep x 72" high	x 72" overall

3. Bench (Movable)

a. Size: 9.5" wide x 1.25" thick
b. Ht: 17.5"
c. Bench: 9½' wide x 1¼' full laminated maple
d. Pedestal Legs: ¼" x 3" trapezoidal shape aluminum bar stool pedestal legs mounted to bench top (black anodized finish).
e. Arrangement: As indicated on Drawings

2.3 OTHER MATERIALS

A. Provide other materials not specifically described but required for a complete and proper installation, as selected by the **General Contractor** subject to the approval of the **Architect**.

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Verification of Conditions:

1. Examine areas and conditions under which work is to be performed.
2. Identify conditions detrimental to proper or timely completion of work and coordinate with **General Contractor** to rectify.

B. Surface:

1. Examine and verify that receiving conditions of substrate have no defects or errors, which would result in poor or potentially defective application or cause latent defects in workmanship.

3.2 COORDINATION

A. Refer to Division 1 for project coordination requirements.

B. **General Contractor** shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.3 PREPARATION

A. Prepare work, substrates, etc. in accordance with manufacturer's recommendations.

3.4 FABRICATION

A. General:

1. Construction:

a. Built on the unit principle - each locker shall have an individual door and frame, individual top, bottom, back and shelves with common intermediate uprights separating compartments.
b. Lockers shall be fabricated square, rigid and without warp. Doors shall be flat and free of distortion.

2. Door frame:

a. All door frame members to be not less than 16 gauge formed to a channel shape. Vertical members to have an additional flange to provide a continuous door strike. Intermembering parts to be mortised and tenoned and electrically welded together in a rigid assembly capable of resisting strains.

b. Cross frame members of 16 gauge channel shapes including intermediate cross frame on double and triple tier lockers shall be securely welded to vertical framing members to ensure rigidity.

3. Body:

a. Bolt spacing in locker body construction not to exceed 9"o.c.
b. All locker body components shall be made of cold rolled steel specially formed for added strength and rigidity and to ensure tight joints at fastening points.
c. Tops & bottoms shall be 24 gauge with three sides formed 90 degrees and the front offset formed to be flush with the horizontal frame member.
d. Shelves shall be 24 gauge with four sides formed to 90 degrees, the front edge shall have a second bend.
e. Backs & sides shall be 24 gauge.

4. Doors:

a. Doors 20" or higher shall be formed from one piece 14 gauge steel. Formations shall be box formed stiffeners on the hinge side and latch side. Both formations shall have a 1/2" flange spot welded to the inside face of the door. Top and bottom flanges shall have one 90 degree bend. For long life, the door shall be manufactured from one integral piece.
b. Door shall be manufactured to allow maximum ventilation and stiffness.

5. Door handle & latching 1, 2 & 3 tier:

a. Handles shall be recessed in the door. The formed pocket shall be brushed stainless steel securely fastened to the door with two lugs plus a positive tamper resistant fastener. The pocket shall be of sufficient depth to prevent a combination padlock, built-in combination lock or key lock from protruding beyond the face of the door. A lock hole cover plate shall be provided for use with padlocks. All pockets shall be 20 gauge drawn steel for superior strength. Door pull shall be formed in the pocket. Pocket and pull shall be integral.
b. Doors shall have a catch to retain unlocked doors in the closed position. Locking shall be accomplished by an 11 gauge lug welded to the locker frame. The lug shall include a surface for the bolt of a built-in combination or key lock to engage. A padlock staple shall protrude through the 20 gauge pocket. The lug shall include an anti-pry flange and notch to deter prying open when locked. Rubber door silencers shall be firmly attached to the locker frame.
c. Handicap accessible operating hardware at accessible locker(s).

6. Ventilation:

a. Shall be facilitated by air flow slots located in the top & bottom flange of the door. The door front shall be flush with no exposed louvers.

7. Number plates:

a. Each locker door to be supplied with a polished aluminum number plate, 2-1/4" wide x 1" high, with black numerals not less than 3/8" high. Number plates shall be attached to the face of the door with two aluminum rivets.

8. Interior equipment:

a. Single tier lockers 60" or higher shall have a hat shelf located approximately 9" below the top of locker; if less than 18" deep, locker shall have three single-prong hooks and one double-prong ceiling hook. Single tier lockers 18" or more in depth shall have a coat rod instead of a ceiling hook. 30" & 36" high lockers shall have three single-prong wall hooks and one double-prong ceiling hook. Hooks to be steel, ball tip zinc plated, attached with two bolts per hook. 20" & 24" high lockers to have three wall hooks for 12" wide and four wall hooks for 15" and wider.

9. Locker accessories:

a. Lockers shall be furnished with the accessories selected from the Accessory Specifications.

3.5 INSTALLATION

A. General:

1. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

B. Install metal lockers plumb, level and flush.

C. Anchor lockers to the floor and wall 48" on center or less as recommended by the manufacturer.

D. Install sloping hoods and metal fillers using concealed fasteners. Provide flush hairline joints against adjacent surfaces.

E. Deliver the keys to the **Owner** at the job site.

3.6 ADJUSTING

A. Test operation of equipment, components, etc. and adjust as needed to produce fully functioning units that comply with requirements.

3.7 CLEANING

A. Remove all dust, dirt, finger marks, etc. from signs and letters, as recommended by manufacturer.

B. Keep building and premises free from accumulated waste materials, rubbish and debris resulting from work described herein. Upon completion of said work, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said work, and legally dispose of off site.

C. Adjust doors and latches to operate without binding. Verify that latches are operating satisfactorily.

3.8 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Subcontractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. Clean adjacent surfaces free of caulking or sealant with mechanical action or solvent as necessary, avoiding damage to other materials.

E. Perform work in accordance with manufacturer's recommendations, as herein specified and in accordance with drawings.

F. In the event of damage, immediately make all repairs and replacements necessary to the approval of the **Architect** and at no cost to the **Owner**.

G. After completion of work in this section, remove all erection equipment and implements of service, and debris.

H. Leave entire area in a neat, clean, acceptable condition.

I. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

J. Provide record drawings in accordance with Division 1 closeout submittal procedures.

K. Close out, on-site inspection will be at the discretion of the **Architect** after he receives the **General Contractor's NOTICE** of "Certificate of Substantial Completion".

END OF SECTION 10 51 13

SECTION 12 48 13 – ENTRANCE FLOOR MATS AND FRAMES - CARPETS

PART 1 - **GENERAL**

1.1 PRINCIPAL WORK IN THIS SECTION

A. The requirements of the **Owner's** General and Supplementary Conditions, and Division 0 and Division 1 general requirements apply to the work of this Section.

B. Coordinate the work of this Section with related trades.

C. Verify applicable dimensions at the jobsite.

D. Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified and as necessary to complete the work.

1. Poured in place recessed Entry mat and frame.

a. Size and shape to accommodate Drawings.

2. Tread type, finish & color to match item specified.

E. Coordinate with related trades for appropriate slab recess, size, shape, etc.

1.2 SUBMITTAL

A. Refer to Division 1 for substitution, deviation and/or submittal procedures.

B. Material list: Submit typed list of all material and products proposed for use, which shall include manufacturer's published technical literature.

1.3 QUALITY ASSURANCE

A. Refer to Division 1 for quality control requirements.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Refer to Division 1 for product delivery, storage and handling requirements.

PART 2 - **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURER

A. Single source responsibility, specified items shall be from one manufacturer.

B. Manufacturer shall be subject for compliance with all requirements of the documents (**both Drawings and Specifications**), provide products from one of the following Acceptable manufacturers.

1. Construction Specialties Inc., www.c-sgroup.com (800) 233-8493
2. KADEE Industries www.kadeeindustries.com , (800) 321 – 3827

3. Babcock-Davis www.babcockdavis.com (888) 412-3726
4. Reviewed Equivalent by **Architect.**

   a. Substitutions shall require Architect's approval and shall be given in letterform.
   b. Refer to Division 1 for substitution, deviation and/or submittal procedures.

C. All specified materials indicated are as manufactured by listed company and shall be installed according to current listed specification requirements.

2.2 MATERIALS

A.	Frame:	Recessed Level Base (integral frame poured in place with the finish floor slab)
B.	Model No:	Pedigrid G1
C.	Overall thickness:	1-11/16"
D.	Tread Rails:	6105-T6 aluminum spaced 1-1/2" on the center
E.	Tread Insert:	Heavy duty carpet
1.	Color:	To be selected by Architect from manufacturer's standard colors

PART 3 - **EXECUTION**

3.1 INSPECTION / EXAMINATION

A. Examine the areas and conditions under which work of this section will be performed. Correct conditions for proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Take all necessary measurements in the field to ensure proper dimensions

B. Coordinate work under this Section with other trades whose work adjoin, combine, or align with work under this section.

3.3 INSTALLATION

A. Install the work of this Section where shown on the drawings and in strict accordance with the manufacturers installation instructions.

1. Assemble frames and install in conjunction with the pouring of the finish concrete floor, provide a uniform recess in the slab to the required depth & insure a true, level and square installation of the frame.
2. Delay installation of the treads until the building enclosure and major interior finishes are completed to insure that treads are not damaged.
3. Protect frames after installation by use of a temporary plywood fill piece / cover. Be careful to provide a smooth cover without edges that would create a tripping hazard.

3.4 PROTECTION AND CLEAN UP

A. Refer to Division 1 for protection and cleaning requirements.

B. Keep areas of work and building free from accumulated debris, rubbish and waste materials as work progresses & dispose of after work is completed.

C. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.

D. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no cost to the **Owner**.

E. Provide Guarantee/Warranties and Bonds as required in this specification section and as listed in Division 1 closeout submittal procedures.

F. Provide record drawings in accordance with Division 1 closeout submittal procedures.

END OF SECTION 12 48 13

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All Division 21 Sections.

B. Division 1.

1.02 SUBMITTALS

A. General:
   1. Refer to Section 01 00 00.
   2. Substitutions and changes from the approved drawings will be a deferred approval item. Such items must be signed by the Architect and approved by DSA prior to fabrication or installation.

B. Preparations.
   1. Prior to data collection and compilation, prepare and submit in duplicate an outline of the proposed organization and content.
   2. Compilation: Prepare and collect data concurrently with construction progress. Compile per submitted outline.

PART 2 - PRODUCTS

2.01 OPERATION AND MAINTENANCE MANUALS

A. Form of Submittals
   1. Prepare data in form of an instructional manual for use by Owner's personnel.
      a. Cover: Identify each volume with typed or printed title, "OPERATING AND MAINTENANCE INSTRUCTION". List:
      b. Title of Project.
      c. Provide indexed tabs.
      d. Identify of separate structure as applicable.
      e. Identity of general subject matter covered in the manual.
   2. Format:
      a. Size: 8-1/2" x 11".
      b. Paper: 20 pound minimum, white, for typed pages.
      c. Text: Manufacturer's printed data, or neatly typewritten.
      d. Drawings:
         1) Provide reinforced punched binder tab, bind in with text.
         2) Fold larger drawings to size of text pages.
      e. Provide fly-leaf for each separate product, or each piece of operating equipment.
         1) Provide typed description of product and major component parts of equipment.
         2) Provide indexed tabs.
   3. Binders:
      a. Commercial quality three-ring binders with durable and cleanable plastic covers.
      b. Maximum ring size: 1".
      c. When multiple binders are used, correlate the data into related consistent groupings.

PART 3 - EXECUTION

3.01 OPERATION AND MAINTENANCE DATA

A. General: Record data and operation and maintenance data are complimentary. Submittal items which may be required under both categories may be included only under one submittal if a statement to that effect is included in the other submittal.

B. Quality Assurance
   1. Preparation of data shall be done by personnel.
      a. Trained and experienced in maintenance and operation of described products.
      b. Familiar with requirements of this Section.
      c. Skilled as technical writer to the extent required to communicate essential data.
      d. Skilled as draftsman competent to prepare required drawings.

C. Content of Manual
   1. Neatly typewritten table of contents for each volume, arranged in systematic order.
      a. A list of each product required to be included, indexed to content of the volume.
      b. List, with each product, name, address and telephone number of:
         1) Subcontractor or installer.
         2) Maintenance contractor, as appropriate.
         3) Identify area of responsibility of each.
         4) Local source of supply for parts and replacement.
      c. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
   2. Product Data:
      a. Include only those sheets which are pertinent to the specific product.
      b. Annotate each sheet to:
         1) Clearly identify specific product or part installed.
         2) Clearly identify data applicable to installation.
         3) Delete references to inapplicable information.
   3. Drawings:
      a. Supplement product data with drawings as necessary to clearly illustrate.
         1) Relations of component parts of equipment and systems.
         2) Control and flow diagrams.
      b. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation
      c. Do not use Project Record Documents as maintenance drawings.
   4. Written text, as required to supplement product data for the particular installation.
      a. Organize in consistent format under separate headings for different procedures.
      b. Provide logical sequence of instructions for each procedure.
   5. Factory Authorized Start-Up Report.
      a. Provide a factory start-up report for each piece of equipment. Contractor start-up reports, unless contractor is a factory authorized representative will not be allowed.
   6. Copy of each warranty, bond and service contract issued.
      a. Provide information sheet for Owner's personnel, give:
         1) Proper procedures in event of failure.
         2) Instances which might affect validity of warranties or bonds.

D. Manual for Equipment and Systems:
   1. Submit three copies of complete manual in final form.
   2. Content, for each unit of equipment and system, as appropriate.
      a. Description of unit and component parts.
         1) Function normal operating characteristics, and limiting conditions
         2) Performance curves, engineering data and tests.
         3) Complete nomenclature and commercial number of replaceable parts.
      b. Operating procedures:
         1) Start-up, break-in, routing and normal operating instructions.
         2) Regulation, control, stopping, shut-down and emergency instructions.
         3) Summer and winter operating instructions.
         4) Special operating instructions.
      c. Maintenance Procedures:
         1) Routing operations.

2) Guide to “trouble-shooting”
3) Disassembly, repair and reassemble.
4) Alignment, adjusting and checking.

d. Servicing and lubrication schedule.
1) List lubricants required.

e. Manufacturer’s printed operating and maintenance instructions.

f. Description of sequence of operation by control manufacturer.

g. Original manufacture’s parts list, illustrations, assembly drawings and diagrams required for maintenance.
1) Predicted life of parts subject to wear.
2) Items recommended to be stocked as spare parts.

h. As-installed control diagrams by controls manufacturer.

i. Each contractor’s coordination drawings:
1) As-installed color-coded piping diagrams.

j. Charts of valve tag numbers, with location and function of each valve.

k. List of original manufacturer’s spare parts, manufacturer’s current prices, and recommended quantities to be maintained in storage.

l. Other data as required under pertinent sections of specifications.

3. Content for each electric and electronic system, as appropriate.
a. Description of system and component parts.
1) Function, normal operating characteristics, and limiting conditions.
2) Performance curves, engineering data and tests.
3) Complete nomenclature and commercial number of replaceable parts.

b. Circuit directories of panel boards.
1) Electric service.
2) Controls.
3) Communications

c. As-installed color coded wiring diagrams.

d. Operating procedures.
1) Routing and normal operating instructions.
2) Sequences required.
3) Special operating instructions.

e. Maintenance procedures.
1) Routine operations.
2) Guide to “trouble shooting”.
3) Disassembly, repair and reassembly.
4) Adjustment and checking.

f. Manufacturer’s printed operating and maintenance instructions.

g. List of original manufacturer’s spare parts, manufacturer’s current prices, and recommended quantities to be maintained in storage.

h. Other data as required under pertinent sections of specifications.

i. Additional requirements for operating and maintenance data: Respective sections of Specifications.

E. Submittal Schedule
1. Submit tow copies of preliminary draft of proposed formats and outlines of contents prior to start of work.
a. Architect will review draft and return one copy with comments.
2. Submit one copy of complete data in final form fifteen days prior to final inspection or acceptance.
a. Copy will be returned after final inspection or acceptance, with comments.
3. Submit specified number of copies of approved data in final form 10 days after final inspection or acceptance.

F. Instruction of Owner's Personnel.
   1. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems
   2. Operating and maintenance manual shall constitute the basis of instruction.
      a. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All Division 21 Sections.

1.02 SUMMARY

A. Furnish and install all mechanical work shown on the drawings, specified herein, and as required for a complete and functional installation.

B. This section includes materials and methods applicable to the work described in all Division 21 Sections. Specific work requirements of individual Mechanical Sections take precedence if in conflict with requirements of this Section.

C. All chemicals utilized on site as part of coating, sealant, and other products shall not contain any chemical that is listed as part of Proposition 65 known carcinogens that are identified by NTP, IARC, and the USEPA California Proposition 65 chemical repository contractors are not allowed to bring these chemicals on any California Intel site.

1.03 DRAWINGS AND SPECIFICATIONS

A. For purposes of clearness and legibility, drawings are essentially diagrammatic and, although size and location of equipment are drawn to scale wherever possible, the Contractor shall make use of all data in all the contract documents and shall verify this information at building site.

B. Information presented on Drawings and in the Specifications is based upon latest data available during their preparation. The Drawings and Specifications are for the assistance and guidance of the Contractor and exact locations, distances, levels, etc. will be governed by the structures and the site the contractor shall accept same with this understanding.

C. The drawings indicate required size and points of termination of pipes, and suggest proper routes to conform to the structure, avoid obstructions and preserve clearances. However, it is not intended that drawings indicate all necessary offsets, and it shall be the work of the Contractor to make the installation in such a manner as to conform to structure, avoid obstruction, preserve headroom and keep openings and passageways clear.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall be responsible for delivery, storage, protection and placing of all equipment and materials.

B. Equipment stored and installed at the job site shall be protected from dust, water or other damage. Cover all equipment stored exposed to weather.

1.05 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer.

1.06 CODES AND SAFETY ORDERS

A. All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshall; the Safety Orders of the Division of Industrial Safety; the I.S.O. codes;
   1. The 2022 California Plumbing Code
   2. The 2022 Title 24, Part 5;
   3. The 2022 California Mechanical Code, Title 24, Part 4
   4. The 2022 California Building Code, Title 24, Part 2,
   5. Current NFPA Codes, and other applicable laws and regulations.
   6. Nothing in the Drawings or Specifications shall be construed to permit work not conforming to these codes. Drawings and Specifications take precedence when work and materials

called for exceed Code requirements.

1.07 INSTALLATION

A. Manufacturer's Instructions:
   1. When specifications require that installation comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation.
   2. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by specifications.
   3. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.
   4. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.
   5. Do not proceed with work without clear understanding.

1.08 PERMITS AND FEES

A. Obtain all permits and pay all required fees for permits and/or utility services. Inspections required during the course of construction shall be arranged as required. On completion of the work furnish the owners representative with certificates of inspection.

1.09 SITE CONDITIONS

A. Assume all responsibility for damage to adjoining properties; and restore property to its original condition, should damage occur as a result of the work of this section. Contractor shall thoroughly familiarize themselves with all site conditions. Should utilities not shown on the drawings be found during excavations, promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities not shown on plans.

1.10 SUBMITTALS

A. General
   1. A submittal schedule shall be issued by the contractor within 15 days of award of the contract. This schedule shall allow for timely review and approval as required by the contract documents.
   2. These requirements apply only to substitutions, submittals, and shop drawings.
   3. The contractor shall review all submittals prior to submission to the Architect. Submittals not reviewed by the contractor will be returned to the contractor and will not be reviewed.
   4. Any deviations from specified requirements shall be clearly indicated in submittals.
   5. Any errors in or omissions from submittals and any consequences of these are the responsibility of the Contractor.
   6. Partial or incomplete submittals may be rejected as not complying with requirements; the Contractor shall be liable for any resultant consequences.
   7. Delayed submittals may be rejected as not complying with requirements. Whether accepted or rejected, delayed submittals will not be considered justification for extension of contract time or similar relief.
   8. Submittals not required or permitted by the Specifications but made at the option of the Contractor, will be returned without review unless accompanied with written valid justification.
   9. Submittal items improperly included with those of another category (such as a proposed substitution included with shop drawing submittal) are not valid and will be returned without review.
   10. Within 35 calendar days after award of the contract, and before fabrications and installation of any material or ordering of any materials, submit for approval one copy in PDF format of complete submittal data on specified and proposed substituted equipment and materials. Submittals shall list all materials proposed identified with drawing symbols and specific data on equipment such as arrangements, performance curves, sizes, capacity, motor locations,

and other pertinent data. Check all submittals for conformance to the requirements of the Construction Documents before forwarding to the architect for each item. No consideration will be given to substitutions submitted past 35 day limit. The contractor shall be responsible for all quantities and errors and omissions of submittals. Furnish samples when requested.

11. Equipment and materials specified as part of the specifications and drawings are listed by two manufacturer's names. The first named manufacturer is the basis of design. The second named manufacturer has been determined to be an equivalent in quality or utility. The second named has not been specifically determined to conform to the first named in size, layout, electrical power, voltage, or impacts to building structure. The contractor is bound by all requirements for substitutes, as described below, for all second named manufacturers and equivalent equipment or products.
12. Each reviewed submittal will be marked to indicate review and directions as stated below.
13. Acceptance of a submittal does not relieve the Contractor of responsibility for omissions from the submittal or errors in the submittal.

B. Requirements
   1. Refer to Division 1, Special Conditions.
   2. Submit on all items specified herein:
      a. Shop Drawings as specified by NFPA 13
      b. Material catalog data
      c. Calculations
      d. Welder Certificate for pipe welding
      e. The certificate of flushing and test results (on the National Automatic Sprinkler and Fire Contractors Association [NAS & FCA] form)

C. Review
   1. Submittals will be reviewed for general acceptability, not necessarily including all details. The engineer's review is for general conformance with the design concept of the project and the information given in the contract documents. The contractor is solely responsible for confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating the work with that of other trades and performing all work in a safe and satisfactory manner. Corrections of comments made on this submittal during this review do not relieve contractor from compliance with the requirements of the contract documents or with its responsibilities listed herein.
      a. Proposed substitutes will be judged not only for the acceptability of the items themselves, but also how they will be used under the conditions of the particular project.
      b. Proposed substitutions will be judged also for compliance with qualifications and conditions stipulated in paragraph 1.13.
   2. Each reviewed submittal will be marked to indicate review and directions as stated below.
      a. Acceptance of a substitute does not waive the specified requirements.
      b. Once a substitution is accepted, no revision or resubmittal may be made except for pressing and valid reason and after receipts of approval to do so.

D. Review Directions
   1. The notation "No Exceptions Taken" indicates that no further submittal on the particular matter is required and that the Contractor may proceed with normally ensuing action. The notation may be applied to submittals on substitutions, shop drawings, record data, or operation and maintenance data. The submittal has only been reviewed for general conformance with the design concept of the Contract Documents. The contractor is responsible for the dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication process or to the means and methods of construction; coordination of the work of all trades; and performing all work in a safe and satisfactory manner. This notation does not modify the contractor's duty to comply with the contract documents.
   2. The notation "Make Corrections Noted" indicates that no further submittal on the particular

matter is required, but the Contractor shall make all changes or corrections noted (but no others) before proceeding with normally ensuing action. The notation may be applied to submittals on substitutions or shop drawings (but usually not record data or operation and maintenance data).

3. The notation "Amend and Resubmit" indicates that the submittal is not accepted and must be revised, resubmitted, and reviewed again. In the case of submittal on substitutions and shop drawings so noted, the Contractor shall not proceed with any normally ensuing action until the resubmittal is reviewed. The notation may be applied to submittals on substitutions, shop drawings, record data, or operation and maintenance data.
4. The notation "Rejected - See Remarks" indicates that the submittal is not accepted and that resubmittal on the same subject matter is not allowed and will not be considered. The notation will be applied normally only to submittals on substitutions (usually not on shop drawings, record data, or operation and maintenance data).
5. The notation "Returned Without Review" indicates that the submittal or item has not been considered officially because it is either not proper, valid, required, or permitted by the Specifications and has no status or effect.

1.11 SHOP DRAWINGS

A. Prepare and furnish complete detailed plans for the installation of an automatic fire sprinkler system which will provide for maximum rate reduction in fire insurance premiums per requirements of, CBC, the State Fire Marshall, and conform to the supply main and riser locations as shown on the drawings.

B. These are working drawings of the building piping, as required by NFPA 13 and 24.

C. Include copies of the hydraulic calculations with each submittal prescribed above.

D. Submit six (6) sets of the above, bearing the "accepted" stamp of the, the local fire department for review and approval. Submit one set of final corrected record drawings. After review, make all corrections required and make final submittal of three (3) reproducible transparencies and 6 blue line sets to the Architect.

E. The drawings submitted by the sprinkler contractor must show sufficient detail and dimensions to clearly indicate that sprinkler lines will be concealed or arranged neatly in exposed areas and will not conflict with structural, mechanical or electrical provisions as shown on the plans. Show feed main hanger locations.

F. Closely coordinate the schedule of this work with the work schedules or all other contractors.

G. The contractor is responsible for providing all shop drawings as described below so that the design professional has the opportunity to determine if the contractor understands the contract documents. It is not the purpose of shop drawings to assure that the contractor is meeting the requirements of the contract documents. Review and approval of a submittal neither extends nor alters any contractual obligation.

H. Accompany all substituted equipment with shop drawings showing revised ductwork and/or piping layouts in order to ascertain that substituted equipment does not adversely affect layout or work of others. Shop Drawings: The following conditions apply to shop drawings:
   1. Shop drawings are not and do not become Contract Documents.
   2. Processed shop drawing submittals and any instructions or requirements noted thereon are a part of the work, but they may not be used as a means of increasing the scope of the work.
   3. If deviations, discrepancies, or conflicts between shop drawing submittals and the Contract Documents are discovered either prior to or after the submittals are processed, the Contract Document requirements shall govern.

1.12 SUBSTITUTIONS

A. Whenever any equipment, material, or process is indicated or specified by patent of proprietary

name and/or name of Manufacturer, in the Specifications and/or on the Drawings, it is understood that such specification is used to facilitate the description of the material and/or process and deemed to be followed by the words "or equal" unless noted "no substitute".

B. Substitute equipment and materials shall be equal in all respects including quality, arrangement, utility, physical size, capacity, and performance to those specified. Approval of substitute material will not relieve the contractor from complying with the requirement of the Drawings and Specifications. The contractor shall be responsible and at his own expense, for any changes caused by proposed substitutions which affect other parts of his own work or the work of other contractors.

C. The submittal of a proposed substitution shall clearly establish the following:
   1. The item can be transported into and installed in the intended space and in the manner shown.
   2. Required connections (electrical, piping, and other) can be properly made and adjoining work can be properly accomplished.
   3. The proposed substitute is similar to and of substance equal to that specified, is suited to the same use as that specified, and will perform the functions required by the design.
   4. Motors for proposed substitute equipment will have the same minimum differential between motor brake horsepower and motor nameplate horsepower as the specified equipment.
   5. All performance requirements shall be at least equal to the specified product or equipment including noise levels, cooling capacity, heating capacity, air flow quantity, etc.

D. By submitting a proposed substitution, the Contractor agrees to the following:
   1. He will assume full responsibility for any and all modifications and necessary alterations arising from the use of the substitute item or material including all cost incurred by all other trades.
   2. He will assume full responsibility for any delay in the construction schedule resulting from the use of the substitution.
   3. He will prove harmless and indemnify the Owner and the Owner's design consultants from real or alleged damages that may result from the installation, use, or performance of a substitute material or product.

E. The following conditions apply to substitutions:
   1. Submittals of substitutions are not and do not become part of the Contract Documents.
   2. Contractor shall not order, fabricate, use, or install any substitute product or procedure unless he has received acceptance of the substitute from the Engineer.
   3. Should the Contractor install any substitute product in violation of the above he shall remove it and install the specified product at his own expense.
   4. The Contractor shall provide a letter stating that all the above items shall apply to all substituted products and equipment.
   5. Any submittal for substituted equipment or product that does not clearly show that the substituted item is equal shall be marked rejected and no further submittal shall be allowed on the substituted item. Provide in submittal format documentation that the proposed item is exactly as specified in the contract documents.

1.13 GUARANTEE

A. Guarantee all work for one year from date of acceptance, against all defects in material, equipment and workmanship including repair of damage to any part of the premises resulting from leaks or other defects in material, equipment and workmanship. Guarantee shall be on form supplied by the owner's representative.

1.14 RECORD DRAWINGS

A. Indicate on reproducible drawings the actual location of all ductwork, piping and equipment as the work progresses. Dimension locations of underground service mains and branches. Deliver the drawings to the architect at the completion of the job.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Shop drawings:
   1. Make all drawings to an appropriate scale, large enough to show all pertinent aspects of the item and the method of its connection into the work.
   2. Make each drawing sheet in a reproducible form such a tracing, sepia, or Mylar transparency.

B. Grouping: Combine submittals in logical groupings; for example, submit Shop Drawings grouped by Sections of the Specifications, arranged in the specified sequence.

C. Shop Drawings: Four blue or black line prints of each for the Engineer.

D. Content:
   1. Shop drawings may be:
      a. Drawings or diagrams prepared by the Contractor, a supplier, a manufacturer, or other.
      b. Typewritten data or descriptions.
      c. Manufacturer's printed brochures, descriptions, charts, instructions, or data sheets.

E. Timing: Submit all shop drawings prior to installation of any items included in submittal.

2.02 CORROSION PROOFING

A. Corrosion Proofing / U.V. Protection: Products which will be installed outdoors, exposed to the weather, exposed to moisture, or other potentially damaging conditions shall be constructed to resist the effects of such exposure.

B. Exterior casings shall have lapped or gasketed joints effectively sealed to prevent intrusion of moisture or other injurious substances.

C. Casings, ducts, pipes, or product items shall be constructed of materials which are fully resistant to harmful substances they may normally contact, or (if ferrous) shall be galvanized after fabrication, or shall be fully protected from such substances by paint or other coating in appropriate thickness or number of coats.

D. All bolts, nuts, screws, and washers shall be galvanized unless specified to be plated or unprotected.

E. Any exposed plastic pipe must have a U.V. inhibitor.

2.03 MATERIAL AND EQUIPMENT

A. All material and equipment shall be new, of the type, capacity and quality specified and free from defects. All materials and equipment shall be of the same brand or manufacturer throughout for each class of material or equipment wherever possible.

2.04 ACCESS BOXES

A. For below grade valves and piping devices
   1. Christy Concrete Products Company, Brooks, with galvanized steel checker plate recessed traffic lid flush with rim of box. Lids for boxes located in areas subject to vehicular traffic shall be constructed to withstand H20 live loading as defined by the American Association of State Highway Officials (16,000 pound maximum individual wheel load). Service identification shall be conspicuously welded on lid before galvanizing. Provide manufacturer's box extensions to bring box bottom three inches below bottom of valve and box top flush with finish grade.

2. Box sizes (non traffic)

Type Valve	Valve Size	Box No.
Water	2 1/2" and smaller	B-9
Water	3" and 4"	B-16
Water	5" and 6"	B-30
Water	8"	B-36

2.05 ACCESS DOORS

A. Unless specified otherwise by the Architect, provide access doors of the following type:

B. Concealed hinges, prime coated with rust-inhibitive paint, style of door to suit wall, ceiling, floor or roof construction and fire rating.
   1. Milcor Type M
   2. Milcor Type UFR, fire resistive type Underwriters Laboratory Class B, 1-1/2 hour rating meets CBC, IBCO and BOCA codes for two hour rated walls self latching with key lock, Elmdor/Stonman Type FR or equal.

C. Minimum size; 18" by 18".

D. Wall and ceiling access doors: Furnish as required for access to ducts, damper operators, duct mounted access panels, etc.; coordinate size and location to obtain access.

E. See architectural drawings for further requirements.

2.06 MISCELLANEOUS EQUIPMENT AND MATERIALS

A. Furnish and install miscellaneous equipment and materials required for the systems described whether or not specifically shown or specified.

PART 3 - EXECUTION

3.01 ACCESSIBILITY

A. Do not install any equipment, valve, control, motor, filter, or any other device requiring maintenance or service in an inaccessible location or position. Install access doors as specified herein to render all such equipment serviceable whether specifically shown on the plans or not. Maintain code clearance to all equipment. Coordinate location of doors with lights, etc., and locate symmetrically with same.

3.02 PREPARATION

A. Observations: Check all project drawings and specifications; report any discrepancies before proceeding with the work and in time to avoid unnecessary rework.

B. Investigation: Examine the areas, conditions, and status of other work contiguous or connecting to the work to be performed; ensure that the time of installation is coordinated with other work.

C. Interruptions of Service: Portions of this work may involve connection to existing work, facilities, or utilities ties and may require interrupting shutdowns of same. Carefully plan, coordinate and execute such work so that any interruptions will be kept to a minimum in time and occurrence. Submit request for shutdowns and make shutdowns only after receiving written approval from the Owner.

D. Other: Correct any unsatisfactory conditions that may impede proper execution of the work. Ensure that all arrangements, personnel, materials, and tools are appropriate and adequate before proceeding.

3.03 INSTALLATION

A. General:
   1. Material and equipment incorporated in the work shall be used or applied only for the purpose intended or specified.
   2. Install piping and ductwork and all equipment that requires access with minimum vertical and horizontal clearances required by OSHA for service.
   3. All mechanical systems such as ductwork, pipes and all other equipment shall have 2 inches minimum clearance.
   4. Do not proceed with work without clear understanding.

B. Manufacturer's Instructions:
   1. When specifications require that installation comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation.
   2. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by specifications.
   3. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.
   4. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.
   5. Do not proceed with work without clear understanding.

3.04 DEMOLITION

A. General
   1. Procedures shall be determined by the contractor.
   2. Demolition work shall not be commenced until all temporary work such as fences, barricades, and any required warning lights and apparatus are furnished and installed and as required by law, regulation, or ordinance, or elsewhere in this specification.
   3. Demolition work shall proceed in such a manner as to minimize the spread of dust and flying particles and to provide safe working conditions for personnel.
   4. Fires and explosives shall not be permitted.

B. Protection
   1. Contractor shall conform to all Federal, State, and local ordinances related to the protection of the public and Contractor’s personnel and the flow of traffic. Provide protection for persons and property throughout the progress of the work.
   2. Existing work damaged by the contractor in the execution of this Contract shall be restored to former condition by the contractor to the satisfaction of the Owner without an increase in the Contract Sum and without an extension of the Contract Time.

C. Disposition of Materials
   1. All materials and equipment not scheduled to be salvaged, including debris and all rejected salvaged materials, shall become the property of the Contractor and shall be disposed of off site in a legal manner. Location of dump and length of hall shall be the contractor’s responsibility.

3.05 LOCATION OF EQUIPMENT AND PIPING

A. Where job conditions do not permit the installation of piping, etc. in the location shown, it shall be brought to the engineer's attention immediately before fabrication of piping, etc. and the relocation required shall be determined in a joint conference.

B. The contractor will be held responsible for the relocating of any items installed without first obtaining the architect’s or engineer’s approval. Remove and relocate such items at The contractors expense as so directed by the architect or engineer.

C. Where piping is left exposed within a room, run in vertical or horizontal planes. Maintain uniform spacing between parallel lines and/or adjacent wall, floor or ceiling surfaces.

D. Horizontal runs of pipe suspended from ceilings shall provide for maximum clearance below.

E. Make minor changes in locations of equipment, piping, etc. from locations shown including minor offsets when directed by the engineer, at no additional cost to the owner.

3.06 CARE AND CLEANING

A. Clean and adjust all equipment at completion of installation to provide operating conditions satisfactory to the engineer. Remove broken, damaged or defective parts; repair or replace as directed by engineer. Remove surface material and debris resulting from this work when directed.

3.07 FLASHINGS

A. Furnish and install a waterproof flashing for each pipe, duct, or other penetration through roof or wall. Flashings shall be 4 lb. seamless lead flashings Semco 1100 series with counter flashing as detailed, except in metal roofs flashing for pipes through roof shall be furnished by the roofing contractor. Where details are not specifically delineated, submit details for review.

3.08 PAINTING

A. Painting is included under the Painting and Finishing Section. It shall be the responsibility of the Mechanical Contractor to properly protect all equipment and controls during painting operations and the Mechanical Contractor shall repair and/or replace any item damaged due to painting that was not properly protected.

3.09 ACCESS DOORS

A. Provide access doors to all concealed equipment, valves, controls, etc. Locate doors where shown or to be coordinated and symmetrically located with lights, diffusers, etc. Access doors furnished by the mechanical contractor shall be installed by the general contractor.

3.10 RECORD DATA

A. Compilation
   1. Record and collect information concurrently with construction progress and date all entries; make drawing entries within 24 hours after occurrence of change or installation requiring recording. Any concealed work covered before recording data shall be uncovered as directed or as necessary to obtain data.
      a. Record information on drawing prints using an erasable colored pencil (not ink or indelible pencil); describe clearly by note or graphic line as appropriate.
   2. Locate any concealed work adequately to allow future access with reasonable ease and accuracy.
      a. Identify the plan location of all stub outs, pipe lines, etc., which are buried or concealed in the structure, whether installed where shown on the contract drawings or in a different location; show actual field dimensions from column lines, wall lines, or other permanent reference lines or points.
      b. In many cases on the contract drawings, the arrangement of conduits, pipes, ducts, and similar items is shown schematically rather than as a precise scaled layout. Identify the actual location of these with horizontal and vertical dimensions. If such lines are exposed or readily accessible, omit dimensional identification.
      c. When any work is installed of size, dimension, slope, or location different from that shown on the contract drawings, note the deviation on the Project Record set. If the variations are substantial or cannot be shown clearly on the record drawings, make a new drawing and attach to the Record set.
   3. On other documents
      a. Where changes occur in specifications, clearly indicate same in ink, colored pencil, or rubber stamp.
      b. Where installed equipment differs from that specified (e.g., by accepted substitution or change order) note in the specifications and include complete data on same.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SPECIAL CONDITIONS and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

B. All Division 21 Sections.

1.02 SUMMARY

A. Furnish and install all mechanical work shown on the drawings, specified herein, and as required for a complete and functional installation.

B. This section includes materials and methods applicable to the work described in all Division 15 Mechanical Sections. Specific work requirements of individual Mechanical Sections take precedence if in conflict with requirements of this Section.

1.03 RELATED SECTIONS

A. Division 3: Concrete Work

B. Division 16: Electrical Work

PART 2 - PRODUCTS

2.1 GATE VALVES

A. Gate valves shall be approved rising stem type (OS&Y).

2.2 VALVE BOXES

A. Underground valve box shall be "Brooks or "Christy" marked for service.

PART 3 - EXECUTION

3.1 TAMPER RESISTANCE

A. All exposed valves shall be chained to prevent accidental shutting of the valves.

B. All shut off valves shall be equipped with tamper switches.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SPECIAL CONDITIONS and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

B. All Division 21 Sections.

1.02 SUMMARY

A. Furnish and install all mechanical work shown on the drawings, specified herein, and as required for a complete and functional installation.

B. This section includes materials and methods applicable to the work described in all Division 21 Mechanical Sections. Specific work requirements of individual Mechanical Sections take precedence if in conflict with requirements of this Section.

1.03 SUBMITTALS

A. Submit proposed alternative methods of attachment for review and approval by the Engineer, prior to deviating from the requirements given below.

B. For all seismic bracing systems, submit structural calculations and details prepared and signed by the Contractors licensed engineer which include all resultant forces applied to the building structure. Do not overstress building structure. The maximum allowable loads are as indicated in 3.01 of this specification. The submittal data required does not require an analysis of the building structural numbers and their reaction to the loads of the piping. The submittal data needs to address attachment methods and shall include calculations indicating the forces that are applied to the building structure at the point of attachment. Calculations will be reviewed for compliance with design criteria, not for arithmetic.

1.04 DRAWINGS AND SPECIFICATIONS

A. Information presented on Drawings and in the Specifications is based upon latest data available during their preparation. The Drawings and Specifications are for the assistance and guidance of the Contractor and exact locations, distances, levels, etc. will be governed by the structures and the site the contractor shall accept same with this understanding.

PART 2 - PRODUCTS

2.01 HANGERS AND SUPPORTS

A. B-Line, Superstrut, Tolco, Grinnell, or equal. Numbers are B-line.

B. Finish: Electro-Chromate or hot dipped galvanized.

C. Trapeze Suspension, for three or more pipes B-Line 1-5/8" width channel or a size suitable for load in accordance with manufacturer's published load ratings. No deflection to exceed 1/180 of a span.

D. Trapeze Supporting Rods: Diameter sufficient to support the load with a safety factor of 5. Anchor rods securely to building structure. See part three for minimum sizes.

E. Pipe Straps: copper coated for copper.

F. Size: For insulated pipe - pipe hangers sized to allow pipe insulation to pass continuously through the hanger.

G. Insulated Pipe Shields: Utilize isolated pipe supports at all insulated pipe hanger locations.

H. Isolators: Trisolator isolators at all hangers and clamps supporting un-insulated piping and tubing and at all points that pipe comes in contact with structure or other pipes.

PART 3 - EXECUTION

3.01 HANGERS AND SUPPORTS

A. General: Support all piping so that it is firmly held in place by approved iron hangers and supports and special hangers as required or as scheduled on the drawings.
   1. Rigidly fasten hose faucets, and similar items at ends of pipe branches to the building construction near point of connection.

B. Hanger Installation: On all insulated pipes, install the hangers on the outside of the pipe covering and not in contact with the pipe. Burning, welding, cutting, or drilling on any structural member may only be done if approved by the structural engineer. No valve or piece of equipment shall be used to support the weight of any pipe. Provide a hanger close to the point of change of direction of pipe run in either horizontal or vertical plane. Place supports and hangers for cast iron soil pipe as close as possible to joints; when hangers or supports do not come within one foot of a branch line fitting, install an additional hanger or support at the fitting. Protect insulation, when pipe is insulated, at each hanger with 180 degree, 18 gauge, 12 inch long G.I. Saddles.

C. Hanger Spacing Schedule:

Type of Pipe	1" dia to 1 1/4”	1 1/2 to 2" dia	2 1/2” dia & over
Steel Pipe	*12' - 0"	15' - 0"	15’ - 0"

D. Rod Size Schedule:

Pipe Size	1/2” – 2”	2 1/2" – 6”	8” & Over
Rod Size:	3/8”	3/8”	1/2"

E. Anchor pipe subject to expansion or contraction in a manner permitting strains to be evenly distributed.

F. Methods of attachment and sizes shall conform to NFPA 13 and FM data sheet 2-8.

G. All hangers and fasteners are subject to the approval of the Structural Engineer.

H. Provide beam clamp retaining straps for all pipe supports attached to structural beams.

I. Support fire-protection system piping independent of other piping.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SPECIAL CONDITIONS and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

B. All Division 21 Sections.

1.02 SUMMARY

A. Furnish and install all mechanical work shown on the drawings, specified herein, and as required for complete and functional installation.

B. This section includes materials and methods applicable to the work described in all Division 21 Mechanical Sections. Specific work requirements of individual Mechanical Sections take precedence if in conflict with requirements of this Section.

1.03 SEISMIC RESISTANCE

A. Furnish and install all systems, units, equipment, and parts to meet or exceed current applicable requirements for seismic resistance specified by codes, regulations, or agencies having jurisdiction. Include all supports, anchors, braces and other restraining devices required. All seismic restraints will meet the following site specific seismic design criteria:
   1. For Seismic Design Category, refer to the structural engineers specifications and drawings.
   2. Seismic restraints are the responsibility of the contractor.

B. Design of seismic bracing shall meet requirements of 2022 CBC Chapter 16.

PART 2 - PRODUCTS

2.01 BRACING SYSTEMS

A. Provide approved types as manufactured by Hilti or Tolco.

PART 3 - EXECUTION

3.01 SWAY BRACING

A. Provide earthquake sway bracing in accordance with NFPA 13 and FM data sheet 2-8 on all feed and cross mains to meet current seismic requirements. Install exposed bracing in a neat workmanlike manner.

END OF SECTION

21 07 00
FIRE SPRINKLER SYSTEMS INSULATION
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

B. All Division 21 Sections.

1.02 SECTION INCLUDES

A. This Section describes insulation materials, methods, and applications for Mechanical Work, Special or specific details, applications, features, or methods may be described in work descriptions Sections or on the drawings.

1.03 REFERENCES

A. Thermal insulation materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use:

B. American Society for Testing of Materials Specifications:
   1. ASTM C 547, "Standard Specification for Mineral Fiber Pipe Insulation"
   2. ASTM C 585, "Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System)"
   3. ASTM C 1136, "Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation"

1.04 SYSTEM PERFORMANCE

A. Insulation materials furnished should meet the minimum thickness requirements of National Voluntary Consensus Standard 90.1 (Latest edition), "Energy Efficient Design of New Buildings," of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE).

B. Insulation materials furnished and installed hereunder shall meet the fire hazard requirements of applicable building codes when tested in composite form per one of the following nominally equivalent test methods:

C. American Society for Testing of Materials: ASTM E 84

D. Underwriters' Laboratories, Inc.: UL 723, CAN/ULC-S102-M88

E. National Fire Protection Association: NFPA 255

F. Molded pipe insulation shall be manufactured to meet ASTM C 585 for sizes required in the particular system.

G. Molded fibrous glass pipe insulation shall comply with the requirements of ASTM C 547.

1.05 QUALITY ASSURANCE

A. Qualifications of Installers: only a licensed firm employing installers specifically skilled and experienced in applying insulation to piping shall do Insulation work.

B. Insulation materials and accessories furnished and installed hereunder shall, where required, be accompanied by manufacturers' current submittal or data sheets showing compliance with applicable specifications listed in above.

C. Insulation materials, including all weather and vapor barrier materials, closures, hangers, supports, fitting covers, and other accessories, shall be furnished and installed in strict accordance with project drawings, plans, and specifications.

D. Insulation materials and accessories shall be installed in a workmanlike manner by skilled and experienced workers who are regularly engaged in commercial insulation work.

1.06 CODES AND STANDARDS:

A. California Code of Regulations - Title 24.

1.07 DELIVERY AND STORAGE OF MATERIALS

A. All of the insulation materials and accessories covered by this specification shall be delivered to the job site and stored in a safe, dry place with appropriate labels and/or other product identification.

B. The contractor shall use whatever means are necessary to protect the insulation materials and accessories before, during, and after installation. No insulation material shall be installed that has become damaged in any way.

C. If any insulation material has become wet because of transit or job site exposure to moisture or water, the contractor shall not install such material, and shall remove it from the job site. An exception may be allowed in cases where the contractor is able to demonstrate that wet insulation when fully dried out (either before installation or afterward following exposure to system operating temperatures) will provide installed performance that is equivalent in all respects to new, completely dry insulation. In such cases, consult the insulation manufacturer for technical assistance.

D. Batt acoustical insulation for interior wall construction.

E. Batt thermal insulation for exterior wall construction.

1.08 REFERENCES

A. ASTM C665 - Mineral Fiber Blanket Thermal Insulation

1.09 REGULATORY REQUIREMENTS

A. Comply with Title 24, Part 2, Chapter 7, fire resistivity ratings.

1.10 SUBMITTALS

A. Product Data:
   1. Submit materials list in accordance with Specifications.
   2. Prepare complete materials list identifying specific insulation types and applications.

1.11 PRODUCT HANDLING

A. Protection:

B. Deliver, store and handle all products in a manner to prevent damage and deterioration.

C. Use all means necessary to protect the installed work and materials of all other trades.

D. Deliver all materials in unopened bundles, labeled with date of manufacturer and testing agency approval.

PART 2 - PRODUCTS

2.01 FIRE SPRINKLER SYSTEMS PIPING INSULATION: SEE 21 07 19

PART 3 - EXECUTION

3.01 APPLICATION / INSTALLATION

A. Use the types and thickness of insulation specified in work description Sections.

B. Apply insulations in accordance with the manufacturer's recommendations and with instructions specified herein or noted on the drawings.

C. Install insulations only after the systems, items, and equipment have been installed and tested, inspected, and accepted. Exceptions: Slip-on piping insulation and equipment insulations installed at the factory.

D. Fit insulation snugly to the item being insulated; butt all joints tightly with no voids, spaces, or thin spots.

E. Seal all joints completely; where sealing tape is used, center the tape over the joint.

F. Except where specified or necessary, do not use staples or fasteners which penetrate vapor barrier jackets or covers on cold systems or equipment; where such penetrating fasteners are used, seal each penetration completely to maintain the vapor barrier integrity. All penetrations of the ASJ and exposed ends of insulation shall be sealed with vapor barrier mastic. Vapor seals at butt joints shall be applied at every fourth pipe section joint and at each fitting to provide isolation of water incursion.

G. Use adhesives, mastics, cements, sealants, and finishes undiluted unless specifically directed otherwise; apply per manufacturer's directions.

H. Install outdoor jacketing or other specified weather proofing or finishing on all insulations outdoors.

I. Install all indoor exposed insulation with extra care and finish neatly.

J. Follow specified methods of installation unless alternative methods are submitted and approved.

3.02 FINISHING

A. Finishes and Protection:
   1. Ensure that the exterior finish of all insulation is applied and complete as specified
   2. Make ready for painting, or painted to match existing including color where specified for paint.
   3. Install all metal jackets or protective sheathing where specified.

B. Repair, Touchup: Properly repair and touchup all dents, rips, tears, or other damage inflicted on jackets or exterior surfaces of insulation. Breaks or punctures in the vapor barrier of external insulation will not be accepted and must be repaired prior to project acceptance.

END OF SECTION

21 07 19
FIRE SPRINKLER SYSTEMS PIPING INSULATION
Dry Creek WWTP Operations and Lab Building
21005.01

PART 1 - GENERAL

1.01 GENERAL

A. A continuous, intact vapor barrier is critical for all pipes conveying fluids at temperatures less than 75° F.

B. All insulation material shall have a mold, humidity, and erosion resistant face, that meets the requirements of CMC Standard No. 6-1.

C. Insulation applied to the exterior surface of pipes located in buildings shall have a flame spread of no more than 25 and a smoke developed rating of not more than 50.

D. All requirements of Section 21 07 00 apply to this section.

PART 2 - PRODUCTS

2.01 IP-3 ELASTOMERIC FOAM

A. Insulation shall be Elastomeric Foam Insulation. Insulation should have a maximum service temperature of 210o F, a minimum service temperature of –40° F., and a "K" factor of .28 at 75° F. The flame spread of the insulation shall be 25 or less, and smoke density shall be 50 or less when tested in accordance with ASTM E84.

B. Provide U.V. protective coating for all outdoor applications.

C. Rubatex R-180-FS/R-1800-FS, Armstrong Armaflex or equal.

PART 3 - EXECUTION

3.01 PIPING APPLICATIONS

A. Fire Sprinkler Piping: Insulate all piping exposed outside of exterior walls, on the roof and under canopies.
   1. Use System IP-3 (Elastomeric Foam).
      a. 3/4” thickness with U.V. protection for all sizes.

3.02 INSTALLATION

A. Unless specifically excluded herein or on the drawings, insulate all parts of the piping systems, including fittings, flanges, valves, and pipe-mounted devices, except do not cover nameplates on devices.

B. Install insulation in removable sections over unions, flanges, and line components or devices requiring periodic maintenance.

C. Install insulation butted tightly to transitions such as insulated pipe shields, insulated pipe sleeves, equipment connections, etc.

D. Install insulation on piping systems so that condensation will not occur. Insulate pipe supports where hanger is directly in contact with pipe up to the point of connection to the building structure. All piping shall be supported in such a manner that neither the insulation nor the vapor/weather barrier is compromised by the hanger or the effects of the hanger. In all cases, hanger spacing shall be such that the circumferential joint may be made outside the hanger. On cold systems, vapor barrier shall be continuous, including material covered by the hanger saddle.

E. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other. Butt insulation joints firmly to ensure complete, tight fit over all piping surfaces.

F. Maintain the integrity of factory-applied vapor barrier jacketing on all pipe insulation, protecting it against puncture, tears or other damage. All staples used on cold pipe insulation shall be coated with suitable sealant to maintain vapor barrier integrity.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SPECIAL CONDITIONS and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

B. All Division 21 Sections.

1.02 SUMMARY

A. General: Furnish and install all engineering, design, materials, tools, equipment and perform all labor necessary for the complete installation of a fire sprinkler system and related items to provide complete functional systems in accordance with the requirements of NFPA 13 and the 2016 CBC, in all areas of the building.

B. Each system to include, but not limited to:
   1. All pipe, fittings, sprinklers, hangers, valves, braces and all other accessories as necessary or required for a complete and operational system complying with all applicable codes.

C. The contractor is responsible for securing approval from all agencies before submitting to the architect's office.

D. System design criteria and water supply information shall be obtained from City Fire Marshal prior to bid. The Contractor shall perform a water flow test at the nearest fire hydrant prior to commencing design of the fire sprinkler system.

E. Contractor shall provide seismic isolation at all building seismic joints. See 21 05 48.

1.03 QUALITY ASSURANCE

A. Standards: The system shall conform to the requirements of the National Fire Protection Association Standards for the Installation of Sprinkler Systems (NFPA 13, and 20). Provide coverage for various hazards in accordance with NFPA and local Fire Department requirements.

B. The system may be a "scheduled" pipe sized system or "calculated" pipe sized system that satisfies the 2022 CBC, NFPA - 13 requirements. Details and computations for calculated systems must be submitted for approval. Pipe sizes shown outside buildings and for risers are minimum regardless of hydraulic calculations.

C. Qualifications of Installers: A firm licensed to engineer and install fire protection systems such as that specified herein shall perform this work; the installing firm must also be regularly and currently engaged in the installation of such systems.

PART 2 - PRODUCTS

2.01 GENERAL

A. All materials and equipment shall be new and of latest design of the manufacturer and shall be tested and approved by the Underwriters Laboratories, Inc. and Factory Mutual.

B. Sprinkler heads: Regular automatic closed type heads, fusible link of temperature rating (indicated below or required by NFPA). Standard semi-recessed type heads (+ 7/8 below ceiling) shall be used at all finished ceiling and soffit locations. Heads in walls where freezing may occur (exposed to weather) shall be "dry pendant" sidewall type. Heads in areas without ceilings shall be standard pendant type. Fire sprinkler heads less than 2 ft, six inches from a supply register shall be intermediate temperature rated for 200 degrees. Escutcheons and canopies in lay-in ceilings shall be as selected by the architect.

C. Spare Sprinkler Heads: Furnish spare sprinkler heads placed in an emergency cabinet. For each cabinet provide one sprinkler wrench. The cabinet will be of No. 20 gauge pressure steel with red lacquer finish complete with manufacturer standard labeling. The spare heads shall be representative of, and in proportion to, the number of each type and temperature of heads installed. Locate cabinet where shown on plans or as directed by owner.

2.02 PIPE AND FITTINGS

A. Pipe fittings for installation below ground shall be cement lined, cast iron conforming to the requirements of American Water Works Association Standard Specification for cast iron special castings, Class D, 150 lb., AWWA C151 mechanical or push-on joint; with AWWA C104 cement-mortar lining, "Blue Brut" or PVC pressure pipe AWWA C900, UL approved for fire line service. If PVC permastran pipe is used with mechanical joint fittings, install according to manufacturer's requirements and recommendations.

B. Fire sprinkler piping, base of riser to 5'-0" outside building (Below ground):

C. Pipe: Acceptable piping materials are Class 50 cement-lined ductile iron with a working pressure of 250 psi per NFPA 24. All piping shall be listed for fire protection service.

D. Fittings: Fittings shall be rated to a minimum of 250 psi and meet applicable requirements of ANSI/AWWA and NFPA 24.

E. Materials shall comply with NFPA / ANSI & AWWA

F. The flange and spigot piece at the base of the riser shall be secured to the underground elbow at the base of the riser with four ¾" stainless steel tie rods for 8" risers, and two ¾" rods for 6" risers (for underground supply piping).

G. Pipe for installation above ground shall conform to ASTM A 795, A 53, or A135. Thin wall pipe with Victaulic couplings may be used for fire lines 2" and larger. Piping for line sizes 1½" and smaller shall be Schedule 40 pipe with screwed fittings. No thin wall pipe shall be used in conjunction with screwed fittings.

H. Gate valves shall be approved rising stem type (OS&Y).

I. Underground valve box shall be "Brooks or "Christy" marked for service.

J. All exposed valves shall be chained to prevent accidental shutting of the valves.

K. Sprinkler riser assemblies shall comply with all applicable codes. Furnish dry pipe valve and air compressor for all dry pipe systems. Provide insulation and heat tracing for riser freeze protection. All shut off valves shall be equipped with tamper switches.

L. Supports, Anchors, Bracing – See All Sections 21 05 29 and 21 05 48.

M. Piping Penetration Auxiliaries: Conform to NFPA 13 and the following:

N. Sleeves: Pipe Shields Inc., Model WFB, galvanized steel.

O. Plates/Collars: 24-gauge galvanized sheet metal. Escutcheons: Polished chrome plated brass or painted metal.

2.03 FIRE ALARM

A. Alarm Bell: Furnish and install UL listed, exterior and interior Fire Alarm Bells in a location approved by the architect.

2.04 SYSTEM TYPE

A. The fire protection system for this building shall be "WET" system, in accordance with NFPA 13 requirements.

B. All heads exposed to freezing conditions shall be dry pendant type heads. All piping shall be run inside building lines on the warm side of the building insulation.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General
1. Install all work in accordance with requirements of NFPA 13 and the Fire Marshal. Notify the Fire Marshal in a timely manner when the installation progressed for required inspections.
2. Coordinate the installation of this work with adjacent or related work under other sections of the specifications. Any installed fire sprinkler work which interferes with other work or fails to meet the requirements of the Fire Marshal (as determined by progress or final observation) will be rejected and shall be removed, replaced, or revised to an acceptable condition at the contractor's expense.
3. Fire sprinkler, lines routed outside of the building insulation in soffits, overhangs, under canopies, or in ventilated un-insulated attics shall be protected by a “dry” compressed air charged or anti-freeze system.
4. Coordinate and install the work of this Section with related or adjacent work specified under other sections of the specifications.
5. System piping volume shall be capable of achieving water delivery to the inspector’s test pipe in less than sixty seconds, starting at the normal air pressure on the system and with any quick opening devices in operation.
6. Cutting, Notching and Patching:
7. Unless noted otherwise on Drawings, provide all cutting and notching required for work of this Section, including concrete saw cutting and core drilling; obtain Architect's approval before cutting or core drilling.
8. Provide all patching required for work of this Section, including concrete replacement; patch to match adjacent work and to architect's satisfaction.
9. Any fire sprinkler pipe located outside of the buildings shall be protected with heat tape.

B. Piping
1. Above-grade piping
    a. Use no coupling except where length of pipe between fittings exceeds 20 feet.
    b. Make reductions in pipe sizes with one piece reducing fitting. Bushings shall not be acceptable, except when standard fittings of proper size are not manufactured. Single bushings of the face type will be permitted up to 5% of total number of reducing fittings in the system. Where bushings are used, install with outer face flush with face of fitting opening being reduced.
    c. Install piping to clear lighting fixtures, air ducts, and other obstructions, minimum clearance 2 inches including concrete foundations, walls, and floors.
    d. All sprinkler piping shall be inspected prior to installation to ensure the pipe is free of welding slag and cutouts, and ensure that the welded fittings do not protrude into the path of water flow.
    e. Install piping level, plumb, and parallel to structure line except where shown otherwise or required by function or regulation to be angled or sloped.
    f. Install piping concealed within penetrations provided in the structure except where shown as exposed.
    g. Install piping without bending, springing, forcing, or placing undue stress on the pipe or fittings.
    h. Install piping to allow for expansion, contraction, and structural settlement.
    i. Install piping so it does not directly contact the structure except where shown or specified otherwise.

j. Install piping so that it does not interfere with equipment access.
k. The use of plain end pipe, fittings and coupling shall not be permitted, except for welded piping.
l. Penetrations through fire rated walls shall be sealed in accordance with a recognized UL/FM assembly.

C. Below grade piping
1. Piping installed under slab shall be cement lined cast iron, PVC or other plastic pressure piping shall not be allowed.
2. Install per NFPA 24 and NFPA 13 and local jurisdiction.
3. The flange and spigot piece at the base of the risers shall be secured to the underground elbow at the base of the riser with four 3/4” stainless steel tie rods for 8” risers, and two 3/4” rods for 6” and smaller risers.
4. Install thrust blocks at all changes in direction sized in accordance with Factory Mutual Data Sheet 3-10.
5. Pipe supports – See Sections 21 05 29 and 21 05 48.
6. Provide 2" clear space around all pipe penetrations passing through concrete foundations, walls or floors.

D. Drains
1. Install auxiliary drains at all low points in the system. Install the inspector's test drain at most remote high point in each system from the main riser. All inspectors' test connections shall be installed in a readily accessible location. Use angle type drain valves. Five or fewer trapped heads may be drained through a plugged fitting. Pipe drain valves shall discharge as shown on the drawings, and as approved by the architect, outside building unless noted otherwise. Install in accordance with NFPA 13.
2. All piping in finished areas must be run concealed above ceilings, in walls or as shown and noted on the plans. Piping shall be run so as to occur on the warm side of all building insulation. The location of exposed piping, if permitted at all, shall be approved by the engineer and architect.

3.02 SPRINKLER HEAD LOCATIONS

A. Sprinkler heads shall be located in finished ceilings, soffits, overhangs, etc., in accordance with NFPA and CBC requirements but conforming to ceiling lighting, and building modules which may require additional heads for symmetry.

B. Fire sprinkler heads for DSA projects shall have a one inch clearance around the fire sprinkler heads as required by ASCE 7-10. Provide a recessed canopy Coverage Extension as manufactured by Fire Protection Products, Inc, or equal.

C. Sprinkler heads in the areas without ceilings shall be located on exposed piping run to conform to building lines and as approved by the Architect. The location of all piping, heads and equipment shall be submitted for final approval by the Architect who shall have final authority of location of same. The contractor shall allow for additional sprinkler heads which may be required for aesthetic purposes.

D. Heads in exterior walls and exterior soffits shall be located as shown on architectural exterior elevations or as approved by the architect.

3.03 COORDINATION

A. The sprinkler contractor shall be responsible to coordinate the location of sprinkler piping with all other trades such as ductwork, electrical work and plumbing work. The sprinkler contractor shall off-set and modify the sprinkler system as may be required to coordinate the sprinkler system with all other systems as shown and/or detailed. All sprinkler piping shall clear all other building services by at least 2 inches.

3.04 REPORTS

A. The system(s) must be inspected, tested, and approved and certified by the owner's insurance carrier, DSA, and local fire department before acceptance of the project.

3.05 DETECTION, ALARM, AND ELECTRICAL WIRING

A. Electrical contractor shall be responsible for all fire detection and alarm and wiring.

B. Demonstrate proper operation of alarm systems.

C. Electrical contractor shall provide all electrical wiring:

END OF SECTION

PART 1 – **GENERAL**

1.01 INTENT OF SPECIFICATIONS

A. This specification outlines the requirements for a total flooding clean agent fire extinguishing system comprising Kidde Fire Systems equipment employing 3M™ Novec™ 1230 Fire Protection Fluid with an Aries Netlink Control Unit alarm and releasing panel. All requirements outlined in this specification shall be completed in their entirety. These requirements, which are in accordance with the items listed in Section 1.3, combined with good engineering practices must be followed in order to produce a safe and effective fire protection and suppression system.

B. The contractor shall provide all requirements as specified in 2015 NFPA 2001 as adopted in the 2022 CFC Ch. 80 for the deferred approval plans and specifications.

1.02 GENERAL DESCRIPTION

The clean agent fire extinguishing system shall perform as outlined in the following sub-sections.

A. Achieve a 4.5% (v/v) extinguishing concentration for Class A (Surface Type Fires) hazards.

B. Achieve a 5.85% (v/v) or greater, as required, extinguishing concentration for Class B (Flammable Liquids) hazards.

C. Achieve a 4.5% (v/v) extinguishing concentration for Class C (Energized Electrical Equipment) hazards.

D. Within 10 seconds, the clean agent fire extinguishing system shall discharge 95% of the required suppression agent mass.

E. The clean agent fire extinguishing system shall consist of one or more Kidde Fire Systems agent storage containers and related equipment. The containers may be either connected to a discharge pipe arrangement separately or connected to a common manifold and discharge pipe arrangement. The agent storage containers shall be filled with Novec 1230 fluid, and super pressurized with dry nitrogen to a working pressure of 360 PSIG at 70°F (24.8 bar gauge at 21°C).

F. The Kidde Aries Netlink addressable, distributed-intelligence control unit and fire alarm/suppression system shall perform fire alarm, supervisory, and trouble event initiation; occupant notification; event annunciation; local control functions; fire extinguishing system release, and off premises transmission.

G. The system's distributed intelligence shall extend to the SmartOne automatic initiating devices on the signaling line circuit. Each automatic initiating device shall have a microprocessor capable of independently determining whether or not a fire signature at its monitored location is of sufficient magnitude to warrant the issuance of an alarm signal to the control unit.

H. The contractor shall include all calculations and references on the deferred approval package submittal.

1.03 CODES AND COMPLIANCE

A. The design, installation, testing and maintenance of the integrated suppression shall be in accordance with the following applicable codes, standards and regulatory bodies:
   1. 2015 NFPA 2001 Clean Agent Fire Extinguishing Systems
   2. 2020 NFPA 70: National Electrical Code (NEC)
   3. 2019 NFPA 72: National Fire Alarm Code
   4. 2020 NFPA 75: Protection of Electronic Computer/Data Process Equipment
   5. 2020 NFPA 76: Fire Protection for Telecommunications Systems
   6. UL 864, 9th ed: Control Units and Accessories for Fire Alarm Systems
   7. UL 2166: Halocarbon Clean Agent Extinguishing System Units

8. UL 268: Standard for Smoke Detectors for Open Areas
9. UL 268A: Standard for Smoke Detectors for Duct Application
10. ANSI B1.20.1: Standard for Pipe Threads, General Purpose
11. Factory Mutual
12. Requirements of the CSFM
13. Manufacturer's Design, Installation, Operation & Maintenance Manual

B. The complete system shall have the applicable following listings and approvals:
   1. Underwriters Laboratories, Inc.
   2. Factory Mutual Global

1.04 SYSTEM DESIGN CRITERIA

A. All system components shall be manufactured and/or supplied by Kidde Fire Systems, 400 Main Street, Ashland, MA 01721, USA,

B. Only green suppression agents are allowed.

C. The system shall be supplied and installed by a Contractor. The Contractor shall be trained by the manufacturer to design, install, test and maintain the Kidde Novec 1230 System and Aries Netlink Control Unit shall be able to produce certificates stating such on request.

D. All materials and equipment shall be new and unused.

E. A total flooding, clean agent fire suppression system, filled with Novec 1230, shall be installed to meet a minimum design concentration per NFPA requirements and calculations.

1.05 QUALIFICATIONS

A. Manufacturer

1. The manufacturer/supplier of the system hardware and components shall have a minimum of fifteen (15) years experience in the design and manufacture of systems of similar type

2. The manufacturer/supplier of the systems shall be certified to ISO 9001 for a minimum period of five (5) years for the design, production and distribution of fire detection, fire alarm and fire suppression systems.

3. The name of the manufacturer/supplier and manufacturer part numbers shall appear on all major components.

4. All devices, components and equipment shall be the products of the same manufacturer/supplier.

5. The system manufacturer/supplier shall have the ability to provide multiple suppression system arrangements to accommodate the performance criteria required by the project.

6. All devices, components and equipment shall be listed by the standardizing agencies (ULC and/or FM).

7. The contractor and installer shall be a listed/certified company meeting all the requirements for design and installation per the manufacturer.

B. Contractor
   1. The system shall be supplied and installed by a factory authorized, Kidde Fire Systems distributor. The Contractor shall be trained by the manufacturer to calculate/design, install, test and maintain the fire suppression system and shall be able to produce a certificate stating such on request.
   2. The installing contractor shall employ a person who can show proficiency at least equal to a NICET level IV certification in special hazards design.

3. The Contractor shall confirm in writing that he stocks a full complement of spare parts and offers 24-hour emergency service for all equipment being furnished.

1.06 WARRANTY

A. The manufacturer shall warrant the system from the date of shipment from the factory as follows: Kidde Engineered System products for thirty-six (36) months; Kidde Aries Netlink Control Unit for sixty (60) months; and the SmartOne devices for twenty-four (24) months.

1.07 SUBMITTALS

A. The Engineer will review all submittals for conformance to the drawings and specifications. The contractor shall be required to resubmit any materials, with appropriate modifications, that are found to be in non-conformance with the requirements of the drawings and these specifications after review by the architect. Approval of the submittals by the architect shall not relieve the Contractor of their responsibility to meet the requirements of the drawings and specifications.

B. Engineered Design Drawings: The Contractor shall provide all required documents that shall include the following details:
   1. The contractor shall coordinate with the factory-authorized Kidde Fire Systems Distributor to provide all required installation drawings per 2015 NFPA 2001 as adopted in the 2019 CFC Ch. 80 as a deferred approval submittal.
   2. Plan and riser drawings showing the location of the Kidde Aries Netlink Control Unit and the locations and necessary installation and mounting details of all field devices such as smoke detectors, manual-release stations and notification appliances. Conduit routings shall be shown, with number of conductors, type of wire, and wire sizes indicated for each conduit segment.
   3. Point-to-point wiring diagram showing the termination points for all field-wiring circuits to the internal Kidde Aries Netlink PCB. All internal wiring and communications cabling shall be shown.
   4. A primary-power calculation that details the power requirements for the Kidde Aries Netlink Control Unit and all field devices such as smoke detectors, notification appliances and releasing solenoids. Include the required capacity of the main AC power-line feed from the commercial power and light company.
   5. A secondary power calculation that shows the quiescent and alarm power requirements for the Kidde Aries Netlink Control Unit and all field devices. Include the periods of time for which the quiescent and alarm power requirements shall be supported in order to determine the necessary standby battery capacity.
   6. The contractor shall submit a calculation justifying the capacity of batteries selected.

C. Flow Calculation Reports: The Contractor shall provide the following information in the flow calculation report.
   1. Customer information and project data.
   2. Enclosure information. At a minimum, enclosure information shall include minimum and adjusted design concentrations, minimum and maximum enclosure temperatures, minimum agent required and volume of enclosures, including non-permeable volume if applicable.
   3. Agent information. At a minimum, agent information shall include cylinder size and part number, quantity of cylinders, main and/or reserve cylinders, pipe take off direction and the floor loading for agent cylinder
   4. Pipe network information. At a minimum, pipe network information shall include pipe type, pipe diameter, pipe length, change in direction or elevation, pipe equivalent length and any added accessory equivalent length. In addition, the following nozzle information shall be provided; number of nozzles and identification of enclosure location, flow rate of associated nozzle, nozzle nominal size, nozzle type and nozzle orifice area

D. Pipes and pipe fittings. A detailed list of pipes and pipe fittings used in the design of the pipe network.

E. OPTIONAL: Three-Way Ball Valve Information. A calculation shall be completed for each directional valve in the piping network. Modeling of the Three-Way Ball Valve shall be shown in the ”90-deg” and “through” position.

F. Commissioning Equipment List: The Contractor shall provide a commissioning equipment list for each installed system. The equipment list shall identify all installed equipment and configurations. The Contractor shall submit the following:
   1. Four (4) sets of installation drawings for each installed system and one (1) set of calculation reports, owner’s manuals and product data sheets.
   2. A description of system functionality and a detailed matrix of all the initiating points, control modules, and field circuits that identifies the labeling of all components and shows the relationships and activation sequences among the various initiating points and the control modules and/or field circuits.
   3. The contractor shall submit a commissioning check sheet for each installed ASD detector. The check sheet shall list all installed equipment, configurations and measured ambient conditions
   4. The Contractor shall submit a test plan that describes how the system shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. Tests shall not be scheduled or conducted until the engineer of record approves the test plan. At a minimum, the tests to be conducted shall be per the relevant referenced codes and any additional supplemental tests required by the CSFM/OSFM. Tests shall not be scheduled or conducted until the engineer of record approves the test plan.
   5. Upon completion of installation and commissioning acceptance, two (2) sets of “As-Built” installation drawings and One (1) set of the calculation report for each installed system.

G. Test Plan
   1. The distributor shall submit a test plan that describes how the system equipment and room integrity shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. At a minimum, the tests to be conducted shall be per 2015 NFPA 2001 as adopted in the 2019 CFC Ch. 80 and any additional supplemental tests required by the CSFM/OSFM. Tests shall not be scheduled nor conducted until the engineer of record approves the test plan

H. Installation Drawings
   1. Four (4) sets of installation drawings for each installed clean agent fire extinguishing system and one (1) set of the calculation report, owner’s manual and product data sheets shall be submitted to the end-user/owner.
   2. Upon completion of installation and commissioning acceptance, two (2) sets of “As-Built” installation drawings and One (1) set of the calculation report for each installed clean agent fire extinguishing system shall be given to the owner/end-user for use and reference.

I. Documentation: The Contractor shall submit two (2) copies the following after complete installation:
   1. Kidde Fire System Design, Installation, Operation and Maintenance Manual.
   2. Kidde Aries Netlink Installation, Operation and Maintenance Manual.

PART 2 - SUPPRESSION SYSTEM REQUIREMENTS

2.01 GENERAL

A. The clean agent fire extinguishing system shall consist of NOVEC 1230, agent storage container(s), 1800-psig seamless nitrogen cylinders, Kidde actuation hardware and Kidde discharge nozzle(s) attached to a pipe network.

2.02 SYSTEM PERFORMANCE

A. System Discharge

1. The discharge time required to achieve 95% of the minimum design concentration for flame extinguishment shall not exceed 10 seconds.

B. Duration of Protection
   1. 85% of the minimum design concentration shall be maintained for 10-minutes or a sufficiently longer period of time to allow effective emergency action by trained personnel. A level 1 certification in room integrity testing, provided by a recognized manufacturer of room integrity testing equipment, is required.

C. Minimum System Design Limits
   1. Nozzles
      a. Nozzles shall be listed and approved for a maximum ceiling height of 16 feet (4.88 m) and a minimum ceiling height of 1 foot (0.31 m).
      b. Nozzle area coverage for both 360- and 180-degree nozzles shall be a maximum of 35.6 ft. x 35.6 ft. square (10.85 m x 10.85 m).
      c. System Nozzles shall be listed and approved to accommodate a maximum arrival time of 2.0 seconds and a maximum run-out time of 6.3 seconds.
      d. System Nozzles shall be listed and approved for a minimum of 60.3 PSIG (4.16 bar gauge) nozzle pressure.

2.03 PIPE AND FITTINGS

A. Distribution piping, and fittings, shall be installed in accordance with 2015 NFPA 2001 as adopted in the 2019 CFC Ch. 80, approved piping standards and the engineered fire suppression system manufacturer's requirements.

2.04 ACTUATION HARDWARE

A. The agent cylinders shall be actuated in accordance with the applicable design manual.

B. The suppression panel shall be UL Listed per UL 864, 9th Edition with the interfacing electric actuators.

2.05 NOZZLES

A. Total flooding clean agent extinguishing system nozzles shall be made of stainless steel.

B. Each nozzle shall be located in the space per the manufacturer's guidelines. Nozzles shall have either a 180- or a 360-degree discharge pattern.

C. Each nozzle discharge pattern shall be available in sizes ranging from 3/8-in NPT to 2-in NPT.

D. Within each nozzle size and style, the manufacturer shall offer multiple different orifice areas (minimum of 20).

E. Nozzles shall be UL Listed and FM Approved for use with the manufacturer's clean agent extinguishing system employing Novec 1230 fluid.

2.06 AGENT STORAGE CONTAINER ASSEMBLIES

A. Novec 1230 fluid shall be stored in containers manufactured and marked in accordance with US Department of Transportation (DOT) specification 4BW-500 or 4BA-500. The agent storage containers shall be conditioned to 360 PSIG @ 70°F (24.8 bar gauge @ 21°C). Cylinder and valve assemblies shall be dual marked with Transport Canada (TC) specification 4BW-M34 or 4BA-M34. The system manufacturer shall be able to provide US DOT documentation that the registration number marked on the agent storage container corresponds to a manufacturing location at a US address.
   1. Novec 1230 fluid containers shall be equipped with a pressure gauge to display internal pressures. The gauge shall be an integral part of the equipment and shall be color-coded for fast referencing of pressure readings.

2. A low-pressure switch shall be provided as standard equipment on the Novec 1230 fluid containers. A decrease in pressure will cause the normally open contacts to close, indicating a trouble condition at the control panel. The low-pressure switch shall be field removable/replaceable while the container is still fully charged.
3. Novec 1230 fluid containers with empty weights in excess of 105-lbm shall be equipped with an integral liquid level indicator (LLI). The LLI will allow the agent container to remain connected and secured in place while measuring the agent mass.

2.07 OPTIONAL EQUIPMENT

A. When protecting multiple hazard areas from a single supply of Novec 1230 fluid, Kidde Three-Way Directional Ball Valves shall be used.
   1. The Three-Way Directional Ball Valves shall be UL Listed or FM Approved for use with Novec 1230 fluid and Kidde Engineered Suppression Systems.
   2. The Three-Way Directional Ball Valves shall be installed and located in the piping network per the manufacturer's guidelines and design manual.

2.08 ELECTRICAL WORK

A. All electrical enclosures, raceways, and conduits shall be provided and installed in accordance with applicable codes and intended use, and shall contain only those electrical circuits associated with the fire-detection and control system. No circuit or circuits that are unrelated to the fire alarm or suppression system shall be routed through the enclosures, raceways, and conduits dedicated to the fire alarm or -suppression system.

B. Splicing of circuits shall be kept to a minimum, and is only permitted in an electrical box suitable for the purpose. Appropriate hardware shall be used to make the wire splices. Wires that are spliced together shall have the same color insulation.

C. White colored wire shall be used exclusively for the identification of the neutral conductor of an alternating-current circuit. Green colored wire shall be used exclusively for the identification of the earth-ground conductor of an AC or DC circuit. Appropriate color-coding shall be utilized for all other field wiring.

D. All electrical circuits shall be numerically tagged with suitable markings at each terminal point. All circuits shall correspond with the installation drawings.

2.09 GENERAL

A. Kidde Aries Netlink shall be an addressable, distributed-intelligence type Control Unit.

2.10 SYSTEM CONFIGURATION

A. Activation of the extinguishing system shall be via crossed-zoned smoke detection in the following optional combinations:
   1. SmartOne Photoelectric smoke detector.

B. Detection system layout shall be in accordance with NFPA 72 and it shall require the activation of at least one detector from each of the two crossed-zoned detector groupings to trigger the automatic release of the extinguishing system.

2.11 CONTROL PANEL

A. The control unit shall consist of a printed-circuit board (PCB), an integral display/control assembly, and terminations for all field circuits, a primary power supply and an enclosure with removable door and viewing window.

B. The PCB shall contain the main-system microprocessor, the real-time clock, the history buffers, the watchdog timer, one USB device port, and two RS-232 serial ports. It shall also provide terminations for the following field circuits:
   1. One (1) signaling line circuit (SLC)

2. Two (2) notification appliance circuits (NACs)
3. Two (2) combination NAC/releasing circuits (Combos)
4. Two (2) releasing circuits
5. Three (3) programmable relays
6. One (1) trouble relay
7. One (1) RS-485 communications circuit
8. Battery charging circuit
9. AC input power connections

C. The SLC shall serve as the hardware and software interface between the intelligent initiating and control devices and the Kidde Aries Netlink Control Unit. The SLC shall be capable of communicating with up to 255 automatic detectors, monitor modules, and control devices, in any combination, without restrictions on the numbers of each type of field device.

D. The two releasing circuits shall be capable of actuating electro-explosive initiators, control heads, or solenoid valves. Each releasing circuit shall be independently programmable to activate any of the following configurations of extinguishing-system actuators:
   1. Electro-explosive initiators, supervised and activated in series, subject to the constraints below:
      a. Maximum of six (6) P/N 93-002009-004
      b. Maximum of six (6) P/N 93-191001-001
   2. One (1) control head or solenoid valve
   3. Two (2) control heads or solenoid valves supervised in series and activated in parallel. It shall not be necessary to use identical solenoid valves when two valves are activated on one releasing circuit.
   4. The releasing circuits shall be capable of actuating Factory Mutual System classified valves (Groups A, B, D, E, G).

E. The two notification-appliance circuits (NACs) shall be independently programmable and configurable for either Class-A or -B operation.
   1. The input power to the NAC shall be filtered and regulated. The NAC shall be capable of delivering a current of up to 1.5 A @ 24 VDC to the notification appliances.
   2. It shall be possible to field-configure each Class-B, Style-Y NAC to activate notification appliances with any and all of the following parameters via a personal-computer-based configuration program:
      a. Twenty-character location
      b. Drill activation
      c. Silenceable/non-silenceable operation
      d. Walk-test activation
      e. Master-coded operation (60 bpm, 120 bpm, temporal per ANSI S3.41, continuous)
      f. Cutoff delay (5, 10, 15 minutes)
      g. Silence inhibit (1, 3, 5 minutes)
   3. It shall be possible to override one master code with another depending on the state (i.e., prealarm, prerelease, release, or time-limit-cutout) of the particular suppression zone. It shall also be possible to shut off and re-activate a NAC as required by the approved system operating sequence. No supplemental equipment shall be required to perform this functionality.
   4. It shall not be necessary to use external synchronization modules to synchronize the audible and visual notification signals created by any NAC
   5. Terminals for connection of field conductors to the NACs shall be large enough to accommodate #12 AWG wiring
   6. The basic power-supply / charger assembly shall consist of an AC to DC switching power unit. The power-supply / charger assembly shall be configurable to accept either 120 or 240 VAC input voltage, and shall provide 5.4 A at 24 VDC of filtered and regulated power to operate the system and charge the system’s standby battery. The charger assembly shall

be capable of charging batteries of capacities up to 70 AH. Two user-configurable auxiliary-power circuits shall be provided on the PCB to power peripheral devices. The auxiliary-power circuits shall be software programmable for either continuous or interruptible power output, and shall be rated for 1.0 A at 24 VDC. It shall not be necessary to set jumpers or dip switches on the PCB to make these outputs continuous or interruptible.

7. The system shall have the ability to use an optional Intelligent Communications Module (ICM). The ICM shall be a device server that provides Internet access to the Kidde Netlink Control Unit via any standard Web browser such as Chrome, Fire Fox or Edge. Browser interface shall support HTLM5. The ICM shall provide the following client services:
   a. Dial-up control-unit monitoring and status reporting
   b. Automatic event detection and reporting via e-mail
   c. Web-browser-based
   d. Emulated display for the control unit
   e. Access to items in the control unit's List Menu.

2.12 ANNUNCIATION

A. The following modules shall be provided for remote-event annunciation and operator control as indicated on the bid documents.
   1. Textual-Type Remote Display Control Module (RDCM)
      a. Model RDCM shall completely duplicate the display and operator-intervention capabilities of the main-control-unit display.
      b. The RDCM shall communicate with the Kidde Aries Netlink Control Unit via RS-485 communications, and the system shall be capable of supporting with up to 15 remote displays.
      c. The remote displays shall operate on 24 VDC power provided by the Kidde Aries Netlink power supply, or by any remote power supply that is UL Listed or FM Approved for fire alarm applications. The remote-display modules shall supervise their input-power connections.
      d. The main Kidde Aries Netlink Control Unit display or one RDCM shall be capable of being programmed as the master unit with immediate operator-intervention privileges upon the occurrence of any alarm or fault condition. The master unit shall have control for a minimum period of 30 seconds, and all other control points shall be locked out and notified of the locked-out condition if another operator attempts to intervene during the locked-out period imposed by the master control module.

B. Output Driver Modules
   1. The Model ATM-L Annunciator Driver Module shall provide the Kidde Aries Netlink Control Unit with up to 32 programmable outputs for remote LEDs, along with 6 system-level LEDs and 5 system-level functional switches.
   2. The Model ATM-R Relay Driver Module shall provide the Kidde Aries Netlink Control Unit with up to 32 programmable outputs for remote relays.
   3. The ATM-L and -R Modules shall communicate with the Kidde Aries Netlink Control Unit via the RS-485 communications circuit, with the most-remote module capable of being located up to 4,000 feet from the control unit. The ATM-Ls and ATM-Rs shall be capable of being installed in various combinations as long as the maximum number of 16 for each module type is not exceeded.
   4. Both modules shall be powered from the Kidde Aries Netlink power supply, or from an external, regulated, and power-limited power supply Listed and Approved for use with fire-protective-signaling systems, depending upon the total load of the remote outputs.

2.13 DETECTORS

A. Smart One Photoelectric Detector
   1. The SmartOne Photoelectric Detector, Model PSD-7252, shall be a microprocessor-based smoke detector. The photoelectric detector shall be a light scattering type, low profile,

intelligent detector that senses a broad range of smoldering and flaming-type fires. The sensing chamber shall permit a full 360° smoke entry.

2. Each photoelectric detector shall be electronically addressable and fully field-programmable. It shall be possible to set an alert threshold anywhere from 0.2 to 3.4% per foot obscuration in 0.1%-per-foot increments, and to set an alarm threshold anywhere from 0.5 to 3.5% per foot obscuration in 0.1%-per-foot increments. Alarm thresholds shall be dynamically adjustable as a result of another alarm event anywhere in the system. Where permitted, each detector shall be programmable for alarm verification in periods of up to 180 seconds in 1-second increments. Each detector shall provide a real-time value of current, local obscuration level in percent-per-foot readout when requested by an operator at the control unit.
3. It shall be possible to configure each photoelectric detector for non-latching operation to prevent inadvertent or spurious fire signatures from accidentally discharging a waterless extinguishing system. The control unit shall latch the alarm report, but the discharge sequence shall be interrupted if the fire signature at the detector drops below the detector's programmable alarm threshold
4. Detector calibration, address, alert and alarm thresholds, and drift-compensation algorithm shall be stored in each detector's non-volatile memory. Systems that store all detector parameters in the control unit (i.e., non-distributed-intelligence-to-the-device-level architecture) shall not be considered as equivalent.
5. A detector-housing, Model DH-2000, shall be available to allow a photoelectric detector to monitor for the presence of combustion products in an air duct. The detector housing shall be rated for air-duct velocities ranging from 500 to 4,000 feet per minute. It shall also be possible to mount the photoelectric detector in an air duct with velocities ranging up to 4,000 feet per minute.

B. SmartOne Thermal Detector
1. The SmartOne Thermal Detector, shall be a microprocessor-based heat detector. The thermal detector shall be a thermistor-type, low profile, intelligent detector that responds to a fixed temperature with minimal thermal lag. The sensing chamber shall permit a full 360° heat entry.
2. Each thermal detector shall be electronically addressable and fully field-programmable. It shall be possible to set both alert and alarm thresholds anywhere from 80°F to 155°F in 1°F increments. Each detector shall provide a real-time value of current, local temperature in °F readout when requested by an operator at the control unit.
3. It shall be possible to configure each thermal detector for non-latching operation to prevent inadvertent or spurious fire signatures from accidentally discharging a waterless extinguishing system. The control unit shall latch the alarm report, but the discharge sequence shall be interrupted if the fire signature at the detector drops below the detector's programmable alarm threshold.
4. Detector calibration, address, and alert and alarm thresholds shall be stored in each detector's non-volatile memory. Systems that store all detector parameters in the control unit (i.e., non-distributed-intelligence-to-the-device-level architecture) shall not be considered as equivalent.

2.14 CONDUCTORS AND CONDUITS

A. All conductors shall be enclosed in rigid or thin-walled, steel conduit unless open wiring is permitted by the local electrical code.

B. Any conduit or raceway exposed to dampness or other similar conditions shall be properly sealed and installed to prevent moisture entrapment. Provisions for draining and drying shall be employed as required.

C. All wiring shall be of the proper size to conduct the circuit current, but shall not be smaller than #18 AWG unless permitted by the local electrical code. Wiring for the signaling line circuit shall

be in accordance with the Kidde Aries Netlink Installation, Operation, and Maintenance Manual. Wire that has scrapes, nicks, gouges, or crushed insulation shall not be used. The manufacturer's minimum wire-bending radii shall be observed in all enclosures, raceways, and conduits. Aluminum wire shall not be used.

2.15 SUPPRESSION SYSTEM INSTALLATION

A. The system shall be supplied and installed by a factory-authorized, Kidde Fire Systems Contractor. The Contractor shall be trained and certified by Fenwal Protection Systems to design, install and maintain the Kidde fire suppression system. The Contractor shall install the system in accordance with the manufacturer's design, installation, operation and maintenance manual.

2.16 ELECTRICAL SYSTEM INSTALLATION

A. The contractor shall install the system in accordance with the appropriate Fenwal Protection Systems installation, operation and maintenance manual.

B. Locations of all electrical equipment, the Kidde Control Unit, and all system components are subject to the approval of the architect.

C. All final-acceptance tests shall be performed in the presence of the architect and the CSFM/OSFM. The contractor shall record all equipment, tests and system configurations in a format approved by the manufacturer and/or the CSFM/OSFM. A copy of the commissioning tests and results shall be provided to the architect, the CSFM/OSFM, and the end-user.

2.17 ROUTINE MAINTENANCE

A. Routine maintenance on equipment shall be performed as recommended by the manufacturer's installation, operation and maintenance manual. At a minimum the routine maintenance will include the following by a certified Kidde Fire System Distributor:
   1. Visual Check of Pipe network and distribution nozzles per the operation and maintenance manual.
   2. Weight and pressure of the Kidde Engineered System cylinders per the operation and maintenance manual.
   3. Inspect all cylinders and equipment for damage per the operation and maintenance manual.
   4. Pneumatic operation of the Three-Way Directional Ball Valve. Routine maintenance on the suppression system as a whole shall be performed as recommended by NFPA, current edition.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All levels of 22 00 00

B. Preparations.
   1. Prior to data collection and compilation, prepare and submit in duplicate an outline of the proposed organization and content.
   2. Compilation: Prepare and collect data concurrently with construction progress. Compile per submitted outline.

PART 2 - PRODUCTS

2.01 OPERATION AND MAINTENANCE MANUALS

A. Form of Submittals
   1. Prepare data in form of an instructional manual for use by Owner's personnel.
   2. Cover: Identify each volume with typed or printed title, "OPERATING AND MAINTENANCE INSTRUCTION". List:
      a. Title of Project.
      b. Provide indexed tabs.
      c. Identify of separate structure as applicable.
      d. Identity of general subject matter covered in the manual.
   3. Format:
      a. PDF

PART 3 - EXECUTION

3.01 OPERATION AND MAINTENANCE DATA

A. General: Record data and operation and maintenance data are complimentary. Submittal items which may be required under both categories may be included only under one submittal if a statement to that effect is included in the other submittal.

B. Quality Assurance
   1. Preparation of data shall be done by personnel.
      a. Trained and experienced in maintenance and operation of described products.
      b. Familiar with requirements of this Section.
      c. Skilled as technical writer to the extent required to communicate essential data.

C. Content of Manual
   1. Neatly typewritten table of contents for each volume, arranged in systematic order.
      a. A list of each product required to be included, indexed to content of the volume.
      b. List, with each product, name, address and telephone number of:
         1) Subcontractor or installer.
         2) Maintenance contractor, as appropriate.
         3) Identify area of responsibility of each.
         4) Local source of supply for parts and replacement
      c. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
   2. Product Data:
      a. Include only those sheets which are pertinent to the specific product.
      b. Annotate each sheet to:
         1) Clearly identify specific product or part installed.
         2) Clearly identify data applicable to installation.

3) Delete references to inapplicable information.

3. Drawings:
   a. Supplement product data with drawings as necessary to clearly illustrate.
      1) Relations of component parts of equipment and systems.
      2) Control and flow diagrams.
   b. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation
   c. Do not use Project Record Documents as maintenance drawings.
4. Supplement product data for the particular installation.
   a. Organize in consistent format under separate headings for different procedures.
   b. Provide logical sequence of instructions for each procedure.
5. Factory Authorized Start-Up Report.
   a. Provide a factory start-up report for each piece of equipment. Contractor start-up reports, unless contractor is a factory authorized representative will not be allowed.
6. Copy of each warranty, bond and service contract issued.
   a. Provide information sheet for Owner's personnel, give:
      1) Proper procedures in event of failure.
      2) Instances which might affect validity of warranties or bonds.

D. Manual for Equipment and Systems:
   1. Submit one copy of complete manual in final form in PDF format.
   2. Content, for each unit of equipment and system, as appropriate.
      a. Description of unit and component parts.
         1) Function normal operating characteristics, and limiting conditions
         2) Performance curves, engineering data and tests.
         3) Complete nomenclature and commercial number of replaceable parts.
      b. Operating procedures:
         1) Start-up, break-in, routing and normal operating instructions.
         2) Regulation, control, stopping, shut-down and emergency instructions.
         3) Summer and winter operating instructions.
         4) Special operating instructions.
      c. Maintenance Procedures:
         1) Routing operations.
         2) Guide to "trouble-shooting"
         3) Disassembly, repair and reassemble.
         4) Alignment, adjusting and checking.
      d. Servicing and lubrication schedule.
         1) List lubricants required.
      e. Manufacturer's printed operating and maintenance instructions.
      f. Description of sequence of operation by control manufacturer.
      g. Original manufacture's parts list, illustrations, assembly drawings and diagrams required for maintenance.
         1) Predicted life of parts subject to wear.
         2) Items recommended to be stocked as spare parts.
      h. As-installed control diagrams by controls manufacturer.
      i. Each contractor's coordination drawings:
         1) As-installed color-coded piping diagrams.
      j. Charts of valve tag numbers, with location and function of each valve.
      k. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
      l. Other data as required under pertinent sections of specifications.
   3. Content for each electric and electronic system, as appropriate.
      a. Description of system and component parts.
         1) Function, normal operating characteristics, and limiting conditions.

2) Performance curves, engineering data and tests.
3) Complete nomenclature and commercial number of replaceable parts.

b. Circuit directories of panel boards.
1) Electric service.
2) Controls.
3) Communications

c. As-installed color coded wiring diagrams.

d. Operating procedures.
1) Routing and normal operating instructions.
2) Sequences required.
3) Special operating instructions.

e. Maintenance procedures.
1) Routine operations.
2) Guide to “trouble shooting”.
3) Disassembly, repair and reassembly.
4) Adjustment and checking.

f. Manufacturer’s printed operating and maintenance instructions.

g. List of original manufacturer’s spare parts, manufacturer’s current prices, and recommended quantities to be maintained in storage.

h. Other data as required under pertinent sections of specifications.

i. Additional requirements for operating and maintenance data: Respective sections of Specifications.

E. Submittal Schedule
1. Submit tow copies of preliminary draft of proposed formats and outlines of contents prior to start of work.
a. Architect will review draft and return one copy with comments.
2. Submit one copy of complete data in final form fifteen days prior to final inspection or acceptance.
a. Copy will be returned after final inspection or acceptance, with comments.
3. Submit specified number of copies of approved data in final form 10 days after final inspection or acceptance.

F. Instruction of Owner’s Personnel.
1. Prior to final inspection or acceptance, fully instruct Owner’s designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems
2. Operating and maintenance manual shall constitute the basis of instruction.
a. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. This section applies to all Division 22 Plumbing Sections.

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:

1. Service connections to on-site utilities provided under the work of this Section or other Sections of the Specifications.

2. All piping systems for conduction of cold water, heated water, soil, waste and other fluids as shown or specified for plumbing work.

3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.

4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

5. All low voltage wiring for automatic fixtures as required.

C. All chemicals utilized on site as part of coating, sealant, and other products shall not contain any chemical that is listed as part of Proposition 65 known carcinogens that are identified by NTP, IARC, and the USEPA California Proposition 65 chemical repository contractors are not allowed to bring these chemicals on any California Intel site.

1.03 RELATED SECTIONS

A. Division 23 - HVAC

B. Division 26 - Electrical Work

1.04 DRAWINGS AND SPECIFICATIONS

A. For purposes of clearness and legibility, drawings are essentially diagrammatic and, although size and location of equipment are drawn to scale wherever possible, the Contractor shall make use of all data in all the contract documents and shall verify this information at building site.

B. Information presented on Drawings and in the Specifications is based upon latest data available during their preparation. The Drawings and Specifications are for the assistance and guidance of the Contractor and exact locations, distances, levels, etc. will be governed by the structures and the site the contractor shall accept same with this understanding.

C. The drawings indicate required size and points of termination of pipes, and suggest proper routes to conform to structure, avoid obstructions and preserve clearances. However, it is not intended that drawings indicate all necessary offsets, and it shall be the work of the Contractor to make the installation in such a manner as to conform to structure, avoid obstruction, preserve headroom and keep openings and passageways clear.

1.05 DELIVERY, STORAGE AND HANDLING

A. Contractor shall be responsible for delivery, storage, protection and placing of all equipment and materials.

B. Equipment stored and installed at the job site shall be protected from dust, water or other damage. Cover all equipment stored exposed to weather.

1.06 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer.

1.07 CODES AND SAFETY ORDERS

A. All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshall; the Safety Orders of the Division of Industrial Safety; the I.S.O. codes;

1. Latest edition of California Code of Regulations, 2019 Title 24, Part 6;

2. 2022 California Plumbing Code, Title 24, Part 5;

3. 2022 California Mechanical Code, Title 24, Part 4;

4. 2022 California Building Code, Title 24, Part 2;

5. NFPA Codes (versions as referenced in 2022 California Building Code, Title 24 Part 2, chapter 35 and 2022 California Fire Code, title 24, Part 9, chapter 80

6. Other applicable laws and regulations.

B. Nothing in the Drawings or Specifications shall be construed to permit work not conforming to these codes. Drawings and Specifications take precedence when work and materials called for exceed Code requirements.

1.08 INSTALLATION

A. Manufacturer's Instructions:

1. When specifications require that installation comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation.

2. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by specifications.

3. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.

4. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.

5. Do not proceed with work without clear understanding.

1.09 PERMITS AND FEES

A. Obtain all permits and pay all required fees for permits and/or utility services. Inspections required during the course of construction shall be arranged as required. On completion of the work furnish the owners representative with certificates of inspection.

1.10 SITE CONDITIONS

A. Assume all responsibility for damage to adjoining properties; and restore property to its original condition, should damage occur as a result of the work of this section. Contractor shall thoroughly familiarize themselves with all site conditions. Should utilities not shown on the drawings be found during excavations, promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities not shown on plans.

1.11 SUBMITTALS

A. General

1. A submittal schedule shall be issued by the contractor within 15 days of award of the contract. This schedule shall allow for timely review and approval as required by the contract documents.

2. These requirements apply only to substitutions, submittals, and shop drawings.

3. The contractor shall review all submittals prior to submission to the Architect. Submittals not reviewed by the contractor will be returned to the contractor and will not be reviewed.

4. Any deviations from specified requirements shall be clearly indicated in submittals.

5. Any errors in or omissions from submittals and any consequences of these are the responsibility of the Contractor.

6. Partial or incomplete submittals may be rejected as not complying with requirements; the Contractor shall be liable for any resultant consequences.

7. Delayed submittals may be rejected as not complying with requirements. Whether accepted or rejected, delayed submittals will not be considered justification for extension of contract time or similar relief.

8. Submittals not required or permitted by the Specifications but made at the option of the Contractor, will be returned without review unless accompanied with written valid justification.

9. Submittal items improperly included with those of another category (such as a proposed substitution included with shop drawing submittal) are not valid and will be returned without review.

10. Within 35 calendar days after award of the contract, and before fabrications and installation of any material or ordering of any materials, submit for approval one copy in PDF format of complete submittal data on specified and proposed substituted equipment and materials. Submittals shall list all materials proposed identified with drawing symbols and specific data on equipment such as arrangements, performance curves, sizes, capacity, motor locations, and other pertinent data. Check all submittals for conformance to the requirements of the Construction Documents before forwarding to the architect for each item. No consideration will be given to substitutions submitted past 35-day limit. The contractor shall be responsible for all quantities and errors and omissions of submittals. Furnish samples when requested.

11. Equipment and materials specified as part of the specifications and drawings are listed by two manufacturer's names. The first named manufacturer is the basis of design. The second named manufacturer has been determined to be an equivalent in quality or utility. The second named has not been specifically determined to conform to the first named in size, layout, electrical power, voltage, or impacts to building structure. The contractor is bound by all requirements for substitutes, as described below, for all second named manufacturers and equivalent equipment or products.

12. Each reviewed submittal will be marked to indicate review and directions as stated below.

13. Acceptance of a submittal does not relieve the Contractor of responsibility for omissions from the submittal or errors in the submittal.

B. Review

1. Submittals will be reviewed for general acceptability, not necessarily including all details. The engineers review is for general conformance with the design concept of the project and the information given in the contract documents. The contractor is solely responsible for confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating the work with that of other trades and performing all work in a safe and satisfactory manner. Corrections of comments made on this submittal during this review do not relieve contractor from compliance with the requirements of the contract documents or with its responsibilities listed herein.

    a. Proposed substitutes will be judged not only for the acceptability of the items themselves, but also how they will be used under the conditions of the particular project.

    b. Proposed substitutions will be judged also for compliance with qualifications and conditions stipulated in paragraph 1.13.

2. Each reviewed submittal will be marked to indicate review and directions as stated below.

    a. Acceptance of a substitute does not waive the specified requirements.

    b. Once a substitution is accepted, no revision or re-submittal may be made except for pressing and valid reason and after receipts of approval to do so.

C. Review Directions

1. The notation "No Exceptions Taken" indicates that no further submittal on the particular matter is required and that the Contractor may proceed with normally ensuing action. The notation may be applied to submittals on substitutions, shop drawings, record data, or operation and maintenance data. The submittal has only been reviewed for general conformance with the design concept of the Contract Documents. The contractor is responsible for the dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication process or to the means and methods of construction; coordination of the work of all trades; and performing all work in a safe and satisfactory manner. This notation does not modify the contractor's duty to comply with the contract documents.

2. The notation "Make Corrections Noted" indicates that no further submittal on the particular matter is required, but the Contractor shall make all changes or corrections noted (but no others) before proceeding with normally ensuing action. The notation may be applied to submittals on substitutions or shop drawings (but usually not record data or operation and maintenance data).

3. The notation "Amend and Resubmit" indicates that the submittal is not accepted and must be revised, resubmitted, and reviewed again. In the case of submittal on substitutions and shop drawings so noted, the Contractor shall not proceed with any normally ensuing action until the resubmittal is reviewed. The notation may be applied to submittals on substitutions, shop drawings, record data, or operation and maintenance data.

4. The notation "Rejected - See Remarks" indicates that the submittal is not accepted and that resubmittal on the same subject matter is not allowed and will not be considered. The notation will be applied normally only to submittals on substitutions (usually not on shop drawings, record data, or operation and maintenance data).

5. The notation "Returned Without Review" indicates that the submittal or item has not been considered officially because it is either not proper, valid, required, or permitted by the Specifications and has no status or effect.

1.12 SHOP DRAWINGS

A. The contractor is responsible for providing all shop drawings so that the design professional has the opportunity to determine if the contractor understands the contract documents. It is not the purpose of shop drawings to assure that the contractor is meeting the requirements of the contract documents. Review and approval of a submittal neither extends nor alters any contractual obligation.

B. Accompany all substituted equipment with shop drawings showing revised piping layouts in order to ascertain that substituted equipment does not adversely affect layout or work of others. Shop Drawings: The following conditions apply to shop drawings:

1. Shop drawings are not and do not become Contract Documents.

2. Processed shop drawing submittals and any instructions or requirements noted thereon are a part of the work, but they may not be used as a means of increasing the scope of the work.

3. If deviations, discrepancies, or conflicts between shop drawing submittals and the Contract Documents are discovered either prior to or after the submittals are processed, the Contract Document requirements shall govern.

1.13 SUBSTITUTIONS

A. Whenever any equipment, material, or process is indicated or specified by patent of proprietary name and/or name of Manufacturer, in the Specifications and/or on the Drawings, it is understood that such specification is used to facilitate the description of the material and/or process and deemed to be followed by the words "or equal" unless noted "no substitute".

B. Substitute equipment and materials shall be equal in all respects including quality, arrangement, utility, physical size, capacity, and performance to those specified. Approval of substitute material will not relieve the contractor from complying with the requirement of the Drawings and Specifications. The contractor shall be responsible and at his own expense, for any changes caused by proposed substitutions which affect other parts of his own work or the work of other contractors.

C. The submittal of a proposed substitution shall clearly establish the following:

1. The item can be transported into and installed in the intended space and in the manner shown.

2. Required connections (electrical, piping, and other) can be properly made and adjoining work can be properly accomplished.

3. The proposed substitute is similar to and of substance equal to that specified, is suited to the same use as that specified, and will perform the functions required by the design.

4. Motors for proposed substitute equipment will have the same minimum differential between motor brake horsepower and motor nameplate horsepower as the specified equipment.

5. All performance requirements shall be at least equal to the specified product or equipment including noise levels, cooling capacity, heating capacity, air flow quantity, etc.

D. By submitting a proposed substitution, the Contractor agrees to the following:

1. Will assume full responsibility for any and all modifications and necessary alterations arising from the use of the substitute item or material including all cost incurred by all other trades.

2. Will assume full responsibility for any delay in the construction schedule resulting from the use of the substitution.

3. Will prove harmless and indemnify the Owner and the Owner's design consultants from real or alleged damages that may result from the installation, use, or performance of a substitute material or product.

E. The following conditions apply to substitutions:

1. Submittals of substitutions are not and do not become part of the Contract Documents.

2. Contractor shall not order, fabricate, use, or install any substitute product or procedure unless he has received acceptance of the substitute from the Engineer.

3. Should the Contractor install any substitute product in violation of the above he shall remove it and install the specified product at his own expense.

4. The Contractor shall provide a letter stating that all the above items shall apply to all substituted products and equipment.

5. Any submittal for substituted equipment or product that does not clearly show that the substituted item is equal shall be marked rejected and no further submittal shall be allowed on the substituted item. Provide in submittal format documentation that the proposed item is exactly as specified in the contract documents.

1.14 GUARANTEE

A. Guarantee all work for one year from date of acceptance, against all defects in material, equipment and workmanship including repair of damage to any part of the premises resulting from leaks or other defects in material, equipment and workmanship. Guarantee shall be on form supplied by the owner's representative.

1.15 RECORD DRAWINGS

A. The Contractor shall dedicate one complete full set of Contract Drawings for use in recording as-built conditions.

B. The Contractor shall update the Record Drawings as often as necessary to keep them current, but, no less than weekly.

C. Mark-up Procedure: During the construction period, maintain a complete, current set of Contract Drawings and Shop Drawings uploaded and updated within the Bluebeam program for Project Record Documents purposes. Label each document “AS-BUILT RECORD”. Keep all record documents current.

D. The Contractor shall provide a complete set of AS-BUILT RECORD Drawings in AutoCAD (drawing) file format and one complete set in PDF format.

E. A reference by number to Change Order, CCD, RFI, Field Order or other such document is not acceptable as sufficient record information on any document. Do not conceal any Work until required information has been recorded.

1. The Contractor shall mark AS-BUILT Record Drawings to indicate the actual installation where the installation varies appreciably from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or record later.

    a. Revisions or any modification to details shown on the Contract Drawings

    b. Depths of various plumbing related to the main floor level.

    c. Horizontal or vertical location of underground utilities.

d. Location of internal utilities concealed in construction.

e. Points of connection for underground work.

f. Revisions to pipe routing locations.

g. Incorporate changes made by Change order, CCD, ASI, RFI etc.

h. Any new details not shown on the Contract Drawings.

2. The Contractor shall mark completely and accurately AS-BUILT Record Drawing prints of Contract Drawings or Shop Drawings, whichever is the most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on the Contract Drawings location.

3. The Contractor shall mark AS-BUILT Record Drawings within BLUEBEAM with red markings. Use other colors to distinguish between changes for different categories of Work at the same location.

4. The Contractor shall note Contractor Change Directives numbers; Bid Alternate numbers; if any, Change Order numbers, and similar identification.

F. Contractor shall prepare Record Drawings: Immediately prior to inspection for Certification of Substantial Completion of the Work, review completed marked-up AS-BUILT Record Drawings with District, Project Inspector to ensure accuracy of information. Once accuracy of information is confirmed, prepare and submit a full electronic set, professionally drafted in AutoCAD format, of as-built Contract Drawings and Shop Drawings.

1. Incorporate changes and additional information previously marked on print sets. Delete, redraw, and/or add details and notations where applicable. Identify and date each Drawing; include the printed designation “AS-BUILT RECORD DRAWING” and the date prepared in a prominent location on each Drawing.

2. Distribution: Whether or not changes and additional information were recorded, organize the original marked-up set of drawings that were maintained during the construction period within BLUEBEAM into manageable sets. The sets should be labeled with all appropriate identification, including titles, dates and other information on cover sheets and submit to Owner.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Shop drawings:

1. Make all drawings to an appropriate scale, large enough to show all pertinent aspects of the item and the method of its connection into the work.

2. Make each drawing sheet in a CAD and PDF format.

B. Grouping: Combine submittals in logical groupings; for example, submit Shop Drawings grouped by Sections of the Specifications, arranged in the specified sequence.

C. Shop Drawings: CAD and PDF format.

D. Content:

1. Shop drawings may be:

a. Drawings or diagrams prepared by the Contractor, a supplier, a manufacturer, or other.

b. Typewritten data or descriptions.

c. Manufacturer's printed brochures, descriptions, charts, instructions, or data sheets.

E. Timing: Submit all shop drawings prior to installation of any items included in submittal.

2.02 CORROSION PROOFING

A. Corrosion Proofing / U.V. Protection: Products which will be installed outdoors, exposed to the weather, exposed to moisture, or other potentially damaging conditions shall be constructed to resist the effects of such exposure.

B. Exterior casings shall have lapped or gasketed joints effectively sealed to prevent intrusion of moisture or other injurious substances.

C. Casings, pipes, or product items shall be constructed of materials which are fully resistant to harmful substances they may normally contact, or (if ferrous) shall be galvanized after fabrication, or shall be fully protected from such substances by paint or other coating in appropriate thickness or number of coats.

D. All bolts, nuts, screws, and washers shall be Galvanized unless specified to be Stainless Steel.

E. Any exposed plastic pipe must have a U.V. inhibitor or U.V. P.

2.03 MATERIAL AND EQUIPMENT

A. All material and equipment shall be new, of the type, capacity and quality specified and free from defects. All materials and equipment shall be of the same brand or manufacturer throughout for each class of material or equipment wherever possible.

2.04 ACCESS BOXES

A. For below grade valves and piping devices

1. Christy Concrete Products Company, Brooks, with galvanized steel checker plate recessed traffic lid flush with rim of box. Lids for boxes located in areas subject to vehicular traffic shall be constructed to withstand H20 live loading as defined by the American Association of State Highway Officials (16,000 pound maximum individual wheel load). Service identification shall be conspicuously welded on lid before galvanizing. For gas service, drill twelve 3/8" diameter vent holes through lid before galvanizing. Provide manufacturer's box extensions to bring box bottom three inches below bottom of valve and box top flush with finish grade.

2. Box sizes (non traffic)

Type Valve	Valve Size	Box No.
Water	2 1/2" and smaller	B-9
Water	3" and 4"	B-16

2.05 ACCESS DOORS

A. Unless specified otherwise by the Architect, provide access doors of the following type:

1. Concealed hinges, prime coated with rust-inhibitive paint, style of door to suit wall, ceiling, floor or roof construction and fire rating.

   a. Milcor Type M

   b. Milcor Type UFR, fire resistive type Underwriters Laboratory Class B, 1-1/2 hour rating meets UBC, IBCO and BOCA codes for two hour rated walls self latching with key lock, Elmdor/Stonman Type FR or equal.

2. Minimum size; 14" by 14".

3. Wall and ceiling access doors: Furnish as required for access to valves etc.; coordinate size and location to obtain access.

4. See architectural drawings for further requirements.

2.06 IDENTIFICATION

A. Equipment: Black Phenolic Plates engraved with 1/2” high white letters. The equipment shall be identified by the equipment schedule tag numbers shown on the plans (i.e. GWH-1). Coordinate identification numbers with electrical contractor to ensure that the disconnect switches and other electrical/mechanical equipment has consistent identification numbers.

2.07 MISCELLANEOUS EQUIPMENT AND MATERIALS

A. Furnish and install miscellaneous equipment and materials required for the systems described whether or not specifically shown or specified.

PART 3 - EXECUTION

3.01 ACCESSIBILITY

A. Do not install any equipment, valve, control, motor, filter, or any other device requiring maintenance or service in an inaccessible location or position. Install access doors as specified herein to render all such equipment serviceable whether specifically shown on the plans or not.

Maintain code clearance to all equipment. Coordinate location of doors with lights, etc., and locate symmetrically with same.

3.02 PREPARATION

A. Observations: Check all project drawings and specifications; report any discrepancies before proceeding with the work and in time to avoid unnecessary rework.

B. Investigation: Examine the areas, conditions, and status of other work contiguous or connecting to the work to be performed; ensure that the time of installation is coordinated with other work.

C. Interruptions of Service: Portions of this work may involve connection to existing work, facilities, or utilities ties and may require interrupting shutdowns of same. Carefully plan, coordinate and execute such work so that any interruptions will be kept to a minimum in time and occurrence. Submit request for shutdowns and make shutdowns only after receiving written approval from the Owner.

D. Other: Correct any unsatisfactory conditions that may impede proper execution of the work. Ensure that all arrangements, personnel, materials, and tools are appropriate and adequate before proceeding.

3.03 INSTALLATION

A. General:

1. Material and equipment incorporated in the work shall be used or applied only for the purpose intended or specified.

2. Install piping and all equipment that requires access with minimum vertical and horizontal clearances required by OSHA for service.

3. All pipes and all other equipment shall have 2 inches minimum clearance.

4. Do not proceed with work without clear understanding.

B. Manufacturer's Instructions:

1. When specifications require that installation comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation.

2. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by specifications.

3. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.

4. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.

5. Do not proceed with work without clear understanding.

3.04 LOCATION OF EQUIPMENT AND PIPING

A. Where job conditions do not permit the installation of piping, etc. in the location shown, it shall be brought to the engineer's attention immediately before fabrication of piping, etc. and the relocation required shall be determined in a joint conference.

B. The contractor will be held responsible for the relocating of any items installed without first obtaining the architect's or engineer's approval. Remove and relocate such items at the contractors expense as so directed by the architect or engineer.

C. Where piping is left exposed within a room, run in vertical or horizontal planes. Maintain uniform spacing between parallel lines and/or adjacent wall, floor or ceiling surfaces.

D. Horizontal runs of plumbing suspended from ceilings shall provide for maximum clearance.

E. Make minor changes in locations of equipment and piping, etc. from locations shown including minor offsets when directed by the engineer, at no additional cost to the owner.

3.05 CARE AND CLEANING

A. Clean and adjust all equipment at completion of installation to provide operating conditions satisfactory to the engineer. Remove broken, damaged or defective parts; repair or replace as directed by engineer. Remove surface material and debris resulting from this work when directed.

3.06 EQUIPMENT AND CONTROL IDENTIFICATION

A. Identify all equipment with permanently attached plates.

3.07 FLASHINGS

A. Furnish and install a waterproof flashing for each pipe or other penetration through roof or wall. Where details are not specifically delineated, submit details for review.

3.08 PAINTING

A. Painting is included under the Painting and Finishing Section. It shall be the responsibility of the Contractor to properly protect all equipment and controls during painting operations and the Contractor shall repair and/or replace any item damaged due to painting that was not properly protected.

3.09 ACCESS DOORS

A. Provide access doors to all concealed equipment, valves, controls, etc. Locate doors where shown or to be coordinated and symmetrically located with lights, diffusers, etc. Access doors furnished by the contractor shall be installed by the general contractor.

3.10 OPERATION AND MAINTENANCE DATA

A. General: Record data and operation and maintenance data are complementary. Submittal items which may be required under both categories may be included only under one submittal if a statement to that effect is included in the other submittal.

B. Quality Assurance

1. Preparation of data shall be done by personnel

a. Trained and experienced in maintenance and operation of described products.

b. Familiar with requirements of this Section.

c. Skilled as technical writer to the extent required to communicate essential data.

d. Skilled as draftsman competent to prepare required drawings.

C. Form of Submittals

1. Prepare data in form of an instructional manual for use by Owner's personnel.

a. Cover: Identify each volume with typed or printed title, "OPERATING AND MAINTENANCE INSTRUCTION". List:

b. Title of Project

c. Provide indexed tabs.

d. Identity of separate structure as applicable.

e. Identity of general subject matter covered in the manual.

2. Format

a. Electronic PDF

3. Drawings

a. Provide supporting drawings as needed.

D. Content of Manual

1. Table of contents for each volume, arranged in systematic order.

a. Contractor, name of responsible principal, address and telephone number.

b. A list of each product required to be included, indexed to content of the volume.

c. List, with each product, name, address and telephone number of:

1) Subcontractor or installer.

2) Maintenance contractor, as appropriate.

3) Identify area of responsibility of each.

4) Local source of supply for parts and replacement.

5) Identify each product by product name and other identifying symbols as set forth in Contract Documents.

2. Product Data

a. Include only those sheets which are pertinent to the specific product.

b. Annotate each sheet to:

1) Clearly identify specific product or part installed.

2) Clearly identify data applicable to installation.

3) Delete references to inapplicable information.

3. Drawings

a. Supplement product data with drawings as necessary to clearly illustrate.

1) Relations of component parts of equipment and systems.

2) Control and flow diagrams.

b. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.

c. Do not use Project Record Documents as maintenance drawings.

4. Factory Authorized Start-Up Report.

a. Provide a factory start-up report for each piece of equipment. Contractor start-up reports, unless contractor is a factory authorized representative will not be allowed.

5. Copy of each warranty, bond and service contract issued.

a. Provide information sheet for Owner's personnel, give:

1) Proper procedures in event of failure.

2) Instances which might affect validity of warranties or bonds.

E. Manual for Equipment and Systems

1. Submit electronic PDF in final form.

a. Content, for each unit of equipment and system, as appropriate.

1) Description of unit and component parts.

2) Function, normal operating characteristics, and limiting conditions.

3) Performance curves, engineering data and tests.

4) Complete nomenclature and commercial number of replaceable parts.

5) Operating procedures

6) Start-up, break-in, routing and normal operating instructions.

7) Regulation, control, stopping, shut-down and emergency instructions.

8) Summer and winter operating instructions.

9) Special operating instructions.

10) Maintenance Procedures

11) Routing operations

12) Guide to "trouble-shooting".

13) Disassembly, repair and reassembly.

14) Alignment, adjusting and checking

15) Servicing and lubrication schedule.

16) List of lubricants required.

17) Manufacturer's printed operating and maintenance instructions.

18) Description of sequence of operation by control manufacturer.

19) Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.

20) Predicted life of parts subject to wear.

21) Items recommended to be stocked as spare parts.

22) As-installed control diagrams by controls manufacturer.

23) Each contractor's coordination drawings.

24) As-installed color coded piping diagrams.

25) Charts of valve tag numbers, with location and function of each valve.

26) List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

27) Other data as required under pertinent sections of specifications.

28) Content, for each electric and electronic system, as appropriate.

29) Description of system and component parts.

30) Function, normal operating characteristics, and limiting conditions.

31) Performance curves, engineering data and tests.

32) Complete nomenclature and commercial number of replaceable parts.

33) Circuit directories of panel boards.

34) Electrical service.

35) Controls.

36) Communications

37) As-installed color coded wiring diagrams.

38) Operating procedures:

39) Routing and normal operating instructions.

40) Sequences required

41) Special operating instructions

42) Maintenance procedures

43) Routine operations

44) Guide to "trouble-shooting".

45) Disassembly, repair and reassembly.

46) Adjustment and checking.

47) Manufacturer's printed operating and maintenance instructions.

48) List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

49) Other data as required under pertinent sections of specifications.

50) Additional requirements for operating and maintenance data: Respective sections of Specifications.

F. Instruction of Owner's Personnel

1. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.

2. Operating and maintenance manual shall constitute the basis of instruction.

    a. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

3.11 RECORD DATA

A. Compilation

1. Record and collect information concurrently with construction progress and date all entries; make drawing entries within 24 hours after occurrence of change or installation requiring recording. Any concealed work covered before recording data shall be uncovered as directed or as necessary to obtain data.

    a. Record information on drawing prints using an erasable colored pencil (not ink or indelible pencil); describe clearly by note or graphic line as appropriate.

2. Locate any concealed work adequately to allow future access with reasonable ease and accuracy.

    a. Identify the plan location of all stub outs, pipe lines, etc., which are buried or concealed in the structure, whether installed where shown on the contract drawings or in a different location; show actual field dimensions from column lines, wall lines, or other permanent reference lines or points.

    b. In many cases on the contract drawings, the arrangement of conduits, pipes and similar items is shown schematically rather than as a precise scaled layout. Identify the actual location of these with horizontal and vertical dimensions. If such lines are exposed or readily accessible, omit dimensional identification.

    c. When any work is installed of size, dimension, slope, or location different from that shown on the contract drawings, note the deviation on the Project Record set. If the variations are substantial or cannot be shown clearly on the record drawings, make a new drawing and attach to the Record set.

3. On other documents

    a. Where changes occur in specifications, clearly indicate same in ink, colored pencil, or rubber stamp.

    b. Where installed equipment differs from that specified (e.g., by accepted substitution or change order) note in the specifications and include complete data on same.

3.12 OPERATION AND MAINTENANCE DATA

A. Preparations: Prior to data collection and compilation, prepare and submit in duplicate an outline of the proposed organization and content.

B. Compilation: Prepare and collect data concurrently with construction progress. Compile per submitted outline.

C. See Section 22 01 00 Operation and Maintenance of Plumbing.

END OF SECTION

22 05 23
GENERAL DUTY VALVES FOR PLUMBING
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All Division 22 Mechanical Sections.

1.02 SUMMARY

A. See Section 22 05 00

1.03 RELATED SECTIONS

A. Division 26 Electrical Work

B. Division 23 HVAC

C. Division 21 Fire Suppression

PART 2 - PRODUCTS

2.01 GENERAL

A. Furnish two tee handle operators for each size to suit all valves which are installed below grade in access boxes and which are not fitted with integral handles; hub end valves shall be used where required.
   1. Valves on systems operating over 100 psi shall be rated for 150 psi or higher as required.

B. Shut-off service, domestic water
   1. Ball Valves:
      a. Sizes 2” and smaller: NIBCO T/S/PC-585-66-LF or T/S/PC-585HP-66-LF, 600-1000 psi rated, threaded or sweat ends, full port, teflon seat, quarter turn handle with stops, two-piece, lead free, bronze body and stainless steel ball.
      b. Sizes 2-1/2 to 4”: NIBCO T-FP-600A-LF, 400 psi rated, threaded ends, full port, teflon seat, quarter turn handle with stops, two-piece dezincification resistant brass body and stainless steel ball.

C. Balancing Valve
   1. 400 psi, 250º F rating, Bell & Gossett Circuit Setter Plus, Lead Free or NIBCO T/S/PC 1805-LF
      a. Sizes 1/2" to 3": Bell & Gossett Circuit Setter Plus Balancing Valve, and all metal parts of nonferrous copper alloy; positive shut off EPDM no drip seat; hidden memory stop; threaded connections. Valve to have differential pressure read-out ports across valve seat area.

D. Check Valves: Back flow prevention service
   1. Swing check, PTFE disc, NIBCO or equal.
      a. Sizes 2" and smaller: Fig. TS/PC-413-Y-LF, lead free; bronze body, threaded or soldered ends, plug type bonnet.
      b. Size 2-1/2 and larger: Webstone 1054W Series, lead free Brass body, threaded ends.
   2. Non-slam check Type NS, Bell & Gossett, NIBCO, or equal.
      a. Sizes 2” and smaller: NIBCO T/S/PC-480-Y-LF
      b. Size 2-1/2” to 4" and larger: NIBCO W/F-910-B-LF (200 psi rated) or W/F-960-B-LF (400 psi rated); wafer or flanged ends.
      c. Cast-iron body, bronze plug, seat and guide bushing, stainless steel helical spring.
      d. Flow area through valve shall exceed cross-sectional area of specified pipe size by no less than 10%.

E. Pressure Reducing Valve
   1. Sizes ½" – 3", Watts Model 223 or equal.
      a. Bronze body, sealed cage, removable disc holder to allow disc replacement. Rated for temperatures up to 160o F. Adjustable pressure range from 25 to 75 psig with 300-psig initial pressure.
      b. Provide with a separate strainer and built in bypass feature.

F. Y-Type, Armstrong
   1. Sizes 2" and smaller: 250 psi bronze body, threaded or soldered ends, threaded screen retainer. monel screen with .045" perforations.
   2. Sizes 2 ½" and larger: 125 psi body, 125 lb. flanged or grooved ends, bolted screen retainer. monel screen with .045" perforations.

2.02 VALVE BOXES

A. Underground valve box shall be "Brooks or "Christy" marked for service.

PART 3 - EXECUTION

3.01 GENERAL

A. Valves shall be full size of line in which installed. Furnish discs suitable for service intended. All valves shall be properly packed and lubricated. Unions shall be placed adjacent to each threaded or soldered valve or equipment connection 2" and smaller. Install flanges at all valves with stems vertical wherever possible. Stems shall not be placed below horizontal.

B. Install unions adjacent to each valve and at final connection to each piece of equipment.

C. All shutoff valves in water lines shall be or ball valves, unless otherwise shown.

D. Valves shall be provided with brass identification tags indicating service controlled. Tags may be omitted on lines exposed in equipment rooms where service is obvious.

END OF SECTION

22 05 29
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All Division 23 Mechanical Sections.

1.02 SUMMARY

A. Furnish and install all plumbing work shown on the drawings, specified herein, and as required for a complete and functional installation.

B. This section includes materials and methods applicable to the work described in all Division 22 Plumbing Sections. Specific work requirements of individual Sections take precedence if in conflict with requirements of this Section.

1.03 SUBMITTALS

A. Submit proposed alternative methods of attachment for review and approval by the Engineer, prior to deviating from the requirements given below.

B. For all seismic bracing systems, submit structural calculations and details prepared and signed by the Contractors licensed engineer which include all resultant forces applied to the building structure. Do not overstress building structure. The maximum allowable loads are as indicated in 3.01 of this specification. The submittal data required does not require an analysis of the building structural numbers and their reaction to the loads of the piping. The submittal data needs to address attachment methods and shall include calculations indicating the forces that are applied to the building structure at the point of attachment. Calculations will be reviewed for compliance with design criteria, not for arithmetic.

1.04 RELATED SECTIONS

A. Division 26 Electrical Work

B. Division 23 HVAC

1.05 DRAWINGS AND SPECIFICATIONS

A. Information presented on Drawings and in the Specifications is based upon latest data available during their preparation. The Drawings and Specifications are for the assistance and guidance of the Contractor and exact locations, distances, levels, etc. will be governed by the structures and the site the contractor shall accept same with this understanding.

PART 2 - PRODUCTS

2.01 HANGERS AND SUPPORTS

A. B-Line, Superstrut, Tolco, Grinnell, or equal. Numbers are B-line.

B. Finish: Electro-Chromate or hot dipped galvanized.

C. Trapeze Suspension, for three or more pipes B-Line 1-5/8" width channel or a size suitable for load in accordance with manufacturer's published load ratings. No deflection to exceed 1/180 of a span.

D. Trapeze Supporting Rods: Diameter sufficient to support the load with a safety factor of 5. Anchor rods securely to building structure. See part three for minimum sizes.

E. Pipe Straps: copper coated for copper.

F. Size: For insulated pipe - pipe hangers sized to allow pipe insulation to pass continuously through the hanger.

G. Insulated Pipe Shields: Utilize isolated pipe supports at all insulated pipe hanger locations.

H. Isolators: Trisolator isolators at all hangers and clamps supporting un-insulated piping and tubing and at all points that pipe comes in contact with structure or other pipes.

PART 3 - EXECUTION

3.01 HANGERS AND SUPPORTS

A. General: Support all piping so that it is firmly held in place by approved iron hangers and supports and special hangers as required or as scheduled on the drawings.
   1. Rigidly fasten hose faucets, and similar items at ends of pipe branches to the building construction near point of connection.

B. Hanger Installation: On all insulated pipes, install the hangers on the outside of the pipe covering and not in contact with the pipe. Burning, welding, cutting, or drilling on any structural member may only be done if approved by the structural engineer. No valve or piece of equipment shall be used to support the weight of any pipe. Provide a hanger close to the point of change of direction of pipe run in either horizontal or vertical plane. Place supports and hangers for cast iron soil pipe as close as possible to joints; when hangers or supports do not come within one foot of a branch line fitting, install an additional hanger or support at the fitting. Protect insulation, when pipe is insulated, at each hanger with 180 degree, 18 gauge, 12 inch long G.I. Saddles.

C. Hanger rods with C-clamp type structural attachment shall be equipped with retaining straps.

D. Metallic Pipe Hanger Spacing and Rod Size Schedule:

Type of Pipe	Spacing		
Pipe Size	½” – 2”	2 ½” – 5”	6” – 8”
Steel Pipe	*8' - 0"	10' - 0"	12’ - 0"
Copper Tubing	5’ - 0”	8’ – 0”	10’ – 0”
Cast Iron	Support at 8'- 0" intervals and on each side of and within 12" of joint.		
Rod Size:	3/8”	½”	5/8”

*1/2” gas piping shall be spaced 6’ – 0” maximum

E. Anchor pipe subject to expansion or contraction in a manner permitting strains to be evenly distributed.

F. All hangers and fasteners are subject to the approval of the Structural Engineer.

G. Provide beam clamp retaining straps for all pipe supports attached to structural beams.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All Division 23 Mechanical Sections.

1.02 SUMMARY

A. See 22 05 00

1.03 RELATED SECTIONS

A. Division 26 Electrical Work

B. Division 23 HVAC

1.04 SEISMIC RESISTANCE

A. Furnish and install all systems, units, equipment, and parts to meet or exceed current applicable requirements for seismic resistance specified by codes, regulations, or agencies having jurisdiction. Include all supports, anchors, braces and other restraining devices required. All seismic restraints will meet the following site specific seismic design criteria:
   1. Seismic Design Category D, 2) Importance Factor, Ip = 1.0 except Ip = 1.5 for fire sprinklers; and 3) SDS = 1.147
   2. Seismic restraints are the responsibility of the contractor.

B. Design of seismic bracing shall meet requirements of CBC Chapter 16A.

PART 2 - PRODUCTS

2.01 BRACING SYSTEMS

A. Provide approved types as manufactured by Grinnell, Hilti or Tolco.

PART 3 - EXECUTION

3.01 SWAY BRACING

A. Provide earthquake sway bracing in accordance with CBC & ASCE 7 requirements. Install exposed bracing in a neat manner.

END OF SECTION

PART 1 - GENERAL

1.01 SEE SECTION 23 05 00

PART 2 - PRODUCTS

2.01 IDENTIFICATION

A. Equipment: Black Phenolic Plates engraved with 1/2" high white letters. The equipment shall be identified by the mechanical equipment schedule tag numbers shown on the plans (ie. GWH-1, CP-1).

2.02 PIPE IDENTIFICATION

A. Maximum spacing for identification shall be 10 feet.

B. Identification shall be provided per the following
   1. At both sides of floor or wall penetrations
   2. Adjacent to all valves and flanges
   3. Adjacent to all changes in direction
   4. To be visible from the point of normal approach

C. Indicate flow direction and type of fluid.

D. Provide plastic labels for mechanical engraving with predrilled holes for attachment hardware.
   1. Material: rigid plastic laminated impact acrylic, 2-layer, exterior grade, UV stable.
   2. Thickness: 3/16 inch minimum.
   3. Maximum label size: Length and width vary for required label content but, no less than 2 inches wide by 1 inch high.
   4. Background color:
   5. Normal power: Black, matte finish.
   6. Lettering: White, machine engraved, Futura font, 3/8 inch high, all caps.
   7. Maximum temperature: Able to withstand up to 160 degrees Fahrenheit.
   8. Fasteners: Self-tapping stainless-steel screws, except contact type permanent adhesive where screws cannot or should not penetrate substrate.
      a. Mounting screw type to be number 8 – 18 by ½ drilling or tapping style, ¼ inch hex washer head, stainless steel, or similar, appropriate for material in which sign is affixed to. A bead of silicone sealer shall be applied on back of sign and at screw locations prior to affixing sign to equipment.
      b. For signs larger than 3 inches by 3 inches, use a minimum of 4 mounting screws.

2.03 PAINTED IDENTIFICATION MATERIALS

A. Stencils: Standard fiberboard stencils, prepared for required applications with the letter sizes generally complying with recommendations of ANSI A13.1 for piping and similar applications but, not less than ¾ inch high letters for access door signs and similar operational instructions.

B. Stencil paint: Standard exterior type stenciling enamel; black, except as otherwise indicated; either brushing grade or pressurized spray can form and grade.

C. Identification paint: Standard identification enamel of colors indicated or, if not otherwise indicated for piping systems, comply with ANSI A13.1 for colors.

2.04 PIPE IDENTIFICATION

A. General requirements for Manufactured Pipe labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Self-adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing. Brady/Seton, Stranco, Rowmark or equal.

C. Small pipes: For external diameters less than 6 inches, provide full-band pipe markers, extending 360 degrees around the pipe at each location, fastened by one of the following methods:
1. Snap-on application of pre-tensioned semi-rigid plastic pipe marker.
2. Adhesive lap joint in pipe marker overlap.
3. Laminated or bonded application of pipe marker to pipe (or insulation).
4. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 3/4 inch wide; full circle at both ends of pipe marker, tape lapped 1-1/2 inches.
5. Pipe label contents: Include identification of piping service using piping system nomenclature as specified, schedules or shown, and abbreviate only as necessary for each application. Include pipe size and an arrow indicating direction of flow.
6. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
7. Lettering Size: At least 1-1/2 inches high.

D. Locate pipe markers as follows:
1. Within one foot of each valve, fitting, thermometer or gauge.
2. At each branch or riser take off.
3. At each passage through walls or ceiling construction.
4. At each passage to underground.
5. On all horizontal pipe runs every 20 feet, at least twice in each room.
6. Identify piping contents, flow direction, supply and return.
7. At wall and ceiling access panels.
8. Practible variations or changes in locations and spacing may be made with specific approval of the University's Representive to meet specific conditions.

E. Color code shall be as follows:
1. Domestic Cold Water – Green Background with White Lettering
2. Domestic Hot Water - Green Background with White Lettering
3. Domestic Hot Water Return - Yellow Background with Black Lettering
4. Lab Air – yellow background with white text
5. Lab Vacuum – White background with black text (could have checkerboard pattern)
6. Medical Air – Yellow background with black text
7. Oxygen – Green background with white text or white background with green text

F. Pipe Letter height shall be as follows:

Outside Pipe Diameter Including Insulation	Minimum Length of Label	Minimum Height of Letters
.75" – 1.25"	8"	.5"
1.5" – 2"	8"	.75"
2.5" – 6"	12"	1.25"
8" – 10"	24"	2.5"
Over 10"	32"	3.5"

PART 3 - EXECUTION

3.01 EQUIPMENT IDENTIFICATION

A. Identify all equipment with permanently attached plates.

B. Identify all controls and controllers except thermostats in finished areas.

3.02 IDENTIFICATION APPLICATIONS

A. Piping and Valves
   1. Provide identifications for all valves. Provide tags with lettered inscriptions (not numbered).

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All Division 22 sections.

1.02 SECTION INCLUDES

A. This Section describes insulation materials, methods, and applications for Plumbing Work, Special or specific details, applications, features, or methods may be described in work descriptions Sections or on the drawings.

1.03 RELATED DIVISIONS

A. 22 00 00: Plumbing

B. 23 00 00: HVAC

1.04 REFERENCES

A. Thermal insulation materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use:
   1. American Society for Testing of Materials Specifications:
      a. ASTM C 547, "Standard Specification for Mineral Fiber Pipe Insulation"
      b. ASTM C 585, "Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System)"
      c. ASTM C 1136, "Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation"

1.05 SYSTEM PERFORMANCE

A. Insulation materials furnished should meet the minimum thickness requirements of National Voluntary Consensus Standard 90.1 (Latest edition), "Energy Efficient Design of New Buildings," of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE).

B. Insulation materials furnished and installed hereunder shall meet the fire hazard requirements of applicable building codes when tested in composite form per one of the following nominally equivalent test methods:

1. American Society for Testing of Materials	ASTM E 84
2. Underwriters' Laboratories, Inc.	UL 723, CAN/ULC-S102-M88
3. National Fire Protection Association	NFPA 255

C. Molded pipe insulation shall be manufactured to meet ASTM C 585 for sizes required in the particular system.

D. Molded fibrous glass pipe insulation shall comply with the requirements of ASTM C 547.

1.06 QUALITY ASSURANCE

A. Qualifications of Installers: only a licensed firm employing installers specifically skilled and experienced in applying insulation to piping shall do Insulation work.

B. Insulation materials and accessories furnished and installed hereunder shall, where required, be accompanied by manufacturers' current submittal or data sheets showing compliance with applicable specifications listed in above.

C. Insulation materials, including all weather and vapor barrier materials, closures, hangers, supports, fitting covers, and other accessories, shall be furnished and installed in strict accordance with project drawings, plans, and specifications.

D. Insulation materials and accessories shall be installed in a workmanlike manner by skilled and experienced workers who are regularly engaged in commercial insulation work.

E. Codes and Standards:
   1. California Code of Regulations - Title 24.
   2. National Fire Protection Association - 90A
   3. Insulation applied to the exterior or interior surface of ducts, and the exterior surface of piping, shall be UL labeled with maximum flame-spread rating of 25 and maximum smoke- developed rating of 50 according to ASTME 84, when tested as a composite installation including insulation, facing materials, and adhesives as normally applied.

1.07 DELIVERY AND STORAGE OF MATERIALS

A. All of the insulation materials and accessories covered by this specification shall be delivered to the job site and stored in a safe, dry place with appropriate labels and/or other product identification.

B. The contractor shall use whatever means are necessary to protect the insulation materials and accessories before, during, and after installation. No insulation material shall be installed that has become damaged in any way.

C. If any insulation material has become wet because of transit or job site exposure to moisture or water, the contractor shall not install such material, and shall remove it from the job site. An exception may be allowed in cases where the contractor is able to demonstrate that wet insulation when fully dried out (either before installation or afterward following exposure to system operating temperatures) will provide installed performance that is equivalent in all respects to new, completely dry insulation. In such cases, consult the insulation manufacturer for technical assistance.

PART 2 - PRODUCTS

2.01 PLUMBING EQUIPMENT INSULATION – SEE 22 07 16

2.02 PLUMBING PIPING INSULATION – SEE 22 07 19

PART 3 - EXECUTION

3.01 APPLICATION/INSTALLATION

A. Use the types and thickness of insulation specified in work description Sections.

B. Apply insulations in accordance with the manufacturer's recommendations and with instructions specified herein or noted on the drawings.

C. Install insulations only after the systems, items, and equipment have been installed and tested, inspected, and accepted. Exceptions: Slip-on piping insulation and equipment insulations installed at the factory.

D. Fit insulation snugly to the item being insulated; butt all joints tightly with no voids, spaces, or thin spots.

E. Seal all joints completely; where sealing tape is used, center the tape over the joint.

F. Except where specified or necessary, do not use staples or fasteners which penetrate vapor barrier jackets or covers on cold systems or equipment; where such penetrating fasteners are

used, seal each penetration completely to maintain the vapor barrier integrity. All penetrations of the ASJ and exposed ends of insulation shall be sealed with vapor barrier mastic. Vapor seals at butt joints shall be applied at every fourth pipe section joint and at each fitting to provide isolation of water incursion.

G. Use adhesives, mastics, cements, sealants, and finishes undiluted unless specifically directed otherwise; apply per manufacturer's directions.

H. Install outdoor jacketing or other specified weather proofing or finishing on all insulations outdoors.

I. Install all indoor exposed insulation with extra care and finish neatly.

J. Follow specified methods of installation unless alternative methods are submitted and approved.

3.02 FINISHING

A. Finishes and Protection:
   1. Insure that the exterior finish of all insulation is applied and complete as specified.
   2. Make ready for painting, or painted to match existing including color where specified for paint.
   3. Install all metal jackets or protective sheathing where specified.

B. Repair, Touchup: Properly repair and touchup all dents, rips, tears, or other damage inflicted on jackets or exterior surfaces of insulation. Breaks or punctures in the vapor barrier of external insulation will not be accepted and must be repaired prior to project acceptance.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. A continuous intact vapor barrier is critical for all pipes conveying fluids at temperatures less than 75° F.

B. All insulation material shall have a mold, humidity, and erosion resistant face that has met the requirements of 2022 CMC Standard No. 6-1.

C. Insulation applied to the exterior surface of pipes located in buildings shall have a flame spread of no more than 25 and smoke developed rating of not more than 50.

D. All requirements of Section 22 07 00 apply to this section.

PART 2 - PRODUCTS

2.01 IP-1 RIGID MOLDED SECTIONAL/INDOOR CONCEALED JACKET

A. Regular shape (straight run).
   1. Molded sectional, factory fabricated of heavy density resin bonded fibrous glass, with integral factory applied all service jack of Kraft paper/aluminum foil/glass fiber reinforcement.
   2. Insulation shall have a thermal conductivity k factor of 0.23 at 75° F mean temperature and be suitable for direct application and service on piping having operating surface temperatures of -60° to 450°F.
   3. Jacket shall:
      a. Extend 1-1/2” (minimum) along one edge of longitudinal joint to form a sealing lap, which shall be faced inside with a paper protected pressure sensitive adhesive.
      b. Have a permanence rating of 0.02 perm/in. and a Beach puncture resistance of 50 units;
      c. Have an exterior suitable for painting with latex or water base paint.
   4. All insulation shall have composite (insulation, jacket, tape seal and adhesive used to adhere jacket to the insulation). Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 and UL 723, not exceeding Flame Spread of 25 and a Smoke Developed of 50. PVC fitting covers and accessories, such as adhesives, mastics, cements and cloth for fittings shall have the same component ratings.
   5. Paper laminate jackets shall be permanently flame and smoke resistant. Chemicals used for treating paper in jacket laminates shall not be water soluble and shall be unaffected by water and humidity.
   6. Fiberglass Schuler-Manville Micro-Lok, or equal.

B. Irregular shape (fittings, flanges, valves, etc.)
   1. Fibrous glass of same density, thickness, and other properties or characteristics as the adjacent regular shape insulation either pre-molded or field forged to fit the item being insulated. The pre-molded insulation shall be provided with weather protection cover.

2.02 IP-2 RIGID MOLDED SECTIONAL/OUTDOOR JACKET

A. Regular shape (straight run).
   1. Molded sectional, factory fabricated of heavy density resin bonded fibrous glass, with integral factory applied all service jacket of Kraft paper/aluminum foil/glass fiber reinforcement.
   2. Insulation shall have a thermal conductivity k factor of 0.23 at 75° F mean temperature and be suitable for direct application and service on piping having operating surface temperatures of -60° to 450°F.

3. Jacket:
4. Straight runs: .016” thick smooth sheet aluminum finish.
5. Irregular shapes:
   a. Amerisafe, factory molded aluminum covers, or
   b. Mitered aluminum sheet matching straight run jacketing, or
   c. Weather coating.
   d. Alternative jacketing: Schuler-Manville Type ML, metal jacketing system.
6. All insulation shall have composite (insulation, jacket, tape seal and adhesive used to adhere jacket to the insulation). Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 and UL 723, not exceeding Flame Spread of 25 and a Smoke Developed of 50. PVC fitting covers and accessories, such as adhesives, mastics, cements and cloth for fittings shall have the same component ratings.
7. Paper laminate jackets shall be permanently flame and smoke resistant. Chemicals used for treating paper in jacket laminates shall not be water soluble and shall be unaffected by water and humidity.
8. Fiberglass Schuler-Manville Micro-Lok, or equal.

B. Irregular shape (fittings, flanges, valves, etc.)
   1. Fibrous glass of same density, thickness, and other properties or characteristics as the adjacent regular shape insulation, either pre-molded or field forged to fit the item being insulated. The pre-molded insulation shall be provided with weather protection cover.

2.03 IP-3 ELASTOMERIC FOAM

A. Insulation shall be Elastomeric Foam Insulation. Insulation should have a maximum service temperature of 210° F, a minimum service temperature of -40°F, and a “K” factor of 028 at 75°F. The flame spread of the insulation shall be 25 or less, and smoke density shall be 50 or less when tested in accordance with ASTM E84.

B. Provide U.V. protective coating for all outdoor applications. Foster 30-64, Armacell WB Coating or K-Flex 374.

C. K-Flex R-180-FS/R-1800-FS, Armacell Armaflex or equal.

2.04 IP-4 CLOSED CELL POLYOLEFIN

A. Closed cell flexible plastic foam insulation should have a “k” factor of 0.27 or less at 75°F and water vapor permeability of .2 perm-inch or less. The manufacturer shall warrant the insulation to be able to be directly buried underground without any protective jacket.

B. Closed Cell Polyolefin in tubular form shall comply with ASTM C-534, UL 94HBF, UBC 42-1 Class I, ASTM E-84 (25/50), NFPA 255 (25/50), UL 723(25/50), FMCSS-302, CAN-ULC-S102.2-M88 (25/50) Flammability Classification, MEA#267-92-M, New York.

C. Provide U.V. protective coating for all outdoor applications.

D. IMCOA Imcolock or equal.

2.05 IP-5 RIGID MOLDED SECTIONAL/INDOOR EXPOSED JACKET

A. Regular shape (straight run)
   1. Molded sectional, factory fabricated of heavy density resin bonded fibrous glass, with integral factory applied all service jacket of Kraft paper/aluminum foil/glass fiber reinforcement.
   2. Insulation shall have a thermal conductivity k factor of 0.23 at 75°F mean temperature and be suitable for direct application and service on piping having operating surface temperatures of -60° to 450°F.
   3. Jacket:

a. Straight runs: PVC fitting covers with vapor barrier.
b. Irregular shapes:
c. Zeston, Snap-Form, factory molded PVC covers, or
d. Mitered aluminum sheet matching straight run jacketing, or
e. Alternative jacketing: Schuler-Manville Type ML, metal jacketing system.

4. All insulation shall have composite (insulation, jacket, tape seal and adhesive used to adhere jacket to the insulation). Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 and UL 723, not exceeding Flame Spread of 25 and a Smoke Developed of 50. PVC fitting covers and accessories, such as adhesives, mastics, cements and cloth for fittings shall have the same component ratings.
5. Paper laminate jackets shall be permanently flame and smoke resistant. Chemicals used for treating paper in jacket laminates shall not be water soluble and shall be unaffected by water and humidity.
6. Fiberglass Schuler-Manville Mico-Lok, or equal.

B. Irregular shape (fittings, flanges, valves, etc.)
1. Fibrous glass of same density, thickness, and other properties or characteristics as the adjacent regular shape insulation, either pre-molded or field forged to fit the item being insulated. The pre-molded insulation shall be provided with PVC protection cover.

PART 3 - EXECUTION

3.01 PIPING APPLICATIONS

Note: Where multiple systems are listed, contractor has the option to choose.

A. Condensate (CD) water piping above grade/indoors
1. Use System IP-3. (Elastomeric Foam) (R-value=6.0).
a. ¾" thickness for all sizes
2. Use System IP-4. (Closed Cell Polyolefin).
a. ¾" thickness for all sizes
3. Use System IP-1. (Rigid Molded Sectional/Indoor Jacket) with vapor barrier.
a. ¾" thickness for all sizes

B. Rain Water Leaders and Overflow Drains above grade/indoors:
1. Use System IP-3. (Elastomeric Foam) (R-value=6.0).
a. ¾" thickness for all sizes
2. Use System IP-4. (Closed Cell Polyolefin).
a. ¾" thickness for all sizes
3. Use System IP-1. (Rigid Molded Sectional/Indoor Jacket) with vapor barrier.
a. ¾" thickness for all sizes

C. Industrial Cold Water (ICW) piping above grade/indoors:
1. Use System IP-3. (Elastomeric Foam) (R-value=6.0).
a. ½" thickness for all sizes
2. Use System IP-4. (Closed Cell Polyolefin).
a. ½" thickness for all sizes
3. Use System IP-1. (Rigid Molded Sectional/Indoor Jacket) with vapor barrier.
a. ½" thickness for all sizes smaller than 1". Use 1" thickness for 1" thru 4"

D. Domestic cold water (CW) piping above grade/indoors (First 5'-0" of the cold-water pipe at the water heater) (R-value=7.7 for pipe sizes less than 1"; R-value=12.5 for pipe sizes 1" to 1-1/4";); R-value=11.0 for pipe sizes 1-1/2" to 3" & R-value=9.0 for pipe sizes 4" to 6":
1. Use System IP-3. (Elastomeric Foam).
a. ½" thickness for all sizes
2. Use System IP-4. (Closed Cell Polyolefin).
a. ½" thickness for all sizes

3. Use System IP-1. (Rigid Molded Sectional/Indoor Jacket) with vapor barrier.
   a. ½" thickness for all sizes smaller than 1". Use 1" thickness for 1" thru 4"

E. Domestic cold water (CW) piping above grade/outdoors
   1. Use System IP-2. (Rigid Molded Sectional/Outdoor Jacket) with vapor barrier. R-value=9.0
      a. 1 ½" thickness for all sizes
      b. All piping shall have heat trace installed to protect from freezing. Coordinate with the electrical contractor.

F. Domestic tempered water (TW) above grade/indoors

   1. Use System IP-1. (Rigid Molded Sectional/Indoor Jacket) with vapor barrier.
      a. For temperatures 105 to 140° F, 1" thickness for pipes smaller than 1" diameter (R-value=7.7), 1-1/2" thickness for 1" & 1-1/4" diameter pipe (R-value=12.5) and 1-1/2" thickness for 1-1/2" to 3" diameter pipe (R-value=12.5); 2" thickness for 2" diameter to 6" diameter pipe (R-value=14.0).

G. Domestic hot water (HW) above grade/indoors

   1. Use System IP-1. (Rigid Molded Sectional/Indoor Jacket) with vapor barrier.
      a. For temperatures 105 to 140° F, 1" thickness for pipes smaller than 1" diameter (R-value=7.7), 1-1/2" thickness for 1" & 1-1/4" diameter pipe (R-value=12.5) and 1-1/2" thickness for 1-1/2" to 3" diameter pipe (R-value=12.5); 2" thickness for 2" diameter to 6" diameter pipe (R-value=14.0).

H. Domestic hot water (HW) above grade/outdoors
   1. Use System IP-2. (Rigid Molded Sectional/Outdoor Jacket) with vapor barrier.
      a. All Sizes: 2" thick. R-value=14.0

3.02 INSTALLATION

A. Unless specifically excluded herein or on the drawings, insulate all parts of hot piping systems, steam piping, and condensate drains including fittings, flanges, valves, and pipe-mounted devices, except do not cover nameplates on devices.

B. Install insulation in removable sections over unions, flanges, and line components or devices requiring periodic maintenance.

C. Install insulation butted tightly to transitions such as insulated pipe shields, insulated pipe sleeves, equipment connections, etc.

D. Install insulation on piping systems so that condensation will not occur. Insulate pipe supports where hanger is directly in contact with pipe up to the point of connection to the building structure. All piping shall be supported in such a manner that neither the insulation nor the vapor/weather barrier is compromised by the hanger or the effects of the hanger. In all cases, hanger spacing shall be such that the circumferential joint may be made outside the hanger. On cold systems, vapor barrier shall be continuous, including material covered by the hanger saddle.

E. Treat equipment face piping as follows:
   1. Where piping is subject to condensation (domestic water systems, rain water leaders, condensate drains) and where installed above grade outdoors (either hot or cold systems) insulate piping completely to the point of equipment connection.
   2. Where not subject to condensation (hot systems) terminate insulation at the outlet side of the equipment shut-off valve, leaving the face piping un-insulated, 24" max, unless noted otherwise, except where exposed to outdoors.

F. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other. Butt insulation joints firmly to ensure complete, tight fit over all piping surfaces.

G. Maintain the integrity of factory-applied vapor barrier jacketing on all pipe insulation, protecting it against puncture, tears or other damage. All staples used on cold pipe insulation shall be coated with Foster 30-65 or Childers CP-34 vapor barrier coating to maintain vapor barrier integrity.

H. Rigid Molded Sectional/Jacketed:
1. Comply with applicable general instructions above.
2. Apply to all hot water and piping (except where specified or noted otherwise) installed above grade indoors and outdoors, concealed or exposed.
3. Seal all transverse joints (except at PVC fitting jackets) with circumferentially applied 3" (minimum) width tape of same material as the jacket, faced with the same adhesive as the longitudinal lap, or seal with Hardcast 4" wide Type DT490-C mineral impregnated woven fiber tape (synthetic fiber indoors, cotton fiber outdoors) using Hardcast FTA-20 activator/adhesive applied by brush or roller. Seal transverse joints at PVC fittings jackets with color matching PVC tape and vapor barrier mastic adhesive.
4. Fittings and valves shall be insulated with pre-formed fiberglass fittings, fabricated sections of fiberglass pipe insulation, blanket insulation, or insulating cement. Thickness shall be equal to adjacent pipe insulation. Finish shall be with pre-formed PVC fitting covers or as otherwise specified on contract drawings.
5. Flanges, couplings and valve bonnets shall be covered with an oversized pipe insulation section sized to provide the same insulation thickness as on the main pipe section. An oversized insulation section shall be used to form a collar between the two insulation sections with low-density blanket insulation being used to fill gaps. Jacketing shall match that used on straight pipe sections. Rough-cut ends shall be coated with suitable weather or vapor resistant mastic as dictated by the system location and service.
6. On hot systems where fittings are to be left exposed, insulation ends should be beveled away from bolts for easy access.
7. On cold systems, particular care must be given to vapor sealing the fitting cover or finish to the pipe insulation vapor barrier. All valve stems shall be sealed with caulking to allow free movement of the stem but provide a seal against moisture incursion.
8. Fit insulation terminations with Zeston, Snap Form, end cap jackets, or seal with Hardcast tape as specified above for joints.
9. On all piping (except equipment face piping) installed outdoors, install outdoor jacketing. Install aluminum sheet jacket with all joints turned down at 45º below horizontal; secure in place with non-corroding bands and/or blind rivets (do not puncture vapor barrier insulation jacket). On equipment face piping (including equipment shut-off valve) coat the insulation with ¼" thick Foster 46-50 or Childers CP-10/11 (weatherproofing) mastic reinforced with glass fabric and finished with two (2) coats of aluminum paint.
10. Penetrations
    a. Extend piping insulation without interruption through walls, floors, and similar piping penetrations, except where otherwise specified.

I. Closed Cell Polyolefin:
1. Install pre slit, pre-glued closed cell polyolefin foam pipe insulation as per manufacturer's recommendations. Seal all joints and seams with Fuse-Seal Gun or with Armstrong 520 adhesive or equal in accordance with manufacturer's written instructions. Fabricate fitting covers from polyolefin foam insulation using same procedure.
2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.
3. In the event of discrepancy, immediately notify the Architect.

4. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

J. Install insulation in accordance with insulation manufacturer's instructions and as specified.

K. Install faced insulation with facing to occupied room side. Install non-rated facing in contact with unexposed surface of finish materials.

L. Do not install insulation over recessed light fixtures.

M. Trim insulation neatly to fit spaces. Fit insulation into crevices, spaces at outlet boxes and similar penetrations.

N. Maintain continuous foil faced vapor barrier. Provide fire resistive tape at all edges or penetrations of foil faced insulation, including batt ends.

O. Where wall insulation cavity exceeds 8 feet high, provide blocking or other approved support at 8 feet on center.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 22 05 00applies to this section.

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. Service connections to existing on-site utilities, and stubs for future connection to equipment provided under the work of this Section or other Sections of the Specifications.
   2. All piping systems for conduction of cold water and heated water as shown or specified for plumbing work.
   3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.03 RELATED SECTIONS

A. Section 22 05 00 – Plumbing

B. Section 22 07 00- Insulation

C. Section 23 00 00 - Heating, Ventilating, & Air Conditioning

1.04 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer. Where possible, offset vents and pipes rising in walls, concealed above ceilings, below plates and rise through roof. Where this is not possible, install vents and pipes through plates as detailed on structural drawings.

1.05 SUBMITTALS

A. Submit a general statement of materials and methods along with manufacturer's technical data and installation instructions for all equipment, fixtures, pipe and fittings, and plumbing specialties to be installed.

B. Record Drawings: Per specification section 22 05 00 requirements.
   1. Operation and Maintenance Manuals: Per specification section 22 01 00 requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Adapters: Wrought copper male adapters shall be used wherever it is necessary to connect copper tubing to a valve or "tee" having threaded connections

2.02 PIPE PROTECTION

A. Bare copper pipe buried in the ground shall have a corrosion protective wrap of one of the following:
   1. Polyvinyl Chloride Tape: The tape shall be of a minimum thickness of 10 mils and shall be laminated with a suitable adhesive, or shall be applied with a suitable primer adhesive.

Width as recommended by the manufacturer for the pipe sizes being wrapped (4" minimum). Tape shall have continuous identification

2. 3M X-Tru-Coat, factory-applied plastic coating with additional field-applied double-layer wrapping of Scotchrap #51, 20-mil plastic tape, Trentex No. V-10, B-20, Scotchwrap No. 50 Polyvinyl chloride tape wrap, or thermofit sleeves.
3. Field Joint Cover: Tape coat, prime coat and one layer of Tape coat #20 heat-applied 62-mil tape.

PART 3 - EXECUTION

3.01 MINIMUM COVER

A. Provide trenching and backfill for buried piping and install at the following depth unless shown otherwise, cover is from top of pipe to finish grade.

B. Water - 30"

3.02 INSTALLATION OF PIPING SYSTEMS

A. General:
   1. Install exposed polished or enameled connections from fixtures or equipment with special care, showing no tool marks or threads at fittings. Inspect each piece of pipe and each fitting carefully for defective workmanship on pipe, or obstruction in pipes and fittings.
   2. Anchor pipe subject to expansion or contraction in a manner permitting strains to be evenly distributed and alleviated by swing joints or expansion loops which shall be installed as required and/or shown. Underground anchors shall consist of plates welded to pipe and encased in concrete. Anchor all domestic cold water piping at all toilet areas that have flush valve urinals or toilets.

B. Thrust Blocks: Provide concrete anchors or thrust blocks for all non-metallic water mains in the ground. Install at all changes in direction and at branch take-offs 2" and larger. Form Thrust Blocks by pouring concrete between the pipes and trench wall. They shall be adequate in size and placed to take all thrusts created by the maximum internal water pressure, as recommended by manufacturer.

C. Sleeves: Install sleeves of sufficient size to allow for free motion of pipe. Finish sleeves flush when in walls and extend a minimum of 2" above floor when passing through floor slabs and outside walls shall be caulked with oakum and mastic and made watertight. No visible leakage at sleeves will be permitted. Sleeves may be omitted for waste lines through slabs on grade and rising into a concealed space if wrapped with 1" insulation. Sleeve all pipes where pipes pass through footings with PVC pipe sleeves.

D. Fire-Barrier Penetrations: Seal pipe penetrations with fire-stopping sealant material specified in Division 7.

E. Cathodic Protection: Install insulated flanges or dielectric unions at points of connection between pipes and equipment as follows: (1) between copper or brass piping and steel or cast iron pipe. (2) Between copper or brass piping and any steel material. (3) Buried connections of copper or brass piping to steel or cast-iron piping shall be protected with a polyvinyl tape wrap 10 mils thick, extending 5' each way from connection.

F. Expansion: Install piping with sufficient offsets, loops, and/or swing joints to allow for expansion and contraction. Anchor piping at equipment to restrain movement at those locations.

G. Freeze Protection: Piping shall not be installed in a location subject to freezing conditions. All piping shall and must be installed on the “warm” side of building envelope insulation without exception. Where risers occur in outside walls, ensure that building insulation is adequate and

intact. All piping must be drainable. Provide drains required and all piping shall be run in or above heated portion of the building.

3.03 INSTALLATION OF UNDERGROUND PIPE PROTECTION

A. Apply covering to within four inches of ends for each pipe length on pre-wrapped pipe.

B. Clean all piping of all loose scale, rust, dirt, oil and grease before wrapping. Wire brush as required, use of a quality solvent for removal of oil and grease.

C. Field Joints and Fittings: Joints shall be wrapped to provide at least two full thickness' over the joint and to extend a minimum of 4" over the adjacent pipe covering. Tightly apply the tapes with a one-half minimum uniform lap, free from wrinkles and voids. Experienced operators shall wrap sections of piping to be wrapped that exceed 50' of continuous lengths with an approved wrapping machine.

D. Piping Protective Covering Testing. After applying covering, and before back filling. Test all protective covering using a Tinker and Rasor Holiday Detector, obtain certification upon completion of test. Correct any discovered faults in coating and repeat test until system is proved free of all faults.

E. Inspection: Damaged or defective wraps shall be repaired as directed. Do not cover wrapped pipe until the inspection and necessary repairs have been completed and approved by the Architect.

F. Defect Repair: Tape coat TC Cold prime and double wrap of Tape coat CT cold-applied tape spirally wrapped with half-tape width overlap of preceding layer.

G. Covering: Place all backfill carefully in order not to damage the wrap. No rocks or sharp edges shall be back filled against the wrap.

3.04 EXCAVATING AND TRENCHING

A. Perform all excavations as required for the installation of the work included under this section, including shoring of earth banks to prevent cave-ins and to protect workmen and equipment. Restore all surfaces, roadways, walks, curb, walls, existing underground installations, etc. damaged or cut as a result of the excavations to their original conditions in a manner approved by the architect. Excavations shall be ample in size to permit pipes or equipment to be laid at elevations intended, and to permit ample space for caulking and joining and compacting backfill around pipe. Maintain all warning signs, barricades, flares and red signal lanterns as required by the Safety Orders of the Division of Industrial Safety and local ordinances. Perform all pumping required to remove all water from trenches during installation of piping and backfilling.

B. Stop machine excavation for pipe trenches in solid ground, several inches above required grade, so that a firm and uniform bearing throughout entire length of pipe is provided. In lieu of above hand excavation on bottom of trench, the contractor may excavate to a depth one quarter of the nominal diameter of pipe, but in no case excavate less than 6" below required grade line, and place a bed of sand or granular soil, properly compacted to provide a uniform grade and to provide a firm support for pipe throughout its entire length. When pipe or underground conduit with insulation or protective coating is to be placed in the trench, clean sand only shall be used for bedding the pipe or conduit.

3.05 BACKFILLING

A. No backfilling operations shall begin until the required tests and inspections have been made and the Architect has given approval for backfilling. Should any of the work be enclosed or covered up before it has been approved, contractor shall, at his expenses, uncover the work. After it has been inspected, tested and approved, he shall make all repairs necessary to restore the work of the other contractor to the condition in which it was found at the time of uncovering.

Insulated pipe and pipe with protective coating shall be backfilled with clean, concrete grade sand for a minimum distance of 12" above the top of the pipe. Compact sand backfill by flooding or jetting. Protect pipe from uplift during jetting operation.

B. Except under existing paved areas, walks, roads, or similar surfaces, and in cases where rock is encountered, backfill more than 12" above the top of the pipe shall be made using suitable excavated material or other approved material as necessary. The backfill shall be placed in 6" layers, measured before compaction, and tamped either by hand or machine.

C. Machine tamping of backfill for excavations under existing or proposed pavement, walks, roads or similar surfaces, and under new slabs on grade, shall be made in accordance with the specifications. Backfill for excavation under pavement, slabs, walks, roads and similar surfaces shall be compacted as specified in the specifications. Surface work shall be replaced to match the existing work. Replace or repair to its original condition all sod, concrete, or other materials disturbed by the trenching or backfilling operation. Remove and dispose of all excess material.

3.06 CROSSING EXISTING UTILITIES

A. Extreme care shall be exercised during excavation across existing utility lines particularly gas and electrical lines for trenching to install new utility lines. Hand excavate all trenches in the proximity of existing lines so as not to damage or cut into them.

B. All existing utility and service lines shall be located by hand excavation prior to trenching with equipment.

C. The location, depth and invert elevations of all existing utilities to be crossed or to which connecting shall be determined before performing any other work or ordering any materials for the project.

3.07 PROTECTION FROM DAMAGE

A. Protect the work and materials of other trades as well as the Mechanical work and material from damage during construction. Cap and/or plug all piping at the completion of roughing-in and before backfilling. Cap all piping at the close of each day.

3.08 FINAL CONNECTIONS

A. Plumbing Contractor shall verify location of and make all final connections to site utilities, extend to buildings and furnish and install valves, valve boxes, pressure reducing valves, shut-off cocks, cleanouts, pressure regulating valves, adapters and other accessories shown and/or required to connect.

3.09 STUBS

A. All stubs for future connection shall be installed within 12” of location shown. Cap or plug stub at depth specified for service.

B. Install valves, valve boxes, regulators, and other accessories or devices specified and cap stub.

C. Furnish and install a #4 Rebar marker pin driven 24” into ground with a white rebar cap 12” above grade at each stub location. Provide brass identification tag.

3.10 FIELD QUALITY CONTROL

A. Water Sterilization
   1. Contractor shall provide all ports, valves and isolation of new piping for testing.
   2. After installation and before installing valves or making final connections, flush or purge piping systems clean of foreign substances; use water to flush piping conducting liquids and compressed air to clear piping conducting gases.

3. After completing cold and heated water systems, disinfect in accordance with current requirements of U.S. Public Health Department. Use 50 parts per million of chlorine with 8 hour retention and flush to leave a residual no greater than supply source. Submit written certification of disinfecting completion by independent laboratory. After sterilization take at least one (1) water sample per floor and have analyzed for "E-coli" to submit test results.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 22 11 00, Facility Water Distribution applies to this section.

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. Service connections to existing on-site utilities, and stubs for future connection to equipment provided under the work of this Section or other Sections of the Specifications.
   2. All piping systems for conduction of cold water, heated water, soil, waste, fuel gas, and other fluids or gases as shown or specified for plumbing work.
   3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.
   5. **No Pro-Press or similar copper pipe joining method will be accepted.**

1.03 RELATED SECTIONS

A. Section 22 05 00 - Plumbing

B. Section 22 07 00 - Insulation

C. Section 23 00 00 - Heating, Ventilating, & Air Conditioning

1.04 QUALITY ASSURANCE

A. All plumbing fixtures and equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.

1.05 REFERENCES

A. Pipes and Tubes **(See 2.03 for application of pipe to be used)**
   1. Hard Copper Tube: ASTM B88, Types K, L and M, water tube, drawn temper.
   2. Soft Copper Tube: ASTM B88, Types K and L, water tube, annealed temper.

B. Fittings
   1. Wrought-Copper, Solder-Joint Pressure Fittings: ANSI B16.22.
   2. Cast-Copper-Alloy, Solder-Joint Pressure Fittings: ASME B16.18, ASTM B584.
   3. Cast-Copper-Alloy, Threaded -Joint Pressure Fittings: ANSI/ASME B16.15, ASTM B584.
   4. Bronze Flanges: ASME B16.24, Classes 150 and 300.
   5. Copper Unions: ASME B16.18, cast-copper-alloy body, hexagonal stock, with ball-and-socket joint, metal-to-metal seating surfaces, and solder-joint, threaded, or solder-joint and threaded ends. Threads complying with ASME B1.20.1.

C. Joining Materials
   1. Solder Filler Metal: ASTM B32, alloys to suit system requirements.
   2. Brazing Filler Metals: AWS A5.8, alloys to suit system requirements.

1.06 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer. Where possible, offset vents and pipes rising in walls, concealed above ceilings, below plates and rise through roof. Where this is not possible, install vents and pipes through plates as detailed on structural drawings.

1.07 SUBMITTALS

A. Submit a general statement of materials and methods along with manufacturer's technical data and installation instructions for all equipment, fixtures, pipe and fittings, and plumbing specialties to be installed.

B. Record Drawings: Per specification section 22 05 00 requirements.

C. Operation and Maintenance Manuals: Per specification section 22 01 00 requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Adapters: Wrought copper male adapters shall be used wherever it is necessary to connect copper tubing to a valve or "tee" having threaded connections.

2.02 PIPE, FITTING, AND JOINING MATERIALS

A. Copper Water Pipe **(See 2.03 for application of pipe to be used)**
   1. Pipe: Above grade, Type M, L, or K hard drawn copper tubing per ASTM B-88, plain ends.
   2. Fittings: Solder type, wrought copper per ANSI Standard B16.22 or cast red bronze per ANSI Standard B16.18. Do not use T-drill.
   3. Unions: Solder type, cast red bronze.
   4. Joining Materials/Methods
      a. Canfield, Silvabrite or equal lead free solder with a non-corrosive water based flux.
      b. 15% silver brazing alloy, water based silver brazing flux. Silver content must be clearly identified on the brazing rod.
   5. Connections
      a. Copper to dissimilar metals: dielectric connector.
      b. Copper to threaded connections: cast brass adapters.

2.03 PIPE AND FITTING APPLICATIONS

A. Inside Building (to 5'-0" outside building line).
   1. Water Piping: Above grade, Type L drawn temper, joining methods, soldered connections, below grade, Type K drawn temper copper tubing, joining methods, brazed connections.
   2. **Plastic pipe and fittings shall not be used inside of buildings.**

B. Outside Building (from 5'-0" outside building line)
   1. Domestic Water
      a. 1 ½" and smaller, Schedule 40 PVC, solvent welded, pipe and Schedule 80 fittings.
      b. 2" & 2 ½", Schedule 80 PVC, solvent welded, pipe and Schedule 80 fittings.
      c. 3" and larger, Johns Mansville, C-900, Blue Brut, PVC pipe and fittings, Class 200, installed in strict accordance with manufacturer's published instructions.

PART 3 - EXECUTION

3.01 PIPING

A. Provide trenching and backfill for buried piping and install with the following minimum cover unless shown otherwise, cover is from top of pipe to finish grade.
   1. Water - 30"

B. Water piping
   1. On buried lines larger than 2-1/2” size, install concrete thrust blocks between pipe and undisturbed soil of trench wall at each change in direction (tees and ells) for lateral support.
   2. Where laid in same trench with sewer line, install on trench shelf at least 12" above top of sewer pipe.
   3. Where subject to freezing conditions water pipe shall be buried at least 30 inches deep or deeper to protect the water from freezing.
   4. Run water piping generally level. No piping shall be installed to cause an unusual noise from the flow of water under normal conditions.
   5. Locate water hammer arrestors at all flush valve water branches to a single fixture and where two or more fixtures are located in a row or battery.
   6. Adapters: Wrought copper male adapters shall be used wherever it is necessary to connect copper tubing to a valve or tee having threaded connections.
   7. Install Bare Metal Pipe Isolators: Stoneman "Trisolator", Superstrut "Cush-a-strip", Unistrut on all hot and cold domestic water piping.

3.02 FIELD QUALITY CONTROL

A. Water Sterilization
   1. Contractor shall provide all ports, valves and isolation of new piping for testing.
   2. After installation and before installing valves or making final connections, flush or purge piping systems clean of foreign substances; use water to flush piping conducting liquids and compressed air to clear piping conducting gases.
   3. After completing cold and heated water systems, disinfect in accordance with current requirements of U.S. Public Health Department. Use 50 parts per million of chlorine with 8 hour retention and flush to leave a residual no greater than supply source. Submit written certification of disinfecting completion by independent laboratory. After sterilization take at lease one (1) water sample per floor and have analyzed for "E-coli" to submit test results.

3.03 PIPING TESTING: TESTING CRITERIA

System	Medium	Pressure	Duration
Water	Water	150 psig	4 hours

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 22 05 00 applies to this section.

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. Service connections to existing on-site utilities, and stubs for future connection to equipment provided under the work of this Section or other Sections of the Specifications.
   2. All piping systems for conduction of water as shown or specified for plumbing work.
   3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.03 RELATED SECTIONS

A. Section 22 05 00 - Plumbing

B. Section 22 07 00 - Insulation

C. Section 23 00 00 - Heating, Ventilating, & Air Conditioning

PART 2 - PRODUCTS

2.01 PIPING ACCESSORIES

A. Unions
   1. Shall have the same pressure rating as pipe fittings.

B. Check Valves
   1. Swing check, Class 125 Buna-N Disc, NIBCO or equal.
      a. Sizes 2 inch and smaller: Fig. T-413; bronze body, threaded ends, plug type bonnet.
      b. Size 2-1/2 inch and larger: Fig. F-968: iron body, brass mounted, flanged ends, bolted bonnet.

C. Strainers
   1. Watts, Armstrong, Sarco, Arco, Sizes 4” and smaller, Watts Series 777, 400 psi WOG bronze body, threaded or soldered ends, 20 mesh stainless steel screen (up to 2 ½”), 3/64” perforated stainless steel screen (3”), 1/8” perforated stainless steel screen (4”), solid threaded screen retainer cap with gasket.
   2. Reduced Pressure Back Flow Preventers
   3. 3/4” to 2”, Watts Series 909, provide bronze strainer, resilient seated full port bronze ball valves, air gap fitting and drain line, replaceable bronze seats.
   4. 2-1/2” to 10”, Watts Series 909, provide bronze strainer, non-rising stem resilient seated gate valve shut-offs, air gap fitting and drain line, replaceable bronze seats.

D. Water Pressure Reducing Valves
   1. 3/4” to 3”, Watts Series 223, provide y-strainer, replaceable stainless steel seat, bronze body construction, water tight sealed cage assembly, removable disc holder, low pressure model adjustable from 10-35 psi., high pressure model adjustable from 50 to 145 psi (1/2” to 1”), 50 to 120 psi (1 ¼”), and 50 to 95 (1 ½” to 3”).

E. Piping Penetration Auxiliaries
   1. Sleeves Below Slab or Grade: Metraseal model MS or equal with schedule 80 PVC sleeve. The seal shall be capable of withstanding a hydrostatic pressure of 20 psig. The seal shall be constructed of synthetic rubber with heavy-duty plastic pressure plates. All bolts and nuts shall be constructed of stainless steel.
   2. Escutcheons: Polished chrome plated brass or painted metal.

PART 3 - EXECUTION

3.01 EQUIPMENT

A. Install equipment in accordance with the manufacturer's installation instructions, as specified herein, and as detailed on the drawings.

3.02 EXTERIOR HOSE BIBBS

A. Install at 18 inches above finished grade and be non-freeze type.

3.03 VALVES, UNIONS AND FLANGES

A. Valves shall be full size of line in which installed. Furnish discs suitable for service intended. All valves shall be properly packed and lubricated. Unions shall be placed adjacent to each threaded or soldered valve or equipment connection 2" and smaller. Install flanges at all valves with stems vertical wherever possible. Stems shall not be placed below horizontal.

B. Install unions adjacent to each valve and at final connection to each piece of equipment.

C. Valves shall be provided with brass identification tags indicating service controlled. Tags may be omitted on lines exposed in equipment rooms where service is obvious.

D. Cathodic Protection: Install insulated flanges or dielectric unions at points of connection between pipes and equipment as follows: (1) between copper or brass piping and steel or cast iron pipe. (2) Between copper or brass piping and any steel material. (3) Buried connections of copper or brass piping to steel or cast-iron piping shall be protected with a polyvinyl tape wrap 10 mils thick, extending 5' each way from connection.

E. Expansion: Install piping with sufficient offsets, loops, and/or swing-joints to allow for expansion and contraction. Anchor piping at equipment to restrain movement at those locations.

F. Freeze Protection: Piping shall not be installed in a location subject to freezing conditions. All piping shall and must be installed on the "warm" side of building envelope insulation without exception. Where risers occur in outside walls, ensure that building insulation is adequate and intact. All piping must be drainable; provide drains required. All piping shall be run in or above heated portion of the building.

3.04 FIELD QUALITY CONTROL

A. Piping Testing: Testing Criteria

System	Medium	Pressure	Duration
Water	Water	150 psig	4 hours

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All Division 21 sections.

1.02 DESCRIPTION

A. Section includes:

B. Provide all equipment, and accessories for the HVAC systems as specified herein; place in satisfactory operation.

C. Noise and vibration isolation requirements as specified in Section 25 05 48 - Noise and Vibration.

D. Controls and Instrumentation as specified herein.

1.03 QUALITY ASSURANCE

A. Welding Qualifications: Welders shall be certified in accordance with American Welding Society "Standard Qualification Procedure".

PART 2 - PRODUCTS

2.01 IN-LINE CENTRIFUGAL PUMPS

A. Shall be Bell & Gossett, Paco, Taco, in-line single-stage, single suction, close coupled bronze fitted pumps furnished complete with motor.

B. Pump housing shall have gauge and drain tappings and shall be of Class 30 cast iron construction suitable for servicing the internal parts without disturbing the connecting piping.

C. Impeller shall be bronze, enclosed, statically and dynamically balanced, and fitted to shaft with a key and locked in place.

D. Pump shall have internally flushed mechanical seal with a ceramic seal seat and carbon seal ring fitted with a bronze shaft sleeve that shall completely cover the wetted area under the seal

E. See schedule on drawings for size, capacity and duty.

F. Motors shall have heavy duty grease lubricated ball bearings. All motors over 1 HP shall be NEMA Premium efficiency, Century Model E Plus III, Reliance XE, or equal, 1.15 service factor, single speed. Motor shall be of the enclosure type called for on the plans.. Motors shall be able to overcome starting load inertia as well as accelerating the load to rated speed under both rated and at 10 percent reduced voltage conditions during starting without excessive heating.

G. See schedule for power requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Lubrication: Where equipment includes poorly accessible lubrication points, provide tubing extensions to readily accessible points and terminate with appropriate lubrication fitting.

B. Miscellaneous: Install belt and coupling guards and other miscellaneous items as required.

C. All pump bases shall be grouted.

END OF SECTION

22 13 00
FACILITY SANITARY SEWERAGE
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 22 05 00 applies to this section.

1.02 SUMMARY

A. This section includes plumbing waste pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. Service connections to existing on-site utilities, and stubs for future connection to equipment provided under the work of this Section or other Sections of the Specifications.
   2. All piping systems for conduction of soil, waste, and other fluids or gases as shown or specified for plumbing work.
   3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.03 RELATED SECTIONS

A. Section 22 05 00 - Plumbing

B. Section 22 07 00 - Insulation

C. Section 23 00 00 - Heating, Ventilating, & Air Conditioning

1.04 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer. Where possible, offset vents and pipes rising in walls, concealed above ceilings, below plates and rise through roof. Where this is not possible, install vents and pipes through plates as detailed on structural drawings.

1.05 SUBMITTALS

A. Submit a general statement of materials and methods along with manufacturer's technical data and installation instructions for all equipment, fixtures, pipe and fittings, and plumbing specialties to be installed.

B. Record Drawings: Per specification section 22 05 00 requirements.
   1. Operation and Maintenance Manuals: Per specification section 22 01 00 requirements.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 MINIMUM COVER

A. Provide trenching and backfill for buried piping and install with the following unless shown otherwise, cover is from top of pipe to finish grade. Refer to plumbing plans for invert elevations.

3.02 INSTALLATION OF PIPING SYSTEMS

A. General
   1. Sleeves: Install sleeves of sufficient size to allow for free motion of pipe. Finish sleeves flush when in walls and extend a minimum of 2" above floor when passing through floor slabs and outside walls shall be caulked with oakum and mastic and made watertight. No visible leakage at sleeves will be permitted. Sleeves may be omitted for waste lines through slabs on grade and rising into a concealed space if wrapped with 1" insulation. Sleeve all pipes where pipes pass through footings with PVC pipe sleeves.
   2. Fire-Barrier Penetrations: Seal pipe penetrations with fire-stopping sealant material specified in Division 7.
   3. Expansion: Install piping with sufficient offsets, loops, and/or swing joints to allow for expansion and contraction. Anchor piping at equipment to restrain movement at those locations.

3.03 EXCAVATING AND TRENCHING

A. Perform all excavations as required for the installation of the work included under this section, including shoring of earth banks to prevent cave-ins and to protect workmen and equipment. Restore all surfaces, roadways, walks, curb, walls, existing underground installations, etc. damaged or cut as a result of the excavations to their original conditions in a manner approved by the architect. Excavations shall be ample in size to permit pipes or equipment to be laid at elevations intended, and to permit ample space for caulking and joining and compacting backfill around pipe. Maintain all warning signs, barricades, flares and red signal lanterns as required by the Safety Orders of the Division of Industrial Safety and local ordinances. Perform all pumping required to remove all water from trenches during installation of piping and backfilling.

B. Stop machine excavation for pipe trenches in solid ground, several inches above required grade, so that a firm and uniform bearing throughout entire length of pipe is provided. In lieu of above hand excavation on bottom of trench, the contractor may excavate to a depth one quarter of the nominal diameter of pipe, but in no case excavate less than 6" below required grade line, and place a bed of sand or granular soil, properly compacted to provide a uniform grade and to provide a firm support for pipe throughout its entire length. When pipe or underground conduit with insulation or protective coating is to be placed in the trench, clean sand only shall be used for bedding the pipe or conduit.

3.04 BACKFILLING

A. No backfilling operations shall begin until the required tests and inspections have been made and the Architect has given approval for backfilling. Should any of the work be enclosed or covered up before it has been approved, contractor shall, at his expenses, uncover the work. After it has been inspected, tested and approved, he shall make all repairs necessary to restore the work of the other contractor to the condition in which it was found at the time of uncovering. Insulated pipe and pipe with protective coating shall be backfilled with clean, concrete grade sand for a minimum distance of 12" above the top of the pipe. Compact sand backfill by flooding or jetting. Protect pipe from uplift during jetting operation.

B. Except under existing paved areas, walks, roads, or similar surfaces, and in cases where rock is encountered, backfill more than 12" above the top of the pipe shall be made using suitable excavated material or other approved material as necessary. The backfill shall be placed in 6" layers, measured before compaction, and tamped either by hand or machine.

C. Machine tamping of backfill for excavations under existing or proposed pavement, walks, roads or similar surfaces, and under new slabs on grade, shall be made in accordance with the specifications. Backfill for excavation under pavement, slabs, walks, roads and similar surfaces shall be compacted as specified in the specifications. Surface work shall be replaced to match

the existing work. Replace or repair to its original condition all sod, concrete, or other materials disturbed by the trenching or backfilling operation. Remove and dispose of all excess material.

3.05 CROSSING EXISTING UTILITIES

A. Extreme care shall be exercised during excavation across existing utility lines particularly gas and electrical lines for trenching to install new utility lines. Hand excavate all trenches in the proximity of existing lines so as not to damage or cut into them.

B. All existing utility and service lines shall be located by hand excavation prior to trenching with equipment.

C. The location, depth and invert elevations of all existing utilities to be crossed or to which connecting shall be determined before performing any other work or ordering any materials for the project.

3.06 PROTECTION FROM DAMAGE

A. Protect the work and materials of other trades as well as the Mechanical work and material from damage during construction. Cap and/or plug all piping at the completion of roughing-in and before backfilling. Cap all piping at the close of each day.

3.07 FINAL CONNECTIONS

A. Plumbing Contractor shall verify location of and make all final connections to site utilities.

3.08 STUBS

A. All stubs for future connection shall be installed within 12” of location shown. Cap or plug stub at depth specified for service.

B. Furnish and install a #4 Rebar marker pin driven 24” into ground with a white rebar cap 12” above grade at each stub location. Provide brass identification tag.

3.09 PIPING TESTING: TESTING CRITERIA

System	Medium	Pressure	Duration
Drainage and Vent	Water	10 feet water	15 minutes

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 22 05 00 applies to this section.

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. Service connections to existing on-site utilities, and stubs for future connection to equipment provided under the work of this Section or other Sections of the Specifications.
   2. All piping systems for conduction of soil, waste, and other fluids or gases as shown or specified for plumbing work.
   3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.03 RELATED SECTIONS

A. Section 22 05 00 - Plumbing

B. Section 22 07 00 - Insulation

C. Section 23 00 00 - Heating, Ventilating, & Air Conditioning

1.04 QUALITY ASSURANCE

A. All plumbing fixtures and equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.

1.05 REFERENCES

A. Pipes and Tubes
   1. Steel Pipe: ASTM A53, Type S, Grade A, Schedule 40, seamless, black or galvanized, plain ends.
   2. Copper Drainage Tube: ASTM B306, Type DWV, drawn temper.
   3. Hubless, Cast-Iron Soil Pipe: CISPI 301.
   4. Polypropylene Pipe: ASTM D4101, NSF listed, Schedule 40.
   5. Polyethylene Pipe: ASTM D2513 produced to APWA/ULCC standards for color coding of gas distribution systems.

B. Fittings
   1. Wrought-Copper, Solder-Joint Pressure Fittings: ANSI B16.22.
   2. Cast-Copper-Alloy, Solder-Joint Pressure Fittings: ASME B16.18, ASTM B584.
   3. Cast-Copper-Alloy, Threaded -Joint Pressure Fittings: ANSI/ASME B16.15, ASTM B584.
   4. Bronze Flanges: ASME B16.24, Classes 150 and 300.
   5. Copper Unions: ASME B16.18, cast-copper-alloy body, hexagonal stock, with ball-and-socket joint, metal-to-metal seating surfaces, and solder-joint, threaded, or solder-joint and threaded ends. Threads complying with ASME B1.20.1.
   6. Steel Pipe Nipples: ASTM A733, made of ASTM A53 or ASTM A106, Schedule 40, seamless, galvanized, carbon-steel pipe.

7. Malleable-Iron Unions: ASME B16.39, Classes 150 and 300; hexagonal stock; with ball-and-socket joint; metal-to-metal bronze seating surfaces; and female threaded ends with threads complying with ASME B1.20.1.
8. Galvanized, Cast-Iron Threaded Fittings: ASME B16.4, Classes 125 and 250; standard pattern; with threads complying with ASME B1.20.1.
9. Wrought-Copper, Solder-Joint, DWV Drainage Fittings: ASME B16.29.
10. Cast-Copper-Alloy, Solder-Joint, DWV Drainage Fittings: ASME B16.23.
11. Plastic Pipe Sleeves: ASTM C564 rubber for cast-iron soil pipe and ASTM F477 elastomeric seal.
12. Polypropylene Plastic, NSF listed, plain and grooved ends.
13. Polyethylene Plastic: ASTM D2683 and D3261,socket or butt fusion fittings.

C. Joining Materials
1. CISPI Couplings for Hubless, Cast-Iron Soil Pipe and Fittings: CISPI 310, having ASTM C564 neoprene sealing sleeve, with 300 series stainless-steel, corrugated shield-and-clamp assembly.
2. Solder Filler Metal: ASTM B32, alloys to suit system requirements.
3. Brazing Filler Metals: AWS A5.8, alloys to suit system requirements.
4. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

D. Plastic Pipe Seals: ASTMF477, elastomeric gasket.

1.06 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer. Where possible, offset vents and pipes rising in walls, concealed above ceilings, below plates and rise through roof. Where this is not possible, install vents and pipes through plates as detailed on structural drawings.

1.07 SUBMITTALS

A. Submit a general statement of materials and methods along with manufacturer's technical data and installation instructions for all equipment, fixtures, pipe and fittings, and plumbing specialties to be installed.

B. Record Drawings: Per specification section 22 05 00 requirements.

C. Operation and Maintenance Manuals: Per specification section 22 05 00 requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Adapters: Wrought copper male adapters shall be used wherever it is necessary to connect copper tubing to a valve or "tee" having threaded connections.

2.02 PIPE, FITTING, AND JOINING MATERIALS

A. Hubless Cast-Iron/Sleeve-Clamped Joints
1. Pipe: Service weight cast iron, hubless, with hot coal tar pitch coating inside and outside, per Cast-Iron Soil Pipe Institute Standard 301.
2. Fittings: Hubless type, Tyler No-Hub Coupling, each matched with pipe and identified with the manufacturer's name or trademark, the Cast-Iron Soil Pipe Institute symbol, and the pipe size. Those for connections to other types of piping - approved cast-iron adapter/transition type.
3. Joining Materials/Methods: Husky Series 4000 (Blue shield) or Mission Heavy Weight Orange shield), 4-band, on pipes over 3", neoprene sleeve type conforming to ASTM C564

specifically designed for connecting hubless cast-iron pipe, coated with manufacturer's recommended lubricant before installing; four type 304 stainless steel band clamps with a type 305 stainless steel worm drive screw, and corrugated shield over sleeve; use standard, 4-band, no-hub couplings on 3" and less.
        1) "Tyler, Standard", two band stainless steel coupling, Stainless Steel screw housing, Stainless Steel shield, shall be used for vent piping and sizes and is allowed for sanitary waste of size 2" of less.
    4. Wedge lock joints at rainwater leaders to underground drain.
    5. Cleanout Plugs: Use Armite Joint Seal compound No. 411, or Enterprise Commercial Thread-Seal.

B. Steel/Cast-Iron Threaded Drainage Fittings
    1. Pipe: Galvanized steel per ASTM A-120, threaded ends, standard weight Schedule 40.
    2. Fittings: Cast-iron threaded drainage type, black coated, with recessed shoulder and pitched threads, per ASTM A-126, Class B.

C. Copper DWV Pipe: DWV drainage tubing per ASTM B-306-86, plain ends for pipe 1 ½" and larger.
    1. Fittings shall be solder type, wrought copper drainage fittings per ANSI Standard B16.29-86.
    2. Joining Materials/Methods: Canfield, Silvabrite or equal lead free solder with a non-corrosive water based flux.
    3. Connections:
        a. Copper to dissimilar metals: dielectric connector.
        b. Copper to threaded connections: cast brass adapters.

D. Steel/Threaded Fittings
    1. Pipe: Black or galvanized steel per ASTM A-53 seamless, threaded ends, standard weight Schedule 40 or Schedule 80.
    2. Fittings
        a. Black or galvanized (to match pipe) banded malleable iron, threaded, ASTM A-197, 150 lb. standard or 300 lb. extra heavy per ANSI Standard B16.3 (to match pipe schedule).
        b. Black or galvanized (to match pipe) banded cast iron, threaded, per ASTM A-126 Class B, 125 lb. standard or 250 lb. extra heavy per ANSI Standard B16.4 (to match pipe schedule).
    3. Unions: AAR 300 lb. malleable iron, black or galvanized (to match pipe).
    4. Joining Materials/Methods
        a. Rectorseal or pure lead and graphite thread lubricant.
        b. Permacel, P-412 1/2" wide teflon pipe joint sealant.

E. Polypropylene plastic fusion welded joints

    1. Pipe: Schedule 40, plain ends.
    2. Fittings: Polypropylene fusion welded type.
    3. Joining Materials/Methods: Fusion welded, using fusion welding fittings, and the control unit meeting the following requirements.
        a. Microprocessor controlled
        b. Water proof
        c. Input and output voltage sensors
        d. Ambient temperature sensors
        e. Audible alarms to indicate cycle interruptions and completion of joining process.
    4. Connections: Utilize only adapters supplied by the same manufacturer of the pipe.

F. Polypropylene plastic mechanical joints

1. Pipe: Schedule 40, grooved ends.
2. Fittings: Polypropylene type designed to lock into a machined groove on the mating pipe.
3. Joining Materials/Methods: Mechanical joint utilizing fittings and pipe supplied by the same manufacturer.
4. Connections: Utilize only adapters supplied by the same manufacturer of the pipe.

G. Polyethylene plastic butt fusion welded joints

1. Pipe: Schedule 40, plain ends.
   a. Fittings: Polyethylene fusion welded type.
   b. Joining Materials/Methods: Fusion welded, using fusion welding fittings, and the manufacturers supplied control unit.
   c. Connections: Utilize only adapters supplied by the same manufacturer of the pipe.

H. Manville Ring-Tite PVC sewer pipe, SDR-35, ASTM D 3034. Use materials per utility standards off site - where applicable.

I. Johns Manville, C-900, Blue Brut, PVC pipe and fittings, Class 200, installed in strict accordance with manufacturer's published instructions.

J. Johns Manville Blue Brut PVC pipe and fittings U.L. approved for fire protection.

2.03 PIPE AND FITTING APPLICATIONS

A. Inside Building (to 5'-0" outside building line).
   1. Soil, waste and vent piping
      a. Below slab, service weight cast iron soil pipe and fittings, asphaltic coated for sizes 2 1/2" and smaller. Above floor from 6" above slab shall be galvanized steel pipe or service weight cast iron soil pipe and fittings, asphaltic coated for sizes 2 1/2" and smaller. Urinal waste shall be service weight cast iron soil pipe and fittings, asphaltic coated. Sizes 3" and larger shall be service weight cast iron soil pipe and fittings, asphaltic coated.
      b. Fittings
         1) Contractor may use "No-Hub" "Husky" joints per manufacturers published instructions for installation. No-Hub fittings for waste and soil pipe shall be four band stainless steel type for all pipe sizes.
            a) Two band stainless steel couplings, Stainless Steel screw housing, Stainless Steel shield may be used for waste piping of size 2" and less.
         2) "Tyler, Standard", two band stainless steel coupling, Stainless Steel screw housing, Stainless Steel shield, shall be used for vent piping.
      c. As an alternate use, copper DWV Pipe.
   2. Condensate Drain Piping:
      a. Inside buildings provide ASTM B88, Type M copper tubing and fittings. Provide Wye fittings with capped cleanout plug for tubing up to 1 inch size. Provide wrought or cast DWV fittings for sizes 1-1/4 inch and larger.
      b. Outside buildings provide ASTM B88, Type L copper pipe and fittings, cast iron drain pipe and fittings or Schedule 40 galvanized steel pipe and cast iron drain or vent fittings.]
      c. Connect condensate drains to mechanical equipment per equipment manufacturer's recommendations; provide P-trap where required. Slope piping to drain, with 1 inch in 10 foot minimum pitch. Provide di-electric couplings or unions at connections to dissimilar materials.
      d. Where Drawings indicate installation of mechanical equipment on spring isolation rails spring mounted curbs, or spring hangers, provide threaded metal connector at mechanical equipment, Metraflex Model SST, or equal by Unisource Mfg. Co., or

Flexicraft Industries. Arrange flexible connection to ensure drainage of condensate, and support flexible connection at each end of connector, to ensure proper alignment.

e. Where condensate drain P-traps are required, install trap using Wye fitting on inlet and outlet of trap. Provide cap on top of each Wye, made removable for cleaning and inspection. Drill 1/8 inch diameter hole in cap at outlet of the trap to allow venting of the system. Minimum depth of trap should be 4 inches, or as recommended by the manufacturer in printed literature.
f. Provide cleanout tees or “Y” at each change in direction.

3. Condensing-Type Equipment Condensate Drain Pipe: CPVC pipe and fittings conforming to ASTM D-2846.
   a. Provide CPVC condensate drain pipe for condensing water heaters, furnaces, and where shown on Drawings.
   b. Piping and fittings shall be as manufactured by Spears Manufacturing, Charlotte Pipe and foundry Co., or equal.
4. Plastic pipe and fittings shall not be used inside of buildings, except as permitted for acid waste and vent systems.
5. Grease Waste (GW) and Vent (GV) Pipe Underground to 6 Inches Aboveground: George Fisher Sloane, Inc., “Fuseal PP,” Orion Fittings, Inc., “Rionfuse CF,” IPEX, Inc., “Enfield,” or equal, Schedule 40 polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.
6. Grease Waste (GW) and Vent (GV) Pipe Aboveground:
   a. In inaccessible spaces or within walls, George Fisher Sloane, Inc., “Fuseal PP,” Orion Fittings, Inc., “Rionfuse CF,” IPEX, Inc., “Enfield,” or equal, flame-retardant schedule 40 polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.
   b. In accessible areas: George Fisher Sloan, Inc. “Fuseal PP,” Orion Fittings, Inc. “Blueline,” IPEX, Inc. "Labline," or equal, flame retardant Schedule 40 polypropylene drainage pipe and fittings, with mechanical joints. Piping shall comply with ASTM F1412.
   c. Vent pipe aboveground: 3 Inches and Larger: Service weight cast iron soil pipe and fittings; 2-1/2 inches and smaller: Schedule 40 galvanized steel pipe with black cast iron drainage fittings.
7. Acid Waste (AW) and Vent (AV) Pipe Underground to 6 Inches Aboveground: George Fisher Sloane, Inc., “Fuseal PP,” Orion Fittings, Inc., “Rionfuse CF,” IPEX, Inc., “Enfield,” or equal, Schedule 40 polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.
8. Acid Waste (AW) and Vent (AV) Pipe Aboveground:
   a. In inaccessible spaces or within walls, George Fisher Sloane, Inc., “Fuseal PP,” Orion Fittings, Inc., “Rionfuse CF,” IPEX, Inc., “Enfield,” or equal, flame-retardant Schedule 40 polypropylene pipe and fittings assembled with electrofusion joints. Piping shall comply with ASTM F1412.
   b. In accessible areas: George Fisher Sloan, Inc. “Fuseal PP,” Orion Fittings, Inc. “Blueline,” IPEX, Inc. "Labline," or equal, flame retardant Schedule 40 polypropylene drainage pipe and fittings, with mechanical joints. Piping shall comply with ASTM F1412.

B. Outside Building (from 5'-0" outside building line)
   1. Install piping from street connection to the property line in accordance with local requirements.
   2. 4 inches and larger: PVC, ASTM D3034 - SDR 35; use matching Ring Tite fittings.
   3. 3 inches and smaller: Cast iron soil pipe and fittings, asphaltic coated, conforming to ASTM A888 and Cast Iron Soil Pipe Institute Standard 301 and so marked. Pipe and fittings shall be as manufactured by AB&I, Charlotte, Tyler pipe, or equal. Provide ANACO-Husky SD

4000, Clamp-All 125, or equal couplings and No-Hub fittings, meeting the requirements of FM 1680, SD Class I and ASTM C1540. Pipe and fittings shall be the product of a single manufacturer.

C. Temperature and Pressure Relief Valve Piping: ASTM B88, Type L copper tubing, hard-temper, with wrought copper fittings. Provide full solder cup for all fittings. Capped or plugged outlets shall be Schedule 40 screwed brass.

PART 3 - EXECUTION

3.01 EQUIPMENT

A. Install equipment in accordance with the manufacturer's installation instructions, as specified herein, and as detailed on the drawings.

3.02 PIPING

A. Provide trenching and backfill for buried piping and install with the following minimum cover unless shown otherwise, cover is from top of pipe to finish grade.
   1. Sewer - 30" (Outside the building perimeter onsite)

B. Sewer Piping: Run all horizontal sanitary piping inside of the building at a uniform grade of not less than ¼" per foot unless otherwise noted on the drawings. Sewers shall have invert elevations as shown and slope uniformly between given elevations. All drainage piping shall be run as straight as possible and shall have long radius bends. All offsets shall be made at an angle of 45 degrees or less. All vent piping shall be graded so as to free itself quickly of any water or condensation. Where possible, groups of vent risers shall be jointed together with one enlarged outlet through roof.
   1. Install clean-outs of the same diameter of pipe in all horizontal soil and waste lines where indicated and at all points of change in direction and at base of all soil or waste drops. Locate-clean outs not less than 18" from building construction so as to provide sufficient space for rodding. No horizontal runs of more than 100 feet shall be without clean-out.
   2. Clean-outs in floors shall be protected with a cover taped in place and removed at completion of concrete work.
   3. Provide trap at each inlet to sanitary sewer system. Provide trap primers where shown and as required by code.

C. Bury a No. 18 AWG insulated copper locating wire with all non-metallic pipe. Copper wire shall have at least 12" above grade at each end.

D. Condensate drain piping
   1. Provide "P" trap having 2" minimum trap seal.
   2. Install trap with top of trap outlet 2" minimum below bottom of condensate collection pan, and within 12" of pan outlet.
   3. Make changes in direction in the condensate drain line using tees; fit the free leg of the tee with a screwed plug for clean-outs. Provide additional such clean-outs where required by code or where necessary for cleaning drain line.
   4. Extend condensate drain line to appropriate disposal point, receptor, or sewer as prescribed by code or shown on drawings.
   5. Insulation: Provide insulation as shown or specified (Section 22 07 00).

3.03 VENT LOCATIONS

A. Plumbing fixture vents have been combined wherever possible to minimize the number of roof penetrations.

B. Roof penetrations have been coordinated with penetrations of other trades, etc.

C. Plumbing contractor shall not shift or relocate vents through the roof or other penetrations from the locations shown without prior approval of the Engineer.

3.04 FIELD QUALITY CONTROL

A. Piping Testing:
1. Testing Criteria

System	Medium	Pressure	Duration
Drainage and Vent	Water	10 ft water	15 minutes

END OF SECTION

22 13 19
SANITARY WASTE PIPING SPECIALTIES
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 22 01 00 applies to this section.

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. Service connections to existing on-site utilities, and stubs for future connection to equipment provided under the work of this Section or other Sections of the Specifications.
   2. All piping systems for conduction of cold water, heated water, soil, waste, fuel gas, and other fluids or gases as shown or specified for plumbing work.
   3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.03 RELATED SECTIONS

A. Section 22 05 00 - Plumbing

B. Section 22 07 00 - Insulation

C. Section 23 00 00 - Heating, Ventilating, & Air Conditioning

PART 2 - PRODUCTS

2.01 PIPING ACCESSORIES

A. Cleanouts: Model Numbers are Josam.
   1. Vertical: polished bronze cover.
   2. Floor: nickel-bronze cover. Provide carpet clean out marker in carpeted areas.
   3. Grade: C.I. with brass plug set in concrete.
   4. Use floor clean outs located in walks.

2.02 PIPING PENETRATION AUXILLIARIES

A. Sleeves Below Slab or Grade: Metraseal model MS or equal with schedule 80 PVC sleeve. The seal shall be capable of withstanding a hydrostatic pressure of 20 psig. The seal shall be constructed of synthetic rubber with heavy-duty plastic pressure plates. All bolts and nuts shall be constructed of stainless steel.
   1. Escutcheons: Polished chrome plated brass or painted metal.

PART 3 - EXECUTION

3.01 EQUIPMENT

A. Install equipment in accordance with the manufacturer’s installation instructions, as specified herein, and as detailed on the drawings.

3.02 VALVES AND FLANGES

A. Valves shall be full size of line in which installed. Furnish discs suitable for service intended. All valves shall be properly packed and lubricated. Unions shall be placed adjacent to each

threaded or soldered valve or equipment connection 2" and smaller. Install flanges at all valves with stems vertical wherever possible. Stems shall not be placed below horizontal.

B. Valves shall be provided with brass identification tags indicating service controlled. Tags may be omitted on lines exposed in equipment rooms where service is obvious.

C. Cathodic Protection: Install insulated flanges or dielectric unions at points of connection between pipes and equipment as follows: (1) between copper or brass piping and steel or cast iron pipe. (2) Between copper or brass piping and any steel material. (3) Buried connections of copper or brass piping to steel or cast-iron piping shall be protected with a polyvinyl tape wrap 10 mils thick, extending 5' each way from connection.

3.03 FIELD QUALITY CONTROL

A. Piping Testing: Testing Criteria

System	Medium	Pressure	Duration
Drainage and Vent	Water	10 feet water	15 minutes

END OF SECTION

22 14 00
FACILITY STORM DRAINAGE PIPING
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 22 05 00 applies to this section.

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. Service connections to existing on-site utilities, and stubs for future connection to roof drains provided under the work of this Section or other Sections of the Specifications.
   2. All piping systems for conduction of rain water as shown or specified for plumbing work.
   3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.03 RELATED SECTIONS

A. Section 22 05 00 - Plumbing

B. Section 22 07 00 - Insulation

C. Section 23 00 00 - Heating, Ventilating, & Air Conditioning

1.04 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer. Where possible, offset vents and pipes rising in walls, concealed above ceilings, below plates and rise through roof. Where this is not possible, install vents and pipes through plates as detailed on structural drawings.

1.05 SUBMITTALS

A. Submit a general statement of materials and methods along with manufacturer's technical data and installation instructions for all equipment, fixtures, pipe and fittings, and plumbing specialties to be installed.

B. Record Drawings: Per specification section 22 05 00 requirements.
   1. Operation and Maintenance Manuals: Per specification section 22 01 00 requirements.

PART 2 - PRODUCTS

2.01 SAME AS SEWERAGE SEE SECTIONS 22 13 00

PART 3 - EXECUTION

3.01 SAME AS SEWERAGE SEE SECTIONS 22 13 00

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Section 22 05 00 applies to this section.

B. See Section 22 07 19

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. Service connections to existing on-site utilities, and stubs for future connection to equipment provided under the work of this Section or other Sections of the Specifications.
   2. All piping systems for conduction of soil, waste, and other fluids or gases as shown or specified for plumbing work.
   3. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   4. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.03 RELATED SECTIONS

A. Section 22 05 00 - Plumbing

B. Section 22 07 00 - Insulation

C. Section 23 00 00 - Heating, Ventilating, & Air Conditioning

1.04 QUALITY ASSURANCE

A. All plumbing fixtures and equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.

1.05 REFERENCES

A. Pipes And Tubes
   1. Steel Pipe: ASTM A53, Type S, Grade A, Schedule 40, seamless, black or galvanized, plain ends.
   2. Copper Drainage Tube: ASTM B306, Type DWV, drawn temper.
   3. Hubless, Cast-Iron Soil Pipe: CISPI 301.

B. Fittings
   1. Wrought-Copper, Solder-Joint Pressure Fittings: ANSI B16.22.
   2. Cast-Copper-Alloy, Solder-Joint Pressure Fittings: ASME B16.18, ASTM B584.
   3. Cast-Copper-Alloy, Threaded -Joint Pressure Fittings: ANSI/ASME B16.15, ASTM B584.
   4. Bronze Flanges: ASME B16.24, Classes 150 and 300.
   5. Copper Unions: ASME B16.18, cast-copper-alloy body, hexagonal stock, with ball-and-socket joint, metal-to-metal seating surfaces, and solder-joint, threaded, or solder-joint and threaded ends. Threads complying with ASME B1.20.1.
   6. Steel Pipe Nipples: ASTM A733, made of ASTM A53 or ASTM A106, Schedule 40, seamless, galvanized, carbon-steel pipe.
   7. Malleable-Iron Unions: ASME B16.39, Classes 150 and 300; hexagonal stock; with ball-and-socket joint; metal-to-metal bronze seating surfaces; and female threaded ends with threads complying with ASME B1.20.1.
   8. Galvanized, Cast-Iron Threaded Fittings: ASME B16.4, Classes 125 and 250; standard pattern; with threads complying with ASME B1.20.1.

9. PVC Plastic, Schedule 40 and Schedule 80, Socket-Type Pipe Fittings: ASTM D2466.
10. Wrought-Copper, Solder-Joint, DWV Drainage Fittings: ASME B16.29.
11. Cast-Copper-Alloy, Solder-Joint, DWV Drainage Fittings: ASME B16.23.

C. Joining Materials
1. CISPI Couplings for Hubless, Cast-Iron Soil Pipe and Fittings: CISPI 310, having ASTM C564 neoprene sealing sleeve, with 300 series stainless-steel, corrugated shield-and-clamp assembly.
2. Solder Filler Metal: ASTM B32, alloys to suit system requirements.
3. Brazing Filler Metals: AWS A5.8, alloys to suit system requirements.

1.06 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer. Where possible, offset vents and pipes rising in walls, concealed above ceilings, below plates and rise through roof. Where this is not possible, install vents and pipes through plates as detailed on structural drawings.

1.07 SUBMITTALS

A. Submit a general statement of materials and methods along with manufacturer's technical data and installation instructions for all equipment, fixtures, pipe and fittings, and plumbing specialties to be installed.

B. Record Drawings: Per specification section 15010 requirements.

C. Operation and Maintenance Manuals: Per specification section 15010 requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Adapters: Wrought copper male adapters shall be used wherever it is necessary to connect copper tubing to a valve or "tee" having threaded connections.

2.02 PIPE, FITTING, AND JOINING MATERIALS

A. Hubless Cast-Iron/Sleeve-Clamped Joints
1. Pipe: Service weight cast iron, hubless, with hot coal tar pitch coating inside and outside, per Cast-Iron Soil Pipe Institute Standard 301.
2. Fittings: Hubless type, Tyler No-Hub Coupling, each matched with pipe and identified with the manufacturer's name or trademark, the Cast-Iron Soil Pipe Institute symbol, and the pipe size. Those for connections to other types of piping - approved cast-iron adapter/transition type.
3. Joining Materials/Methods: Husky Series 4000 (Blue shield) or Mission HeavyWieght Orange shield) on pipes over 3", neoprene sleeve type conforming to ASTM C564 specifically designed for connecting hubless cast-iron pipe, coated with manufacturer's recommended lubricant before installing; four type 304 stainless steel band clamps with a type 305 stainless steel worm drive screw, and corrugated shield over sleeve; use standard no-hub couplings on pipe 3" and less
4. Wedge lock joints at rainwater leaders to underground drain.
5. Cleanout Plugs: Use Armite Joint Seal compound No. 411, or Enterprise Commercial Thread-Seal.

B. Steel/Cast-Iron Threaded Drainage Fittings
1. Pipe: Galvanized steel per ASTM A-120, threaded ends, standard weight Schedule 40.
2. Fittings: Cast-iron threaded drainage type, black coated, with recessed shoulder and pitched threads, per ASTM A-126, Class B.

C. Copper DWV Pipe: DWV drainage tubing per ASTM B-306-86, plain ends for pipe 1 ½" and larger.
   1. Fittings shall be solder type, wrought copper drainage fittings per ANSI Standard B16.29-86.
   2. Joining Materials/Methods: Canfield, Silvabrite or equal lead free solder with a non-corrosive water based flux.
   3. Connections:
      a. Copper to dissimilar metals: dielectric connector.
      b. Copper to threaded connections: cast brass adapters.

2.03 PIPE AND FITTING APPLICATIONS

A. Inside Building (to 5'-0" outside building line).
   1. Rainwater leader piping
      a. Below slab, service weight cast iron soil pipe and fittings, asphaltic coated for sizes 2 1/2" and smaller. Above floor from 6" above slab shall be galvanized steel pipe or service weight cast iron soil pipe and fittings, asphaltic coated for sizes 2 1/2" and smaller. Sizes 3" and larger shall be service weight cast iron soil pipe and fittings, asphaltic coated.
      b. Fittings
         1.) Contractor may use "No-Hub" "Husky" joints per manufacturers published instructions for installation. No-Hub fittings for waste and soil pipe shall be four band stainless steel type.
      c. As an alternate use, copper DWV Pipe.
   2. Plastic pipe and fittings shall not be used inside of buildings.

B. Outside Building (from 5'-0" outside building line)
   1. Rainwater leaders: Pipe shall be first quality Johns Manville Ring-Tite PVC sewer pipe. Use cast iron pipe and fittings where 12" minimum bury cannot be maintained and other locations where indicated. Use materials per utility standards off site - where applicable.
      a. Contractors Option: first quality, extra strength, bell and spigot clay sewer pipe.

PART 3 - EXECUTION

3.01 EQUIPMENT

A. Install equipment in accordance with the manufacturer's installation instructions, as specified herein, and as detailed on the drawings.

3.02 PIPING

A. For underground pipe, provide trenching and backfill for buried piping and install with the following minimum cover unless shown otherwise, cover is from top of pipe to finish grade.
   1. Rainwater leaders - 30"

B. Rainwater Leader Piping: Run all horizontal piping inside of the building at a uniform grade of not less than ¼" per foot unless otherwise noted on the drawings. Pipe shall have invert elevations as shown and slope uniformly between given elevations. All drainage piping shall be run as straight as possible and shall have long radius bends. All offsets shall be made at an angle of 45 degrees or less.
   1. Install clean-outs of the same diameter of pipe in all horizontal lines where indicated and at all points of change in direction and at base of all drops. Locate-clean outs not less than 18" from building construction so as to provide sufficient space for rodding. No horizontal runs of more than 100 feet shall be without clean-out.
   2. Clean-outs in floors shall be protected with a cover taped in place and removed at completion of concrete work.

3. Provide trap at each inlet to rainwater system.

C. Bury a No. 18 AWG insulated copper locating wire with all non-metallic pipe. Copper wire shall have at least 12" above grade at each end.

3.03 FIELD QUALITY CONTROL

A. Piping Testing:
1. Testing Criteria

System	Medium	Pressure	Duration
Rainwater Leader	Water	10 ft water	15 minutes

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SPECIAL CONDITIONS and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

B. Section 22 05 00 applies to this section.

1.02 SUMMARY

A. This section includes all plumbing fixtures.

1.03 RELATED SECTIONS

A. Section 22 05 00 – Common Work Results For Plumbing

B. Section 22 07 00 - Insulation

C. Section 21 00 00 - Fire Protection

1.04 QUALITY ASSURANCE

A. All plumbing fixtures and equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.

B. 2022 CBC 11B-604

1.05 SUBMITTALS

A. Submit a general statement of materials and methods along with manufacturer's technical data and installation instructions for all equipment, fixtures, pipe and fittings, and plumbing specialties to be installed.

B. Record Drawings: Per specification section 22 05 00 requirements.

C. Operation and Maintenance Manuals: Per specification section 22 05 00 requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. See fixture and equipment schedules on drawings.

PART 3 - EXECUTION

3.01 PLUMBING FIXTURES

A. All fixtures shall be furnished as scheduled. All finished plumbing shall be accurately lined up and where batteries of fixtures occur, special care shall be taken with the roughing-in and finished plumbing.

B. The number and position of all plumbing fixtures are shown on the plumbing drawings. Consult architectural drawings for the location dimensions and mounting heights of fixtures. Heights shall comply with the C.B.C., the latest handicapped requirement, and all ADA requirements.

C. All water supplied to fixtures shall be provided with Speedway loose key compression shut-off stops. Combination fixtures shall have compression stop on each water supply fitting. Concealed stops shall be Crane 9H-313 or equal.

D. All finish for exposed metal trim on any fixture shall be polished chromium plated. This shall include wall flanges, nuts, and washers. Handles on all faucets and stops shall be of all metal, chromium plated. Porcelain caps secured with putty shall be provided and installed for all exposed bolt heads.

E. All fixtures shall be properly and securely installed and supported as required and approved. Fixtures set against concrete walls shall be bolted thereto. Fixtures secured to partitions shall be securely bolted to the wall carrier fittings with foot supports, and shall be provided in types as required to suit the particular installation and fixture.

F. Connection between fixtures and flanges on soil pipe shall be made absolutely gas tight and water tight with graphite type gaskets (wall hung fixture) or Fedar's closet setting compound (floor outlet fixtures). Rubber gaskets, or putty will not be permitted.

G. Fixtures not having integral traps shall be provided with "P" traps of chromium plated solderless seamless brass with trap screw at bottom and connected to concealed waste in wall sanitary fittings. All trap tail pieces shall be 17 gauge minimum.

H. Unions on waste pipes on fixture side of traps may be slip or flange joints with soft rubber or lead gaskets.

I. All flush valves shall be tested and adjusted so that each fixture receives the proper amount of water. All faucets, hose bibbs, drinking fountains, etc., shall be properly regulated to the approval of the Architect.

J. Comply with State handicapped requirements regarding flow control devices, fixture mounting heights, insulation of piping under fixtures, etc.

K. Furnish and install stainless steel Hudee frames for counter mounted fixtures unless "Self-Rimming".

L. Grout all voids between fixtures and adjacent surfaces with 100% white Dow Silicon sealant.

M. All hot water fixtures except kitchen and janitors sinks to be provided with thermostatic mixing valves (see Contract Drawings) set at 110F (unless served by tempered water systems).

END OF SECTION

22 63 13
AIR AND VACUUM PIPING
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 SCOPE

A. Section Includes

1. Plumbing Work to include compressed air piping, valves and all appurtenances required for a complete system.
2. Provide complete plumbing systems including
   a. All piping systems for conduction of compressed air as shown or specified for plumbing Work.
   b. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing Work.
   c. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.02 RELATED SECTIONS

A. Section 22 05 00 Common Work Results for Plumbing

B. Section 22 05 29 Hangers and Supports for Plumbing Piping and Equipment

1.03 QUALITY ASSURANCE

A. All plumbing fixtures and equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.

B. All piping and joints shall be medical grade.

PART 2 - PRODUCTS

2.01 PIPE AND FITTING APPLICATIONS

A. Lab Air Piping

1. Piping
   a. One and one half inches and smaller, Type L Copper, hard drawn tubing per ASTM B-88, plain ends.
   b. Fittings: Solder type, wrought copper per ANSI Standard B16.22 or cast red brass per ASTM B-43, schedule 40, brazed.
2. Unions: Solder type, cast red bronze.
3. Joining Materials/Methods
   a. Canfield, Silvabrite or equal lead free solder with a non-corrosive water based flux.
   b. 15 percent silver brazing alloy, water based silver brazing flux. Silver content must be clearly identified on the brazing rod.
4. Connections
   a. Copper to dissimilar metals: dielectric connector.
   b. Copper to threaded connections: cast brass adapters.
5. Provide Bare Metal Pipe Isolators: Stoneman "Trisolator", Superstrut Cush-a-strip or equal on all hot and cold domestic water piping.

B. Vacuum Piping

1. Piping
   a. One and one half inches and smaller, Schedule 40 PVC, solvent welded, pipe and Schedule 80 fittings.
   b. Two inches to 3 inches, Schedule 80 PVC, solvent welded, pipe and Schedule 80 fittings.

PART 3 - EXECUTION

3.01 PIPING TESTING: TESTING CRITERIA

System	Medium	Pressure	Duration
Lab Air & Vacuum	Air	150 pounds per square inch gauge	4 hours

END OF SECTION

PART I - GENERAL

1.01 SUMMARY

A. Extent of high purity water systems, required by this section is indicated on drawings and by requirements of this section.

B. Types of system specified in this section include the following:

1. Deionized Water

C. Types of equipment and services specified in this section include the following:

1. Pipe and Fittings.

2. Valves and Piping Specialties.

3. Rinsing, Cleaning, Balancing and Testing.

1.02 SYSTEM DESCRIPTION

A. The system shall include supply and return piping, valves and piping specialties. The system shall connect to the existing DI system.

B. Design Requirements: The system shall be designed based on the following data.

1. System Flow: 10 GPM re-circulation rate in new loop.

C. Performance Requirements: The system shall maintain existing system water quality based on Owner provided information. Contractor shall obtain this information for the Owner prior to any on site activities.

1.03 REFERENCES

A. ASTM: American Society of Testing Materials

1.04 SUBMITTALS

A. Treatment Equipment Manufactures Qualifications: Submit data indicating experience in design and operation of similar systems in the area.

B. Product Data: Submit manufacturer’s technical product data, including rated capacities of selected components clearly indicated, weights (shipping, installed and operating), furnished specialties and accessories; and installation and start-up instructions.

C. Installers Qualifications: Submit qualifications for each installer.

D. Testing and Performance Data: Submit documentation including test procedures and laboratory results.

E. Samples: Submit sample joints as required.

F. Maintenance Data: Submit maintenance data and parts lists for each component. Include this data in maintenance manual; in accordance with requirements of Division 1.

1.05 QUALITY ASSURANCE

A. Installer's Qualifications: Firm and individuals with not less than five (5) years experiences in installation of high purity water systems similar in complexity and type to those required for this Project. Each installer shall demonstrate the ability to install acceptable high purity piping systems.

B. Manufacturers Qualifications: Firms regularly engaged in manufacture of water conditioners, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.

C. Welding: Qualify processes and operators according to the ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

D. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp flash tanks to comply with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.

B. Storage and Protection Prior to Cleaning: Comply with manufacturer's recommendations.

1. Store all components in a cool, dry place out of direct sunlight.

2. Protect from damage by the elements and construction procedures.

3. Store fittings in original cartons.

4. Store at temperature above 40ºF.

5. Ends of piping, valves, and fittings shall be sealed.

6. Avoid rough handling of pipe and fittings.

1.07 PROJECT CONDITIONS

A. Field Measurements: Verify space requirements for installation, operation and maintenance.

1.08 SEQUENCE/SCHEDULING

A. Coordinate installation, cleaning and testing with Owner and all trades.

PART II - PRODUCTS

2.01 MANUFACTURERS

A. Piping:

1. Harvel LXT.
2. Normac.
3. Or equal.

B. Valves and Specialties:

1. Harvel LXT (Valves).
2. Normac.
3. Or equal.

2.02 PIPING AND FITTINGS

A. PVC: Harvel LXT, ASTM D-1785, Type II pressure rating, Schedule 80 pipe with socket-type Schedule 80 fittings with solvent weld joints.

B. Stainless Steel Pipe: ANSI 36.19, Type 316 L, Schedule 40.

C. Stainless Steel Fittings: 316 L, Schedule 40 butt-weld fittings and flanges, ANSI B16.9.

D. Welding Materials: Comply with Section II, Part C, of the ASME Boiler and Pressure Vessel Code for welding materials appropriate for wall thickness and for chemical analysis of pipe being welded.

E. Gasket Material: Thickness, material and type suitable for fluid to be handled; and design temperature and pressures.

F. Unions: Suitable for pressure and temperature and high-purity applications.

G. Factory cleaned and bagged for high purity service.

2.03 VALVES

A. PVC Ball Valves: Harvel LXT, full port, PTFE seats, true union ball valves with socket end connections.

B. Stainless Steel Ball Valves: Apollo Series 86 stainless steel ball valve with butt-weld ends.

C. Factory cleaned and bagged for high purity service.

2.04 PRESSURE REGULATORS

A. Automatic, adjustable pressure regulating valve to maintain constant downstream pressure, designed for high purity water service. 150 psig at 75ºF. rated, PVC construction (Plast-O-Matic, or equal).

B. Pressure Gages: PVC with Teflon diaphragm gage guards, with ¼" ball valves. 0-100 psig.

PART III - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

2. Manufacturer shall review proposed piping layout including pipe sizing, velocities and material for confirmation of system performance.

3.02 PIPING APPLICATIONS

A. DI Supply and Return Piping: PVC, Schedule 80.

B. DI Supply and Return Piping at Humidifiers: Stainless steel, 316L ball valves, Schedule 40 with butt-weld fittings.

3.03 VALVE APPLICATION

A. Shut-off and balancing: PVC ball valves.

B. Shut-off at Humidifiers: Stainless steel ball valves with butt-weld ends.

3.04 GENERAL

A. General: Install piping and valves in accordance with manufacturer's written instructions and as required to maintain system performance requirements.

3.05 PIPING INSTALLATION

A. Refer to Division 15, Section 15050 – Basic Mechanical Materials and Methods, for basic piping installation.

B. Supports: Provide continuous V channel support for all horizontal piping. Supports shall not occur at joints.

3.06 SYSTEM CLEANING, FLUSHING AND FILLING

A. Installed piping system including valves shall be flushed and cleaned prior to connecting to the existing system.

B. As a minimum perform the following flushing, cleaning and filling activities.

1. Initial water flush (CW).

2. Detergent strip cleaning and flush (Alkanoz or equal).

3. Post strip flush (CW).

4. Sanitization (5% hydrogen peroxide/water).

5. Post sanitation flush to meet inlet water quality (no trace hydrogen peroxide).

6. System fill per Owners requirements using DI water from approved outside source meeting existing system requirements.

3.07 BALANCING

A. Balance system to indicate volumes. Verify/record existing system operational (flow and pressure) conditions prior to field connection to existing system.

3.08 JOINT CONSTRUCTION

A. Per manufactures written instructions for high purity applications. The following are minimum requirements for PVC pipe:

1. All cut piping shall be square and true.

2. All pipe ends shall be deburred.

3. Piping shall be fully seated in fitting sockets without gaps in wetted portion.

4. Avoid excess amounts of solvent to minimize “puddling” on interior of finished joint.

B. Sample Joints: Each installer shall submit to the Owners representative one finished joint per day for inspection.

C. Provide transition and special fittings with pressure ratings equal to piping as approved by the manufacture and treatment equipment manufacturer requirements.

D. PVC Pipe Primers and Solvents: Record date of manufacturer and/or expiration date of all materials used.

3.09 VALVE INSTALLATION

A. Install valves per manufacturers written requirements.

B. Keep valve in factory package until installation.

3.10 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment and machines to allow service and maintenance.

C. Provide fittings and transition connections suitable for connection to fixtures and equipment.

3.11 FIELD QUALITY CONTROL

A. The following tasks shall be performed by the Contractor as work of this section.

1. Pipe, joint and valve assembly.

2. System rinsing, cleaning and filling.

3. System pressure testing.

4. System balancing.

5. Preparation of reports indicating compliance.

B. In addition to providing direction for the tasks listed above the treatment equipment manufacture shall perform the following tasks as work of this section:

1. Certification of system performance.

2. Submission of report including laboratory water analysis indicating system compliance.

3.12 CLOSEOUT PROCEDURES

A. Treatment equipment manufacturer's technical representative shall provide a one 8-hour day to instruct Owner's personnel in operation and maintenance of water conditioners.

1. Schedule training with Owner; provide at least 7-day notice to Contractor and Engineer of training date.

B. Complete instructions covering installation and operation of the deionized water system shall be provided in booklet form. All component parts must be easily identified, in exposed views, by an individual part number.

END OF SECTION

PART 1 - GENERAL

1.01 SUBMITTALS

A. Preparations.
   1. Prior to data collection and compilation, prepare and submit in duplicate an outline of the proposed organization and content.
   2. Compilation: Prepare and collect data concurrently with construction progress. Compile per submitted outline.

PART 2 - PRODUCTS

2.01 OPERATION AND MAINTENANCE MANUALS

A. Form of Submittals
   1. Prepare data in form of an instructional manual for use by Owner's personnel.
      a. Cover: Identify each volume with typed or printed title, "OPERATING AND MAINTENANCE INSTRUCTION". List:
      b. Title of Project.
      c. Provide indexed tabs.
      d. Identify of separate structure as applicable.
      e. Identity of general subject matter covered in the manual.
   2. Format:
      a. PDF.
      b. Text: Manufacturer's printed data.
      c. Drawings:
   3. Provide description of product and major component parts of equipment.
   4. Provide indexed tabs.

PART 3 - EXECUTION

3.01 OPERATION AND MAINTENANCE DATA

A. General: Record data and operation and maintenance data are complimentary. Submittal items which may be required under both categories may be included only under one submittal if a statement to that effect is included in the other submittal.

B. Quality Assurance
   1. Preparation of data shall be done by personnel.
      a. Trained and experienced in maintenance and operation of described products.
      b. Familiar with requirements of this Section.

C. Content of Manual
   1. Provide table of contents for each volume, arranged in systematic order.
      a. A list of each product required to be included, indexed to content of the volume.
      b. List, with each product, name, address and telephone number of:
         1) Subcontractor or installer.
         2) Maintenance contractor, as appropriate.
         3) Identify area of responsibility of each.
         4) Local source of supply for parts and replacement.
      c. Identify each product by product name and other identifying symbols as set forth in Contract Documents.
   2. Product Data:
      a. Include only those sheets which are pertinent to the specific product.
      b. Annotate each sheet to:

1) Clearly identify specific product or part installed.
2) Clearly identify data applicable to installation.
3) Delete references to inapplicable information.

3. Drawings:
   a. Supplement product data with drawings as necessary to clearly illustrate.
      1) Relations of component parts of equipment and systems.
      2) Control and flow diagrams.
   b. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation
   c. Do not use Project Record Documents as maintenance drawings.
4. Supplement product data for the particular installation.
   a. Organize in consistent format under separate headings for different procedures.
   b. Provide logical sequence of instructions for each procedure.
5. Factory Authorized Start-Up Report.
   a. Provide a factory start-up report for each piece of equipment. Contractor start-up reports, unless contractor is a factory authorized representative will not be allowed.
6. Copy of each warranty, bond and service contract issued.
   a. Provide information sheet for Owner's personnel, give:
      1) Proper procedures in event of failure.
      2) Instances which might affect validity of warranties or bonds.

D. Manual for Equipment and Systems:
   1. Content, for each unit of equipment and system, as appropriate.
      a. Description of unit and component parts.
         1) Function normal operating characteristics, and limiting conditions
         2) Performance curves, engineering data and tests.
         3) Complete nomenclature and commercial number of replaceable parts.
      b. Operating procedures:
         1) Start-up, break-in, routing and normal operating instructions.
         2) Regulation, control, stopping, shut-down and emergency instructions.
         3) Summer and winter operating instructions.
         4) Special operating instructions.
      c. Maintenance Procedures:
         1) Routing operations.
         2) Guide to "trouble-shooting"
         3) Disassembly, repair and reassemble.
         4) Alignment, adjusting and checking.
      d. Servicing and lubrication schedule.
         1) List lubricants required.
      e. Manufacturer's printed operating and maintenance instructions.
      f. Description of sequence of operation by control manufacturer.
      g. Original manufacture's parts list, illustrations, assembly drawings and diagrams required for maintenance.
         1) Predicted life of parts subject to wear.
         2) Items recommended to be stocked as spare parts.
      h. As-installed control diagrams by controls manufacturer.
      i. Each contractor's coordination drawings:
         1) As-installed color-coded piping diagrams.
      j. Charts of valve tag numbers, with location and function of each valve.
      k. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
      l. Other data as required under pertinent sections of specifications.
      m. Content for each electric and electronic system, as appropriate.
      n. Description of system and component parts.

1) Function, normal operating characteristics, and limiting conditions.
2) Performance curves, engineering data and tests.
3) Complete nomenclature and commercial number of replaceable parts.

o. Circuit directories of panel boards.
1) Electric service.
2) Controls.
3) Communications

p. As-installed color coded wiring diagrams.

q. Operating procedures.
1) Routing and normal operating instructions.
2) Sequences required.
3) Special operating instructions.

r. Maintenance procedures.
1) Routine operations.
2) Guide to “trouble shooting”.
3) Disassembly, repair and reassembly.
4) Adjustment and checking.

s. Manufacturer’s printed operating and maintenance instructions.

t. List of original manufacturer’s spare parts, manufacturer’s current prices, and recommended quantities to be maintained in storage.

u. Other data as required under pertinent sections of specifications.

v. Additional requirements for operating and maintenance data: Respective sections of Specifications.

E. Instruction of Owner’s Personnel.
1. Prior to final inspection or acceptance, fully instruct Owner’s designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems
2. Operating and maintenance manual shall constitute the basis of instruction.
a. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SPECIAL CONDITIONS and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

B. This section applies to all Division 23 Mechanical Sections.

1.02 SUMMARY

A. Furnish and install all mechanical work shown on the drawings, specified herein, and as required for a complete and functional installation.

B. This section includes materials and methods applicable to the work described in all Division 23 Mechanical Sections. Specific work requirements of individual Mechanical Sections take precedence if in conflict with requirements of this Section.

C. All chemicals utilized on site as part of coating, sealant, and other products shall not contain any chemical that is listed as part of Proposition 65 known carcinogens that are identified by NTP, IARC, and the USEPA California Proposition 65 chemical repository contractors are not allowed to bring these chemicals on any California Intel site.

1.03 RELATED SECTIONS

A. Division 26 - Electrical Work

B. Division 22 - Plumbing

1.04 DRAWINGS AND SPECIFICATIONS

A. For purposes of clearness and legibility, drawings are essentially diagrammatic and, although size and location of equipment are drawn to scale wherever possible, the Contractor shall make use of all data in all the contract documents and shall verify this information at building site.

B. Information presented on Drawings and in the Specifications is based upon latest data available during their preparation. The Drawings and Specifications are for the assistance and guidance of the Contractor and exact locations, distances, levels, etc. will be governed by the structures and the site the contractor shall accept same with this understanding.

C. The drawings indicate required size and points of termination of pipes, and suggest proper routes to conform to structure, avoid obstructions and preserve clearances. However, it is not intended that drawings indicate all necessary offsets, and it shall be the work of the Contractor to make the installation in such a manner as to conform to structure, avoid obstruction, preserve headroom and keep openings and passageways clear.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall be responsible for delivery, storage, protection and placing of all equipment and materials.

B. Equipment stored and installed at the job site shall be protected from dust, water or other damage. Cover all equipment stored exposed to weather.

1.06 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer.

1.07 SEISMIC RESISTANCE

A. See Section 23 05 48.

1.08 CODES AND SAFETY ORDERS

A. All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshall; the Safety Orders of the Division of Industrial Safety; the I.S.O. codes;

1. 2022 California Plumbing Code, Title 24, Part 5;
2. 2022 California Mechanical Code, Title 24, Part 4;
3. 2022 California Building Code, Title 24, Part 2;
4. NFPA Codes (versions as referenced in 2022 California Building Code, Title 24 Part 2, chapter 35 and 2022 California Fire Code, title 24, Part 9, chapter 80), and other applicable laws and regulations.

B. Nothing in the Drawings or Specifications shall be construed to permit work not conforming to these codes.

C. Drawings and Specifications take precedence when work and materials called for exceed Code requirements.

1.09 INSTALLATION

A. Manufacturer's Instructions:
1. When specifications require that installation comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation.
2. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by specifications.
3. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.
4. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.
5. Do not proceed with work without clear understanding.
6. Arrange for pipe spaces, chases, slots and openings in building structure during progress of construction, to accommodate mechanical system installation.
7. Coordinate installation of supporting devices. Set sleeves in poured-in-place concrete and other structural components during construction.
8. Coordinate requirements for access panels and doors for mechanical items requiring access where concealed behind finished surfaces.
9. Coordinate with other trades equipment locations, pipe, duct and conduit runs, electrical outlets and fixtures, air inlets and outlets, and structural and architectural features. Provide information on location of piping and seismic bracing to other trades as required for a completely coordinated project.

1.10 PERMITS AND FEES

A. Obtain all permits and pay all required fees for permits and/or utility services. Inspections required during the course of construction shall be arranged as required. On completion of the work furnish the owners representative with certificates of inspection.

B. Include in bid all costs for gas service including meter, regulators and service line installed by a gas utility company or a gas utility company approved contractor.

1.11 SITE CONDITIONS

A. Assume all responsibility for damage to adjoining properties; and restore property to its original condition, should damage occur as a result of the work of this section. Contractor shall thoroughly familiarize himself with all site conditions. Should utilities not shown on the drawings be found during excavations, promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities not shown on plans.

1.12 SUBMITTALS

A. General
   1. A submittal schedule shall be issued by the contractor within 15 days of award of the contract. This schedule shall allow for timely review and approval as required by the contract documents.
   2. These requirements apply only to substitutions, submittals, and shop drawings.
   3. The contractor shall review all submittals prior to submission to the Architect. Submittals not reviewed by the contractor will be returned to the contractor and will not be reviewed.
   4. Any deviations from specified requirements shall be clearly indicated in submittals.
   5. Any errors in or omissions from submittals and any consequences of these are the responsibility of the Contractor.
   6. Partial or incomplete submittals may be rejected as not complying with requirements; the Contractor shall be liable for any resultant consequences.
   7. Delayed submittals may be rejected as not complying with requirements. Whether accepted or rejected, delayed submittals will not be considered justification for extension of contract time or similar relief.
   8. Submittals not required or permitted by the Specifications but made at the option of the Contractor, will be returned without review unless accompanied with written valid justification.
   9. Submittal items improperly included with those of another category (such as a proposed substitution included with shop drawing submittal) are not valid and will be returned without review.
   10. Within 35 calendar days after award of the contract, and before fabrications and installation of any material or ordering of any materials, submit for approval one copy in PDF format of complete submittal data on specified and proposed substituted equipment and materials. Submittals shall list all materials proposed identified with drawing symbols and specific data on equipment such as arrangements, performance curves, sizes, capacity, motor locations, and other pertinent data. Check all submittals for conformance to the requirements of the Construction Documents before forwarding to the architect for each item. No consideration will be given to substitutions submitted past 35 day limit. The contractor shall be responsible for all quantities and errors and omissions of submittals. Furnish samples when requested.
   11. Equipment and materials specified as part of the specifications and drawings are listed by two manufacturers names. The first named manufacturer is the basis of design. The second named manufacturer has been determined to be an equivalent in quality or utility. The second named has not been specifically determined to conform to the first named in size, layout, electrical power, voltage, or impacts to building structure. The contractor is

bound by all requirements for substitutes, as described below, for all second named manufacturers and equivalent equipment or products.

12. Each reviewed submittal will be marked to indicate review and directions as stated below.
13. Acceptance of a submittal does not relieve the Contractor of responsibility for omissions from the submittal or errors in the submittal.

1.13 REVIEW

A. Submittals will be reviewed for general acceptability, not necessarily including all details. The engineers review is for general conformance with the design concept of the project and the information given in the contract documents. The contractor is solely responsible for confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating the work with that of other trades and performing all work in a safe and satisfactory manner. Corrections of comments made on this submittal during this review do not relieve contractor from compliance with the requirements of the contract documents or with its responsibilities listed herein.
   1. Proposed substitutes will be judged not only for the acceptability of the items themselves, but also how they will be used under the conditions of the particular project.
   2. Proposed substitutions will be judged also for compliance with qualifications and conditions stipulated in paragraph 1.16.

B. Each reviewed submittal will be marked to indicate review and directions as stated below.
   1. Acceptance of a substitute does not waive the specified requirements.
   2. Once a substitution is accepted, no revision or resubmittal may be made except for pressing and valid reason and after receipts of approval to do so.

1.14 REVIEW DIRECTIONS

A. The notation "No Exceptions Taken" indicates that no further submittal on the particular matter is required and that the Contractor may proceed with normally ensuing action. The notation may be applied to submittals on substitutions, shop drawings, record data, or operation and maintenance data. The submittal has only been reviewed for general conformance with the design concept of the Contract Documents. The contractor is responsible for the dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication process or to the means and methods of construction; coordination of the work of all trades; and performing all work in a safe and satisfactory manner. This notation does not modify the contractor's duty to comply with the contract documents.

B. The notation "Make Corrections Noted" indicates that no further submittal on the particular matter is required, but the Contractor shall make all changes or corrections noted (but no others) before proceeding with normally ensuing action. The notation may be applied to submittals on substitutions or shop drawings (but usually not record data or operation and maintenance data).

C. The notation "Amend and Resubmit" indicates that the submittal is not accepted and must be revised, resubmitted, and reviewed again. In the case of submittal on substitutions and shop drawings so noted, the Contractor shall not proceed with any normally ensuing action until the resubmittal is reviewed. The notation may be applied to submittals on substitutions, shop drawings, record data, or operation and maintenance data.

D. The notation "Rejected - See Remarks" indicates that the submittal is not accepted and that resubmittal on the same subject matter is not allowed and will not be considered. The notation will be applied normally only to submittals on substitutions (usually not on shop drawings, record data, or operation and maintenance data).

E. The notation "Returned Without Review" indicates that the submittal or item has not been considered officially because it is either not proper, valid, required, or permitted by the Specifications and has no status or effect.

1.15 SHOP DRAWINGS

A. The contractor is responsible for providing all shop drawings as described below so that the design professional has the opportunity to determine if the contractor understands the contract documents. It is not the purpose of shop drawings to assure that the contractor is meeting the requirements of the contract documents. Review and approval of a submittal neither extends nor alters any contractual obligation.

B. Accompany all substituted equipment with shop drawings showing revised ductwork and/or piping layouts in order to ascertain that substituted equipment does not adversely affect layout or work of others. Shop Drawings: The following conditions apply to shop drawings:
   1. Shop drawings are not and do not become Contract Documents.
   2. Processed shop drawing submittals and any instructions or requirements noted thereon are a part of the work, but they may not be used as a means of increasing the scope of the work.
   3. If deviations, discrepancies, or conflicts between shop drawing submittals and the Contract Documents are discovered either prior to or after the submittals are processed, the Contract Document requirements shall govern.

1.16 SUBSTITUTIONS

A. Whenever any equipment, material, or process is indicated or specified by patent of proprietary name and/or name of Manufacturer, in the Specifications and/or on the Drawings, it is understood that such specification is used to facilitate the description of the material and/or process and deemed to be followed by the words "or equal" unless noted "no substitute".

B. Substitute equipment and materials shall be equal in all respects including quality, arrangement, utility, physical size, capacity, and performance to those specified. Approval of substitute material will not relieve the contractor from complying with the requirement of the Drawings and Specifications. The contractor shall be responsible and at his own expense, for any changes caused by proposed substitutions which affect other parts of his own work or the work of other contractors.

C. The submittal of a proposed substitution shall clearly establish the following:
   1. The item can be transported into and installed in the intended space and in the manner shown.
   2. Required connections (electrical, piping, and other) can be properly made and adjoining work can be properly accomplished.
   3. The proposed substitute is similar to and of substance equal to that specified, is suited to the same use as that specified, and will perform the functions required by the design.
   4. Motors for proposed substitute equipment will have the same minimum differential between motor brake horsepower and motor nameplate horsepower as the specified equipment.
   5. All performance requirements shall be at least equal to the specified product or equipment including noise levels, cooling capacity, heating capacity, air flow quantity, etc.

D. By submitting a proposed substitution, the Contractor agrees to the following:
   1. He will assume full responsibility for any and all modifications and necessary alterations arising from the use of the substitute item or material including all cost incurred by all other trades.
   2. He will assume full responsibility for any delay in the construction schedule resulting from the use of the substitution.

3. He will prove harmless and indemnify the Owner and the Owner's design consultants from real or alleged damages that may result from the installation, use, or performance of a substitute material or product.

E. The following conditions apply to substitutions:
1. Submittals of substitutions are not and do not become part of the Contract Documents.
2. Contractor shall not order, fabricate, use, or install any substitute product or procedure unless he has received acceptance of the substitute from the Engineer.
3. Should the Contractor install any substitute product in violation of the above he shall remove it and install the specified product at his own expense.
4. The Contractor shall provide a letter stating that all the above items shall apply to all substituted products and equipment.
5. Any submittal for substituted equipment or product that does not clearly show that the substituted item is equal shall be marked rejected and no further submittal shall be allowed on the substituted item. Provide in submittal format documentation that the proposed item is exactly as specified in the contract documents.

1.17 GUARANTEE

A. Guarantee all work for one year from date of acceptance, against all defects in material, equipment and workmanship including repair of damage to any part of the premises resulting from leaks or other defects in material, equipment and workmanship. Guarantee shall be on form supplied by the owner's representative.

1.18 RECORD DRAWINGS

A. The contractor is responsible to provide record drawings. Provide PDF drawings showing the actual location of all ductwork, piping and equipment. Dimension locations of underground service mains and branches. Deliver the PDF drawings to the architect at the completion of the job for review and approval by the engineer.

B. Mark-up Procedure: During the construction period, maintain a complete, current set of Contract Drawings and Shop Drawings uploaded and updated within the BLUEBEAM program for Project Record Document purposes. Label each document "AS-BUILT RECORD". Keep all record documents current.

C. On completion of the Work the Contractor will provide one complete set of AS-BUILT RECORD Drawings in AutoCAD (drawing) file format and one complete set in Adobe PDF file format.

D. A reference by number to a Change Order, CCD, RFI, RFQ RFP, Field Order or other such document is not acceptable as sufficient record information on any record document. Do not conceal any Work until required record information has been recorded.

E. Contractor shall mark AS-BUILT Record Drawings to indicate the actual installation where the installation varies appreciably from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to:

1. Revisions or any modification to details shown on the Contract Drawings
2. Depths of various elements (sanitary sewer, water etc. in relation to main floor level or survey datum.
3. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.

4. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
5. Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stub outs, invert elevations and similar items
6. Actual equipment locations
    a. Duct size and routing
7. Changes made by Change Order, CCD, ASI, or any other directive
    a. Details not on original Contract Drawings
    b. Contractor shall mark completely and accurately AS-BUILT Record Drawing prints of Contract Drawings or Shop Drawings, whichever is the most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.
    c. Contractor shall mark AS-BUILT Record Drawing sets within BLUEBEAM with red markings; use other colors to distinguish between changes for different categories of the Work at the same location.
    d. Contractor shall mark important additional information that was either shown schematically or omitted from original Drawings.
    e. Contractor shall note Contractor Change Directive numbers; Bid Alternate numbers, if any, Change Order numbers, and similar identification.
    f. Contractor shall be responsible for Mark-up: Where feasible, the individual or entity who obtained Project Record Drawing data, whether the individual or entity is the installer, Subcontractor or similar entity, is required to prepare the mark-up on AS-BUILT Record Drawings.
    g. Accurately record information in an understandable and legible drawing technique.
    h. Record data as soon as possible after it has been obtained. In the case of concealed installations, record and check the mark-up prior to concealment.

F. Contractor shall prepare Record Drawings: Immediately prior to inspection for Certification of Substantial Completion of the Work, review completed marked-up AS-BUILT Record Drawings with District, Project Inspector and Architect to ensure accuracy of information. Once accuracy of information is confirmed, prepare and submit a full electronic set, professionally drafted in AutoCAD format, of as-built Contract Drawings and Shop Drawings.

1. Incorporate changes and additional information previously marked on print sets. Delete, redraw, and/or add details and notations where applicable. Identify and date each Drawing; include the printed designation “AS-BUILT RECORD DRAWING” and the date prepared in a prominent location on each Drawing.
2. Distribution: Whether or not changes and additional information were recorded, organize the original marked-up set of drawings that were maintained during the construction period within BLUEBEAM into manageable sets. The sets should be labeled with all appropriate identification, including titles, dates and other information on cover sheets and submit to District.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Shop drawings:
1. Make all drawings to an appropriate scale, large enough to show all pertinent aspects of the item and the method of its connection into the work.

2. Make each drawing sheet in AutoCAD.

B. Grouping: Combine submittals in logical groupings; for example, submit Shop Drawings grouped by Sections of the Specifications, arranged in the specified sequence.

C. Shop Drawings: Four blue or black line prints of each for the Engineer.

D. Timing: Submit all shop drawings prior to installation of any items included in submittal.

2.02 CORROSION PROOFING

A. Corrosion Proofing / U.V. Protection: Products which will be installed outdoors, exposed to the weather, exposed to moisture, or other potentially damaging conditions shall be constructed to resist the effects of such exposure.

B. Exterior casings shall have lapped or gasketed joints effectively sealed to prevent intrusion of moisture or other injurious substances.

C. Casings, ducts, pipes, or product items shall be constructed of materials which are fully resistant to harmful substances they may normally contact, or (if ferrous) shall be galvanized after fabrication, or shall be fully protected from such substances by paint or other coating in appropriate thickness or number of coats.

D. All bolts, nuts, screws, and washers shall be galvanized unless specified to be plated or unprotected.

E. Any exposed plastic pipe must have a U.V. inhibitor.

2.03 MATERIAL AND EQUIPMENT

A. All material and equipment shall be new, of the type, capacity and quality specified and free from defects. All materials and equipment shall be of the same brand or manufacturer throughout for each class of material or equipment wherever possible.

2.04 FILTERS

A. A complete set of filters shall be supplied for use during the construction period. A complete set of new filters shall be installed before testing and balancing.

2.05 ACCESS BOXES

A. For below grade valves and piping devices
   1. Christy Concrete Products Company, Brooks, with galvanized steel checker plate recessed traffic lid flush with rim of box. Lids for boxes located in areas subject to vehicular traffic shall be constructed to withstand H20 live loading as defined by the American Association of State Highway Officials (16,000 pound maximum individual wheel load). Service identification shall be conspicuously welded on lid before galvanizing. For gas service, drill twelve 3/8" diameter vent holes through lid before galvanizing. Provide manufacturer's box extensions to bring box bottom three inches below bottom of valve and box top flush with finish grade.

2. Box sizes (non-traffic)

Type Valve	Valve Size	Box No.
Gas	1 1/2" and smaller	B-24
Gas	2" and 2 1/2"	B-36
Gas	3" and 4"	B-40
Gas	5" and 6"	B-48
Gas	8"	B-52

2.06 ACCESS DOORS

A. Unless specified otherwise by the Architect, provide access doors of the following type:
   1. Concealed hinges, prime coated with rust-inhibitive paint, style of door to suit wall, ceiling, floor or roof construction and fire rating.
      a. Milcor Type M
      b. Milcor Type UFR, fire resistive type Underwriters Laboratory Class B, 1-1/2 hour rating meets UBC, IBCO and BOCA codes for two hour rated walls self latching with key lock, Elmdor/Stonman Type FR or equal.
   2. Minimum size; 18" by 18".
   3. Wall and ceiling access doors: Furnish as required for access to ducts, damper operators, duct mounted access panels, etc.; coordinate size and location to obtain access.
   4. See architectural drawings for further requirements.

2.07 MISCELLANEOUS EQUIPMENT AND MATERIALS

A. Furnish and install miscellaneous equipment and materials required for the systems described whether or not specifically shown.

PART 3 - EXECUTION

3.01 PREPARATION

A. General:
   1. Do not install any equipment, valve, control, motor, filter, or any other device requiring maintenance or service in an inaccessible location or position. Install access doors as specified herein to render all such equipment serviceable whether specifically shown on the plans or not. Maintain code clearance to all equipment. Coordinate location of doors with lights, etc., and locate symmetrically with same.

B. Observations: Check all project drawings and specifications; report any discrepancies before proceeding with the work and in time to avoid unnecessary rework.

C. Investigation: Examine the areas, conditions, and status of other work contiguous or connecting to the work to be performed; ensure that the time of installation is coordinated with other work.

D. Interruptions of Service: Portions of this work may involve connection to existing work, facilities, or utilities ties and may require interrupting shutdowns of same. Carefully plan, coordinate and execute such work so that any interruptions will be kept to a minimum in time and occurrence. Submit request for shutdowns and make shutdowns only after receiving written approval from the Owner.

E. Other: Correct any unsatisfactory conditions that may impede proper execution of the work. Ensure that all arrangements, personnel, materials, and tools are appropriate and adequate before proceeding.

3.02 INSTALLATION

A. General:
   1. Material and equipment incorporated in the work shall be used or applied only for the purpose intended or specified.
   2. Install piping and ductwork and all equipment that requires access with minimum vertical and horizontal clearances required by OSHA for service.
   3. All mechanical systems such as ductwork, pipes and all other equipment shall have 2 inches minimum clearance.
   4. Do not proceed with work without clear understanding.

3.03 MANUFACTURER'S INSTRUCTIONS

A. When specifications require that installation comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation.

B. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by specifications.

C. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.

D. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.

E. Do not proceed with work without clear understanding.

3.04 PROTECTION

A. Contractor shall conform to all Federal, State, and local ordinances related to the protection of the public and Contractor's personnel and the flow of traffic. Provide protection for persons and property throughout the progress of the work.

3.05 DISPOSITION OF MATERIALS

A. All materials and equipment not scheduled to be salvaged, including debris and all rejected salvaged materials, shall become the property of the Contractor and shall be disposed of off site in a legal manner. Location of dump and length of hall shall be the contractor's responsibility.

3.06 LOCATION OF EQUIPMENT, PIPING AND DUCT WORK

A. Where job conditions do not permit the installation of piping, ductwork, etc. in the location shown, it shall be brought to the engineer's attention immediately before fabrication of ductwork, piping, etc. and the relocation required shall be determined in a joint conference.

B. The contractor will be held responsible for the relocating of any items installed without first obtaining the architect's or engineer's approval. Remove and relocate such items at The contractors expense as so directed by the architect or engineer.

C. Where piping or ducting is left exposed within a room, run in vertical or horizontal planes. Maintain uniform spacing between parallel lines and/or adjacent wall, floor or ceiling surfaces.

D. Horizontal runs of plumbing and/or electrical conduit suspended from ceilings shall provide for maximum clearance.

E. Make minor changes in locations of equipment, piping, ducts, etc. from locations shown including minor offsets when directed by the engineer, at no additional cost to the owner.

3.07 CARE AND CLEANING

A. Clean and adjust all equipment at completion of installation to provide operating conditions satisfactory to the engineer. Remove broken, damaged or defective parts; repair or replace as directed by engineer. Remove surface material and debris resulting from this work when directed.

3.08 PAINTING

A. Painting is included under the Painting and Finishing Section. It shall be the responsibility of the Mechanical Contractor to properly protect all equipment and controls during painting operations and the Mechanical Contractor shall repair and/or replace any item damaged due to painting that was not properly protected.

3.09 ACCESS DOORS

A. Provide access doors to all concealed equipment, valves, controls, etc. Locate doors where shown or to be coordinated and symmetrically located with lights, diffusers, etc. Access doors furnished by the mechanical contractor shall be installed by the general contractor.

3.10 ELECTRICAL REQUIREMENTS

A. Provide working space around electrical equipment in compliance with the applicable Code and all Safety Orders.

B. Coordinate the Mechanical Work with the Electrical Work to comply with the above. Furnish and set in place all motors and duct or pipe installed controls.

C. Location of all new switches shall be verified with the architect or architect before roughing-in. Furnish necessary control diagrams and instruction for the proper installation of the controls.

D. Assume responsibility for the proper supervision and testing of the controls for sequence of operation.

E. Motors and control equipment shall conform to the Standards of the National Electrical Manufacturers Association.

F. All equipment electrical characteristics shall be as noted on the drawings, or as specified. Verify before ordering any equipment.

G. Before permitting operation of any equipment which is furnished, installed or modified under this contract, review all wiring connections that pertain to mechanical equipment or work, and verify that these connections are correct.

H. Ascertain that the over-load protection devices installed are of the correct type, rating and setting to properly protect this equipment.

3.11 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.

B. Operating and maintenance manual shall constitute the basis of instruction.
   1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

3.12 RECORD DATA

A. Compilation
   1. Record and collect information concurrently with construction progress and date all entries; make drawing entries within 24 hours after occurrence of change or installation requiring recording. Any concealed work covered before recording data shall be uncovered as directed or as necessary to obtain data.
   2. Record information on drawing prints using an erasable colored pencil (not ink or indelible pencil); describe clearly by note or graphic line as appropriate.

B. Locate any concealed work adequately to allow future access with reasonable ease and accuracy.
   1. Identify the plan location of all stub outs, pipe lines, etc., which are buried or concealed in the structure, whether installed where shown on the contract drawings or in a different location; show actual field dimensions from column lines, wall lines, or other permanent reference lines or points.
   2. In many cases on the contract drawings, the arrangement of conduits, pipes, ducts, and similar items is shown schematically rather than as a precise scaled layout. Identify the actual location of these with horizontal and vertical dimensions. If such lines are exposed or readily accessible, omit dimensional identification.
   3. When any work is installed of size, dimension, slope, or location different from that shown on the contract drawings, note the deviation on the Project Record set. If the variations are substantial or cannot be shown clearly on the record drawings, make a new drawing and attach to the Record set.

C. On other documents
   1. Where changes occur in specifications, clearly indicate same in ink, colored pencil, or rubber stamp.
   2. Where installed equipment differs from that specified (e.g., by accepted substitution or change order) note in the specifications and include complete data on same.

END OF SECTION

PART 1 - GENERAL

1.01 SEE SECTION 23 05 00

1.02 REFERENCES AND STANDARDS

A. Where material or equipment is specified to conform to referenced standards, it shall be assumed that the most recent edition of the standard in effect at the time of bid shall be used.
   1. AABC - Associated Air Balance Council
   2. AFBMA - Anti Friction Bearing Manufacturer's Association
   3. AMCA - Air Moving and Control Association Inc.
      a. Standard 210 - Laboratory Methods of Testing Fans
   4. ANSI - American National Standards Institute
   5. ARI - Air-Conditioning and Refrigeration Institute
   6. ASHRAE - American Society of Heating, Refrigerating and Air Conditioning Engineers
   7. ASME - American Society of Mechanical Engineers
   8. ASTM - American Society for Testing and Materials
   9. CCR - California Code of Regulations
      a. Title 8 - Division of Industrial Safety, Subchapter 7; General Industry Safety Orders, Articles 31 through 36
   10. CSA – Canadian Standards Association International
   11. CSFM - California State Fire Marshal
   12. NCPWB - National Certified Pipe Welding Bureau
   13. NIST - National Institute of Standards and Technology
   14. NEMA - National Electrical Manufacturers' Association
   15. NFPA - National Fire Protection Association
   16. OSHA - Occupational Safety and Health Act
   17. SMACNA - Duct Manuals
   18. UL - Underwriters' Laboratories, Inc.

B. Requirements of Regulatory Agencies:
   1. The publications listed below form part of this specification; comply with provisions of these publications except as otherwise shown or specified.
      a. California Building Code, 2022.
      b. California Electrical Code, 2022.
      c. California Energy Code, 2022.
      d. California Fire Code, 2022.
      e. California Green Building Standards Code, 2022.
      f. California Mechanical Code, 2022.
      g. California Plumbing Code, 2022.
      h. California Code of Regulations, Title 24.
      i. California Health and Safety Code.
      j. CAL-OSHA.
      k. California State Fire Marshal, Title 19 CCR.
      l. National Fire Protection Association.
      m. Occupational Safety and Health Administration.
      n. Other applicable state laws.
   2. Nothing in Drawings or specifications shall be construed to permit work not conforming to these codes, or to requirements of authorities having jurisdiction. It is not the intent of Drawings or specifications to repeat requirements of codes except where necessary for clarity.

PART 2 - PRODUCTS

2.01 MOTOR AND STARTERS

A. Motors furnished as part of mechanical equipment shall be of size indicated and shall have starting torque sufficient to start and drive equipment load to which they are connected.

B. Electric motors shall be NEMA Premium efficiency. Provide one of the following or an equal product:
   1. U.S. Motors
   2. Century Electric
   3. General Electric
   4. Lincoln
   5. Gould

C. Motor enclosures shall be:
   1. Open drip proof for general use.
   2. Totally enclosed for wet or exterior use.
   3. Explosion-proof for hazardous location use.

D. Electric Motors of 1/2 HP rating and over, heavy duty, ball bearing, open (drip-proof), squirrel cage induction type, normal starting torque 60 cycle service, 40o F continuous rating, and shall conform in all respects to the latest applicable standard of NEMA and AIEE. Motors up to ¾ HP rating shall have sleeve or ball bearing. Electric motors which are not housed within equipment they serve, shall be stamped for Quiet-Operation. Motors shall be of an Energy Efficient design meeting C.E.C., Title 24.

E. Motor starters and contactors except those in motor control centers shall be included in the mechanical work.

F. Starters: Starters furnished integral to, or specifically for, mechanical equipment shall be Square D, General Electric, Cutler-Hammer, or equal and shall comply with the following:
   1. Enclosures shall be NEMA Standard to suit location/duty:
      a. Type 1: general purpose.
      b. Type 3: rain tight.
      c. Type 4: watertight.
      d. Type 7&9: explosion proof.
   2. Thermal overload protection devices shall be provided as follows:
      a. One for single-phase motors.
      b. Three for three-phase motors.
      c. One for each ungrounded conductor for each winding of multi-wound or multi-speed motors.
   3. Starters for motors up to 1/3 HP may be manual type if no interlocking is required; pilot light to indicate ON position is required.
   4. Starters for motors up to 30 HP shall be magnetic across-the-line type except as stipulated above.
   5. Starters for motors over 30 HP shall be transition-type magnetic-reduced voltage unless specified otherwise. Coordinate the characteristics to ensure adequate starting torque and to limit the starting current to a level compatible to the electrical system and acceptable to the utility company/agency.
   6. Magnetic starters shall be provided with:
      a. 120 volt control circuits.
      b. H-O-A switch in cover.
      c. Auxiliary contacts for necessary interlocking.
      d. Integral disconnect switch or circuit breakers for branch circuit, short-circuit and ground-fault protection.

7. Short-circuit interrupting capacity of starters and disconnects shall be adequate for voltage employed and for current to be interrupted. This may require use of high interrupting capacity breakers or current limiting fuses. If fuses are used, provide three spares for each disconnect.
8. Starters shall be compatible with the motor they control.

PART 3 - EXECUTION

3.01 ELECTRICAL REQUIREMENTS

A. Provide working space around electrical equipment in compliance with the applicable Code and all Safety Orders.

B. Coordinate the Mechanical Work with the Electrical Work to comply with the above. Furnish and set in place all motors and duct or pipe installed controls.

C. Location of all new switches shall be verified with the architect or architect before roughing-in. Furnish necessary control diagrams and instruction for the proper installation of the controls.

D. Assume responsibility to ensure that all motors are connected with flexible conduit per Division 26 requirements.

E. Assume responsibility for the proper supervision and testing of the controls for sequence of operation.

F. Motors and control equipment shall conform to the Standards of the National Electrical Manufacturers Association.

G. All equipment electrical characteristics shall be as noted on the drawings, or as specified. Verify before ordering any equipment.

H. Before permitting operation of any equipment which is furnished, installed or modified under this contract, review all wiring connections that pertain to mechanical equipment or work, and verify that these connections are correct.

I. Ascertain that the over-load protection devices installed are of the correct type, rating and setting to properly protect this equipment.

J. Where equipment motors are to be electrically interlocked with other equipment for simultaneous operation, utilize mechanical equipment wiring diagrams to coordinate with the electrical systems so that proper wiring of the equipment involved is affected.

END OF SECTION

PART 1 - GENERAL

1.01 SEE SECTION 23 05 00

1.02 SUBMITTALS

A. Submit proposed alternative methods of attachment for review and approval by the Engineer, prior to deviating from the requirements given below.

B. For all seismic bracing systems, submit structural calculations and details prepared and signed by the Contractors licensed engineer which include all resultant forces applied to the building structure. Do not overstress building structure. The maximum allowable loads are as indicated in 3.01 of this specification. The submittal data required does not require an analysis of the building structural numbers and their reaction to the loads of the piping. The submittal data needs to address attachment methods and shall include calculations indicating the forces that are applied to the building structure at the point of attachment. Calculations will be reviewed for compliance with design criteria, not for arithmetic.

PART 2 - PRODUCTS

2.01 PIPE SUPPORTS

A. All pipes within the outer casings shall be supported at not more than 10-foot intervals. These supports shall be designed to allow for continuous airflow and drainage of the conduit in place. The straight supports shall be designed to occupy not more than 10% of the annular air space. Supports shall be of the type where insulation thermally isolates the carrier pipe from the outer conduit. The surface of the insulation shall be protected at the support by a sleeve not less than 12 inches long, fitted with traverse and, where required, rotational arresters.

2.02 HANGERS AND SUPPORTS

A. Building Attachments: Powder-actuated-type, drive-pin attachments with pullout and shear capacities appropriate for supported loads and building materials, UL listing and FM approval for fire-protection systems. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping. Provide beam clamp retaining straps for all pipe supports where attached to steel beams.

B. Mechanical-Anchor Fasteners: Insert-type attachments with pullout and shear capacities appropriate for supported loads and building materials.

C. Load Distribution: Install hangers and supports so piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

D. Electro-Chromate or hot dipped galvanized.
   1. Pipe Straps: copper coated for copper.
   2. For insulated pipe - pipe hangers sized to allow pipe insulation to pass continuously through the hanger.
      a. Trapeze Supporting Rods: Diameter sufficient to support the load with a safety factor of 5.
      b. Isolators: Trisolator.

PART 3 - EXECUTION

3.01 PIPING HANGERS AND SUPPORTS

A. General
   1. Miscellaneous: Provide all supports, anchors, concrete pads, grouting, bedding, bracing, vibration isolation, and accessories required for pumps and other equipment.
   2. Support all piping with appropriate manufactured devices as specified use no wire or makeshift device.
   3. The engineer prior to installation shall approve all hanger material.
   4. Size hanger rods, screws, bolts, nuts, etc., according to manufacturer's recommendations. Size hangers to fit around bare pipe, isolator, or insulated pipe shield as appropriate.
   5. Use cadmium plated or galvanized hangers, attachments, rods, nuts, bolts and other accessories where exposed to weather. Hot dip galvanize all items which are not factory finished. Plating for hinged movements must be done at factory.
   6. Hanger rods with C-clamp type structural attachment shall be equipped with retaining straps.
   7. At each support on bare copper tubing or piping system, install an isolator; at each support point on insulated piping systems, install an insulated pipe shield.
   8. Burning, welding, cutting, or drilling on any structural member may only be done if approved by the structural engineer.
   9. No valve or piece of equipment shall be used to support the weight of any pipe.
   10. Provide a hanger close to the point of change of direction of pipe run in either horizontal or vertical plane.
   11. When hangers or supports do not come within one foot of a branch line fitting, install an additional hanger or support at the fitting.

B. Pipe Supports
   1. Horizontal Lines
      a. Suspend all horizontal pipes individually and not in contact with the structure except as specified below. Support each branch line with at least one hanger.

C. Parallel pipes may be supported on trapeze type hangers. Size trapeze hangers to support weight of piping plus a surcharge of 300 pounds. For three or more pipes use a size suitable for the load in accordance with manufacturers published load ratings. No deflection to exceed 1/180 of a span. Anchor rods securely to building structure.

3.02 LINES NEAR FLOOR

A. Support all piping near the floor individually by means of adjustable steel pipe stanchions with welded end plates properly secured to the pipe and to the floor. Alternate: Lines also near walls may be suspended as specified above for horizontal lines, from appropriately sized and mounted angle brackets.

B. Hanger Spacing Schedule:

Type of Pipe	1" dia. Or under	1¼" to 2" dia	2½" dia & over
Steel Pipe	8'-0"	10'-0"	12'-0"
Copper Tubing	6'-0"	8'-0"	10'-0"

Rod Size:	$^{3}/_{8}$"	½"	$^{5}/_{8}$"	$^{5}/_{8}$"
Pipe Size	(1/2" – 2")	(2-1/2" - 5")	(6" - 8")	(over 8")

END OF SECTION

23 05 30
HANGERS AND SUPPORTS FOR HVAC DUCTWORK
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and DIVISION 1, GENERAL REQUIREMENTS, apply to the work in this section.

1.02 SECTIONS INCLUDE

A. General: Refer to Section 23 05 00, Mechanical - General.

B. Work Included: Provide all ductwork and ductwork accessories, auxiliaries, and adjuncts for all and systems as specified or shown.

C. Work Described Elsewhere: HVAC piping, equipment, and controls are specified in other HVAC Sections.

1.03 RELATED SECTIONS

A. All Sections of Division 23.

1.04 SUBMITTALS

A. Air Balancing: Provide submittals for air balancing work as specified in Section 23 05 93 HVAC General.

PART 2 - PRODUCTS

2.01 GENERAL

A. The contractor shall provide all miscellaneous metal to bridge between structural beams to provide connection for duct supports. As an alternate ductwork may be supported from the roof deck if approved by the owner and structural engineer.

B. Rectangular Ducts (Horizontal):
   1. Up to 30" duct width: Two 1-1/2" wide 16-gauge galvanized steel straps bolted to opposite sides of duct and firmly secured to overhead construction. Each strap must also be turned and screwed to bottom of duct.
   2. 30" and greater duct width: Trapeze assembly comprised of Unistrut, Powerstrut, channel supported at each end by rod firmly secured to overhead construction; affix duct to channel with angle bracket on each side. Each strap must also be turned and screwed to bottom of duct.
      a. 30" to 72" duct width: Use Unistrut P-1000 channel or equal, size as necessary, 3/8" diameter rods.
      b. 72" to 84" duct width: Use Unistrut P-1000 channel or equal, size as necessary,1/2" diameter rods.
      c. 84" and greater duct width: Use Unistrut P-1001 channel or equal, 1/2" diameter rods.

C. Round Ducts (Horizontal):
   1. Up to 40” in diameter: Two (2) 1-1/2” wide 18 gauge galvanized steel straps, firmly secured to overhead construction and extending around the entire perimeter of the duct and secured to the duct. Provide bracing to prevent duct sway as specified above for rectangular duct.
   2. Ducts over 40” in diameter: All supports for round ductwork over 40” must be approved by the structural engineer.

D. Vertical Ducts:
   1. Rectangular: Unistrut, Powerstrut, P-1000 channel riveted or bolted to side of duct and secured to the structure at each floor or other such level.
   2. Round: Fabricate two-piece angle iron collar, rivet or bolt to duct, secured to structure per above.

E. Kitchen Exhaust Ducts:
   1. Duct bracing and supports shall be of non-combustible material securely attached to the structure and designed to carry gravity and lateral loads.
   2. Bolts, screws, and other mechanical fasteners shall not penetrate duct walls.

F. Structure Attachments: See Contract Documents & Specification Section 23 05 48.

PART 3 - EXECUTION

3.01 DUCTWORK SUPPORTS

A. Supports
   1. Install ductwork in accordance with applicable details, SMACNA "Guidelines for Seismic Restraints of Mechanical Systems, Latest ed." recommendations, manufacturer's recommendations, and best practice, coordinate all ductwork support connection with the Structural Engineer.
   2. Install ducts rigidly, securely, and air tight.
   3. Support ducts independently of ductwork - connected equipment and visa-versa.
   4. Ducts shall be vibration isolated as described in 23 05 48.
   5. Penetrations:
      a. Description: All penetrations of walls separating shall have a minimum clearance of 1/2-inch and a maximum clearance of 3/4 inch.
      b. Materials: A minimum 1.5 lbs/cu.ft. fiberglass insulations shall be used and a nonhardening caulking compound.
      c. Installation: The opening around the penetration shall be filled loosely with the fiberglass insulation. The opening is then to be sealed airtight with the non-hardening caulking compound. Pipes, ducts, etc., shall be supported on either side of the wall with supports to roof structure.

END OF SECTION

PART 1 - GENERAL

1.01 SEE SECTION 23 05 00

A. Furnish and install all systems, units, equipment, and parts to meet or exceed current applicable requirements for seismic resistance specified by codes, regulations, or agencies having jurisdiction. Include all supports, anchors, braces, and other restraining devices required. All seismic restraints and isolation shall meet Seismic requirements and are the responsibility of the contractor.

B. Design and installation of seismic bracing shall be per 2022 CBC Chapter 16.

1.02 QUALITY ASSURANCE

A. General: All isolators furnished under this Section for a given application shall be of a single manufacturer who has been regularly engaged in the design and manufacture of the equipment.

B. Manufacturers must demonstrate to the satisfaction of the Engineer that the quality is equal to the equipment made by those manufacturers specifically named herein. Wherever possible, all materials and systems specified in this section shall be purchased from a single vibration isolation materials manufacturer to assure single responsibility for the performance of all isolation materials used.

C. Vibration and Noise: The completed installation must control vibration and noise to the specified limits. Systems equipment, or parts which vibrate or generate vibration unduly or which generate or emit undue noise while in operation shall: (1) be adjusted, repaired, or replaced as appropriate to obtain acceptable levels of vibration or noise, or (2) be supported on or fitted with suppression or absorption devices or means which effectively prevent the transmission of vibration or noise beyond the offending item.

1.03 SEISMIC RESISTANCE

A. Furnish and install all systems, units, equipment, and parts to meet or exceed current applicable requirements for seismic resistance specified by codes, regulations, or agencies having jurisdiction. Include all supports, anchors, braces and other restraining devices required. All seismic restraints will meet the following site specific seismic design criteria:

1. Seismic Design Category D, 2) Importance Factor, Ip = 1.0 and 3) SDS = 0.490

2. Seismic restraints are the responsibility of the contractor.

B. Design of seismic bracing shall meet requirements of 2022 CBC Chapter 16A.

1.04 SUBMITTALS

A. Manufacturer's Data:

1. Provide materials lists, catalog data sheets, manufacturer's drawings and technical literature covering details of all equipment or items specified or shown on drawings.
2. For Metal Spring Isolators provide the following as a minimum:
   a. Spring diameter.
   b. Static deflection.
   c. Compressed spring height.
   d. Solid spring height.

e. Number of active coils.
f. Ratio of horizontal to vertical stiffness.
g. Operating height.
h. Spring constant.
i. Vertical load for each spring.
j. Location and designation of each isolator.
k. Calculate horizontal and vertical loading and bending moment due to a horizontal force applied at the center of the gravity of the isolated equipment. Calculate bolt requirements.
l. Indicate all bases and rail clearance of one inch.

B. Shop Drawings:

1. Submit plans, elevations and sections and details showing installation, operating heights and spring constants.

C. Static seismic calculations for all equipment, piping and miscellaneous structural steel connections to building frame.

1. Calculations shall be performed by a California licensed structural engineer employed by the isolation manufacturer for a minimum of five years.

D. Certification of Seismic restraints include details of materials or methods which depart widely from those specified.

E. All mechanical equipment shall be anchored or braced to meet the horizontal and vertical forces prescribed in 2022 CBC.

F. The attachment of the following items shall be designed to resist the forces prescribed in Section 1613A, but need not be detailed on the plans:

G. Equipment weighing less than 400 pounds supported directly on the floor or roof.

H. Furniture required to be attached in accordance with Part 2, Title 24, C.C.R..

I. Temporary or movable equipment.

J. Equipment weighing less than 20 pounds supported by vibration isolators.

K. Equipment weighing less than 20 pounds suspended from a roof or floor or hung from a wall.

L. For those elements that do not require details on the approved drawings, the installation shall be subject to the approval of the Mechanical Engineer and the field representative of the Division of the State Architect.

M. The bracing and attachments to the structure shall comply with one of the OSHPD Pre-Approvals with an OPM #, such as Mason Industries.

N. Copies of the manual shall be on the jobsite prior starting hanging and bracing of the pipe and ductwork systems.

O. The structural engineer shall verify the adequacy of the structure to support the hanger and brace loads.

PART 2 - PRODUCTS

2.01 ELASTOMERIC ISOLATION PADS (EIP)

A. Elastomeric Isolation Pads:

1. Acceptable manufacturers include but are not limited to the following:
   a. Mason Industries, Inc. – Type Super W Pad
   b. Kinetics Noise Control, Inc. – Type RSP
   c. Vibration Mountings & Controls, Inc. Type NRC

2. Fabrication: Single or multiple layers of sufficient durometer stiffness for uniform loading over pad area. Acceptable manufacturers include but are not limited to the following:
   a. Mason Industries, Inc. – Type Super W Pad
   b. Kinetics Noise Control, Inc. – Type RSP
   c. Vibration Mountings & Controls, Inc. Type NRC
3. Size: Factory or field cut to match requirements of supported equipment.
4. Pad Material: Oil and water resistant with elastomeric properties.
5. Surface Pattern: Waffle pattern.

2.02 HOUSED-RESTRAINED-SPRING ISOLATORS (HRSI)

A. Freestanding, Steel, Open-Spring Isolators with Vertical-Limit Stop Restraint in Two-Part Telescoping Housing:

1. Acceptable manufacturers include but are not limited to the following:
   a. Mason Industries, Inc. – Type SSLFH
   b. Kinetics Noise Control, Inc. – Type SL
   c. Vibration Mounting & Controls – Type CAL

2. Two-Part Telescoping Housing: A steel top and bottom frame separated by an elastomeric material and enclosing the spring isolators. Housings are equipped with adjustable snubbers to limit vertical movement.

   a. Drilled base housing for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
   b. Threaded top housing with adjustment bolt and cap screw to fasten and level equipment.

3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.03 TRISOLATORS (T)

A. Sheet metal sleeve with min 3/8” thick felt insert to be installed at attachment points of hangers or piping.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Semco.
   b. Elcen.
   c. Elmdor/Stoneman .
   d. or equivalent shop- fabricated device.

2.04 RESTRAINED SPRING CURB (RSC)

1. Acceptable manufacturers include but are not limited to the following:
   a. Mason Industries, Inc. – Type RSC
   b. Or approved equal.
   c. Curb must be Pre-Approved per OPA-0207

B. Description: Factory-assembled, fully enclosed, insulated, air- and watertight curb rail designed to resiliently support equipment.

C. Upper Frame: Upper frame shall provide continuous and captive support for equipment.

D. Lower Support Assembly: The lower support assembly shall be formed sheet metal section containing adjustable and removable steel springs that support upper frame. Springs to have a 3" deflection and 50% additional travel to solid. Spring diameters no less than 0.8 of the spring height at rated load. All spring locations shall have access ports with removable waterproof covers. The lower support assembly shall have a means for attaching to building structure and a wood nailer for attaching roof materials and shall be insulated with a minimum of 2 inches of rigid glass-fiber insulation on inside of assembly. Adjustable, restrained-spring isolators shall be mounted on elastomeric vibration isolation pads and shall have access ports, for level adjustment, with removable waterproof covers at all isolator locations. Isolators shall be located so they are accessible for adjustment at any time during the life of the installation without interfering with the integrity of the roof.

E. Snubber Bushings: All-directional, elastomeric snubber bushings at least 1/4 inch thick.

F. Water Seal: Galvanized sheet metal with EPDM seals at corners, attached to upper support frame, extending down past wood nailer of lower support assembly, and counterflashed over roof materials.

2.05 VIBRATION ISOLATION SCHEDULE

Equipment	Unit(s)	Design Deflection	Isolator
VRF Outdoor Unit and		2”	Super W
Condensing Units/Heat Pumps		2.0”	Super W
GENERAL VIBRATION ISOLATION REQUIREMENTS			
Incorporate a water hammer arrestor on connections to equipment using a quick closing valve.			
Flexible conduits at connections to motors and other vibrating equipment.			
Provide suitable flexible piping at connections to vibration isolated equipment such that vibration isolator efficiency is not reduced.			
Use resilient elements at all support points where permitted. Where permitted, make no rigid connections between equipment, piping, and the building structure which would degrade the noise and vibration isolation system.			
PLUMBING LINES VIBRATION ISOLATION SCHEDULE			
Miscellaneous Attachments		Type T	

PART 3 - EXECUTION

3.01 GENERAL

A. Specific application of products shall be as delineated in this and other Sections of the Division.

B. Installation of all vibration isolation materials, spring and equipment bases specified in this section of the specifications shall be accomplished following the manufacturer's written instructions.

C. Additional installation instructions may be specified in other Sections of the Division.

D. Acoustically Sensitive Areas: For purposes of noise and vibration control, the following areas are defined as Acoustically Sensitive:

1. Conference Rooms
2. Offices

E. The isolation materials manufacturer shall be responsible for the proper selection of spring rates to accomplish the specified minimum static deflections, for all spring and pad type isolators, based on the weight distribution of equipment to be isolated.

F. The isolation materials manufacturer shall be responsible for the structural design of steel beam bases, to support mechanical equipment scheduled to receive a supplementary base.

3.02 INSTALLATION OF ISOLATORS

A. General

1. Isolators shall be installed and loaded per the requirements of the manufacturer except as otherwise indicated.
2. All vibration isolators for a single piece of equipment shall be installed to provide equal deflection and load.

a. Adjust leveling devices as required to distribute loading uniformly onto isolators.
b. Shim units as required where leveling devices cannot be used to distribute loading properly.
c. Adjust to ensure that units do not exceed rated operating deflections or bottom out under loading and are not short-circuited by other contacts or bearing points.
d. Remove space blocks and similar devices (if any) intended for temporary protection against overloading during installation.

3. Locate isolation hangers as near the overhead support structure as possible.
4. All connections to vibration isolated equipment shall be through flexible connections. This shall include all piping, electrical connections, fuel lines, structural elements, etc.
5. Equipment installed on metal spring isolators shall rock freely or move freely within limits of stop or seismic snubber restraints.

B. Composite Rubber Isolator
1. Install isolator material under bolts and through bolt hole when securing equipment to structure. The isolator shall be separated from the bolt by a heavy flat washer that will not deform under the load.
2. The bolts shall be torqued per isolator manufacturer's guidelines and as required by the elevator equipment manufacturer.
3. Inspect that rubber isolator is not deflected to the point of excess deformation. Ensure that equipment does not contact the building structure.

3.03 FLEXIBLE CONNECTOR INSTALLATION

A. Duct Flexible Connectors

1. Provide at inlet and outlet of each supply and return fan and as shown on drawings.
2. Allow one inch (1") minimum free space between metal collars each side of fabric.
3. Connection shall be nominal six inches (6") wide with material taunt.

END OF SECTION

PART 1 - GENERAL

1.01 SEE SECTION 23 05 00

PART 2 - PRODUCTS

1.01 IDENTIFICATION

A. Equipment: Black Phenolic Plates engraved with 1/2" high white letters. The equipment shall be identified by the mechanical equipment schedule tag numbers shown on the plans (ie. AC-1, REF-1, ACCU-1). Coordinate identification numbers with electrical contractor to ensure that the disconnect switches and other electrical/mechanical equipment has consistent identification numbers.

B. Controls: Same as equipment above except 1/2" high letters.

1.02 PIPE IDENTIFICATION

A. Maximum spacing for identification shall be 10 feet.

B. Identification shall be provided per the following
1. At both sides of floor or wall penetrations
2. Adjacent to all valves and flanges
3. Adjacent to all changes in direction
4. To be visible from the point of normal approach

C. Indicate flow direction and type of fluid.

D. Provide plastic labels for mechanical engraving with predrilled holes for attachment hardware.
1. Material: rigid plastic laminated impact acrylic, 2-layer, exterior grade, UV stable.
2. Thickness: 3/16 inch minimum.
3. Maximum label size: Length and width vary for required label content but, no less than 2 inches wide by 1 inch high.
4. Background color:
5. Normal power: Black, matte finish.
6. Lettering: White, machine engraved, Futura font, 3/8 inch high, all caps.
7. Maximum temperature: Able to withstand up to 160 degrees Fahrenheit.
8. Fasteners: Self-tapping stainless-steel screws, except contact type permanent adhesive where screws cannot or should not penetrate substrate.
   a. Mounting screw type to be number 8 – 18 by ½ drilling or tapping style, ¼ inch hex washer head, stainless steel, or similar, appropriate for material in which sign is affixed to. A bead of silicone sealer shall be applied on back of sign and at screw locations prior to affixing sign to equipment.
   b. For signs larger than 3 inches by 3 inches, use a minimum of 4 mounting screws.

1.03 PAINTED IDENTIFICATION MATERIALS

A. Stencils: Standard fiberboard stencils, prepared for required applications with the letter sizes generally complying with recommendations of ANSI A13.1 for piping and similar applications but, not less than ¾ inch high letters for access door signs and similar operational instructions.

B. Stencil paint: Standard exterior type stenciling enamel; black, except as otherwise indicated; either brushing grade or pressurized spray can form and grade.

C. Identification paint: Standard identification enamel of colors indicated or, if not otherwise indicated for piping systems, comply with ANSI A13.1 for colors.

1.04 PIPE IDENTIFICATION

A. General requirements for Manufactured Pipe labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Self-adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing. Brady/Seton, Stranco, Rowmark or equal.

C. Small pipes: For external diameters less than 6 inches, provide full-band pipe markers, extending 360 degrees around the pipe at each location, fastened by one of the following methods:
   1. Snap-on application of pre-tensioned semi-rigid plastic pipe marker.
   2. Adhesive lap joint in pipe marker overlap.
   3. Laminated or bonded application of pipe marker to pipe (or insulation).
   4. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 3/4 inch wide; full circle at both ends of pipe marker, tape lapped 1-1/2 inches.
   5. Pipe label contents: Include identification of piping service using piping system nomenclature as specified, schedules or shown, and abbreviate only as necessary for each application. Include pipe size and an arrow indicating direction of flow.
   6. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
   7. Lettering Size: At least 1-1/2 inches high.

D. Locate pipe markers as follows:
   1. Within one foot of each valve, fitting, thermometer or gauge.
   2. At each branch or riser take off.
   3. At each passage through walls or ceiling construction.
   4. At each passage to underground.
   5. On all horizontal pipe runs every 20 feet, at least twice in each room.
   6. Identify piping contents, flow direction, supply and return.
   7. At wall and ceiling access panels.
   8. Practible variations or changes in locations and spacing may be made with specific approval of the University’s Representive to meet specific conditions.

A. Color code shall be as follows:
   1. Refrigerant Piping - Yellow Background with Black Lettering

B. Pipe Letter height shall be as follows:

Outside Pipe Diameter Including Insulation	Minimum Length of Label	Minimum Height of Letters
.75” – 1.25”	8”	.5”
1.5” – 2”	8”	.75”
2.5” – 6”	12”	1.25”
8” – 10”	24”	2.5”
Over 10”	32”	3.5”

PART 3 - EXECUTION

1.01 EQUIPMENT AND CONTROL IDENTIFICATION

A. Identify all equipment with permanently attached plates.

B. Identify all controls and controllers except thermostats in finished areas.

1.02 IDENTIFICATION APPLICATIONS

A. Piping and Valves
   1. Provide identifications for all valves. Provide tags with lettered inscriptions (not numbered).

END OF SECTION

PART 1 - GENERAL

1.01 SEE SECTION 23 05 00

A. Work Included: This Section describes balancing requirements for all phases of HVAC work. The work includes complete balancing, adjusting and testing of the air and hydronic equipment and systems.

1.02 QUALITY ASSURANCE

A. Testing and Balancing shall be performed in complete accordance with AABC National Standards for Field Measurement and Instrumentation only by an AABC or NEBB licensed contractor.

B. Work shall be performed by an independent test and balance agency that specializes in, and whose business is limited to testing and balancing of air conditioning systems.

C. Instruments used for testing and balancing of systems shall have been calibrated within a period of six (6) months and shall be checked for accuracy prior to start of work.

1.03 SUBMITTALS

A. Provide to the Owner and Contractor with four (4) copies of a balancing agenda prior to start of balancing work including:
   1. General description of each air system with its associate equipment and operational cycles for winter heating, reheat, humidification, and cooling. Where different cycles are used for day and night time operation, describe separately.
   2. A complete list of all flow and terminal measurements to be performed.
   3. Agenda shall also include specific procedures for determining test parameters for flow. Specify type of instruments to be used, method of instrument application and air terminal correction factors for:
      a. Air terminal configuration.
      b. Flow direction (supply, return, or exhaust).
      c. Effective area application to each size and type of air terminal.
      d. Density corrections.
   4. Furnish a copy of agenda to the engineer and Owner prior to start of work, including qualifications of key personnel assigned to the project.

B. Provide a PDF of final report, containing information outlined in AABC and in Part 3 - EXECUTION.

1.04 NOTIFICATION AND SCHEDULING

A. A pre-balance conference shall be held prior to start as scheduled by the Contractor. Attendees at the meeting shall include representatives of the Balancing Contractor, General Contractor, Mechanical Sub-contractor, Control Sub-contractor, and Owner.

B. The schedule for testing and balancing the HVAC system shall be established in coordination with the Balancing Contractor on a critical path network.

C. The Balancing Contractor is responsible for initiating this continuing coordination to determine schedule for final testing and balancing services.

1.05 COORDINATION WITH OTHER TRADES

A. To bring the HVAC system into a state of readiness for testing, adjusting and balancing, the Mechanical Contractor shall perform the following:

1. Ensure that all splitters, extractor, volume, smoke and fire dampers are properly located and functional. Dampers serving requirements of smoke, minimum and maximum outside, return, relief, and exhaust air shall provide tight closure and full opening, with a smooth and free operation.
2. Verify that all supply, return, exhaust, and grilles, registers, diffusers and terminal units are installed and operational.
3. Ensure that air handling or conditioning systems, units, and associated apparatus, such as heating and cooling coils, filter sections, access doors, etc., are blanked and/or sealed to eliminate excessive bypass or leakage of air. All fans and systems (supply, return, relief, and exhaust) are operating and free of vibration.

PART 2 - PRODUCTS

2.01 INSTRUMENT AND TOOLS

A. Furnish all instrumentation and tools required to perform a complete air and water balance of all systems on this project.

2.02 FLOW METERING SYSTEM

A. Use flow metering systems specified and/or furnished to perform air and water balance.

PART 3 - EXECUTION

3.01 GENERAL

A. Coordinate required locations of duct test openings and damper locations specified in other sections.

B. Coordinate work done by testing and balancing agency with work of other trades.

C. Plan Check and Review:
   1. Review location and type of volume dampers inlet conditions to air terminals, valves and HVAC equipment.
   2. Review location, type and size of balancing valve, flow metering stations and automatic control valves in the water flow system.
   3. Review location of pressure sensors in the air and water distribution systems.
   4. Review automatic control systems as they affect the test and balance procedure.
   5. Review sheet metal and piping shop drawings to verify the installation of flow control devices.

D. Job Site Inspections
   1. Check for necessary balancing hardware (dampers, flow meters, valves, pressure taps, thermometer wells, etc.) to determine if they are installed properly and readily accessible.
   2. Identify and report possible restrictions in systems (closed smoke/fire dampers, fire dampers, long runs of flexible duct, poorly installed duct fittings.
   3. The mechanical contractor shall make any changes in pulley, sheaves; supply new pulleys, sheaves, belts as required. In addition, the Mechanical Contractor to add dampers, etc. Necessary for correct balance at no additional cost to the Owner.
   4. Check for necessary balancing hardware (dampers, flow meters, valves, pressure taps, thermometer wells, etc.) to determine if they are installed properly and readily accessible.

E. Identify and report possible restrictions in systems (closed smoke/fire dampers, fire dampers, long runs of flexible duct, poorly installed duct fittings.

3.02 TESTING

A. Testing equipment shall be furnished by the contractor; testing personnel shall be competent to conduct the tests.

B. Test all ductwork for excessive leakage and/or noise. Testing on any completed section of the ductwork must be made before installation of the finished ceiling or before the ductwork is furred in inaccessible spaces. Any leaks found must be properly repaired or joints remade and the section retested until tight. Any leaks which cause an objectionable noise must be repaired, regardless of the amount of leakage.

C. Should any piece of an apparatus or any material or work fail in any of the tests, it shall be immediately removed and replaced by new material, and portion of the work replaced shall again be tested by Contractor at his own expense.

3.03 OPERATIONAL TESTS AND ADJUSTMENTS

A. Upon completion of the work, all equipment and systems shall be operated and tested for a period of at least three consecutive days to demonstrate their satisfactory overall operation. On the last day of this period, the Contractors shall arrange for an acceptance test and final inspection by the Owner. All necessary adjustments and corrections to the systems shall be made prior to acceptance test so that the systems are operating smoothly and properly and absolutely ready before check and acceptance.

B. Coordination of all items associated with the mechanical systems is the responsibility of the mechanical contractor, including all wiring in connection with mechanical equipment, and all temperature control work. It shall be this contractor's responsibility to determine that his systems, equipment and apparatus are properly wired and controlled and completely ready for satisfactory operation and test.

C. Immediately before starting tests, all air filters shall be replaced as hereinbefore specified. All motors checked for rotation and all bearings lubricated.

D. Operating and safety controls shall be tested at least three times, under ambient design conditions.

3.04 AIR BALANCE

A. Changes, additions and modifications to dampers, pulleys and/or drive belts and other equipment necessary for proper air balance shall be provided by the Mechanical Contractor at no additional cost to the Owner.

B. The Mechanical Contractor shall retain the services of an independent certified test and balance agency to provide a complete air balance. All work shall be done by using instruments certified accurate to limits used in standard practice for testing and balancing of air distribution for heating-cooling systems.

C. Study design specifications and engineering drawings and prepare schedule to physically inspect mechanical equipment for air distribution systems to be tested and balanced.

D. Prepare test and balancing schedule, test record forms and necessary technical information about the air distribution systems for installed heating-cooling equipment, and fan systems, for complete total air balance.

E. Recommend adjustments and/or corrections to mechanical equipment and air distribution systems that are necessary for proper balancing of air handling systems.

F. Upon completion of the air handling system, the Air Balance Agency shall complete tests, analysis and balance of the air handling systems for heating-cooling equipment. The

Air-Balance Agency then shall submit four copies of balance report to the Mechanical Contractor for forwarding to the Architect for evaluation and approval.

G. Air Balance Report shall include the following data
   1. Design specifications of air handling equipment
      a. CFM
      b. Static Pressure
      c. % of Outside Air
      d. Fan Motor HP
      e. Fan Motor BHP
      f. Fan RPM
   2. Installed equipment data
      a. Manufacturer
      b. Identifying Data
   3. Balancing test data
      a. Fan Speed
      b. Fan Operating amperes
      c. Fan Operating BHP
      d. Fan Duct sizes
      e. Air Velocity (avg.)
      f. Total CFM
      g. Static Pressures
      h. Design Specifications of grilles and/or diffusers
      i. Manufacturer No. and Data
      j. FPM
      k. CFM
   4. Installed equipment data
      a. Manufacturer No. and Data
      b. Location
   5. Balancing test data
      a. FPM
      b. CFM

H. All outlets shall be set for the air pattern shown on plans.

I. Supply and return air dampers shall be set for design CFM, on heating and cooling cycle.

J. Test and balance shall correct for air density at 6000 ft. elevation and above.

3.05 OWNERS INSTRUCTION

A. Review the installation of all equipment and controls with the Owner after all systems are operating automatically. Instruct the Owner in the adjustment of all control and equipment devices. Allow a minimum of 8 hours for this instruction.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and DIVISION 01 00 00, GENERAL REQUIREMENTS, apply to the work in this section.

B. See 23 05 00

1.02 SECTIONS INCLUDE

A. This Section describes insulation materials, methods, and applications for HVAC Mechanical Work, Special or specific details, applications, features, or methods may be described in work descriptions Sections or on the drawings.

1.03 REFERENCES

A. Thermal insulation materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use:
   1. American Society for Testing of Materials Specifications:
      a. ASTM C 547, "Standard Specification for Mineral Fiber Pipe Insulation"
      b. ASTM C 585, "Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System)"
      c. ASTM C 1136, "Standard Specification for Flexible, Low Permeanace Vapor Retarders for Thermal Insulation"

1.04 SYSTEM PERFORMANCE

A. Insulation materials furnished should meet the minimum thickness requirements of National Voluntary Consensus Standard 90.1 (Latest edition), "Energy Efficient Design of New Buildings," of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE).

B. Insulation materials furnished and installed hereunder shall meet the fire hazard requirements of applicable building codes when tested in composite form per one of the following nominally equivalent test methods:
   1. American Society for Testing of Materials ASTM E 84
   2. Underwriters' Laboratories, Inc. UL 723, CAN/ULC-S102-M88
   3. National Fire Protection Association NFPA 255

C. Molded pipe insulation shall be manufactured to meet ASTM C 585 for sizes required in the particular system.

D. Molded fibrous glass pipe insulation shall comply with the requirements of ASTM C 547.

1.05 QUALITY ASSURANCE

A. Qualifications of Installers: only a licensed firm employing installers specifically skilled and experienced in applying insulation to piping shall do Insulation work.

B. Insulation materials and accessories furnished and installed hereunder shall, where required, be accompanied by manufacturers' current submittal or data sheets showing compliance with applicable specifications listed in above.

C. Insulation materials, including all weather and vapor barrier materials, closures, hangers, supports, fitting covers, and other accessories, shall be furnished and installed in strict accordance with project drawings, plans, and specifications.

D. Insulation materials and accessories shall be installed in a workmanlike manner by skilled and experienced workers who are regularly engaged in commercial insulation work.

E. Codes and Standards:
   1. California Code of Regulations - Title 24.
   2. National Fire Protection Association - 90A.

1.06 DELIVERY AND STORAGE OF MATERIALS

A. All of the insulation materials and accessories covered by this specification shall be delivered to the job site and stored in a safe, dry place with appropriate labels and/or other product identification.

B. The contractor shall use whatever means are necessary to protect the insulation materials and accessories before, during, and after installation. No insulation material shall be installed that has become damaged in any way.

C. If any insulation material has become wet because of transit or job site exposure to moisture or water, the contractor shall not install such material, and shall remove it from the job site. An exception may be allowed in cases where the contractor is able to demonstrate that wet insulation when fully dried out (either before installation or afterward following exposure to system operating temperatures) will provide installed performance that is equivalent in all respects to new, completely dry insulation. In such cases, consult the insulation manufacturer for technical assistance.

PART 2 - PRODUCTS

2.01 DUCT INSULATION – SEE 23 07 13

2.02 HVAC PIPING INSULATION – SEE 23 07 19

PART 3 - EXECUTION

3.01 APPLICATION / INSTALLATION

A. Use the types and thickness of insulation specified in work description Sections.

B. Apply insulations in accordance with the manufacturer's recommendations and with instructions specified herein or noted on the drawings.

C. Install insulations only after the systems, items, and equipment have been installed and tested, inspected, and accepted. Exceptions: Slip-on piping insulation and equipment insulations installed at the factory.

D. Fit insulation snugly to the item being insulated; butt all joints tightly with no voids, spaces, or thin spots.

E. Seal all joints completely; where sealing tape is used, center the tape over the joint.

F. Except where specified or necessary, do not use staples or fasteners which penetrate vapor barrier jackets or covers on cold systems or equipment; where such penetrating fasteners are used, seal each penetration completely to maintain the vapor barrier integrity. All penetrations of the ASJ and exposed ends of insulation shall be sealed with vapor barrier mastic. Vapor seals at butt joints shall be applied at every fourth pipe section joint and at each fitting to provide isolation of water incursion.

G. Use adhesives, mastics, cements, sealants, and finishes undiluted unless specifically directed otherwise; apply per manufacturer's directions.

H. Install outdoor jacketing or other specified weather proofing or finishing on all insulations outdoors.

I. Install all indoor exposed insulation with extra care and finish neatly.

J. Follow specified methods of installation unless alternative methods are submitted and approved.

3.02 FINISHING

A. Finishes and Protection:
   1. Insure that the exterior finish of all insulation is applied and complete as specified
   2. Make ready for painting, or painted to match existing including color where specified for paint.
   3. Install all metal jackets or protective sheathing where specified.

B. Repair, Touchup: Properly repair and touchup all dents, rips, tears, or other damage inflicted on jackets or exterior surfaces of insulation. Breaks or punctures in the vapor barrier of external insulation will not be accepted and must be repaired prior to project acceptance.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. See Section 23 07 00

B. A continuous, intact vapor barrier is critical for ducts.

C. All insulation material shall have a mold, humidity, and erosion resistant face that has met the requirements of CMC Table 1701.

D. Insulation applied to the exterior surface of ducts located in buildings shall have a flame spread of no more than 25 and a smoke developed rating of not more than 50.

E. Insulate all above grade ductwork unless otherwise shown on the drawings or specified in Section 23 31 16 METAL DUCT.

PART 2 - PRODUCTS

2.01 ID-1 FLEXIBLE BLANKET/VAPOR BARRIER FACED

A. Glass fiber reinforced Kraft/aluminum foil faced flexible blanket of 1.5 PCF nominal density resin bonded fibrous glass, have a installed thermal conductivity k factor of 0.25 at 75° F.; suitable for direct application and service on cold and dual temperature ductwork.

B. Supply FSK jacket with a permeance of 0.02 or less

C. Fiberglass insulation with all service facing, Certainteed Type 150 with Type IV facing, Johns Manville Microlite with FSK facing.

PART 3 - EXECUTION

3.01 APPLICATIONS

A. Supply Air Ducts indoors/concealed
   1. Use System ID-1 (Flexible Blanket / Vapor Barrier Faced
      a. 2” thickness for all sizes; installed R-value = 6.3 minimum
      b. Applies to all cross sections (I.E. rectangular, circular, etc.)

B. Return Air Ducts indoors/concealed
   1. Use System ID-1 (Flexible Blanket / Vapor Barrier Faced
      a. 1 ½" thickness for all sizes; installed R-value = 4.7 minimum.
      b. Applies to all cross sections (I.E. rectangular, circular, etc.)

C. Do not externally insulate the following unless otherwise shown on the drawings or specified:
   1. Lined ductwork (indoors).
   2. Ducts constructed of fibrous glass (flexible or rigid).
   3. Above grade ducts conducting exhaust air or ventilating air (not heated or cooled and used for fresh air supply) unless otherwise noted.
   4. Exposed ducts located in conditioned space.

3.02 INSTALLATION FLEXIBLE BLANKET/VAPOR BARRIER FACED

A. Install on supply and return ductwork so that condensation will not occur.

B. Wrap around ducts, butt all joints. Secure with 3” (minimum) width tape at 18" (maximum) intervals along the duct; tape may be of the same material as the insulation facing with a pressure sensitive adhesive on one side or may be Hardcast DT490-C mineral impregnated woven synthetic fiber using Hardcast FTA-20 roller. In addition, on rectangular and cross

section ducts, secure to the flat bottoms more than 18" wide with SticKlip fasteners only with 1 ½" diameter washers at 16" centers both ways; one centered longitudinal row is sufficient for ducts up to 36" flat bottom width.

C. Seal all seams and joints with 3" (minimum) width tape centered along the edge of the lap;tape shall be as specified above.

D. Seal all fastener penetrations with 3" x 3" (minimum) tape centered over the washer; tape shall be as specified above.

E. Where strap type duct supports penetrate the insulation, slit the insulation and facing, fit around the straps, and seal with tape as specified above; tape shall be of size to suit the situation and be applied in the number of layers necessary to obtain complete sealing.

F. At trapeze or similar type duct supports, insert a 12" wide strip of Armaflex insulation, ½" thick between duct bottom and the supporting member across and 6" beyond both ends of the bearing surface. Lap ducts insulation over this insert and seal the same as other lapped seams.

G. Insulate all flexible duct connectors to the same thickness as adjacent duct insulation.

H. Continue insulation on terminal unit inlets to cover the entire inlet collar.

I. Insulate over all duct access doors with the same thickness as adjacent duct insulation. Provide removable insulation piece with an outer label on the insulation identifying the type of door.

3.03 INSTALLATION: FLEXIBLE BLANKET/COATED LINER

A. Apply a 1/16" thick coat of Foster 85-62 JacTac 3-M Company Scotch Grip #38, Childers-125-1, adhesive or duct butter on all end or edges of cuts, rips, etc., before or while installing.

B. Secure to the ductwork with welded or SticKlip, fasteners with 1 ½" diameter washers with cupped or beveled heads. Set at 16 (maximum) on centers both ways; provide a row of pins within 1" of all edges and joints, and one row of pins (minimum) on each flat duct or plenum face. In addition secure the entire perimeter of all edges at seams or joints with a 4" minimum width application of the above specified adhesive. The upstream edge of all duct liner shall have a sheet metal closure to protect against erosion.

C. Fasteners shall compress the liner no more than 1/8”.

D. Clip off protruding ends of fastener pins in plenums.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

1.02 SEE SECTION 23 07 00.

A. A continuous, intact vapor barrier is critical for all pipes conveying fluids at temperatures less than 75° F.

B. All insulation material shall have a mold, humidity, and erosion resistant face that has met the requirements of CMC Table 1701.

C. Insulation applied to the exterior surface of pipes located in buildings shall have a flame spread of no more than 25 and a smoke developed rating of not more than 50.

D. All requirements of Section 23 07 00 apply to this section.

PART 2 - PRODUCTS

2.01 IP-1 RIGID MOLDED SECTIONAL.INDOOR CONCEALED JACKET

A. Regular shape (straight run)
   1. Molded sectional, factory fabricated of heavy density resin bonded fibrous glass, with integral factory applied all service jacket of Kraft paper/aluminum foil/glass fiber reinforcement.7
   2. Insulation shall have a thermal conductivity k factor of 0.23 at 75° F. mean temperature and be suitable for direct application and service on piping having operating surface temperatures of –60 degrees to 450 degrees F.
   3. Jacket shall:
      a. Extend 1 ½" (minimum) along one edge of longitudinal joint to form a sealing lap which shall be faced inside with a paper protected pressure sensitive adhesive;
      b. Have a permanence rating of 0.02 perm/in. and a Beach puncture resistance of 50 units;
      c. Have an exterior suitable for painting with latex or water base paint.
   4. All insulation shall have composite (insulation, jacket, tape seal and adhesive used to adhere jacket to the insulation) Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 and UL 723, not exceeding Flame Spread of 25 and a Smoke Developed of 50. PVC fitting covers and accessories, such as adhesives, mastics, cements and cloth for fittings shall have the same component ratings.
   5. Paper laminate jackets shall be permanently flame and smoke resistant. Chemicals used for treating paper in jacket laminates shall not be water soluble and shall be unaffected by water and humidity.
   6. Fiberglass Schuler-Manville Micro-Lok, or equal.

B. Irregular shape (fittings, flanges, valves, etc.)
   1. Fibrous glass of same density, thickness, and other properties or characteristics as the adjacent regular shape insulation either pre-molded or field forged to fit the item being insulated. The pre-molded insulation shall be provided with weather protection cover.

2.02 IP-2 RIGID MOLDED SECTIONAL/OUTDOOR JACKET

   1. Regular shape (straight run)
   2. Molded sectional, factory fabricated of heavy density resin bonded fibrous glass, with integral factory applied all service jacket of Kraft paper/aluminum foil/glass fiber reinforcement.

3. Insulation shall have a thermal conductivity k factor of 0.23 at 75 degrees F. mean temperature and be suitable for direct application and service on piping having operating surface temperatures of –60 degrees to 450 degrees F.
4. Jacket:
   a. Straight runs: .016" thick smooth sheet aluminum finish.
   b. Irregular shapes:
      1) Surefit Aluminum Pipe Fitting Covers for pipes up to 6”.
      2) Mitered aluminum sheet matching straight run jacketing for pipes over 6”.
   c. Alternative jacketing: Schuler-Manville Type ML, metal jacketing system.
5. All insulation shall have composite (insulation, jacket, tape seal and adhesive used to adhere jacket to the insulation) Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 and UL 723, not exceeding Flame Spread of 25 and a Smoke Developed of 50. PVC fitting covers and accessories, such as adhesives, mastics, cements and cloth for fittings shall have the same component ratings.
6. Paper laminate jackets shall be permanently flame and smoke resistant. Chemicals used for treating paper in jacket laminates shall not be water soluble and shall be unaffected by water and humidity.
7. Fiberglass Schuler-Manville Micro-Lok, or equal.

B. Irregular shape (fittings, flanges, valves, etc.)
   1. Fibrous glass of same density, thickness, and other properties or characteristics as the adjacent regular shape insulation, either pre-molded or field forged to fit the item being insulated. The pre-molded insulation shall be provided with weather protection cover.

2.03 IP-3 ELASTOMERIC FOAM

A. Insulation shall be Elastomeric Foam Insulation. Insulation should have a maximum service temperature of 210o F, a minimum service temperature of –40 degrees F., and a "K" factor of .28 at 75 degrees F. The flame spread of the insulation shall be 25 or less, and smoke density shall be 50 or less when tested in accordance with ASTM E84.

B. Provide U.V. protective coating for all outdoor applications similar to Fosters 30-64 coating.

C. Rubatex R-180-FS/R-1800-FS, Armstrong Armaflex or equal

2.04 IP-4 CLOSED CELL POLYOLEFIN

A. Closed cell flexible plastic foam insulation should have a "k" factor of 0.27 or less at 75 degrees F and water vapor permeability of .2 perm-inch or less. The manufacturer shall warrant the insulation to be able to be directly buried underground without any protective jacket.

B. Closed Cell Polyolefin in tubular form shall comply with ASTM C-534, UL 94HBF, UBC 42-1 Class I, ASTM E-84 (25/50), NFPA 255 (25/50), UL 723(25/50), FMVSS-302, CAN-ULC-S102.2-M88 (25/50) Flammability Classification, MEA#267-92-M, New York.

C. Provide U.V. protective coating for all outdoor applications

D. IMCOA Imcolock or equal.

2.05 IP-5 RIGID MOLDED SECTIONAL/INDOOR EXPOSED JACKET

A. Regular shape (straight run)

B. Molded sectional, factory fabricated of heavy density resin bonded fibrous glass, with integral factory applied all service jacket of Kraft paper/aluminum foil/glass fiber reinforcement.

C. Insulation shall have a thermal conductivity k factor of 0.23 at 75 degrees F. mean temperature and be suitable for direct application and service on piping having operating surface temperatures of –60 degrees to 450 degrees F.

1. Jacket:
   a. Straight runs: PVC fitting covers with vapor barrier.
   b. Irregular shapes:
      1) Amerisafe, factory molded aluminum covers, or
      2) Mitered aluminum sheet matching straight run jacketing; or
   c. Alternative jacketing: Schuler-Manville Type ML, metal jacketing system.
2. All insulation shall have composite (insulation, jacket, tape seal and adhesive used to adhere jacket to the insulation) Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 and UL 723, not exceeding Flame Spread of 25 and a Smoke Developed of 50. PVC fitting covers and accessories, such as adhesives, mastics, cements and cloth for fittings shall have the same component ratings.
3. Paper laminate jackets shall be permanently flame and smoke resistant. Chemicals used for treating paper in jacket laminates shall not be water soluble and shall be unaffected by water and humidity.
4. Fiberglass Schuler-Manville Micro-Lok, or equal.

D. Irregular shape (fittings, flanges, valves, etc.)
   1. Fibrous glass of same density, thickness, and other properties or characteristics as the adjacent regular shape insulation, either pre-molded or field forged to fit the item being insulated. The pre-molded insulation shall be provided with PVC protection cover.

PART 3 - EXECUTION

3.01 PIPING APPLICATIONS

NOTE: Where multiple systems are listed, contractor has the option to choose.

A. Condensate (CD) water piping above grade/indoors:
   1. Use System IP-3. (Elastomeric Foam).
      a. 1" thickness for all sizes
   2. Use System IP-4. (Closed Cell Polyolefin).
      a. 1" thickness for all sizes
   3. Use System IP-1. (Rigid Molded Sectional/Indoor Jacket) with vapor barrier.
      a. 1" thickness for all sizes

B. Condensate (CD) water piping below computer room floor:
   1. Use System IP-3 Elastomeric Foam with vapor barrier or IP-4 Closed Cell Polyolefin.
      a. 1" thickness for all sizes
      b. Insulate all waste piping downstream of condensate receptors (CDR) inside of the return air plenum.

C. Refrigerant (RS) – Suction piping above grade/indoors
   1. Use System IP-3 (Elastomeric Foam)
      a. 1" thickness for all sizes

D. Refrigerant (RS) – Suction piping above grade/outdoors
   1. Use System IP-2 (Elastomeric Foam)
      a. 1" thickness with U.V. protection for all sizes

E. Refrigerant (HG) – Hot gas piping above grade/indoors
   1. Use System IP-3 (Elastomeric Foam)
      a. 1" thickness for all sizes

F. Refrigerant (HG) – Hot gas piping above grade/outdoors
   1. Use System IP-2 (Elastomeric Foam)
      a. 1" thickness with U.V. protection for all sizes

3.02 INSTALLATION

A. Unless specifically excluded herein or on the drawings, insulate all parts of hot and chilled water piping systems, steam piping, and condensate drains including fittings, flanges, valves, and pipe-mounted devices, except do not cover nameplates on devices.

B. Install insulation in removable sections over unions, flanges, and line components or devices requiring periodic maintenance.

C. Install insulation butted tightly to transitions such as insulated pipe shields, insulated pipe sleeves, equipment connections, etc.

D. Install insulation on all chilled water piping systems so that condensation will not occur. Insulate all chilled water pipe supports where hanger is directly in contact with pipe up to the point of connection to the building structure. All piping shall be supported in such a manner that neither the insulation nor the vapor/weather barrier is compromised by the hanger or the effects of the hanger. In all cases, hanger spacing shall be such that the circumferential joint may be made outside the hanger. On cold systems, vapor barrier shall be continuous, including material covered by the hanger saddle.

E. Treat equipment face piping as follows:
   1. Where piping is subject to condensation (chilled water systems, domestic water systems, rain water leaders, condensate drains) and where installed above grade outdoors (either hot or cold systems) insulate piping completely to the point of equipment connection.
   2. Where not subject to condensation (hot systems) terminate insulation at the outlet side of the equipment shut-off valve, leaving the face piping un-insulated, 24” max, unless noted otherwise, except where exposed to outdoors.

F. Install insulation materials with smooth and even surfaces. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use cut pieces or scraps abutting each other. Butt insulation joints firmly to ensure complete, tight fit over all piping surfaces.

G. Maintain the integrity of factory-applied vapor barrier jacketing on all pipe insulation, protecting it against puncture, tears or other damage. All staples used on cold pipe insulation shall be coated with suitable sealant to maintain vapor barrier integrity.

H. Rigid Molded Sectional/Jacketed:
   1. Comply with applicable general instructions above.
   2. Apply to all hot water and chilled water piping (except where specified or noted otherwise) installed above grade indoors and outdoors, concealed or exposed.
   3. Seal all transverse joints (except at PVC fitting jackets) with circumferentially applied 3" (minimum) width tape of same material as the jacket, faced with the same adhesive as the longitudinal lap, or seal with Hardcast 4" wide Type DT490-C mineral impregnated woven fiber tape (synthetic fiber indoors, cotton fiber outdoors) using Hardcast FTA-20 activator/adhesive applied by brush or roller. Seal transverse joints at PVC fittings jackets with color matching PVC tape and vapor barrier mastic adhesive.
   4. Fittings and valves shall be insulated with pre-formed fiberglass fittings, fabricated sections of fiberglass pipe insulation, blanket insulation, or insulating cement. Thickness shall be equal to adjacent pipe insulation. Finish shall be with pre-formed PVC fitting covers or as otherwise specified on contract drawings.
   5. Flanges, couplings and valve bonnets shall be covered with an oversized pipe insulation section sized to provide the same insulation thickness as on the main pipe section. An oversized insulation section shall be used to form a collar between the two insulation sections with low-density blanket insulation being used to fill gaps. Jacketing shall match that used on straight pipe sections. Rough-cut ends shall be coated with suitable weather or vapor resistant mastic as dictated by the system location and service.

6. On hot systems where fittings are to be left exposed, insulation ends should be beveled away from bolts for easy access.
7. On cold systems, particular care must be given to vapor sealing the fitting cover or finish to the pipe insulation vapor barrier. All valve stems shall be sealed with caulking to allow free movement of the stem but provide a seal against moisture incursion.
8. Fit insulation terminations with Zeston, Snap Form, end cap jackets, or seal with Hardcast tape as specified above for joints.
9. On all piping (except equipment face piping) installed outdoors, install outdoor jacketing. Install aluminum sheet jacket with all joints turned down at 45° below horizontal; secure in place with non-corroding bands and/or blind rivets (do not puncture vapor barrier insulation jacket). On equipment face piping (including equipment shut-off valve) coat the insulation with ¼" thick Fosters 30-80 or Childers CP-38 outdoor vapor barrier coating reinforced with fosters Mast a Fab or Childers Chil Glas #10 and finished with two (2) coats of aluminum paint.
10. Penetrations
    a. Extend piping insulation without interruption through walls, floors, and similar piping penetrations, except where otherwise specified.

I. Closed Cell Polyolefin:
1. Install pre slit, pre-glued closed cell polyolefin foam pipe insulation as per manufacturer's recommendations. Seal all joints and seams with Fuse-Seal Gun or with Armstrong 520 adhesive or equal in accordance with manufacturer's written instructions. Fabricate fitting covers from polyolefin foam insulation using same procedure.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. The General Conditions of the Contract, Supplementary Conditions, and GeneralRequirements are part of this specification and shall be used in conjunction with this section as part of the contract documents. Consult the above for further instructions pertaining to this work. The Contractor is bound by the provisions of Division 1.

1.02 CONTROL SYSTEM DESCRIPTIONS

A. The Building Automation System (BAS) shall be as indicated on the drawings and described in these specifications. System shall include a network of commercial Internet-programmable thermostats, their accessories, and any other networked devices required for complete climate management. Devices shall communicate across a wireless network using IEEE 802.15.4 technical standards. Wireless communication shall be of an automated mesh communication type, which self-establishes network addresses, communication routes, and all other setup requirements to establish connection across the entire campus. A single Ethernet-connected Gateway shall be able to connect the wireless mesh network to the Internet, allowing for climate management through a cloud based web-application. This network design is to be used to isolate the BAS from the owner's private Ethernet network (LAN) and/or WiFi networks. IEEE 802.11 or any other wireless standard of communication or a wired network communication protocol between devices is not acceptable by these BAS specifications. The Gateway is to connect to a single outbound Ethernet connection on the owner's wide area network (WAN) over a TCP/IP connection. The owner's firewall shall not require any inbound port assignments for the Gateway to connect to the cloud servers. The Gateway shall not require a Public IP and it shall not run any standard available operating systems, such as Windows or Linux.

B. Access and control of BAS shall be through a web-based graphical management platform. The BAS platform shall sit on a cloud server and be accessible on both local personal computers and remotely by use of a web-browser that supports HTML5 or later.

C. No on-site servers are to be installed or used for the BAS. No licensing fees or future licensing fees shall be required as part of the BAS. These specifications and guidelines are to create a cohesive and secure network that provides full management over the facility's climate through the cloud BAS.

D. The BAS shall accommodate an unlimited simultaneous multiple-user operation. Access to the BAS shall be limiting based on security permissions of each operator's role managed by owner site Administrators.

1.03 APPROVED BUILDING AUTOMATION SYSTEM MANUFACTURERS

A. Pelican Wireless Systems

1.04 SUBMITTALS

A. Shop drawings and manufacturer's standard specification data sheets on all hardware shall be provided for this project. No work may begin on any segment of this project until the Engineer and Owner have reviewed submittals for conformity with the plan and specifications. For Engineered shop drawings specific to the mechanical equipment and design requirements, contact Tom Hardy of RSD/Total Control at 916.780.5929.

B. All submittals shall be bound, in a three-ring binder, or provided digitally on a USB stick with a table of contents and related section tabs. Five (5) copies shall be submitted to the Architect or Engineer for distribution and review.

C. Shop drawings shall include basic floor plans depicting locations of all equipment and wiring (installed by others) to be controlled by system and locations of thermostats, gateways, and other equipment provided under this section. Drawings shall also show location of electrical power, low voltage wiring and data ports, provided by others, required for proper installation of systems of this section.

D. The Engineer will make corrections, if required, and return to the Contractor. The Contractor will then resubmit with the corrected or additional data. This procedure shall be repeated until all corrections are made to the satisfaction of the Engineer and the submittals are fully approved.

1.05 SYSTEM STARTUP & COMMISSIONING

A. Each BAS component in the system shall be tested for both hardware and software functionality. In addition, each mechanical and electrical system under control of the BAS will be tested against the appropriate sequence of operation specified herein. Documentation shall be provided to the owner that proves installation and testing has been completed and points out any mechanical issues found which are not related to the installation of the BAS. Successful

B. Completion of the system tests shall constitute the beginning of the warranty period.

C. The BAS Contractor shall provide all manpower and engineering services required to assist the HVAC Contractor and Balancing Contractor in testing, adjusting, and balancing all systems in the building. The BAS Contractor shall have a trained technician available on request during the balancing of the systems. The BAS Contractor shall coordinate all requirements to provide a complete air balance with the Balancing Contractor and shall include all labor and materials in his contract to assist with functional testing of system as it relates to the BAS.

D. Upon completion of installation, submit three (3) copies of record documents. The documents shall be submitted for approval prior to final completion and include:
   1. Testing and Commissioning Reports and Checklists signed off by trainedfield commissioning personnel.
   2. Name, address and telephone number of Contractor personnel managing and installing equipment, along with service personnel responsible for supporting the ongoing warranty and services of the control system.
   3. Procedures for operating the BAS, including logging on/off, alarm management, reading reports, trends, modification of setpoints, scheduling, and other interactive system requirements.
   4. Provide information on how to receive support from Pelican Wireless Systems and communicate that they are a direct supporting resource. Contact information for Technical Support from Pelican Wireless Systems is to be provided.

1.06 CODES AND STANDARDS

A. Codes and Standards. Meet requirements of all applicable standards and codes, except when more detailed or stringent requirements are indicated by the Contract Documents, including requirements of this Section:
   1. California 2022 Title 24 Compliant
   2. California Energy Commission Occupant Control Smart Thermostat (OCST) certified
   3. OpenADR 2.0 certified

1.07 TRAINING

A. The BAS Contractor shall provide training for two (2) owner representatives and/or maintenance personnel. The BAS Contractor shall provide on-site training to the representative(s) and maintenance personnel per the following description:

a. On-site training shall consist of a minimum of (1) hours, as indicated above of hands-on instruction geared at the operation and maintenance of the systems. The curriculum shall include:

- System Overview
- System Application and Operation
- System Access
- Application Features Overview
- Changing Set Points and other attributes
- Scheduling
- Editing configurable variables
- Graphics
- Viewing Historical Reports
- Operational sequences including start-up, shutdown, adjusting and balancing
- Equipment maintenance

1.08 OPERATING AND MAINTENANCE MANUALS

A. The operation and maintenance manuals shall contain all information necessary for the operation, maintenance, replacement, installation, and parts procurement for the entire BAS.

B. Following project completion and testing, the BAS contractor will submit as-built documentation reflecting the exact installation of the system.

1.09 WARRANTY

A. The BAS contractor shall warrant the system for 12 months after system acceptance and beneficial use by the owner. During the warranty period, the BAS contractor shall be responsible for all necessary revisions as required to provide a complete and workable system consistent with the letter and intent of the Sequence of Operation section of the specification. BAS equipment shall include a limited-warranty by the manufacturer for a period of five (5) years from the time of system acceptance.

B. Limited-warranty by manufacturer is limited to replacement of defective products.

1.10 WORK REQUIRED BY THE CONTRACTOR

A. The BAS Contractor shall coordinate with other contractors prior to performing the work on this project and cooperate as necessary to achieve a complete and neat installation. **To that end, each contractor shall consult the drawings and specifications for all trades to determine the nature and extent of their work.**

B. Prior to fabrication and installation. The owner's representative shall be immediately notified if an area of conflict occurs between trades prior to fabrication and installation. BAS Contractor shall provide field supervision to the Contractor for pre-installation of control components.

C. Low-voltage thermostat wiring between equipment and thermostat locations shall be furnished and installed by the Contractor. Unless otherwise noted, all low-voltage wiring shall be multiple conductor thermostat wiring (wire count as indicated in Thermostat Manufacturer's Installation Instructions) installed per owner's specifications. Wiring shall be minimum three (3) conductor/18-gauge wires per BAS manufacturer's standard specifications, multiple conductor/18-gauge thermostat wiring preferred - see Installation Instructions for specific conductor counts depending on heating and cooling modes.

D. Related work provided by the Contractor:
1. 110V outlets shall be provided within five (5) feet of each Gateway orWireless Repeater location.

2. One (1) Ethernet data port shall be provided within ten (10) feet of each Gateway location.

E. Equipment start-up and servicing.

1.11 SCOPE OF WORK

A. Except where otherwise noted, the system shall consist of a network of commercial Internet-programmable thermostats, their accessories, and any other networked climate management device(s) required to fill the intent of the specification, sequence of operations, and provide for a complete and operable system.

B. The BAS contractor shall review and study building/site conditions where applicable and all construction drawings for the project including HVAC drawings and the entire project specifications to familiarize themselves with the equipment and system operation prior to bidding and submittal of a bid/price and notify the owner immediately of any conflicts between the project and the scope of work of this section.

C. All equipment and installation of control devices associated with the equipment listed below shall be provided under this BAS contractor.

D. When the BAS is fully installed and operational, the BAS contractor will make themselves available to meet with the designated representatives of the owner to review the as-installed condition of the system. At that time, the BAS contractor

E. Shall demonstrate the operation of the system and prove that it complies with the intent of the drawings and specifications.

F. The BAS contractor shall furnish and install a complete BAS control system, including all necessary hardware and all operating and applications software necessary to perform the control sequences of operation as called for in this specification.

G. Provide and install BAS controls for the HVAC Equipment as noted on the drawings.

H. Provide technical support necessary for commissioning of system in coordination with the HVAC Contractor, Balancing Contractor, and the owner's team.

I. Shall provide one training session in the operation of the system for owner's personnel.

J. All work performed under this section of the specifications will be in compliance with all codes and regulations as mandated by the authority having jurisdiction.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Unless otherwise noted, all product shall be of a single manufacturer. The standard of design and quality shall be products as manufactured by Pelican Wireless Systems.

2.02 COMMUNICATION

A. This project shall be comprised of a network of devices that use an IEEE 802.15.4 self-creating and self-healing wireless mesh communication network to reach an Ethernet Gateway.

B. The Gateway shall communicate to cloud servers via a single Ethernet connection at the owner’s wide area network (WAN) over a TCP/IP connection. The facility’s firewall shall not require any inbound port assignments for the Gateway to connect to the cloud servers. The Gateway shall not require a Public IP.

C. No BACnet, modBus, LON, or any other device-to-device wired communication protocol shall be used in the communication network.

2.03 OPERATOR INTERFACE

A. The BAS shall be controlled, managed, and configured using a Web-App on any personal computer, smartphone, and/or tablet that runs a browser with HTML5 or newer.

B. The Web-App platform shall run on cloud servers which allow for virtual access. Platform shall not run on a local on-site server.

C. The Web-App shall support at a minimum, the following functions:
   1. Personal user log-on identifications (email addresses) and unique passwords shall be required.
   2. Custom HTML programming shall not be required to display any graphics, data, or build the Web-App. There shall be no development cost, commissioning costs, or software upgrade cost required to obtain and use the Web-App.
   3. Storage of historical data shall reside on the cloud server and shall not sit within the client's computer, internal network, or other devices. A BAS, which requires on-site data storage, is not acceptable.
   4. System shall allow for administrator and user defined access privileges.
   5. A Push/Pull OpenAPI interface with XML data output shall be available.
   6. Servers shall not run a Windows operating system.

D. Control and Override
   1. The BAS shall provide view, override, and edit of the status of any object and property in the system. The status of the device shall be defined graphically and shall not require any custom programs or programming.
   2. Temporary Overrides. The BAS shall be able to provide temporary override (wherever an override is allowed) and automatically remove the override after a specified period of time.
   3. Any override and edit of a object virtually or at the device, if allowable, shall be historically tracked.

E. Scheduling
   1. The BAS shall provide users with scheduling of application devices through a graphical interface. Scheduling shall include, but is not limited to:
      a. Occupied/Unoccupied Schedules. Shall allow 12 scheduled set-time changes in a single day, be configurable for Daily, Weekly, and Weekday/Weekend layouts, and shall be able to be unique to individualdevices or easily shared between multiple devices, where applicable.
      b. Event Schedules. Shall allow for advanced one-time or repeating event type schedules. Event schedules shall override Occupied/Unoccupied Schedules. After the Event schedule ends, the device shall revert back to the Occupied/Unoccupied Schedule automatically.
      c. Vacation Schedules. A 360-day Calendar shall provide override of schedules during vacation days. Thermostats shall be able to automatically or be manually switched to follow Vacation Schedules instead of Occupied/Unoccupied Schedules.

F. Alarm Notification
   1. Alarm Notification(s) shall be generated if there are failures detected by devices part of the BAS. These failures shall be, but are not limited to: temperature deviations, temperatures missing targets, temperatures too high or too low, failures of equipment, etc. Alarm Notification(s) shall be posted on the BAS and shall be able to be sent either via email or text message to an unlimited number of users.

G. Reports and Logs
   1. Data shall be logged and stored on cloud servers for all devices part of BAS in real-time. Every device real-time "state change", when applicable, shall be stored and viewable for at

least one week, with the option of up to two (2) years.
   a. Each space temperature
   b. Each temperature set point(s)
   c. Each current call: heat, cool, number of stages, fan, economizer, etc.
   d. Each damper position
   e. Each valve position
   f. Each CO^2 change
   g. Each CO^2 setting
   h. Each current call for ventilation due to high CO^2
   i. Each Humidity change
   j. Each Humidity set point
   k. Each current call for dehumidification or humidification.
   l. Each Fan speed adjustment
   m. Supply duct static pressure
   n. Supply, Return, Outside air temperatures
2. Data shall be represented on historical graphs that allow for easy viewing of device state change at different times.
3. Excel outputs shall not be required to view data. Historical data shall be viewable through BAS.

2.04 APPLICATION-SPECIFIC CONTROLLERS

A. Application Specific Controllers shall not require custom programming and shall control specific equipment through simple configuration settings done through the cloud-based BAS. All configuration changes shall automatically upload into the device once set on the BAS and shall be stored by the device's internal memory.

B. Gateways are devices which connected to an Ethernet port and act as a bridge between the BAS cloud servers and the wireless mesh network.
   1. Shall be capable of providing Internet connection to up to 2,000 devices.
   2. Shall be capable of automatically addressing routing tables to all devices part of wireless mesh network and shall not require manual programming or addressing.
   3. Shall communicate to cloud servers over a TCP/IP outbound-only connection.
   4. Shall not require a Public IP address, custom VPNs, or any on-site servers.
   5. Shall communicate to other BAS devices over the dedicated and isolated
   6. 802.15.4 IEEE technical standard.
   7. Shall be secured using AES (Advanced Encryption Standards).

C. Internet-Enabled Thermostats are controllers which detect a space/zone temperature and operate equipment or dampers which supply heating, cooling, ventilation, or a combination of the three mechanical states, to their space/zone. Examples are thermostats for VAV, VVT, Fan-Powered Boxes, Fan Coil, Blower Coils, Unit Ventilators, Heat Pumps, Water Source Heat Pumps, and Conventional DX and/or Gas heat equipment.
   1. Shall be capable of providing 24VAC outputs which can be configured to provide control of the following: two stages of fan, three stages of cooling, two stages of heating, one stage of auxiliary heat (heat pumps), floating point zone dampers, two position zone dampers, floating point zone reheat valves, and two position zone reheat valves.
   2. Shall include a removable wiring terminal module that allows for thermostat installation even in situations where there are only three wires between equipment and where the thermostat is to be installed.
   3. Shall be available with the following internal sensors: temperature only, temperature and humidity, temperature, humidity, and CO^2, and temperature and CO^2. All sensors required by the specifications are to be internal to the thermostat and not require two devices on the wall.

4. Shall be able to accept expansion accessories that allow for more advanced control sequences, and additional temperature detection. Examples are economizer controllers, outside air ventilation control, supply air temperature detection, unit ventilator face/bypass control, and modulating control. All expansion accessories shall be Internet enabled and accessible through EMS.
5. Shall communicate with the wireless mesh network through an internal wireless antenna that runs on the 802.15.4 technical standards.
6. Shall be able to automatically repeat the wireless mesh network to additional devices part of the BAS.
7. Shall automatically push, in real-time, to the BAS all “state changes” so as to be viewable historically and in real-time from BAS. Examples are changes in equipment operation (heat, cool, fan), number of stages active, the temperatures in the space, damper position, valve position, temperature set-points, etc.
8. Shall be able to lock-out heat pump compressor(s) based on outside air temperature.
9. Shall provide set-point (heat & cool) temperature limitations through BAS.
10. Shall provide full local keypad lock-out from BAS.
11. Shall meet California 2016 Title 24 code standards.
12. Shall have a programmable three (3°F) degree heat/cool temperature range which auto-adjusts to a five (5°F) degree dead band.
13. Shall have both a heat setpoint, cool setpoint, and auto-changeover.
14. Shall have Optimum Start algorithms that will calculate start times based on at least seven (7) days of previous run-time temperature and rate-of-change historical data for its space. Optimum Start algorithm shall recalculate each optimized schedule time before each optimized schedule.
15. Shall be able to be manually overridden through BAS.
16. Shall be configured through BAS.

D. Wired Temperature Inputs are to be available to provide external temperature detection for specific BAS devices. Examples are to provide supply air temperature, water temperature, refrigeration temperature, outside air temperature, etc. to a thermostat or other device.
   1. Shall accept 10K type II thermistors.
   2. Shall push to the BAS real-time temperature changes so as to be viewable historically and in real-time from the BAS.
   3. Shall accept a thermistor at a maximum of up to 100 feet from input terminal.
   4. Shall be configured through the BAS.

E. Internet-Enabled Economizer Controller are controllers that modulate an outside air damper to provide ventilation and economization to a single zone.
   1. Shall only require a dry-bulb outside air temperature sensor and dry-bulb supply air temperature sensor. No dry-bulb return air temperature sensor or dry-bulb mixing box temperature sensor shall be required to meet full economizer functionality to at a minimum California 2016 Title 24 standards.
   2. Shall communicate with thermostat to determine space temperature and space temperature setpoint in order to decide when economization can be used.
   3. Shall continue to economize as its only source of cooling as long as the outside air temperature is able to keep the space temperature within 1°F of the cool temperature setpoint.
   4. Shall be able to enable mechanical cooling at the same time as economization.
   5. Shall be able to prevent the supply air temperature from dropping below a minimum temperature.
   6. Shall provide enthalpy by use of pulling humidity and barometric pressure information from the Internet based on the zip code of installation location. Enthalpy shall not require any additional probes other than the dry-bulb probe and shall be free to enable.
   7. If connected to a CO^2 thermostat, shall be able to provide demand ventilation control of outside air damper.

8. Shall have a minimum ventilation damper position and a maximum ventilation damper position.
9. Shall be able to be scheduled to not open the outside air damper for ventilation during unoccupied hours.
10. Shall be able to control a Variable Frequency Drive (VFD) with up to five (5) fan
11. speed inputs. Example of fan speed changes are during ventilation, stage one cooling, stage two cooling, stage one heating, stage two heating.
12. Shall modulate an outside air damper by use of a 0-10VDC signal.
13. Shall accept a 0-10VDC signal feedback input from the outside air damper actuator to confirm outside air damper is working correctly.
14. Shall meet all California 2016 Title 24 codes, including Fault Detection and Diagnostic requirements.
15. Shall send Fault Detection and Diagnostic information to the BAS.
16. Shall accept a minimum of three (3) 10K type II thermistors.
17. Shall be able to modulate a 0-10VDC hot water, steam, or electric SCR for heating and outside air tempering.
18. Shall be able to modulate a 0-10VDC chilled water or modulating DX for cooling and outside air tempering.
19. Shall be able to control a face/bypass damper.
20. Shall push all “state changes” to the BAS as to be viewable historically and in real-time from BAS. Examples are changes in equipment operation (heat, cool, fan, economization, ventilation), number of stages active, the supply air temperature, the return air temperature, hot water valve position, face/bypass damper position, variable speed fan setting, etc.
21. Shall be able to be manually overridden through the BAS.
22. Shall be configured through the BAS.

F. Internet-Enabled Power Relay Module are controllers which have dry-contact relays able to start/stop different electrical equipment. Examples are exhaust fans, lights, pumps, valves, boilers, chillers, etc.
   1. Shall have relays with a max rating of 120 VAC @ 15 AMPs or 240/277 VAC @10 AMPs.
   2. Shall have a low-voltage terminal for momentary contact override inputs. Override time shall be configurable for a specific amount of minutes through a configuration from the BAS.
   3. Shall be able to provide Lead/Lag sequencing between relays.
   4. Shall be able to accept an external dry-contact input used to verify flow if being used as a pump controller. If being used as a lead/lag pump controller, shall be able to alarm the BAS if flow is not detected when Pump A is enabled and start Pump B as a stand-by pump.
   5. Shall communicate with the wireless mesh network through an external wireless antenna that runs on the 802.15.4 technical standards. Antenna shall be able to communicate with Power Relay Module over three (3) 18-gauge wires up to 500 feet between device terminal inputs.
   6. Shall be able to automatically repeat the wireless mesh network to additional devices part of the BAS.
   7. Shall push all “state changes” to the BAS as to be viewable historically and in
   8. real-time from the BAS. Examples are changes in relay positions On or Off. Shall be able to be manually overridden through the BAS.
   9. Shall be configured through the BAS.

G. Zone Controllers are controllers which operate equipment which supply heating, cooling and ventilation, or a combination of these mechanical states to multiple zones.
   1. Shall communicate with the wireless mesh network through a removable wirelessantenna that runs on the 802.15.4 technical standards.

2. Remote mountable antenna shall be able to communicate to Zone Controller over three (3) 18-gauge wires up to 500 feet between devices terminal inputs.
3. Communication from the Zone Controller to all zone/space Thermostats shall be over the wireless mesh network.
4. Shall be capable of providing 24VAC outputs which can be configured to provide control of the following: multiple stages of fan, multiple stages of cooling, and multiple stages of heating.
5. Shall be capable of providing 0-10VDC outputs which can be configured to provide control of the following: variable speed fan (VFD), modulating outside air damper, modulating heating valve.
6. Shall have integrated outside air damper control logic and not require a third- party or additional controllers to provide economization and ventilation control.
7. Shall directly accept a supply duct static pressure probe. Shall have an integrated short-term and long-term learning PID loop algorithm for maintaining target supply static configurations. PID loop shall not require any type of cost for programming and is to be factory loaded into controller.
8. Shall only require dry-bulb outside, return, and supply air temperature sensors.
9. If communicating to CO^2 thermostat(s), shall be able to provide demand ventilation control of outside air damper.
10. Shall push all “state changes” to the BAS as to be viewable historically and in real-time from the BAS. Examples are changes in equipment operation (heat, cool, fan, economization, ventilation), number of stages active, the supply air temperature, the return air temperature, the outside air temperature, hot water valve position, supply duct static reading, variable speed fan setting, etc.
11. Shall be able to be manually overridden through the BAS.
12. Shall be configured through the BAS.
13. Make-up Air Controllers which operate equipment supplying ventilation to the building shall communicate with the wireless mesh network through a removable wireless antenna that runs on the 802.15.4 technical standards.
14. Remote mountable antenna shall be able to communicate to Controller over three (3) 18-gauge wires up to 500 feet between devices terminal inputs.
15. Communication from the Controller to zone/space Thermostat(s) shall be over the wireless mesh network.
16. Shall be capable of providing 24VAC outputs which can be configured to provide control of the following: multiple stages of fan, multiple stages of cooling, and multiple stages of heating.
17. Shall be capable of providing 0-10VDC outputs which can be configured to provide control of the following: modulating variable speed fan (VFD), modulating outside air damper, modulating heating, modulating cooling.
18. Shall be able to modulate a VFD to maintain a targeted building static pressure.
19. Shall be able to modulate a 0-10VDC hot water, steam, or electric SCR for heating and outside air tempering.
20. Shall be able to modulate a 0-10VDC chilled water or modulating DX for cooling and outside air tempering.
21. Shall have integrated outside air damper control logic.
22. Shall directly accept a building pressure probe. Shall have an integrated short- term and long-term learning PID loop algorithm for maintaining target building pressure. PID loop shall not require any type of cost for programming, is to be factory loaded into controller, and updatable virtually through EMS.
23. Shall only require dry-bulb outside and supply air temperature sensors.
24. If communicating to CO^2 thermostat(s), shall be able to provide demand ventilation control of outside air damper.

25. Shall push all “state changes” to the BAS as to be viewable historically and in real-time from the BAS. Examples are changes in equipment operation (heat, cool, fan, economization, ventilation), number of stages active, the supply air temperature, the return air temperature, the outside air temperature, hot water valve position, supply duct static reading, variable speed fan setting, etc.
26. Shall be scheduled On or Off through the BAS.
27. Shall be able to be manually overridden through the BAS.
28. Shall be configured through the BAS.

H. Wireless Proximity Sensors are thermostat accessories which are able to detect when a door or window is opened or closed, or be able to accept a dry-contact input from an occupancy sensor.
   1. Shall be able to communicate to a single Internet-Programmable Thermostatover wireless mesh network.
   2. Shall communicate with the wireless mesh network through an internal wireless antenna that runs on the 802.15.4 technical standards.
   3. Shall run on two AA batteries and not require any unique type of battery to operate.
   4. Shall push all “state changes” to the BAS as to be viewable historically and in real-time from the BAS. Examples are if the door is open, if the space is unoccupied, if a window is open.
   5. Shall be configured through the BAS.

I. Remote Wireless Sensors are thermostat accessories which are used to either average temperatures between the sensors location and a master thermostat or to relocate the sensing location of the master thermostat without having to run new wire.
   1. Shall be able to communicate to a single Internet-Programmable Thermostatover wireless mesh network.
   2. Shall communicate with the wireless mesh network through an internal wireless antenna that runs on the 802.15.4 technical standards.
   3. Shall run on two AA batteries and not require any unique type of battery to operate.
   4. Shall push all “state changes” to the BAS as to be viewable historically and in real-time from the BAS. Examples are changes in equipment operation (heat, cool, fan), number of stages active, the temperatures in the space, temperature set-points, etc.
   5. Shall be configured through the BAS.

J. Wireless Repeaters are devices which extend the 802.15.4 wireless mesh network across large expanses or where BAS devices are unable to repeat the wireless mesh network on their own. Examples are when bridging the wireless mesh network from one building to another.
   1. Shall communicate with the wireless mesh network through an internal wirelessantenna that runs on the 802.15.4 technical standards.
   2. Shall be able to automatically repeat the wireless mesh network to additional devices part of the BAS.
   3. Shall not require an Ethernet connection or any TCP/IP connection.
   4. Shall only require a single 120V outlet for power.

K. Configuration of Devices and System
   1. To meet the sequence of operation for each controller, the controller shall be configured through the BAS by the installing contractor. No custom programmingor downloading by use of a service tool shall be required.
   2. Stand-Alone Operation: Each piece of equipment specified shall provide stand- alone operation. BAS devices shall not require web connection or communication to the BAS to run under normal operations.

PART 3 - EXECUTION

3.01 EXAMINATION

A. The Contract Documents shall be thoroughly examined for coordination of control devices, their installation, wiring, and commissioning. Coordinate and review mechanical equipment specifications, locations, and identify any discrepancies, conflicts, or omissions that shall be reported to the Architect/Engineer for resolution before rough-in work is started.

B. The BAS manufacturer shall be available to provide assistance to BAS Contractor in order to verify that control equipment can be installed as required, and any discrepancies, conflicts, or omissions shall be reported to the Architect/Engineer for resolution before rough-in work is started.

3.02 PROTECTION

A. The BAS installing contractor shall protect all work and material from damage by their work or personnel, and shall be liable for all damage thus caused.

B. The BAS installing contractor shall be responsible for their work and equipment until final inspection, testing, and acceptance. The BAS installing contractor shall protect their work against theft or damage, and shall carefully store material and equipment received on site that is not immediately installed. The Contractor shall close all open ends of work with temporary covers or plugs during storage and construction to prevent entry of foreign objects.

C. **Installation of BAS shall be performed by an approved Contractor. Approved contractor is one whom either has installed the BAS before or has been approved by the BAS manufacturer. The Contractor shall certify all work as proper and complete. Under no circumstance shall the design, scheduling, coordination, programming, training, and warranty requirements for the project be delegated to a subcontractor unless that subcontractor meets the BAS approved Contractor requirements as stated above.**

D. Demolition. Remove controls which do not remain as part of the BAS. The owner will inform the Contractor of any equipment which is to be removed that will remain the property of the owner. All other equipment which is remove will be disposed of by the Contractor.

E. Access to Site. Unless notified otherwise, entrance to building is restricted. No one will be permitted to enter the building unless their names have been cleared with the owner or an owner-approved representative.

F. Code Compliance. All wiring shall be installed in accordance with all applicable electrical codes and will comply with equipment manufacturer’s recommendations.

G. Clean Up. During installation, contractor shall maintain a clean environment. At the completion of the work, all equipment pertinent to this contract shall be checked and thoroughly cleaned, and all other areas shall be cleaned around equipment provided under this contract.

3.03 TEST AND BALANCE

A. Testing of controls shall be performed by installing contractor. All equipment and their components being controlled shall be tested, including, but not limited too: heating enables and a proper supply air temperature from the AHU, RTU, and into the zone (if there is a zone box) is recorded, cooling enables and a proper supply air temperature from the AHU, RTU, and into the zone (if there is a zone box) is recorded, fan enables and the proper fan speed is set when specified (when using a multiple speed fan, VFD, or ECM motor), and that the outside air damper fully opens and closes when commanded. Any devices that are enabled and disabled shall properly respond to the BAS control signals.

B. All control configurations shall be set to meet specifications. All temperatures and other sensors shall be determined accurate and configured for the type of temperature being detected.

C. All mechanical systems controlled by BAS shall be properly balanced to the right CFMs to meet required codes and specifications.

3.04 WIRING, CONDUIT, AND CABLE

A. All control wires between mechanical equipment and BAS devices are to be furnished and installed by others, unless BAS contractor is responsible for this part of the installation. The BAS contractor shall not begin work on this contract until all wiring is installed to the satisfaction of the BAS contractor.

B. It is not an excuse to have not referenced the manufacturer's installation documentation or to have contacted the BAS manufacturer if wire installation is not understood and done incorrectly by the installing Contractor.

3.05 HARDWARE INSTALLATION

A. Installation Practices for Devices. All devices are to be mounted level/plumb and per the manufacturer's installation documentation.

B. It is not an excuse to have not referenced the manufacturer's installation documentation or to have contacted the BAS manufacturer if hardware installation not understood and done incorrectly by the installing Contractor.

C. Identification.
1. Identify all control wires with labeling tape or sleeves using either words, letters, or numbers that can be exactly cross-referenced with as-built drawings.
2. All field enclosures, other than controllers, shall be identified with a nameplate. The lettering shall be in white against a black or blue background.
3. Junction box covers will be marked to indicate that they are a part of the BAS.
4. All field devices (except space sensors) that are not mounted within FIP's shall be identified with name plates.
5. All field devices inside FIP's shall be labeled.

D. Control System Switch-Over. The installing contractor shall minimize control system downtime during switch-over. Sufficient installation mechanics will be on-site so that the entire switch-over can be accomplished in a reasonable time frame.

E. Location.
1. The location of sensors is as indicated in the mechanical and architectural drawings.
2. Space temperature, humidity, and CO^2 sensors will be mounted away from machinery generating heat, direct light, and/or diffuser air streams.
3. If external temperature sensors are installed, sensors will be mounted away from machinery generating heat, direct light, and/or diffuser air streams.
4. If outdoor air temperature sensors are installed, sensors are to be installed such that the effects of heat radiated from the building or sunlight is minimized.

3.06 SYSTEM CONFIGURATION

A. General. The installing contractor shall provide all labor necessary to install, initialize, start-up and troubleshoot all system hardware and configurations described in this section. This includes any requirements necessary to access the web application on third-party devices.

B. Installing contractor shall work with owner's representative to determine configuration parameters including but not limited to hours of operation, set points, system variables, naming of devices, and site naming. Naming of devices and the site shall be performed by the installing contractor. Naming convention of space thermostats shall be space served. Naming convention

of zone controllers shall be the equipment serial number. All naming shall be provided by or agreed upon with the owner.

3.07 SYSTEM COMMISSIONING AND SYSTEM STARTUP

A. Each BAS component in the system shall be tested for both hardware and software functionality. In addition, each mechanical and electrical system under control of the BAS will be tested against the appropriate sequence of operation specified herein. Documentation shall be provided to the owner that proves installation and testing has been completed and points out any mechanical issues found that are not related to the installation of the BAS. Successful completion of the system tests shall constitute the beginning of the warranty period.

B. The BAS Contractor shall provide all manpower and engineering services required to assist the HVAC Contractor and Balancing Contractor in testing, adjusting, and balancing all systems in the building. The BAS Contractor shall have a trained technician available on request during the balancing of the systems. The BAS Contractor shall coordinate all requirements to provide a complete air balance with the Balancing Contractor and shall include all labor and materials in his contract to assist with functional testing of system as it relates to BAS.

C. Upon completion of installation, submit three (3) copies of record documents. The documents shall be submitted for approval prior to final completion and include:
   1. Testing and Commissioning Reports and Checklists signed off by trained field commissioning personnel.
   2. Name, address and telephone number of Contractor personnel managing and installing equipment, along with service personnel responsible for supporting the ongoing warranty and services of the control system.
   3. Procedures for operating the BAS including logging on/off, alarm management, reading reports, trends, modification of setpoints, scheduling, and other interactive system requirements.
   4. Provide information on how to receive support from Pelican Wireless Systems and demonstrate that they are a direct supporting resource. Contact information for Technical Support from Pelican Wireless Systems is to be provided.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SPECIAL CONDITIONS and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

1.02 SUMMARY

A. This section includes all plumbing (equipment, fixtures, pipe and fittings, specialties) inside the building(s) and outside the building(s) to the point of connection to site plumbing systems.

B. Provide complete plumbing systems including:
   1. All piping systems for conduction of natural gas as shown or specified for plumbing work.
   2. All valves, piping supports, piping penetration auxiliaries, piping protective coverings, piping, and other piping accessories as shown or specified for plumbing work.
   3. All plumbing equipment and auxiliary items as specified herein or shown on the drawings.

1.03 QUALITY ASSURANCE

A. All plumbing fixtures and equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.

1.04 REFERENCES

A. Pipes and Tubes
   1. Steel Pipe: ASTM A53, Type S, Grade A, Schedule 40, seamless, black or galvanized, plain ends.
   2. Polyethylene Pipe: ASTM D2513 produced to APWA/ULCC standards for color coding of gas distribution systems.

B. Fittings
   1. Steel Pipe Nipples: ASTM A733, made of ASTM A53 or ASTM A106, Schedule 40, seamless, galvanized, carbon-steel pipe.
   2. Malleable-Iron Unions: ASME B16.39, Classes 150 and 300; hexagonal stock; with ball-and-socket joint; metal-to-metal bronze seating surfaces; and female threaded ends with threads complying with ASME B1.20.1.
   3. Polyethylene Plastic: ASTM D2683 and D3261, socket or butt fusion fittings.

1.05 JOINING MATERIALS

A. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

B. Heat Fusion

1.06 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer. Where possible, offset vents and pipes rising in walls, concealed above ceilings, below plates and rise through roof. Where this is not possible, install vents and pipes through plates as detailed on structural drawings.

1.07 SUBMITTALS

A. Submit a general statement of materials and methods along with manufacturer's technical data and installation instructions for all equipment, fixtures, pipe and fittings, and plumbing specialties to be installed.

B. Record Drawings: Per specification section 23 05 00 requirements.

C. Operation and Maintenance Manuals: Per specification section 23 05 00 requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Adapters: Wrought copper male adapters shall be used wherever it is necessary to connect copper tubing to a valve or "tee" having threaded connections.

2.02 PIPE, FITTING, AND JOINING MATERIALS

A. Steel/Threaded Fittings
   1. Pipe: Black or galvanized steel per ASTM A-53 seamless, threaded ends, standard weight Schedule 40 for sizes 2" and smaller.
   2. Fittings:
      a. Black or galvanized (to match pipe) banded malleable iron, threaded, ASTM A-197, 150 lb. standard or 300 lb. extra heavy per ANSI Standard B16.3 (to match pipe schedule).
      b. Unions: AAR 300 lb. malleable iron, black or galvanized (to match pipe).
      c. Joining Materials/Methods
         1) Rectorseal or pure lead and graphite thread lubricant.
         2) Permacel, P-412, ½" wide teflon pipe joint sealant.

B. Steel/Welding Fittings
   1. Pipe: Black or galvanized steel per ASTM A-53 seamless, threaded ends, standard weight Schedule 40 for sizes 2" and smaller.
   2. Fittings: Black steel, permanently marked, seamless butt welding type, standard weight or extra strong (to match pipe schedule). Optional in lieu of tees where main is at least two pipe sizes larger than branch Bonney Forge, Threadolets for ½" to 2", weldolets for branch lines 2 ½" to 4"; fitting shall suit main size.
   3. Unions: AAR 300 lb. malleable iron, black or galvanized (to match pipe).
   4. Joining Materials/Methods
      a. Gas or electric arc welding per ASME Code for pressure piping.

C. Polyethylene plastic butt fusion welded joints
   1. Pipe: Schedule 40, plain ends.
   2. Fittings: Polyethylene fusion welded type.
   3. Joining Materials/Methods: Fusion welded, using fusion welding fittings, and the manufacturers supplied control unit.
   4. Connections: Utilize only adapters supplied by the same manufacturer of the pipe.

2.03 PIPE AND FITTING APPLICATIONS

A. Inside Building (to 5'-0" outside building line).
   1. Gas Piping: Schedule 40, black steel pipe; malleable iron screwed fittings for sizes 2" and smaller. Weld sizes 2 ½" and larger. Weld all below grade piping and protect as specified herein.
   2. Plastic pipe and fittings shall not be used inside of buildings.

B. Outside Building (from 5'-0" outside building line)
   1. Gas piping
      a. Above grade and to 30" below grade, shall be Schedule 40, black steel pipe with 150 lb. malleable iron, welded joints.
      b. Below grade pipe shall be protected with X-Tru-Coat and fittings covered with X-Tru-Coat, heat shrink, sleeves to 6” above grade. Above grade sizes 2" and smaller may be screwed joints.
      c. Underground gas piping below 30" depth and 30” after the first change in direction, shall be polyethelyene pipe with fusion welded joints.

C. Appliance Flexible Connectors for Indoor Equipment Without External Spring Isolation:
   1. Contractor may choose one of the following:
      a. Direct gas pipe connection.
      b. Appliance flexible connector:
         1) Comply with ANSI Z21.24.
         2) Polymer or hot-dipped PVC coated corrugated 304 stainless steel.
         3) Operating-Pressure Rating: 0.5 psig.
         4) End Fittings: Zinc-coated steel.
         5) Maximum Length: 30 inches.
         6) Manufacturers: Dormont, Series 30C, 31, 40C, 41, and 51, Brasscraft model ProCoat, or equal.
      c. Provide with end connections compatible with equipment and piping system.
      d. Equipment located in spaces normally accessible to building occupants, other than maintenance personnel, shall utilize direct gas pipe connection.
      e. Provide anti-microbial PVC coating for use with appliances located in kitchen areas.
   2. Flexible Gas Connector for Outdoor Equipment Without External Spring Isolation:
      a. Contractor may choose one of the following:
         1) Direct gas pipe connection.
         2) Corrugated stainless steel hose with 304 stainless steel braid covering, CSA certified. Metraflex model GASCT, Unisource Manufacturing series 400, or equal. Provide with end connections compatible with equipment and piping system.
   3. Flexible Gas Connector for Equipment with External Spring Isolation, Indoors and Outdoors:
      a. Where Drawings indicate installation of mechanical equipment on spring isolation rails spring mounted curbs, or spring hangers, provide metal flexible connectors, Metraflex Metraloop, or equal by Unisource Mfg. Co., or Flexicraft Industries, CSA certified for 4 inches of movement in all directions.
   4. Flexible Gas Connection System for Movable Gas-Fired Cooking Equipment:
      a. System shall include flexible PVC coated braided stainless steel hose, quick disconnect fitting, full port CSA certified ball valve, 2 swivel elbows, coiled steel restraining cable and mounting hardware. Assembly shall be certified per ANSI Z21.69/CSA 6.16, “Connectors for Movable Gas Appliances.” Size as required for appliance connection, 48” minimum hose length. Install per manufacturer’s instructions. Connectors shall be Dormont Safety System, T&S Safe-T-Link, or equal.
   5. Gas Piping Underground: Performance Pipe, “DriscoPlex” 6500 PE 2708 (yellow), Polypipe, Inc., “Polypipe”, or equal, polyethylene gas distribution pipe, ASTM D2513, ASTM D3261, and ASTM D2683 fittings with fusion welded joints. Provide piping labeled for natural gas in accordance with CPC.
      a. Electrically isolate underground ferrous gas piping from the rest of the gas system with listed or approved isolation fittings installed a minimum of six inches above grade.
      b. Provide Central Plastics Corp., Perfection, or equal, anodeless, single seal riser for transition from below grade polyethylene to schedule 40 steel piping above grade. Minimum horizontal length shall be 30 inches. Minimum vertical length shall be 30

inches, or greater as required. Provide fusion connection to polyethylene pipe below grade, and screwed connection to steel pipe above grade.

2.04 PIPE PROTECTION

A. Bare galvanized or black steel pipe buried in the ground shall have a corrosion protective wrap of one of the following:
   1. Polyvinyl Chloride Tape: The tape shall be of a minimum thickness of 10 mils and shall be laminated with a suitable adhesive, or shall be applied with a suitable primer adhesive. Width as recommended by the manufacturer for the pipe sizes being wrapped (4" minimum). Tape shall have continuous identification
   2. 3M X-Tru-Coat, factory-applied plastic coating with additional field-applied double-layer wrapping of Scotchrap #51, 20-mil plastic tape, Trentex No. V-10, B-20, Scotchwrap No. 50 Polyvinyl chloride tape wrap, or thermofit sleeves.
   3. Field Joint Cover: Tape coat, prime coat and one layer of Tape coat #20 heat-applied 62-mil tape.

B. Provide a sacrificial anode for the underground portion of all steel piping when required by the local authority.

2.05 VALVES

A. General
   1. Furnish two tee handle operators for each size to suit all valves which are installed below grade in access boxes and which are not fitted with integral handles; hub end valves shall be used where required.
   2. Valves on systems operating over 100 psi shall be rated for 150 lb. or higher as required.

B. Shut-off service, natural gas
   1. Sizes 2" and smaller: NibcoT-585-70-UL, full port ball valve; 400 psi gas service rating; bronze body and ball, teflon seat, quarter turn handle with stops, swing-out accessibility/removal.
   2. Sizes 2 ½" to 4": Homestead, Standard Opening, 200 psi shut-off pressure differential; semi-steel body, flanged ends, plug with lever handle.

2.06 PIPING ACCESSORIES

A. Unions shall have the same pressure rating as pipe fittings.

2.07 PIPING PENETRATION AUXILIARIES

A. Sleeves Below Slab or Grade: Metraseal model MS or equal with schedule 80 PVC sleeve. The seal shall be capable of withstanding a hydrostatic pressure of 20 psig. The seal shall be constructed of synthetic rubber with heavy-duty plastic pressure plates. All bolts and nuts shall be constructed of stainless steel.

B. Escutcheons: Polished chrome plated brass or painted metal.

PART 3 - EXECUTION

3.01 GAS PIPING

A. Gas Piping: Install generally level with as few bends as possible. Install dirt legs and shut-off valves at each piece of equipment. Support as specified and in accordance with the C.P.C.

B. Polyethylene Gas Piping: Shall be heat fusion welded in strict accordance with manufacturer's installation instruction. Bury high pressure mains (over 7" W.C.) 36" minimum and low pressure

(7" W.C. or less) 30". Place pipe on 6" sand bed on trench bottom and cover pipe with 12" sand after placement. Remaining backfill may be native soil.

C. Bury a No. 18 AWG insulated copper locating wire with all non-metallic pipe. Copper wire shall have at least 12" above grade at each end.

3.02 VALVES

A. Valves shall be full size of line in which installed. Furnish discs suitable for service intended. All valves shall be properly packed and lubricated. Unions shall be placed adjacent to each threaded or soldered valve or equipment connection 2" and smaller. Install flanges at all valves with stems vertical wherever possible. Stems shall not be placed below horizontal.

B. Install unions adjacent to each valve and at final connection to each piece of equipment.

C. All shutoff valves in gas lines shall be or ball valves, unless otherwise shown.

D. Valves shall be provided with brass identification tags indicating service controlled. Tags may be omitted on lines exposed in equipment rooms where service is obvious.

3.03 PIPING TESTING: TESTING CRITERIA

System	Medium	Pressure	Duration
Natural Gas	Air	150 psig above grade	4 hours
		65 psig below grade	4 hours

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, SPECIAL CONDITIONS and DIVISION 1 GENERAL REQUIREMENTS, apply to the work of this section.

B. Section 23 05 00, General Mechanical Requirements applies to this section.

C. Sections 23 05 29, 23 05 48, 23 05 53 and 23 07 19.

1.02 SUMMARY

A. Work Included
   1. Provide complete piping systems for conduction of heating hot water supply and return, chilled water supply and return , and other fluids for HVAC work including all other chemicals required for pipe flushing, cleaning, testing, etc., all as specified or shown on the drawings.

B. Provide all valves, strainers, piping supports, seismic braces, piping penetration auxiliaries, protective coverings, piping insulation, and other piping appurtenances as shown or specified for HVAC work.

C. Installation of sensing and control devices that mount on or insert into piping.

1.03 QUALITY ASSURANCE

A. All HVAC equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.

B. Standards: Comply with all applicable codes or standards governing process piping, system materials, application, and installation.

C. Welding Qualifications: Welders shall be certified in accordance with American Welding Society "Standard Qualification Procedure".

1.04 REFERENCES

A. Pipes And Tubes
   1. Hard Copper Tube: ASTM B 88, Types L and M, water tube, drawn temper.
   2. Soft Copper Tube: ASTM B 88, Types K and L, water tube, annealed temper.

B. Fittings
   1. Wrought-Copper, Solder-Joint Pressure Fittings: ASME B16.22.
   2. Cast-Copper-Alloy, Solder-Joint Pressure Fittings: ASME B16.18.
   3. Bronze Flanges: ASME B16.24, Classes 150 and 300.
   4. Copper Unions: ASME B16.18, cast-copper-alloy body, hexagonal stock, with ball-and-socket joint, metal-to-metal seating surfaces, and solder-joint, threaded, or solder-joint and threaded ends. Threads complying with ASME B1.20.1.

C. Joining Materials
   1. Solder Filler Metal: ASTM B 32, alloys to suit system requirements.
   2. Brazing Filler Metals: AWS A5.8, alloys to suit system requirements.

1.05 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer.

PART 2 - PRODUCTS

2.01 PIPE MATERIALS

A. Copper/Soldered Joints
   1. Pipe: Type L, Type K or Type M hard drawn copper tubing per ASTM B-88, plain ends.
   2. Fittings: Solder type, wrought copper per ANSI Standard B16.22 or cast red bronze per ANSI Standard B16.18. Do not use T-drill.
   3. Unions: Solder type, cast red bronze.
   4. Joining Materials/Methods
      a. Canfield, Silvabrite or equal lead free solder with a non-corrosive water based flux.

2.02 REFRIGERANT SYSTEM COMPONENTS

A. Refrigerant Piping (R, RL, RS): Type L, hard copper ACR tubing with silver soldered joints and wrought copper fittings. Do not reduce sizes due to long runs.
   1. Contractor shall have the option to use manufacturer's "Line Sets" for total lengths of lines of 50'-0" from ACCU to coil. Suction lines shall be insulated as hereinbefore specified.
   2. An inverted vapor line trap shall be installed in all systems when the condensing unit is below the furnace or fan coil. The top peak of the trap must be at least one inch higher then the top of the indoor coil.
   3. Install a liquid line solenoid on all systems when the refrigerant lines are installed underground, including all refrigerant lines installed in buried pipes and when the total equivalent line length exceeds 50 feet.
   4. Install a hard start capacitor and relay on all systems, except three-phase systems, when the refrigerant lines are installed underground, including all refrigerant lines installed in buried pipes and when the total equivalent line length exceeds 50 feet. If a factory installed soft start is included with the unit, this must removed prior to installation of the hard start kit.
   5. A suction accumulator must be installed on all systems when the refrigerant lines are installed underground and when the total equivalent line length exceeds 50 feet, including all refrigerant lines installed in buried pipes. The accumulator shall be sized to receive a minimum of 70% of the total system refrigerant charge. The additional refrigerant charge beyond the 15 feet of line included in the unit charge as noted in the nameplate data. Include the additional refrigerant charge due to the larger diameter liquid line.
   6. Install a crankcase heater on all systems when the refrigerant lines are installed underground, including all refrigerant lines installed in buried pipes and when the total equivalent line length exceeds 50 feet.
   7. Install a liquid-line filter drier on all systems when the refrigerant lines are installed underground, including all refrigerant lines installed in buried pipes and when the total equivalent line length exceeds 50 feet.
   8. Install a 5 minute outdoor unit cycle protector on all units.
   9. Install a liquid line sized per manufacturer's instructions on all systems when the equivalent refrigerant line length exceeds 50 feet.
   10. The contractor shall be responsible to provide locking-type tamper resistant caps on all refrigerant access port located outdoor,s except where the refrigerant ports are located in secure locations with key access.

2.03 HANGERS AND SUPPORTS

A. Building Attachments: Powder-actuated-type, drive-pin attachments with pullout and shear capacities appropriate for supported loads and building materials, UL listing and FM approval for fire-protection systems. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping. Provide beam clamp retaining straps for all pipe supports where attached to steel beams.

B. Mechanical-Anchor Fasteners: Insert-type attachments with pullout and shear capacities appropriate for supported loads and building materials.

C. Load Distribution: Install hangers and supports so piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

D. B-Line, finish: Electro-Chromate or hot dipped galvanized.
   1. Individual: B3690, B3100 cleavis or B3110
      a. Use H-104 all thread rod.
      b. Use B3110 for pipe subject to movement.
   2. Pipe Straps: B2007-B2072 for standard pipe, B2000-B2069, copper coated for copper.
   3. For insulated pipe - B3690 pipe hangers sized to allow pipe insulation to pass continuously through the hanger.
      a. Trapeze Supporting Rods: Diameter sufficient to support the load with a safety factor of 5.
      b. Isolators: 319 CT or Trisolator.

PART 3 - EXECUTION

3.01 INSTALLATION OF REFRIGERANT PIPING

A. Install Bare Metal Pipe Isolators: Stoneman “Trisolator”, Superstrut “Cust-aStrip”, Unistrut on all non-insulated refrigerant piping.

B. Install pipe supports on the outside of the insulation for all insulated refrigerant piping.

C. The buried portion of the refrigerant lines shall be buried in gravel filled trench. The refrigerant lines shall be installed in a 4” minimum schedule 40 PVC plastic pipe. The 4” pipe shall be sealed moisture tight to prevent moisture from entering the buried refrigerant lines.
   1. The buried portions of the refrigerant lines shall slope towards the indoor unit.
   2. All the PVC joints shall be sealed with joint cement to prevent moisture leakage.
   3. There should be a minimum of joints in the buried portion of the refrigerant lines. If the buried portion is less than 20 feet, there should not be any joints in the buried portion.
   4. The refrigerant leak test shall be performed prior to final sealing of the PVC pipe.
   5. The refrigerant suction line must be insulated through the buried portion as wells as all other portions as previously specified.

3.02 PIPING HANGERS AND SUPPORTS

A. General
   1. Miscellaneous: Provide all supports, anchors, concrete pads, grouting, bedding, bracing, vibration isolation, and accessories required for pumps and other equipment.
   2. Support all piping with appropriate manufactured devices as specified use no wire or makeshift device.
   3. The engineer prior to installation shall approve all hanger material.
   4. Size hanger rods, screws, bolts, nuts, etc., according to manufacturer's recommendations. Size hangers to fit around bare pipe, isolator, or insulated pipe shield as appropriate.
   5. Use cadmium plated or galvanized hangers, attachments, rods, nuts, bolts and other accessories where exposed to weather. Hot dip galvanize all items which are not factory finished. Plating for hinged movements must be done at factory.
   6. Hanger rods with C-clamp type structural attachment shall be equipped with retaining straps.
   7. At each support on bare copper tubing or piping system, install an isolator; at each support point on insulated piping systems, install an insulated pipe shield.
   8. Burning, welding, cutting, or drilling on any structural member may only be done if approved by the structural engineer.
   9. No valve or piece of equipment shall be used to support the weight of any pipe.

10. Provide a hanger close to the point of change of direction of pipe run in either horizontal or vertical plane.
11. When hangers or supports do not come within one foot of a branch line fitting, install an additional hanger or support at the fitting.

B. Pipe Supports
   1. Horizontal Lines
      a. Suspend all horizontal pipes individually and not in contact with the structure except as specified below. Support each branch line with at least one hanger.

C. Parallel pipes may be supported on trapeze type hangers. Size trapeze hangers to support weight of piping plus a surcharge of 300 pounds. For three or more pipes use a size suitable for the load in accordance with manufacturers published load ratings. No deflection to exceed 1/180 of a span. Anchor rods securely to building structure.
   1. Hanger Spacing Schedule:

Type of Pipe	1" dia. Or under	1¼" to 2" dia
Copper Tubing	6'-0"	8'-0"
Rod Size:	$^{3}/_{8}$"	½"

3.03 TESTING OF REFRIGERANT PIPING

A. Test all piping at completion of rough-in, in accordance with the following schedule and show no loss in pressure or visible leaks after a minimum duration of 12 hours at the test pressure indicated. The contractor shall furnish testing equipment. Testing personnel shall be competent to conduct the tests, and demonstrate satisfactory completion of tests to the engineer.

System Tested	Test Pressure Psig	Test Medium
Refrigerant – Liquid	250	Nitrogen, let stand 12 hours
Refrigerant – Suction	150 and 28" vacuum	Nitrogen, let stand 12 hours

B. Before covering, concealing, or using the refrigerant piping system or parts thereof, test and prove tight; obtain certification of the inspector that this has been accomplished.

C. Valves and connected equipment or any system component with a pressure rating less than the system test pressure shall not be subjected to the test.

D. If systems are tested in sections, include connections to preceding tested sections in ensuing tests.

E. After producing the specified test pressure, disconnect the pressurizing source; do not introduce further pressure for the duration of the test period. Should any pressure loss or detectable leak occur within test period, repair piping and retest. Repeat the procedure until the system is proved tight.

F. Test all piping as noted above, with no leaks or loss in pressure. Repair or replace defective piping until tests are accomplished successfully

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and DIVISION 1, GENERAL REQUIREMENTS, apply the work in this section.

1.02 SECTION INCLUDES

A. General: Refer to Section 23 05 00, Mechanical - General.

B. Work Included: Provide all ductwork and ductwork accessories, auxiliaries, and adjuncts for all and systems as specified or shown.

C. Work Described Elsewhere: HVAC piping, equipment, and controls are specified in other HVAC Sections.

PART 2 - PRODUCTS

2.01 DUCT WORK

A. Requirements
   1. Shop Fabricated Ductwork
      a. Fabricate ductwork as required by classification as described below or gauges, and of configuration and sizes shown on the Drawings. Note that duct sizes shown are net inside; where ducts are lined, fabricate larger than shown to accommodate lining with shown dimensions net inside lining.
      b. Fabricate ducts and fittings as shown on drawings, or if not detailed, fabricate in accordance with SMACNA.
      c. Fabricate ducts with adequate cross-bracing or reinforcing to prevent drumming; should drumming subsequently occur, provide additional reinforcement as necessary to overcome same.
      d. Construct ducts to provide smooth passage for the conducted air, laying edges exposed to the airstream in the direction of air flow.
      e. Fabricate elbows or other fittings for changing direction of duct with a centerline radius equal to 1.5 times the duct width unless shown otherwise or necessitated by space restrictions. Where square or short radius turns are shown or required, fit with air turning vanes.
      f. Fabricate diverging transitions with side slopes of 1:6; fabricate converging transitions with side slopes of 1:2. Greater slopes may be used only where space restriction prohibits specified slopes.
   2. Factory fabricated ductwork construction shall conform to applicable requirements stipulated above for shop fabricated ductwork.

B. Galvanized Steel Ductwork (GSD)
   1. Rectangular Cross Section
      a. Shop fabricated of prime grade lock seam for quality galvanized steel sheet in accordance with requirements stipulated above and fitted with auxiliaries and accessories as specified below and shown on the drawings.
   2. Low Pressure Ductwork, up to 2" static pressure and 2,500 fpm:
   3. Rectangular Duct: GSD gauge per SMACNA or C.M.C whichever is more stringent.
   4. Round Duct: As manufactured by United McGill Corp or equal. Uni-Rib, UNIRIB DUCT machine formed, spiral lock seam construction spot welded and bonded seams with an intermediate standing rib for rigidity. Slip joint construction couplings with a minimum of 2" insertion length. GSD gauge per SMACNA or C.M.C whichever is more stringent.
   5. Fittings: (except elbows) machine formed using SMACNA RL-1 seams with seal class B.

6. Plenums: Fabricate cross-brake panels and stiffen with galvanized steel angle iron members. Provide duct access doors as specified below and as shown on drawings.
7. Elbows: fittings shall have a wall thickness not less than that specified for longitudinal straight ducts as shown in Table 3-2 and 3-3, SMACNA HVAC Duct Construction Standards, Metal and Flexible, 4" - 8" two piece, die stamped with fully welded longitudinal seam; 9" - 30", segmented standing seam construction; 31" - 36", segmented construction with joint spot welded and bonded. Each segmented elbow shall have the number of segments as indicated by Table 3-1 SMACNA HVAC Duct Construction Standards, Metal and Flexible for above 1500 fpm.

C. Medium Pressure Duct, from above 2" to 6" static pressure and to 4000 fpm:
1. All ductwork shall be constructed per SMACNA guidelines or C.M.C whichever is more stringent for medium pressure ductwork.
2. Flat Oval Duct:
   a. As manufactured by United McGill Corp or equal. Uni-Seal flat oval duct and fittings, spiral lock seam or fully welded longitudinal seam, as needed, construction, and FORC reinforcing connectors.

Major Axis	up to 24"	25"- 36"	37"- 48"	49"- 60"	61" - 70"	71" & Up
GSD Gage:	24	22	22	20	20	18
Fittings Gage:	20	20	18	18	16	16

   b. b. Fittings: (except elbows) machined formed using SMACNA RL-1 seams with seal class A.
3. All ductwork shall be constructed per SMACNA guidelines or C.M.C whichever is more stringent for medium pressure ductwork.
4. Round Duct:
   a. As manufactured by United McGill Corp or equal. Uni-Seal heavy gauge round duct and fittings machine formed, spiral lock seam or fully welded, as needed, construction for rigidity.
   b. Fittings: (except elbows) machined formed using SMACNA RL-1 seams with seal class A.
5. Unless otherwise specified, standing seam joint shall be used wherever possible on all fittings. All standing seam joints shall be sealed with a UL-Classified zero flame spread and zero smoke developed cement specially formulated for bonding metal-to-metal joints. In lieu of standing seam construction, joints may be solid welded or spot welded and bonded. All welded joints shall be coated with a protective paint, inside and out, to prevent damage to the galvanized surface. Spot-welded fittings shall have all joints sealed with a UL-Classified zero flame spread and zero smoke developed cement specially formulated for bonding metal-to-metal joints.
6. Elbows: fittings shall have a wall thickness not less than that specified for longitudinal straight ducts as shown in Table 3-2 and 3-3, SMACNA HVAC Duct Construction Standards, Metal and Flexible, 4" - 8" two piece, die stamped with fully welded longitudinal seam; 9" - 30", segmented standing seam construction; 31" - 36", segmented construction with joint spot welded and bonded. Each segmented elbow shall have the number of segments as indicated by Table 3-1 SMACNA HVAC Duct Construction Standards, Metal and Flexible for above 1500 fpm.
7. Divided-flow fittings shall be constructed with a radiused entrance to all branch taps and with no excess material projecting from the body into the branch tap entrance.
8. Liner for all fittings shall be as specified above.
9. Type II Hood Exhaust Duct: Ducts for Type II hoods shall be stainless steel, minimum 0.044 inch thickness, welded seams to first vertical rise up shaft.

D. Conical Fittings:
   1. Low pressure:
      a. All conical fittings shall be constructed with a minimum 2” flare around entire perimeter and a minimum 1:2 slope unless noted otherwise.
   2. Medium pressure:
      a. All conical fittings shall be constructed with a minimum inlet equal to 1.5 times the outlet (1.5 x D) and a length equal to 0.7 times the outlet (0.7 x D) where D equals the duct diameter.
      b. All conical fittings shall be constructed per SMACNA HVAC Construction Standards Metal And Flexible, figure 2-6

E. 45 degree entry fittings:
   1. All 45 degree entry fittings shall be constructed per SMACNA HVAC Construction Standards Metal And Flexible, figure 2-6.

F. Fume Hood Exhaust Ductwork:
   1. All fume hood exhaust duct shall be Type 316 Stainless Steel, 18-gauge minimum. All joints shall be welded.

2.02 DUCTWORK ACCESS

A. Duct Access Doors:
   1. Access panels - Rectangular ducts
      a. Size to provide easy access, but not less than 18" wide.
      b. Ventfabrics "Ventlok" insulated, hinged and latched type or equal
   2. Access panels - Round ducts
      a. Size to provide easy access, but not less than 18" wide.
      b. Ductmate-Metu round insulated access door or equal

2.03 DUCTWORK ADJUNCTS

A. Intake/Exhaust Screens: Provide ½” mesh 18 gauge galvanized iron bird screens at all exterior openings in mechanical system except where provided by others.

B. Combustion Air Openings: Provide corrosion resistant ¼” screen mesh at all combustion air openings except where ducts terminate in attics.

C. Insulation: As specified in Section 23 07 00, Insulation.

D. Test Fittings: Ventlok #699.

E. Duct Penetrations:
   1. Where ducts penetrate fire separations in the building, provide fire dampers or smoke/fire dampers as specified, shown and required by code.
   2. Where ducts penetrate roof or exterior walls, provide 24 gauge galvanized sheet metal flashing and counterflashing; solder all joints and make watertight, including under all air handlers, around all duct work penetrations, and exhaust fans.

F. Sealants
   1. Design Polymerics DP1020, Ductmate PROseal high velocity duct sealant, Childers CP-146/CP-148, Fosters 32-19/32-17, or equal, UL 723, ASTM E-84
   2. Low Shrinkage, flexible, and mildew resistant conforming to NFPA 90A and 90B

G. Tapes and Adhesives:
   1. Pressureless Tapes: Hardcast, 4" wide Type DT 5400 mineral impregnated woven fiber tape with manufacturer's FTA-20 activator/adhesive (indoors) and RTA-50 activator/adhesive (outdoors), applied with brush or roller in accordance with manufacturer's directions.

H. Transverse Duct Connections:
   1. Traverse Joints: Ductmate or WDCI proprietary duct connection systems will be accepted. Ductwork constructed using these systems will refer to the manufacturers guidelines for sheet gauge, intermediate reinforcement size and spacing, and joint reinforcements. TDC/TDF/T-24 shall be constructed as a SMACNA T-24 flange.
   2. The Ductmate companion angle with an integral polymer mastic seal shall be securely fastened to the duct walls using self-drilling screws, rivets or spot welding. Fastener spacing shall be as recommended by the manufacturer for the size or duct and the pressure class. The raw duct ends shall be properly seated in the integral mastic seal. A continuous strip of closed cell gasket tape, size 1/4" x 3/4", shall be installed between the mating flanges of the companion angles at each transverse joint, and the joint shall be made up using 3/8" diameter x 1" long plated bolts and nuts. Drive-on or snap-on cleats shall be used at spacings as recommended by the manufacturer.
   3. The Ductmate system shall not be used for applications with duct gauges heavier than 16 gauge or lighter than 26 gauge.
   4. Longitudinal Seams: Pittsburgh Lock shall be used on all longitudinal seams. All longitudinal seams will be sealed with a mastic sealant. Snaplock is not acceptable.

PART 3 - EXECUTION

3.01 APPLICATIONS

A. Galvanized Steel Ductwork (GSD): Except where specified or shown otherwise, use (GSD) conforming to requirements (Part 2), or cross section configuration shown, in all locations (indoor/outdoor, above/below grade, concealed/exposed).

B. Flexible Fibrous Glass Duct (FFG): Use (FFG) only where specifically called for on the drawings, as connection between to air outlets and inlets.

C. No round-to-round saddle taps are allowed.

3.02 DUCTWORK

A. Pressure-Velocity Classification:
   1. All supply ductwork on constant volume systems (low pressure):
      a. All ductwork shall be constructed per SMACNA static pressure class of positive +2” and a velocity of 2500 FPM.
      b. Seal all joints and seams on all ducts and plenums per SMACNA seal class B. Pressure sensitive tapes are not allowed.
   2. All return ductwork (low velocity):
      a. All ductwork shall be constructed per SMACNA static pressure class of negative -2” and a velocity of 2500 FPM.
      b. Seal all joints and seams on all ducts and plenums per SMACNA seal class B. Pressure sensitive tapes are not allowed.

3. All general exhaust ductwork (low pressure):
   a. All ductwork shall be constructed per SMACNA static pressure class of negative -2" and a velocity of 2500 FPM.
   b. Seal all joints and seams on all ducts and plenums per SMACNA seal class B. Pressure sensitive tapes are not allowed.
4. All fume exhaust ductwork (medium pressure):
   a. All ductwork shall be constructed per SMACNA static pressure class of negative -4" and a velocity of 2500 FPM.

B. Broken places in galvanized coating made in forming shall be completely covered with galvanized paint.

C. All ductwork shall comply with the C.M.C and the local jurisdiction's addendum.

D. Ducts shall be reinforced in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, Latest Edition (low pressure and medium pressure, where shown on drawings). Duct shall be diagonally creased on all four sides. Seams shall be double crimped, bent and elbows shall be made with the throat radius of all bends 12" diameters of the width of the duct wherever possible and in no case shall the throat radius be less than one diameter of the branch duct. Where space does not permit the above radius or where square elbows are indicated on the drawings, they shall be equipped with turning vanes of an approved type for low velocity ducts. Medium velocity ducts shall not use turning vanes and shall not use square elbows unless shown otherwise. Use Ductmate closure systems for all round and rectangular ducts.

E. Transition pieces in the ducts shall have the sides sloped approximately one to five and no abrupt changes or offsets of any kind in the duct system will be permitted. Round to round take-offs shall be made with 45° wye fittings.

F. Ductwork Auxiliaries
   1. Flexible Connectors
      a. Install duct sections being fitted with a flexible connector with a 3" minimum gap between the ends being bridged by the flexible connector. Provide a generous fold in connector to allow for movement; staple and seal closure.
      b. Provide 26-gauge galvanized steel weather shield on top and sides of flexible duct connectors for outdoor installations. Install weather shield at same time as flexible connectors; unprotected flexible connections will be replaced with new connectors at contractor's expense if the weather shields are installed at a subsequent time.

G. Access and Inspection Panels and Doors
   1. Install panels and doors so that frames do not protrude into air stream. Mount frame against outside of lined ducts; provide 13" flanged stub for access panels on other ducts.
   2. Provide inspection panel at each splitter damper.
   3. Provide access panel at each fire damper or smoke/fire damper and elsewhere in the ductwork as required. Label as specified in Part 2 above.
   4. Wall and ceiling access panels: Furnish as required for access to ducts, damper operators, duct mounted access panels, etc.; coordinate size and location to obtain good access.

H. Duct sizes shown on lined duct shall be clear inside insulation.

I. Paint the inside of ductwork visible through grilles and registers dull black.

J. Furnish and install 1-1/2 x 1-1/2 x 3/16" closure angles around all exposed ducts through walls and ceilings. (Both sides)

K. Access doors shall be provided in ductwork for easy access to each fire damper and smoke/fire damper.

3.03 FIELD QUALITY CONTROL

A. General
   1. Perform testing and provide demonstrations as specified in other HVAC Sections.
   2. Comply with requirements of Part 3, 23 05 00.

B. Duct Cleaning
   1. Clean all ductwork in the shop prior to shipping. All ductwork shall be transported to the site in covered vans to eliminate contamination or shall be sealed prior to shipment and shall be protected from contamination at the site.
   2. After fabrication, and during and after installation, seal sections of open ductwork with plastic sheeting to prevent the intrusion of dirt and debris.
   3. After installation is complete, but before balancing and final connections are made, and with construction filters in place, blow clean all ductwork with the system fans operating at full air volume.
   4. All return air ductwork shall be kept sealed until all construction is complete. If the air conditioning system is used during construction, the return air ductwork system shall not be used. Other means of outlets shall be used, such as leaving doors or windows open.

C. Demonstrations: Before enclosing ductwork operate each fire damper and smoke/fire damper in the presence of the Owners representative to show that each damper is functional.

D. Inspections: Evidence of poor fabrication or installation, as disclosed by job site inspections, will be cause for rejection; replacement or repair of defective work shall be done at no additional cost to the Owner.

E. Ducts exposed in the conditioned space shall be free of dents and blemishes. Ducts shall be mounted tight against adjacent surfaces.

F. Duct slopes for transitions shall not be more than 1:4 unless otherwise shown. No abrupt changes or offsets of any kind in the duct system is allowed.

G. All round duct exposed within the space shall be spiral duct and fittings.

3.04 ADJUSTING AND FINISHING

A. General: Comply with requirements of Part 3, 23 05 00. Adjust fan speeds as necessary.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL SUPPLEMENTARY CONDITIONS, and DIVISION 1, GENERAL REQUIREMENTS, apply the work in this section.

1.02 SECTION INCLUDES

A. General: Refer to Section 23 05 00.

B. Work Included: Provide all ductwork and ductwork accessories, auxiliaries and adjuncts for all systems as specified or shown.

C. Work Described Elsewhere: HVAC piping, equipment, and controls are specified in other HVAC Sections.

PART 2 - PRODUCTS

2.01 DUCT WORK

A. Factory-made air ducts shall be approved for the use intended or shall conform to the requirements of C.M.C. Standard No. 6-1.
   1. Each portion of a factory-made air duct system shall be identified by the manufacturer with a label or other suitable identification indicating compliance with C.M.C. Standard No. 6-1 and its class designation. These ducts shall be listed and shall be installed in accordance with the terms of their listing.
   2. All factory-made air ducts must be Approved Class 0 or Class 1.

B. Flexible Ducts: Comply with SMACNA's "Duct Construction Standards, Metal and Flexible. Owens-Corning Fiberglass Valuflex or equal, insulated, wire helix type, 6 inch W.C. min. Product shall qualify as Class I Air Duct per UL181. Inner liner shall be black where visible through registers. All flexible ductwork must have a FHC not exceeding 25/50.

C. Flexible Ductwork - Circular Cross Section:
   1. Thermaflex M-KE or approved equal insulated flexible glass fiber duct factory fabricated as a Class 1 air duct, constructed of 2-layers of polyester film 100% bonded together, encapsulating the galvanized steel wire. Insulated with fiberglass insulation and jacketed with a reinforced vapor barrier jacket listed and labeled as a Class 1 Air Duct. Tested in accordance with U.L. Standard 181. Meets all requirements of NFP 90-A & 90-B, CMC Standards. Inner liner shall be black where visible through registers. All flexible ductwork must have a flame and smoke spread not exceeding 25/50
   2. R-Value shall be 8.0 or greater in accordance with ADC Flexible Duct Performance and Installation Standards.
   3. Joint sealant: Fiberglass Type II (glass fabric) Duct Tape with a UL 181 B-M rating and panduit strap, as detailed on drawings.

PART 3 - EXECUTION

3.01 APPLICATIONS

A. Flexible Fibrous Glass Duct (FFG): Use (FFG) only where specifically called for on the drawings, as connection between terminal boxes and air outlets.

B. All ductwork shall comply with the C.M.C and the local jurisdiction’s addendum.

C. Flexible Fibrous Glass Ducts (FFG) - install as follows:

1. In a single piece not exceeding 5 feet in length.
2. With each section carrying a UL Class I label.
3. With no sharp bends. Do not bend size 4" through 12" diameter in excess of 180° in a 5 ft. length; do not bend sizes over 12" diameter in excess of 90° in a 5 ft. length.
4. Listed flexible duct: Install flexible duct as per manufacturers instructions. With all metal-to-metal connections secured with Panduit PLT-8H clamps or stainless steel cinch clamp, apply duct sealant between the end of the duct and the collar in a 2-inch band and clamp as described above. Allow at least 48 hours before pressure testing.
5. Supported at 4 ft. centers with 24 gauge, 12" galvanized saddles.

D. Flexible Fibrous Glass Ducts (FFG) – shall not be used to replace rigid elbows or fittings per the CMC.

3.02 FIELD QUALITY CONTROL

A. General
   1. Perform testing and provide demonstrations as specified in other HVAC Sections.
   2. Comply with requirements of Part 3, Section 23 05 00.

B. Duct Penetrations:
   1. Where ducts penetrate fire separations in the building, provide fire dampers or smoke/fire dampers as specified, shown and required by code.

C. Demonstrations: Before enclosing ductwork operate each fire damper and smoke/fire damper in the presence of the Owners representative to show that each damper is functional.

D. Inspections: Evidence of poor fabrication or installation, as disclosed by job site inspections, will be cause for rejection; replacement or repair of defective work shall be done at no additional cost to the Owner.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and DIVISION 1, GENERAL REQUIREMENTS, apply to the work in this section.

B. Section 23 05 00, General Mechanical Requirements applies to this section.

1.02 QUALITY ASSURANCE

A. All HVAC equipment shall comply with California Code of Regulations, Title-24, Part 6, latest edition.

B. Comply with UL 1/81 and UL 181A for ducts and closures.

PART 2 - PRODUCTS

2.01 DAMPERS

A. All dampers for us in low temperature air below 50° F duct shall have non-conducting composite damper shafts with shaft bearings and air seats.

B. Manual Dampers:
   1. Round Ductwork 16” and smaller (low pressure):
      a. Butterfly type, volume dampers.
      b. Provide locking mechanism shall be provided on either the quadrants or end bearings. Ventlock or equal. Damper blade shall be a minimum of 22 gauge, but not less than two gauges more than the duct gauge.
      c. All duct penetrations shall be gasketed to prevent air leakage.
      d. Provide stand-offs as required for specified insulation thickness (see section 23 07 13.
      e. Continuous 3/8” min rod shall be provided.
      f. In locations where ducts are exposed use Ventlok #688 damper regulator for low pressure applications.
   2. Round Ductwork 18” and larger (low pressure):
      a. Manual Dampers: Opposed blade type, 6” maximum blade width, Vent Products model 5303 or equal.
   3. Rectangular Ductwork 12” high and smaller (low pressure):
      a. Rectangular volume dampers shall be Air Balance #111 or equal.
   4. Rectangular Ductwork larger than 12” high (low pressure):
      a. Rectangular volume dampers shall be Air Balance #AC-2 or equal.
   5. Stainless Steel Ductwork:
      a. All materials used for dampers shall be stainless steel.

C. Smoke/Fire Dampers:
   1. General:
      a. Provide Ruskin Model FSD60 or equal with State Fire Marshal approval for all applications other than in Stainless Steel Ductwork.
      b. Provide Ruskin Model FSD36 or equal with State Fire Marshal approval for all applications in Stainless Steel Ductwork.
      c. The maximum pressure drop at design flow of the smoke fire damper shall not exceed 0.3 inches w.g.
      d. Provide a duct mounted smoke detector with in-duct probes. No duct smoke detectors shall be located inside the duct.
      e. Provide a fire alarm connection to monitor the damper. Coordinate with the fire alarm design contractor and plans.

f. Provide electrical power to the damper per the plans.

2. The combination fire smoke dampers shall meet or exceed the following specifications:
   a. The frame shall be a minimum of 16 gauge (1.52) galvanized steel formed into a structural hat channel shape with tabbed corners for reinforcement.
   b. Bearings shall be stainless steel sleeve turning in an extruded hole in the frame.
   c. The blades shall be airfoil shaped double skin construction with 14 (1.90) gauge equivalent thickness.
   d. Blade edge seals shall be silicone rubber and galvanized steel mechanically locked in blade edge, adhesive or clip fastened seals are not acceptable, and shall withstand 450° F.
   e. Jamb seals shall be stainless steel flexible metal compression type. Blade action must be opposed.
3. Each combination fire smoke damper shall be 12-hour fire rated under UL Standard 555, and shall further be classified by Underwriters Laboratories as a Leakage Rated Damper for use in smoke control systems under the latest version of UL555S, and bear a UL label attesting to same.
4. Damper manufacturer shall have tested and qualified with UL, a complete range of damper sizes covering all dampers required by this specification. Testing and UL qualifying a single damper size is not acceptable.
5. The leakage rating under UL555S shall be no higher than leakage class 1 (4 cfm/ft. at 1” w.g. and 8 cfm/ft. at 4” w.g.)
6. As part of the UL qualification, dampers shall have demonstrated a capacity to operate (to open and close) under HVAC system operating conditions, with pressures of at least 4” w.g. in the closed position and 3000 fpm air velocity in the open position.
7. In addition to the leakage ratings already specified herein, the combination fire smoke dampers and their actuators shall be qualified under UL555S to an elevated temperature of 350°F.
8. Appropriate electric actuators shall be installed by the damper manufacturer at time of damper fabrication. Damper and actuator shall be supplied as a single entity which meets all applicable UL555 and UL555S qualifications for both dampers and actuators.
9. Manufacturer shall provide factory assembled sleeve of 16” minimum length, contractor to verify requirement.
10. Factory supplied caulked sleeve shall be 20 gauge to dampers through 84” wide and 18 gauge above 84” wide.
11. Damper and actuator assembly shall be factory cycled 10 times to assure operation.
    a. Coordinate damper actuator voltages with Fire Alarm Contractor.
12. Each combination fire/smoke damper shall be equipped with a controlled 7 to 15 second heat actuated release devise.
13. The electric EFL (electric fuse link) shall close and lock the fire/smoke damper during test, smoke detection, power failure or fire conditions through the actuator closure springs.
14. To prevent duct and HVAC component damage, the damper shall at all times be connected to the actuator for controlled closure in not less than 7 seconds and no more than 15 seconds. Instantaneous damper closure is unacceptable.
15. Damper shall be automatic remote resettable after test, smoke detection or power failure conditions. After exposure to high temperature or fire, the damper must be inspected prior to reset to ensure proper operation. Release temperature shall be 165°F, 212°, 285°F.
16. Actuator: Provide Belimo FN120 or NF24 spring return damper actuator. Coordinate with fire alarm contractor for correct voltage. Actuator shall be located outside the airstream and duct.

PART 3 - EXECUTION

3.01 DAMPERS

A. Install duct accessories according to applicable portions of details of construction as shown in SMACNA standards.

B. Install volume-control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.

C. Ductwork shall comply with Chapter 6 C.M.C.

D. Where ducts penetrate fire separations in the building, provide fire dampers or smoke/fire dampers as specified, shown and required by code.

E. Balancing Dampers
   1. Provide balancing dampers (same as volume dampers specified in this section) where shown on drawings and any other locations required to achieve proper system air balance. In general, balancing dampers are required at all zone supply air ducts from supply air plenums, equipment, and in ducts to supply and return air grilles. All dampers shall be placed as shown. Minimum of seven duct diameters prior to the diffuser or register.
   2. Damper operators shall be installed in either to side or bottom of ductwork.

END OF SECTION

PART 1 - GENERAL

1.01 SEE 23 05 00

PART 2 - PRODUCTS

2.01 AIR TURNING VANES AND DEVICES

A. Ordinary type installed in elbows: Type, size, etc., as shown on drawings (see Duct Symbol Legend), fiberglass turning vanes are not acceptable. Install multiple turning vane sections with vanes 36” long or less in large elbows. Use turning vanes specifically rated for medium velocity when duct velocity exceeds 2,500 fpm.
   1. Installed at duct branches or take-offs where shown: Ward Industries VNN, VNA, Airsan Accoustiturn, or equal.

PART 3 - EXECUTION

3.01 AIR TURNING VANES AND DEVICES

A. Provide at all square elbows and elsewhere as shown and scheduled on drawings. Do not use double thickness duct turns on turns less than 12" wide. Where height of double thickness duct turns exceeds 36", provide 1" H 1" H 16 gauge channel brace at mid-height, secure to duct at both ends. Acoustical duct turns: Where height exceeds 36" provide 16 gauge channel brace at mid-height secured to duct at both ends. Fiberglass turning vanes will not be acceptable.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and DIVISION 1, GENERAL REQUIREMENTS, apply to the work in this section.

B. Section 23 05 00, General Mechanical Requirements applies to this section

1.02 QUALITY ASSURANCE

A. All HVAC equipment shall comply with California Code of Regulations, Title 24, Part 6, latest edition.

B. Comply with UL 181 and UL 181A for ducts and closures.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Flexible Connectors: Ventlok, flexible fabric, Duralon Flexible fabric with Metalfab connectors at connections to fans and air handling equipment.
   1. Comply with UL 181, Class 1.
   2. Minimum fabric weight 26 oz. / sq. yd. ± 2 oz., thickness 0.019".
   3. Ventfabrics Inc. Ventlon, or equal, for exterior applications, resistant to sunlight, ozone and weather.
   4. Ventfabrics Inc. Ventglass, or equal, for interior applications.
   5. Complies with Underwriters Laboratories Standard # 214 for fire retardancy, and is accepted by the National Fire Protection Association for vibration isolation connectors in duct systems as covered by Paragraph 2-1.2.3 NFPA Bulletin #90A.
   6. Bonding Agent, Ventfabrics # 655 Adhesive or equal.

PART 3 - EXECUTION

3.01 DUCTWORK AUXILIARIES

A. Flexible Connectors
   1. Install duct sections being fitted with a flexible connector with a 3" minimum gap between the ends being bridged by the flexible connector. Provide a generous fold in connector to allow for movement; staple and seal closure.
   2. Provide 26-gauge galvanized steel weather shield on top and sides of flexible duct connectors for outdoor installations. Install weather shield at same time as flexible connectors; unprotected flexible connections will be replaced with new connectors at contractor's expense if the weather shields are installed at a subsequent time.
   3. Ductwork shall be supported separately from the fan within 3 feet of the flexible connection.

END OF SECTION

PART 1 - GENERAL

1.01 – SEE 23 05 00

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Miscellaneous equipment not specified herein shall be furnished as scheduled on the drawings.

B. C.C.R. - Title 24 Energy Standards, Requirements: All insulation values shall meet current requirements of the C.C.R. Energy Standards.

2.02 DUCT WORK

A. Rectangular Duct, Flexible Blanket Liner: Flexible blanket made from strong, glass fibers bonded with a dark impregnated thermosetting resin as manufactured by Johns Manville or equal.
   1. Air stream surface shall be protected with a smooth surface coating for minimum resistance to airflow, Permacote or equal, UL 723 compliant.
   2. Flame spread not over 25, Smoke Developed not over 50.
   3. The duct liner shall be suitable for direct application and service as a thermal/acoustical liner for hot or cold round ductwork at air velocities up to 6,000 fpm.
      a. 1” thickness
         1) Liner shall have a minimum R-value of 4.2 and Conductance of 0.24 at 75oF in accordance with ASTM C518
         2) Noise: Liner shall have a minimum NRC of 0.70 when tested in accordance with ASTM C423-90 and ASTM E795
      b. 1 ½" thickness
         1) Liner shall have a minimum R-value of 6.3 and Conductance of 0.16 at 75o F in accordance with ASTM C518
         2) Noise: Liner shall have a minimum NRC of 0.85 when tested in accordance with ASTM C423-90 and ASTM E795
      c. 2” thickness
         1) Liner shall have a minimum R-value of 8.0 and Conductance of 0.13 at 75o F in accordance with ASTM C518
         2) Noise: Liner shall have a minimum NRC of .95 when tested in accordance with ASTM C423-90 and ASTM E795
      d. The duct liner shall be suitable for direct application and service as a thermal/acoustical liner for hot or cold rectangular ductwork and plenums at air velocities up to 6,000 fpm.

PART 3 - EXECUTION

3.01 DUCT LINER

A. Install volume-control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.

B. Duct Liner
   1. Applications
      a. Rectangular Supply Ducts Exposed to Weather: Flexible Blanket/Coated Liner, 2” thickness.
      b. Rectangular Ductwork Exposed in Space or Concealed Above Ceiling: Flexible Blanket/Coated Liner, 1" thickness.

c. Round Ductwork Exposed in Space or Concealed Above Ceiling: Flexible Blanket/Coated Liner, 1" thickness.
d. Round Ductwork Exposed to the Weather: Flexible Blanket/Coated Liner, 2" thickness.

2. Install duct liner in all plenums, exposed ducts and ducts for a distance of 10' on each side of all fans, where specified here and at other locations indicated on drawings.
3. On rectangular duct secure duct and plenum liner with cement stic-klips at 12" o.c. both ways to duct with Mircale adhesive, then cement the lining in place with 50% covering of Fosters #81-99 Safetee Duct-Fas adhesive. Apply a brush coat of adhesive to edges of insulation where abutted together inside ductwork. Do not leave any raw edges of liner uncoated.
4. On round spiral duct install in accordance with the current Johns Manville Spiracoustic Round Liner System Installation Guide. Apply a brush coat of adhesive to edges of insulation where abutted together inside ductwork. Do not leave any raw edges of liner uncoated.

5. Duct sizes shown on lined duct shall be clear inside insulation.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

A. Installation of rooftop laboratory exhaust and axial flow fans. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

A. High-Plume Dilution Laboratory Exhaust System and Axial Flow Exhaust Fans.

1.03 RELATED DOCUMENTS

A. This Section includes rooftop laboratory exhaust fans and axial exhaust fans.

B. Related Sections include the following:
   1. Division 1

1.04 REFERENCES

A. AMCA Publication 99, "Standards Handbook"

B. ANSI/AMCA Standard 210-99, "Laboratory Methods of Testing Fans for Aerodynamic Performance Rating"

C. AMCA Publication 211-05, "Certified Ratings Program - Product Rating Manual for Fan Air Performance"

D. AMCA Standard 300-05, "Reverberant Room Method for Sound Testing of Fans"

E. AMCA Publication 311-05, "Certified Ratings Program"

F. AMCA Standard 260-07, "Laboratory Methods of Testing Induced Flow Fans for Rating"

G. AMBA Method of Evaluating Load Ratings of Bearings ANSI-11 (r1999)

H. ANSI/AMCA Standard 204-05, "Balance Quality and Vibration Levels for Fans"

I. AMCA Standard 500-D-07, "Laboratory Methods of Testing Dampers for Rating"

J. AMCA Standard 500-L-07, "Laboratory Methods of Testing Louvers for Rating"

K. SMACNA - Medium Pressure Plenum Construction Standard

L. ANSI Z9.5 – Laboratory Design

M. ASHRAE - Laboratory Design Guide

1.05 SUBMITTALS

A. Product Data: Include manufacturer's technical data for each model indicated, including rated capacities of selected model clearly indicated; dimensions; required clearances; shipping, installed, and operating weights; furnished specialties; accessories; and installation and startup instructions.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loadings, required clearances, components, and location and size of each field connection.

C. Commissioning Reports: Indicate results of startup and testing commissioning requirements. Submit copies of checklists.

D. Maintenance Data: Maintenance manuals specified in Division 1.

1.06 QUALITY ASSURANCE

A. Performance ratings: Conform to AMCA standard 210, 260 and 300. Fans must be tested in accordance with AMCA 210, 260 and 300 in an AMCA accredited laboratory and certified for air and sound performance.

B. Fan shall be licensed to bear the AMCA ratings seal for air performance (AMCA 210), sound performance (AMCA 300), and induced flow fan for high plume dilution blowers (AMCA 260).

C. Manufacturers that are not licensed to bear the AMCA 210 and 260 ratings seal, must provide performance witness testing (at the manufacturer's expense), per paragraph 1.4.D.

D. Classification for Spark Resistant Construction conform to AMCA 99.

E. Each fan shall be vibration tested before shipping, as an assembly, in accordance with AMCA 204-05. Each assembled fan shall be test run at the factory at the specified fan RPM and vibration signatures shall be taken on each bearing in three planes - horizontal, vertical, and axial. The maximum allowable fan vibration shall be less than 0.08 in./sec peak velocity; filter-in reading as measured at the fan RPM. This report shall be provided at no charge to the customer upon request.

F. Manufacturers that do not comply with paragraph 1.6, A must also provide, at the owner and engineer's option and manufacturer's expense, witness testing of fan discharge and entrainment airflow, performed in an AMCA accredited laboratory, in accordance with AMCA 210 and 260. This test shall verify the critical and safety related dilution performance of the high plume dilution blower, as stated by the manufacturer.

G. Laboratory exhaust system defined in this section shall have a 36 month warranty.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver exhaust fans as factory-assembled units with protective crating and covering as recommended by the manufacturer.

B. Handle exhaust fans to comply with manufacturers written rigging and installation instructions for unloading and moving to final location.

1.08 COORDINATION

A. Coordinate installation of roof curbs, equipment supports, and roof penetrations with roof construction.

1.09 WARRANTY

A. Warranty: The warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 GENERAL

A. Base fan performance at standard conditions (density 0.075 Lb/ft3).

B. Each fan shall be direct driven in AMCA arrangement 2 according to drawings.

C. Fans to be equipped with 316 stainless steel lifting lugs for corrosion resistance.

D. Fasteners exposed to corrosive exhaust shall be stainless steel.

E. Curb cap shall be 316 stainless steel for corrosion resistance.

F. Fan assemblies that use flexible connectors that can fail and cause loss of laboratory containment shall not be acceptable.

G. Fan assembly shall be designed for a minimum of 125-mph wind loading, without the use of guy wires.

2.02 CORROSION RESISTANT COATING

A. All fan and system components (fan, nozzle, wind band, plenum) shall be corrosion resistant coated with LabCoat™, a two part electrostatically applied and baked, sustainable, corrosion resistant coating system; or Heresite P-413C. Standard finish color to be gray.

B. All parts shall be cleaned and chemically prepared for coating using a multi-stage wash system which includes acid pickling that removes oxide, increases surface area, and improves coating bond to the substrate.

C. The first powder coat applied over the prepared surface shall be a zinc rich epoxy primer (no less than 70% zinc) and heated to a gelatinous consistency (partial cure) at which the second powder coat of polyester resin shall be electrostatically applied and simultaneously be cured at a uniform temperature of 400°F.

D. The coating system shall not be less than a total thickness of 6 mils, is not affected by the UV component of sunlight (does not chalk), and has superior corrosion resistance to acid, alkali, and solvents. Coating system shall exceed 4000 hour ASTM B117 Salt Spray Resistance.

E. Note that 10-20 mil thick wet coating systems pollute the environment (air and water), and that these manually applied coatings are not uniform over the impeller surface and can cause fan imbalance and vibration.

2.03 FAN HOUSING AND OUTLET

A. Fan housing to be aerodynamically designed with high-efficiency inlet, engineered to reduce incoming air turbulence.

B. Fan housing shall be bifurcated, allowing all drive components, including the motor, to be serviced without contact of the contaminated airstream. Must be manufactured of welded steel and meet specification section 2.15 for corrosion resistant coating. No uncoated metal fan parts will be acceptable.

C. Fan housings that are fabricated of polypropylene or fiberglass that have lower mechanical properties than steel, have rough interior surfaces in which corrosive, hazardous compounds can collect, and / or which chalk and structurally degrade due to the UV component of the sunlight shall not be acceptable.

D. A multi-stage air induction discharge nozzle shall be supplied by the fan manufacturer, be integral to the fan body, and be designed to efficiently handle an outlet velocity of up to 7000 FPM. The multi-stage nozzle shall induce ambient air up to 270% of fan capacity. Nozzle / Wind band assemblies that are manufactured by third party vendors, or that are fabricated of plastic or resins, having mechanical properties less than steel shall not be acceptable.

E. An integral fan housing drain shall be used to drain rainwater when the fan is de-energized.

F. A bolted & gasketed access door shall be supplied for impeller inspection and service.

G. Fan assembly shall be AMCA type C spark resistant construction minimum or as noted on the schedule.

2.04 FAN IMPELLER

A. Fan impeller shall be mixed flow design with non-stall characteristics. The impeller shall be electronically balanced both statically and dynamically exceeding AMCA Standards.

B. Fan impeller shall be manufactured of welded and coated steel. Reference specification section 2.15 for corrosion resistant coating.

C. Fan impellers that are fabricated of polypropylene or fiberglass that have lower mechanical properties than steel and lower maximum tip speeds are not acceptable.

D. Vacuum Seal: Fan impeller shall include a secondary fan blade located on the impeller back plate. This secondary impeller shall create a negative pressure at the shaft opening; preventing hazardous or toxic exhaust fumes from escaping through the housing shaft opening. Mechanical shaft seals that wear out and need to be replaced or seal systems that use hoses or tubes that can leak, are not acceptable.

2.05 BYPASS AIR PLENUM

A. For constant volume systems, the fan / nozzle assembly shall be connected directly to roof curb and exhaust duct without the need of the bypass air plenum.

B. For variable volume systems, a bypass air plenum shall be provided as shown on drawings. The plenum shall be provided with bypass air damper(s) for introducing outside air at roof level upstream of the fan, complete with bypass air rain hood and bird screen.

C. The plenum shall be constructed of welded and coated steel and meet specification section 2.15 for corrosion resistant coating. Plenums that are fabricated of plastics or resins that are combustible and have mechanical properties less than steel shall not be acceptable.

D. The bypass air plenum shall be mounted on factory fabricated roof curb provided by the fan manufacturer, as shown on the project drawings (see section 2.5).

E. Fan designs that use inlet flexible connectors that can leak causing loss of lab exhaust shall not be permitted.

F. Bypass air damper(s) shall be opposed-blade design for airflow control, airfoil design, fabricated of steel for structural rigidity, and coated with a minimum of 4 mils of chemically resistant Hi-Pro Polyester resin, electrostatically applied and baked. Bypass dampers shall have stainless steel damper rods, bearings and jamb seals and the blades shall have polymer edge seals. Dampers shall be suitable for application up to 15 inches wg. Damper blade drive linkage shall be set by manufacturer and welded to eliminate linkage slippage. All damper access and service (drive actuators) shall be performed outside of the contaminated plenum interior.

G. If stated in the schedule notes, an optional integral bypass air packed acoustic attenuator fabricated of 304 stainless steel shall be provided by the fan manufacturer (if shown on the drawings). Acoustic insertion loss shall be as follows:

63	125	250	500	1K	2K	4K	8K
3	8	12	21	31	24	16	11

H. Fan isolation damper(s), shall be parallel-blade design, airfoil design, fabricated of steel for structural rigidity, and coated with a minimum of 4 mils of chemically resistant Hi-Pro Polyester resin, electrostatically applied and baked. Bypass dampers shall have stainless steel damper rods, bearings and jamb seals and the blades shall have polymer edge seals. Dampers shall be suitable for application up to 15 inches wg. Damper blade drive linkage shall be set by manufacturer and welded to eliminate linkage slippage. All damper access and service, (including removal and replacement and drive actuators) shall be performed outside of the contaminated plenum interior.

I. Isolation damper actuator(s), if scheduled, shall be factory mounted and wired to a step-down transformer in a NEMA enclosure with wiring provided to each motor disconnect for field installation by others.

J. Blower / Plenum vibration isolation shall be limited to neoprene / cork vibration pads.

2.06 BYPASS AIR PLENUM CURB

A. Exhaust system manufacturer shall supply a structural support curb for the plenum of specified height as shown on the drawings.

B. Curb shall be fabricated of a minimum of 12 gauge corrosion-resistant coated steel and structurally reinforced.

C. Curbs shall be insulated.

D. When properly anchored to the roof structure, the standard curb / plenum / blower assembly shall withstand wind loads of up to 125 mph without additional structural support.

2.07 FAN MOTOR AND DRIVE

A. Motors shall be premium efficiency, standard NEMA frame, 900, 1200, or 1800 RPM, TEFC with a 1.15 service factor, as scheduled. A factory-mounted NEMA 3R disconnect switch, mounted and wired, shall be provided for each fan. Motor maintenance shall be accomplished without fan or fan impeller removal, or requiring maintenance personnel to access the contaminated exhaust components.

B. Motor mounting shall be “C-face” and / or foot mount.

C. Drive arrangement shall be AMCA arrangement #2, utilizing a direct mount coupling connecting the motor shaft and fan impeller shaft. Belt drive arrangement #9 or #10, or direct drive arrangement #4 requiring access and handling of hazardous and contaminated fan components are not acceptable. Fan shaft shall be 316 stainless steel.

D. Fan shaft bearing shall be Air Handling Quality, ball or roller pillow block type, and sized for an L-10 life of no less than 200,000 hours.

E. All shaft bearings and non-permanently lubricated motors shall have extended lube lines with zerk fittings.

F. Motor, coupling, and bearing shall all be outside the contaminated exhaust, and be capable of replacement without disassembling fan and accessing hazardous and contaminated fan components.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The Requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and DIVISION 1, GENERAL REQUIREMENTS, apply to the work in this section.

1.02 DESCRIPTION

A. Work Included:
   1. Provide all equipment and accessories for the packaged rooftop gas/electric air conditioning units as specified herein.
   2. Controls and Instrumentation as specified herein.

B. Starters.

C. Electrical power connections.

1.03 SCOPE

A. Installation of packaged, gas/electric, rooftop air conditioning units. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.04 RELATED DOCUMENTS

A. This Section includes rooftop heating and cooling units.

B. Related Sections include the following:
   1. Division 1
   2. Division 7 Section "Manufactured Roof Specialties" for type and style of roof curbs and equipment supports.
   3. Division 15 Section "Mechanical Vibration Controls and Seismic Restraints" for manufactured isolation bases.
   4. Division 15 Section "Control Systems Equipment" for temperature-control devices, and control wiring and control devices connected to energy recovery units.

1.05 SUBMITTALS

A. Product Data: Include manufacturer's technical data for each model indicated, including rated capacities of selected model clearly indicated; dimensions; required clearances; shipping, installed, and operating weights; furnished specialties; accessories; and installation and startup instructions.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loadings, required clearances, components, and location and size of each field connection.

C. Commissioning Reports: Indicate results of startup and testing commissioning requirements. Submit copies of checklists.

D. Maintenance Data: Maintenance manuals specified in Division 1.

E. Warranties: Special warranties specified in this Section.

1.06 QUALITY ASSURANCE

A. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Code for Mechanical Refrigeration."

B. Energy Efficiency Ratio: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings" and Title 24 California Codes.

C. Listing and Labeling: Provide electrically operated components specified in this Section that are listed and labeled.
   1. The rooftop unit(s) shall be certified in accordance with UL Standard 1995 and ANSI Standard Z21.47
   2. The rooftop unit(s) shall be safety certified by an accredited testing laboratory and the nameplate shall carry the label of the certification agency.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver rooftop units as factory-assembled units with protective crating and covering as recommended by the manufacturer.

B. Coordinate delivery of units in sufficient time to allow movement into building.

C. Handle rooftop units to comply with manufacturers written rigging and installation instructions for unloading and moving to final location.

1.08 COORDINATION

A. Coordinate installation of roof curbs, roof plenums, equipment supports, and roof penetrations with roof construction. Roof specialties are specified in Division 7 Sections.

1.09 WARRANTY

A. Heat Pump Unit, Roof-Mounted: Compressor shall have a five-year warranty.

B. Air Cooled Condensing Unit: Unit shall have 5-year limited compressor warranty.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents.
   1. Filters: One set of 4" filters for each unit to be installed prior to air balance.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Daikin (Basis of Design, VRF & Split Systems)

2.02 SPLIT SYSTEM AC UNIT

A. General: Furnish and install split system air conditioner, with R410A refrigerant, and complete with automatic controls. Equipment shall be shipped factory assembled, wired, tested, and ready for field connections.

B. Quality Assurance:
1. Unit shall be ETL or UL listed and labeled.
2. Unit shall be manufactured in a facility registered to ISO 9001:2000.
3. Unit shall be rated in accordance with ARI standard 210.

C. Delivery, Storage and Handling: Follow manufacturer's recommendations.

D. Cooling System: The total certified cooling capacity shall not be less than scheduled. The compressor power input shall not exceed that of the unit specified.

E. Indoor Section: Wall mounted, ceiling surface mounted, or ceiling recessed mounted, as indicated on Drawings.
1. Cabinet:
   a. Wall mounted: Molded white high strength plastic.
      1) Provide wall mounted unit with factory mounting plate.
   b. Ceiling surface mounted: Molded white high strength plastic with provision for outside air duct connection.
   c. Ceiling recessed mounted: galvanized steel with provision for outside air duct connection.
2. Fans: Double inlet, forward curved, statically and dynamically balanced.
3. Fan Motor: Direct drive, permanently lubricated, with two or 4 speed operation for unit size scheduled on Drawings.
4. Air Outlet: With motorized horizontal and vertical vanes.
   a. Wall and ceiling surface mounted units: Horizontal vane shall close air outlet upon unit shut-down.
5. Evaporator Coil: Aluminum fins mechanically bonded to copper tubes. Coils shall be pressure leak tested.
6. Insulation: Interior surfaces exposed to the airstream shall be fully insulated.

F. Outdoor Section:
1. Casing: Galvanized steel plate, powder coated with acrylic or polyester.
2. Condenser Fan Grille: ABS plastic.
3. Fan and fan motor: Direct drive, totally enclosed, propeller type, permanently lubricated, horizontal discharge.
4. Compressor: Variable speed rotary type, with crankcase heater and accumulator. Compressor shall be capable of operating at 0 degrees F. Compressor mounted on vibration isolator pads.
5. Coil: Aluminum fins mechanically bonded to copper tubes. Coils shall be pressure leak tested. Provide coil with integral metal guard.

G. Controls: Hard wired, microprocessor based, wall mounted controller with LCD display shall provide the following functions, as a minimum:
1. 7-day programmable timer.
2. Test and check functions.
3. Diagnostic functions.
4. Vane position control.
5. Fan speed adjustment.

6. Temperature adjustment.
7. Automatic restart.
8. Mode selection, including cool/dry/fan.
    a. Provide lockable enclosure for wall mounted controller.

H. Safeties: Shall include the following, as a minimum:
1. Five minute compressor anti-recycle timer.
2. High pressure protection.
3. Current and temperature sensing motor overload protection.

I. Filters: Provide 1 inch thick fiberglass throwaway filters with cardboard holding frames for indoor unit. Provide sufficient filters for four complete changes for each unit.

J. Service Access: All components, wiring, and inspection areas shall be completely accessible through removable panels.

K. Refrigerant Piping:
1. Provide factory pre-charged and sealed line set piping, length to suit the location of equipment. Tubing sizes shall be in accordance with manufacturers written instructions.
2. Provide refrigeration piping in accordance with Article, Refrigerant Piping, in this Section.

L. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
1. Mitsubishi Electric Corporation.
2. Carrier Corporation.

M. Owner Training: Manufacturer shall provide one on-site 2-hour training session for Owners' maintenance personnel.

2.03 VARIABLE REFRIGERANT FLOW - SPLIT SYSTEM HEAT PUMPS – HEAT RECOVERY TYPE

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
1. Daikin w/BAcnet integration to Pelican Controls

B. Indoor Units
1. General:
    a. Galvanized steel casing.
    b. Ducted, ceiling-recessed, or in-room units per Drawings schedule. Available styles shall include:
        1) Concealed (ducted) units:
            a) Horizontal/Vertical air handling unit for closet or above-ceiling installation.
            b) Ceiling concealed.
            c) Ceiling concealed, with high-static option.
        2) Recessed Units:
            a) Ceiling-recessed units: One-, two-, and four-way throw configurations.
            b) Floor-standing, recessed.
        3) In-room units:
            a) Ceiling-suspended.
            b) Wall-mounted.
            c) Floor-standing.

c. Factory assembled and tested with factory wiring, piping, expansion valve, control circuit board, and fan motor. Units shall have, as a minimum, the following functions:
   1) Self-diagnostic function.
   2) Auto restart function.
   3) Auto changeover function.
   4) Emergency operation function.
   5) 3-minute time delay shall provide minimum 3 minute run time for cooling and heating.
d. Indoor unit and refrigerant pipes shall be charged with dehydrated air prior to shipment from the factory.
e. The indoor units shall be equipped with a return air thermistor.

2. Unit Cabinet:
   a. The cabinet shall be insulated with foamed polystyrene and polyethylene insulation.
3. Fan:
   a. The fan shall be direct-drive type, statically and dynamically balanced impeller with multiple high and low fan speeds. Auto fan setting shall automatically adjust fan speed.
   b. The fan motor shall be thermally protected.
   c. The fan motor shall be equipped as standard with adjustable external static pressure (ESP) settings.
   d. For single-phase fan motors sized larger than 1/12 hp and smaller than 1 hp, refer to Article, Electric Motors, in Section 23 00 50, Basic HVAC Materials and Methods.
   e. Ceiling recessed and wall-mounted units shall have motorized louvers to direct airflow in up and down directions, and manually adjusted vanes for side-to-side adjustment of airflow direction.
   f. Ceiling suspended units shall have motorized guide vanes to vary airflow direction.
   g. All units shall be provided with a condensate drain pan below the coil. Drain pans shall have primary and overflow drains.
   h. Ceiling recessed units shall have an integral condensate pump. Refer to Drawings schedule for additional condensate pump requirements.
4. Coil:
   a. Coils shall be aluminum fins bonded to internally grooved copper tubes. Fins shall have corrosion-resistant coating.
   b. The coils shall be pressure tested at the factory.
   c. Unit shall be provided with ball-type refrigerant service valves at each refrigerant piping connection.
   d. A condensate pan and drain connections shall be provided under the coil. Provide overflow cutoff switch to disable unit during overflow condition.
5. Filters:
   a. Provide indoor units manufactured to accept washable filter media with two sets for each unit.
   b. Refer to Drawings schedule, and article, Filters, in this Section for filter requirements for ducted, above-ceiling units incorporating mixing boxes.
6. Controls:
   a. Units shall have controls provided by the manufacturer to perform input functions necessary to operate the system.
   b. Operating modes shall include Auto Changeover (heat recovery systems only), Heating, Cooling, Dry, and Fan Only.
   c. Units shall be compatible with a BMS system via optional LonWorks or BACnet gateways.
   d. Units incorporating mixing boxes for economizer operation shall be furnished with economizer control system certified as meeting the requirements for Fault

Detection and Diagnostics (FDD) in the California Building Energy and Efficiency Standards.

C. Outdoor Condensing Units:
   1. General:
      a. Condensing unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. The refrigeration circuit of the condensing unit shall consist of scroll compressors, motors, fans, condenser coil, electronic expansion valves, solenoid valves (when required by manufacturer), 4-way valve, distribution headers, capillaries, filters, shut off valves, oil separators, service ports and refrigerant accumulator and regulator.
      b. The following safety devices shall be included as part of the condensing unit; high pressure sensor and switch, low pressure sensor, control circuit fuses, over- and under-current protection, phase failure and phase reversal protection, fusible plug or pressure relief valve, and crankcase heater..
      c. All refrigerant lines shall be individually insulated between the condensing units and indoor units. .
      d. The system will automatically restart operation after a power failure without loss of settings.
      e. The condensing units shall be modular in design and allow for side-by-side installation with minimum spacing. Provide kit for field piping between connected condensing units. Refer to Drawings schedules and diagrams for connected units.
      f. To ensure the liquid refrigerant does not flash when supplying to indoor units, the circuit shall be provided with a sub-cooling feature.
      g. Oil recovery cycle shall be automatic occurring 2 hours after start of operation, and thereafter every 8 hours of operation. Each system shall maintain continuous heating during oil return operation. Reverse cycle (cooling mode) oil return during heating operation shall not be permitted due to the potential reduction in space temperature.
      h. The condensing unit shall be capable of heating operation at 0°F dry bulb ambient temperature without additional low ambient controls or an auxiliary heat source.
         1) Provide condensing unit with low ambient kit when scheduled on Drawings. Low ambient kit components shall be furnished with NEMA 4x rated control box for outdoor installation.
   2. Unit Cabinet:
      a. The condensing unit cabinet shall be weatherproof and corrosion resistant. The unit shall be constructed from rust-proofed galvanized steel panels coated with a baked enamel or powder coat finish.
   3. Fan:
      a. The condensing unit shall consist of one or more direct-drive, vertical discharge propeller fans with blades constructed of thermoplastic polymer material.
      b. The condensing unit fan motor shall be variable-speed digitally commutating (DC) type. Fan motor dipswitch shall allow increase of external static pressure setting.
      c. The fan motor shall have inherent protection and permanently lubricated bearings and be mounted on vibration isolators.
      d. The fan motor shall be provided with a fan guard to prevent contact with moving parts.
   4. Condenser Coil:
      a. Coils shall be aluminum fins bonded to internally grooved copper tubes. Fins shall have corrosion-resistant coating.
      b. The coils shall be pressure tested at the factory.
      c. Unit shall be provided with ball-type refrigerant service valves at each refrigerant piping connection.
      d. Condensing unit cabinet shall be provided with metal coil guard.

5. Compressor:
    a. The scroll compressors shall be variable speed pulse-width inverter (PVM inverter) controlled type, hermetically sealed, which shall vary the compressor speed to follow fluctuations in total cooling and heating load, determined by the suction gas pressure as measured in the condensing unit.
        1) The inverter driven compressor motor in each condensing unit shall be the reluctance DC (digitally commutating) type.
    b. Each compressor shall be equipped with a crankcase heater, high pressure safety switch, and internal thermal overload protector.
    c. Oil separators shall be provided as part of the compressor module together with an intelligent oil management system.
    d. The compressor shall be isolated to avoid the transmission of vibration.
    e. In the event of compressor failure the remaining compressors shall continue to operate and provide heating or cooling as required at a proportionally reduced capacity.
    f. Multiple compressor operation sequencing: When multiple condenser modules are combined, operation hours of each compressor shall be balanced by means of a duty cycling function, enabling sequential starting of each module at each start/stop cycle, completion of oil return, and completion of defrost, or every 8 hours.
    g. Refrigerant shall be R410a.

D. Indoor Heat Recovery Controllers: Two- or three-pipe refrigerant control units to match outdoor condensing unit configuration. Heat recovery units shall be installed between outdoor condensing units and indoor zone-conditioning units. Indoor heat recovery unit shall operate to remove heat from zones requiring cooling, and distribute that heat to zones requiring heating. Refer to Drawings for unit locations. Refer to Drawings schedules and details for unit configuration and electrical requirements.

E. All refrigerant lines shall be individually insulated between the condensing units and indoor units.
    1. For interconnecting piping between outdoor and indoor equipment, refer to Article, Refrigeration Pipe and Fittings, in this Section.

F. System Controls:
    1. General: The controls network shall be capable of supporting remote controllers, schedule timers, system controllers, centralized controllers, an integrated web based interface, graphical user workstation, and system integration to a Building Management Systems via BACnet® and/or LonWorks®.
    2. For additional information, Refer to Section 23 09 23, Direct Digital Control System for HVAC.
    3. Programmable Local Remote Controller: The programmable local remote controller shall be capable of controlling a minimum of 16 indoor units serving a single zone, and of operation with or without a central controller. Controller shall have the following minimum functions:
        a. On/Off.
        b. Operating mode (cool, heat, auto, dry, and fan, depending on selected system type).
        c. Temperature setting.
        d. Fan speed setting.
        e. Air swing settings.
        f. Room temperature and humidity display.
        g. Occupancy sensor capable.
        h. Schedule operations.
        i. Allow/Prohibit local remote control functions.

j. Unit level error code display.
k. Test run.
l. Set temperature range limit.
m. Override of scheduled functions for indoor unit groups.
n. Lock out of On/Off, Mode, Set Temp., Hold-button, and Air Direction.

4. Centralized Controller: The controller shall support system configuration, daily/weekly scheduling, monitoring of operation status, error email notification, online maintenance tool and malfunction monitoring. The controller shall have basic operation controls which can be applied to an individual indoor unit, a group of indoor units, or all indoor units. (cool, heat, auto, dry, and fan)The central controller shall be able to enable or disable operation of local remote controllers via a PC. Controller shall have the following minimum functions:
   a. On/Off.
   b. Operating mode (cool, heat, auto, dry, and fan, depending on selected system type).
   c. Temperature setting.
   d. Fan speed setting.
   e. Air swing settings.
   f. Room temperature display.
   g. Schedule operations.
   h. Morning warm-up/cool-down.
   i. Night setback setting.
   j. Allow/Prohibit local remote control functions.
   k. Unit level error code display.
   l. External input/output.
   m. PC data back-up.
5. BACnet® and/or LonWorks® Gateway: Gateway to allow connection to Energy Management Systems shall allow changes to the following, as a minimum:
   a. On/Off.
   b. Temperature setting.
   c. Alarm.
   d. Operating mode.
   e. Fan speed setting.
   f. Allow/Prohibit local remote control functions.
   g. High/Low limit setback temperature (heat recovery systems only).
   h. Air direction/swing settings.
6. Web browser: The controls network shall allow multiple individual users to monitor and control user defined zones via a network PC web browser.

G. Owner Training: Manufacturer shall provide one on-site 8-hour training session for Owners' maintenance personnel. 8-hour training shall include instruction in use of equipment manufacturer's service tool.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

A. Provide electrical systems as shown and specified, including wiring and connections to any electrical equipment provided and any work not specifically noted but that can be reasonably inferred or is necessary to provide a complete functional system.

B. Table of Contents, Division 26 – Electrical:

SECTION NO.	SECTION TITLE
26 05 00	Common Work Results for Electrical
26 05 19	Low-Voltage Electrical Power Conductors and Cables
26 05 26	Grounding and Bonding for Electrical Systems
26 05 29	Hangers and Supports for Electrical Systems
26 05 33.13	Raceway for Electrical Systems
26 05 33.16	Boxes for Electrical Systems
26 05 43	Underground Ducts for Electrical Systems
26 05 48	Vibration and Seismic Controls for Electrical Systems
26 05 53	Identification for Electrical Systems
26 05 73	Power System Studies
26 09 23	Lighting Control Devices
26 22 13	Low-Voltage Distribution Transformers
26 24 13	Switchboards
26 24 16	Panelboards
26 27 26	Wiring Devices
26 27 13	Electricity Metering
26 28 13	Fuses
26 28 16	Enclosed Switches and Circuit Breakers
26 31 00	Photovoltaic Power Systems
26 36 23	Automatic Transfer Switches
26 43 13	Surge Protective Devices (SPD)
26 51 00	Interior Lighting
26 56 00	Exterior Lighting

C. Work included: This section includes general administrative and procedural requirements for Division 26. The following administrative and procedural requirements are included in this section to supplement the requirements specified in Division 01 General Requirements.
1. Quality assurance.
2. Definition of terms.
3. Submittals.
4. Coordination.
5. Record documents.
6. Operation and maintenance manuals.
7. Project management and coordination service.
8. Contract modification pricing procedures.
9. Excavation.
10. Rough-in.
11. Electrical installation.
12. Cutting, patching, painting, and sealing.
13. Field quality control.
14. Cleaning.
15. Project closeout.

16. Interface/Responsibility Matrix.

D. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete and operable installation.
   1. General and supplementary conditions: Drawings and general provisions of Contract and Division 01 of the Specifications, apply to all Division 26 Sections.
   2. Earthwork: Include trenching, backfilling, boring and soil compaction as required for the installation of underground conduit, in-grade pull boxes, vaults, lighting pole foundations, etc. Refer to Division 31, Earthwork.
   3. Selective demolition: Nondestructive removal of materials and equipment for reuse or salvage as indicated. Also dismantling electrical materials and equipment made obsolete by these installations. Refer to Division 02, Selective Demolition.
   4. Concrete work: Include forming, steel bar reinforcing, cast-in- place concrete, finishing and grouting as required for underground conduit encasement, light pole foundations, pull box slabs, vaults, housekeeping pads, etc. Also includes setting of floor boxes in existing concrete slabs, saw-cutting of existing slabs and grouting of conduits in saw-cut. Refer to Division 03, Concrete.
   5. Miscellaneous metal work: Include fittings, brackets, backing, supports, rods, welding and pipe as required for support and bracing of raceways, luminaires, panelboards, distribution boards, switchboards, motor control centers, etc. Refer to Division 05, Miscellaneous Metals.
   6. Miscellaneous lumber and framing work: Include wood grounds, nailers, blocking, fasteners and anchorage for support of electrical materials and equipment. Refer to Division 06, Rough Carpentry.
   7. Moisture protection and smoke barrier penetrations: Include membrane clamps, sheet metal flashing, counter flashing, caulking and sealant as required for waterproofing of conduit penetrations and sealing penetrations in or through fire walls, floors, ceiling slabs and foundation walls. All penetrations through vapor barriers at slabs on grade shall be taped and made vapor tight. Refer to Division 07, Thermal and Moisture Protection.
   8. Access panels and doors: Required in walls, ceilings, and floors to provide access to electrical devices and equipment. Refer to Division 08, Access Doors also, Division 05, Metals.
   9. Painting: Include surface preparation, priming and finish coating as required for electrical cabinets, exposed conduit, pull and junction boxes, etc. where indicated as field painted in this Division. Refer to Division 09, Painting.
   10. Luminaire supports: Provide slack support wire for luminaires installed in acoustical tile or lay-in suspended ceilings. Refer to Division 09, Acoustical Treatment.

E. Provide all necessary electrical connections to all equipment provided by other divisions. Obtain specific power and control wiring requirements and connection points from others to perform electrical work. Contractor shall assist in testing equipment but responsibility is limited to correctly wiring and terminating electrical connections. Work furnished and installed under another Division requiring connections under this Division includes but is not limited to:
   1. Electric motors.
   2. Package mechanical equipment: fans, fan coil units, pumps, boilers, compressors, etc.
   3. Flow switches and valve monitors for sprinkler system.
   4. Elevator controllers.
   5. Pre-wired electrified partition furniture.
   6. Temperature control panel(s). (Line voltage only).
   7. Irrigation controller(s). (Line voltage only).
   8. FM-200 control panel. (Line voltage only).
   9. Kitchen equipment and appliances.

10. Laboratory equipment.
11. Electric signage.
12. Electric door locks.
13. Electric heat trace tape.
14. Door hold-open/release devices.
15. Variable frequency drive units.
16. Chiller starters.
17. Motorized roll down/sliding doors and grills.
18. Motorized dock levelers.
19. Projection screens.

F. Items furnished under this Division, but installed and connected under another Division includes but is not limited to:
1. Diesel generator day tank. (Division 22)
2. Diesel generator silencer. (Division 23)
3. Generator daytank fuel strainer, manual fuel pump, check valve and any other specified accessories. (Division 22)
4. Remote radiator for generator. (Division 22)

G. Items furnished under another Division, but installed and connected under this Division includes but is not limited to:
1. Wall mounted control stations for motorized roll down and sliding doors.
2. Electric fire sprinkler water flow bells.
3. Speed control switches for ceiling exhaust fans

1.02 RELATED SECTIONS

A. Section 01 73 29 - Cutting and Patching

B. Section 01 33 00 - Shop Drawings, Product Data and Samples

C. Section 01 77 00 – Closeout Procedures

D. Section 01 78 00 – Closeout Submittals

E. Section 03 30 00 – Cast in Place Concrete

F. Section 07 92 00 - Joint Sealants

G. Section 07 84 00 – Fire Stopping

H. Division 5 – Metals.

I. Division 6 – Rough Carpentry.

J. Division 8 – Access Doors.

K. Division 9 – Finishes.

L. Division 21 – Fire Suppression

M. Division 22 - Mechanical Plumbing

N. Division 23 – Mechanical HVAC

O. Division 27 – Communications

P. Division 28 – Electronic Safety and Security

Q. Division 31 - Earthwork

1.03 QUALITY ASSURANCE

A. Reference to Codes, Standards, Specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to submittal of the bid. Such codes or standards shall be considered a part of this Specification as though fully repeated herein.

B. When codes, standards, regulations, etc. allow Work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred authority for reducing the quality, requirements, or extent of the Contract Documents. The Contract Documents address the minimum requirements for construction.

C. Work shall be performed in accordance with all applicable requirements of the latest edition of all governing codes, rules and regulations including but not limited to the following minimum standards, whether statutory or not:
1. California Electric Code (CEC).
2. California Building Code (CBC).
3. California Fire Code (CFC).
4. California Mechanical Code (CMC).
5. California Energy Code (CEC)
6. California Plumbing Code (CPC)
7. California Green Buildings Standards Code (CGBSC)

D. Standards: Equipment and materials specified under this Division shall conform to the following standards where applicable:

ACI	American Concrete Institute
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
CBM	Certified Ballast Manufacturers
ETL	Electrical Testing Laboratories
FS	Federal Specification
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IPCEA	Insulated Power Cable Engineer Association
NEMA	National Electrical Manufacturer's Association
UL	Underwriters' Laboratories

E. Independent Testing Agency qualifications:
1. Testing Agency shall be an independent testing organization that will function as an unbiased authority, professionally independent of Manufacturer, Supplier and Contractor, furnishing and installing equipment or system evaluated by Testing Agency.
2. Testing Agency shall be regularly engaged in the testing of electrical equipment, devices, installations, and systems.
3. Testing Agency shall meet Federal Occupational Safety and Health Administration (OSHA) requirements for accreditation of independent testing laboratories, Title 9, Part 1907.

4. On-site technical personnel shall be currently certified by the International Electrical Testing Association (NETA) in electrical power distribution system testing.
5. Testing Agency shall use technicians who are regularly employed by the firm for testing services.
6. Contractor shall submit proof of above Testing Agency qualifications with bid documentation upon request.

F. All base material shall be ASTM and/or ANSI standards.

G. All electrical apparatus furnished under this Section shall conform to NEMA standards and the CEC and bear the UL label where such label is applicable.

H. Certify that each welder performing Work has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone re-certification.

1.04 DEFINITIONS

A. The following list of terms as used in the Division 26 documents shall be defined as follows:
1. "Provide": Shall mean furnish, install, and connect unless otherwise indicated.
2. "Furnish": Shall mean purchase and deliver to Project site.
3. "Install": Shall mean to physically install the items in-place.
4. "Connect": Shall mean make final electrical connections for a complete operating piece of equipment.
5. "As directed": Shall be as directed by the Owner or their authorized Representative.
6. "Utility Companies": Shall mean the company providing electrical, telephone or cable television services to the Project.

1.05 DRAWINGS AND SPECIFICATIONS

A. For purposes of clearness and legibility, drawings are essentially diagrammatic and, although size and location of equipment are drawn to scale wherever possible, the Contractor shall make use of all data in all the contract documents and shall verify this information at building site.

B. Information presented on Drawings and in the Specifications is based upon latest data available during their preparation. The Drawings and Specifications are for the assistance and guidance of the Contractor and exact locations, distances, levels, etc. will be governed by the structures and the site the contractor shall accept same with this understanding.

C. The drawings indicate required size and points of termination of conduits, and suggest proper routes to conform to structure, avoid obstructions and preserve clearances. However, it is not intended that drawings indicate all necessary offsets, and it shall be the work of the Contractor to make the installation in such a manner as to conform to structure, avoid obstruction, preserve headroom and keep openings and passageways clear.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Contractor shall be responsible for delivery, storage, protection and placing of all equipment and materials.

B. Equipment stored and installed at the job site shall be protected from dust, water or other damage. Cover all equipment stored exposed to weather.

1.07 STRUCTURAL REQUIREMENTS

A. Structural members shall not be cut or modified in any manner without specific instructions from the structural engineer.

1.08 SEISMIC RESISTANCE

A. Provide systems, units, equipment, and parts to meet or exceed current applicable requirements for seismic resistance specified by codes, regulations, or agencies having jurisdiction. Include supports, anchors, braces, and other restraining devices required. Seismic restraints shall meet the local Seismic Zone requirements, SMACNA, and California Building Code (CBC), Chapter 16a, which are the responsibility of the Contractor.

B. See Section 26 05 29 Hangers and Supports.

1.09 RULES AND REGULATIONS

A. All work and materials shall be in full accordance with the latest rules and regulations of California Code of Regulations, Title 20 & Title 24 California Building Standards Code, California Electrical Code, Local City and County Code, applicable regulations of local utility companies, E.U.S.E.R.C. Standards, and General Order 95 of the Public Utilities Commission, and any other applicable laws or regulations.

B. Nothing in these drawings or specifications is to be construed to permit work not conforming to the above codes.

1.10 PERMITS AND FEES

A. Obtain all permits and pay all required fees for permits and/or utility services. Inspections required during the course of construction shall be arranged as required. On completion of the work furnish the Owner's representative with certificates of inspection.

B. Include in bid all costs for electrical service including meter, and service lines installed by a power utility company or a power utility company approved contractor.

1.11 SITE CONDITIONS

A. Assume all responsibility for damage to adjoining properties; and restore property to its original condition, should damage occur as a result of the work of this section. Contractor shall thoroughly familiarize himself with all site conditions. Should utilities not shown on the drawings be found during excavations, promptly notify the Owner's Representative for instructions as to further action. Failure to do so will make the Contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities not shown on plans.

1.12 SUBMITTALS

A. Submit in accordance with Section 01 33 00 Shop Drawings, Product Data and Samples.
   1. Format: Furnish submittal data in electronic format for each Specification Section with a table of contents listing materials by Section and paragraph number and electronically bookmarked.

B. General

1. A submittal schedule shall be issued by the Contractor within 15 days of award of the contract. This schedule shall allow for timely review and approval as required by the contract documents.
2. These requirements apply only to substitutions, submittals, and shop drawings.
3. The contractor shall review all submittals prior to submission to the Architect. Submittals not reviewed by the contractor will be returned to the contractor and will not be reviewed.
4. Any deviations from specified requirements shall be clearly indicated in submittals.
5. Any errors in or omissions from submittals and any consequences of these are the responsibility of the Contractor.
6. Partial or incomplete submittals may be rejected as not complying with requirements; the Contractor shall be liable for any resultant consequences.
7. Delayed submittals may be rejected as not complying with requirements. Whether accepted or rejected, delayed submittals will not be considered justification for extension of contract time or similar relief.
8. Submittals not required or permitted by the Specifications but made at the option of the Contractor, will be returned without review unless accompanied with written valid justification.
9. Submittal items improperly included with those of another category (such as a proposed substitution included with shop drawing submittal) are not valid and will be returned without review.
10. Within 35 calendar days after award of the contract, and before fabrications and installation of any material or ordering of any materials, submit for approval one copy in PDF format of complete submittal data on specified and proposed substituted equipment and materials. Submittals shall list all materials proposed identified with drawing symbols and specific data on equipment such as arrangements, performance curves, sizes, capacity, motor locations, and other pertinent data. Check all submittals for conformance to the requirements of the Construction Documents before forwarding to the Owner's Representative for each item. No consideration will be given to substitutions submitted past 35 day limit. The contractor shall be responsible for all quantities and errors and omissions of submittals. Furnish samples when requested.
11. Equipment and materials specified as part of the specifications and drawings are listed by two manufacturers names. The first named manufacturer is the basis of design. The second named manufacturer has been determined to be an equivalent in quality or utility. The second named has not been specifically determined to conform to the first named in size, layout, electrical power, voltage, or impacts to building structure. The contractor is bound by all requirements for substitutes, as described below, for all second named manufacturers and equivalent equipment or products.
12. Each reviewed submittal will be marked to indicate review and directions as stated below.
13. Acceptance of a submittal does not relieve the Contractor of responsibility for omissions from the submittal or errors in the submittal

C. The Contractor shall submit detailed Drawings of all electrical equipment rooms and closets if the proposed installation layout differs from the construction documents. Physical size of electrical equipment indicated on the Drawings shall match those of the electrical equipment that is being submitted for review, i.e.: switchboards, panelboards, transformers, control panels, etc. Minimum scale: 1/4" = 1'- 0". Revised electrical equipment layouts must be approved prior to release of order for equipment and prior to installation.

1.13 REVIEW

A. Submittals will be reviewed for general acceptability, not necessarily including all details. The engineers review is for general conformance with the design concept of the project and the information given in the contract documents. The contractor is solely responsible for confirming

and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating the work with that of other trades and performing all work in a safe and satisfactory manner. Corrections of comments made on this submittal during this review do not relieve contractor from compliance with the requirements of the contract documents or with its responsibilities listed herein.

1. Proposed substitutes will be judged not only for the acceptability of the items themselves, but also how they will be used under the conditions of the particular project.
2. Proposed substitutions will be judged also for compliance with qualifications and conditions stipulated in paragraph 1.15.

B. Each reviewed submittal will be marked to indicate review and directions as stated below.
   1. Acceptance of a substitute does not waive the specified requirements.
   2. Once a substitution is accepted, no revision or resubmittal may be made except for pressing and valid reason and after receipts of approval to do so.

1.14 REVIEW DIRECTIONS

A. The notation "No Exceptions Taken" indicates that no further submittal on the particular matter is required and that the Contractor may proceed with normally ensuing action. The notation may be applied to submittals on substitutions, shop drawings, record data, or operation and maintenance data. The submittal has only been reviewed for general conformance with the design concept of the Contract Documents. The contractor is responsible for the dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication process or to the means and methods of construction; coordination of the work of all trades; and performing all work in a safe and satisfactory manner. This notation does not modify the contractor's duty to comply with the contract documents.

B. The notation "Make Corrections Noted" indicates that no further submittal on the particular matter is required, but the Contractor shall make all changes or corrections noted (but no others) before proceeding with normally ensuing action. The notation may be applied to submittals on substitutions or shop drawings (but usually not record data or operation and maintenance data).

C. The notation "Amend and Resubmit" indicates that the submittal is not accepted and must be revised, resubmitted, and reviewed again. In the case of submittal on substitutions and shop drawings so noted, the Contractor shall not proceed with any normally ensuing action until the resubmittal is reviewed. The notation may be applied to submittals on substitutions, shop drawings, record data, or operation and maintenance data.

D. The notation "Rejected - See Remarks" indicates that the submittal is not accepted and that resubmittal on the same subject matter is not allowed and will not be considered. The notation will be applied normally only to submittals on substitutions (usually not on shop drawings, record data, or operation and maintenance data).

E. The notation "Returned Without Review" indicates that the submittal or item has not been considered officially because it is either not proper, valid, required, or permitted by the Specifications and has no status or effect.

1.15 SHOP DRAWINGS

A. The contractor is responsible for providing all shop drawings as described below so that the design professional has the opportunity to determine if the contractor understands the contract documents. It is not the purpose of shop drawings to assure that the contractor is meeting the

requirements of the contract documents. Review and approval of a submittal neither extends nor alters any contractual obligation.

B. Accompany all substituted equipment with shop drawings showing revised equipment and/or equipment layouts in order to ascertain that substituted equipment does not adversely affect layout or work of others. Shop Drawings: The following conditions apply to shop drawings:
   1. Shop drawings are not and do not become Contract Documents.
   2. Processed shop drawing submittals and any instructions or requirements noted thereon are a part of the work, but they may not be used as a means of increasing the scope of the work.
   3. If deviations, discrepancies, or conflicts between shop drawing submittals and the Contract Documents are discovered either prior to or after the submittals are processed, the Contract Document requirements shall govern.

1.16 SUBSTITUTIONS

A. Whenever any equipment, material, or process is indicated or specified by patent of proprietary name and/or name of Manufacturer, in the Specifications and/or on the Drawings, it is understood that such specification is used to facilitate the description of the material and/or process and deemed to be followed by the words "or equal" unless noted "no substitute".

B. Substitute equipment and materials shall be equal in all respects including quality, arrangement, utility, physical size, capacity, and performance to those specified. Approval of substitute material will not relieve the contractor from complying with the requirement of the Drawings and Specifications. The contractor shall be responsible and at his own expense, for any changes caused by proposed substitutions which affect other parts of his own work or the work of other contractors.

C. The submittal of a proposed substitution shall clearly establish the following:
   1. The item can be transported into and installed in the intended space and in the manner shown.
   2. Required connections (electrical and other) can be properly made and adjoining work can be properly accomplished.
   3. The proposed substitute is similar to and of substance equal to that specified, is suited to the same use as that specified, and will perform the functions required by the design.
   4. The proposed substitute equipment will have the same minimum ratings and dimensions that accommodate the available space as the specified equipment.
   5. All performance requirements shall be at least equal to the specified product or equipment including short circuit current rating, selective coordination, noise levels, temperature ratings, bracing and insulation ratings, etc.

D. By submitting a proposed substitution, the Contractor agrees to the following:
   1. He will assume full responsibility for any and all modifications and necessary alterations arising from the use of the substitute item or material including all cost incurred by all other trades.
   2. He will assume full responsibility for any delay in the construction schedule resulting from the use of the substitution.
   3. He will prove harmless and indemnify the Owner and the Owner's design consultants from real or alleged damages that may result from the installation, use, or performance of a substitute material or product.

E. The following conditions apply to substitutions:

1. Submittals of substitutions are not and do not become part of the Contract Documents.
2. Contractor shall not order, fabricate, use, or install any substitute product or procedure unless he has received acceptance of the substitute from the Owner's Representative.
3. Should the Contractor install any substitute product in violation of the above he shall remove it and install the specified product at his own expense.
4. The Contractor shall provide a letter stating that all the above items shall apply to all substituted products and equipment.
5. Any submittal for substituted equipment or product that does not clearly show that the substituted item is equal shall be marked rejected and no further submittal shall be allowed on the substituted item. Provide in submittal format documentation that the proposed item is exactly as specified in the contract documents.

1.17 INSTALLATION

A. Manufacturer's Instructions:
1. When specifications require that installation comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation.
2. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by specifications.
3. Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.
4. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Owner's Representative for further instructions.
5. Do not proceed with work without clear understanding.

1.18 COORDINATION

A. Discrepancies:
1. In the event of discrepancies within the Contract Documents, the Engineer shall be so notified, within sufficient time, as delineated in Division 01, prior to the Bid Opening to allow the issuance of an Addendum.
2. If, in the event that time does not permit notification or clarification of discrepancies prior to the Bid Opening, the following shall apply: The Drawings govern in matters of quantity and the Specifications govern in matters of quality. In the event of conflict within the Drawings involving quantities or within the Specifications involving quantities or within the Specifications involving quality, the greater quantity and higher quality shall apply. Such discrepancies shall be noted and clarified in the Contractor's Bid. No additional allowances will be made because of errors, ambiguities or omissions that reasonably should have been discovered during the preparation of the Bid.

B. Project conditions:
1. Examination of Project site: The Contractor shall visit the Project site and thoroughly review the locale, working conditions, conflicting utilities, and the conditions in which the Electrical Work will take place. Verify all existing conditions in the field. No allowances will be made subsequently for any costs that may be incurred because of any error or omission due to failure to examine the Project site and to notify the Engineer of any discrepancies between Contract Documents and actual Project site conditions.
2. Protection: Keep conduits, junction boxes, outlet boxes and other openings closed to prevent entry of foreign matter. Cover fixtures, equipment, devices, and apparatus and protect them against dirt, paint, water, chemical or mechanical damage, before and during construction period. Prior to final acceptance, restore to original condition any

fixture, apparatus or equipment damaged including restoration of damaged factory applied painted finishes. Protect bright finished surfaces and similar items until in service. No rust or damage will be permitted.

3. Supervision: Contractor shall personally or through an authorized and competent representative constantly supervise the Work from beginning to completion and, within reason, keep the same foreman and workmen on the Project throughout the Project duration.

C. Preparation:
   1. Drawings:
      a. Layout: General layout indicated on the Drawings shall be followed except where other Work may conflict with the Drawings.
      b. Accuracy: Drawings for the Work under this Section are essentially diagrammatic within the constraints of the symbology applied.

D. Utility company contacts:
   1. Contact for electrical service: Anthony Dias.

E. Coordinate arrangement, mounting, and support of electrical equipment:
   1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
   2. To provide for ease of disconnecting the equipment with minimum interference to other systems.
   3. To allow right of way for piping and conduit positioned at required slope.
   4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

F. Coordinate placement of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

1.19 WORKMANSHIP

A. Good workmanship shall be evidenced in the placement of all electrical materials and equipment. Equipment shall be level, plumb and true with the structure and other equipment. All materials shall be firmly secured in place and adequately supported and permanent. The requirements of the codes are minimum standards. The recommendations of the National Electrical Contractors Association Standards shall be followed except where otherwise specifically directed.

1.20 CLEANING

A. After all other work such as plastering, painting, etc., has been accomplished, lighting, panelboards, switchboards, and all other electrical equipment shall be cleaned of all dirt, grease, plaster, paint or other marks.

1.21 MISCELLANEOUS EQUIPMENT

A. Contractor shall provide conduit, conductors, disconnects, and connections for power and controls for equipment requiring electrical services. This includes materials required for temporary services and testing.

1.22 GUARANTEE

A. Guarantee all work for two years from date of acceptance, against all defects in material, equipment and workmanship including repair of damage to any part of the premises resulting from leaks or other defects in material, equipment and workmanship. Guarantee shall be on form supplied by the Owner's representative.

1.23 RECORD DRAWINGS

A. Changes including the result of RFI's or field directives shall be included in a record set provided by the Contractor in an electronic format compatible with system used to produce the original contract drawing set. Provide a copy of the marked-up field set along with the electronic file. It will not be acceptable to cut and paste the drawing changes to this set.

B. Provide Project Record Drawings as described herein:
   1. Drawings shall fully represent installed conditions including actual locations of outlets, true panelboard connections following phase balancing routines, correct conduit, and wire sizing as well as routing, revised luminaire schedule listing Manufacturers and products installed and revised panel schedules. Contractor shall record all changes in the Work during the course of construction on blue or black line prints. These prints shall be made subject of monthly review by the Owner's Representative to ascertain that they are current. If not current, monthly payments may be withheld.
   2. Record Drawings shall be the transfer of information on these prints to the construction documents via computer aided drafting (CAD)building information modeling (Revit) process. A set of Revit files of the electrical construction documents will be provided to the Contractor by the Engineer. For the BIM/clash detection process, a Revit file of the electrical construction documents will be provided to the Contractor by the Engineer, which will represent a LOD of 300 design level. The Contractor is responsible for updating the model with changes as well as taking the model to a LOD of 500 design level.
   3. Record drawing submissions shall be provided to the Engineer to review upon the completion of the following phases of Work:
      a. All underground installation.
      b. Building electrical rough-in.
      c. Final electrical installation.
   4. Include in the record drawing submission the following shop drawing submission with all updated installation information:
      a. Manufactured wiring system.
      b. Fire alarm system.
      c. Security system.
      d. Telecommunication cabling system
      e. Nurse call system.
      f. Intercom system.
      g. Television distribution system.
      h. School communication system.
      i. Public address system.
      j. Sound reinforcement system.
   5. A single set of half size prints of the Record Drawings shall be submitted for review. Upon receipt of the Engineer's review comments, corrections shall be made, and the Contractor shall provide the following:
      a. Two sets of full-size prints.
      b. Four sets of half-size prints.
      c. One set of full size reproducibles.

d. Electronic files of Drawings in PDF and CADRevit.

C. Panel schedules:
1. Typewritten panel schedules shall be provided for panelboards indicating the loads served and the correct branch circuit number. Schedules shall be prepared on forms provided by the Manufacturer and inserted in the pocket of the inner door of each panelboard. See Section 262416: Panelboards for requirements.
2. A single set of the record panel schedules shall be submitted for review. Upon receipt of the Engineer's review comments, corrections shall be made, and the Contractor shall provide the following:
   a. Fold and insert one copy of the appropriate schedule in the pocket of the inner door of each panelboard.
   b. Three binders, each containing a full set of the panel schedules. Provide index listing all schedules and dividers for separation of schedules as follows:
      1) 277/480V normal.
      2) 277/480V emergency.
      3) 277/480V legally required standby.
      4) 277/480V optional standby.
      5) 277/480V critical.
      6) 277/480V life safety.
      7) 277/480V equipment.
      8) 277/480V generator equipment.
      9) 120/208V normal.
      10) 120/208V emergency.
      11) 120/208V legally required standby.
      12) 120/208V optional standby.
      13) 120/208V critical.
      14) 120/208V life safety.
      15) 120/208V equipment.
      16) 120/208V generator equipment.

D. Field labels, markings, and warning signs: Provide in accordance and as required by:
1. General: CEC Article 110.21.
2. High-Leg System: CEC Article 110.15.
3. Arc-Flash Warning: CEC Article 110.16.
4. Identification of Disconnecting Means: CEC Article 110.22 (A).
5. Engineered Series Combination Systems: CEC Article 110.22 (B).
6. Tested Series Combination Systems: CEC Article 110.22 (C).
7. Available Fault Current: CEC Article 110.24.
8. Depth of Working Space in Existing Buildings: CEC Article 110.26 (A)(1)(c).
9. Guarding of Live Parts: CEC Article 110.27 (C).
10. Locked Rooms or Enclosures: CEC Article 110.34 (C).
11. Manholes: CEC Article 110.75 (E).

1.24 OPERATION AND MAINTENANCE MANUALS

A. Prior to Project closeout furnish to the Owner, six (6) hard back 3-ring binders containing all bulletins, operation and maintenance instructions, part lists, service telephone numbers and other pertinent information as noted in each Section all equipment furnished under Division 26. Binders shall be indexed into Division Sections and labeled for easy reference. Bulletins containing more information than the equipment concerned shall be properly stripped and assembled.

1.25 PROJECT MANAGEMENT AND COORDINATION SERVICES

A. Overview: Contractor shall provide a Project Manager/Engineer for the duration of the Project to coordinate the Division 26 Work with all other trades. Coordination services, procedures and documentation responsibility shall include, but shall not be limited to the items listed in this Section.

B. Review of Shop Drawings prepared by other Subcontractors:
   1. Obtain copies of all Shop Drawings for equipment provided by others that require electrical service connections or interface with Division 26 Work.
   2. Perform a thorough review of the Shop Drawings to confirm compliance with the service requirements contained in the Division 26 Contract Documents. Document any discrepancy or deviation as follows:
      a. Prepare memo summarizing the discrepancy.
      b. Provide a copy of the specific shop drawing, indicating via cloud, the discrepancy.
   3. Prepare and maintain a shop drawing review log indicating the following information:
      a. Shop drawing number and brief description of the system/material.
      b. Date of your review.
      c. Indication if follow-up coordination is required.

C. Request for information (RFI):
   1. Thoroughly review the Contract Documents prior to the preparation and submission of an RFI. If an RFI is submitted, attach 8 1/2" x 11" copies of all relevant documents to clarify the issue.
   2. Prepare and maintain an RFI log indicating the following information:
      a. RFI number and brief summary of the issue.
      b. Date of issuance and receipt of response.

D. Clarification confirmation memo (CCM):
   1. Either the Contractor will prepare CCM memos or the Engineer to confirm a decision clarifying the Contract Documents that does not impact cost or affect other trades.
   2. Prepare and maintain a CCM log indicating the following information:
      a. CCM number: Use CCM-C1, C2, etc. for memos issued by the Contractor and CCM-E1, E2, etc. for memos issued by the Engineer.
      b. Brief summary of issue and date issued.

1.26 CONTRACT PRICING MODIFICATION PROCEDURES

A. Submission guidelines: This Section covers the criteria for direct costs, mark-ups, and documentation requirements to be followed by the Contractor for any pricing modification to the Base Contract, where unit pricing has not already been established.
   1. Change orders: Pricing for additions or deletions to the Base Contract Scope of Work upon acceptance of bid value and receipt of authorization to proceed.
   2. Allowances: Cost allowances may be assigned for specific Scope of Work outlined within the Base Contract where design has not been fully delineated on the Contract Documents. When detailed information is available, the Contractor shall prepare and submit a price quotation for the Work. This price quotation will be compared to the allowance value and any adjustments necessary to the Base Contract value shall be made via change order.

B. Direct costs:
   1. Labor:

a. Hourly labor rates shall not exceed the prevailing wage for the County where the Work is being performed. The costs for all supervision, including general superintendents and foremen, shall be included in the mark-up defined herein. Working foremen will be considered a direct cost only if the individual is on the Project site physically installing Work under the change order.
b. Labor burden shall be based on rates currently in effect at the time the Work under the change order is being performed and shall include only fringe benefits by governing trade organizations, Federal Insurance Contribution Act, Federal and State Unemployment taxes, payroll taxes and net actual premium paid for public liability, workers' compensation, property damage and other forms of insurance required by the Owner. No other cost will be included as labor burden.
c. NECA Manual of Labor Units will be utilized as the basis for determining labor productivity rates for Electrical Work as follows:
    1) 85% of NECA column 1 (normal) for change in scope issued well in advance of Work needing to be performed, so as not to cause slow-down or Work stoppage.
    2) 100% of NECA column 1 (normal) for Work being performed with other Base Contract Work, not out of sequence and with minimal slow-down or Work stoppage.
    3) 100% of NECA column 2 (difficult) for Work performed out of sequence, requiring Work stoppage and reconstruction in areas already complete. This Work may involve the removal of ceiling tiles or the cutting and patching of walls.
d. No labor costs shall be included for the following items since the labor is already covered by the NECA labor units for conduit and construction channel:
    1) Conduit straps and clips.
    2) Construction channel accessories (nuts, washers, etc.).
    3) Screws.
    4) Conduit elbows ¾" and smaller.

2. Material:
    a. The cost of material shall be the direct cost, including sales tax and may include the cost of transportation from the Supplier to the Contractor, but charges for final delivery to the Project site will not be allowed.
    b. Electrical commodities priced based on most current Trade Service Book with a 15% discount. Non-commodities priced per invoice from Supplier.
3. Equipment rental:
    a. Payment for equipment costs will be made at the rental rates listed for such equipment as specified in the current edition, at the time of the Work, of "Labor Surcharge and Equipment Rental Rates," a Caltrans Publication. Such rental rates shall be adjusted as appropriate and will be used to compute payments for equipment; regardless of the whether the equipment is under Contractor's control through direct ownership, leasing, renting or other method of acquisition. Daily, weekly, or monthly rates shall be used, whichever is lower. Hourly rates including operator shall not be used.
    b. The actual time to be paid for equipment shall be the time the equipment is in productive operation on the Work. No payment will be made time while equipment is inoperative due to breakdown or for non-working days.
    c. Individual pieces of equipment having a replacement value of $1,000 or less shall be considered small tools or small equipment and no payment will be made since the costs of these tools and equipment are included as part of the Contractor's mark-up for overhead and profit.
    d. Payment to Contractor for use of equipment as set forth herein shall constitute full compensation to Contractor for the cost of fuel, power, oil, lubricants, supplies, small equipment, necessary attachments, repairs and maintenance of any kind,

depreciation, storage, insurance, labor (except for equipment operators) and any and all costs to Contractor for incidental use of the equipment.

4. Performance bond: Only the actual cost of insurance and bond premiums, with no mark-up for overhead and profit, will be allowed.

C. Mark-up for overhead and profit on direct costs:
   1. Costs to be included as part of mark-up:
      a. Field and home office personnel including, but not limited to, Principals, Project Managers, Superintendents, Supervisory Foremen, Estimators, Project Engineers, Detailers, Draftspersons, Schedulers and Administrative Assistants.
      b. All field and home office expenses including, but not limited to, field trailers, parking, storage sheds, office equipment and supplies, telephone service at the Project site, long-distance telephone calls, fax machines, computers and software, temporary utilities, sanitary facilities, etc.
      c. Administrative functions including, but not limited to, reviewing, coordinating, distributing, processing, posting, recording, estimating, negotiating, scheduling, schedule updating and revising, expediting, detailing, revising Shop Drawings and preparing Record Drawings.
      d. Vehicles required for the transportation of Contractor's staff and field personnel.
   2. Maximum mark-up values:
      a. For Work performed by the Contractor, the overhead mark-up shall equal a maximum of 10 percent of the direct costs, as defined herein.
      b. Mark-up for profit shall equal a maximum of 5 percent of combined direct and overhead costs.
      c. For Work performed by a Subcontractor shall equal a maximum of 5 percent mark-up for profit. Subcontractor shall follow the same guidelines above for their mark-up allowance. No consideration shall be given for more mark-ups then this two-tier arrangement whereas the mark-up could excess 20%.
      d. For Work scope changes that result in a net decrease in cost to the Contractor or a Subcontractor, the Owner shall receive a credit based on the actual net decrease in direct cost figured in the same manner as an add cost. It is understood that the mark-up value applied at bid time will not be credited back. Although, if this is a change to a previous change order, then mark-up values shall be included in credit back to Owner.
      e. There will be no mark-ups on the cost of performance bond.

D. Documentation:
   1. Project change order request submission:
      a. Provide copies of all take-off sheets showing material and labor charges in line item format.
      b. Provide recap sheet showing all direct costs and mark-ups.
      c. Provide copies of invoices for Subcontracted Work.
   2. Allowance account tracking:
      a. Contractor shall prepare and maintain a spreadsheet for each allowance account to track and monitor the requested and approved charges.
      b. Copies of these spreadsheets, along with the summary spreadsheets, shall be submitted to the Owner's Representative twice a month.

PART 2 - PRODUCTS

2.01 SHOP DRAWINGS:

A. Make all drawings to an appropriate scale, large enough to show all pertinent aspects of the item and the method of its connection into the work.

B. Make each drawing sheet in a reproducible form, CAD, Revit or PDF.

C. Grouping: Combine submittals in logical groupings; for example, submit Shop Drawings grouped by Sections of the Specifications, arranged in the specified sequence.

D. Content:
1. Shop drawings may be:
c. Drawings or diagrams prepared by the Contractor, a supplier, a manufacturer, or other.
d. Typewritten data or descriptions.
e. Manufacturer's printed brochures, descriptions, charts, instructions, or data sheets.

E. Timing: Submit all shop drawings prior to installation of any items included in submittal.

2.02 MATERIALS

A. Unless otherwise noted, all material and equipment shall be new, of the type, capacity and quality specified and free from defects. Material shall bear the label of, or be listed by, the Underwriters' Laboratories or Nationally Recognized Testing Laboratory (NRTL).

B. Materials shall be of the same brand or manufacture throughout for each class of material or equipment wherever possible.

C. Equipment shall be the product of a manufacturer who has, for a period of not less than five (5) years, been in successful manufacture of the equipment and who has a nationally distributed catalog covering ratings and specifications of said equipment.

2.03 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Sleeves for Rectangular Openings: Galvanized sheet steel.
1. Minimum Metal Thickness:
a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.04 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
1. Manufacturers:
a. Calpico, Inc.
b. Advance Products & Systems, Inc.
c. Pipeline Seal and Insulator, Inc.
d. Or, Equal.
2. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
3. Pressure Plates: Stainless steel. Include two for each sealing element.

4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.05 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

2.06 ACCESS DOORS

A. Unless specified otherwise by the Architect, provide access doors of the following type:
   1. Concealed hinges, prime coated with rust-inhibitive paint, style of door to suit wall, ceiling, floor or roof construction and fire rating.
      a. Milcor Type M
         1.) Architectural grade, one-piece frame, 16 gauge frame & door panel on concealed spring hinges, grey powder coated steel, Elmdor/Stonman or equal.
      b. Milcor Type UFR, fire resistive type Underwriters Laboratory Class B, 1-1/2 hour rating meets UBC, IBCO and BOCA codes for two hour rated walls self latching with key lock, Elmdor/Stonman Type FR or equal.
   2. Minimum size; 18" by 18".
   3. Wall and ceiling access doors: Furnish as required for access to fire alarm devices, devices requiring access for adjustment, battery packs, etc.; coordinate size and location to obtain access.
   4. See architectural drawings for further requirements.

2.07 MISCELLANEOUS EQUIPMENT AND MATERIALS

A. Furnish and install miscellaneous equipment and materials required for the systems described whether or not specifically shown.

PART 3 - EXECUTION

3.01 COMMON REQUIREMENTS FOR ELECTRICAL

A. All work shall be installed in a neat, workmanlike manner in accordance with ANSI/NECA 1-2015.

B. Comply with the requirements of all listed codes and standards.

C. Where any device or part of equipment is referred to in these specifications in the singular number (e.g., "the switch"), this reference shall be deemed to apply to as many such devices as are required to complete the installation as shown on the drawings.

D. During construction the contractor shall at all times maintain electrical utilities of the building without interruption. Should it be necessary to interrupt any electrical service or utility, the contractor shall secure permission in writing from the owner’s representative for such Interruption at least ten (10) business days in advance. Any interruption shall be made with minimum amount of inconvenience and any shut-down time shall have to be on a premium time basis and such time to be included in the contractor's bid. Arrange to provide and pay for temporary power source as required by project conditions.

E. The locations of switches, receptacles, lights, motors, etc. outlets shown are approximate. The contractor shall use good judgment in placing the preceding items to eliminate all interference with ducts, piping, etc. The contractor shall check all door swings so that light switches are not located behind doors. Relocate switches as required, with approval from the Design Professional. The owner's representative may direct relocation of outlets before installation, up to five (5) feet from the position indicated on the Drawings, without additional cost.

F. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity. Normal maintenance shall not require the removal of protective guards from adjacent equipment. Install equipment as close as practical to the locations shown on the Drawings.
1. Where the owner's representative determines that the Contractor has installed equipment not conveniently accessible for operations and maintenance, the equipment shall be removed and reinstalled as directed at no additional cost to the owner.
2. "Conveniently Accessible" is defined as being capable of being reached without climbing or crawling over or under obstacles such as motors, pumps, belt guards, transformers, racks, piping, ductwork, raceways or similar.

G. Owner furnished equipment: Equipment furnished by the District shall be received, stored, uncrated, protected, and installed by the Contractor with all appurtenances required to place the equipment in operation, ready for use. The Contractor shall be responsible for the equipment as if he had purchased the equipment himself and shall hold the warranty

H. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

I. Headroom Maintenance: If mounting heights or other location criteria are not indicated, locate components and equipment to provide maximum possible headroom consistent with these requirements.
1. Adequate working space shall be provided around electrical equipment in strict compliance with the Electrical Safety Orders, California Electrical Code and/or the serving utility whichever is more stringent. In general, provide six and one-half feet of headroom and thirty-six inches minimum clear work space in front of panelboards and controls for 120/208 volt equipment, and forty two inches for 277/480 volt equipment.
   a. Note that most power utilities now require a minimum of 48-inches of clear working space in front of low voltage, 1,000 volts and less, service entrance equipment.

J. Equipment: Placement shall facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby infrastructure. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

K. Right of Way: Give to piping systems with slope requirements.

3.02 ROUGH-IN

A. Contractor shall verify lines, levels and dimensions indicated on the Drawings and shall be responsible for the accuracy of the setting out of Work and for its strict conformance with existing conditions at the Project site.

B. Verify final locations for rough ins with field measurements and with the requirements for the actual equipment to be connected.

C. Refer to equipment specification in Divisions 22 through 33 for rough-in requirements.

3.03 ELECTRICAL INSTALLATION

A. Preparation, sequencing, handling, and installation shall be in accordance with Manufacturer's written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified. Comply with the following requirements:
1. Shop Drawings prepared by Manufacturer.
2. Verify all dimensions by field measurements.
3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.
4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
5. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the Work. Give attention to large equipment requiring positioning prior to closing in the building.
6. Where mounting height is not detailed or dimensioned, contact the Architect for direction prior to proceeding with rough-in.
7. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies and controlling agencies. Provide required connection for each service.
8. Install systems, materials, and equipment to conform with approved submittal data, including coordination Drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are indicated only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.
9. Install systems, materials, and equipment level and plumb, parallel, and perpendicular to other building systems and components, where installed exposed in finished spaces.
10. Install electrical equipment to facilitate servicing, maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
11. Coordinate electrical systems, equipment, and materials installations with other building components.
12. Provide access panel or doors where devices or equipment are concealed behind finished surfaces. Furnish and install access doors per the requirements of Division 08.
13. Install systems, materials and equipment giving right-of-way priority to other systems that are required to maintain a specified slope.
14. Conform to the National Electrical Contractors Association "Standard of Installation" for general installation practice.

3.04 CUTTING, PATCHING, PAINTING AND SEALING

A. Structural members shall in no case be drilled, bored, or notched in such a manner that will impair their structural value. Cutting of holes, if required, shall be done with core drill and only with the approval of the Architect and Structural Engineer.

B. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

C. ***Cut, remove, and legally dispose of selected electrical equipment, components and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new work.***

D. ***Protect the structure, furnishings, finishes and adjacent materials not indicated or scheduled to be removed.***

E. ***Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.***

F. ***Patch existing surfaces and building components using experienced installers and new materials matching existing materials and the original installation. For installers' qualifications refer to the materials and methods required for the surface and building components being patched.***

G. Application of joint sealers:
   1. General: Comply with joint sealer Manufacturers' printed application instructions applicable to products and applications indicated, except where more stringent requirements apply.
   2. Installation of fire-stopping sealant: Install sealant, including forming, packing and other accessory materials, to fill openings around electrical services penetrating floors and walls, to provide fire-stops and fire-resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

3.05 SLEEVES FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Provide sleeves for penetrations unless core-drilled holes or formed openings are used. Provide sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Provide sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with Firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves penetrating floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
   1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Section 070690 "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Provide sleeves and seal raceway and cable

penetration sleeves with firestop materials. Comply with requirements in Section 07 84 00 – Fire Stopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Above ground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve and provide mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Provide cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve and provide mechanical sleeve seals.

3.06 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical infrastructure to restore or maintain fire-resistance rating of assembly. Firestopping materials and execution requirements are specified in Section 07 84 00 – Fire Stopping.

3.07 FIELD QUALITY CONTROL

A. General testing requirements:
1. The purpose of testing is to ensure that all tested electrical equipment, both Contractor and Owner supplied, is operational and within industry and Manufacturer's tolerances and is installed in accordance with design Specifications.
2. Tests and inspections shall determine suitability for energization.
3. Perform tests in presence of the Owner's Representative and furnish test equipment, facilities and technical personnel required to perform tests.
4. Tests shall be conducted during the construction period and at completion to determine conformity with applicable codes and with these Specifications.

B. Tests: In addition to specific system test described elsewhere, tests shall include:
1. Equipment operations: Test motors for correct operation and rotation.
2. Lighting control circuits: Test lighting circuits for correct operation through their control devices.
3. Alarm and interlock systems: Produce malfunction symptoms in operating systems to test alarm and interlock systems. In addition, all specific tests described in the fire alarm system shall be performed.
4. Circuit numbering verification: Select on a random basis, various circuit breakers within the panelboards and cycle them on and off to verify compliance of the typed panel directories with actual field wiring.
5. Voltage check:
   a. At completion of job, check voltage at several points of utilization on the system that has been installed under this Contract. During test, energize all installed loads.
   b. Adjust taps on transformers to give proper voltage, which is 118 to 122volts for 120volt nominal systems and proportionately equivalent for higher voltage systems. If proper voltage cannot be obtained, inform the Owner and the serving Utility Company.
6. Test electrical service power rotation and post on a label at the utility meter enclosure. Maintain rotation throughout the distribution system.
   a. Where portable generator tap boxes are present provide a label at the tap box indicating the power rotation.

C. Test all wiring and connections for continuity and grounds before any fixtures or equipment are connected and where such tests indicate faulty insulation or other defects, they shall be located, repaired and tested again at the Contractor's expense. Electrical loads shall be balanced at the panelboards and motors shall be checked for correct rotation.

D. Contractor shall provide test power required when testing equipment before service energization and coordinate availability of test power with General Contractor after service energization. The Contractor shall provide any specialized test power as needed or specified herein.

E. Testing safety and precautions:
   1. Safety practices shall include the following requirements:
      a. Applicable State and Local safety operating procedures.
      b. OSHA.
      c. NSC.
      d. NFPA 70E.
   2. All tests shall be performed with apparatus de-energized and grounded except where otherwise specifically required ungrounded by test procedure.

F. Calibration of test equipment:
   1. Testing Agency shall have calibration program that assures test instruments are maintained within rated accuracy.
   2. Instruments shall be calibrated in accordance with the following frequency schedule:
      a. Field instruments: Analog, 6-months maximum; Digital, 12-months maximum.
      b. Laboratory instruments: 12-months.
      c. Leased specialty equipment: 12-months where accuracy is guaranteed by lessor.
   3. Dated calibration labels shall be visible on test equipment.
   4. Records, which show date and results of instruments calibrated or tested, must be kept up to date.
   5. Up-to-date instrument calibration instructions and procedures shall be maintained for test instrument.
   6. Calibration standards shall be of higher accuracy than instrument tested.
   7. Equipment used for field testing shall be more accurate than instrument being tested.

G. Coordinate with General Contractor regarding testing schedule and availability of equipment ready for testing.

H. Third party acceptance testing is required as part of this project. Contractor to provide the services of a NETA certified testing contractor to perform testing of equipment identified in the respective specification sections. Submit test reports noting acceptance, test values and a baseline for future test readings. Apparatus to be included in the testing are as follows:
   1. Switchboards
   2. Distribution panels.
   3. Panelboards
   4. Automatic transfer switches.
   5. Generator.
   6. Transformers.
   7. Feeders.

I. Notify the Owner’s Representative one week in advance of any testing.

J. Any products which fail during the tests or are ruled unsatisfactory by the Owner's Representative shall be replaced, repaired, or corrected as prescribed by the Owner's Representative at the expense of the Contractor. Tests shall be performed after repairs, replacements or corrections until satisfactory performance is demonstrated.

K. Testing Agency shall maintain written record of tests and shall assemble and certify final test report.

L. Include all test results in the maintenance manuals.

M. Notify Owner’s Representative in advance prior to project completion. At such time, arrange an operating test for approval and/or schedule for electrical apparatus testing by a third party testing company. Demonstrate equipment to be in conformance with applicable Codes and operate in accordance with Requirements of this Section of the Specifications. Provide all instruments and personnel required for test.

N. In the absence of manufacturer's torque values refer to Table 1 herein.

Table 1

U.S. Standard

Bolt Torques for Bus Connections

Heat Treated Steel – Cadmium or Zinc Plated

GRADE	SAE	SAE	SAE	SAE
	1 & 2	5	6	8
Minimum Tensile (P.S.I.)	64K	105K	133K	150K
Bolt Diameter	Torque (Foot Pounds)			
1/4	4.0	5.6	8.0	8.4
5/16	7.2	11.2	15.2	17.6
3/8	12.0	20.0	27.2	29.6
7/16	19.2	32.0	44.0	48.0
1/2	29.6	48.0	68.0	73.6
9/16	42.4	70.4	96.0	105.6
5/8	59.2	96.0	133.6	144.0
3/4	96.0	160.0	224.0	236.8
7/8	152.0	241.6	352.0	378.4
1.	225.6	372.8	528.0	571.2

3.08 SALVAGE MATERIAL AND EQUIPMENT

A. Where remodel or demolition work is to be accomplished under this Contract, all removed materials and equipment, which in the opinion of the Owner is salvable, shall remain the property of the Owner. Such salvaged materials and equipment shall be delivered to Owner on premises as directed and shall be neatly piled or stored and protected from damage.

B. All materials considered as scrap and not salvageable shall be removed from premises and disposed of by Contractor.

3.09 DEMOLITION

A. When devices are removed that are located midway in a circuit maintain continuity of the circuit and accessibility of any junction boxes.

B. When the scope of work requires the removal of electrical equipment all associated conduit, conductors, boxes, hangers, anchors, etc. shall be removed in their entirety. All openings shall be patched and sealed to match the adjacent construction and finish including the replacement of floor tiles.

C. Damaged floor and ceiling tiles shall be replaced.

3.10 CLEANING

A. Prior to energizing of electrical equipment, the Contractor shall thoroughly clean the interior of enclosures from construction debris, scrap wire, etc. using Manufacturer's approved methods and materials.

B. Upon completion of Project, prior to final acceptance, the Contractor shall thoroughly clean both the interior and exterior of all electrical equipment per Manufacturers approved methods and materials. Remove paint splatters and other spots, dirt, and debris.

C. Touch-up paint any marks, blemishes or other finish damage suffered during installation.

3.11 PROJECT CLOSEOUT

A. Training:
   1. At the time of completion, a period of not less than ***4***-hours shall be allotted by the Contractor for instruction of building operating and maintenance personnel in the use of all systems. This ***4***-hour training is in addition to any instruction time called out in the Specifications for specific systems. All personnel shall be instructed at one time, the Contractor making all necessary arrangements with Manufacturer's Representative. The equipment Manufacturer shall be requested to provide product literature and application guides for the users' reference. Costs, if any, for the above services shall be paid by the Contractor.
   2. All training sessions shall be video recorded. Confirm file type, i.e. MOV, AVI, MP4, etc. with the district. Each specification section that requires training shall include one file, and all Division 26 specifications shall be stored on a flash drive (USB3.0, 1TB min.) 3 flash drives shall be provided to the district representative with closeout documentation.

B. Special tools: Provide one of each tool type required for proper operation and maintenance of the equipment provided under this Section. All tools shall be delivered to the Owner at the Project completion.

C. Keying: Provide two keys for each lock furnished under this Section and turn over to Owner.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Building wires and cables rated 600 V and less.
   2. Connectors, splices, and terminations rated 600 V and less.
   3. Sleeves and sleeve seals for cables.

1.03 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.04 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For testing agency.

C. Field quality-control test reports.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
   1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with CEC, California Electrical Code.

PART 2 - PRODUCTS

2.01 CONDUCTORS AND CABLES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Building Wire:
      a. General Cable Corporation.
      b. Senator Wire & Cable Company.
      c. Southwire Company.
      d. Cerro Wire, a Marmon/Berkshire Hathaway Company.
      e. United Wire and Cable
   2. Flexible cords and cables:
      a. Carol Cable Company
      b. Cerrowire
      c. PWC Corp
   3. Wiring connectors and terminations:
      a. 3M Company.
      b. Ideal.
      c. Blackburn-Holub.
      d. Burndy.
      e. Thomas & Betts Corp.
      f. Beau Barrier.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical..

2.02 BUILDING WIRE

A. Conductor material:
   1. Provide annealed copper for all wire, conductor, and cable, unless otherwise indicated.
   2. All building wire shall be stranded, unless otherwise indicated.
   3. Comply with NEMA WC 70. Aluminum shall not be used.
   4. Stranded Copper, #10 AWG minimum, except for control circuits which may be #14 AWG minimum. Signal and control circuits other than mechanical shall be as indicated on Drawings or as required by equipment manufacturers.
   5. Conductors in sizes up through #10 AWG shall have solid color finish as listed above. #8 AWG and larger shall be color coded by application of phase tape for minimum of 6" length on conductor. Coding shall occur at all terminations, pull boxes and splices.
   6. Color-coding shall be continuous and consistent throughout the work. Do not use different colors for switch legs, fixture taps, travelers, etc.
   7. Phasing: Terminals in panelboards, motor control centers, switchboards and other equipment shall be phased A, B, C, reading left to right or top to bottom looking into the front of the equipment.

B. Conductor Insulation: Comply with UL 83 for Types THW, THHN/THWN, THWN-2, XHHW-2, USE, and SO.
   1. All insulated wire, conductor and cable shall be 600volt rated, unless otherwise noted on the Drawings.
   2. Thermoplastic-insulated building wire.
   3. Rubber-insulated building wire.
   4. Copper feeders and branch circuits larger than #6 AWG: Type THW, XHHW or dual rated THHN/THWN.
   5. Copper feeders and branch circuits #6 AWG and smaller: Type TW, THW, XHHW or dual rated THHN/THWN.

6. Feeders and branch circuits for direct-current (DC) in wet locations: Type XHHW-2.
7. Conductors for variable frequency drives (VFD): Type XHHW-2.
8. Service Entrance: Type RHW or THWN.
9. Control Circuits: Type THW or dual rated THHN/THWN.
10. Identify system conductors as to voltage and phase connections by means of color-impregnated insulation.
11. XHHW-2 conductors shall be used for feeders from generator to service switchboard.

C. Conductor Temperature Rating: 90°C.

2.03 FLEXIBLE CORDS AND CABLES (TYPE S)

A. Provide flexible cords and cables of size, type and arrangement as indicated on the Drawings.

B. Type 'S' flexible cords and cables shall be manufactured in accordance with CEC Article 400 and composed of two or more conductors and a full size green insulated ground wire with an outer jacket of rubber or neoprene as noted.

C. Flexible cords and cables shall be fitted with wire mesh strain relief grips either as an integral component of the connector or as an independently supported unit.

D. Suspended flexible cords and cables shall incorporate safety spring(s) unless otherwise noted.

E. Fixture Whips
1. Minimum conductor size is #16 AWG.
2. Maximum length is 6 feet.

F. Cable Ties: For wire training and clamping in cabinets and enclosures use nylon cable ties.

2.04 CONNECTORS AND SPLICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Cooper Crouse-Hinds.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

C. Bolted pressure connectors: Provide wide range-taking connectors with cast bronze compression bolts, designed for parallel taps, tees, crosses or end-to-end connections.

D. Electrical spring wire connectors:
1. Provide multi-part construction incorporating a non-restricted, zinc coated square cross-section steel spring enclosed in a steel sheet with an outer jacket of plastic and insulating skirt.
2. Self-striping pigtail and tap U-contact connectors shall not be used.

E. Compression type terminating lugs:
1. Provide tin-plated copper high-compression type lugs for installation with hand or hydraulically operated circumference-crimping tools and dies as stipulated by the lug Manufacturer or as indicated on Drawings. Notch or single point type crimping is NOT acceptable.
2. Two-hole, long barrel lugs shall be provided for size #4/0 and larger wire where terminated to bus bars. Use minimum of three crimps per lug, on sizes where possible.

F. Splicing and insulating tape: Provide black, ultraviolet proof, self-extinguishing, 7-mil thick vinyl general purpose electrical tape with a dielectric strength of 10,000volts suitable for temperatures from minus 18-degrees C to 105-degrees C.

G. Insulating putty:
1. Provide pads or rolls of non-corrosive, self-fusing, one-eighth inch thick rubber putty with PVC backing sheet. Scotch vinyl mastic pads and roll or equal.
2. Use putty suitable for temperatures from minus 17.8-degrees C to 37.8-degrees C with a dielectric strength of 570volts/mil minimum.

H. Insulating resin:
1. Provide two-part liquid epoxy resin with resin and catalyst in pre-measured, sealed mixing pouch. Scotchcast 4 or equal for wet or underground vaults, boxes, etc. splices or terminations.
2. Use resin with a set up time of approximately 30-minutes at 21.1-degrees C and with thermal and dielectric properties equal to the insulating properties of the cables immersed in the resin.

I. Terminal strips:
1. Provide box type terminal strips in the required quantity plus 25% spare. Install in continuous rows in terminal cabinets.
2. Use the box type terminal strips with barrier open backs and with ampere ratings as required.
3. Identify all terminals with numbering sequence being used for a system.

J. Crimp type connectors:
1. Provide insulated fork or ring crimp terminals with tinned electrolytic copper-brazed barrel with funnel wire entry and insulation support
2. Fasten crimp type connectors or terminals using a crimping tool recommended by the connector Manufacturer.
3. Provide insulated overlap splices with tinned seamless electrolytic copper barrel with funnel wire entry and insulation support.
4. Provide insulated butt splices with tinned seamless electrolytic copper barrel with center stop, funnel wire entry and insulation support.

K. Cable ties: Provide harnessing and point-to-point wire bundling with nylon cable ties. All cable ties shall be installed using tool supplied by Manufacturer of ties.

L. Wire lubricating compound:
1. UL listed for the wire insulation and conduit type and shall not harden or become adhesive.
2. Shall not be used on wire for isolated type electrical power systems.

M. Bolt termination hardware:
1. Bolts shall be plated, medium carbon steel heat-treated, quenched and tempered equal to ASTM A-325 or SAE grade 5; or silicon bronze alloy ASTM B-9954 Type B.

2. Nuts shall be heavy semi-finished hexagon, conforming to ANSI B18.2.2, threads to be unified coarse series (UNC), class 2B steel or silicon bronze alloy.
3. Flat washers shall be steel or silicon bronze, Type A plain standard wide series, confirming to ANSI B27.2. SAE or narrow series shall not be used.
4. Belleville conical spring washers shall be hardened steel, cadmium plated or silicon bronze.
5. Each bolt connecting lug(s) to a terminal or bus shall not carry current exceeding the following values:
   a. 1/4" bolt: 125amps
   b. 5/16" bolt: 175amps
   c. 3/8" bolt: 225amps
   d. 1/2" bolt: 300amps
   e. 5/8" bolt: 375amps
   f. 3/4" bolt: 450amps

2.05 LOW VOLTAGE CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Class 2 Power Source: Not smaller than No. 12 AWG, complying with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

B. Classes 2 and 3 Control Cables: Stranded copper, complying with UL 83, multi-conductor cable with copper conductors not smaller than No. 18 AWG, complying with Division 26 Section Conductors and Cables.

C. Class 1 Control Cables: Stranded copper, complying with UL 83, multi-conductor cable with copper conductors not smaller than No. 18 AWG, complying with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

D. Structured Network Digital and Multiplexed Signal Cables: UTP cable with copper conductors, complying with TIA/EIA-568-B.2, Category 5e for horizontal copper cable and with Division 27 Section "Communications Horizontal Cabling."

E. RS-485 Cables:
   1. Standard Cable: CEC, Type CM.
      a. Paired, 2 pairs, twisted, No. 22 AWG, stranded (7x30) tinned copper conductors.
      b. PVC insulation.
      c. Unshielded.
      d. PVC jacket.
      e. Flame Resistance: Comply with UL 1581.

PART 3 - EXECUTION

3.01 CONDUCTOR MATERIAL APPLICATIONS

A. Color code all branch circuits and feeders as follows:

	120/208 Volts	277/480 Volts
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Gray
Ground	Green	Green

3.02 CONDUCTOR INSULATION AND WIRING METHODS

A. Exposed & Concealed Feeders: Type THHN-THWN-2, single conductors in raceway.

B. Exposed & Concealed Branch Circuits: Type THHN-THWN-2, single conductors in raceway.

C. Code size ground wire shall be provided in all raceways, secured using approved methods to each pull box, junction box, and equipment housing.

D. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain-relief device at terminations to suit application.

E. Class 1 and Class 2 Control Circuits: Type THHN-THWN, in raceway.

F. Branch circuits and feeders in conduit exposed to direct sunlight: Type XHHW-2.

G. Motor feeders/branch circuits sourced from a variable frequency drive: Type XHHW-2 from the drive unit to the motor.

3.03 INSTALLATION OF CONDUCTORS AND CABLES

A. All wiring shall be installed in raceways.

B. Swab conduits before installing cables, and exercise care in pulling to avoid damage or disarrangement of conductors, use approved grips.

C. Conceal cables in finished walls and poles, unless otherwise indicated.

D. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

E. Use pulling means including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.
   1. Wire Pulling Lubricant: Minerallac "Pull-In" compound, Y- ER-EAS wire pulling lubricant, Poly-water, or other UL approved lubricant. Flax-soap is not approved.

3.04 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Splices:
1. For conductors #10 and smaller, pre-insulated type connectors, 3M Scotchloks, T & B Piggys or equal, nylon self-insulated type.
2. For conductors #8 and larger use compression type connector, Burndy type YS long barrel, requiring the use of a 360 degree circumference compression type tool, then insulated with Scotchtape No. 88 or equal.
    a. Use Scotchfill or equal around large or irregular shape splices for insulation build-up and Scotchtape No. 88.
    b. Wire splicing devices shall be sized according to manufacturer's recommendations.
3. Factory insulated mechanical connectors manufactured by Polaris, ILSCO, etc., are not approved.
4. Push in style connectors, i.e. WAGO, are not approved.
5. Self-stripping pigtail and tap-U contact connectors shall not be used.

D. Splices in underground pull boxes or in other areas subject to moisture shall be provided with cast resin kits and cadweld or compression type connections, Burndy type YS long barrel. Use Scotchlok sealing packs for wire size to #10 and Scotchcast kits for larger splices as recommended by 3M Company. All splices to be prepared as hereinbefore specified before resin kits are applied. Wire splicing devices shall be sized according to manufacturer's recommendations.

3.05 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.
1. Submit test reports for approval.

B. Tests and Inspections:
1. After installing conductors and cables and before electrical circuitry has been energized, test conductors for compliance with requirements.
2. Grounding test shall be by Fall-of-Potential method by an independent testing agency.
3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
    a. Visual and Mechanical Inspection:
        1) Inspect cables for physical damage and proper connection in accordance with single line diagram.
        2) Test cable mechanical connections to manufacturer’s recommended values with a calibrated torque wrench. In absence of manufacturer’s data use Table 1.
4. Check cable color-coding with applicable engineer’s specifications and California Electrical Code standards.
    a. Electrical Tests:
        1) Perform insulation resistance test on each conductor including neutral with respect to ground and adjacent conductors before connecting to equipment. Applied potential to be 1000 volts dc for one (1) minute withstand test, per NETA ATS-2017.
        2) Perform continuity test on all power equipment branch and feeder circuit conductors. Verify proper cable connection and phasing.

3) Test all feeder splices per NETA standards and document the results in the test report. The resistance across the splice in each phase shall not exceed 50% of the lowest value obtained.

b. Test Values:
1) Minimum insulation resistance values shall be not less than fifty megohms.

C. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes grounding systems and equipment.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For qualified testing agency and testing agency's field supervisor.

C. Field quality-control reports.

D. Operation and Maintenance Data: For grounding to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
   1. Instructions for periodic testing and inspection of grounding features at test wells ground rings, grounding connections for separately derived systems based on NETA MTS.
      a. Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
      b. Include recommended testing intervals.

1.04 QUALITY ASSURANCE

A. Contractor to perform testing per NETA standards.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

C. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
   1. Ground Rods:
      a. Weaver.
      b. Erico "Cadweld" Products, Inc.
   2. Ground Wells:
      a. Christy Concrete Products, Inc.
      b. Forni Corp.
   3. Ground Bushings, Connectors, Jumpers and Bus:
      a. O-Z/Gedney.
      b. Thomas & Betts Corp.
      c. Burndy.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

2.02 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:
   1. Solid Conductors: ASTM B 3.
   2. Tinned Conductors: ASTM B 33.

C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 4 inches (6.3 by 100 mm) in cross section, with NEMA 2-hole drilling apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V. Lexan or PVC, impulse tested at 5000 V.

2.03 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts.
   1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

D. Bus-bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

2.04 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel; 3/4 inch diameter by 10 feet (19 mm by 3 m).

B. Chemical-Enhanced Grounding Electrodes: Copper tube, straight or L-shaped, charged with nonhazardous electrolytic chemical salts.
   1. Termination: Factory-attached No. 4/0 AWG bare conductor at least 48 inches (1200 mm) long.
   2. Backfill Material: Electrode manufacturer's recommended material.

C. UFER Ground; Bare copper conductor 25-feet minimum length and gauge size per 12.5 percent of the service conductor size.

PART 3 - EXECUTION

3.01 APPLICATIONS

A. Conductors: Install stranded conductors unless otherwise indicated.

B. Underground Grounding Conductors: Install bare tinned-copper conductor, No. [2/0] AWG minimum.
   1. Bury at least 30 inches below grade.

2. Duct-Bank Grounding Conductor: Bury 12 inches (300 mm) above duct bank when indicated as part of duct-bank installation.

C. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
   1. Install bus on insulated spacers 2 inches (50 mm) minimum from wall, 36 inches above finished floor unless otherwise indicated.

D. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down to specified height above floor; connect to horizontal bus.

E. Conductor Terminations and Connections:
   1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
   2. Underground Connections: Welded connectors.
   3. Connections to Ground Rods at Test Wells: Welded connectors.
   4. Connections to Structural Steel: Welded connectors.

3.02 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

A. Comply with IEEE C2 grounding requirements.

B. Grounding Manholes and Handholes: Install a driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inches (100 mm) will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, nonshrink grout.

C. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields according to written instructions by manufacturer of splicing and termination kits.

D. Pad-Mounted Transformers and Switches: Provide grounding per utility company requirements. Otherwise: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Install tinned-copper conductor not less than No. 2/0 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 24 inches (150 mm) from the foundation.

3.03 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. Signal and Communication Equipment: In addition to grounding and bonding required by CEC, provide a separate grounding system complying with requirements in TIA/ATIS J-STD-607-A.
   1. For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.

2. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-4-by-24-inch grounding bus.
3. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

C. Metal Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

3.04 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.
1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.

C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches (300 mm) deep, with cover.
1. Test Wells: Install at least one test well for each service unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:
1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.

G. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet (18 m) apart.

H. Ground Ring: Install a grounding conductor, electrically connected to each building structure ground rod and to each steel column, extending around the perimeter of area or item indicated.
1. Install tinned-copper solid conductor not less than No. 2 AWG for ground ring and for taps to building steel.
2. Bury ground ring 30-inches deep and not less than 24 inches from building's foundation.

I. Ufer Ground (Concrete-Encased Grounding Electrode): Fabricate according to CEC; use a minimum of 25 feet of bare copper conductor not smaller than 12.5 percent of the service conductor size (sum total per a single phase) AWG. In no case shall the conductor size be less than #4/0 AWG.
1. If concrete foundation is less than 20 feet (6 m) long, coil excess conductor within base of foundation.
2. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts. Extend grounding conductor below grade and connect to building's grounding grid or to grounding electrode external to concrete.
3. 2-inch minimum encasement in concrete.

3.05 LABELING

A. Comply with requirements in Division 26 Section "Identification" Article for instruction signs. The label or its text shall be green.

B. Install labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed.
1. Label Text: "If this connector or cable is loose or if it must be removed for any reason, notify the Owner’s Representative."

3.06 FIELD QUALITY CONTROL

A. Contractor to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:
1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells. Make tests at ground rods before any conductors are connected.
    a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    b. Perform tests by fall-of-potential method according to IEEE 81.

C. Grounding system will be considered defective if it does not pass tests and inspections.
1. Prepare test and inspection reports.

D. Report measured ground resistances that exceed the following values:
   1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
   2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
   3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
   4. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohm(s).
   5. Substations and Pad-Mounted Equipment: [5] <Insert value> ohms.
   6. Manhole Grounds: 10 ohms.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Engineer promptly and include recommendations to reduce ground resistance.

END OF SECTION

26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Hangers and supports for electrical equipment and systems.

B. Related Sections include the following:
   1. Division 26 Section 26 05 48 Vibration And Seismic Controls for products and installation requirements necessary for compliance with seismic criteria.

1.03 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.04 PERFORMANCE REQUIREMENTS

A. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

B. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project. Minimum structural safety factor shall meet the following site specific seismic design criteria:
   1. Seismic restraints are the responsibility of the contractor.

C. Design of seismic bracing shall meet requirements of CBC Chapter 16A.

1.05 SUBMITTALS

A. Product Data: For the following:
   1. Steel slotted support systems.
   2. Nonmetallic slotted support systems.
   3. Anchors.
   4. Hangers.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
   1. Steel slotted channel systems. Include Product Data for components.
   2. Nonmetallic slotted channel systems. Include Product Data for components.
   3. Equipment supports.

1.06 QUALITY ASSURANCE

A. Comply with CEC.

PART 2 - PRODUCTS

2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Cooper B-Line, Inc.; a division of Eaton.
      b. ERICO International Corporation.
      c. Thomas & Betts Corporation.
      d. Unistrut; Tyco International, Ltd.
   2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
   3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
   4. Painted Coatings: Manufacturer's standard painted coating applied in accordance with MFMA-4.
   5. Channel Dimensions: Selected for applicable load criteria.
      a. 12 Gage minimum.

B. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
   1. Provide end caps on all exposed strut to conceal sharp edges.

C. Rated Strength: Selected to suit applicable load criteria.

D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Hilti Inc.
      b. Or, Approved Equal
   2. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
   3. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.

2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

PART 3 - EXECUTION

3.01 SUPPORT INSTALLATION

A. Provide end caps for all strut.

B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
   1. To Wood: Fasten with through bolts unless noted otherwise in the electrical or structural details.
   2. To New Concrete: Bolt to concrete inserts unless noted otherwise in the electrical or structural details.
   3. To Masonry: Approved expansion anchor fasteners on solid masonry units.
   4. To Concrete: Expansion anchor fasteners unless noted otherwise in the electrical or structural details.
   5. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
   6. To Light Steel: Sheet metal screws.
   7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements. See mounting details in the electrical and structural drawing set.

D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.
   1. Ferro resonant scan all concrete walls and floors prior to drilling.

E. Note: Structural details in the construction drawing set and structural specifications take precedence.

3.02 TOUCHUP: CLEAN FIELD WELDS AND ABRADED AREAS OF SHOP PAINT. PAINT PAINTING

A. Exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
   1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes raceways and fittings for electrical wiring.

1.03 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. FMC: Flexible metal conduit.

C. LFMC: Liquidtight flexible metal conduit.

D. RGS: Rigid Galvanized Steel Conduit.

E. CEC: California Electrical Code.

1.04 SUBMITTALS

A. Product Data: For wireways and fittings.

B. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.
   1. Proposed motion sensor and LED dimmable driver interconnection schematic.

C. Source quality-control test reports.

1.05 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.

   1. Metal conduit:

      a. ***Allied Tube and Conduit Co.***
      b. ***Triangle PWC, Inc.***
      c. ***Western Tube and Conduit Corp.***
      d. ***Spring City Electrical Manufacturing Co.***
      e. ***Alflex Corp.***
      f. ***American Flexible Metal Conduit Co.***

g. ***Anaconda.***

2. Fittings:

h. Appleton Electric Co.
i. OZ/Gedney.
j. Thomas & Betts Corp.
k. Spring City Electrical Manufacturing Co.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

2.02 METAL CONDUIT AND TUBING

A. EMT: ANSI C80.3.
1. Shall be galvanized steel, thin wall. Maximum trade size to be used shall be 4".
2. Conduit: Shall be formed of cold rolled strip steel, electrical resistance welded continuously along the longitudinal seam and hot dip galvanized after fabrication. Conduit shall conform to ANSI C80.3 Specifications and shall meet UL requirements.
3. Set screw type couplings: Hot dip galvanized, steel, UL listed concrete tight. Use set screw type couplings with four setscrews each of conduit sizes over 2 inches. Setscrews shall be of case-hardened steel with hex-head and cup point to firmly seat in wall of conduit for positive grounding.
4. Set screw type connectors: Hot dip galvanized, steel, UL listed concrete tight with male hub and insulated plastic throat, 150-degree C temperature rated. Setscrew shall be same as for couplings.
5. Raintight couplings: Hot dip galvanized, steel; UL listed raintight and concrete tight, using gland and ring compression type construction.
6. Raintight connectors: Hot dip galvanized, steel, UL listed raintight and concrete tight, with insulated throat, using gland and ring compression type construction.

B. FMC: Zinc-coated steel.
1. Conduit: Shall be fabricated in continuous lengths from galvanized steel strip, spirally wound and formed to provide an interlocking design and conforming to UL 1.
2. Fittings: Connectors shall be of the single screw clamp variety with steel or cast malleable iron bodies and threaded male hubs with insulated throats. Exception: Pressure cast screw-in connectors shall be acceptable for luminaire connection in suspended ceilings and cut-in outlet boxes within existing furred walls.LFMC: Flexible steel conduit with PVC jacket.

C. LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC)
1. Conduit: Shall be fabricated in continuous lengths from galvanized steel strips, interlocking spirally wound, covered with extruded liquidtight jacket of polyvinyl chloride (PVC) and conforming to UL 360. Provide conduit with a continuous copper-bonding conductor wound spirally between the convolutions.
2. Fittings: Connector body and gland nut shall be of cadmium plated steel or cast malleable iron, with tapered, male, threaded hub; insulated throat and neoprene "O" ring gasket recessed into the face of the stop nut. The clamping gland shall be of molded nylon with an integral brass push-in ferrule.

D. RGS (RMC) Conduit: ANSI C80.1 and UL 6.
1. Full weight, mild steel pipe, heavy wall, threaded with threaded fittings, zinc coated on both inside and outside by a hot dipping or sherardizing process.
2. Standard threaded couplings, locknuts, bushings, and elbows: Only materials of steel or malleable iron are acceptable. Locknuts shall be bonding type with sharp edges for digging into the metal wall of an enclosure; provide two locknuts at each box or can, inside and outside.

3. Three-piece couplings: Hot dip galvanized, cast malleable iron.
4. Insulating bushings: Threaded polypropylene or thermosetting phenolic rated 150-degree C minimum.
5. Insulated grounding bushings: Threaded cast malleable iron body with insulated throat and steel "lay-in" ground lug with compression screw.
6. Insulated metallic bushings: Threaded cast malleable iron body with plastic insulated throat rated 150-degrees C.
7. All fittings and connectors shall be threaded.

E. PVC INSULATED GALVANIZED RIGID STEEL CONDUIT (PVC GRS/RMC)
1. Conduit: Full weight, threaded, hot-dip galvanized steel, conforming to ANSI C80.1 and NEMA RN-1 with nominal 20 or 40 mil thermoplastic vinyl coating, heat fused and bonded to the exterior of the conduit.
2. Fittings: Conduit couplings and connectors shall be as specified for galvanized rigid steel conduit and shall be factory PVC coated with an insulating jacket equivalent to that of the coated material.

F. INTERMEDIATE METAL CONDUIT (IMC)
1. Conduit: Hot dip galvanized steel meeting the requirements of CEC Article 345 and conforming to ANSI C80.6 and UL 1242.
2. Fittings: Conduit couplings, connector and bushing shall be as specified for galvanized rigid steel conduit. Integral retractable type IMC couplings are also acceptable.

G. PVC: PLASTIC CONDUIT [PVC (Polyvinyl Chloride), Schedule 40, Heavy Wall, UL Listed and Labeled for Direct Burial, 90 Degrees Centigrade]
1. Shall be classified for direct burial,
2. Standard PVC manufactured elbows shall be used. Where bends and offsets other than the standard fittings must be used, they shall be made with the use of standard manufactured bending equipment. Burn marks on PVC conduit will be considered cause for rejection of installation.

H. MISCELLANEOUS CONDUIT FITTINGS AND PRODUCTS
1. Watertight conduit entrance seals: Steel or cast malleable iron bodies and pressure clamps with PVC sleeve, neoprene sealing grommets and PVC coated steel pressure rings. Fittings shall be supplied with neoprene sealing rings between the body and PVC sleeve.
2. Watertight cable sealing bushings: One piece, compression molded sealing ring with PVC coated steel pressure disks, stainless steel sealing screws and zinc plated cast malleable iron locking collar.
3. Expansion fittings: Multi-piece unit comprised of a hot dip galvanized malleable iron or steel body and outside pressure bussing designed to allow a maximum of 4" conduit movement (2" in either direction). Furnish with external braid tinned copper bonding jumper. Unit shall be UL listed for wet or dry locations.
4. Expansion/deflection couplings: Multi-piece unit comprised of a neoprene sleeve with internal flexible tinned copper braid attached to bronze end couplings with stainless steel bands. Coupling shall accommodate 0.75-inch deflection, expansion or contraction in any direction and allow 30-degree angular deflections. Flexible, corrosion-resistant, watertight, moisture and heat resistant molded rubber jacket and stainless-steel jacket clamps. Unit shall comply with UL467 and UL514. Manufacturer shall be OZ/Gedney Type DX, Steel City Type EDF or equal.
5. Fire rated penetration seals:
   a. UL building materials directory classified.
   b. Conduit penetrations in fire rated separation shall be sealed with a UL classified fill, void or cavity material.

c. The fire rated sealant material shall be the product best suited for each type of penetration and may be a caulk, putty, composite sheet, or wrap/strip.

6. Standard products not herein specified:
   a. Provide listing of standard electrical conduit hardware and fittings not herein specified for approval prior to use or installation, i.e. locknuts, bushings, etc.
   b. Listing shall include Manufacturers name, part numbers and a written description of the item indicating type of material and construction.
   c. Miscellaneous components shall be equal in quality, material and construction to similar items herein specified.
      1) ***Hazardous area fittings: UL listed for the application.***

I. Joint Compound for Rigid Steel Conduit: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from weather, corrosion, and enhance their conductivity.

2.03 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel with snap-on covers. Prime coating, ready for field painting.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Thomas & Betts Corporation.
      b. Walker Systems, Inc.; Wiremold Company (The).
      c. Wiremold Company (The); Electrical Sales Division.
      d. Or, Equal

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of conduit system installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 RACEWAY APPLICATION

A. Galvanized rigid steel conduit (GRS) can be used in the following applications:
   1. For feeders and branch circuits located indoors, concealed or exposed above suspended ceilings, in damp/wet locations, in crawl spaces, in attics, chases, furred spaces, equipment rooms, loading docks or in hazardous locations in accordance with CEC and local Codes.
   2. For feeders and branch circuits concealed in concrete floors and walls when not in contact with earth.
   3. For use where conduit is subject to physical damage.
   4. For feeders and branch circuits installed exposed on the roof.

B. PVC insulated galvanized rigid steel conduit can be used in the following applications:
   1. Use 40-mil coating for feeders and branch circuits in damp or wet locations.
   2. Use 40-mil for feeders and branch circuits concealed in concrete walls or slabs in contact with earth.
   3. Use 40-mil for runs beneath floor slabs on grade.
   4. Use 40-mil for all below grade penetrations through floor slabs on grade or exterior walls.

C. Intermediate metal conduit (IMC): Can be used for the same application as galvanized rigid steel conduit as specified herein, except for hazardous locations prohibited by CEC or Local Codes.

D. Electrical metallic tubing (EMT): Can be used exposed or concealed for interior electrical feeders 4" and smaller, interior power and lighting branch circuits and low tension distribution system where run above suspended ceilings, in concrete slabs and walls not in contact with earth; in stud walls, furred spaces and crawl spaces. EMT shall not be installed exposed below 8 feet above the finish floor except within electrical, communication or signal rooms or closets (subject to physical damage).

E. Flexible metallic conduit (FMC): Can be used only in dry locations for connections from an adjacent outlet box or conduit to all motors, transformers, vibrating equipment or machinery, controllers, solenoid valves, float and flow switches or similar devices and to luminaires installed in suspended ceilings.

F. Liquidtight flexible metallic conduit (LFMC): Can be used in wet or damp locations for connections from adjacent outlet box or conduit to all motors, transformers, vibrating equipment or machinery, controllers, solenoid valves, float and flow switches or similar devices. These areas are typically food preparation and dishwashing areas, sump wells, loading docks, pump rooms, exterior areas, etc.

G. Fire-Resistive Systems: Refer to CEC Article 728. All devices utilized, mountings, and supports shall be listed as part of the fire-resistive system.

H. Minimum Raceway Size: 3/4-inch trade size.

I. Raceway Fittings: Compatible with raceways and suitable for use and location.
   1. Galvanized Rigid Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
      a. Apply thread sealant to all joints except in permanently dry locations. Where installed below floor slab and in contact with fill material, or underground and in contact with earth or encased in concrete shall be double wrapped with Scotchwrap #50, Johns-Manville VID-10 or equal at double 1/2 lap (four net layers). Follow any specific instructions or methods shown on Drawings.
      b. Termination of conduits, wiring gutters or boxes shall be fitted with steel locknut and insulated metallic bushing or with two steel locknuts and insulating bushings. When grounding bushings are required, use insulated grounding bushing. Where conduit connections are exposed to weather or excessive moisture they shall be fitted with insulated watertight sealing hub i.e. Myers Hub.
      c. Cap underground conduit stubs.
      d. All cut ends of conduit shall be reamed to remove rough edges where conduit is threaded in the field; an electrical conduit thread cutting die with a taper shall be used.
   2. LFMC: Use malleable liquidtight insulated fittings with full-size cast steel UL locknut, threaded locking mechanism with insulated throat.
      a. In wet and corrosive locations, outside, or motor connections, shall be liquid- tight. May be used to connect recessed lighting fixtures or mechanical controls and equipment. Length shall be kept to a minimum but to allow for movement or removal of equipment. Leave slack in flex connection to maintain flexibility of conduit, minimum of 3’ of flex & one (1) 90° bend.
   3. PVC: May be used underground with sand fill evenly compacted on all sides or in concrete floor, or concrete walls, limited to structural requirements.
      a. All portions shall be concealed below grade or within concrete slab. Continuation of run above grade or floor slab shall be with rigid steel, intermediate metal grade or EMT in furred walls

b. Stubup at generator pad and portable tap box may be PVC SCH 40 terminated with bell ends.
c. Conduit entries into underground pullboxes shall be terminated with bell ends.
d. Minimum 24" cover over conduit. Refer to additional details on drawings.
e. A copper bonding conductor shall be pulled in each raceway and bonded to equipment at each end with code lugs.
f. Duct separation shall be provided using plastic conduit spacers specifically designed for the purpose. Refer to duct bank details on drawings.
g. All joints shall be solvent cemented in accordance with manufacturer's recommendations. All underground stubs shall be capped.

4. Room Wall and Ceiling Surfaces: Surface metal raceway sized to accommodate conductors for lighting control.

3.03 PREPARATION

A. Locations of conduit runs shall be planned in advance of the installation and coordinated with ductwork, plumbing, ceiling and wall construction in the same areas and shall not unnecessarily cross other conduits or pipe, nor prevent removal of ceiling tiles or panels, nor block access to mechanical or electrical equipment.

B. Where practical, install conduits in groups in parallel vertical or horizontal runs and at elevations that avoid unnecessary offsets.

C. All conduits shall be run parallel or at right angles to the centerlines of columns and beams, whether routed exposed, concealed above suspended ceiling or in concrete slabs.

D. Conduits shall not be placed closer than 12-inches to a flue, parallel hot water, steam line or other heat producing source or three inches from such lines when crossing perpendicular to the runs.

E. Communications conduits shall not be placed closer than 12 inches to power, a flue, parallel hot water, steam line or other heat producing source or three inches from such lines when crossing perpendicular to the runs.

F. Exposed conduit installation shall not encroach into the ceiling height headroom of walkways or doorways. Where possible, install horizontal raceway runs above water and below steam piping.

G. The largest trade size conduits in concrete floor and wall slabs shall not exceed 1/3 the floor or wall thickness and conduits shall be spaced a minimum of three conduit diameters apart unless otherwise noted on the Drawings. All conduits shall be installed in the center of concrete slabs or wall and shall not be placed between reinforcing steel and the bottom of floor slabs.

H. In long runs of conduit, provide sufficient pull boxes inside buildings to facilitate pulling wires and cables, with spacing not to exceed 150-feet. Support pull boxes from structure independent of conduit supports. These pull boxes are not indicated on the Drawings.

I. Provide all reasonably inferred standard conduits fitting and products required to complete conduit installation to meet the intended application whether noted, indicated, or specified in the Contract Documents or not.

J. Connect recessed luminaires to conduit runs with maximum six feet of flexible metal conduit

3.04 INSTALLATION

A. Install conduit in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Minimum Conduit Size: Unless otherwise noted herein or on Drawings, minimum conduit size shall be 3/4" for interior applications and 1" for exterior and underground applications.

C. Minimum Communication and Signal Conduit Size: Unless otherwise noted herein or on Drawings, minimum conduit size shall be 1" for interior applications and 2" for exterior and underground applications.

D. All conduit sizes indicated on the Drawings are sized for copper conductors with THHN/THWN insulation. If conductor type or size is changed the Contractor shall be responsible for resizing conduits upward to meet Code.

E. All communication and signal conduit sizes indicated on the Drawings are sized for 40% fill or less for category 6 or 6A cable. If cable type or size is changed the Contractor shall be responsible for resizing conduits upward to meet a maximum 40% fill.

F. In general, all conduit work shall be concealed where possible. Exceptions shall be electrical, communication and mechanical rooms, exposed ceiling areas, and parking garages.

G. Conduit connections to motors and surface cabinets shall be concealed, except for electrical, communication and mechanical rooms, or unless exposed Work is clearly called for on the Drawings.

H. Install conduits in complete runs before pulling in cables or wires.

I. Install conduit free from dented, bruises or deformations. Remove and replace any damaged conduits with new undamaged material.

J. Conduits shall be well protected and tightly covered during construction using metallic bushings and bushing "pennies" to seal open ends.

K. In making joints in rigid steel conduit, ream conduit smooth after cutting and threading. Coat all field-threaded joints with UL approved conductive type compound to ensure low resistance ground continuity through conduit and to prevent seizing and corrosion.

L. Clean any conduit in which moisture or any foreign matter has collected before pulling in conductors. Paint all field-threaded joints to prevent corrosion.

M. In all empty conduits or ducts, install a “True Tape” conduit measuring tape line to provide overall conduit length for determining length of cables/conductors for future use.

N. Conduit systems shall be mechanically and electrically continuous throughout. Install code size, insulated, copper, green-grounding conductors in all conduit runs for branch circuits and feeders. This conductor is not indicated on the Drawings. Refer to Section 260526: Grounding and Bonding.

O. Metallic conduit shall not be in contact with other dissimilar metal pipes (i.e. plumbing).

P. Make bends with standard conduit bending hand tool or machines. The use of any item not specifically designed for the bending of electrical conduit is strictly prohibited.

Q. A run of conduit between terminations at wire pulling points shall not contain more than the equivalent of four quarter bends (360-degrees, total).

R. A run of communications and signal conduit between terminations at wire pulling points shall not contain more than the equivalent of two quarter bends (180-degrees, total).

S. Emergency power raceway system: Install entirely independent of other raceway systems, except where specifically allowed by CEC Article 517.

3.05 PENETRATIONS

A. Locate penetrations and holes in advance where they are proposed in the structural sections such as footings, beams, wall, etc. Penetrations are acceptable only when the following occurs:
   1. Where indicated on the Structural Drawings.
   2. As approved by the Structural Engineer prior to construction and after submittal of Drawing showing location, size, and position of each penetration.

B. Cutting or holes:
   1. Cut holes through concrete, masonry block or brick floors and floors of structure with a diamond core drill or concrete saw. Pneumatic hammer, impact electric, hand or manual hammer type drills are not allowed, except where permitted by the Structural Engineer as required by limited working space. Obtain the approval of the Structural Engineer prior to drilling through structural sections.
   2. Provide sleeves or “can outs” for cast-in-place concrete floors and walls. Following conduit installation, seal all penetrations using non-iron bearing, chloride free, non-shrinking, dry-pack grouting compounds; or fire rated penetration-sealing materials.
   3. Cut holes for conduit penetrations through non-concrete and non-masonry walls, partitions, or floors with a hole saw. The hole shall be only as large as required to accommodate the size of the conduit.
   4. Provide single piece escutcheon plates around all exposed conduit penetrations in public places.

C. Sealing:
   1. Non-rated penetrations: Pack opening around conduits with non-flammable insulating material and seal with gypsum wallboard taping compound.
   2. Fire stop: Where conduits, wireways and other electrical raceways pass through fire rated partitions, walls, smoke partitions or floor; install a UL classified fire stop material to provide an effective barrier against the spread of fire, smoke, and gases. Completely fill and seal clearances between raceways and openings with the fire stop material.

D. Waterproofing: At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight as specified in Division 07: Sealants and Caulking.
   1. Install specified watertight conduit entrance seals at all below grade wall and floor penetrations. Conduits penetrating exterior building walls and building floor slab shall be PVC coated rigid galvanized steel.
   2. For roof penetrations furnish and install roof flashing, counter flashing and pitch-pockets as specified under Roofing and Sheet Metal Sections of the Specifications.
   3. Provide membrane clamps and cable sealing fittings for any conduit that horizontally penetrates the waterproof membrane.
   4. Conduits that horizontally penetrate a waterproof membrane shall fall away from and below the penetration on the exterior side a minimum of two times the conduit diameters.

3.06 CONCEALED IN CONCRETE

A. Install conduits approximately in the center of the slab so that there will be a minimum of 3/4-inch of concrete around the conduits.

B. Installation of conduit in structural concrete that is less than three inches thick is prohibited. Topping slabs, maintenance pads and curbs are exempted.

C. Tie conduits to reinforcing rods or otherwise secure them to prevent sagging or shifting during concrete placement. Run conduit larger than 1-inch trade size, parallel with or at right angles to the main reinforcement; where at right angles to the reinforcement, the conduit shall be close to one of the supports of the slab.

D. Where nonmetallic conduit or tubing is used, raceways must be converted to PVC coated rigid steel conduit before rising above floor.

E. Make couplings and connections watertight.

F. Protect stub-ups from damage where conduits rise from floor slabs. Arrange so curved portion of bends is not visible above the finished slab.

3.07 TERMINATIONS AND JOINTS

A. Use raceway fittings that are of types compatible with the associated raceway and suitable for the use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings except as otherwise indicated.

B. Raceways shall be joined using specified couplings or transition couplings where dissimilar raceway systems are joined.

C. Conduits shall be securely fastened to cabinets, boxes and gutters using two locknuts and an insulating bushing or specified insulated connectors. Where joints cannot be made tight, use bonding jumpers to provide electrical continuity of the raceway system. Where terminations are subject to vibration, use bonding bushings or wedges to assure electrical continuity. Where subject to vibration or dampness, use insulating bushings to protect conductors. Install grounding bushings or bonding jumpers on all conduits terminating at concentric or eccentric knockouts.

D. Conduit terminations exposed at weatherproof enclosures and cast outlet boxes shall be made watertight using specified connectors and hubs.

E. Stub-up connections: Extend conduits through concrete floor for connection to freestanding equipment with an adjustable top or coupling threaded inside for plugs and set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; flexible metal conduit may be used 6 inches above the floor. Where equipment connections are not made under this contract, install screwdriver operated threaded flush plugs with floor.

F. Install specified cable sealing bushings on all conduits originating outside the building walls and terminating in switchgear, cabinets, or gutters inside the building. Install cable sealing bushings or raceway seal for conduit terminations in all grade level or below grade exterior pull, junction, or outlet boxes.

G. Raceway seal: Inject into wire filled raceways, a pre-formulated rigid 2 lbs. density polyurethane foam which expands a minimum 35 times its original bulk. Foam shall have the physical properties of water vapor transmission of 1.2 to 3.0 perms: water absorption less than 2% by volume, fungus and bacterial resistant. Foam shall permanent seal against water, moisture, insects, and rodents. Install raceway sealing foam at the following points:

1. Where conduits pass from warm locations to cold locations to prevent passage of water vapor (such as refrigerated spaces, constant temperature rooms, air-conditioned spaces, etc.).
2. Where conduits enter buildings from below grade.

H. Install expansion couplings where any conduit crosses a building separation or expansion joint as follows:
1. Conduits three inches and larger, shall be rigidly secured to the building structure on opposite sides of a building expansion joint and provided with expansion or deflection couplings. Install the couplings in accordance with the Manufacturer's recommendations.
2. Conduits smaller than three inches shall be rigidly secured to the building structure on opposite sides of a building expansion joint with junction boxes on both sides of the joint. Connect conduits to junction boxes with 15 inches of slack flexible conduit. Flexible conduit shall have a green copper ground-bonding jumper installed. For concrete embedded conduit, use expansion and deflection couplings as specified above for three inches and larger conduits.

I. Use short length (maximum of 6ft) of the appropriate FMC or LFMC conduit for connections to motors and other electrical equipment subject to movement, vibration, misalignment, cramped quarters, or noise transmission. Provide liquidtight flexible metal conduit for installation in exterior locations, moisture or humidity-laden atmosphere, corrosive atmosphere, water hose or spray wash-down operations and locations subject to seepage or dripping of oil, grease, or water. Provide a green ground wire with FMC or LFMC conduit.

3.08 HAZARDOUS LOCATIONS

A. Use rigid steel conduit only.

B. Install UL approved sealing fittings that prevent passage of explosive vapors in accordance with the Manufacturers written instructions. Locate fittings at suitable, approved, accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank coverplate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points and elsewhere as indicated:
1. Where conduits enter or leave hazardous locations.
2. At luminaires, switches, receptacles and as required by the CEC.

3.09 SUPPORTS

A. Provide supports for raceways as specified in Section 260529: Electrical Hangers and Supports.

B. All raceways systems shall be secured to building structures using specified fasteners, clamps and hangers spaced according to the CEC.

C. Support single runs of conduit using one-hole pipe straps. Where run horizontally on walls in damp or wet locations, install "clamp backs" to space conduit off the surface.

D. Multiple conduit runs shall be supported using "trapeze" hangers fabricated from specified construction channel, mounted to 3/8-inch diameter, threaded steel rods secured to building structures. Fasten conduit to construction channel with standard one-hole pipe clamps or the equivalent. Provide lateral seismic bracing for hangers.

E. Individual 1/2" and 3/4" conduits installed above suspended ceilings may be attached to the ceiling's hanger wire using spring steel support clips provided that not more than two conduits are attached to any single support wire.

F. Support exposed vertical conduit runs at each floor level, independent of cabinets or switches to which they run, by means of acceptable supports.

G. Fasteners and supports in solid masonry and concrete:
   1. Use steel or malleable iron concrete inserts set in place prior to placing the concrete.
   2. After concrete installation:
   3. Steel expansion anchors not less than ¼ inch bolt size and not less than 1-1/8" embedment.
   4. Power set fasteners not less than ¼ inch diameter with depth of penetration not less than three inches.
   5. Use vibration and shock resistant anchors and fasteners for attaching to concrete ceilings.

H. Hollow masonry: Toggle bolts are permitted. Bolts supported only by masonry block are not acceptable.

I. Metal structures: Use machine screw fasteners or other devices specifically designed and approved for the application.

3.10 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.11 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes boxes for electrical wiring.

1.03 DEFINITIONS

A. CEC: California Electrical Code.

1.04 SUBMITTALS

A. Product Data: For boxes.

B. Source quality-control test reports.

1.05 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.01 BOXES, ENCLOSURES, AND CABINETS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
   1. Outlet and junction boxes:
      a. Spring City Electrical Manufacturing Co.
      b. Thomas & Betts Corp.
      c. Raco, Inc.
   2. Cast boxes:
      a. Appleton Electric Co.
      b. Crouse-Hinds.
   3. Floor boxes:
      a. Legrand.
      b. Hubbell Inc.
      c. Raceway Components, Inc.
   4. Pullboxes:
      a. Circle AW Products.
      b. Hoffman Engineering Co.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

C. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
   1. Shall be of size and shape best suited for particular application, properly code sized for number of wires and conduits passing through or terminating therein, but in no case less than four inches square or octagon by 2-1/4-inch deep. Support boxes directly to structural

members, framing or blocking by means of screws, anchors, bolts or embedded in masonry or concrete.

2. Outlet boxes shall be one-piece pressed steel, sherardized or galvanized. Boxes shall be fitted with flush device covers and "Plaster Rings", or tile rings in masonry or concrete. Surface covers shall be used where exposed wiring is permissible. Lighting outlets shall be fitted with 3/8" malleable fixture stud. Boxes in damp or outdoor locations shall be malleable iron with threaded hubs, fitted with gasket and cast cover.

D. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy Type FD, with gasketed cover.

E. Metal Floor Boxes: Sheet metal, fully adjustable, rectangular. Provide with flanges to accommodate floor finish.

F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

G. Pull Boxes: Indoor pull boxes fabricated of code gauge steel, of size shown or as required, complete with screw covers, flush type in finished areas, surface type in unfinished areas, primed, and painted. See drawings for additional requirements.

H. Pull boxes used outdoors or in damp locations fabricated of code gauge steel with rain-tight welded seams, conduit hubs on top or sides, screw covers with neoprene or korprene gaskets. Hardware non-ferrous metal or hot-dipped galvanized. Boxes located on roof, entire boxes painted two coats of rust-inhibiting aluminum paint, Rustoleum or equal. Boxes located on building walls or free standing; finish powder paint color to match exterior building color.
1. Hoffman, NEMA 3R, A Series or equal.

I. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

2.02 CABINETS:

A. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.

B. Hinged door in front cover with flush latch and concealed hinge.

C. Key latch to match panelboards.

D. Metal barriers to separate wiring of different systems and voltage.

E. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.01 PREPARATION

A. Install all outlet boxes flush with building walls, ceilings, and floors except where boxes are installed in mechanical and electrical rooms, in cabinetry, above accessible ceilings or where exposed Work is called for on the Drawings.

B. Locate pull boxes and junction boxes in concealed locations above removable ceilings or exposed in electrical rooms, utility rooms or storage areas.

C. Install outlet boxes at the locations and elevations indicated on the Drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.

D. Locate switch outlet boxes on the latch side of doorways unless otherwise indicated.

E. Locate outlet boxes above hung ceilings having concealed suspension systems, adjacent to openings for removable recessed luminaires.

F. Do not install outlet boxes back-to-back, separate boxes by at least 6". In fire-rated walls separate boxes by at least 24" and wall stud.

G. Adjust position of outlet boxes in finished masonry walls to suit masonry course lines. Coordinate cutting of masonry walls to achieve neat openings for boxes.

3.02 INSTALLATION

A. Install boxes in accordance with Manufacturer's written instructions, as indicated on Drawings and as specified herein.

B. Locate electrical boxes as indicated on Drawings and as required for splices, taps, wire pulling, equipment connections and Code compliance.

C. Install junction or pull boxes where required to limit bends in conduit runs to not more than (3) 90 degree bends or where pulling tension achieved would exceed the maximum allowable for the cable to be installed. Note that these boxes are not indicated on the Drawings.

D. Install raised covers (plaster rings) on all outlet boxes in stud walls or in furred, suspended, or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.

E. Leave no unused openings in any box. Install close-up plugs as required to seal openings.

F. Provide cast metal boxes with gasketed cast metal cover plates where boxes are exposed in damp or wet locations.

G. Welded outlet boxes shall only be used in concealed interior installations.

H. Provide precast concrete boxes in exterior planting areas, walkways, roads etc.

I. Provide an access panel in permanent ceiling or wall where boxes are installed and will be inaccessible.

J. For boxes mounted in exterior walls, make sure that there is insulation behind outlet boxes to prevent condensation in boxes.

K. For outlets mounted above counters, benches or backsplashes, coordinate location and mounting heights with built-in units. Adjust mounting height to agree with required location for equipment served.

L. Use conduit outlet bodies to facilitate pulling of conductors or to make changes in conduit direction only. Do not make splices in conduit outlet bodies.

M. Add additional sheet rock as necessary to maintain original fire rating of walls where boxes are installed.

N. Install galvanized steel coverplates on boxes in unfinished areas, above accessible ceilings and on surface mounted outlets.

3.03 SUPPORTS

A. Provide boxes installed in walls with brackets designed for attaching directly to the studs or mount boxes on specified box supports.

B. Mount boxes, installed in suspended ceilings of gypsum board or lath and plaster construction, to 16-gauge metal channel bars attached to main ceiling runners.

C. Support boxes independently of conduit system.

D. Support boxes, installed in suspended ceilings supporting acoustical tiles or panels, directly from the structure above wherever pendant mounted luminaires are to be installed from the box.

E. Support boxes mounted above suspended acoustical tile ceilings, directly from the structure above.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

A. Section Includes:
   1. Conduit, ducts, and duct accessories for direct-buried and concrete-encased duct banks, and in single duct runs.
   2. Handholes and pull boxes.
   3. Manholes.

1.02 RELATED SECTIONS

A. Section 26 05 19 Low Voltage Electrical Power Conductors and Cables

B. Section 26 05 53 Identification for Electrical Systems

1.03 DEFINITION

A. RNC: Rigid nonmetallic conduit.

1.04 SUBMITTALS

A. Submit in accordance with of Section 01 3300 Shop Drawings, Product Data and Samples.

B. Product Data: For the following:
   1. Duct-bank materials, including separators and miscellaneous components.
   2. Ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
   3. Accessories for manholes, handholes, pull boxes, and other utility structures.
   4. Warning tape.

C. Shop Drawings for Precast or Factory-Fabricated Underground Utility Structures: Include plans, elevations, sections, details, attachments to other work, and accessories, including the following:
   1. Duct entry provisions, including locations and duct sizes.
   2. Reinforcement details.
   3. Frame and cover design and manhole frame support rings.
   4. Ladder details.
   5. Grounding details.
   6. Dimensioned locations of cable rack inserts, pulling-in and lifting irons, and sumps.
   7. Joint details.

D. Product Certificates: For concrete and steel used in precast concrete manholes, pull boxes and handholes, comply with ASTM C 858.

E. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Comply with IEEE C2 – National Electrical Safety Code.

B. Comply with the current issue of the California Electrical Code.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.

B. Store precast concrete underground utility structures at Project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.

C. Lift and support precast concrete units only at designated lifting or supporting points.

1.07 COORDINATION

A. Coordinate layout and installation of ducts, manholes, handholes, and pull boxes with final arrangement of other utilities, site grading, and surface features as determined in the field.

B. Coordinate elevations of ducts and duct-bank entrances into manholes, handholes, and pull boxes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and handholes, and as approved by the Owner's Representative.

1.08 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. Furnish cable-support stanchions, arms, insulators, and associated fasteners in quantities equal to five percent of quantity of each item installed.

PART 2 - PRODUCTS

2.01 CONDUIT

A. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.

B. RNC: NEMA TC 2, Type EPC-40-PVC, and Type EPC-80-PVC UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

2.02 NONMETALLIC DUCTS AND DUCT ACCESSORIES

A. Basis-of-Design Product: Carlon or comparable product by one of the following:
   1. Cantex, Inc.
   2. Allied Tube & Conduit; Atkore International.
   3. JM Eagle; J-M Manufacturing Company, Inc..
   4. DCX-CHOL Enterprises, Inc.; ELECSYS Division.
   5. Electri-Flex Company.
   6. IPEX Inc.
   7. Lamson & Sessions; Carlon Electrical Products.
   8. Or, Equal.

B. Duct Accessories:
   1. Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and sizes of ducts with which used, and retained to provide minimum duct spacings indicated while supporting ducts during concreting or backfilling.

2. Warning Tape: Underground-line warning tape specified in Section 25 0553 "Identification."

2.03 PRECAST CONCRETE HANDHOLES AND PULL BOXES

A. Manufacturers: provide products by one of the following:
   1. Jensen Precast
   2. Christy Concrete Products.
   3. Oldcastle Precast Group.
   4. Oldcastle Precast Inc.; Utility Vault Division.
   5. Or, Equal.

B. Comply with ASTM C 858 for design and manufacturing processes.

C. Ferrous metal hardware shall be hot-dip galvanized in accordance with ASTM A153 (ASTM A153M) and ASTM A123 (ASTM A123M) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings.

D. Description: Factory-fabricated, reinforced-concrete, monolithically poured walls and bottom unless open-bottom enclosures are indicated. Frame and cover shall form top of enclosure and shall have load rating consistent with that of handhole or pull box.
   1. Frame and Cover: Weatherproof steel frame, with steel cover with recessed cover hook eyes and tamper-resistant, captive, cover-securing stainless-steel bolts.
   2. Frame and Cover: Weatherproof steel frame, with hinged steel access door assembly with tamper-resistant, captive, cover-securing stainless-steel bolts.
      a. Cover Hinges: Concealed, with hold-open ratchet assembly.
      b. Cover Handle: Recessed.
   3. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
   4. Cover Legend: Molded lettering, As indicated for each service.
   5. Configuration: Units shall be designed for flush burial and have closed bottom unless otherwise indicated.
   6. Extensions and Slabs: Designed to mate with bottom of enclosure. Same material as enclosure.
      a. Extension shall provide increased depth of 12 inches
      b. Slab: Same dimensions as bottom of enclosure, and arranged to provide closure.

2.04 PRECAST MANHOLES

A. Manufacturers: provide products by one of the following:
   1. Jensen Precast
   2. Christy Concrete Products.
   3. Oldcastle Precast Group.
   4. Oldcastle Precast Inc.; Utility Vault Division.
   5. Or equal.

B. Comply with ASTM C 858 with structural design loading as specified in "Underground Enclosure Application" Article, and with interlocking mating sections, complete with accessories, hardware, and features.

C. Concrete Knockout Panels: 1-1/2 to 2 inches thick, for future conduit entrance and sleeve for ground rod.

D. Joint Sealant: Asphaltic-butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand maximum hydrostatic pressures at the installation location with the ground-water level at grade.

2.05 UTILITY STRUCTURE ACCESSORIES

A. Manufacturers: provide products by one of the following
1. Jensen Precast
2. Bilco Company (The).
3. Campbell Foundry Company.
4. Christy Concrete Products.
5. Cretex Concrete Products West, Inc.; Riverton Division.
6. East Jordan Iron Works.
7. Hubbell Power Systems; Lenoir City Division.
8. McKinley Iron Works.
9. Neenah Foundry Company.
10. NewBasis.
11. Oldcastle Precast Group.
12. Oldcastle Precast Inc.; Utility Vault Division.
13. Osburn Associates, Inc.
14. Underground Devices, Inc.
15. Or equal

B. Ferrous metal hardware, where indicated, shall be hot-dip galvanized complying with ASTM A 153 (A 153M) and A 123 (A 123M).

C. Manhole Frames, Covers, and Chimney Components: Comply with structural design loading specified for manhole.
1. Frame and Cover: Weatherproof, gray cast iron complying with ASTM A 48/A 48M, Class 30B with milled cover-to-frame bearing surfaces; diameter, 29 inches.
a. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
b. Special Covers: Recess in face of cover designed to accept finish material in paved areas.
2. Cover Legend: Cast in. Retained to suit system.
a. Legend: "ELECTRIC-LV" for duct systems with power wires and cables for systems operating at 600 V and less.
b. Legend: "SIGNAL" for communications, data, and telephone duct systems.
3. Manhole Chimney Components: Precast concrete rings with dimensions matched to those of roof opening.
a. Mortar for Chimney Ring and Frame and Cover Joints: Comply with ASTM C 270, Type M, except for quantities less than 2.0 cu. Ft. where packaged mix complying with ASTM C 387/C 387M, Type M, may be used.

D. Pulling Eyes in Concrete Walls: Eyebolt with reinforcing-bar fastening insert, 2-inch-diameter eye, and 1-by-4-inch bolt.

E. Working Load Embedded in 6-Inch, 4000-psi Concrete: 13,000-lbf minimum tension.

F. Pulling-In and Lifting Irons in Concrete Floors: 7/8-inch- diameter, hot-dip galvanized, bent steel rod; stress relieved after forming; and fastened to reinforcing rod. Exposed triangular opening.

G. Ultimate Yield Strength: 40,000-lbf shear and 60,000-lbf tension.

H. Bolting Inserts for Concrete Utility Structure Cable Racks and Other Attachments: Flared, threaded inserts of noncorrosive, chemical-resistant, nonconductive thermoplastic material; 1/2-inch ID by 2-3/4 inches deep, flared to 1-1/4 inches minimum at base.
   1. Tested Ultimate Pullout Strength: 12,000 lbf minimum.

I. Expansion Anchors for Installation after Concrete Is Cast: Zinc-plated, carbon-steel-wedge type with stainless-steel expander clip with 1/2-inch bolt, 5300-lbf rated pullout strength, and minimum 6800-lbf rated shear strength.

J. Cable Rack Assembly: Steel, hot-dip galvanized except insulators.
   1. Stanchions: T-section or channel; 2-1/4-inch nominal size; punched with 14 holes on 1-1/2-inch centers for cable-arm attachment.
   2. Arms: 1-1/2 inches wide, lengths ranging from 3 inches with 450-lb minimum capacity to 18 inches with 250-lb minimum capacity. Arms shall have slots along full length for cable ties and be arranged for secure mounting in horizontal position at any vertical location on stanchions.
   3. Insulators: High-glaze, wet-process porcelain arranged for mounting on cable arms.

K. Duct-Sealing Compound: Nonhardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 deg F. Capable of withstanding temperature of 300 deg F without slump and adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals.

2.06 SOURCE QUALITY CONTROL

A. Test and inspect precast concrete utility structures according to ASTM C 1037.

PART 3 - EXECUTION

3.01 CORROSION PROTECTION

A. Aluminum shall not be installed in contact with earth or concrete.

B. Rigid steel galvanized conduit to be wrapped with 10-Mil PVC tape.

3.02 UNDERGROUND DUCT APPLICATION

A. Ducts for Electrical Cables over 600 V: RNC, NEMA Type EPC-80, Installed per utility requirements.

B. Ducts for Electrical Feeders 600 V and Less: RNC, NEMA Type EPC-40-PVC, in direct-buried duct bank unless otherwise indicated.

C. Ducts for Electrical Branch Circuits: RNC, NEMA Type EPC-40-PVC, in direct-buried duct bank unless otherwise indicated.

3.03 EARTHWORK

A. Excavation and Backfill: Comply with Division 31 Section "Earth Moving," but do not use heavy-duty, hydraulic-operated, compaction equipment.

B. Restore surface features at areas disturbed by excavation and reestablish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

C. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 32 Sections "Turf and Grasses" and "Plants."

D. Cut and patch existing pavement in the path of underground ducts and utility structures according to Division 01 Section "Cutting and Patching."

3.04 DUCT INSTALLATION

A. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes to drain in both directions.

B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 60 inches, horizontally and 36-inch vertically, at other locations unless otherwise indicated.

C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.

D. Duct Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches o.c. for 5-inch ducts, and vary proportionately for other duct sizes.
   1. Begin change from regular spacing to end-bell spacing 10 ft. from the end bell without reducing duct line slope and without forming a trap in the line.
   2. Grout end bells into structure walls from both sides to provide watertight entrances.

E. Building Floor Penetrations: Make a transition from underground duct to rigid steel conduit at least 5 ft. outside the building wall without reducing duct line slope away from the building and without forming a trap in the line. Use fittings manufactured for duct-to-conduit transition. Install conduit penetrations of building walls as specified in Division 26 Section "Common Work Results for Electrical."

F. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.

G. Pulling Cord: Install 100-lbf- test nylon cord in ducts, including spares.

H. Direct-Buried Duct Banks:
   1. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.
   2. Space separators close enough to prevent sagging and deforming of ducts, with not less than 5 spacers per 20 ft. of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and contraction as temperature changes. Stagger spacers approximately 6 inches between tiers.
   3. Excavate trench bottom to provide firm and uniform support for duct bank. Prepare trench bottoms as specified in Division 31 Section "Earth Moving" for pipes less than 6 inches in nominal diameter.
   4. Install backfill as specified in Division 31 Section "Earth Moving."

5. After installing first tier of ducts, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand-place backfill to 4 inches over ducts and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."
6. Install ducts with a minimum of 3 inches between ducts for like services and 3 feet between power and signal ducts.
7. Depth: Install top of duct bank at least 36 inches below finished grade unless otherwise indicated.
8. Install manufactured rigid steel galvanized conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
    a. Couple steel conduits to ducts with female adapters designed for this purpose, and encase coupling with 3 inches of concrete.
    b. For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.
9. Warning Tape: Bury warning tape approximately 12 inches above direct-buried ducts and duct banks, placing them 24 inches o.c. Align tape along the width and along the centerline of duct bank. Provide an additional plank for each 12-inch increment of duct-bank width over a nominal 18 inches.

3.05 INSTALLATION OF CONCRETE MANHOLES, HANDHOLES, AND PULL BOXES

A. Precast Concrete Handhole and Manhole Installation:
1. Comply with ASTM C 891 unless otherwise indicated.
2. Install units level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances.
3. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

B. Elevations:
1. Manhole Roof: Install with rooftop at least 15 inches below finished grade.
2. Manhole Frame: In paved areas and trafficways, set frames flush with finished grade. Set other manhole frames 1 inch above finished grade.
3. Handhole Covers: In paved areas and trafficways, set surface flush with finished grade. Set covers of other handholes 1 inch above finished grade.
4. Where indicated, cast handhole cover frame integrally with handhole structure.

C. Drainage: Install drains in bottom of manholes where indicated. Coordinate with drainage provisions indicated.

D. Manhole Access: Circular opening in manhole roof; sized to match cover size.
1. Manholes with Fixed Ladders: Offset access opening from manhole centerlines to align with ladder.
2. Install chimney, constructed of precast concrete collars and rings to support frame and cover and to connect cover with manhole roof opening. Provide moisture-tight masonry joints and waterproof grouting for cast-iron frame to chimney.

E. Hardware: Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated.

F. Fixed Manhole Ladders: Arrange to provide for safe entry with maximum clearance from cables and other items in manholes.

G. Field-Installed Bolting Anchors in Manholes and Concrete Handholes: Do not drill deeper than 3-7/8 inches for manholes and 2 inches for handholes, for anchor bolts installed in the field. Use a minimum of two anchors for each cable stanchion.

H. Warning Sign: Install "Confined Space Hazard" warning sign on the inside surface of each manhole cover.

3.06 GROUNDING

A. Ground underground ducts and utility structures according to the CEC and Division 26 Section "Grounding and Bonding for Electrical Systems." The more stringent shall apply.

3.07 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:
   1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
   2. Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.
   3. Test manhole and handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Division 26 Section "Grounding and Bonding for Electrical Systems."

B. Correct deficiencies and retest as specified above to demonstrate compliance.

C. Prepare test and inspection reports.

3.08 CLEANING

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

B. Clean internal surfaces of manholes, including sump. Remove foreign material.

END OF SECTION

26 05 48
VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS
Dry Creek WWTP Operations and Lab Building
210015.01

PART 1 - GENERAL

1.01 SCOPE

A. Section includes:
   1. Channel support systems.
   2. Anchors

1.02 RELATED SECTIONS

A. Section 26 05 33.13 Raceways for Electrical Systems

B. Section 26 05 29 Hangers and Supports for Electrical Systems

C. Section 26 22 00 Low Voltage Distribution Transformers

D. Section 26 24 13 Switchboards

1.03 DEFINITIONS

A. CBC: California Building Code.

B. ICC-ES: ICC-Evaluation Service.

1.04 PERFORMANCE REQUIREMENTS

A. Provide systems, units, equipment, and parts to meet or exceed current applicable requirements for seismic resistance specified by codes, regulations and authority having jurisdiction. Include all supports, anchors, braces and other restraining devices required.

B. Seismic bracing shall meet requirements of CBC Chapter 16A.

1.05 SUBMITTALS

A. Submit in accordance with of Section 01 33 00 Shop Drawings, Product Data and Samples.

B. Product Data: For the following:
   1. Seismic restraints and bracing systems.

PART 2 - PRODUCTS

2.01 SEISMIC-RESTRAINT DEVICES

A. Manufacturers:
   1. Cooper B-Line, Inc.; a division of Eaton.
   2. Unistrut; Atkore International.
   3. Hilti Inc.
   4. Or equal

B. General Requirements for Restraint Components: As noted in the Drawings.

2.02 FACTORY FINISHES

A. Finish: Galvanized steel

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements for tolerances and other conditions affecting performance.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before further placement of equipment, panels, boxes, conduits, etc.

C. Proceed only after unsatisfactory conditions have been corrected.

3.02 APPLICATIONS

A. Multiple Raceways: Secure raceways to trapeze member with bolted 2 piece clamps.

B. Torque fittings, anchors and connections per manufacturer's recommended values.

3.03 FIELD QUALITY CONTROL

A. Perform Tests and Inspections:
   1. Test at least 4 of each type and size of secured anchors and fasteners selected by Owner's Representative or IOR.
   2. Test to 90 percent of rated proof load of device.
   3. If a device fails test, modify all mountings of same type and retest until satisfactory results are achieved.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:
1. Equipment identification
2. Panelboard directories
3. Identification for power, conductors, communication, and control cable
4. Wire and cable identification
5. Buried electrical line warnings
6. Junction box identification
7. Inscribed device coverplates
8. Warning labels and signs
9. Instruction signs
10. Miscellaneous identification products

1.02 RELATED SECTIONS

A. Section 09 90-00, Painting and Coating

1.03 REFERENCE STANDARDS

A. ANSI/ASME A13.1 – Scheme for the Identification of Electrical Systems.

1.04 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: Submit samples of each color, lettering style, and other graphic representation required for each identification material or system.

C. Schedules of nameplates to be furnished indicating wording, symbols, letter size, letter style, and color coding for each system.

1.05 QUALITY ASSURANCE

A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer:
1. Brady/Seton
2. Stranco
3. Rowmark
4. Or equal

2.02 CONDUCTOR AND COMMUNICATION AND CONTROL-CABLE IDENTIFICATION

A. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather and chemical resistant coating and matching wraparound adhesive tape for securing ends of legend label.
   1. Marker for Tags: Machine-printed permanent, waterproof, black ink marker recommended by printer manufacturer.

B. Snap-Around labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

C. Snap around, Color Coding Bands: Slit, pretensioned, flexible, solid color-coded acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.03 UNDERGROUND-LINE WARNING TAPE

A. Tape:
   1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
   2. Printing on tape shall be permanent and shall not be damaged by burial operations.
   3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:
   1. Comply with ANSI Z535.1 through ANSI A535.5
   2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
   3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE. C. Tag:
   4. Pigmented polyolefin, bright-colored, compounded for direct-burial service.
   5. Thickness: 4 mils.
   6. Weight: 18.5 lb/1000 sq. ft.
   7. 3-inch Tensile According to ASTM D 882: 30 lbf, and 2500 psi.

2.04 WARNING LABELS AND SIGNS

A. Comply with CEC and 29 CFR 1910.145

B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.

C. Warning label and sign shall include, but are not limited to, the following legends:
   1. Material: rigid plastic laminated impact acrylic, 2 layer, exterior grade, UV stable
   2. Thickness: 3/16 inch minimum
   3. Maximum label size: Length and width vary for required label content, but no less than 2 inches wide by 1 inch high. D. Baked-Enamel Warnings Signs:
   4. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
   5. 1/4 inch grommets in corners for mounting.
   6. Nominal size, 7 inches by 10 inches E. Metal-Backed, Butyrate Warning Signs:
   7. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396 inch galvanized-steel backing; and with colors, legend, and size required for application.

8. 1/4 inch grommets in corners for mounting.
9. Nominal size, 10 inches by 14 inches

2.05 EQUIPMENT IDENTIFICATION NAMEPLATES

A. Provide plastic labels for mechanical engraving with predrilled holes for attachment hardware.
   1. Material: rigid plastic laminated impact acrylic, 2 layer, exterior grade, UV stable
   2. Thickness: 3/16 inch minimum
   3. Maximum label size: Length and width vary for required label content, but no less than 2 inches wide by 1 inch high.
   4. Background color:
      a. Normal power: Black, matte finish
      b. Emergency power: Red, matte finish
   5. Lettering: White, machine engraved, Futura font, 3/8 inch high, all caps
   6. Maximum temperature: Able to withstand up to 160 deg. F.
   7. Fasteners: Self-tapping stainless steel screws, except contact type permanent adhesive where screws cannot or should not penetrate substrate.
      a. Mounting screw type to be #8- 18 x 1 /2 drilling or tapping style, 1/4 inch hex washer head, stainless steel, or similar, appropriate for material in which sign is affixed to. A bead of silicone sealer shall be applied on back of sign and at screw locations prior to affixing sign to equipment.
      b. For signs larger than 3 inches by 3 inches, use a minimum of 4 mounting screws.

2.06 LEGEND PLATES

A. Die-stamped legend plate with mounting hole and positioning key for panel mounted operator devices, i.e. motor control pilot devices, hand-off-auto switches, reset buttons, etc.

2.07 BRASS TAGS

A. 2 inch, 19 gauge, metal tags with die-stamped legend, punched for fastener.

2.08 PANELBOARD DIRECTORIES (400 AMP, OR LESS)

A. Directories: Minimum 6 inch by 8 inch circuit directory frame and card with clear plastic covering shall be provided inside the inner panel door.

B. Circuit numbering: Starting at the top, odd numbered circuits in sequence down the left hand side and even numbered circuits down the right hand side. Multi-section panelboards shall have continuous consecutive circuit numbers.

2.09 WIRE AND TERMINAL MARKERS

A. Provide self-adhering, pre-printed, machine printable or write-on, self-laminating vinyl wrap around strips. Blank markers shall be inscribed using the printer or pen recommended by Manufacturer for this purpose.

2.10 PAINTED IDENTIFICATION MATERIALS

A. Stencils: Standard fiberboard stencils, prepared for required applications with the letter sizes generally complying with recommendations of ANSI A13.1 for piping and similar applications, but not less than3/4 inch high letters for access door signs and similar operational instructions.

B. Stencil Paint: Standard exterior type stenciling enamel; black, except as otherwise indicated; either brushing grade or pressurized spray-can form and grade.

C. Identification Paint: Standard identification enamel of colors indicated or, if not otherwise indicated for piping systems, comply with ANSI A13.1 for colors.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

B. Coordination: Where identification is to be applied to surfaces which require insulation, painting or other covering or finish, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.

3.02 ELECTRICAL EQUIPMENT IDENTIFICATION

A. General: Install engraved plastic laminate sign or plastic equipment marker on or near each major item of electrical equipment and each operational device, as specified herein if not otherwise specified for each item or device.

B. Optional sign types: Where lettering larger than 1 inch height is needed for proper identification, because of distance from normal location of required identification, stenciled signs may be provided in lieu of engraved plastic, verify with Owner’s Representative.

C. Lettering size: Minimum 1/4 inch high lettering for name of unit where viewing distances less than 24 inches, 1/2 inch high for distances up to 6 feet, and proportionately larger lettering for greater distances. Provide secondary lettering of 2/3 to 3/4 of size of the principal lettering.

D. Plasticized tags: Where equipment to be identified is concealed above acoustical ceilings or similar concealment, use plasticized tags installed within concealed space to eliminate text in exposed sign (outside concealment). In rooms other than security area, mechanical rooms, storage, etc. use thumbtacks for exposed signs with color coded for each type of equipment. Verify with Owner’s Representative.

3.03 LEGEND PLATES

A. Provide panel-mounted operators devices such as pilot lights, reset buttons, “HAND-OFF-AUTO” switches, etc.

3.04 BRASS TAGS

A. Provide tags for individual ground conductors to exposed ground bus indicating connection, i.e. “UFER”, “Cold Water Bond”, etc.

B. Provide tags for all feeder cables in underground vaults and pull boxes.

C. Provide tags for empty conduits in underground vault, pull boxes, and stubs.

3.05 PANELBOARD DIRECTORIES (400 AMP, OR LESS)

A. Provide typewritten directories arranged in numerical order denoting loads served by room number or area for each circuit.

B. Verify room numbers or area designation with Owner's Representative.

C. Mount panelboard directories in a minimum 6 inch by 8 inch metal frame under clear plastic cover inside every panelboard.

3.06 WIRE AND CABLE IDENTIFICATION

A. Provide wire markers on each conductor in panelboards, pull boxes outlet and junction boxes and at load connection. Identify with branch circuit or feeder number for power and lighting circuits and with control wire number as indicated on Manufacturer's shop drawings for control wiring.

B. Provide colored phase markers for conductors as noted in Section 26 05 19 Conductors and Cables. Apply colored, pressure sensitive plastic tape in half-lapped turns for a distance of 3 inches from terminal pointes and in boxes where splices or taps are made. Apply the last two laps of tape with no tension to prevent possible unwinding. Do not cover cable identification markings by taping.

3.07 UNDERGROUND CONDUIT MARKERS

A. During trench backfilling, for exterior underground power, signal and communications lines, install continuous underground plastic line marker, located directly above line at 6 inches to 8 inches below finished grade. Where multiple lines installed in a common trench or concrete envelope, do not exceed an overall width of 16 inches; install a single line marker.

3.08 JUNCTION BOX IDENTIFICATION

A. The cover of junction, pull, and connection boxes for both power and signal systems, located above suspended ceilings and below ceilings in non-public areas, shall be clearly marked with a permanent ink felt pen. Identify the circuits (panel designation and circuit numbers) contained in each box.

3.09 ADJUSTING AND CLEANING

A. Adjusting: Relocate any electrical identification device which has become visually blocked by Work of this Division or other Divisions.

B. Cleaning: Clean face of identification devices.

3.10 EXTRA STOCK

A. Furnish minimum of 5% extra stock of each electrical identification material required, including additional numbered valve tags (not less than 3) for each piping system, additional piping system identification markers, and additional plastic laminate engraving blanks of assorted sizes.

1. Where stenciled markers are provided, clean and retain stencils after completion of stenciling and include used stencils in extra stock, along with required stock of stenciling paints and applicators.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes computer-based, fault-current (short-circuit study) protective device evaluation study, coordination of protection devices and Arc Flash Risk Assessment. Protective devices shall be set based on results of the protective device coordination study. The final study will be generated based on the final electrical equipment submittals and the final pulled conductor lengths for all feeders.

B. Based on the findings of the final report, the electrical contractor shall adjust all required protective device settings based on the results of the protective device coordination and/or Arc Flash Risk Assessment.

C. The electrical contractor shall also install Arc Flash Risk (Incident Energy, Available Fault Current) labels on all switchboards, panelboards, disconnects, and transfer switches provided as part of the Arc Flash Risk Assessment.

1.02 SUBMITTALS

A. Submit in accordance with of Section 01 33 00 Shop Drawings, Product Data and Samples.

B. Product Data: For computer software program to be used for studies.

C. Product Certificates: For coordination-study and fault-current-study computer software programs, certifying compliance with IEEE 399.

D. Qualification Data: For coordination-study specialist.

E. Other Action Submittals: The following submittals shall be made after the approval process for system protective devices has been completed. Submittals shall be in digital form.
   1. Coordination-study input data, including completed computer program input data sheets in MS Excel format, XLS.
   2. Study and Equipment Evaluation Reports shall indicate worst-case scenario conditions and associated results.
   3. Coordination-Study Report including computer generated Time-current Characteristic Curves (TCC).
   4. Arc Flash Risk Assessment Report and Incident Energy with Available Fault Current Warning / Danger Labels

1.03 QUALITY ASSURANCE

A. Studies shall use computer programs that are distributed nationally and are in wide use. Software algorithms shall comply with requirements of standards and guides specified in this Section. Software QA program shall comply with ISO 9000 with accredited certification agency such as UL. Manual calculations are not acceptable.

B. Coordination-Study Specialist Qualifications: A manufacturer or independent entity experienced in the application of computer software used for studies, having performed successful studies of similar magnitude on electrical distribution systems using similar devices.

1. Professional engineer, licensed in the state where Project is located, shall be responsible for the study. All elements of the study shall be performed under the direct supervision and control of engineer.

C. At closeout two electronic copies of the computer software model shall be provided. Each copy on an independent flash drive.

1.04 REFERENCES

A. Institute of Electrical and Electronics Engineers (IEEE):

- IEEE 242 for short-circuits currents and coordination time intervals.
- IEEE 399 for general study procedures.
- IEEE 141 – Recommended Practice for Electric Power Distribution and Coordination of Industrial and Commercial Power Systems
- IEEE 241 – Recommended Practice for Electric Power Systems in Commercial Buildings
- IEEE 1015 – Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems.
- IEEE 1584 – Guide for Performing Arc Flash Hazard Calculations

B. American National Standard Institute (ANSI):

- ANSI C57.12.00 – Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
- ANSI C37.13 – Standard for Low Voltage AC Power Circuit Breakers Used in Enclosures
- ANSI C37.010 – Standard Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis
- ANSI C37.41 – Standard Design Tests for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches and Accessories

C. National Fire and Protection Association (NFPA):

- CEC – California Electrical Code (Latest Edition)
- NFPA 70E – Standard for Electrical Safety in the Workplace

PART 2 - PRODUCTS

2.01 COMPUTER SOFTWARE DEVELOPERS

A. Available Computer Software Developers: Companies offering computer software programs that may be used in the Work include, but are not limited to, the following:
1. ETAP.
2. SKM Systems Analysis, Inc.

3. Easy Power.
4. Or, Equal.

2.02 COMPUTER SOFTWARE PROGRAM REQUIREMENTS

A. Comply with IEEE 399.

B. Analytical features of fault-current-study computer software program shall include "mandatory," "very desirable," and "desirable" features as listed in IEEE 399.

C. Computer software program shall be capable of plotting and diagramming time-current-characteristic curves as part of its output. Computer software program shall report device settings and ratings of all overcurrent protective devices and shall demonstrate selective coordination by computer-generated, time-current coordination plots.
1. Optional Features:
    a. Arcing faults.
    b. Simultaneous faults.
    c. Explicit negative sequence.
    d. Mutual coupling in zero sequence.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine Project overcurrent protective device submittals for compliance with electrical distribution system coordination requirements and other conditions affecting performance. Devices to be coordinated are indicated on Drawings.
1. Proceed with coordination study only after relevant equipment submittals have been assembled. Overcurrent protective devices that have not been submitted and approved prior to coordination study may not be used in study.

3.02 POWER SYSTEM DATA

A. Contractor to gather and tabulate the following input data to support coordination study:
1. Product Data for overcurrent protective devices specified in other Division 26 Sections and involved in overcurrent protective device coordination studies. Use equipment designation tags that are consistent with electrical distribution system diagrams, overcurrent protective device submittals, input and output data, and recommended device settings.
2. Actual fault contribution or impedance of utility service entrance.
3. Maximum available fault current to the system from the utility service.
4. Electrical Distribution System Diagram: In hard-copy and electronic-copy formats, showing the following:
    a. Circuit-breaker and fuse-current ratings and types.
    b. Relays and associated power and current transformer ratings and ratios.
    c. Transformer kilovolt amperes, primary and secondary voltages, connection type, impedance, and X/R ratios.
    d. Generator kilovolt amperes, size, voltage, and source impedance.
    e. Cables: Indicate conduit material, sizes of conductors, conductor material, insulation, and length.
    f. Busway ampacity and impedance.
    g. Motor horsepower and code letter designation according to NEMA MG 1.
5. Data sheets to supplement electrical distribution system diagram, cross-referenced with tag numbers on diagram, showing the following:

a. Special load considerations, including starting inrush currents and frequent starting and stopping.
b. Transformer characteristics, including primary protective device, magnetic inrush current, and overload capability.
c. Motor full-load current, locked rotor current, service factor, starting time, type of start, and thermal-damage curve.
d. Generator thermal-damage curve.
e. Ratings, types, and settings of utility company's overcurrent protective devices.
f. Special overcurrent protective device settings or types stipulated by utility company.
g. Time-current-characteristic curves of all devices.
h. Manufacturer, frame size, interrupting rating in amperes rms symmetrical, ampere or current sensor rating, long-time adjustment range, short-time adjustment range, and instantaneous adjustment range for circuit breakers.
i. Manufacturer and type, ampere-tap adjustment range, time-delay adjustment range, instantaneous attachment adjustment range, and current transformer ratio for overcurrent relays.
j. Panelboards, switchboards, motor-control center ampacity, and interrupting rating in amperes rms symmetrical.

3.03 FAULT-CURRENT STUDY

A. Calculate the maximum available short-circuit current in amperes rms symmetrical at circuit-breaker positions of the electrical power distribution system. The calculation shall be for a current immediately after initiation and for a three-phase bolted short circuit at each of the following:
1. Switchgear and switchboard bus.
2. Motor-control center.
3. Distribution panelboard.
4. Branch circuit panelboard.

B. Study electrical distribution system from normal and alternate power sources throughout electrical distribution system for Project. Include studies of system-switching configurations and alternate operations that could result in maximum fault conditions.

C. Calculate momentary and interrupting duties on the basis of maximum available fault current at each location:
1. Electric utility’s supply termination point
2. Incoming switchgear
3. Unit substation primary and secondary terminals
4. Low voltage switchgear
5. Motor control centers
6. Standby generators and automatic transfer switches
7. Branch circuit panelboards
8. Other significant locations throughout the system

D. Calculations to verify interrupting ratings of overcurrent protective devices shall comply with IEEE 241 and IEEE 242.
1. Transformers:
   a. IEEE C57.96.
2. Low-Voltage Circuit Breakers: IEEE 1015 and IEEE C37.20.1.
3. Low-Voltage Fuses: IEEE C37.46.

E. Study Report:
1. Show calculated X/R ratios and equipment interrupting rating (1/2-cycle) fault currents on electrical distribution system diagram.

2. One-line diagram of the system being evaluated with available fault at each bus
3. Typical calculation examples.

F. Equipment Evaluation Report:
1. For devices and equipment rated for asymmetrical fault current, apply multiplication factors listed in the standards to 1/2-cycle symmetrical fault current.
2. Verify adequacy of phase conductors at maximum three-phase bolted fault currents; verify adequacy of equipment grounding conductors and grounding electrode conductors at maximum ground-fault currents. Ensure that short-circuit withstand ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current.

3.04 COORDINATION STUDY

A. Perform coordination study using approved computer software program. Prepare a written report using results of fault-current study. Comply with IEEE 399.
1. Calculate the maximum and minimum 1/2-cycle short circuit currents.

B. Comply with IEEE 242 recommendations for fault currents and time intervals.

C. Transformer Primary Overcurrent Protective Devices:
1. Device shall not operate in response to the following:
a. Inrush current when first energized.
b. Self-cooled, full-load current or forced-air-cooled, full-load current, whichever is specified for that transformer.
c. Permissible transformer overloads according to IEEE C57.96 if required by unusual loading or emergency conditions.
2. Device settings shall protect transformers according to IEEE C57.12.00, for fault currents.

D. Conductor Protection: Protect cables against damage from fault currents according to ICEA P-32-382, ICEA P-45-482, and conductor melting curves in IEEE 242. Demonstrate that equipment withstands the maximum short-circuit current for a time equivalent to the tripping time of the primary relay protection or total clearing time of the fuse. To determine temperatures that damage insulation, use curves from cable manufacturers or from listed standards indicating conductor size and short-circuit current.

E. Coordination-Study Report: Prepare a written report indicating the following results of coordination study:
1. Tabular Format of Settings Selected for Overcurrent Protective Devices:
a. Device tag.
b. Relay-current transformer ratios; and tap, time-dial, and instantaneous-pickup values.
c. Circuit-breaker sensor rating; and long-time, short-time, and instantaneous settings.
d. Fuse-current rating and type.
e. Ground-fault relay-pickup and time-delay settings.
2. Coordination Curves: Prepared to determine settings of overcurrent protective devices to achieve selective coordination. Graphically illustrate that adequate time separation exists between devices installed in series, including power utility company's upstream devices. Prepare separate sets of curves for the switching schemes and for emergency periods where the power source is local generation. Show the following information:
a. Device tag.
b. Voltage and current ratio for curves.
c. Three-phase and single-phase damage points for each transformer.
d. No damage, melting, and clearing curves for fuses.
e. Cable damage curves.

f. Transformer inrush points.
g. Maximum fault-current cutoff point.

F. Completed data sheets for setting of overcurrent protective devices.

3.05 ARC FLASH RISK ASSESSMENT

A. Perform Arc Flash analysis according to the IEEE 1584 guidelines and equations presented in NFPA 70E-2015, Annex D. Analysis shall be performed in conjunction with Short Circuit analysis and Protective Device Time-Current Coordination analysis.

B. Incident Energy and Flash protection boundary shall be calculated at all locations where energized work could be performed such as switchboards, switchgear, motor control centers, panel boards, busway and tiebreakers.

C. Working distances shall be based on IEEE 1584. The calculated arc flash protection boundary shall be determined using those working distances.

D. Calculations must be performed to represent the maximum and minimum contributions of fault current magnitude for normal and emergency operating conditions The incident energy must be calculated for the following scenarios (if applicable):
1. Full contribution from utility service with full motor load
2. Arcing Current Variation Correction Factor for utility service with full motor load
3. Full contribution from utility service with no motor load
4. Arcing Current Variation Correction Factor for utility service with no motor load
5. Full contribution from standby generator with full motor load
6. Arcing Current Variation Correction Factor for standby generator with full motor load
7. Full contribution from standby generator with no motor load
8. Arcing Current Variation Correction Factor for standby generator with no motor load
9. Full contribution from utility service and parallel generators with full motor load
10. Arcing Current Variation Correction Factor for utility service and parallel generators with full motor load
11. Full contribution from utility service and parallel generators with no motor load
12. Arcing Current Variation Correction Factor for utility service and parallel generators with no motor load

E. Multiple system configurations and operating conditions shall be considered and greatest incident energy must be selected for each equipment location.
1. Provide a tabular view report of all configurations and operating conditions used
2. Provide calculation methods and assumptions including any adjustments used when considering resistance and impedance tolerances.

F. When applicable, Utility Minimum and Maximum contributions should be considered. Calculations shall also take into consideration the maximum let through fault current of the utility transformer, the parallel operation of local generators with utility source as well as any stand-by generators.

G. Include scenarios when the main source protective devices are or are not adequately isolated from the bus and may fail to operate or be capable of de-energizing the arc fault before it escalates into a line-side arc fault.

H. Arc flash computation shall include both line and load side of main breaker calculations, where necessary.

I. The Arc flash analysis shall include all 480-volt, 240-volt, and 208-volt locations.

J. Arc Flash Risk Assessment report:
1. Arc Flash reports shall compare results from the various arc flash hazard assessments and be capable of filtering the “worst case” Arc Flash analysis results coming from different scenarios in a single table report.
2. Provide a report in a tabulated format that displays the sequence of operation of protective devices during an arc fault.
3. Recommendations for arc flash energy reduction including the use of arc reduction maintenance switches, current limiting fuses, replacement of overcurrent protective devices and/or trip units, or replacement of equipment with arc resistant or preventative designs.

K. Arc Flash Warning Labels:
1. Contractor shall provide a Durable 3.5 in. x 5 in. thermal transfer type label of high adhesion polyester for each work location analyzed.
2. All labels will be based on recommended overcurrent device settings and will be provided after the results of the analysis have been presented to the Company and after any system changes, upgrades or modifications have been incorporated into the system.
3. The label shall include the following information, at a minimum:
   a. Location
   b. Nominal voltage
   c. Flash protection boundary
   d. Available Fault Current
   e. Incident energy
   f. Working distance
   g. Engineering study number, revision number and issue date

4. Arc Flash warning label sample is shown below:



5. Labels shall be machine printed, with no field markings.
6. Arc flash labels shall be provided in the following manner and all labels shall be based on recommended overcurrent device settings.

a. For each 600, 480 and applicable 208 volt panelboard, one arc flash label shall be provided for each section
b. For each motor control center, one arc flash label shall be provided for each section
c. For each low voltage switchboard, one arc flash label shall be provided for each section
d. For each switchgear, one flash label shall be provided for each section
e. For each transformer disconnect switch and motor disconnect switch, one arc flash label shall be provided
f. For medium voltage switches, one arc flash label shall be provided

7. Labels shall be installed by the engineering services division of the Company under the Startup and Acceptance Testing contract portion.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Indoor occupancy sensors.

B. Related Requirements:
   1. Division 26 Section "Wiring Devices" for wall-box dimmers, wall-switch occupancy sensors, and manual light switches.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.04 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.05 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of lighting control device to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
   1. Network addressable lighting control system:
      a. Wattstopper “DLM”.
      b. Acuity “nLight”.
      c. Douglas “Dialog”.
      d. ETC “Echo”.
      e. Eaton “Greengate Room Controller”.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

2.02 GENERAL

A. The lighting control system shall be standalone with no central control software. Lighting components shall tie together and communicate directly with each other as required for the device type.

B. Control stations, occupancy sensors, and daylight sensors shall tie into dimming and relay modules to control luminaires.

C. The control parameters shall be set within each device, either as dip switches or dials on the device itself or with handheld or computer-based commissioning tools. The parameters remain set until they are manually changed.

D. Daylight sensors shall rationalize changes to light levels when daylight is available and shall maintain a steady light level when subjected to fluctuating ambient conditions.

E. Where required in a sequence of operation an astronomical time clock function shall be integrated into the control modules or relay panels.

F. During an emergency condition (loss of normal power), the system shall not impede the emergency lighting to function properly, i.e. the control system shall control emergency lighting to turn on at full light output and lock out user controls.

G. The control system shall allow occupancy sensor, when relaying a vacant status to either turn lights off or dim lights to a preset level.

H. The control system components shall comply with the latest edition of the California Building Energy Efficiency Standards, California Building Code, Part 6 and be certified by The California Energy Commission.

2.03 LIGHTING CONTROL MODULES

A. General:
1. Lighting control modules provide an interface between the control system and luminaires. Modules take inputs from the system and convert the commands through the power and control wiring to the fixture providing “ON/OFF/DIMMING” functions.
2. Lighting control modules contain a 16amp minimum rated relay(s) for “ON/OFF” control as well as a 0-10volt dimming signal. Modules shall also have the capability of two wire phase dimming (MLV or ELV).
3. In the event of a power failure, control modules connected to luminaires shall default to the “on” state at full light output.

B. The following lighting control modules shall be available with the system, at a minimum:
1. Single zone 0-10volt control module with a relay.
2. Multi-zone 0-10volt control module with one relay per 0-10volt zone (“Room Controller”).
3. Single zone two wire dimming module (Incandescent, MLV, or ELV) with a relay.
4. Multi-zone two wire dimming module (Incandescent, MLB, or ELV with one relay per zone (“Room controller”)

C. Mounting:
1. Single zone modules shall have a ½” nipple to mount directly to a ½” knockout on a junction box.
2. Multi-zone modules shall mount stand alone or onto a 4 square junction box.

2.04 PLUG LOAD CONTROL MODULES

A. General:
1. Plug load Control modules provide an interface between the control system and controlled outlets. Modules take inputs from the system and convert the commands through the power wiring to the receptacle(s) being controlled.
2. Control modules contain a 20amp rated relay(s) for “ON/OFF” control.

B. Mounting:
   1. Modules shall have a ½" nipple to mount directly to a ½" knockout on a junction box.

2.05 CONTROL STATIONS

A. General:
   1. The controllers are configurable wall mounted devices that provide local "ON/OFF/DIMMING" control to lighting zones.
   2. Each device can be set-up and modified through the control systems software interface.

B. Dimmer switch controller:
   1. Software configurable dimmer switch that provides "ON/OFF" switching and the capability to dim.
   2. Dimming to be continuous over the full range of the driver or ballast it is controlling.

C. Dimming scene controller:
   1. Multi-button controller allowing the end user to recall zones or scenes for "ON/OFF/DIMMING" control.
   2. Scenes are made up of multiple zones, where each zone is dimmed to a specific light output.
   3. Scene configuration can be changed via control systems software.
   4. The scene controller shall also allow for a custom labeling feature that allows scene labels on the controller to be easily modified.

D. Specifics:
   1. Mounting:
      a. Controllers utilize a standard single-gang device strap configuration for ease in mounting. Where multiple controllers are ganged together, they shall allow for a single multi-gang cover plat to be used.
      b. Mounts to standard switch box or cut-in ring.
   2. Controllers shall tie to the system in one of the following ways:
      a. Hardwired low voltage, wiring and connections per manufacturer's requirements.
      b. Wireless with a 10-year minimum battery life. Mechanically triggered wireless switches shall not be allowed unless approved by The Owner.

2.06 OCCUPANCY SENSOR

A. General:
   1. Occupancy sensors shall automatically detect movement within a space, reporting the state of occupancy to the control modules for "ON/OFF/DIMMING" control of lighting zones and "ON/OFF" control of the controlled receptacle circuits within that space.
   2. All setpoints for the occupancy sensor shall be accessible on the device or through the commissioning tool.
   3. Sensors shall capable of being linked together via hard wired connections to provide a larger coverage area.
   4. Provide enough occupancy sensors as required for complete area coverage they are installed in, regardless of how many sensors are shown on the Drawings.

B. Specifics:
   1. Sensor shall have a coverage of 1,000 square feet. Manufacturer to provide additional sensors if coverage is less than 1,000 square feet.
   2. Sensors shall be infrared or dual technology or microphonic. Dual technology sensors shall be capable of disabling either infrared or ultrasonic sensing.

2.07 DAYLIGHT SENSOR

A. General:
1. Daylight sensors shall automatically measure the amount of ambient light within a space, reporting the state of occupancy to the control modules for “ON/OFF/DIMMING” control of lighting zones.
2. Setpoints for the sensors shall be adjusted directly on the device or through commissioning tool. The setpoints refer to the range at which electric lighting will dim in response to the amount of light the sensor detects.
3. Daylight sensors shall continuously monitor the ambient light level.
4. Interior daylight sensors shall operate on a “closed loop” protocol, measuring both daylight and electric light contributions.
5. Exterior daylight sensors shall operate on an “open loop” protocol, measuring only daylight contributions.

B. Specifics:
1. Sensor shall mount directly to any surface, no junction box required.
2. Integrated sensors on luminaires shall be installed at the lighting manufacturer’s factory.
3. Sensors shall tie to the system in one of the following ways:
    a. Hardwired low voltage, wiring and connections per manufacturer’s requirements.
    b. Wireless with a 10-year minimum battery life.
4. Exterior sensors shall be outdoor rated.

2.08 RELAY PANEL

A. Addressable relay panel that fully integrates with the addressable control system, consisting of individual relays, control module, power supplies, network connection interface, etc.

B. Cabinet: NEMA 1 enclosure sized to accept the quantity of relays as noted on the Drawings.

C. Control relays: Heavy-duty momentary pulsed mechanically latching contactors. Operating voltage is 24volt AC; contacts are rated at 20amp at 120 or 277volt AC. Power supply: 120/277volt AC input transformer with 24volt AC, 60Hz, 1.6amp (40 VA) Class II power supplies output.

D. Network connection: Per manufacturer.

E. Panel shall be UL924 rated. Systems which integrate a UL924 sensing module for the entire panel or system shall not require the panel to be UL924 rated.

F. Panel shall allow for barriers between voltage classes, 120volt, 277volt, normal, and emergency.

2.09 EMERGENCY BYPASS RELAYS

A. General:
1. System manufacturer shall provide emergency bypass relays as shown on the Drawings.
2. The bypass relay device shall take an uncontrolled normal sensing hot, uncontrolled emergency hot, and controlled normal circuit as inputs.
3. The device shall bypass the controlled normal hot and control signal at the loss of power from the normal sensing hot and allow the uncontrolled emergency hot to power the downstream luminaires.

4. The device shall be capable of accepting a 0-10volt control signal and breaking if the downstream fixtures are 0-10volt controlled.

B. Specifics:
1. Mounting: directly onto a junction box or integral to the luminaire.
2. UL924 rated for switched and dimmed loads.
3. Where more than six bypass relays are located in a central location provide an enclosure to mount all devices.

2.10 EMERGENCY TRANSFER DEVICE

A. General:
1. System manufacturer shall provide emergency transfer devices as shown on the Drawings.
2. The transfer devices shall take an uncontrolled normal sensing hot, uncontrolled emergency hot, and controlled normal circuit as inputs.
3. The device shall transfer be an open transition “make before break” type. The normal controlled circuit shall transfer to emergency circuit at the loss of power from the normal sensing hot and allow the uncontrolled emergency hot to power the downstream luminaires.
4. The device shall be capable of accepting a 0-10volt control signal and breaking if the downstream fixtures are 0-10volt controlled.

B. Specifics:
1. Mounting: directly onto a junction box.
2. UL1008 rated for switched and dimmed loads.
3. Where more than six transfer devices are located in a central location, provide either an enclosure or panel housing to mount all devices within.

2.11 DEVICE COMMUNICATION CABLING

A. General:
1. The device communication cabling integrates devices such as occupancy sensors, photocell sensors, control modules and control stations with each other to provide a complete standalone system.
2. The network communication cabling provides low-voltage power to all devices on the network, eliminating the need for external power supplies and power packs for devices such as occupancy sensors. Where a device requires 120volt power it shall be noted on the submittal.
3. Cabling shall be topology free.
4. Cabling shall be plenum rated.

2.12 OCCUPANCY SENSOR

A. General Requirements for Sensors: Wall- or ceiling-mounted, solid-state indoor occupancy sensors with a separate power pack.
1. Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.
2. Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
3. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor is powered from the power pack.

4. Power Pack: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by CEC.
5. Mounting:
   a. Sensor: Suitable for mounting in any position on a standard outlet box.
   b. Relay: Externally mounted through a 1/2-inch knockout in a standard electrical enclosure.
   c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
6. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
7. Bypass Switch: Override the "on" function in case of sensor failure.

B. Dual-Technology Type: Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.
1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch-minimum movement of any portion of a human body that presents a target of not less than 36 sq. in., and detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch-high ceiling.

2.13 SWITCHBOX-MOUNTED OCCUPANCY SENSORS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Cooper Industries, Inc.
2. Hubbell Building Automation, Inc.
3. Lithonia Lighting; Acuity Lighting Group, Inc.
4. Sensor Switch, Inc.
5. Watt Stopper.

B. General Requirements for Sensors: Automatic-wall-switch occupancy sensor, suitable for mounting in a single gang switchbox.
1. Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application, and shall comply with California Title 24.
2. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F.
3. Switch Rating: LED

C. Wall-Switch Sensor:
1. Standard Range: 180-degree field of view, field adjustable from 180 to 40 degrees; with a minimum coverage area of 2100 sq. ft.
2. Sensing Technology: Dual technology - PIR and ultrasonic.
3. Switch Type: SP, manual "on," automatic "off.
4. Voltage: Match the circuit voltage; dual-technology type.
5. Ambient-Light Override: Concealed, field-adjustable, light-level sensor from 10 to 150 fc. The switch prevents the lights from turning on when the light level is higher than the set point of the sensor.
6. Concealed, field-adjustable, "off" time-delay selector at up to 30 minutes.
7. Concealed "off" time-delay selector at 30 seconds, and 5, 10, and 20 minutes.
8. Adaptive Technology: Self-adjusting circuitry detects and memorizes usage patterns of the space and helps eliminate false "off" switching.

PART 3 - EXECUTION

3.01 SENSOR INSTALLATION

A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.

B. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.02 CONTRACTOR INSTALLATION

A. Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-borne vibration, unless contactors are installed in an enclosure with factory-installed vibration isolators.

3.03 WIRING INSTALLATION

A. Wiring Method: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables.

B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.

C. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.

D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.04 IDENTIFICATION

A. Identify components and power and control wiring according to Division 26 Section "Identification."
   1. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.

3.05 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections. This shall be included in the contractor bid.

B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
   1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
   2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Lighting control devices will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.06 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
   1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.

3.07 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices.

B. Factory authorized service representative shall conduct two initial ***4***-hour training sessions for Owner's Maintenance Personnel upon completion and acceptance of system. Provide one 4-hour follow-up training session to be scheduled by Owner within one year of the final date of the final initial training session. Instructions shall include operation, maintenance, and testing of equipment with both classroom training and hands-on instruction. The agenda for the second session will be by Owner.

C. Contractor shall provide a training video.

D. Contractor shall schedule training with a minimum of **7**-days advance notice.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 kVA:
   1. Distribution transformers.

1.02 RELATED SECTIONS

A. Division 03 Concrete

B. Section 26 05 19 Low Voltage Electrical Power Conductors and Cables

C. Section 26 05 26 Grounding and Bonding for Electrical Systems

D. Section 26 05 48 Vibration and Seismic Controls for Electrical Systems

E. Section 26 05 53 Identification for Electrical Systems

1.03 DEFINITIONS

A. IEEE: Institute of Electrical Electronic Engineers

B. CEC: California Electrical Code.

C. NETA: International Electrical Testing Association

D. NRTL: Nationally Recognized Testing Laboratory

E. NEMA: National Electrical Manufacturer's Association

F. UL: Underwriter's Laboratory

G. ASTM B 3: Standard Specification for Soft or Annealed Copper Wire

H. ASTM B 33: Standard Specification for Tinned Soft or Annealed Copper Wire

1.04 SUBMITTALS

A. Submit in accordance with of Section 01 33 00 Shop Drawings, Product Data and Samples.

B. Product Data: Include rated nameplate data, capacities, weights, dimensions, minimum clearances, devices and features, and performance for each type and size of transformer indicated.

C. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   1. Wiring Diagrams: Power, signal, and control wiring.

D. Transformer location layouts: When there is a substitution of the transformer specified the Contractor shall provide a detailed floor plan with the layout of the electrical equipment to validate that the substituted transformer dimensions can be accommodated without changes to the room size.

E. Manufacturer Seismic Qualification Certification: Submit certification that transformers, accessories, and components will withstand seismic forces defined in Section 260548 Section Vibration and Seismic Controls. Include the following:
   1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
   2. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
   3. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
   4. Detailed description of equipment anchorage devices on which the certification is based and their mounting requirements.

F. Qualification Data: For testing agency.

G. Source quality-control test reports.

H. Field quality-control test reports.

I. Operation and Maintenance Data: For transformers to include in emergency, operation, and maintenance manuals.

J. Warranty: See Article 1.7 Warranty

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: NETA certified for on site testing.

B. Source Limitations: Obtain each transformer type through one source from a single manufacturer.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."

1.06 COORDINATION

A. Coordinate size and location of concrete bases with actual transformer provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Section 032000 Concrete Reinforcing.

1.07 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace devices that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Two years from date of Notice of Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer:
   1. Schneider, Square D
   2. ABB/ General Electric.
   3. Eaton Electrical Inc.
   4. Siemens.

B. Substitutions: Under provisions of Section 26 05 00

2.02 GENERAL TRANSFORMER REQUIREMENTS

A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.
   1. Provide with Rodent screens.

B. Cores: Grain-oriented, non-aging silicon steel.

C. Coils: Continuous windings without splices except for taps.
   1. Internal Coil Connections: Brazed or pressure type.
   2. Coil Material: Copper, unless otherwise noted on the drawings.

D. Basic impulse level (BIL): 10 kV for transformers 600V and less.

E. Transformers shall have an efficiency compliant with the U.S. Department of Energy (DOE) final rule for the Distribution Transformers Energy Conservation Standard Rulemaking, 78 FR 23335 (April 18, 2013). Transformers built prior to January 1, 2016 will not be considered acceptable unless efficiency compliance documentation is submitted verifying transformer efficiency meets or exceeds the January 1, 2016 energy efficiency levels listed in DOE 78 FR 23335 (April 18, 2013).

F. Transformers shall be designed to limit inrush current to 12-times (12x) the base rated full load current or less.

G. Grounding: Ground core and coil assembly to enclosure by means of a visible flexible copper strap.

2.03 DISTRIBUTION TRANSFORMERS

A. Comply with NEMA ST 20, and list and label as complying with UL 1561.

B. Cores Construction:

1. High grade, non-aging, silicon steel, clamped with structural angles and bolted to the transformer enclosure on vibration isolating pads.
2. One leg per phase.

C. Coil Construction:
1. Continuous wound with copper wire, without splices except for taps.
2. Pressure type, primary, secondary and tap connections.
3. End fillers or tie downs for maximum strength.
4. Vacuum impregnated with non-hygroscopic, thermosetting varnish.
5. All connections shall be accessible from the front of the transformer to allow rear of transformer to be positioned within six inches of the adjacent wall.
6. Isolate core and coil from enclosure using vibration-absorbing mounts.

D. Enclosure: Ventilated switchboard type, NEMA 250, Type 3R located outdoors and Type 2 located indoors.
1. Material: Code gauge steel.
2. Manufacturers nameplate: Include transformer connection data and overload capacity based on rated allowable temperature rise.
3. Type: Provide NEMA type as indicated on Drawings or specified herein, drip-proof, self-bracing enclosure designed to prevent accidental contact with electrically energized parts unless otherwise noted.
4. Mounting: Transformers 75 kVA and less shall be suitable for wall, floor, frame, or trapeze mounting. Transformers larger than 75 kVA shall be suitable for floor mounting.
5. Finish: Clean, degrease, zinc-phosphate, prime and finish paint steel parts with a baked-on synthetic enamel, ANSI 61 (light gray).
6. Size: Dimensions and configurations shall conform to the spaces allocated on the Drawings.
7. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.
8. Provide enclosure with rodent screens for all locations.
9. Provide with drip shields when outdoors.

E. Transformer Enclosure Finish: Comply with NEMA 250.
1. Finish Color: Standard factory finish ANSI gray..

F. Taps for Transformers Smaller Than 3 kVA: None

G. Taps for Transformers 7.5 to 24 kVA: Two 5 percent taps below rated voltage.

H. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and four 2.5 percent taps below normal full capacity.

I. Insulation Class:
1. 220 deg C, UL-component-recognized insulation system with a maximum of 150 deg C rise above 40 deg C ambient temperature unless listed otherwise in the drawings.
2. Case temperature shall not exceed 40-degrees centigrade rise above ambient at its warmest point.
3. Provide insulating materials that are in accordance with the latest addition of NEMA ST20 Standards for a 220-degree centigrade, UL component recognized insulation system for extended life.

J. Energy Efficiency for Transformers Rated 15 kVA and Larger:
   1. Transformers shall have energy efficiencies that meet or exceed the latest requirements of the US Department of Energy's Candidate Standard Level Three (CSL-3) efficiency, with extremely low no load losses.
   2. Transformers shall be designed to an efficiency standard higher than the latest requirements of the California Code of regulations Title 20 and Title 24 and DOE 2016.
   3. Tested according to NEMA TP 2.

K. Electrostatic Shielding: Each winding shall have an independent, single, full-width copper electrostatic shield arranged to minimize interwinding capacitance.
   1. Arrange coil leads and terminal strips to minimize capacitive coupling between input and output terminals.
   2. Include special terminal for grounding the shield.
   3. Shield Effectiveness:
      a. Capacitance between Primary and Secondary Windings: Not to exceed 33 picofarads over a frequency range of 20 Hz to 1 MHz.
      b. Common-Mode Noise Attenuation: Minimum of minus 120 dBA at 0.5 to 1.5 kHz; minimum of minus 65 dBA at 1.5 to 100 kHz.
      c. Normal-Mode Noise Attenuation: Minimum of minus 52 dBA at 1.5 to 10 kHz.

2.04 Low-Sound-Level Requirements: Minimum of 3 dBA less than NEMA ST 20 standard sound levels when factory tested according to IEEE C57.12.91.

A. Low-Sound-Level Requirements: Maximum sound levels, when factory tested according to IEEE C57.12.91, as follows:
   1. 9 kVA and Less: 40 dBA
   2. 10 to 50 kVA: 45 dBA
   3. 51 to 150 kVA: 50 dBA
   4. 151 to 300 kVA: 55 dBA
   5. 301 to 500 kVA: 60 dBA
   6. 501 to 750 kVA: 62 dBA
   7. 751 to 1000 kVA: 64 dBA

2.05 IMPEDANCE

A. Transformer impedance shall conform to NEMA standards. Do not use low impedance type transformers unless the circuits and equipment affected by the larger short circuit currents through such transformers are increased in short circuit current ratings, as required, at no additional cost to the Owner.

B. The following impedance are used as our basis of design:
   1. Single phase transformers:
      a. Up to 15 kVA: 6.1Z
      b. 16 to 25 kVA: 5.0Z
      c. 26 to 37.5 kVA: 4.0Z
      d. 38 to 50 kVA: 3.8Z
      e. 76 to 100 kVA: 4.9Z
      f. 101 to 167 kVA: 5.4Z
      g. 168 to 333 kVA: 5.5Z

2. Three phase transformers:
   a. 15 kVA: 6.4Z
   b. 25 kVA: 5.8Z
   c. 30 kVA: 5.2Z
   d. 37.5 kVA: 5.5Z
   e. 45 kVA: 5.0Z
   f. 75 kVA: 4.7Z
   g. 112.5 kVA: 5.1Z
   h. 150 kVA: 5.3Z
   i. 225 kVA: 5.7Z
   j. 500 kVA: 5.7Z

2.06 IDENTIFICATION DEVICES

A. Nameplates: Engraved, laminated-plastic or metal nameplate for each distribution / buck-boost transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Section 260553 Identification.

2.07 SOURCE QUALITY CONTROL

A. Test and inspect transformers according to IEEE C57.12.91.

B. Factory Sound-Level Tests: Conduct sound-level tests on equipment for this Project.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for each transformer.

B. Verify that field measurements are as needed to maintain working clearances required by CEC and manufacturer's written instructions.

C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be located.

D. Verify that ground connections are in place and requirements in Section 26 05 26 Grounding and Bonding have been met. Maximum ground resistance shall be 5 ohms at location of transformer.

E. Proceed with placement only after unsatisfactory conditions have been corrected.

3.02 PLACEMENT

A. Construct concrete bases and anchor floor-mounting transformers according to manufacturer's written instructions, seismic codes applicable to Project, and requirements in Section 26 05 48 Vibration and Seismic Controls.

3.03 CONNECTIONS

A. Ground equipment according to Section 26 05 26 Grounding and Bonding for Electrical Systems

B. Connect wiring according to Section 26 05 19 Conductors and Cables.
   1. Torque connections per manufacturer's listed specifications. In the absence of manufacturer's torque specifications use torque values recommended by NETA/ANSI.
   2. Provide all transformers with lugs for both primary and secondary conductor sizes for conductors indicated on Drawing. Connect lug to termination point with appropriate size bolt, nut flat and Belleville washers.
   3. Provide high-pressure compression lugs, for primary and secondary phase and neutral terminations for transformers 45 kVA and larger. Utilize only the tool and dies designed for uses in installing the lugs provided.
   4. Use flexible conduit indoors in dry locations or liquid-tight flexible conduit in damp/wet locations, two-foot minimum in length, for primary and secondary connections to transformer case. Make connections to side panels of enclosure, except for floor mounted transformers fed from directly below enclosure.

3.04 GROUNDING

A. Provide copper terminal bar for grounding and bonding the transformer in accordance with CEC Article 450.10. Bond the terminal bar to the enclosure and connect the following to the terminal bar:
   1. Primary feeder equipment grounding conductor.
   2. Secondary feeder supply side bonding conductor(s).
   3. Grounding electrode conductor.
   4. Main bond jumper to neutral (when present).

3.05 IDENTIFICATION

A. Nameplates: Engraved, laminated-plastic or metal nameplate for each transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Section 26 05 53 "Identification for Electrical Systems."
   1. Nameplates to include primary power source and the secondary load.

3.06 FIELD QUALITY CONTROL

A. Independent Testing Agency: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing, calibration and inspection required herein. Independent Testing Agency shall meet the requirements as outlined in Section 260010: Basic Electrical Requirements. Testing Agencies objectives shall be to:
   1. Assure transformer installation conforms to specified requirements and operates within specified tolerances.
   2. Field test and inspect to ensure operation in accordance with Manufacturer's recommendations and Specifications.
   3. Prepare final test report including results, observations, failures, adjustments, and remedies.
   4. Apply label on transformer upon satisfactory completion of tests and results.
   5. Verify ratings and settings and make final adjustments.

B. .Tests and Inspections:
   1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

C. Remove and replace units that do not pass tests or inspections and retest as specified above.

D. Test Labeling: On completion of satisfactory testing of each unit, attach a dated and signed "Satisfactory Test" label to tested component.

3.07 ADJUSTING

A. Record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.

B. Output Settings Report: Prepare a written report recording output voltages and tap settings.

3.08 CLEANING

A. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Service and distribution switchboards rated 600 V and less.
   2. Disconnecting and overcurrent protective devices.
   3. Identification.

1.02 RELATED SECTIONS

A. Division 3 Concrete

B. Section 26 05 19 Low Voltage Electrical Power Conductors and Cables

C. Section 26 05 26 Grounding and Bonding for Electrical Systems

D. Section 26 05 29 Hangers and Supports for Electrical Systems

E. Section 26 05 53 Identification for Electrical Systems

F. Section 26 27 13 Electricity Metering

1.03 DEFINITIONS

A. NETA: International Electrical Testing Association

B. NRTL: Nationally Recognized Testing Laboratory

C. NEMA: National Electrical Manufacturer’s Association

D. NECA: National Electrical Contractors Association

E. CEC, California Electrical Code

F. CBC: California Building Code

G. UL: Underwriters Laboratory

H. CEC: California Electrical Code

I. OSHA: Occupational Safety & Health Administration

1.04 SUBMITTALS

A. Submit in accordance with of Section 01 33 23 Shop Drawings, Product Data and Samples.

B. Product Data: For each type of switchboard, overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

C. Shop Drawings: For each switchboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of devices, equipment features, and ratings.
2. Detail enclosure types for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Detail short-circuit current rating of switchboards and overcurrent protective devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

D. Short Circuit Analysis, Breaker Coordination Study & Arc Flash Analysis
1. Submittal to include overcurrent and protective device coordination study per specification 26 05 73 Overcurrent Protective Device Coordination Study.
2. Breaker coordination to comply with HCAI PIN 70.

E. Field Quality-Control Reports:
1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

F. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals include the following:
1. Routine maintenance requirements for switchboards and components.

G. Warranty: See Article 1.8 Warranty.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Member company of NETA or an NRTL.
1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for switchboards including clearances between switchboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver switchboards in sections or lengths that can be moved past obstructions in delivery path.

1.07 PROJECT CONDITIONS

A. Environmental Limitations:
1. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
a. Ambient Temperature: Not exceeding 122 deg F.
b. Altitude: Not exceeding 6600 feet.

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied unless permitted under the following conditions:

1. Notify Owner's Representative no fewer than 7 business days in advance of proposed interruption of electric service.
2. Do not proceed with interruption of electric service without Owner's Representative's written permission.
3. Comply with NFPA 70E, Electrical Safety in the Workplace.

1.08 COORDINATION

A. Coordinate layout and placement of switchboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases.

1.09 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace devices that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Two years from date of Notice of Completion.

1.10 EXTRA MATERIALS

A. Provide extra materials that match products provided and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Fuses for fused power-circuit devices: Equal to 10 percent of quantity required for each size and type, but no fewer than 3 of each size and type.
   2. Keys: Two spares for each type of panelboard cabinet lock.

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Square D.
   2. ABB/ General Electric.
   3. Eaton.
   4. Siemens.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

C. Distribution Switchboards: Power and feeder distribution type.
   1. NEMA 250 3R enclosure with screened venting and base channels for outdoor.
      a. The enclosure shall have 2 screened vents with filters, top and bottom on each side to vent the interior section.
      b. Each door shall have 2 screened vents with filters top and bottom to vent the vestibule.
   2. NEMA 1 enclosure with base channels for indoor
   3. Switchboards to include the distribution transformer as an integrated system.

D. Doors: Secured with pad locking provisions.
   1. For doors more than 36 inches high, provide 3 point latch.
   2. Door-in door construction: Side wireway covers to be hinged.
   3. Provide 2-party hasp for the utility section.

E. Mains: As indicated in the panel schedules.

F. Provide with thermostatically controlled heat strip power at 120 volts for outdoor enclosure.
   1. Include stepdown transformer, fuses, finger safe fuse pull outs, and disconnect switch.

G. Dead front type completely metal enclosed, self-supporting structure of the universal frame type using die-formed, welded and bolted members. Formed ends sectionalized and removable with screw-on plates and NEMA 3R top covers outdoor units and NEMA 1 for indoor units, front facing side covers formed hinged with knurled knobs and concealed hinges. Finish gray, ASA70 dry powder polyester plastic electro statically applied, meeting a 3,000 hour salt spray test.
   1. 1-1/2-inch high Base Channels shall be 7 gage or thicker steel
   2. Structures shall be 12 gage or thicker
   3. Covers shall be 12 gage or thicker
   4. Top cover shall be 14 gage or thicker
   5. Switchboards shall have depth as required to house all equipment contained within it. Switchboard shall be constructed so that the back and front of all sections align. Construction of the board shall allow maintenance of incoming line terminations, device connections and all bus bolted connections.
   6. All devices shall be accessible and removable from the front unless rear access is indicated on the Drawings.
   7. Provide necessary hardware to permit locking every overcurrent protective device handle in the "OFF" position.
   8. Provide hinged access doors to all termination, meter, and relay compartments with knurled and slotted large head captive-bolts. The design shall allow access to compartments without tools and without removing any panels.
   9. Furnish cable pull sections or top cable pull boxes where indicated on the Drawings complete with cable tie down supports. Where cable pull section or pull boxes contain utility service cables, provide utility acceptable sealing means.
   10. Switchboard shall be suitable for use as service entrance equipment and be labeled in accordance with UL requirements.
   11. Utility metering compartment section shall be fabricated to meet all utility company requirements. Where separate vertical section is required for utility metering, match and align with switchboard enclosure.

H. All bussing shall be copper with silver plated connections and joints sized to limit temperature rise of 55 degrees centigrade per UL Standard 891 temperature rise requirements, braced to withstand a minimum short circuit current of 65,000 RMS symmetrical amperes or as otherwise noted. All busses shall be rated 100 percent and shall extend full length of usable space. Incoming supply lugs shall be at the top or bottom of the bus, not at the center. Flex bus is not permitted. Tapering of the horizontal or vertical bus is not permitted.
   1. Bus arrangement shall be Phase A-B-C-N left-to-right, top-to-bottom and front-to-rear as viewed from the front. Horizontal and vertical bus ampere rating shall be uniform from end-to-end.
   2. Bussing shall be full height in each section.
   3. All bussing to and from an overcurrent protective device shall be rated to the frame sizing, not the trip rating.
   4. Where "SPACE" is indicated in the switchboards, cross connectors and mounting hardware shall be installed to match the frame size ampere rating noted on the Electrical Drawings.

All "SPACES" shall be ready for installation of overcurrent protective devices at a future time.

5. Shipping splits and provisions for future bus extension shall be provided with necessary bus splices.
6. Each switchboard shall contain a full length, bottom/front located copper ground bus that is securely connected to each vertical section. Ground bus shall be sized in accordance with UL 891, Table 25.1.
7. Termination lugs: High compression circumference crimped type rated for use with aluminum/copper conductors.
8. Neutral bus shall be ***100***-percent rated unless otherwise indicated on the Drawings.
9. Main service switchboards:
    a. Removable neutral link: Provide removable bolted bus section for the purpose of disconnecting the ground circuit conductor from the premises wiring at the supply side of the service in accordance with CEC article 230-75.
    b. Main bonding jumper: Connection between the grounded circuit conductor and the equipment ground conductor at the supply side of the service. Size in accordance with CEC table 250-94 or 12-1/2% of the area of the largest phase conductor in accordance with CEC article 250-79(c).

I. Switching and overcurrent protective devices:
1. Main overcurrent protective devices(s) shall be fixedmounted molded case circuit breaker with interrupting rating and frame and trip ratings as indicated on Drawings.
2. Feeder overcurrent protective device(s) shall be fixedmounted molded case circuit breaker with frame and trip rating as indicated on Drawings.
3. Devices interrupting rating shall be fully rated to match that of switchboard for which the device is installed.
4. Series ratings of overcurrent protective devices is not acceptable unless specifically noted on the Drawings.
5. Devices shall be manually operated unless shunt trip and/or electrically operated devices are indicated on Drawings.
6. The rating shall be full symmetrical amp rating and series rated only when specifically noted in the drawings.
    a. 100A frames and larger shall be electronic adjustable trip type. All breakers shall be provided with factory padlocking provisions.
    b. All breakers shall be listed for termination of copper, copper clad, or aluminum conductors insulated at 75 degree C temperature rating or higher.
7. Circuit breakers serving motor loads utilizing variable frequency drives shall be Square D Series H Frame or larger with adjustable electronic trip units or Equal.
8. Breakers shall be electronic type common trip with one operating handle.
9. All breaker shall have an electronic trip with adjustable short time and instantaneous trip.
10. Overcurrent protective devices rated for 1200 amps and greater shall be capable of arc energy reduction in accordance with CEC 240.67 for fuses and CEC 240.87 for breakers.

J. Ground fault protection:
1. General: A solid-state, zone-interlocked, ground fault protection system shall be provided integral on the main device(s) as indicated on Drawings. It shall consist of integral phase current sensors, appropriate solid-state relaying equipment to provide the desired ground fault current sensitivity and time-current response characteristics. Provide neutral ground fault current transformer for four wire systems.
2. Device settings: Adjustable pickup current sensitivity for ground fault currents from 200 amperes to 1200 amperes shall be provided. A calibrated dial shall be provided for setting the current pickup point in the field. Time delay shall be adjustable from 0 to 60 cycles. Settings for individual relays shall be as directed by the short circuit/coordination study

specified in Section 26 05 73: Power System Studies. A locking screw shall be provided to retain both adjustments at desired setting.

3. All overcurrent devices shall be independently time coordinated irrespective of zone interlocking to allow the last downstream level of ground fault devices to be time coordinated, i.e. it shall NOT revert to the lowest time setting.

K. Surge Protective Devices:
   1. Refer to Section 264313: Surge Protective Devices.

L. Instrumentation and controls:
   1. Switchboards shall have a digital meter unit (DMU) as indicated on the Drawings. DMU shall be by the same manufacturer as the switchboard.
   2. Meter potential circuits shall be fused. Potential transformers if required for the monitoring devices shall be provided with fuses in the primary.
   3. Meter current circuits shall have shorting terminal blocks between the meter and the current transformers. Current transformers shall be ring type (one per phase) with ratio, thermal, and mechanical ratings coordinated with the application and protection.
   4. Instrument transformer accuracy per IEEE C57.13.6:
   5. Current transformers must maintain 0.3% accuracy from 5% rated current through rating factor at rated burden.
   6. Voltage transformers must maintain 0.15% accuracy from 90% to 110% of rated voltage.
   7. All internal devices (relays, transformers, etc.) shall be tagged as to rating and function with permanently fastened engraved nameplates.
   8. Control and signal circuits: Control devices, i.e.: contactors, relays, time clocks, etc. shall be mounted in a separate compartment that is fully barrier from the overcurrent protective device compartments. Control devices shall be accessible through a separate hinged cover panel.
   9. Relays: All relays shall be industrial control grade with a "ON" indicating neon light, hold down springs, minimum of 10amp rated contacts and a minimum of four form C contacts. Relays used for control power transfer shall have 20amp rated contacts. Do NOT use paralleled relays for relays with greater than 4-poles, use relays with the required number of poles. This is to prevent the situation where one relay fails, and half of the intended function is lost, which could be dangerous.

M. Conduits shall enter cabinet through neat holes and perpendicular to entrance face. Lace all conductors with Nylon Tie-Wraps. Provide laminated acrylic nameplates at all breakers.

N. Where spaces are indicated on the Drawings, all required hardware and trim shall be provided to allow future placement of breakers.

O. Provide equipment completely factory assembled, wired and tested before delivery and shall bear UL labels. Design shall meet CEC, NEMA and OSHA requirements.

P. Manufacturer shall provide equipment to meet the space provided, and shall not reduce the number of sections shown on the drawings.

Q. Switchgear enclosures that are located in exterior locations exposed to weather shall have thermostatically controlled heat strips.

R. All switchgear/electrical equipment shall be labeled with warnings to qualified personnel of the potential arc flash hazards and the appropriate personal protective equipment (PPE) required, per the latest issue of the CEC and NFPA-70E.

S. Provide a minimum of 25 percent of space for spare capacity.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Receive, inspect, handle, and store switchboards according to NECA and NEMA standards.

B. Examine switchboards before mounting. Reject switchboards that are moisture damaged or physically damaged.

C. Examine elements and surfaces to receive switchboards for compliance with manufacturer's tolerances and other conditions affecting performance of the Work.

D. Proceed with placement only after unsatisfactory conditions have been corrected.

3.02 PLACEMENT

A. Place switchboards and accessories according to NECA and NEMA standards.
1. Equipment Mounting: Locate switchboards on concrete base as detailed in the drawings.
2. Maintain 48-inches clear in front of switchboards for the entire length.

B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from switchboard units and components.

C. Utilize filler plates in unused spaces of panel-mounted sections.

3.03 IDENTIFICATION

A. Identify field-provided conductors, interconnecting wiring, and components; provide warning signs complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

B. Switchboard Nameplates: Label each switchboard compartment with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

C. Device Nameplates: Label each disconnecting and overcurrent protective device with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

D. Provide address label with content in compliance with the requirements listed in SMUD's installation requirements.

3.04 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Acceptance Testing Preparation:
1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:
   1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
   2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Switchboard will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies switchboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.05 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

B. Load Balancing: After Notice of Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.
   1. Measure as directed during period of normal system loading.
   2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed.
   3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
   4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUBMITTALS

A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.
   1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
   2. Detail enclosure types and details for types other than NEMA 250, Type 1.
   3. Detail bus configuration, current, and voltage ratings.
   4. Short-circuit current rating of panelboards and overcurrent protective devices. Fully rated panels are required.
   5. Include evidence of NRTL listing for series rating of installed devices.
   6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
   7. Include wiring diagrams for power, signal, and control wiring.
   8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.

C. Short Circuit Analysis, Breaker Coordination Study & Arc Flash Analysis in conjunction with the requirements of specification 262413 Switchboards.
   1. Submittal to include overcurrent and protective device coordination study per specification 260573 Overcurrent Protective Device Coordination Study.
   2. Breaker coordination to comply with HCAI PIN 70.

D. Field Quality-Control Reports:
   1. Test procedures used.
   2. Test results that comply with requirements.
   3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

E. Panelboard Schedules: For installation inside panelboard covers. Submit final versions after load balancing prior to request for final inspection.

F. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
   1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
   2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

1.03 QUALITY ASSURANCE

A. Testing Agency Qualifications: Member company of NETA or an NRTL.
   1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

B. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

E. Comply with NEMA PB 1.

F. Comply with CEC.

G. Comply with UL489 Molded-Case Circuit Breakers and Circuit Breaker Enclosures, UL50 Enclosures for Electrical Equipment, UL 67 Panelboards and UL 98 Enclosed and Dead Front Switches.

H. Panelboards shall be qualified for use in seismic areas as follows:
   1. High seismic loading as defined in IEEE Std 693-1997, with 2.0 amplification factor.
   2. CBC, Sds = 1.022, Ss = 1.532g, Ip = 1.0 in accordance with ICC-ES-AC156.
   3. Seismic compliance shall be qualified only through shake table testing. Compliance by calculation is not acceptable.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.

B. Handle and prepare panelboards for installation according to NEMA PB 1.

C. Store in a clean, dry space. Maintain factory protection or cover with heavy canvas or plastic to keep out dirt, water, construction debris and traffic.

1.05 PROJECT CONDITIONS

A. Environmental Limitations:
   1. Do not deliver or install panelboards until spaces are enclosed and weather tight, wet work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
   2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
      a. Ambient Temperature: Not exceeding 23 deg F (minus 5 deg C) to plus 104 deg F (plus 40 deg C).
      b. Altitude: Not exceeding 6600 feet.

B. Service Conditions: NEMA PB 1, usual service conditions, as follows:
   1. Ambient temperatures within limits specified.

2. Altitude not exceeding 6600 feet.

1.06 COORDINATION

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.07 FIELD MEASUREMENTS

A. Contractor shall make all necessary field measurements to verify that equipment shall fit in allocated space in full compliance with minimum required clearances specified in California Electrical Code.

1.08 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: One year from date of Substantial Completion.

1.09 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Keys: Two spares for each type of panelboard cabinet lock.
   2. Circuit Breakers Including GFCI and Ground Fault Equipment Protection (GFEP) Types: spares as noted on the panel schedules with no less than two spares for each panelboard.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Square D.
   2. ABB/ General Electric.
   3. Eaton.
   4. Siemens.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

C. Enclosures: Flush- and surface-mounted cabinets.
   1. Rated for environmental conditions at installed location.
      a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
      b. Outdoor: Provide NEMA Type 3R enclosure.

2. Hinged Front Cover: “Door-in-Door”, Entire front trim hinged to box and with standard door within hinged trim cover.
    a. Panelboard covers shall be door-in-door construction such that inner door exposes the overcurrent protective devices and the outer door exposes the complete panelboard interior (i.e. branch circuit conductors, lugs, neutral and ground bus, overcurrent protective devices, etc.). Outer door shall have full-length piano hinge and inner door shall have two-point hinges.
    b. Door latches shall be metallic. Plastic will be rejected.
    c. Provide combination spring catch and lock on inside edge of the inner door trims with flush fitting joint between door and trim. Locks on all panelboards shall be keyed alike. Doors 36 inches and over in height shall be provided with three-point catch and lock. Provide quarter-turn captive bolts on the outer door.
3. Finishes:
    a. Panels and Trim: Galvanized steel, factory finished immediately after cleaning and pre-treating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
    b. Back Boxes: Same finish as panels and trim.
4. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.

D. Incoming Mains Location: As conditions warrant.
1. Main breakers, where specified, as part of a combination main and distribution section or panel, shall be located above or below distribution bussing and be connected such that normal load side of breakers is disconnected when breaker is in open position. Backwards connections are prohibited.

E. Phase, Neutral, and Ground Buses:
1. Material: Hard-drawn copper, 98 percent conductivity. Bussing shall extend full length of usable space. Provide copper ground bus complete with lugs, not insulated from enclosure. The bussing shall be braced for a minimum of 65,000 RMS symmetrical amps unless noted otherwise in the drawings.
    a. Tapering of the horizontal or vertical bus is not permitted.
2. Copper Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
3. Bus shall be bolted copperwith taps arranged for distributed phase connections to branch circuit devices
4. Cross connectors shall be copper, drilled and tapped for bolt-on device connections, arranged for double row placement of device and designed to permit removal or addition of overcurrent protection devices without disturbing adjacent devices or removing main bus connections.
5. Neutral bus shall be 100percent rated of phase bus bars and shall have lugs for each outgoing branch circuit or feeder requiring a neutral connection unless otherwise noted.
6. Ground bus shall be full size with lugs for each outgoing branch circuit and feeder.
7. Refer to panelboard schedules on Drawings for bus rating. Bus rating shall match or be greater than main device or main lug rating.
8. Provide full sized bussing in all sections of multi-section panelboards.
9. Termination Lugs: Rated for use with aluminum/copper conductors.
10. All "SPACES" shall be ready for installation of future overcurrent protective device.

F. Conductor Connectors: Suitable for use with conductor material and sizes.
1. Material: Hard-drawn copper, 98 percent conductivity.
2. Main and Neutral Lugs: Mechanical type.
3. Ground Lugs and Bus-Configured Terminators: Mechanical type.

4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
5. Extra-Capacity Neutral Lugs: Rated 200 percent of phase lugs mounted on extra-capacity neutral bus when specified.

G. Overcurrent protective devices:
1. Overcurrent protective devices shall be molded case circuit breakers.
2. Main devices shall be hard bus connected to the panelboard bus bars.
3. In all cases, panelboards fed directly from a transformer shall have a main overcurrent protective device. If not indicated on the Drawings or Panelboard Schedules, provide this device sized to provide the full capacity of the transformer rating.
4. Main devices shall be vertically mounted and shall have their operating handle in the up position when energized. Main devices that are mounted in the same manner as the branch devices are NOT acceptable, i.e. main devices shall be individually mounted at the top or bottom of the phase bus bars.
5. Panelboards overcurrent protective devices layout shall conform to the layout indicated on the panelboard schedules.
6. Provide identified handle ties for single pole circuit breakers that share a neutral conductor.
7. Multiple pole circuit breakers shall have internal common trip connections. All breakers shall be bolt-on to the bus type, with a minimum symmetrical amp rating of 22,000 RMS unless noted otherwise in the drawings. All breakers shall be listed for termination of copper, insulated at 75oC temperature rating or higher. All breaker lugs shall be copper. Breakers shall be fully rated for the symmetrical amp rating listed unless specified otherwise.
    a. Panel schedules listed with Square D I-Line type HCX, etc.), supporting rectifier loads, or motor horse powers greater than 3 HP shall come equipped with F-Frame (1-3/8” width per pole minimum) breakers.

H. Surge Protective Devices:
1. Refer to Section 26 43 13: Surge Protective Devices.

I. Service Equipment Label: NRTL labeled for use as service equipment for panelboards or load centers with one or more main service disconnecting and overcurrent protective devices.

J. Miscellaneous requirements:
1. Circuit numbering: Starting at the top, indicate odd numbered circuits in sequence down the left-hand side and even numbered circuits down the right-hand side. Multi-section panelboards shall have continuous consecutive circuit numbers. Provide metal embossed circuit identification of panelboards.
2. Directories: A 6" x 8" minimum size circuit directory frame and card with clear plastic covering shall be provided inside the inner panelboard door to reflect conditions at completion of Work. Directory shall be typewritten denoting loads served by room number or area for each circuit.
3. Nameplates: Provide engraved nameplate for each panelboard. See Section 260533: Electrical Identification for requirements.

K. Refer to Panelboard Schedules for the following:
1. Mounting style; service voltage; terminal lug size, location, and quantity; bus ampacity; interrupting capacity of bus and breakers; quantity, poles and rating of overcurrent protective devices.

2.02 DISTRIBUTION PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Square D.
   2. ABB/ General Electric.
   3. Eaton.
   4. Siemens.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

C. Mains: As indicated in the panel schedules.

D. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes shall be bolt-on type.
   1. Circuit breakers serving motor loads utilizing variable frequency drives shall be Square D, HFD Frame with adjustable electronic trip units.
   2. Panel schedules listed with Square D I-Line type HCX, etc.), supporting rectifier/inverter type loads, or motor horse powers greater than 3 HP shall come equipped with H-Frame minimum (1-3/8” width per pole minimum) style breakers.
   3. Multiple pole circuit breakers shall have internal common trip connections and shall be bolt-on to the bus type, with a minimum symmetrical amp rating of 22,000 RMS unless noted otherwise in the drawings. Breakers shall be listed for termination of copper, insulated at 75oC temperature rating or higher.
   4. All breaker shall have an electronic trip with adjustable short time and instantaneous trip.
   5. Breakers shall be fully rated for the symmetrical amp rating listed unless specified otherwise.

2.03 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:
   1. Square D.
   2. ABB/ General Electric.
   3. Eaton.
   4. Siemens.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

C. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
   1. Enclosure shall be 20" wide x 5-3/4" deep, surface or flush mounted, unless specified otherwise in the panel schedule.
   2. Flush panelboards mounted adjacent to each other shall be same physical size.
   3. Where "SPACE" is indicated on panelboard schedules or Drawings, install minimum 100amp branch circuit cross connectors and mounting hardware. For future device spaces larger than 100amps, cross connectors shall match the frame size ampere rated noted.

D. Mains: As noted on panel schedules.

E. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
   1. Circuit breakers shall not be less than 1” per pole spacing. Less than 1” will be regarded as a miniature circuit breaker and will be rejected during the submittal review process.
   2. Multiple pole circuit breakers shall have internal common trip connections and shall be bolt-on to the bus type, with a minimum symmetrical amp rating of 22,000 RMS unless

noted otherwise in the drawings. Breakers shall be listed for termination of copper, insulated at 75oC temperature rating or higher.
3. All breaker lugs shall be copper.
4. Breakers shall be fully rated for the symmetrical amp rating listed unless specified otherwise.

F. Contactors in Main Bus: NEMA ICS 2, Class A, electrically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.
1. Internal Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.
2. External Control-Power Source: As noted on plans.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.

B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install panelboards and accessories according to NEMA PB 1.1.

B. Equipment Mounting:
1. For panelboards, install epoxy-coated anchor bolts that anchor into structural concrete floor.
2. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
3. Install anchor bolts to elevations required for proper attachment to panelboards.
4. Attach panelboard to the vertical finished or structural surface behind the panelboard.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.

D. Mount top of trim 78 inches above finished floor unless otherwise indicated.

E. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

F. Install overcurrent protective devices and controllers not already factory installed.
1. Set field-adjustable, circuit-breaker trip ranges.

G. Install filler plates in unused spaces.

H. Stub four 3/4-inch empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future.

I. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.

3.03 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section Identification.

B. Create a directory to indicate installed circuit loads after balancing panelboard loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard & Distribution Panel Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section Identification.
   1. Nameplates to include power source serving panel and feeder rating.

D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section Identification.

3.04 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Acceptance Testing Preparation:
   1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
   2. Test continuity of each circuit.

C. Tests and Inspections:
   1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
   2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Panelboards will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken and observations after remedial action.

3.05 ADJUSTING

A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as indicated.

C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.
   1. Measure as directed during period of normal system loading.

2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

3.06 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:
   1. Power monitoring equipment.
   2. Web-based power monitoring communication system.
   3. Data acquisition server “Gateway.”
   4. Miscellaneous monitoring systems.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:
   1. American National Standards Institute, Inc. (ANSI)/Institute of Electrical and Electronics Engineers (IEEE):
      ANSI/IEEE 802.3; Ethernet Standard.
   2. American National Standards Institute, Inc. (ANSI):
      ANSI C12.20; For Electricity Meters – 0.2 and 0.5 Accuracy Classes.
      ANSI C37.90.1; Surge Withstand Capability (SWC) Test.
   3. Federal Communications Commission (FCC) Regulations:
      FCC Part 15; Subpart B for Unintentional Radiators that Generate Radio Frequency Emissions. Class A for Digital Devices that Market use for Commercial applications.
   4. Underwriters Laboratories, Inc. (UL):
      UL 61010A-1; General Safety Requirements for Electrical Equipment intended for Laboratory Use.

1.03 SUBMITTALS

A. Submit in accordance with the requirements of 26 05 00: Common Work Results for Electrical, the following items:
   1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
   2. Describe product operation, equipment and dimensions and indicate features of each component.
   3. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
   4. Shop Drawings to include:
      a. Front, plan, and side view elevations with overall dimensions.
      b. Wiring diagrams showing all components and the connections between the components.
   5. Furnish structural calculations for equipment anchorage as described in Section 26 05 00: Common Work Results for Electrical.
   6. Submit Manufacturer's installation instructions.
   7. Complete bill of material listing all components.
   8. Warranty.

B. Hardware and software description shall be provided in detail for all communications hardware, software, including sensor devices and gathering data to be transmitted over the network, and master display unit. This description will include a list of all the communicating devices to be connected to the network.

C. Typical software screen displays shall be provided in printout form and/or on disk.

1.04 OPERATION AND MAINTENANCE MANUAL

A. Supply operation and maintenance manuals in accordance with the requirements of 26 05 00: Common Work Results for Electrical, to include the following:
   1. A detailed explanation of the operation of the system.
   2. Instructions for routine maintenance.
   3. Parts list and part numbers.
   4. Pictorial and schematic Electrical Drawings of wiring systems, including operating, hardware, flat screens, instrumentation, and annunciators.
   5. Telephone numbers for authorized parts and service distributors.
   6. Final testing reports.

1.05 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Energy information system shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner.

B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

C. Handling: Handle in accordance with Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

1.07 WARRANTY

A. Units, components and programming offered under this Section shall be covered by a 2-year parts and labor warranty for malfunctions resulting from defects in materials and workmanship. Warranty shall begin upon acceptance by the Owner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
   1. Power monitoring equipment:
      a. Schneider/ Square D
      b. Eaton:
      c. Siemens
   2. Web-based power monitoring communication system:
      a. Schneider/ Square D
      b. Eaton
      c. Siemens
   3. Data acquisition server gateway:
      a. Obvius A8812-1 “AcquiSuite” Data Acquisition Server

B. Substitutions: Under provisions of 26 05 00: Common Work Results for Electrical.

2.02 MICORPROCESSOR-BASED POWER MONITORING EQUIPMENT

A. Integrated multi-point metering/switchboard construction:
   1. Combines switchboard design with multi-point metering (MPM) equipment to provide a complete factory installed metering switchboard consisting of distribution switchboard with overcurrent protection devices, meter module(s) and current sensors, factory installed and wired to meters.
   2. The MPM shall monitor 60 single-pole loads, 30 two pole loads or 20 three-pole loads or any combination thereof by use of current sensors.
   3. All connections to the MPM shall be through removable plugs.
   4. The MPM shall be capable of accepting input from current sensors by connecting with factory installed plug connectors.
   5. The MPM shall be capable of automatically sensing the current rating of the current sensor.
   6. The MPM shall provide a mechanism for detecting tampering with the current sensors. Tamper detection shall be accessible remotely by the headend computer.
   7. The MPM shall be available in one of three voltage ratings:
      a. 120/208volt AC
      b. 277/480volt AC
      c. 347/600volt AC
   8. The MPM shall calculate power and energy consumption in accordance with ANSI C12.20 metering specification and stored in non-volatile memory for forwarding to an intelligent system.
   9. The MPM shall store power in kW and energy in kWh for each metering point.
   10. The MPM shall store energy profile information for each metering point in non-volatile memory. The profile time-period shall be adjustable from 1 to 60-minutes. The MPM shall be able to save a minimum of 365-days of energy profile data for all 60-meter points on a 15-minutes basis.
   11. The MPM shall be suitable for mounting within a panelboard or switchboard utilizing a dedicated mounting bracket. The MPM shall have all connections oriented towards the wiring gutters of the panelboard or switchboard in which it is mounted. The MPM may also be mounted in a separate enclosure.
   12. The MPM shall have LEDs that can be easily viewed when the unit is installed to aid in the installation and operation of the device with the following functionality as a minimum:
      a. Each current input shall have an LED that shall flash in proportion to the amount of power flowing in the measures circuit.
      b. An indication LED that flashes to indicate when the MPM is functioning properly.
      c. A transmit LED that indicates when the MPM is transmitting data on the communication network.

d. A receive LED that indicates when the MPM is receiving data on the communication network.

13. The MPM shall have rotary address switches that are easily accessible and set the unit address on the communication network.
14. The local device network shall be factory interconnected utilizing two Modbus RTU ports. The communication speed at the device level shall be a minimum of 9,600-baud. Devices shall communicate at their maximum baud rate regardless of the number of devices on the network.
15. MPM shall be networkable such that a single modem can be utilized to read multiple meters.
16. Current sensors shall be provided with a toroidal winding over solid core. The winding shall be mounted over the circuit to be monitored by inserting the load conductor through a hole in the center of the current transformers. The current in the load conductor shall be made available to an electronic monitoring device through a four-conductor cable and terminated to a removable plug on the current sensor. The current sensor shall have two LEDs, one red for indicating loss of connection and one blue for verification to connected load. The current sensors shall be suitable for use with circuits rated 125amp through 400amp. Extension cables, with a length of 8 and 16-feet and factory installed connectors shall be available for installations where the standard cable is too short for proper installation. The current sensors shall have 600volt rated cable insulation and shall be UL listed with the MPM.

2.03 WEB-BASED POWER MONITORING COMMUNICATION SYSTEM

A. General: Furnish and install a complete web-based power monitoring communications system (PMCS) as detailed on the drawings and as described herein. The PMCS shall include all remote devices for metering, monitoring, control and protection, a network time server, all Ethernet communications gateways and gateway interfaces, intercommunication wiring, and ancillary equipment.

B. Web-based PMCS:
   1. The PMCS shall provide a web browser-based monitoring and management system for all communicating devices in the power system.
   2. The PMCS shall communicate to all devices over an industry standard Ethernet communication backbone. For devices that cannot communicate directly on Ethernet, a gateway complying with the requirements of this specification can be provided.
   3. The PMCS shall provide a real time, web-based system to allow the user to easily view the key operational characteristics of the system. These features of the system shall not require any custom screen development or configuration to provide the following functions:
      a. The PMCS shall provide the ability to view the current value of all operational variables available from all supported devices connected to the Ethernet network without the need for any additional system software.
      b. The PMCS shall not require specific knowledge of a device to be able to display information from that device. Instead, the software shall have the ability to query the device for its operational capabilities and automatically set up web-based pages to display the information. No custom screen development shall be required to display data from any device able to connect to the system:
         1) The software shall support the ability to automatically establish a connection to any device added to a gateway without the user doing any configuration in the software.
      c. The PMCS shall automatically build a one-line network hierarchy for all connected devices so the user can easily view them and display the corresponding data, status for those devices.
   4. The PMCS shall provide the ability trend one or more variables (volts, amps, kW, kWh, etc.) from one or more devices on a web-based trend graph. The trend viewer shall support the following features:
      a. Web accessible trending tool.
      b. Option to display all variables on a single chart.
      c. Support for Min and Max value generation and graphing.
      d. Ability to select trend date ranges from a calendar.
      e. Ability to save the selected trend data to a CSV file using the web interface
   5. The PMCS shall provide an energy graph on the home page and shall include:
      a. Ability to show either demand or usage.
      b. Ability to show the peak value for selected time periods and load factor.
      c. Compare energy usage across devices.
      d. Display peak periods for each device.
      e. Ability to display line, bar, stacked bar, and cumulative usage for each selected period.
      f. Move cursor to view energy values at any given time.
      g. Calendar based date and time selection.
   6. The PMCS shall support displaying of the waveform data collected by the power monitoring devices that can capture waveforms. The graphic format will display the data in an oscilligraphic format and in a Fourier Amplitude Spectrum graph.

7. The PMCS shall provide time stamped sequential order of events for trips, analog alarms, motor start profiles, and operator actions based on the information received from the actual devices.
8. The PMCS shall have the ability to manage alarm and event conditions detected by the devices. Alarm management shall include:
   a. Ability to acknowledge alarms via the web interface.
   b. Ability to flag priority alarms.
   c. Ability to export alarms.
   d. Ability to sort and analyze alarms by time, device, or priority.
9. The PMCS shall provide web-based navigation system to easily:
   a. Drill down" in the one-line hierarchy.
   b. Upload any .jpeg or, png file as a one-line background.
10. The PMCS shall be easy to operate and manage and shall include:
    a. Ability to have a favorite's list of devices.
    b. Ability to add and remove devices from the favorites list.
    c. Ability to see devices current status and key parameters at a glance.
    d. Ability to navigate to main software views with a single mouse click.
11. The PMCS shall be scalable such that the system can be expanded without requiring the user to reconfigure a new system.
12. The PMCS shall be sized to support the number of devices shown on the drawings, plus the capacity to accommodate 10% additional devices.
13. The PMCS shall not restrict the number of simultaneous users except based on the computing resources provided to support the system.
14. The PMCS shall allow users to be granted privileges based on their user ID and password, to perform various functions in the system. The software shall support, at a minimum 2 levels of access with one supporting Read only access and the other provide full Administration access.
15. The PMCS shall provide onboard embedded memory that is not external to the system or resident on a separate computer.

C. Web-Enabled PMCS Hardware Components:
   1. All web enabled devices in the PMCS shall provide any authorized user on the customer's network access to the critical data listed below with the user requiring only a supported Internet browser on their own computer.
      a. Meter Screen providing:
         1) Volts: L-L and L-N, and average.
         2) Frequency.
         3) Current and average phase A, B, and C, N and G.
      b. Power Screen providing:
         1) Energy.
         2) Demand.
         3) Power Factor.
      c. Quality Screen providing:
         1) Total Harmonic Distortion (THD) of volts and current.
      d. Events screen providing:
         1) Latest events.
         2) Enabled Triggers.
         3) Historical Events.
   2. The web-enabled power monitoring hardware shall support multiple protocols over Ethernet to ensure the system can easily be integrated into the PCMS software system as well as existing systems. These protocols shall include:
      a. Modbus TCP/IP.
      b. BACnet/IP.
      c. SNMP.

d. HTTP.
e. SMTP.
f. NTP.
g. File System for exporting .CSV trend files.

3. The web enabled power monitoring hardware shall provide support for configuration of all web enabled meters and gateways directly via the web pages on the device.
   a. To support the configuration of legacy devices on the device networks connected to the gateway, the gateway shall support a “pass through mode” to allow the legacy configuration software to connect from any computer on the users network to the device via the gateway.
4. All web enabled power monitoring hardware that is connected directly to Ethernet shall support the ability to synchronize their time clock using Network Time Protocol (NTP). The purpose for this support is to ensure all device clocks are accurate so that event sequences can be adequately analyzed.
   a. For devices that support clock synchronization and are on the device networks connected to the gateways, they shall support the ability to sync their clock to the clock in the gateway.
5. Ethernet Switches:
   a. A single web access point: 4 or 6-port Ethernet switch shall be provided in the equipment to allow a single access point for the user and the ability to connect more than one network device directly on the customer’s Ethernet Local Area Network (LAN).
   b. Ethernet switch shall support standard copper RJ45 connectors and/or 100BaseFX Fiber-Optic via ST connectors.

2.04 DATA ACQUISITION SERVER GATEWAY

A. General:
1. The data acquisition server allows users to connect and secure data from virtually any meter type and convert the raw meter output into usable information. This information can be integrated with almost any level of software system or database, from an enterprise software suite to a simple Excel spreadsheet.
2. The data acquisition server is scalable for energy monitoring applications, including the ability to access and configure devices through ant web browser.
3. The data acquisition server employs “plug & play” technology, and automatically detects and configures downstream Modbus devices in seconds. Data from downstream devices are time stamped and stored in non-volatile memory at user-selected intervals. The data can be stored or uploaded to a destination of user’s choice through a number of different formats. Data can also be accessed through any web browser via integrated modem or Ethernet connection.
4. Using the built-in modem or Ethernet port, data is sent via either the network or phone lines to the online server system. From the Online website, you can view past data, plot charts, and export data.
5. User cab push/pull data into energy kiosk or dashboard, custom software applications, or any web interface.

B. Equipment description:
1. The data acquisition server unit shall be a standalone, wall-mounted device powered by a 120volt AC plug-in transformer with 24volt DC output.
2. The unit shall accept up to 32 Modbus device inputs on the RS485 serial input terminals. The unit shall provide automatic recognition and configuration for Modbus power meters as well as other Modbus devices.
3. The unit shall provide user interface via standard web browser using an integrated Ethernet RJ45 jack.

4. Unit shall provide alarm setpoints for all measured values including the option for either high/low or warning/alarm.
5. Unit shall be capable of using LAN connections (static IP or DHCP), telephone modem or cell modem (GSM) for data upload.
6. Unit shall provide data in standard delimited text form (.txt). There shall be an option for retrieving data using XML. Data uploads shall be either push or pull at the option of the user, on user-selected intervals.
7. Store all recorded variables in non-volatile memory.
8. The unit shall function as a gateway device, using Modbus TCP to retrieve specific data from connected devices as required.
9. Performance characteristics:
    a. Main processor: ARM 9
    b. I/O Co-processor: ARM 7
    c. Operating system: Linux 2.6
    d. Flash ROM: 16MB NOR Flash (expandable with USB memory device)
    e. Memory: 32MB RAM
    f. LED: 8x pulse input, 4 modem activity, Modbus TX/RX, power status
    g. Console: 2x 16 LCD character, two buttons
    h. LAN: 10/100, Auto crossover detection
    i. Modem (phone): V.34bis, 33,600bps
    j. Modem (cellular): GSM/GPRS Class 10, 85kbps
    k. Protocols: Modbus/RTU. Modbus/TCP, TCP/IP, PPP, HTTP/HTML, FTP, SNMP, SMTP, XML
    l. Power supply: 24volt DC, transformer included
    m. Power requirement: 120volt AC
    n. Serial port: RS485 Modbus
    o. USB port: USB memory expansion port
    p. Interval recording: User selectable 1 to 60-minutes. Default of 15-minute interval
    q. Outputs: 2x, Dry contact 30volt DC, 150mA max
    r. The unit shall accept up to 8 inputs directly. Each input shall be capable of being configured for the following:
        1) 0-10volts: Min/Max/Ave/Instantaneous
        2) 4-20mA: Min/Max/Ave/Instantaneous
        3) Pulse: Consumption, rate.
        4) Resistance: Min/Max/Ave/Instantaneous
        5) Runtime: Runtime, status

2.05 MISCELLANEOUS MONITORING SYSTEMS

A. The meters that follow are all to be furnished under another Division of Work but require connection under this Division to the energy information system network. Coordinate the exact location of these meters with HVAC, plumbing and landscape irrigation contractors prior to commencing installation.

B. Meters provided by others shall have a Modbus TCP/IP protocol to be supported on the energy information system network. The exception being the water flow meters and the natural gas flow meters, which shall be the pulse output type meters with dry contacts. The data acquisition server can support direct connections with both the Modbus meters and the pulse output meters.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of metering equipment installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Install energy information system components in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. Tighten electrical connectors and terminals; including screws and bolts, in accordance with equipment Manufacturers published instructions.

C. Coordinate with the Mechanical Controls Contractor and integrate the energy information system into the building management system. See mechanical controls details for more information.

D. Coordinate the software installation after all hardware has been completely installed, connected, and activated.

3.03 PROGRAMMING

A. The contractor shall insure the on-site programming of the system by a manufacturer's representative, as well as to assist in the system startup. On-site services shall include:
   1. Setting all the addresses of all devices in the equipment.
   2. Verifying and troubleshooting the integrity of the data.
   3. Assisting the Owner in correcting any data line problems.
   4. Coordinating any possible warranty problems.
   5. Configure the software to match the field devices.

3.04 FIELD QUALITY CONTROL

A. Independent testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing, calibration and inspection required herein. Testing Agencies objectives shall be to:
   1. Assure energy information system equipment installation conforms to specified requirements and operates within specified tolerances.
   2. Field test and inspect to insure operation in accordance with Manufacturer's recommendations and Specifications.
   3. Prepare final test report including results, observations, failures, adjustments, and remedies.
   4. Verify settings and make final adjustments.

B. At least three weeks prior to any testing, notify the Engineer so that arrangement can be made for witnessing test, if deemed necessary. All pretesting shall have been tested satisfactorily prior to the Engineer's witnessed test.

C. The Contractor shall supply a suitable and stable source of electrical power to each test site. The Testing Agency shall specify the specific power requirements.

D. Testing of energy information system equipment shall be done only after all devices are installed and system is energized.

E. Prefunctional testing:
   1. Provide Testing Agency with Contract Documents and Manufacturer instructions for installation and testing.
   2. Visual and mechanical inspection:
      a. Inspect for physical damage, defects alignment and fit.
      b. Verify the meters are functional by scrolling through monitoring options.
      c. Compare nameplate information and connections to Contract Documents.
      d. Check tightness of all control and power connections.
      e. Check that all covers, barriers, and doors are secure.
   3. Electrical tests:
      a. Provide a portable meter that was calibrated prior to test, on the same day as test, and with an accuracy equivalent to that of the meters being tested.
      b. Confirm values of each meter in the system by hooking up portable meter to feeder being monitored. Ensure that there is a minimum of 5% load on feeder at time of test, based on the overcurrent protection size.
      c. Calibrate meters as required based on reading from portable meter.

F. Contractor shall replace at no costs to the Owner all devices which are found defective or do not operate within factory specified tolerances.

G. Contractor shall submit the Testing Agency's final report for review prior to Project closeout and final acceptance by the Owner. Test report shall indicate test dates, devices tested, results, observation, deficiencies, and remedies. Test report shall be included in the operation and maintenance manuals.

3.05 CLEANING

A. Upon completion of Project prior to final acceptance the Contractor shall thoroughly clean energy information system equipment per Manufacturer's approved methods and materials.

3.06 TRAINING

A. Factory authorized service representative shall conduct two initial 4-hour training sessions for Owner's Maintenance Personnel upon completion and acceptance of system. Provide one 4-hour follow-up training session to be scheduled by Owner within one year of the final date of the final initial training session. Instructions shall include operation, maintenance, and testing of equipment with both classroom training and hands-on instruction. The agenda for the second session will be by Owner.

B. Contractor shall provide a training video.

C. Contractor shall schedule training with a minimum of 7-days advance notice.

END OF SECTION

PART 1- GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Snap switches and wall-box dimmers.

B. Related Sections include the following:
   1. Division 26 Section "Low-Voltage Electrical Power Conductors and Cables" for wiring.

1.03 DEFINITIONS

A. EMI: Electromagnetic interference.

B. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

C. RFI: Radio-frequency interference.

D. UTP: Unshielded twisted pair.

1.04 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Dimmer switch submittals shall include written certification of compatibility from the lighting fixture manufacturer.

B. Field quality-control test reports.

C. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.05 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with CEC.

1.06 COORDINATION

A. Receptacles for Owner-Furnished Equipment: Match plug configurations.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
   1. Switches, receptacles and coverplates:
      a. Leviton Mfg. Company Inc. (Leviton).
      b. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
      c. Pass & Seymour/Legrand (Legrand)
   2. Occupancy/vacancy sensors switches, time switches:
      a. SensorSwitch, Inc.
      b. Wattstopper
      c. Cooper Controls “Greengate”
      d. Leviton
      e. Hubbell Building Automation, Inc.
   3. Floor mounted service boxes:
      a. Legrand

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

2.02 RECEPTACLES

A. Standards:
   1. Provide general purpose 20amp, 125/250volt AC receptacles that conform to NEMA WD-1 Specifications. Specialty receptacles shall conform to NEMA WD-5 Specifications as applicable.
   2. Provide NEMA 5-20R, industrial (heavy-duty) specification grade as noted herein, 20amp, 125volt AC, 2-pole, 3-wire grounding type receptacles.
   3. Receptacles shall be the standard conventional style device.
   4. Receptacles shall be tamper-resistant to meet the requirements of CEC Article 406.12.

B. Color:
   1. Device color shall be as selected by the Architect, unless otherwise noted.
   2. Devices connected to an emergency circuit shall be red.

2.03 STRAIGHT-BLADE RECEPTACLES

A. Tamper-Resistant Single Outlet Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, and FS W-C-596.
   1. Provide self-grounding back and side wired with binding head staked terminal screw.
   2. Products: Subject to compliance with requirements, provide one of the following:
      a. Hubbell; #5361 series.
      b. Leviton; #5361 series.
      c. Pass & Seymour; #5361 series.

B. Tamper-Resistant Convenience Duplex Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, and FS W-C-596.
   1. Provide self-grounding back and side wired with binding head staked terminal screw.
   2. Products: Subject to compliance with requirements, provide one of the following:
      a. Hubbell; #5362 series.
      b. Leviton; #5362 series.
      c. Pass & Seymour; #5362 series.

C. Half Controlled Tamper-Resistant Convenience Receptacles 125 V, 20A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, and FS W-C-596.
   1. NEMA-approved and CEC, CA Title 24 compliant: Permanently marked with universal symbol for controlled receptacle and the word “CONTROLLED”.
   2. Controlled duplex receptacles shall include split circuit hot tab for one controlled outlet, and one uncontrolled.
   3. Controlled double duplex receptacle shall consist of one uncontrolled general-purpose duplex receptacle, and one controlled duplex receptacle.
   4. For half controlled receptacle with split-circuit hot tab, use:
      a. Pass & Seymour #5362CH
      b. Hubbell BR20C1
      c. Leviton 5362-1P
   5. For dual controlled receptacle, use:
      a. Pass & Seymour #5362CD
      b. Hubbell BR20C2
      c. Leviton 5362-2P.

D. USB Charger Type Tamper-Resistant Specification Grade Duplex Receptacle 125 V, 20A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, and FS W-C-596.
   1. Two 5-volt DC USB Type A charging ports; compatible with USB 2.0 and 3.0 devices, and capable of charging two devices simultaneously while using receptacles.
   2. Comply with USB battery charging spec USB BC1.2.
   3. Minimum 3.1 amps total charging capacity.
   4. Products: Subject to compliance with requirements, provide one of the following types:
      a. Pass & Seymour TR5362USB series.
      b. Hubbell USB20X2 series.
      c. Leviton #T5832 series.

2.04 GFCI RECEPTACLES

A. General Description:
   1. Straight blade, Tamper-Resistant non-feed-through type.
   2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
      a. Provide 20amp, 125volt AC, receptacles consisting of NEMA 5-20R duplex device with integral solid state sensing and signaling circuitry capable of detecting and interrupting a maximum 5-milli-amp line-to-ground fault current in approximately 1/40th of a second.
      b. Provide visual device with trip indication, manual reset, and test mechanisms and with point of use and multi-outlet protection.
      c. Provide self-test and monitor feature with visual indicators on device face representing power status, trip condition, ground fault condition and end of life status.
      d. Provide weather resistant devices at all damp and wet locations.

B. Duplex GFCI Specification Grade Convenience Receptacles, 125 V, 20 A, double sided contact, back side wired:
   1. Building Interior Locations:
      a. Pass & Seymour #2097TR series
      b. Hubbell GFTRST20 series
      c. Leviton #S7899 series
   2. Exterior Locations: Weather Resistant Listed.
      a. Pass & Seymour #2097TRWR series
      b. Hubbell GFTWRST20 series

c. Leviton #WT899 series

2.05 TWIST-LOCKING RECEPTACLES

C. Single Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration L5-20R, and UL 498.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Cooper; CWL520R.
b. Hubbell; HBL2310.
c. Leviton; 2310.
d. Pass & Seymour; L520-R.

2.06 WALL SWITCHES

A. Comply with NEMA WD 1, UL 20, and FS W-S-896.

B. Switches, 120/277 V, 20 A:

C. Pilot-Light Switches, 20 A:
1. Products: Subject to compliance with requirements, provide one of the following:
a. Hubbell; HBL1201PL for 120 and 277 V.
b. Leviton; 1221-LH1.
c. Pass & Seymour; PS20AC1RPL for 120 V, PS20AC1RPL7 for 277 V.
2. Description: Single pole, with neon-lighted handle, illuminated when switch is "off."

D. Key-Operated Switches, 120/277 V, 20 A:
1. Products: Subject to compliance with requirements, provide one of the following:
a. Hubbell; HBL1221L.
b. Leviton; 1221-2L.
c. Pass & Seymour; PS20AC1-L.
2. Description: Single pole, with factory-supplied key in lieu of switch handle.

E. Single-Pole, Double-Throw, Momentary-Contact, Center-off Switches: 120/277 V, 20 A; for use with mechanically held lighting contactors.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Hubbell; HBL1557.
b. Leviton; 1257.
c. Pass & Seymour; 1251.

F. Key-Operated, Single-Pole, Double-Throw, Momentary-Contact, Center-off Switches: 120/277 V, 20 A; for use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.
1. Products: Subject to compliance with requirements, provide one of the following:
a. Hubbell; HBL1557L.
b. Leviton; 1257L.
c. Pass & Seymour; 1251L.

2.07 OCCUPANCY/VACANCY SENSOR SWITCHES

A. Occupancy sensors: automatic on, automatic off.

B. Vacancy sensors: manual on, automatic off.

C. General:
   1. Occupancy sensors shall comply with the latest edition of the California Building Energy Efficiency Standards, California Building Code, Part 6 and be certified by The California Energy Commission. All sensors shall be listed in the most current directory of Certified Occupancy Sensing Devices or be on file with the CEC.
   2. Sensors shall be dual-technology type infrared/ultrasonic or infrared/microphonic or as specified herein.
   3. Neutral connection required. Sensors that rely on ground leakage current for operation shall not be provided.
   4. All sensors shall have an adjustable time delay off setting and a sensitivity adjustment.
   5. Ceiling mounted sensors shall operate be line voltage or low voltage with separate control unit. Control unit shall contain power supply and relays for switching loads.
   6. Units shall be furnished with area coverage to suit application. No allowance shall be given for providing sensors improperly sized for the square footage of the controlled area.

D. Color: Device color shall be as selected by Architect, unless otherwise noted.

E. Wallbox mounted single level control sensors:
   1. Sensor shall provide minimum coverage of 900-square feet.
   2. Time delay adjustment from 30-seconds to 20-minutes. Set initial time-out setting at 4-minutes, unless otherwise specified. Set sensitivity adjustment at maximum.
   3. Load capacity of 0 to 1800watts at connected voltage.
   4. For use in small utility closets and similar areas where dual level switching is not indicated.

F. Wallbox mounted dual level control sensors:
   1. Sensor shall provide dual level switching capability and minimum coverage of 1000-square feet.
   2. Operation shall be manual (in two levels) “ON” and manual (in two levels) or automatic (full) “OFF”.
   3. Time delay adjustment from 30-seconds to 20-minutes. Set initial time-out setting at 20-minutes, unless otherwise specified. Set sensitivity adjustment at maximum.
   4. Load capacity of 50 to 1000watts at connected voltages.
   5. Integral photocell. Provide with ambient light control adjustment.
   6. For use in offices and similar areas where dual level switching is indicated.

G. Wallbox mounted combination sensor and dimmer:
   1. Sensor shall provide 0-10volt dimming capability for LED loads.
   2. Sensor shall provide minimum coverage of 20-feet for clear line-of-sight applications.
   3. Infrared only or dual-technology sensor.
   4. Time delay adjustment from 3-minutes to 20-minutes. Set initial time-out setting at 15-minutes, unless otherwise specified. Set sensitivity adjustment at maximum.
   5. For use in private offices and similar areas where dimming is indicated.

H. Ceiling or wall mounted single-directional sensors:
   1. Sensor shall provide minimum coverage of 900-square feet.
   2. Operation shall be automatic “ON” and automatic “OFF”. Provide with a manual override switch.
   3. Time delay adjustment from 30-seconds to 20-minutes. Set initial time-out setting at 10-minutes. Set sensitivity adjustment at maximum.
   4. Load capacity of 20amps per power or slave pack at connected voltage.
   5. Power pack, if required, consisting of Class 2, 24volt output transformer and relay in single housing, capable of powering up 2 sensors and mounted inside standard 4-inch square box.
   6. For use in small office, classroom, and similar areas.

I. Ceiling mounted omnidirectional sensors:
   1. Sensor shall provide minimum omnidirectional coverage of 1000-square feet.
   2. Operation shall be automatic “ON” and automatic “OFF”. Provide with a manual override switch.
   3. Time delay adjustment from 30-seconds to 20-minutes. Set initial time-out setting at 10-minutes. Set sensitivity adjustment at maximum.
   4. Load capacity of 20amps per power or slave pack at connected voltage.
   5. Power pack, if required, consisting of Class 2, 24volt output transformer and relay in single housing, capable of powering up to 2 sensors and mounted inside standard 4-inch square box.
   6. For use in large storage rooms and similar areas

J. Dimmer Switches:
   1. Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
   2. Modular; compatible with dimmer driver; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 10 percent of full brightness.
      a. Switches shall be 2-wire with no requirement for a neutral.
      b. Shall be certified by the lighting fixture manufacturer as compatible with the driver.
      c. Shall provide uniform dimming to a 10% or lower lighting output level without flicker.

K. Control: Continuously adjustable slider; with single-pole or three-way switching. Comply with UL 1472.

2.08 TIME SWITCHES

G. Wallbox mounted, line voltage type.

H. Shall be compatible with all LED lighting loads, electronic ballasts, motor loads, and inductive loads. Triac and other harmonic generating devices shall not be allowed.

I. Shall have no minimum load requirement and shall be capable of controlling up to 800watts.

J. Shall allow manual override of the preset time-out period.

K. Time switch shall be capable of operating as an “ON/OFF” switch.

L. Digital time switch:
   1. Shall have the option for a beep warning that shall sound every 5-seconds once the time switch countdown reaches one minute.
   2. Shall have an electroluminescent backlit Liquid Crystal Display that shows the timer’s countdown.
   3. Maximum setting of 30-minutes for server aisles and 10-minutes for closets.

M. Analog time switch:
   1. Spring wound rotary style.
   2. Maximum setting of 30-minutes for server aisles and 10-minutes for closets.

N. Astronomical time switch:
   1. Includes integral programming function for precise Time Zone, Longitude, and Latitude input/
   2. Weekly schedule format.
   3. Minimum 5 programmable schedules.

2.09 WALL SWITCHES

O. Comply with NEMA WD 1, UL 20, and FS W-S-896.

P. Switches, 120/277 V, 20 A:

Q. Pilot-Light Switches, 20 A:
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Hubbell; HBL1201PL for 120 and 277 V.
   b. Leviton; 1221-LH1.
   c. Pass & Seymour; PS20AC1RPL for 120 V, PS20AC1RPL7 for 277 V.
2. Description: Single pole, with neon-lighted handle, illuminated when switch is "off."

R. Key-Operated Switches, 120/277 V, 20 A:
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Hubbell; HBL1221L.
   b. Leviton; 1221-2L.
   c. Pass & Seymour; PS20AC1-L.
2. Description: Single pole, with factory-supplied key in lieu of switch handle.

S. Single-Pole, Double-Throw, Momentary-Contact, Center-off Switches: 120/277 V, 20 A; for use with mechanically held lighting contactors.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Hubbell; HBL1557.
   b. Leviton; 1257.
   c. Pass & Seymour; 1251.

T. Key-Operated, Single-Pole, Double-Throw, Momentary-Contact, Center-off Switches: 120/277 V, 20 A; for use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.
1. Products: Subject to compliance with requirements, provide one of the following:
   a. Hubbell; HBL1557L.
   b. Leviton; 1257L.
   c. Pass & Seymour; 1251L.

2.10 FLOOR MOUNTED SERVICE BOXES

A. Multi-service recessed floor box:
1. Combination power and communication cable service floor box with flush cover and recessed compartment for access to service device(s). Box shall be for installation concrete floors.
2. Box shall be constructed of formed steel with provisions for adjustments before and after pour. Access hatch shall be steel and provided with carpet trim and insert. Make allowances for floor finishes if other than carpet. Furnish with specified receptacle(s) and accessories called for on Drawings.
3. Use Hubbell #3SFB-SS series or Walker 'Resource RFB' series.

B. Cast flush floor box:
1. Single or multi-gang floor box for flush applications in concrete floor. Box shall be cast iron with brass coverplates and carpet flange. Furnish with provisions for adjustments before and after pour. Provide with all accessories such as receptacles, compartment dividers, coverplate options, rings, etc. as indicated for application on Drawings.

2. Furnish box in either shallow or deep sizes as determined by the concrete floor depth and in ganged configurations indicated on Drawings.
3. Use Hubbell #B-2400, B-4200 and B-4300 series or Walker #880C series.

C. Poke-through floor fitting:
1. Flushstyle fire rated poke-through device for installation in a 2" or 3" cured hole through a concrete floor. Provide with finish ring, receptacle, cable access, box, etc. or any other accessories to facilitate the installation indicated on Drawings.
2. Use raceway components #RC 700 series or Walker #1500 series for flush installations.
3. Use raceway components #FIT-200 series or Walker #1600 series for monument installation.

2.11 COVER PLATES

A. General:
1. Provide all coverplates with rounded edges and corners, smooth and free of grooves, embossing or other embellishment.
2. Provide mounting screws to match the plate finish.
3. Provide gang type coverplates where two or more devices are installed at one location. Individual gangable coverplates are not acceptable.
4. Provide plates of one design, standard conventionaldesigner decora style, throughout the Project unless otherwise specified.

B. Color: Coverplate color shall be ivorywhiteblackgrayas specified by the Architect, unless otherwise noted.

C. Plastic coverplates:
1. Provide smooth, high impact, self-extinguishing thermoplastic coverplates and 0.100 inches thick with rounded edges and corners.
2. Provide openings to accommodate the devices indicated on the Drawings and in the Specifications.

D. Metal coverplates:
1. Provide smooth, type 430 stainless steel coverplates, 0.035" thick with rounded edges and corners.
2. Provide openings to accommodate the devices indicated on the Drawings and in the Specifications.
3. Provide removable plastic film to protect coverplates during installation. Remove film at time of final acceptance.

E. Weatherproof coverplates:
1. Non-public areas:
   a. Provide horizontal mounted, weatherproof in-use coverplate for one duplex or one GFCI receptacle. Provide gasketed, spring loaded, vertically self-closing covers suitable for use in damp and wet locations as described in UL 514 and CEC 406. Covers shall allow the use of the device with the cover closed.
   b. Furnish base plates, covers, hinge pins, spring, and screws of corrosion resistant type 302 stainless steel.
2. Public area receptacles:
   a. Provide horizontal mounted weatherproof in-use coverplate for one duplex or one GFCI receptacle. Provide gasketed, spring loaded, lockable, vertically self-closing covers suitable for use in damp and wet locations as described in UL 514 and CEC 406. Covers shall allow the use of the device with the cover closed.

b. Furnish base plates, covers, hinge pins, spring and screws of corrosion resistant type 302 stainless steel.
c. Provide two (2) keys for each locking type coverplate.

2.12 FINISHES

A. Color: Wiring device and matching covers, color to match existing devices in each room.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Line voltage dimming at Mountain House Campus only unless noted otherwise in the plans.

C. No dimming at the Main Campus unless noted otherwise in the plans.

D. Conductors:
1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of CEC, Article 300, without pigtails.
4. Existing Conductors:
   a. Cut back and pigtail, or replace all damaged conductors.
   b. Straighten conductors that remain and remove corrosion and foreign matter.
   c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

E. Device Installation:
1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Dimmers:

1. Install dimmers within terms of their listing.
2. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.

H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multi-gang wall plates.

3.02 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."
1. Receptacles: Identify panelboard and circuit number from which served. Label cover plate using clear self-adhesive labels with minimum 1/4" high black letters. Labels shall be by Brady, P-Touch, or equal.

3.03 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.
1. Test Instruments: Use instruments that comply with UL 1436.

B. Tests for convenience receptacles
1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
   a. Nuisance trip test: Verify that a current, below 4 milliamperes (mA), will not cause the GFCI to trip. A passing GFCI receptacle will not trip below 4 mA, It should trip with a reading between 4-6 mA.
   b. Safety check test: Verify that a current of between 4-6 mA will trip the GFCI. The device passes when it trips between 4-6 mA.
   c. Radio Transmitter Test: In critical applications, a typical site radio transmitter shall be keyed in proximity, 1 foot (300mm), of the GFCI device to verify that it is immune to a nuisance trip.
   d. Critical GFCI devices shall be identified on the record drawings.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Cartridge fuses rated 600 V ac and less for use in control circuits, enclosed switches, panelboards, switchboards, enclosed controllers, and motor-control centers.

1.02 RELATED SECTIONS

A. Section 26 05 53 Identification for Electrical Systems

B. Section 26 24 13 Switchboards

C. Section 26 24 16 Panelboards

D. Section 26 28 16 Enclosed Switches & Circuit Breakers

1.03 DEFINITIONS

A. NEMA: National Electrical Manufacturer's Association

B. CEC: California Electrical Code

1.04 SUBMITTALS

A. Submit in accordance with of Section 01 33 00 Shop Drawings, Product Data and Samples.

B. Product Data: For each type of product indicated. Include construction details, material, dimensions, descriptions of individual components, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:
   1. Ambient Temperature Adjustment Information: If ratings of fuses have been adjusted to accommodate ambient temperatures, provide list of fuses with adjusted ratings.
      a. For each fuse having adjusted ratings, include location of fuse, original fuse rating, local ambient temperature, and adjusted fuse rating.
      b. Provide manufacturer's technical data on which ambient temperature adjustment calculations are based.
   2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
   3. Current-limitation curves for fuses with current-limiting characteristics.
   4. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
   5. Coordination charts and tables and related data.

1.05 QUALITY ASSURANCE

A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

C. Comply with NEMA FU 1 standards for cartridge fuses.

D. Comply with California Electrical Code 2022 Edition.

1.06 PROJECT CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 degrees Fahrenheit (5 degrees Centrigrade) or more than 100 degree Fahrenheit (38 degrees Centrigrade), apply manufacturer's ambient temperature adjustment factors to fuse ratings.

1.07 COORDINATION

A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

1.08 EXTRA MATERIALS

A. Provide extra materials that match products provided and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Fuses: Equal to 10 percent of the required quantity for each size and type, but no fewer than 3 of each size and type.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:
   1. Cooper Bussmann, Inc.
   2. Ferraz Shawmut, Inc.
   3. Or equal

2.02 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine fuses before placement. Reject fuses that are moisture damaged or physically damaged.

B. Examine holders to receive fuses for compliance with tolerances and other conditions affecting performance, such as rejection features.

C. Examine utilization equipment nameplates and product instructions. Apply fuses of sizes and with characteristics appropriate for each piece of equipment.

D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

E. Proceed with assembly only after unsatisfactory conditions have been corrected.

3.02 FUSE APPLICATIONS

A. Cartridge Fuses:
   1. Motor Branch Circuits: Class RK5, time delay.
   2. Control Circuits: Class CC, fast acting.

3.03 FUSES

A. Assemble fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

3.04 IDENTIFICATION

A. Apply labels complying with requirements for identification specified in Section 26 05 53 Identification for Electrical Systems and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block, socket, and holder.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

A. Section Includes:
   1. Fusible switches
   2. Molded-case circuit breakers (MCCBs)
   3. Enclosures

1.02 RELATED SECTIONS

A. Section 26 05 19 Low Voltage Electrical Power Conductors and Cables

B. Section 26 05 48 Vibration and Seismic Controls for Electrical Systems

C. Section 26 05 53 Identification for Electrical Systems

D. Section 26 28 13 Fuses

1.03 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. DPST: Double pole, single throw.

D. NRTL: Nationally Recognized Testing Laboratory

E. NEMA KS 1: National Electrical Manufacturers Association standards for enclosed switches

F. NEMA 250: National Electrical Manufacturers Association standards for electrical enclosures

G. CEC: California Electrical Code

1.04 SUBMITTALS

A. Submit in accordance with of Section 01 33 00 Shop Drawings, Product Data and Samples.

B. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
   1. Enclosure types and details for types other than NEMA 250, Type 1.
   2. Current and voltage ratings.
   3. Short-circuit current ratings (interrupting and withstand, as appropriate).
   4. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.

C. Field quality-control reports.
   1. Test procedures used.
   2. Test results that comply with requirements.

3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

D. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified Operation and Maintenance Data, include the following:
   1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.

1.05 QUALITY ASSURANCE

A. Source Limitations: Obtain enclosed switches overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.

B. Electrical Components, Devices, and accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

C. Comply with California Electrical Code, 2022 Edition.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
   1. Ambient Temperature: Not less than minus 22 degrees Fahrenheit and not exceeding 122 degrees Fahrenheit.
   2. Altitude: Not exceeding 6600 feet.

1.07 COORDINATION

A. Coordinate layout and placement of switches, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

1.08 EXTRA MATERIALS

A. Provide extra materials that match products provided and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Fuses: Refer to Section 26 28 13 Fuses for required spares.
   2. Fuse Pullers: Two for each size and type.

PART 2 - PRODUCTS

2.01 FUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Square D.
   2. ABB/ General Electric.
   3. Eaton.
   4. Siemens.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

C. Type HD, Heavy Duty, Single Throw, for both 240 and 600 V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

D. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.
2. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
3. Auxiliary Contact Kit: Two NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open when used in conjunction with a VFD or elevator.
4. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.02 FUSES

A. General: All power fuses shall be time-delay, high interrupting (300K AIC), current limiting type, unless otherwise noted on the Drawings. All fuses shall be the product of a single Manufacturer and shall be selectively coordinated when applied in 2:1 ratio. Types of fuses shall be as follows:
1. 0 to 600amps: UL Class J, dual element, time delay type fuse with separate overload and short-circuit elements. The fuse shall hold 500% of rated current for a minimum of 10-seconds.

B. Control and instrument fuses shall be suitable for installing in blocks or fuseholders. Exact type and rating shall be as recommended by the Manufacturer of the equipment being protected.

C. Refer to specification 26 28 13 Fuses for additional product information.

2.03 MOLDED-CASE CIRCUIT BREAKERS

A. Branch and feeder circuit breakers shall be molded case, bolt on and trip indicating.

B. Where stationary molded case circuit breakers are indicated on the Drawings to be current limiting type, they shall be current limiting as defined by UL 489 and shall not employ any fusible elements.

C. Circuit breakers shall have interrupting capacity not less than that indicated on the Drawings or if not indicated, not less than 14,000 RMS symmetrical amps for 480volt systems and 10,000 RMS symmetrical amps for 208volt systems.

D. Covers shall be sealed on non-interchangeable breakers and trip unit covers shall be sealed on interchangeable trip breakers to prevent tampering. Circuit breaker ratings shall be clearly visible after installation or engraved nameplates shall be provided stating the rating. All ferrous parts shall be plated to minimize corrosion.

E. Circuit breakers shall be toggle, quick-make and quick-break operating mechanisms with trip-free feature to prevent contacts being held closed against overcurrent conditions in the circuit. Trip position of the breakers shall be clearly indicated by operating handles moving to a center position.

F. Provide identified handle ties for single pole circuit breakers that share a neutral conductor.

G. Multipole breakers shall have a single handle to open and close all contacts simultaneously in both manual operation and under automatic tripping. Interpole barriers shall be provided inside the breaker to prevent any phase-to-phase flashover. Each pole of the breaker shall have means for Arc extinguishing.

H. All terminals shall be dual rated for aluminum or copper wire.

I. Circuit breakers with frame ratings 100amps and smaller shall be ambient temperature compensated, thermal magnetic type unless otherwise noted. Breakers shall be of full size, 1" per pole type. Panels with more than one branch breaker larger than 100amps shall be installed in distribution type panels.

J. Circuit breakers with frame ratings above 100amps through 400amps shall have solid state electronic trips with true RMS reading through the 13th harmonic with 1% accuracy, interchangeable trip via front accessible current plug, adjustable instantaneous and short time be rated as indicated on Drawings at the voltage indicated.

K. Circuit breakers with frame ratings above 400amps through 2500amps shall have microprocessor-based RMS sensing trip units with the following characteristics:
1. Interchangeable current rating plug or an adjustable trip setting to match the trip rating as indicated on Drawings.
2. Adjustable long-time pick-up setting. Minimum of five settings from 50% to 100%.
3. Adjustable long-time delay setting. Minimum of three delay bands.
4. Adjustable short time pick-up setting. Minimum of five settings from 200% to 800%.
5. Adjustable short-time delay setting. Minimum of three delay bands with I2t IN and OUT curves.
6. Adjustable instantaneous pick-up setting. Minimum of five settings from 200% to 1000%. Where the instantaneous feature is omitted on the Drawings, the trip unit shall have an instantaneous override feature.
7. Zone selective interlocking (ZSI) for short-time delay and ground-fault delay trip functions, if indicated on the drawings.
8. LED status indication to show “health” of trip unit.
9. Three-phase ammeter, if indicated on the drawings.
10. Trip indication targets on overload, ground fault and short circuit, if indicated on the drawings.
11. Auxiliary Contact Kit: Two NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open when used in conjunction with a VFD or elevator.
12. Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.

L. Accessories: Provide accessories as noted on the Drawings, i.e. shunt-trip, auxiliary contacts, undervoltage trip, alarm switch, etc.

M. Spaces in the boards shall be able to accept any combination of 1, 2 or 3-pole circuit breakers as indicated. Provide all necessary bus, device supports, and mounting hardware sized for frame, not trip rating.

N. Series rated breakers are not acceptable unless specifically noted on the Drawings.

O. Breaker shall be rated to operate in an ambient temperature of 40-degrees C and at 100% of their frame ampere rating on a continuous basis, if indicated on the drawings.

P. For circuit breakers rated or can be adjusted to 1200amps (or higher), provide zone selective interlocking (ZSI) with downstream protective devices, if indicated on the drawings. If ZSI is not indicated on the drawings, provide a key interlock maintenance mode switch and blue LED indicating lamp in the same section, which shall allow an operator to manually enable temporary protective device maintenance settings to reduce the arc flash energy level. Key shall be held captive when maintenance mode signal is disabled and removable when maintenance mode signal is enabled. Maintenance mode switch positions shall be labeled “Enabled” and “Disabled”. Blue indicating lamp shall be push-to-test type.

Q. Refer to the Drawings for breakers requiring ground fault protection. See Section 262413: Switchboards for requirements of ground fault protection system.

2.04 ENCLOSURES

A. Enclosed Switches: NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at applied location.
   1. Outdoor Locations: NEMA 250, Type 3R.
   2. Wash-Down Areas: NEMA 250, Type 4X.
   3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4X.

B. Enclosure shall be lockable in the off position.

C. Provide defeater mechanism to bypass door lock out when the operating handle is in the on position.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches for compliance with tolerances and other conditions affecting performance of the Work.

B. Proceed with Work only after unsatisfactory conditions have been corrected.

3.02 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

A. Provide individual wall-mounted switches with tops at uniform height unless otherwise indicated.

B. Comply with requirements specified in Section 26 05 48 Vibration and Seismic Controls for Electrical Systems.

C. Provide fuses in fusible devices.

D. Provide disconnect with auxiliary contacts and ½-inch conduit and 2#14 AWG between disconnect and any variable frequency drive.

3.03 IDENTIFICATION

A. Comply with requirements in Section 26 05 53 Identification for Electrical Systems.
   1. Identify conductors, interconnecting wiring, and components; provide warning signs.
   2. Label each enclosure with engraved nameplate.

3.04 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Acceptance Testing Preparation:
   1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
   2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site. Retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report identifying enclosed switches, circuit breakers and test results. Include notation of deficiencies detected, remedial action taken and observations after remedial action.

3.05 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:
   1. PV Inverter(s).
   2. PV modules or panels.
   3. DC disconnect(s).
   4. Combiner and junction boxes.
   5. Remote monitoring panel.
   6. Start-up services.

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified:
   1. Institute of Electrical and Electronic Engineers (IEEE):
      - IEEE 519; Guide for Harmonic Control and Reactive Compensation of Static Power Controllers
      - IEEE 587; Category B for Surge Withstand ability (ANSI C62.41).
      - IEEE 929; Recommended Practice for Utility Interface of Residential and Intermediate PV Systems.
   2. CEC California Electrical Code
   3. Underwriters Laboratories, Inc. (UL):
      - UL 1703; Standard for Flat-Plate Photovoltaic Modules and Panels.
      - UL 1741; Standard for Inverters, Converters and Controllers for Use in Independent Power Systems

1.03 DEFINITIONS

A. PV power system: Photovoltaic power source consisting of input and output feeders, PV inverter(s), PV modules or panels, DC disconnect(s), combiner and junction boxes and associated accessories.

1.04 SUBMITTALS

A. Submit in accordance with the requirements of Section 26 05 00: Common Work Results for Electrical, the following items:
   1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
   2. Describe system operation, equipment and indicate features of each component.
   3. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
   4. Shop Drawings to include:
      a. Completely dimensioned plan view (1/4-inch scale) of all PV modules or panels and associated equipment with dimensioned locations of all incoming conduits. Indicate clearance requirements and interconnection cable requirements. Include

feeder tags for all interconnections and feeder cables indicated on the equipment layout plan.

b. Complete interconnection schematic wiring diagrams indicating the wiring requirements and conductor terminal identification for the following items:
   1) PV inverter(s).
   2) DC disconnect(s).
   3) PV array.
   4) Combiner and junction boxes.

c. One line power diagram: Show all major power components and indicate the current draw on each feeder for wire sizing purposes. Two sets of discrete feeder tags shall be used by the Manufacturer to clearly label all feeders as follows:
   1) C1, C2, C3, etc.: Feeder tag denoting cable to be furnished and installed by the Contractor.
   2) M1, M2, M3, etc.: Feeder tag denoting cable to be furnished by PV system Supplier and installed by the Contractor.

5. Submit energy efficiency compliance documentation.
6. Furnish structural calculations for equipment and mounting structure anchorage as described in Section 260010: Basic Electrical Requirements. Provide weights, dimensions, and center of gravity for structural calculations.
7. Copy of complete in-factory tests run prior to shipment.
8. Submit Manufacturer's installation instructions.
9. Complete Bill of Materials listing all components; include equipment height, width, depth, and weight.
10. Warranty.

B. Dimensions and configurations of PV components shall conform to the space allocated on the Drawings. The Contractor shall submit a revised layout if the equipment furnished varies in size from that indicated on Drawings for Engineer's approval.

C. Manufacturer's qualifications: Furnish satisfactory proof of required experience specified herein for Manufacturer of each product.

D. Installer's qualifications: Furnish satisfactory proof of required experience specified herein for system installer.

E. The Manufacturer will supply the Owner copies of all readings taken during the certification process.

F. Copies of the completed and submitted rebate and incentive program documents.

1.05 OPERATION AND MAINTENANCE MANUAL

A. Supply operation and maintenance manuals in accordance with the requirements of Section 26 00 10: Basic Electrical Requirements, to include the following:
   1. A detailed explanation of the operation of the system.
   2. Instructions for routine maintenance.
   3. Pictorial parts list and part numbers.
   4. Schematic wiring diagrams.
   5. Telephone numbers for the authorized parts and service distributor.
   6. Include all service bulletins.
   7. Final testing reports.

1.06 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

C. Manufacturer qualifications: Firms regularly engaged in the manufacturing of PV power systems of types and sizes required for this Project and whose products have been in satisfactory use in similar service for not less than 5-years.

D. The unit shall be factory assembled and tested by the PV power system provider or by a firm holding a contract as the authorized distributor of the equipment and shipped to the Project site by his authorized dealer having a parts facility within 100-miles of the Project. Upon request, the Contractor shall furnish to the Engineer a notarized letter of certification stating that in fact the bidder meets the requirements of this paragraph.

E. Installer's qualifications: Firms with a minimum of 5-years of successful installation experience with Projects utilizing PV power systems similar to that of this Project.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Shipment: The equipment specified herein shall be delivered via an air-suspension van, complete and ready for installation, to the Owner's Project site. The Contractor shall be given at least two weeks notification of intent to ship and vendor shall not ship without written approval by the Engineer.

B. Preparation for shipment:
   1. Protective coatings:
      a. PV inverter and other similar self-contained or enclosed components shall be shop primed and finished. Surfaces that will be inaccessible after assembly shall be painted or otherwise protected before assembly by a method that provides protection for the life of the equipment.
      b. After final factory tests and acceptance, prior to packing, crating or shipment, all machined and/or polished and other ferrous and non-ferrous surfaces that are not to be painted shall be coated with rust preventive compounds according to the best judgment and experience of the Manufacturer.
      c. Primers for steel and iron surfaces shall be suitable for the service and operating temperatures to be encountered during the life of the equipment.
      d. All exterior parts of equipment shall receive factory paint in the Manufacturer's standard colors.
   2. Packing: All material and equipment shall be protected to ensure cleanliness during shipment, storage, and erection.
      a. All equipment shall be adequately packed to prevent damage from handling, weather, shock, vibration, and corrosion during shipment.
      b. All boxes, crates and shipments shall be identified with equipment numbers, tag numbers, mark numbers or other identification.
      c. All boards, panels, racks, and equipment shall be prepared for shipment with provisions for lifting and/or skidding. All lifting points shall be clearly marked.
      d. Each shipping unit shall be braced adequately and rigidly both internally and externally to prevent damage during transit or in the process of erection.
      e. All original shipping stops, bolts, ties, shunts, and other such hardware shall be reinstalled in all instruments and devices and vendor shall provide any other necessary protection required to prevent damage during shipment.

f. When assemblies are supplied that require disassembly for installation or are shipped disassembled, each piece of the subassembly so affected shall be uniquely identified to its assembly position.
g. Manufacturer shall identify all equipment and components with metal or heavy linen tags substantially wired to the object and bearing the appropriate designation or tag number.
h. All loose peripheral equipment shall be boxed, crated, or otherwise completely enclosed and protected during storage, handling, and shipment. Each item of equipment shall be clearly marked. All equipment shall be protected from possible rough handling or vibration during transit.

C. Delivery: PV power system components shall not be delivered to the Project site until Contractor is ready for installation and construction is complete in area. Equipment damaged during shipping shall be replaced and returned to Manufacturer at no cost to Owner.

D. Storage: Storage on Project site is not acceptable.

E. Handling: Handle in accordance with Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

1.08 UTILITY INTERCONNECTION REQUIREMENTS

A. The PV power system provider shall be responsible for acquiring the utility interconnection approval permit. This includes acquiring all forms, documents, permit applications, associated fees and attending any required meetings with the utility.

B. The PV power system provider shall comply with all utility interconnection requirements. Additional requirements deemed necessary by the utility that were not included by the PV inverter Manufacturer will be provided by the PV power system provider at no cost to Owner.

C. The Engineer shall be copied on all forms, documents, applications, permits and correspondence between the PV power system provider and utility.

1.09 REBATE AND INCENTIVE PROGRAMS

A. The PV power system provider shall be responsible for acquiring, completing, and submitting information to qualify and reserve funds from rebate and incentive programs offered by state and federal programs in the Owner’s name.

B. The PV power system provider shall coordinate all inspections and perform all follow-up Work deemed necessary in order for the Owner to receive the rebate or incentive compensation.

C. The Engineer shall be copied on all forms, documents, applications, permits and associated correspondence.

1.10 WARRANTY

A. Units and components offered under this Section shall be covered by a 15-year parts and labor warranty for malfunctions resulting from defects in materials and workmanship. Warranty shall

begin upon acceptance by the Owner. The exception to this shall be the PV modules or panels which shall be covered by a 25-years parts and labor warranty.

B. The PV power system Supplier shall promptly correct any deficiencies in the materials and workmanship, which occur during the parts and labor warrantee to the satisfaction of the Engineer at no additional cost to the Owner.

C. PV modules or panels shall be warrantee to be free from defective materials and workmanship. The PV power system Supplier shall repair or replace, at their option, without charge to the Owner, any PV module or panel that fails as a result of defective workmanship or materials within 5 years from the date of Engineer's acceptance of the completed installation.

D. In addition, PV power system Supplier agrees to replace or repair at their option, on a pro-rated basis after the 5-year parts and labor warranty, any PV module or panel that fails for the full 25-years warranty period.

E. Warranty discharge limitations shall be specified and shall be consistent with these Specifications.

1.11 SYSTEM START-UP

A. Upon completion of installation, a factory trained dealer service representative shall perform initial start-up of the PV power system. Sufficient time shall be allowed to properly check the system out and perform required minor adjustments before the Engineer's witnessed test shall begin.

1.12 MAINTENANCE

A. Maintenance services:
   1. For a period of 1 year following acceptance the equipment Supplier shall have a person(s) familiar with this Project attend 4 meetings with the Owner's Representative to review system performance, operation, and any system problems. That person shall provide a written summary of the items discussed in each meeting and a schedule of when the system problems will be corrected. The report is due within 7 working days after each meeting.
   2. Provide a 2-year Manufacturer's maintenance contract of the full PV power system. The 2-year period shall begin from the date of acceptance on a total no-charge basis. During this period, Manufacturer's maintenance staff shall visit the installation not less than 2-times for routine inspection and preventive maintenance. The maintenance visits shall be scheduled at 6-month intervals and shall be coordinated with the Owner and performed at times selected by the Owner. A written report of each maintenance visit shall be submitted to the Owner within 10-days. The vendor shall submit a preventative maintenance schedule outlining in detail the following:
      a. Time and duration when services are to be performed.
      b. Work to be performed. Minimum Work per visit shall include voltage and current readings on all PV modules or panels.
      c. Shutdowns required for service.
      d. Company or Contractor support services required.
   3. Manufacturer of PV power system shall have service and maintenance personnel solely in employ of and trained by Manufacturer in the maintenance, field testing, repair, and adjustment of the type system to be provided.
      a. Service and maintenance personnel to be used for on-site testing and placing system in operation to have minimum of 2-years of experience with system to be provided.

b. Service and maintenance personnel shall be capable of responding to requests for emergency on-site service calls within 24 hours from initial call during normal working hours (8 a.m. to 5 p.m. Monday, through Friday) and within 48 hours during off hours (holidays, weekends, evenings after 5 p.m.).

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
   1. PV inverters: Refer to the latest California Energy Commission List for Approved Grid Support Inverters.
   2. PV modules or panels:
      a. LG
      b. Panasonic
      c. REC Solar
      d. Silfab
      e. SunPower

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

2.02 GENERAL

A. The PV power system shall consist of the following:
   1. PV inverter(s).
   2. Utility interconnection protection.
   3. System metering, system status indicators and system alarm annunciation circuitry.
   4. PV modules or panels.
   5. Accessories as specified herein.

B. Installation and wiring methods shall conform to the requirements set forth in the California Electric Code Article 690. Use of 90-degree C rated wiring at the 75-degree C ampacity shall be used. All correction factors for ambient temperatures shall be based on the 75-degree C ampacity rating.

C. Logic and control connections shall be routed away from any power runs.

2.03 RATINGS

A. The PV system kW rating shall be as indicated on the Drawings. Each PV system shall consist of the quantity of PV inverters and PV modules as indicated on the Drawings.

B. Available short circuit current RMS symmetrical at the input to the system is 65,000amps at 480volt AC, therefore all non-automatic breakers exposed to this current (inputs and bypass) shall be adequately rated to withstand the short circuit in the closed mode and all automatic circuit breakers exposed to this current shall be adequately rated to interrupt it. All switchgear bussing shall be braced to withstand the specified short circuit current.

2.04 PV INVERTER CHARACTERISTICS

A. The PV inverter shall be UL 1741 Listed.

B. The PV inverter shall be listed on the latest California Energy Commission List for Approved Grid Support Inverters.

C. DC Input:
   1. Voltage Range: 300 to 600volt DC.
   2. Surge withstand ability: Per IEEE 587/ANSI C62.41, category B standards.

D. AC Output:
   1. Rating: Refer to drawings.
   2. Voltage: 277/480volt AC, plus or minus 10%, 3-phase, 4-wire, plus ground.
   3. Frequency: 60 Hz., plus or minus 0.5 Hz.
   4. Surge withstand ability: Per IEEE 587/ANSI C62.41, Category B Standards.
   5. AC Line Filter: Per IEEE 519 harmonic distortion requirements for voltage and current.

E. Noise level: Noise generated by the PV inverter(s) under any condition of normal operation shall not exceed the allowable sound pressure level of 75dBa (75/150 CPS octave band) measured at five feet from the nearest surface of the cabinet using a sound level measuring device equivalent to a General Radio type 1551B. If noise generated by the PV inverter(s) exceeds this value, the Manufacturer shall install, at his own expense, additional acoustical treatment on the walls and ceiling of the PV inverter equipment room to reduce the noise level to acceptable values.

F. Environmental conditions: The PV inverter shall be capable of withstanding any combination of the following external environmental conditions without mechanical or electrical damage or degradation of operating characteristics.
   1. Operating ambient temperature: 0-degrees C to 40-degrees C.
   2. Non-operating and storage ambient temperature: -10-degrees C to 40-degrees C.
   3. Relative humidity: 5% to 95% non-condensing for all temperatures in the temperature range stated above.
   4. Altitude to 4000-feet above means sea level without derating.

2.05 INSTRUMENTATION

A. The system control panel shall be equipped with a display screen capable of displaying the following:
   1. Output AC voltage and current for all phases.
   2. Output power in AC kW and kWh (+/- 1% accuracy).
   3. Input DC voltage and current.
   4. Date and time.
   5. Mode status and alarm codes.
   6. Protective function set points.

2.06 CONTROLS

A. The following system level control functions shall be provided:
   1. Start/ Stop switch to enable or disable the PV inverter. Located on the front panel.
   2. Maximum power tracking circuitry to achieve maximum power output.
   3. Automatic start-up when sufficient DC voltage is present for a specified time.
   4. Automatic turn-off when insufficient DC voltage is present for a specified time.
   5. Lamp test/reset pushbutton.
   6. Audible alarm test/reset pushbutton.
   7. Audible alarm silence button.

2.07 PV MODULES OR PANELS

A. General:
   1. PV panels shall be UL 1703 Listed.
   2. Each panel shall have bypass diodes for shadow tolerance.
   3. Fire resistance shall be at least Class B.
   4. PV panels shall withstand winds up to 140mph without damage to the modules or roofing structure.
   5. PV panels shall be connected in arrays, such that the array does not to exceed 600volt DC under any conditions.

B. PV Panels:
   1. Installation method shall be per manufacturer's instructions or approved methods.
   2. The PV module or panel shall have a minimum efficiency rating of at least 16.5%.

2.08 DC DISCONNECT

A. Wall mounted local DC disconnect of the load break circuit breaker type with shunt trip shall be supplied.

B. This disconnect shall be 3-pole with the two outside poles used to open the leads to the PV inverter.

C. The PV inverter shall automatically be disconnected from the PV arrays by opening the DC disconnect by shunt trip operation due to interlock operation or fault isolation.

D. The disconnect shall contain the following:
   1. Circumference crimped cable termination lugs.
   2. NEMA 1 cabinet construction.
   3. Provisions for handling with a forklift from the bottom.
   4. ANSI 61 light gray paint.
   5. Hinged or removable front panels.
   6. One normally open and one normally closed contact to indicate main disconnect position.

2.09 COMBINER AND JUNCTION BOXES

A. Combiner and junction boxes used to terminate and fuse PV arrays with other PV arrays shall be UL 1741 Listed.

B. Blocking diodes shall be incorporated with each PV array circuit to prevent back feeding.

C. Each PV array circuit shall be fused.

D. Enclosures shall be wall mounted, NEMA 3R and rated for 600volt DC.

E. Enclosure shall have chassis ground.

2.10 CONSTRUCTION AND INTERWIRING

A. The PV inverter shall be constructed in NEMA Type 3R outdoor enclosure, unless otherwise noted on the drawings.

B. Parts placement: The PV inverter shall be designed to permit ready access to modules and assemblies. Parts, test points and terminals shall be placed so that they are accessible for

circuit checking, adjustment, and maintenance without the removal of any adjacent module or assembly.

2.11 SOURCE QUALITY CONTROL

A. Verification of performance:
   1. The PV inverter shall be inspected and tested in the Manufacturer's plant to demonstrate achievement of the system's power objectives and for full compliance with the requirements of the Contract Documents.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of PV power system installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Install PV power system in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. Installation, circuit requirements, disconnecting means, wiring methods, grounding and bonding, markings, signage, and interconnections shall conform to the requirements set forth in the CEC (California Electric Code - 2022) Article 690.

C. Feeders and branch circuits for direct-current (DC) systems in wet locations shall be type XHHW-2 copper conductors.

3.03 FIELD QUALITY CONTROL

A. Manufacturer's field service: Contractor shall arrange and pay for the services of a factory-authorized service representative to supervise the initial start-up, pretesting, and adjustment of the PV power system.

B. Independent testing: Contractor shall arrange and pay for the services of an independent Testing Agency to perform all quality control electrical testing, calibration and inspection required herein. Testing Agencies objectives shall be to:
   1. Assure PV power system installation conforms to specified requirements and operates within specified tolerances.
   2. Field test and inspect to ensure operation in accordance with Manufacturer's recommendations and Specifications.
   3. Prepare final test report including results, observations, failures, adjustments, and remedies.
   4. Apply label on PV power system upon satisfactory completion of tests and results.
   5. Verify ratings and settings and make final adjustments.

C. Engineer witnessed testing: Allow a period of 8-hours per PV power system for Engineer review and final check.

D. At least three weeks prior to any testing notify the Engineer so that arrangements can be made for witnessing tests, if deemed necessary. All pretesting shall have been tested satisfactorily prior to the Engineer's witnessed test.

E. The Contractor shall supply a suitable and stable source of electrical power to each test site. The Testing Agency shall specify the specific power requirements.

F. Testing of overcurrent protective devices shall be done only after all devices are installed and prior to system being energized.

G. Prefunctional testing:
   1. Provide Testing Agency with Contract Documents and Manufacturer instructions for installation and testing.
   2. Visual and mechanical inspection:
      a. Inspect for physical damage, defects alignment and fit.
      b. Perform mechanical operational tests in accordance with Manufacturer's instructions.
      c. Compare nameplate information and connections to Contract Documents.
      d. Check tightness of all control and power connections.
      e. Check that all covers, barriers, and doors are secure.
      f. Verify interlock operation.
   3. Pretesting:
      a. Upon completing system installation, align and adjust the system and perform complete pretesting to determine conformance with the requirements of the Contract Documents. Correct any deficiencies observed in the pretesting. Replace all malfunctioning or damaged items and retest until satisfactory results are achieved.
      b. Insulation resistance tests of all buses, components, and control circuits.
      c. Continuity tests of circuits.
      d. Provide Testing Agency with Contract Documents and Manufacturer's instructions for installation and testing.
   4. PV module or panel certification: Prior to the load testing of the PV modules or panels and in the presence of the Engineer, each installation shall be certified in writing by the PV module or panel Manufacturer.
      a. As part of the certification process, the module or panel open circuit voltage shall be taken for each PV module or panel and recorded.
      b. DC voltage and current readings shall be taken at the junction or combiner boxes for each PV array and recorded.
      c. Torque shall be checked on ALL bolted connections.
      d. PV modules or panels shall be completely cleaned.

H. Functional performance testing:
   1. Contractor shall provide all tools, labor, and load bank to perform the performance tests on the PV power system listed below.
   2. Test and cycle all alarm and annunciation circuits to verify proper operation.
   3. Test and verify all interlocks and shutdowns (including rapid shutdown).
   4. Furnish all meters and recording equipment required to fully document the tests and the performance of the system and prepare typewritten reports of all tests. Review and sign all test reports attesting to their accuracy as required by the Engineer.
   5. The Contractor shall provide the following equipment and services:
      a. Load bank cables.
      b. Load bank(s).
   6. The Contractor shall provide the following equipment and services:

a. Field labor to start emergency generator and provide assistance during the on-site testing.
b. Retain the services of Testing Agency for infrared scanning during load bank testing.

7. With PV power system operating with the utility at full power load (utilizing a load bank as the load) and in the presence of the Engineer perform and document the following tests:
   a. PV power system: DC input voltage, current and power
   b. PV power system and PV inverter: AC output voltage, current, power, power factor and THD with harmonic spectrum graph showing individual harmonic components.
   c. Efficiency: Calculate the PV power system efficiency and PV inverter efficiency. (Efficiency shall be defined as the AC RMS Output Power/ DC Input Power.)
   d. Remove utility source and measure response time for PV power system to shutdown.
8. The operation of the equipment installation does not constitute an acceptance of the Work by the Owner. The final acceptance is to be made after the equipment has been adjusted and has demonstrated to the Engineer's satisfaction that if fulfills the requirements of the Plans and Specifications and Supplier has furnished all required certificates in accordance with testing procedures indicated.
9. Should it be found that the equipment or any portion thereof, furnished under this Section, fails to comply with the Specifications forming part thereof, with respect or regard to the quality amount or value of materials, appliances or labor used in the Work, it shall be rejected and replaced. All Work disturbed by changes necessitated in consequence of said defects or imperfections shall be restored to the original condition.
10. Contractor shall replace at no cost to the Owner all devices which are found defective or do not operate within factory specified tolerances.

I. In the event that the system fails to function properly during the testing as a result of inadequate pretesting or preparation, the Contractor shall bear all costs incurred by the necessity for retesting including test equipment, transportation, subsistence and Engineer's hourly rate.

J. Contractor shall submit the Testing Agency's final report for review prior to Project closeout and final acceptance by the Owner. Test report shall indicate test dates, devices tested, results, observations, deficiencies, and remedies. Include a copy of the test report in the Owner's operation and maintenance manuals.

3.04 TRAINING

A. Provisions shall be made for an on-site 2-day training program, one of the days shall be concurrent with the field-testing program. The training shall include, but not be limited to, a theoretical presentation of the PV power system and a thorough explanation and training in general operating procedures including system level troubleshooting. The classes shall be for 3 to 6 students at the discretion of the Owner.

B. The Contractor shall furnish all materials, books, and other aids for each student at no charge to Owner.

C. The Contractor shall furnish a training video that includes the topics covered.

D. Contractor shall schedule training with a minimum of 7-days advance notice.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes transfer switches rated 600 V and less, including the following:
   1. Automatic transfer switches.
   2. Remote annunciation systems.
   3. Remote annunciation and control systems.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, weights, operating characteristics, furnished specialties, and accessories.
   1. Provide a withstand rating chart that includes required protective devices to meet the listed ratings.

B. Shop Drawings: Dimensioned plans, elevations, sections, and details showing minimum clearances, conductor entry provisions, gutter space, installed features and devices, and material lists for each switch specified.

C. Qualification Data: For manufacturer and testing agency.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For each type of product to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
   1. Features and operating sequences, manual.
   2. List of all factory settings of relays; provide relay-setting and calibration instructions, including software, where applicable.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Maintain a service center capable of providing training, parts, and emergency maintenance repairs within a response period of less than eight hours from time of notification.

B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
   1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

C. Source Limitations: Obtain manual transfer switches as part of the engine generator package, through one source from a single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with NEMA ICS 1.

F. Comply with CEC.

G. Comply with NFPA 110.

H. Comply with UL 1008 unless requirements of these Specifications are stricter.

1.05 COORDINATION

A. Coordinate the location of the transfer switch in the main electrical room when dimensions differ from plan.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products available from the Generator Vendor as part of a package:
   1. Contactor Style Transfer Switches:
      a. Schneider; ASCO Power Technologies.
      b. Kohler Power Systems; Generator Division.
      c. ABB / GE Zenith Controls.
      d. Onan/Cummins Power Generation; Industrial Business Group.

2.02 GENERAL TRANSFER-SWITCH PRODUCT REQUIREMENTS

A. Indicated Current Ratings: Apply as defined in UL 1008 for continuous loading and total system transfer.

B. Tested Fault-Current Closing and Withstand Ratings: Adequate for duty imposed by protective devices at installation locations in Project under the fault conditions indicated, based on testing according to UL 1008.
   1. Where transfer switch includes internal fault-current protection, rating of switch and trip unit combination shall exceed indicated fault-current value at installation location.

C. Solid-State Controls: Repetitive accuracy of all settings shall be plus or minus 2 percent or better over an operating temperature range of minus 20 to plus 70 deg C.

D. Resistance to Damage by Voltage Transients: Components shall meet or exceed voltage-surge withstand capability requirements when tested according to IEEE C62.41. Components shall meet or exceed voltage-impulse withstand test of NEMA ICS 1.

E. Electrical Operation: Accomplish by a nonfused, momentarily energized solenoid or electric-motor-operated mechanism, mechanically and electrically interlocked in both directions.

F. Switch Characteristics: Designed for continuous-duty repetitive transfer of full-rated current between active power sources.

1. Limitation: Switches using molded-case switches or circuit breakers or insulated-case circuit-breaker components are not acceptable.
2. Switch Action: Double throw; mechanically held in both directions.
3. Contacts: Silver composition or silver alloy for load-current switching. Conventional manual transfer-switch units, rated 225 A and higher, shall have separate arcing contacts.

G. Neutral Switching. Where four-pole switches are indicated, provide neutral pole switched simultaneously with phase poles.

H. Heater: Equip switches exposed to outdoor temperatures and humidity, and other units indicated, with an internal heater. Provide thermostat within enclosure to control heater.

I. Annunciation, Control, and Programming Interface Components: Devices at transfer switches for communicating with remote programming devices, annunciators, or annunciator and control panels shall have communication capability matched with remote device.

J. Factory Wiring: Train and bundle factory wiring and label, consistent with Shop Drawings, either by color-code or by numbered or lettered wire and cable tape markers at terminations. Color-coding and wire and cable tape markers are specified in Division 26 Section "Identification for Electrical Systems."
1. Designated Terminals: Pressure type, suitable for types and sizes of field wiring indicated.
2. Power-Terminal Arrangement and Field-Wiring Space: Suitable for top, side, or bottom entrance of feeder conductors as indicated.
3. Control Wiring: Equipped with lugs suitable for connection to terminal strips.

K. Enclosures: Provide switch as enclosed style for installation in the NEMA 1 enclosure.

2.03 AUTOMATIC TRANSFER SWITCHES

A. Comply with Level 1 equipment according to NFPA 110.

B. Switching Arrangement: Double-throw type, incapable of pauses or intermediate position stops during normal functioning, unless otherwise indicated.

C. Manual Switch Operation: Unloaded. Control circuit automatically disconnects from electrical operator during manual operation.

D. Signal-Before-Transfer Contacts: A set of normally open/normally closed dry contacts operates in advance of retransfer to normal source. Interval is adjustable from 1 to 30 seconds.

E. In-Phase Monitor: Factory-wired, internal relay controls transfer so it occurs only when the two sources are synchronized in phase. Relay compares phase relationship and frequency difference between normal and emergency sources and initiates transfer when both sources are within 15 electrical degrees, and only if transfer can be completed within 60 electrical degrees. Transfer is initiated only if both sources are within 2 Hz of nominal frequency and 70 percent or more of nominal voltage.

F. Automatic Transfer-Switch Features:

1. Undervoltage Sensing for Each Phase of Normal Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100 percent of nominal, and dropout voltage is adjustable from 75 to 98 percent of pickup value. Factory set for pickup at 90 percent and dropout at 85 percent.

2. Adjustable Time Delay: For override of normal-source voltage sensing to delay transfer and engine start signals. Adjustable from zero to six seconds. Settings to be adjusted in the field during startup and commissioning.
3. Voltage/Frequency Lockout Relay: Prevent premature transfer to generator. Pickup voltage shall be adjustable from 85 to 100 percent of nominal. Factory set for pickup at 90 percent. Pickup frequency shall be adjustable from 90 to 100 percent of nominal. Factory set for pickup at 95 percent.
4. Time Delay for Retransfer to Normal Source: Adjustable from 0 to 30 minutes, and factory set for 10 minutes to automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
5. Test Switch: Simulate normal-source failure.
6. Switch-Position Pilot Lights: Indicate source to which load is connected.
7. Source-Available Indicating Lights: Supervise sources via transfer-switch normal- and emergency-source sensing circuits.
    a. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
    b. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."
8. Unassigned Auxiliary Contacts: Two normally open, single-pole, double-throw contacts for each switch position, rated 10 A at 240-V ac.
9. Transfer Override Switch: Overrides automatic retransfer control so automatic transfer switch will remain connected to emergency power source regardless of condition of normal source. Pilot light indicates override status.
10. Engine Starting Contacts: One isolated and normally closed, and one isolated and normally open; rated 10 A at 32-V dc minimum.
11. Engine Shutdown Contacts: Time delay adjustable from zero to five minutes, and factory set for five minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.
12. Engine-Generator Exerciser: Solid-state, programmable-time switch starts engine generator and transfers load to it from normal source for a preset time, then retransfers and shuts down engine after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods are adjustable from 10 to 30 minutes. Factory settings are for 30-day exercise cycle, 20-minute running period, and 5-minute cool-down period. Exerciser features include the following:
    a. Exerciser Transfer Selector Switch: Permits selection of exercise with and without load transfer.
    b. Push-button programming control with digital display of settings.
    c. Integral battery operation of time switch when normal control power is not available.
    d. This feature is to be available and only activated in the field per the direction of the owner’s representative.

2.04 SOURCE QUALITY CONTROL

A. Factory test and inspect components, assembled switches, and associated equipment. Ensure proper operation. Check transfer time and voltage, frequency, and time-delay settings for compliance with specified requirements. Perform dielectric strength test complying with NEMA ICS 1.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Identify components according to Division 26 Section "Identification for Electrical Systems”.

B. Provide a placard indicating the sequence of operation including load shedding.

C. The installation and operation shall comply with NFPA 110 for an optional standby system.

D. Space in the main electrical room is limited. If a substitution is made from the transfer switch specified it will be the Contractor's responsibility to ensure that it will fit into the allotted space. Note that with a single point of egress double the clearance is required.

3.02 CONNECTIONS

A. Wiring to Remote Components: Match type and number of cables and conductors to control and communication requirements of transfer switches as recommended by manufacturer. Increase raceway sizes at no additional cost to Owner if necessary to accommodate required wiring.

B. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems".

C. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables".

3.03 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

B. Testing Agency: Engage a qualified independent testing and inspecting agency to perform tests and inspections and prepare test reports.
   1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installation, including connections, and to assist in testing.
   2. After installing equipment and after electrical circuitry has been energized, test for compliance with requirements.
   3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
   4. Measure insulation resistance phase-to-phase and phase-to-ground with insulation-resistance tester. Include external annunciation and control circuits. Use test voltages and procedure recommended by manufacturer. Comply with manufacturer's specified minimum resistance.
      a. Check for electrical continuity of circuits and for short circuits.
      b. Inspect for physical damage, proper installation and connection, and integrity of barriers, covers, and safety features.
      c. Verify that automatic and manual transfer warnings are properly placed.
      d. Perform automatic and manual transfer operation.
   5. After energizing circuits, demonstrate interlocking sequence and operational function for each switch.
      a. Verify utility power rotation and coordinate throughout the distribution system.
      b. Simulate power failures of normal source to automatic transfer switches and of emergency source with normal source available.
      c. Simulate loss of phase-to-ground voltage for each phase of normal source.
      d. Verify time-delay settings.
      e. Verify pickup and dropout voltages by data readout or inspection of control settings.

f. Perform contact-resistance test across main contacts and correct values exceeding 500 microhms and values for 1 pole deviating by more than 50 percent from other poles.
g. Verify proper sequence and correct timing of automatic engine starting, transfer time delay, retransfer time delay on restoration of normal power, and engine cool-down and shutdown.

C. Coordinate tests with a generator connected and operating.
1. Contractor to furnish a portable generator, fuel, cables and personnel to connect and accomplish the test.

D. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation and contact resistances and time delays. Attach a label or tag to each tested component indicating satisfactory completion of tests.

E. Remove and replace malfunctioning units and retest as specified above.

F. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switch. Remove all access panels so joints and connections are accessible to portable scanner.
1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switch 11 months after date of Substantial Completion.
2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
3. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.04 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain transfer switches and related equipment as specified below. Refer to Division 01 Section "Demonstration and Training".

B. Factory authorized service representative shall conduct two initial ***4***-hour training sessions for Owner's Maintenance Personnel upon completion and acceptance of system. Provide one 4-hour follow-up training session to be scheduled by Owner within one year of the final date of the final initial training session. Instructions shall include operation, maintenance, adjusting and testing of equipment with both classroom training and hands-on instruction. The agenda for the second session will be by Owner.

C. Contractor shall provide a training video.

D. Contractor shall schedule training with a minimum of **7**-days advance notice.

E. Coordinate this training when there is a portable generator in place.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:
   1. Surge protective devices (SPD).

B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.

1.02 REFERENCES

A. Comply with the latest edition of the following applicable Specifications and standards except as otherwise indicated or specified.
   1. American National Standards Institute, Inc. (ANSI)/Institute of Electrical and Electronics Engineers (IEEE):
      ANSI/IEEE C62.1; Standard for Surge Arresters for Alternating Current Power Circuits.
      ANSI/IEEE C62.11; Standard for Metal-Oxide Surge Arrestors for AC Power Circuits.
      ANSI/IEEE C62.41.1; Guide on the Surges Environment in Low-Voltage (1000V and Less) AC Power Circuits.
      ANSI/IEEE C62.41.2; Recommended Practices on Characterization of Surges in Low-Voltage (1000V and Less) AC Power Circuits.
      ANSI/IEEE C62.45; Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits.
   2. Underwriters Laboratory, Inc. (UL):
      UL 50; Cabinets and Boxes.
      UL 1283 Electromagnetic Interference Filters. [Type 2 only]
      UL 1449; Surge Protective Devices, 4th Edition.
   3. National Electrical Manufacturers Association (NEMA):
      NEMA PB 1.1; General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.

1.03 SYSTEM DESCRIPTION

A. Provide surge protective device (SPD) equipment having the electrical characteristics, ratings, and modifications as specified herein and as shown on the drawings. To maximize performance and reliability and to obtain the lowest possible let-through voltages, the ac surge protection shall be integrated into electrical distribution equipment such as switchboards, and panelboards.

B. SPD units and all components shall be designed, manufactured, and tested in accordance with the latest applicable UL standard (ANSI/UL 1449 4th Edition).

C. SPD units shall be furnished in two Types. Type 1 and Type 2 as outlined below:
   1. Type 1: Permanently connected SPDs installed on the line or load side of main disconnect device(s), at main switchboard. This type closely relates to the devices previously referred to as secondary surge arrestors. These Type 1 SPDs should be specially suited to conduct the high energy impulses from lightning strikes.

2. Type 2: Permanently connected SPD installed on the load side of the service panel main disconnect device(s). This type most closely relates to devices that were previously classified as Transient Voltage Surge Suppression (TVSS). These Type 2 SPDs are especially suited for distribution boards and panelboard applications.

1.04 SUBMITTALS

A. Submit in accordance with the requirements of Section 26 05 00: Common Work Results for Electrical, the following items:
   1. Data/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
   2. Describe system operation, equipment and dimensions and indicate features of each component.
   3. Clearly mark on each data sheet the specific item(s) being submitted and the proposed application.
   4. Shop Drawings: Include elevations, cabinet dimensions, complete component listing and layout within cabinet, amperage ratings and capacities, system characteristics and wiring diagrams.
   5. Submit Manufacturer's installation instructions.
   6. Complete bill of material listing all components.
   7. Warranty.

1.05 OPERATION AND MAINTENANCE MANUAL

A. Supply operation and maintenance manuals in accordance with the requirements of Section 260010: Basic Electrical Requirements, to include the following.
   1. A detailed explanation of the operation of the system.
   2. Instruments for routine maintenance.
   3. Pictorial parts list and parts number.
   4. Telephone numbers for authorized parts and service distributors.

1.06 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: SPD components shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner.

B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

C. Handling: Handle in accordance with the Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

1.08 WARRANTY

A. Units and components offered under this Section shall be covered by a *5*-year parts and labor warranty for malfunctions resulting from defects in materials and workmanship. Warranty shall begin upon acceptance by the Owner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
1. Schneider Electric/ Square D.
2. ABB/ General Electric.
3. Eaton.
4. Siemens.

B. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

2.02 GENERAL

A. All Specification noted herein apply to the switchboard, and panelboard units, unless otherwise noted.

B. The SPD system utilizes diversion modules to suppress and divert transient voltage and surge currents. The system is designed to provide protection for sensitive electronic devices against the effects of surges, transients, and electrical line noise.

C. Environmental requirements:
1. Operating temperature: -40-degree C to 60-degree C.
2. Relative humidity: 0% to 95%.
3. Operating altitude: 0 to 12,000-feet.
4. Audible noise: Less than 35-dB.

D. Electrical requirements:
1. Unit operating voltage: The SPD system voltage shall be as indicated on the Drawings.
2. Maximum continuous operating voltage “MCOV”: The MVOC shall not be less than 125% of the nominal system operating voltage.
3. The suppression system shall incorporate thermally protected metal-oxide varistors “MOVs” as the core surge suppression component for the service entrance and all other distribution levels. The system shall not utilize silicon avalanche diodes, selenium cells, air gaps, or other components that may crowbar the system voltage leading to system upset or create any environmental hazards.
4. Protection modes: The SPD must protect all modes of the electrical system being utilized. The required protection modes are indicated by bullets in the following table:

PROTECTION MODES TABLE

Configuration	L-N	L-G	L-L	N-G
WYE	•	•	•	•
Delta	N/A	•	•	N/A

PROTECTION MODES TABLE				
Configuration	L-N	L-G	L-L	N-G
Single Split Phase	●	●	●	●
High Leg Delta	●	●	●	●

5. Nominal discharge current (In): All SPDs applied to the distribution system shall have a 20kA In rating regardless of their SPD Type (includes Types 1 and 2) or operating voltage. SPDs having an in less than 20kA shall be rejected.
6. Voltage protection rating (VPR): The maximum ANSI/UL 1449 4th Edition VPR for the device shall not exceed the following:

VOLTAGE PROTECTION RATING TABLE				
System Voltage	**L-N**	**L-G**	**L-L**	**N-G**
120/208	700V	700V	1200V	700V
277/480	1200V	1200V	2000V	1200V
346/600	1500V	1500V	3000V	1500V

E. SPD design:
1. The SPD shall be maintenance free and shall not require any user intervention throughout its life. SPDs containing items such as replaceable modules, replaceable fuses, or replaceable batteries shall not be accepted. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.
2. The surge current shall be equally distributed to all MOV components to ensure equal stressing and maximum performance. The surge suppression platform must provide equal impedance paths to each matched MOV.
3. Each unit shall include a high-performance EMI/RFI noise rejection filter. Noise attenuation for electric line noise shall be up to 50-dB from 10kHz to 100MHz using the MIL-STD-220A insertion loss test method.
4. No plug-in component modules or printed circuit boards shall be used as surge current conductors. All internal components shall be soldered, hardwired with connections utilizing low impedance conductors.
5. SPD shall provide the following integral monitoring options:
    a. Each unit shall have a green/red solid-state indicator light that reports the status of the protection on each phase:
        1) For WYE configured units, the indicator lights must report the status of all protection elements and circuitry in the L-N and L-G modes. WYE configured units shall also contain an additional green/red solid-state indicator light that reports the status of the protection elements and circuitry in the N-G mode.
        2) For delta configured units, the indicator lights must report the status of all protection elements and circuitry in the L-G and L-L modes.
        3) The absence of a green light and the presence of a red light shall indicate that damage has occurred on the respective phase or mode. All protection status indicators shall indicate the actual status of the protection on each phase or mode. If power is removed from any one phase, the indicator lights shall continue to indicate the status of the protection on all other phases and protection modes.
    b. The SPD must include Form C dry contacts (one NO and one NC) for remote annunciation of its status. Both the NO and NC contacts shall change state under any fault condition.
    c. The SPD shall contain an audible alarm that will be activated under any fault condition. There shall also be an audible alarm silence button used to silence the audible alarm after it has been activated.
    d. Surge counter:
        1) The SPD shall be equipped with an LCD display that indicates to the user how many surges have occurred at the location.
        2) The surge counter shall trigger each time a surge event with a peak current magnitude of a minimum of 50amps ± 20amps occurs.
        3) A reset pushbutton shall also be standard, allowing the surge counter to be zeroed. The reset button shall contain a mechanism to prevent accidental resetting of the counter via a single, short-duration button press. In order to prevent accidental resetting, the surge counter reset button shall be depressed for a minimum of 2-seconds in order to clear the surge count total.
        4) The ongoing surge count shall be stored in non-volatile memory. If power to the SPD is completely interrupted, the ongoing count indicated on the surge counter's display prior to the interruption shall be stored in non-volatile memory and displayed after power is restored. The surge counter's

memory shall not require a backup battery in order to achieve this functionality.

6. The unit shall contain thermally protected MOVs. These thermally protected MOVs shall have a thermal protection element packaged together with the MOV in order to achieve overcurrent protection of the MOV. The thermal protection element shall disconnect the MOV(s) from the system in a fail-safe manner should a condition occur that would cause them to enter a thermal runaway condition.
7. All the SPD's components and diagnostics shall be contained within one discrete assembly. SPDs or individual SPD modules that must be ganged together in order to achieve higher surge current ratings or other functionality shall not be accepted.
8. Safety requirements:
   a. The SPD shall minimize potential arc flash hazards by containing no user serviceable or replaceable parts and shall be maintenance free. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.
   b. SPDs designed to interface with the electrical assembly via conductors shall require no user contact with the inside of the unit. Such units shall have any required conductors be factory installed.

2.03 SYSTEM APPLICATION

A. The SPD applications covered under this section include switchboards panelboard assemblies. All SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C, B, and A environments.

B. The minimum surge current capacity the device is capable of withstanding shall be as shown in the following table:

MINIMUM SURGE CURRENT CAPACITY TABLE

Category	Application	Per Phase	Per Mode
C	Service Entrance Locations (Switchboards)	250kA	125kA
B	High Exposure Roof Top Locations (Switchboards and Panelboards)	160kA	80kA
A	Branch Locations (Panelboards)	120kA	60kA

C. All SPDs installed on the line side of the service entrance disconnect shall be Type 1 SPDs. All SPDs installed on the load side of the service entrance disconnect shall be Type 1 or Type 2 SPDs.

2.04 PANELBOARDS

A. The SPD application covered under this section includes lighting and outlet panelboards. The SPD units shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category A or B environments.

B. The SPD shall not limit the use of through-feed lugs, sub-feed lugs, and sub-feed breaker options.

C. SPDs shall be installed immediately following the load side of the main breaker. SPDs installed in main lug only panelboards shall be installed immediately following the incoming main lugs.

D. The panelboard shall be capable of re-energizing upon removal of the SPD.

E. The SPD shall be interfaced to the panelboard via a direct bus bar connection.

F. The SPD shall be included and mounted within the panelboard by the manufacturer of the panelboard.

G. The SPD shall be of the same manufacturer as the panelboard.

H. The complete panelboard including the SPD shall be UL67 listed.

2.05 SWITCHBOARDS

A. The SPD application covered under this section is for switchboard locations. Service entrance located SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C environments.

B. The SPD shall be of the same manufacturer as the switchboard.

C. The SPD shall be factory installed inside the switchboard at the assembly point by the original equipment manufacturer.

D. Locate the SPD on the load side of the main disconnect device, as close as possible to the phase conductors and the ground/neutral bar.

E. The SPD shall be connected through a disconnect (30A circuit breaker). The disconnect shall be located in immediate proximity to the SPD. Connection shall be made via bus, conductors, or other connections originating in the SPD and shall be kept as short as possible.

F. The SPD shall be integral to switchboard as a factory standardized design.

G. All monitoring and diagnostic features shall be visible from the front of the equipment.

2.06 ENCLOSURES

A. All enclosed equipment shall have NEMA 1 general purpose enclosures, unless otherwise noted. Provide enclosures suitable for locations as indicated on the drawings and as described below:
   1. NEMA 1: Constructed of a polymer (units integrated within electrical assemblies), intended for indoor use to provide a degree of protection to personal access to hazardous parts and provide a degree of protection against the ingress of solid foreign objects (falling dirt).
   2. NEMA 4: Constructed of steel, intended for either indoor or outdoor use, to provide a degree of protection from the following:
      a. Against access to hazardous parts.
      b. Of equipment inside the enclosure against ingress of solid foreign objects (dirt and windblown dust).
      c. With respect to the harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water).

2.07 SOURCE QUALITY CONTROL

A. Standard factory tests shall be performed on the equipment under this section. All tests shall be in accordance with the latest version of NEMA and UL standards.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of SPD installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Install SPD in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. As a minimum, provide SPDs on all service entrance switchboards, 120/208volt distribution switchboards and 120/208volt panelboards in compliance with CEC Article(s) 285, 620, 645, 670, 695, and 700.

C. Conductors from the power source to the SPD shall be minimum #4 AWG copper in switchboards and #8 AWG copper in panelboards (when not direct bus connected). Conductors shall be routed without sharp bends and straight and short as possible. The absolute maximum of 7'-0" long for units in switchboards and 1'-0" long for units in panelboards.

D. Conductors originating from direct bus bar connections shall be individually wrapped with electric tape in half-lapped increments for added protection of the un-protected conductors. Tie-wrap the conductors away from the bus bars without any sharp bends. All holes that the conductors pass through shall be grommets.

E. Cabinets shall be anchored and braced to withstand seismic forces as calculated per Section 26 05 00: Common Work Results for Electrical.

3.03 ATTIC STOCK

A. For every SPD installed in panelboard or switchboard, a replacement SPD shall be provided for attic stock.

3.04 FIELD QUALITY CONTROL

A. Prefunctional testing:
   1. Visual and mechanical inspection:
      a. Inspect for physical damage, defects, alignment, and fit.
      b. Compare nameplate information and connections to Contract Documents.
      c. Check tightness of all control and power connections.
      d. Prior to energization, verify source neutral is bonded to ground per CEC Articles 250.24(B), 250.28 and 250.30.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

A. Section Includes:
1. General requirements for lighting fixtures & components.
2. Emergency lighting units.
3. Exit signs.
4. LED Luminaire
5. Lighting fixture supports.

1.02 RELATED SECTIONS

A. Section 26 05 19 Low Voltage Electrical Power Conductors and Cables

B. Section 26 05 29 Hangers and Supports for Electrical Systems

1.03 REFERENCES

A. American National Standards Institute (ANSI):
1. Underwriters Laboratories, Inc. (UL):
2. UL 66 Fixture Wire.
3. UL 924 Standard for Emergency Lighting and Power Equipment.
4. UL 1598 Luminaires.
5. UL 2108 Standard for Low Voltage Lighting Systems.

B. Illuminating Engineering Society of North America (IESNA):
1. IESNA LM-79-08 Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products.
2. IESNA LM-80-2008 Approved Method for Measuring Lumen Maintenance of LED Light Sources.

1.04 SYSTEM DESCRIPTION

A. Provide a fully functioning and operational lighting system as described herein complete with lamps, ballasts, drivers, wiring, controls and attachment to support system adhering to applicable seismic code requirements.

1.05 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color-rendering index.

C. LER: Luminaire efficacy rating.

D. Lumen: Measured output of lamp and luminaire, or both.

E. Luminaire: Complete lighting fixture, including ballast housing if provided.

1.06 SUBMITTALS

A. Submit in accordance with Section 01 33 00 Shop Drawings, Product Data, and Samples

B. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:
   1. Physical description of lighting fixture including dimensions.
   2. Sway adapters, seismic restraint devices and detailed method of mounting.
   3. A sample of the hanger assembly for suspended luminaires shall be supplied to the Owner's Representative for review and approval.
   4. Emergency lighting units including battery and charger.
   5. Energy-efficiency data.
   6. Sound Performance Data: For air-handling lighting fixtures. Indicate sound power level and sound transmission class in test reports certified according to standards specified in Division 23 Section "Diffusers, Registers, and Grilles."
   7. Life, output (lumens, CCT, and CRI), and energy-efficiency data for lamps.
   8. Photometric data and adjustment factors based on laboratory tests, complying with IESNA Lighting Measurements Testing & Calculation Guides, of each lighting fixture type. The adjustment factors shall be for lamps, ballasts, and accessories identical to those indicated for the lighting fixture as applied in this Project.
      a. Manufacturer Certified Data: Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

C. Product Certificates: For each type of driver for bi-level and dimmer-controlled fixtures, from manufacturer.

D. Field quality-control reports.

E. Warranty: Sample of special warranty.

1.07 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.

B. Warranty: See Article 1.11 Warranty.

1.08 MATERIALS MAINTENANCE SUBMITTALS

A. Provide extra materials that match products utilized and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Plastic Diffusers and Lenses: One for every 100 of each type and rating utilized. Provide at least one of each type.
   2. LED-fixture-mounted, emergency battery pack: One for every 20 emergency lighting units utilized.
   3. Drivers: One for every 100 of each type and rating utilized. Provide at least one of each type.
   4. Globes and Guards: One for every 20 of each type and rating utilized. Provide at least one of each type.

1.09 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as

defined by OSHA in 29 CFR 1910, complying with the IESNA Lighting Measurements Testing & Calculation Guides.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

C. Comply with CEC.

D. FM Global Compliance: Lighting fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.

1.10 COORDINATION

A. Prior to rough-in of fixtures, consult the Owner's Representative drawings for details of ceiling construction, finish, reflected ceiling plans and other applicable details and coordinate layout of lighting fixtures and suspension system. Field coordinate other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

1.11 WARRANTY

A. Special Warranty for Lighting Fixtures: Manufacturer's standard form in which manufacturer of lighting unit agrees to repair or replace components of fixtures that fail in materials or workmanship within specified warranty period.
   1. Warranty Period for Lighting Luminaires: 2 years from date of Notice of Completion. Labor shall be included for the duration of the Warranty at no additional expense to the Owner.

B. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
   1. Warranty Period for Emergency Lighting Unit Batteries: 5 years from date of Notice of Completion. Full warranty shall apply for first year, and prorated warranty for the remaining four years. Labor shall be included for the duration of the Warranty at no additional expense to the Owner.
   2. Warranty Period for Emergency Driver Batteries: 5 years from date of Notice of Completion. Full warranty shall apply for first year, and prorated warranty for the remaining four years. Labor shall be included for the duration of the Warranty at no additional expense to the Owner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
   1. Luminaires, Poles, and Exit Signs: as listed in the Luminaire Schedule.
   2. Light-Emitting Diode (LED) Arrays:
      a. Cree.
      b. Nichia.
      c. Citizen.
      d. Lumileds.
      e. Samsung.
      f. Lumenetix Araya.

g. Xicato.
h. Bridgelux.
i. LEDs provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.

3. LED replacement and integral-driver lamps:
   a. General Electric.
   b. Osram.
   c. Cree.
   d. Maxlite.
   e. Green Creative.
   f. Soraa.
4. LED drivers (DC output):
   a. eldoLED.
   b. Lutron.
   c. Signify Advance.
   d. Osram.
   e. Q-Tran.
   f. Universal Lighting Technologies.
   g. Drivers provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.
5. Transformers for LED systems (AC output):
   a. Q-Tran.
   b. Hatch.
   c. Semper Fi.
   d. Transformers provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.
6. Unit battery equipment:
   a. Philips Bodine.
   b. Myers/Iota.
   c. Unit battery equipment provided by Luminaire Manufacturers listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.

B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

2.02 .GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

B. Metal Parts: Free of burrs and sharp corners and edges.

C. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

D. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

E. Diffusers and Globes:
1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
   a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
   b. UV stabilized.
2. Glass: Annealed crystal glass unless otherwise indicated.

2.03 EXIT SIGNS

A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

B. Internally Lighted Signs:
   1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
   2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.
      a. Battery: Sealed, maintenance-free, nickel-cadmium type.
      b. Charger: Fully automatic, solid-state type with sealed transfer relay.
         1) Certified Title 20 compliant
      c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
      d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
      e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
      f. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-provided infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
      g. Integral Self-Test: Factory-provided electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.
   3. Master/Remote Sign Configurations:
      a. Master Unit: Comply with requirements above for self-powered exit signs, and provide additional capacity in LED power supply for power connection to remote unit.
      b. Remote Unit: Comply with requirements above for self-powered exit signs, except omit power supply, battery, and test features. Arrange to receive full power requirements from master unit. Connect for testing concurrently with master unit as a unified system.

2.04 EMERGENCY LIGHTING UNITS

A. General Requirements for Emergency Lighting Units: Self-contained units complying with UL 924.
   1. Battery: Sealed, maintenance-free, lead-acid type.
   2. Charger: Fully automatic, solid-state type with sealed transfer relay.
      a. Certified Title 20 compliant
   3. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
   4. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
   5. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
   6. Wire guard in first subparagraph below is optional feature. Coordinate with Drawings.
   7. Wire Guard: Heavy-chrome-plated wire guard protects lamp heads or fixtures.

8. Integral Time-Delay Relay: Holds unit on for fixed interval of 15 minutes when power is restored after an outage.
9. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-provided infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
10. Integral Self-Test: Factory-provided electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.05 LED LUMINAIRE

A. Light Emitting Diodes (LED):
1. Refer to the Luminaire Schedule for size and type of LEDs required.
2. All diodes shall be of the same manufacturer and bin number.
3. Diodes shall be tested and tuned for the specified Kelvin color.
4. Color correlated temperature: 3500 unless otherwise noted in the drawings.
5. Minimum CRI (Color Rendering Index): 80
6. LED luminaire shall be free of toxic materials and be RoHS compliant.
7. Groups of three or more diodes in a single housing shall be tested for even distribution.
8. Standard lumen output shall meet or exceed the State of California Title 24 Energy Code for high efficiency luminaires.
9. LED luminaires shall have an IES formatted electronic photometrics report.
10. Diodes shall have a minimum life of 50,000 hours and maintain at least 80 percent of initial lamp lumens during this period.
11. Individual LEDs shall be connected such that a catastrophic loss or the failure of one LED will not result in the loss of the entire luminaire.
12. LED boards shall be suitable for field maintenance or service from below the ceiling with plug-in connectors. LED boards shall be upgradable.
13. Color shift over 6,000 hours shall be <0.007 change in u' v' as demonstrated in IES LM80 report.

B. Power Supply and Driver:
1. Drivers shall be integral to fixture housing.
2. Drivers shall have a ten-year expected life while operating at maximum case temperature and 90 percent non-condensing relative humidity.
3. Drivers shall be UL Recognized under the component program and shall be modular for simple field replacement. Drivers that do not meet these requirements will not be accepted.
4. Electrical characteristics: 120 – 277 Volt, UL Listed, CSA Certified, Sound Rated A+. Driver shall be >80% efficient at full load across all input voltages. Input wires shall be 18AWG solid copper minimum.
5. Dimming: Driver shall be suitable for full-range dimming. LED dimming shall be equal in range and quality to a commercial grade incandescent dimmer. The luminaire shall be capable of continuous dimming without perceivable flicker over a range of 100 percent to 10 percent (1 percent where specified) of rated lumen output with a smooth shut off function.
6. Dimming quality to be defined by dimming range, freedom from perceived flicker or visible stroboscopic flicker, smooth and continuous change in level (no visible steps in transition), natural square law response to control input, inaudible in 26db environment, and stable when input voltage conditions fluctuate over what is typically experienced in a commercial environment. Demonstration of this compliance to dimming performance will be necessary for substitutions or prior approval.
    a. Dimming shall be controlled by a 0-10V signal

b. Driver shall include ability to provide no light output when the analog control signal drops below 0.5V, or the DALI/DMX digital signal calls for light to be extinguished and shall consume 0.5 Watts or less in this standby. Control deadband between 0.5V and 0.65V shall be included to allow for voltage variation of incoming signal without causing noticeable variation in fixture to fixture output.
c. Driver shall be capable of configuring a linear or logarithmic dimming curve, allowing fine grained resolution at low light levels.
d. Driver must be capable of 20 bit dimming resolution for white light LED driver.
e. Drivers shall track evenly across multiple fixtures at all light levels, and shall have an input signal to output light level that allows smooth adjustment over the entire dimming range.

7. Flicker: Driver and luminaire electronics shall deliver illumination that is free from objectionable flicker as measured by flicker index (ANSI/IES RP-16-10). At all points within the dimming range from 100 – 0.1 percent luminaire shall have:
8. Less than 1 percent flicker index at frequencies below 120Hz.
9. Less than 12 percent flicker index at 120Hz, and shall not increase greater than 0.1 percent per Hz to a maximum of 80 percent flicker index at 800Hz.
10. Driver disconnect shall be provided where required to comply with codes.
11. The electronics/power supply enclosure shall be internal to the solid state lighting luminaire and be accessible per UL requirements.
12. The surge protection which resides within the driver shall protect the luminaire from damage and failure for transient voltages and currents as defined in ANSI/IEEE C64.41 2002 for Location Category A, where failure does not mean a momentary loss of light during the transient event.

C. Electrical:
1. Operation Voltage: The luminaire shall operate from a 50 or 60Hz +/- 3Hz AC line over a voltage ranging from 120VAC to 277VAC. The fluctuations of line voltage shall have no visible effect on the luminous output. The standard operating voltages are 120VAC, 277VAC & 347VAC.
2. Power Factor: The luminaire shall have a power factor of 90% or greater at all standard operating voltages and full luminaire output.
3. THD: Total harmonic distortion (current and voltage) induced into an AC power line by a luminaire shall not exceed 20 percent at any standard input voltage and meet ANSI C82.11 maximum allowable THD requirements at full output. THD shall at no point in the dimming curve allow imbalance current to exceed full output THD.
4. Surge Suppression: The luminaire shall include surge protection to withstand high repetition noise and other interference. Withstand up to a 1,000 Volt surge without impairment of performance as defined by ANSI C62.41 Category A.
5. Inrush Current: Meet or exceed NEMA 410 driver inrush standard of 430 Amps per 10 Amps load with a maximum of 370 Amps.
6. RF Interference: The luminaire and associated on-board circuitry must meet Class A emission limits referred in Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 Non-Consumer requirements for EMI/RFI emissions.
7. Driver must support automatic adaptation, allowing for future luminaire upgrades and enhancements and deliver improved performance:
    a. Adjustment of forward LED voltage, supporting 3V through 60V.
    b. Adjustment of LED current from 200mA to 1.05A at the 100 percent control input point in increments of 1mA.
    c. Adjustment for operating hours to maintain constant lumens (within 5 percent) over the 50,000 hour design life of the system, and deliver up to 20 percent energy savings early in the life cycle.

8. Electrical connections between normal power and driver must be modular utilizing a snap fit connector. All electrical components must be easily accessible after installation and be replaceable without removing the fixture from the ceiling.
9. All electrical components shall be RoHS compliant.

D. Photometric Requirements:
1. Luminaire performance shall be tested as described herein.
   a. Luminaire performance shall be judged against the specified minimum illuminance in the specified pattern for a particular application.
   b. Luminaire lighting performance shall be adjusted (depreciated) for the minimum life expectancy.
   c. The performance shall be adjusted (depreciated) by using the LED manufacturer's data or the data from the IESNA Standard TM-21 test report, which ever one results in higher level of lumen depreciation.
   d. The luminaire may be determined to be compliant photometrically, if:
      1) The initial minimum illuminance level is achieved in 100% of the area of the specified lighting pattern.
      2) The measurements shall be calibrated to standard photopic calibrations.

E. Thermal Management:
1. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the luminaire over the expected useful life.
2. The LED manufacturer's maximum junction temperature for the expected life shall not be exceeded at the average operating ambient.
3. The LED manufacturer's maximum junction temperature for the catastrophic failure shall not be exceeded at the maximum operating ambient.
4. The luminaire shall have an UL IC rating.
5. The driver manufacturer's maximum case temperature shall not be exceeded at the maximum operating ambient. Thermal management shall be passive by design. The use of fans or other mechanical devices shall not be allowed.

2.06 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Comply with Section 260529 Hangers and Supports for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gauge.

E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.

F. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.

G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.01 PLACEMENT

A. Lighting fixtures:
   1. Set level, plumb, and square with ceilings and walls unless otherwise indicated.
   2. Provide lamps in each luminaire.

B. Temporary Lighting: If it is necessary, and approved by Owner's Representative, to use permanent luminaires for temporary lighting, provide and energize the minimum number of luminaires necessary. When construction is sufficiently complete, remove the temporary luminaires, disassemble, clean thoroughly, and provide new lamps.

C. Lay-in Ceiling Lighting Fixtures Supports: Use grid as a support element.
   1. Provide ceiling support system rods or wires, independent of the ceiling suspension devices for each fixture. Locate not more than 6 inches from lighting fixture corners.
   2. Support Clips: Fasten to lighting fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
   3. Fixtures of Sizes Less Than Ceiling Grid: Provide as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch metal channels spanning and secured to ceiling tees.
   4. Provide at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.

D. Suspended Lighting Fixture Support:
   1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
   2. Suspended luminaires shall be provided such that they are able to swing 45 degrees from vertical in all directions unobstructed.
   3. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
   4. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
   5. Do not use grid as support for pendant luminaires. Connect support wires or rods to building structure.
   6. Connect wiring according to Section 260523 Low-Voltage Electrical Power Conductors and Cables.

3.02 IDENTIFICATION

A. Provide labels with panel and circuit numbers on concealed junction and outlet boxes. Comply with requirements for identification specified in Section 26 05 53 Identification.

3.03 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

C. LED luminaires will be considered faulty and require replacement if one or more diodes are not functioning.

3.04 STARTUP SERVICE

A. Burn-in all LED lamps that require specific aging period to operate properly, prior to occupancy by Owner.

3.05 ADJUSTING

A. Occupancy Adjustments: Within 12 months of date of Substantial Completion, provide on-site assistance in adjusting aimable luminaires to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose. Some of this work may be required after dark.
   1. Adjust aimable luminaires in the presence of Owner's Representative.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
1. Exterior luminaires.
2. Lamps and diodes.
3. Ballasts and LED drivers.
4. Luminaire-mounted motion sensors.
5. Poles mount accessories.

1.03 REFERENCES

A. American National Standards Institute (ANSI):
1. ANSI C78.377A Chromaticity.

B. Underwriters Laboratories, Inc. (UL):
1. UL 66 Fixture Wire.
2. UL 1598 Luminaires.
3. UL 2108 Standard for Low Voltage Lighting Systems.

C. Illuminating Engineering Society of North America (IESNA):
1. IESNA LM-79-08 Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products.
2. IESNA LM-80-2008 Approved Method for Measuring Lumen Maintenance of LED Light Sources.
3. IESNA TM-21-2011 Projecting Long Term Lumen Maintenance of LED Light Sources

1.04 SYSTEM DESCRIPTION

A. Provide and install a fully functioning and operational lighting system as described herein complete with lamps, ballasts, drivers, wiring, controls and attachment to support system adhering to applicable seismic code requirements.

1.05 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color-rendering index.

C. LER: Luminaire efficacy rating.

D. Luminaire: Complete lighting fixture, including driver housing if provided.

E. Pole: Luminaire support structure, including tower used for large area illumination.

F. Standard: Same definition as "Pole" above.

1.06 SUBMITTALS

A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
   1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
   2. Details of attaching luminaires and accessories.
   3. Details of installation and construction.
   4. Luminaire materials.
   5. Life, output (lumens, CCT, and CRI), and energy-efficiency data for light sources.
   6. Photometric data and adjustment factors based on laboratory tests, complying with IESNA Lighting Measurements Testing & Calculation Guides, of each lighting fixture type. The adjustment factors shall be for lamps, ballasts, and accessories identical to those indicated for the lighting fixture as applied in this Project.
   7. Manufacturer Certified Data: Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
   8. Motion Sensors.
   9. LED drivers, including energy-efficiency data.
   10. Lamps, including life, output, CCT, CRI, lumens, and energy-efficiency data.
   11. LED luminaire data shall be consistent with the LED Lighting Facts program or DesignLights Consortium (DLC) guidelines.
   12. Materials, dimensions, and finishes of poles.
   13. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   2. Wiring Diagrams: For power, signal, and control wiring.

C. Samples: For products designated for sample submission in the Luminaire Schedule. Each Sample shall include lamps and drivers.

D. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.

E. Field quality-control reports.

F. Operation and Maintenance Data: For luminaires to include in operation and maintenance manuals.

G. Warranty: Sample of special warranty.

1.07 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as

defined by OSHA in 29 CFR 1910, complying with the IESNA Lighting Measurements Testing & Calculation Guides

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

D. Comply with IEEE C2, "National Electrical Safety Code."

E. Comply with CEC.

1.08 DELIVERY, STORAGE, AND HANDLING

A. The Contractor will purchase and store luminaires for this project. Additional items required as part of this project will the responsibility of the Contractor for delivery, storage and handling.

1.09 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
   1. Warranty Period for Luminaires: Five years from date of Substantial Completion.
   2. Warranty Period for Labor related to luminaire or parts replacement inclusive of the pre-purchase items shall be one year from the date of Substantial Completion.
   3. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
   4. Warranty Period for Color Retention: Five years from date of Substantial Completion.
   5. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

1.10 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Lamps: Furnish at least one of each type.
   2. LED Bar: Furnish at least one of each type.
   3. Glass and Plastic Lenses, Covers, and Other Optical Parts: Furnish at least one of each type.
   4. Drivers/Engine: Furnish at least one of each type.
   5. Guards: Furnish at least one of each type.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, product(s) indicated on Drawings.

B. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
   1. Luminaires and Poles: as listed in the Luminaire Schedule.
   2. Light-Emitting Diode (LED) Arrays:

a. LEDs provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.

3. LED drivers (DC output):
   a. Drivers provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.
4. Transformers for LED systems (AC output):
   a. Transformers provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.
5. Unit battery equipment:
   a. Unit battery equipment provided by Luminaire Manufacturers listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.

C. Substitutions: Under provisions of Section 26 05 00: Common Work Results for Electrical.

2.02 GENERAL REQUIREMENTS FOR LUMINAIRES

A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
   1. LER Tests Fluorescent luminaires: Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.
   2. LER Tests HID luminaires: Where LER is specified, test according to NEMA LE 5B.
   3. LER Tests for LED luminaires: Test and measurement in accordance with IESNA LM-79; Lumen Maintenance in accordance with IESNA LM-80.

B. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.

C. Metal Parts: Free of burrs and sharp corners and edges.

D. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.

E. Exposed Hardware Material: Stainless steel.

F. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

G. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

H. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finishing process and color of pole or support materials.

I. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
   1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
   2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.

a. Color: As selected from manufacturer's standard catalog of colors.

J. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
a. Color: As specified on drawings.

K. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

2.03 LIGHT EMITTING DIODES (LED)

A. Refer to the Luminaire Schedule for size and type of LED lamps required.
1. All diodes shall be of the same manufacturer and bin number in adherence to current NEMA standard SSL-3.
2. Diodes shall be tested and tuned for the specified Kelvin color.
3. Color correlated temperature: 4000 unless otherwise noted in the drawings.
4. Minimum CRI (Color Rendering Index): 80
5. LED luminaire shall be free of toxic materials and be RoHS compliant.
6. Groups of three or more diodes in a single housing shall be tested for even distribution.
7. Standard lumen output shall meet or exceed the State of California Title 24 Energy Code for high efficiency luminaires.
8. LED luminaires shall have an IES formatted electronic photometrics report.
9. Diodes or Solid State LED chips shall have a minimum life of 50,000 hours and maintain at least 70% of initial lamp lumens during this period.

2.04 LED DRIVERS

A. Drivers shall be integral to fixture housing unless otherwise directed.

B. Drivers shall have a minimum life of 50,000 hours and maintain at least 70% of initial lamp lumens during that period.

C. Dimming applications, provide Dimmable Constant Current Drivers:
1. Wattage shall be as specified on the luminaire schedule and operate at 700mA unless otherwise noted on the luminaire schedule.
2. Dimmable to 30%.
3. Minimum efficiency to be 89%.
4. Ingress Protection (IP67) rated.
5. Minimum warranty of 5 years.
6. Universal voltage.

D. Non-dimming applications, provide Constant Voltage LED Drivers:
   1. Capable of 12 volt or 24 volt output.
   2. Minimum efficiency to be 93%.
   3. Ingress Protection (IP67) rated.
   4. Minimum warranty of 5 years.
   5. Universal voltage.

2.05 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

A. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.

B. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
   1. Materials: Shall not cause galvanic action at contact points.
   2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
   3. Anchor-Bolt Template: Plywood or steel.

2.06 POLE ACCESSORIES

A. Base Covers: Manufacturers' standard metal units, arranged to cover pole's mounting bolts and nuts. Finish same as pole.

PART 3 - EXECUTION

3.01 LUMINAIRE INSTALLATION

A. Install pre-purchased luminaires complete and operable. All lighting shall be operable prior to leaving the job site each day. Partial installations will not be acceptable.

B. Contractor is responsible for determining power source for each of the luminaires replaced as part of this project. Any shutdown of power shall be coordinated with the City’s representatives in advance.

C. Fasten luminaire to indicated structural supports.
   1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

D. Adjust luminaires that require field adjustment or aiming.

3.02 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

B. Steel Conduits: Comply with Division 26 Section "Raceway and Boxes." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.03 GROUNDING

A. Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding."

B. All luminaires shall be grounded. Where a ground bond does not exist, it shall be provided.

3.04 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Label new luminaires with code identified on the drawings. Methods shall match existing method used on campus.

C. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
   1. Verify operation of motion sensor controlled luminaires. Dimming and fade rate are initiated by the motion sensor.

D. LED luminaires will be considered faulty and require replacement if one or more diodes are not functioning.

E. Illumination Tests:
   1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
      a. IESNA LM-50, "Photometric Measurements of Roadway Lighting Installations."
      b. IESNA LM-52, "Photometric Measurements of Roadway Sign Installations."
      c. IESNA LM-64, "Photometric Measurements of Parking Areas."
      d. IESNA LM-72, "Directional Positioning of Photometric Data."

F. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.05 IDENTIFICATION

A. Provide each site pole and bollard with a unique address label composed of 2” high lettering.
   1. Mounted at 8-feet AFG on poles.
   2. Just above the base on bollards.

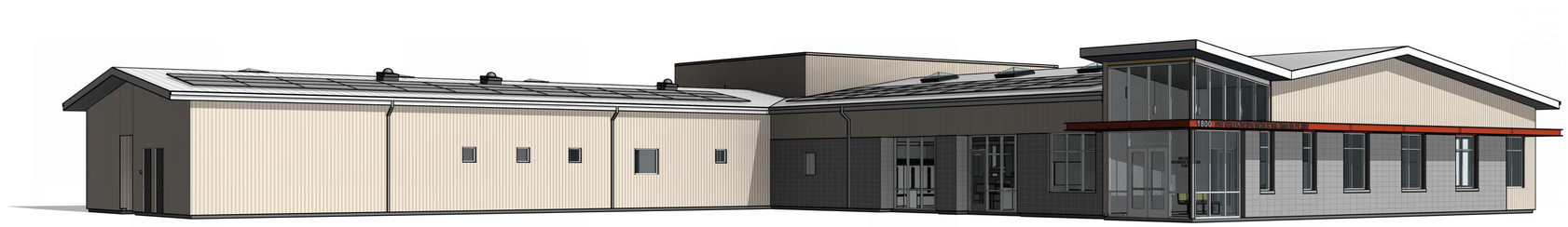
END OF SECTION

DRAWINGS

Project: Dry Creek Wastewaer Treatment Operations and Laboratory Building Project

196

2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178



CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG

MARCH 17, 2025

BID SET (PRELIMINARY)

ARCHITECT STAMP

LICENSED ARCHITECT
REGISTERED PROFESSIONAL
No. C18650
Exp. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

COVER SHEET

DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.

G-000

DATE: May 29, 2024

BID SET (PRELIMINARY)

DATE PLOTTED: 7/5/2024 11:16:36 AM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4TT455.rvt

CITY OF ROSEVILLE
DRY CREEK WASTEWATER TREATMENT PLANT
OPERATIONS AND LAB BUILDING

SYMBOLS

DRAFTING ITEMS

- DATUM - CONTROL POINT
- DIMENSION LINE AND TICK
- MATCHLINE - SEE: 1 / A101
- BREAK LINE
- 01.23.A KEYNOTE
- Name / Elevation PROJECT LEVEL MARKER
- 0 COLUMN GRID MARKER
- REVISION CLOUD
- 1 CMNT # REVISION TAG
- PROJECT NORTH / PROJECT NORTH ARROW

VIEW REFERENCES

- 1 / A101 SIM — VIEW REFERENCE / SHEET REFERENCE
- 1 / A101 SIM — DETAIL VIEW
- 1 / A101 TYP. — SECTION VIEW
- 1 / A101 SIM — ENLARGED VIEW
- 1A / 1A A-101 1A / 1A — INTERIOR ELEVATION / VIEW REFERENCE / SHEET REFERENCE
- 99 / A1-100 — EXTERIOR ELEVATION

ABBREVIATIONS

@	AT	ID	INSIDE DIAMETER
℄	CENTER LINE	INSUL	INSULATION OR INSULATED
#	POUND	INV	INVERT
⊥	PERPENDICULAR	LAV	LAVATORY
∠	ANGLE	MATL	MATERIAL
AB	ANCHOR BOLT	MAX	MAXIMUM
AC	ASPHALTIC CONCRETE	MB	MACHINE BOLT
ACT	ACOUSTICAL CEILING TILE	MECH	MECHANICAL
AFF	ABOVE FINISH FLOOR	MFR	MANUFACTURE OR MANUFACTURER
ALT	ALTERNATE	MH	MAN HOLE
ALUM	ALUMINUM	MIN	MINIMUM
ANOD	ANODIZED	MISC	MISCELLANEOUS
APPROX	APPROXIMATE	MO	MASONRY OPENING
ARCH	ARCHITECT OR ARCHITECTURAL	N	NORTH
BD	BOARD	(N)	NEW
BLDG	BUILDING	NIC	NOT IN CONTRACT
BLK(G)	BLOCK(ING)	NO OR #	NUMBER
BOB	BOTTOM OF BEAM	NTS	NOT TO SCALE
BM	BEAM	OC	ON CENTER
CB	CATCH BASIN	OD	OUTSIDE DIAMETER
CI	CAST IRON	OPNG	OPENING
CJ	CONSTRUCTION JOINT	PL	PLATE OR PROPERTY LINE
CLG	CEILING	PLAM	PLASTIC LAMINATE
CLR	CLEAR	PLAS	PLASTER (NUMBER - SEE SPECS)
CMU	CONCRETE MASONRY UNIT	PLYWD	PLYWOOD
CO	CLEAN OUT	PNT	PAINT (NUMBER - SEE SPECS)
COL	COLUMN	PTDF	PRESSURE TREATED DOUGLAS FUR
CONC	CONCRETE	QT	QUARRY TILE
CONT	CONTINUOUS	RD	ROOF DRAIN
CSK	COUNTERSINK	REF	REFRIGERATOR
CW	COLD WATER	REINF	REINFORCE OR REINFORCING
	CHANNEL	RH	ROUND HEAD
DBL	DOUBLE	RM	ROOM
DEPT	DEPARTMENT	RO	ROUGH OPENING
DET	DETAIL	RWD	REDWOOD
DF	DRINKING FOUNTAIN	S	SOUTH
DIA	DIAMETER	SCH	SCHEDULE
DIAG	DIAGONAL	SD	STORM DRAIN
DN	DOWN	SHR	SHOWER
DS	DOWNSPOUT	SHT	SHEET
DWG	DRAWING	SHTHG	SHEATHING
E	EAST	SIM	SIMILAR
(E)	EXISTING	SMACNA SPEC	4E ARCH SHEET METAL MANUAL SPECIFICATION
EB	EXPANSION BOLT		
EJ	EXPANSION JOINT	SQ	SQUARE
ELEV	ELEVATION	SSTL	STAINLESS STEEL
ELEC	ELECTRIC(AL)	STD	STANDARD
EP	EDGE OF PAVING	STL	STEEL
EQ	EQUAL	SUSP	SUSPENDED
EQUIP	EQUIPMENT	SYM	SYMMETRICAL
FD	FLOOR DRAIN	TOB	TOP OF BEAM
FE(C)	FIRE EXTINGUISHER (& CABINET)	TOC	TOP OF CURB OR TOP OF CONCRETE
FF	FINISHED FLOOR	TCB	TOP OF CATCH BASIN
FG	FINISHED GRADE	TEL	TELEPHONE
FH	FLAT HEAD OR FIRE HYDRANT	TEMP	TEMPERATURE OR TEMPERED
FIN	FINISH	T&G	TONGUE & GROOVE
FL	FLOW LINE	TP	TOP OF PAVING
FLG	FLASHING	TS	STRUCTURAL TUBING
FLR	FLOOR	TV	TELEVISION
FOC	FACE OF CONCRETE	TOW	TOP OF WALL
FOF	FACE OF FINISH	TYP	TYPICAL (ITEMS TYPICAL UNLESS SHOWN OR NOTED OTHERWISE)
FOM	FACE OF MASONRY		
FOS	FACE OF STUD	UON	UNLESS OTHERWISE NOTED
FRP	FIBERGLASS REINFORCED PANEL	VCT	VINYL COMPOSITION TILE
FT	FOOT OR FEET	VERT	VERTICAL
FTG	FOOTING	VGDF	VERTICAL GRAIN DOUGLAS FIR
GA	GAUGE	VTR	VENT THRU ROOF
GALV	GALVANIZED	W	WEST
GB	GRAB BAR, GRADE BREAK	WC	WATER CLOSET
GL	GLASS	W.C.	WHEELCHAIR ACCESSIBLE
GLB	GLUE LAMINATED BEAM	WD	WOOD
GYP	GYPSUM	WF	WIDE FLANGE
GWB	GYPSUM WALL BOARD	WH	WATER HEATER
HB	HOSE BIBB	WP	WATERPROOF
HDR	HEADER	WS	WOOD SCREW
HGT	HEIGHT	WSCT	WAINSCOT
HORIZ	HORIZONTAL	WWF	WELDED WIRE FABRIC
HTR	HEATER	W/	WITH
HVAC	HEATING/VENTILATING/AIR CONDITIONING	W/O	WITHOUT

PROJECT DESCRIPTION

CONSTRUCTION OF A NEW OPERATIONS AND LAB BUILDING AT THE DRY CREEK WASTEWATER TREATMENT PLANT (DCWWTP) TO REPLACE THE EXISTING ADMINISTRATION, OPERATIONS AND LAB BUILDING.

THE NEW ADMINISTRATION,OPERATION AND LAB BUILDING WILL BE A SINGLE STORY, 12,480 SF BUILDING HOUSING LOBBY/RECEPTION, VISITORS AREA, ADMINISTRATIVE OFFICES, CONTROL OFFICES, WATER QUALITY LABORATORY, CONFRENCE ROOM, OPERATORS QUARTERS/LOCKERS/SHOWERS, LUNCHROOM AND RESTROOMS.

THE PROJECT WILL BE CONSTRUCTED IN (4) PHASES OF WORK:

DEMOLITION PHASE 1: DEMOLITION OF EXISTING GAZEBO STRUCTURE AND SELECTIVE DEMOLITION OF EXISTING SITE IMPROVEMENTS, UTILITIES AND LANDSCAPE AREAS IN PREPARATION OF CONSTRUCTION OF PHASE 2 NEW OPERATIONS AND LAB BUILDING.

CONSTRUCTION PHASE 1: CONSTRUCTION OF NEW OPERATIONS AND LAB BUILDING, TENANT IMPROVEMENTS AND ASSOCAITED SITEWORK AND UTILITIES.

DEMOLITION PHASE 2: DEMOLITION OF EXISTING OPERATIONS AND LAB BUILDING AND SELECTIVE DEMOLITION OF ADDITIONAL EXISTING SITE IMPROVEMENTS AND UTILITIES IN PREPARATION OF CONSTRUCTION OF PHASE 4 SITE IMPROVEMENTS, UTILITIES AND LANDSCAPE AREAS.

CONSTRUCTION PHASE 2: CONSTRUCTION OF ADDITIONAL SITE IMPROVEMENTS, ROADWAYS, UTILITIES AND LANDSCAPE AREAS.

DEFERRED APPROVALS

CONTRACTOR SHALL PROVIDE AND SUBMIT ENGINEERING CALCULATIONS, SHOP DRAWINGS AND OTHER EXHIBITS AND PAY PLAN CHECK FEES REQUIRED FOR DEFERRED SUBMITTAL WORK AND TO OBTAIN PERMITS PRIOR TO COMMENCING INSTALLATION OF THE WORK ON SITE:

A. FIRE SPRINKLER SYSTEMS
B. PRE-ENGINEERED TRUSSES

SEPARATE PERMITS

OWNER SHALL PROVIDE AND SUBMIT ENGINEERING CALCULATIONS. SHOP DRAWINGS AND OTHER EXHIBITS AND PAY PLAN CHECK FEES REQUIRED FOR SEPARATE PERMITS AND TO OBTAIN PERMITS PRIOR TO COMMENCING INSTALLATION OF THE WORK ON SITE:

A. FIRE SPRINKLERS (WET SYSTEM)
B. FIRE SPRINKLERS (DRY SYSTEM) 1
C. FIRE ALARM SYSTEM
D. BUILDING DEMOLITION PERMIT 2

APPLICABLE CODES AND STANDARDS

PARTIAL LIST OF APPLICABLE CODES AS OF JANUARY 1, 2023*

2022 CALIFORNIA ADMINISTRATIVE CODE (CAC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 1
2022 CALIFORNIA BUILDING CODE (CBC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2
(2021 INTERNATIONAL BUILDING CODE, VOL. 1 & 2, AND 2022 CALIFORNIA AMENDMENTS)
2022 CALIFORNIA ELECTRICAL CODE (CEC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 3
(2021 NATIONAL ELECTRICAL CODE AND 2022 CALIFORNIA AMENDMENTS)
2022 CALIFORNIA MECHANICAL CODE (CMC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 4
(2021 IAPMO UNIFORM MECHANICAL CODE AND 2022 CALIFORNIA AMENDMENTS)
2022 CALIFORNIA PLUMBING CODE (CPC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 5
(2021 IAPMO UNIFORM PLUMBING CODE AND 2022 CALIFORNIA AMENDMENTS)
2022 CALIFORNIA ENERGY CODE (CEC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 6
2022 CALIFORNIA FIRE CODE (CFC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 9
(2021 INTERNATIONAL FIRE CODE AND 2022CALIFORNIA AMENDMENTS)
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 11
2022 CALIFORNIA REFERENCED STANDARDS CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 12
(PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS)

PARTIAL LIST OF APPLICABLE STANDARDS
FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2022 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80. SEE CALIFORNIA BUILDING CODE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS.

NFPA 13-22 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
NFPA 14-19 - STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS
NFPA 10-21 - STANDARD FOR PORTABLE FIRE EXTINGUISHERS
NFPA 12-15 - STANDARD ON CARBON DIOXIDE EXTINGUISHING SYSTEMS
NFPA 12A-18 - STANDARD ON HALON 1301 FIRE EXTINGUISHING SYSTEMS
NFPA 13-22 - STANDARD FOR INSTALLATION OF SPRINKLER SYSTEMS (AS AMENDED)
NFPA 17-21 - STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS
NFPA 17A-21 - STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS
NFPA 20-19 - STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION
NFPA 24-19 - STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES (AS AMENDED)
NFPA 72-22 - NATIONAL FIRE ALARM AND SIGNALING CODE (AS AMENDED)
NFPA 80-19 - STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES
UL 300-2005(R2010) - STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT
UL 464-03 - AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES
UL 521-99 - STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
UL 1971-2002(R2010) - STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED
ICC 300-17 - STANDARD FOR BLEACHERS, FOLDING AND TELESCOPIC SEATING, AND GRANDSTANDS

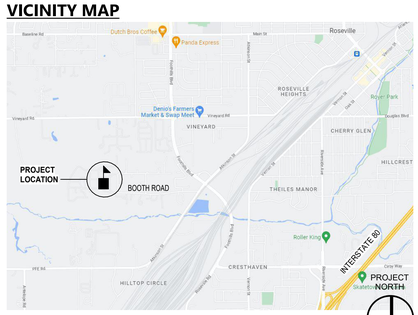
*ALL PARTS OF THE 2022 TITLE 24 HAVE AN EFFECTIVE DATE OF JANUARY 1, 2023 EXCEPT:
2022 CALIFORNIA ADMINISTRATIVE CODE - EFFECTIVE MARCH 5, 2022

SHEET INDEX

SHEET #	SHEET NAME
1. OVERALL GENERAL INFORMATION	
G-000	COVER SHEET
G-001	TITLE SHEET
G-002	CALGREEN (MANDATORY)
G-003	CALGREEN (MANDATORY)
G-004	CALGREEN (MANDATORY)
G-101	CODE SITE PLAN
G-201	CODE FLOOR PLAN
G-211	EXITING AND SIGNAGE PLAN
G-301	WALL TYPES (EXTERIOR)
G-302	WALL TYPES (INTERIOR)
G-900	ACCESSIBILITY CLEARANCES
G-923	SIGNAGE DETAILS
GENERAL SHEETS TOTAL: 12	
2. CIVIL ENGINEERING (FOR REFERENCE ONLY) 1	
C0.1	CIVIL COVER SHEET
C0.2	GENERAL NOTES
C0.3	GENERAL NOTES
C1.1	PHASE 1 DEMOLITION PLAN
C1.2	PHASE 1 DEMOLITION PLAN
C1.3	PHASE 2 DEMOLITION PLAN
C2.1	PHASE 1 PARTIAL GRADING PLAN
C2.2	PHASE 1 PARTIAL GRADING PLAN
C2.3	PHASE 2 PARTIAL GRADING PLAN
C3.1	PHASE 1 UTILITY PLAN
C3.2	PHASE 2 UTILITY PLAN
C4.1	PHASE 1 PARTIAL PAVING PLAN
C4.2	PHASE 1 PARTIAL PAVING PLAN
C4.3	PHASE 2 PARTIAL PAVING PLAN
C5.1	DETAILS
C5.2	DETAILS
C6.1	PHASE 1 EROSION CONTROL PLAN
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3. LANDSCAPE ARCHITECTURE	
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L-2.1	PLANTING PLAN
L-2.2	PLANTING CALCULATIONS
L-3.1	IRRIGATION DETAILS
L-3.2	IRRIGATION DETAILS
L-3.3	PLANTING DETAILS
L-3.4	IRRIGATION CALCULATIONS 2
LANDSCAPE ARCHITECTURE SHEETS TOTAL: 8	
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AS-102	SITE PLAN CONSTRUCTION PHASE 1
AS-103	SITE DEMO-PHASE 2
AS-104	SITE PLAN CONSTRUCTION PHASE 2
AS-105	OVERALL NEW SITE PLAN - PHASE 2
AS-106	ENLARGED SITE PLAN
AS-601	SITE DETAILS - TYPICAL
AS-603	SITE DETAILS - TYPICAL
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4. ARCHITECTURAL DRAWINGS	
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A-201	FLOOR PLAN
A-202	DIMENSION & WALL TYPE PLAN
A-211	REFLECTED CEILING PLAN
A-212	DIMENSIONED REFLECTED CEILING PLAN
A-221	ROOF PLAN
A-251	FINISH PLAN
A-252	INTERIOR FINISH SCHEDULE
A-253	LABORATORY EQUIPMENT PLAN
A-254	FURNITURE PLAN (REFERENCE ONLY)
A-301	EXTERIOR ELEVATIONS
A-401	BUILDING SECTIONS
A-402	BUILDING SECTIONS
A-411	WALL SECTIONS
A-412	WALL SECTIONS
A-413	WALL SECTIONS
A-414	WALL SECTIONS
A-415	WALL SECTIONS
A-501	ENLARGED FLOOR PLANS
A-502	ENLARGED FLOOR PLANS
A-601	INTERIOR ELEVATIONS
A-602	INTERIOR ELEVATIONS
A-603	INTERIOR ELEVATIONS
A-604	INTERIOR ELEVATIONS
A-605	INTERIOR ELEVATIONS
A-606	INTERIOR ELEVATIONS
A-607	INTERIOR ELEVATIONS
A-608	INTERIOR ELEVATIONS

SHEET #	SHEET NAME
A-701	EXTERIOR WALL DETAILS
A-710	EXTERIOR STOREFRONT DETAILS
A-711	DOOR AND WINDOW DETAILS
A-712	DOOR AND WINDOW DETAILS
A-720	METAL ROOF DETAILS
A-721	TPO ROOF DETAILS
A-730	CANOPY DETAILS
A-740	INTERIOR WALL DETAILS
A-741	INTERIOR WALL DETAILS
A-750	INTERIOR DETAILS
A-760	CEILING DETAILS
A-780	CASEWORK DETAILS
A-781	CASEWORK DETAILS
A-790	FIRESTOPPING PENETRATIONS - HORIZONTAL PIPES
1 A-791	FIRESTOPPING PENETRATIONS - HORIZ CABLES
A-801	DOOR SCHEDULE
A-811	WINDOW SCHEDULE
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S2.00	CURB PLAN
S2.01	FOUNDATION PLAN
S2.02	ROOF FRAMING PLAN
S3.01	BUILDING SECTIONS
S3.02	BUILDING SECTIONS
S5.01	TYPICAL CONCRETE DETAILS
S5.11	TYPICAL FRAMING AND NAILING DETAILS
S5.12	TYPICAL SHEAR WALL AND HOLDOWN DETAIL
S5.13	INTERIOR TYPICAL NON-STRUCTURAL DETAILS
S5.14	TYPICAL I-JOIST DETAILS
S5.15	TYPICAL WOOD TRUSS NOTES AND DETAILS
S5.16	MISC DETAILS
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M-002	MECHANICAL SCHEDULES
1 M-003	MECHANICAL SCHEDULES
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M-102	TITLE 24
M-103	TITLE 24
M-104	TITLE 24
1 M-105	TITLE 24
M-201	FLOOR PLAN - MECHANICAL
M-221	ROOF PLAN - MECHANICAL
M-301	REFRIGERANT PIPING PLAN
M-401	DETAILS
M-402	DETAILS
M-403	DETAILS
M-404	DETAILS
M-501	CONTROLS
M-502	CONTROLS
M-503	CONTROLS
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P-102	SITE PLAN - PLUMBING PHASE 2
P-200	FLOOR PLAN - PLUMBING FIXTURE IDENTIFICATION
P-201	FLOOR PLAN - PLUMBING WASTE & VENT
P-202	FLOOR PLAN - PLUMBING WATER & GAS
P-221	ROOF PLAN - PLUMBING
P-301	ENLARGED LAB WATER & WASTE PLANS
P-302	ENLARGED LAB DI WATER, AIR AND VAC PLANS
P-303	ENLARGED LOCKER ROOM PLANS
P-400	DETAILS
P-401	DETAILS
P-402	DETAILS
P-403	DETAILS
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8. ELECTRICAL ENGINEERING	
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E-002	LUMINAIRE SCHEDULE
E-003	TITLE 24 INDOOR LIGHTING
E-004	TITLE 24 INDOOR LIGHTING
E-005	TITLE 24 OUTDOOR LIGHTING
E-100	SITE PLAN - ELECTRICAL DEMOLITION
E-101	SITE PLAN - ELECTRICAL
E-102	SITE PLAN - LIGHTING
E-103	SITE PLAN - LIGHTING PHOTOMETRICS
E-201	FLOOR PLAN - POWER & SIGNAL
E-202	FLOOR PLAN - POWER - MECHANICAL
E-203	FLOOR PLAN - LIGHTING
E-204	ROOF PLAN - POWER
E-205	ROOF PLAN - SOLAR
E-301	ENLARGED FLOOR PLAN - POWER & SIGNAL
E-401	ONE LINE DIAGRAM
E-402	ONE LINE DIAGRAM - SOLAR
E-501	PANEL SCHEDULES
E-502	PANEL SCHEDULES
E-601	DETAILS
E-602	DETAILS
E-603	DETAILS
E-604	DETAILS
E-605	DETAILS
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9. FIRE PROTECTION (FOR REFERENCE ONLY)	
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FA-101	SITE PLAN - FIRE ALARM
FA-201	FLOOR PLAN - FIRE ALARM
FA-301	ONE LINE DIAGRAM & OPERATIONS MATRIX
FA-401	DETAILS
FA-402	DETAILS
FP-201	FLOOR PLAN - FIRE PROTECTION (FOR REFERENCE ONLY)
FIRE PROTECTION SHEETS TOTAL: 7	
OVERALL SHEET TOTAL: 170	

VICINITY MAP



PROJECT ADDRESS
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19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

CONSULTANTS

CIVIL ENGINEER
WARREN CONSULTING ENGINEERS, INC
1117 Windfield Way, Suite 110
El Dorado Hills, CA 95762
TEL (916)985-1870

LANDSCAPE ARCHITECT
YAMASAKI LANDSCAPE ARCHITECTURE
1223 High St
Auburn, CA 95603
TEL (530) 885-0040

STRUCTURAL ENGINEER
BUEHLER
600 Q St, STE 200
Sacramento, CA 95811
TEL (916) 443-0303

MEP ENGINEER
PETERS ENGINEERING
7750 College Town Dr, STE 101
Sacramento, CA 95817
TEL (916) 447-2841

ARCHITECT STAMP | CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments
2	10/23/24	PC Comments
3	2/12/2025	Preliminary Bid Set

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
TITLE SHEET

DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
G-001

DATE: May 29, 2024

BID SET (PRELIMINARY)

DATE PLOTTED: 2/13/2025 3:16:48 PM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt

CALGREEN CODE COMPLIANCE

THIS PROJECT IS SUBJECT TO THE REQUIREMENTS OF THE 2022 CALGREEN CODE (TITLE 24CCR, PART II) AS ADOPTED BY THE CITY OF ROSEVILLE WITH APPLICABLE CITY CODE AMMENDMENTS. MANDATORY MEASURES ARE LOCATED AT DRAWING SHEET G-002-004.

SIGNATURE OF THE ARCHITECT/ENGINEER | DATE | LICENSE NUMBER | EXPIRATION DATE

AIA California

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2023)

Y = YES
N/A = NOT APPLICABLE
RESPON. PARTY = RESPONSIBLE PARTY (ie: ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

Y | N/A | RESPON. PARTY

CHAPTER 3
GREEN BUILDING
SECTION 301 GENERAL

301.1 SCOPE. Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code. Voluntary green building measures are also included in the application checklists and may be included in the design and construction of structures covered by this code, but are not required unless adopted by a city, county, or city and county as specified in Section 101.7.

301.3 NONRESIDENTIAL ADDITIONS AND ALTERATIONS. [BSC-CG] The provisions of individual sections of Chapter 5 apply to newly constructed buildings, building additions of 1,000 square feet or greater, and/or building alterations with a permit valuation of $200,000 or above (for occupancies within the authority of California Building Standards Commission). Code sections relevant to additions and alterations shall only apply to the portions of the building being added or altered within the scope of the permitted work.

A code section will be designated by a banner to indicate where the code section only applies to newly constructed buildings [N] or to additions and/or alterations [A]. When the code section applies to both, no banner will be used.

301.3.1 Nonresidential additions and alterations that cause updates to plumbing fixtures only:

Note: On and after January 1, 2014, certain commercial real property, as defined in Civil Code Section 1101.3, shall have its noncompliant plumbing fixtures replaced with appropriate water-conserving plumbing fixtures under specific circumstances. See Civil Code Section 1101.1 *et seq.* for definitions, types of commercial real property affected, effective dates, circumstances necessitating replacement of noncompliant plumbing fixtures, and duties and responsibilities for ensuring compliance.

301.3.2 Waste Diversion. The requirements of Section 5.408 shall be required for additions and alterations whenever a permit is required for work.

301.4 PUBLIC SCHOOLS AND COMMUNITY COLLEGES. (see GBSC)
301.5 HEALTH FACILITIES. (see GBSC)

SECTION 302 MIXED OCCUPANCY BUILDINGS

302.1 MIXED OCCUPANCY BUILDINGS. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.

SECTION 303 PHASED PROJECTS

303.1 PHASED PROJECTS. For shell buildings and others constructed for future tenant improvements, only those code measures relevant to the building components and systems considered to be new construction (or newly constructed) shall apply.

303.1.1 Initial Tenant improvements. The provisions of this code shall apply only to the initial tenant improvements to a project. Subsequent tenant improvements shall comply with the scoping provisions in Section 301.3 non-residential additions and alterations.

ABBREVIATION DEFINITIONS:

HCD	Department of Housing and Community Development
BSC	California Building Standards Commission
DSA-SS	Division of the State Architect, Structural Safety
OSHPD	Office of Statewide Health Planning and Development
LR	Low Rise
HR	High Rise
AA	Additions and Alterations
N	New

CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES
DIVISION 5.1 PLANNING AND DESIGN
SECTION 5.101 GENERAL

5.101.1 SCOPE
The provisions of this chapter outline planning, design and development methods that include environmentally responsible site selection, building design, building siting and development to protect, restore and enhance the environmental quality of the site and respect the integrity of adjacent properties.

SECTION 5.102 DEFINITIONS

5.102.1 DEFINITIONS
The following terms are defined in Chapter 2 *(and are included here for reference)*

CUTOFF LUMINAIRES. Luminaires whose light distribution is such that the candela per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at an angle of 90 degrees above nadir, and 100 (10 percent) at a vertical angle of 80 degrees above nadir. This applies to all lateral angles around the luminaire.

LOW-EMITTING AND FUEL EFFICIENT VEHICLES.
Eligible vehicles are limited to the following:

1. Zero emission vehicle (ZEV), enhanced advanced technology PZEV (enhanced AT ZEV) or transitional zero emission vehicles (TZEV) regulated under CCR, Title 13, Section 1962.
2. High-efficiency vehicles, regulated by U.S. EPA, bearing a fuel economy and greenhouse gas rating od 9 oe 10 as regulated under 40 CFR Section 600 Subpart D.

NEIGHBORHOOD ELECTRIC VEHICLE (NEV). A motor vehicle that meets the definition of "low-speed vehicle" either in Section 385.5 of the Vehicle Code or in 49CFR571.500 (as it existed on July 1, 2000), and is certified to zero-emission vehicle standards.

TENANT-OCCUPANTS. Building occupants who inhabit a building during its normal hours of operation as permanent occupants, such as employees, as distinguished from customers and other transient visitors.

VANPOOL VEHICLE. Eligible vehicles are limited to any motor vehicle, other than a motortruck or truck tractor, designed for carrying more than 10 but not more than 15 persons including the driver, which is maintained and used primarily for the nonprofit work-related transportation of adults for the purpose of ridesharing.

Note: Source: Vehicle Code, Division 1, Section 668

ZEV. Any vehicle certified to zero-emission standards.

SECTION 5.106 SITE DEVELOPMENT

5.106.1 STORM WATER POLLUTION PREVENTION FOR PROJECTS THAT DISTURB LESS THAN ONE ACRE OF LAND. Newly constructed projects and additions which disturb less than one acre of land, and are not part of a larger common plan of development or sale, shall prevent the pollution of storm water runoff from the construction activities through one or more of the following measures:

5.106.1.1 Local ordinance. Comply with a lawfully enacted storm water management and/or erosion control ordinance.

5.106.1.2 Best Management Practices (BMPs). Prevent the loss of soil through wind or water erosion by implementing an effective combination of erosion and sediment control and good housekeeping BMPs.

1. Soil loss BMPs that should be considered for implementation as appropriate for each project include, but are not limited to, the following:
   a. Scheduling construction activity during dry weather, when possible.
   b. Preservation of natural features, vegetation, soil, and buffers around surface waters.
   c. Drainage swales or lined ditches to control stormwater flow.
   d. Mulching or hydroseeding to stabilize disturbed soils.
   e. Erosion control to protect slopes.
   f. Protection of storm drain inlets (gravel bags or catch basin inserts).
   g. Perimeter sediment control (perimeter silt fence, fiber rolls).
   h. Sediment trap or sediment basin to retain sediment on site.
   i. Stabilized construction exits.
   j. Wind erosion control.
   k. Other soil loss BMPs acceptable to the enforcing agency.
2. Good housekeeping BMPs to manage construction equipment, materials, non-stormwater discharges and wastes that should be considered for implementation as appropriate for each project include, but are not limited to, the following:
   a. Dewatering activities.
   b. Material handling and waste management.
   c. Building materials stockpile management.
   d. Management of washout areas (concrete, paints, stucco, etc.).
   e. Control of vehicle/equipment fueling to contractor's staging area.
   f. Vehicle and equipment cleaning performed off site.
   g Spill prevention and control.
   h. Other housekeeping BMPs acceptable to the enforcing agency.

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5.106.2 STORMWATER POLLUTION PREVENTION FOR PROJECTS THAT DISTURB ONE OR MORE ACRES OF LAND. Comply with all lawfully enacted stormwater discharge regulations for projects that (1) disturb one acre or more of land, or (2) disturb less than one acre of land but are part of a larger common plan of development sale.

Note: Projects that (1) disturb one acre or more of land, or (2) disturb less than one acre of land but are part of the larger common plan of development or sale must comply with the post-construction requirements detailed in the applicable National Pollutant Discharge Elimination System (NPDES) General permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board or the Lahontan Regional Water Quality Control Board (for projects in the Lake Tahoe Hydrologic Unit).

The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff (pre-project hydrology) with the installation of postconstruction stormwater management measures. The NPDES permits emphasize runoff reduction through on-site stormwater use, interception, evapotranspiration, and infiltration through nonstructural controls, such as Low Impact Development (LID) practices, and conversation design measures. Stormwater volume that cannot be addressed using nonstructural practices is required to be captured in structural practices and be approved by the enforcing agency.

Refer to the current applicable permits on the State Water Resources Control Board website at: www.waterboards.ca.gov/constructionstormwater. Consideration to the stormwater runoff management measures should be given during the initial design process for appropriate integration into site development.

5.106.4 BICYCLE PARKING. For buildings within the authority of California Building Standards Commission as specified in Section 103, comply with Section 5.106.4.1. For buildings within the authority of the Division of the State Architect pursuant to Section 105, comply with Section 5.106.4.2

5.106.4.1 Bicycle parking. [BSC-CG] Comply with Sections 5.106.4.1.1 and 5.106.4.1.2; or meet the applicable local ordinance, whichever is stricter.

5.106.4.1.1 Short-term bicycle parking. If the new project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack.
Exception: Additions or alterations which add nine or less visitor vehicular parking spaces.

5.106.4.1.2 Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility.

5.106.4.1.3 For additions or alterations that add 10 or more tenant-occupant vehicular parking spaces, provide secure bicycle parking for 5 percent of the tenant vehicular parking spaces being added, with a minimum of one bicycle parking facility.

5.106.4.1.4 For new shell buildings in phased projects provide secure bicycle parking for 5 percent of the anticipated tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility.

5.106.4.1.5 Acceptable bicycle parking facility for Sections 5.106.4.1.2, 5.106.4.1.3, and 5.106.4.1.4 shall be convenient from the street and shall meet one of the following:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.

5.106.4.2 Bicycle parking. [DSA-SS] For public schools and community colleges, comply with Sections 5.106.4.2.1 and 5.106.4.2.2

5.106.4.2.1 Student bicycle parking. Provide permanently anchored bicycle racks conveniently accessed with a minimum of four two-bike capacity racks per new building.
5.106.4.2.2 Staff bicycle parking. Provide permanent, secure bicycle parking conveniently accessed with a minimum of two staff bicycle parking spaces per new building. Acceptable bicycle parking facilities shall be convenient from the street or staff parking area and shall meet one of the following:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

5.106.5.3 Electric vehicle (EV) charging. [N] Construction to provide electric vehicle infrastructure and facilitate electric vehicle charging shall comply with Section 5.106.5.3.1 and shall be provided in accordance with regulations in the California Building Code and the California Electrical Code.

Exceptions:
1. On a case-by-case basis where the local enforcing agency has determined compliance with this section is not feasible based upon one of the following conditions:
   a. Where there is no local utility power supply
   b. Where the local utility is unable to supply adequate power.
   c. Where there is evidence suitable to the local enforcement agency substantiating the local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.
2. Parking spaces accessible only by automated mechanical car parking systems are not required to comply with this code section

5.106.5.3.1 EV capable spaces.
[N] EV capable spaces shall be provided in accordance with Table 5.106.5.3.1 and the following requirements:
1. Raceways complying with the California Electrical Code and no less that 1-inch (25 mm) diameter shall be provided and shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the EV capable and into a suitable listed cabinet, box,enclosure or equivalent. A common raceway may be used to serve multiple EV charging spaces.
2. A service panel or subpanel (s) shall be provided with panel space and electrical load capacity for a dedicated 208/240 volt, 40-ampere minimum branch circuit for each EV capable space, with delivery of 30-ampere minimum to an installed EVSE at each EVCS.
3. The electrical system and any on-site distribution transformers shall have sufficient capacity to supply full rated amperage at each EV capable space.
4. The service panel or subpanel circuit directory shall identify the reserved overcurrent protective devices space(s) as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."

Note: A parking space served by electric vehicle supply equipment or designed as a future EV charging space shall count as at least one standard automobile parking space only for the purpose of complying with any applicable minimum parking space requirements established by an enforcement agency. See vehicle Code Section 22511.2 for further details.

TABLE 5.106.5.3.1

TOTAL NUMBER OF ACTUAL PARKING SPACES	NUMBER OF REQUIRED EV CAPABLE SPACES	NUMBER OF EVCS (EV CAPABLE SPACES PROVIDED WITH EVSE)^2
0-9	0	0
10-25	2	0
26-50	8	2
51-75	13	3
76-100	17	4
101-150	25	6
151-200	35	9
201 AND OVER	20% of total[1]	25% of EV capable spaces[1]

1. Where there is insufficient electrical supply.
2. The number of required EVCS (EV capable spaces provided with EVSE) in column 3 count towards the total number of required EV capable spaces shown in column 2.

5.106.5.3.2 Electric vehicle charging stations (EVCS)
EV capable spaces shall be provided with EVSE to create EVCS in the number indicated in Table 5.106.5.3.1. The EVCS required by Table 5.106.5.3.1 may be provided with EVSE in any combination of Level 2 and Direct Current Fast Charging (DCFC), except that at least one Level 2 EVSE shall be provided.

One EV charger with multiple connectors capable of charging multiple EVs simultaneously shall be permitted if the electrical load capacity required by Section 5.106.5.3.1 for each EV capable space is accumulatively supplied to the EV charger.

The installation of each DCFC EVSE shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by five and reduce proportionally the required electrical load capacity to the service panel or subpanel.

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5.106.5.3.3 Use of automatic load management systems (ALMS).
ALMS shall be permitted for EVCS. When ALMS is installed, the required electrical load capacity specified in Section 5.106.5.3.1 for each EVCS may be reduced when serviced by an EVSE controlled by an ALMS. Each EVSE controlled by an ALMS shall deliver a minimum 30 amperes to an EV when charging one vehicle and shall deliver a minimum 3.3 kW while simultaneously charging multiple EVs.

5.106.5.3.4 Accessible EVCS.
When EVSE is installed, accessible EVSC shall be provided in accordance with the *California Building Code*, Chapter 11B, Section 11B-228.3.
Note: For EVCS signs, refer to Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s).

5.106.5.4 Electric Vehicle (EV) charging: medium-duty and heavy-duty. [N]
Construction shall comply with section 5.106.5.4.1 to facilitate future installation of electric vehicle supply equipment (EVSE). Construction for warehouses, grocery stores and retail stores with planned off-street loading spaces shall also comply with Section 5.106.5.4.1 for future installation of medium- and heavy-duty EVSE.
Exceptions:
1. On a case-by-case basis where the local enforcing agency has determined compliance with this section is not feasible based upon one of the following conditions:
   a. Where there is no local utility power supply.
   b. Where the local utility is unable to supply adequate power.
   c. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.

When EVSE(s) is/are installed, it shall be in accordance with the *California Building Code*, the *California Electrical Code* and as follows:

5.106.5.4.1 Electric vehicle charging readiness requirements for warehouse, grocery stores and retail stores with planned off-street loading spaces.
[N] In order to avoid future demolition when adding EV charging supply and distribution equipment, spare raceway(s) and busway(s) and adequate capacity for transformers(s), service panels(s) or subpanel(s) shall be installed at the time of construction in accordance with the California Electrical Code. Construction plans and specifications shall include but are not limited to, the following:
1. The transformer, main service equipment and subpanel shall meet the minimum power requirement in Table 5.106.5.4.1 to accommodate the dedicated branch circuits for the future installation of EVSE.
2. The construction documents shall indicate on or more location(s) convenient to the planned offstreet loading space(s) reserved for medium-and heavy-duty ZEV charging cabinets and charging dispensers, and a pathway reserved for routing of conduit from the termination of the raceway(s) or busway(s) to the charging cabinet(s) and dispenser(s) as shown in Table 5.106.5.4.1
3. Raceway(s) or busway(s) originating at a main service panel or a subpanel(s) serving the area where potential future medium-and heavy-duty EVSE will be located and shall terminate in close proximity to the potential future location of the charging equipments for medium- and heavy-duty vehicles.
4. The raceway(s) or busway(s) shall be sufficient size to carry the minimum additional system load to the future location of the charging for medium- and heavy-duty ZEVs as shown in Table 5.106.5.4.1.

TABLE 5.106.5.4.1 RACEWAY CONDUIT AND PANEL POWER REQUIREMENTS FOR MEDIUM- AND HEAVY-DUTY EVSE [N]

BUILDING TYPE	BUILDING SIZE (SQ. FT.)	NUMBER OF OFF-STREET LOADING SPACES	ADDITIONAL CAPACITY REQUIRED (KVA) FOR RACEWAY & BUSWAY AND TRANSFORMER & PANEL
Grocery	10,000 to 90,000	1 or 2	200
		3 or Greater	400
	Greater than 90,000	1 or Greater	400
Retail	10,000 to 135,000	1 or 2	200
		3 or Greater	400
	Greater than 135,000	1 or Greater	400
Warehouse	20,000 to 256,000	1 or 2	200
		3 or Greater	400
	Greater than 256,000	1 or Greater	400

5.106.8 LIGHT POLLUTION REDUCTION. [N]. I Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the California Energy Code for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the California Administrative Code; and
2. Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8);
3. Uplight and Glare ratings as defined in California Energy Code (shown in Tables 130.2-A and 130.2-B in Chapter 8) and
4. Allowable BUG ratings not exceeding those shown in Table 5.106.8, [N] or Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

Exceptions: [N]

1. Luminaires that qualify as exceptions in Sections 130.2 (b) and 140.7 of the California Energy Code.
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the California Energy Code, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.
5. Luminaires with less than 6,200 initial luminaire lumens.

TABLE 5.106.8 [N] MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS[1,2]

ALLOWABLE RATING	LIGHTING ZONE LZ0	LIGHTING ZONE LZ1	LIGHTING ZONE LZ2	LIGHTING ZONE LZ3	LIGHTING ZONE LZ4
MAXIMUM ALLOWABLE BACKLIGHT RATING [3]					
Luminaire greater than 2 mounting heights (MH) from property line	N/A	No Limit	No Limit	No Limit	No Limit
Luminaire back hemisphere is 1-2 MH from property line	N/A	B2	B3	B4	B4
Luminaire back hemisphere is 0.5-1 MH from property line	N/A	B1	B2	B3	B3
Luminaire back hemisphere is less than 0.5 MH from property line	N/A	B0	B0	B1	B2
MAXIMUM ALLOWABLE UPLIGHT RATING (U)					
For area lighting [3]	N/A	U0	U0	U0	U0
For all other outdoor lighting,including decorative luminaires	N/A	U1	U2	U3	UR

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5.106.5.3.5 Maximum allowable GLARE rating. (G)

MAXIMUM ALLOWABLE GLARE RATING (G)					
MAXIMUM ALLOWABLE GLARE RATING (G)	N/A	G1	G2	G3	G4
MAXIMUM ALLOWABLE GLARE RATING (G)	N/A	G0	G1	G1	G2
MAXIMUM ALLOWABLE GLARE RATING (G)	N/A	G0	G0	G1	G1
MAXIMUM ALLOWABLE GLARE RATING (G)	N/A	G0	G0	G0	G1

1. IESNA Lighting Zones 0 and 5 are not applicable; refer to Lighting Zones as defined in the *California Energy Code* and Chapter 10 of the *California Administrative Code.*

2. For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.

3. General lighting luminaires in areas such as outdoor parking, sales or storage lots shall meet these reduced ratings. Decorative luminaires located in these areas shall meet *U*-value limits for "all other outdoor lighting"

5.106.8.1 Facing- Backlight
Luminaries within 2MH of a property line shall be oriented so that the nearest property line is behind the fixture, and shall comply with the backlight rating specified in Table 5.106.8 based on the lighting zone and distance to the nearest point of that property line.
Exception: Corners. If two property lines (or two segments of the same property line) have equidistant point to the luminaire, then the luminaire may be oriented so that the intersection of the two lines (the corner) is directly behind the luminaire. The luminaire shall still use the distance to the nearest points(s) on the property lines to determine the required backlight rating.

5.106.8.2 Facing-Glare.
For luminaires covered by 5.106.8.1, if a property line also exists within or extends into the front hemisphere within 2MH of the luminaire then the luminaire shall comply with the more stringent glare rating specified in Table 5.106.8 based on the lighting zone and distance to the nearest point on the nearest property line within the front hemisphere.

Note: [N]
1.See also *California Building Code*, Chapter 12, Section 1205.6 for college campus lighting requirements for parking facilities and walkways.
2.Refer to Chapter 8 (Compliance Forms, Worksheets and Reference Material) for IES TM-15-11 Table A-1, *California Energy Code* Tables 130.2-A and 130.2-B.
3. Refer to the *California Building Code* for requirements for additions and alterations.

5.106.10 GRADING AND PAVING. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales.
2. Water collection and disposal systems.
3. French drains.
4. Water retention gardens.
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.
Exception: Additions and alterations not altering the drainage path.

5.106.12 SHADE TREES [DSA-SS]. Shade Trees shall be planted to comply with Sections 5.106.12.1, 5.106.12.2, and 5.106.12.3. Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section 5.304.6.

5.106.12.1 Surface parking areas. Shade tree plantings, minimum #10 container size or equal, shall be installed to provide shade over 50 percent of the parking area within 15 years.

Exceptions: Surface parking area covered by solar photovoltaic shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5 shall be permitted in whole or in part in lieu of shade tree planting.

5.106.12.2 Landscape areas. Shade trees plantings, minimum #10 container size or equal shall be installed to provide shade of 20% of the landscape area within 15 years.

Exceptions: Playfields for organized sport activity are not included in the total area calculation.

5.106.12.3. Hardscape areas. Shade tree plantings, minimum #10 container size or equal shall be installed to provide shade over 20 percent of the hardscape area within 15 years.

Exceptions:
1. Walks, hardscape areas covered by solar photovoltaic shade structures or shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5 shall be permitted in whole or in part in lieu of shade tree planting.
2. Designated and marked play areas of organized sport activity are not included in the total area calculation.

DIVISION 5.2 ENERGY EFFICIENCY
SECTION 5.201 GENERAL

5.201.1 Scope [BSC-CG]. ***California Energy Code [DSA-SS].*** For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.

DIVISION 5.3 WATER EFFICIENCY AND CONSERVATION
SECTION 5.301 GENERAL

5.301.1 Scope. The provisions of this chapter shall establish the means of conserving water use indoors, outdoors and in wastewater conveyance.

SECTION 5.302 DEFINITIONS

5.302.1 Definitions. The following terms are defined in Chapter 2 *(and are included here for reference)*

EVAPOTRANSPIRATION ADJUSTMENT FACTOR (ETAF) [DSA-SS]. An adjustment factor when applied to reference evapotranspiration that adjusts for plant factors and irrigation efficiency, which ae two major influences on the amount of water that needs to be applied to the landscape.

FOOTPRINT AREA [DSA-SS]. The total area of the furthest exterior wall of the structure projected to natural grade, not including exterior areas such as stairs, covered walkways, patios and decks.

METERING FAUCET. A self-closing faucet that dispenses a specific volume of water for each actuation cycle. The volume or cycle duration can be fixed or adjustable.

GRAYWATER. Pursuant to Health and Safety Code Section 17922.12, "graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines and laundry tubs, but does not include waste water from kitchen sinks or dishwashers.

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). The California ordinance regulating landscape design, installation and maintenance practices that will ensure commercial, multifamily and other developer installed landscapes greater than 2500 square feet meet an irrigation water budget developed based on landscaped area and climatological parameters.

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). [HCD] The California model ordinance (California Code of Regulations, Title 23, Division 2, Chapter 2.7), regulating landscape design, installation and maintenance practices. Local agencies are required to adopt the updated MWELO, or adopt a local ordinance at least as effective as the MWELO.

POTABLE WATER. Water that is drinkable and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards. See definition in the California Plumbing Code, Part 5.

POTABLE WATER. [HCD] Water that is satisfactory for drinking, culinary, and domestic purposes, and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards and the requirements of the Health Authority Having Jurisdiction.

RECYCLED WATER. Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur [Water Code Section 13050 (n)]. Simply put, recycled water is water treated to remove waste matter attaining a quality that is suitable to use the water again.

SUBMETER. [HCD 1] A secondary device beyond a meter that measures water consumption of an individual rental unit within a multiunit residential structure or mixed-use residential and commercial structure. (See Civic Code Section 1954.202 (g) and Water code Section 517 for additional details.)

WATER BUDGET. Is the estimated total landscape irrigation water use which shall not exceed the maximum applied water allowance calculated in accordance with the Department of Water Resources Model Efficient Landscape Ordinance (MWELO).

DISCLAIMER:*THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.*

196
2237 DOUGLAS BLVD, SUITE 160
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ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT — GEORGE W. TSIOUVARAS — No. C18650 — Exp. 2/28/25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
8		

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
CALGREEN (MANDATORY)

DRAWN BY: XX | JOB NUMBER: 210015.01

SHEET NO.
G-002

DATE: May 29, 2024

DATE PLOTTED: 7/3/2024 12:49:42 PM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt

BID SET (PRELIMINARY)

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
NONRESIDENTIAL MANDATORY MEASURES, SHEET 2 (January 2023)

Y = YES
N/A = NOT APPLICABLE
RESPON. PARTY = RESPONSIBLE PARTY (ie: ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

SECTION 5.303 INDOOR WATER USE

5.303.1 METERS. Separate submeters or metering devices shall be installed for the uses described in Sections 503.1.1 and 503.1.2.

5.303.1.1 Buildings in excess of 50,000 square feet. Separate submeters shall be installed as follows:

1. For each individual leased, rented or other tenant space within the building projected to consume more than 100 gal/day (380 L/day), including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop.
2. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems:
   a. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s).
   b. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s).
   c. Steam and hot water boilers with energy input more than 500,000 Btu/h (147 kW).

5.303.1.2 Excess consumption. A separate submeter or metering device shall be provided for any tenant within a new building or within an addition that is projected to consume more than 1,000 gal/day.

5.303.3 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:

5.303.3.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type toilets.

Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.

5.303.3.2 Urinals.
5.303.3.2.1 Wall-mounted Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush.

5.303.3.2.2 Floor-mounted Urinals. The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush.

5.303.3.3 Showerheads. [BSC-CG]
5.303.3.3.1 Single showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

5.303.3.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time.
Note: A hand-held shower shall be considered a showerhead.

5.303.3.4 Faucets and fountains.

5.303.3.4.1 Nonresidential Lavatory faucets. Lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi.

5.303.3.4.2 Kitchen faucets. Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

5.303.3.4.3 Wash fountains. Wash fountains shall have a maximum flow rate of not more than1.8 gallons per minute/20 [rim space (inches) at 60 psi].

5.303.3.4.4 Metering faucets. Metering faucets shall not deliver more than 0.20 gallons per cycle.

5.303.3.4.5 Metering faucets for wash fountains. Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons per minute/20 [rim space (inches) at 60 psi].

Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

5.303.3.4.6 Pre-rinse spray value
When installed, shall meet the requirements in the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations), Section 1605.1(h)(4) Table H-2, Section 1605.3 (h)(4)(A), and Section 1607 (d)(7), and shall be equipped with an integral automatic shutoff.

FOR REFERENCE ONLY: The following table and code section have been reprinted from the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations), Section 1605.1 (h)(4) and Section 1605.3 (h)(4)(A).

TABLE H-2

STANDARDS FOR COMMERCIAL PRE-RINSE SPRAY VALUES MANUFACTURED ON OR AFTER JANUARY 28, 2019

PRODUCT CLASS [spray force in ounce force (ozf)]	MAXIMUM FLOW RATE (gpm)
Product Class 1 (≤ 5.0 ozf)	1.00
Product Class 2 (> 5.0 ozf and ≤ 8.0 ozf)	1.20
Product Class 3 (> 8.0 ozf)	1.28

5.303.4 COMMERCIAL KITCHEN EQUIPMENT.

5.303.4.1 Food Waste Disposers. Disposers shall either modulate the use of water to no more than 1 gpm when the disposer is not in use (not actively grinding food waste/re-load) or shall automatically shut off after no more than 10 minutes of inactivity. Disposers shall use no more than 8 gpm of water.
Note: This code section does not affect local jurisdiction authority to prohibit or require disposer installation

5.303.5 AREAS OF ADDITION OR ALTERATION. For those occupancies within the authority of the California Building Standards Commission as specified in Section 103, the provisions of Section 5.303.3 and 5.303.4 shall apply to new fixtures in additions or areas of alteration to the building.

5.303.6 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code* and in Chapter 6 of this code.

SECTION 5.304 OUTDOOR WATER USE

5.304.1 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.

Notes:
1. The Model Water Efficient Landscape Ordinance (MWELO) is located in the California Code of Regulations, Title 23, Chapter 2.7, Division 2.
2. MWELO and supporting documents, including a water budget calculator, are available at: https://www.water.ca.gov/.

5.304.6 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS. For public schools and community colleges, landscape projects as described in Sections 5.304.6.1 and 5.304.6.2 shall comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) commencing with Section 490 of Chapter 2.7, Division 2, Title 23, *California Code of Regulations*, except that the evapotranspiration adjustment factor (ETAF) shall be 0.65 with an additional water allowance for special landscape areas (SLA) of 0.35.

Exception: Any project with an aggregate landscape area of 2,500 square feet or less may comply with the prescriptive measures contained in Appendix D of the MWELO.

5.304.6.1 Newly constructed landscapes. New construction projects with an aggregate landscape area equal to or greater than 500 square feet.

5.304.6.2 Rehabilitated landscapes. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 1,200 square feet.

DIVISION 5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

SECTION 5.401 GENERAL

5.401.1 SCOPE. The provisions of this chapter shall outline means of achieving material conservation and resource efficiency through protection of buildings from exterior moisture, construction waste diversion, employment of techniques to reduce pollution through recycling of materials, and building commissioning or testing and adjusting.

SECTION 5.402 DEFINITIONS

5.402.1 DEFINITIONS. The following terms are defined in Chapter 2 *(and are included here for reference)*

ADJUST. To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.

BALANCE. To proportion flows within the distribution system, including sub-mains, branches and terminals, according to design quantities.

BUILDING COMMISSIONING. A systematic quality assurance process that spans the entire design and construction process, including verifying and documenting that building systems and components are planned, designed, installed, tested, operated and maintained to meet the owner's project requirements.

ORGANIC WASTE. Food waste, green waste, landscape and pruning wste, nonhazardous wood waste, and food soiled paper waste that is mixed in with food waste.

TEST. A procedure to determine quantitative performance of a system or equipment

SECTION 5.407 WATER RESISTANCE AND MOISTURE MANAGEMENT

5.407.1 WEATHER PROTECTION. Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1402.2 (Weather Protection), manufacturer's installation instructions or local ordinance, whichever is more stringent.

5.407.2 MOISTURE CONTROL. Employ moisture control measures by the following methods.

5.407.2.1 Sprinklers. Design and maintain landscape irrigation systems to prevent spray on structures.

5.407.2.2 Entries and openings. Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows:

5.407.2.2.1 Exterior door protection. Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:

1. An installed awning at least 4 feet in depth.
2. The door is protected by a roof overhang at least 4 feet in depth.
3. The door is recessed at least 4 feet.
4. Other methods which provide equivalent protection.

5.407.2.2.2 Flashing. Install flashings integrated with a drainage plane.

SECTION 5.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

5.408.1 CONSTRUCTION WASTE MANAGEMENT. Recycle and/or salvage for reuse a minimum of 65% of the non-hazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.

5.408.1.1 Construction waste management plan. Where a local jurisdiction does not have a construction and demolition waste management ordinance, submit a construction waste management plan that:

1. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
2. Determines if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
3. Identifies diversion facilities where construction and demolition waste material collected will be taken.
4. Specifies that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

5.408.1.2 Waste Management Company. Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.

Note: The owner or contractor shall make the determination if the construction and demolition waste material will be diverted by a waste management company.

Exceptions to Sections 5.408.1.1 and 5.408.1.2:

1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.
3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets.

5.408.1.3 Waste stream reduction alternative. The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65% minimum requirement as approved by the enforcing agency.

5.408.1.4 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Sections 5.408.1.1, through 5.408.1.3. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

Notes:

1. Sample forms found in "A Guide to the California Green Building Standards Code (Nonresidential)" located www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission-Resources-List-Folder/CALGreen may be used to assist in documenting compliance with the waste management plan.
2. Mixed construction and demolition debris processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

5.408.2 UNIVERSAL WASTE. [A] Additions and alterations to a building or tenant space that meet the scoping provisions in Section 301.3 for nonresidential additions and alterations, shall require verification that Universal Waste items such as fluorescent lamps and ballast and mercury containing thermostats as well as other California prohibited Universal Waste materials are disposed of properly and are diverted from landfills. A list of prohibited Universal Waste materials shall be included in the construction documents.

Note: Refer to the Universal Waste Rule link at: http://www.dtsc.ca.gov/universalwaste/

5.408.3 EXCAVATED SOIL AND LAND CLEARING DEBRIS. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.

Exception: Reuse, either on or off-site, of vegetation or soil contaminated by disease or pest infestation.

Notes:

1. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material.
2. For a map of know pest and/or disease quarantine zones, consult with the California Department of Food and Agriculture. (www.cdfa.ca.gov)

SECTION 5.410 BUILDING MAINTENANCE AND OPERATIONS

5.410.1 RECYCLING BY OCCUPANTS. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive.

Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code 42649.82 (a)(2)(A) et seq. shall also be exempt from the organic waste portion of this section.

5.410.1.1 Additions. All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30% or more in floor area, shall provide recycling areas on site.

Exception: Additions within a tenant space resulting in less than a 30% increase in the tenant space floor area.

5.410.1.2 Sample ordinance. Space allocation for recycling areas shall comply with Chapter 18, Part 3, Division 30 of the *Public Resources Code*. Chapter 18 is known as the California Solid Waste Reuse and Recycling Access Act of 1991 (Act).

Note: A sample ordinance for use by local agencies may be found in Appendix A of the document at the CalRecycle's web site.

5.410.2 COMMISSIONING. [N] New buildings 10,000 square feet and over. For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements. Commissioning shall be performed in accordance with this section by trained personnel with experience on projects of comparable size and complexity. For I-occupancies that are not regulated by OSHPD or for I-occupancies and L-occupancies that are not regulated y the California Energy Code Section 100.0 Scope, all requirements in Sections 5.410.2 through 5.410.2.6 shall apply.

Note: For energy-related systems under the scope (Section 100) of the California Energy Code, including heating, ventilation, air conditioning (HVAC) systems and controls, indoor lighting systems and controls, as well as water heating systems and controls, refer to California Energy Code Section 120.8 for commissioning requirements

Commissioning requirements shall include:

1. Owner's or Owner representative's project requirements.
2. Basis of design.
3. Commissioning measures shown in the construction documents.
4. Commissioning plan.
5. Functional performance testing.
6. Documentation and training.
7. Commissioning report.

Exceptions:

1. Unconditioned warehouses of any size.
2. Areas less than 10,000 square feet used for offices or other conditioned accessory spaces within unconditioned warehouses.
3. Tenant improvements less than 10,000 square feet as described in Section 303.1.1.
4. Open parking garages of any size, or open parking garage areas, of any size, within a structure.

Note: For the purposes of this section, unconditioned shall mean a building, area, or room which does not provide heating and or air conditioning.

Informational Notes:

1. IAS AC 476 is an accreditation criteria for organizations providing training and/or certification of commissioning personnel. AC 476 is available to the Authority Having Jurisdiction as a reference for qualifications of commissioning personnel. AC 476 des not certify individuals to conduct functional performance tests or to adjust and balance systems.
2. Functional performance testing for heating, ventilation, air conditioning systems and lighting controls must be performed in compliance with the *California Energy Code*.

5.410.2.1 Owner's or Owner Representative's Project Requirements (OPR). [N] The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. This documentation shall include the following:
1. Environmental and sustainability goals.
2. Building sustainable goals.
3. Indoor environmental quality requirements.
4. Project program, including facility functions and hours of operation, and need for after hours operation.
5. Equipment and systems expectations.
6. Building occupant and operation and maintenance (O&M) personnel expectations.

5.410.2.2 Basis of Design (BOD). [N] A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project. The Basis of Design document shall cover the following systems:

1. Renewable energy systems.
2. Landscape irrigation systems.
3. Water reuse system.

5.410.2.3 Commissioning plan. [N] Prior to permit issuance a commissioning plan shall be completed to document how the project will be commissioned. The commissioning plan shall include the following:
1. General project information.
2. Commissioning goals.
3. Systems to be commissioned. Plans to test systems and components shall include:
   a. An explanation of the original design intent.
   b. Equipment and systems to be tested, including the extent of tests.
   c. Functions to be tested.
   d. Conditions under which the test shall be performed.
   e. Measurable criteria for acceptable performance.
4. Commissioning team information.
5. Commissioning process activities, schedules and responsibilities. Plans for the completion of commissioning shall be included.

5.410.2.4 Functional performance testing. [N] Functional performance tests shall demonstrate the correct installation and operation of each component, system and system-to-system interface in accordance with the approved plans and specifications. Functional performance testing reports shall contain information addressing each of the building components tested, the testing methods utilized, and include any readings and adjustments made.

5.410.2.5 Documentation and training. [N] A Systems Manual and Systems Operations Training are required, including Occupational Safety and Health Act (OSHA) requirements in *California Code of Regulations* (CCR), Title 8, Section 5142, and other related regulations.

5.410.2.5.1 Systems manual. [N] Documentation of the operational aspects of the building shall be completed within the systems manual and delivered to the building owner or representative. The systems manual shall include the following:
1. Site information, including facility description, history and current requirements.
2. Site contact information.
3. Basic operations and maintenance, including general site operating procedures, basic troubleshooting, recommended maintenance requirements, site events log.
4. Major systems.
5. Site equipment inventory and maintenance notes.
6. A copy of verifications required by the enforcing agency or this code.
7. Other resources and documentation, if applicable.

5.410.2.5.2 Systems operations training. [N] A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and documented in the commissioning report and shall include the following:
1. System/equipment overview (what it is, what it does and with what other systems and/or equipment it interfaces).
2. Review and demonstration of servicing/preventive maintenance.
3. Review of the information in the Systems Manual.
4. Review of the record drawings on the system/equipment.

5.410.2.6 Commissioning report. [N] A report of commissioning process activities undertaken through the design and construction phases of the building project shall be completed and provided to the owner or representative.

5.410.4 TESTING AND ADJUSTING. New buildings less than 10,000 square feet. Testing and adjusting of systems shall be required for new buildings less than 10,000 square feet or new systems to serve an addition or alteration subject to Section 303.1.

5.410.4.2 (Reserved)

Note: For energy-related systems under the scope (Section 100) of the California Energy Code, including heating, ventilation, air conditioning (HVAC) systems and controls, indoor lighting system and controls, as well as water heating systems and controls, refer to California Energy Code Section 120.8 for commissioning requirements and Sections 120.5, 120.6, 130.4, and 140.9(b)3 for additional testing requirements of specific systems.

5.410.4.2 Systems. Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include at a minimum, as applicable to the project:

1. Renewable energy systems.
2. Landscape irrigation systems.
3. Water reuse systems.

5.410.4.3 Procedures. Perform testing and adjusting procedures in accordance with manufacturer's specifications and applicable standards on each system.

5.410.4.3.1 HVAC balancing. In addition to testing and adjusting, before a new space-conditioning system serving a building or space is operated for normal use, the system shall be balanced in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards; the National Environmental Balancing Bureau Procedural Standards; Associated Air Balance Council National Standards or as approved by the enforcing agency.

5.410.4.4 Reporting. After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.

5.410.4.5 Operation and maintenance (O & M) manual. Provide the building owner or representative with detailed operating and maintenance instructions and copies of guaranties/warranties for each system. O & M instructions shall be consistent with OSHA requirements in CCR, Title 8, Section 5142, and other related regulations.

5.410.4.5.1 Inspections and reports. Include a copy of all inspection verifications and reports required by the enforcing agency.

DIVISION 5.5 ENVIRONMENTAL QUALITY

SECTION 5.501 GENERAL

5.501.1 SCOPE. The provisions of this chapter shall outline means of reducing the quantity of air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of a building's installers, occupants and neighbors.

SECTION 5.502 DEFINITIONS

5.502.1 DEFINITIONS. The following terms are defined in Chapter 2 *(and are included here for reference)*

ARTERIAL HIGHWAY. A general term denoting a highway primarily for through traffic usually on a continuous route.

A-WEIGHTED SOUND LEVEL (dBA). The sound pressure level in decibels as measured on a sound level meter using the internationally standardized A-weighting filter or as computed from sound spectral data to which A-weighting adjustments have been made.

1 BTU/HOUR. British thermal units per hour, also referred to as Btu. The amount of heat required to raise one pound of water one degree Fahrenheit per hour, a common measure of heat transfer rate. A ton of refrigeration is 12,000 Btu, the amount of heat required to melt a ton (2,000 pounds) of ice at 32^{0} Fahrenheit.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). A metric similar to the day-night average sound level (Ldn), except that a 5 decibel adjustment is added to the equivalent continuous sound exposure level for evening hours (7pm to 10pm) in addition to the 10 dB nighttime adjustment used in the Ldn.

COMPOSITE WOOD PRODUCTS. Composite wood products include hardwood plywood, particleboard and medium density fiberboard. "Composite wood products" does not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, timber, prefabricated wood I--joists or finger--jointed lumber, all as specified in California Code of Regulations (CCR), Title 17, Section 93120.1(a).

Note: See CCR, Title 17, Section 93120.1.

DAY-NIGHT AVERAGE SOUND LEVEL (Ldn). The A-weighted equivalent continuous sound exposure level for a 24-hour period with a 10 dB adjustment added to sound levels occurring during nighttime hours (10p.m. to 7 a.m.).

DECIBEL (db). A measure on a logarithmic scale of the magnitude of a particular quantity (such as sound pressure, sound power, sound intensity) with respect to a reference quantity.

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are considered electric vehicles. For purposes of the *California Electrical Code*, off-road, self-propoelled electric vehicles, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats, and the like, are not included.

ELECTRIC VEHICLE CHARGING STATION(S) (EVCS)). One or more spaces intended for charging electric vehicles.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

ENERGY EQUIVALENT (NOISE) LEVEL (Leq). The level of a steady noise which would have the same energy as the fluctuating noise level integrated over the time of period of interest.

EXPRESSWAY. An arterial highway for through traffic which may have partial control of access, but which may or may not be divided or have grade separations at intersections.

FREEWAY. A divided arterial highway with full control of access and with grade separations at intersections.

GLOBAL WARMING POTENTIAL (GWP). The radiative forcing impact of one mass-based unit of a given greenhouse gas relative to an equivalent unit of carbon dioxide over a given period of time. Carbon dioxide is the reference compound with a GWP of one.

GLOBAL WARMING POTENTIAL VALUE (GWP VALUE). A 100-year GWP value published by the Intergovernmental Panel on Climate Change (IPCC) in either its Second Assessment Report (SAR) (IPCC, 1995); or its Fourth Assessment A-3 Report (AR4) (IPCC, 2007). The SAR GWP values are found in column "SAR (100-yr)" of Table 2.14.; the AR4 GWP values are found in column "100 yr" of Table 2.14.

HIGH-GWP REFRIGERANT. A compound used as a heat transfer fluid or gas that is: (a) a chlorofluorocarbon, a hdrochlorofluorocarbon, a hydrofluorocarbon, a perfluorocarbon, or any compound or blend of compounds, with a GWP value equal to or greater than 150, or (B) any ozone depleting substance as defined in Title 40 of the Code of Federal Regulations, Part 82, sec.82.3 (as amended March 10, 2009)**.**

LONG RADIUS ELBOW. Pipe fitting installed between two lengths of pipe or tubing to allow a change of direction, with a radius 1.5 times the pipe diameter.

LOW-GWP REFRIGERANT. A compound used as a heat transfer fluid or gas that: (A) has a GWP value less than 150, and (B) is not an ozone depleting substance as defined in Title 40 of the Code of Federal Regulations, Part 82, sec.82.3 (as amended March 10, 2009).

MERV. Filter minimum efficiency reporting value, based on ASHRAE 52.2--1999.

MAXIMUM INCREMENTAL REACTIVITY (MIR). The maximum change in weight of ozone formed by adding a compound to the "Base REactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundredths of a gram (g O^{3}/g ROC).

PRODUCT-WEIGHTED MIR (PWMIR). The sum of all weighted-MIR for all ingredients in a product subject to this article. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging).

PSIG. Pounds per square inch, guage.

REACTIVE ORGANIC COMPOUND (ROC). Any compound that has the potential, once emitted, to contribute to ozone formation in the troposphere.

SCHRADER ACCESS VALVES. Access fittings with a valve core installed.

SHORT RADIUS ELBOW. Pipe fitting installed between two lengths of pipe or tubing to allow a change of direction, with a radius 1.0 times the pipe diameter.

SUPERMARKET. For the purposes of Section 5.508.2, a supermarket is any retail food facility with 8,000 square feet or more conditioned area, and that utilizes either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units.

VOC. A volatile organic compound broadly defined as a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeters of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen and other elements. See CCR Title 17, Section 94508(a)

Note: Where specific regulations are cited from different agencies such as SCAQMD, ARB, etc., the VOC definition included in that specific regulation is the one that prevails for the specific measure in question.

SECTION 5.503 FIREPLACES

5.503.1 FIREPLACES. Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed woodstove or pellet stove, and refer to residential requirements in the California Energy Code, Title 24, Part 6, Subchapter 7, Section 150. Woodstoves, pellet stoves and fireplaces shall comply with applicable local ordinances.

5.503.1.1 Woodstoves. Woodstoves and pellet stoves shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits.

SECTION 5.504 POLLUTANT CONTROL

5.504.1 TEMPORARY VENTILATION. The permanent HVAC system shall only be used during construction if necessary to condition the building or areas of addition or alteration within the required temperature range for material and equipment installation. If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30% based on ASHRAE 52.1-1992 Replace all filters immediately prior to occupancy, or, if the building is occupied during alteration, at the conclusion of construction.

5.504.3 Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation and during storage on the construction site until final startup of the heating, cooling and ventilation equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system.

DISCLAIMER:THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT — REGINALD M. THOMAS — No. C18650 — Ren. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP
311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
CALGREEN (MANDATORY)

DRAWN BY: XX JOB NUMBER: 210015.01

SHEET NO.
G-003

DATE: May 29, 2024

BID SET (PRELIMINARY)

DATE PLOTTED: 7/3/2024 12:49:43 PM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
NONRESIDENTIAL MANDATORY MEASURES, SHEET 3 (January 2023)

Y = YES
N/A = NOT APPLICABLE
RESPON. PARTY = RESPONSIBLE PARTY (ie: ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

Y	N/A	RESPON. PARTY
☒	☐	GC

5.504.4 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.

5.504.4.1 Adhesives, sealants and caulks. Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:

1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below.

2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with Section 94507.

TABLE 5.504.4.1 - ADHESIVE VOC LIMIT[1,2]

Less Water and Less Exempt Compounds in Grams per Liter

ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT
INDOOR CARPET ADHESIVES	50
CARPET PAD ADHESIVES	50
OUTDOOR CARPET ADHESIVES	150
WOOD FLOORING ADHESIVES	100
RUBBER FLOOR ADHESIVES	60
SUBFLOOR ADHESIVES	50
CERAMIC TILE ADHESIVES	65
VCT & ASPHALT TILE ADHESIVES	50
DRYWALL & PANEL ADHESIVES	50
COVE BASE ADHESIVES	50
MULTIPURPOSE CONSTRUCTION ADHESIVES	70
STRUCTURAL GLAZING ADHESIVES	100
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250
OTHER ADHESIVES NOT SPECIFICALLY LISTED	50
SPECIALTY APPLICATIONS	
PVC WELDING	510
CPVC WELDING	490
ABS WELDING	325
PLASTIC CEMENT WELDING	250
ADHESIVE PRIMER FOR PLASTIC	550
CONTACT ADHESIVE	80
SPECIAL PURPOSE CONTACT ADHESIVE	250
STRUCTURAL WOOD MEMBER ADHESIVE	140
TOP & TRIM ADHESIVE	250
SUBSTRATE SPECIFIC APPLICATIONS	
METAL TO METAL	30
PLASTIC FOAMS	50
POROUS MATERIAL (EXCEPT WOOD)	50
WOOD	30
FIBERGLASS	80

1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.

2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168, www.arb.ca.gov/DRDB/SC/CURHTML/R1168.PDF

TABLE 5.504.4.2 - SEALANT VOC LIMIT

Less Water and Less Exempt Compounds in Grams per Liter

SEALANTS	CURRENT VOC LIMIT
ARCHITECTURAL	250
MARINE DECK	760
NONMEMBRANE ROOF	300
ROADWAY	250
SINGLE-PLY ROOF MEMBRANE	450
OTHER	420
SEALANT PRIMERS	
ARCHITECTURAL	
NONPOROUS	250
POROUS	775
MODIFIED BITUMINOUS	500
MARINE DECK	760
OTHER	750

NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.

5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of *California Code of Regulations*, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.

Y	N/A	RESPON. PARTY

TABLE 5.504.4.3 - CONT.

GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS

COATING CATEGORY	CURRENT VOC LIMIT
SPECIALTY COATINGS	
ALUMINUM ROOF COATINGS	400
BASEMENT SPECIALTY COATINGS	400
BITUMINOUS ROOF COATINGS	50
BITUMINOUS ROOF PRIMERS	350
BOND BREAKERS	350
CONCRETE CURING COMPOUNDS	350
CONCRETE/MASONRY SEALERS	100
DRIVEWAY SEALERS	50
DRY FOG COATINGS	150
FAUX FINISHING COATINGS	350
FIRE RESISTIVE COATINGS	350
FLOOR COATINGS	100
FORM-RELEASE COMPOUNDS	250
GRAPHIC ARTS COATINGS (SIGN PAINTS)	500
HIGH-TEMPERATURE COATINGS	420
INDUSTRIAL MAINTENANCE COATINGS	250
LOW SOLIDS COATINGS[1]	120
MAGNESITE CEMENT COATINGS	450
MASTIC TEXTURE COATINGS	100
METALLIC PIGMENTED COATINGS	500
MULTICOLOR COATINGS	250
PRETREATMENT WASH PRIMERS	420
PRIMERS, SEALERS, & UNDERCOATERS	100
REACTIVE PENETRATING SEALERS	350
RECYCLED COATINGS	250
ROOF COATINGS	50
RUST PREVENTATIVE COATINGS	250
SHELLACS:	
CLEAR	730
OPAQUE	550
SPECIALTY PRIMERS, SEALERS & UNDERCOATERS	100
STAINS	250
STONE CONSOLIDANTS	450
SWIMMING POOL COATINGS	340
TRAFFIC MARKING COATINGS	100
TUB & TILE REFINISH COATINGS	420
WATERPROOFING MEMBRANES	250
WOOD COATINGS	275
WOOD PRESERVATIVES	350
ZINC-RICH PRIMERS	340

1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS

2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.

3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2006. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.

5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:

1. Manufacturer's product specification
2. Field verification of on-site product containers

5.504.4.4 Carpet Systems.
All carpet installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Version 1.2, January 2017 (Emission testing method for California Specifications 01350).

See California Department of Public Health's website for certification programs and testing labs.
https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx#material

5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the California Department of Public Health,"Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers,"Version 1.2, January 2017 (Emission testing method for California Specifications 01350).

See California Department of Public Health's website for certification programs and testing labs.
https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx#material

5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.

5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.

5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.

TABLE 5.504.4.5 - FORMALDEHYDE LIMITS[1]

MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION

PRODUCT	CURRENT LIMIT
HARDWOOD PLYWOOD VENEER CORE	0.05
HARDWOOD PLYWOOD COMPOSITE CORE	0.05
PARTICLE BOARD	0.09
MEDIUM DENSITY FIBERBOARD	0.11
THIN MEDIUM DENSITY FIBERBOARD[2]	0.13

1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.

2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).

Y	N/A	RESPON. PARTY
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5.504.4.6 Resilient flooring systems. Where resilient flooring is installed, at least 80 percent of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health,"Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specifications 01350)

See California Department of Public Health's website for certification programs and testing labs.
https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx#material

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.4.7 Thermal insulation
Comply with the requirements of the California Department of Public Health, "Standard Method of the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, "Version 1.2, January 1.2, January 2017 (Emission testing method for California Specification 01350).
See California Department of Public Health's website for certification programs and testing labs.
https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx#material

5.504.4.7.1 Verification of compliance.
Documentation shall be provided verifying that thermal insulation materials meet the pollutant emission limits.

5.504.4.8 Acoustical ceiling and wall panels.
Comply with the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, " Version 1.2, January 2017 (Emission testing method for California Specification 01350).
See California Department of Public Health's website for certification programs and testing labs.

5.504.4.8.1 Verification of compliance. Documentation shall be provided verifying that acoustical finish materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions: Existing mechanical equipment.

5.504.5.3.1 Labeling. Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.

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5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.

SECTION 5.505 INDOOR MOISTURE CONTROL

5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.

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SECTION 5.506 INDOOR AIR QUALITY

5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the *California Energy Code*, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

☒	☐	MECH

5.506.2 CARBON DIOXIDE (CO_2) MONITORING. For buildings or additions equipped with demand control ventilation, CO_2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the California Energy Code, Section 120(c)(4).

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5.506.3 Carbon dioxide (CO2) monitoring in classrooms.
(DSA-SS) Each public K-12 school classroom, as listed in Table 120.1-A of the *California Energy Code*, shall be equipped with a carbon dioxide monitor or sensor that meets the following requirements:

1. The monitor or sensor shall be permanently affixed in a tamper-proof manner in each classroom between 3 and 6 feet (914 mm and 1829 mm) above the floor and at least 5 feet (1524 mm) away from door and operable windows.
2. When the monitor or sensor is not integral to an Energy Management Control System (EMCS), the monitor or sensor shall display the carbon dioxide readings on the device. When the sensor is integral to an EMCS, the carbon dioxide readings shall be available to and regularly monitored by facility personnel.
3. A monitor shall provide notification though a visual indicator on the monitor when the carbon dioxide levels in the classroom have exceeded 1,100ppm. A sensor integral to an EMCS shall provide notification to facility personnel through a visual and/or audible indicator when the carbon dioxide levels in the classroom have exceeded 1,100ppm.
4. The monitor or sensor shall measure carbon dioxide levels at minimum 15- minute intervals and shall maintain a record of previous carbon dioxide measurements of not less than 30 days duration.
5. The monitor or sensor used to measure carbon dioxide levels shall have the capacity to measure carbon dioxide levels with a range of 400ppm to 2000ppm or greater.
6. The monitor or sensor shall be certified by the manufacturer to be accurate within 75ppm at 1,000ppm carbon dioxide concentration and shall be certified by the manufacturer to require calibration no more frequently than once every 5 years.

SECTION 5.507 ENVIRONMENTAL COMFORT

5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

   Exceptions:

   1. L_{dn} or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
   2. L_{dn} or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1. Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_{eq} - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (L_{eq}-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbase.org/PDF/CaseStudies/stc_icc_ratings.pdf.

SECTION 5.508 OUTDOOR AIR QUALITY

5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

Y	N/A	RESPON. PARTY
☐	☒	

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO_2), and potentially other refrigerants.

5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fourth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the *California Mechanical Code* and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit ovr the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device tha indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 50 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.

CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

702 QUALIFICATIONS

702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a special inspector:

1. Certification by a national or regional green building program or standard publisher.
2. Certification by a statewide energy consulting or verification organization, such as HERS raters, building performance contractors, and home energy auditors.
3. Successful completion of a third party apprentice training program in the appropriate trade.
4. Other programs acceptable to the enforcing agency.

Notes:

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC-CG] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

703 VERIFICATIONS

703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.

DISCLAIMER: *THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.*

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ARCHITECT STAMP

LICENSED ARCHITECT — REGINALD W. THOMAS — No. C18650 — Exp. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
A		

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
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DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
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SHEET TITLE
CALGREEN (MANDATORY)

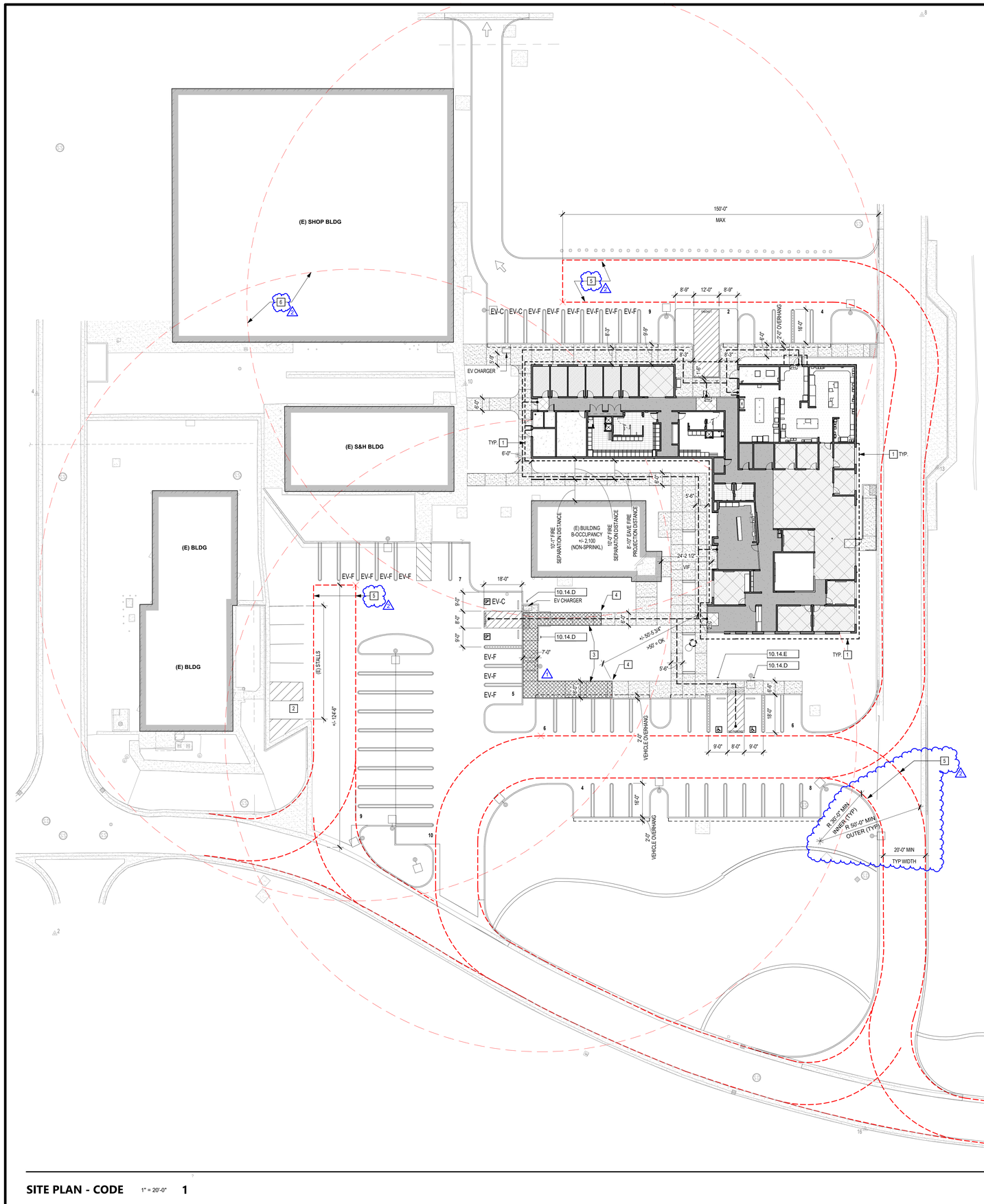
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SHEET NO.
G-004

DATE: May 29, 2024

BID SET (PRELIMINARY)

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SITE PLAN - CODE 1" = 20'-0" **1**

PARKING ANALYSIS

75 TOTAL STALLS, INCLUDING

EXISTING:
(4) (E) REGULAR STALLS
(1) (E) VAN ACCESSIBLE STALL
(5) STALLS

NEW:
(1) VAN ACCESSIBLE STALL
(1) VAN ACCESSIBLE EVSE STALL
(2) STANDARD ACCESSIBLE STALLS
(2) EVSE STALLS
(33) 9'X16' STALLS W/2' OVERHANG
(31) 9'X18' STALLS
(70) STALLS

ACCESSIBLE STALLS:
REQUIRED:
PER CBC 11B-208.2 & 11B-208.2.4 FOR 51-75 STALLS
(3) STALLS: (1) VAN & (2) STANDARD ACCESSIBLE STALLS

PROVIDED:
(4) STALLS: (2) VAN & (2) STANDARD ACCESSIBLE STALLS
(1) VAN-ACCESSIBLE EVSE STALL

EV STALLS:
REQUIRED:
PER TABLE 5.106.5.3.1 FOR TOTAL # OF STALLS 51-75:
(3) EVSE STALLS REQUIRED
(13) EV CAPABLE SPACES REQUIRED

PROVIDED:
(3) STALLS W/CHARGING EQUIPMENT, INCLUDING 1-VAN-ACCESSIBLE
(13) EV CAPABLE STALLS (INCLUDED IN OVERALL COUNT)

FIRE SEPARATION

TABLE 602 EXTERIOR WALLS FIRE SEPARATION
10 FT OR LESS = 0 HR RATING @ TYPE V-B

TABLE 705.2 MIN DISTANCE OF PROJECTION
5 FT OR GREATER = 40 IN

SECTIONS 705.2.2 & 705.2.3
COMBUSTIBLE PROJECTION GREATER THAN 5FT FROM LINE OF FIRE SEPARATION = OK

SAFE DISPERSAL AREA

PER CBC 1028.5:

OCCUPANT CALCULATION:
TOTAL OCCUPANTS (SEE G-201) = 138
OCCUPANTS W/ACCESSIBILITY AREA REQS = 138 * .02 = 3

DISPERSAL AREA CALCULATION:
OCCUPANT AREA = (138-3) * 5 SF/PERSON = 675 SF
ACCESSIBLE OCCUPANT AREA = 3 * 10 SF = 30 SF
TOTAL REQUIRED AREA = 675 SF + 30 SF = 705 SF
TOTAL PROVIDED AREA = 747 SF > 705 SF = OK

DISPERSAL AREA SEPARATION:
MIN REQ'D SEPARATION = 50'-0"
PROVIDED SEPARATION = 50'-5"

KEYNOTES

10.14.D REGULAR ACCESSIBLE STALL SIGN
10.14.E VAN ACCESSIBLE STALL SIGN

SHEET NOTES G-101

1 DASHED LINE INDICATES ROOF ABOVE
2 (E) ACCESSIBLE STALL
3 SAFE DISPERSAL AREA PER CBC 1028.5
4 SAFE DISPERSAL AREA SIGNAGE. SEE 6/AS-603
5 DASHED LINES INDICATE FIRE ACCESS ROADWAY: MIN 20FT WIDE W/30FT MIN INSIDE TURNING RADIUS AND 50FT MIN OUTSIDE TURNING RADIUS
6 150 FT RADIUS FROM FIRE ACCESS ROADWAY. FOR REFERENCE ONLY.

CODE SITE GENERAL NOTES

A. ALL NEW CONCRETE AND AC PAVING IN P.O.T. SHALL HAVE 2% MAX. SLOPE IN ALL DIRECTIONS U.N.O. AND SHALL HAVE FLUSH TRANSITIONS TO ALL ADJACENT NEW AND EXISTING WALK SURFACES IN P.O.T.
B. ALL LANDSCAPE EDGES ALONG ALL NEW OR EXISTING WALK SURFACES IN P.O.T. SHALL BE PER CIVIL DRAWINGS.
C. FOR GRATINGS OR STRAINERS LOCATED IN THE SURFACE OF ANY PEDESTRIAN WAY OR IN P.O.T., THE MAXIMUM GRATE OR STRAINER OPENINGS SHALL NOT EXCEED 1/2" IN THE DIRECTION OF TRAFFIC FLOW.
D. THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR THE PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS, AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NON-COMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NON-COMPLIANT ELEMENTS, COMPONENTS, OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS. DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NON-CONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

LEGEND - SITE PLAN

- ASSUMED PROPERTY LINE
- LIMITS OF WORK
- PROJECT AREA
- (N) CONCRETE PAVING
  - EXPANSION JOINT PER
  - CONTROL JOINT PER
- (N) ASPHALT CONCRETE PAVING
- (E) BUILDING
- LANDSCAPING

PATH OF TRAVEL (P.O.T.)

- AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE
- IS AT LEAST 48" WIDE.
- NO ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL.
- THE PATH SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH.
- PASSING SPACES (11B-403.2) AT LEAST 60"x60" ARE LOCATED NOT MORE THAN 200' APART.
- PARTS OF P.O.T. WITH CONTINUOUS GRADIENTS HAVE 60" LEVEL AREAS (11B-403.7) NOT MORE THAN 400' APART.
- THE CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
- (POT) SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80" (11B-307).
- ARCHITECT SHALL VERIFY PATH OF TRAVEL CONFORMS WITH THE ABOVE.

- FENCE LINE
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION

3 / AS-601 — 7 / AS-601

196
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ARCHITECT STAMP — CONSULTANT STAMP

LICENSED ARCHITECT — ROBERT W. TOWER — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments
2	10/23/24	PC Comments

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CITY OF ROSEVILLE - DCWWTP

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SHEET TITLE
CODE SITE PLAN

DRAWN BY: XX JOB NUMBER: 210015.01

SHEET NO.
G-101

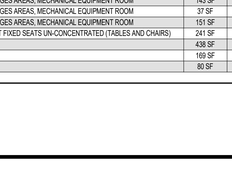
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OCCUPANCY TYPE



CODE ANALYSIS FLOOR PLAN 3/32" = 1'-0" 1

OCCUPANT CHART PER 2022 CBC TABLE 1004.5

ROOM #	ROOM NAME	FUNCTION	N SF	SF/OCC.	OCC. #	OCCUPANCY TYPE	MAXIMUM OCCUPANT LOAD W/ 1 EXIT TABLE 1006.2.1	MIN. CLR. DOOR EXIT WIDTH	# EXITS REQUIRED	# EXITS PROVIDED
101	WAITING	ASSEMBLY WITHOUT FIXED SEATS UN-CONCENTRATED (TABLES AND CHAIRS)	288 SF	15 SF	20	B	49	2'-8"	1	2
101A	RECEPTION	BUSINESS AREAS	111 SF	150 SF	1	B	49	2'-8"	1	
102	CONFERENCE ROOM	BUSINESS AREAS	258 SF	150 SF	2	B	49	2'-8"	1	1
103	OFFICE	BUSINESS AREAS	196 SF	150 SF	2	B	49	2'-8"	1	1
104	OFFICE	BUSINESS AREAS	239 SF	150 SF	2	B	49	2'-8"	1	1
105	OFFICE	BUSINESS AREAS	151 SF	150 SF	2	B	49	2'-8"	1	1
106	CONTROL ROOM 1	BUSINESS AREAS	341 SF	150 SF	3	B	49	2'-8"	1	1
107	CONFERENCE ROOM	BUSINESS AREAS	152 SF	150 SF	2	B	49	2'-8"	1	1
108	OPEN OFFICE	BUSINESS AREAS	2,010 SF	150 SF	14	B	49	2'-8"	1	1
109	KITCHEN	KITCHENS, COMMERCIAL	341 SF	200 SF	2	B	49	2'-8"	1	2
110	OFFICE	BUSINESS AREAS	118 SF	150 SF	1	B	49	2'-8"	1	1
111	OFFICE	BUSINESS AREAS	118 SF	150 SF	1	B	49	2'-8"	1	1
112	LABORATORY	LABORATORIES, NON-EDUCATIONAL	1,226 SF	100 SF	13	B	49	2'-8"	1	2
113	WORK ROOM	LABORATORIES, NON-EDUCATIONAL	514 SF	100 SF	4	B	49	2'-8"	1	1
114	OFFICE	BUSINESS AREAS	118 SF	150 SF	1	B	49	2'-8"	1	1
115	OFFICE	BUSINESS AREAS	118 SF	150 SF	1	B	49	2'-8"	1	1
116	RECORDS	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	112 SF	300 SF	1	B	49	2'-8"	1	1
117	STORAGE	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	76 SF	300 SF	1	B	49	2'-8"	1	1
118	CORRIDOR	BUSINESS AREAS	907 SF	150 SF	7	B	49	2'-8"	1	3
119	RESTROOM	BUSINESS AREAS	72 SF	150 SF		B	49			1
120	RESTROOM	BUSINESS AREAS	72 SF	150 SF		B	49			1
121	JANITOR	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	35 SF	300 SF	1	B	49	2'-8"	1	1
122	WOMEN'S LOCKER RM	BUSINESS AREAS	422 SF	150 SF	9	B	49	2'-8"	1	1
123	MEN'S LOCKER RM	BUSINESS AREAS	612 SF	150 SF	13	B	49	2'-8"	1	1
124	LAUNDRY	BUSINESS AREAS	103 SF	150 SF	1	B	49	2'-8"	1	1
125	CONTROL ROOM 2	BUSINESS AREAS	238 SF	150 SF	2	B	49	2'-8"	1	1
126	BUNK ROOM	RESIDENTIAL	115 SF	200 SF	1	R-3	10	2'-8"	1	1
127	BUNK ROOM	RESIDENTIAL	115 SF	200 SF	1	R-3	10	2'-8"	1	1
128	BUNK ROOM	RESIDENTIAL	115 SF	200 SF	1	R-3	10	2'-8"	1	1
129	BUNK ROOM	RESIDENTIAL	115 SF	200 SF	1	R-3	10	2'-8"	1	1
130	BUNK ROOM	RESIDENTIAL	115 SF	200 SF	1	R-3	10	2'-8"	1	1
131	BUNK ROOM	RESIDENTIAL	115 SF	200 SF	1	R-3	10	2'-8"	1	1
132	MECHANICAL	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	38 SF	300 SF	1	B	49	2'-8"	1	
133	MDF	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	301 SF	300 SF	2	B	49	2'-8"	1	1
134	ELECTRICAL	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	143 SF	300 SF	1	B	49	2'-8"	1	1
135	FIRE RISER	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	37 SF	300 SF	1	B	49	2'-8"	1	1
136	EQUIPMENT ROOM	ACCESSORY STORAGES AREAS, MECHANICAL EQUIPMENT ROOM	151 SF	300 SF	1	B	49	2'-8"	1	1
137	BREAK ROOM	ASSEMBLY WITHOUT FIXED SEATS UN-CONCENTRATED (TABLES AND CHAIRS)	241 SF	15 SF	17	B	49	2'-8"	1	
138	EXTERIOR COVERED SPACE	N/A	438 SF	0 SF		B	49			
139	CORRIDOR	BUSINESS AREAS	169 SF	150 SF	2	B	49	2'-8"	1	
140	CORRIDOR	BUSINESS AREAS	80 SF	150 SF	1	B	49	2'-8"	1	
OCCUPANT TOTAL:					138					

R-3 NOTES:

420.2 SEPARATION WALLS
"WALLS SEPARATING DWELLING UNITS IN THE SAME BUILDING, WALLS SEPARATING SLEEPING UNIT IN THE SAME BUILDING AND WALL SEPARATING DWELLING OR SLEEPING UNITS FROM OTHER OCCUPANCIES CONTIGUOUS TO THEM IN THE SAME BUILDING SHALL BE CONSTRUCTION AS FIRE PARTITIONS IN ACCORDANCE WITH SECTION 708."

420.4 AUTOMATIC SPRINKLER SYSTEM
"GROUP R OCCUPANCIES SHALL BE EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.2.8.."

420.5 FIRE ALARM SYSTEMS AND SMOKE ALARMS
"... SINGLE OR MULTIPLE-STATION SMOKE ALARMS SHALL BE PROVIDED IN GROUP R-3 IN ACCORDANCE WITH SECTION 907.2.11..."

420.10 GROUP R COOKING FACILITIES
"IN GROUP R OCCUPANCIES, COOKING APPLIANCES USED FOR DOMESTIC COOKING OPERATIONS SHALL BE IN ACCORDANCE WITH SECTION 917.2 OF THE CALIFORNIA MECHANICAL CODE."

R-3 ACCESSIBILITY REQUIREMENTS SHALL BE PER CBC CH 11A

LEGEND - CODE ANALYSIS

1 HR RATED SEPERATION
2 HR RATED SEPERATION
3 HR RATED SEPERATION

OCCUPANCY TAG
ROOM NAME
101
150 SF | 15
OCC. TOT. 25
ROOM NUMBER
OCCUPANT LOAD FACTOR
TOTAL OCCUPANCY CALCULATED
ROOM AREA

EGRESS WIDTH TAG
EXIT 01
123 OCC.
38" MIN.
36" PROVIDED
EXIT LOCATION
TOTAL OCCUPANTS CALCULATED
MINIMUM EXIT WIDTH CALCULATED
EXIT WIDTH PROVIDED

FIRE SPRINKLER RISER
FIRE EXTINGUISHER
BUILDING ENTRANCE
0' EGRESS DISTANCE

2022 CALIFORNIA BUILDING CODE

602 CONSTRUCTION TYPE:

BUILDINGS AND STRUCTURES ERECTED OR TO BE ERECTED, ALTERED OR EXTENDED IN HEIGHT OR AREA SHALL BE CLASSIFIED IN ONE OF THE FIVE CONSTRUCTION TYPES DEFINED IN SECTIONS 602.2 THROUGH 602.5.

- ☐ TYPE I-A
- ☐ TYPE I-B
- ☐ TYPE II-A
- ☐ TYPE II-B
- ☐ TYPE III-A
- ☐ TYPE III-B
- ☐ TYPE IV-HT
- ☐ TYPE V-A
- ■ TYPE V-B

BUILDING SPRINKLER SYSTEM:

- ☐ NS — BUILDINGS NOT EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKER SYSTEM
- ■ S1 — BUILDINGS A MAXIMUM OF ONE STORY ABOVE GRADE EQUIPPED WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1
- ☐ SM-H — BUILDINGS TWO OR MORE STORIES ABOVE GRADE EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1 (WITHOUT HEIGHT INCREASE)
- ☐ SM+H — BUILDINGS TWO OR MORE STORIES ABOVE GRADE EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.1 (WITH HEIGHT INCREASE)
- ☐ S13R — BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.2
- ☐ S13D — BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3.1.3

302 OCCUPANCY CLASSIFICATION:

STRUCTURES OR PORTIONS OF STRUCTURES SHALL BE CLASSIFIED WITH RESPECT TO OCCUPANCY IN ONE OR MORE OF THE GROUPS LISTED IN THIS SECTION. A ROOM OR SPACE THAT IS INTENDED TO BE OCCUPIED AT DIFFERENT TIMES FOR DIFFERENT PURPOSES SHALL COMPLY WITH ALL OF THE REQUIREMENTS THAT ARE APPLICABLE TO EACH OF THE PURPOSES FOR WHICH THE ROOM OR SPACE WILL BE OCCUPIED.

- ☐ GROUP A-1 ☐ GROUP A-2 ☐ GROUP A-3 ☐ GROUP A-4 ☐ GROUP A-5
- ■ GROUP B
- ☐ GROUP C
- ☐ GROUP E
- ☐ GROUP F-1 ☐ GROUP F-2
- ☐ GROUP H-1 ☐ GROUP H-2 ☐ GROUP H-3 ☐ GROUP H-4 ☐ GROUP H-5
- ☐ GROUP I-1 ☐ GROUP I-2 ☐ GROUP I-3 ☐ GROUP I-4
- ☐ GROUP L
- ☐ GROUP M
- ☐ GROUP R-1 ☐ GROUP R-2 ☐ GROUP R-2.1 ■ GROUP R-3 ☐ GROUP R-3.1
- ☐ GROUP R-4
- ☐ GROUP S-1 ☐ GROUP S-2
- ☐ GROUP U

508 MIXED USE AND OCCUPANCY:

EACH PORTION OF A BUILDING SHALL BE INDIVIDUALLY CLASSIFIED IN ACCORDANCE WITH SECTION 302.1. WHERE A BUILDING CONTAINS MORE THAN ONE OCCUPANCY GROUP, THE BUILDING OR PORTION THEREOF SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF SECTION 508.2, 508.3 OR 508.4, OR A COMBINATION OF THESE SECTIONS.

THIS BUILDING CONTAINS:

- ☐ **ONE OCCUPANCY GROUP ONLY**
- ■ **508.2 ACCESSORY OCCUPANCIES**
  ACCESSORY OCCUPANCIES ARE THOSE OCCUPANCIES THAT ARE ANCILLARY TO THE MAIN OCCUPANCY OF THE BUILDING OR PORTION THEREOF.
- ☐ **508.3 NONSEPARATED OCCUPANCIES**
  NONSEPARATED OCCUPANCIES SHALL BE INDIVIDUALLY CLASSIFIED IN ACCORDANCE WITH SECTION 302.1. THE REQUIREMENTS OF THIS CODE SHALL APPLY TO EACH PORTION OF THE BUILDING BASED ON THE OCCUPANCY CLASSIFICATION OF THAT SPACE. IN ADDITION, THE MOST RESTRICTIVE PROVISIONS OF CHAPTER 9 THAT APPLY TO THE NONSEPARATED OCCUPANCIES SHALL APPLY TO THE TOTAL NONSEPARATED OCCUPANCY AREA.
- ☐ **508.4 SEPARATED OCCUPANICES**
  NONSEPARATED OCCUPANCIES SHALL BE INDIVIDUALLY CLASSIFIED IN ACCORDANCE WITH SECTION 302.1. THE REQUIREMENTS OF THIS CODE SHALL APPLY TO EACH PORTION OF THE BUILDING BASED ON THE OCCUPANCY CLASSIFICATION OF THAT SPACE. IN ADDITION, THE MOST RESTRICTIVE PROVISIONS OF CHAPTER 9 THAT APPLY TO THE NONSEPARATED OCCUPANCIES SHALL APPLY TO THE TOTAL NONSEPARATED OCCUPANCY AREA.

TABLE 508.4 *REQUIRED SEPARATION OF OCCUPANICES (HOURS)*

PRIMARY OCCUPANCY	SEPARATED OCCUPANCY	SPRINKLERED?	REQUIRED SEPARATION
GROUP B	GROUP R-3	YES	**1 HR**

- ☐ **509 INCIDENTAL USES**
- ☐ **510 SPECIAL PROVISIONS**

504 ALLOWABLE HEIGHT :

THE HEIGHT, IN FEET, AND THE NUMBER OF STORIES OF A BUILDING SHALL BE DETERMINED BASED ON THE TYPE OF CONSTRUCTION, OCCUPANCY CLASSIFICATION AND WHETHER THERE IS AN AUTOMATIC SPRINKLER SYSTEM INSTALLED THROUGHOUT THE BUILDING.

TABLE 504.3 *ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE*
TABLE 504.4 *ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE*

OCCUPANCY	SPRINKLERS	CONSTRUCTION	ALLOWABLE	ACTUAL
GROUP B	S1	TYPE V-B	60'-0"	± 24'-0"
			3 STORIES	1 STORIES

506 ALLOWABLE AREA CALCULATIONS:

506.1 BUILDING AREA
THE FLOOR AREA OF A BUILDING SHALL BE DETERMINED BASED ON THE TYPE OF CONSTRUCTION, OCCUPANCY CLASSIFICATION, WHETHER THERE IS AN AUTOMATIC SPRINKLER SYSTEM INSTALLED THROUGHOUT THE BUILDING AND THE AMOUNT OF BUILDING FRONTAGE ON PUBLIC WAY OR OPEN SPACE.

506.2.1 SINGLE OCCUPANCY, ONE STORY
THE ALLOWABLE AREA OF A SINGLE-OCCUPANCY BUILDING WITH NO MORE THAN ONE STORY ABOVE GRADE PLANE SHALL BE DETERMINED IN ACCORDANCE WITH EQUATION 5-1

(EQUATION 5-1) $A_a = A_t + (NS \times I_f)$

506.2.2 MIXED-OCCUPANCY, ONE STORY
THE ALLOWABLE AREA OF A MIXED-OCCUPANCY BUILDING WITH NO MORE THAN ONE STORY ABOVE GRADE PLANE SHALL BE DETERMINED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF SECTION 508.1 BASED ON EQUATION 5-1 FOR EACH APPLICABLE OCCUPANCY.

(EQUATION 5-1) $A_a = A_t + (NS \times I_f)$

506.2.3 SINGLE OCCUPANCY, MULTISTORY
THE ALLOWABLE AREA OF A SINGLE-OCCUPANCY BUILDING WITH MORE THAN ONE STORY ABOVE GRADE PLANE SHALL BE DETERMINED IN ACCORDANCE WITH EQUATION 5-2:

(EQUATION 5-2) $A_a = A_t + (NS \times I_f) \times S_a$

506.2.4 MIXED-OCCUPANCY MULTISTORY
EACH STORY OF A MIXED-OCCUPANCY BUILDING WITH MORE THAN ONE STORY ABOVE GRADE PLANE SHALL INDIVIDUALLY COMPLY WITH THE APPLICABLE REQUIREMENTS OF SECTION 508.1. FOR BUILDINGS WITH MORE THAN THREE STORIES ABOVE GRADE PLANE, THE TOTAL BUILDING AREA SHALL BE SUCH THAT THE AGGREGATE SUM OF THE RATIOS OF THE ACTUAL AREA OF EACH STORY DIVIDED BY THE ALLOWABLE AREA OF SUCH STORIES, DETERMINED IN ACCORDANCE WITH EQUATION 5-3 BASED ON THE APPLICABLE PROVISIONS OF SECTION 508.1, SHALL NOT EXCEED THREE. PROVIDED THE AGGREGATE SUM OF THE RATIOS FOR PORTIONS OF MIXED-OCCUPANCY, MULTISTORY BUILDINGS CONTAINING A, E, H, I, L AND R OCCUPANCIES, HIGH-RISE BUILDINGS, AND OTHER APPLICATIONS LISTED IN SECTION 1.11 REGULATED BY THE OFFICE OF THE STATE FIRE MARSHAL, INCLUDING ANY OTHER ASSOCIATED NON-SEPARATED OCCUPANCIES, SHALL NOT EXCEED TWO.

(EQUATION 5-3) $A_a = [A_t + (NS \times I_f)]$

A_a = ALLOWABLE AREA (SQUARE FEET).
A_t = TABULAR ALLOWABLE AREA FACTOR (NS, S13R OR SM VALUE, AS APPLICABLE) IN ACCORDANCE WITH TABLE 506.2.
NS = TABULAR ALLOWABLE AREA FACTOR IN ACCORDANCE WITH TABLE 506.2 FOR A NONSPRINKLERED BUILDING (REGARDLESS OF WHETHER THE BUILDING IS SPRINKLERED).
I_f = AREA FACTOR INCREASE DUE TO FRONTAGE (PERCENT) AS CALCULATED IN ACCORDANCE WITH SECTION 506.3.
$S_a < 2$ GROUP A, E, H, I, L, R, HIGH-RISE BUILDINGS AND APP. IN SECTION 1.11 PER SFM
$S_a < 3$ OTHER THAN ABOVE
$S_a < 1$ NO INDIVIDUAL STORY SHALL EXCEED (A_a)

FLOOR 1

OCC. GROUP	A_t (SF)	NS (SF)	I_f	A_a (SF)	ACTUAL (SF)
B	36,000 SF	9,000 SF	0	36,000 SF	12,456 SF

TOTAL BUILDING AREA	RATIO= 0.35	< Sa = 3 = OK	12,456 SF

INTERIOR FINISHES RATINGS:

TABLE 803.13 *INTERIOR WALL & CEILING FINISH RATING REQUIRMENTS*

OCCUPANCY	INT. EXIT	CORRIDOR	ROOMS / ENCLOSURE
B	B	C	C
R-3	C	C	C

ROOF RATINGS:

TABLE 1505.1 *MIN. ROOF COVER (VB=CLASS C MIN.)*

FIRE RESISTANCE RATINGS:

TABLE 601 & **TABLE 705.5** *FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS*

BUILDING ELEMENT	TYPE V-B	EXTERIOR NON-BEARING	
		FIRE SEPARATION DISTANCE	WALL RATING FOR OCCUPANCY GROUP B
PRIMARY STRUCTURAL FRAME	0 HR		
EXTERIOR BEARING WALL	0 HR		
INTERIOR BEARING WALL	0 HR	X < 5'-0"	1 HR
INTERIOR NONBEARING	0 HR	5'-0" < X < 10'-0"	1 HR
FLOOR & SECONDARY MEMBER	0 HR	10'-0" < X < 30'-0"	0 HR
ROOF & SECONDARY MEMBER	0 HR	30'-0" < X	0 HR

TABLE 705.8 *MAXIMUM AREA OF EXT. WALL OPENING PER FIRE SEPARATION DIST.*

EXTERIOR	SEPARATION	PROTECTION	ALLOWABLE OPENINGS	ACTUAL OPENINGS
NORTH WALL 2,884 SF	X > 30'	UNPROTECTED, SPRINKLERED	0 SF	0 SF
			0%	0%
EAST WALL 2,299 SF	X > 30'	UNPROTECTED, SPRINKLERED	0 SF	0 SF
			0%	0%
SOUTH WALL 1 1,333 SF	10'< X < 15'	UNPROTECTED, SPRINKLERED	0 SF	0 SF
			0%	0%
SOUTH WALL 2 1,333 SF	10'< X < 15'	UNPROTECTED, SPRINKLERED	0 SF	0 SF
			0%	0%
WEST WALL 13,131 SF	X > 30'	UNPROTECTED, SPRINKLERED	0 SF	0 SF
			0%	0%

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REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

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1800 Booth Road
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SHEET TITLE
CODE FLOOR PLAN

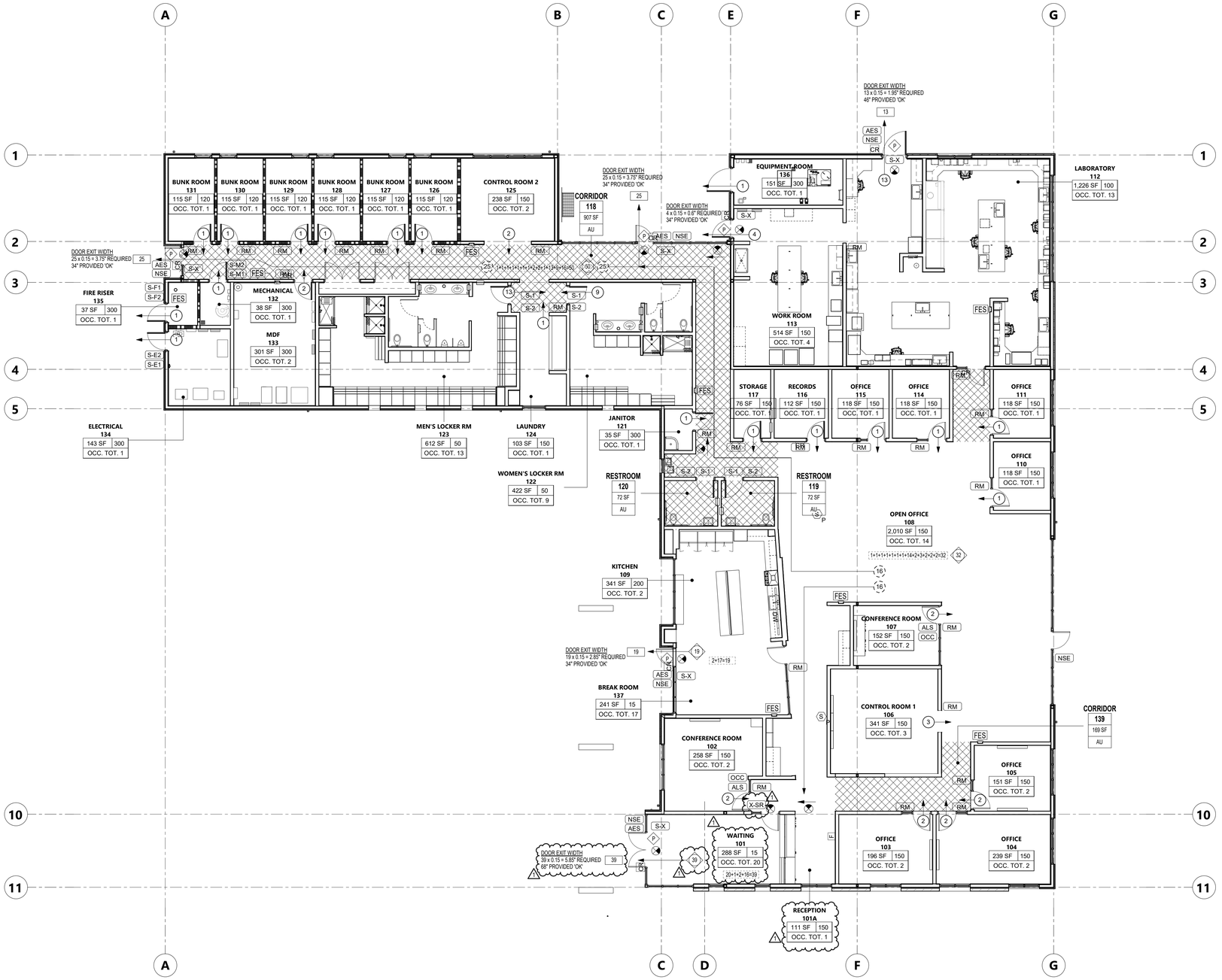
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PLUMBING FIXTURE CALCULATIONS:

OCCUPANCY	TOTAL OCCUPANTS	REQUIRED PLUMBING FIXTURES (CPC TABLE 422.1)				
		WC	URINAL	LAV	DRINKING FOUNTAIN	SERVICE SINK
B	72	CPC TABLE 422.1 MINIMUM PLUMBING FACILITIES				
PLUMBING FIXTURE LOAD CALCULATION	MALE = 72/2 = **36**	1:50 **1**	1:100 **1**	1:75 **1**	1:150 **1**	- **1**
	FEMALE = 72/2 = **36**	1:15 **3**	-	1:50 **1**		
BUILDING AREA W/O EXT ROOF = 11,941 SF EXCLUDED AREAS CORRIDORS (907+169) = 1,076 SF SINGLE OCC RESTROOMS (73 + 73) = 146 SF TOTAL EXCLUDED AREA = 1,222 SF ADJUSTED BUILDING AREA = 10,719 SF OCCUPANT LOAD PER **CPC TABLE 4-1** = 150 OCC/SF OCCUPANTS = 10,719 / 150 = **72 PPL**	PROVIDED PLUMBING FIXTURES					
		WC	URINAL	LAV	DRINKING FOUNTAIN	SERVICE SINK
	MALE	**3***	**2**	**3***	**2**	**1**
	FEMALE	**3***	-	**3***		

* INCLUDES SINGLE-USE RESTROOMS

PROJECT NORTH

EXITING AND SIGNAGE PLAN 1/8" = 1'-0" **1**

WALL TYPE LEGEND

- NON RATED WALL OR FURRING WALL ASSEMBLY
- 1 HOUR RATED WALL ASSEMBLY
- METAL PANEL WALL
- MASONRY WALL
- MASONRY VENEER WALL

FOR WALL TYPES REFER TO **G-301 & G-302**

SIGNAGE GENERAL NOTES

A. FOR ADDITIONAL SIGNAGE INFORMATION, REFER TO SPECIFICATION SECTION 10 14 00 AND SIGNAGE DETAILS HEREIN.
B. COORDINATE THIS PLAN WITH DOCUMENTS INCLUDING BUT NOT LIMITED TO SITE PLANS, FLOOR PLANS, ELEVATIONS AND CEILING PLANS BY ALL DISCIPLINES.
C. INSTALL BLANK SIGN ON OPPOSITE SIDE OF SIGN WHEN INSTALLED ON GLASS.
D. MOUNT SIGNS BACK TO BACK AT GLAZING.

LEGEND - SIGNAGE

RM	ROOM NAME / NUMBER SIGN, SEE DETAILS 2/G-923
RM-1	PAPER INSERT DOOR ID SIGNAGE, SEE DETAILS
S-1	TOILET ROOM DOOR SIGN, SEE DETAILS 18/G-923
S-2	TOILET ROOM WALL SIGN, SEE DETAILS 13/G-923
S-X	TACTILE "EXIT" SIGN (INTERIOR), SEE DETAILS 7/G-923
S-XR	TACTILE "EXIT ROUTE" SIGN (INTERIOR), SEE DETAILS 10/G-923
S-XS	TACTILE "EXIT STAIR" SIGN (INTERIOR), SEE DETAILS 10/G-923
OCC	"MAXIMUM OCCUPANCY" SIGN (INTERIOR), SEE DETAIL 15/G-923
S-F1	IDENTIFICATION SIGN MOUNTED TO DOOR: "FIRE SPRINKLER RISER INSIDE" SIGN, SEE DETAIL 1/G-923
S-F2	IDENTIFICATION SIGN MOUNTED TO WALL: "FIRE SPRINKLER RISER INSIDE" SIGN, SEE DETAIL 1/G-923
S-E1	IDENTIFICATION SIGN MOUNTED TO DOOR: "MAIN ELECTRICAL ROOM" SIGN, SEE DETAIL 1/G-923
S-E2	IDENTIFICATION SIGN MOUNTED TO WALL: "MAIN ELECTRICAL ROOM" SIGN, SEE DETAIL 1/G-923
S-M1	IDENTIFICATION SIGN MOUNTED TO DOOR: "MAIN MECHANICAL ROOM" SIGN, SEE DETAIL 1/G-923
S-M2	IDENTIFICATION SIGN MOUNTED TO WALL: "MAIN MECHANICAL ROOM" SIGN, SEE DETAIL 1/G-923
ALS	ASSISTIVE LISTENING SIGN, SEE DETAIL 14/G-923
EAR	EXTERIOR AREA FOR ASSISTED RESCUE SIGN, SEE DETAIL
AES	ACCESSIBLE ENTRANCE SIGN, SEE DETAIL 11/G-923
NSE	IDENTIFICATION NO SMOKING SIGN: "NO SMOKING WITHIN 25 FEET OF BUILDING ENTRANCE"

LEGEND - EXITING

ROOM SYMBOLS

ROOM NAME
101
150 SF | 15
OCC. TOT. 25

- ROOM NAME
- ROOM NUMBER
- OCCUPANCY LOAD FACTOR
- OCCUPANCY LOAD
- SQUARE FOOTAGE

ACCESSORY ROOM SYMBOLS

OFFICE
101
150 SF
AU

- ROOM NAME
- ROOM NUMBER
- SQUARE FOOTAGE
- ACCESSORY USE

EXITING ANALYSIS SYMBOLS

- COMBINED OCCUPANT LOAD IN A MAIN AREA
- OCCUPANT LOAD OF SPECIFIC ROOM
- ESTIMATED OCCUPANT LOAD TO EXITING FROM MAIN AREA. TYPICAL 1/2" OR 1/3" THE MAIN AREA OCCUPANT LOAD
- # - OCCUPANT LOAD AT EXTERIOR DOOR USED FOR MINIMUM CLEAR DOOR WIDTH CALCULATIONS. - OCCUPANT LOAD AT STAIR TO BE USED TO CALCULATE MINIMUM REQUIRED STAIR WIDTH.
- HEAVY LINE REPRESENTS DIVISION BETWEEN MAIN AREA'S FOR CALCULATING OCCUPANT LOADS WITHIN THE SPECIFIC AREA EXTEND.
- COMBINED OCCUPANT LOAD: SPECIFIC AREA WHEN MULTIPLE LOADS DUMP INTO AN AREA.
- CIRCULATION SPACE / ACCESSORY USE

HARDWARE

- PANIC HARDWARE (EXIT DEVICE). TYPICAL NON LATCHING HARDWARE AT MAIN ENTRANCE DOORS.

SIGNAGE

REFER TO SIGNAGE LEGEND

EXIT SIGNS (ILLUMINATED)

- EXIT SIGN (ARROW INDICATES SPECIFIC PATH DIRECTION INTEGRAL TO SIGN) CENTER SIGN OVER DOOR OPENING

FIRE EXTINGUISHERS: (75' MAX. TRAVEL DISTANCE TO EXTINGUISHER, MIN. 1 PER 3,000S.F. CFC SECTION 906)

- FES FIRE EXTINGUISHER AND BRACKET: SURFACE MOUNTED WITH SIGNAGE.
- FEF FIRE EXTINGUISHER: FULLY RECESSED WITH SIGNAGE
- FES FIRE EXTINGUISHER: SEMI RECESSED WITH SIGNAGE

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ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT ROBERT W. TOWER No. C18650 Exp. 2/28/25 STATE OF CALIFORNIA

REVISIONS

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1	8/28/24	PC Comments

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SHEET TITLE
EXITING AND SIGNAGE PLAN

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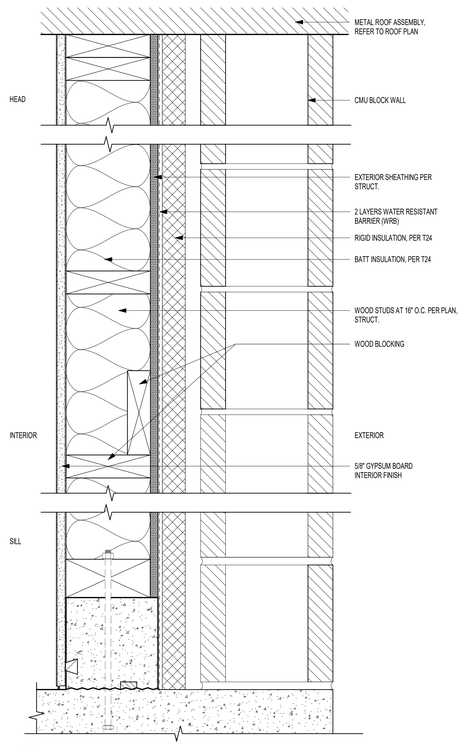
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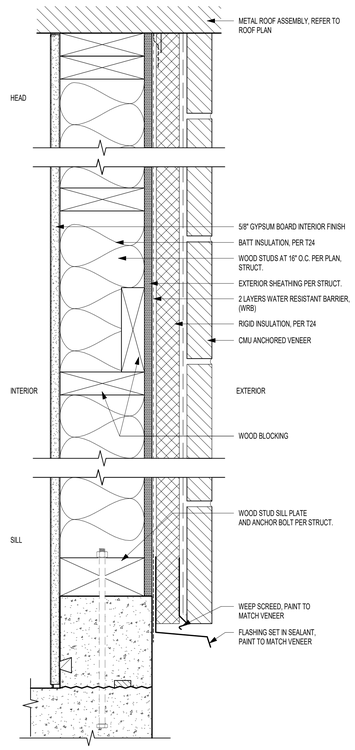
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WALL TYPE "E-4"



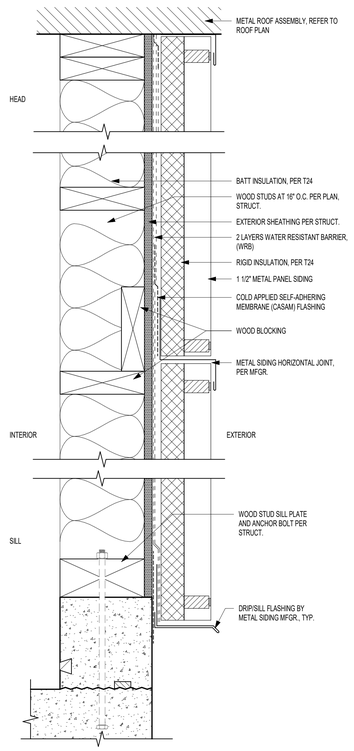
E-4 EXTERIOR WALL TYPE — 3" = 1'-0"
DECORATIVE FULL CMU WALL ADJACENT TO WOOD STUD WALL

WALL TYPE "E-3"



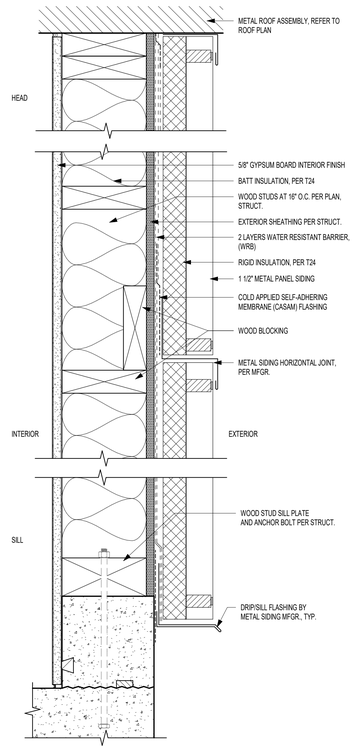
E-3 EXTERIOR WALL TYPE — 3" = 1'-0"
ANCHORED VENEER ON WOOD STUD

WALL TYPE "E-2"



E-2 EXTERIOR WALL TYPE — 3" = 1'-0"
METAL PANEL ON WOOD STUD FURRING

WALL TYPE "E-1"



E-1 EXTERIOR WALL TYPE — 3" = 1'-0"
METAL PANEL ON WOOD STUD

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ARCHITECT STAMP

LICENSED ARCHITECT — GEORGE M. PADDON — No. C18650 — Exp. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

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SHEET TITLE
WALL TYPES (EXTERIOR)

DRAWN BY: Author JOB NUMBER: 210015.01

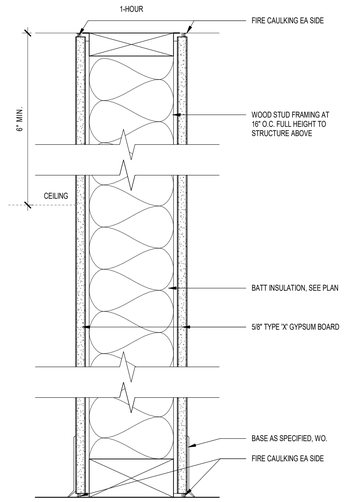
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WALL TYPE "I-9"

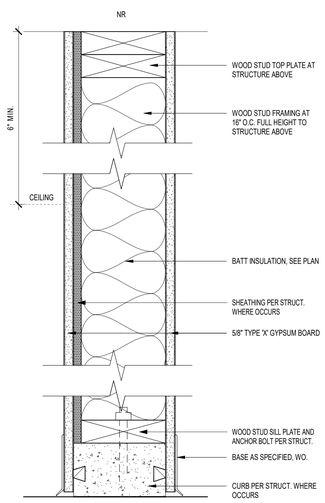


NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

GA FILE NO. WP 3605

I-9 INTERIOR WALL TYPE — WOOD STUD 1-HR — 3" = 1'-0"

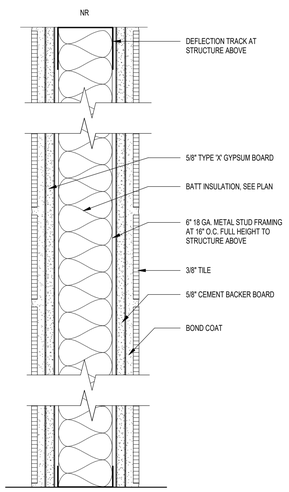
WALL TYPE "I-7"



NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

I-7 INTERIOR WALL TYPE — WOOD STUD - GYP. 2 SIDES, SHEATHING 1 SIDE — 3" = 1'-0"

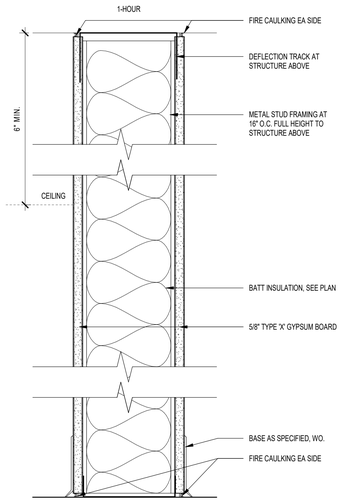
WALL TYPE "I-5"



NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

I-5 INTERIOR WALL TYPE — METAL STUD - TILE 2 SIDES — 3" = 1'-0"

WALL TYPE "I-3"

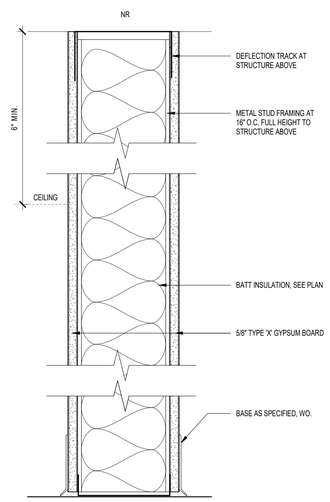


NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

CBC TABLE 721.1(2)-13-1.1 1 HR

I-3 INTERIOR WALL TYPE — METAL STUD 1-HR — 3" = 1'-0"

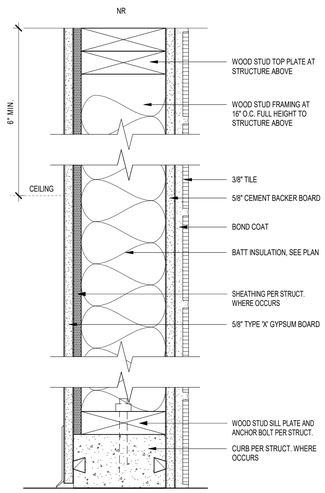
WALL TYPE "I-1"



NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

I-1 INTERIOR WALL TYPE — METAL STUD - GYP. 2 SIDES — 3" = 1'-0"

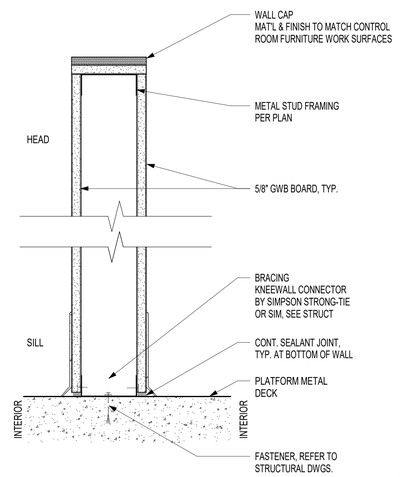
WALL TYPE "I-8"



NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

I-8 INTERIOR WALL TYPE — WOOD STUD - GYP/SHEATHING 1 SIDE, TILE 1 SIDE — 3" = 1'-0"

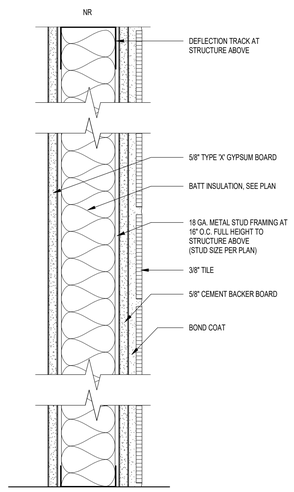
WALL TYPE "I-6"



NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

I-6 INTERIOR WALL TYPE — METAL STUD - LOW WALL — 3" = 1'-0"

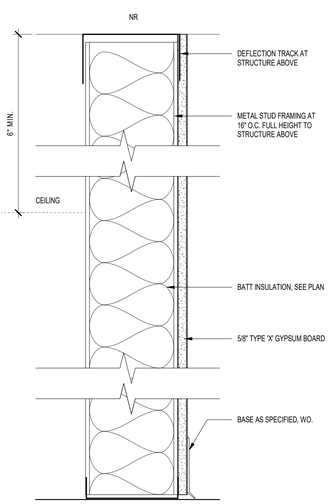
WALL TYPE "I-4"



NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

I-4 INTERIOR WALL TYPE — METAL STUD - TILE 1 SIDE — 3" = 1'-0"

WALL TYPE "I-2"



NOTE: REFER TO FINISH PLAN FOR WALL FINISHES

I-2 INTERIOR WALL TYPE — METAL STUD - FURRED — 3" = 1'-0"

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ARCHITECT STAMP

LICENSED ARCHITECT — GREGORY M. THOMAS — No. C18650 — Exp. 2/28/25 — STATE OF CALIFORNIA

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PROJECT OWNER & TITLE

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SHEET TITLE

WALL TYPES (INTERIOR)

DRAWN BY: 19six JOB NUMBER: 210015.01

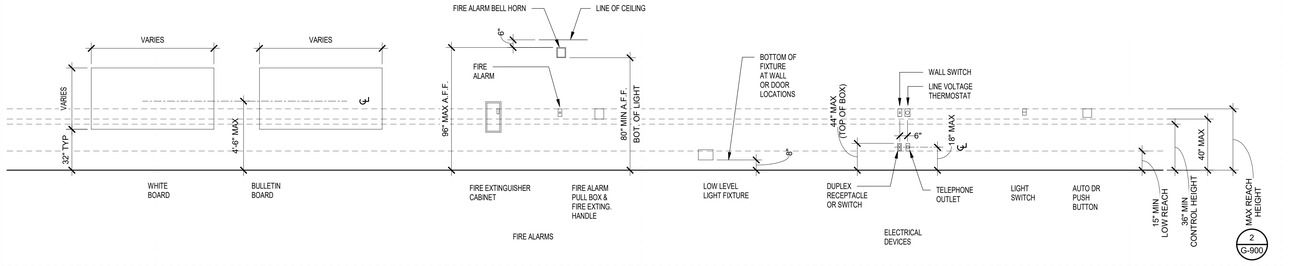
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G-302

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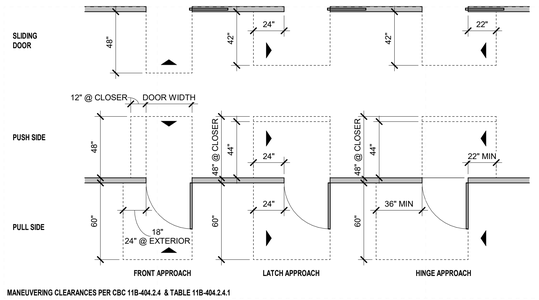
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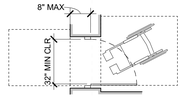
21.12.14 - 00000

TYPICAL MOUNTING HEIGHTS

1/4" = 1'-0" **11**



MANEUVERING CLEARANCES PER CBC 11B-404.2.4 & TABLE 11B-404.2.4.1



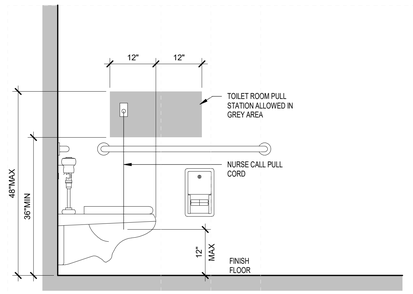
CLEAR WIDTH PER CBC 11B-404.2.3 DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES (813 MM) MINIMUM. CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. OPENINGS MORE THAN 24 INCHES (610 MM) DEEP SHALL PROVIDE A CLEAR OPENING OF 36 INCHES (914 MM) MINIMUM. THERE SHALL BE NO PROJECTIONS INTO THE REQUIRED CLEAR OPENING WIDTH LOWER THAN 34 INCHES (864 MM) ABOVE THE FINISH FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES (864 MM) AND 80 INCHES (2032 MM) ABOVE THE FINISH FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES (102 MM).

RECESSED DOORS PER CBC 11B-404.2.4.3 MANEUVERING CLEARANCES FOR FORWARD APPROACH SHALL BE PROVIDED WHEN ANY OBSTRUCTION WITHIN 18 INCHES (457 MM) OF THE LATCH SIDE AT AN INTERIOR DOORWAY, OR WITHIN 24 INCHES (610 MM) OF THE LATCH SIDE OF AN EXTERIOR DOORWAY. PROJECTS MORE THAN 8 INCHES (203 MM) BEYOND THE FACE OF THE DOOR, MEASURED PERPENDICULAR TO THE FACE OF THE DOOR OR GATE.

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CLEAR AREA AT DOORS

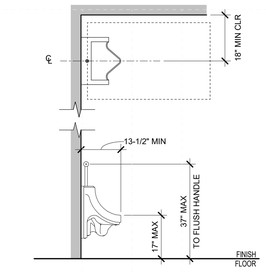
1/4" = 1'-0" **1**



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TOILET ROOM NURSE CALL LOCATION

3/4" = 1'-0" **22**

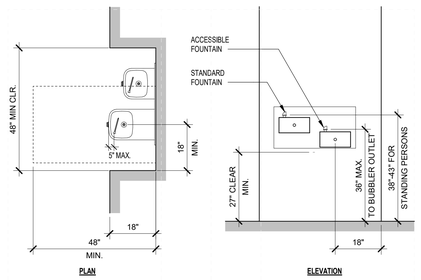


11B-605.1 GENERAL URINALS SHALL COMPLY WITH SECTION 11B-605.

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ACCESSIBLE URINAL

1/2" = 1'-0" **17**

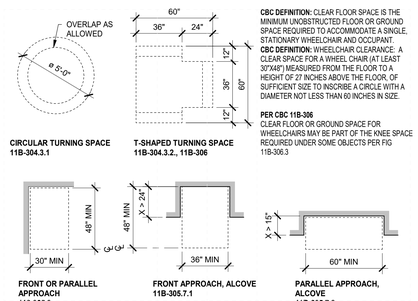


DRINKING FOUNTAIN PER CBC 11B-602

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DRINKING FOUNTAIN ALCOVE

RE: 2 / A-501 1/2" = 1'-0" **12**



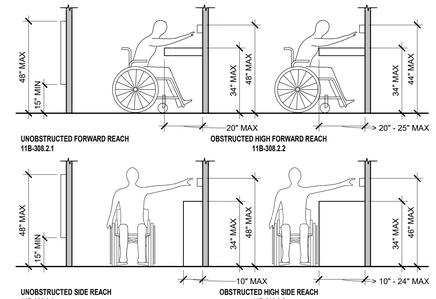
CBC DEFINITION: CLEAR FLOOR SPACE IS THE MINIMUM UNOBSTRUCTED FLOOR OR GROUND SPACE REQUIRED TO ACCOMMODATE A SINGLE, STATIONARY WHEELCHAIR AND OCCUPANT.
CBC DEFINITION: WHEELCHAIR CLEARANCE: A CLEAR SPACE FOR A WHEEL CHAIR (AT LEAST 30"X48") MEASURED FROM THE FLOOR TO A HEIGHT OF 27 INCHES ABOVE THE FLOOR, OF SUFFICIENT SIZE TO INSCRIBE A CIRCLE WITH A DIAMETER NOT LESS THAN 60 INCHES IN SIZE.

PER CBC 11B-306
CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS MAY BE PART OF THE KNEE SPACE REQUIRED UNDER SOME OBJECTS PER FIG 11B-306.3

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TURNING SPACE, CLEAR FLOOR SPACE

1/4" = 1'-0" **7**



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REACH RANGE

3/8" = 1'-0" **2**

NOTE: BENCH PER CBC 11B-903

11B-903.4 BACK SUPPORT THE BENCH SHALL PROVIDE FOR BACK SUPPORT OR SHALL BE AFFIXED TO A WALL ALONG ITS LONG DIMENSION. BACK SUPPORT SHALL BE 48 INCHES (1219 MM) LONG MINIMUM AND SHALL EXTEND FROM A POINT 2 INCHES (51 MM) MAXIMUM ABOVE THE SEAT SURFACE TO A POINT 18 INCHES (457 MM) MINIMUM ABOVE THE SEAT SURFACE. BACK SUPPORT SHALL BE 21/2 INCHES (64 MM) MAXIMUM FROM THE REAR EDGE OF THE SEAT MEASURED HORIZONTALLY.

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ACCESSIBLE BENCH

1/2" = 1'-0" **18**

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AMBULATORY WATER CLOSET

3/8" = 1'-0" **13**

KNEE AND TOE CLEARANCES PER CBC 11B-306

11B-306.1 GENERAL WHERE SPACE BENEATH AN ELEMENT IS INCLUDED AS PART OF CLEAR FLOOR OR GROUND SPACE OR TURNING SPACE, THE SPACE SHALL COMPLY WITH SECTION 11B-306. ADDITIONAL SPACE SHALL NOT BE PROHIBITED BENEATH AN ELEMENT BUT SHALL NOT BE CONSIDERED AS PART OF THE CLEAR FLOOR OR GROUND SPACE OR TURNING SPACE.

11B-306.2.5 WIDTH TOE CLEARANCE SHALL BE 30 INCHES (762 MM) WIDE MINIMUM.

11B-306.3.5 WIDTH KNEE CLEARANCE SHALL BE 30 INCHES (762 MM) WIDE MINIMUM.

11B-606.1 GENERAL LAVATORIES AND SINKS SHALL COMPLY WITH SECTION 11B-606.

11B-606.5 WATER SUPPLY AND DRAIN PIPES UNDER LAVATORIES AND SINKS SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES AND SINKS.

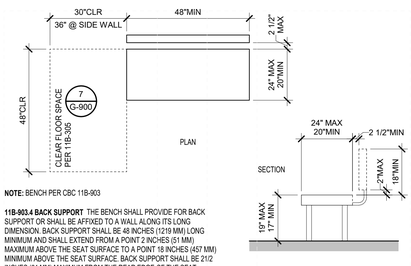
11B-606.6 ADJACENT SIDE WALL OR PARTITION LAVATORIES, WHEN LOCATED ADJACENT TO A SIDE WALL OR PARTITION, SHALL BE A MINIMUM OF 18 INCHES (457 MM) TO THE CENTERLINE OF THE FIXTURE.

11B-605.6 HAND WASHING FIXTURES, LAVATORIES AND SINKS ALL HAND WASHING FIXTURES, LAVATORIES AND SINKS SHALL COMPLY WITH SECTION 11B-606.

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KNEE AND TOE CLEARANCE

RE: 2 / A-501 1/2" = 1'-0" **3**



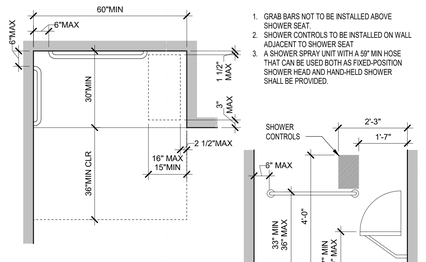
NOTE: BENCH PER CBC 11B-903

11B-903.4 BACK SUPPORT THE BENCH SHALL PROVIDE FOR BACK SUPPORT OR SHALL BE AFFIXED TO A WALL ALONG ITS LONG DIMENSION. BACK SUPPORT SHALL BE 48 INCHES (1219 MM) LONG MINIMUM AND SHALL EXTEND FROM A POINT 2 INCHES (51 MM) MAXIMUM ABOVE THE SEAT SURFACE TO A POINT 18 INCHES (457 MM) MINIMUM ABOVE THE SEAT SURFACE. BACK SUPPORT SHALL BE 21/2 INCHES (64 MM) MAXIMUM FROM THE REAR EDGE OF THE SEAT MEASURED HORIZONTALLY.

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ADA BENCH W/ BACK SUPPORT

1/2" = 1'-0" **19**



1. GRAB BARS NOT TO BE INSTALLED ABOVE SHOWER SEAT.
2. SHOWER CONTROLS TO BE INSTALLED ON WALL ADJACENT TO SHOWER SEAT
3. A SHOWER SPRAY UNIT WITH A 59" MIN HOSE THAT CAN BE USED BOTH AS FIXED-POSITION SHOWER HEAD AND HAND-HELD SHOWER SHALL BE PROVIDED.

NOTE: SHOWER PER CBC 11B-608

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SHOWER, STANDARD ROLL-IN

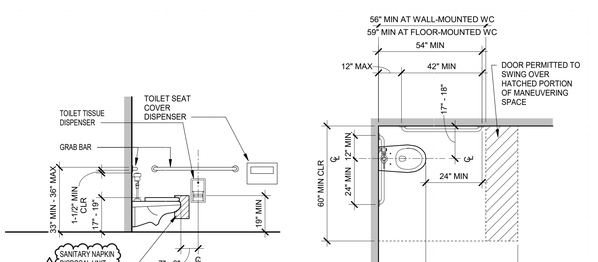
1/2" = 1'-0" **14**

11B-604.1 GENERAL WATER CLOSETS AND TOILET COMPARTMENTS SHALL COMPLY WITH SECTIONS 11B-604.2 THROUGH 11B-604.8.

11B-603.2.3 DOOR SWING DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE OR CLEARANCE REQUIRED FOR ANY FIXTURE. DOORS TO ACCESSIBLE WATER CLOSET COMPARTMENTS SHALL BE PERMITTED TO ENCROACH INTO THE TURNING SPACE WITHOUT LIMITATION. OTHER THAN DOORS TO ACCESSIBLE WATER CLOSET COMPARTMENTS, A DOOR, IN ANY POSITION, SHALL BE PERMITTED TO ENCROACH INTO THE TURNING SPACE BY 12 INCHES (305 MM) MAXIMUM.

11B-604.5 GRAB BARS GRAB BARS FOR WATER CLOSETS SHALL COMPLY WITH SECTION 11B-609. GRAB BARS SHALL BE PROVIDED ON THE SIDE WALL CLOSEST TO THE WATER CLOSET AND ON THE REAR WALL

⚠ **11B-604.7.2 DISPOSAL UNITS** SANITARY NAPKIN DISPOSAL UNITS, IF PROVIDED, SHALL COMPLY WITH SECTION 11B-604.7.2. DISPOSAL UNIT SHALL BE WALL MOUNTED AND LOCATED ON THE SIDEWALL BETWEEN THE REAR WALL OF THE TOILET AND THE TOILET PAPER DISPENSER, ADJACENT TO THE TOILET PAPER TOWER DISPENSER. THE DISPOSAL UNIT SHALL BE LOCATED BELOW THE GRAB BAR WITH OPENING OF THE DISPOSAL UNIT 19 IN MIN ABOVE THE FINISH FLOOR



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ACCESSIBLE WATER CLOSET

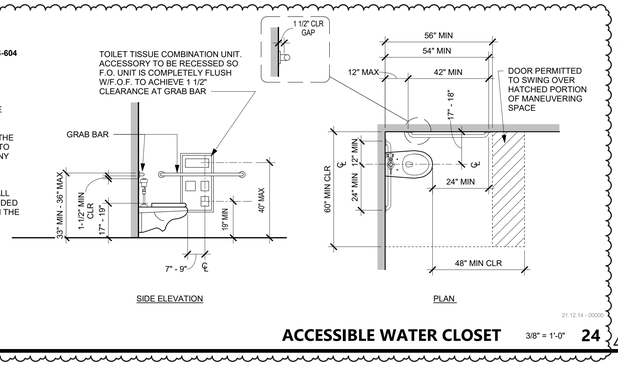
RE: 2 / A-501 3/8" = 1'-0" **4**

WATER CLOSETS AND TOILET COMPARTMENTS PER CBC 11B-604

11B-604.1 GENERAL WATER CLOSETS AND TOILET COMPARTMENTS SHALL COMPLY WITH SECTIONS 11B-604.2 THROUGH 11B-604.8.

11B-603.2.3 DOOR SWING DOORS SHALL NOT SWING INTO THE CLEAR FLOOR SPACE OR CLEARANCE REQUIRED FOR ANY FIXTURE. DOORS TO ACCESSIBLE WATER CLOSET COMPARTMENTS SHALL BE PERMITTED TO ENCROACH INTO THE TURNING SPACE WITHOUT LIMITATION. OTHER THAN DOORS TO ACCESSIBLE WATER CLOSET COMPARTMENTS, A DOOR, IN ANY POSITION, SHALL BE PERMITTED TO ENCROACH INTO THE TURNING SPACE BY 12 INCHES (305 MM) MAXIMUM.

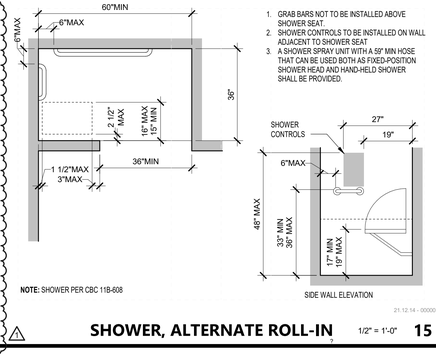
11B-604.5 GRAB BARS GRAB BARS FOR WATER CLOSETS SHALL COMPLY WITH SECTION 11B-609. GRAB BARS SHALL BE PROVIDED ON THE SIDE WALL CLOSEST TO THE WATER CLOSET AND ON THE REAR WALL



21.12.14 - 00000

ACCESSIBLE WATER CLOSET

3/8" = 1'-0" **24** ⚠



1. GRAB BARS NOT TO BE INSTALLED ABOVE SHOWER SEAT.
2. SHOWER CONTROLS TO BE INSTALLED ON WALL ADJACENT TO SHOWER SEAT
3. A SHOWER SPRAY UNIT WITH A 59" MIN HOSE THAT CAN BE USED BOTH AS FIXED-POSITION SHOWER HEAD AND HAND-HELD SHOWER SHALL BE PROVIDED.

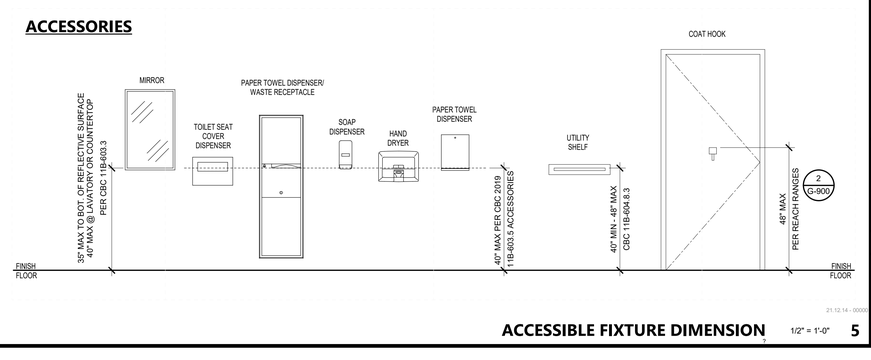
NOTE: SHOWER PER CBC 11B-608

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SHOWER, ALTERNATE ROLL-IN

1/2" = 1'-0" **15**

ACCESSORIES



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ACCESSIBLE FIXTURE DIMENSION

1/2" = 1'-0" **5**

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOUCEY — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
ACCESSIBILITY CLEARANCES

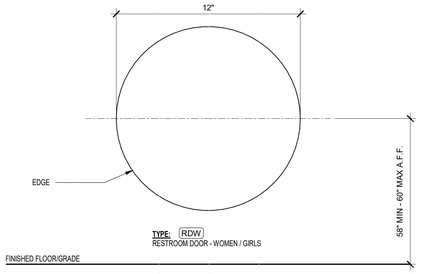
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SHEET NO.
G-900

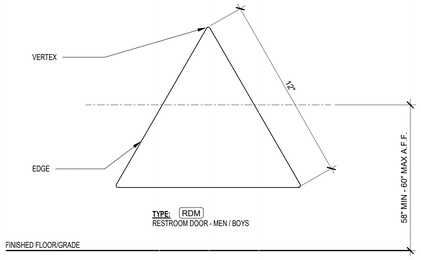
DATE: May 29, 2024

BID SET (PRELIMINARY)

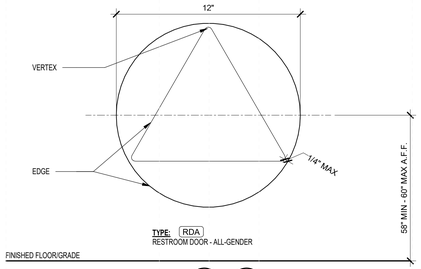
DATE PLOTTED: 9/20/2024 11:25:51 AM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt



TYPE: RDW
RESTROOM DOOR - WOMEN / GIRLS



TYPE: RDM
RESTROOM DOOR - MEN / BOYS



TYPE: RDA
RESTROOM DOOR - ALL-GENDER

NOTE 1: FOR LOCATION AND MOUNTING SEE & 4 G-923 5 G-923

NOTE 2: SECOND SURFACE SCREENED COPY ON MATTE CLEAR ACRYLIC

NOTE 3: COLOR TBD. MUST HAVE AT LEAST 70% CONTRAST TO DOOR COLOR

NOTE 4: EDGES SHALL BE EASED OR ROUNDED AT 1/16" MIN OR CHAMFERED AT 1/8" MAX.

NOTE 5: VERTICES ON TRIANGLES SHALL BE RADIUSED BETWEEN 1/8" MIN AND 1/4" MAX.

NOTE 6: CIRCLE & TRIANGLE SYMBOL SHALL BE 1/4" THICK.

NOTE 7: THE INSCRIBED TRIANGLE SHALL BE 1/4" THICK CONTRASTING COLOR ON A 1/4" THICK CIRCLE (1/2" TOTAL THICKNESS) THAT IS IN CONTRAST WITH THE DOOR COLOR (NOTE 3)

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SIGNAGE - RESTROOM DOORS
3" = 1'-0" **18**

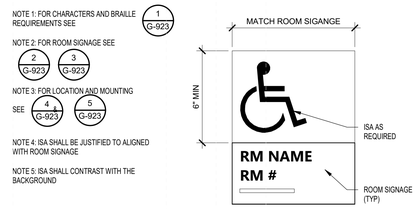
NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE 1 G-923

NOTE 2: FOR ROOM SIGNAGE SEE 2 G-923 3 G-923

NOTE 3: FOR LOCATION AND MOUNTING SEE & 4 G-923 5 G-923 6 G-923

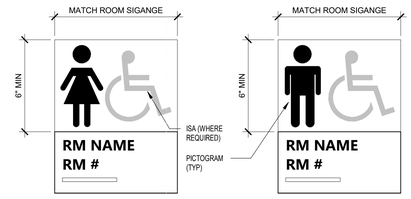
NOTE 4: PICTOGRAMS SHALL BE PER

NOTE 5: ISA SYMBOL REQUIRED AT RESTROOMS IN BUILDINGS WHERE NOT ALL RESTROOMS ARE ACCESSIBLE.



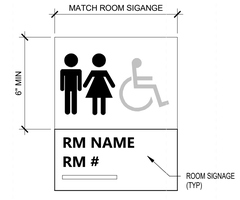
21.12.14 - 00000

SIGNAGE - ROOM - ISA
3" = 1'-0" **11**



TYPE: RWW RWG
RESTROOM WALL - WOMEN
RESTROOM WALL - GIRLS

TYPE: RWM RWB
RESTROOM WALL - MEN
RESTROOM WALL - BOYS



TYPE: RWA
RESTROOM WALL - ALL-GENDER

NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE 1 G-923

NOTE 2: FOR ROOM SIGNAGE SEE 2 G-923 3 G-923

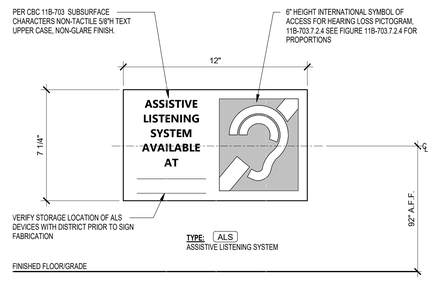
NOTE 3: FOR LOCATION AND MOUNTING SEE & 4 G-923 5 G-923 6 G-923

NOTE 4: PICTOGRAMS SHALL BE PER

NOTE 5: ISA SYMBOL REQUIRED AT RESTROOMS IN BUILDINGS WHERE NOT ALL RESTROOMS ARE ACCESSIBLE.

21.12.14 - 00000

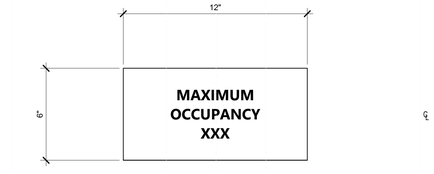
SIGNAGE - RESTROOMS - PICTOGRAMS
3" = 1'-0" **13**



TYPE: ALS
ASSISTIVE LISTENING SYSTEM

21.12.14 - 00000

SIGNAGE - ALS
3" = 1'-0" **14**



TYPE: MO
MAXIMUM OCCUPANCY

21.12.14 - 00000

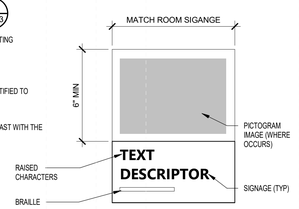
SIGNAGE - MAXIMUM OCCUPANCY
3" = 1'-0" **15**

NOTE 1: FOR SIGNAGE SEE 2 G-923 3 G-923 10 G-923

NOTE 2: FOR LOCATION AND MOUNTING SEE 4 G-923 5 G-923

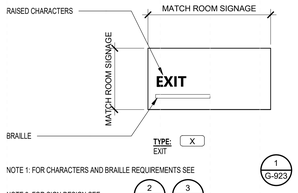
NOTE 3: PICTOGRAM SHALL BE JUSTIFIED TO ALIGN WITH TEXT DESCRIPTOR

NOTE 4: PICTOGRAM SHALL CONTRAST WITH THE BACKGROUND



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SIGNAGE - PICTOGRAMS
3" = 1'-0" **6**

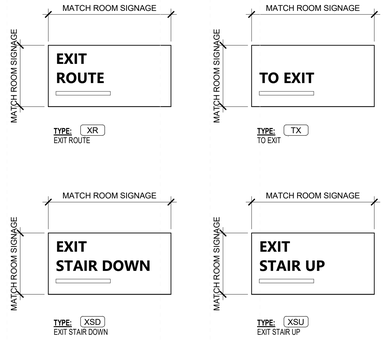


TYPE: X
EXIT

NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE 1 G-923

NOTE 2: FOR SIGN DESIGN SEE 2 G-923 3 G-923

NOTE 3: FOR LOCATION AND MOUNTING SEE & 4 G-923 5 G-923



TYPE: XR
EXIT ROUTE

TYPE: TX
TO EXIT

TYPE: XSD
EXIT STAIR DOWN

TYPE: XSU
EXIT STAIR UP

TYPE: XRD
EXIT RAMP DOWN

TYPE: XRU
EXIT RAMP UP

TYPE: AR
AREA OF REFUGE

TYPE: RES
EXTERIOR AREA OF ASSISTED RESCUE

NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE 1 G-923

NOTE 2: FOR SIGN DESIGN SEE 2 G-923 3 G-923

NOTE 3: FOR LOCATION AND MOUNTING SEE & 4 G-923 5 G-923

NOTE 4: WHEN PICTOGRAMS ARE USED, SEE 6 G-923

NOTE 5: WORDING ON THESE SIGNS IS PER CBC CHAPTER 10

21.12.14 - 00000

SIGNAGE - EXIT
3" = 1'-0" **7**

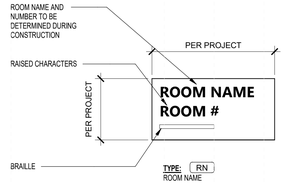
21.12.14 - 00000

SIGNAGE - EXIT ROUTES
3" = 1'-0" **10**

1. PROVIDE SIGNS WHERE INDICATED ON PLANS.
2. RAISED CHARACTERS SHALL COMPLY WITH SECTION 11B-703.2 AND SHALL BE DUPLICATED IN BRAILLE.
   DEPTH: RAISED CHARACTERS SHALL BE 1/32INCH MINIMUM ABOVE THEIR BACKGROUND
   CASE: CHARACTERS SHALL BE UPPER CASE
   STYLE: CHARACTERS SHALL BE SANS SERIF
   PROPORTIONS: THE WIDTH OF LETTER "O" SHALL BE 60 PERCENT MINIMUM AND 110 PERCENT MAXIMUM OF THE HEIGHT OF LETTER "I"
   HEIGHT: 5/8 INCH MINIMUM AND 2 INCHES MAXIUM
3. BRAILLE SHALL BE CONTRACTED (GRADE 2) AND SHALL COMPLY WITH SECTION 11B-703.3.
   DIMENSIONS: BASE DOT DIAMTER 0.059 INCHES TO 0.063 INCHES
   SPACING IN EACH CELL AT 0.10 INCHES ON CENTER
   SPACING BETWEEN CELLS TO BE 0.30 INCHES
   DOT HEIGHT TO BE BETWEEN 0.025 INCHES TO 0.037 INCHES WITH DOMED TOPS
   POSITION: BRAILLE SHALL BE POSITIONED BELOW THE CORRESPONDING TEXT IN A HORIZONTAL FORMAT
4. CHARACTERS AND SYMBOLS SHALL BE LIGHT-ON-DARK OR DARK-ON-LIGHT CONTRAST BETWEEN CHARACTERS, SYMBOLS AND THEIR BACKGROUND.
5. FOR ALL SIGNS MOUNTED ON GLAZING COORDINATE OPPOSITE SIDE SIGN IN THE SAME LOCATION. WHERE NO SIGN IS SPECIFIED ON OPPOSITE SIDE, PROVIDE A BLANK SIGN TO MATCH PER 5 G-923

21.12.14 - 00000

SIGNAGE - GENERAL NOTES
12" = 1'-0" **1**



TYPE: RN
ROOM NAME

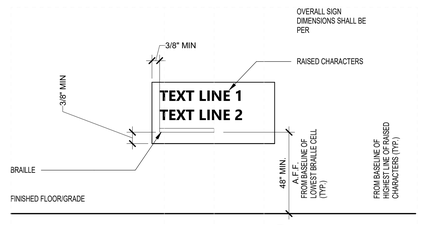
NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE & 1 G-923 3 G-923

NOTE 2: FOR LOCATION AND MOUNTING SEE & 4 G-923 5 G-923

NOTE 3: FOR ROOM NAMES THAT REQUIRE MULTIPLE LINES OF TEXT, EXPAND THE SIGN VERTICALLY TO ACCOMMODATE THE TEXT

21.12.14 - 00000

SIGNAGE - ROOM IDENTIFICATION
3" = 1'-0" **2**



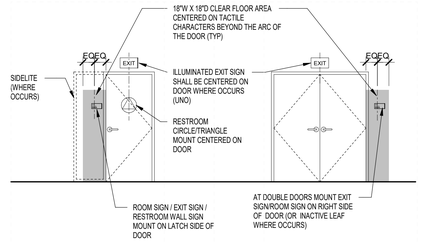
NOTE 1: FOR CHARACTERS AND BRAILLE REQUIREMENTS SEE 1 G-923

NOTE 2: FOR LOCATION AND MOUNTING SEE & 4 G-923 5 G-923

NOTE 3: FOR SIGNS WITH ONLY A SINGLE LINE OF TEXT, IT SHALL BE LOCATED AT "TEXT LINE 2"

21.12.14 - 00000

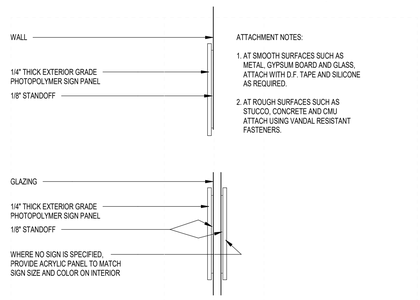
SIGNAGE - CODE DIMENSIONS
3" = 1'-0" **3**



NOTE 1:
WHERE NO WALL SPACE IS AVAILABLE ON LATCH SIDE FOR SINGLE DOORS OR THE RIGHT SIDE AT DOUBLE DOORS, SIGNS SHALL BE PLACED ON NEAREST ADJACENT WALL, PREFERABLE LATCH SIDE FOR SINGLE DOORS OR THE RIGHT SIDE AT DOUBLE DOORS

21.12.14 - 00000

SIGNAGE - MOUNTING LOCATIONS
1/4" = 1'-0" **4**



21.12.14 - 00000

SIGNAGE - MOUNTING
3" = 1'-0" **5**

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT GREGORY M. PARKER No. C18650 Exp. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SIGNAGE DETAILS

DRAWN BY: XX JOB NUMBER: 210015.01

SHEET NO.
G-923

DATE: May 29, 2024

DATE PLOTTED: 7/3/2024 12:50:16 PM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt

BID SET (PRELIMINARY)

ABBREVIATIONS

NOTE: NOT ALL ABBREVIATIONS MAY BE USED ON THESE PLANS.

AB	AGGREGATE BASE
AC	ASPHALTIC CONCRETE
AD	AREA DRAIN
APN	ASSESSOR'S PARCEL NUMBER
ARV	AIR RELEASE VALVE
ASB	AGGREGATE SUB-BASE
BO	BLOW-OFF VALVE
BV	BUTTERFLY VALVE
BW	BACK OF WALK
C/L	CENTERLINE
CB	CATCH BASIN
CL	CLASS
CMP	CORRUGATED METAL PIPE
CATV	CABLE TELEVISION
CO	CLEANOUT
COMM	COMMUNICATION
CONC.	CONCRETE
CONST.	CONSTRUCT
CR	CURB RETURN
CS	CONCRETE SURFACE
DC	DOUBLE CHECK VALVE
DDC	DOUBLE DETECTOR CHECK VALVE
DG	DECOMPOSED GRANITE
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
DS	DOWNSPOUT
E	ELECTRIC
EOT	END OF TRANSMISSION
EP	EDGE OF PAVEMENT
ESMT	EASEMENT
EX	EXISTING
FS	FIRE SERVICE LINE
FDC	FIRE DEPARTMENT CONNECTION
FL	FLOWLINE
FM	SANITARY SEWER FORCE MAIN
FF	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
G	GAS
GB	GRADE BREAK
GR	GRATE ELEVATION
GRD	GRADE ELEVATION
GV	GATE VALVE
HB	HOSE BIBB
HBD	HEADER BOARD
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH POINT
INV	PIPE INVERT ELEVATION
JP	JOINT UTILITY POLE
LF	LINEAL FEET
LIP	LIP OF GUTTER
LT	LEFT
MS	MOWSTRIP
NTS	NOT TO SCALE
OH	OVERHEAD
PAD	BUILDING PAD
PCC	PORTLAND CEMENT CONCRETE
PD	PLANTER DRAIN
PIV	POST INDICATOR VALVE
P/L	PROPERTY LINE
PP	POWER POLE
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
R	RADIUS
RIM	MANHOLE RIM ELEVATION (SOLID COVER)
RP	REDUCED PRESSURE BACKFLOW PREVENTER
RW	RIGHT OF WAY
SCH	SCHEDULE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SG	SUBGRADE ELEVATION
SP	FIRE SPRINKLER SERVICE
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STD	STANDARD
S/W	SIDEWALK
T	TELEPHONE
TC	TOP OF CURB
TD	TRENCH DRAIN
TDCB	TRENCH DRAIN CATCH BASIN
TP	TELEPHONE POLE
TRW	TOP OF RETAINING WALL
TSW	TOP OF SEAT WALL
TW	TOP OF WALK ELEVATION
U	UTILITY
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
VCP	VITRIFIED CLAY PIPE
W	WATER
W/	WITH
W/O	WITHOUT
WV	WATER VALVE

LEGEND

NOTE: NOT ALL SYMBOLS MAY BE USED ON THESE PLANS.

PROPOSED GRADING & DRAINAGE SYMBOLS:

- 8" SD — STORM DRAIN LINE (SIZE AND FLOW SHOWN)
- STORM DRAIN MANHOLE (SDMH)
- CATCH BASIN (CB)
- DROP INLET (DI)
- AREA DRAIN (AD)
- PLANTER DRAIN (PD) OR FLOOR DRAIN (FD)
- CO — STORM DRAIN CLEANOUT
- 99.99 — ELEVATION
- FF=100.00 — FINISHED FLOOR ELEVATION
- PAD=99.33 — BUILDING PAD ELEVATION
- CONCRETE SIDEWALK
- GRADED DIRECTION FOR DRAINAGE FLOW
- SWALE
- SLOPE
- TREE TO BE REMOVED
- RETAINING WALL

PROPOSED SANITARY SEWER SYMBOLS:

- 6" SS — SANITARY SEWER LINE (SIZE AND FLOW SHOWN)
- SANITARY SEWER MANHOLE (SSMH)
- CO — SEWER CLEANOUT FLUSHER BRANCH

PROPOSED WATER SYMBOLS:

- 8" W — WATER LINE & SIZE
- 8" FS — FIRE LINE & SIZE
- 8" DW — DOMESTIC WATER LINE & SIZE
- 8" RW — RECLAIMED WATER LINE & SIZE
- 8" IRR — IRRIGATION SERVICE LINE & SIZE
- 8" NP — NON POTABLE WATER LINE & SIZE
- 8" SP — FIRE SPRINKLER SERVICE LINE & SIZE
- GATE VALVE
- M — WATER METER
- FH — FIRE HYDRANT ASSEMBLY
- FDC — FIRE DEPARTMENT CONNECTION
- DC — DETECTOR CHECK VALVE
- DDC — DOUBLE DETECTOR CHECK VALVE
- RP — REDUCED PRESSURE BACKFLOW PREVENTER
- BUTTERFLY VALVE
- 1" — AIR RELEASE VALVE + SIZE
- 1" — BLOW-OFF VALVE + SIZE
- PIV — POST INDICATOR VALVE

REFERENCE CODES

NOTE: ALL NEW WORK, UNDER THIS PERMIT, SHALL CONFORM TO THE FOLLOWING MODEL CODES: 2022 CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24 , CALIFORNIA BUILDING STANDARDS COMMISSION (CBSC)

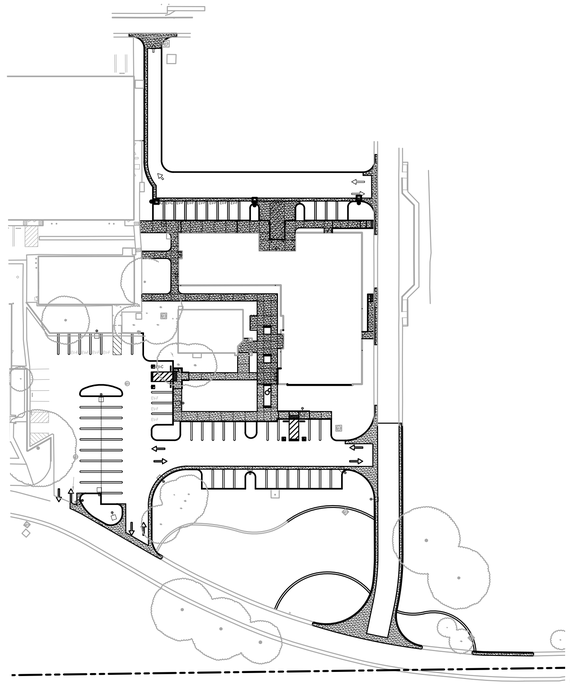
- PART 1 – BUILDING STANDARDS, CALIFORNIA ADMINISTRATIVE CODE
- PART 2 ,VOLUME 1 OF 2 – CALIFORNIA BUILDING CODE (CBC), W/ CITY OF ROSEVILLE AMENDMENTS CITY OF ROSEVILLE ENFORCES CBC CHAPTERS 11A & 11B FOR DISABLED ACCESS COMPLIANCE
- PART 2 ,VOLUME 2 OF 2 – CALIFORNIA BUILDING CODE (CBC), W/ CITY OF ROSEVILLE AMENDMENTS
- PART 3 – CALIFORNIA ELECTRICAL CODE (CEC), W/ CITY OF ROSEVILLE AMENDMENTS
- PART 4 – CALIFORNIA MECHANICAL CODE (CMC), W/ CITY OF ROSEVILLE AMENDMENTS
- PART 5 – CALIFORNIA PLUMBING CODE (CPC), W/ CITY OF ROSEVILLE AMENDMENTS
- PART 6 – CALIFORNIA ENERGY CODE (CEC)
- PART 7 – (NO LONGER PUBLISHED, REFER TO TITLE 8)
- PART 8 – CALIFORNIA HISTORICAL BUILDING CODE
- PART 9 – CALIFORNIA FIRE CODE , W/ CITY OF ROSEVILLE AMENDMENTS
- PART 10 – CALIFORNIA CODE FOR BUILDING CONSERVATION
- PART 11 – CALIFORNIA GREEN BUILDING STANDARDS CODE (CGBSC)

CURRENT CALIFORNIA CODE OF REGULATIONS (CCR), OFFICE OF ADMINISTRATIVE LAW

- TITLE 8, CCR, INDUSTRIAL REGULATIONS, SUBCHAPTER 6. ELEVATOR SAFETY ORDERS
- TITLE 19 – C.C.R.PUBLIC SAFETY
- TITLE 24 – C.C.R. BUILDING STANDARDS CODE

DRY CREEK WASTEWATER TREATMENT PLANT

1800 Booth Road
Roseville, CA 95747

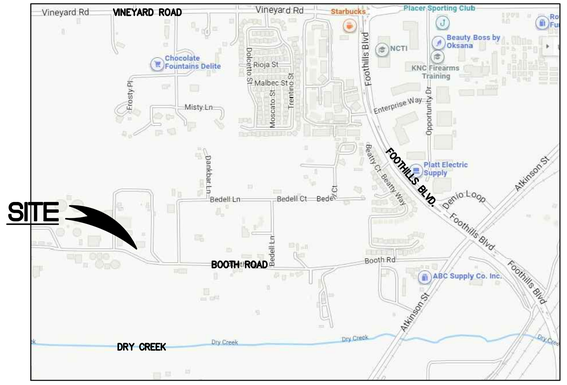


SITE PLAN

NORTH

0 60'

1 inch = 60 feet



SITE

NORTH

VICINITY MAP

NO SCALE

SHEET INDEX

C0.1	CIVIL COVER SHEET
C0.2	GENERAL NOTES
C0.3	GENERAL NOTES
C1.1	PHASE 1 CIVIL DEMOLITION PLAN
C1.2	PHASE 1 CIVIL DEMOLITION PLAN
C1.3	PHASE 2 CIVIL DEMOLITION PLAN
C2.1	PHASE 1 GRADING PLAN
C2.2	PHASE 2 GRADING PLAN
C3.1	PHASE 1 UTILITY PLAN
C3.2	PHASE 2 UTILITY PLAN
C4.1	PHASE 1 PARTIAL PAVING PLAN
C4.2	PHASE 1 PARTIAL PAVING PLAN
C4.3	PHASE 2 PAVING PLAN
C5.1	DETAILS
C5.2	DETAILS AND SECTIONS
C6.1	EROSION CONTROL PLAN

WDID # 5S31I005740199198

EARTHWORK VOLUMES:	
CUT	1390 CY
FILL	95 CY
NET CUT	1295 CY

CONTRACTOR SHALL VERIFY VOLUMES INDEPENDENTLY EXPORT SHALL COMPLY WITH CITY STDS.

HOURS OF CONSTRUCTION

IN ACCORDANCE WITH THE CITY'S NOISE ORDINANCE, THE HOURS OF PROJECT CONSTRUCTION SHALL BE LIMITED TO THE FOLLOWING: 7:00AM TO 7:00PM (MONDAY THROUGH FRIDAY) 8:00AM TO 8:00PM (SATURDAY, SUNDAY AND HOLIDAYS)

UTILITY REPRESENTATIVES

UTILITY	AGENCY	REPRESENTATIVE	PHONE
GAS	PG&E	TBD	877-743-7782
ELECTRICITY	ROSEVILLE ELECTRIC	TIFFANY MCAVOY	916-797-6937
TELEPHONE	CONSOLIDATED	MARK SMITH	916-786-1175
WATER	CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES DEPT.	GEORGE HANSON	916-774-5750
SEWER	CITY OF ROSEVILLE ENVIRONMENTAL UTILITIES DEPT.	BRYAN BUCHANAN	916-774-5750
DRAINAGE	CITY OF ROSEVILLE DEVELOPMENT SERVICES DEPT.	ENGINEERING	916-774-5339
U.S.A.	UNDERGROUND SERVICE ALERT		1-800-642 2444
CABLE T.V.	COMCAST	ROMEO LORICO	925-371-3511
FIRE DISTRICT	CITY OF ROSEVILLE FIRE DEPT.	MICHAEL BRADLEY	916-774-5802

CITY OF ROSEVILLE PLANNING
FILE NO.
ACCEPTED BY: _____ DATE _____
CITY OF ROSEVILLE
DEVELOPMENT SERVICES ENGINEERING
ACCEPTED BY: _____ CITY ENGINEER _____ DATE _____

IMPROVEMENTS COMPLETED

DATE

811 Know what's below. Call before you dig.

EN24-0353

CWJ# 500063

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 ¼" BRASS DISK, STAMPED 2018 PLS, SET IN CONCRETE AT EXPANSION JOINT, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL	BY	DATE

REVISIONS	NO.	DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

PROFESSIONAL ENGINEER ★ REGISTERED ★ ANTHONY J. GIOVANNETTI NO. C74668 CIVIL STATE OF CALIFORNIA 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1117 WINDFIELD WAY, SUITE 105
EL DORADO HILLS, CA 95762 | (916) 985-1870

TITLE: **CIVIL COVER SHEET**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO. **C0.1**

BID SET (PRELIMINARY)

FILENAME:I: \22-166\CIVIL\DWG\22-166 C0.1-C0.3.DWG

EN24-0353

CWJ# 500063

GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THESE PLANS AND THE LATEST EDITION AND AMENDMENTS OF THE CITY OF ROSEVILLE DESIGN AND CONSTRUCTION STANDARDS.
2. THE CITY OF ROSEVILLE IS A MEMBER OF THE UNDERGROUND SERVICE ALERT (U.S.A.) ONE-CALL SYSTEM. THE CONTRACTORS SHALL NOTIFY THE U.S.A. CENTER 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK BY CALLING 1-800-227-2600.
3. THE CONTRACTOR SHALL MARK IN WHITE PAINT ALL AREAS TO BE EXCAVATED PRIOR TO CONTACTING U.S.A. ANY AREAS NOT MARKED WILL NOT BE SUBJECT TO U.S.A., AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE RESULTING FROM EXCAVATION.
4. THE CONTRACTOR SHALL EXPOSE AND VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION OF THE NEW IMPROVEMENTS CONNECTING TO OR IN THE VICINITY OF THE SAME.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS ON THE JOB SITE.
6. THE CONTRACTOR SHALL PLACE BOXED SURVEY MONUMENTS WITH 1-1/2" BRONZE HEAD SET IN CONCRETE (STD. DWG. ST-36) AT LOCATIONS SHOWN ON THESE PLANS.
7. A.C. SURFACE SHALL BE CUT TO A NEAT, STRAIGHT LINE PARALLEL WITH THE STREET CENTERLINE AND THE EXPOSED EDGE SHALL BE TACKED WITH EMULSION PRIOR TO PAVING. THE EXPOSED BASE MATERIAL SHALL BE GRADED, RE-COMPACTED, AND RESEALED PRIOR TO PAVING.
8. ANY EXISTING CONCRETE SURFACE TO BE REMOVED SHALL BE SAW CUT TO A NEAT, STRAIGHT LINE.
9. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN THAT SHALL BE ACCEPTED BY THE ENGINEERING DIVISION OF PUBLIC WORKS BEFORE START OF WORK IN RIGHT-OF-WAY AND SHALL BE IN ACCORDANCE WITH CALIFORNIA MUTCD LATEST EDITION. AT LEAST ONE LANE IN EACH DIRECTION SHALL REMAIN OPEN TO TRAFFIC UNLESS OTHERWISE SHOWN ON THE PLANS. TRAFFIC CONTROL HOURS ARE SUBJECT TO LIMITATION BY THE CITY. TRAFFIC CONTROL WITH LANE CLOSURES THAT AFFECT TRAFFIC FLOW MAY REQUIRE NIGHT WORK. IF, AS A PART OF TRAFFIC CONTROL MEASURES, A ROADWAY CLOSURE HAS BEEN APPROVED, THE CONTRACTOR SHALL NOTIFY DEVELOPMENT SERVICES CONSTRUCTION INSPECTOR 72 HOURS IN ADVANCE OF SETTING UP THIS CLOSURE.
10. CURB RAMPS CONFORMING TO ALL ADA AND TITLE 24 REQUIREMENTS SHALL BE PLACED AT ALL NEW STANDARD CURB RETURNS (STANDARD DRAWING ST-27) AND STANDARD TYPE A-- DRIVEWAYS. WHERE EXISTING RAMPS DO NOT MEET CURRENT ADA AND TITLE 24 REQUIREMENTS, THE RAMPS SHALL BE UPGRADED IN CONFORMANCE WITH MINIMUM TITLE 24 REQUIREMENTS. WHERE EXISTING RAMPS DO NOT INCLUDE DETECTABLE WARNING PANELS (TRUNCATED DOMES), PANELS SHALL BE RETROFITTED PER THE CONSTRUCTION STANDARDS.
11. DRAIN INLETS NOT WITHIN A PAVED AREA SHALL HAVE A 12" WIDE COLLAR OF 6" THICK P.C.C. OR 2" THICK A.C.
12. PRIOR TO THE CERTIFICATE OF COMPLETION ON ALL SINGLE-FAMILY RESIDENTIAL SUBDIVISIONS, THE DEVELOPER SHALL SUBMIT A LETTER FROM THE POST OFFICE STATING THAT ITS REQUIREMENTS FOR MAILBOX CLUSTER PADS HAVE BEEN SATISFIED.
13. ALL UNDERGROUND UTILITIES WITHIN EXISTING OR PROPOSED CITY OF ROSEVILLE EASEMENTS SHALL REQUIRE A MINIMUM OF 90% COMPACTION ON THE TRENCH-BACKFILL. COMPACTION OF BACKFILL BY JETTING IS NOT PERMITTED IN CITY OF ROSEVILLE RIGHT OF WAY AND EASEMENT AREAS OR WITHIN DEDICATED RECLAIMED WATER, STORM, SEWER OR WATER EASEMENTS AND MAINS.
14. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING ONE-WEEK PRIOR TO STARTING WORK. MEMBERS OF THE CITY OF ROSEVILLE DEVELOPMENT SERVICES DEPARTMENT, ENVIRONMENTAL UTILITIES DEPARTMENT AND ALL OTHER UTILITY REPRESENTATIVES SHALL BE NOTIFIED BY THE CONTRACTOR AS TO THE DATE AND LOCATION OF THE MEETING.
15. PRIOR TO EXCAVATION OF TRENCHES 5 FEET OR DEEPER, THE CONTRACTOR SHALL SUBMIT TO THE DEVELOPMENT SERVICES DEPARTMENT OR ENVIRONMENTAL UTILITIES DEPARTMENT INSPECTOR A COPY OF THE COMPANY'S ANNUAL CALOSHA TRENCHING PERMIT AND A COPY OF THE COMPANY'S LETTER INFORMING CALOSHA OF THE TIME THE TRENCHING IS COMMENCING AND THE LOCATION OF THE WORK.
16. ALL PAINTED TRAFFIC STRIPES, ARROWS, AND PAVEMENT MARKINGS SHALL BE CONSTRUCTED WITH THERMOPLASTIC MATERIAL TO THE SPECIFICATIONS SET FORTH IN CHAPTER 3 OF THE CALIFORNIA MUTCD LATEST EDITION. NON-REFLECTIVE PAVEMENT MARKERS SHALL CONSIST OF CERAMIC MARKERS ONLY CONFORMING TO CHAPTER 3 OF THE CALIFORNIA MUTCD LATEST EDITION.
17. THE DEVELOPERS CONTRACTOR SHALL TAKE EXTREME CARE TO PROTECT EXISTING SITE AND ADJACENT IMPROVEMENTS FROM DAMAGE. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR OR MAKE REPLACEMENT OF ALL CRACKED AND OTHERWISE PRE-EXISTING DAMAGED PUBLIC IMPROVEMENTS ALONG THE FRONTAGE OF THE PROJECT SITE AND ANY DAMAGE RESULTING FROM CONSTRUCTION TO CURRENT CITY STANDARDS AND AT THEIR OWN EXPENSE. THE EXTENT OF THE REPAIRS SHALL BE DETERMINED BY THE DEVELOPMENT SERVICES CONSTRUCTION INSPECTOR AND SHALL BE COMPLETED PRIOR TO THE CITY ACCEPTANCE OF THE IMPROVEMENTS.
18. WHERE COMBINATIONS OF SIDEWALK OR CURB AND GUTTER ARE PLACED CONTIGUOUS TO EXISTING, ALL ADJOINING EXISTING CONCRETE VERTICAL FACES SHALL BE DOWELED. ALL ABUTTING SIDEWALK ENDS SHALL BE DOWELED MID-SECTION VERTICALLY WITH TWO DOWELS FOR FOUR THROUGH SIX-FOOT WIDE SIDEWALK AND THREE DOWELS FOR WIDER SIDEWALK. ABUTTING CURB AND GUTTER ENDS SHALL BE DOWELED TWICE, 18 INCHES APART AT GUTTER PAN MID-SECTION. DOWEL CONNECTIONS OF LONGITUDINAL RUNS OF SIDEWALK TO BACK OF CURB SHALL BE THREE FEET ON CENTER. ALL DOWELS SHALL BE 16 INCHES LONG, GRADE 60; #4 REBAR PENETRATING FOUR INCHES. THE DOWEL HOLE SHALL BE 5/8-INCH DIAMETER AT A SLIGHT HORIZONTAL ANGLE FROM PERPENDICULAR. THE PENETRATING PORTION OF THE DOWEL AND THE ENTIRE (CLEANED) VERTICAL SURFACE OF THE ADJOINING, EXISTING CONCRETE SHALL BE THOROUGHLY COATED WITH STATE STANDARD TWO-PART EPOXY.
19. WHEN SAWCUTTING WITHIN THE STREET FOR TRENCHING OR OTHER PURPOSES, CONTRACTOR SHALL GRIND 1½" OF PAVEMENT BETWEEN THE LANE LINES (FROM LANE STRIPE TO LANE STRIPE) UPON COMPLETION OF THE SAWCUTTING AND OR TRENCHING WORK. WHERE THE SAWCUTTING OCCURS BETWEEN THE CURB AND GUTTER AND NEAREST LANE STRIPE (INCLUDING BIKE LANES), THE SAME 1 ½" GRIND SHALL BE REQUIRED. CONTRACTOR TO PLACE A PETROMAT FABRIC OR APPROVED EQUAL BY THE CITY OF ROSEVILLE AND OVERLAY FROM LANE STRIPE TO LANE STRIPE, OR CURB TO LANE STRIPE AND RESTRIPE OR REPLACE ANY DELINEATORS REMOVED DURING THE GRIND.
20. ALL PUBLICLY MAINTAINED STORM DRAIN ON PRIVATE PROPERTY SHALL BE A MINIMUM OF 12 INCHES IN DIAMETER AND SHALL BE RCP CL IV, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
21. FOR RESIDENTIAL SUBDIVISIONS, UNLESS OTHERWISE APPROVED BY DEVELOPMENT SERVICES ENGINEERING, THE FINAL GRADING OF THE PROJECT SITE SHALL BE CONSTRUCTED TO ACCOMMODATE A MAXIMUM DRIVEWAY SLOPE OF 14% FOR EACH RESIDENTIAL LOT, AS MEASURED FROM THE BACK OF THE SIDEWALK TO THE GARAGE (20-FT SET BACK). IT WILL REMAIN THE RESPONSIBILITY OF THE BUILDERS/DEVELOPER TO DESIGN A HOUSE THAT PROVIDES SUITABLE ACCESS TO THE PARCEL.
22. THE CONTRACTOR SHALL PLACE FILTER FABRIC BETWEEN THE INITIAL BEDDING AND BACKFILL AND THE TRENCH BACKFILL FOR SANITARY SEWERS DEPTH GREATER THAN 15 FEET MEASURED TO THE PIPE INVERT.

GRADING NOTES: (SWPPP VERSION)

1. GRADING SHALL CONFORM TO APPENDIX CHAPTER 33 UBC, LATEST EDITION, AND TO THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEERING REPORT BY ENGEO INCORPORATED, ENTITLED "THE DRY CREEK WASTEWATER TREATMENT PLANT OPERATIONS BUILDING". ENGINEERING DIV. FILE NO. 308-1029.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED AS SPECIFIED IN THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR THIS PROJECT OR AS DETERMINED BY THE CITY INSPECTOR. THE SWPPP IS CONSIDERED A DYNAMIC DOCUMENT AND WILL CHANGE AS CONDITIONS WARRANT. PERMANENT EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED AS SHOWN ON THE SWPPP PLAN.
3. LOTS SHALL BE GRADED WITH A CONSTANT SLOPE ALONG THE FRONTAGE OF THE RIGHT-OF-WAY, FROM BUILDING SETBACK LINE TO BACK OF SIDEWALK. ALL TEMPORARY AND PERMANENT SLOPES STEEPER THAN 4:1 ALONG THIS FRONTAGE SHALL HAVE EROSION NETTING INSTALLED.
4. ALL REAR LOT CORNER ELEVATIONS SHALL BE EQUAL TO OR GREATER THAN THE HIGHEST ADJACENT PAD GRADE UNLESS SPECIFICALLY SHOWN ON THESE PLANS AND APPROVED BY ENGINEERING DIVISION.
5. NON-POTABLE WATER SHALL BE SPRAYED ON ALL EXPOSED EARTH SURFACES DURING CLEARING GRADING, EARTH MOVING, AND OTHER SITE PREPARATION ACTIVITIES. THE EXPOSED EARTH SHALL BE WATERED THROUGHOUT THE DAY TO MINIMIZE DUST.
6. TARPAULINS OR OTHER EFFECTIVE COVERS SHALL BE USED ON ALL STOCKPILED EARTH MATERIAL AND ON HAUL TRUCKS TO MINIMIZE DUST.
7. THE CITY SHALL HAVE THE AUTHORITY TO STOP ALL GRADING OPERATIONS, IF, IN OPINION OF CITY STAFF, INADEQUATE DUST CONTROL MEASURES ARE BEING PRACTICED OR EXCESSIVE WIND CONDITIONS CONTRIBUTE TO FUGITIVE DUST EMISSIONS.
8. ADJACENT STREET FRONTAGES SHALL BE SWEPT AT LEAST ONCE A DAY TO REMOVE SILT AND OTHER DIRT WHICH IS EVIDENT FROM CONSTRUCTION ACTIVITIES. REFER TO SCHEDULES WITHIN SWPPP.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING CONSTRUCTION VEHICLES LEAVING THE SITE ON A DAILY BASIS TO PREVENT DUST, SILT AND DIRT FROM BEING RELEASED OR TRACKED OFFSITE. REFER TO SWPPP FOR SPECIFIC REQUIRMENTS.
10. CONSTRUCTION SHALL STOP IF CULTURAL RESOURCES ARE SUSPECTED. IT IS POSSIBLE THAT PREVIOUS ACTIVITIES HAVE OBSCURED SURFACE EVIDENCE OF CULTURAL RESOURCES. IF SIGNS OF AN ARCHEOLOGICAL SITE, SUCH AS ANY UNUSUAL AMOUNTS OF STONE, BONE, OR SHELL, ARE UNCOVERED DURING GRADING OR OTHER CONSTRUCTION ACTIVITIES, WORK SHALL BE HALTED WITHIN 100 FEET OF THE FIND AND THE ROSEVILLE COMMUNITY DEVELOPMENT DEPARTMENT SHALL BE NOTIFIED. A QUALIFIED ARCHEOLOGIST SHALL BE CONSULTED FOR AN ON-SITE EVALUATION. THE ARCHEOLOGIST MAY REQUIRE ADDITIONAL MITIGATION.
11. SHOULD GRADING OPERATIONS UNCOVER HAZARDOUS MATERIALS, OR WHAT APPEARS TO BE HAZARDOUS MATERIALS, THE FIRE DEPARTMENT SHALL BE CONTACTED IMMEDIATELY AT (916) 774-5820. THE AREA, WHICH CONTAINS THE HAZARDOUS MATERIALS, SHALL BE MARKED OFF UNTIL AN INVESTIGATION BY A MEMBER OF THE FIRE DEPARTMENT IS CONDUCTED.
12. GRADES SHOWN OUTSIDE OF THE PUBLIC RIGHT OF WAY WITHIN THE APPROVED GRADING PLAN ARE SUBJECT TO FURTHER REVIEW AND MODIFICATION BY THE BUILDING DIVISION FOR COMPLIANCE WITH THE UNIFORM BUILDING CODE AND STATE OF CALIFORNIA TITLE 24 HANDICAP ACCESSIBILITY REQUIREMENTS.
13. THE CONTRACTOR/DEVELOPER IS EXPECTED TO COMPLY WITH THE FUGITIVE DUST CONTROL REQUIREMENTS FROM THE PLACER COUNTY AIR POLLUTION CONTROL DISTRICT: WWW.PLACER.CA.GOV/APCD
14. CONTAMINATED SOIL - DEVELOPER AGREES TO PROPERLY ADHERE TO ALL THEN CURRENT STATE AND FEDERAL REQUIREMENTS WHEN ANY EVIDENCE OF TOXIC, HAZARDOUS OR CONTAMINATED SOILS ARE ENCOUNTERED DURING ANY AND ALL EXCAVATION OR GRADING OPERATIONS, AND TO INDEMNIFY, DEFEND AND HOLD HARMLESS THE CITY OR ROSEVILLE, ITS OFFICERS, AGENTS AND EMPLOYEES, FROM ANY AND ALL LIABILITY, COSTS, CLAIMS, FEES, FINES, PENALTIES AND CLAIMS OF OR DAMAGE OF ANY TYPE WHATSOEVER. EXTRA COSTS FOR REMEDIATION AND/OR REMOVAL OF SOIL SHALL BE BOURN SOLELY BY THE DEVELOPER. THE PARTIES INTEND THAT THIS PROVISION BE BROADLY CONSTRUED.

EROSION / SEDIMENT CONTROL: (SWPPP VERSION)

1. THE STATE'S GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY (WQD 99-080-DWQ) REQUIRES THE PREPARATION OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR SITES WITH SOIL DISTURBANCES GREATER THAN OR EQUAL TO ONE ACRE, OR FROM SITES SMALLER THAN ONE ACRE IF THE CONSTRUCTION ACTIVITY IS PART OF A LARGER PLAN OF DEVELOPMENT OR SALE THAT DISTURBS ONE ACRE OR MORE. CONSTRUCTION ACTIVITY SHALL NOT COMMENCE, NOR A PRE-CONSTRUCTION MEETING PERMITTED TO BE SCHEDULED, PRIOR TO THE SWPPP BEING ACCEPTED BY THE CITY. FOR MORE INFORMATION SEE; http://www.roseville.ca.us/eu/stormwater_management
2. THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS INCORPORATED BY REFERENCE INTO THIS SET OF PLANS. THE SWPPP IS CONSIDERED A DYNAMIC DOCUMENT AND WILL CHANGE AS CONDITIONS WARRANT. PERMANENT EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED AS SHOWN ON THESE PLANS.
3. A COPY OF THE SWPPP SHALL BE KEPT AT THE PROJECT SITE AT ALL TIMES.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED AS SPECIFIED IN THE SWPPP AND/OR AS DIRECTED BY CITY INSPECTOR.
5. NO GRADING OR TRENCHING, EXCEPT AS REQUIRED FOR EROSION OR SEDIMENT CONTROL, SHALL OCCUR WITHIN 35 FEET FROM THE CENTERLINE OF PERENNIAL AND INTERMITTENT DRAINAGE SWALES BETWEEN OCTOBER 15 AND APRIL 15 EXCEPT AS APPROVED BY THE DEPARTMENT OF FISH AND GAME.
6. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE SWPPP.
7. THE CONTRACTOR SHALL ESTABLISH A SPECIFIC SITE WITHIN THE DEVELOPMENT FOR MAINTENANCE AND STORAGE OF EQUIPMENT OR ANY OTHER ACTIVITY THAT MAY ADVERSELY CONTRIBUTE TO THE WATER QUALITY OF THE RUNOFF IN ACCORDANCE WITH THE SWPPP

WATER NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS AND THE LATEST EDITION OF THE CITY OF ROSEVILLE STANDARD SPECIFICATIONS AND IMPROVEMENT STANDARDS (INCLUDING ALL APPLICABLE REVISIONS AND ADDENDUMS).
2. CITY OF ROSEVILLE STANDARD REQUIREMENTS SHALL BE ADHERED TO UNLESS SPECIFICALLY INDICATED OTHERWISE IN THE PLANS AND SPECIFICATIONS.
3. THE ENTIRE LENGTH OF ALL PROPOSED WATER PIPE SHALL BE RESTRAINED. PIPE 16 INCHES AND SMALLER SHALL BE RESTRAINED MECHANICALLY. 24 INCH DIAMETER PIPE SHALL BE RESTRAINED BY WELDING. RESTRAINT TO BE PROVIDED ON EXISTING WATER PIPES AT CONNECTION POINTS SHOWN ON THE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION STAKING.
5. CONTRACTOR SHALL MAINTAIN ALL CONSTRUCTION VEHICLES, SOIL, STOCKPILES, EQUIPMENT, AND MATERIALS WITHIN A CORRIDOR LIMITED TO 25 FEET FROM THE PIPE CENTERLINE (50 FOOT TOTAL), EXCEPT THAT CONTRACTOR MAY USE THE ENTIRE AREA WITHIN THE RIGHT OF WAY ADJACENT TO PROPOSED CONSTRUCTION.
6. CONTRACTOR SHALL MARK ALL AREAS PROPOSED FOR EXCAVATION WITH WHITE PAINT PRIOR. TO CALLING UNDERGROUND SERVICES ALERT (USA). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES RESULTING FROM EXCAVATION IN AREAS NOT ADEQUATELY MARKED.
7. INSTALLATION OF PROPOSED PIPELINES AND OTHER IMPROVEMENTS SHALL BE IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS AND APPLICABLE AWWA GUIDELINES, UNLESS OTHERWISE NOTED ON THE PLANS AND SPECIFICATIONS. COPIES OF MANUFACTURERS'.
8. INSTALLATION GUIDELINES SHALL BE AT THE CONSTRUCTION SITE AT ALL TIMES. TEST,DISINFECT, AND FLUSH WATER SYSTEM ONLY IN THE PRESENCE OF A WATER DIVISION REPRESENTATIVE.
9. ALL PIPELINES, APPURTENANCES, AND OTHER WATER SYSTEM COMPONENTS SHALL BE TESTED AT 150 PSI AT HIGHEST WATER MAIN ELEVATION FOR A MINIMUM OF 2 HOURS IN ACCORDANCE WITH THE SPECIFICATIONS. WATER SYSTEM SECTIONS NOT MEETING LEAKAGE REQUIREMENTS AS INDICATED IN THE SPECIFICATIONS SHALL BE REPAIRED AND RETESTED AT THE CONTRACTOR'S EXPENSES.
10. UF RATED #12 TRACING WIRE SHALL BE APPLIED TO MAINS AND SERVICE LINES. WIRE SHALL BE CONTINUOUS BETWEEN MAIN LINE VALVES, BOXES, AND FIRE HYDRANTS. TRACING WIRE THROUGH VALVE BOXES SHALL BE PLACED OUTSIDE OF THE RISER AND INSIDE THE BOX.
11. MAIN LINE FITTINGS FOR RCCP SHALL BE CUSTOM MANUFACTURED AS AN INTEGRAL COMPONENT OF THE PIPELINE. CONNECTING FITTINGS SHALL BE DUCTILE IRON Z(FLANGED) ONLY,

FIRE DEPARTMENT GENERAL NOTES:

1. AN APPROVED PROJECT SIGN SHALL BE PLACED AT VEHICLE ACCESS POINTS INTO THE PROJECT DURING CONSTRUCTION TO ASSIST EMERGENCY RESPONDERS. THE SIGN SHALL IDENTIFY THE ADDRESS, AS APPROVED BY THE CITY OF ROSEVILLE. SUCH SIGNS SHALL BE CLEARLY VISIBLE AND LEGIBLE FROM THE STREET FRONTING THE PROJECT.
2. PRIOR TO COMBUSTIBLE MATERIALS BEING BROUGHT TO THE SITE, FIRE APPARATUS ACCESS ROADS SHALL BE PROVIDED TO WITHIN 150 FEET OF ALL STRUCTURES AND COMBUSTIBLE STORAGE PILES. FIRE APPARATUS ACCESS ROADS SHALL BE FULLY PAVED AND SHALL BE DESIGNED TO SUPPORT THE IMPOSED WEIGHT OF A FIRE APPARATUS (34 TONS GVW), UNLESS PRIOR APPROVAL IS OBTAINED FROM THE FIRE DEPARTMENT FOR TEMPORARY ACCESS ROADS. ACCESS ROADS SHALL BE PROVIDED WITH A MINIMUM 20-FOOT ROADWAY WIDTH AND 13 FOOT 6 INCH VERTICAL CLEARANCE.
3. PRIOR TO COMBUSTIBLE MATERIALS BEING BROUGHT TO THE SITE, ANY REQUIRED ON-SITE FIRE HYDRANTS SHALL BE COMPLETED AND ACCEPTED BY THE ROSEVILLE FIRE DEPARTMENT.
4. CONSTRUCTION MATERIAL AND VEHICLES SHALL NOT OBSTRUCT FIRE APPARATUS ACCESS TO FIRE APPARATUS ROADS, FIRE HYDRANTS OR THE BUILDING.
5. BARRICADES SHALL BE PROVIDED TO PROTECT ANY NATURAL GAS METER, FIRE HYDRANT, FIRE DEPARTMENT CONTROL DEVICE, OR OTHER POSSIBLE PERTINENT EQUIPMENT OR DEVICES THAT MAY BE SUBJECT TO VEHICULAR DAMAGE.
6. PROVIDE AND MAINTAIN A MINIMUM 3-FOOT CLEAR SPACE AROUND FIRE PROTECTION EQUIPMENT.
7. THE BURNING OF COMBUSTIBLE CONSTRUCTION MATERIALS AND TRASH IS PROHIBITED.
8. ASPHALT AND TAR KETTLES SHALL NOT BE LOCATED WITHIN 20 FEET OF ANY COMBUSTIBLE MATERIAL, COMBUSTIBLE BUILDING SURFACE OR BUILDING OPENING. AN ATTENDANT SHALL BE WITHIN 100 FEET OF A KETTLE WHEN THE HEAT SOURCE IS OPERATING. A MINIMUM OF ONE (1) 20B:C PORTABLE FIRE EXTINGUISHER SHALL BE LOCATED WITHIN 30 FEET OF THE KETTLE, AND ON THE ROOF DURING ASPHALT COATING OPERATIONS.
9. DRYWALL AND OTHER TEMPORARY HEATING DEVICES SHALL BE OF AN APPROVED TYPE, LOCATED AWAY FROM COMBUSTIBLE MATERIALS AND ATTENDED AND MAINTAINED AT ALL TIMES. HEATING DEVICES SHALL NOT BE OPERATED AFTER NORMAL WORKING HOURS WITHOUT BEING ATTENDED TO ON AN HOURLY BASIS.
10. CUTTING AND WELDING OPERATIONS SHALL CONFORM TO THE HOT WORK PROVISIONS OF CHAPTER 35 OF THE FIRE CODE. A FIRE WATCH SHALL BE PROVIDED DURING HOT-WORK ACTIVITIES AND SHALL CONTINUE FOR A MINIMUM OF 30 MINUTES AFTER THE CONCLUSION OF THE WORK.
11. IF SITE SURVEY OR EARTH MOVING WORK RESULTS IN THE DISCOVERY OF HAZARDOUS MATERIALS IN CONTAINERS, OR WHAT APPEARS TO BE HAZARDOUS WASTES RELEASED INTO THE GROUND, THE CONTRACTOR OR APPLICANT SHALL IMMEDIATELY REPORT THE FINDING TO THE ROSEVILLE FIRE DEPARTMENT VIA PHONE AT (916) 774-5821. ALL SUSPECTED AREAS SHALL BE MARKED OFF WITH APPROVED SIGNAGE OR CAUTION TAPE UNTIL SUCH TIME THAT A REPRESENTATIVE FROM THE FIRE DEPARTMENT DETERMINES WHETHER THE RELEASE IS REPORTABLE OR NOT AND IF SITE REMEDIATION IS REQUIRED.
12. FIRE SAFETY DURING CONSTRUCTION SHALL COMPLY WITH CHAPTER 33 OF THE CALIFORNIA FIRE CODE.
13. ADEQUATE RADIO COVERAGE SHALL BE PROVIDED WITHIN BUILDINGS FOR PUBLIC SAFETY AGENCIES, AS REQUIRED BY FIRE CODE.
14. PORTABLE FIRE EXTINGUISHERS SHALL BE INSTALLED IN OCCUPANCIES AND LOCATIONS AS SET FORTH IN THE CALIFORNIA FIRE CODE AND AS REQUIRED BY THE CHIEF. PROVIDE A MINIMUM OF ONE (1) PORTABLE FIRE EXTINGUISHER WITHIN EACH TENANT SPACE. THE MAXIMUM TRAVEL DISTANCE TO THE FIRE EXTINGUISHER SHALL NOT EXCEED 75-FEET. THE MINIMUM RATING CLASSIFICATION FOR THE EXTINGUISHER SHALL BE NOT LESS THAN 2A-10B:C. THE MAXIMUM TRAVEL DISTANCE FROM ANY POINT IN A LIGHT HAZARD AREA OF CLASS A HAZARDS SHALL NOT BE MORE THAN 75 FEET FROM A CLASS 2A-10B:C. FIRE EXTINGUISHER AND ONE EXTINGUISHER SHALL BE PROVIDED FOR EACH 6,000 SQUARE FEET. THE MAXIMUM TRAVEL DISTANCE FROM ANY POINT IN AN ORDINARY HAZARD OF CLASS A HAZARDS AREA SHALL NOT BE MORE THAN 75 FEET AND ONE EXTINGUISHER SHALL BE PROVIDED FOR EACH 3,000 SQUARE FEET. THE MAXIMUM TRAVEL DISTANCE TO CLASS B EXTINGUISHERS IS EITHER 30 FEET OR 50 FEET DEPENDING UPON THE SIZE OF THE EXTINGUISHER AND THE CLASSIFICATION OF THE HAZARD. REFER TO UFC STANDARD NO. 10-1 FOR COMPLETE REQUIREMENTS. ALL PORTABLE FIRE EXTINGUISHERS SHALL HAVE A SERVICE TAG AFFIXED TO THEM SHOWING THAT THE EXTINGUISHER HAS BEEN SERVICED BY A CALIFORNIA STATE LICENSED FIRE EXTINGUISHER CONCERN. ALL FIRE EXTINGUISHERS SHALL BE ATTACHED TO A BRACKET OR WITHIN AN APPROVED CABINET. MAXIMUM DISTANCE FROM THE FLOOR SHALL NOT EXCEED 54-INCHES. SIGNAGE SHALL BE POSTED ABOVE THE EXTINGUISHER AND SHALL READ FIRE EXTINGUISHER.
15. THE REQUIRED MINIMUM FIRE FLOW FOR THE PROTECTION OF THE PROPOSED PROJECT IS 1500 GALLONS PER MINUTE WITH 20 POUNDS PER SQUARE INCH RESIDUAL WATER PRESSURE REMAINING IN THE SYSTEM. A CHANGE IN ANY OF THE CONDITIONS MAY INCREASE THE REQUIRED FIRE FLOW.
16. ALL UNDERGROUND FIRE LINE SHALL BE HYDRAULICALLY PRESSURED AT 200 PSI FOR TWO-HOURS PER THE NFPA STANDARD FOR UNDERGROUND FIRE WATER LINE. AN INSPECTION SHALL BE REQUIRED TO WITNESS THE TEST WITH A SUBSEQUENT INSPECTION AFTER THE TWO-HOUR DURATION HAS EXPIRED.
17. TEMPORARY USE OF ON-SITE GENERATORS WITH OVER 60 GALLONS OF DIESEL FUEL SHALL REQUIRE A FIRE DEPARTMENT PERMIT AND MUST MEET THE REQUIREMENTS OF THE CHAPTER 6.95 OF THE HEALTH AND SAFETY CODE. THE ROSEVILLE FIRE DEPARTMENT AND THE NATIONAL FIRE CODES. CONTACT THE FIRE DEPARTMENT AT 916-774-5800 TO INITIATE THE PERMIT APPLICATION.
18. SECTION 10.6.2 OF NFPA 24 HAS BEEN AMENDED NOT TO ALLOW MECHANICAL JOINTS UNDER BUILDINGS. SEE CHAPTER 80 OF THE CALIFORNIA FIRE CODE, PAGE 519. PROVIDE DETAIL OF THE PROPOSED RISER AND UNDERGROUND DETAIL TO THE PAD.
19. CIVIL IMPROVEMENT PLANS SHALL BE RESUBMITTED IF IT HAS BEEN DETERMINED BY THE APPLICANT THAT AN ON-SITE FIRE PUMP WILL BE REQUIRED AS THE RESULT OF SUPPLYING 100 PSI RESIDUAL PRESSURE AT THE STANDPIPE ROOF OUTLET ACCORDANCE WITH NFPA 14, STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS.
20. THE SUBMITTED PRIVATE UNDERGROUND FIRE LINE SHALL BE REVIEWED AND APPROVED BY THE ENVIRONMENTAL UTILITIES DEPARTMENT (EUD) IN CONJUNCTION WITH THE FIRE DEPARTMENT (RFD) PRIOR TO REQUESTING FOR THE REQUIRED INSPECTION FROM THE RFD. THE FIRE SPRINKLER PLANS WILL NOT BE APPROVED BY THE RFD UNTIL THE UNDERGROUND SERVICE LATERAL HAS BEEN INSPECTED AND ACCEPTED BY THE RFD.
21. ALL PROPOSED BURIED BOLTS SHALL BE COATED WITH A LISTED PRODUCT SUCH AS CHRISTY'S HD-50.
22. ACCORDING TO NFPA 13 6.3.1.1.1 THE UNDERGROUND FIRE LINE CANNOT EXTEND INTO THE BUILDING FURTHER THAN 24 INCHES.
23. AN 18 AWG MINIMUM GAUGE TRACER WIRE SHALL BE INSTALLED ALONG ALL NON-METALLIC UNDERGROUND PIPING IN ACCORDANCE WITH SECTION 604 OF THE CALIFORNIA PLUMBING CODE. NOTATIONS SHALL BE MADE ON THE RESUBMITTAL.
24. FIRE DEPARTMENT CONNECTION(S) SHALL BE WITHIN 2-FEET OF BACK OF CURB OR BACK OF WALKWAY, AND SHALL REMAIN UNOBSTRUCTED AT ALL TIMES.
25. ALL FIRE DEPARTMENT CONNECTIONS SHALL BE LABELED WITH THE APPROPRIATE ADDRESS.
26. MECHANICAL JOINTS SHALL BE INSTALLED AT AREAS NOTED PER THE EBBA THRUST RESTRAINT DESIGN PROGRAM SPECIFICATIONS.
27. CONDUITS SHALL BE INSTALL AND AVAILABLE FOR FUTURE MONITORING OF ALL FIRE PROTECTION DEVICES.
28. ALL WORK SHALL BE INSPECTED BY THE FIRE DEPARTMENT PRIOR TO INSTALLING GROUND MATERIALS.
29. TO SCHEDULE A FIRE DEPARTMENT INSPECTION FOR ANY ON-SITE WORK, FOLLOW THE DIRECTIONS USING THE CITY OF ROSEVILLE CITIZEN PORTAL AT permitsonline.roseville.ca.us. THE FOLLOWING BD NUMBER BELOW SHALL BE USED WHEN SCHEDULING A FIRE DEPARTMENT INSPECTION. A BD NUMBER WILL BE ISSUED UPON APPROVAL. ALL INQUIRING REGARDING INSPECTIONS AND PERMIT FEES SHALL BE MADE BY CALLING (916) 774-5332. BD24-4254.

FIRE DEPARTMENT HAZARDOUS MATERIALS DISCLOSURE NOTE:

1. IF SITE SURVEY OR EARTH MOVING WORK RESULTS IN THE DISCOVERY OF HAZARDOUS MATERIALS IN CONTAINERS, OR WHAT APPEARS TO BE HAZARDOUS WASTES RELEASED INTO THE GROUND, THE CONTRACTOR OR APPLICANT SHALL IMMEDIATELY REPORT THE FINDING TO THE ROSEVILLE FIRE DEPARTMENT VIA PHONE AT (916) 774-5821. ALL SUSPECTED AREAS SHALL BE MARKED OFF WITH APPROVED SIGNAGE OR CAUTION TAPE UNTIL SUCH TIME THAT A REPRESENTATIVE FROM THE FIRE DEPARTMENT DETERMINES WHETHER THE RELEASE IS REPORTABLE OR NOT AND IF SITE REMEDIATION IS REQUIRED.

REQUIRED FIRE FLOW / AVAILABLE WATER SUPPLY NOTES:

1. THE REQUIRED MINIMUM FIRE FLOW FOR THE PROTECTION OF THE PROPOSED WITH 20 POUNDS PER SQUARE INCH 4000 GALLONS PER MINUTE PROJECT IS RESIDUAL WATER PRESSURE REMAINING IN THE SYSTEM. THIS FLOW IS BASED UPON THE PREMISE THAT THE STRUCTURE WILL BE O HR RATING @ TYPE V-B CONSTRUCTION MATERIALS WITH THE INSTALLATION OF A FULL COVERAGE AUTOMATIC FIRE SPRINKLER SYSTEM, AND ARE REFLECTIVE OF THE PROPOSED SQUARE F

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DEMOLITION NOTES

1. PROVIDE TEMPORARY BARRICADES AND OTHER FORMS OF PROTECTION AS REQUIRED TO PROTECT GENERAL PUBLIC FROM INJURY DUE TO DEMOLITION WORK. CBC CHAPTER 31.

2. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATION, NOTIFY BUILDING OWNER AND COORDINATE FURTHER REQUIREMENTS TO COMPLY WITH APPLICABLE REGULATIONS, LAWS & ORDINANCES CONCERNING REMOVAL, HANDLING, AND PROTECTION AGAINST EXPOSURE.

COMPLIANCE WITH CODES AND AUTHORITIES AND DOCUMENTS

1. ALL WORK SHALL COMPLY WITH THE MINIMUM STANDARDS OF THE CALIFORNIA BUILDING CODE – C.B.C., AMERICANS WITH DISABILITIES ACT – ADA AND C.B.C. SEC. 107.

2. ALL WORK SHALL COMPLY WITH THE CURRENT EDITIONS ADOPTED BY AGENCIES HAVING JURISDICTION AND SUPPLEMENTS OF THE FOLLOWING STATE REGULATIONS, CODES AND AUTHORITIES:
   A. CALIFORNIA BUILDING CODE – TITLE 8. CALIFORNIA CODE OF REGULATIONS, INDUSTRIAL RELATIONS CONSTRUCTION SAFETY ORDERS.
   B. CALIFORNIA BUILDING CODE – TITLE 24 PART 2 CALIFORNIA CODE OF REGULATIONS
   C. CALIFORNIA BUILDING CODE – TITLE 24 PART 2 CALIFORNIA CODE OF REGULATIONS, BARRIER FREE ACCESS OF THE PHYSICALLY HANDICAPPED.
   D. CALIFORNIA BUILDING CODE – TITLE 24 CALIFORNIA ADMINISTRATIVE CODE ENERGY REGULATIONS.
   E. CALIFORNIA FIRE CODE.

3. ALL WORK SHALL COMPLY WITH THE CURRENT EDITIONS OF THE FOLLOWING LOCAL REGULATIONS, CODES AND AUTHORITIES:
   A. BUILDING INSPECTION DIVISION.
   B. PLANNING AND DEVELOPMENT.
   D. FIRE DEPARTMENT/ DEPARTMENT OF TRANSPORTATION.

4. DIMENSIONS:
   A. DIMENSIONS SHALL NOT BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON DRAWINGS.
   B. DIMENSIONS TO EXISTING CURBS ARE TO FACE OF CURB.
   C. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD BEFORE PROCEEDING WITH THE WORK.

5. WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION ON THE PROJECT.

6. CONTRACTOR SHALL SAWCUT EXISTING CONCRETE AT CONTROL JOINT/EXPANSION JOINT WHERE EVER POSSIBLE. IF NOT POSSIBLE, CONTRACTOR SHALL COORDINATE AND REVIEW LOCATION IN FIELD WITH CITY OF ROSEVILLE PRIOR TO CUTTING.

TYPICAL NOTES

1. DIMENSIONS ARE NOT ADJUSTABLE WITHOUT APPROVAL OF CITY OF ROSEVILLE IN WRITING.

2. MAXIMUM SLOPE MEANS THE SLOPE SHALL NOT EXCEED THE SLOPE SHOWN.

3. MINIMUM SLOPE MEANS THE SLOPE SHALL NOT BE LESS THAN THE SLOPE SHOWN.

4. MATCH EXISTING MEANS THE CONSTRUCTION SHALL MATCH THE SAME OR SIMILAR EXISTING ITEM IN QUALITY, SHAPE, SIZE, COLOR TEXTURE, PATTERN, HEIGHT AND ALIGNMENT, U.N.O.

CONTRACTOR RESPONSIBILITIES

1. THE CONTRACTOR SHALL EXAMINE THE DRAWINGS AND SPECIFICATIONS AND SHALL NOTIFY THE CITY OF ROSEVILLE OF ANY DISCREPANCIES FOUND PRIOR TO PROCEEDING WITH THE WORK.

2. THE CONTRACTOR SHALL VERIFY CONDITIONS AT THE SITE AND REPORT ANY DISCREPANCIES OR EXISTING CONDITION CONFLICTS TO THE CITY OF ROSEVILLE BEFORE PROCEEDING WITH THE WORK.

3. THE CONTRACTOR SHALL NOT PROCEED WITH WORK RELATED TO ANY DISCREPANCIES OR EXISTING CONDITION CONFLICT WITHOUT RESOLUTION FROM THE CITY OF ROSEVILLE.

4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE CITY OF ROSEVILLE OF ANY CONFLICTS HEREIN – EITHER UNAPPARENT OR OBVIOUS – PRIOR TO START OF WORK ON THAT ITEM OR BEAR THE RESPONSIBILITY OF CORRECTING SUCH WORK AS DIRECTED BY THE CITY OF ROSEVILLE AT NO ADDITIONAL COST AND WITH NO TIME EXTENSION OF THE PROJECT SCHEDULE.

5. THE CONTRACTOR SHALL CREATE A TRAFFIC SAFETY PLAN, SITE CLEAN UP/ MAINTENANCE PLAN AND PHASING PLAN FOR REVIEW WITH THE OWNER'S REPRESENTATIVE PRIOR TO PROCEEDING WITH THE WORK.

6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY OF THE PUBLIC AND EMPLOYEES USING THE FACILITY, AND THEIR VEHICLES.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL EXISTING MATERIAL, DEMOLITION WORK/ MATERIAL OR SURPLUS MATERIAL. CONTRACTOR SHALL RECYCLE ALL MATERIAL POSSIBLE AND SHALL COMPLY WITH JURISDICTIONS WASTE MANAGEMENT REQUIREMENTS.
   A. CONTRACTOR SHALL SUBMIT A WASTE MANAGEMENT PLAN BY EMAIL TO SCST@ROSEVILLE.CA.US OR BY FAX TO 916-774-5798. FOR QUESTIONS OR ASSISTANCE COMPLETING A WASTE MANAGEMENT PLAN PLEASE CALL 916-774-5780. FOR ASSISTANCE ON DRAFTING A PLAN OR QUESTIONS REGARDING THE RESOURCE GUIDE, PLEASE CONTACT: SHELLY TILLEY, REFUSE SUPERINTENDENT STILLEY@ROSEVILLE.CA.US 916-774-5785 ENVIRONMENTAL UTILITIES – SOLID WASTE DIVISION. REFERENCE CGBSC SEC. 5.408.

8. CONTRACTOR SHALL VERIFY LAYOUT IN THE FIELD WITH THE CITY OF ROSEVILLE PRIOR TO DEMOLITION WORK AND DURING FORMING PRIOR TO CONCRETE POUR. IF CONTRACTOR FINDS A DISCREPANCY OR CONFLICT WITH EXISTING CONDITIONS, HE SHALL CONTACT THE CITY OF ROSEVILLE IMMEDIATELY. THE CONTRACTOR SHALL ADJUST THE LAYOUT AS DIRECTED BY THE CITY OF ROSEVILLE TO RESOLVE THE DISCREPANCY OR EXISTING CONDITION AT NO ADDITIONAL COST TO THE CITY OF ROSEVILLE.

9. CONTRACTOR TO BID ALL CURBS AS FULL DEPTH/BARRIER CURBS AS DETAILED.

10. CONTRACTOR SHALL MAINTAIN THE SITE IN A CLEAN CONDITION AND SHALL CLEAN ALL AREAS AT COMPLETION OF THE PROJECT.

11. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT PRIOR TO ANY EXCAVATION.

12. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES BELOW GRADE AND RELATED SERVICE CONNECTIONS WITH THE RESPECTIVE UTILITY COMPANIES.

13. THE CONTRACTOR SHALL COORDINATE THE REMOVAL, ABANDONMENT AND/OR LOCATIONS OF EXISTING UTILITIES ABOVE OR BELOW GRADE WITH THE RESPECTIVE UTILITY COMPANIES.

14. LANDSCAPING AND IRRIGATION REPAIRS SHALL BE PERFORMED BY A QUALIFIED CONTRACTOR.

TREE PRESERVATION:

1. GRADING AROUND TREES TO BE LIMITED TO OUTSIDE THE DRIPLINE. ANY TREE WELL GRADED SHOULD BE DRAINED TO SOME OUTFALL OR SWALE.

2. THE FOLLOWING CONDITIONS SHALL APPLY TO ENSURE THE PRESERVATION OF TREES:
   A. EACH TREE OR GROUP OF TREES TO BE SAVED SHALL BE FENCED BY A CHAIN-LINK FENCE PRIOR TO ANY GRADING OR MOVEMENT OF HEAVY EQUIPMENT OR ISSUANCE OF ANY PERMITS.
   B. FENCING SHALL BE LOCATED ONE FOOT (1') OUTSIDE THE DRIPLINE OF THE TREE OR TREES.
   C. SIGNS SHALL BE POSTED ON ALL SIDES OF SAID FENCES STATING:

   WARNING:
   THIS FENCE SHALL NOT BE REMOVED
   OR RELOCATED WITHOUT WRITTEN
   AUTHORIZATION FROM THE
   PLANING DEPARTMENT

3. THE GRADING PLAN FOR THE PROJECT HAS BEEN DESIGNED FOR NO GRADING TO OCCUR WITHIN THE DRIPLINE OF ANY OAK TREE UNLESS SPECIFICALLY APPROVED BY PLANNING DEPARTMENT AND SHOWN ON THESE PLANS. NO GRADES SHALL BE MODIFIED WITHOUT THE APPROVAL OF THE CIVIL ENGINEER AND THE CITY OF ROSEVILLE.

4. NO TRENCHING SHALL OCCUR BENEATH THE DRIPLINE OF ANY OAK TREE TO BE SAVED UNLESS STATED ON THESE PLANS "TRENCHING UNDER THIS TREE IS APPROVED".

5. PARKING OF VEHICLES AND EQUIPMENT OR STORAGE OF MATERIALS UNDER THE DRIPLINE OF TREES SHALL NOT OCCUR AT ANY TIME.

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200

3 1/4" BRASS DISK, STAMPED 2018 PLS, SET IN CONCRETE AT JOHNSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL

BY	DATE

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED: MG

DRAWN: MG

CHECKED: MG

DATE: 1-30-25

REGISTERED PROFESSIONAL ENGINEER ANTHONY J. MANGIONE NO. C74696 CIVIL STATE OF CALIFORNIA 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1234 FORNI ROAD, SUITE 110
EL DORADO HILLS, CA 95762 | (916) 985-1870

TITLE: **GENERAL NOTES**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

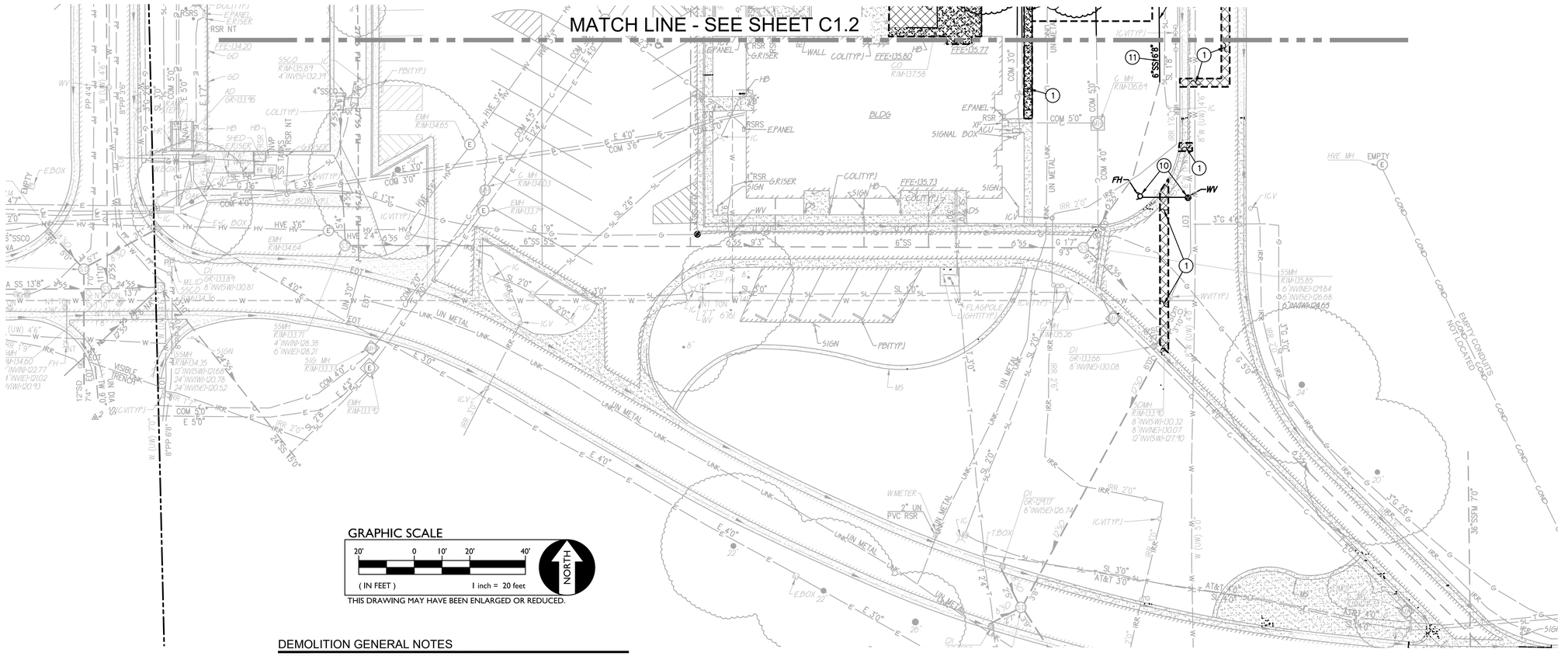
SHEET NO.
C0.3

BID SET (PRELIMINARY)

FILENAME:I:\22-166\CIVIL\DWG\22-166 C0.1-C0.3.DWG

EN24-0353

CWJ# 500063



GRAPHIC SCALE

20' 0 10' 20' 40'

(IN FEET) 1 inch = 20 feet

NORTH

THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

DEMOLITION GENERAL NOTES

THE FOLLOWING NOTES APPLY TO SHEETS C1.1 – C1.4

1. REFER TO ARCHITECTURAL, LANDSCAPE, ELECTRICAL AND PLUMBING PLANS FOR ADDITIONAL DEMOLITION ITEMS.
2. IN THE EVENT THAT ANY UNUSUAL CONDITIONS NOT COVERED BY THE GEOTECHNICAL INVESTIGATION REPORT OR ARE ENCOUNTERED DURING GRADING OPERATIONS THE GEOTECHNICAL ENGINEER AND THE ARCHITECT SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTIONS.
3. ADDITIONAL DEMOLITION INFORMATION MAY BE SHOWN ON THE GRADING, DRAINAGE, AND UTILITY PLANS, AND THOSE PLANS PREPARED BY OTHER DISCIPLINES FOR THIS PROJECT.
4. ALL DEMOLISHED ITEMS SHALL BE DISPOSED OF OFFSITE AT A SUITABLE, LEGAL, DUMP SITE OR OTHER FACILITY.
5. ALL DISPOSED OF MATERIALS SHALL BE RECYCLED IF POSSIBLE.
6. THE SCHOOL DISTRICT SHALL HAVE SALVAGE RIGHTS TO ANY DEMOLISHED ITEMS SHOWN HEREON. THE CONTRACTOR SHALL GIVE THE DISTRICT NOTICE 7 DAYS PRIOR TO THE START OF DEMOLITION. THE DISTRICT SHALL MOVE ANY RETAINED ITEMS OUT OF THE CONTRACTORS WORK AREA, UNLESS ANOTHER ARRANGEMENT IS MADE WITH THE CONTRACTOR. ANY REMAINING ITEMS BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE. ANY ITEMS NOT SHOWN FOR REMOVAL SHALL REMAIN AND SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION TO A REASONABLE EXTENT.
7. EXISTING UTILITY STRUCTURES IN AREAS OF NEW PAVING SHALL BE REMOVED AND REPLACED WITH NEW BOX/COVER AT NEW GRADE UNLESS SPECIFICALLY NOTED OTHERWISE.
8. ITEMS OUTSIDE THE LIMITS OF DEMOLITION SHALL REMAIN AND BE PROTECTED FROM DAMAGE DURING CONSTRUCTION.
9. EXISTING UTILITY STRUCTURES AND PIPING NOT SHOWN ON DEMOLITION PLAN TO BE REMOVED SHALL REMAIN AND BE PROTECTED.
10. SAWCUTS AND SUBSEQUENT PATCH BACK OF CONCRETE WALKS, SHALL BE TO THE EXISTING CONCRETE JOINT BEYOND THE NEAREST LOCATION OF DEMOLITION AS SHOWN. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE, SHOW AND COORDINATE WITH EXISTING JOINTS, HOWEVER IF FIELD CONDITIONS ARE OTHERWISE, IT IS UNDERSTOOD TO REMOVE AND PATCH BACK TO THE NEAREST JOINTS BEYOND DEMOLITION.
11. PRIOR TO THE START OF CONSTRUCTION, VERIFY AND POTHOLE ALL UTILITY POINTS OF CONNECTION FOR LOCATION, DEPTH, AND SIZE. IF CONFLICT IS FOUND, CONTACT THE ENGINEER IMMEDIATELY FOR DIRECTION.
12. WITHIN LANDSCAPE AREAS TO BE DEMOLISHED THERE MAY BE EXISTING IRRIGATION LINES NOT SHOWN ON THIS PLAN. CONTRACTOR SHALL REMOVE LATERAL LINES AND HEADS ENCOUNTERED. MAIN LINES AND CONTROL WIRES MAY ONLY BE REMOVED PROVIDED THAT ROUTING IS KNOWN AND REMOVAL WILL NOT DEACTIVATE AN IRRIGATION SYSTEMS INTENDED TO REMAIN. IF CONFLICT IS FOUND, CONTACT THE ENGINEER FOR DIRECTION.
13. COORDINATE REMOVAL OF LANDSCAPE ITEMS WITH LANDSCAPE PLANS.

DEMOLITION NOTES

1. WITHIN LIMITS SHOWN REMOVE ALL PAVEMENT, CURB, GUTTER, BASE MATERIAL AND LANDSCAPING. COORDINATE LIMITS OF REMOVAL WITH PLANS BY OTHERS. ADDITIONAL DEMOLITION ITEMS SHOWN ON ARCHITECTURAL, ELECTRICAL AND PLUMBING PLANS.
2. REMOVE TREE, STUMP AND ALL ROOTS.
3. REMOVE EXISTING IRRIGATION SYSTEM. CLEAR, GRUB AND REMOVE EXISTING VEGETATION.
4. REMOVE PLANTER BOX.
5. REMOVE COLUMNS AND ASSOCIATED FOOTINGS.
6. REMOVE MOWSTRIP BAND.
7. REMOVE MANHOLE.
8. REMOVE GAZEBO, COLUMNS AND ASSOCIATED FOOTINGS.
9. BLACKOUT EXISTING STRIPING.
10. REMOVE FIRE HYDRANT LINE AND VALVE. PATCH PIPE PER CITY OF ROSEVILLE STANDARDS.
11. REMOVE SEWER PIPE AFTER NEW PIPING HAS BEEN INSTALLED AND IS IN OPERATION.

GENERAL NOTE:

ADDITIONAL DEMOLITION ITEMS SHOWN ON ARCHITECTURAL, ELECTRICAL, LANDSCAPE AND PLUMBING PLANS. CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE LIMITS OF REMOVAL FOR ITEMS SHOWN ON PLANS BY OTHERS AND FOR PROTECTION OF ALL ITEMS THAT ARE TO REMAIN.

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 1/4" BRASS DISK, STAMPED 2018 PLS 8378, SET IN CONCRETE AT JOHNSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL	BY	DATE

NO.	REVISIONS DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

REGISTERED PROFESSIONAL ENGINEER ANTHONY J. MARSHALL NO. C74986 CIVIL STATE OF CALIFORNIA 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1717 FOURTH STREET, SUITE 150
EL DORADO HILLS, CA 95762 | (916) 985-1870

TITLE: PHASE 1 - CIVIL DEMOLITION PLAN

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO.
C1.1

BID SET (PRELIMINARY)

FILENAME: I:\22-166\CIVIL\DWG\22-166 C1.1-C1.3.DWG

EN24-0353

CWJ# 500063

GRAPHIC SCALE

20' 0 10' 20' 40'

(IN FEET) 1 inch = 20 feet

NORTH

THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

MATCH LINE - SEE SHEET C1.1

DEMOLITION NOTES

1. WITHIN LIMITS SHOWN REMOVE ALL PAVEMENT, CURB, GUTTER, BASE MATERIAL AND LANDSCAPING. COORDINATE LIMITS OF REMOVAL WITH PLANS BY OTHERS. ADDITIONAL DEMOLITION ITEMS SHOWN ON ARCHITECTURAL, ELECTRICAL AND PLUMBING PLANS.
2. REMOVE TREE, STUMP AND ALL ROOTS.
3. REMOVE EXISTING IRRIGATION SYSTEM. CLEAR, GRUB AND REMOVE EXISTING VEGETATION.
4. REMOVE PLANTER BOX.
5. REMOVE COLUMNS AND ASSOCIATED FOOTINGS.
6. REMOVE MOWSTRIP BAND.
7. MANHOLE TO BE REMOVED. COORDINATE WITH ELECTRICAL PLANS.
8. REMOVE GAZEBO, COLUMNS AND ASSOCIATED FOOTINGS.
9. BLACKOUT EXISTING STRIPING.
10. TREES NOTED TO BE SAVED SHALL BE PROTECTED BY TEMPORARY FENCING PLACED AROUND BASE OF TREE.
11. REMOVE SEWER PIPE AFTER NEW PIPING HAS BEEN INSTALLED AND IS IN OPERATION.

GENERAL NOTE:

ADDITIONAL DEMOLITION ITEMS SHOWN ON ARCHITECTURAL, ELECTRICAL, LANDSCAPE AND PLUMBING PLANS. CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE LIMITS OF REMOVAL FOR ITEMS SHOWN ON PLANS BY OTHERS AND FOR PROTECTION OF ALL ITEMS THAT ARE TO REMAIN.

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200

3 1/4" BRASS DISK, STAMPED 2018 PLS, SET IN CONCRETE AT ATKINSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL

BY	DATE

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED: MG

DRAWN: MG

CHECKED: MG

DATE: 1-30-25

PROFESSIONAL ENGINEER * ANTHONY J. WARREN NO. C74696 CIVIL * STATE OF CALIFORNIA * REGISTERED 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1321 CONCORD AVENUE, SUITE 110
EL DORADO HILLS, CA 95762 | (916) 985-1870

TITLE: PHASE 1 - CIVIL DEMOLITION PLAN

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

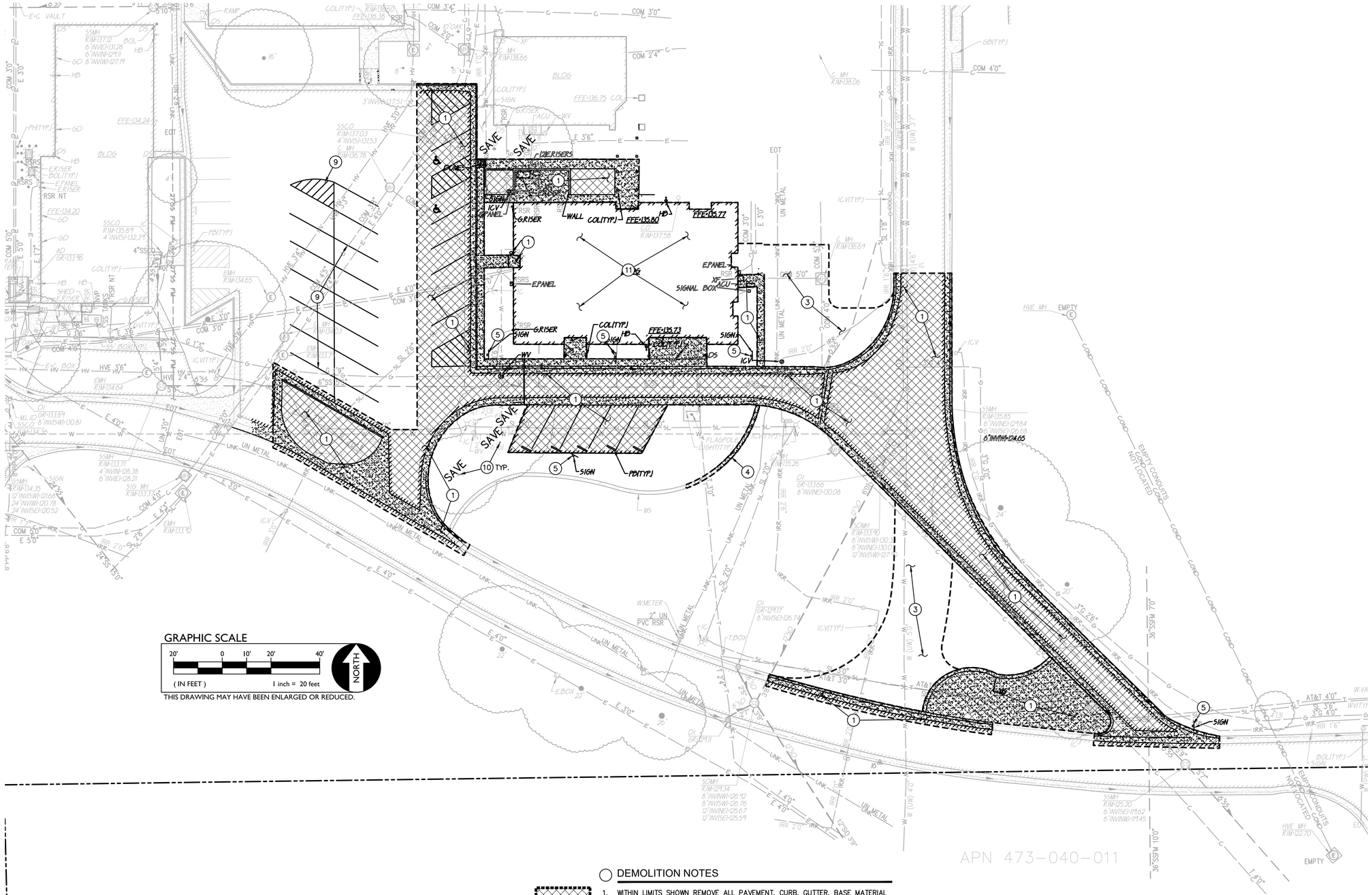
SHEET NO. C1.2

BID SET (PRELIMINARY)

FILENAME:I:\22-166\CIVIL\DWG\22-166 C1.1-C1.3.DWG

EN24-0353

CWJ# 500063


SAVE
SAVE
SAVE

EN24-0353

CWJ# 500063

TBM 1 CHISELED "+"
N=2031328.25
E=6756107.44
ELEV=137.45

TBM 8 CHISELED "+"
N=2031308.83
E=6756497.97
ELEV=137.51

TBM 10 CHISELED "+"
N=2031133.66
E=6756281.03
ELEV=138.18

TBM 4 CHISELED "+"
N=2031128.94
E=6756077.63
ELEV=136.50

EXISTING TRASH AREA.

FF=138.59

SSMH RIM=137.14

SSMH RIM=136.44

SSMH RIM=136.26

DI GR=135.94

GRAPHIC SCALE

20' 0 10' 20' 40'

(IN FEET) 1 inch = 20 feet

NORTH

THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

GRADING NOTES

1. MATCH EXISTING GRADE.
2. GRADE UNIFORMLY.
3. ADJUST EXISTING STRUCTURE TO ELEVATION NOTED.
4. CONSTRUCT CONCRETE CURB PER 3/C5.1
5. CONSTRUCT CONCRETE TYPE 2 VERTICAL CURB AND GUTTER PER CITY OF ROSEVILLE ST-17.
6. CONSTRUCT CONCRETE VALLEY GUTTER PER 4/C5.1
8. CONSTRUCT CONCRETE SEAT WALL PER 1/C5.2
9. CONSTRUCT ACCESSIBLE RAMP TYPE 2 PER 2/C5.1
10. SAWCUT AND REMOVE CONCRETE COLLAR AS NECESSARY TO CONSTRUCT CURB.
11. PROVIDE 5' TRANSITION FROM ROLLED TO VERTICAL CURB.
12. PROVIDE UNDER SIDEWALK DRAIN PER 2/C5.2 COORDINATE LOCATION WITH BUILDING DOWNSPOUT LOCATION.
13. CONSTRUCT CONCRETE TYPE 1 ROLLED CURB AND GUTTER PER CITY OF ROSEVILLE ST-17.
14. PROVIDE 5' TRANSITION FROM ROLLED CURB TO FLUSH CONDITION AT WALK.
15. PAINT CURB RED WITH 4" HIGH, 3/4" WIDE STROKE SAYING "NO PARKING – FIRE LANE". MARKINGS SHALL BE LOCATED EVERY 25'.

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 1/4" BRASS DISK, STAMPED 2018 PLS 8278, SET IN CONCRETE AT ATKINSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL

NO.	REVISIONS DESCRIPTION	DATE	BY	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

PROFESSIONAL ENGINEER * REGISTERED * ANTHONY J. CANEPA NO. C74696 CIVIL * STATE OF CALIFORNIA * 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
2300 CLAYTON ROAD, SUITE 1370
EL DORADO HILLS, CA 95762 | (916) 985-1870

TITLE: **PHASE 1 - GRADING PLAN**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO.
C2.1

BID SET (PRELIMINARY)

FILENAME=I:\22-166\CIVIL\DWG\22-166 C2.1.DWG

EN24-0353

CWJ# 500063

TBM 4 CHISELED "+"
N=2031128.94
E=6756077.63
ELEV=136.50

TBM 13 CHISELED "+"
N=2031093.98
E=6756505.23
ELEV=137.02

TBM 2 CHISELED "+"
N=2030872.73
E=6756086.14
ELEV=135.15

TBM 16 CHISELED "+"
N=2030779.95
E=6756471.00
ELEV=127.92

GRADING NOTES

1. MATCH EXISTING GRADE.
2. GRADE UNIFORMLY.
3. ADJUST EXISTING STRUCTURE TO ELEVATION NOTED.
4. CONSTRUCT CONCRETE CURB PER (3 / C5.1)
5. CONSTRUCT CONCRETE TYPE 2 CURB AND GUTTER PER CITY OF ROSEVILLE ST-17.
6. CONSTRUCT CONCRETE VALLEY GUTTER PER (4 / C5.1)
7. CONSTRUCT ACCESSIBLE RAMP TYPE 1 PER (11 / C5.1)
8. CONSTRUCT TYPE 1 ROLLED CURB AND GUTTER PER CITY OF ROSEVILLE ST-17.
11. PROVIDE 5' TRANSITION FROM ROLLED TO VERTICAL CURB.
15. PAINT CURB RED WITH 4" HIGH, 3/4" WIDE STROKE SAYING "NO PARKING – FIRE LANE". MARKINGS SHALL BE LOCATED EVERY 25'.

GRAPHIC SCALE

20' 0 10' 20' 40'

(IN FEET) 1 inch = 20 feet

NORTH

THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 1/4" BRASS DISK, STAMPED 2018 PLS 8278, SET IN CONCRETE AT ATKINSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL	BY	DATE

REVISIONS NO.	DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

PROFESSIONAL ENGINEER – ANTHONY J. GIOVANNONI NO. C74686 – CIVIL – STATE OF CALIFORNIA – 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1170 FIDDYMENT AVENUE, SUITE 5
EL DORADO HILLS, CA 95762 | (916) 985-1870

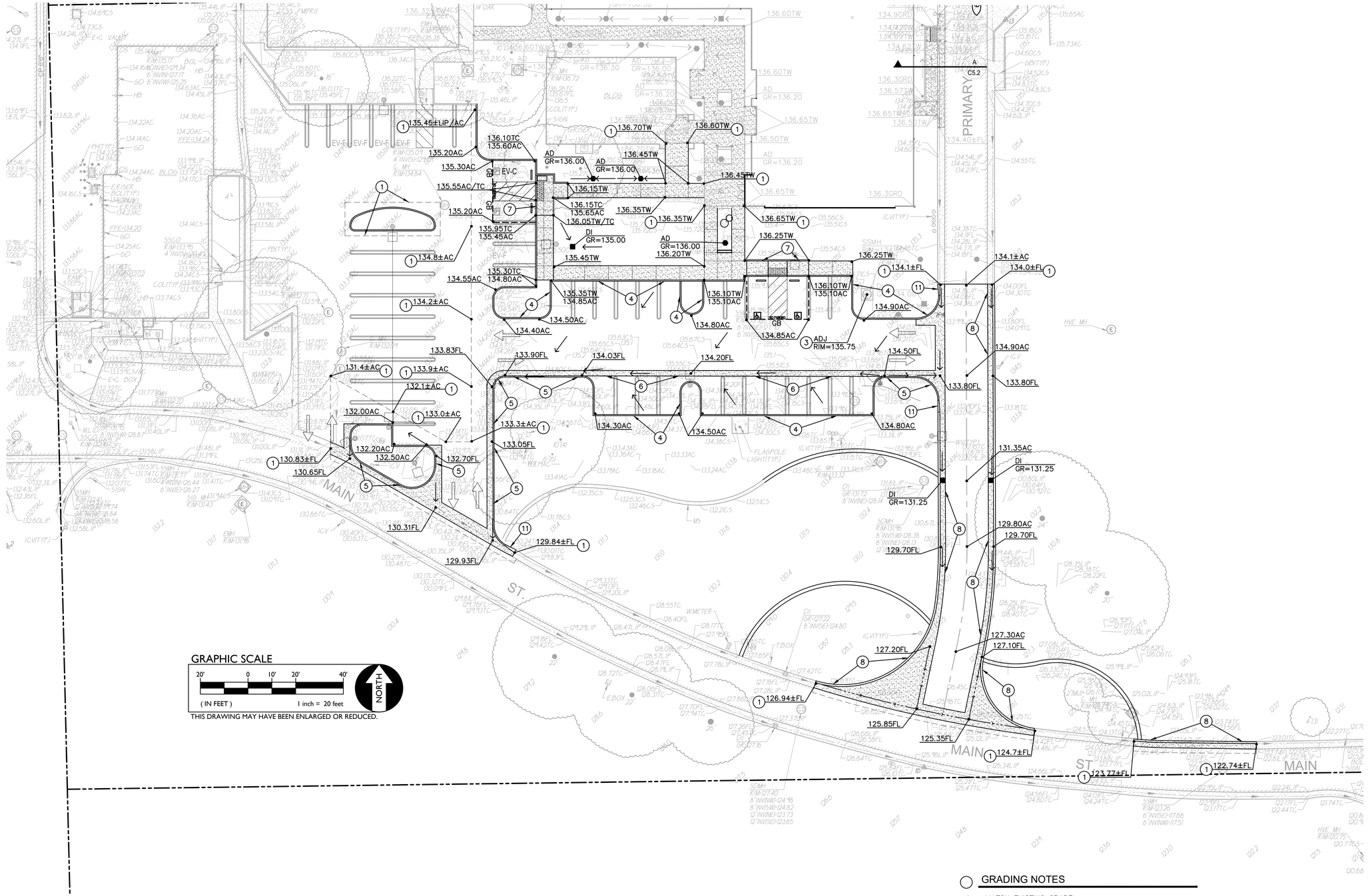
TITLE: **PHASE 2 - GRADING PLAN**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO.
C2.2

BID SET (PRELIMINARY)

FILENAME:I: \22-166 \CIVIL \DWG \22-166 C2.2.DWG



GRADING NOTES

1. MATCH EXISTING GRADE.
2. GRADE UNIFORMLY.
3. ADJUST EXISTING STRUCTURE TO ELEVATION NOTED.
4. CONSTRUCT CONCRETE CURB PER 3/C5.1
5. CONSTRUCT CONCRETE TYPE 2 CURB AND GUTTER PER CITY OF ROSEVILLE ST-17.
6. CONSTRUCT CONCRETE VALLEY GUTTER PER 4/C5.1
7. CONSTRUCT ACCESSIBLE RAMP TYPE 1 PER 11/C5.1
8. CONSTRUCT TYPE 1 ROLLED CURB AND GUTTER PER CITY OF ROSEVILLE ST-17.
11. PROVIDE 5' TRANSITION FROM ROLLED TO VERTICAL CURB.

A.P.N. 011-230-002 AND 015-100-013

BENCHMARK NO. BM2 ELEV. 118.14

FOUND BM2 ON A 2-INCH BRASS DISC IN THE SOUTHWEST CORNER OF THE EAST ROSEVILLE INFLUENT JUNCTION BOX.
City of Roseville datum

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL	BY	DATE

REVISIONS NO.	DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 8-14-24

REGISTERED PROFESSIONAL ENGINEER ★ WINNIE GEE ★ NO. C74668 ★ STATE OF CALIFORNIA ★ CIVIL ★ 8/14/2024

WARREN CONSULTING ENGINEERS, INC.
3590 GLENCOE AVE., SUITE 101
EL DORADO HILLS, CA 95762 | (916) 986-1870

TITLE: **PHASE 2 - GRADING PLAN**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

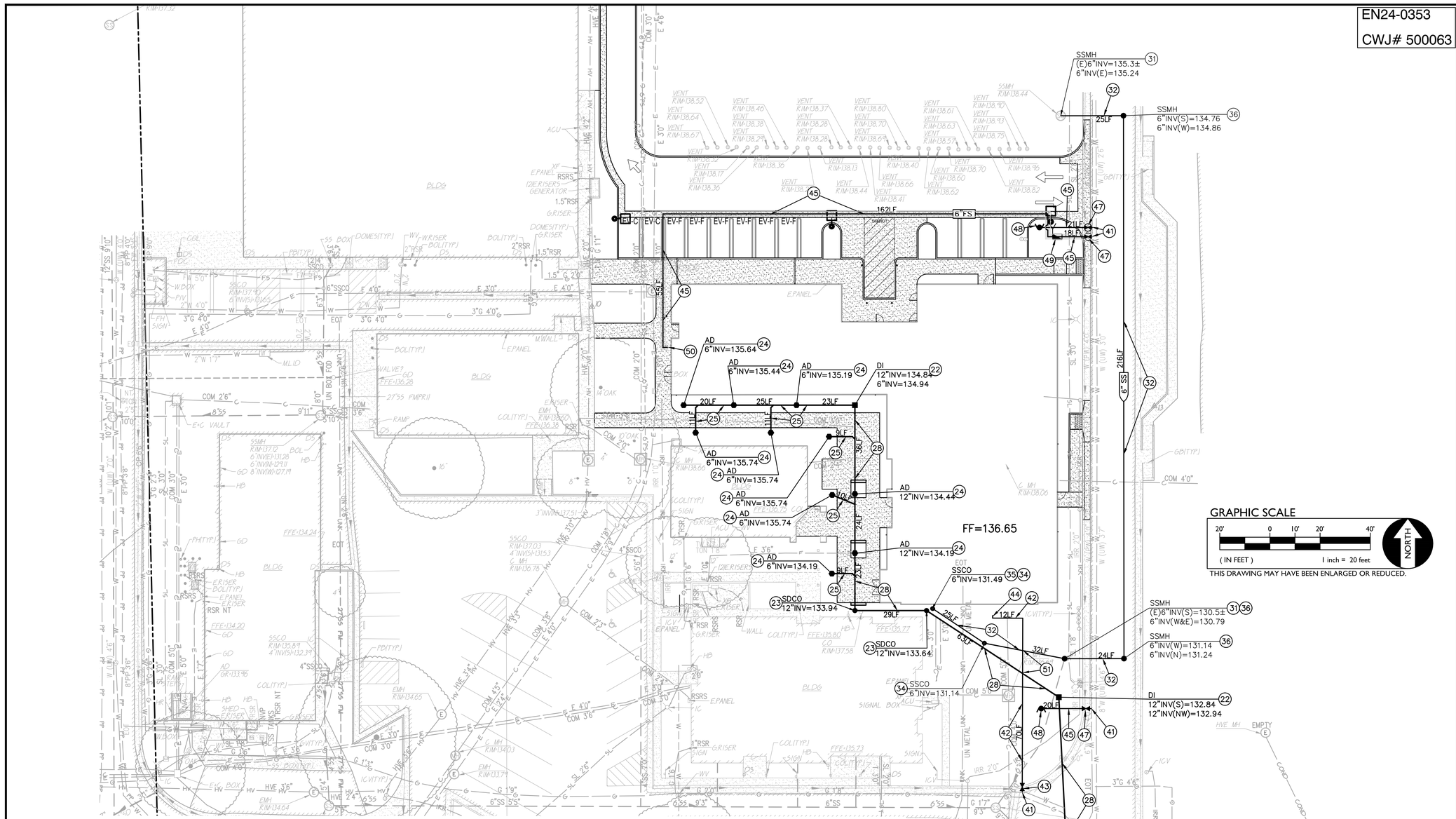
SHEET NO.
C2.3

BID SET (PRELIMINARY)

FILENAME:I:\22-166\CIVIL\DWG\22-166 C2.3.DWG

EN24-0353

CWJ# 500063



DRAINAGE NOTES

21. CONNECT TO EXISTING STORM DRAIN STRUCTURE. FIELD VERIFY DEPTH AND CONDITION PRIOR TO ANY TRENCHING.
22. PROVIDE DROP INLET PER (6 / C5.1)
23. PROVIDE STORM DRAIN CLEANOUT PER (5 / C5.1)
24. PROVIDE AREA DRAIN PER (7 / C5.1)
25. PLACE 6" PVC SDR 35 STORM DRAIN PER S=0.010 MIN.
28. PLACE 12" PVC SDR 35 STORM DRAIN PER S=0.005 MIN. (8 / C5.1)

SEWER NOTES

31. CONNECT TO EXISTING 6" SEWER. POTHOLE AND FIELD VERIFY LOCATION AND DEPTH PRIOR TO ANY SITE TRENCHING.
32. PLACE 6" VCP SEWER PIPE AT 1% MIN. SLOPE PER CITY OF ROSEVILLE STD. DWG. SS-1.
33. NOT USED
34. PROVIDE SEWER CLEANOUT PER CITY OF ROSEVILLE STD. DWG SS-5
35. CONNECT TO BUILDING SERVICE. COORDINATE LOCATION WITH PLUMBING PLANS.
36. CONSTRUCT SEWER MANHOLE PER CITY OF ROSEVILLE STD. DWG SS-2.

WATER NOTES

41. CONNECT TO EXISTING WATER PIPE PER CITY OF ROSEVILLE STANDARDS. POTHOLE AND FIELD VERIFY CONDITIONS PRIOR TO TRENCHING.
42. PLACE 2" SCH 80 WATER LINE PER (9 / C5.1)
43. PROVIDE GATE VALVE AND VALVE BOX PER (10 / C5.1)
44. CONNECT TO BUILDING SERVICE. COORDINATE LOCATION WITH PLUMBING PLANS.
45. PLACE 6" D.I.P. WATER PIPE PER CITY OF ROSEVILLE STD. DWG. W-1. RESTRAIN ALL FITTINGS AND JOINTS.
46. NOT USED
47. PROVIDE 6" GATE VALVE PER CITY OF ROSEVILLE STD. DWG. W-16.
48. PROVIDE FIRE HYDRANT ASSEMBLY PER CITY OF ROSEVILLE STD. DWG. W-13.
49. PROVIDE 6" FIRE PROTECTION ASSEMBLY PER CITY OF ROSEVILLE STD. DWG. W-2.
50. CONNECT TO FIRE SPRINKLER RISER. SEE FIRE SPRINKLER PLANS.
51. PROVIDE MINIMUM VERTICAL SEPERATION PER 8-13-A.

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 1/4" BRASS DISK, STAMPED 2018 PLS 8758, IN CREEK AT JUNCTION OF STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED
VERTICAL SCALE:
JOB NO.: 22-166

AGENCY APPROVAL

BY	DATE

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

PROFESSIONAL ENGINEER * REGISTERED * ANTHONY J. GIOVANNETTI NO. C74656 CIVIL STATE OF CALIFORNIA 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1 WINDSOR LAKE CIRCLE, SUITE 195
EL DORADO HILLS, CA 95762 | (916) 985-1970

TITLE: **PHASE 1 - UTILITY PLAN**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO.
C3.1

BID SET (PRELIMINARY)

FILENAME=I:\22-166\CIVIL\DWG\22-166 C3.1-C3.2.DWG

EN24-0353

CWJ# 500063

FF=136.65

GRAPHIC SCALE

20' 0 10' 20' 40'

(IN FEET) 1 inch = 20 feet

NORTH

THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

DRAINAGE NOTES

21. CONNECT TO EXISTING STORM DRAIN STRUCTURE. FIELD VERIFY DEPTH AND CONDITION PRIOR TO ANY TRENCHING.
22. PROVIDE DROP INLET PER (6 / C5.1)
23. PROVIDE STORM DRAIN CLEANOUT PER (5 / C5.1)
24. PROVIDE AREA DRAIN PER (7 / C5.1)
25. PLACE 6" PVC SDR 35 STORM DRAIN PER S=0.010 MIN.
26. PLACE 8" PVC SDR 35 STORM DRAIN PER (8 / C5.1) S=0.005 MIN.
27. PROVIDE TYPE "C" DROP INLET PER CITY OF ROSEVILLE STD DWG DR-1.

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200

3 3/4" BRASS DISK, STAMPED 2018 PLS 8278, SET IN CONCRETE AT KANOON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL	BY	DATE

REVISIONS	NO.	DESCRIPTION	DATE

DESIGNED: MG

DRAWN: MG

CHECKED: MG

DATE: 1-30-25

ANTHONY J. WARREN NO. C74896 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1100 ALAKAPO STREET, SUITE 3
EL DORADO HILLS, CA 95762 | (916) 985-1870

TITLE: **PHASE 2 - UTILITY PLAN**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO.

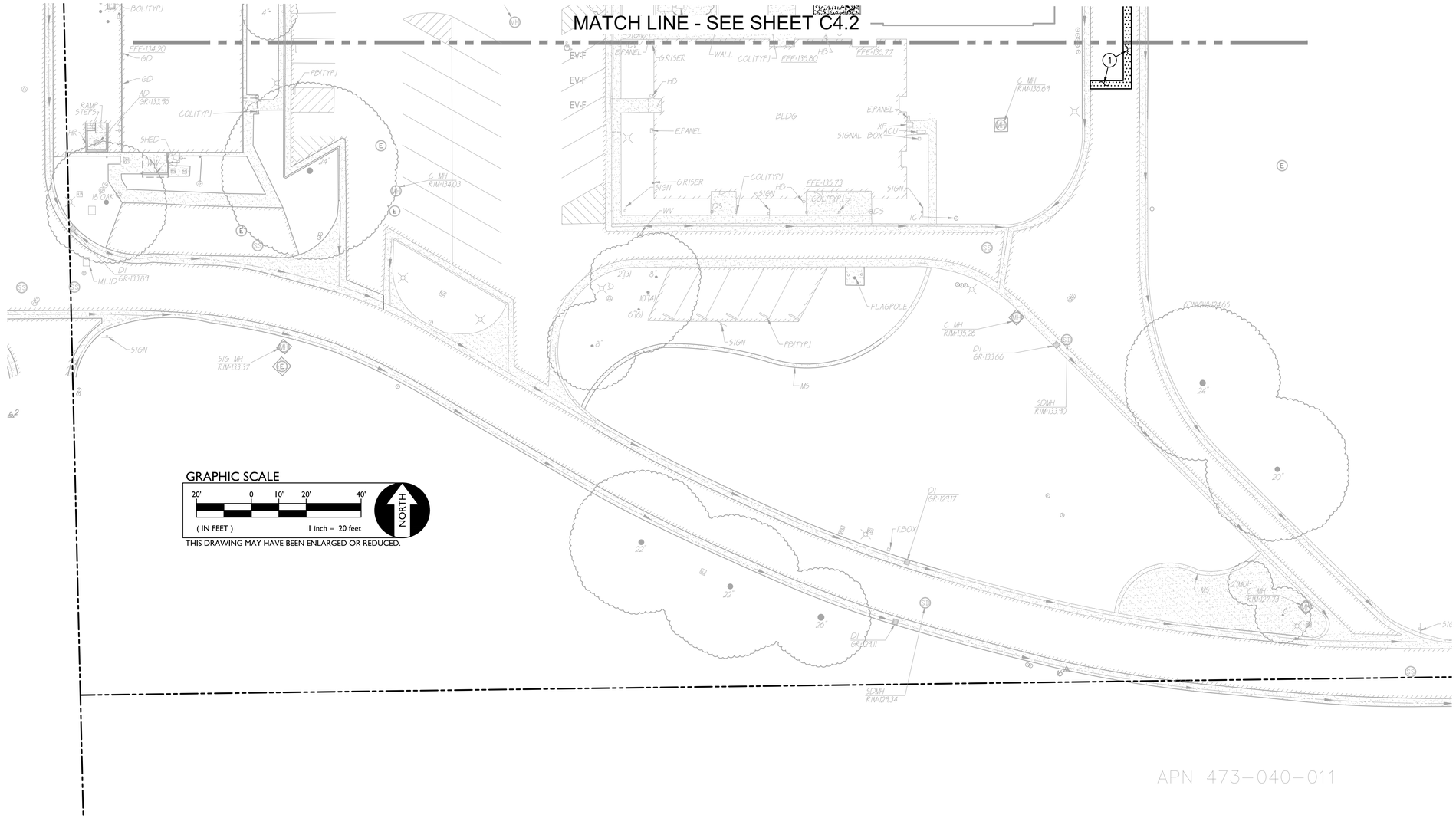
C3.2

BID SET (PRELIMINARY)

FILENAME:I:\22-166\CIVIL\DWG\22-166 C3.1-C3.2.DWG

EN24-0353

CWJ# 500063



PAVING GENERAL NOTES:

1. REFER TO ARCHITECTURAL PLANS FOR EXPANSION AND CONTROL JOINT LAYOUT IN CONCRETE.
2. ALL NEW ASPHALT PAVING TO BE PROVIDED WITH 2 COATS SEALCOAT PER SPECIFICATIONS.
3. SLOPE IN ACCESSIBLE STALLS AND UNLOAD ZONES SHALL NOT EXCEED 1.9% IN ANY DIRECTION.
4. SLOPE OF FINISHED PAVING TO BE 1% MINIMUM FOR ASPHALT, 0.5% MINIMUM FOR CONCRETE AND THE MAXIMUM SLOPE SHALL BE AS FOLLOWS;

   CROSS SLOPE PERPENDICULAR TO PATH OF TRAVEL – 1.9%
   DIRECTION OF TRAVEL – 4.9%
   RAMP IN DIRECTION OF TRAVEL – 8.0%
   PLAZA 1.9% – IN ANY DIRECTION
5. ADJUST TO FINISH GRADE ALL UTILITY BOXES, FRAMES, COVERS SLEEVES, POST HOLES GRATES, ETC. FOUND IN AREA OF WORK, WHETHER SHOWN OR NOT. CLEAN OR REPLACE AS NECESSARY TO ENSURE PROPER SEATING.

PAVING LEGEND

1. TYPE 1 PAVING
   PLACE 4" AC OVER 12" CL 2 AB ON SUBGRADE COMPACTED PER SPECIFICATIONS.
2. TYPE 2 PAVING
   PLACE 3" AC OVER 8" CL 2 AB ON SUBGRADE COMPACTED PER SPECIFICATIONS.
3. TYPE 3 PAVING
   PLACE 4" PCC WITH NO. 3 BARS AT 18" O.C. EACH WAY, OVER 4" CL 2 AB COMPACTED TO 95% ON SUBGRADE COMPACTED PER SPECIFICATIONS. (1/C5.1)
4. TYPE 4 PAVING
   PLACE 6" PCC WITH NO. 4 BARS @ 24" O.C. EACH WAY OVER 6" CL 2 AB COMPACTED TO 95% ON SUBGRADE COMPACTED PER SPECIFICATIONS. (1/C5.1)

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 ¼" BRASS DISK, STAMPED 2018 PLS 8278, DRY CREEK AT ATKINSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED
VERTICAL SCALE:
JOB NO.: 22-166

AGENCY APPROVAL

BY	DATE

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

REGISTERED PROFESSIONAL ENGINEER ★ ANTHONY J. GIOVANNETTI ★ NO. C74668 ★ CIVIL ★ STATE OF CALIFORNIA ★ 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1321 HARVARD WAY, SUITE 10
EL DORADO HILLS, CA 95762 | (916) 985-1870

TITLE: **PHASE 1 - PARTIAL PAVING PLAN**

PROJECT:
DRY CREEK
WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

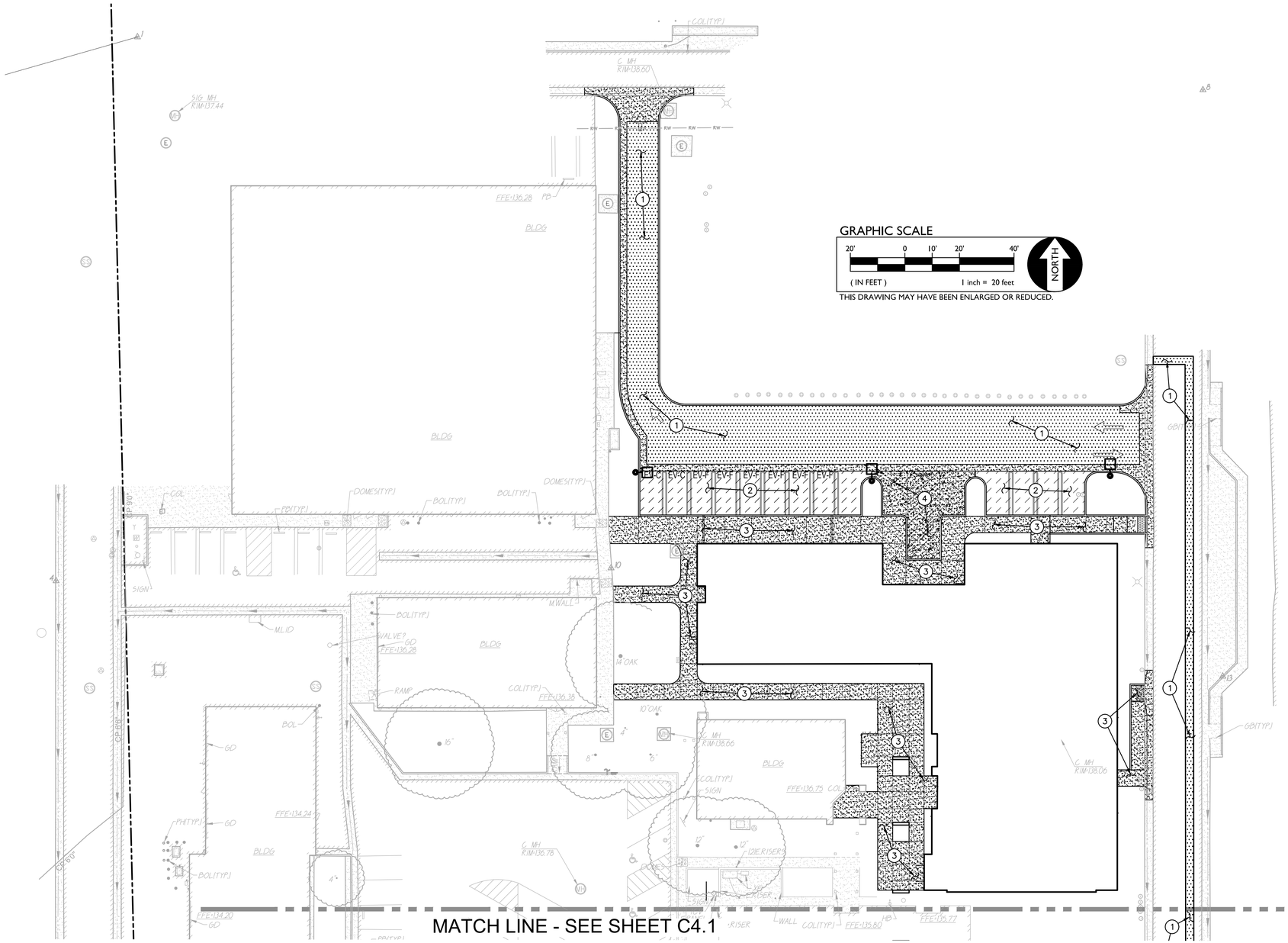
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C4.1

BID SET (PRELIMINARY)

FILENAME: I:\22-166\CIVIL\DWG\22-166 C4.1-C4.2.DWG

EN24-0353

CWJ# 500063



PAVING GENERAL NOTES:

1. REFER TO ARCHITECTURAL PLANS FOR EXPANSION AND CONTROL JOINT LAYOUT IN CONCRETE.
2. ALL NEW ASPHALT PAVING TO BE PROVIDED WITH 2 COATS SEALCOAT PER SPECIFICATIONS.
3. SLOPE IN ACCESSIBLE STALLS AND UNLOAD ZONES SHALL NOT EXCEED 1.9% IN ANY DIRECTION.
4. SLOPE OF FINISHED PAVING TO BE 1% MINIMUM FOR ASPHALT, 0.5% MINIMUM FOR CONCRETE AND THE MAXIMUM SLOPE SHALL BE AS FOLLOWS;

   CROSS SLOPE PERPENDICULAR TO PATH OF TRAVEL – 1.9%
   DIRECTION OF TRAVEL – 4.9%
   RAMP IN DIRECTION OF TRAVEL – 8.0%
   PLAZA 1.9% – IN ANY DIRECTION
5. ADJUST TO FINISH GRADE ALL UTILITY BOXES, FRAMES, COVERS SLEEVES, POST HOLES GRATES, ETC. FOUND IN AREA OF WORK, WHETHER SHOWN OR NOT. CLEAN OR REPLACE AS NECESSARY TO ENSURE PROPER SEATING.

PAVING LEGEND

(1) TYPE 1 PAVING
PLACE 4" AC OVER 12" CL 2 AB ON SUBGRADE COMPACTED PER SPECIFICATIONS.

(2) TYPE 2 PAVING
PLACE 3" AC OVER 8" CL 2 AB ON SUBGRADE COMPACTED PER SPECIFICATIONS.

(3) TYPE 3 PAVING
PLACE 4" PCC WITH NO. 3 BARS AT 18" O.C. EACH WAY, OVER 4" CL 2 AB COMPACTED TO 95% ON SUBGRADE COMPACTED PER SPECIFICATIONS. (1 / C5.1)

(4) TYPE 4 PAVING
PLACE 6" PCC WITH NO. 4 BARS @ 24" O.C. EACH WAY OVER 6" CL 2 AB COMPACTED TO 95% ON SUBGRADE COMPACTED PER SPECIFICATIONS. (1 / C5.1)

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 ½" BRASS DISK, STAMPED 2018 PLS 8278, IN CREEK AT ATKINSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED
VERTICAL SCALE:
JOB NO.: 22-166

AGENCY APPROVAL

BY	DATE

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

REGISTERED PROFESSIONAL ENGINEER ★ WINNIE LAU ★ NO. C74668 ★ CIVIL ★ STATE OF CALIFORNIA
2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1301 HIGUERA DRIVE, SUITE 10
EL DORADO HILLS, CA 95762 | (916) 985-1870

TITLE: **PHASE 1 - PARTIAL PAVING PLAN**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

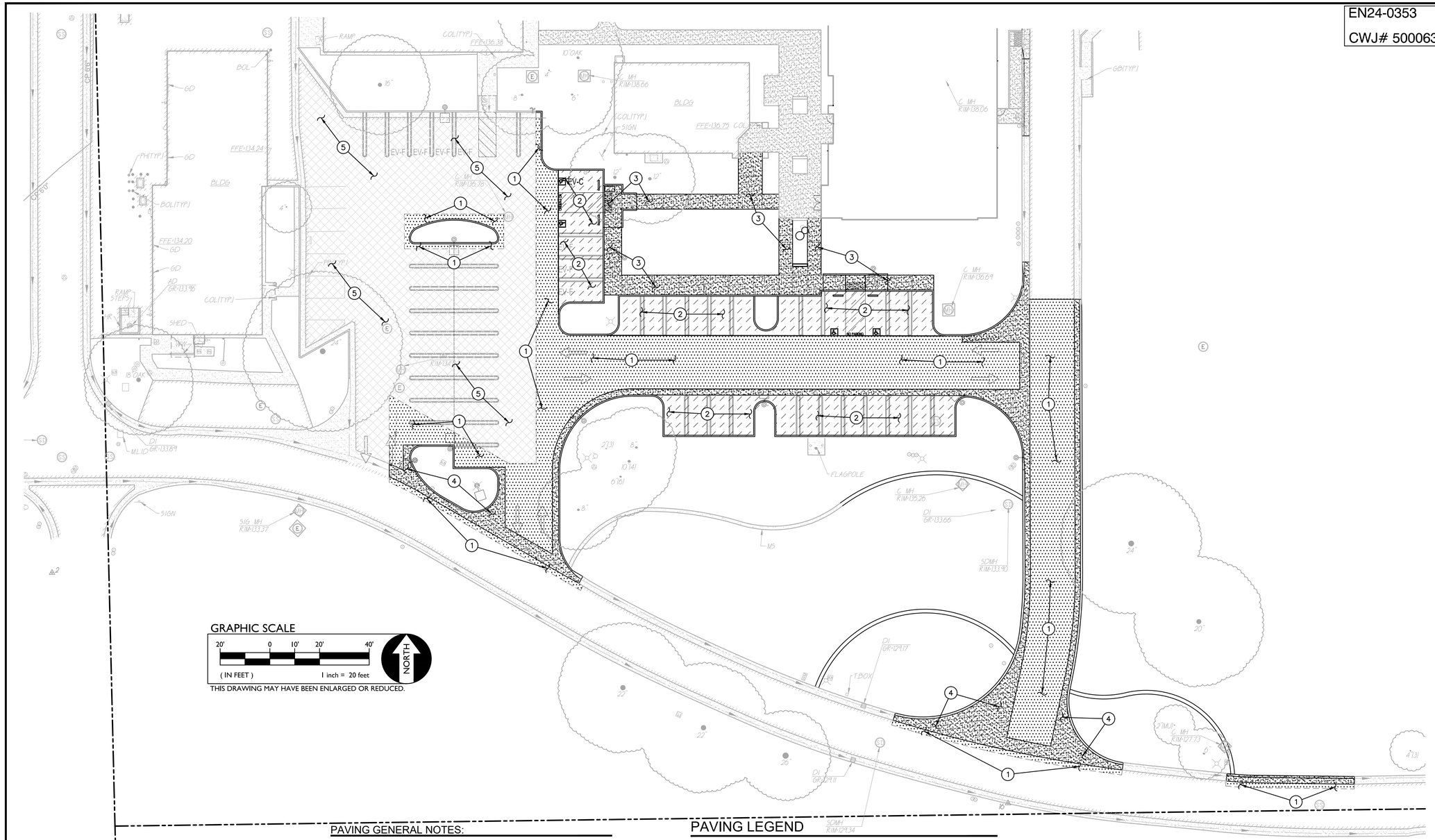
SHEET NO.
C4.2

BID SET (PRELIMINARY)

FILENAME: I:\22-166\CIVIL\DWG\22-166 C4.1-C4.2.DWG

EN24-0353

CWJ# 500063



GRAPHIC SCALE

20' 0 10' 20' 40'

(IN FEET) 1 inch = 20 feet

NORTH

THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

PAVING GENERAL NOTES:

1. REFER TO ARCHITECTURAL PLANS FOR EXPANSION AND CONTROL JOINT LAYOUT IN CONCRETE.
2. ALL NEW ASPHALT PAVING TO BE PROVIDED WITH 2 COATS SEALCOAT PER SPECIFICATIONS.
3. SLOPE IN ACCESSIBLE STALLS AND UNLOAD ZONES SHALL NOT EXCEED 1.9% IN ANY DIRECTION.
4. SLOPE OF FINISHED PAVING TO BE 1% MINIMUM FOR ASPHALT, 0.5% MINIMUM FOR CONCRETE AND THE MAXIMUM SLOPE SHALL BE AS FOLLOWS;

   CROSS SLOPE PERPENDICULAR TO PATH OF TRAVEL – 1.9%
   DIRECTION OF TRAVEL – 4.9%
   RAMP IN DIRECTION OF TRAVEL – 8.0%
   PLAZA 1.9% – IN ANY DIRECTION

5. ADJUST TO FINISH GRADE ALL UTILITY BOXES, FRAMES, COVERS SLEEVES, POST HOLES GRATES, ETC. FOUND IN AREA OF WORK, WHETHER SHOWN OR NOT. CLEAN OR REPLACE AS NECESSARY TO ENSURE PROPER SEATING.

PAVING LEGEND

(1) TYPE 1 PAVING
PLACE 4" AC OVER 12" CL 2 AB ON SUBGRADE COMPACTED PER SPECIFICATIONS.

(2) TYPE 2 PAVING
PLACE 3" AC OVER 8" CL 2 AB ON SUBGRADE COMPACTED PER SPECIFICATIONS.

(3) TYPE 3 PAVING
PLACE 4" PCC WITH NO. 3 BARS AT 18" O.C. EACH WAY, OVER 4" CL 2 AB COMPACTED TO 95% ON SUBGRADE COMPACTED PER SPECIFICATIONS. (1 / C5.1)

(4) TYPE 4 PAVING
PLACE 6" PCC WITH NO. 4 BARS @ 24" O.C. EACH WAY OVER 6" CL 2 AB COMPACTED TO 95% ON SUBGRADE COMPACTED PER SPECIFICATIONS. (1 / C5.1)

(5) TYPE 5 PAVING
PROVIDE 2 COATS SEAL COAT ON EXISTING PAVEMENT.

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 ¼" BRASS DISK, STAMPED 2018 PLS 8278, IN CREEK AT ATKINSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL

BY	DATE

REVISIONS

NO.	DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

REGISTERED PROFESSIONAL ENGINEER ★ ANTHONY J. PASQUALE ★ NO. C74668 ★ CIVIL ★ STATE OF CALIFORNIA ★ 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1301 HOWE AVENUE, SUITE 116
EL DORADO HILLS, CA 95762 T (916) 985-1870

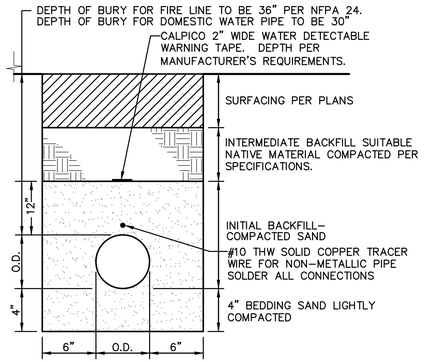
TITLE: **PHASE 2 - PAVING PLAN**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO. **C4.3**

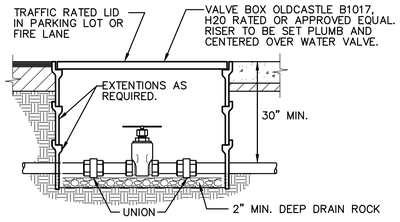
BID SET (PRELIMINARY)

FILENAME: I:\22-166\CIVIL\DWG\22-166 C4.1-C4.2.DWG



9 C5.1 WATER TRENCH

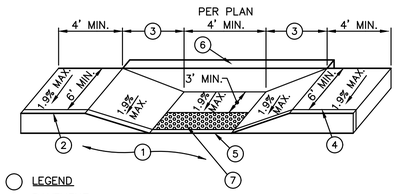
NO SCALE



10 C5.1 WATER VALVE

1/2" TO 3" PIPE

NO SCALE

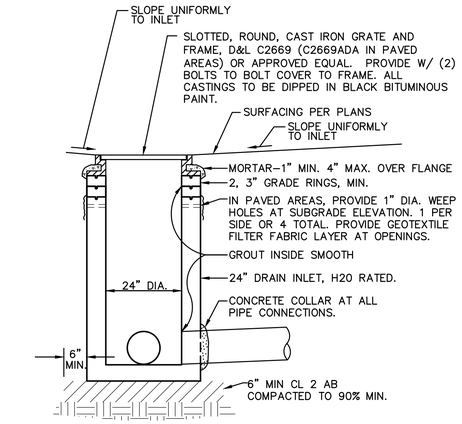


LEGEND

1. PAVEMENT.
2. TOP FACE OF CURB, STANDARD 6" HIGH.
3. 8.3% (1:12) MAXIMUM SLOPE.
4. SCORE MARK, 6" BACK OF CURB.
5. TRANSITION SHALL BE FLUSH AND FREE OF ABRUPT CHANGE PER CALIFORNIA BUILDING CODE, TITLE 24, SECTION 11B-503.
6. 6" WIDE RETAINING CURB, WHERE SHOWN ON PLAN.
7. PLACE 36" WIDE PREFABRICATED CAST IN PLACE DETECTABLE WARNING TILE BY ARMOR-TILE OR APPROVED EQUAL.

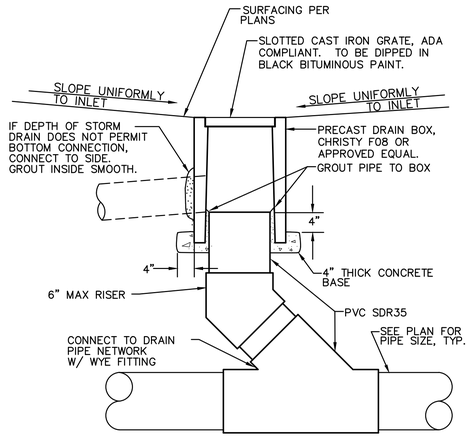
11 C5.1 ACCESSIBLE RAMP TYPE 1

NO SCALE



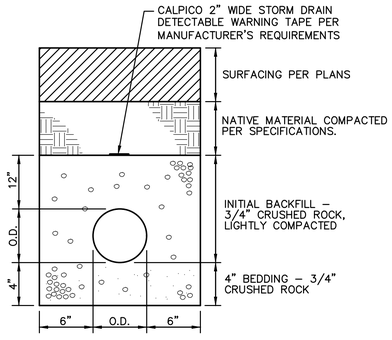
6 C5.1 DROP INLET

NO SCALE



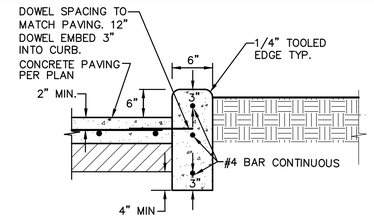
7 C5.1 AREA DRAIN

NO SCALE



8 C5.1 STORM DRAIN AND SANITARY SEWER TRENCH

NO SCALE

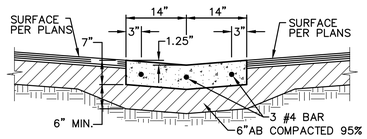


NOTES:

1. PROVIDE FELT EXPANSION JOINTS (E.J.) AT 60 FEET O.C. MAXIMUM PROVIDE CONTROL JOINTS AT 10 FEET O.C. MAXIMUM, EXCEPT WHEN PLACING ADJACENT TO CONCRETE WALKS THE EXPANSION JOINTS SHALL ALIGN WITH THE EXPANSION JOINTS SHOWN FOR THE CONCRETE WALKS.
2. AT E.J. USE 1/2"X24" SMOOTH DOWELS, ALIGN WITH REBAR, GREASE 1/2 THE LENGTH BEFORE CONCRETE PLACEMENT.

3 C5.1 CONCRETE CURB

NO SCALE

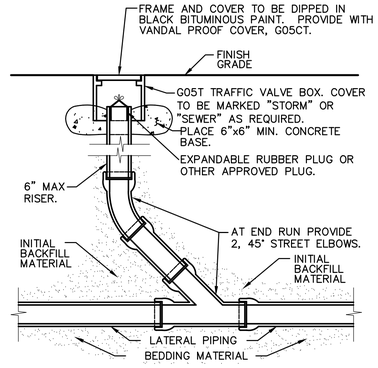


NOTES:

1. PROVIDE FELT EXPANSION JOINTS (E.J.) AT 60 FEET O.C. SEAL E.J. WITH APPROVED JOINT SEALANT. PROVIDE CONTROL JOINTS AT 10 FEET O.C.
2. AT E.J. USE 1/2"X24" SMOOTH DOWELS, ALIGN WITH REBAR, GREASE 1/2 THE LENGTH BEFORE CONCRETE PLACEMENT.

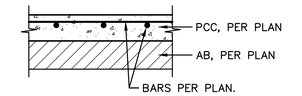
4 C5.1 CONCRETE VALLEY GUTTER

NO SCALE

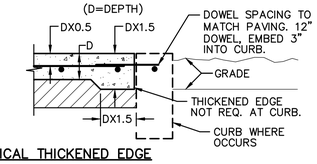


5 C5.1 CLEANOUT

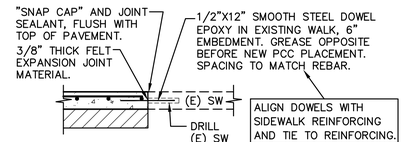
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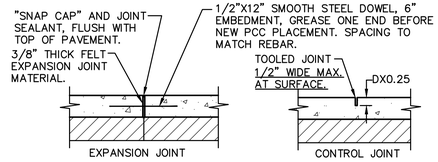
TYPICAL SECTION



TYPICAL THICKENED EDGE



CONNECTION TO (E) CONCRETE



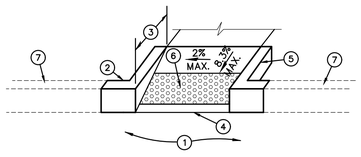
TYPICAL JOINTS

NOTES:

1. PROVIDE FELT EXPANSION JOINTS AT 20 FEET O.C. MAX. SEE PLAN FOR LAYOUT.
2. PROVIDE CONTROL JOINTS AT 10 FEET O.C. MAX. SEE PLAN FOR LAYOUT.
3. EXPANSION OR CONTROL JOINTS SHALL NOT EXCEED 1/2" IN SURFACE WIDTH.

1 C5.1 CONCRETE SIDEWALK

NO SCALE



LEGEND

1. PAVEMENT.
2. TOP FACE OF CURB, STANDARD 6" HIGH.
3. 8.3% (1:12) MAXIMUM SLOPE.
4. TRANSITION SHALL BE FLUSH AND FREE OF ABRUPT CHANGE PER CALIFORNIA BUILDING CODE, TITLE 24, SECTION 11B-406.5.8.
5. 6" WIDE RETAINING CURB, HEIGHT TO BE DETERMINED BY PROJECTED BACK OF WALK GRADE AT EACH END OF CURB RETURN AND BACK OF LANDING SURFACE.
6. PLACE 36" DEEP PREFABRICATED CAST IN PLACE DETECTABLE WARNING TILE BY ARMOR-TILE OR APPROVED EQUAL.
7. EXISTING CURB.

2 C5.1 ACCESSIBLE RAMP TYPE 2

NO SCALE

EN24-0353

CWJ# 500063

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200

3 1/4" BRASS DISK, STAMPED 2018 PLS, SET IN CONCRETE AT A UNION STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED

VERTICAL SCALE:

JOB NO.: 22-166

AGENCY APPROVAL	BY	DATE

REVISIONS NO.	DESCRIPTION	DATE

DESIGNED: MG

DRAWN: MG

CHECKED: MG

DATE: 1-30-25

REGISTERED PROFESSIONAL ENGINEER * ANTHONY J. GIANNOTTI * NO. C74656 * CIVIL * STATE OF CALIFORNIA * 2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1747 PONDEROSA ROAD, SUITE 150
EL DORADO HILLS, CA 95762 | (916) 985-1970

TITLE: **DETAILS**

PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO.

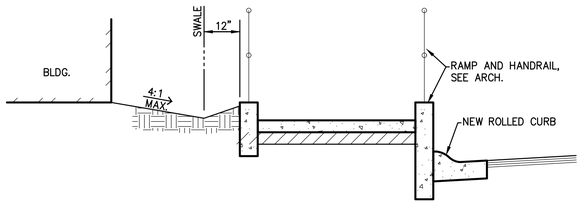
C5.1

BID SET (PRELIMINARY)

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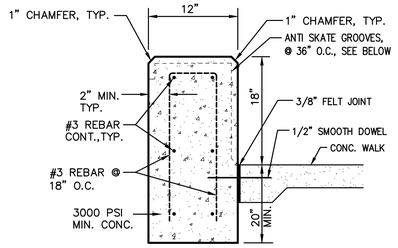
EN24-0353

CWJ# 500063

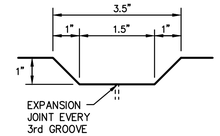


A / C5.2 SECTION

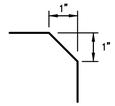
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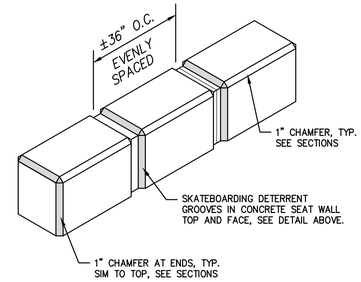
SEAT WALL SECTION



ANTI SKATE GROOVES



1" CHAMFER

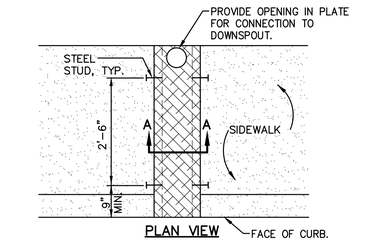


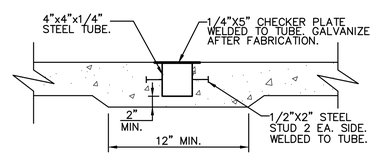
ANTI SKATE GROOVES

GENERAL NOTE:
SACK ALL SURFACES WITH ARDEX TWP OR APPROVED EQUAL.

1 / C5.2 CONCRETE SEATWALL

NO SCALE





SECTION A–A

2 / C5.2 UNDER SIDEWALK DRAIN

NO SCALE

A.P.N.	473-040-033-000
BENCHMARK NO.	CITY BM 86 ELEV. 129.200
	3 1/4" BRASS DISK, STAMPED 2018 PLS 8278, IN CREEK AT JOHNSON STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.
HORIZONTAL SCALE:	AS NOTED
VERTICAL SCALE:	
JOB NO.:	22-166

AGENCY APPROVAL	BY	DATE

REVISIONS NO.	DESCRIPTION	DATE

DESIGNED:	DRAWN:	CHECKED:	DATE:
MG	MG	MG	1-30-25

PROFESSIONAL ENGINEER ★ REGISTERED ★ STATE OF CALIFORNIA
ANTHONY J. GIOVANNELLI
NO. C74668
CIVIL
2/4/2025

WARREN CONSULTING ENGINEERS, INC.
1117 HAMILTON WAY, SUITE 101
EL DORADO HILLS, CA 95762 | (916) 985-1970

TITLE: **DETAILS**

PROJECT:
DRY CREEK
WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO.

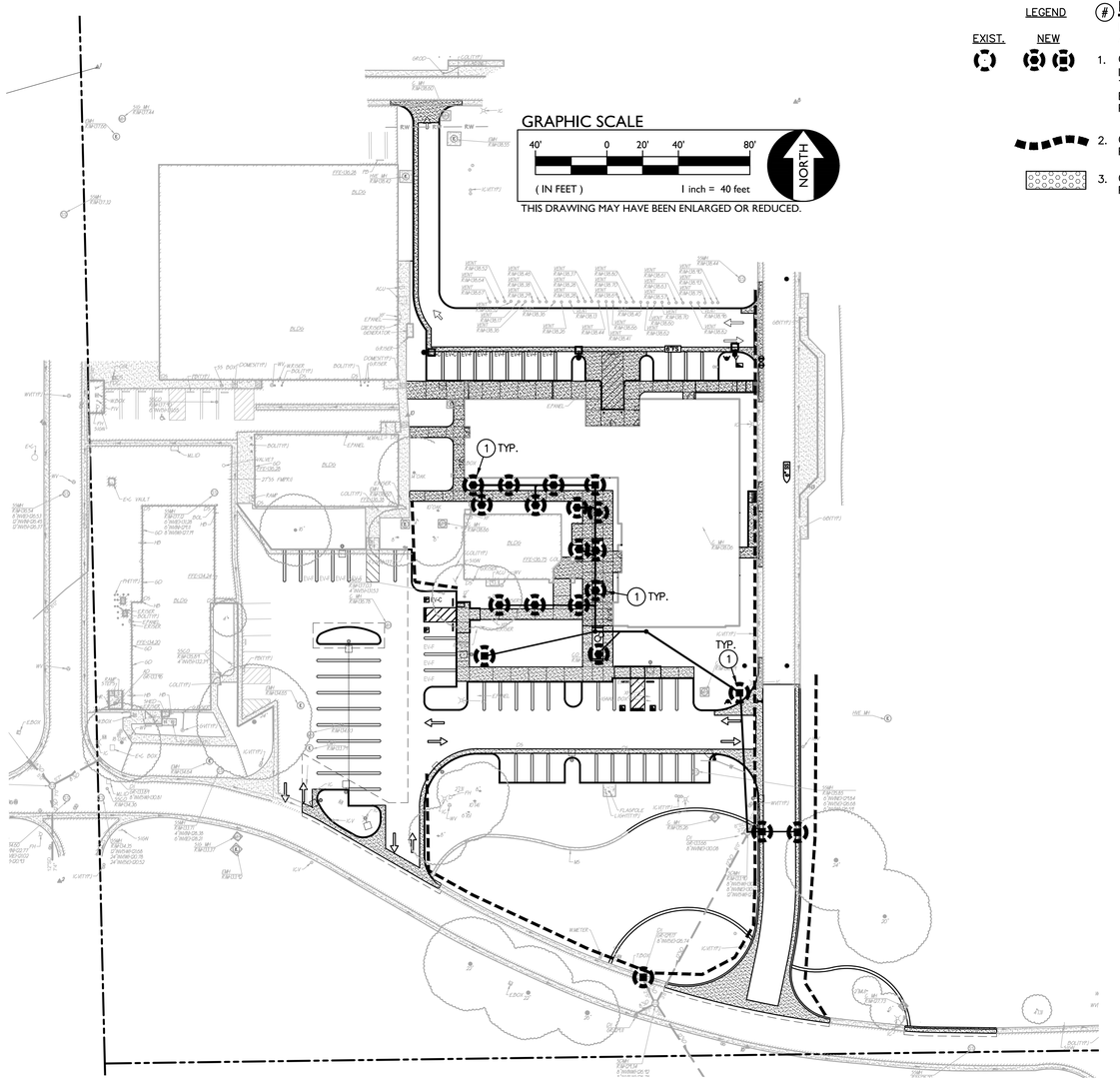
C5.2

BID SET (PRELIMINARY)

FILENAME:I:\22-166\CIVIL\DWG\22-166 C5.1-C5.2.DWG

EN24-0353

CWJ# 500063



PHASE OF CONSTRUCTION	EROSION AND SEDIMENT CONTROL MEASURES																
	WET SEASON					WET & DRY SEASON											
	HYDRO-SEEDING	STRAW MULCHING/ TACTIFIER	SOIL BINDERS	PRESERVATION OF EXISTING VEGITATION	BLANKETS MATS & GEOTEXTILES	FIBER ROLLS	DUST CONTROL	OUTLET PROTECTION	SILT FENCING	SAND/GRAVEL BAG BARRIERS	STORM DRAIN INLET PROTECTION	SEDIMENT BASIN	SEDIMENT TRAP	DEWATERING	STABILIZED CONSTRUCTION ENTRANCE	MATERIAL & WASTE DISPOSAL LOCATION	CONCRETE WASHOUT
PRE-GRADING	X	X		X			X		N/A			N/A	N/A				
CUT-FILL ACTIVITIES	X	X	X	X	X	X	X			X	X		X	X	X	X	
UNDERGROUND WORK	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X
STORM IMPROVEMENTS	X		X	X	X	X	X	X		X	X		X	X	X	X	X
CURB AND GUTTER	N/A		X	X	X	X	X	X		X	X			X	X	X	X
STREET IMPROVEMENTS			X	X	X	X	X	X		X	X			X	X	X	X
PAVE OUT				X	X		X	X		X	X			X		X	X
POST CONSTRUCTION			X	X	X												
MAINTENANCE SCHEDULE																	
DAILY*																	
WEEKLY*		X	X		X	X		X		X	X				X	X	X
MONTHLY*																	
BEFORE RAIN		X	X		X	X		X		X	X						
DURING RAIN		X	X		X	X		X		X	X						
AFTER RAIN		X	X		X	X		X		X	X						
AS NEEDED				X			X							X			

* = WHEN RAIN EVENT INSPECTIONS OCCURS, THEY MAY QUALIFY AS A DAILY, WEEKLY, OR MONTHLY INSPECTION AS APPLIES.

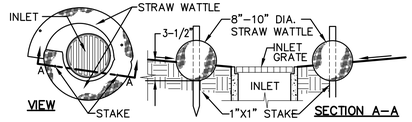
LEGEND

EXIST. NEW

EROSION CONTROL NOTES

NOTE: EXACT LOCATION WILL BE COORDINATED BY CONTRACTOR AND PROJECT QSP.

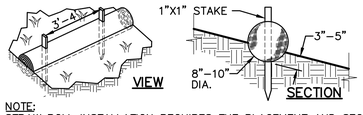
1. CONTRACTOR SHALL PROVIDE STRAW WATTLE BARRIER AT ALL INLETS (NEW AND/OR EXIST.) IN AREAS OF ON-SITE WORK PER THE DETAIL PROVIDED. IN ADDITION TO WATTLE, PROVIDE FILTER BAG AT EACH INLET. STRAW WATTLES NOT REQUIRED AT INLETS IN PAVED AREAS, ONLY FILTER BAG. (1 / C6.1)
2. CONTRACTOR SHALL PROVIDE STRAW WATTLES AT PERIMETER OF SITE PER DETAIL (2 / C6.1)
3. CONTRACTOR SHALL PROVIDE STABILIZED CONSTRUCTION SITE ACCESS PER DETAIL (3 / C6.1)



NOTE: STRAW WATTLE INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE WATTLE IN A TRENCH, 3-1/2" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.

1 / C6.1 STRAW WATTLE INLET FILTER

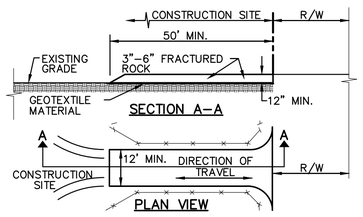
NO SCALE



NOTE:
STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"-5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.

2 / C6.1 STRAW ROLLS

NO SCALE



NOTES:

1. STABILIZED CONSTRUCTION SITE ACCESS SHALL BE CONSTRUCTED OF 3"-6" ANGULAR ROCK MATERIAL CONFORMING TO SECTION 26 OF STATE SPECIFICATIONS PLACED OVER GEOTEXTILE MATERIAL. ROCK SHALL BE PLACED TO A MINIMUM THICKNESS OF SIX INCHES. THE METHOD OF PLACING, SPREADING AND COMPACTING ROCK SHALL CONFORM TO SECTION 26 OF THE STATE SPECIFICATIONS.
2. LENGTH OF SITE ACCESS SHALL BE A MINIMUM LENGTH OF FIFTY FEET. WIDTH SHALL BE A MINIMUM WIDTH OF TWELVE FEET OR AS NECESSARY TO COVER ALL VEHICULAR INGRESS AND EGRESS.
3. THE SITE ACCESS SHALL BE KEPT IN GOOD CONDITION BY OCCASIONAL TOP DRESSING.

3 / C6.1 STABILIZED CONSTRUCTION SITE ACCESS

NO SCALE

MONITORING SCHEDULE

1. WITHIN 2 BUSINESS DAYS (48 HOURS) PRIOR TO EACH QUALIFYING RAIN EVENT.
2. EVERY 24 HOURS DURING A QUALIFYING RAIN EVENT.
3. WITHIN 2 BUSINESS DAYS (48 HOURS) AFTER EACH QUALIFYING RAIN EVENT RESULTING IN 0.50 INCHES OF RAIN OR MORE.
4. RECORD THE TIME, DATE AND RAIN GAUGE READING OF ALL QUALIFYING RAIN EVENTS.
5. QUARTERLY NON-STORM WATER DISCHARGE INSPECTIONS.
6. WEEKLY INSPECTIONS.

EROSION AND SEDIMENT CONTROL GENERAL NOTES

1. IF CERTAIN SOIL TYPES (E.G. COLLOIDAL SOILS) ARE DETECTED, THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL TREATMENT MEASURES PRIOR TO DISCHARGE.
2. CONTRACTOR IS RESPONSIBLE FOR THE DEWATERING AND REMOVAL OF ALL TEMPORARY EROSION CONTROL DEVICES JUST PRIOR TO THE COMMENCING OF THE FINAL GRADING AND PAVING OPERATIONS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING THE SITE TO MINIMIZE DUST CREATED DURING CONSTRUCTION.
4. PRIOR TO PLACEMENT OF HYDRO SEEDING, REMOVE TEMPORARY EROSION CONTROL MEASURES (STRAW WATTLE FENCE AND TRACKED LOOSE STRAW).
5. CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR COMPLIANCE WITH STATE WATER RESOURCES CONTROL BOARD REQUIREMENTS.
6. ALL MATERIALS STORED ON-SITE SHALL HAVE PROPER ENCLOSURES AND/OR COVERINGS.
7. CONTRACTOR SHALL MAINTAIN ALL WATTLE OR SILT FENCES AND OTHER STORM WATER POLLUTION PREVENTION DEVICES THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL INSPECT ALL EROSION CONTROL DEVICES WEEKLY AS WELL AS BEFORE, DURING, AND AFTER A STORM EVENT. CONTRACTOR SHALL REMOVE ALL EROSION CONTROL AND POLLUTION PREVENTION DEVICES AT THE END OF CONSTRUCTION AS REQUIRED. REFER TO SPECIFICATIONS AND ADDITIONAL REQUIREMENTS.
8. CONTRACTOR SHALL PROVIDE AND MAINTAIN CONSTRUCTION FENCING THROUGHOUT THE PROJECT. THIS FENCING SHALL DETER PEDESTRIANS AND NON-CONSTRUCTION RELATED PERSONNEL FROM ENTERING THE CONSTRUCTION SITE AREA TO THE GREATEST POSSIBLE EXTEND, THE CONTRACTOR SHALL COORDINATE THIS FENCING LAYOUT WITH SCHOOL DISTRICT PERSONNEL PRIOR TO ANY FENCING PLACEMENT SO AS TO NOT SIGNIFICANTLY INTERFERE WITH SCHOOL OPERATION.
9. CONTRACTOR SHALL ADEQUATELY PREVENT EXCESSIVE AMOUNTS OF MUD, SAND, DIRT, AND OTHER DEBRIS FROM BEING TRACKED ONTO THE STREET FROM CONSTRUCTION VEHICLE MOVEMENT. PROVIDE WASHING FACILITIES AT CONSTRUCTION ENTRANCE IF NECESSARY.
10. CONTRACTOR SHALL ADEQUATELY PREVENT EXCESSIVE AMOUNTS OF MUD, SAND, DIRT, AND OTHER DEBRIS FROM BEING TRACKED ONTO THE STREET FROM CONSTRUCTION VEHICLE MOVEMENT. PROVIDE WASHING FACILITIES AT CONSTRUCTION ENTRANCE IF NECESSARY.

ANY CHANGES MADE TO THE SWPPP IN THE FIELD MUST BE SHOWN ON THE MAP. UPDATE MAP TO REFLECT CHANGES.

MAINTENANCE/REPAIRS OF BMP FAILURE SHALL BEGIN WITHIN 72 HOURS OF IDENTIFICATION AND CHANGES SHALL BE COMPLETED PRIOR TO THE NEXT RAIN EVENT.

STORM DRAINAGE OUTFALL BMP'S
REFER TO PROTECT CONSTRUCTION PLAN DETAILS FOR SPECIFIC POST CONSTRUCTION BMP MEASURES AT OUTFALL STRUCTURES.

SEDIMENT AND EROSION CONTROL MEASURES ON SWPPP MAP ARE MINIMUM BMP'S RECOMMENDED FOR COMPLIANCE. CONSTRUCTION SITE MUST BE MONITORED AND BMP'S SHALL BE MODIFIED DEPENDING ON CONSTRUCTION SCHEDULE AND RAIN EVENTS.

ADD TO MAP AS LOCATED IN THE FIELD

- CONSTRUCTION TRAILER.
- VEHICLE/EQUIPMENT MAINTENANCE AND FUELING AREA.
- COVERED WASTE STORAGE (DUMPSTERS).
- STAGE — STAGING AREA
- MATERIAL STORAGE
- SP — SOIL STOCKPILES.
- CWO — CONCRETE WASHOUT.

FOR REFERENCE ONLY

A.P.N. 473-040-033-000

BENCHMARK NO. CITY BM 86 ELEV. 129.200
3 3/4" BRASS DISK, STAMPED 2018 PLS 8278, SET IN CONCRETE AT JUNCTION OF STREET, NORTHWEST CORNER OF BRIDGE ON SIDEWALK.

HORIZONTAL SCALE: AS NOTED
VERTICAL SCALE:
JOB NO.: 22-166

AGENCY APPROVAL	BY	DATE

NO.	REVISIONS DESCRIPTION	DATE

DESIGNED: MG
DRAWN: MG
CHECKED: MG
DATE: 1-30-25

PROFESSIONAL ENGINEER * REGISTERED * CALIFORNIA
ANTHONY J. GIOVANNI
No. C74666
CIVIL
1/4/2025

WARREN CONSULTING ENGINEERS, INC.
1117 MISSOURI FLAT ROAD, SUITE 5
EL DORADO HILLS, CA 95762 | (916) 986-1970

TITLE: EROSION CONTROL PLAN
PROJECT: DRY CREEK WASTEWATER TREATMENT PLANT
1800 Booth Road
Roseville, CA 95747
PLACER COUNTY, CA
ROSEVILLE

SHEET NO.
C6.1

BID SET (PRELIMINARY)

FILENAME:I:\22-166\CIVIL\DWG\22-166 C6.1.DWG

DRY CREEK WASTEWATER TREATMENT PLANT

1800 BOOTH ROAD
ROSEVILLE, CALIFORNIA

Landscape Development Plans

PLANTING NOTES

1. Installing Contractor shall verify quantities and areas to be planted prior to start of job. Notify Landscape Architect of any discrepancies prior to starting work.
2. All planting areas shall be completely free of trash, debris, rocks, and construction materials larger than 2", and shall be brought to finish grade before planting begins. Finish grade shall be 2" below surface of walks, curbs, and paved areas in planting areas where bark is to be installed. Grades shall be flush at catch basins. Surfaces shall be sloped with regard to drainage requirements so that water does not puddle or stand.
3. If additional soil is required, it shall be approved loam as similar to the existing soil as possible, free of debris and noxious weeds. Prior to placing additional soil, disc or scarify the sub-grade to a depth of at least 8" to permit bonding to the sub-grade. Spread and rototill a one inch layer of new soil, then proceed to place remaining soil and establish finish grade.
4. Landscape contractor must conduct a soils test to determine amendment quantities. For bid purposes, assume the following soil preparation for all planting areas: Apply nitrified wood product amendment at a minimum rate of 6 cubic yards per 1000 sq. ft. and commercial fertilizer (16-16-16 NPK or equal) at a rate of 30 lbs. per 1000 sq.ft. for shrub and ground cover areas, 20 lbs. per 1000 sq.ft. for lawn areas. Rototill to a depth of 6" to 10". Compact and settle all areas by application of heavy irrigation to a minimum depth of 12".
5. Concrete headers shall be installed between all lawn and shrub/ground cover areas. Install per plans and details provided.
6. All plants shall be top quality nursery stock, free of disease and insect pests. Plants shall be normal size for container, vigorous, and true to name and variety. Plant holes shall be the same depth as the root ball, and three times the width for shrubs and four times the width for trees, see details.
7. Backfill for the plant holes shall be existing soil which has been previously amended. Apply Osmocote Controlled Release Formula fertilizer (18-6-12, 4 month formula) per manufacturer's recommendations.
8. When planted, crown of plant shall be 1-1/2" above finish grade. Prepare a water basin by forming a soil ring at least 3" high and as wide around the outer edge of the new plant hole. Water thoroughly to eliminate air pockets.
9. Upon completion of planting all containerized material, rake all shrub and ground cover areas to smooth grade, leaving watering basins intact. Prior to placement of bark mulch, all shrub and ground cover areas shall be treated with a pre-emergent herbicide (Ronstar or equal) per manufacturer's directions. Contractor to verify with manufacturer that pre-emergent will not adversely affect plant health.
10. Place a 3" layer of 'Walk-On' fir bark mulch, or approved equal, in all shrub and ground cover areas. Shredded redwood 'Gorilla Hair' is not acceptable.
11. Ground cover plants shall be planted in straight rows and evenly triangularly spaced a intervals noted in plant legend. Plant each rooted plant with its proportionate amount of rooting soil in a manner that will insure minimum disturbance of the root system.
12. For trees that require staking, use two 2" diameter treated lodgepole stakes set at minimum of 12" into undisturbed subgrade below the root ball. Place ties and stakes only to the level which will hold the tree upright; proper height is 6" above the point where the tree will snap to an upright position by itself if the top is pulled to one side as if wind loaded and then released. Ties shall be cinch-tie flexible vinyl (or equal) nailed to stake with galvanized nails, see details.
13. Sod lawns: After soil preparation, carefully smooth all surfaces and roll to expose depressions and irregularities. Regrade as necessary. Lay first strip of sod slabs along a straight line. Butt joints tightly, do not overlap edges. For remaining strips, stagger joints much as laying bricks. Use a sharp knife to cut sod to fit curves, edges, sprinkler heads, etc. When a conveniently large area has been sodded, water lightly to prevent drying. After laying all sod, roll lightly to eliminate irregularities and to form good contact between sod and soil. Water thoroughly; soil should be moistened at least 8 inches deep. Repeat sprinkling at regular intervals to keep sod moist at all times until rooted. After sod is established, decrease frequency and increase amount of water per application as necessary.
14. Contractor shall furnish all labor, material, equipment, and services required to maintain the landscape in an attractive condition as specified herein for a period of 90 days after final acceptance by Owner. Maintenance Period shall commence after all planting and related work has been completed in accordance with Plans and Notes. A prime requirement is that all lawn areas shall show an even, healthy stand of grass which shall have been mown at least twice. Any materials found to be dead, missing, or in poor condition during the Maintenance Period shall be replaced within 10 days of written notification by the Owner. Contractor shall not be held responsible for damage arising from acts of God, vandalism, theft, or negligence by Owner during the Maintenance Period.

IRRIGATION NOTES

1. Installing Contractor shall verify all dimensions and areas prior to start of job. Intent is for full coverage of planting. Notify Landscape Architect of any discrepancies prior to trenching.
2. Plan is diagrammatic and not intended to show exact locations of piping and valves. Install valves and piping in landscape areas wherever possible. Install valves near curbs and sidewalks whenever possible. Sprinkler head spacings are shown accurately and shall be installed as indicated by the center of the symbol. Contractor is responsible for pipe sizing the irrigation system correctly.
3. All materials shall be new and in perfect condition. No deviations from the specifications will be allowed without prior written approval of Landscape Architect.
4. Mainline shall be SCH 40 PVC or CL315 at a minimum depth of 18" below finish grade. Lateral lines shall be SCH 40 PVC at a minimum depth of 12" below grade. Use only the solvent supplied and recommended by the pipe manufacturer to make plastic pipe joints. Allow 15 minutes set-up curing time before moving or handling, and 24 hour curing time before water is placed in PVC pipe. Center load pipe with a small amount of backfill to prevent arching and whipping under pressure.
5. Where more than one pipe is installed in a trench, place pipe side by side at a minimum of 2" apart. Where soil conditions are rocky, place a 4" layer of fine material on bottom of trench prior to installation of pipe.
6. All valves shall be installed in Carson poly-plastic valve boxes with flush covers, or approved equal. Remote control valves shall be installed in Carson 1419 12" depth standard rectangular valve boxes; Drip zone remote control valves with filters and PRVs shall be installed in Carson 1220 12" depth jumbo rectangular valve boxes; Ball valves shall be installed in Carson 0011 10" diameter round valve boxes. Top of valve boxes shall be 1" above finish grade.
7. Install pop-up shrub heads and lawn spray heads 2" from curbs and walks.
8. Securely mount controller as directed by manufacturer. Complete all electrical connections to controller. All control wire shall be #14 U.L. direct burial. Taped and bundled every 20'. Place at a minimum depth of 18", installing in common trenches with mainline whenever possible. Where wire crosses paving, encase wire in a SCH 40 PVC sleeve. Run one extra wire, of a different color, to the last valve on each mainline leg, looping the wire through each valve box and label for future use.
9. At valves, both wires shall be brought into valve box and shall have an excess loop of 24" before being spliced into the solenoid pigtails using Pentite connectors.
10. After valves have been installed, test all mainlines for leaks at full line pressure for a period of 2 hours with couplings exposed and pipe sections center loaded. Before testing, fill line with water for at least 24 hours. Provisions shall be made for thoroughly bleeding the line of air and debris. Correct all defects and retest.
11. All excavations shall be backfilled with fine material to 4" above crown of pipe and tamped; then fill with earth and tamp. All trenches shall be left flush with adjoining grade and in a firm unyielding condition. Any subsequent settling shall be corrected by the Contractor.
12. Install systems without spray nozzles; open flush valves. Flush and operate each valve system at full pressure until all debris is removed. Install spray nozzles and close flush valves.
13. Test to determine that all sprinklers function according to manufacturer's data and give full coverage according to intent of drawing. Replace and adjust as necessary. Additional heads shall be provided by the Contractor to cover areas shown to be deficient by test.
14. Contractor shall set initial program for the controller. Contractor shall provide Owner with the instruction manual and demonstrate its operation to the Owner.
15. Contractor shall guarantee all parts and labor for one year with exception of damage caused by vandalism, theft, adverse natural conditions, or anything beyond the control of the Contractor.

GENERAL NOTES

1. Landscape areas not covered with live material shall be covered with a 3" 'Walk-On' fir bark mulch layer.
2. Adjust location of plant material to avoid interference with building numbers and addresses at mature height.
3. Provide a minimum three foot clearance around all fire protection equipment and associated landscape apparatus.
4. All trees planted adjacent to fire lanes shall have their canopies maintained at 13'-6" or higher where they overhang into the required width of the fire lane.
5. Landscaping shall be placed and pruned as to retain the required clearance for ladder access to windows around the building and to not interfere at maturity with 13'-6" emergency vehicle access clearance.
6. Turf slopes cannot exceed 4:1.
7. Maintain a minimum distance of 18" between edge of lawn and trunk of tree(s).
8. Landscape contractor shall provide protection for all concrete surfaces when installing landscape materials. Staining of concrete from dirt, tire marks and damaged curbs will not be permitted. All damaged surfaces shall be cleaned or replaced.
9. Landscape contractor shall coordinate and install the sleeving and stubbing for irrigation crossing parking lots and paved areas.
10. Landscape contractor shall grade all landscape areas 2% min. to drain to the street. Landscape contractor is responsible to provide positive drainage away from all buildings. All planters and planter islands should be crowned to prevent standing water.
11. Root barriers are required in all locations where trees are placed closer than 48" from curbs, sidewalks, concrete or asphalt refer to detail for specification and installation.
12. Quantities found in the plant legend are for contractor convenience. In the event that the quantities in the legend differ from those found on the plans, the quantities found on the plans will take precedence.
13. Contractor to hand dig only under existing tree canopies, no mechanical excavation will be allowed, do not cut any roots 2" or larger in diameter, if it is necessary to prune roots 2" in diameter or larger, contractor shall hire the services of a licensed arborist to supervise and direct the work, follow all recommendations of the arborist.

DRAWING INDEX

L-0.1 - COVER SHEET
L-1.1 - IRRIGATION PLAN
L-2.1 - PLANTING PLAN
L-2.1 - PLANTING CALCULATIONS
L-3.1 - IRRIGATION DETAILS
L-3.2 - IRRIGATION DETAILS
L-3.3 - PLANTING DETAILS
L-3.4 - IRRIGATION CALCULATIONS

YAMASAKI
LANDSCAPE ARCHITECTURE

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LANDSCAPE DEVELOPMENT PLANS

DRY CREEK WASTEWATER TREATMENT PLANT

1800 BOOTH ROAD
ROSEVILLE, CA

CITY OF ROSEVILLE

Project Mgr: TVZ

Drawn By: EJS

Scale: NTS

Date: 05/29/2024

File Name: DCWT-CV

No.	Date	Revision
1	08/28/2024	REVISION
2	10/23/2024	PC COMMENTS
3	02/12/2025	BID SET

These drawings are instruments of service and are the property of Yamasaki Landscape Architecture. All designs and other information on the drawings are for the use on the specified project and shall not be used otherwise without the express written permission of Yamasaki Landscape Architecture.

Seal

LICENSED LANDSCAPE ARCHITECT
ERIC J. ZARO
5766
Expiration
8/26
02/11/25
Date
STATE OF CALIFORNIA

Sheet Title

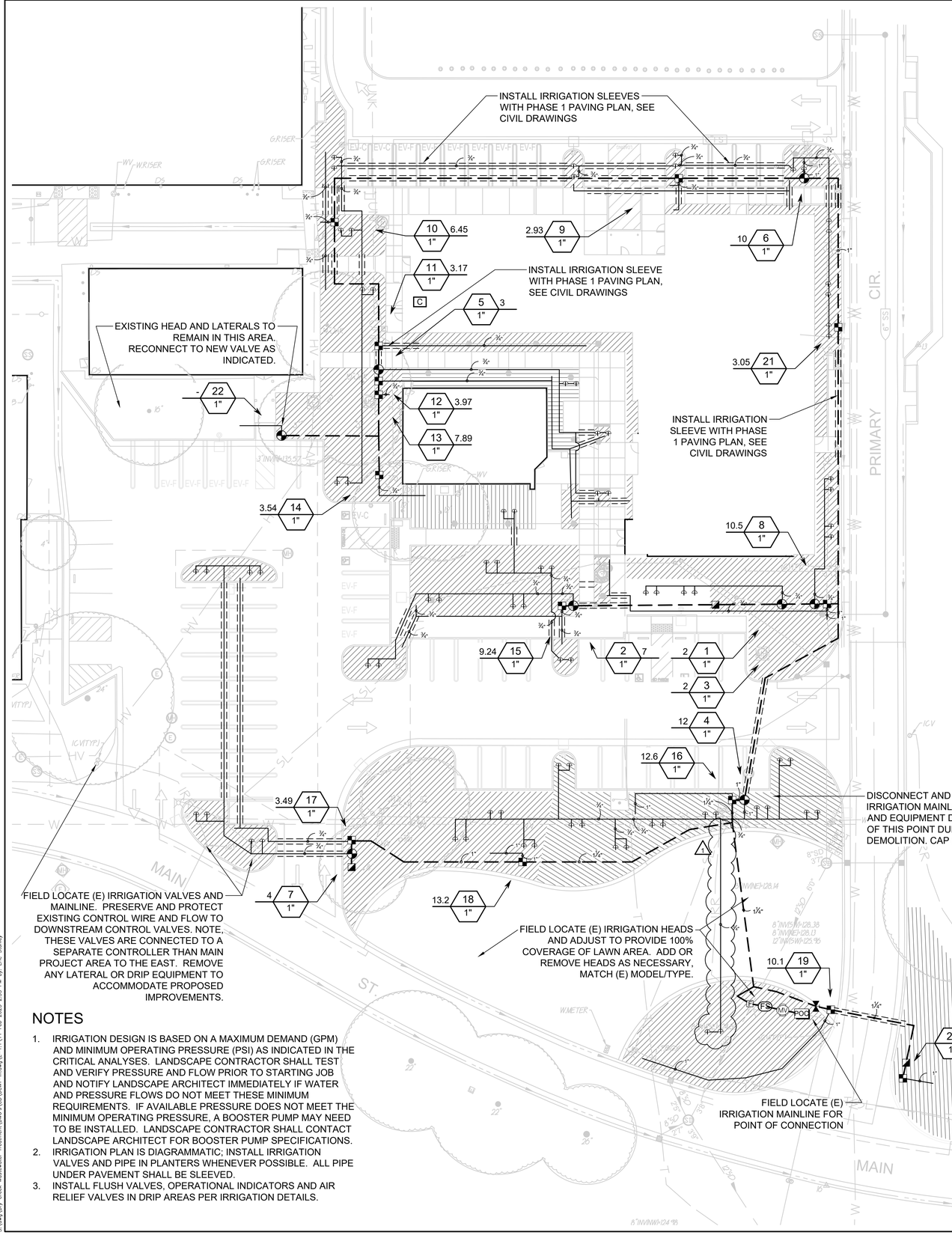
BID SET
COVER SHEET

Sheet No

L-0.1

BID SET (PRELIMINARY)

S:\Landy\Dry Creek Wastewater Treatment\DWG's\CD's\DCWT-CV.dwg\L0.1\T1 Feb 2025 2:54 PM by: Eric Stoney



IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	PSI
0.25 0.50	Hunter RZWS-36-CV 36in. long RZWS with installed .25 gpm or .50 gpm bubbler options, Check Valve, 1/2in. swing joint for connection to 1/2in. pipe	15

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	Rain Bird XCZ-100-PRB-R Wide Flow Drip Control Kit for Commercial Applications. Purple Cap designates for Reclaimed Water, Non-Potable Use. 1in. PESBR Valve and 1in. Pressure Regulating 40psi Basket Filter. 5-20 GPM.
	Area to Receive Dripline Rain Bird XFS-CV-PS-6-18 XFS-CV 0.6 GPH Landscape Dripline w/ Purple Stripe.

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
	Rain Bird EFB-CP 1in., 1-1/2in., 2in. Brass Remote Control Valve, that is Contamination Proof w/Self-Flushing Filter Screen. Globe Configuration, Reclaimed Water Compatible, and Purple Handle Cover Designates Non-Potable Water Use.
	Rain Bird 44-NP 1in. Brass Quick-Coupling Valve, with Corrosion-Resistant Stainless Steel Spring, Locking Non-Potable Purple Rubber Cover, and 2-Piece Body.
	Nibco T-113 Class 125 bronze gate shut off valve with wheel handle, same size as mainline pipe diameter at valve location. Size Range - 1/4in. - 3in.
MV	Superior 3100-RW 2" Normally Open Brass Master Valve that Provides Dirty Water Protection. Available in 3/4in., 1in., 1-1/4in., 1-1/2in., 2in., 2-1/2in., and 3in.. With Purple Cross Handle for Reclaimed Water Use.
C	CALSENSE CONTROLLER ET2000e PER CITY STANDARD
FS	CALSENSE FLOW METER FM-1B
F	AMIAD FILTER PER CITY STANDARD
POC	Point of Connection 2" FIELD LOCATE AND CONNECT TO EXISTING MAINLINE.
	Irrigation Lateral Line: PVC Class 200 SDR 21-NP
	Irrigation Mainline: PVC Schedule 40-NP
	Pipe Sleeve: PVC Schedule 40

Valve Callout
Valve Number
Valve Flow
#" Valve Size

NOTE: EXISTING IRRIGATION MAINLINE IS RECYCLED (NON-POTABLE) WATER. USE PURPLE PIPE AND PURPLE NP INDICATORS FOR ALL IRRIGATION EQUIPMENT.

NOTES

1. IRRIGATION DESIGN IS BASED ON A MAXIMUM DEMAND (GPM) AND MINIMUM OPERATING PRESSURE (PSI) AS INDICATED IN THE CRITICAL ANALYSES. LANDSCAPE CONTRACTOR SHALL TEST AND VERIFY PRESSURE AND FLOW PRIOR TO STARTING JOB AND NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY IF WATER AND PRESSURE FLOWS DO NOT MEET THESE MINIMUM REQUIREMENTS. IF AVAILABLE PRESSURE DOES NOT MEET THE MINIMUM OPERATING PRESSURE, A BOOSTER PUMP MAY NEED TO BE INSTALLED. LANDSCAPE CONTRACTOR SHALL CONTACT LANDSCAPE ARCHITECT FOR BOOSTER PUMP SPECIFICATIONS.
2. IRRIGATION PLAN IS DIAGRAMMATIC; INSTALL IRRIGATION VALVES AND PIPE IN PLANTERS WHENEVER POSSIBLE. ALL PIPE UNDER PAVEMENT SHALL BE SLEEVED.
3. INSTALL FLUSH VALVES, OPERATIONAL INDICATORS AND AIR RELIEF VALVES IN DRIP AREAS PER IRRIGATION DETAILS.

CRITICAL ANALYSIS

Generated:	2024-12-04 09:40
P.O.C. NUMBER: 01	
Water Source Information:	FIELD LOCATE AND CONNECT TO EXISTING MAINLINE.
FLOW AVAILABLE	
Point of Connection Size:	2"
Flow Available	77.18 GPM
PRESSURE AVAILABLE	
Static Pressure at POC:	60 PSI
Pressure Available:	60 PSI
DESIGN ANALYSIS	
Maximum Station Flow:	16.49 GPM
Flow Available at POC:	77.18 GPM
Residual Flow Available:	60.69 GPM
Critical Station:	20
Design Pressure:	20 PSI
Friction Loss:	0.41 PSI
Fittings Loss:	0.04 PSI
Elevation Loss:	0 PSI
Loss through Valve:	21.5 PSI
Pressure Req. at Critical Station:	38.9 PSI
Loss for Fittings:	0.19 PSI
Loss for Main Line:	1.91 PSI
Loss for POC to Valve Elevation:	0 PSI
Loss for Backflow:	0 PSI
Loss for Master Valve:	0.53 PSI
Critical Station Pressure at POC:	41.6 PSI
Pressure Available:	60 PSI
Residual Pressure Available:	18.4 PSI

SLEEVING SCHEDULE

PIPE SIZE OR # OF WIRES	REQUIRED SLEEVE SIZE
3/4", 1"	1-2" SLEEVE
1-1/4", 1-1/2", 2", 2-1/2"	1-4" SLEEVE
3", 4"	1-6" SLEEVE
6"	1-12" SLEEVE
1-25 CONTROL WIRES	1-2" SLEEVE
26-50 CONTROL WIRES	2-2" SLEEVES

1. ALL SLEEVES SHALL BE SCH 40 PVC.
2. ALL PIPE AND CONTROL WIRES SHALL BE INSTALLED IN SEPARATE SLEEVES UNDER PAVED AREAS, SIZE AS INDICATED ABOVE.
3. SLEEVES SHALL EXTEND AT LEAST 12" BEYOND THE EDGE OF THE PAVEMENT.

PIPE SIZING SCHEDULE

PVC TYPE	SCH 40	CLASS 315	CLASS 200
PIPE SIZE	MAX. GPM	MAX. GPM	MAX. GPM
3/4"	8	-	-
1"	13	-	-
1-1/4"	23	-	-
1-1/2"	32	-	-
2"	53	-	-
2-1/2"	-	74	-
3"	-	109	-
4"	-	-	200
6"	-	-	425

1. ALL MAINLINE PIPE SHALL BE MINIMUM 1".
2. ALL LATERAL LINE PIPE SHALL BE MINIMUM 3/4".
3. ALL PIPE 2" AND SMALLER SHALL BE SCH 40.
4. ALL PIPE 2-1/2" TO 3" SHALL BE CLASS 315.
5. ALL PIPE 4" AND GREATER SHALL BE CLASS 200.

VALVE SCHEDULE

NUMBER	MODEL	SIZE	TYPE	GPM
1	Rain Bird EFB-CP	1"	Bubbler	2
2	Rain Bird EFB-CP	1"	Bubbler	7
3	Rain Bird EFB-CP	1"	Bubbler	2
4	Rain Bird EFB-CP	1"	Bubbler	12
5	Rain Bird EFB-CP	1"	Bubbler	3
6	Rain Bird EFB-CP	1"	Bubbler	10
7	Rain Bird EFB-CP	1"	Bubbler	4
8	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	10.49
9	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	2.93
10	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	6.45
11	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	3.17
12	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	3.97
13	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	7.89
14	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	3.54
15	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	9.24
16	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	12.64
17	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	3.49
18	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	13.21
19	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	10.07
20	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	16.49
21	Rain Bird XCZ-100-PRB-R	1"	Area for Dripline	3.05
22	Rain Bird EFB-CP	1"	Existing Spray Head	

NORTH

0' 40' 20' 80'

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CITY OF ROSEVILLE

Project Mgr: TVZ
Drawn By: EJS
Scale: 1" = 20'
Date: 05/29/2024
File Name: DCWT-IR

No.	Date	Revision
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2	10/23/2024	PC COMMENTS
3	02/12/2025	BID SET

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Seal

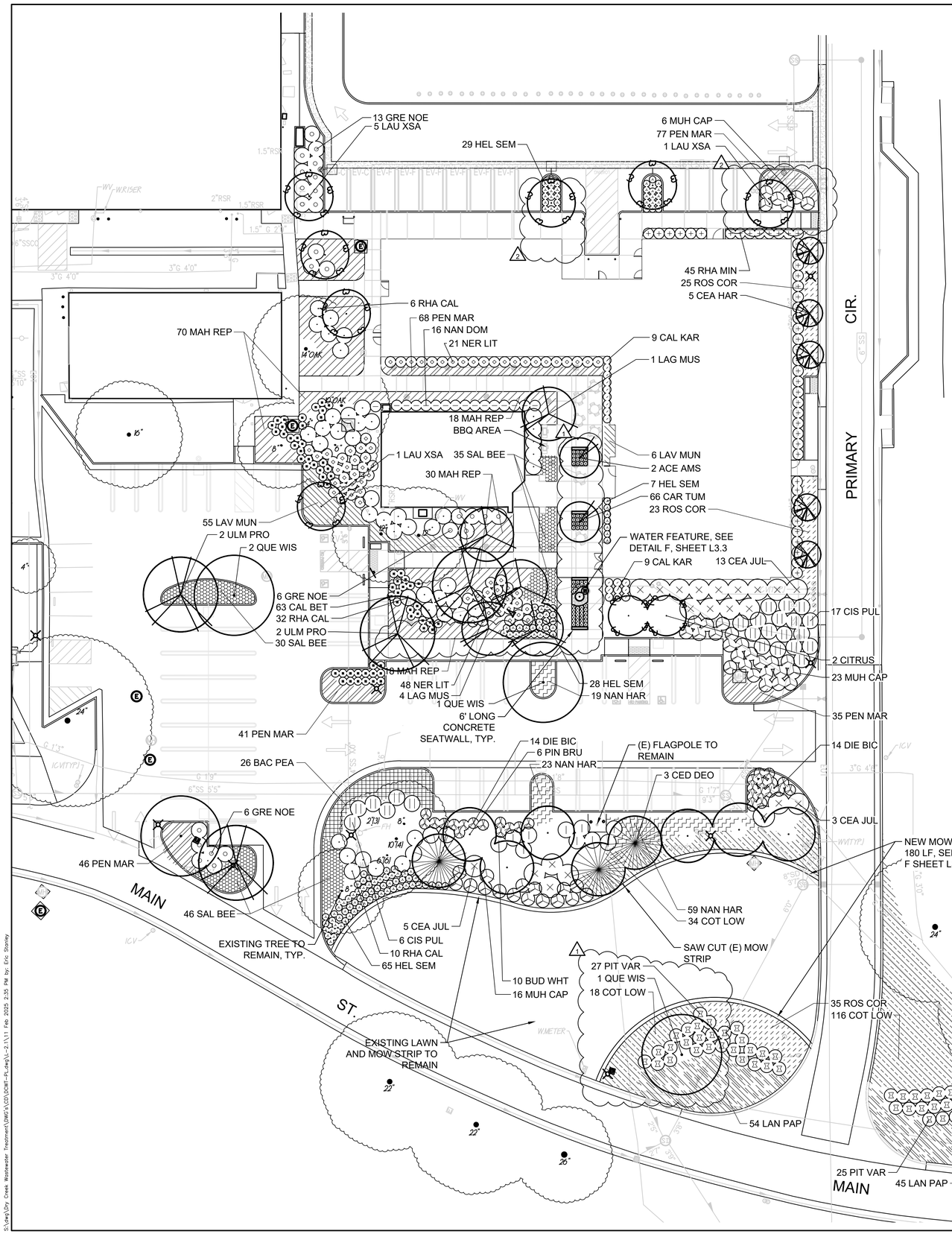
LICENSED LANDSCAPE ARCHITECT
TRISTAN V. ZARO
6726
02/11/25
STATE OF CALIFORNIA

Sheet Title
BID SET
IRRIGATION PLAN

Sheet No
L-1.1

BID SET (PRELIMINARY)

S:\Dwg\Dry Creek Wastewater Treatment\DWG's\CD\DCWT-IR.dwg\L-1.1\1 Feb 2025 2:35 PM by: Eric Stanley



PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	WATER USE
TREES					
	ACE AMS	2	Acer x freemanii 'Armstrong' / Armstrong Freeman Maple	24" box	MED
	CEA HAR	5	Ceanothus x 'Ray Hartman' / Ray Hartman Wild Lilac	15 gal	LOW
	CED DEO	3	Cedrus deodara / Deodar Cedar	15 gal	LOW
	CITRUS	2	Citrus Tree / Assorted Semi-Dwarf Varieties	24" box	HIGH
	LAG MUS	5	Lagerstroemia indica x fauriei 'Muskogee' / Muskogee Crape Myrtle	15 gal	LOW
	LAU XSA	7	Laurus x 'Saratoga' / Saratoga Hybrid Laurel	15 gal	LOW
	PIN BRU	6	Pinus halepensis 'Brutia' / Calabrian Pine	15 gal	LOW
	QUE WIS	4	Quercus wislizeni / Interior Live Oak	15 gal	LOW
	ULM PRO	4	Ulmus wilsoniana 'Prospector' / Prospector Elm	24" box	LOW
SHRUBS					
	BUD WHT	10	Buddleia davidii `White Profusion` / Butterfly Bush	5 gal	LOW
	CAL BET	63	Callistemon citrinus `Better John` / Better John Dwarf Bottlebrush	5 gal	LOW
	CEA JUL	21	Ceanothus `Julia Phelps` / California Wild Lilac	5 gal	LOW
	CIS PUL	23	Cistus pulverulentus `Sunset` / Rockrose	5 gal	LOW
	DIE BIC	28	Dietes bicolor / Fortnight Lily	1 gal	LOW
	GRE NOE	25	Grevillea x `Noellii` / Grevillea	5 gal	LOW
	NAN DOM	16	Nandina domestica / Heavenly Bamboo	5 gal	LOW
	NER LIT	69	Nerium oleander `Little Red` / Little Red Oleander	5 gal	LOW
	PIT VAR	52	Pittosporum tobira `Variegata` / Variegated Mock Orange	5 gal	MED
	RHA CAL	48	Rhamnus californica `Eve Case` / California Coffee Berry	5 gal	LOW
	RHA MIN	45	Rhaphiolepis umbellata `Minor` / Yedda Hawthorn	1 gal	LOW
GRASSES					
	CAL KAR	18	Calamagrostis x acutiflora 'Karl Foerster' / Feather Reed Grass	1 gal	LOW
	CAR TUM	66	Carex tumulicola / Foothill Sedge	1 gal	LOW
	HEL SEM	129	Helictotrichon sempervirens / Blue Oat Grass	1 gal	LOW
	MUH CAP	45	Muhlenbergia capillaris / Pink Muhly	1 gal	LOW

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	WATER USE	SPACING
GROUND COVERS						
	BAC PEA	26	Baccharis pilularis `Twin Peaks` / Twin Peaks Coyote Brush	1 gal	LOW	48" o.c.
	COT LOW	168	Cotoneaster dammeri `Lowfast` / Lowfast Bearberry Cotoneaster	1 gal	LOW	60" o.c.
	LAN PAP	99	Lantana `Paparazzi` / Spreading Lantana	1 gal	LOW	48" o.c.
	LAV MUN	61	Lavandula angustifolia `Munstead` / Munstead English Lavender	1 gal	LOW	36" o.c.
	MAH REP	136	Mahonia repens / Creeping Oregon Grape	1 gal	LOW	48" o.c.
	NAN HAR	101	Nandina domestica 'Harbour Dwarf' / Harbour Dwarf Heavenly Bamboo	1 gal	LOW	30" o.c.
	PEN MAR	228	Penstemon heterophyllus 'Margarita BOP' / Margarita BOP Penstemon	1 gal	LOW	24" o.c.
	ROS COR	126	Rosa x 'Meidrifora' / Coral Drift Groundcover Rose	2 gal	LOW	42" o.c.
	SAL BEE	111	Salvia x `Bee`s Bliss` / Bee`s Bliss Sage	1 gal	LOW	36" o.c.

2 MED

0' 40' 20' 80'

NORTH

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LANDSCAPE ARCHITECTURE

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AUBURN, CALIFORNIA 95603
530.885.0040
www.yamasaki-la.com

LANDSCAPE DEVELOPMENT PLANS

DRY CREEK WASTEWATER TREATMENT PLANT

1800 BOOTH ROAD
ROSEVILLE, CA

CITY OF ROSEVILLE

Project Mgr: TVZ

Drawn By: EJS

Scale: 1" = 20'

Date: 05/29/2024

File Name: DCWT-PL

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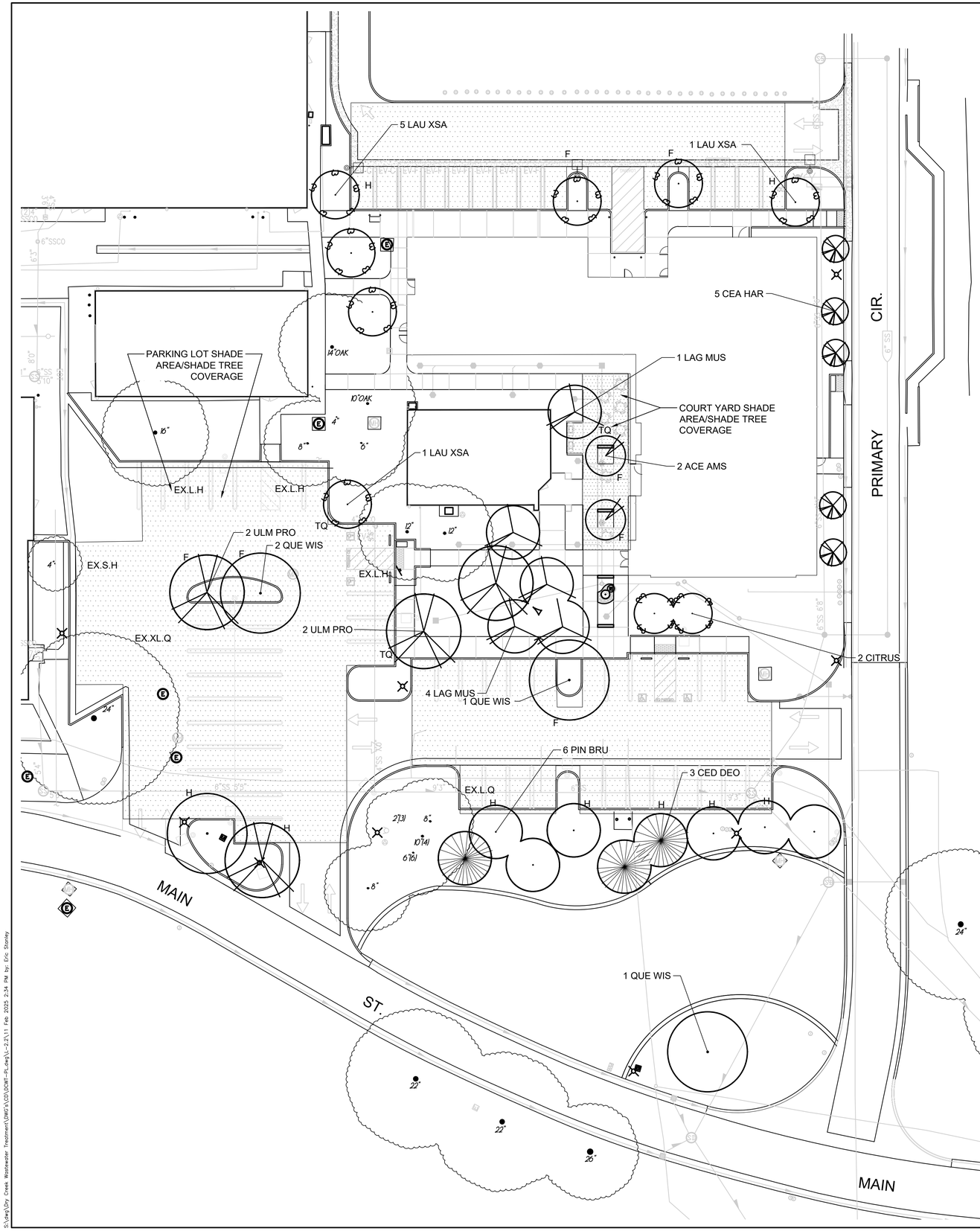
BID SET
PLANTING PLAN

Sheet No

L-2.1

BID SET (PRELIMINARY)

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PARKING LOT SHADE CALCULATIONS

TREE CODE	SHADE (SF)	QTY	(F)100%	QTY	(TQ)75%	QTY	(H)50%	QTY	(Q)25%
CED DEO	962		0		0	1	481		0
LAU XSA	707	2	1414	1	530	2	707		0
PIN HAL	707		0		0	4	1414		0
QUE WIS	962	2	1924		0	1	481		0
ULM PRO	962	1	962	1	722	1	481		0
(E) S TREE	240		0		0	1	120		0
(E) L TREE	962		0		0	3	1443	1	241
(E) XL TREE	3180		0	1	2385		0		0

PARKING LOT AREA (SF)	26,340
SHADE REQUIRED (50%)	13,170
SHADE PROVIDED (SF)	13,304
SHADE PROVIDED	50.5%

COURT YARD SHADE CALCULATIONS

TREE CODE	SHADE (SF)	QTY	(F)100%	QTY	(TQ)75%	QTY	(H)50%	QTY	(Q)25%
ACE AMS	314	2	628		0		0		0
LAG MUS	314		0		0	1	157		0

COURT YARD AREA (SF)	1,265
SHADE REQUIRED (20%)	253
SHADE PROVIDED (SF)	785
SHADE PROVIDED	62.1%

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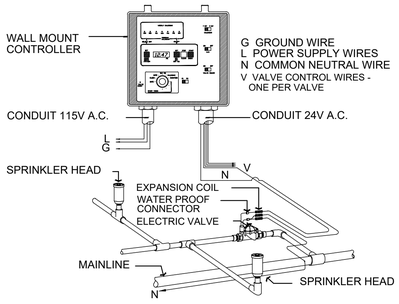
BID SET
PLANTING CALCULATIONS

Sheet No

L-2.2

BID SET (PRELIMINARY)

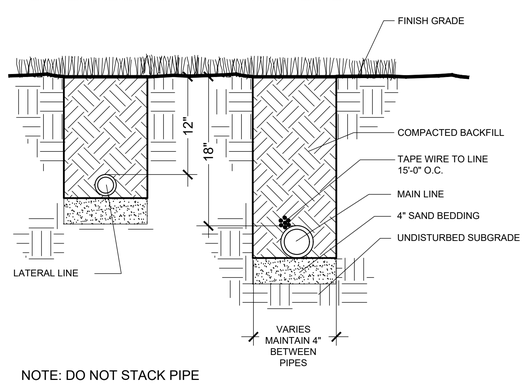
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NOTE:
MOUNT CONTROLLER TO WALL STUDS WITH FOUR EACH 3/8" X 3" MINIMUM GALVANIZED LAG SCREWS, IMBED 2" MIN.

CONTROLLER INSTALLATION (A)

CTRL1 SCALE: N.T.S.



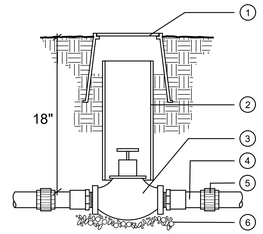
NOTE: DO NOT STACK PIPE ON TOP OF OTHER PIPE.

IRRIGATION TRENCH (B)

TRNCH1 SCALE: N.T.S.

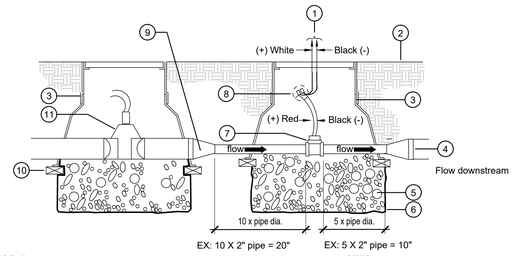
LEGEND

1. 9" VALVE BOX
2. 6" PVC SLEEVE
3. GATE VALVE
4. IRRIGATION MAINLINE
5. PVC UNION
6. PEAGRAVEL SUMP 6" MIN.



GATE VALVE (C)

VLV-GATE SCALE: N.T.S.



LEGEND

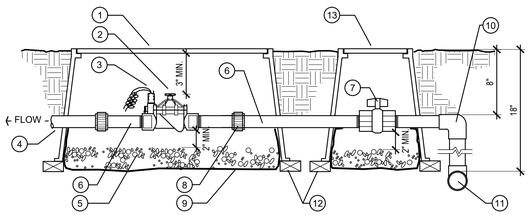
1. SENSOR CABLE - TWO #20 FOIL SHIELD W/DRAIN, BLACK JACKET, DIRECT BURIAL BLACK, WHITE. ALLOW 2' OF EXTRA CABLE.
2. FINISHED GRADE OR SURFACE.
3. VALVE BOX WITH EXTENSIONS AS REQUIRED.
4. FITTING OR REDUCING COUPLING AT DISTANCE EQUAL TO 5 X PIPE DIAMETER FROM FLOW SENSOR.
5. 3/4 " PEA GRAVEL SUMP, 6" DEEP.
6. FILTER FABRIC.
7. FLOW SENSOR BODY.
8. WATERPROOF CONNECTIONS * NOTE POLARITY ON SENSOR TO SENSOR CABLE HOOKUP.
9. FITTING OR REDUCING COUPLING AT DISTANCE EQUAL TO 10 X PIPE DIAMETER FROM FLOW SENSOR.
10. STANDARD BRICK.
11. MASTER VALVE.

NOTES:

- NOTE: FLOW SENSOR MUST BE INSTALLED WITH INSERT (TOP) POSITIONED VERTICALLY AND BODY (TEE) POSITIONED HORIZONTALLY.
- NOTE: FLOW SENSOR CABLE MUST BE RUN IN 1" PVC CONDUIT FROM FLOW SENSOR TO CONTROLLER ENGLOSURE.
- NOTE: CONTRACTOR TO FOLLOW ALL MASTER VALVE AND FLOW SENSOR COMPANIES' DETAILS AND INSTALLATION PROCEDURES FOR INSTALLATION.

FLOW SENSOR/MASTER VALVE (D)

FLW-SENS-MST-VLV SCALE: N.T.S.



LEGEND

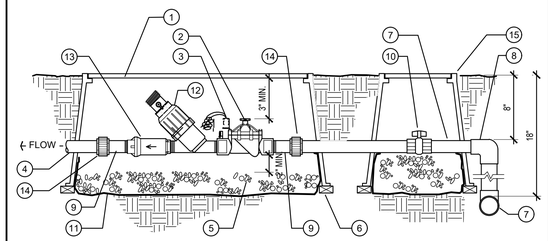
1. JUMBO RECTANGULAR VALVE BOX (15"x21")
2. REMOTE CONTROL VALVE
3. SOLENOID
4. PVC LATERAL
5. 6" PEA GRAVEL SUMP
6. PVC SCH 80 TOE NIPPLE, TYP.
7. PVC BALL VALVE
8. SCH. 80 PVC UNION, TYP.
9. FILTER FABRIC
10. SCH. 80 ST ELL
11. PVC MAIN LINE
12. STANDARD BRICK (3 5/8"x2 1/4"x8")
13. 10" ROUND VALVE BOX

NOTES:

- USE TEFLON TAPE ON ALL THREADED MANIFOLD COMPONENTS
- USE A PVC BALL VALVE WITH EVERY VALVE OR MANIFOLD OF VALVES.
- LINE SUMP WITH FILTER FABRIC AND LEAVE EXPOSED ABOVE GRAVEL 2" MIN.

REMOTE CONTROL VALVE (E)

VLV-RMT-2 SCALE: N.T.S.



LEGEND

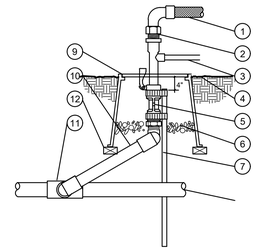
1. RECTANGULAR VALVE BOX
2. REMOTE CONTROL VALVE
3. SOLENOID
4. PVC LATERAL
5. 6" PEA GRAVEL SUMP
6. STANDARD BRICK (3 5/8"x2 1/4"x8")
7. PVC MAINLINE
8. PVC ELL
9. SCH. 80 PVC TOE NIPPLE
10. PVC BALL VALVE
11. FILTER FABRIC
12. FILTER
13. PRESSURE REGULATOR
14. SCH. 80 PVC UNION, TYP.
15. 10" ROUND VALVE BOX

NOTES:

- ¾" - 1" VALVES, USE 15"X21" VALVE BOX
- 1 ½" VALVE, USE 17"X30" VALVE BOX
- USE TEFLON TAPE ON ALL THREADED MANIFOLD COMPONENTS
- USE A PVC BALL VALVE WITH EVERY VALVE
- LINE SUMP WITH FILTER FABRIC AND LEAVE EXPOSED OVER GRAVEL 2" MIN.

REMOTE CONTROL VALVE FOR DRIP (F)

VLV-PRVF-2 SCALE: N.T.S.

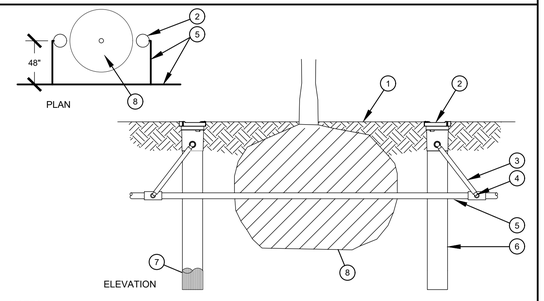


LEGEND

1. GARDEN HOSE
2. SWIVEL HOSE ELL
3. COUPLER
4. FINISHED GRADE
5. QUICK COUPLING VALVE
6. 6" MIN. PEA GRAVEL SUMP
7. #4 REBAR WITH HOSE CLAMPS
8. MAINLINE
9. 9" ROUND VALVE BOX
10. PVC SWING JOINT ASSEMBLY
11. TEE
12. STANDARD BRICK, 3 REQUIRED.

QUICK COUPLING VALVE (G)

VLV-QKCPL SCALE: N.T.S.



NOTES:

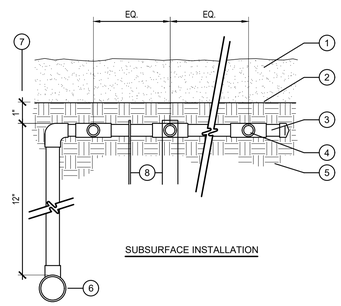
1. POSITION 2 UNITS EVENLY SPACED AROUND TREE. FOR NEW TREES PLACE 24" AWAY FROM TRUNK. FOR EXISTING TREES PLACE HALF THE DISTANCE BETWEEN CANOPY EDGE AND TREE TRUNK.
2. INSTALL PRODUCT WITH TOP EVEN WITH GROUND SURFACE.
3. WHEN INSTALLING IN EXTREMELY HARD OR CLAY SOILS, ADD 3/4" (1,9 CM) GRAVEL UNDER AND AROUND THE UNIT TO ALLOW FASTER WATER INFILTRATION AND ROOT PENETRATION.
4. ONCE UNIT HAS BEEN INSTALLED, FILL THE BASKET WITH PEA GRAVEL BEFORE LOCKING LID.
5. OPTIONAL SOCK FOR USE IN SANDY SOILS; CONTRACTOR TO DETERMINE SOIL TYPE AND INSTALL WITH SOCK IF NECESSARY.

LEGEND

1. FINISH GRADE/TOP OF MULCH
2. ROOT WATERING SYSTEM
3. SWING ASSEMBLY (INCLUDED)
4. 1/2" (1,3 CM) MALE NPT INLET (INCLUDED) PVC SCH 40 TEE OR ELL
5. LATERAL PIPE
6. RIGID BASKET CANISTER (INCLUDED)
7. OPTIONAL SOCK FOR SANDY SOILS
8. TREE ROOT BALL

ROOT WATERING SYSTEM AT TREE (H)

BBLR-RWS SCALE: N.T.S.



SUBSURFACE INSTALLATION

LEGEND

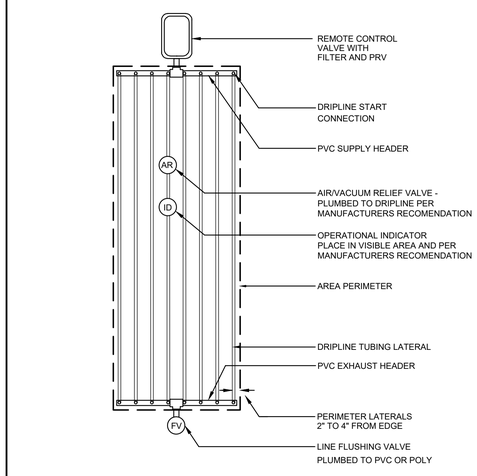
1. MULCH
2. FINISHED GRADE
3. HEADER
4. DRIPLINE, SEE PLANS FOR SPACING
5. SUBGRADE
6. SUPPLY LATERAL
7. DRIPLINE DEPTH
8. STAPLES

NOTES:

- CHOOSE HEADER STYLE BASED ON FLOW AND HEADER LAYOUT REQUIREMENTS.
- STAPLES ARE REQUIRED AT ALL BLANK TUBING HEADERS AND DRIPLINE, PER MANUFACTURES SPECIFICATIONS AND RECOMMENDATIONS.
- STAPLES ARE NOT REQUIRED ON PCV HEADERS.

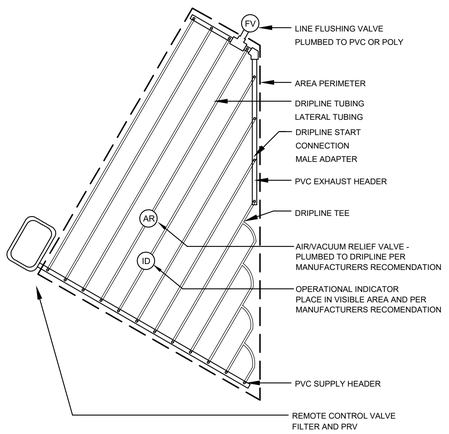
SUBSURFACE HEADER & DRIPLINE INSTALLATION

NTFM-DPTH SCALE: N.T.S.



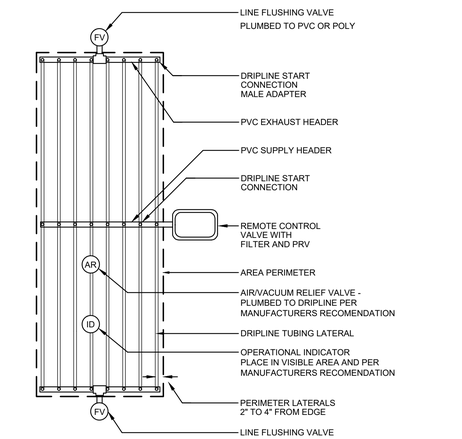
DRIPLINE LAYOUT - END FEED

DRP-END LAY SCALE: N.T.S.



DRIPLINE IRREGULAR AREAS LAYOUT

NTFM-IRR SCALE: N.T.S.



DRIPLINE LAYOUT - CENTER FEED

DRP-MID LAY SCALE: N.T.S.

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Drawn By: EJS

Scale: NTS

Date: 05/29/2024

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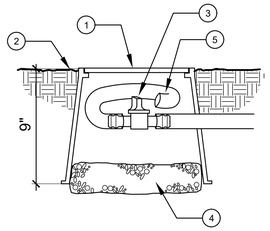
BID SET
IRRIGATION DETAILS

Sheet No

L-3.1

BID SET (PRELIMINARY)

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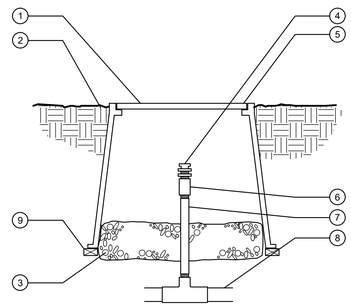
1. 6" ROUND VALVE BOX
2. FINISH GRADE
3. MANUAL LINE FLUSHING VALVE
4. 4" DEEP PEA GRAVEL SUMP
5. 18" OF BLANK DRIP TUBING

NOTES:

- USE TEFLON TAPE ON ALL THREADED MANIFOLD COMPONENTS
- LINE SUMP WITH FILTER FABRIC AND LEAVE EXPOSED OVER GRAVEL 2" MIN.

FLUSH VALVE — A

VLV-FLSH-MAN — SCALE: NTS

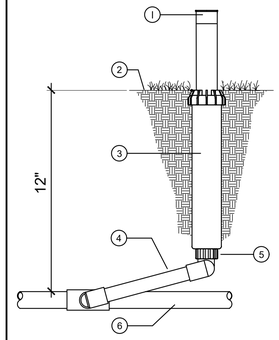


LEGEND

1. 6" ROUND VALVE BOX
2. FINISH GRADE
3. PEA GRAVEL SUMP WRAPPED WITH LANDSCAPE FABRIC 6" DEEP
4. AIR/VACUUM RELIEF VALVE
5. VALVE BOX SET TO 2 3/4" ABOVE GRADE IN PLANTER AREAS, & 1 1/2" ABOVE GRADE IN SOD AREAS.
6. 3/4" PVC COUPLING (TxT)
7. 3/4" SCH 80 RISER
8. PVC PIPING AND FITTINGS
9. STANDARD BRICK

AIR/VACUUM RELIEF — B

NTFM-AIRVAC — SCALE: N.T.S



LEGEND

1. CAP GLUED TO STEM
2. GRADE
3. 12" POP-UP SPRAY BODY
4. SWING JOINT
5. TEFLON TAPE FOR ALL THREADED CONNECTIONS.
6. IRRIGATION SUPPLY PIPE OR DRIP LINE.

NOTES:

- INSTALL IN MULCH BED.
- TO BE PLACED AT THE FARTHEST POINT ON EACH ZONE. IF A ZONE SPLITS PLACE ONE ON EACH SPLIT.
- DO NOT INSTALL WITHIN 5' OF A CURB.

OPERATION MONITOR — C

OPR-MON — SCALE: N.T.S.

D

E

F

G

H

I

J

K

L

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Seal



Sheet Title

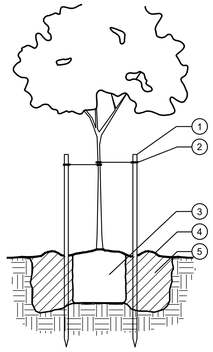
BID SET
IRRIGATION DETAILS

Sheet No

L-3.2

BID SET (PRELIMINARY)

S:\dwg\Dry Creek Wastewater Treatment\DWG's\CD\DCWT-IRDT.dwg\L-3.2\11 Feb 2025 2:34 PM by: Eric Stanley

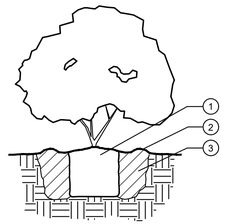


LEGEND
1. TREE STAKE
2. TREE TIE
3. ROOTBALL
4. SOIL RING
5. AMENDED BACKFILL

NOTES:
- WIDTH OF HOLE SHALL BE 3 TIMES THE WIDTH OF THE ROOTBALL
- DEPTH OF THE HOLE SHALL BE HEIGHT OF THE ROOTBALL WITH 1 1/2" OF TOP OF ROOTBALL HIGHER THAN SURROUNDING FINISH GRADE
- CUT TREE STAKES WITHIN 2" OF TIES
- WATER BACKFILL HEAVILY TO REDUCE AIR POCKETS
- REMOVE NURSERY STAKE PRIOR TO THE END OF THE MAINTENANCE PERIOD
- MAINTAIN A MINIMUM DISTANCE OF 18" BETWEEN EDGE OF LAWN AND TRUNK OF TREE(S)

TREE PLANTING AND STAKING (A)

PLT-TREE1 SCALE: N.T.S.

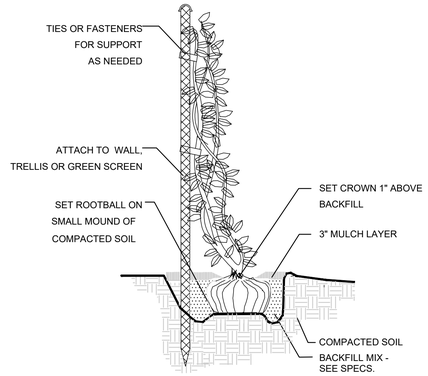


LEGEND
1. ROOTBALL
2. SOIL RING
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NOTES:
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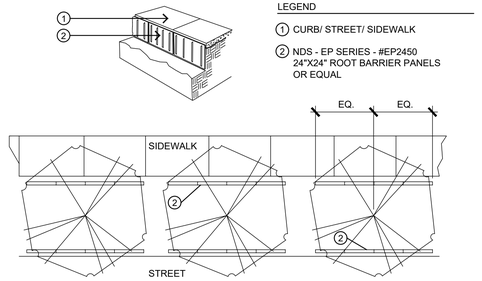
SHRUB PLANTING (B)

PLT-SHRB1 SCALE: N.T.S.



VINE PLANTING (C)

PLT-VINE SCALE: N.T.S.

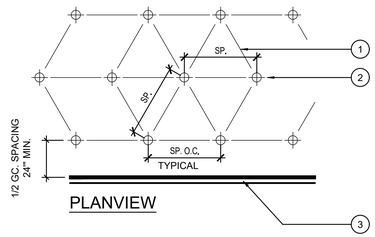


LEGEND
1. CURB/ STREET/ SIDEWALK
2. NDS - EP SERIES - #EP2450 24"X24" ROOT BARRIER PANELS OR EQUAL

NOTES:
- INSTALL (4) 24" PANELS ON EACH SIDE OF TREE
- CENTER THE PANELS ON TRUNK OF TREE
- ROOT BARRIERS ARE REQUIRED IN ALL LOCATIONS WHERE TREES ARE PLACED CLOSER THAN 48" FROM CURBS, SIDEWALKS, CONCRETE OR ASPHALT, AND WHERE SHOWN ON PLANS
- SET TOP OF ROOT BARRIER 4" BELOW TOP OF WALK OR CURB, OR 2" BELOW FINISHED GRADE, WHICHEVER IS LOWER.

TREE ROOT BARRIER (D)

PLT-BARR SCALE: N.T.S.

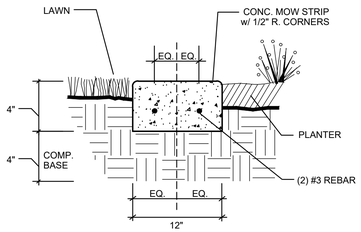


PLANVIEW

LEGEND
1. GROUNDCOVER SPACING PER PLANT SCHEDULE.
2. GROUNDCOVER CENTERS.
3. WALL, WALK OR EDGE OF GROUNDCOVER PLANTING.

GROUNDCOVER PLANTING (E)

PLT-GRDCVR SCALE: N.T.S.



FIELD VERIFY AND MATCH EXISTING MOW CURB WIDTH

NOTE
- PLACE 1/2" WIDE PRE-FORMED FIBER EXPANSION JOINTS AT 15' O.C.
- IF EXTRUDED USE FIBER MESH. IF POURED IN PLACE USE (2) #3 REBAR CONTINUOUS EQUALLY SPACED IN MIDDLE OF MOW STRIP
- MOW STRIP SHALL BE FLUSH WITH ADJOINING WALK OR CURB
- CONCRETE TO BE CLASS A

12" CONCRETE MOW STRIP (F)

CONC MS SCALE: N.T.S.



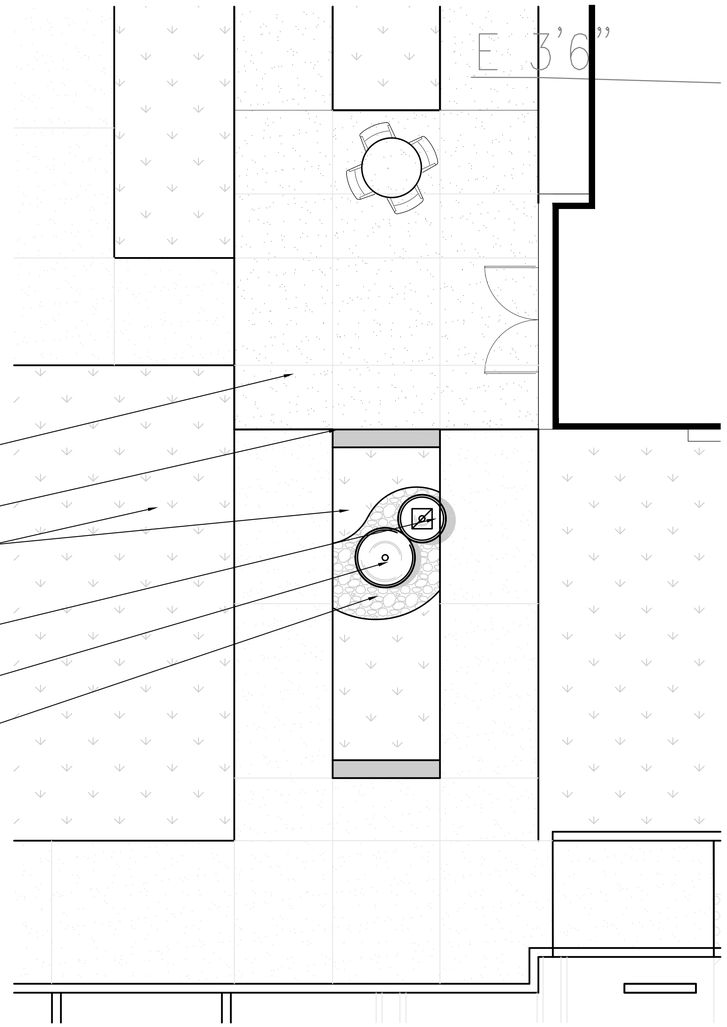
FOUNTAIN



AXONOMETRIC SKETCH OF WATER FEATURE

NOTES:

1. FOUNTAIN: AQUASCAPE SPILLWAY BOWL AND BASIN FOUNTAIN KIT 32"/40" DIAMETER (SKU 58087). FOUNTAIN KIT IS SELF CONTAINED AND RE-CIRCULATING. AQUASCAPEINC.COM 866.877.6637
2. POWER SUPPLY TO BE HARD-WIRED WITH OUTDOOR-RATED WATERPROOF JUNCTIONS. TIMER AND MANUAL CONTROLS SHALL BE INSTALLED IN LOCATION TO BE DETERMINED BY OWNER IN THE FIELD.
3. CONTRACTOR TO PROVIDE SHOP DRAWING SUBMITTAL SHOWING FOUNTAIN SPECIFICATIONS, SUBGRADE PREPARATION, POWER SUPPLY, CONTROLS, WATER SUPPLY, AND AUTOMATIC REFILL FLOAT.
4. CONTRACTOR TO SUBMIT ONE-QUART SAMPLE OF DECORATIVE COBBLE FOR OWNER'S APPROVAL PRIOR TO SUBMITTING.
5. SPECIFY AND INSTALL WATER FEATURE PER LOCAL CODE.



WATER FEATURE

DCWWTP-WaterFeature.dwg SCALE: 1/4" = 1'-0"

YAMASAKI
LANDSCAPE ARCHITECTURE

1223 HIGH STREET
AUBURN, CALIFORNIA 95603
530.885.0040
www.yamasaki-la.com

LANDSCAPE DEVELOPMENT PLANS

DRY CREEK WASTEWATER TREATMENT PLANT

1800 BOOTH ROAD
ROSEVILLE, CA

CITY OF ROSEVILLE

Project Mgr: TVZ
Drawn By: EJS
Scale: NTS
Date: 05/29/2024
File Name: DCWT-PLDT

No.	Date	Revision
1	08/28/2024	REVISION
2	10/23/2024	PC COMMENTS
3	02/12/2025	BID SET

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Seal



Sheet Title
BID SET
PLANTING DETAILS

Sheet No
L-3.3

BID SET (PRELIMINARY)

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YAMASAKI

Irrigation Division
Irrigation Audit Services (CLIA)
LEED Certified Landscape Design
AB1881 Compliance Documentation

PROJECT INFORMATION

Project Name: Dry Creek Waste Water Treatment **Date:** 10/22/2024

Project Contact:	Applicant:	Yamasaki Landscape Architecture
		1223 High Street, Auburn, CA 95603
		(530) 885-0040
	Contact:	Jeff Ambrosia
	Owner:	City of Roseville
Project Address:		1800 Booth Road
		Roseville, CA

Project Type:	New Public Project
Local Water Purveyor:	Dry Creek Waste Water Treatment Plant
Water Supply:	Recycled Water (purple pipe)

Total Landscape Area:	25,545 s.f.
Maximum Applied Water Allowance:	372,032 gallons
Estimated Total Water Use:	298,629 gallons

Document Check List:

- ☑ Project Information
- ☑ Water Efficient Landscape Worksheet
- ☐ Soil Management Report
- ☑ Landscape Design Plan
- ☑ Irrigation Design Plan
- ☐ Grading Design Plan

Applicant Signature — Date: 10/22/2024

"I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package. "

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Irrigation Division
Irrigation Audit Services (CLIA)
LEED Certified Landscape Design
AB1881 Compliance Documentation

Water Efficient Landscape Worksheet
Section A: Hydrozone Information Sheet

Zone or Valve #	Irrigation Method	Area (Sq.Ft.)	% of Landscape Area
1	Bubbler	160	1%
2	Bubbler	320	1%
3	Bubbler	120	0%
4	Bubbler	480	2%
5	Bubbler	120	0%
6	Bubbler	400	2%
7	Bubbler	160	1%
8	Drip	2,376	9%
9	Drip	680	3%
10	Drip	1,451	6%
11	Drip	675	3%
12	Drip	896	4%
13	Drip	1,775	7%
14	Drip	797	3%
15	Drip	2,212	9%
16	Drip	3,080	12%
17	Drip	821	3%
18	Drip	3,195	13%
19	Drip	2,266	9%
20	Drip	1,485	6%
21	Drip	686	3%
22	Spray	1,390	5%
			0%
		Total Area (Sq.Ft.)	Total (%)
Total Landscape Area		25,545	100%

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Irrigation Audit Services (CLIA)
LEED Certified Landscape Design
AB 1881 Compliance Documentation

Water Efficient Landscape Worksheet
Section B. Water Budget Calculation

Maximum Applied Water Allowance (MAWA)

Project ETo City: Roseville

MAWA = (ETo) (0.62) [(0.45 x LA) + (0.55 x SLA)

Insert: Where:

52.20 — MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration (inches per year)
0.45= ET Adjustment Factor (ETAF)(AB 1881 Dec 1, 2015)
25,545 — LA = Landscape Area includes Special Landscape Area (Sq.Ft.)
0.62 = Conversion Factor (to gallons per Sq.Ft.)
0 — SLA = Special Landscape Area (Sq.Ft.)
0.55= The additional ET Adjustment Factor for SLA (1.0-0.45=0.55)

MAWA = 52.2 (0.62) [(0.45x 25,545 + (0.55x 0)

Maximum Applied Water Allowance: **372,032** Gal. / Yr

YAMASAKI

Irrigation Division
Irrigation Audit Services (CLIA)
LEED Certified Landscape Design
AB 1881 Compliance Documentation

Water Eficient Landscape Worksheet
Section B. Water Budget Calculation

Estimated Total Water Use (ETWU)

Valve / Hydrozone	Plant Water Use	Plant Factor (PF)	IE	ETAF (PF/IE)	Area (HA) (Sq.Ft.)	ETAF x Area	Estimated Total Water Use
1	High (H)	0.8	0.81	0.99	160	158	5,114
2	Low (L)	0.2	0.81	0.25	320	79	2,557
3	Low (L)	0.2	0.81	0.25	120	30	959
4	Low (L)	0.2	0.81	0.25	480	119	3,836
5	Moderate (M)	0.5	0.81	0.62	120	74	2,397
6	Low (L)	0.2	0.81	0.25	400	99	3,196
7	Low (L)	0.2	0.81	0.25	160	40	1,279
8	Low (L)	0.2	0.81	0.25	2,376	587	18,987
9	Low (L)	0.2	0.81	0.25	680	168	5,434
10	Low (L)	0.2	0.81	0.25	1,451	358	11,595
11	Low (L)	0.2	0.81	0.25	675	167	5,394
12	Low (L)	0.2	0.81	0.25	896	221	7,160
13	Low (L)	0.2	0.81	0.25	1,775	438	14,184
14	Low (L)	0.2	0.81	0.25	797	197	6,369
15	Low (L)	0.2	0.81	0.25	2,212	546	17,676
16	Low (L)	0.2	0.81	0.25	3,080	760	24,613
17	Low (L)	0.2	0.81	0.25	821	203	6,561
18	Low (L)	0.2	0.81	0.25	3,195	789	25,532
19	Moderate (M)	0.5	0.81	0.62	2,266	1,399	45,270
20	Moderate (M)	0.5	0.81	0.62	1,485	917	29,667
21	Low (L)	0.2	0.81	0.25	686	169	5,482
22	High (H)	0.8	0.65	1.23	1,390	1,711	55,367
Total				SUM	25,545	9,227	
							298,629
Special Landscape Areas							
	High (H)	0.8	0.75	1.00		0	0
Total SLA				SUM	0	0	0
						Project Eto	52.2
ETWU =(ETo)(0.62)x(PF x HA + SLA)						Regular Landscape ETWU	298,629
IE						Average ETAF	0.36
						SLA ETWU	0
						Sitewide ETAF	0.36
Max Applied Water Allowance	*372,032*					**Estimated Total Water Use**	298,629

HYDROZONE INFORMATION / CONTROLLER SCHEDULE

VALVE NUMBER	LANDSCAPE COEFFICIENT Kl=Ks*Kmc*Kd	VEGETATION TYPE	IRRIGATION METHOD	PRECIPITATION RATE (INCH/HR)	ESTABLISHMENT PERIOD — MINUTES PER RUN TIME | RUN TIMES PER DAY | DAYS PER WEEK												ESTABLISHED PERIOD — MINUTES PER RUN TIME | RUN TIMES PER DAY | DAYS PER WEEK											
					SPRING			SUMMER			FALL			WINTER			SPRING			SUMMER			FALL			WINTER		
1	0.7	TREES	BUBBLER	1.9	14	1	3	17	1	4	14	1	3	13	1	1	14	1	2	15	1	3	14	1	2	8	1	1
2	0.7	TREES	BUBBLER	1.9	14	1	3	17	1	4	14	1	3	13	1	1	14	1	2	15	1	3	14	1	2	8	1	1
3	0.7	TREES	BUBBLER	1.9	14	1	3	17	1	4	14	1	3	13	1	1	14	1	2	15	1	3	14	1	2	8	1	1
4	0.7	TREES	BUBBLER	1.9	14	1	3	17	1	4	14	1	3	13	1	1	14	1	2	15	1	3	14	1	2	8	1	1
5	0.7	TREES	BUBBLER	1.9	14	1	3	17	1	4	14	1	3	13	1	1	14	1	2	15	1	3	14	1	2	8	1	1
6	0.22	TREES	BUBBLER	1.9	4	1	3	5	1	4	4	1	3	4	1	1	4	1	2	5	1	3	4	1	2	3	1	1
7	0.22	TREES	BUBBLER	1.9	4	1	3	5	1	4	4	1	3	4	1	1	4	1	2	5	1	3	4	1	2	3	1	1
8	0.22	SHRUBS	DRIP	0.43	29	1	2	32	1	3	29	1	2	17	1	1	39	1	1	32	1	2	39	1	1	12	1	1
9	0.22	SHRUBS	DRIP	0.43	29	1	2	32	1	3	29	1	2	17	1	1	39	1	1	32	1	2	39	1	1	12	1	1
10	0.22	SHRUBS	DRIP	0.43	29	1	2	32	1	3	29	1	2	17	1	1	39	1	1	32	1	2	39	1	1	12	1	1
11	0.22	SHRUBS	DRIP	0.43	29	1	2	32	1	3	29	1	2	17	1	1	39	1	1	32	1	2	39	1	1	12	1	1
12	0.22	SHRUBS	DRIP	0.43	29	1	2	32	1	3	29	1	2	17	1	1	39	1	1	32	1	2	39	1	1	12	1	1
13	0.2	SHRUBS	DRIP	0.43	27	1	2	29	1	3	27	1	2	16	1	1	35	1	1	29	1	2	35	1	1	11	1	1
14	0.2	SHRUBS	DRIP	0.43	27	1	2	29	1	3	27	1	2	16	1	1	35	1	1	29	1	2	35	1	1	11	1	1
15	0.2	SHRUBS	DRIP	0.43	27	1	2	29	1	3	27	1	2	16	1	1	35	1	1	29	1	2	35	1	1	11	1	1
16	0.2	SHRUBS	DRIP	0.43	27	1	2	29	1	3	27	1	2	16	1	1	35	1	1	29	1	2	35	1	1	11	1	1
17	0.2	SHRUBS	DRIP	0.43	27	1	2	29	1	3	27	1	2	16	1	1	35	1	1	29	1	2	35	1	1	11	1	1
18	0.2	SHRUBS	DRIP	0.43	27	1	2	29	1	3	27	1	2	16	1	1	35	1	1	29	1	2	35	1	1	11	1	1
19	0.2	SHRUBS	DRIP	0.43	27	1	2	29	1	3	27	1	2	16	1	1	35	1	1	29	1	2	35	1	1	11	1	1
20	0.2	SHRUBS	DRIP	0.43	27	1	2	29	1	3	27	1	2	16	1	1	35	1	1	29	1	2	35	1	1	11	1	1
21	0.2	COOL TURF	SPRAY	0.5	11	1	4	11	1	7	11	1	4	14	1	1	15	1	2	17	1	3	15	1	2	9	1	1
		TOTAL RUN TIME (HOURS)			7.5			8.4			7.5			5.0			9.5			8.3			9.5			3.3		

YAMASAKI
LANDSCAPE ARCHITECTURE

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AUBURN, CALIFORNIA 95603
530.885.0040
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LANDSCAPE DEVELOPMENT PLANS

DRY CREEK WASTEWATER TREATMENT PLANT

1800 BOOTH ROAD
ROSEVILLE, CA

CITY OF ROSEVILLE

Project Mgr: TVZ

Drawn By: EJS

Scale: NTS

Date: 05/29/2024

File Name: DCWT-IRDT

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Seal

LICENSED LANDSCAPE ARCHITECT — TIMOTHY V. ZARO — No. 6126 — STATE OF CALIFORNIA — Signature — Renewal Date: 02/11/25

Sheet Title

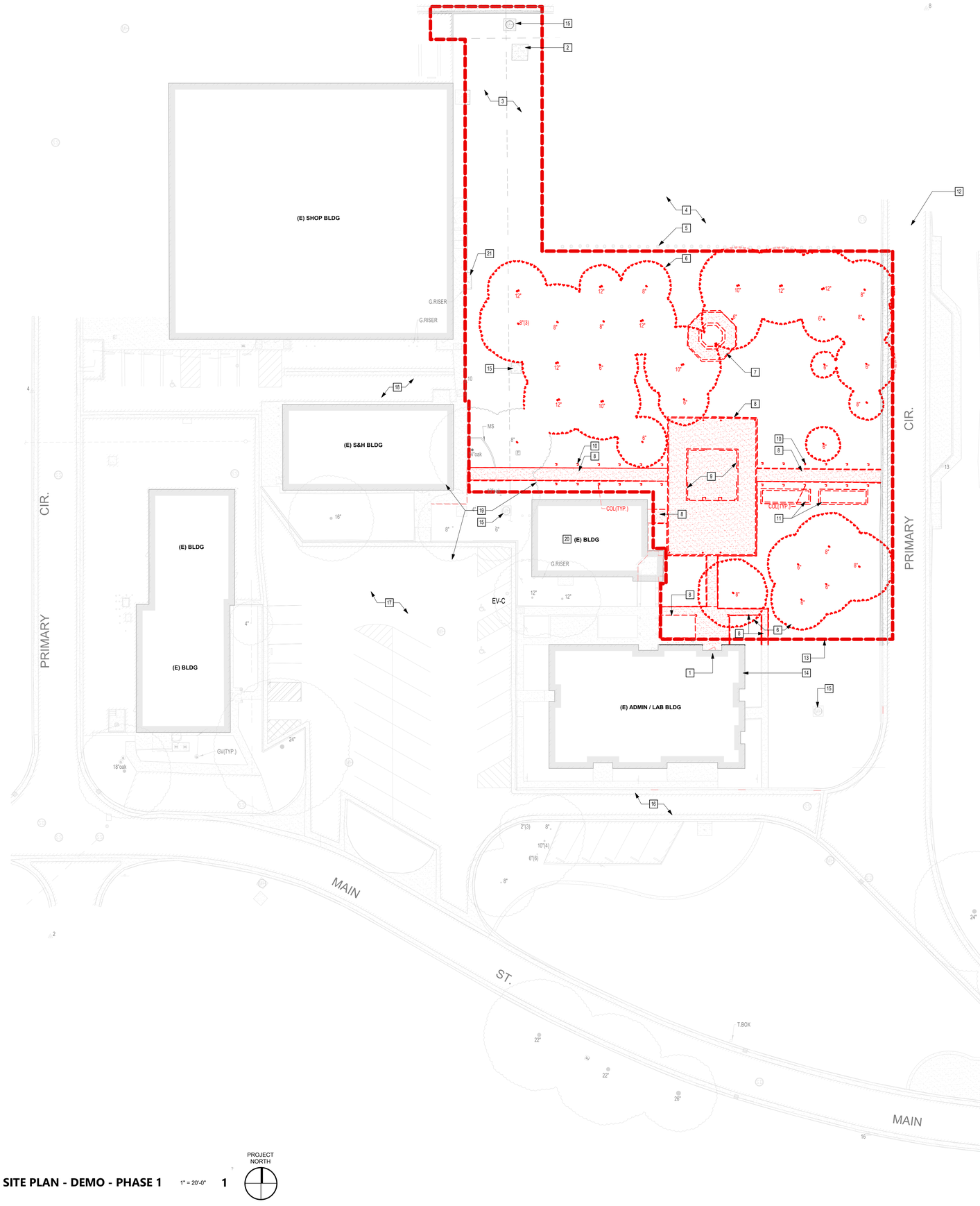
BID SET
IRRIGATION CALCULATIONS

Sheet No

2 L-3.4

BID SET (PRELIMINARY)

S:\dwgs\Dry Creek Wastewater Treatment\DWG's\CD's\DCWT-IRDT.dwg\L-3.4\11 Feb 2025 2:34 PM by: Eric Stanley



SHEET NOTES AS-101

1 COORDINATE (E) BUILDING EGRESS W/GC OPERATIONS
2 (E) ELECTRICAL VAULT TO REMAIN, SEE CIVIL
3 (F) ROADWAY, SEE CIVIL FOR GRADING AND DEMOLITION
4 (E) EVAPOTRANSPIRATION BED TO REMAIN
5 (E) EVAPOTRANSPIRATION BED CLEANOUTS TO REMAIN
6 (E) TREES TO BE REMOVED, REFER TO CIVIL AND LANDSCAPE PLANS
7 (E) FOUNTAIN TO BE DEMOLISHED
8 (E) FLATWORK TO BE DEMOLISHED
9 (E) STRUCTURE TO BE DEMOLISHED
10 (E) WALKWAY COVER AND SUPPORTING STRUCTURE TO BE DEMOLISHED
11 (E) PLANTERS TO BE DEMOLISHED
12 (E) SITE ROADWAY TO REMAIN
13 APPROXIMATE EXTENTS OF PHASE 1
14 (E) ADMINISTRATION BUILDING TO REMAIN OPERATIONAL INCL ACCESS TO VISITOR LOBBY
15 (E) COMM VAULT TO REMAIN, COORDINATE ALL WORK W/OWNER
16 (E) DRIVE AISLE TO REMAIN
17 (E) DRIVE AISLE AND PARKING AREA TO REMAIN IN PHASE 1
18 (E) PAVING TO REMAIN
19 (E) TREES TO REMAIN; PROTECT IN PLACE
20 (E) BUILDING TO REMAIN OPERATIONAL DURING CONSTRUCTION; MAINTAIN ACCESS AND ALL SERVICES
21 (E) GENERATOR TO REMAIN, SEE PLANS

LEGEND - SITE PLAN

- ASSUMED PROPERTY LINE
- LIMITS OF WORK
- PROJECT AREA
- (N) CONCRETE PAVING
  - EXPANSION JOINT PER
  - CONTROL JOINT PER
- (N) ASPHALT CONCRETE PAVING
- (E) BUILDING
- LANDSCAPING

PATH OF TRAVEL (P.O.T.)

- AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE
- IS AT LEAST 48" WIDE.
- NO ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL.
- THE PATH SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH.
- PASSING SPACES (11B-403.2) AT LEAST 60"x60" ARE LOCATED NOT MORE THAN 200' APART.
- PARTS OF P.O.T. WITH CONTINUOUS GRADIENTS HAVE 60" LEVEL AREAS (11B-403.7) NOT MORE THAN 400' APART.
- THE CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
- (POT) SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80" (11B-307).
- ARCHITECT SHALL VERIFY PATH OF TRAVEL CONFORMS WITH THE ABOVE.

- FENCE LINE
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION

3 AS-601 | 7 AS-601

SITE PLAN - DEMO - PHASE 1 1" = 20'-0" 1

PROJECT NORTH

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOWERS — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE DEMO-PHASE 1

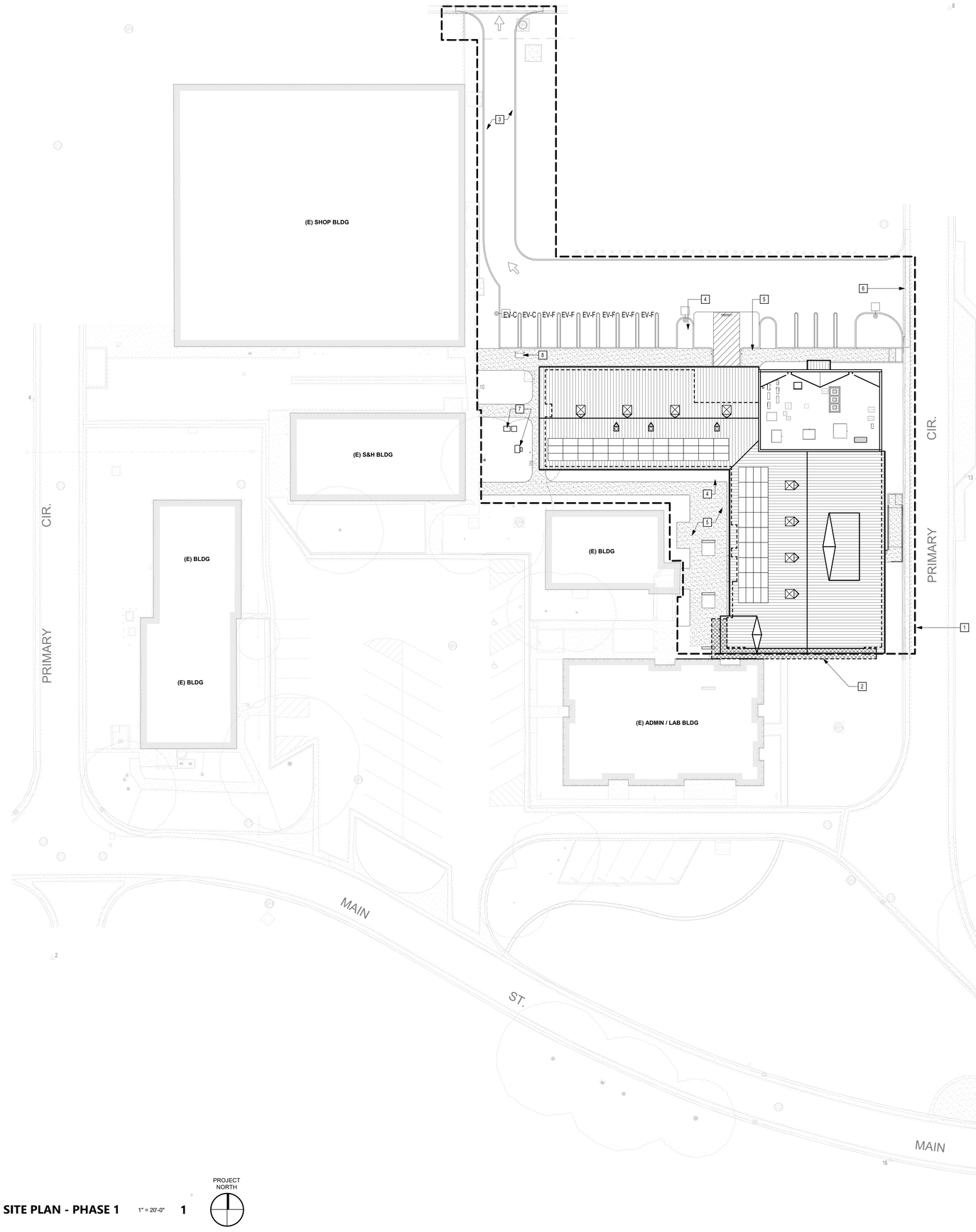
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
AS-101

DATE: May 29, 2024

BID SET (PRELIMINARY)

DATE PLOTTED: 10/31/2024 12:01:43 PM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt



SHEET NOTES AS-102

1 APPROXIMATE EXTENTS OF PHASE 1
2 BUILDING CANOPY, INSTALLATION PHASE AT DISCRETION OF GENERAL CONTRACTOR
3 (N) ONE-WAY DRIVE AISLE; SEE CIVIL PLANS
4 (N) LANDSCAPE, SEE LANDSCAPE PLANS FOR PHASING AND ADDT'L INFORMATION
5 (N) LANDSCAPE, SEE LANDSCAPE PLANS FOR PHASING AND ADDT'L INFORMATION
6 (N) DRIVEWAY ACCESS FROM (E) ROAD
7 (N) ELECTRIC EQUIPMENT, SEE ELEC PLANS
8 (N) EVCS, SEE ELEC PLANS

SITE PLAN GENERAL NOTES

A. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CBC, TITLE 24, AND ADA.
B. DIMENSIONS INDICATED ARE FOR PLAN REVIEW PURPOSES ONLY; REFER TO CIVIL DRAWINGS FOR HORIZONTAL CONTROL PLAN, DIMENSIONS, SLOPES, BUILDING LOCATIONS, STRUCTURAL PAVING SECTIONS, ETC. TO BE USED FOR CONSTRUCTION.
C. REFER TO CIVIL DRAWINGS FOR FINISH GRADES AND CONFIRM SLOPE PERCENTAGES AS HEREIN NOTED ARE NOT EXCEEDED.
D. VERIFY GRADES AND SLOPES IN FIELD WITH ARCHITECT DURING FORMING AND PRIOR TO CONCRETE OR A.C. PAVING INSTALLATION.
E. VERIFY AND COORDINATE IN FIELD DURING LAYOUT THAT NEW WORK HAS CLEARANCE FROM AND DOES NOT IMPACT EXISTING ITEM OR UTILITY, PRIOR TO START OF WORK.
F. A PAVED ALL-WEATHER FIRE ACESS ROAD DESIGNED TO **CITY OF ROSEVILLE** STANDARD SPECIFICATIONS, AND FIRE HYDRANTS SHALL BE INSTALLED AND IN SERVICE PRIOR TO ANY COMBUSTIBLE CONSTRUCTION MATERIALS BEING BROUGHT ON SITE IN ACCORDANCE WITH [ENTER JURISDICTION] FIRE DEPARTMENT STANDARDS.
G. "EJ" DENOTES CONCRETE FLATWORK EXPANSION JOINT, TYPICAL ALL JOINTS NOT IDENTIFIED AS "EJ" SHALL BE CONTROL JOINTS (CJ) TYPICAL U.N.O.
H. FOR TYPICAL ASPHALT PAVING NOTES, REFER TO: CIVIL PLANS
FOR TYPICAL CONCRETE FLATWORK PAVING NOTES, REFER TO: CIVIL PLANS
I. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR OFF-SITE IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, CURB-GUTTER-SIDEWALK, STREET LIGHTING AND LANDSCAPE IMPROVEMENTS.
J. PROVIDE 12" WIDE CONCRETE MOW STRIP UNDER CHAIN LINK AND DECORATIVE IRON FENCING, TYPICAL; REFER TO SPECIFICATION SECTION 32 13 13.
K. PROTECT ALL EXISTING TREES TO REMAIN. IF ROOTS ARE ENCOUNTERED, NOTIFY ARCHITECT AND OWNER AND REQUEST DIRECTION. ALL ROOTS NEEDING TO BE REMOVED SHALL BE CUT NEAT AND CLEAN WITH A SAW OR PRUNNING CLIPPERS.
L. COORDINATE NEW WORK WITH DEMOLITION WORK. VERIFY EXTENT OF DEMOLITION NEEDED AND CONNECTION OF NEW AND EXISTING WORK PRIOR TO START OF DEMOLITION.
M. NEW CONCRETE SHALL MATCH EXISTING, ADJACENT CONCRETE IN COLOR, TEXTURE AND PATTERN.
N. TRANSITION FROM NEW PAVING/FLATWORK TO EXISTING PAVING/FLATWORK SHALL BE FLUSH, EVEN, LEVEL AND WITH A NEAT, CLEAN, AND STRAIGHT EDGE.
O. THICKNESS OF NEW A.C. PAVING SHALL MATCH EXISTING A.C. PAVING, OR BE A THICKER SECTION.
P. SEE MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS FOR UTILITIES.
Q. REROUT AND RECONENCT EXISTING UTILITIES TO BE IN PROPER AND FULLY FUNCTIONAL WORKING ORDER.
R. COORDINATE LOCATION OF NEW SIGNAGE AND NEW CURBS WITH RESPECT TO (E) TREES, WITH ARCHITECT IN FIELD, PRIOR TO INSTALLATION.
S. REINSTALL LANDSCAPE AND IRRIGATION IN DEMOLISHED AREAS TO MATCH EXISTING, MODIFY LANDSCAPE AND IRRIGATION AT ADJUSTED AREAS AS REQUIRED.
T. INSTALL NEW BASE TO MATCH (E) BASE IF REQUIRED TO ACHIEVE PAVING ELEVATION AND SLOPE. NEW BASE SHALL BE COMPACTED TO 95%.
U. FOR SITE DETAILS REFER TO **AS-601**
V. FOR SITE SIGNAGE DETALS REFER TO **AS-603**
W. **FOR ADDITIONAL SITE DEMOLITION & CONSTRUCTION REFER TO SPECIFICATIONS**

LEGEND - SITE PLAN

ASSUMED PROPERTY LINE

LIMITS OF WORK

PROJECT AREA

(N) CONCRETE PAVING
EXPANSION JOINT PER
CONTROL JOINT PER

3 AS-601 7 AS-601

(N) ASPHALT CONCRETE PAVING

(E) BUILDING

LANDSCAPING

PATH OF TRAVEL (P.O.T.)

- AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE
- IS AT LEAST 48" WIDE.
- NO ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL.
- THE PATH SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH.
- PASSING SPACES (11B-403.2) AT LEAST 60"x60" ARE LOCATED NOT MORE THAN 200' APART.
- PARTS OF P.O.T. WITH CONTINUOUS GRADIENTS HAVE 60" LEVEL AREAS (11B-403.7) NOT MORE THAN 400' APART.
- THE CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
- (POT) SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80" (11B-307).
- ARCHITECT SHALL VERIFY PATH OF TRAVEL CONFORMS WITH THE ABOVE.

X—X—X—X FENCE LINE

FH FIRE HYDRANT

FDC FIRE DEPARTMENT CONNECTION

SITE PLAN - PHASE 1 1" = 20'-0" **1**

PROJECT NORTH

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOWER — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE PLAN CONSTRUCTION PHASE 1

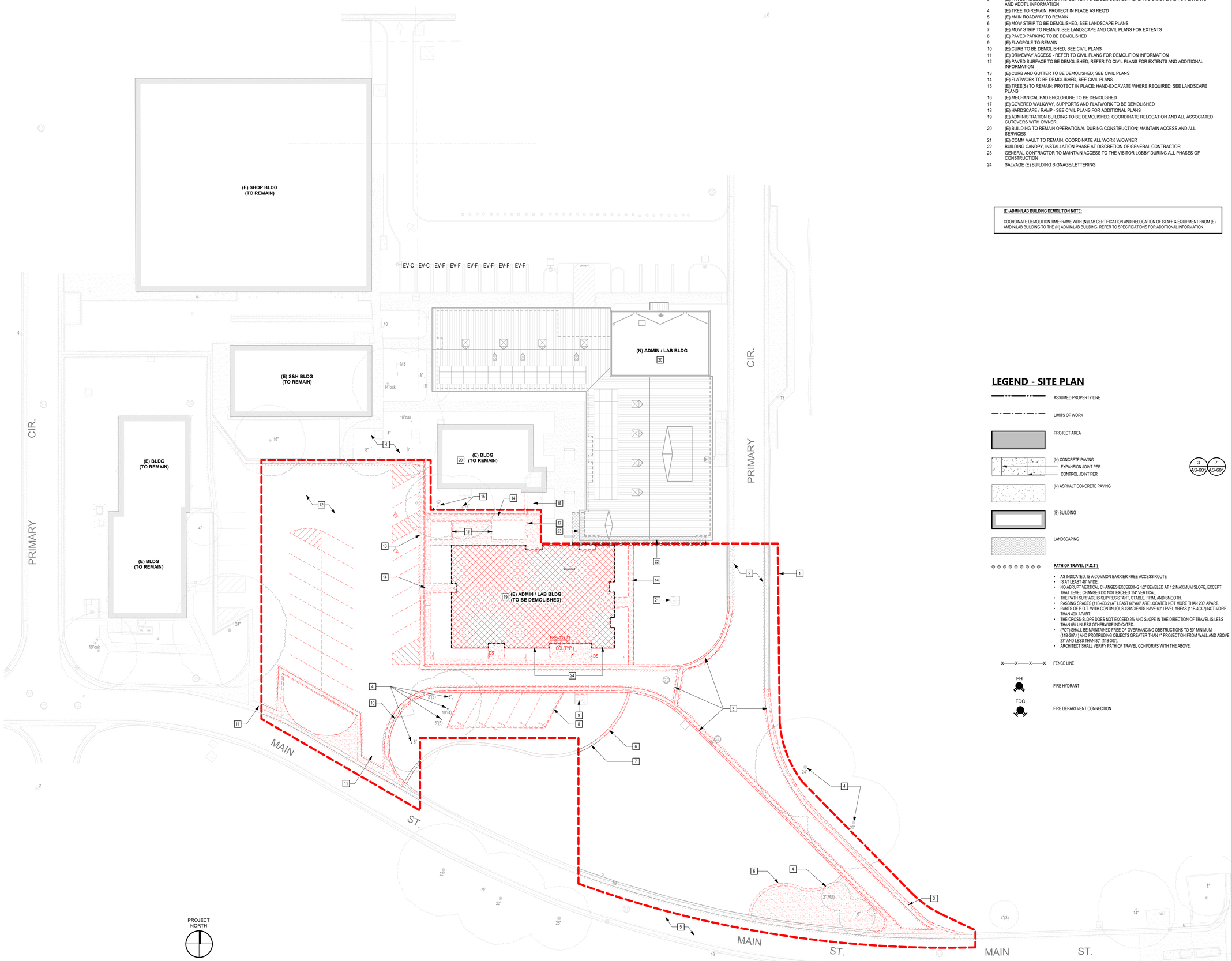
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
AS-102

DATE: May 29, 2024

BID SET (PRELIMINARY)

DATE PLOTTED: 10/31/2024 12:02:55 PM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt



SHEET NOTES AS-103

1 APPROXIMATE EXTENTS OF PHASE 2
2 (E) ROADWAY TO REMAIN; SEE CIVIL FOR EXTENTS
3 (E) PAVED ACCESS, CURB AND GUTTER TO BE DEMOLISHED, REFER TO CIVIL PLANS FOR EXTENTS AND ADDT'L INFORMATION
4 (E) TREE TO REMAIN; PROTECT IN PLACE AS REQ'D
5 (E) MAIN ROADWAY TO REMAIN
6 (E) MOW STRIP TO BE DEMOLISHED, SEE LANDSCAPE PLANS
7 (E) MOW STRIP TO REMAIN; SEE LANDSCAPE AND CIVIL PLANS FOR EXTENTS
8 (E) PAVED PARKING TO BE DEMOLISHED
9 (E) FLAGPOLE TO REMAIN
10 (E) CURB TO BE DEMOLISHED; SEE CIVIL PLANS
11 (E) DRIVEWAY ACCESS - REFER TO CIVIL PLANS FOR DEMOLITION INFORMATION
12 (E) PAVED SURFACE TO BE DEMOLISHED; REFER TO CIVIL PLANS FOR EXTENTS AND ADDITIONAL INFORMATION
13 (E) CURB AND GUTTER TO BE DEMOLISHED; SEE CIVIL PLANS
14 (E) FLATWORK TO BE DEMOLISHED, SEE CIVIL PLANS
15 (E) TREE(S) TO REMAIN; PROTECT IN PLACE; HAND-EXCAVATE WHERE REQUIRED; SEE LANDSCAPE PLANS
16 (E) MECHANICAL PAD ENCLOSURE TO BE DEMOLISHED
17 (E) COVERED WALKWAY, SUPPORTS AND FLATWORK TO BE DEMOLISHED
18 (E) HARDSCAPE / RAMP - SEE CIVIL PLANS FOR ADDITIONAL PLANS
19 (E) ADMINISTRATION BUILDING TO BE DEMOLISHED; COORDINATE RELOCATION AND ALL ASSOCIATED CUTOVERS WITH OWNER
20 (E) BUILDING TO REMAIN OPERATIONAL DURING CONSTRUCTION; MAINTAIN ACCESS AND ALL SERVICES
21 (E) COMM VAULT TO REMAIN, COORDINATE ALL WORK W/OWNER
22 BUILDING CANOPY, INSTALLATION PHASE AT DISCRETION OF GENERAL CONTRACTOR
23 GENERAL CONTRACTOR TO MAINTAIN ACCESS TO THE VISITOR LOBBY DURING ALL PHASES OF CONSTRUCTION
24 SALVAGE (E) BUILDING SIGNAGE/LETTERING

(E) ADMIN/LAB BUILDING DEMOLITION NOTE:

COORDINATE DEMOLITION TIMEFRAME WITH (N) LAB CERTIFICATION AND RELOCATION OF STAFF & EQUIPMENT FROM (E) AMDIN/LAB BUILDING TO THE (N) ADMIN/LAB BUILDING. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

LEGEND - SITE PLAN

- ASSUMED PROPERTY LINE
- LIMITS OF WORK
- PROJECT AREA
- (N) CONCRETE PAVING
  - EXPANSION JOINT PER
  - CONTROL JOINT PER
- (N) ASPHALT CONCRETE PAVING
- (E) BUILDING
- LANDSCAPING

3 AS-601 / 7 AS-601

PATH OF TRAVEL (P.O.T.)

- AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE
- IS AT LEAST 48" WIDE.
- NO ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL.
- THE PATH SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH.
- PASSING SPACES (11B-403.2) AT LEAST 60"x60" ARE LOCATED NOT MORE THAN 200' APART.
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- THE CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
- (POT) SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80" (11B-307).
- ARCHITECT SHALL VERIFY PATH OF TRAVEL CONFORMS WITH THE ABOVE.

X—X—X—X FENCE LINE

FH FIRE HYDRANT

FDC FIRE DEPARTMENT CONNECTION

SITE PLAN - DEMO - PHASE 2 1" = 20'-0" 1

19|96
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT — REGISTERED PROFESSIONAL — No. C18650 — Exp. 2/28/25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG

1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE DEMO-PHASE 2

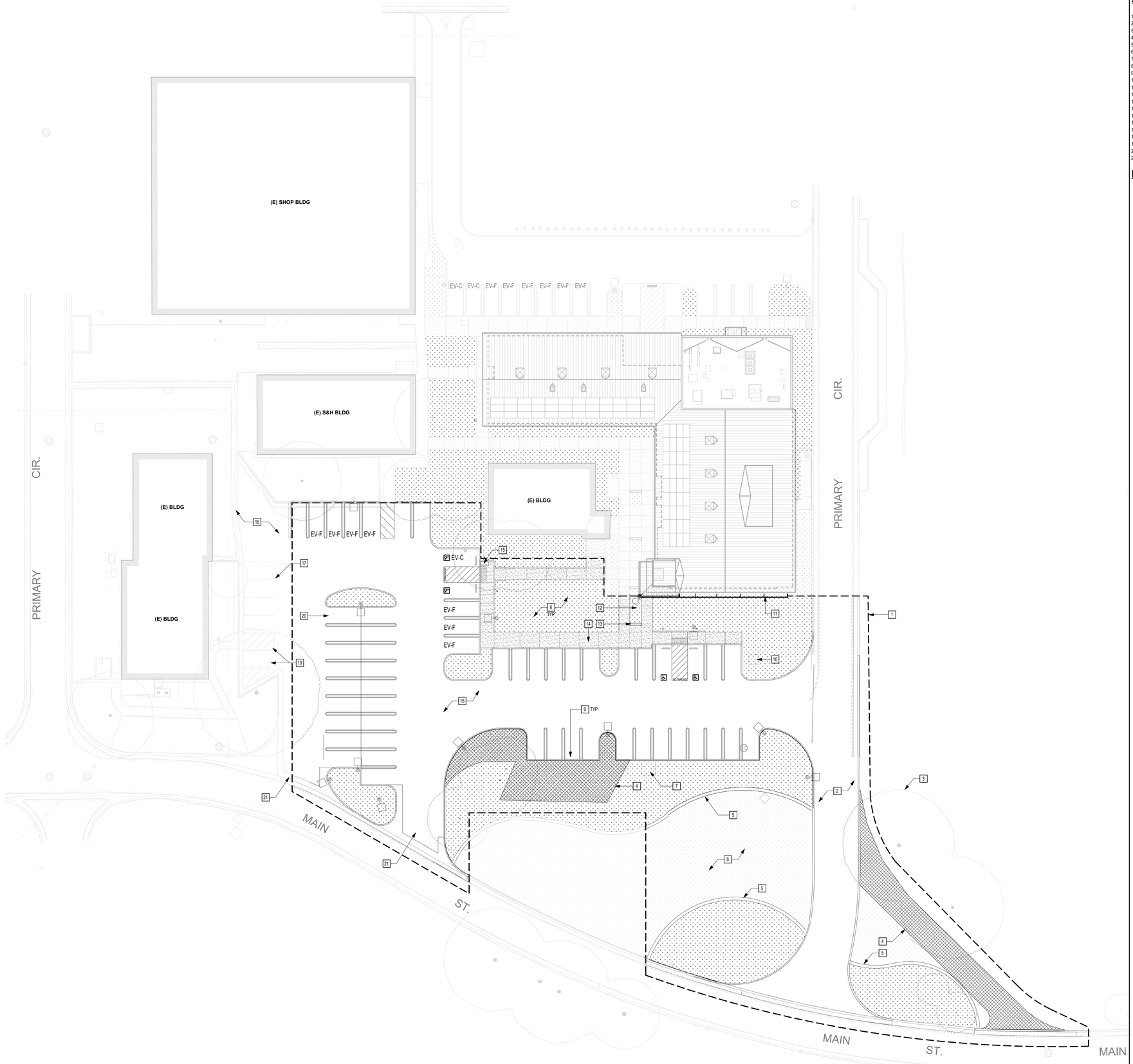
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
AS-103

DATE: May 29, 2024

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SITE PLAN - PHASE 2 Construction 1" = 20'-0" **1**

SHEET NOTES AS-104

1 APPROXIMATE EXTENTS OF PHASE 2
2 (N) ROADWAY, SEE CIVIL PLANS
3 (E) TREES TO REMAIN
4 (N) LANDSCAPE O/DEMOLISHED PAVING, SEE CIVIL AND LANDSCAPE PLANS
5 (N) MOW STRIPS W/LANDSCAPING, SEE LANDSCAPE PLAN
6 (N) LANDSCAPING PER LANDSCAPE PLANS
7 (E) FLAGPOLE TO REMAIN
8 (E) LANDSCAPING TO REMAIN; SEE CIVIL AND LANDSCAPE PLANS
9 (N) SITE LIGHTING, SEE ELECTRICAL PLANS
10 (E) COMM VAULT TO REMAIN, COORDINATE ALL WORK W/OWNER
11 BUILDING CANOPY, INSTALLATION PHASE AT DISCRETION OF GENERAL CONTRACTOR
12 (N) WATER FEATURE AND LANDSCAPING, SEE CIVIL AND LANDSCAPE PLANS
13 (N) CONC SEAT WALL, SEE CIVIL AND LANDSCAPE PLANS
14 (N) FLATWORK, SEE CIVIL PLANS
15 (N) ACCESSIBLE EVCS, SEE ELECTRIC PLANS
16 (N) SLURRY SEAL AT EXISTING ASPHALT
17 RESTRIPE (E) STALLS TO MATCH (N) STALLS
18 (N) PAVING, SEE CIVIL PLANS
19 (E) ACCESSIBLE STALL AND AISLE TO REMAIN
20 (F) EV STALLS
21 DRIVEWAY ACCES, REFER TO CIVIL PLANS

KEYNOTES

SITE PLAN GENERAL NOTES

A. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CBC, TITLE 24, AND ADA.
B. DIMENSIONS INDICATED ARE FOR PLAN REVIEW PURPOSES ONLY; REFER TO CIVIL DRAWINGS FOR HORIZONTAL CONTROL PLAN, DIMENSIONS, SLOPES, BUILDING LOCATIONS, STRUCTURAL PAVING SECTIONS, ETC. TO BE USED FOR CONSTRUCTION.
C. REFER TO CIVIL DRAWINGS FOR FINISH GRADES AND CONFIRM SLOPE PERCENTAGES AS HEREIN NOTED ARE NOT EXCEEDED.
D. VERIFY GRADES AND SLOPES IN FIELD WITH ARCHITECT DURING FORMING AND PRIOR TO CONCRETE OR A.C. PAVING INSTALLATION.
E. VERIFY AND COORDINATE IN FIELD DURING LAYOUT THAT NEW WORK HAS CLEARANCE FROM AND DOES NOT IMPACT EXISTING ITEM OR UTILITY, PRIOR TO START OF WORK.
F. A PAVED ALL-WEATHER FIRE ACESS ROAD DESIGNED TO **CITY OF ROSEVILLE** STANDARD SPECIFICATIONS, AND FIRE HYDRANTS SHALL BE INSTALLED AND IN SERVICE PRIOR TO ANY COMBUSTIBLE CONSTRUCTION MATERIALS BEING BROUGHT ON SITE IN ACCORDANCE WITH [ENTER JURISDICTION] FIRE DEPARTMENT STANDARDS.
G. "EJ" DENOTES CONCRETE FLATWORK EXPANSION JOINT. TYPICAL ALL JOINTS NOT IDENTIFIED AS "EJ" SHALL BE CONTROL JOINTS (CJ) TYPICAL, U.N.O.
H. FOR TYPICAL ASPHALT PAVING NOTES, REFER TO: CIVIL PLANS
FOR TYPICAL CONCRETE FLATWORK PAVING NOTES, REFER TO: CIVIL PLANS
I. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR OFF-SITE IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, CURB-GUTTER-SIDEWALK, STREET LIGHTING AND LANDSCAPE IMPROVEMENTS.
J. PROVIDE 12" WIDE CONCRETE MOW STRIP UNDER CHAIN LINK AND DECORATIVE IRON FENCING, TYPICAL; REFER TO SPECIFICATION SECTION 32 13 13.
K. PROTECT ALL EXISTING TREES TO REMAIN. IF ROOTS ARE ENCOUNTERED, NOTIFY ARCHITECT AND OWNER AND REQUEST DIRECTION. ALL ROOTS NEEDING TO BE REMOVED SHALL BE CUT NEAT AND CLEAN WITH A SAW OR PRUNNING CLIPPERS.
L. COORDINATE NEW WORK WITH DEMOLITION WORK. VERIFY EXTENT OF DEMOLITION NEEDED AND CONNECTION OF NEW AND EXISTING WORK PRIOR TO START OF DEMOLITION.
M. NEW CONCRETE SHALL MATCH EXISTING, ADJACENT CONCRETE IN COLOR, TEXTURE AND PATTERN.
N. TRANSITION FROM NEW PAVING/FLATWORK TO EXISTING PAVING/FLATWORK SHALL BE FLUSH, EVEN, LEVEL AND WITH A NEAT, CLEAN, AND STRAIGHT EDGE.
O. THICKNESS OF NEW A.C. PAVING SHALL MATCH EXISTING A.C. PAVING, OR BE A THICKER SECTION.
P. SEE MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS FOR UTILITIES.
Q. REROUT AND RECONNECT EXISTING UTILITIES TO BE IN PROPER AND FULLY FUNCTIONAL WORKING ORDER.
R. COORDINATE LOCATION OF NEW SIGNAGE AND NEW CURBS WITH RESPECT TO (E) TREES, WITH ARCHITECT IN FIELD, PRIOR TO INSTALLATION.
S. REINSTALL LANDSCAPE AND IRRIGATION IN DEMOLISHED AREAS TO MATCH EXISTING, MODIFY LANDSCAPE AND IRRIGATION AT ADJUSTED AREAS AS REQUIRED.
T. INSTALL NEW BASE TO MATCH (E) BASE IF REQUIRED TO ACHIEVE PAVING ELEVATION AND SLOPE. NEW BASE SHALL BE COMPACTED TO 95%.
U. FOR SITE DETAILS REFER TO **AS-601**
V. FOR SITE SIGNAGE DETAILS REFER TO **AS-603**
W. **FOR ADDITIONAL SITE DEMOLITION & CONSTRUCTION REFER TO SPECIFICATIONS**

LEGEND - SITE PLAN

ASSUMED PROPERTY LINE
LIMITS OF WORK
PROJECT AREA
(N) CONCRETE PAVING
EXPANSION JOINT PER
CONTROL JOINT PER
3 AS-601 / 7 AS-601
(N) ASPHALT CONCRETE PAVING
(E) BUILDING
LANDSCAPING

PATH OF TRAVEL (P.O.T.)

- AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE
- IS AT LEAST 48" WIDE.
- NO ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL.
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- ARCHITECT SHALL VERIFY PATH OF TRAVEL CONFORMS WITH THE ABOVE.

FENCE LINE
FH FIRE HYDRANT
FDC FIRE DEPARTMENT CONNECTION

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT GREGORY W. TOSCANO No. C18650 Exp. 2/28/25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE PLAN CONSTRUCTION PHASE 2

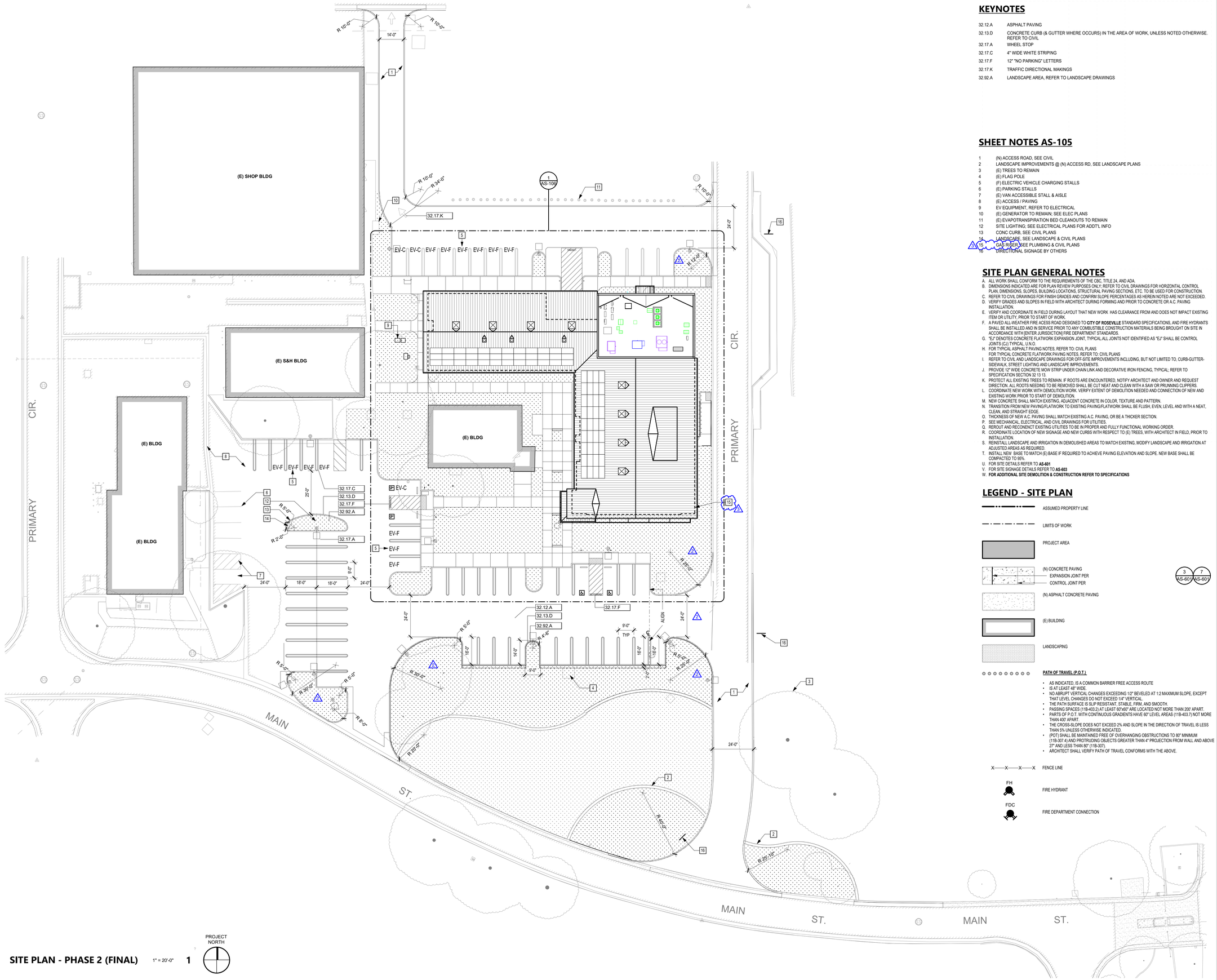
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
AS-104

DATE: May 29, 2024

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KEYNOTES

32.12.A	ASPHALT PAVING
32.13.D	CONCRETE CURB (& GUTTER WHERE OCCURS) IN THE AREA OF WORK, UNLESS NOTED OTHERWISE. REFER TO CIVIL
32.17.A	WHEEL STOP
32.17.C	4" WIDE WHITE STRIPING
32.17.F	12" "NO PARKING" LETTERS
32.17.K	TRAFFIC DIRECTIONAL MAKINGS
32.92.A	LANDSCAPE AREA, REFER TO LANDSCAPE DRAWINGS

SHEET NOTES AS-105

1 (N) ACCESS ROAD, SEE CIVIL
2 LANDSCAPE IMPROVEMENTS @ (N) ACCESS RD, SEE LANDSCAPE PLANS
3 (E) TREES TO REMAIN
4 (E) FLAG POLE
5 (F) ELECTRIC VEHICLE CHARGING STALLS
6 (E) PARKING STALLS
7 (E) VAN ACCESSIBLE STALL & AISLE
8 (E) ACCESS / PAVING
9 EV EQUIPMENT, REFER TO ELECTRICAL
10 (E) GENERATOR TO REMAIN; SEE ELEC PLANS
11 (E) EVAPOTRANSPIRATION BED CLEANOUTS TO REMAIN
12 SITE LIGHTING: SEE ELECTRICAL PLANS FOR ADDT'L INFO
13 CONC CURB, SEE CIVIL PLANS
14 LANDSCAPE: SEE LANDSCAPE & CIVIL PLANS
15 GAS RISER, SEE PLUMBING & CIVIL PLANS
16 DIRECTIONAL SIGNAGE BY OTHERS

SITE PLAN GENERAL NOTES

A. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CBC, TITLE 24, AND ADA.
B. DIMENSIONS INDICATED ARE FOR PLAN REVIEW PURPOSES ONLY; REFER TO CIVIL DRAWINGS FOR HORIZONTAL CONTROL PLAN, DIMENSIONS, SLOPES, BUILDING LOCATIONS, STRUCTURAL PAVING SECTIONS, ETC. TO BE USED FOR CONSTRUCTION.
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H. FOR TYPICAL ASPHALT PAVING NOTES, REFER TO: CIVIL PLANS
FOR TYPICAL CONCRETE FLATWORK PAVING NOTES, REFER TO: CIVIL PLANS
I. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR OFF-SITE IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, CURB-GUTTER-SIDEWALK, STREET LIGHTING AND LANDSCAPE IMPROVEMENTS.
J. PROVIDE 12" WIDE CONCRETE MOW STRIP UNDER CHAIN LINK AND DECORATIVE IRON FENCING, TYPICAL; REFER TO SPECIFICATION SECTION 32 13 13.
K. PROTECT ALL EXISTING TREES TO REMAIN. IF ROOTS ARE ENCOUNTERED, NOTIFY ARCHITECT AND OWNER AND REQUEST DIRECTION. ALL ROOTS NEEDING TO BE REMOVED SHALL BE CUT NEAT AND CLEAN WITH A SAW OR PRUNNING CLIPPERS.
L. COORDINATE NEW WORK WITH DEMOLITION WORK. VERIFY EXTENT OF DEMOLITION NEEDED AND CONNECTION OF NEW AND EXISTING WORK PRIOR TO START OF DEMOLITION.
M. NEW CONCRETE SHALL MATCH EXISTING, ADJACENT CONCRETE IN COLOR, TEXTURE AND PATTERN.
N. TRANSITION FROM NEW PAVING/FLATWORK TO EXISTING PAVING/FLATWORK SHALL BE FLUSH, EVEN, LEVEL AND WITH A NEAT, CLEAN, AND STRAIGHT EDGE
O. THICKNESS OF NEW A.C. PAVING SHALL MATCH EXISTING A.C. PAVING, OR BE A THICKER SECTION.
P. SEE MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS FOR UTILITIES.
Q. REROUT AND RECONENCT EXISTING UTILITIES TO BE IN PROPER AND FULLY FUNCTIONAL WORKING ORDER.
R. COORDINATE LOCATION OF NEW SIGNAGE AND NEW CURBS WITH RESPECT TO (E) TREES, WITH ARCHITECT IN FIELD, PRIOR TO INSTALLATION.
S. REINSTALL LANDSCAPE AND IRRIGATION IN DEMOLISHED AREAS TO MATCH EXISTING, MODIFY LANDSCAPE AND IRRIGATION AT ADJUSTED AREAS AS REQUIRED.
T. INSTALL NEW BASE TO MATCH (E) BASE IF REQUIRED TO ACHIEVE PAVING ELEVATION AND SLOPE. NEW BASE SHALL BE COMPACTED TO 95%.
U. FOR SITE DETAILS REFER TO **AS-601**
V. FOR SITE SIGNAGE DETAILS REFER TO **AS-603**
W. **FOR ADDITIONAL SITE DEMOLITION & CONSTRUCTION REFER TO SPECIFICATIONS**

LEGEND - SITE PLAN

- ASSUMED PROPERTY LINE
- LIMITS OF WORK
- PROJECT AREA
- (N) CONCRETE PAVING
  - EXPANSION JOINT PER
  - CONTROL JOINT PER
- (N) ASPHALT CONCRETE PAVING
- (E) BULIDING
- LANDSCAPING

3/AS-601 7/AS-601

PATH OF TRAVEL (P.O.T.)

- AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE
- IS AT LEAST 48" WIDE.
- NO ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL.
- THE PATH SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH.
- PASSING SPACES (11B-403.2) AT LEAST 60"x60" ARE LOCATED NOT MORE THAN 200' APART.
- PARTS OF P.O.T. WITH CONTINUOUS GRADIENTS HAVE 60" LEVEL AREAS (11B-403.7) NOT MORE THAN 400' APART.
- THE CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.
- (POT) SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80" (11B-307).
- ARCHITECT SHALL VERIFY PATH OF TRAVEL CONFORMS WITH THE ABOVE.

- FENCE LINE
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION

SITE PLAN - PHASE 2 (FINAL) 1" = 20'-0" 1

PROJECT NORTH

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOWER — No. C18650 Ret. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
2	10/23/24	PC Comments
3	2/12/2025	Preliminary Bid Set

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
OVERALL NEW SITE PLAN - PHASE 2

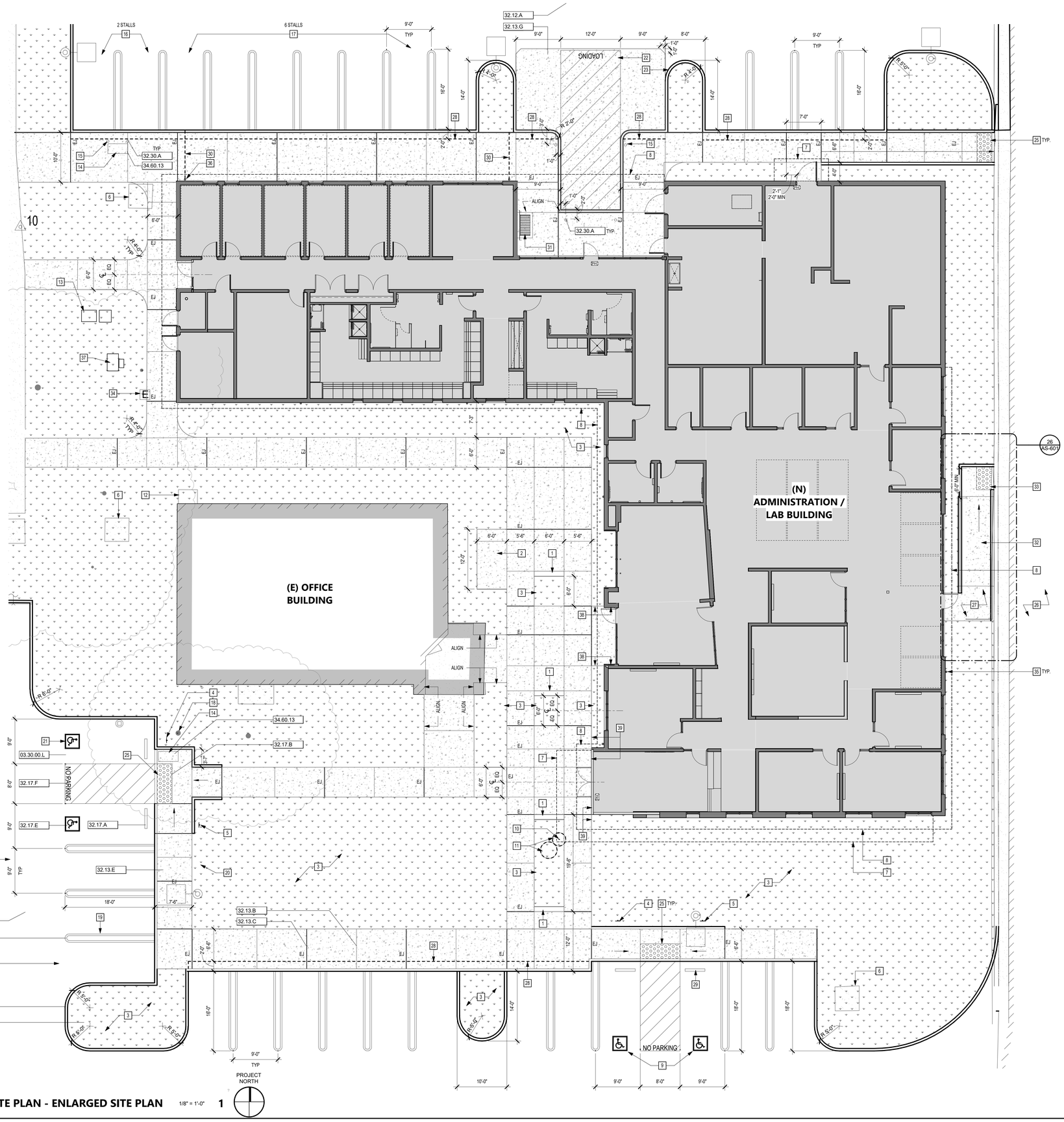
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
AS-105

DATE: May 29, 2024

BID SET (PRELIMINARY)

DATE PLOTTED: 3/17/2025 9:45:27 AM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt



SITE PLAN - ENLARGED SITE PLAN

1/8" = 1'-0" 1

KEYNOTES

03.30.00.L	VEHICULAR CONCRETE PAVING
32.12.A	ASPHALT PAVING
32.13.B	CONTROL JOINTS AT 5'-0" O.C. OR AS SHOWN ON THE PLANS
32.13.C	EXPANSION JOINTS AT 30'-0" O.C. OR AS SHOWN ON THE PLANS
32.13.D	CONCRETE CURB (& GUTTER WHERE OCCURS) IN THE AREA OF WORK, UNLESS NOTED OTHERWISE. REFER TO CIVIL
32.13.E	CONCRETE FLATWORK. REFER TO CIVIL
32.13.G	CONCRETE PAVING. REFER TO CIVIL
32.14.A	PARKING PER CITY STANDARDS
32.17.A	WHEEL STOP
32.17.B	36" WIDE TRUNCATED DOMES BAND
32.17.C	4" WIDE WHITE STRIPING
32.17.E	36" X 36" INTERNATIONAL SYMBOL OF ACCESSIBILITY
32.17.F	12" "NO PARKING" LETTERS
32.30.A	CONCRETE FILLED PERMANENT PIPE BOLLARD
32.92.A	LANDSCAPE AREA, REFER TO LANDSCAPE DRAWINGS
34.60.13	ELECTRIC VEHICLE CHARGING STATION

SHEET NOTES AS-106

1 CONC SEAT WALL, REFER TO CIVIL PLANS FOR DETAILS
2 (F) BARBEQUE LOCATION
3 LANDSCAPE, SEE LANDSCAPE & CIVIL PLANS
4 VAN ACCESSIBLE SIGNAGE, SEE 2/A-603
5 ACCESSIBLE SIGNAGE, SEE 1/A-603
6 (E) COMMUNICATIONS VAULT
7 LINE OF CANOPY ABOVE, SEE A-730
8 LINE OF ROOF ABOVE
9 ACCESSIBLE STALLS & STRIPING, SEE 5/AS-601, SIM
10 RAIN CHAIN, DISCHARGE TO WATER FEATURE BELOW
11 WATER FEATURE, SEE LANDSCAPE, CIVIL & ELECTRIC SITE PLANS; ALIGN W/RAIN CHAIN ABOVE
12 (E) EQUIPMENT ENCLOSURE
13 EV EQUIPMENT, SEE ELECTRIC & CIVIL SITE PLAN
14 ELECTRIC VEHICLE CHARGING STATION
15 6" CONC FILLED BOLLARD PER 22/AS-601
16 ELECTRIC VEHICLE CHARGING STALL
17 (F) ELECTRIC VEHICLE CHARGING STALLS
18 (E) TREE TO REMAIN
19 STRIPING PER CITY OF ROSEVILLE STANDARDS & 3/AS-601
20 SITE LIGHTING, SEE ELECTRICAL SITE PLAN
21 VAN ACCESSIBLE ELECTRIC VEHICLE CHARGING STALL
22 LOADING ZONE STRIPING & MARKING
23 CONC CURB, SEE CIVIL PLANS
25 CURB RAMP, SEE 10/AS-601 & 14/AS-601
26 (E) SITE ROADWAY
27 CONC FLATWORK, SEE CIVIL PLANS
28 LINE OF 2-FT VEHICLE OVERHANG
29 WHEEL STOP, SEE 12/AS-601
30 DS DRAIN TO PARKING AREA, SEE CIVIL
31 2'X4' BOOT WASH AREA W/SPLASH PANEL., SEE 23/AS-601. SEE PLUMBING FOR DRAIN AND HOSE-BIB INFORMATION
32 CONC RAMP, SEE CIVIL & 8/AS-601
33 RAMP LANDING, SEE CIVIL & 8/AS-601
34 COORDINATE FLATWORK W/(E) INFRASTRUCTURE
35 SURFACE-DISCHARGE DOWNSPOUT W/SPLASHBLOCK, SEE 22/A-701
36 DOWNSPOUT DISCHARGE AT FLATWORK, SEE 18/A-701
37 BATTERY STORAGE SYSTEM W/INVERTER, SEE ELECTRICAL PLANS
38 ALIGN EDGE OF FLATWORK W/EDGE OF BLDG CURB
39 ALIGN EDGE OF FLATWORK W/STOREFRONT/EDGE OF SLAB

SITE PLAN GENERAL NOTES

A. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CBC, TITLE 24, AND ADA.
B. DIMENSIONS INDICATED ARE FOR PLAN REVIEW PURPOSES ONLY; REFER TO CIVIL DRAWINGS FOR HORIZONTAL CONTROL PLAN, DIMENSIONS, SLOPES, BUILDING LOCATIONS, STRUCTURAL PAVING SECTIONS, ETC. TO BE USED FOR CONSTRUCTION.
C. REFER TO CIVIL DRAWINGS FOR FINISH GRADES AND CONFIRM SLOPE PERCENTAGES AS HEREIN NOTED ARE NOT EXCEEDED.
D. VERIFY GRADES AND SLOPES IN FIELD WITH ARCHITECT DURING FORMING AND PRIOR TO CONCRETE OR A.C. PAVING INSTALLATION.
E. VERIFY AND COORDINATE IN FIELD DURING LAYOUT THAT NEW WORK HAS CLEARANCE FROM AND DOES NOT IMPACT EXISTING ITEM OR UTILITY, PRIOR TO START OF WORK.
F. A PAVED ALL-WEATHER FIRE ACESS ROAD DESIGNED TO **CITY OF ROSEVILLE** STANDARD SPECIFICATIONS, AND FIRE HYDRANTS SHALL BE INSTALLED AND IN SERVICE PRIOR TO ANY COMBUSTIBLE CONSTRUCTION MATERIALS BEING BROUGHT ON SITE IN ACCORDANCE WITH [ENTER JURISDICTION] FIRE DEPARTMENT STANDARDS.
G. "EJ" DENOTES CONCRETE FLATWORK EXPANSION JOINT. TYPICAL ALL JOINTS NOT IDENTIFIED AS "EJ" SHALL BE CONTROL JOINTS (CJ) TYPICAL, U.N.O.
H. FOR TYPICAL ASPHALT PAVING NOTES, REFER TO: CIVIL PLANS
FOR TYPICAL CONCRETE FLATWORK PAVING NOTES, REFER TO: CIVIL PLANS
I. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR OFF-SITE IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, CURB-GUTTER-SIDEWALK, STREET LIGHTING AND LANDSCAPE IMPROVEMENTS.
J. PROVIDE 12" WIDE CONCRETE MOW STRIP UNDER CHAIN LINK AND DECORATIVE IRON FENCING, TYPICAL; REFER TO SPECIFICATION SECTION 32 13 13.
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LEGEND - SITE PLAN

- ASSUMED PROPERTY LINE
- LIMITS OF WORK
- PROJECT AREA
- (N) CONCRETE PAVING
- EXPANSION JOINT PER
- CONTROL JOINT PER (3 AS-601 / 7 AS-601)
- (N) ASPHALT CONCRETE PAVING
- (E) BUILDING
- LANDSCAPING
- PATH OF TRAVEL (P.O.T.)

PATH OF TRAVEL (P.O.T.)
- AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE
- IS AT LEAST 48" WIDE.
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- FENCE LINE
- FH — FIRE HYDRANT
- FDC — FIRE DEPARTMENT CONNECTION

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOUCHE — No. C18650 Exp. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
ENLARGED SITE PLAN

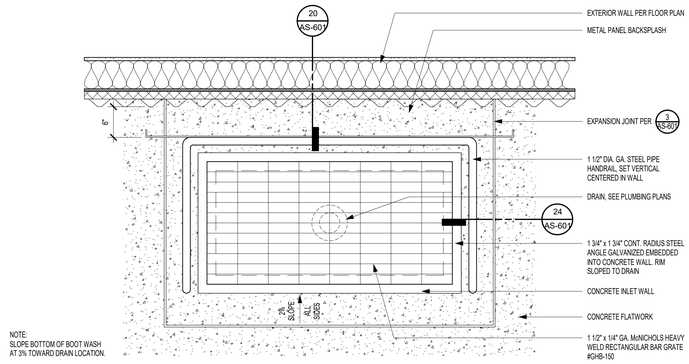
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
AS-106

DATE: May 29, 2024

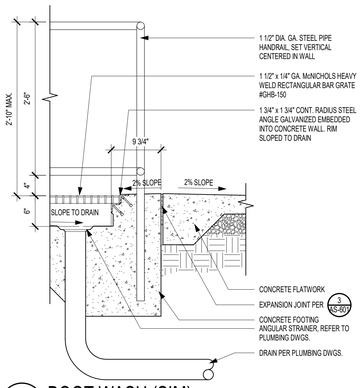
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BID SET (PRELIMINARY)



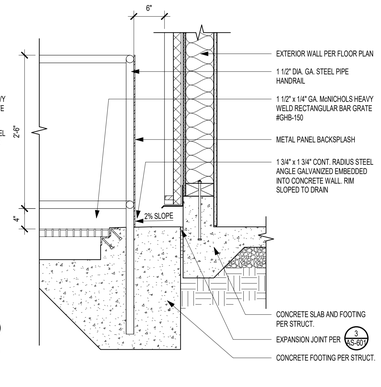
23 BOOT WASH PLAN

1" = 1'-0"



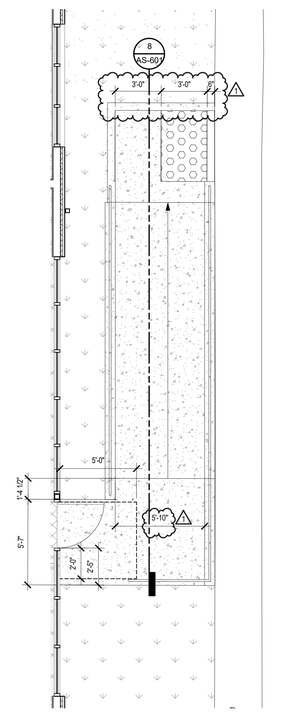
24 BOOT WASH (SIM) SECTION

1" = 1'-0"



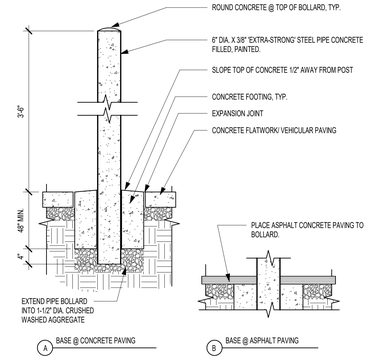
20 BOOT WASH SECTION AT WALL

1" = 1'-0"



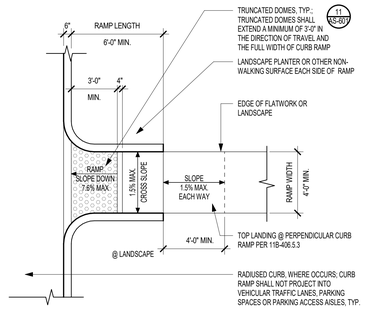
26 ACCESS RAMP @ EAST ELEVATION

1/4" = 1'-0"

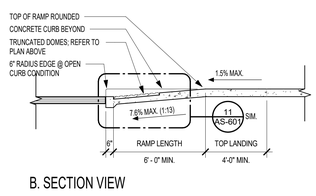


22 BOLLARD CONCRETE FILLED

3/4" = 1'-0"



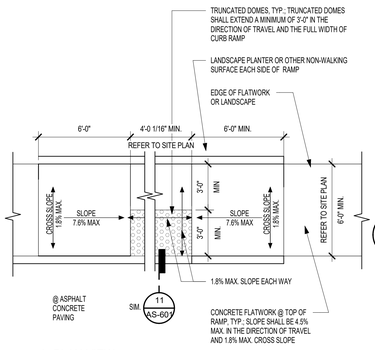
A. PLAN VIEW



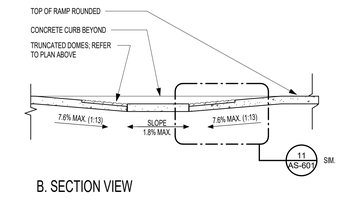
B. SECTION VIEW

14 CURB RAMP PERPENDICULAR

1/4" = 1'-0"



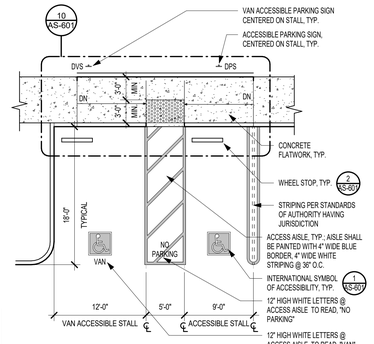
A. PLAN VIEW



B. SECTION VIEW

10 CURB RAMP PARALLEL

1/4" = 1'-0"

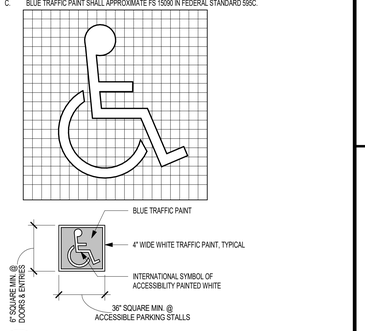


5 ACCESSIBLE STALL TYPICAL 2-STALL CONFIGURATION

1/8" = 1'-0"

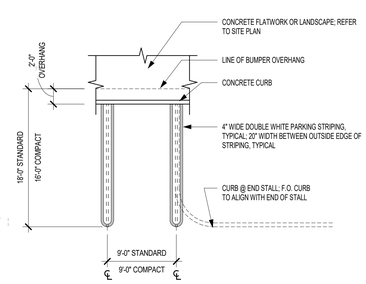
SIGNAGE FOR THE DISABLED NOTES:

A. ALL CONSTRUCTION SHALL COMPLY WITH CALIFORNIA ACCESS REGULATIONS AND ADA REGULATIONS, MOST CURRENT AND MOST RESTRICTIVE SHALL APPLY.
B. FIGURE SHALL BE WHITE ON A BLUE BACKGROUND.
C. BLUE TRAFFIC PAINT SHALL APPROXIMATE FS 15090 IN FEDERAL STANDARD 595C.



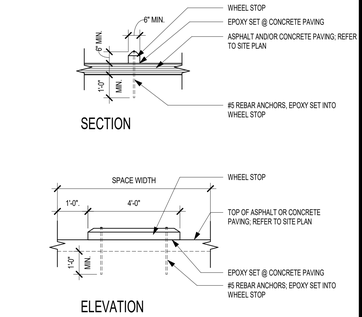
1 INTERNATIONAL SYMBOL OF ACCESSIBILITY @ ACCESSIBLE PARKING

1" = 1'-0"



6 TYPICAL PARKING STALL SINGLE LOADED PARKING

1/8" = 1'-0"

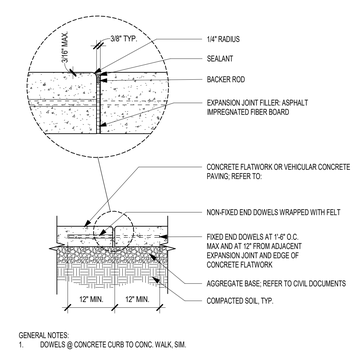


SECTION

ELEVATION

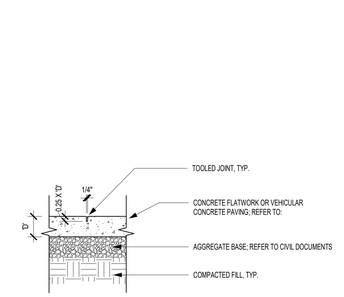
2 WHEEL STOP

3/8" = 1'-0"



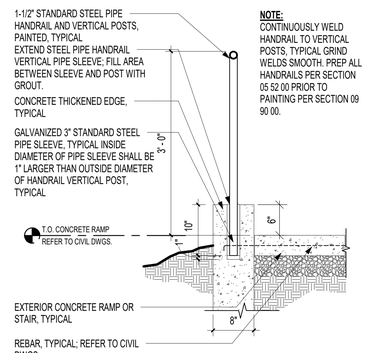
7 CONTROL JOINT (CJ) @ CONCRETE FLATWORK

1" = 1'-0"



3 EXPANSION JOINT @ CONCRETE FLATWORK

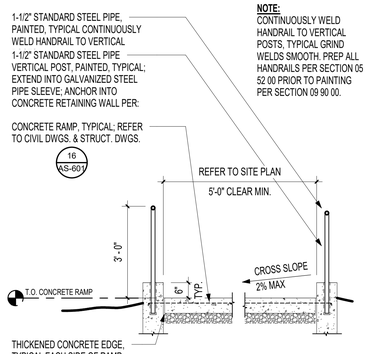
1" = 1'-0"



NOTE:
CONTINUOUSLY WELD HANDRAIL TO VERTICAL POSTS, TYPICAL GRIND WELDS SMOOTH. PREP ALL HANDRAILS PER SECTION 05 52 00 PRIOR TO PAINTING PER SECTION 09 90 00.

16 HANDRAIL ANCHORAGE @ CONCRETE RAMP OR STAIR

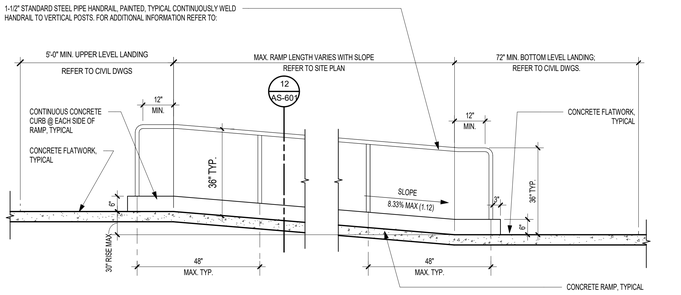
1"=1'-0"



NOTE:
CONTINUOUSLY WELD HANDRAIL TO VERTICAL POSTS, TYPICAL GRIND WELDS SMOOTH. PREP ALL HANDRAILS PER SECTION 05 52 00 PRIOR TO PAINTING PER SECTION 09 90 00.

12 CONCRETE RAMP AND HANDRAIL

1/2"=1'-0"



NOTE:
PREP ALL HANDRAILS PER SECTION 05 52 00 PRIOR TO PAINTING PER SECTION 09 90 00.

8 CONCRETE RAMP AND HANDRAIL

1/2"=1'-0"

1996
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT JEREMY W. FOSTER No. C18650 Ref. 2/28/25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE DETAILS - TYPICAL

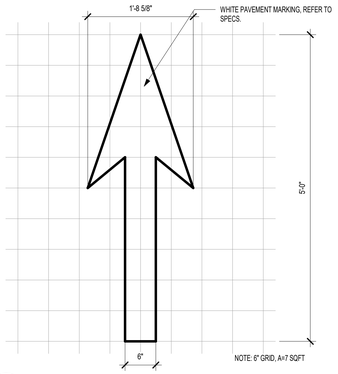
DRAWN BY: 19six | JOB NUMBER: 210015.01

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AS-601

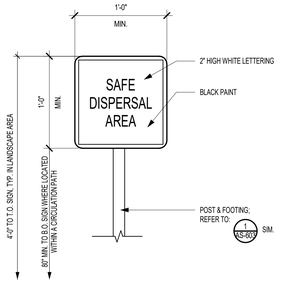
DATE: May 29, 2024

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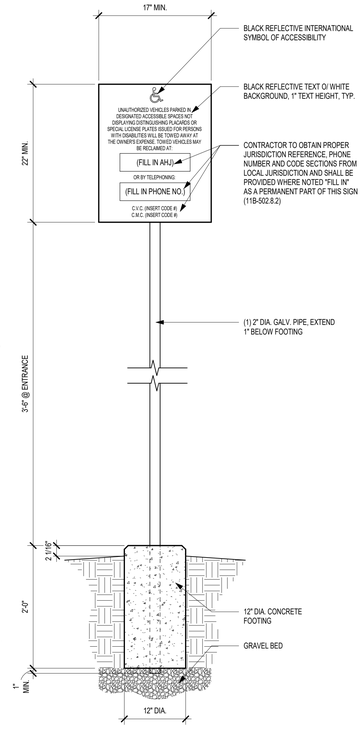
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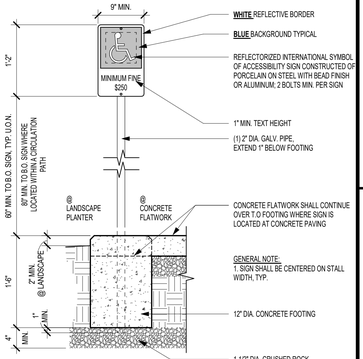
13 PAVEMENT MARKINGS
ARROW
1" = 1'-0"
wpv1.1



9 SAFE DISPERSAL AREA SIGN
POLE MOUNTED
1-1/2" = 1'-0"
wpv1.1



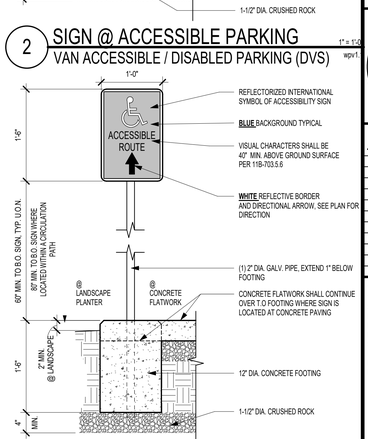
6 SITE ENTRANCE
ACCESSIBLE PARKING SIGN (SEA)
1" = 1'-0"
wpv1.1



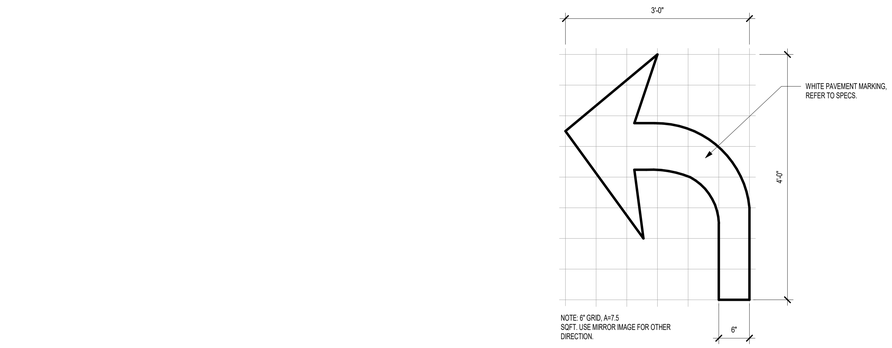
1 SIGN @ ACCESSIBLE PARKING
ACCESSIBLE / DISABLED PARKING (DPS)
1" = 1'-0"
wpv1.

14 PAVEMENT MARKINGS
ONE WAY ARROW AND LETTERING
1" = 1'-0"
wpv1.1

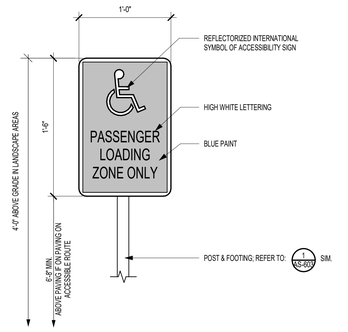
10 ONE WAY - DO NOT ENTER SIGN
POLE MOUNTED
1-1/2" = 1'-0"
wpv1.1



2 SIGN @ ACCESSIBLE PARKING
VAN ACCESSIBLE / DISABLED PARKING (DVS)
1" = 1'-0"
wpv1.

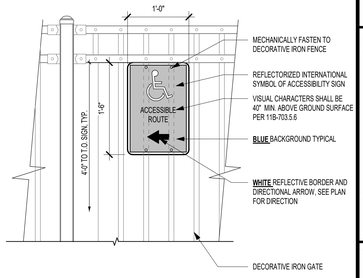


15 PAVEMENT MARKINGS
TURN ARROW
1" = 1'-0"
wpv1.1



7 ACCESSIBLE PASSENGER
DROP-OFF AND LOADING ZONE SIGN (PLZ)
1-1/2" = 1'-0"
wpv1.1

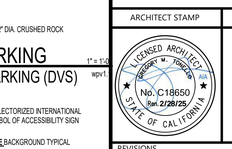
3 DIRECTIONAL ACCESSIBLE SIGN
ROUTE SIGN (DAP)
1" = 1'-0"
wpv1.



4 DIRECTIONAL ACCESSIBLE SIGN
ROUTE SIGN (DAP) AT DECORATIVE FENCE
1" = 1'-0"
wpv1.

19six
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ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP



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311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
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Roseville, CA 95747

SHEET TITLE
SITE DETAILS - TYPICAL

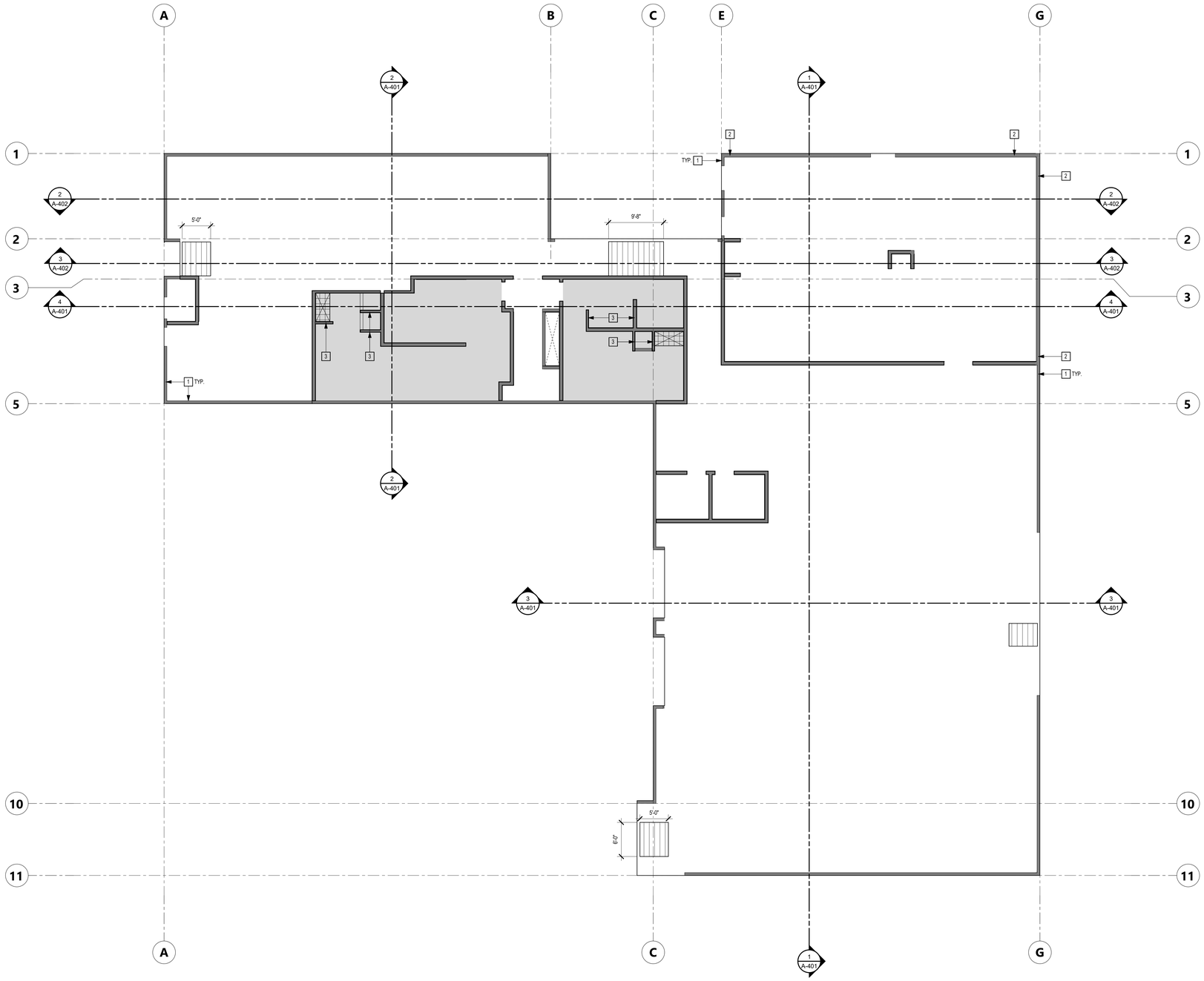
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
AS-603

DATE: May 29, 2024

DATE PLOTTED: 7/3/2024 12:49:38 PM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt

BID SET (PRELIMINARY)



CURB PLAN 1/8" = 1'-0" **1**

SHEET NOTES A-200

1 3 1/2"H X 6" W CONC CURB TYP, UNO
2 3 1/2" H X 7 3/4" W CONC CURB
3 3 1/2"H X 3 5/8" W CONC CURB TYP, UNO

CURB PLAN GENERAL NOTES

A. REFER TO DIMENSIONED FLOOR PLAN **A-202** FOR DIMENSIONS & WALL TYPES
B. REFER TO PLUMBING PLANS FOR DRAIN LOCATIONS
C. REFER TO FINISH PLAN **A-251** FOR MATERIAL TRANSITION DETAILS

LEGEND - EDGE OF SLAB

SLAB DEPRESSION FOR RECESSED ENTRY MAT. REFER TO SPECIFICATIONS AND DETAIL.

SLAB DEPRESSION FOR SHOWER MORTAR BED. REFER TO SPECIFICATIONS AND DETAIL.

1.5" SLAB DEPRESSION FOR LOCKER ROOM(S) MORTAR BED. SHOWERS: SLOPE TO DRAIN, MAX 2% AT ACCESSIBLE STALL. REFER TO SPECIFICATIONS. (1)

NOTE:

REFER TO STRUCTURAL AND MEP DRAWINGS FOR ADDITIONAL INFORMATION.

196

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ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT ROBERT W. TOMLINSON AIA No. C18650 Exp. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

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311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

CURB PLAN

DRAWN BY: 19six JOB NUMBER: 210015.01

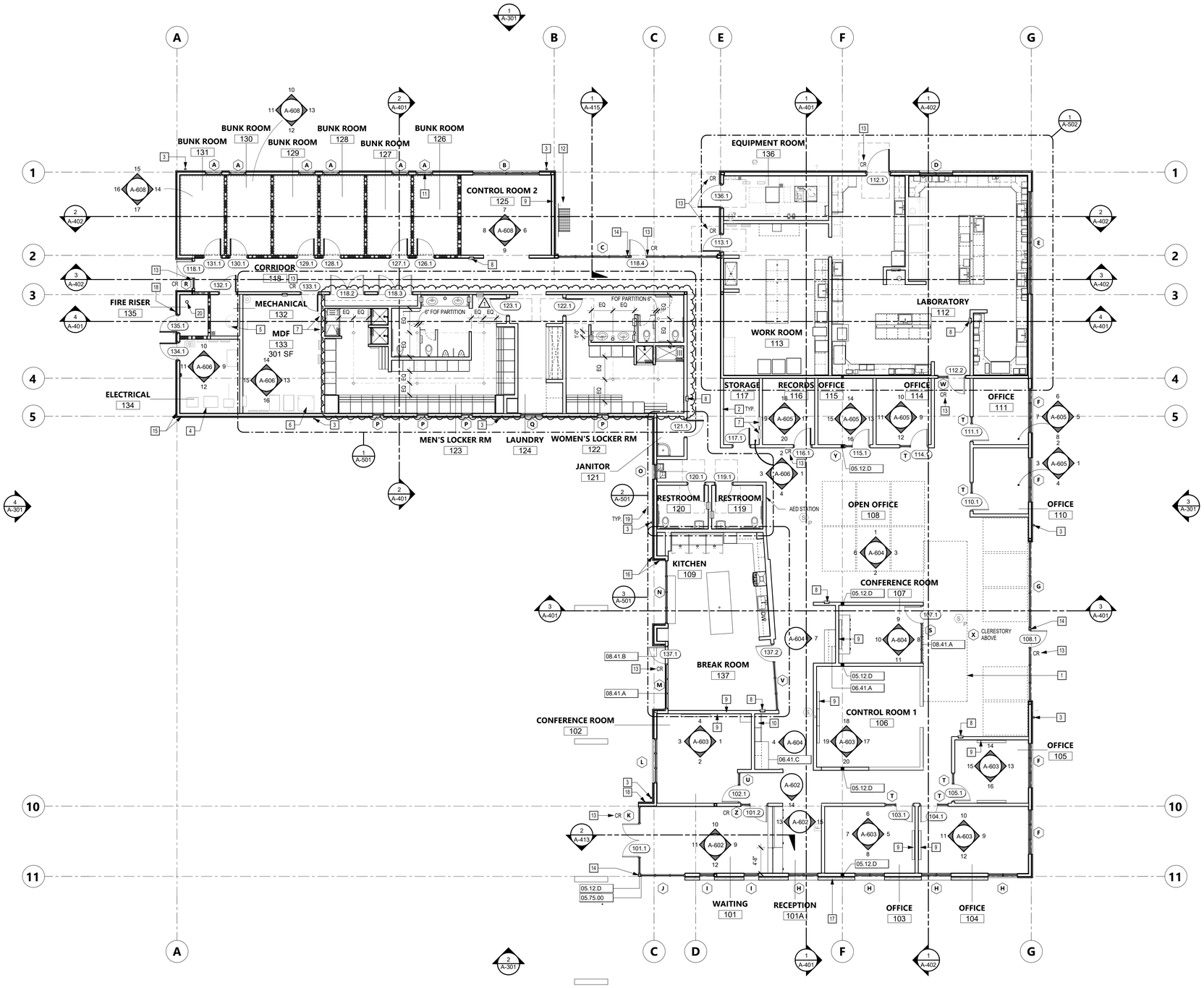
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A-200

DATE: May 29, 2024

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KEYNOTES

05.12.D	STEEL TUBE
05.75.00	BRAKE METAL
06.41.A	PLASTIC LAMINATED FACED ARCHITECTURAL CABINETS
06.41.C	PLASTIC LAMINATED COUNTERTOP W/ 4" SPLASH (NOT FOR USE AT SINKS OR TRANSACTION COUNTERS)
08.41.A	ALUMINUM-FRAMED STOREFRONT SYSTEM
08.41.B	STOREFRONT ALUMINUM DOOR

SHEET NOTES A-201

1. DASHED LINE INDICATES SKYWELL ABOVE
2. PROVIDE BACKING AT ALL WALLS OF STORAGE
3. METAL DOWNSPOUT, SEE SITE PLAN, CIVIL PLANS, EXTERIOR ELEVATIONS AND ROOF PLAN FOR ADDITIONAL INFORMATION
4. TRANSFORMER, REFER TO ELECTRICAL
5. WATER HEATER, REFER TO PLUMBING
6. COOLING SYSTEM, REFER TO MECHANICAL
7. ELECTRICAL PANEL, REFER TO ELECTRICAL
8. FIRE EXTINGUISHER CABINET
9. PROVIDE BACKING AT (F) TV LOCATION; SEE 24/A-740; SEE ELECTRICAL PLANS FOR POWER/DATA INFORMATION
10. BOOK SHELF
11. EGRESS WINDOWS AT SLEEPING UNIT, SEE EXTERIOR ELEVATIONS AND WINDOW SCHEDULE FOR ADDITIONAL INFORMATION
12. EXTERIOR BOOT WASH, SEE DETAIL 23/AS-601
13. CARD READER ACCESS; SEE DOOR SCHEDULE AND ELECTRICAL PLANS FOR ADDITIONAL INFORMATION
14. BRAKE METAL O/STRUCT COLUMN. FINISH TO MATCH STOREFRONT
15. EXTERIOR METAL PANELS W/CONCEALED FASTENERS; SEE EXTERIOR ELEVATIONS FOR ADDT'L INFORMATION
16. EXTERIOR MASONRY VENEER, SEE EXTERIOR ELEVATIONS FOR ADDT'L INFORMATION
17. FULL CMU CLADDING, SEE EXTERIOR ELEVATIONS FOR ADDT'L INFORMATION
18. KNOX BOX PER CITY OF ROSEVILLE REQUIREMENTS
19. HOSE BIB, SEE PLUMBING PLANS
20. FIRE RISER PIPE, 12" MIN. CLEAR SPACE AROUND

FLOOR PLAN GENERAL NOTES

A. ALL INTERIOR CONSTRUCTION ON THIS PROJECT IS DESIGNATED "AIRTIGHT" FOR THE PURPOSES OF SOUND ISOLATION AND NOISE CONTROL. THE REQUIREMENTS FOR AIRTIGHT CONSTRUCTION INCLUDE, BUT ARE NOT LIMITED TO, THE REQUIREMENTS DESCRIBED IN THE SPECIFICATIONS AND THE DETAILS SHOWN ON DRAWING SHEETS **A-740,741 & 750**. ALL NECESSARY PRODUCTS AND DETAILING SHALL BE PROVIDED TO ACHIEVE AIRTIGHT/LEAKPROOF CONSTRUCTION, WHETHER OR NOT THOSE PRODUCTS, OR DETAILS, ARE SPECIFICALLY DESCRIBED OR SHOWN IN THE PROJECT DOCUMENTS.
B. EXTERIOR DIMENSIONS ARE TO FACE OF SHEATHING OR FACE OF CMU, TYPICAL U.N.O.
C. INTERIOR DIMENSIONS ARE TO FACE OF STUD, TYPICAL U.N.O.
D. DOOR OPENINGS NOT LOCATED BY DIMENSIONS SHALL BE LOCATED 6" FROM FINISH WALL TO DOOR OPENING OR CENTERED IN WALL, U.N.O.
E. ALL INTERIOR WALLS SHALL BE 14'-0" U.N.O.
F. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL DIMENSIONS.
G. FOR TOILET ROOM ACCESSORIES, DENOTED BY ◇, MOUNTING HEIGHTS AND BACKING REQUIREMENTS, REFER TO SHEET **G-900 & A-740.**
H. PROVIDE COAT HOOKS AND BUMPERS AT ALL TOILET PARTITION STALLS; REFER TO TOILET ROOM ACCESSORIES DETAIL FOR TYPE AND LOCATION.
I. FOR TYPICAL ACCESSIBLE MOUNTING HEIGHTS AND CLEARANCES, REFER TO SHEET **G-900**.
J. FOR SIGNAGE TYPES AND LOCATIONS, REFER TO EXITING AND SIGNAGE PLAN SHEET **G-923**
K. GENERAL CONTRACTOR SHALL PROVIDE BLOCKING AND/OR STRAPPING INSIDE WALLS FOR ATTACHING SHELVES, CABINETS, RAILINGS, MILLWORK, TOILET ACCESSORIES AND OTHER ITEMS REQUIRING SUPPORT; REFER TO DETAILS ON **G-900, A-740 & A-780**.
L. FIRE EXTINGUISHERS, TYPICAL U.N.O., SHALL HAVE A MINIMUM RATING OF 2A-10:BC WITH MULTI-PURPOSE DRY CHEMICAL FIRE EXTINGUISHER AGENT AND SHALL BE LOCATED SUCH THAT THE MAXIMUM TRAVEL DISTANCE BETWEEN EXTINGUISHERS DOES NOT EXCEED 75'. THE MAXIMUM FLOOR AREA PER UNIT OF "A" SHALL BE 3,000 S.F. AND THE MAXIMUM FLOOR AREA PER EXTINGUISHER SHALL BE 11,250 S.F. PER CBC TABLE 906.3(1).
M. FIRE EXTINGUISHERS AT ELECTRICAL AND IDF ROOMS SHALL HAVE A MINIMUM RATING OF 10B:C WITH CARBON DIOXIDE FIRE EXTINGUISHER AGENT AND SHALL BE LOCATED SUCH THAT THE MAXIMUM TRAVEL DISTANCE BETWEEN EXTINGUISHERS DOES NOT EXCEED 75'. THE MAXIMUM FLOOR AREA PER UNIT OF "A" SHALL BE 3,000 S.F. AND THE MAXIMUM FLOOR AREA PER EXTINGUISHER SHALL BE 11,250 S.F. PER CBC TABLE 906.3(1).
N. FIRE EXTINGUISHERS AT KITCHEN SHALL HAVE A MINIMUM RATING OF 40:BC WITH CLASS K FIRE EXTINGUISHER AGENT AND SHALL BE LOCATED SUCH THAT THE MAXIMUM TRAVEL DISTANCE BETWEEN EXTINGUISHERS DOES NOT EXCEED 75'. THE MAXIMUM FLOOR AREA PER UNIT OF "A" SHALL BE 1,000 S.F. AND THE MAXIMUM FLOOR AREA PER EXTINGUISHER SHALL BE 11,250 S.F. PER CBC TABLE 906.3(1).
O. REFER TO EXTERIOR ELEVATIONS FOR CLERESTORY WINDOW TYPES AND LOCATIONS.
P. ALL EXTERIOR WINDOWS SHALL HAVE SURFACE MOUNTED MANUALLY OPERATED ROLLER SHADES WITH DARKENING FABRIC PANELS, TYPICAL U.N.O.; ALL CONDUIT, WIRES, ETC. SHALL BE FULLY CONCEALED IN WALL; REFER TO SPECIFICATION SECTION 12 24 00.
Q. ALL EXTERIOR WINDOWS IN CONFERENCE, MEETING AND TRAINING ROOMS SHALL HAVE SURFACE MOUNTED MANUALLY OPERATED ROLLER SHADES WITH DARKENING AND BLACK OUT FABRIC PANELS, TYPICAL U.N.O.; ALL CONDUIT, WIRES, ETC. SHALL BE FULLY CONCEALED IN WALL; REFER TO SPECIFICATION SECTION 12 24 00.
R. CONTRACTOR SHALL PROVIDE BLOCKING AND/OR STRAPPING INSIDE WALLS/PARTITIONS FOR ATTACHING SHELVES, CABINETS, RAILINGS, MILLWORK, TOILET ACCESSORIES AND OTHER ITEMS REQUIRING SUPPORT INSIDE WALLS/PARTITIONS.
S. FOR EXTERIOR AND INTERIOR WINDOW TYPES, REFER TO SHEET **A-811.**
T. FOR DOOR SCHEDULE, REFER TO SHEET **A-801.**
U. FOR INTERIOR FINISH PLAND AND FINISH SCHEDULE REFER TO **A-251** & **A-252**

LEGEND - FLOOR PLAN

ROOM NAME — ROOM NAME
101 — ROOM NUMBER
150 SF — ROOM AREA
AB — WALL TYPE TAG
101AA — DOOR TYPE TAG
A — WINDOW TYPE TAG
A / 12000 — EQUIPMENT SCHEDULE / EQUIPMENT MARK
TYP. (#)
RM — SIGNAGE TAG

WALL TYPE LEGEND

- NON RATED WALL OR FURRING WALL ASSEMBLY
- 1 HOUR RATED WALL ASSEMBLY
- METAL PANEL WALL
- MASONRY WALL
- MASONRY VENEER WALL

FOR WALL TYPES REFER TO **G-301** & **G-302**

FLOOR PLAN 1/8" = 1'-0" **1**

196
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ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOWERS — No. C18650 Exp. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

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SHEET TITLE
FLOOR PLAN

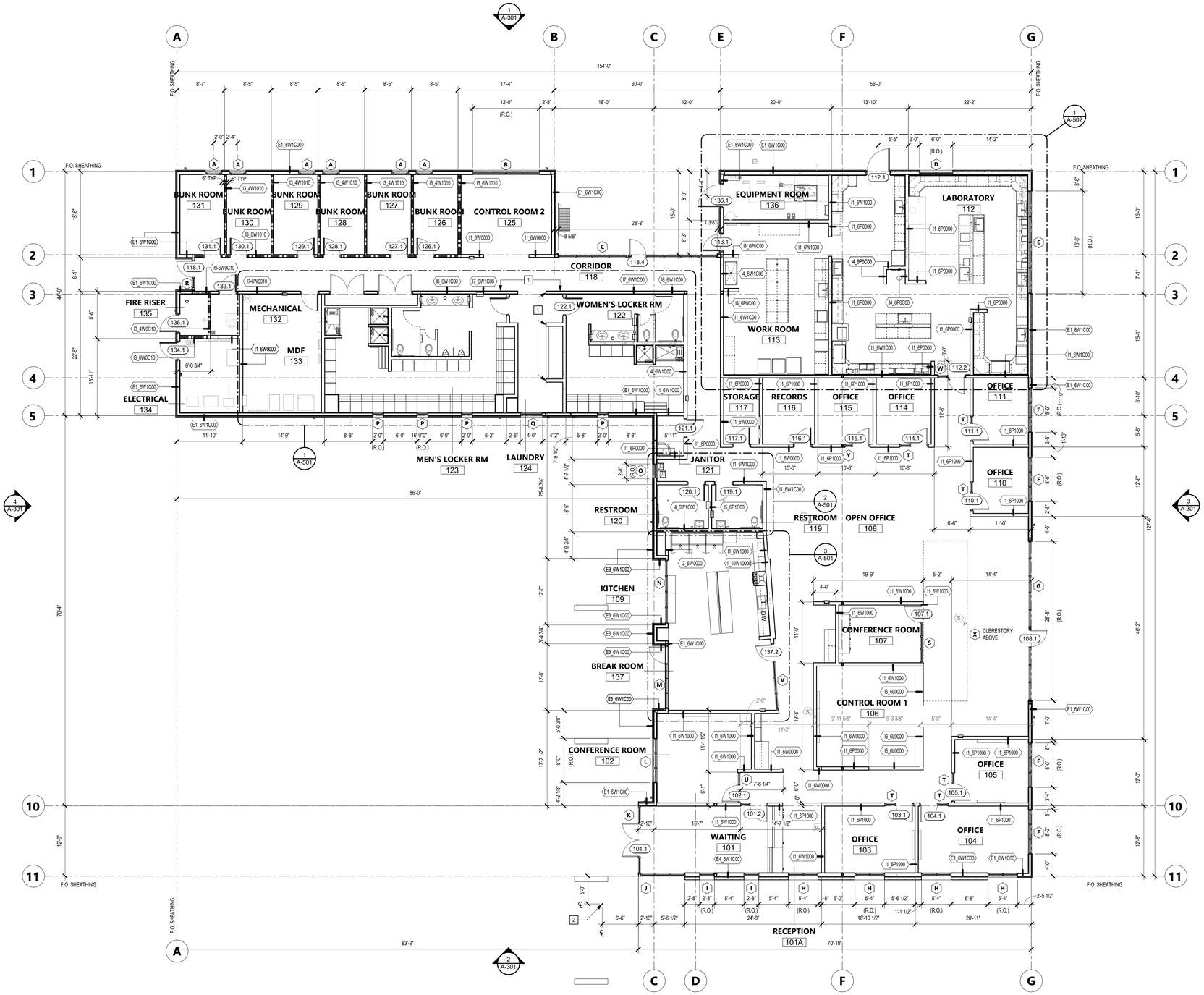
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A-201

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DIMENSION & WALL TYPE PLAN 1/8" = 1'-0" **1**

SHEET NOTES A-202

1 ALIGN FINISHES
2 DRAIN CHAIN

FLOOR PLAN GENERAL NOTES

A. ALL INTERIOR CONSTRUCTION ON THIS PROJECT IS DESIGNATED "AIRTIGHT" FOR THE PURPOSES OF SOUND ISOLATION AND NOISE CONTROL. THE REQUIREMENTS FOR AIRTIGHT CONSTRUCTION INCLUDE, BUT ARE NOT LIMITED TO, THE REQUIREMENTS DESCRIBED IN THE SPECIFICATIONS AND THE DETAILS SHOWN ON DRAWING SHEETS **A-742,741 & 750**. ALL NECESSARY PRODUCTS AND DETAILING SHALL BE PROVIDED TO ACHIEVE AIRTIGHT/LEAKPROOF CONSTRUCTION, WHETHER OR NOT THOSE PRODUCTS, OR DETAILS, ARE SPECIFICALLY DESCRIBED OR SHOWN IN THE PROJECT DOCUMENTS.
B. EXTERIOR DIMENSIONS ARE TO FACE OF SHEATHING OR FACE OF CMU, TYPICAL U.N.O.
C. INTERIOR DIMENSIONS ARE TO FACE OF STUD, TYPICAL U.N.O.
D. DOOR OPENINGS NOT LOCATED BY DIMENSIONS SHALL BE LOCATED 6" FROM FINISH WALL TO DOOR OPENING OR CENTERED IN WALL, U.N.O.
E. ALL INTERIOR WALLS SHALL BE 14'-0" U.N.O.
F. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL DIMENSIONS.
G. FOR TOILET ROOM ACCESSORIES, DENOTED BY ◇, MOUNTING HEIGHTS AND BACKING REQUIREMENTS, REFER TO SHEET **G-900 & A-740.**
H. PROVIDE COAT HOOKS AND BUMPERS AT ALL TOILET PARTITION STALLS; REFER TO TOILET ROOM ACCESSORIES DETAIL FOR TYPE AND LOCATION.
I. FOR TYPICAL ACCESSIBLE MOUNTING HEIGHTS AND CLEARANCES, REFER TO SHEET **G-900**.
J. FOR SIGNAGE TYPES AND LOCATIONS, REFER TO EXITING AND SIGNAGE PLAN SHEET **G-923**
K. GENERAL CONTRACTOR SHALL PROVIDE BLOCKING AND/OR STRAPPING INSIDE WALLS FOR ATTACHING SHELVES, CABINETS, RAILINGS, MILLWORK, TOILET ACCESSORIES AND OTHER ITEMS REQUIRING SUPPORT; REFER TO DETAILS ON **G-900, A-740 & A-760.**
L. FIRE EXTINGUISHERS, TYPICAL U.N.O., SHALL HAVE A MINIMUM RATING OF 2A-10 BC WITH MULTI-PURPOSE DRY CHEMICAL FIRE EXTINGUISHER AGENT AND SHALL BE LOCATED SUCH THAT THE MAXIMUM TRAVEL DISTANCE BETWEEN EXTINGUISHERS DOES NOT EXCEED 75'. THE MAXIMUM FLOOR AREA PER UNIT OF "A" SHALL BE 3,000 S.F. AND THE MAXIMUM FLOOR AREA PER EXTINGUISHER SHALL BE 11,250 S.F. PER CBC TABLE 906.3(1).
M. FIRE EXTINGUISHERS AT ELECTRICAL AND IDF ROOMS SHALL HAVE A MINIMUM RATING OF 10B C WITH CARBON DIOXIDE FIRE EXTINGUISHER AGENT AND SHALL BE LOCATED SUCH THAT THE MAXIMUM TRAVEL DISTANCE BETWEEN EXTINGUISHERS DOES NOT EXCEED 75'. THE MAXIMUM FLOOR AREA PER UNIT OF "A" SHALL BE 3,000 S.F. AND THE MAXIMUM FLOOR AREA PER EXTINGUISHER SHALL BE 11,250 S.F. PER CBC TABLE 906.3(1).
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O. REFER TO EXTERIOR ELEVATIONS FOR CLERESTORY WINDOW TYPES AND LOCATIONS.
P. ALL EXTERIOR WINDOWS SHALL HAVE SURFACE MOUNTED MANUALLY OPERATED ROLLER SHADES WITH DARKENING FABRIC PANELS, TYPICAL U.N.O.; ALL CONDUIT, WIRES, ETC. SHALL BE FULLY CONCEALED IN WALL; REFER TO SPECIFICATION SECTION 12 24 00.
Q. ALL EXTERIOR WINDOWS IN CONFERENCE, MEETING AND TRAINING ROOMS SHALL HAVE SURFACE MOUNTED MANUALLY OPERATED ROLLER SHADES WITH DARKENING AND BLACK OUT FABRIC PANELS. TYPICAL U.N.O.:; ALL CONDUIT, WIRES, ETC. SHALL BE FULLY CONCEALED IN WALL; REFER TO SPECIFICATION SECTION 12 24 00.
R. CONTRACTOR SHALL PROVIDE BLOCKING AND/OR STRAPPING INSIDE WALLS/PARTITIONS FOR ATTACHING SHELVES, CABINETS, RAILINGS, MILLWORK, TOILET ACCESSORIES AND OTHER ITEMS REQUIRING SUPPORT INSIDE WALLS/PARTITIONS.
S. FOR EXTERIOR AND INTERIOR WINDOW TYPES, REFER TO SHEET **A-811.**
T. FOR DOOR SCHEDULE, REFER TO SHEET **A-801.**
U. FOR INTERIOR FINISH PLAND AND FINISH SCHEDULE REFER TO **A-251 & A-252**

WALL TAG NOTES

WALL TYPE TAG
E = EXTERIOR WALL
I = INTERIOR WALL
# = WALL TYPE, SEE G-301 & G-302

FRAMING STUD SIZE
0: 7/8" HAT CHANNEL
1: 1 5/8" C-STUD
2: 2 1/2" C-STUD / CH-STUD / x2 WOOD
4: 3 5/8" C-STUD/ CH-STUD/ x4 WOOD
5: 5 1/2" C-STUD
6: 6" C-STUD / CH STUD / x6 WOOD
8: 8" C-STUD

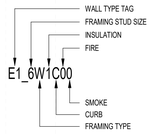
FRAMING TYPE
C: CHASE WALL
F: FURRING (C-STUD)
H: FURRING (HAT CHANNEL)
L: LOW WALL
P: PARTITION (C-STUD)
S: SHAFT WALL
W: FULL HEIGHT WALL

INSULATION
0: NOT INSULATED
1: INSULATED

BASE CONDITION
0: NO CURB
C: CURB

FIRE RATING
0: NON-RATED
1: RATED

SMOKE RATING
0: NON-RATED
1: RATED



*REFER TO THE BUILDING & WALL SECTIONS FOR ASSEMBLY DETAIL REFERENCES STARTING ON **A-401**
*REFER TO **G-301 & G-302** FOR WALL TYPES

WHERE THERE IS AN ACCESSIBLE CONCEALED FLOOR, FLOOR-CEILING OR ATTIC SPACE, FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITIONS OR ANY OTHER WALL REQUIRED TO HAVE PROTECTED OPENINGS OR PENETRATIONS SHALL BE EFFECTIVELY AND PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING IN THE CONCEALED SPACE. SUCH IDENTIFICATION SHALL
1. BE LOCATED WITHIN 15 FEET (4572 MM) OF EACH END OF EACH WALL AND AT INTERVALS NOT EXCEEDING 30 FEET (9144 MM) MEASURED HORIZONTALLY ALONG THE WALL OR PARTITION.
2. INCLUDE LETTERING NOT LESS THAN 3 INCHES (76 MM) IN HEIGHT WITH A MINIMUM 3.8-INCH (9.5 MM) STROKE IN A CONTRASTING COLOR INCORPORATING THE SUGGESTED WORDING. "FIRE AND/ OR SMOKE BARRIER--PROTECT ALL OPENINGS." OR OTHER WORDING.

WALL TYPE LEGEND

- NON RATED WALL OR FURRING WALL ASSEMBLY
- 1 HOUR RATED WALL ASSEMBLY
- METAL PANEL WALL
- MASONRY WALL
- MASONRY VENEER WALL

FOR WALL TYPES REFER TO **G-301 & G-302**

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ARCHITECT STAMP
LICENSED ARCHITECT ROBERT W. TOUPIN III No. C18650 Ref. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
DIMENSION & WALL TYPE PLAN

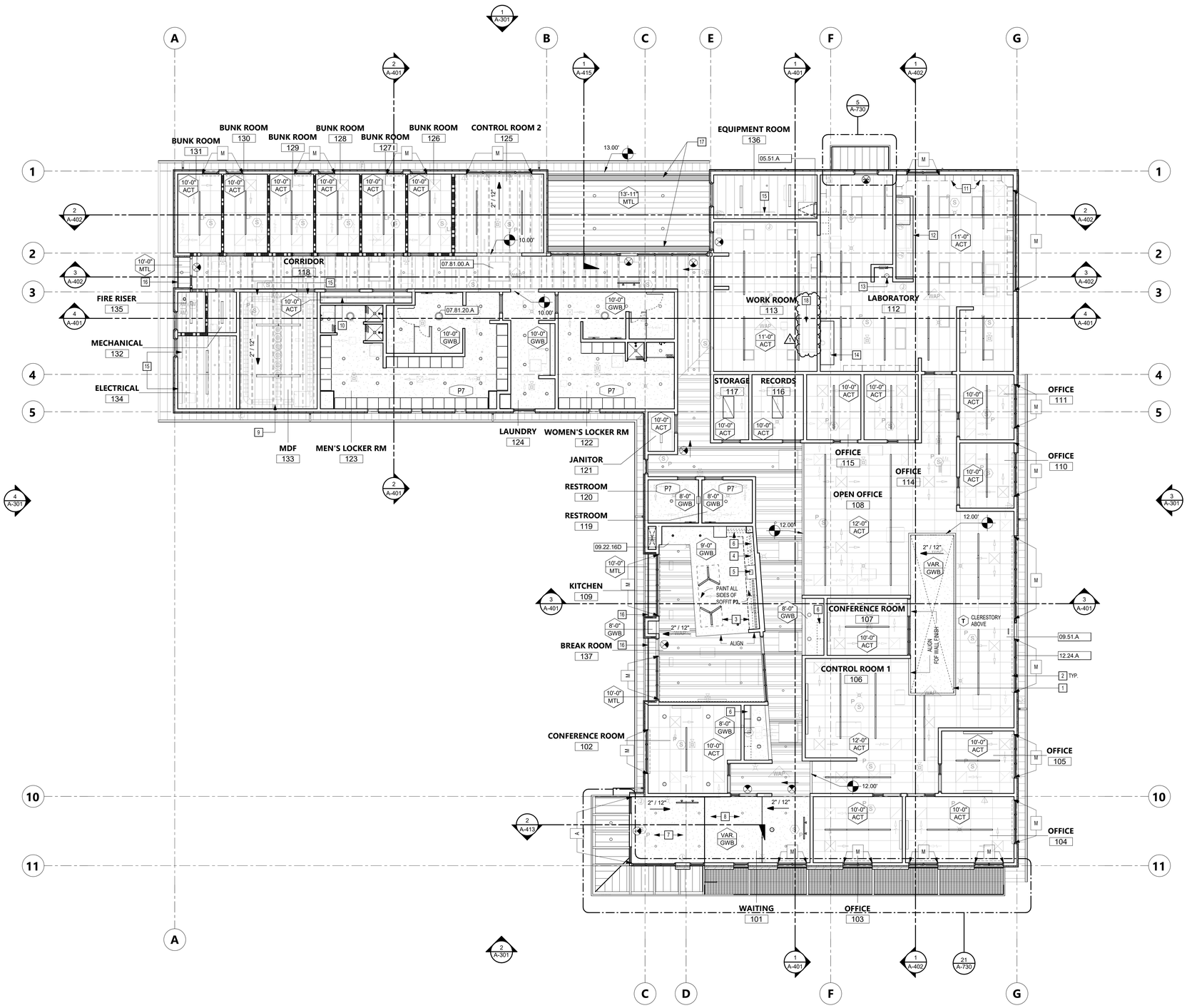
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
A-202

DATE: May 29, 2024

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KEYNOTES

05.51.A	ACCESS LADDER WITH COVER
07.81.00.A	PRISMATIC LENS SKYLIGHT
07.81.20.A	TUBULAR SKYLIGHT
09.22.16D	NON-STRUCTURAL METAL FRAMING: CEILING/SOFFIT FRAMING
09.51.A	SUSPENDED ACOUSTICAL PANEL CEILING
12.24.A	MANUAL ROLLER WINDOW SHADES

SHEET NOTES A-211

1. DASHED LINE INDICATES SKYWELL ABOVE
2. SURFACE-MOUNTED, MANUALLY-OPERATED ROLLER SHADES AT EXTERIOR WINDOWS, TYP; UNO
3. LINE OF COUNTER BELOW
4. UNDERCABINET LIGHTING; SEE ELECTRICAL PLANS FOR ADDT'L INFORMATION
5. EXHAUST HOOD DUCTING, REFER TO MECHANICAL PLANS
6. CASEWORK, REFER TO INTERIOR ELEVATIONS AND INTERIOR DETAILS FOR ADDT'L INFORMATION
7. FURRED WOOD FRAMING W/ACOUSTIC GYPSUM BD CEILING
8. ACCOUSTIC GYPSUM BD CEILING O/ROOF STRUCT ABOVE
9. CABLE TRAY, MAINTAIN UTILITIES 3-FT CLEAR
10. SHELF & POLE
11. LABORATORY UPPER METAL CASEWORK
12. DETACHEABLE FINISHED METAL PANEL ABV FUME HOODS.
13. EMERGENCY SHOWER NOZZLE, SEE PLUMBING PLANS
14. MUFFLE FURNACE HOOD, SEE MECHANICAL PLANS
15. HVAC SYSTEM CASSETTE, SEE MECHANICAL & PLUMBING PLANS
16. 2" CONTINUOUS SOFFIT VENT
17. PERFORATED METAL SOFFIT PANELS
18. HOOD O/WASHING EQUIPMENT, SEE MECHANICAL PLANS

REFLECTED CEILING PLAN GENERAL NOTES

A. CEILING ELEVATIONS SHOWN ARE RELATIVE TO THE FINISH FLOOR ELEVATION IN THAT ROOM, TYPICAL U.N.O.
B. ALIGN CEILING DEVICES IN HALLWAYS AND GYPSUM BOARD CEILINGS, TYPICAL.
C. FOR CEILING TILE AND GRID TYPES REFER TO CEILING LEGEND AND SPECIFICATIONS, TYPICAL.
D. CENTER ACOUSTICAL CEILING GRID WITHIN ROOMS, TYPICAL U.N.O.
E. ILLUMINATED EXIT SIGNAGE AT DOORWAYS OR OPENING INTO HALLWAYS SHALL BE CENTERED ABOVE DOORS/OPENINGS, TYPICAL U.N.O.; REFER TO EXITING PLANS AND ELECTRICAL DWGS.
F. RECESSED CAN LIGHT FIXTURES IN ACOUSTICAL CEILING ASSEMBLY SHALL BE CENTERED IN CEILING TILE, TYPICAL UNLESS SPECIFICALLY DIMENSIONED OTHERWISE.
G. ALL CEILINGS TO BE PAINTED **'P-1'** U.N.O.
H. ALL CEILING PAINT SHALL BE **FLAT** FINISH, TYPICAL U.N.O.
I. ALL CEILING PAINT IN KITCHENS, JANITOR ROOMS, AND UTILITY ROOMS SHALL BE SEMI-GLOSS, TYPICAL.
J. ALL PAINT COLOR AND SHEEN TRANSITIONS SHALL OCCUR AT INSIDE CORNERS, TYPICAL U.N.O.
K. VERTICAL SURFACE OF SOFFITS SHALL BE PAINTED THE SAME COLOR AS HORIZONTAL SURFACE, U.N.O.
L. ALL EXPOSED FLOOR/ROOF DECK, STRUCTURE, PIPE, CONDUIT, ETC. SHALL BE PAINTED **'P-1'** U.N.O.
M. REFER TO ELECTRICAL DRAWINGS FOR LIGHTING INFORMATION, TYPICAL.
N. REFER TO MECHANICAL DRAWINGS FOR AIR SUPPLY, RETURN AND/OR EXHAUST FAN GRILLS, TYPICAL.
O. FIRE SPRINKLER CONTRACTOR SHALL COORDINATE FIRE SPRINKLER HEADS AND PIPING WITH MECHANICAL DUCTS AND EQUIPMENT, ELECTRICAL LIGHTING AND CONDUITS, AND PLUMBING PIPING AS SHOWN ON DRAWINGS, TYPICAL.
P. FIRE SPRINKLER HEADS IN ACOUSTICAL CEILING ASSEMBLY SHALL BE CENTERED IN CEILING TILE, TYPICAL UNLESS SPECIFICALLY DIMENSIONED OTHERWISE.
Q. REFER TO INTERIOR ELEVATIONS AND/OR ELECTRICAL LIGHTING SCHEDULE FOR FURTHER INFORMATION AND DIMENSIONS OF WALL MOUNTED LIGHT FIXTURES
R. FOR INTERIOR FINISH SCHEDULE REFER TO **A-252**
S. HANGING LIGHT FIXTURE HEIGHTS, UNO:
   a. HALLWAY/CORRIDOR: 12-FT
   b. LOBBY: 12-FT
   c. OPEN OFFICE W/ACT CEILING: 10-FT
   d. LABORATORY W/ACT CEILING: 9-FT
   e. BREAK ROOM: 9-FT
   f. OFFICE, CONFERENCE, STORAGE, BUNK ROOMS W/ACT CEILING: 8-FT

LEGEND - REFLECTED CEILING PLAN

- 12'-0" ACT — CEILING HEIGHT ABOVE FIN. FLOOR / CEILING MATERIAL
- ACT 1 - 2x4 SUSPENDED ACOUSTICAL PANEL CEILING (CL3) — 5 / A-760
- OPEN CEILING W/ BATT INSULATION & SCRIM SHEET
- GWB - FRAMED GYPSUM BOARD CEILING — 21 / A-760, 22 / A-760, 24 / A-760
- ROOF ACCESS HATCH — 9 / A-721
- SEMI RECESSED LIGHT FIXTURE
- MTL 1 - LINEAR METAL CEILING PANELS- 4", 6", 8" MACROPLUS SQUARE EDGE — 14 / A-701
- U.O.S. — EXPOSED UNDERSIDE OF STRUCTURE
- AIR SUPPLY DIFFUSER, SEE ALSO MECHANICAL PLANS
- EXIT SIGN. SEE ELECTRICAL LIGHTING PLANS
- 1x4 PENDANT LIGHT FIXTURE
- ROLLER SHADES - RECESSED
- 4" LED LIGHT FIXTURE
- 2' x 2' SUSPENDED LIGHT FIXTURE
- 4.5" x 4.5" DECORATIVE LENS DOWNLIGHT
- RETURN AIR GRILLE PER MECHANICAL DRAWINGS
- M — MANUAL SHADE LOCATIONS **(SP6)**
- A — MOTORIZED SHADE LOCATIONS **(SP6)**
- SUPPLY REGISTER PER MECHANICAL DRAWINGS
- EXHAUST FAN OR GRILLE PER MECHANICAL DRAWINGS
- SUPPLY AND RETURN DIFFUSER PER MECHANICAL DRAWINGS
- FIRE SPRINKLER HEAD
- AUDIO SPEAKER

NOTE: SYMBOLS SHOWN FOR LOCATION PURPOSES ONLY. SEE MECHANICAL, ELECTRICAL, & FIRE PROTECTION DRAWINGS FOR DETAILED INFORMATION

REFLECTED CEILING PLAN 1/8" = 1'-0" **1**

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ARCHITECT STAMP — LICENSED ARCHITECT — ROBERT W. TOUCHE — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

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1	8/28/24	PC Comments

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CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
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Roseville, CA 95747

SHEET TITLE
REFLECTED CEILING PLAN

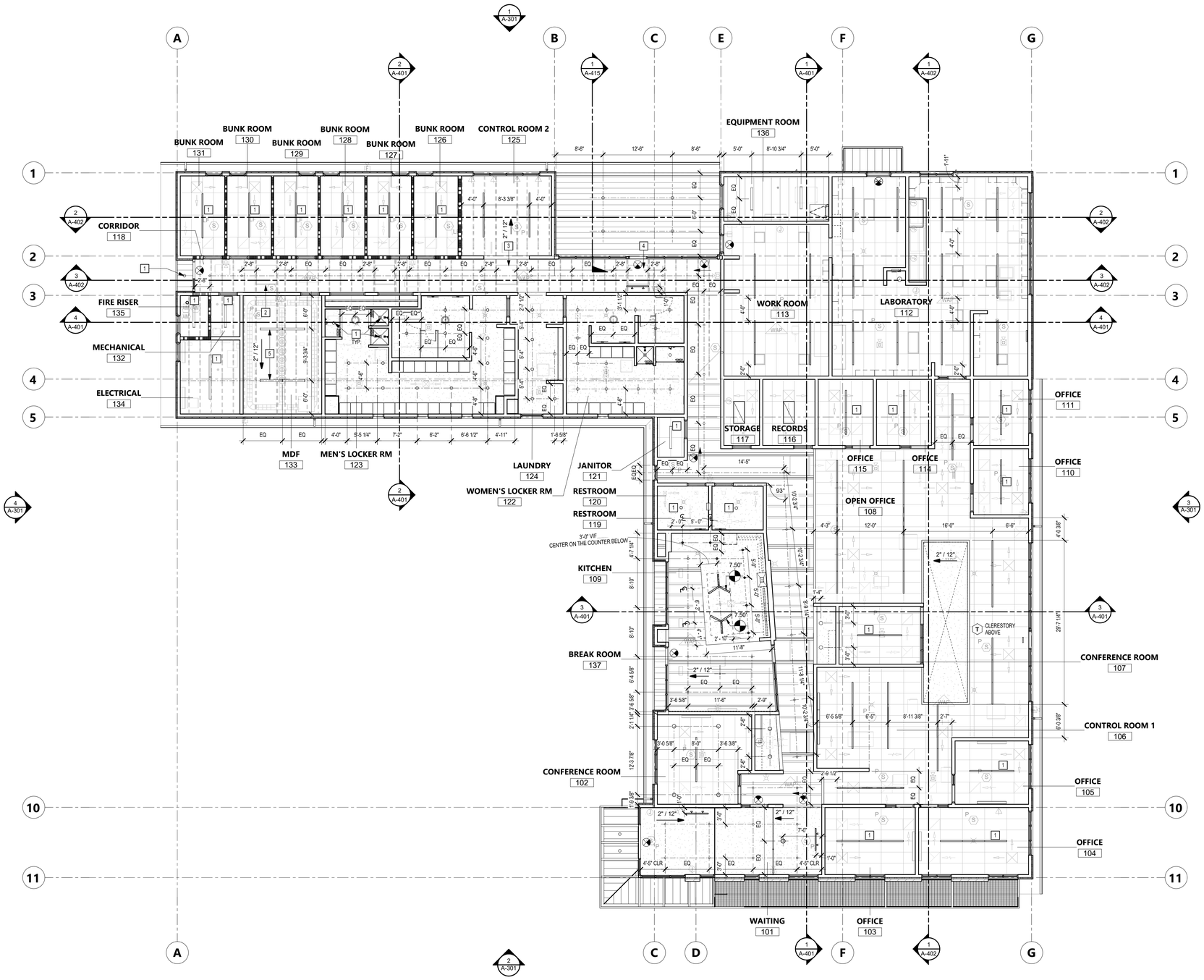
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A-211

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SHEET NOTES A-212

1 CENTER LIGHT FIXTURE IN ROOM OR AREA
2 CENTER SKYLIGHT OPENING WITHIN THE CORRIDOR
3 CENTER SKYLIGHT OPENING WITH CONTROL ROOM OPENING
4 CENTER SKYLIGHT OPENING WITH EXTERIOR DOOR
5 COORDINATE HEIGHT W/HEIGHT OF CABLE TRAYS

REFLECTED CEILING PLAN - DIMENSIONED 1/8" = 1'-0" **1**

196
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ARCHITECT STAMP

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CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
DIMENSIONED REFLECTED CEILING PLAN

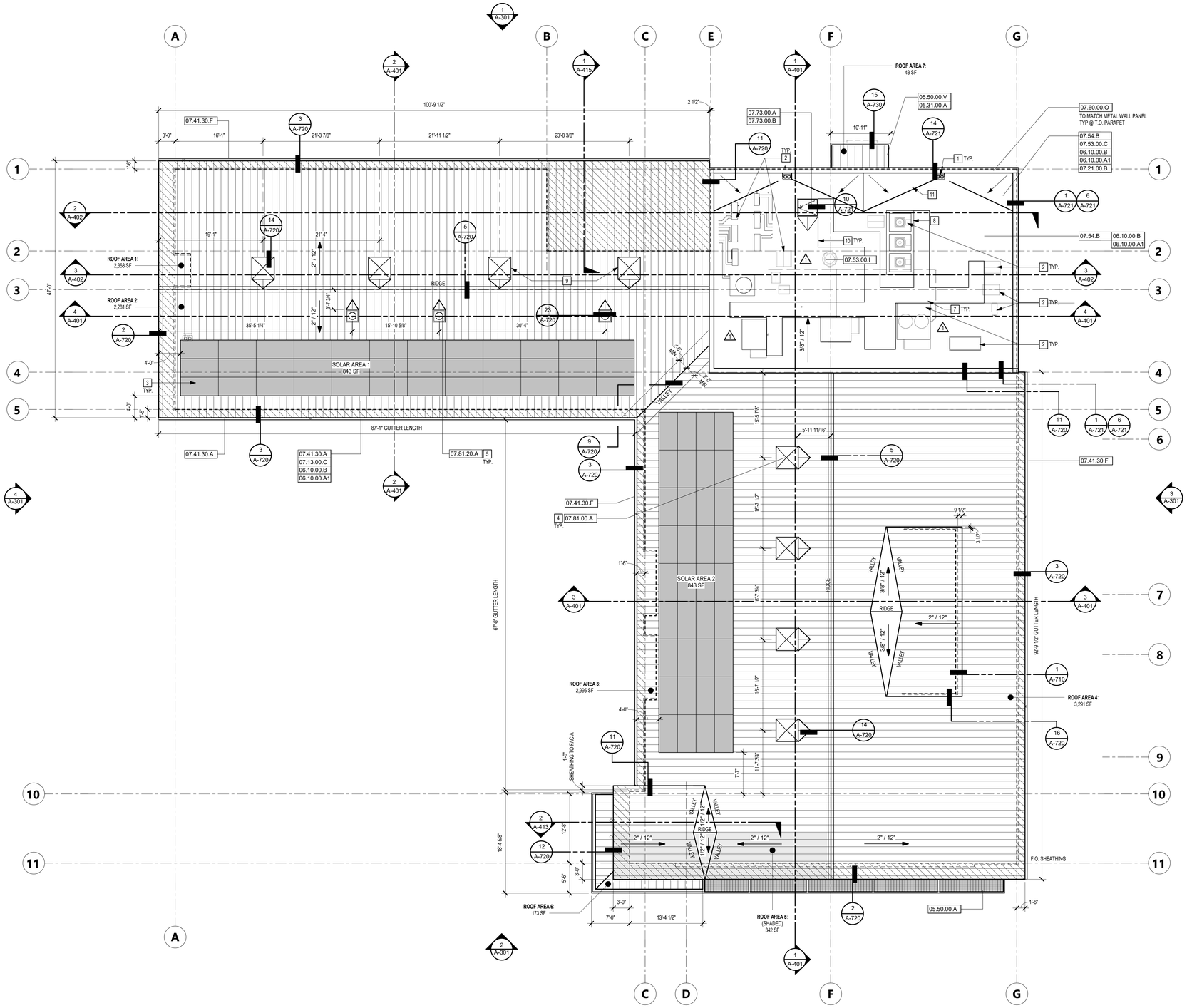
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A-212

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KEYNOTES

05.31.00.A	METAL DECKING
05.50.00.A	STEEL TRELLIS ASSEMBLY
05.50.00.V	STEEL CANOPY ASSEMBLY
06.10.00.A1	WOOD FRAMING
06.10.00.B	PLYWOOD SUBSTRATE SHEATHING
07.13.00.C	COLD APPLIED SELF ADHERING WATERPROOFING MEMBRANE
07.21.00.B	RIGID INSULATION
07.41.30.A	METAL ROOF-STANDING SEAM
07.41.30.F	METAL ROOF - GUTTER
07.53.00.C	TAPERED RIGID INSULATION CRICKET
07.53.00.I	SINGLE PLY WALKWAY
07.54.B	THERMOPLASTIC (TPO) ROOFING
07.60.00.O	METAL COPING
07.73.00.A	ROOF ACCESS HATCH
07.73.00.B	SAFETY RAILING ASSEMBLY WITH GATE
07.81.00.A	PRISMATIC LENS SKYLIGHT
07.81.20.A	TUBULAR SKYLIGHT

ROOF PLAN GENERAL NOTES

A. ALL ROOFS SHALL BE CLASS **"C"** MINIMUM.
B. ROOF SLOPE IS DETERMINED BY STRUCTURE; ROOF CRICKETS FORMED BY TAPERED RIGID INSULATION TYPICAL, U.N.O.
C. ALL ROOF CRICKETS SHALL HAVE SLOPE OF **1/2":12"** MINIMUM U.N.O.
D. ROOFING CONTRACTOR SHALL PROVIDE AN ADDITIONAL LAYER OF WALKWAY PAD UNDER CONDENSATE PIPE SUPPORTS, TYPICAL.
E. ROOF WALKWAY PADS SHALL BE PROVIDED FROM ROOF ACCESS HATCH(ES) TO AND AROUND ALL MECHANICAL UNITS AND EQUIPMENT REQUIRING SERVICE, TYPICAL.
F. PROVIDE CURBS AT ALL SKYLIGHT AND EQUIPMENT LOCATIONS.
G. REFER TO MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR MPE EQUIPMENT CURB INFORMATION.
H. ALL ROOF PENETRATION AND CURBS SHALL BE FLASHED. FLASHING SHALL BE PROVIDED BY ROOFING CONTRACTOR; REFER TO MECHANICAL, PLUMBING & ELEVTRICAL DRAWINGS FOR EQUIPMENT PIPING SUPPORT AND ROOF PENETRATIONS.
I. REFER TO **A-720** (METAL) & **A-721**(TPO) FOR ROOF DETAILS
J. FOR TYPICAL ROOF PENETRATION FLASHING, REFER TO: **7/A-720** & **2/A-721**

SHEET NOTES A-221

1 ROOF DRAIN & OVERFLOW
2 MECHANICAL EQUIPMENT
3 DESIGNATED ROOF AREAS FOR SOLAR PANELS, PROVIDE TIE OFF LOCATIONS
4 4'X4' PYRAMID SKYLIGHT, SEE 15/A-720
5 TUBULAR SKYLIGHT W/14" MIN TUBE SIZE, SOLATUBE 290 DS OR SIM, SEE 22/A-720
7 EQUIPMENT CURB FLASHING, SEE 13/A-721
8 TIEDOWN UNISTRUT FRAME @ FUME HOOD EXHAUST(S). SEE MECHANICAL PLANS FOR ADDT'L INFO
9 SEE RCP PLAN FOR ADDITIONAL SKYLIGHT ALIGNMENT INFORMATION
10 ROOF WALK PAD, VERIFY LOCATIONS W/MEP EQUIPMENT SERVICING REQUIREMENTS. SEE 4/A-721
11 CRICKET, CRICKET VALLEY MIN SLOPE 1/2" PER FOOT

SMACNA DATA:
RAIN INTENSITY: 3.9 IN/HR (100 YEAR)*
*BASED ON SMACNA CALCULATOR FOR RAINFALL AVERAGES IN SACRAMENTO, CA

GUTTER DIMESIONS (BASED ON LARGEST ROOF AREA #4):
WIDTH = 5.5"
HEIGHT = 4.5"
DOWNSPOUT: 2"X3"
MAX GUTTER LENGTH = 50'-0"

PROVIDE DOME STRAINERS PER CPC 1102.2

ROOF DRAIN CALCULATIONS

AREA 1:

ROOF AREA TO BE DRAINED: 2,368 SF
AREA DRAINED PER DOWNSPOUT: 2200 SF
DOWNSPOUTS: 2

MINIMUM AREA PER DOWNSPOUT:
3,298/2200 = 1.07
PROVIDED 2"X3" RECTANGULAR

RECTANGULAR GUTTER LENGTH = 101'
MAX GUTTER LENGTH = 50'-0"
OF EXPANSION JOINTS = 3
GUTTER WIDTH = 5.5"
GUTTER DEPTH = 4.5"

AREA 2:

ROOF AREA TO BE DRAINED: 2,281 SF
AREA DRAINED PER DOWNSPOUT: 2200 SF
DOWNSPOUTS: 2

MINIMUM AREA PER DOWNSPOUT:
2,281/2200 = 1.03
PROVIDED 2"X3" RECTANGULAR

RECTANGULAR GUTTER LENGTH = 87'
MAX GUTTER LENGTH = 50'-0"
OF EXPANSION JOINTS = 2
GUTTER WIDTH = 5.5"
GUTTER DEPTH = 4.5"

AREA 3:

ROOF AREA TO BE DRAINED: 2,995 SF
AREA DRAINED PER DOWNSPOUT: 2200 SF
DOWNSPOUTS: 2

MINIMUM AREA PER DOWNSPOUT:
3,298/2200= 1.36
PROVIDED 2"X3" RECTANGULAR

RECTANGULAR GUTTER LENGTH = 68'
MAX GUTTER LENGTH = 50'-0"
OF EXPANSION JOINTS =2
GUTTER WIDTH = 5.5"
GUTTER DEPTH = 4.5"

AREA 4:

ROOF AREA TO BE DRAINED: 3,291 SF
AREA DRAINED PER DOWNSPOUT: 2200 SF
DOWNSPOUTS: 2

MINIMUM AREA PER DOWNSPOUT:
3,298/2200 = 1.5
PROVIDED 2"X3" RECTANGULAR

RECTANGULAR GUTTER LENGTH = 93'
MAX GUTTER LENGTH = 50'-0"
OF EXPANSION JOINTS = 2
GUTTER WIDTH = 5.5"
GUTTER DEPTH = 4.5"

AREA 5:

ROOF AREA TO BE DRAINED: 342 SF
AREA DRAINED PER DOWNSPOUT: 2200 SF
DOWNSPOUTS: 1

MINIMUM AREA PER DOWNSPOUT:
342/2200 = 0.16
MIN DS WIDTH: 1.75"X2.25"

RECTANGULAR GUTTER LENGTH = 0'
MAX GUTTER LENGTH = 50'-0"
OF EXPANSION JOINTS = 0
GUTTER WIDTH = 5.5"
GUTTER DEPTH = 4.5"

AREA 6 (FRONT CANOPY):

ROOF AREA TO BE DRAINED: 173 SF
AREA DRAINED PER DOWNSPOUT: 2200 SF
DOWNSPOUTS: 1

RECTANGULAR GUTTER LENGTH = 20.5' & 18.5'
MAX GUTTER LENGTH = 50'-0"
OF EXPANSION JOINTS = 0
GUTTER WIDTH = 5.5"
GUTTER DEPTH = 4"

AREA 7 (REAR CANOPY):

ROOF AREA TO BE DRAINED: 43 SF
DOWNSPOUTS: 1
MIN DS SIZE: 1.75"X2.25"
RECTANGULAR GUTTER LENGTH: 11'
OF EXPANSION JOINTS = 0
GUTTER WIDTH = 4"
GUTTER DEPTH = 2"

LEGEND - ROOF PLAN SYMBOLS

O.D. OVERFLOW DRAIN
R.D. ROOF DRAIN
T.O.P. TOP OF PARAPET
T.O.S. TOP OF STEEL; UNDERSIDE OF DECK (U.N.O.)

CRICKET
R.D. O.D. ROOF AND OVERFLOW DRAIN
ROOF ACCESS HATCH
METAL SEAM ROOF

- ALL ROOFING SHALL BE CLASS "C", SEE G-201

MIN. AREA REQUIRED TO VENTILATE PER CBC 1202:
(0 SF/150)*(144in) = 0 in²
MAX AREA TO VENTILATE= 0 in²
TOTAL VENT AREA= **0 in²**

1 9 6
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ARCHITECT STAMP

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CONSULTANT STAMP

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PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
ROOF PLAN

DRAWN BY: 19six JOB NUMBER: 210015.01

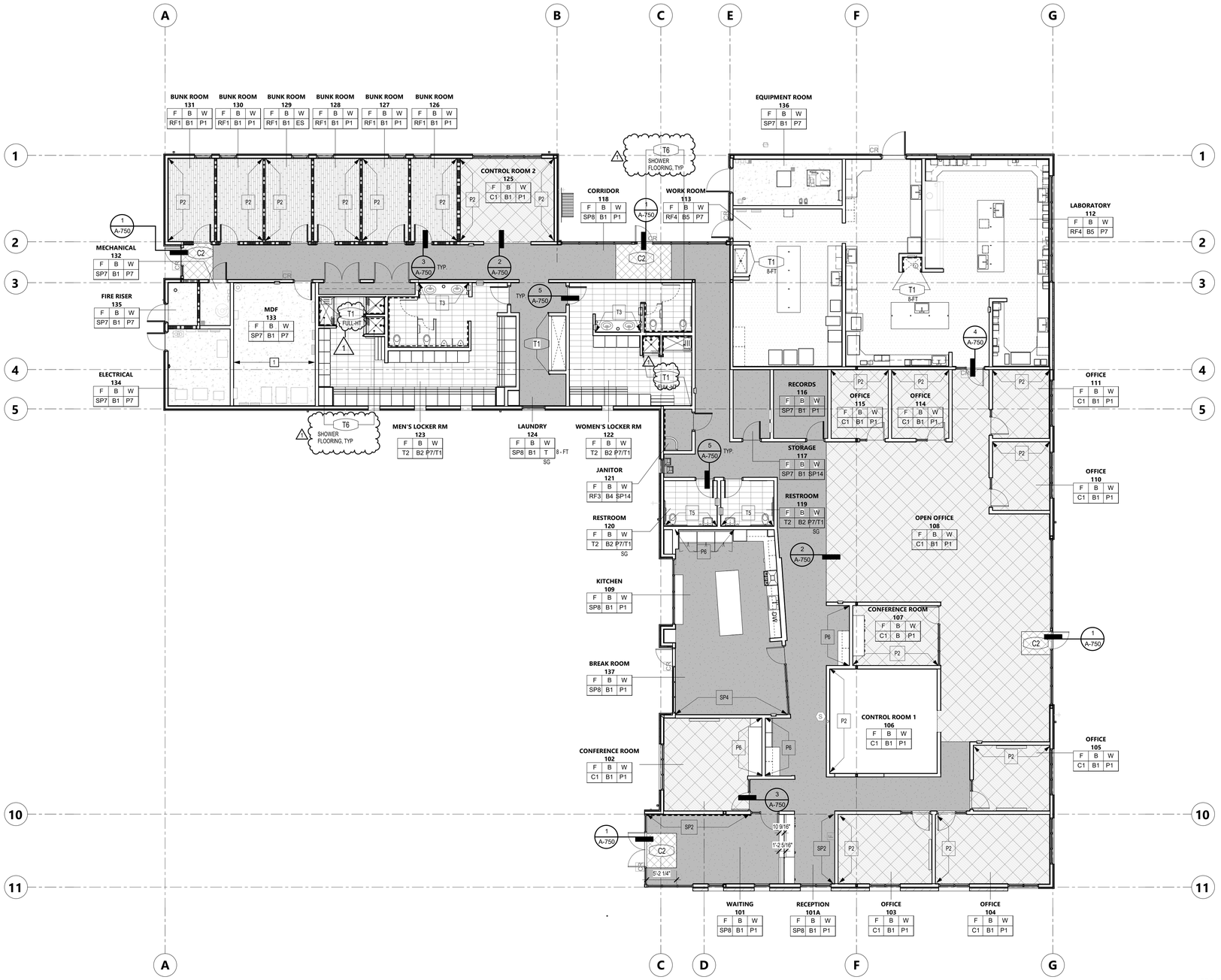
SHEET NO.
A-221

DATE: May 29, 2024

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ROOF PLAN 1/8" = 1'-0" **1**

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FINISH PLAN 1/8" = 1'-0" **1**

FINISHES GENERAL NOTES

A. CONTRACTOR RESPONSIBLE FOR FIELD VERIFYING MATERIAL DIMENSIONS AT EACH PARTITION IN THE FIELD AS RELATED TO THE OVERALL FINAL PARTITION DIMENSION, PRIOR TO DOOR AND WINDOW SUBMITTALS.
B. FOR MATERIAL FINISHES AND LOCATION OF FINISHES, REFER TO FINISH PLAN, INTERIOR ELEVATIONS AND FINISH SCHEDULE.
C. SPECIFICATIONS SHALL SUPERCEDE DIMENSIONS IN THIS DETAIL AS NECESSARY; CONTRACTOR TO VERIFY.

KEYNOTES

SHEET NOTES A-251

1 PAINTED 3/4" PLYWOOD PANELS

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ARCHITECT STAMP

LICENSED ARCHITECT GREGORY W. TOUSLEY No. C18650 Exp. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

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SHEET TITLE
FINISH PLAN

DRAWN BY: 19six JOB NUMBER: 210015.01

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PAINT (P)

(P)	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARK
(E)	EXISTING PAINT					MATCH EXISTING ADJACENT
P1	FIELD PAINT	DUNN EDWARDS	CLASSIC WHITE	DEHW08		EGG SHELL, TYP PROMAR 400 ZERO VOC LATEX
P2	ACCENT PAINT	DUNN EDWARDS	PEWTER PATTER	TAN; DET627		
P3	ACCENT PAINT	DUNN EDWARDS	LOOKING GLASS	DARK GREY; DE6376		
P4	ACCENT PAINT	DUNN EDWARDS	BLACK BEAN	BLACK; DE6385		
P5	ACCENT PAINT	DUNN EDWARDS	COWBOY TRAILS	TERRA COTTA; DET689		
P6	ACCENT PAINT	DUNN EDWARDS	YANKEE DOODLE	BLUE; DET578		
P7	FIELD PAINT IN WET AREAS	DUNN EDWARDS	CLASSIC WHITE	DEHW08		SEMI- GLOSS; PROMAR 400 ZERO VOC LATEX

BASE FINISHES (B)

(B)	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARKS
B1	RUBBER BASE	ROPPE	4" H	150 DARK GREY		TYPICAL, UNO
B2	ALUMINUM COVE BASE	SCHLUTER SYSTEMS	DILEX-AHK	ANODIZED ALUMINUM		TYPICAL FOR ALL RESTROOMS
B3	CONCRETE CURB BASE					SEALED CONC (SLIMPFOOT OR SEALED CONC BASE)
B4	6" H MARMOLEUM COVED BASE	FORBO	MATCH RF3	MATCH RF3		COVE BASE
B5	6" H MARMOLEUM COVED BASE	FLEXCO	MATCH RF4	MATCH RF4		COVE BASE

PLASTIC LAMINATE (PL)

Key Name	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARK
PL1	VERTICAL CASEWORK FINISH	WILSONART	7981K-12 AEON SCRATCH RESISTANCE	LANDMARK WOOD		PROVIDE MATCHING EDGE BANDING W.O.
PL2	CASEWORK ACCENT FINISH	WILSONART	1570 AEON SCRATCH RESISTANCE	WHITE		ACCENT LAMINATE

SOLID SURFACE (SS)

Key Name	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARK
SS1	QUARTZ COUNTERTOP	SILESTONE	SQUARE EDGE	WHITE STROM 14		FULL HEIGHT BACKSPLASH IN KITCHEN;
SS2	SOLID SURFACE COUNTERTOP	LG HIGH MACS		Z003 STRATO WIND		WORK ROOM COUNTERS

TILE (T)

(F)	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARKS
T1	PORCELAIN WALL TILE	DALTILE	AMBASSADOR 12" X24"	WANDERLUST ; WHITE		WAINSCOT 6 FULL SIZE TILES; INSTALLED HORIZONTALLY STACKED
T2	PORCELAIN FLOOR TILE	DALTILE	FABRIC ART 12" X 24"	MODERN LINEAR; MIDNIGHT BLUE		INSTALLED STACKED ALIGN W/ WALL TILE GROUT LINES
T3	PORCELAIN ACCENT WALL TILE	DALTILE	MULTITUDE WAVE 12" X 24"	NOSTALGIC BLUE		INSTALLED HORIZONTALLY STACKED
T4	NOT USED	EMSER TILE	CATCH 3" X 12"	ICE GLOSSY (WHITE)		INSTALLED VERTICALLY STACKED; VE OPTION
T5	RESTROOM FEATURE WALL	EMSER TILE	CATCH 3" X 12"	SILICON GLOSSY (DARK GREY)		INSTALLED VERTICALLY STACKED
T6	SHOWER FLOORING	DALTILE	KEYSTONES 2" X 2"	DESERT GRAY		

RESILIENT FLOORING (RF)

Key Name	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARK
RF1	BUNK ROOM LVT WOOD PLANK	TRI-WEST FLOORING	CITY WIDE; CW12001 7" X 48" 12MIL	WILSHIRE BOULEVARD		INSTALLED ASHLAR
RF2	VCT	TARKETT	VCT II 557/509	GREY		NOT USED: VE OPTION
RF3	MARMOLEUM FLOORING	FORBO	STRIATO 5249	STONEHENGE		
RF4	RUBBER FLOORING	NORA	2MM: CONVIA	7351: PEARL GREY		

CARPET (C)

Key Name	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARK
C1	CARPET FLOORING THROUGHOUT	SHAW CONTRACT	HABITAT TILE; 5T390	DEEP SKY; 88485 (BLUE)		INSTALLED ASHLAR
C2	WALK-OFF CARPET	CONSTRUCTION SPECIALTIES	PEDIGRID; G1 1 1\1/16" DEEP	HEAVY DUTY CARPET INSERT;COLOR :TBD;		DEPRESS SLAB CORDINATE W/ STRUCTURAL
C3						

CEILING FINISHES (CL)

(C)	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARK
(E)	EXISTING CEILING					MATCH EXISTING ADJACENT
CL1	5/8" TYPE "X" GYP BD			PAINT		
CL2	5/8" WATER RESISTANT TYPE "X" GYP BD			PAINT		
CL3	SUSPENDED ACOUSTIC CEILING 2' x 4' TILES	USG MARS PLANK	FLB-88985 3/4 IN THICK .75 NRC; GRID: CENTRICITEE DXT	WHITE		

SPECIALITY PRODUCTS (SP)

(W)	DESCRIPTION	MANUFACTURER	PRODUCT STYLE	COLOR	SPECIFICATION SECTION	REMARKS
SP1	DIMENSIONAL LETTERING PLACEHOLDER		ALUMINUM	TERRA COTTA COLOR		MAY REPURPOSE EXISTING SIGNAGE
SP2	SUPERGRAPHICS	SIGNATURE GRAPHICS	DREAMSACPE-OS MATTE	SHUTTERSTOCK IMAGE 71525107		VERIFY W/ DESIGNER
SP3	ACOUSTICAL PANEL	3FORM	HUSH CLAD; SWITCH	COLOR: ARMOR		
SP4	ACOUSTICAL PANEL	3FORM	HUSH CLAD; SWITCH	COLOR: DUSK (BLUE)		
SP5	WALLCOVERING - POLYESTER	MOMENTUM	NUFELT MANCHESTER	PRIVATE JET; PTMC-09		
SP6	WINDOW COVERING	SENSCREEN	5% OPEN	WHITE		MANUAL SHADES
SP7	SEALED CONCRETE					
SP8	POLISHED CONCRETE					CLASS B GRIND, MEDIUM POLISH. SEE SPECIFICATION FOR ADDITIL INFO & SLIP RESISTANCE
SP9	TOILET PARTITIONS	SCRANTON PRODUCTS	ORANGE PEEL	GREY		CEILING MOUNT
SP10	SPIDER GLASS FILM	3M	FASARA GLASS FILM	TBD		VERIFY W/ DESIGNER
SP11	NOT USED	INPRO	PRISM; REAR TRENCH DRAIN SHOWER BASE	BRIGHT WHITE P9011		NOT USED: VERIFYSIZE W/ ARCHITECT & PLUMBING PRIOR TO FABRICATION
SP12	NOT USED	INPRO	PRISM; REAR TRENCH DRAIN SHOWER BASE	BRIGHT WHITE P9011		NOT USED: VERIFYSIZE W/ ARCHITECT & PLUMBING PRIOR TO FABRICATION
SP13	NOT USED	INPRO	PRISM SMOOTH WALL PANELS	BRIGHT WHITE P9011		NOT USED:VERIFYSIZE W/ ARCHITECT & PLUMBING PRIOR TO FABRICATION
SP14	FRP	KORSEAL	4' X 8'	SIMPLY WHITE		INSTALL PANELS VERTICALLY TO MAXIMIZE MATERIAL
SP15	PHENOLIC RESIN COUNTER AND BACKSPLASH	HANSON		BLACK		

GENERAL NOTES - FINISHES

FINISHES GENERAL NOTES

A. CONTRACTOR RESPONSIBLE FOR FIELD VERIFYING MATERIAL DIMENSIONS AT EACH PARTITION IN THE FIELD AS RELATED TO THE OVERALL FINAL PARTITION DIMENSION, PRIOR TO DOOR AND WINDOW SUBMITTALS.
B. FOR MATERIAL FINISHES AND LOCATION OF FINISHES, REFER TO FINISH PLAN, INTERIOR ELEVATIONS AND FINISH SCHEDULE.
C. SPECIFICATIONS SHALL SUPERCEDE DIMENSIONS IN THIS DETAIL AS NECESSARY; CONTRACTOR TO VERIFY.

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ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOWLER — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

INTERIOR FINISH SCHEDULE

DRAWN BY: 19six JOB NUMBER: 210015.01

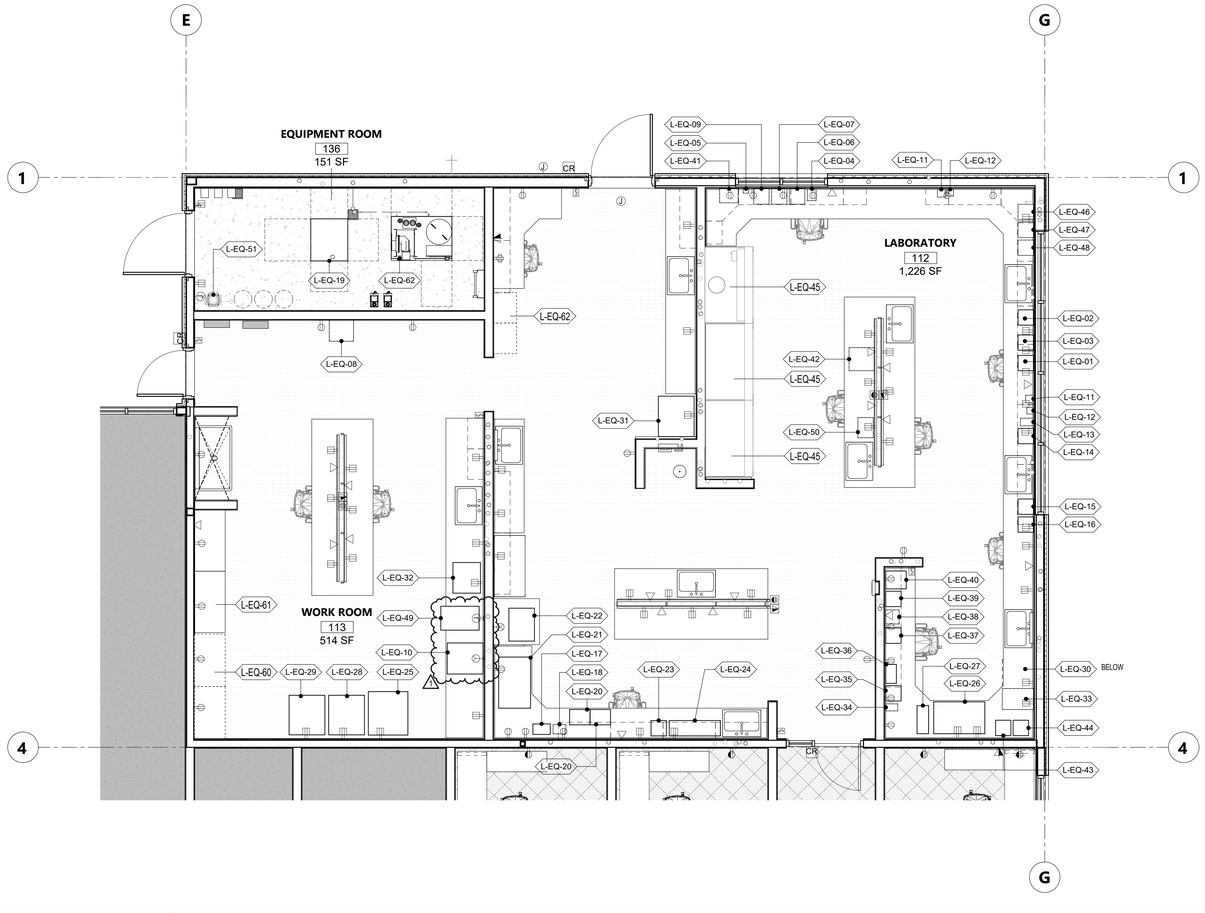
SHEET NO.

A-252

DATE: May 29, 2024

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DATE PLOTTED: 9/20/2024 11:21:59 AM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4T455.rvt



LABORATORY EQUIPMENT PLAN 1/4" = 1'-0" 1

LAB EQUIPMENT SCHEDULE

Type Mark	Description	Manufacturer	Model	Procurement: Supplied By	Procurement: Installed By	Electrical: Volt	Phase	KW	AMP	HP	Connection Type	Low Voltage Connection Type	Plumbing: Supply HW	Supply CW	Supply SOV	Waste Size	Waste Vent	Waste Gas	Waste Exhaust	Comments
Ammonia Analysis Equipment																				
L-EQ-01	OIA Computer			Owner	Owner	120			1-5		STD									
L-EQ-02	OIA Ammonia analyzer	OI Analytica	Model A001614	Owner	Owner	120			3		STD									
L-EQ-03	OIA Printer			Owner	Owner	120			6		STD									
BOD/COD Analysis Equipment																				
L-EQ-04	DO Meter	Hach	HACH HQ440D Multi HACH HQ440D Multi HACH HQ440D Multi	Owner	Owner	120			1		STD									
L-EQ-05	Ultra-Turrax	IKA® Works Inc.	T25 Basic SI HACH HQ440D Multi HACH HQ440D Multi	Owner	Owner	120		0.5			STD									
L-EQ-06	COD Heating Block			Owner	Owner	120		1			STD									
L-EQ-07	Magnetic stirrer x2	MS-1288	Lab Companion	Owner	Owner	120		0.3			STD									
L-EQ-08	COD Waste Container			Owner	Owner	120					STD									
L-EQ-09	COD Waste Container			Owner	Owner	120					STD									
Dish Washer (Lab Grade)																				
L-EQ-10	Lab Grade Dish Washer	FlaskScrubber	LABCONCO	Owner	GC	230			11 amps, 20 amp circuit breaker required.		S-20 P-PLUG			CW & DI						
Electrical Conductivity Equipment																				
L-EQ-11	EC Meter	OakTon	Cor2700 Meter	Owner	Owner	120			1.7		STD									
L-EQ-12	EC magnetic stirrer	MS-12BB	Lab Companion	Owner	Owner	120		0.3			STD									
Fluoride Analysis Equipment																				
L-EQ-13	Fluoride Meter	Hach	Sension 4	Owner	Owner	120			0.5		STD									
L-EQ-14	Fluoride magnetic stirrer	Fisher Scientific	11-100-49S	Owner	Owner	120			0.39		STD									
L-EQ-15	Pipet Rack			Owner	Owner	N/A					N/A									
L-EQ-16	Sample Tray ~1.5' x 1.5'			Owner	Owner	N/A					N/A									
Gravimetric (Solids Area) Equipment																				
L-EQ-17	Analytical Balance	Mettler	AE200	Owner	Owner	120			80 mA		STD									
L-EQ-18	Top Load Balance	Tree	HRB-S	Owner	Owner	120			500 mA		STD									
L-EQ-19	TSS Vacuum Pump	Powerex	IBVS0202	⚠1 GC	GC	208				2 HP	CONFIRM									SEE MEP PLANS FOR ADDT'L EQUIPMEN INFO & CLEARANCES
L-EQ-20	TSS Dessicator	Bel-Art	Dry-Keeper (vert, 3 shlv)	Owner	Owner	120	3 PH				STD									
L-EQ-21	TSS Drying Oven	Thermo Precision Incubator	PR205075G	GC	GC	120			12.1		STD								X	REQUIRES EXHAUST
L-EQ-22	Muffle Furnace	Yamato	FO810CR	⚠1 GC	GC	208, 220	1 PH				3-WIRE W/ROUNDED TERMINAL								X	REQUIRES EXHAUST
L-EQ-23	Pipet Rack			Owner	Owner						N/A									
L-EQ-24	TSS Vacuum Filtering Station			Owner	Owner						N/A									ADJACENT TO VACUUM
L-EQ-62	Air Compressor	Beacon Medaes	LAS02D-080 V-D	⚠1 Owner	GC	460	3 PH			2 HP	SEE MEP									SEE MEP PLANS FOR ADDT'L EQUIPMEN INFO & CLEARANCES; SEE STRUC PLANS FOR ANCHORAGE
Incubators & Refrigerators																				
L-EQ-25	BOD Incubator	Thermo Scientific	PR505755R	Owner	Owner	120			6.2-10		5-15P NEMA									
L-EQ-26	Microbio BacTi Incubator	Thermo Scientific	PR205075M (6878)	Owner	Owner	120			8.3		STD									
L-EQ-27	Battery Backup for BacTi incubator	APC	Smart UPS 2200	Owner	Owner	120			18.4		STD									

LAB EQUIPMENT SCHEDULE

Type Mark	Description	Manufacturer	Model	Procurement: Supplied By	Procurement: Installed By	Electrical: Volt	Phase	KW	AMP	HP	Connection Type	Low Voltage Connection Type	Plumbing: Supply HW	Supply CW	Supply SOV	Waste Size	Waste Vent	Waste Gas	Waste Exhaust	Comments
L-EQ-28	Media Refrigerator	GE GE	GTH17DBC2RWW	Owner	Owner	120			3		STD									
L-EQ-29	Chemical Refrigerator/Freezer		GTH17DBC2RWW	Owner	Owner	120			6.5		STD									
L-EQ-30	Bacti Refrigerator	ULINE		Owner	Owner	120			2.4		STD									
L-EQ-31	Industrial Waste Refrigerator	GE	GE GTS16DTHMRBB	Owner	Owner	120			15		STD									
L-EQ-32	Glassware drying oven	ThermoPrecision	D800-900 | 6528	Owner	Owner	120			15.6		STD									
L-EQ-33	Dual Water Bath	ThermoScientific	TSGP1515D	Owner	Owner	120 or 208/230			9		CONFIRM									
Micro																				
L-EQ-34	Media Dispenser	Cole Parmer Masterfle	77922-18	Owner	Owner	120			1.3		STD									
L-EQ-35	365 nm UV Lamp	Analytik Jena US		Owner	Owner	120			0.17		STD									
L-EQ-36	Microscope	Olympus Model	CX43RF	Owner	Owner	120			0.4 A		STD									
L-EQ-37	Microscope Monitor			Owner	Owner	120					STD									
L-EQ-38	Optical Counting Equipment	American Optical	Model 3325	Owner	Owner	120		.04			STD									
L-EQ-39	Waste Media Space			Owner	Owner	N/A														
L-EQ-40	Quanti-Tray Sealer PLUS	IDEXX®	Quanti-tray Plus	Owner	Owner	120			10 A		STD									
Miscellaneous Equipment																				
L-EQ-41	Centrifuge	Corning LSE		Owner	Owner	120			1.1		STD									
L-EQ-42	HACH spectrophotometer	HACH DR6000		Owner	Owner	120			2		STD									
L-EQ-43	Stirrer/Hot plate	Fisher Scientific	11-100-49SH	Owner	Owner	120			8.9		STD									
L-EQ-44	Stirrer/Hot plate	Fisher Scientific	11-100-49SH	Owner	Owner	120			8.9		STD									
L-EQ-45	Fume Hood	LABCONCO	PROTECTOR XL ⚠1	GC	GC	120					NEMA			X				X	X	REQUIRES DRAIN; VACUUM; (3) TOTAL; SEE MEP PLANS FOR ADDTL EQUIPMEN INFO; SEE MEP PLANS FOR ADDTL INFO; SEE STRUCT FOR ANCHORAGE INFO
pH Equipment																				
L-EQ-46	pH meter	Thermo Scientific Orion 410A+		Owner	Owner						STD									
L-EQ-47	pH magnetic stirrer	Thermo Scientific Orion 410A+ Thermo Scientific Orion 410A+ Thermo Scientific RT-Basic-17 Thermo Scientific RT-Basic-17		Owner	Owner				0.3		STD									
L-EQ-48	Burette			Owner	Owner						N/A									
Sterility Equipment																				
L-EQ-49	Autoclave	Market Forge Sterilmatic	⚠1	GC	GC	120/208-240	1		12 @ 236V		HARDWIRED					Drain - 1/2" (13mm) N.P.T. of 3/8" (10mm) OD copper				POWER - NO PREFERENCE - BASED ON INFRASTRUCTURE; CONRIM PER CLIENT MARKUP
Turbidity Equipment																				
L-EQ-50	Turbidity Meter	HACH	2100N	Owner	Owner	120			1.2		STD									
Water Purification System																				
L-EQ-51	Water Purification System	CULLIGAN / GOULDS	SEE MEP	⚠1 Owner	GC	208			4.1	1 HP	STD			CW						⚠1 SEE MEP PLANS FOR ADDTL INFO; EVOQUA INSTALLER THROUGH GC
L-EQ-52	Demin Resistivity Meter	MYRON L®	Model 750 II	Owner	Owner	120					STD			DI						
Storage																				
L-EQ-60	Metal Storage Cabinets			TBD	TBD															2'D X 35"W X 7' H
L-EQ-61	Metal Storage Shelving			TBD	TBD															2'D X 4'W X 6' H
L-EQ-60	Metal Storage Cabinets			TBD	TBD															16"D X 2'W X 7' H

NOTE: CONFIRM ALL FINAL EQUIPMENT SELECTIONS PRIOR TO COMMENCEMENT OF WORK

196
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ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOUCEY — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

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1	8/28/24	PC Comments

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PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG

1800 Booth Road
Roseville, CA 95747

SHEET TITLE

LABORATORY EQUIPMENT PLAN

DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.

A-253

DATE: May 29, 2024

BID SET (PRELIMINARY)

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FURNITURE PLAN 1/8" = 1'-0" **1**

PROJECT NORTH

196

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ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT GREGORY M. TOPPEN AIA No. C18650 Ren. 2/28/25 STATE OF CALIFORNIA

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FURNITURE PLAN (REFERENCE ONLY)

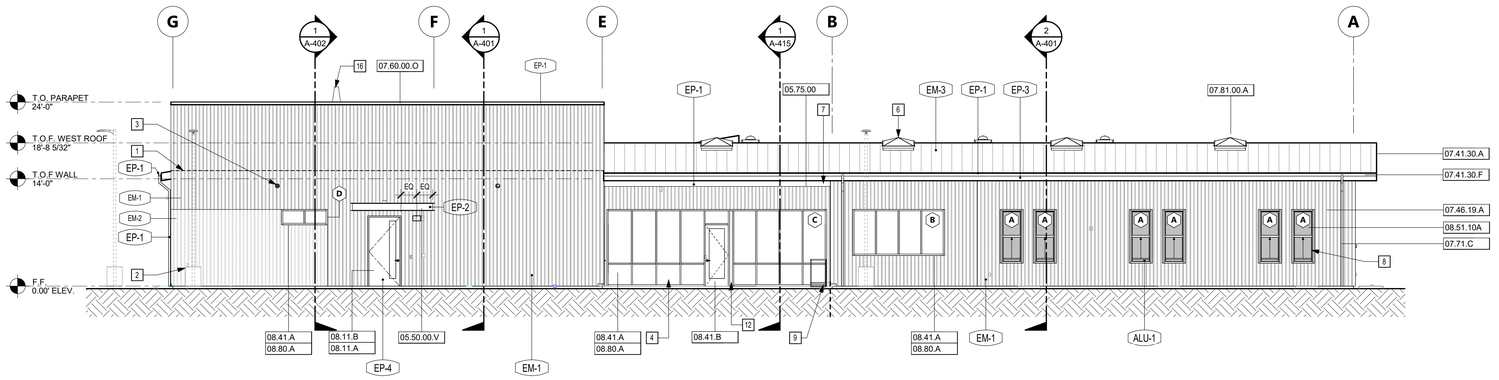
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
A-254

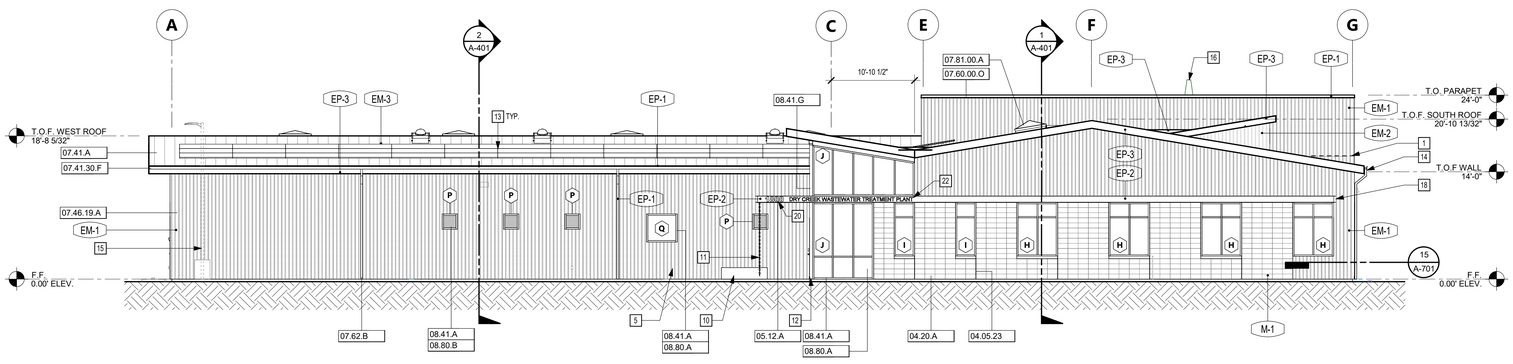
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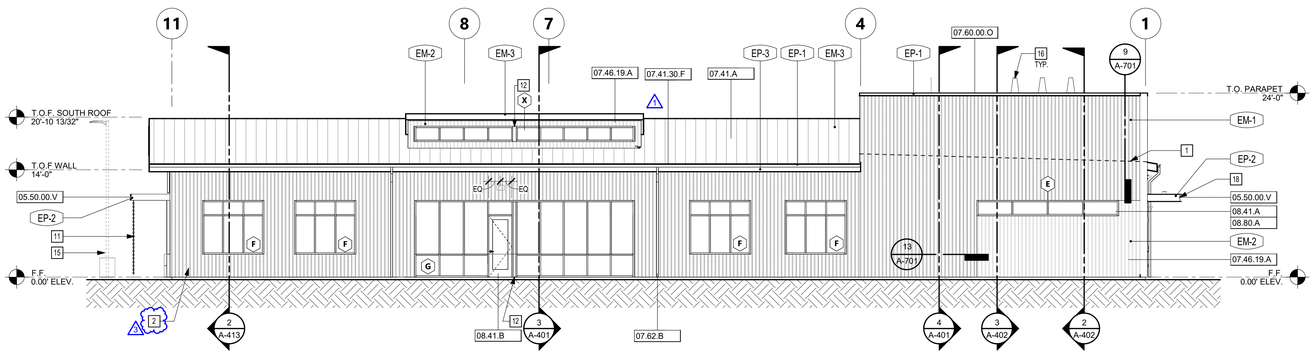
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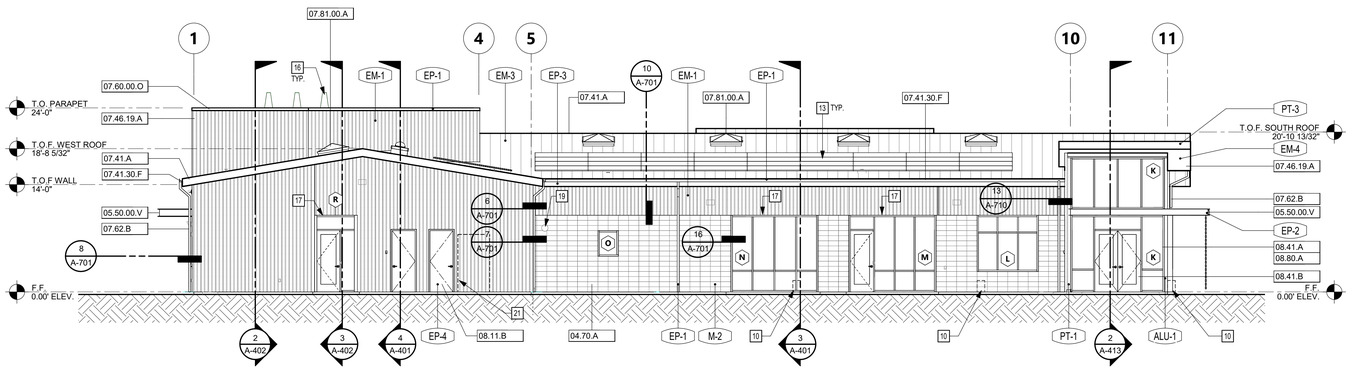
NORTH ELEVATION 1/8" = 1'-0" 1



SOUTH ELEVATION 1/8" = 1'-0" 2



EAST ELEVATION 1/8" = 1'-0" 3



WEST ELEVATION 1/8" = 1'-0" 4

KEYNOTES

04.05.23	MASONRY EXPANSION JOINT
04.20.A	CMU WALL
04.70.A	CMU VENEER
05.12.A	STRUCTURAL STEEL BEAM PER STRUCTURAL DRAWINGS
05.50.00.V	STEEL CANOPY ASSEMBLY
05.75.00	BRAKE METAL
07.41.30.A	METAL ROOF-STANDING SEAM
07.41.30.F	METAL ROOF - GUTTER
07.41.A	STANDING-SEAM METAL ROOF PANELS
07.46.19.A	METAL SIDING AND SOFFIT ASSEMBLY
07.60.00.O	METAL COPING
07.62.B	SCHEDULE 40 DOWNSPOUT, PAINTED
07.71.C	MANUFACTURED DOWNSPOUT
07.81.00.A	PRISMATIC LENS SKYLIGHT
08.11.A	HOLLOW METAL DOOR FRAME, PAINTED
08.11.B	HOLLOW METAL DOOR, PAINTED
08.41.A	ALUMINUM-FRAMED STOREFRONT SYSTEM
08.41.B	STOREFRONT ALUMINUM DOOR
08.41.G	ALUMINUM BREAK METAL
08.51.10A	OPERABLE ALUMINUM WINDOW
08.80.A	VISION GLAZING
08.80.B	PRIVACY GLAZING

SHEET NOTES A-301

1 LINE OF ROOF BEYOND
2 GAS RISER LOCATION PER PLUMBING PLANS
3 ROOF OVERFLOW, SEE 24/A-701 SIM
4 6" CONC FILLED BOLLARD PER 22/AS-601
5 EXTERIOR METAL PANELS W/CONCEALED FASTENERS
6 4'X4' PYRAMID SKYLIGHT, SEE 15/A-720
7 BRAKE METAL O/STRUCT BEAM; FINISH TO MATCH WALL PANELS
8 ALU SH EGRESS WINDOWS AT BUNK ROOMS, SEE WINDOW SCHEDULE FOR ADDT'L INFO
9 BOOT WASH PER A23-AS-601. SEE PLUMBING PLANS FOR ADDT'L INFO
10 SEAT WALL AT LANDSCAPE PLANTER; SEE CIVIL FOR ADDT'L INFO
11 RAIN DRAIN CHAIN
12 BRAKE METAL O/STRUCT COLUMN. FINISH TO MATCH STOREFRONT
13 SOLAR PANELS; PROVIDE TIE-OFF CONNECTIONS; SEE ELEC & STRUCT PLANS FOR ADDT'L INFO
14 METAL GUTTER & DOWNSPOUT, SEE ROOF PLAN FOR SIZING, SEE FLOOR & SITE PLANS FOR ADDT'L INFORMATION
15 SITE LIGHTING; SEE ELECTRICAL PLANS FOR ADDT'L INFO
16 HOOD EXHAUST BEYOND, SEE MECHANICAL PLANS
17 METAL SOFFIT PANEL, SEE 14/A-701
18 STEEL CANOPY, SEE A-730 FOR CANOPY DETAILS
19 MECHANICAL EXHAUST, SEE MECHANICAL PLANS
20 8" H LIGHTED ADDRESS NUMBER
21 BATTERY STORAGE SYSTEM W/INVERTER BEYOND, SEE ELECTRICAL PLANS
22 6" H BUILDING SIGNAGE

LEGEND - EXTERIOR MATERIALS

EM-1 EXTERIOR METAL PANELS W/CONCEALED FASTENERS
MFG: METAL SALES
PROFILE / COLOR: EM15-1224 / ASH GREY

EM-2 EXTERIOR METAL PANELS W/CONCEALED FASTENERS
MFG: METAL SALES
PROFILE / COLOR: EM15-1224 / TERRA COTTA

EM-3 STANDING SEAM METAL ROOF
MFG: METAL SALES
PROFILE / COLOR: 18" MINI BATTEN, STRIATED / SNOWDRIFT WHITE

EM-4 METAL SOFFIT
MFG: METAL SALES
PROFILE / COLOR: CTR-2022 W/V-GROOVES / SNOWDRIFT WHITE

EP-1 EXTERIOR PAINT
MFG: SEE SPECIFICATIONS
COLOR: MATCH EM-1 (METAL SALES 'ASH GREY')

EP-2 EXTERIOR PAINT
MFG: SEE SPECIFICATIONS
COLOR: MATCH EM-2 (METAL SALES 'TERRA COTTA')

EP-3 EXTERIOR PAINT
MFG: SEE SPECIFICATIONS
COLOR: MATCH EM-3 (METAL SALES 'SNOWDRIFT WHITE')

EP-4 EXTERIOR PAINT
MFG: SEE SPECIFICATIONS
COLOR: DARK GRAY (TBD)

M-1 CONCRETE MASONRY UNITS
MFG: BASALITE
BOND / FINISH / COLOR : STACKED / GROUND FACE / 490

M-2 CONCRETE MASONRY UNITS (VENEER)
MFG: BASALITE
BOND / FINISH/ COLOR: STACKED / GROUND FACE / 490

ALU-1 STOREFRONT / BRAKE METAL
FINISH: CLEAR ANODIZED ALUMINUM FINISH

EXTERIOR ELEVATION GENERAL NOTES

A. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET **A-811**
B. FOR DOOR SCHEDULE SEE SHEET **A-851**
C. ALL WALL, CEILING, AND SOFFIT PAINT COLOR TRANSITIONS SHALL OCCUR AT INSIDE CORNERS, TYPICAL U.N.O.
D. ALL STEEL TO BE GALVANIZED AND PAINTED.
E. EXTERIOR CEMENT PLASTER TO BE PAINTED.
F. HOLLOW METAL DOOR AND WINDOW FRAMES AND HOLLOW METAL DOORS SHALL BE PAINTED TO MATCH ADJACENT WALL, TYPICAL, U.N.O.
G. METAL LOUVERS WITHIN HOLLOW METAL DOORS SHALL BE PAINTED TO MATCH DOOR.
H. REFER TO STRUCTURAL DRAWINGS FOR FOUNDATION INFORMATION.
I. CEMENT PLASTER CONTROL JOINTS SHALL BE PLACED IN THE FOLLOWING ORDER OF PRIORITY:
   a. AS NOTED ON ELEVATIONS
   b. ALIGN WITH ADJACENT EDGE OF OPENINGS, ALIGN WITH WINDOW MULLION EDGES OR CENTERLINE
   c. ALIGN WITH EXISTING JOINT PATTERN
J. MASONRY EXPANSION JOINTS SHALL BE PLACED IN ORDER OF PRIORITY IDENTIFIED FOR CEMENT PLASTER JOINTS, U.N.O.
K. CONTRACTOR TO COORDINATE AND CONFIRM EXPANSION AND CONTROL JOINT LOCATIONS WITH ARCHITECT PRIOR TO LAYOUT AND INSTALLATION.

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT — JEREMY M. TOMLIN — No. C18650 — Exp. 2/28/25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments
3	2/12/2025	Preliminary Bid Set

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
EXTERIOR ELEVATIONS

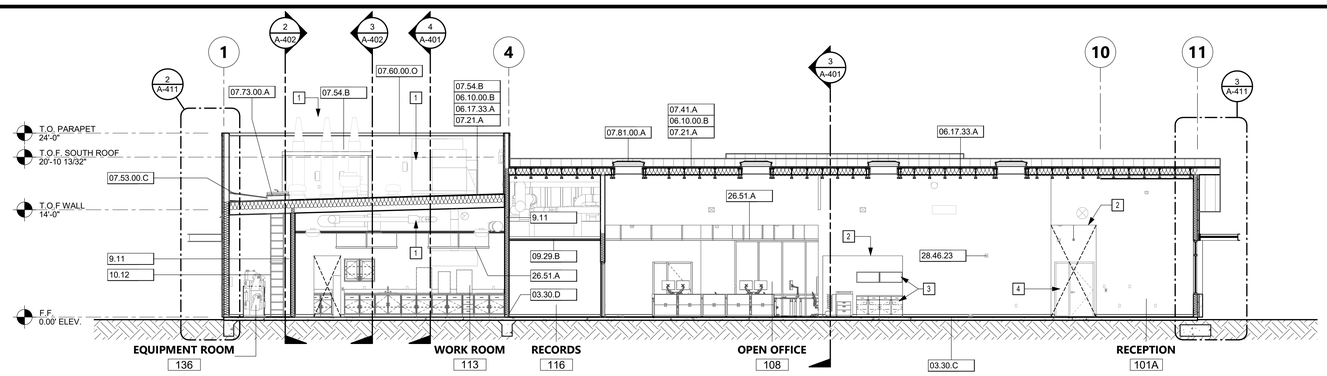
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SHEET NO.
A-301

DATE: May 29, 2024

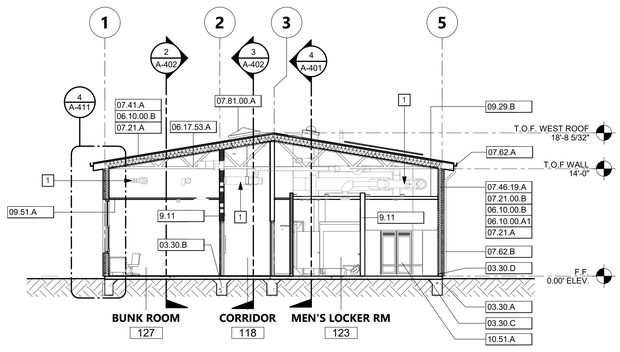
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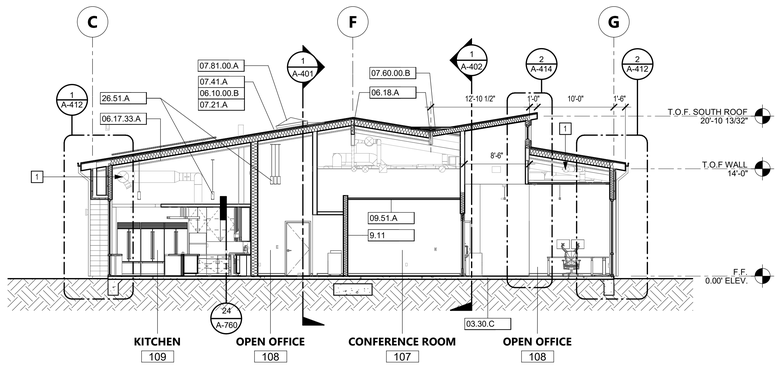
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BUILDING SECTION - 1

1/8" = 1'-0" **1**



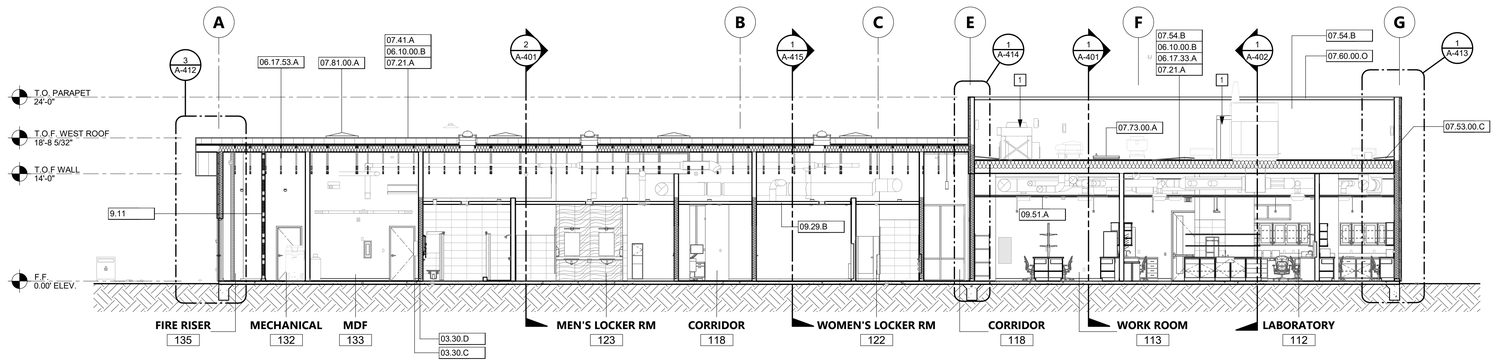


BUILDING SECTION - 2

1/8" = 1'-0" **2**

BUILDING SECTION - 3

1/8" = 1'-0" **3**



BUILDING SECTION - 4

1/8" = 1'-0" **4**

KEYNOTES

03.30.A	FOOTING PER STRUCTURAL DRAWINGS
03.30.B	FOUNDATION WALL PER STRUCTURAL DRAWINGS
03.30.C	SLAB-ON-GRADE PER STRUCTURAL DRAWINGS
03.30.D	CONCRETE CURB
06.10.00.A1	WOOD FRAMING
06.10.00.B	PLYWOOD SUBSTRATE SHEATHING
06.17.33.A	WOOD I-JOISTS
06.17.53.A	SHOP FABRICATED WOOD TRUSSES
06.18.A	GLU-LAM BEAM PER STRUCTURAL DRAWINGS
07.21.00.B	RIGID INSULATION
07.21.A	UNFACED, GLASS-FIBER, BATT/BLANKET INSULATION PER T24. SEE GENERAL NOTES FOR ADDT'L INFO
07.41.A	STANDING-SEAM METAL ROOF PANELS
07.46.19.A	METAL SIDING AND SOFFIT ASSEMBLY
07.53.00.C	TAPERED RIGID INSULATION CRICKET
07.54.B	THERMOPLASTIC (TPO) ROOFING
07.60.00.B	SHEET METAL CRICKET
07.60.00.O	METAL COPING
07.62.A	6" BOX GALV. PRE-FINISHED GUTTER
07.62.B	SCHEDULE 40 DOWNSPOUT, PAINTED
07.73.00.A	ROOF ACCESS HATCH
07.81.00.A	PRISMATIC LENS SKYLIGHT
9.11	WALL FRAMING PER WALL TYPES
09.29.B	5/8" TYPE 'X' MOISTURE & MOLD RESISTANT GYPSUM BOARD, PAINTED
09.51.A	SUSPENDED ACOUSTICAL PANEL CEILING
10.12	ACCESS LADDER, PROTECT IN PLACE.
10.51.A	STAFF LOCKERS
26.51.A	INTERIOR LIGHTING FIXTURE, REFER TO ELECTRICAL LIGHTING PLANS
28.46.23	FIRE ALARM HORNS AND STROBES. SEE FA PLANS.

SHEET NOTES A-401

1 MECHANICAL EQUIPMENT, REFER TO MECHANICAL
2 INTERIOR SOFFIT, SEE RCP
3 CASEWORK, SEE INTERIOR ELEVATIONS & DETAILS FOR ADDT'L INFORMATION
4 INTERIOR DOOR W/SIDELIGHT, SEE DOOR & WINDOW SCHEDULES FOR ADDT'L INFORMATION

BUILDING SECTIONS GENERAL NOTES

A. REFER TO STRUCTURAL DRAWINGS FOR FOUNDATION AND FOOTING INFORMATION.
B. PROVIDE CONTINUOUS THERMALLY INSULATED BUILDING ENVELOPE WITH NO LAPSE OR GAPS IN COVERAGE.
C. PER T24 PROVIDE FRICTION FIT **R-21** BATT INSULATION MINIMUM IN EXTERIOR FRAMED WALL CAVITY, TYPICAL U.N.O.
D. PER T24 PROVIDE **1"** TAPED RIGID (**R-5**)INSULATION MINIMUM OVER WRB, TYPICAL U.N.O.
E. PER T24 PROVIDE **R-38** BATT INSULATION MINIMUM UNDER ROOF SHEATHING, TYPICAL U.N.O.
F. PROVIDE FRICTION FIT ACOUSTIC INSULATION TO FILL WALL CAVITY AT ALL INTERIOR WALLS, TYPICAL.
G. REFER TO **G-301** & **G-302** FOR WALL TYPES
H. REFER TO **A-701** FOR EXTERIOR WALL DETAILS
I. REFER TO **A-720** & **A-721** FOR ROOF DETAILS

WALL TYPE LEGEND

- NON RATED WALL OR FURRING WALL ASSEMBLY
- 1 HOUR RATED WALL ASSEMBLY
- METAL PANEL WALL
- MASONRY WALL
- MASONRY VENEER WALL

FOR WALL TYPES REFER TO **G-301** & **G-302**

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ARCHITECT STAMP

LICENSED ARCHITECT — GREGORY W. TORGERSON — No. C18650 — Exp. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

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City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

BUILDING SECTIONS

DRAWN BY: 19six JOB NUMBER: 210015.01

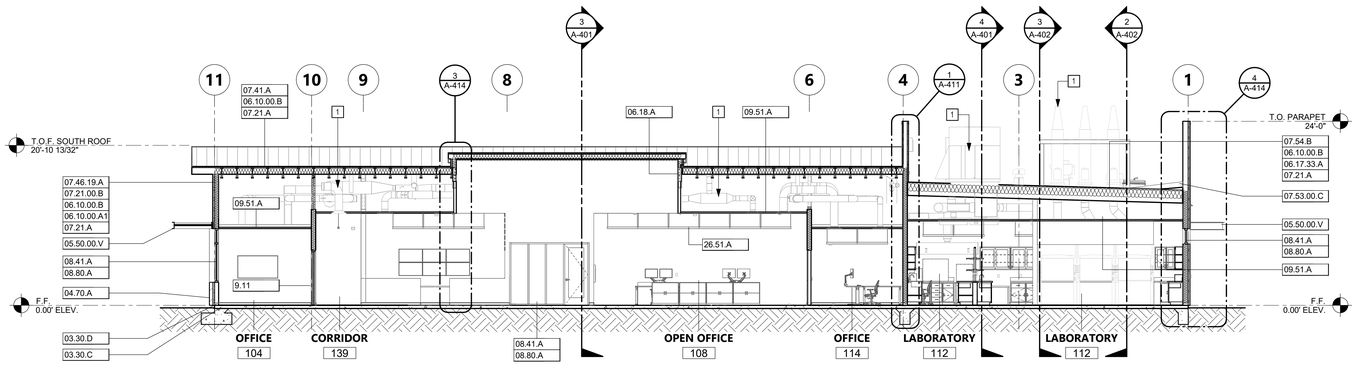
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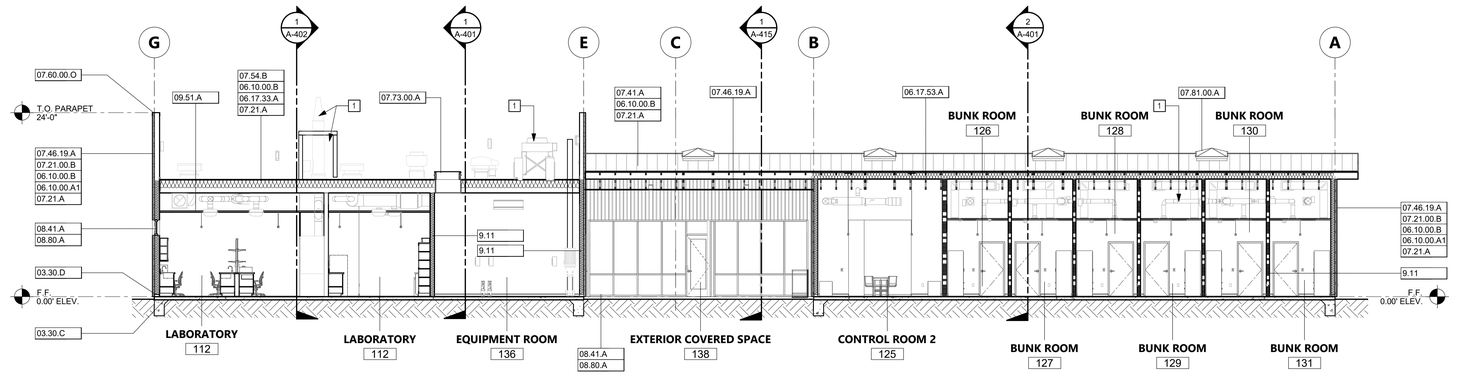
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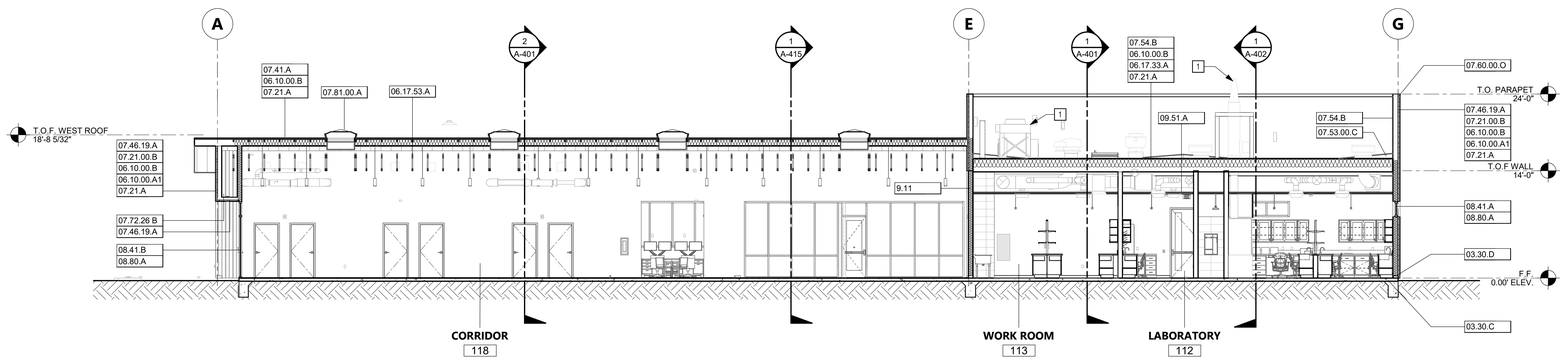
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BUILDING SECTION - 5 1/8" = 1'-0" 1



BUILDING SECTION - 6 1/8" = 1'-0" 2



BUILDING SECTION - 7 1/8" = 1'-0" 3

KEYNOTES

03.30.C	SLAB-ON-GRADE PER STRUCTURAL DRAWINGS
03.30.D	CONCRETE CURB
04.70.A	CMU VENEER
05.50.00.V	STEEL CANOPY ASSEMBLY
06.10.00.A1	WOOD FRAMING
06.10.00.B	PLYWOOD SUBSTRATE SHEATHING
06.17.33.A	WOOD I-JOISTS
06.17.53.A	SHOP FABRICATED WOOD TRUSSES
06.18.A	GLU-LAM BEAM PER STRUCTURAL DRAWINGS
07.21.00.B	RIGID INSULATION
07.21.A	UNFACED, GLASS-FIBER, BATT/BLANKET INSULATION PER T24. SEE GENERAL NOTES FOR ADDT'L INFO
07.41.A	STANDING-SEAM METAL ROOF PANELS
07.46.19.A	METAL SIDING AND SOFFIT ASSEMBLY
07.53.00.C	TAPERED RIGID INSULATION CRICKET
07.54.B	THERMOPLASTIC (TPO) ROOFING
07.60.00.O	METAL COPING
07.72.26 B	CONTINUOUS SOFFIT VENT
07.73.00.A	ROOF ACCESS HATCH
07.81.00.A	PRISMATIC LENS SKYLIGHT
08.41.A	ALUMINUM-FRAMED STOREFRONT SYSTEM
08.41.B	STOREFRONT ALUMINUM DOOR
08.80.A	VISION GLAZING
9.11	WALL FRAMING PER WALL TYPES
09.51.A	SUSPENDED ACOUSTICAL PANEL CEILING
26.51.A	INTERIOR LIGHTING FIXTURE, REFER TO ELECTRICAL LIGHTING PLANS

SHEET NOTES A-402

1 MECHANICAL EQUIPMENT, REFER TO MECHANICAL

BUILDING SECTIONS GENERAL NOTES

A. REFER TO STRUCTURAL DRAWINGS FOR FOUNDATION AND FOOTING INFORMATION.
B. PROVIDE CONTINUOUS THERMALLY INSULATED BUILDING ENVELOPE WITH NO LAPSE OR GAPS IN COVERAGE.
C. PER T24 PROVIDE FRICTION FIT **R-21** BATT INSULATION MINIMUM IN EXTERIOR FRAMED WALL CAVITY, TYPICAL U.N.O.
D. PER T24 PROVIDE **1"** TAPED RIGID (**R-5**)INSULATION MINIMUM OVER WRB, TYPICAL U.N.O.
E. PER T24 PROVIDE **R-38** BATT INSULATION MINIMUM UNDER ROOF SHEATHING, TYPICAL U.N.O.
F. PROVIDE FRICTION FIT ACOUSTIC INSULATION TO FILL WALL CAVITY AT ALL INTERIOR WALLS, TYPICAL.
G. REFER TO **G-301** & **G-302** FOR WALL TYPES
H. REFER TO **A-701** FOR EXTERIOR WALL DETAILS
I. REFER TO **A-720** & **A-721** FOR ROOF DETAILS

WALL TYPE LEGEND

- NON RATED WALL OR FURRING WALL ASSEMBLY
- 1 HOUR RATED WALL ASSEMBLY
- METAL PANEL WALL
- MASONRY WALL
- MASONRY VENEER WALL

FOR WALL TYPES REFER TO **G-301** & **G-302**

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ARCHITECT STAMP

LICENSED ARCHITECT ROBERT W. TOUCEY No. C18650 Ref. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
BUILDING SECTIONS

DRAWN BY: 19six JOB NUMBER: 210015.01

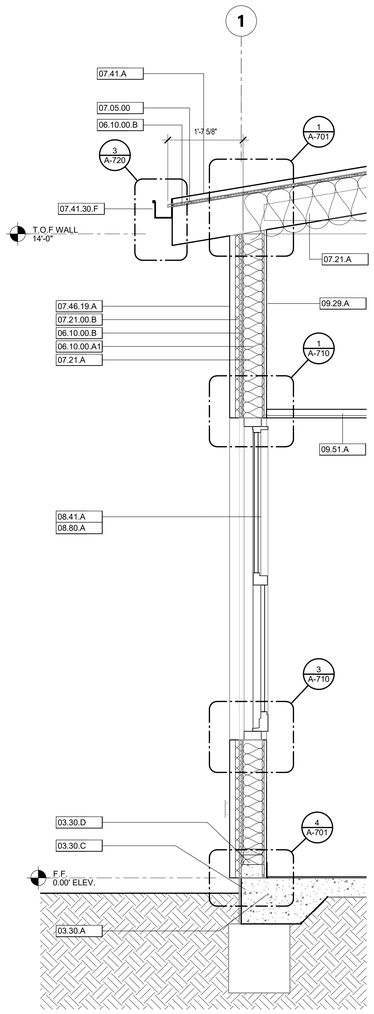
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A-402

DATE: May 29, 2024

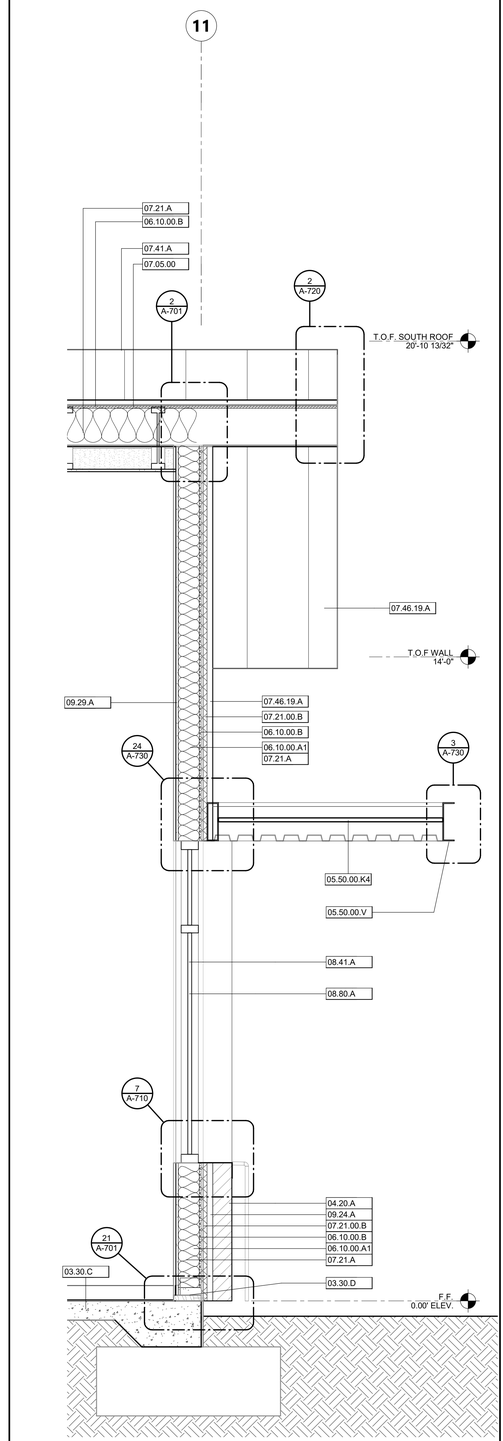
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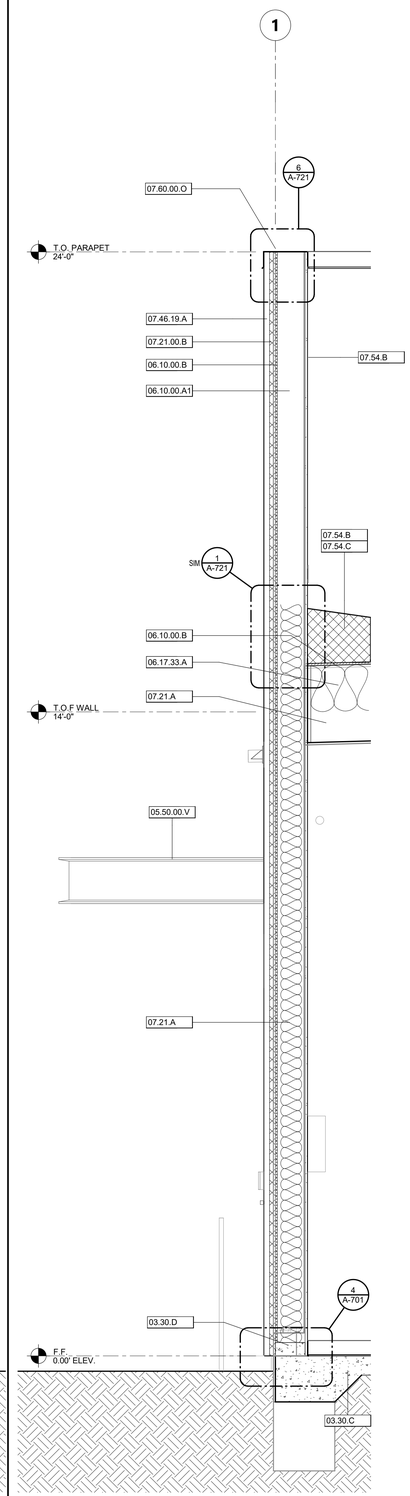
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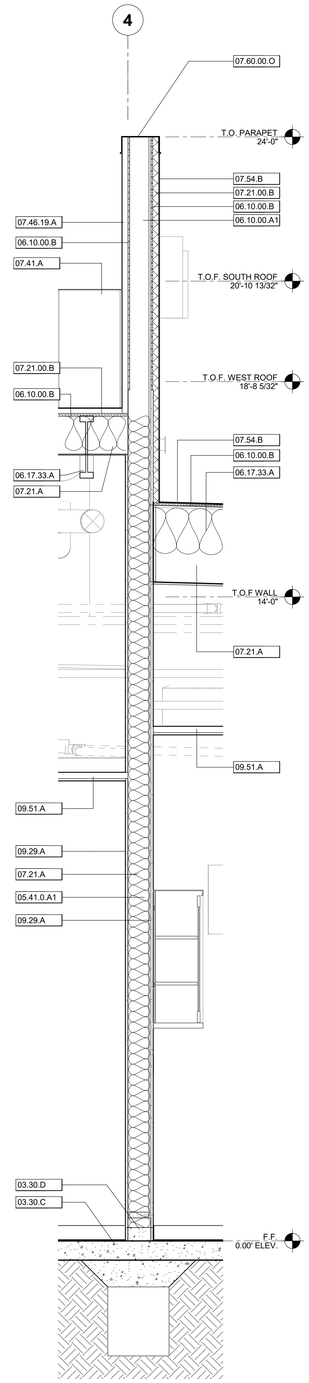
WALL SECTION - BUNK RM 3/4" = 1'-0" **4**



WALL SECTION - RECEPTION 3/4" = 1'-0" **3**



WALL SECTION - EQUIPMENT RM 3/4" = 1'-0" **2**



WALL SECTION - LAB/OFFICE 3/4" = 1'-0" **1**

KEYNOTES

03.30.A	FOOTING PER STRUCTURAL DRAWINGS
03.30.C	SLAB-ON-GRADE PER STRUCTURAL DRAWINGS
03.30.D	CONCRETE CURB
04.20.A	CMU WALL
05.41.0.A1	STEEL STUD
05.50.00.K4	FLOOR GRATING
05.50.00.V	STEEL CANOPY ASSEMBLY
06.10.00.A1	WOOD FRAMING
06.10.00.B	PLYWOOD SUBSTRATE SHEATHING
06.17.33.A	WOOD I-JOISTS
07.05.00	ROOF UNDERLAYMENT
07.21.00.B	RIGID INSULATION
07.21.A	UNFACED, GLASS-FIBER, BATT/BLANKET INSULATION PER T24. SEE GENERAL NOTES FOR ADDT'L INFO
07.41.30.F	METAL ROOF - GUTTER
07.41.A	STANDING-SEAM METAL ROOF PANELS
07.46.19.A	METAL SIDING AND SOFFIT ASSEMBLY
07.54.B	THERMOPLASTIC (TPO) ROOFING
07.54.C	TAPERED (CRICKETS) INSULATION FOR SLOPE
07.60.00.O	METAL COPING
08.41.A	ALUMINUM-FRAMED STOREFRONT SYSTEM
08.80.A	VISION GLAZING
09.24.A	PORTLAND CEMENT PLASTER
09.29.A	5/8" TYPE 'X' GYPSUM BOARD, PAINTED WHERE EXPOSED
09.51.A	SUSPENDED ACOUSTICAL PANEL CEILING

WALL SECTIONS GENERAL NOTES

A. REFER TO STRUCTURAL DRAWINGS FOR FOUNDATION AND FOOTING INFORMATION.
B. PROVIDE CONTINUOUS THERMALLY INSULATED BUILDING ENVELOPE WITH NO LAPSE OR GAPS IN COVERAGE.
C. EXTERIOR INSULATION PER T-24 REPORT
   a. **EXTERIOR WALLS, BATT INSULATION:** PER T24 PROVIDE FRICTION FIT **R-21** BATT INSULATION MINIMUM IN EXTERIOR FRAMED WALL CAVITY, TYPICAL U.N.O.
   b. **EXTERIOR WALLS, RIGID INSULATION:** PER T24 PROVIDE **1.5"** TAPED RIGID (**R-7.5**) WALL INSULATION MINIMUM OVER WRB, TYPICAL U.N.O.
   c. **ROOF BATT INSULATION:** PER T24 PROVIDE **R-38** BATT INSULATION MINIMUM UNDER ROOF SHEATHING, COVER W/SCRIM SHEET, TYPICAL U.N.O.
D. **INTERIOR WALLS:** PROVIDE FRICTION FIT ACOUSTIC INSULATION TO FILL WALL CAVITY AT ALL INTERIOR WALLS, TYPICAL.
E. REFER TO **G-301** & **G-302** FOR WALL TYPES
F. REFER TO **A-701** FOR EXTERIOR WALL DETAILS
G. REFER TO **A-720** & **A-721** FOR ROOF DETAILS

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ARCHITECT STAMP



CONSULTANT STAMP

REVISIONS

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SHEET TITLE
WALL SECTIONS

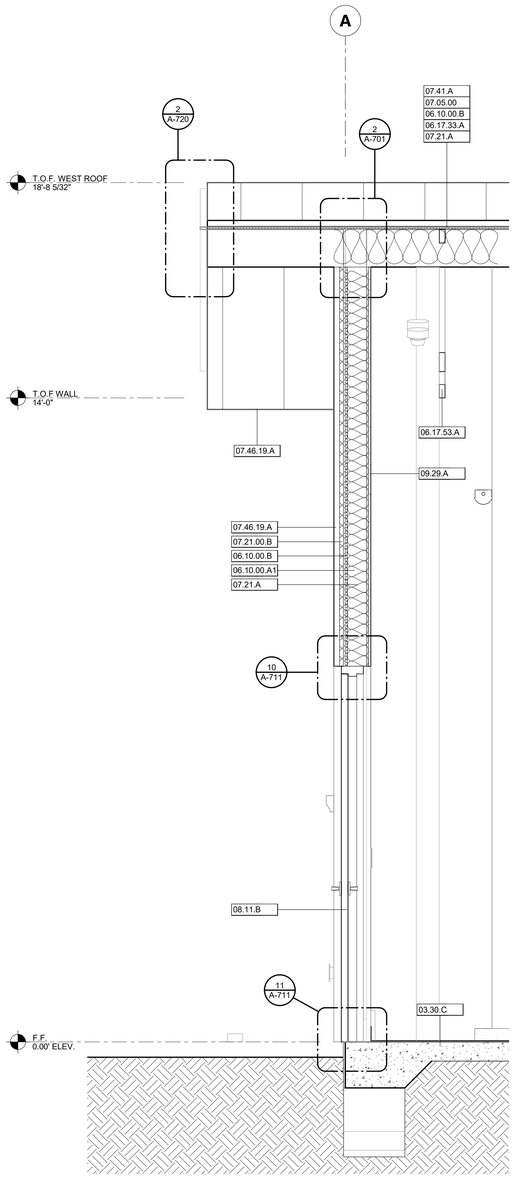
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A-411

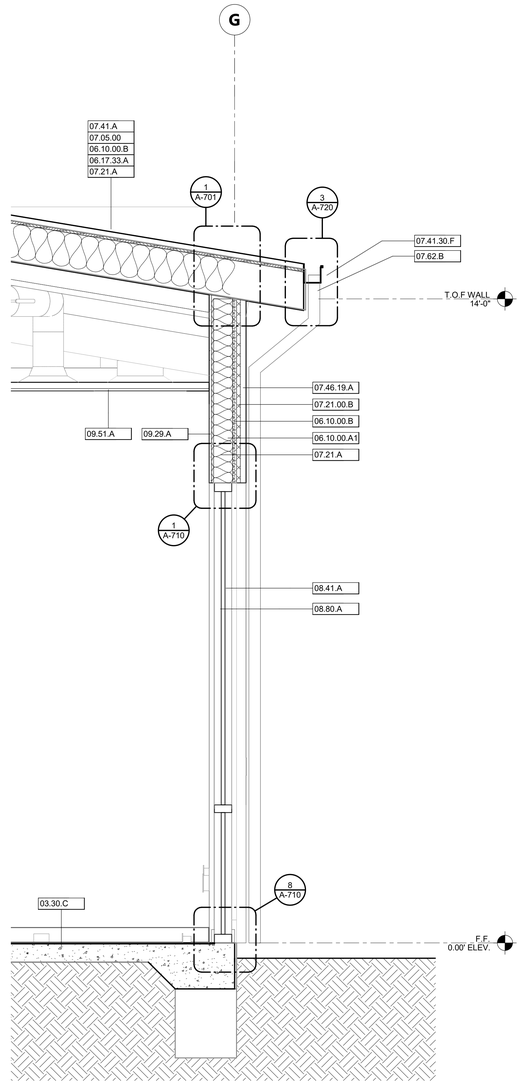
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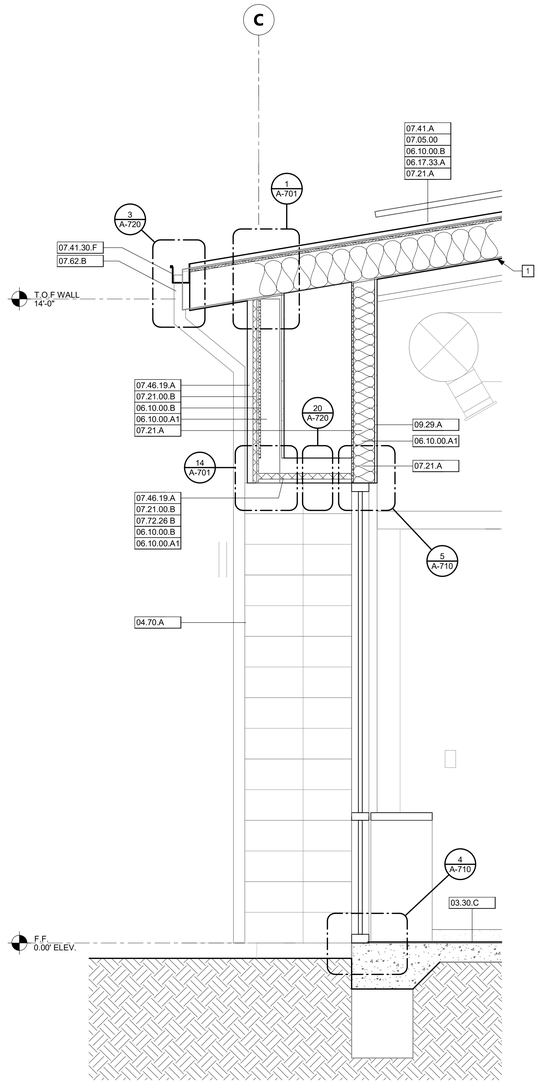
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WALL SECTION - FIRE RISER 3/4" = 1'-0" 3



WALL SECTION - OPEN OFFICE @ EAST 3/4" = 1'-0" 2



WALL SECTION - BREAK ROOM 3/4" = 1'-0" 1

KEYNOTES

03.30.C	SLAB-ON-GRADE PER STRUCTURAL DRAWINGS
04.70.A	CMU VENEER
06.10.00.A1	WOOD FRAMING
06.10.00.B	PLYWOOD SUBSTRATE SHEATHING
06.17.33.A	WOOD I-JOISTS
06.17.53.A	SHOP FABRICATED WOOD TRUSSES
07.05.00	ROOF UNDERLAYMENT
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07.62.B	SCHEDULE 40 DOWNSPOUT, PAINTED
07.72.26.B	CONTINUOUS SOFFIT VENT
08.11.B	HOLLOW METAL DOOR, PAINTED
08.41.A	ALUMINUM-FRAMED STOREFRONT SYSTEM
08.80.A	VISION GLAZING
09.29.A	5/8" TYPE 'X' GYPSUM BOARD, PAINTED WHERE EXPOSED
09.51.A	SUSPENDED ACOUSTICAL PANEL CEILING

WALL SECTIONS GENERAL NOTES

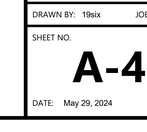
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B. PROVIDE CONTINUOUS THERMALLY INSULATED BUILDING ENVELOPE WITH NO LAPSE OR GAPS IN COVERAGE.
C. EXTERIOR INSULATION PER T-24 REPORT
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   b. **EXTERIOR WALLS, RIGID INSULATION:** PER T24 PROVIDE **1.5"** TAPED RIGID (**R-7.5**) WALL INSULATION MINIMUM OVER WRB, TYPICAL U.N.O.
   c. **ROOF BATT INSULATION:** PER T24 PROVIDE **R-38** BATT INSULATION MINIMUM UNDER ROOF SHEATHING, COVER W/SCRIM SHEET, TYPICAL U.N.O.
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E. REFER TO **G-301** & **G-302** FOR WALL TYPES
F. REFER TO **A-701** FOR EXTERIOR WALL DETAILS
G. REFER TO **A-720** & **A-721** FOR ROOF DETAILS

SHEET NOTES A-412

1 SCRIM SHEET O/BATT INSULATION AT ALL EXPOSED OPEN CEILING CONDITIONS, SEE RCP PLAN FOR ADDT'L INFO

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
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ARCHITECT STAMP



CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
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DCWWTP OPERATIONS AND LAB BLDG
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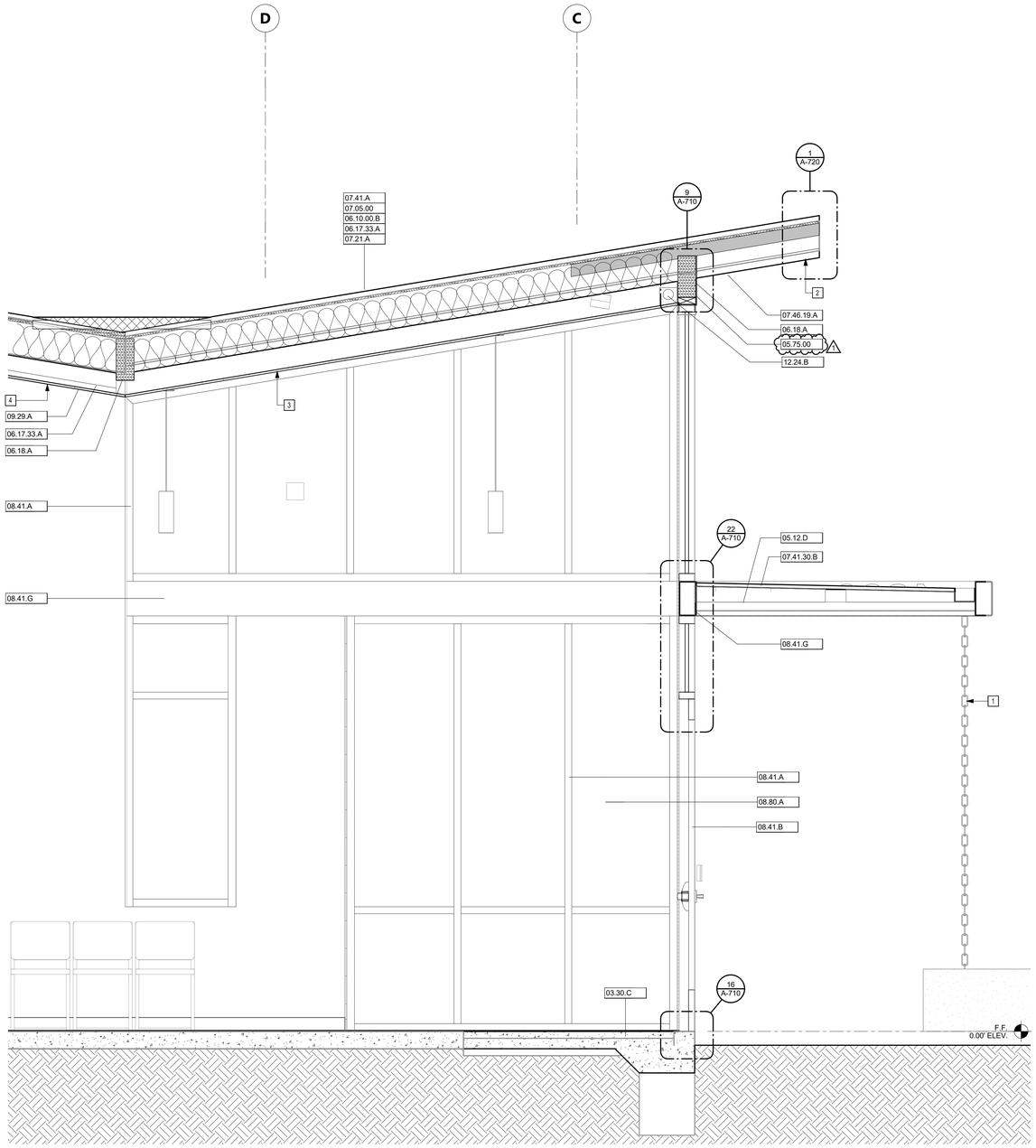
SHEET TITLE
WALL SECTIONS

DRAWN BY: 19six JOB NUMBER: 210015.01

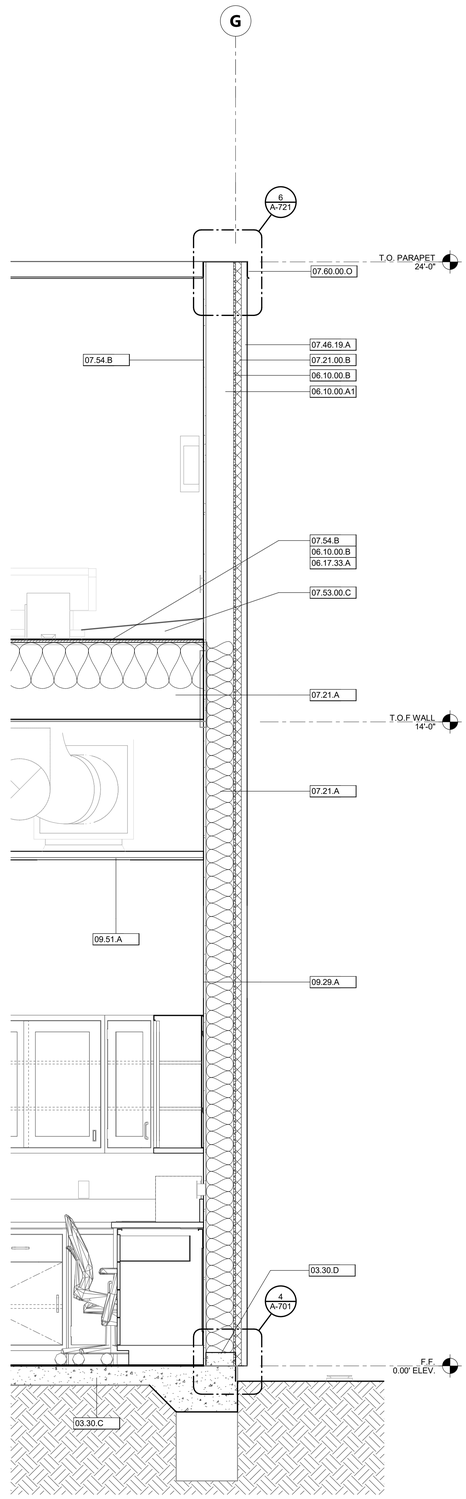
SHEET NO.
A-412

DATE: May 29, 2024

BID SET (PRELIMINARY)



WALL SECTION - MAIN LOBBY 3/4" = 1'-0" **2**



WALL SECTION - LAB @ EAST 3/4" = 1'-0" **1**

KEYNOTES

03.30.C	SLAB-ON-GRADE PER STRUCTURAL DRAWINGS
03.30.D	CONCRETE CURB
05.12.D	STEEL TUBE
05.75.00	BRAKE METAL
06.10.00.A1	WOOD FRAMING
06.10.00.B	PLYWOOD SUBSTRATE SHEATHING
06.17.33.A	WOOD I-JOISTS
06.18.A	GLU-LAM BEAM PER STRUCTURAL DRAWINGS
07.05.00	ROOF UNDERLAYMENT
07.21.00.B	RIGID INSULATION
07.21.A	UNFACED, GLASS-FIBER, BATT/BLANKET INSULATION PER T24. SEE GENERAL NOTES FOR ADDT'L INFO
07.41.30.B	METAL ROOF-CORRUGATED
07.41.A	STANDING-SEAM METAL ROOF PANELS
07.46.19.A	METAL SIDING AND SOFFIT ASSEMBLY
07.53.00.C	TAPERED RIGID INSULATION CRICKET
07.54.B	THERMOPLASTIC (TPO) ROOFING
07.60.00.O	METAL COPING
08.41.A	ALUMINUM-FRAMED STOREFRONT SYSTEM
08.41.B	STOREFRONT ALUMINUM DOOR
08.41.G	ALUMINUM BREAK METAL
08.80.A	VISION GLAZING
09.29.A	5/8" TYPE 'X' GYPSUM BOARD, PAINTED WHERE EXPOSED
09.51.A	SUSPENDED ACOUSTICAL PANEL CEILING
12.24.B	MOTORIZED ROLLER WINDOW SHADES

WALL SECTIONS GENERAL NOTES

A. REFER TO STRUCTURAL DRAWINGS FOR FOUNDATION AND FOOTING INFORMATION.
B. PROVIDE CONTINUOUS THERMALLY INSULATED BUILDING ENVELOPE WITH NO LAPSE OR GAPS IN COVERAGE.
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F. REFER TO **A-701** FOR EXTERIOR WALL DETAILS
G. REFER TO **A-720** & **A-721** FOR ROOF DETAILS

SHEET NOTES A-413

1 RAIN DRAIN CHAIN
2 CONTINUOUS SOFFIT VENT
3 ACOUSTIC GYP BD O/FURRED FRAMING TO ALIGN W/ADJACENT GYP BD FRAMING O/ROOF STRUCTURE
4 ACOUSTIC GYP BD O/ROOF STRUCTURE

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ARCHITECT STAMP

LICENSED ARCHITECT
ROBERT W. TOUCEY
No. C18650
Ref. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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SHEET TITLE
WALL SECTIONS

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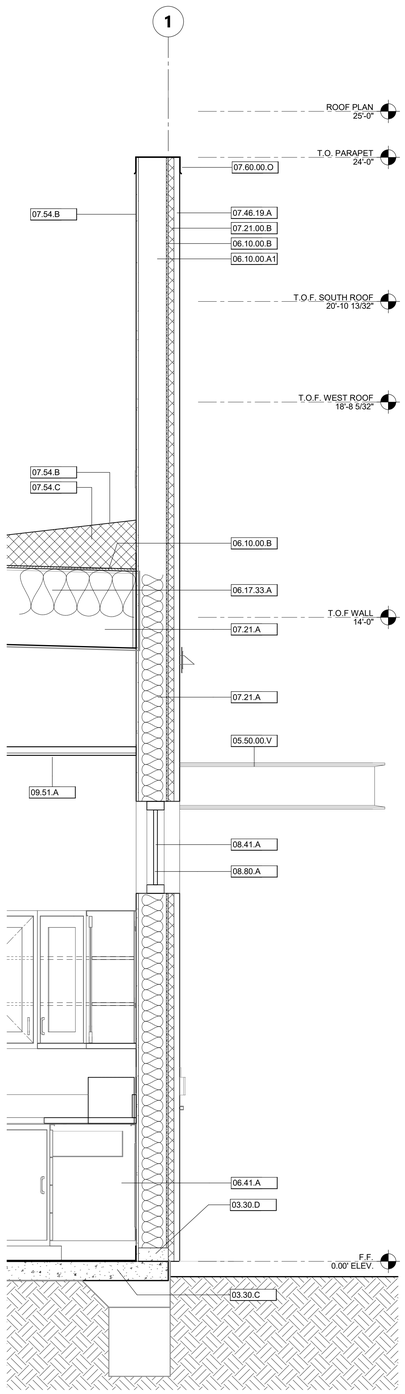
SHEET NO.
A-413

DATE: May 29, 2024

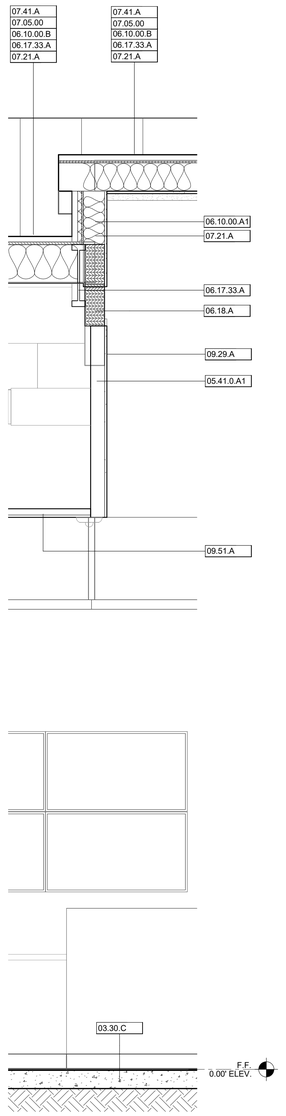
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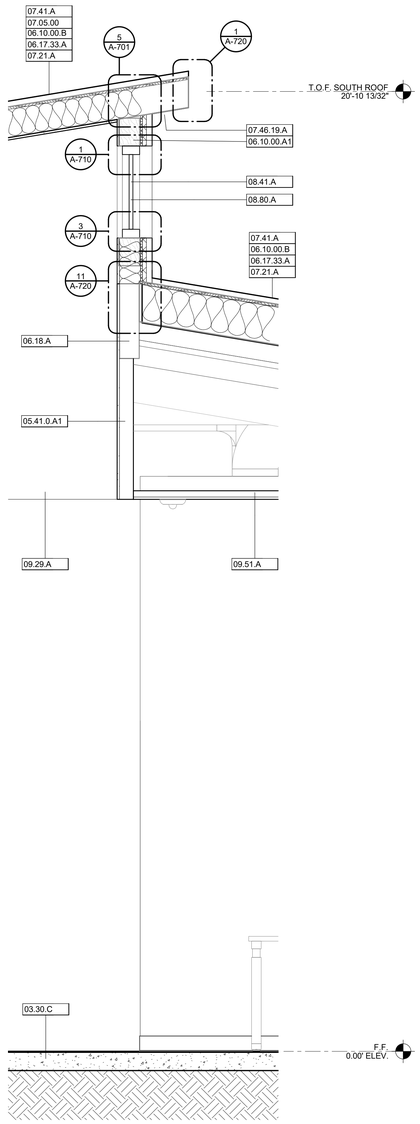
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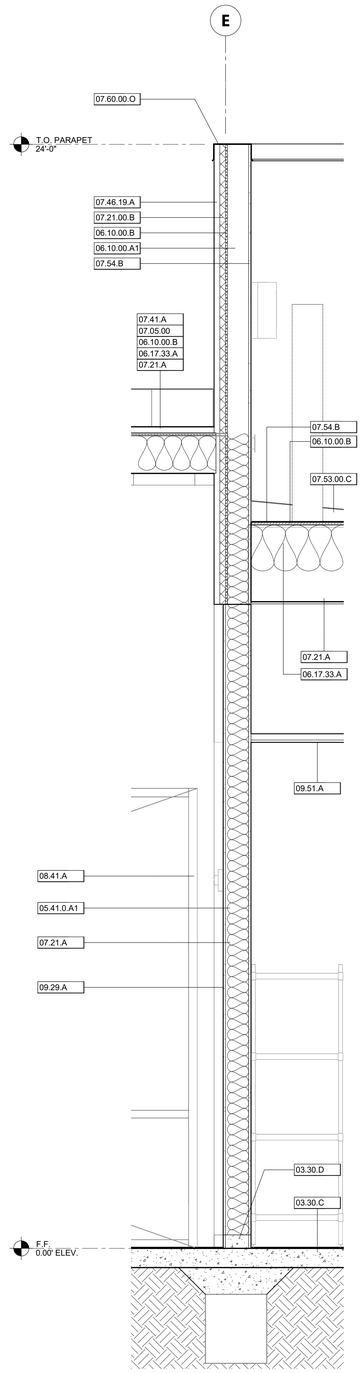
WALL SECTION - LAB @ NORTH 3/4" = 1'-0" **4**



WALL SECTION - CLERESTORY 2 3/4" = 1'-0" **3**



WALL SECTION - CLERESTORY 1 3/4" = 1'-0" **2**



WALL SECTION - LAB @ MTL ROOF 3/4" = 1'-0" **1**

KEYNOTES

03.30.C	SLAB-ON-GRADE PER STRUCTURAL DRAWINGS
03.30.D	CONCRETE CURB
05.41.0.A1	STEEL STUD
05.50.00.V	STEEL CANOPY ASSEMBLY
06.10.00.A1	WOOD FRAMING
06.10.00.B	PLYWOOD SUBSTRATE SHEATHING
06.17.33.A	WOOD I-JOISTS
06.18.A	GLU-LAM BEAM PER STRUCTURAL DRAWINGS
06.41.A	PLASTIC LAMINATED FACED ARCHITECTURAL CABINETS
07.05.00	ROOF UNDERLAYMENT
07.21.00.B	RIGID INSULATION
07.21.A	UNFACED, GLASS-FIBER, BATT/BLANKET INSULATION PER T24. SEE GENERAL NOTES FOR ADDT'L INFO
07.41.A	STANDING-SEAM METAL ROOF PANELS
07.46.19.A	METAL SIDING AND SOFFIT ASSEMBLY
07.53.00.C	TAPERED RIGID INSULATION CRICKET
07.54.B	THERMOPLASTIC (TPO) ROOFING
07.54.C	TAPERED (CRICKETS) INSULATION FOR SLOPE
07.60.00.O	METAL COPING
08.41.A	ALUMINUM-FRAMED STOREFRONT SYSTEM
08.80.A	VISION GLAZING
09.29.A	5/8" TYPE 'X' GYPSUM BOARD, PAINTED WHERE EXPOSED
09.51.A	SUSPENDED ACOUSTICAL PANEL CEILING

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ARCHITECT STAMP

LICENSED ARCHITECT ROBERT W. TOWERS
No. C18650
Ret. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

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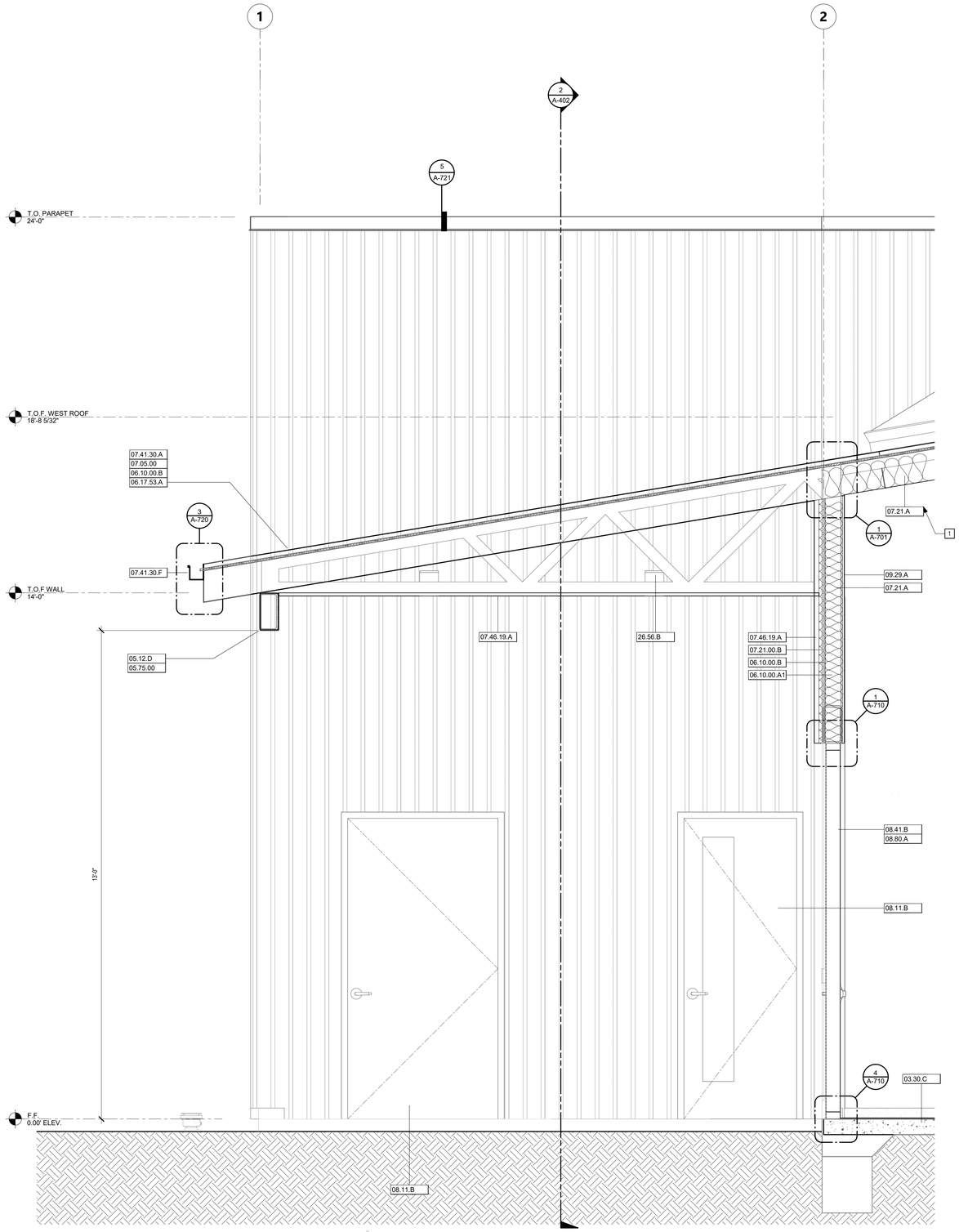
SHEET TITLE
WALL SECTIONS

DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
A-414

DATE: May 29, 2024

BID SET (PRELIMINARY)



WALL SECTION @ COVERED NORTH ENTRY 3/4" = 1'-0" **1**

KEYNOTES

03.30.C	SLAB-ON-GRADE PER STRUCTURAL DRAWINGS
05.12.D	STEEL TUBE
05.75.00	BRAKE METAL
06.10.00.A1	WOOD FRAMING
06.10.00.B	PLYWOOD SUBSTRATE SHEATHING
06.17.53.A	SHOP FABRICATED WOOD TRUSSES
07.05.00	ROOF UNDERLAYMENT
07.21.00.B	RIGID INSULATION
07.21.A	UNFACED, GLASS-FIBER, BATT/BLANKET INSULATION PER T24. SEE GENERAL NOTES FOR ADDT'L INFO
07.41.30.A	METAL ROOF-STANDING SEAM
07.41.30.F	METAL ROOF - GUTTER
07.46.19.A	METAL SIDING AND SOFFIT ASSEMBLY
08.11.B	HOLLOW METAL DOOR, PAINTED
08.41.B	STOREFRONT ALUMINUM DOOR
08.80.A	VISION GLAZING
09.29.A	5/8" TYPE 'X' GYPSUM BOARD, PAINTED WHERE EXPOSED
26.56.B	EXTERIOR LIGHTING, SEE ELECTRICAL PLANS

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SHEET NOTES A-415

1 SCRIM SHEET O/BATT INSULATION AT ALL EXPOSED OPEN CEILING CONDITIONS, SEE RCP PLAN FOR ADDT'L INFO

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ARCHITECT STAMP

LICENSED ARCHITECT
ROBERT W. TIBBETS JR.
No. C18850
Ref. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

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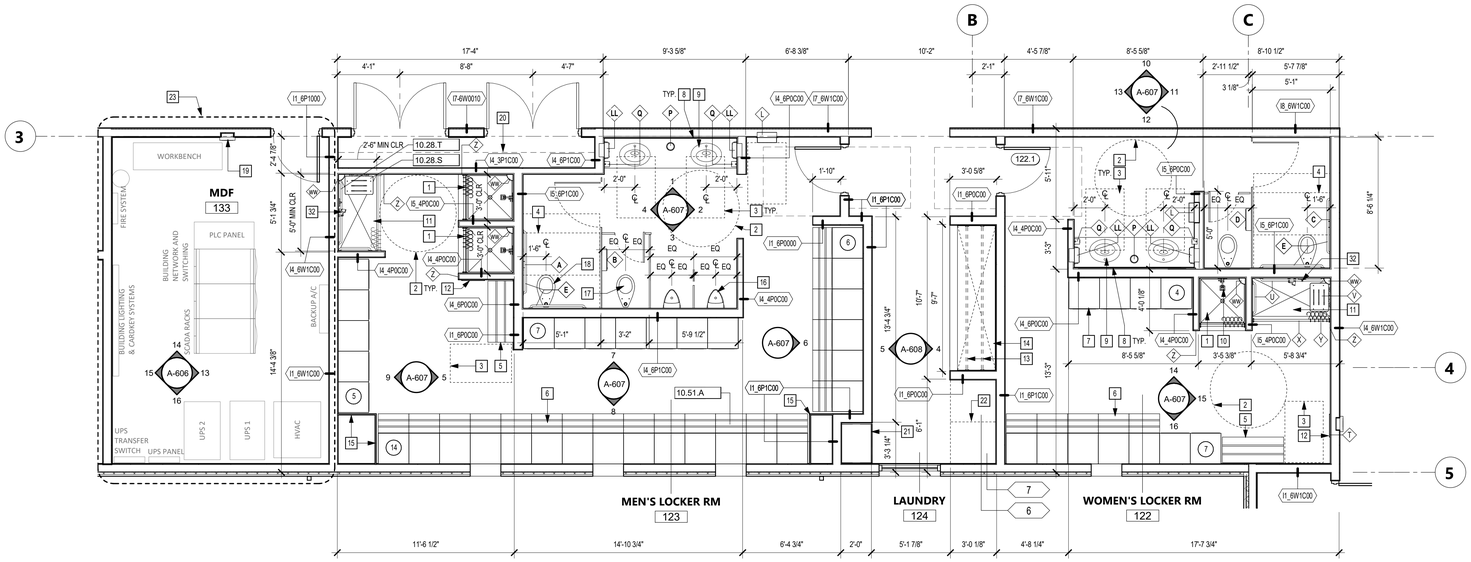
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A-415

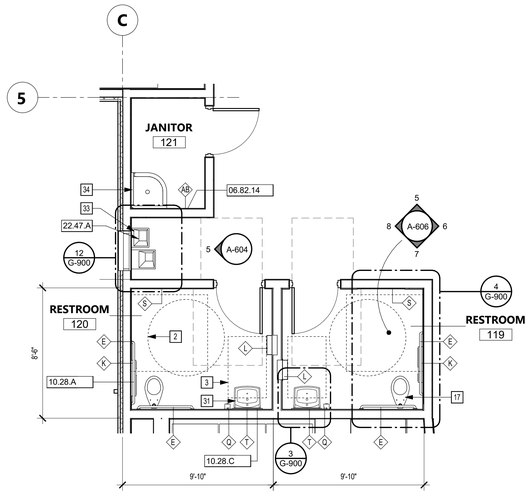
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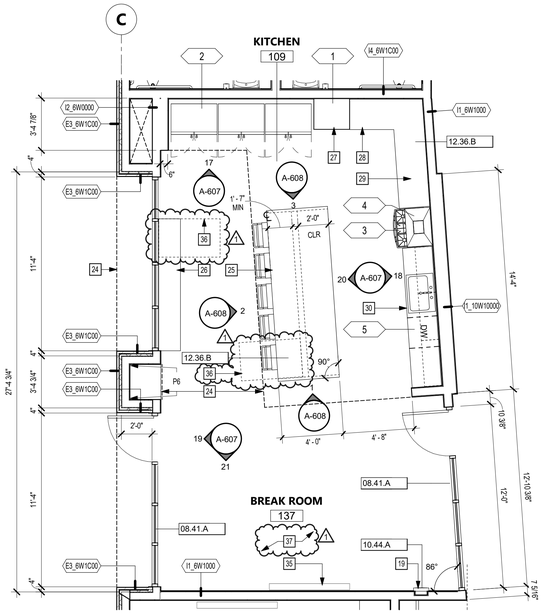
BID SET (PRELIMINARY)



ENLARGED LOCKER ROOMS & MDF PLAN 1/4" = 1'-0" 1



ENLARGED RESTROOMS PLAN 1/4" = 1'-0" 2



ENLARGED KITCHEN PLAN 1/4" = 1'-0" 3

KITCHEN & LAUNDRY EQUIPMENT SCHEDULE

TAG	EQUIPMENT DESCRIPTION	QTY	MAKE/MODEL	FURNISHED BY	INSTALLED BY	COMMENTS
1	MICROWAVE	2	WHIRLPOOL / WMC50522H	GC	GC	SS FINISH
2	REFRIGERATOR	3	WHIRLPOOL / WRS325SDH	GC	GC	SS FINISH
3	COOKTOP / OVEN	1	WHIRLPOOL/WEG515S0FV	GC	GC	SS FINISH
4	HOOD	1	WHIRLPOOL / WVW73UC6LS	GC	GC	SS FINISH
5	DISHWASHER	1	BOSCH / 800 SERIES	GC	GC	ACCESSIBLE, UNDER COUNTER
6	WASHING MACHINE	1	WHIRLPOOL/CHW9160GW	GC	GC	-
7	DRYER	1	WHIRLPOOL / CED9160GW	GC	GC	-

WALL TYPE LEGEND

- NON RATED WALL OR FURRING WALL ASSEMBLY
- 1 HOUR RATED WALL ASSEMBLY
- METAL PANEL WALL
- MASONRY WALL
- MASONRY VENEER WALL

FOR WALL TYPES REFER TO **G-301** & **G-302**

WALL TAG NOTES

WALL TYPE TAG
E = EXTERIOR WALL
I = INTERIOR WALL
# = WALL TYPE, SEE G-301 & G-302

FRAMING STUD SIZE
0: 7/8" HAT CHANNEL
1: 1 5/8" C-STUD
2: 2 1/2" C-STUD / CH-STUD / x2 WOOD
4: 3 5/8" C-STUD/ CH-STUD/ x4 WOOD
5: 5 1/2" C-STUD
6: 6" C-STUD / CH STUD / x6 WOOD
8: 8" C-STUD

FRAMING TYPE
C: CHASE WALL
F: FURRING (C-STUD)
H: FURRING (HAT CHANNEL)
L: LOW WALL
P: PARTITION (C-STUD)
S: SHAFT WALL
W: FULL HEIGHT WALL

INSULATION
0: NOT INSULATED
1: INSULATED

BASE CONDITION
0: NO CURB
C: CURB

FIRE RATING
0: NON-RATED
1: RATED

SMOKE RATING
0: NON-RATED
1: RATED

E1_6W1C00
- WALL TYPE TAG
- FRAMING STUD SIZE
- INSULATION
- FIRE
- SMOKE
- CURB
- FRAMING TYPE

*REFER TO THE BUILDING & WALL SECTIONS FOR ASSEMBLY DETAIL REFERENCES STARTING ON **A-401**
*REFER TO **G-301** & **G-302** FOR WALL TYPES

WHERE THERE IS AN ACCESSIBLE CONCEALED FLOOR, FLOOR-CEILING OR ATTIC SPACE, FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITIONS OR ANY OTHER WALL REQUIRED TO HAVE PROTECTED OPENINGS OR PENETRATIONS SHALL BE EFFECTIVELY AND PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING IN THE CONCEALED SPACE. SUCH IDENTIFICATION SHALL:
1. BE LOCATED WITHIN 15 FEET (4572 MM) OF EACH END OF EACH WALL AND AT INTERVALS NOT EXCEEDING 30 FEET (9144 MM) MEASURED HORIZONTALLY ALONG THE WALL OR PARTITION.
2. INCLUDE LETTERING NOT LESS THAN 3 INCHES (76 MM) IN HEIGHT WITH A MINIMUM 3.8-INCH (9.5 MM) STROKE IN A CONTRASTING COLOR INCORPORATING THE SUGGESTED WORDING: "FIRE AND/ OR SMOKE BARRIER--PROTECT ALL OPENINGS," OR OTHER WORDING.

KEYNOTES

06.82.14	FIBERGLASS REINFORCED PANELING
08.41.A	ALUMINUM-FRAMED STOREFRONT SYSTEM
10.28.A	GRAB BAR
10.28.C	MIRROR
10.28.S	FOLD DOWN SHOWER SEAT
10.28.T	SHOWER GRAB BAR
10.44.A	FIRE EXTINGUISHER WITH RECESSED FIRE EXTINGUISHER CABINET
10.51.A	STAFF LOCKERS
12.36.B	SOLID SURFACE COUNTERTOP. 4" BACKSPLASH, TYP. 24" MIN BACKSPLASH @ SINKS.
22.47.A	HI-LOW DRINKING FOUNTAIN

SHEET NOTES A-501

1 SHOWER STALL W/CURB. FOR FINISH REFER TO TCNA B420 & CF121 OR SIM.
2 60" DIAMETER ACCESSIBLE CLEAR TURNAROUND SPACE
3 30" x 48" ACCESSIBLE CLEAR SPACE
4 59" x 60" ACCESSIBLE CLEAR SPACE
5 ACCESSIBLE LOCKER ROOM BENCH PER DETAIL 18/G-900
6 INTEGRAL LOCKER BENCH
7 2'X2' METAL LOCKER W/VENTILATED DIAMONDPLATE DOOR AND SLOPING TOP
8 MIRROR PER 5/G-900, SEE INTERIOR ELEVATION
9 UNDERMOUNT LAVATORY; SEE 3/G-900 & PLUMBING PLANS
10 SHOWERHEAD AND CONTROLS, SEE14/G-900 & PLUMBING PLANS
11 ACCESSIBLE SHOWER STALL PER 14/G-900. FOR FINISH REFER TO TCNA B420 & CF121 OR SIM.
12 18"X54" MIN MIRROR AT ACCESSIBLE BENCH, PER CBC 11B-803.6. BOTTOM EDGE OF REFLECTING SURFACE 20" MAX ABOVE FF.
13 METAL CLOTHING POLES AT GARMENT DRYING AREA; SEE INTERIOR ELEVATIONS FOR HEIGHTS
14 SHOE DRYING RACKS
15 LOCKER END PANELING
16 URINAL; SEE PLUMBING PLAN & 17/G-900
17 FLOOR-MOUNT TOILET, SEE PLUMBING PLANS & 4/G-900
18 TOILET AT ACCESSIBLE STALL; SEE PLUMBING PLANS AND 4/G-900
19 SEMI-RECESSED FIRE EXTINGUISHER CABINET
20 SHELF AND POLE AT GARMENT STORAGE CLOSET
21 BUILT-IN CABINETWORK, SEE INTERIOR ELEVATIONS & CASEWORK DETAILS
22 WASHER/DRYER LOCATION; VERIFY EQUIPMENT CLEARANCES PRIOR TO INSTALLATION
23 MDF LAYOUT FOR REFERENCE ONLY (BY OTHERS); NOT TO SCALE; COORDINATE REQUIREMENT W/DISTRICT IT DEPARTMENT
24 LINE OF SOFFIT ABOVE, SEE REFLECTED CEILING PLAN
25 KITCHEN ISLAND W/CABINETS BELOW, SEE INTERIOR ELEVATIONS & DETAILS
26 BAR COUNTER, SEE INTERIOR ELEVATIONS & DETAIL 16/A-780
27 MICROWAVE CABINET, SEE INTERIOR ELEVATIONS
28 LOWER CABINETS, SEE INTERIOR ELEVATIONS
29 UPPER CABINETS, SEE INTERIOR ELEVATIONS
30 UNDERMOUNT KITCHEN SINK W/ACCESSIBLE CABINET BELOW; SEE INTERIOR ELEVATIONS & PLUMBING PLANS FOR ADDT'L INFO
31 WALL-MOUNT SINK, SEE PLUMBING PLANS FOR ADDT'L INFO
32 SINGLE HAND-HELD PERSONAL SHOWER SYSTEM
33 DRINKING FOUNTAIN, SEE 12/G-900 & PLUMBING PLANS
34 MOP SINK, SEE PLUMBING PLANS
35 PROVIDE BACKING AT (F) TV LOCATION; SEE 24/A-740 & ELECTRICAL PLANS FOR POWER/DATA INFORMATION
1 36 ACCESSIBLE SEATING W/MIN 30" x 48 CLEAR SPACE & MIN 17" DEEP SURFACE.SEE 3/G-900 FOR ADDITIONAL KNEE CLEARANCE REQUIREMENTS.
1 37 (F) FURNITURE DINING SURFACES TO COMPLY W/CBC 11B-226.1

PROJECT NORTH

RESTROOM GENERAL NOTES

A. MOUNTING HEIGHTS SHOWN ARE TYPICAL, U.N.O.
B. ALL ACCESSORIES SHALL BE ACCESSIBLE WITH A MAXIMUM REACH HEIGHT OF 40" ABOVE FINISH FLOOR.
C. SEE ENLARGED TOILET PLAN AND INTERIOR ELEVATION DRAWINGS FOR TOILET ACCESSORY LOCATIONS.
D. OWNER FURNISHED ACCESSORIES SHALL BE CONTRACTOR INSTALLED.
E. PROVIDE BACKING FOR GRAB BARS AND SHELVES PER DETAIL.
F. ALL FLOOR DRAINS SHALL HAVE 1/2" MAX. STRAINER OPENING IN ALL DIRECTIONS SEE DETAILS.
G. ALL DIMENSIONS FOR ACCESS COMPLIANCE ARE TO FACE OF FINISH.
H. PROVIDE UNDER LAVATORY GUARDS, MOLDED VINYL COVERING FOR SUPPLY AND DRAIN PIPING WITH FLIP TOP AT VALVE TO ALLOW SERVICE WITHOUT REMOVING COVERING.
I. THE SPACE BETWEEN WALL AND GRAB BAR SHALL BE 1 1/2". THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS BELOW AND AT THE ENDS SHALL BE 1 1/2" MIN. THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS ABOVE SHALL BE 12" MIN.
J. REFER TO **G-900** FOR RESTROOM / SHOWER ACCESSIBILITY INFORMATION
K. REFER TO INTERIOR ELEVATIONS STARTING **A-501** FOR ADDITIONAL INFORMATION

WATERCLOSET COMPARTMENT/ TOILET ROOM W/ COMBINATION UNIT

A MENS RECESSED SEAT-COVER /
TOILET PAPER DISPENSER (ACCESSIBLE STALL) BOBRICK B-3474
https://www.bobrick.com/products/washroom-accessories/toilet-compartment-accessories/toilet-compartment-catalog/product/b-3474/

1 B MENS SURFACE MOUNTED SEAT-COVER /
TOILET PAPER DISPENSER (PARTITION) BOBRICK B-3479
https://www.bobrick.com/product/b-3479?browse_category=combination-toilet-accessories

C WOMENS RECESSED SEAT-COVER /
TOILET PAPER DISPENSER (ACCESSIBLE STALL) BOBRICK B-35745
https://www.bobrick.com/product/b-35745/

D WOMENS SURFACE MOUNTED SEAT-COVER /
TOILET PAPER DISPENSER (PARTITION) BOBRICK B-3579
https://www.bobrick.com/product/b-3579?browse_category=combination-toilet-accessories

E GRAB BAR @ REAR WALL (ACCESSIBLE STALL): BOBRICK B-6806 X 42
GRAB BAR @ SIDE WALL (ACCESSIBLE STALL): BOBRICK B-6806 X 48
https://www.bobrick.com/products/washroom-accessories/toilet-compartment-accessories/toilet-compartment-catalog/product/b-6806-series/

F FOLDING UTILITY SHELF BOBRICK B-287
https://www.bobrick.com/specialty-accessories-catalog/product/b-287/

G COAT HOOK (ACCESSIBLE STALL): BOBRICK B-2116
https://www.bobrick.com/specialty-accessories-catalog/product/b-2116/

H DOOR BUMPER (ACCESSIBLE STALL): BOBRICK B-687
https://www.bobrick.com/specialty-accessories-catalog/product/b-687/

J COAT HOOK W/ BUMPER (STANDARD STALL): BOBRICK B-212
https://www.bobrick.com/specialty-accessories-catalog/product/b-212/

WATER CLOSET COMPARTMENT / TOILET UNIT W/ INDIVIDUAL UNITS / GEN RESTROOM

K SURACE MOUNTED SEAT-COVER /
TOILET TISSUE DISPENSER BOBRICK B3479
https://www.bobrick.com/products/washroom-accessories/toilet-compartment-accessories/toilet-compartment-catalog/product/b-3479/

1 L RECESSED PAPER TOWEL / WASTE RECEPTACLE: GEORGIA PACIFIC ENMOTION - 59491
NOTE: INCL GP ENMOTION AUTOMATIC PAPER TOWEL DISPENSER
https://www.gppro.com/gp/gppro/p/59491

LL RECESSED AUTOMATED TOWEL DISPENSER GEORGIA PACIFIC ENMOTION - 59466
https://www.gppro.com/gp/GP-PRO-Categories/Commercial-Paper-Towels-and-Dispensers/ENMOTION%C2%AE-8%E2%80%9D-RECESSED-AUTOMATED-TOUCHLESS-PAPER-TOWEL-DISPENSER-BY-GP-PRO-%28GEORGIA-PACIFIC%29-STAINLESS-STEEL-I-/p/DISPENSER-of-594564

M NOT USED

N SANITARY NAPKIN DISPENSER: BOBRICK B-3706C
https://www.bobrick.com/products/washroom-accessories/restroom-accessories-catalog/product/b-3706c/

O RECESSED SANITARY NAPKINS DISPOSAL: BOBRICK B-353
https://www.bobrick.com/products/washroom-accessories/toilet-compartment-accessories/toilet-compartment-catalog/product/b-353/

P COUNTERTOP MOUNTED ROUND WASTE CHUTE: BOBRICK B-529

Q SOAP DISPENSER (WALL MOUNTED): AZURE 1L FOAM SOAP DISPENSER (CONFIRM W/OWNER)

R FOLDING UTILITY SHELF BOBRICK B-287
https://www.bobrick.com/specialty-accessories-catalog/product/b-287/

S WALL MOUNTED BABY CHANGING STATION KOALA KARE KB300-00
https://www.koalakare.com/product-catalog/kb300/

T FRAMED MIRROR: BOBRICK B-165
WARDROBE MIRROR: BOBRICK B-165
https://www.bobrick.com/products/washroom-accessories/restroom-accessories-catalog/product/b-165-series/

NOTE: MIRRORS SHALL BE MOUNTED TO WALL USING CONCEALED HANGERS/FASTENERS, TYP.

SHOWER

U TWO-WALL GRAB BAR (ACCESSIBLE SHOWER): BOBRICK B-58616
https://www.bobrick.com/products/washroom-accessories/toilet-compartment-accessories/toilet-compartment-catalog/product/b-58616/

V FOLDING SEAT (ACCESSIBLE SHOWER): BOBRICK B-5181
https://www.bobrick.com/specialty-accessories-catalog/product/b-5181/

W RECESSED SOAP DISH: BOBRICK B-4380
https://www.bobrick.com/specialty-accessories-catalog/product/b-4380/

1 WW SHOWER SHELF: INPRO PRISM SOLID SURFACE (5")
https://www.inproonline.com/products/washroom-systems/soap-dishes/soap-shelf/

X SHOWER ROD: BOBRICK B-6047 X LENGTH REQ'D
https://www.bobrick.com/specialty-accessories-catalog/product/b-6047x60/

Y SHOWER CURTAIN: BOBRICK B-204-3
https://www.bobrick.com/specialty-accessories-catalog/product/204-3/

Z SHOWER HOOKS: BOBRICK B-672
https://www.bobrick.com/specialty-accessories-catalog/product/b-672/

AA TOWEL SHELF W/ BAR: BOBRICK B-676 X 24
https://www.bobrick.com/specialty-accessories-catalog/product/b-676x24/

AB CUSTODIAN / JANITOR ROOM

MOP RACK W/ SHELF: BOBRICK B-239 X 34"
https://www.bobrick.com/specialty-accessories-catalog/product/b-239x34/

19-6
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT GREGORY M. TOMICH AIA No. C18650 Ref. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
ENLARGED FLOOR PLANS

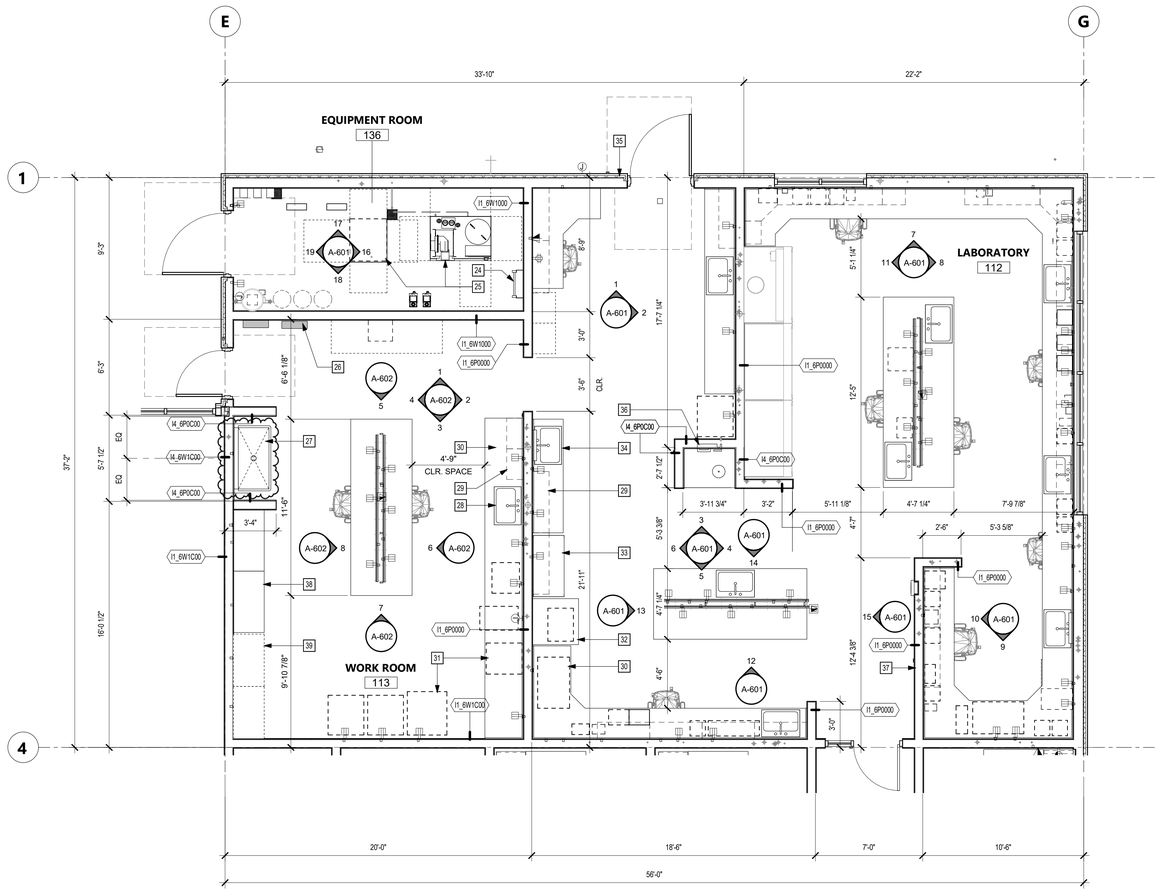
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
A-501

DATE: May 29, 2024

BID SET (PRELIMINARY)

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PROJECT NORTH

ENLARGED LABORATORY PLAN 1/4" = 1'-0" 1

SHEET NOTES A-502

24 ROOF ACCESS LADDER PER DETAIL 9/A-721
25 MECHANICAL EQUIPMENT; REFER TO MEP PLANS
26 LAB ELECTRICAL PANELS; SEE ELEC PLANS
27 DEEP SS SINK W/SPRAYER; SEE PLUMBING PLANS
28 DEEP SS WASH-OUT SINK; SEE PLUMBING PLANS
29 UPPER METAL LABORATORY CABINETS W/SLIDING GLASS DOORS REFER TO INTERIOR ELEVATIONS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
30 LOWER METAL LABORATORY CABINETS; REFER TO INTERIOR ELEVATIONS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
31 LABORATORY EQUIPMENT; REFER TO A-253 FOR EQUIPMENT LAYOUT PLAN & MEP PLANS FOR ADDITIONAL INFORMATION
32 36" DEEP SURFACE AT MUFFLE FURNACE
33 BALANCE TABLE
34 EPOXY RESIN SINK
35 POWER-OPERATED DOOR
36 EMERGENCY SHOWER
37 GOGGLES & LAB COATS RACK
38 FREE-STANDING SHELVING FOR EQUIPMENT CHARGING
39 FREE-STANDING CASEWORK

FLOOR PLAN GENERAL NOTES

A. ALL INTERIOR CONSTRUCTION ON THIS PROJECT IS DESIGNATED "AIRTIGHT" FOR THE PURPOSES OF SOUND ISOLATION AND NOISE CONTROL. THE REQUIREMENTS FOR AIRTIGHT CONSTRUCTION INCLUDE, BUT ARE NOT LIMITED TO, THE REQUIREMENTS DESCRIBED IN THE SPECIFICATIONS AND THE DETAILS SHOWN ON DRAWING SHEETS **A-740,741 & 750**. ALL NECESSARY PRODUCTS AND DETAILING SHALL BE PROVIDED TO ACHIEVE AIRTIGHT/LEAKPROOF CONSTRUCTION, WHETHER OR NOT THOSE PRODUCTS, OR DETAILS, ARE SPECIFICALLY DESCRIBED OR SHOWN IN THE PROJECT DOCUMENTS.
B. EXTERIOR DIMENSIONS ARE TO FACE OF SHEATHING OR FACE OF CMU, TYPICAL U.N.O.
C. INTERIOR DIMENSIONS ARE TO FACE OF STUD, TYPICAL U.N.O.
D. DOOR OPENINGS NOT LOCATED BY DIMENSIONS SHALL BE LOCATED 6" FROM FINISH WALL TO DOOR OPENING OR CENTERED IN WALL, U.N.O.
E. ALL INTERIOR WALLS SHALL BE 14'-0" U.N.O.
F. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL DIMENSIONS.
G. FOR TOILET ROOM ACCESSORIES, DENOTED BY ◇,MOUNTING HEIGHTS AND BACKING REQUIREMENTS, REFER TO SHEET **G-900 & A-740.**
H. PROVIDE COAT HOOKS AND BUMPERS AT ALL TOILET PARTITION STALLS; REFER TO TOILET ROOM ACCESSORIES DETAIL FOR TYPE AND LOCATION.
I. FOR TYPICAL ACCESSIBLE MOUNTING HEIGHTS AND CLEARANCES, REFER TO SHEET **G-900**.
J. FOR SIGNAGE TYPES AND LOCATIONS, REFER TO EXITING AND SIGNAGE PLAN SHEET **G-923**
K. GENERAL CONTRACTOR SHALL PROVIDE BLOCKING AND/OR STRAPPING INSIDE WALLS FOR ATTACHING SHELVES, CABINETS, RAILINGS, MILLWORK, TOILET ACCESSORIES AND OTHER ITEMS REQUIRING SUPPORT; REFER TO DETAILS ON **G-900, A-740 & A-780**.
L. FIRE EXTINGUISHERS, TYPICAL U.N.O., SHALL HAVE A MINIMUM RATING OF 2A-10:BC WITH MULTI-PURPOSE DRY CHEMICAL FIRE EXTINGUISHER AGENT AND SHALL BE LOCATED SUCH THAT THE MAXIMUM TRAVEL DISTANCE BETWEEN EXTINGUISHERS DOES NOT EXCEED 75'. THE MAXIMUM FLOOR AREA PER UNIT OF "A" SHALL BE 3,000 S.F. AND THE MAXIMUM FLOOR AREA PER EXTINGUISHER SHALL BE 11,250 S.F. PER CBC TABLE 906.3(1).
M. FIRE EXTINGUISHERS AT ELECTRICAL AND IDF ROOMS SHALL HAVE A MINIMUM RATING OF 10B:C WITH CARBON DIOXIDE FIRE EXTINGUISHER AGENT AND SHALL BE LOCATED SUCH THAT THE MAXIMUM TRAVEL DISTANCE BETWEEN EXTINGUISHERS DOES NOT EXCEED 75'. THE MAXIMUM FLOOR AREA PER UNIT OF "A" SHALL BE 3,000 S.F. AND THE MAXIMUM FLOOR AREA PER EXTINGUISHER SHALL BE 11,250 S.F. PER CBC TABLE 906.3(1).
N. FIRE EXTINGUISHERS AT KITCHEN SHALL HAVE A MINIMUM RATING OF 40:BC WITH CLASS K FIRE EXTINGUISHER AGENT AND SHALL BE LOCATED SUCH THAT THE MAXIMUM TRAVEL DISTANCE BETWEEN EXTINGUISHERS DOES NOT EXCEED 75'. THE MAXIMUM FLOOR AREA PER UNIT OF "A" SHALL BE 1,000 S.F. AND THE MAXIMUM FLOOR AREA PER EXTINGUISHER SHALL BE 11,250 S.F. PER CBC TABLE 906.3(1).
O. REFER TO EXTERIOR ELEVATIONS FOR CLERESTORY WINDOW TYPES AND LOCATIONS.
P. ALL EXTERIOR WINDOWS SHALL HAVE SURFACE MOUNTED MANUALLY OPERATED ROLLER SHADES WITH DARKENING FABRIC PANELS, TYPICAL U.N.O.; ALL CONDUIT, WIRES, ETC. SHALL BE FULLY CONCEALED IN WALL; REFER TO SPECIFICATION SECTION 12 24 00.
Q. ALL EXTERIOR WINDOWS IN CONFERENCE, MEETING AND TRAINING ROOMS SHALL HAVE SURFACE MOUNTED MANUALLY OPERATED ROLLER SHADES WITH DARKENING AND BLACK OUT FABRIC PANELS, TYPICAL U.N.O.;: ALL CONDUIT, WIRES, ETC. SHALL BE FULLY CONCEALED IN WALL; REFER TO SPECIFICATION SECTION 12 24 00.
R. CONTRACTOR SHALL PROVIDE BLOCKING AND/OR STRAPPING INSIDE WALLS/PARTITIONS FOR ATTACHING SHELVES, CABINETS, RAILINGS, MILLWORK, TOILET ACCESSORIES AND OTHER ITEMS REQUIRING SUPPORT INSIDE WALLS/PARTITIONS.
S. FOR EXTERIOR AND INTERIOR WINDOW TYPES, REFER TO SHEET **A-811.**
T. FOR DOOR SCHEDULE, REFER TO SHEET **A-801.**
U. FOR INTERIOR FINISH PLAND AND FINISH SCHEDULE REFER TO **A-251** & **A-252**

WALL TAG NOTES

WALL TYPE TAG
E = EXTERIOR WALL
I = INTERIOR WALL
# = WALL TYPE, SEE G-301 & G-302

FRAMING STUD SIZE
0: 7/8" HAT CHANNEL
1: 1 5/8" C-STUD
2: 2 1/2" C-STUD / CH-STUD / x2 WOOD
4: 3 5/8" C-STUD/ CH-STUD/ x4 WOOD
5: 5 1/2" C-STUD
6: 6" C-STUD / CH STUD / x6 WOOD
8: 8" C-STUD

FRAMING TYPE
C: CHASE WALL
F: FURRING (C-STUD)
H: FURRING (HAT CHANNEL)
L: LOW WALL
P: PARTITION (C-STUD)
S: SHAFT WALL
W: FULL HEIGHT WALL

INSULATION
0: NOT INSULATED
1: INSULATED

BASE CONDITION
0: NO CURB
C: CURB

FIRE RATING
0: NON-RATED
1: RATED

SMOKE RATING
0: NON-RATED
1: RATED

E1_6W1C00
WALL TYPE TAG
FRAMING STUD SIZE
INSULATION
FIRE
SMOKE
CURB
FRAMING TYPE

*REFER TO THE BUILDING & WALL SECTIONS FOR ASSEMBLY DETAIL REFERENCES STARTING ON **A-401**
*REFER TO **G-301** & **G-302** FOR WALL TYPES

WHERE THERE IS AN ACCESSIBLE CONCEALED FLOOR, FLOOR-CEILING OR ATTIC SPACE, FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITIONS OR ANY OTHER WALL REQUIRED TO HAVE PROTECTED OPENINGS OR PENETRATIONS SHALL BE EFFECTIVELY AND PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING IN THE CONCEALED SPACE. SUCH IDENTIFICATION SHALL
1. BE LOCATED WITHIN 15 FEET (4572 MM) OF EACH END OF EACH WALL AND AT INTERVALS NOT EXCEEDING 30 FEET (9144 MM) MEASURED HORIZONTALLY ALONG THE WALL OR PARTITION.
2. INCLUDE LETTERING NOT LESS THAN 3 INCHES (76 MM) IN HEIGHT WITH A MINIMUM 3.8-INCH (9.5 MM) STROKE IN A CONTRASTING COLOR INCORPORATING THE SUGGESTED WORDING. "FIRE AND/ OR SMOKE BARRIER--PROTECT ALL OPENINGS." OR OTHER WORDING.

WALL TYPE LEGEND

NON RATED WALL OR FURRING WALL ASSEMBLY
1 HOUR RATED WALL ASSEMBLY
METAL PANEL WALL
MASONRY WALL
MASONRY VENEER WALL

FOR WALL TYPES REFER TO **G-301** & **G-302**

19six
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ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP
LICENSED ARCHITECT ROBERT W. TOUGAS No. C18650 Exp. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

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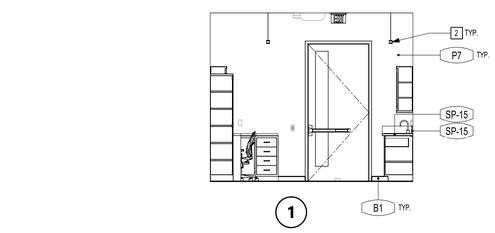
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A-502

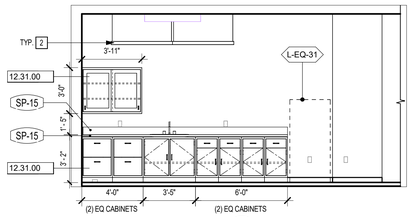
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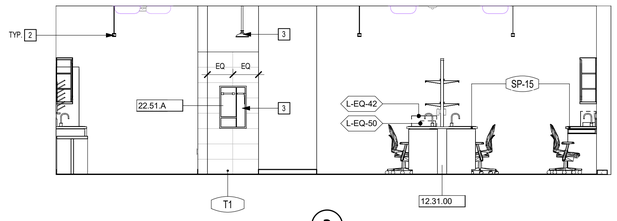
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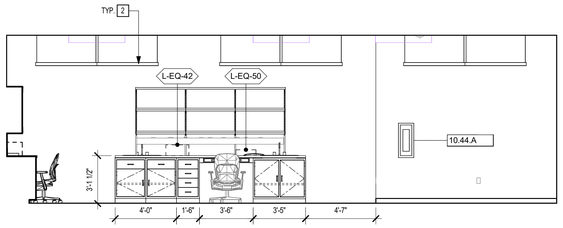
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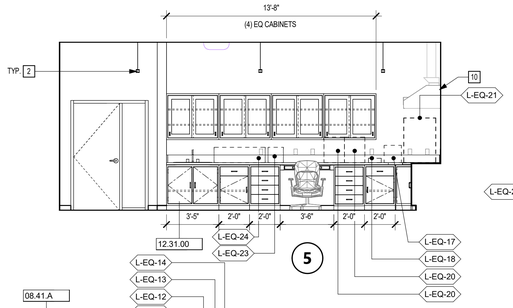
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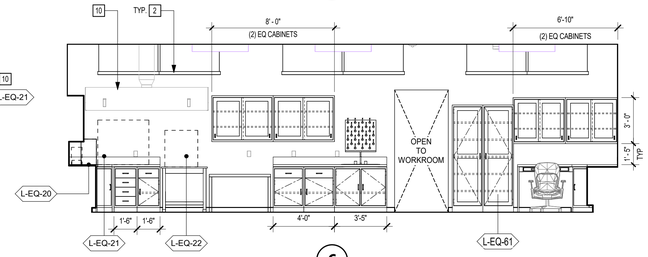
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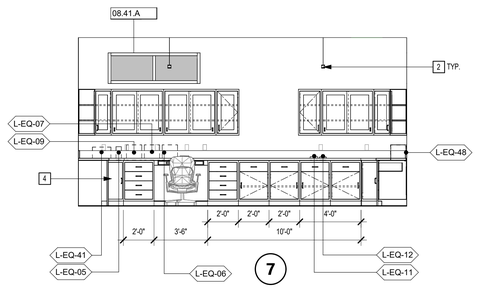
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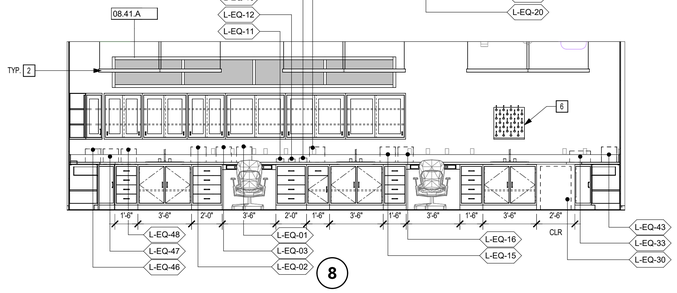
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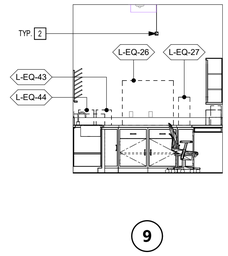
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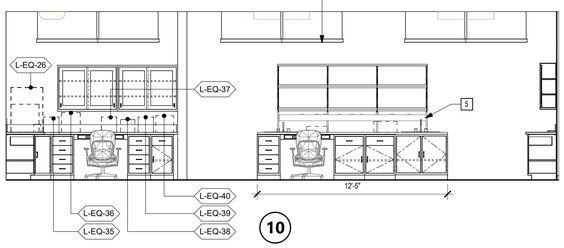
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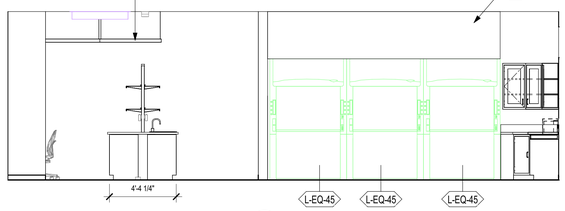
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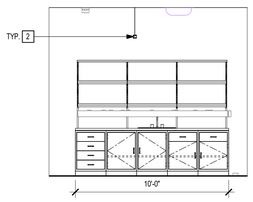
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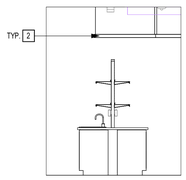
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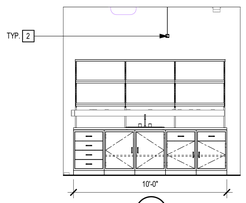
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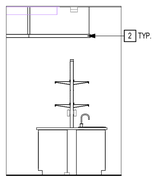
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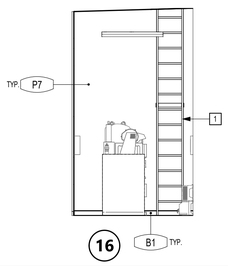


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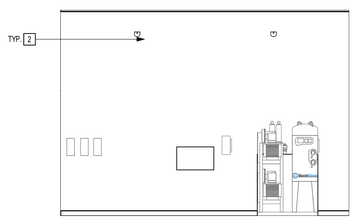


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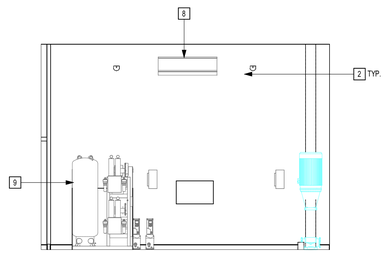
LABORATORY - 112 | 1/4" = 1'-0" | 1



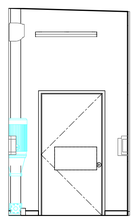
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17



18



19

EQUIPMENT ROOM - 136 | 1/4" = 1'-0" | 3

SHEET NOTES A-601

1 ROOF ACCESS LADDER PER DETAIL 11/A-750
2 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL
3 EMERGENCY SHOWER/EYE WASH EQUIPMENT
4 ALL LABORATORY CORNER CABINETS TO INCLUDE 'LAZY SUSAN' UNO
5 POWER/DATA WIREMOLD AT ALL LABORATORY ISLANDS; UNO
6 DRYING RACK W/DRIP TRAY, TYP
7 REMOVABLE COVER PLATES ABOVE FUME HOODS
8 HVAC SYSTEM CASSETTE, SEE MECHANICAL & PLUMBING PLANS
9 LABORATORY SUPPORT EQUIPMENT, SEE MECHANICAL & PLUMBING SHEETS FOR ADDTL INFORMATION
10 EXHAUST HOOD, SEE MECHANICAL PLANS

KEYNOTES

08.41.A ALUMINUM-FRAMED STOREFRONT SYSTEM
10.44.A FIRE EXTINGUISHER WITH RECESSED FIRE EXTINGUISHER CABINET
12.31.00 MANUFACTURED METAL CASEWORK
22.51.A EMERGENCY EYEWASH STATION.

GENERAL NOTES - INTERIOR ELEVATIONS

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-811.
2. FOR DOOR SCHEDULE SEE A-801
3. FOR FINISH SCHEDULE SEE A-252
4. ALL STEEL TO BE GALVANIZED AND PAINTED.
5. ALL WALLS TO BE PAINTED P1 UON.
6. PAINT COLORS SHALL TYPICALLY TERMINATE AT INSIDE CORNERS UNLESS NOTED OTHERWISE.
7. PAINT IN KITCHEN AND RESTROOMS TO BE HIGH LUSTER, TYP. UNO.
8. PAINT AT CEILINGS TO BE FLAT, UNO.
9. FOR ACCESSIBILITY REQUIREMENTS SEE SHEET G-900
10. FOR SIGNAGE DETAILS SEE SHEET G-923
11. FOR SIGNAGE PLAN SEE G-211
12. FOR INTERIOR DETAILS SEE A-740 & A-741
13. FOR CASEWORK SEE A-780 & A-781
14. FIELD VERIFY ALL CASEWORK OPENINGS PRIOR TO FABRICATION.
15. MILLWORKER TO PROVIDE SHOP DRAWINGS TO OWNER FOR REVIERW AND APPROVAL PRIOR TO FABRICATION.
16. FOR APPLIANCE SCHEDULE REFER TO A-501
17. FOR LABORATORY EQUIPMENT SCHEDULE REFER TO A-253
18. FOR RESTROOM ACCESSORY SCHEDULE REFER TO A-501

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR ELEVATIONS

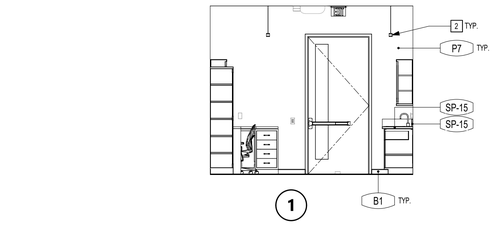
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A-601

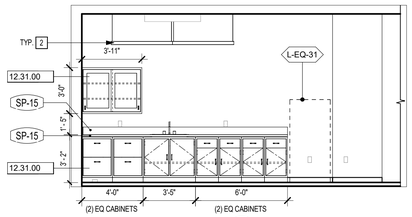
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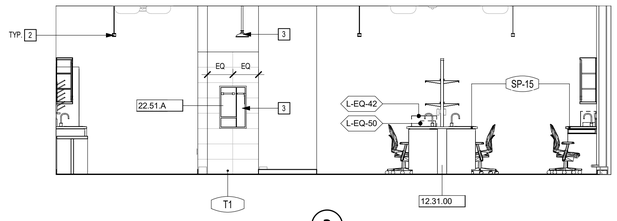
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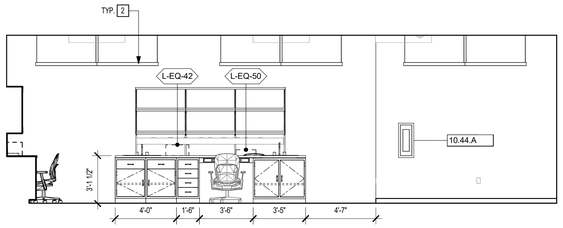
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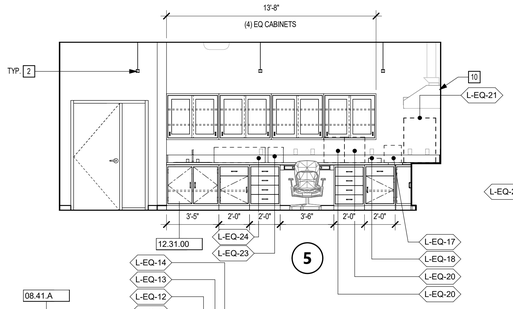
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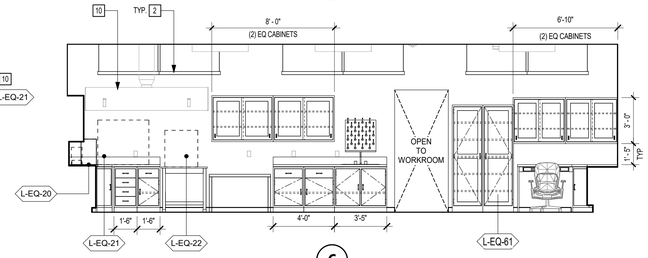
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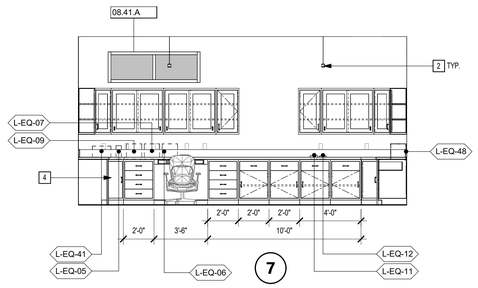
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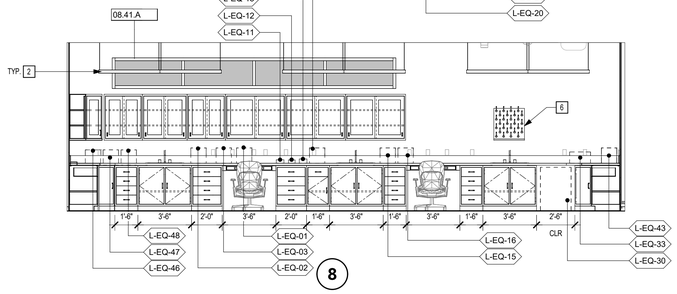
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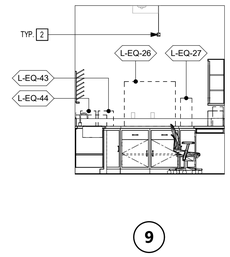
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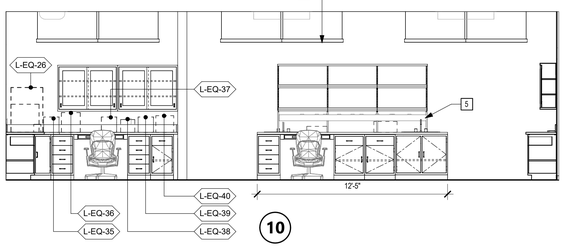
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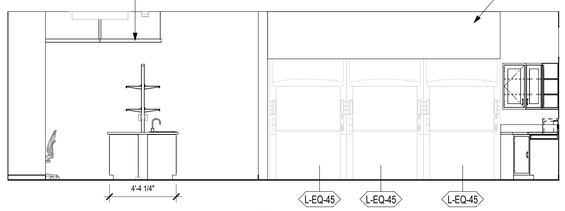
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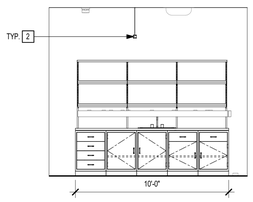
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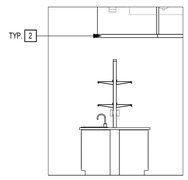
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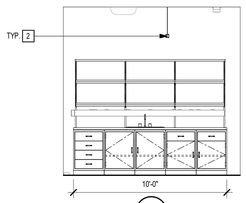
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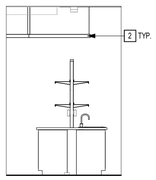
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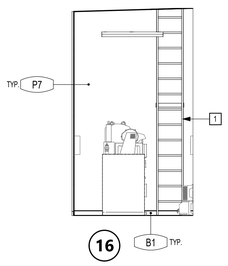


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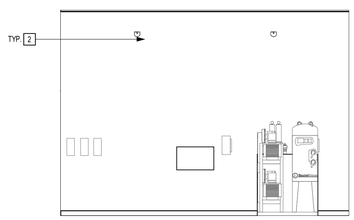


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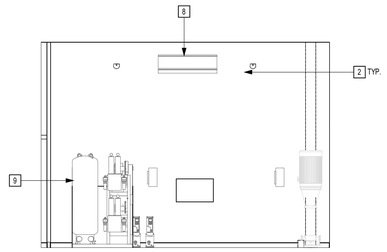
LABORATORY - 112 | 1/4" = 1'-0" | 1



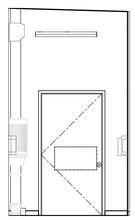
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17



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19

EQUIPMENT ROOM - 136 | 1/4" = 1'-0" | 3

GENERAL NOTES - INTERIOR ELEVATIONS

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3. FOR FINISH SCHEDULE SEE A-252
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SHEET NOTES A-601

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5 POWER/DATA WIREMOLD AT ALL LABORATORY ISLANDS; UNO
6 DRYING RACK W/DRIP TRAY, TYP
7 REMOVABLE COVER PLATES ABOVE FUME HOODS
8 HVAC SYSTEM CASSETTE, SEE MECHANICAL & PLUMBING PLANS
9 LABORATORY SUPPORT EQUIPMENT, SEE MECHANICAL & PLUMBING SHEETS FOR ADDTL INFORMATION
10 EXHAUST HOOD, SEE MECHANICAL PLANS

19-6
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT ROBERT W. TOUCEY AIA No. C18650 Ref. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR ELEVATIONS

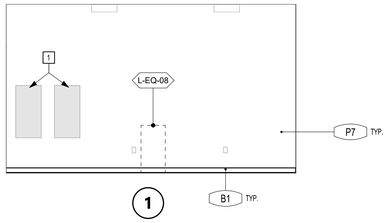
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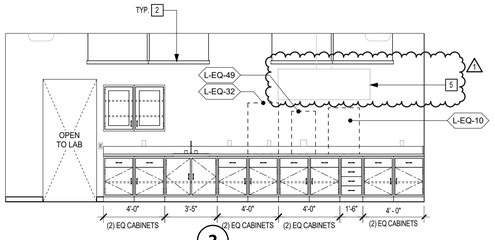
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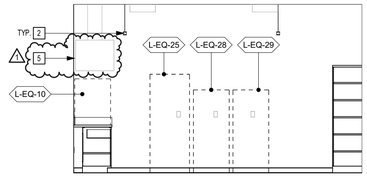
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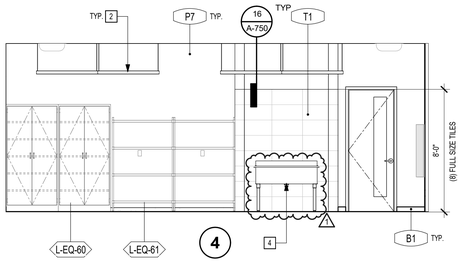
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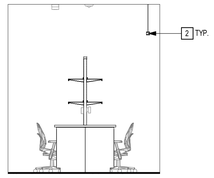
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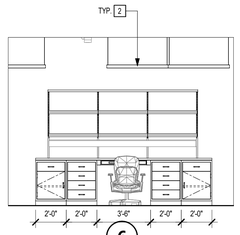
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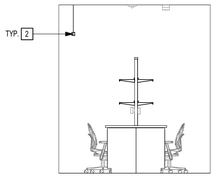
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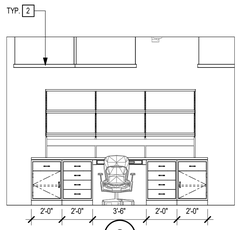
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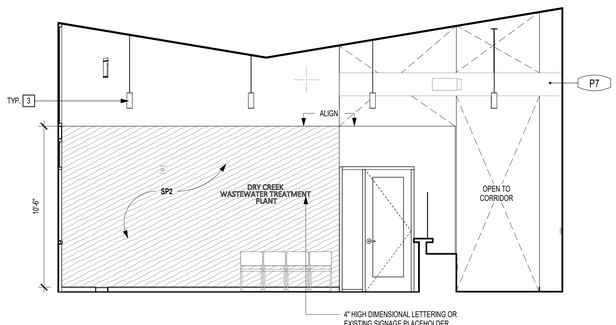


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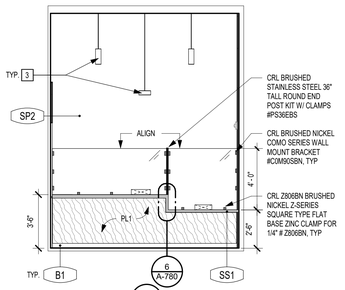


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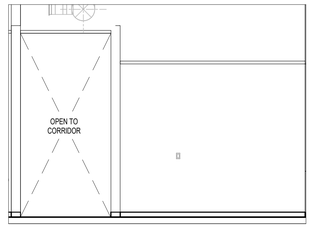
WORK ROOM - 113 | 1/4" = 1'-0" | **1**



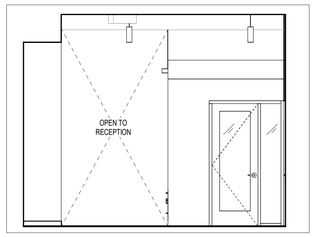
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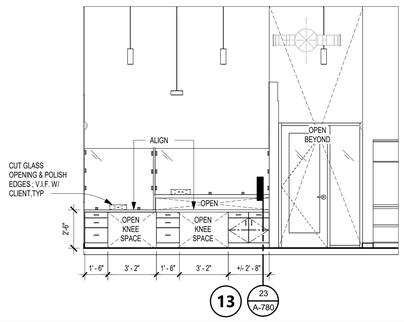
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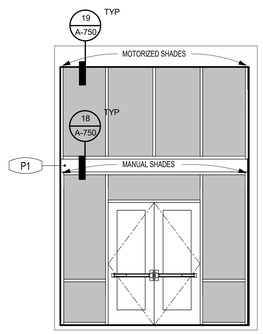
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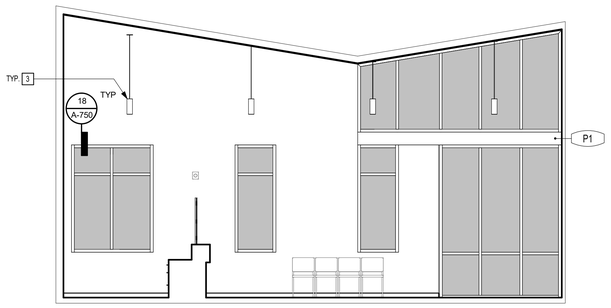
14



13



11



12

RECEPTION - 101 | 1/4" = 1'-0" | **3**

SHEET NOTES A-602

1 ELECTRICAL PANEL, SEE ELECTRICAL
2 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL
3 PENDANT LIGHT, SEE ELECTRICAL
4 DEEP BASIN WASH SINK, REFER TO PLUMBING PLANS
5 EXHAUST HOOD, SEE MECHANICAL PLANS

GENERAL NOTES - INTERIOR ELEVATIONS

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-811.
2. FOR DOOR SCHEDULE SEE A-801
3. FOR FINISH SCHEDULE SEE A-252
4. ALL STEEL TO BE GALVANIZED AND PAINTED.
5. ALL WALLS TO BE PAINTED P1 UON.
6. PAINT COLORS SHALL TYPICALLY TERMINATE AT INSIDE CORNERS UNLESS NOTED OTHERWISE.
7. PAINT IN KITCHEN AND RESTROOMS TO BE HIGH LUSTER, TYP. UNO.
8. PAINT AT CEILINGS TO BE FLAT, UNO.
9. FOR ACCESSIBILITY REQUIREMENTS SEE SHEET G-900
10. FOR SIGNAGE DETAILS SEE SHEET G-923
11. FOR SIGNAGE PLAN SEE G-211
12. FOR INTERIOR DETAILS SEE A-740 & A-741
13. FOR CASEWORK SEE A-780 & A-781
14. FIELD VERIFY ALL CASEWORK OPENINGS PRIOR TO FABRICATION.
15. MILLWORKER TO PROVIDE SHOP DRAWINGS TO OWNER FOR REVIERW AND APPROVAL PRIOR TO FABRICATION.
16. FOR APPLIANCE SCHEDULE REFER TO A-501
17. FOR LABORATORY EQUIPMENT SCHEDULE REFER TO A-253
18. FOR RESTROOM ACCESSORY SCHEDULE REFER TO A-501

196
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TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT
ROBERT W. TOMLIN
No. C18650
Exp. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR ELEVATIONS

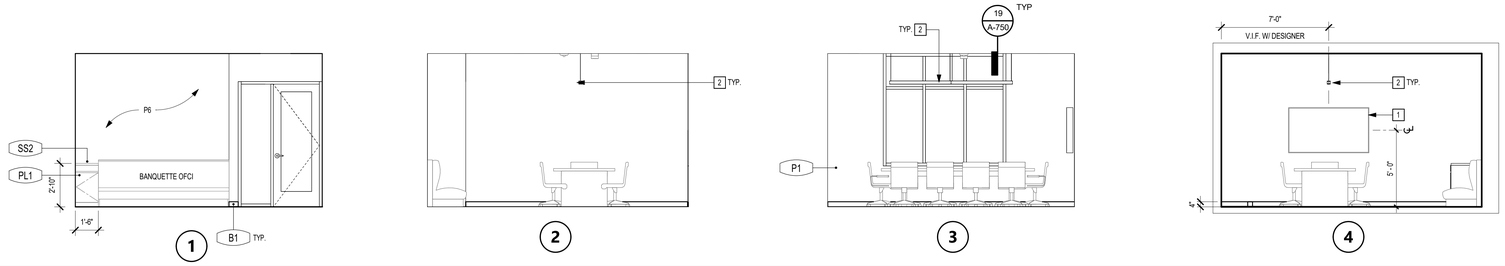
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SHEET NO.
A-602

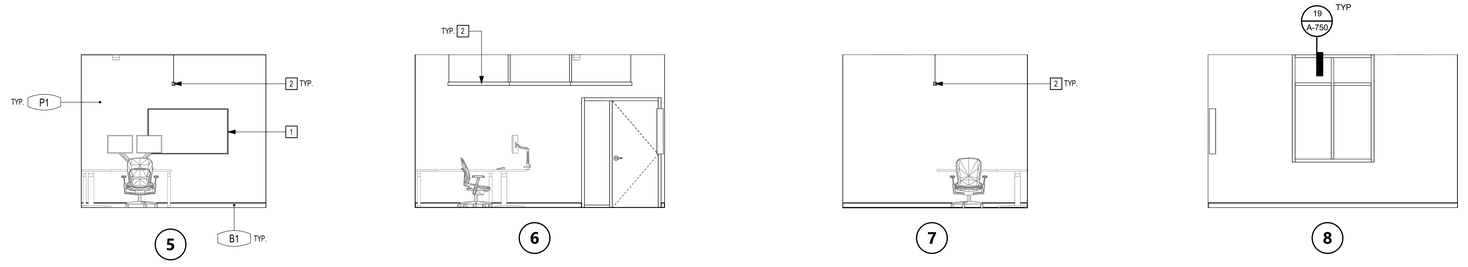
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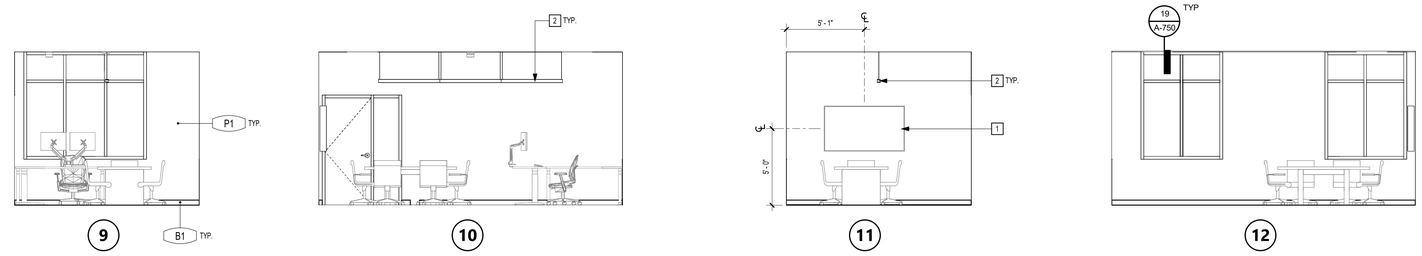
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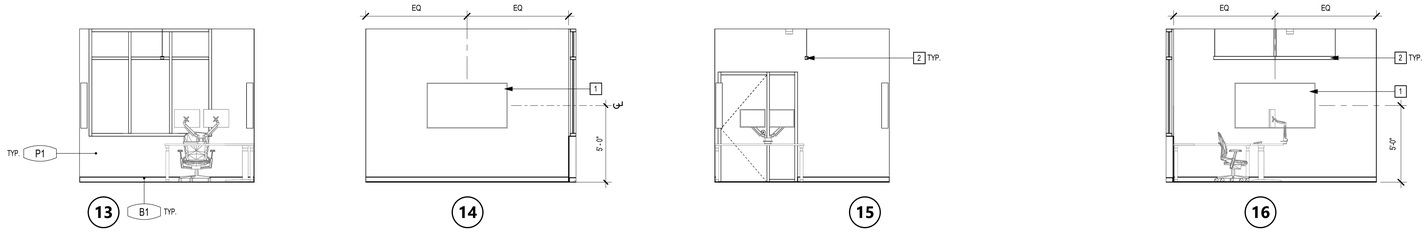
CONFERENCE ROOM - 102 | 1/4" = 1'-0" | **1**



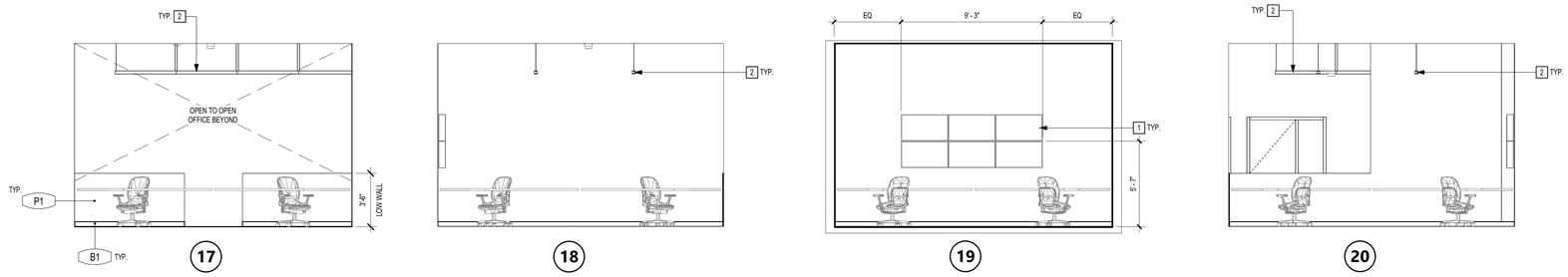
OFFICE - 103 | 1/4" = 1'-0" | **2**



OFFICE - 104 | 1/4" = 1'-0" | **3**



OFFICE - 105 | 1/4" = 1'-0" | **4**



CONTROL ROOM - 106 | 1/4" = 1'-0" | **5**

SHEET NOTES A-603

1 WALL MOUNTED TELEVISION, PROVIDE BACKING IN WALL, SEE 24/A-740
2 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL

GENERAL NOTES - INTERIOR ELEVATIONS

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SHEET TITLE
INTERIOR ELEVATIONS

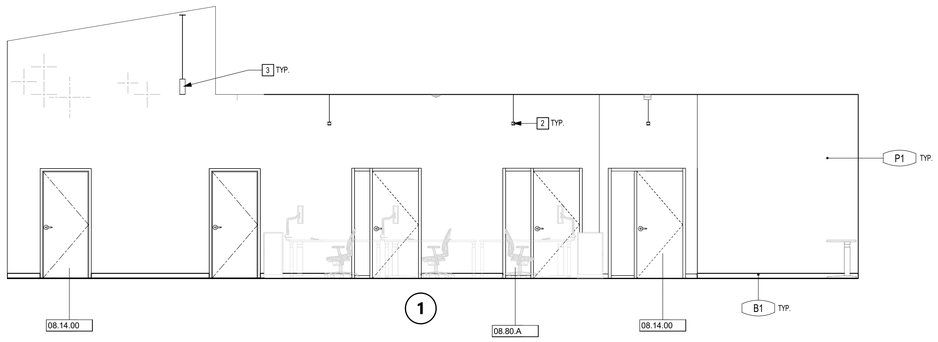
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A-603

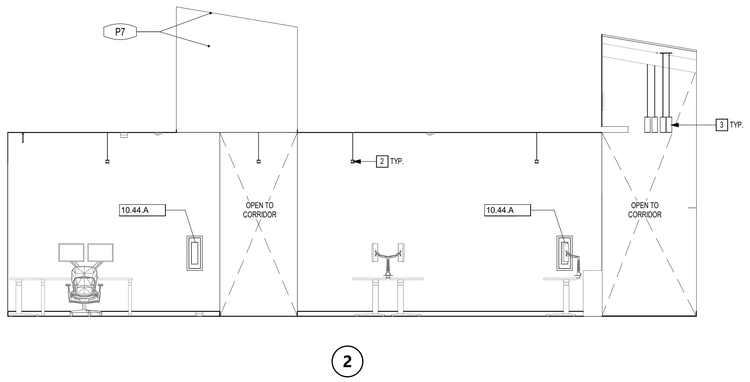
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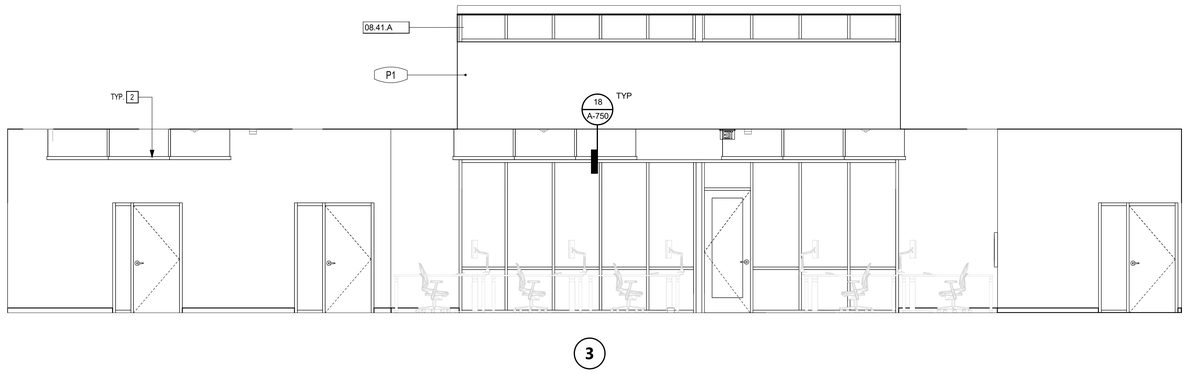
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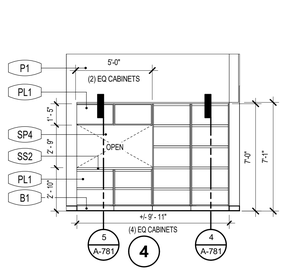
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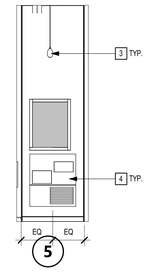
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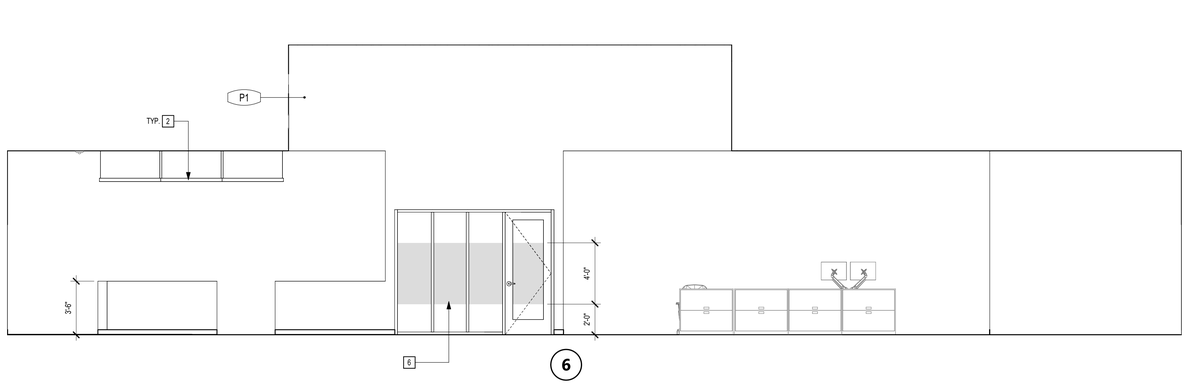
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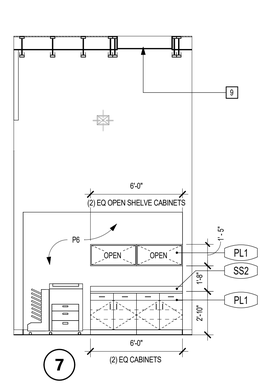
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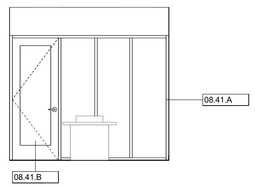


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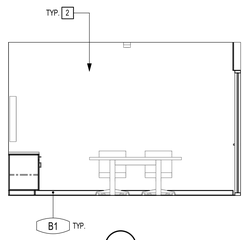


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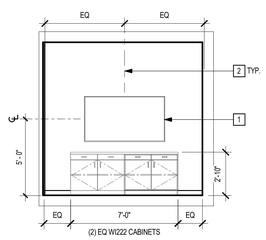
OPEN OFFICE - 108 | 1/4" = 1'-0" | 1



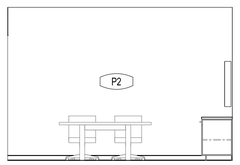
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9



10



11

CONFERENCE ROOM - 107 | 1/4" = 1'-0" | 2

SHEET NOTES A-604

1 WALL MOUNTED TELEVISION, PROVIDE BACKING IN WALL
2 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL
3 PENDANT LIGHT, SEE ELECTRICAL
4 DRINKING FOUNTAIN
6 WINDOW FILM

GENERAL NOTES - INTERIOR ELEVATIONS

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196
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ROSEVILLE, CA 95661
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ARCHITECT STAMP

LICENSED ARCHITECT ROBERT W. TOUCEY 3/31 No. C18650 Ref. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

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PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR ELEVATIONS

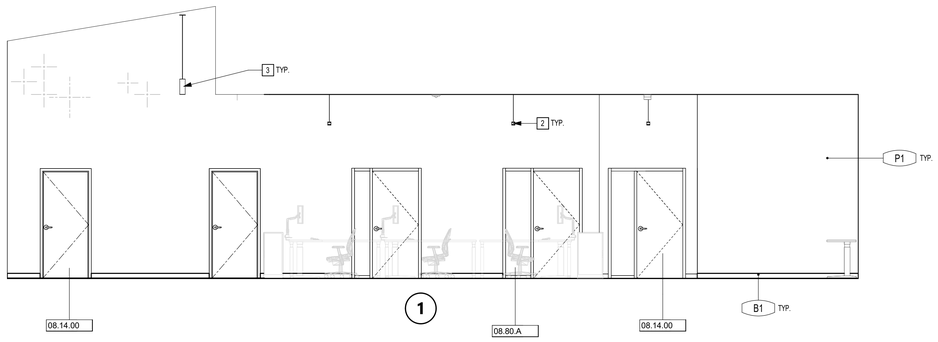
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SHEET NO.
A-604

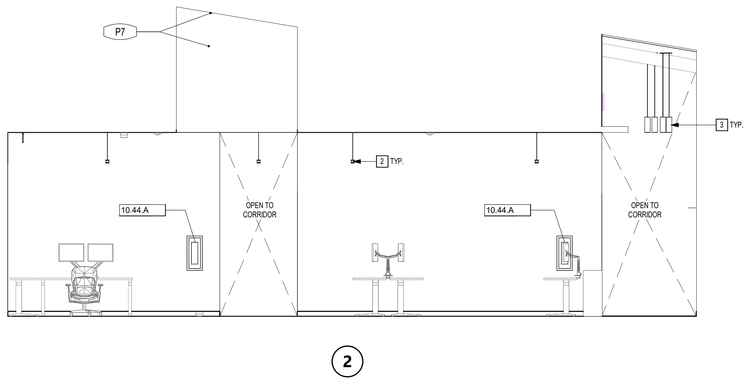
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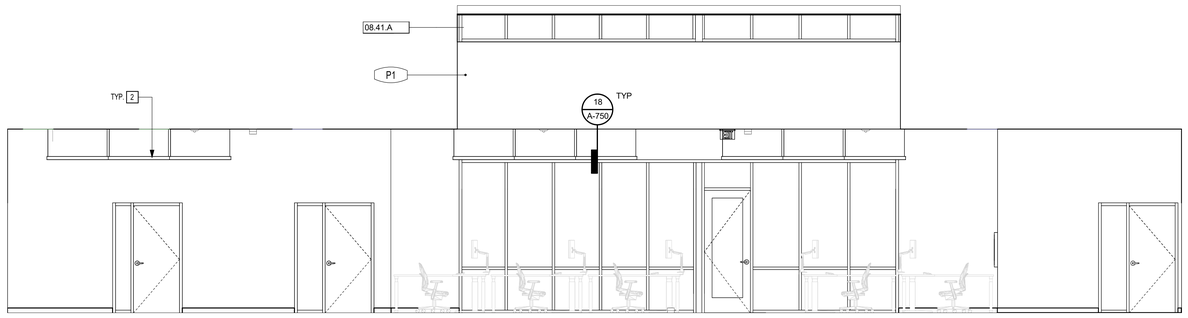
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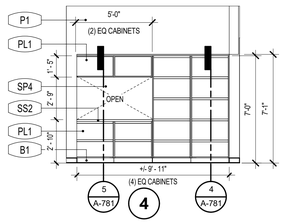
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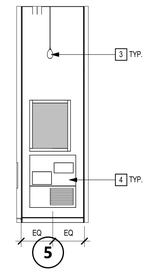
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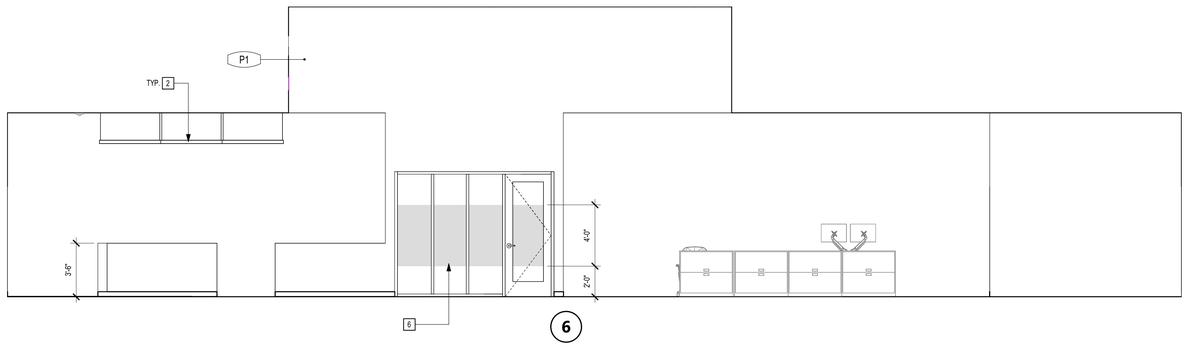
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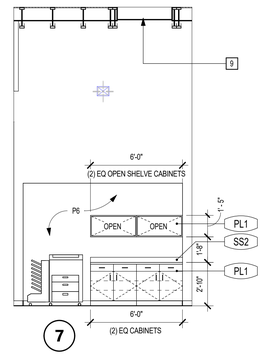
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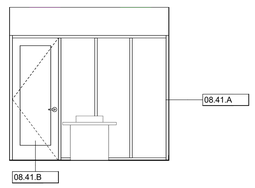


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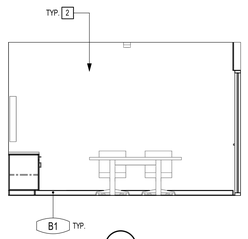


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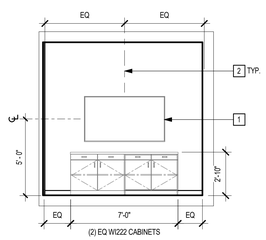
OPEN OFFICE - 108 | 1/4" = 1'-0" | 1



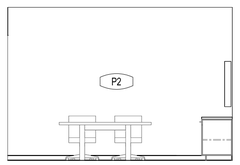
8



9



10



11

CONFERENCE ROOM - 107 | 1/4" = 1'-0" | 2

SHEET NOTES A-604

1 WALL MOUNTED TELEVISION, PROVIDE BACKING IN WALL
2 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL
3 PENDANT LIGHT, SEE ELECTRICAL
4 DRINKING FOUNTAIN
6 WINDOW FILM

KEYNOTES

08.14.00 SOLID CORE WOOD DOOR
08.41.A ALUMINUM-FRAMED STOREFRONT SYSTEM
08.41.B STOREFRONT ALUMINUM DOOR
08.80.A VISION GLAZING
10.44.A FIRE EXTINGUISHER WITH RECESSED FIRE EXTINGUISHER CABINET

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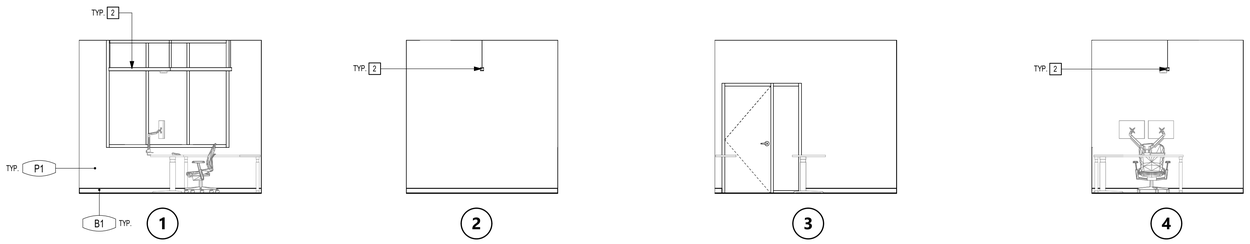
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
A-604

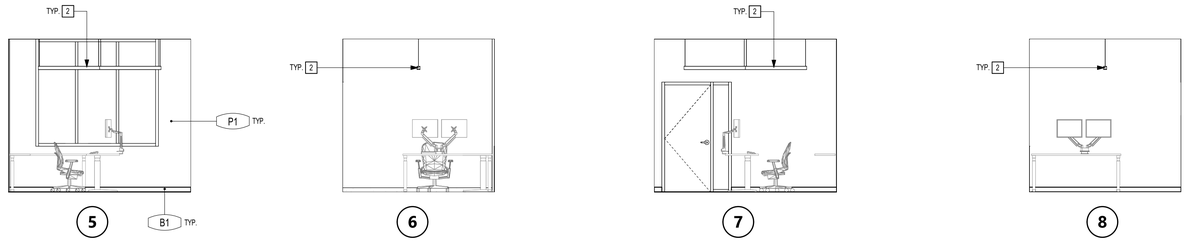
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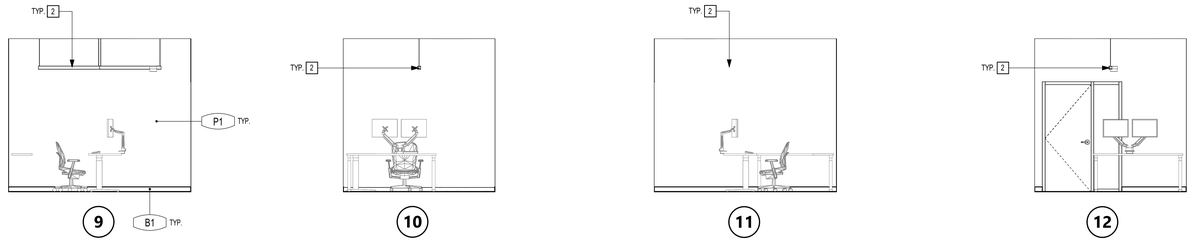
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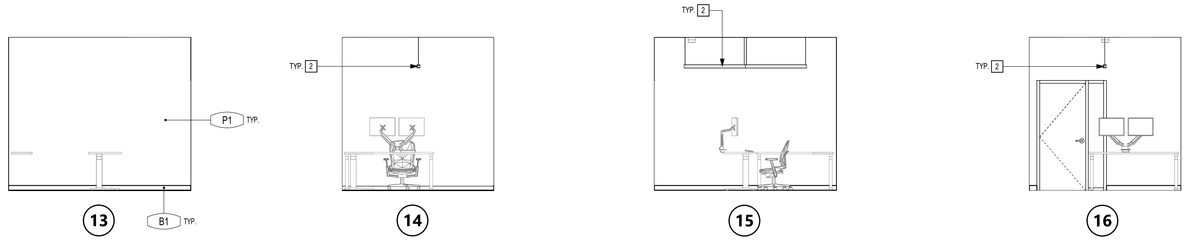
OFFICE - 110 | 1/4" = 1'-0" | **1**



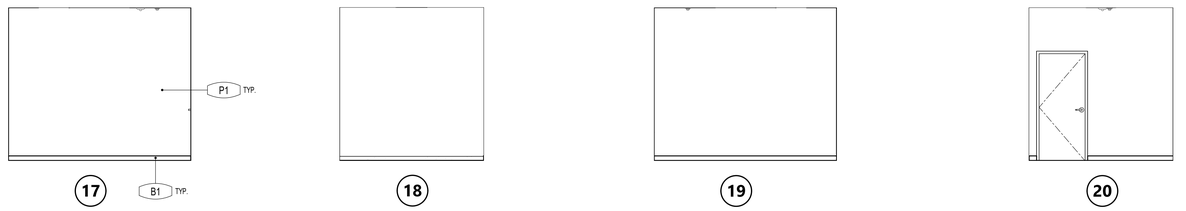
OFFICE - 111 | 1/4" = 1'-0" | **1**



OFFICE - 114 | 1/4" = 1'-0" | **1**



OFFICE - 115 | 1/4" = 1'-0" | **2**



RECORDS - 116 | 1/4" = 1'-0" | **3**

SHEET NOTES A-605

2 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL

GENERAL NOTES - INTERIOR ELEVATIONS

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-811.
2. FOR DOOR SCHEDULE SEE A-801
3. FOR FINISH SCHEDULE SEE A-252
4. ALL STEEL TO BE GALVANIZED AND PAINTED.
5. ALL WALLS TO BE PAINTED P1 UON.
6. PAINT COLORS SHALLTYPICALLY TERMINATE AT INSIDE CORNERS UNLESS NOTED OTHERWISE.
7. PAINT IN KITCHEN AND RESTROOMS TO BE HIGH LUSTER, TYP. UNO.
8. PAINT AT CEILINGS TO BE FLAT, UNO.
9. FOR ACCESSIBILITY REQUIREMENTS SEE SHEET G-900
10. FOR SIGNAGE DETAILS SEE SHEET G-923
11. FOR SIGNAGE PLAN SEE G-211
12. FOR INTERIOR DETAILS SEE A-740 & A-741
13. FOR CASEWORK SEE A-780 & A-781
14. FIELD VERIFY ALL CASEWORK OPENINGS PRIOR TO FABRICATION.
15. MILLWORKER TO PROVIDE SHOP DRAWINGS TO OWNER FOR REVIERW AND APPROVAL PRIOR TO FABRICATION.
16. FOR APPLIANCE SCHEDULE REFER TO A-501
17. FOR LABORATORY EQUIPMENT SCHEDULE REFER TO A-253
18. FOR RESTROOM ACCESSORY SCHEDULE REFER TO A-501

19six

2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT
ROBERT W. TOUCEY
No. C18650
Exp. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR ELEVATIONS

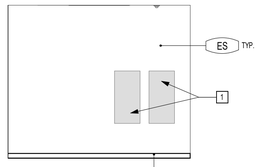
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A-605

DATE: May 29, 2024

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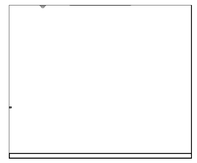
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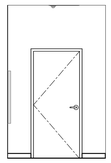
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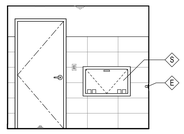


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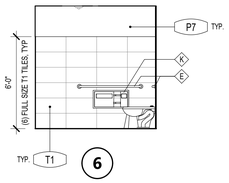


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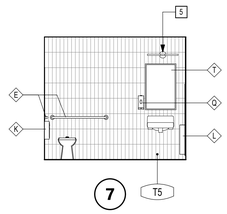
STORAGE - 117 | 1/4" = 1'-0" | **1**



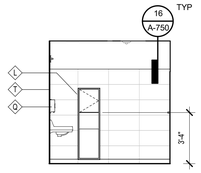
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6



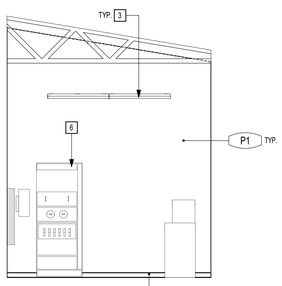
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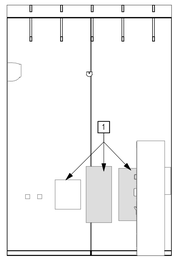
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NOTE: RESTROOM 120 SIMILAR BUT OPPOSITE HAND

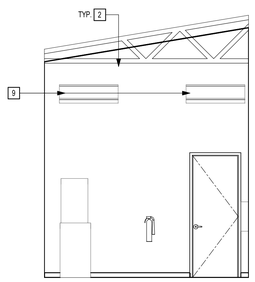
RESTROOM - 119 & 120 | 1/4" = 1'-0" | **2**



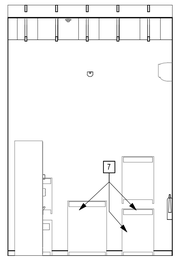
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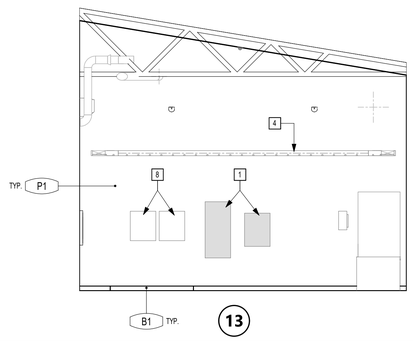


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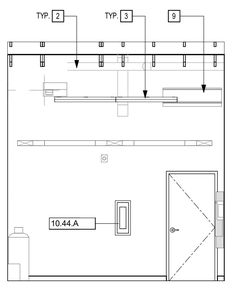


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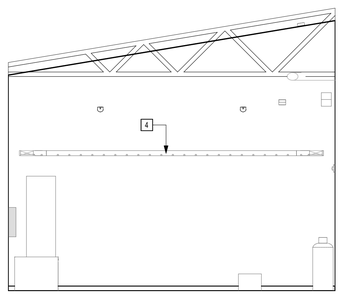
ELECTRICAL - 134 | 1/4" = 1'-0" | **3**



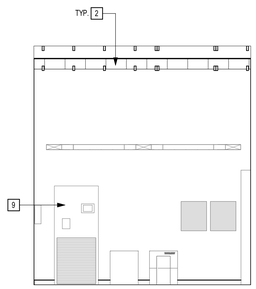
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14



15



16

MDF - 133 | 1/4" = 1'-0" | **4**

GENERAL NOTES - INTERIOR ELEVATIONS

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SHEET NOTES A-606

1 ELECTRICAL PANEL, SEE ELECTRICAL
2 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL
3 LINEAR WALL MOUNTED LIGHT, SEE ELECTRICAL
4 CABLE TRAY, MAINTAIN 3-FT MIN TO UTILITIES
5 VANITY LIGHT, SEE ELECTRICAL
6 SWITCHBOARD, SEE ELECTRICAL
7 TRANSFORMER, SEE ELECTRICAL
8 LIGHTING CONTROL PANEL, SEE ELECTRICAL
9 HVAC, SEE MECHANICAL

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2237 DOUGLAS BLVD, SUITE 160
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ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT JEREMY W. TOMSEN No. C18650 Ren. 2/28/25 STATE OF CALIFORNIA

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Roseville, CA 95747

SHEET TITLE
INTERIOR ELEVATIONS

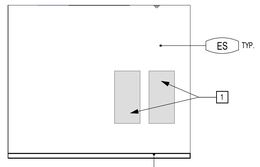
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SHEET NO.
A-606

DATE: May 29, 2024

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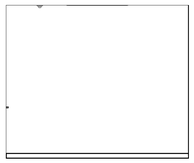
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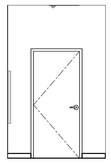
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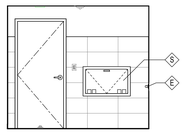


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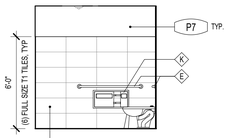


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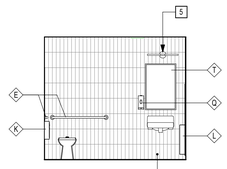
STORAGE - 117 | 1/4" = 1'-0" | **1**



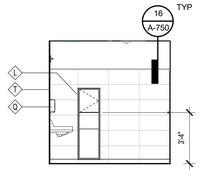
5



6



7



8

NOTE: RESTROOM 120 SIMILAR BUT OPPOSITE HAND

RESTROOM - 119 & 120 | 1/4" = 1'-0" | **2**

9

10

11

12

ELECTRICAL - 134 | 1/4" = 1'-0" | **3**

13

14

15

16

MDF - 133 | 1/4" = 1'-0" | **4**

SHEET NOTES A-606

1 ELECTRICAL PANEL, SEE ELECTRICAL
2 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL
3 LINEAR WALL MOUNTED LIGHT, SEE ELECTRICAL
4 CABLE TRAY, MAINTAIN 3-FT MIN TO UTILITIES
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6 SWITCHBOARD, SEE ELECTRICAL
7 TRANSFORMER, SEE ELECTRICAL
8 LIGHTING CONTROL PANEL, SEE ELECTRICAL
9 HVAC, SEE MECHANICAL

KEYNOTES

10.44.A FIRE EXTINGUISHER WITH RECESSED FIRE EXTINGUISHER CABINET

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19six
2237 DOUGLAS BLVD, SUITE 160
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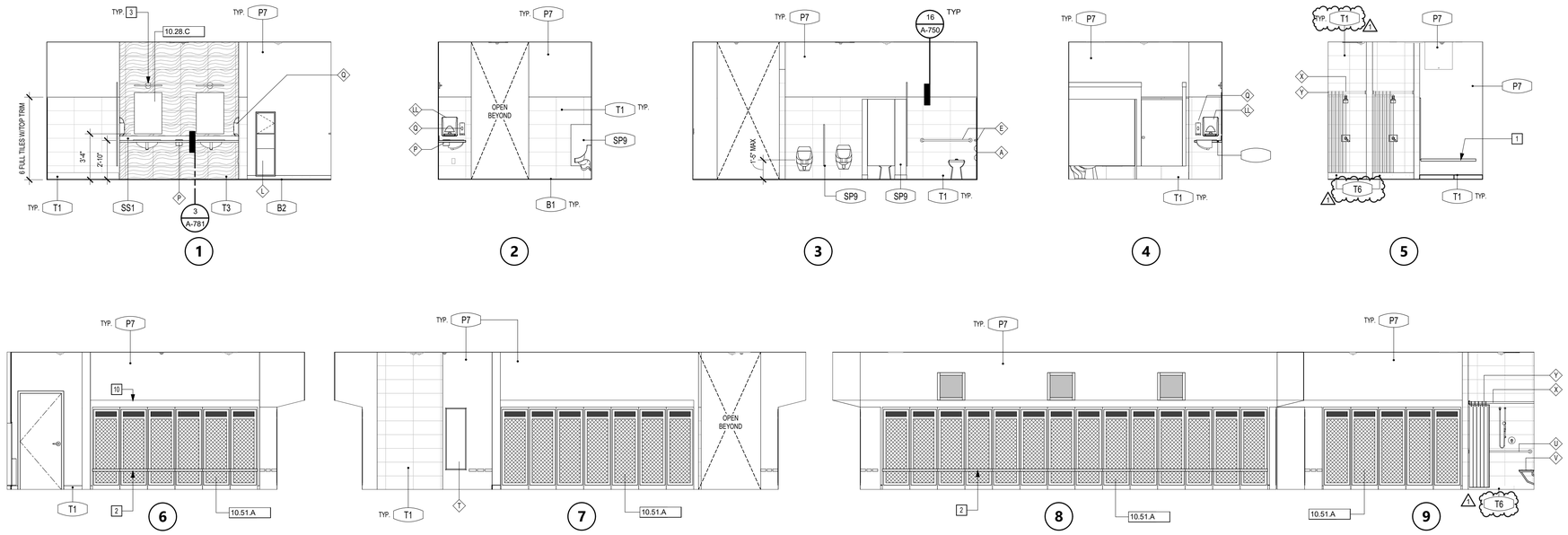
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SHEET NO.
A-606

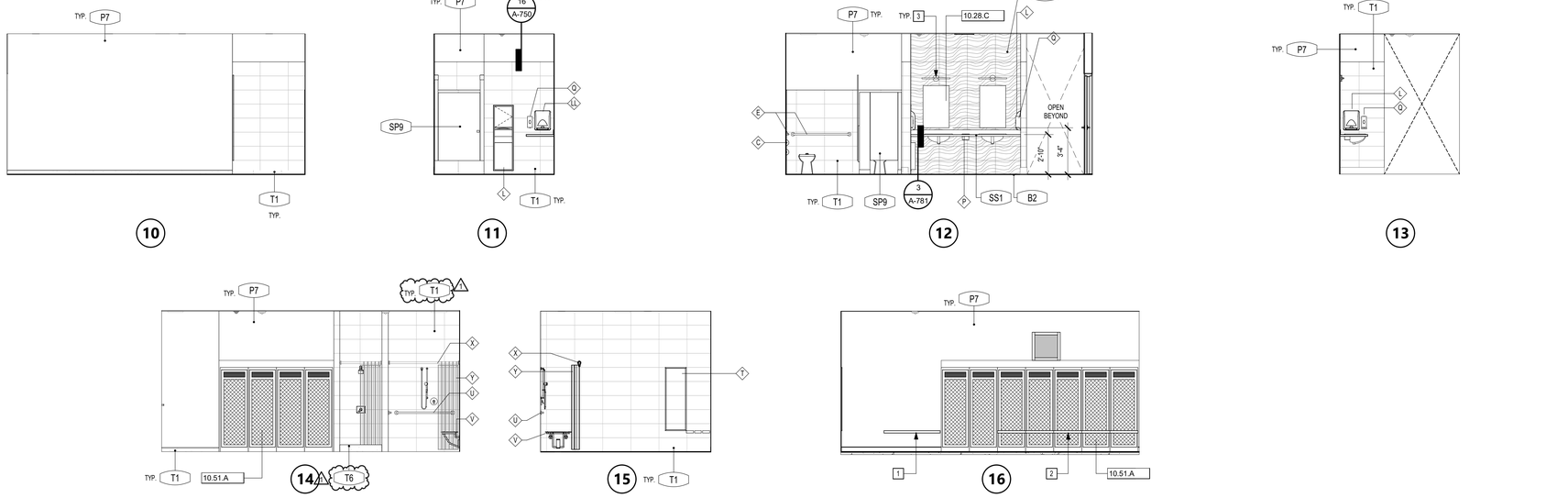
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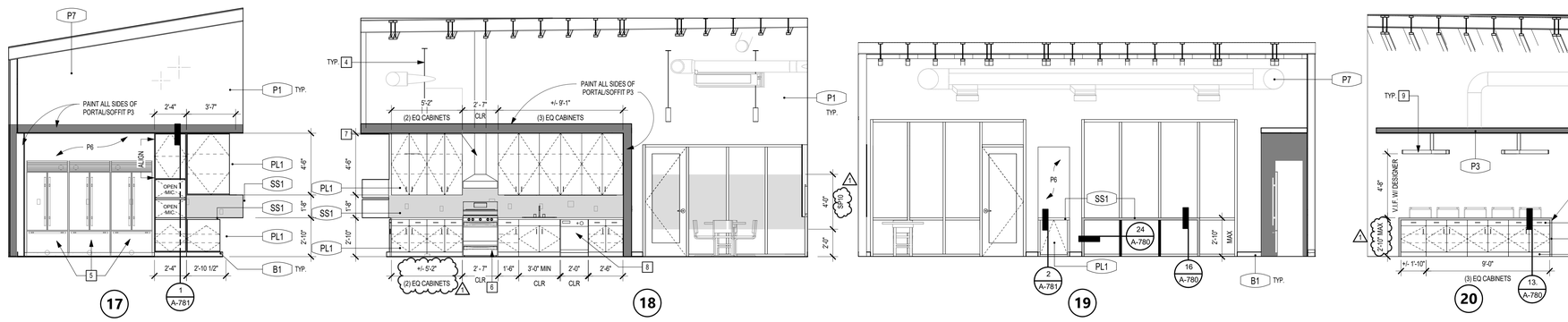
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MEN'S LOCKER RM - 123 | 1/4" = 1'-0" | **1**



WOMEN'S LOCKER RM - 122 | 1/4" = 1'-0" | **2**



BREAK ROOM - 137 | 1/4" = 1'-0" | **2**

SHEET NOTES A-607

1 ACCESSIBLE LOCKER ROOM BENCH PER DETAIL 18/G-900
2 INTEGRAL LOCKER BENCH
3 VANITY LIGHT, SEE ELECTRICAL
4 PENDANT LIGHT, SEE ELECTRICAL
5 REFRIGERATOR
6 RANGE AND OVEN
7 RANGE HOOD
8 DISHWASHER
9 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL
10 SLOPING LOCKER TOP, TYP

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LICENSED ARCHITECT
ROBERT W. TOUCEY
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Exp. 2/28/25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR ELEVATIONS

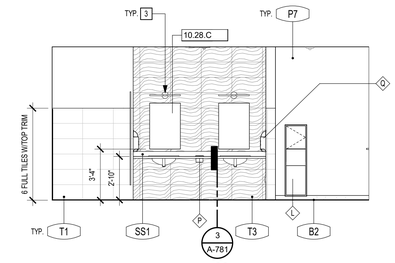
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
A-607

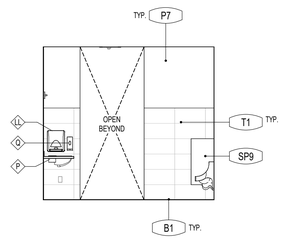
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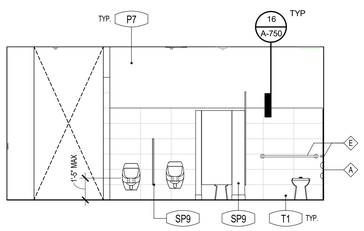
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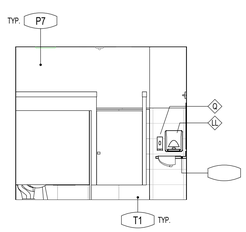
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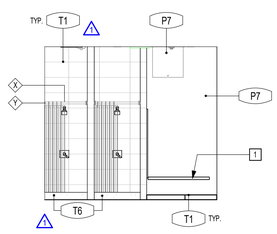
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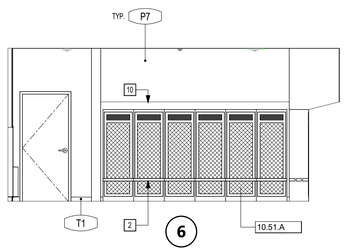
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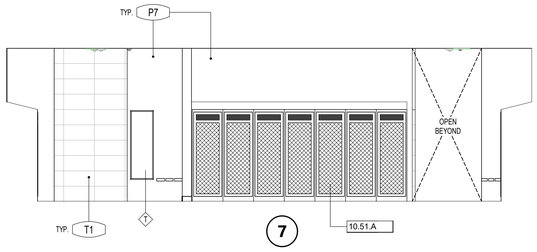
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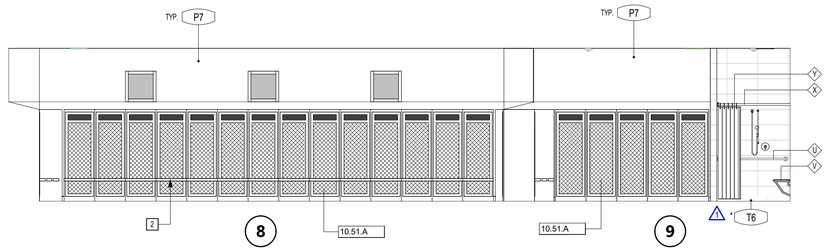
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6



7



8

9

MEN'S LOCKER RM - 123 | 1/4" = 1'-0" | **1**

10

11

12

13

14

15

16

WOMEN'S LOCKER RM - 122 | 1/4" = 1'-0" | **2**

17

18

19

20

21

BREAK ROOM - 137 | 1/4" = 1'-0" | **2**

SHEET NOTES A-607

1 ACCESSIBLE LOCKER ROOM BENCH PER DETAIL 18/G-900
2 INTEGRAL LOCKER BENCH
3 VANITY LIGHT, SEE ELECTRICAL
4 PENDANT LIGHT, SEE ELECTRICAL
5 REFRIGERATOR
6 RANGE AND OVEN
7 RANGE HOOD
8 DISHWASHER
9 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL
10 SLOPING LOCKER TOP, TYP

KEYNOTES

10.28.C MIRROR
10.44.A FIRE EXTINGUISHER WITH RECESSED FIRE EXTINGUISHER CABINET
10.51.A STAFF LOCKERS

GENERAL NOTES - INTERIOR ELEVATIONS

1. FOR WINDOW AND STOREFRONT SIZES AND MOUNTING HEIGHTS SEE SHEET A-811.
2. FOR DOOR SCHEDULE SEE A-801
3. FOR FINISH SCHEDULE SEE A-252
4. ALL STEEL TO BE GALVANIZED AND PAINTED.
5. ALL WALLS TO BE PAINTED P1 UON.
6. PAINT COLORS SHALL TYPICALLY TERMINATE AT INSIDE CORNERS UNLESS NOTED OTHERWISE.
7. PAINT IN KITCHEN AND RESTROOMS TO BE HIGH LUSTER, TYP. UNO.
8. PAINT AT CEILINGS TO BE FLAT, UNO.
9. FOR ACCESSIBILITY REQUIREMENTS SEE SHEET G-900
10. FOR SIGNAGE DETAILS SEE SHEET G-923
11. FOR SIGNAGE PLAN SEE G-211
12. FOR INTERIOR DETAILS SEE A-740 & A-741
13. FOR CASEWORK SEE A-780 & A-781
14. FIELD VERIFY ALL CASEWORK OPENINGS PRIOR TO FABRICATION.
15. MILLWORKER TO PROVIDE SHOP DRAWINGS TO OWNER FOR REVIERW AND APPROVAL PRIOR TO FABRICATION.
16. FOR APPLIANCE SCHEDULE REFER TO A-501
17. FOR LABORATORY EQUIPMENT SCHEDULE REFER TO A-253
18. FOR RESTROOM ACCESSORY SCHEDULE REFER TO A-501

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

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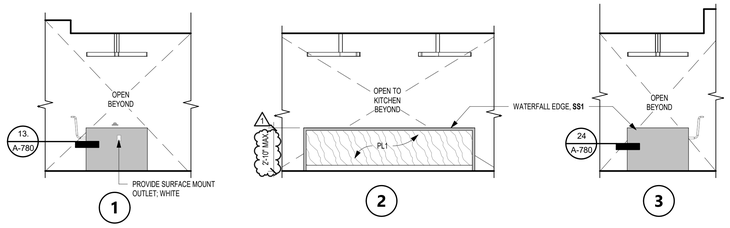
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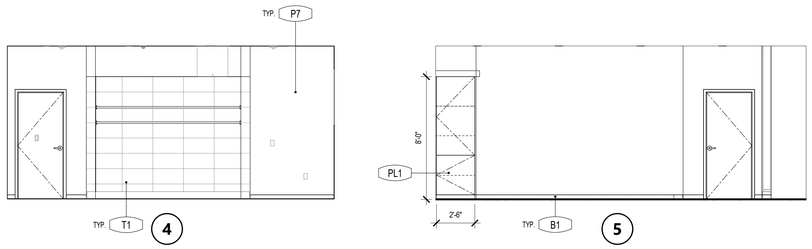
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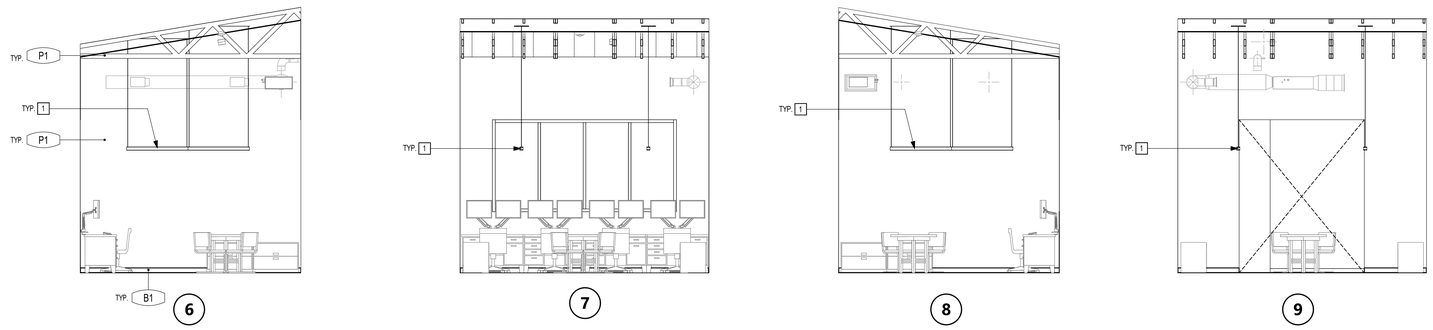
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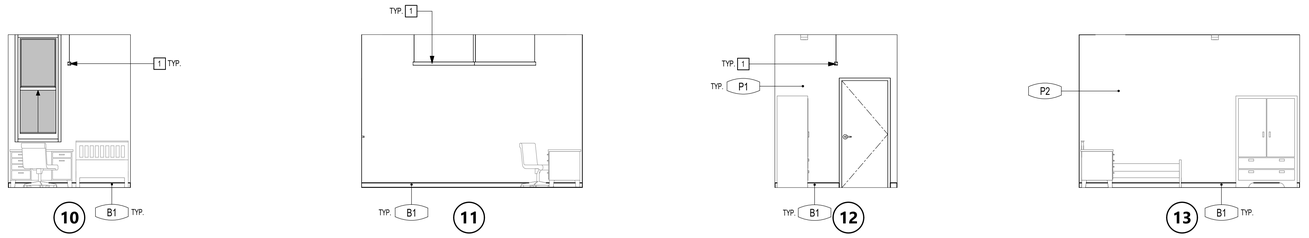
KITCHEN ISLAND - 109 | 1/4" = 1'-0" | **1**



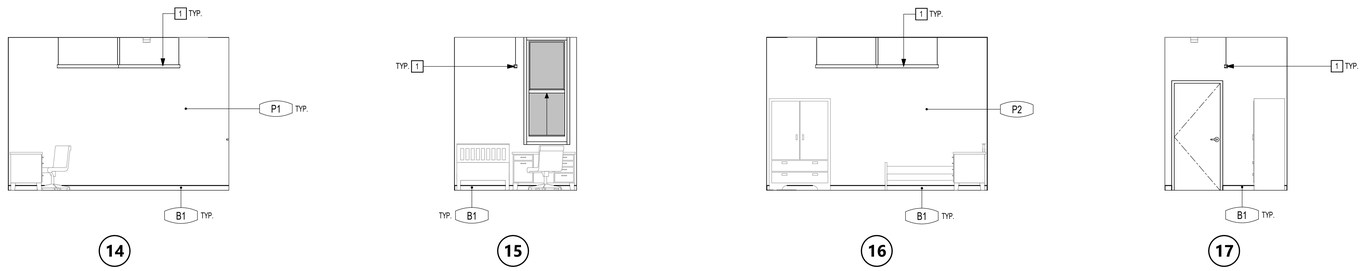
LAUNDRY - 124 | 1/4" = 1'-0" | **2**



CONTROL ROOM 2 - 125 | 1/4" = 1'-0" | **3**



BUNK ROOM - 127, 129 & 131 | 1/4" = 1'-0" | **4**



BUNK ROOM - 126,128 & 130 | 1/4" = 1'-0" | **5**

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SHEET NOTES A-608

1 LINEAR SUSPENDED LIGHT, SEE ELECTRICAL

19six

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ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT
ROBERT W. TOMLIN
No. C18650
Ref. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

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SHEET TITLE

INTERIOR ELEVATIONS

DRAWN BY: 19six JOB NUMBER: 210015.01

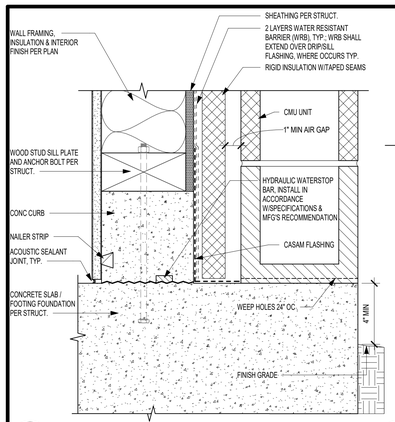
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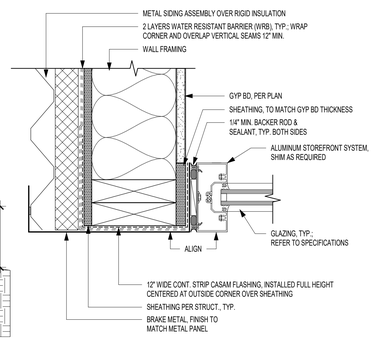
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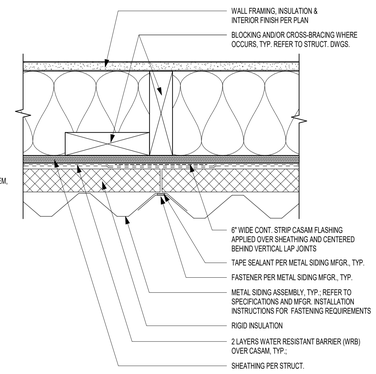
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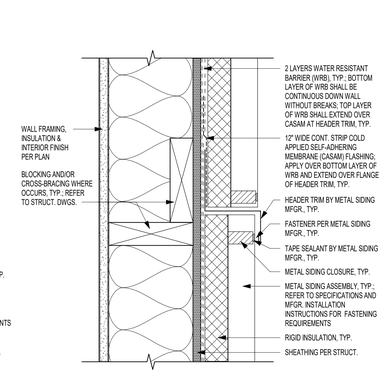
21 CMU CLADDING
BASE OF WALL AT LANDSCAPE
3" = 1'-0"



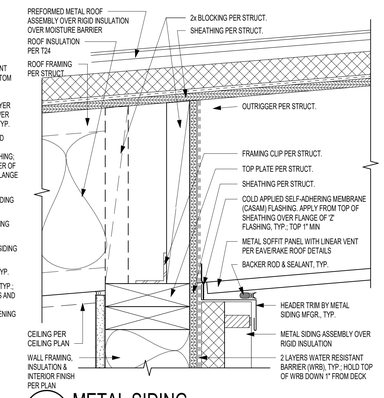
17 METAL SIDING
AT OUTSIDE CORNER - STOREFRONT
3" = 1'-0"



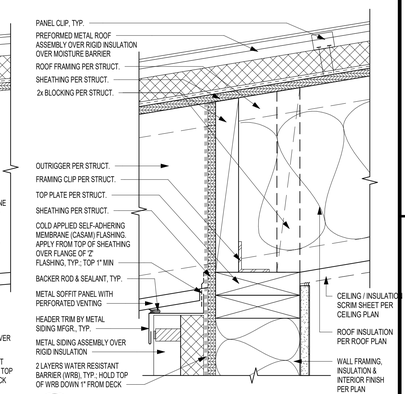
13 METAL SIDING
VERTICAL JOINT
3" = 1'-0"



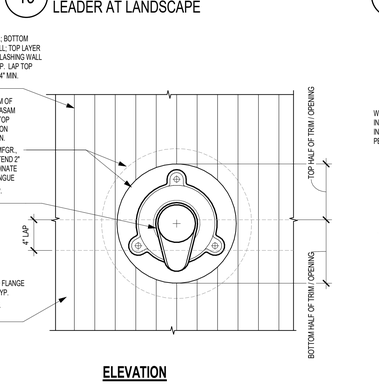
9 METAL SIDING
HORIZONTAL JOINT
3" = 1'-0"



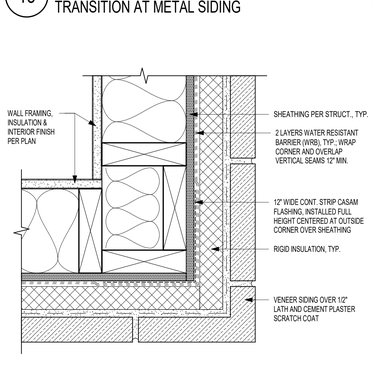
5 METAL SIDING
TOP OF WALL AT HIGH EAVE (CLERESTORY)
3" = 1'-0"



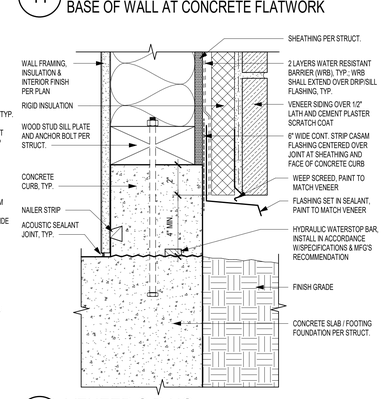
1 METAL SIDING
AT EAVE/SOFFIT
3" = 1'-0"



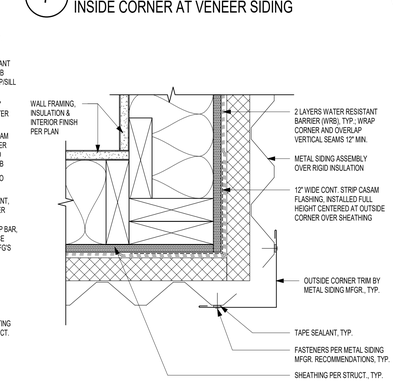
18 DOWNSPOUT / RAINWATER
LEADER AT FLATWORK
1 1/2" = 1'-0"



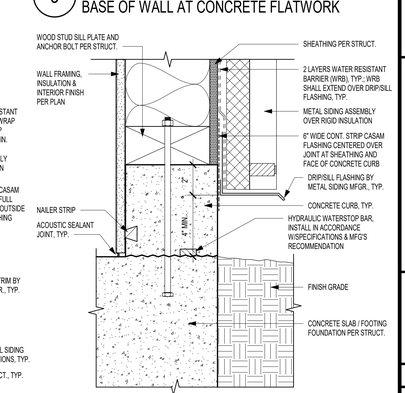
14 METAL SIDING
AT EXTERIOR METAL SOFFIT
3" = 1'-0"



10 VENEER SIDING
TRANSITION AT METAL SIDING
3" = 1'-0"



6 METAL SIDING
INSIDE CORNER
3" = 1'-0"



2 METAL SIDING
TOP OF WALL AT ROOF GABLE OVERHANG
3" = 1'-0"

23 DOWNSPOUT / RAINWATER
LEADER AT SPLASH BLOCK
1 1/2" = 1'-0"

19 DOWNSPOUT / RAINWATER
LEADER AT LANDSCAPE
1 1/2" = 1'-0"

15 CMU
TRANSITION AT METAL SIDING
3" = 1'-0"

11 VENEER SIDING
BASE OF WALL AT CONCRETE FLATWORK
3" = 1'-0"

7 METAL SIDING
INSIDE CORNER AT VENEER SIDING
3" = 1'-0"

3 METAL SIDING
BASE OF WALL AT CONCRETE FLATWORK
3" = 1'-0"

24 ROOF DRAIN OVERFLOW
PENETRATION THROUGH CORRUGATED METAL SIDING
1 1/2" = 1'-0"
wpv1.1

16 VENEER SIDING
AT OUTSIDE CORNER
3" = 1'-0"

12 VENEER SIDING
BASE OF WALL AT LANDSCAPE
3" = 1'-0"

8 METAL SIDING
AT OUTSIDE CORNER
3" = 1'-0"

4 METAL SIDING
BASE OF WALL AT LANDSCAPE
3" = 1'-0"

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT — GREGORY M. FONG — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

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SHEET TITLE
EXTERIOR WALL DETAILS

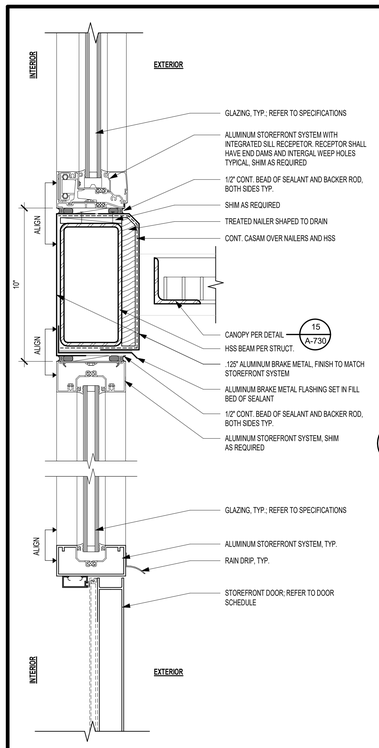
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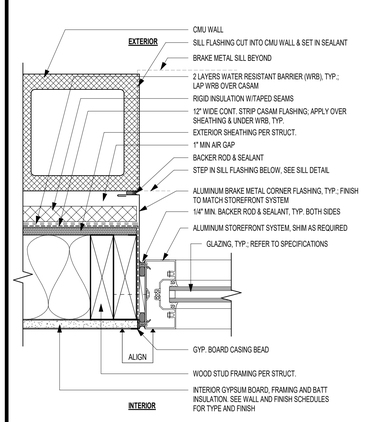
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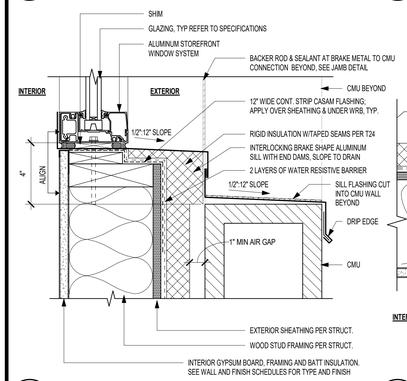
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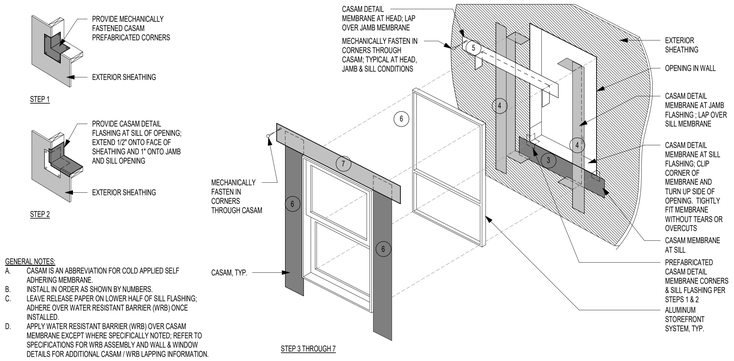
22 STOREFRONT DOOR HEAD
AT ENTRY CANOPY — 3"=1'-0"



23 STOREFRONT WINDOW JAMB
AT CMU WALL — 3" = 1'-0"

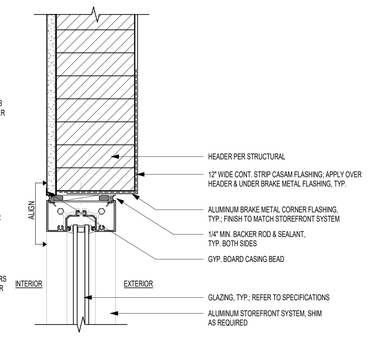


24 STOREFRONT WINDOW SILL
AT CMU BLOCK — 3"=1'-0"

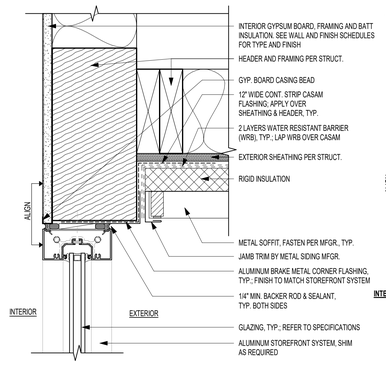


GENERAL NOTES:
A. CASAM IS AN ABBREVIATION FOR COLD APPLIED SELF ADHERING MEMBRANE.
B. INSTALL IN ORDER AS SHOWN BY NUMBERS.
C. LEAVE RELEASE PAPER ON LOWER HALF OF SILL FLASHING; ADHERE OVER WATER RESISTANT BARRIER (WRB) ONCE INSTALLED.
D. APPLY WATER RESISTANT BARRIER (WRB) OVER CASAM MEMBRANE EXCEPT WHERE SPECIFICALLY NOTED; REFER TO SPECIFICATIONS FOR WRB ASSEMBLY AND WALL & WINDOW DETAILS FOR ADDITIONAL CASAM / WRB LAPPING INFORMATION.

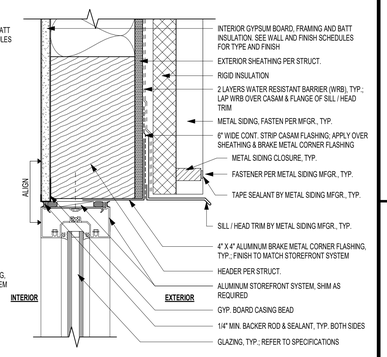
17 MEMBRANE FLASHING
AT STOREFRONT WINDOW EXTERIOR OPENINGS — 1/4"=1'-0"



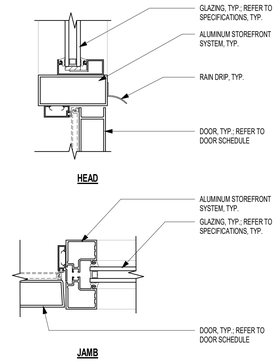
9 STOREFRONT WINDOW HEAD
AT ENTRY TOWER ROOF — 3" = 1'-0"



5 STOREFRONT WINDOW HEAD
AT EXTERIOR SOFFIT — 3"=1'-0"



1 STOREFRONT WINDOW HEAD
AT METAL SIDING — 3" = 1'-0"



GENERAL NOTES FOR WINDOW AND FLASHING CONDITIONS

A. COLD APPLIED SELF ADHERING(CASAM) MEMBRANE AND WATER RESISTANT BARRIER(WRB) TO BE INSTALLED PER C.B.C. REQUIREMENTS
B. COORDINATE AND SEQUENCE WITH OTHER TRADES FOR PROPER INSTALLATION AND OVERLAP OF S.M. FLASHING, WATERPROOF MEMBRANE FLASHING AND WRB, WINDOW SEALANT, AND EXTERIOR FINISH MATERIALS TO FORM WATERTIGHT BARRIER.
C. METAL WINDOW FLASHING SHALL BE SET IN A CONTINUOUS BEAD OF SEALANT.
D. METAL WINDOW FLASHING SHALL BE SINGLE UNIT WITH FULLY SOLDERED WELDED SEAMS. IF UNIT MUST BE MORE THAN A SINGLE PECE, THE SEAMS SHALL BE AT MIDDLE PORTION OF HEAD AND SILL. JOINTS SHALL NOT OCCUR AT INTERSECTIONS OR CORNERS.
E. WINDOW DETAILS HAVE BEEN PROVIDED FOR GENERAL REFERENCE ONLY. SEE SHOP DRAWINGS FOR MORE SPECIFIC, DETAILED AND ADDITIONAL INFORMATION. COORDINATE ALL TRADES WITH WINDOW SHOP DRAWINGS.
F. SIZE AND SHAPE OF FLASHING SHALL BE ADJUSTED AS REQD. TO PROVIDE A MIN. 4" FLANGE BEHIND EXTERIOR PANEL ASSEMBLY, COLD APPLIED SELF ADHERING WATERPROOF MEMBRANE (CASAM), WRB, AND TO WORK WITH CURTAINWALL OR STOREFRONT MULLION AS APPLICABLE.

SILL FLASHING

A. SHALL HAVE A VERTICAL REAR LEG, SEALED AT END TERMINATION.
B. SHALL HAVE SEALED END DAMS ALL TERMINATIONS
C. SHALL BE SIZED TO ACCOMMODATE VERTICAL FLASHING, WATERPROOF MEMBRANE, AND WRB AT JAMBS
D. ALL SPLICES MUST ALLOW FOR THERMAL AND DYNAMIC MOVEMENT AND BE SEALED IN ACCORDANCE WITH ASTM AND MANUFACTURERS REQUIREMENTS. THE SPLICE WILL HAVE A BRIDGE SEAL 1/4" THICK WITH A MIN. OF 1/4" BOND SURFACE TO BOTH SUBSTRATES. THE BRIDGE SEAL MUST NOT BE DISRUPTED WITH THREE SIDED ADHESION OR OTHER OBSTRUCTIONS.
E. ALL PENETRATIONS THROUGH THE SILL FLASHING MUST BE SEALED WATERTIGHT
F. ALL ATTACHMENTS MUST ACCOMMODATE THERMAL AND DYNAMIC MOVEMENT
G. ALL INTERRUPTIONS IN FLASHING MUST BE SEALED
H. GALV. SHEET METAL SILL FLASHING AND WATERPROOF MEMBRANE SILL FLASHING SHALL EXTEND BEYOND WINDOW FRAME JAMB AT ALL END CONDITIONS AND SHALL TURN UP 6" VERTICAL AT JAMB CONDITIONS.

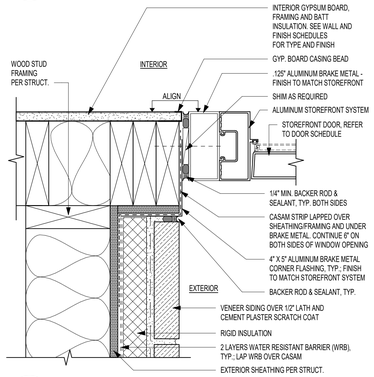
VERTICAL JAMB AT SILL AND HEAD FLASHING AREAS

A. INSTALL VERTICAL WATERPROOF MEMBRANE FLASHING AT JAMB AND IT SHALL OVERLAP UPTURNED SILL FLASHING.
B. INSTALL WATERPROOF MEMBRANE FLASHING AT HEAD AND OVERLAP VERTICAL PIECES JAMB AND HEAD FLASHING
C. VERTICAL JAMB FLASHING SHALL RUN CONTINUOUS WITHOUT SPLICE, BREAK OR INTERRUPTION TO EDGE OF SILL FLASHING. IT SHALL BE FULLY SOLDERED/SEALED TO SILL FLASHING, SEAL MUST BE WATERTIGHT AND ALLOW FOR DYNAMIC AND THERMAL MOVEMENT
D. JAMB FLASHING SHALL MEET THE HEAD FLASHING BY BUTTING INTO THE BOTTOM EDGE. COMBINATION OF BRIDGE SEAL (AT FACE) AND FILLET BEAD (AT RETURN) MUST OCCUR AT ALL INTERSECTIONS
E. ALL FASTENER PENETRATIONS MUST BE SEALED WATERTIGHT
F. ATTACHMENTS MUST ALLOW FOR DYNAMIC AND THERMAL MOVEMENT
G. HEAD SPLICES TO BE SEALED WITH BRIDGE SEAL. SEE SILL FLASHING NOTES
H. ALL SPLICES MUST ALLOW FOR DYNAMIC AND THERMAL MOVEMENT AND BE SEALED IN ACCORDANCE WITH ASTM AND MANUFACTURERS REQUIREMENTS. THE SPLICE WILL HAVE A BRIDGE SEAL 1/4" THICK WITH A MIN. OF 1/4" BOND SURFACE TO BOTH SUBSTRATES. THE BRIDGE SEAL MUST NOT BE DISRUPTED WITH THREE SIDED ADHESION OR OTHER OBSTRUCTIONS.

PERIMETER SEALANT

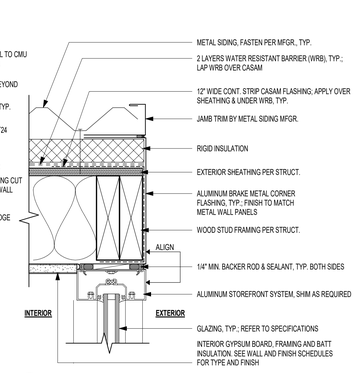
A. EXTERIOR WINDOW PERIMETER SEALANT SHALL ALWAYS BE CONTINUOUS AND IN THE SAME PLANE
B. INSTALLER SHALL TAKE CARE TO COMPLETE SEALS AROUND ALL BRIDGE AND FILLET BEADS USED TO SEAL FLASHING

14 STOREFRONT DOOR HEAD/JAMB
AT STOREFRONT WINDOW — 3" = 1'-0" — wpv1.1

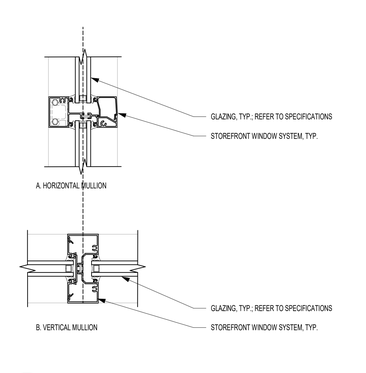


19 EXTERIOR MEMBRANE NOTES
N.T.S.

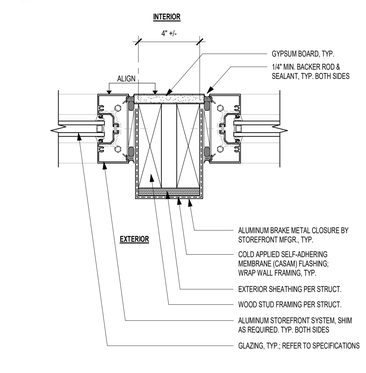
15 STOREFRONT DOOR JAMB
AT VENEER SIDING — 3"=1'-0"



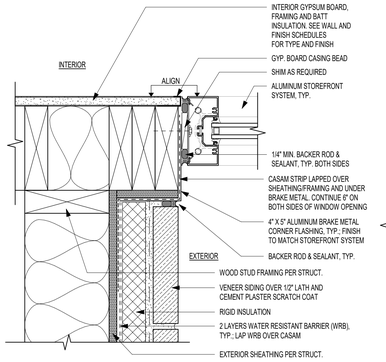
13 STOREFRONT WINDOW JAMB
AT METAL SIDING - MAIN ENTRY



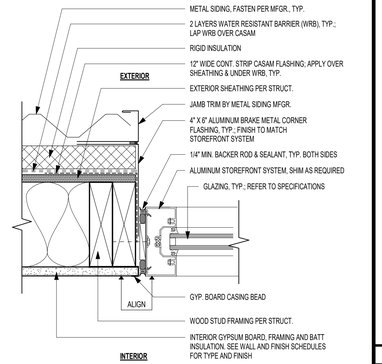
16 STOREFRONT DOOR THRESHOLD
AT CONCRETE FLATWORK — 3" = 1'-0"



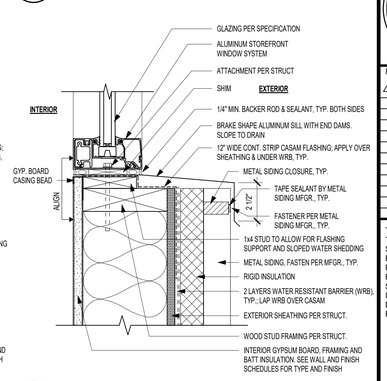
11 STOREFRONT WINDOW JAMB
AT BRAKE METAL (CLERESTORY) — 3" = 1'-0"



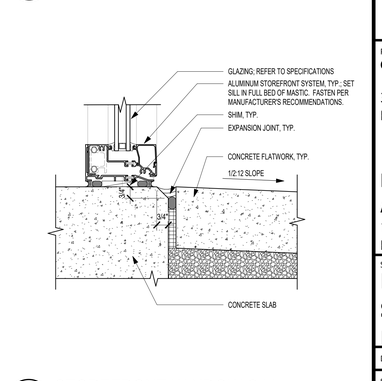
6 STOREFRONT WINDOW JAMB
AT VENEER SIDING — 3"=1'-0"



2 STOREFRONT WINDOW JAMB
AT METAL SIDING — 3" = 1'-0"

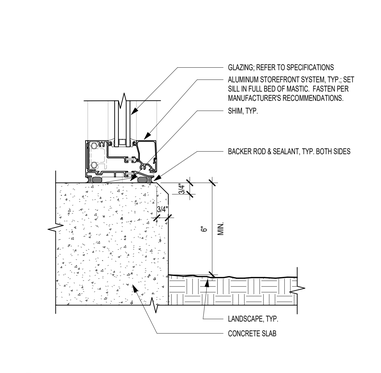


7 STOREFRONT WINDOW SILL
AT VENEER SIDING — 3"=1'-0"



3 STOREFRONT WINDOW SILL
AT METAL SIDING — 3"=1'-0"

12 STOREFRONT WINDOW
INTERMEDIATE MULLIONS — 3" = 1'-0"



8 STOREFRONT WINDOW SILL
AT LANDSCAPE — 3" = 1'-0"

4 STOREFRONT WINDOW SILL
AT CONCRETE FLATWORK — 3" = 1'-0" — wpv1.1

1966
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT — REGISTERED PROFESSIONAL ENGINEER — No. C18650 — Ext. 2/28/25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
8		

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
EXTERIOR STOREFRONT DETAILS

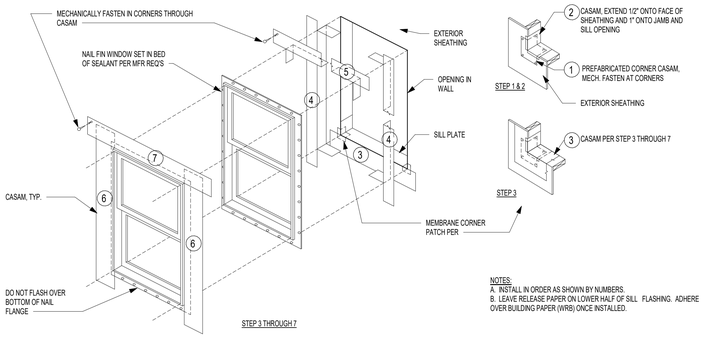
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SHEET NO.
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DATE: May 29, 2024

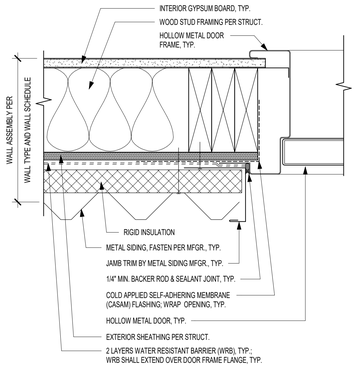
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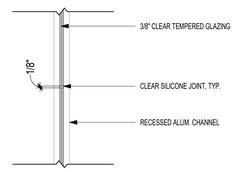


NOTES:
A. INSTALL IN ORDER AS SHOWN BY NUMBERS.
B. LEAVE RELEASE PAPER ON LOWER HALF OF SILL FLASHING. ADHERE OVER BUILDING PAPER (WRB) ONCE INSTALLED.

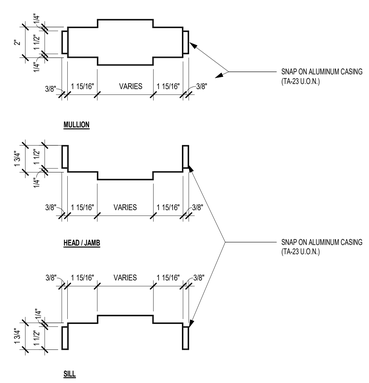
21 MEMBRANE FLASHING AT EXTERIOR NAIL FIN WINDOWS
COLD APPLIED, SELF ADHERING MEMBRANE (CASAM)
NTS.
wp1.1



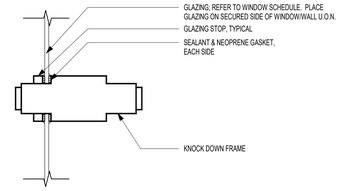
13 EXTERIOR HOLLOW METAL DOOR
JAMB AT METAL SIDING
3" = 1'-0"



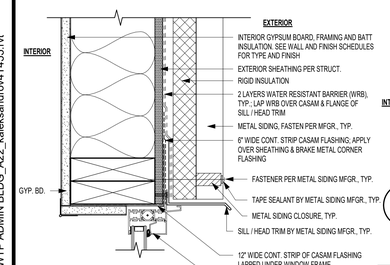
9 BUTT JOINT
AT INTERIOR GLAZING
3" = 1'-0"



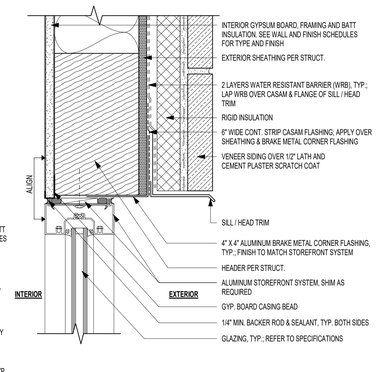
A KNOCK DOWN FRAME



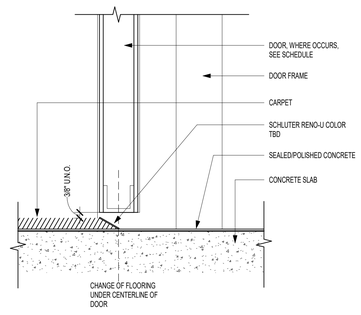
E KNOCK DOWN WINDOW MULLION



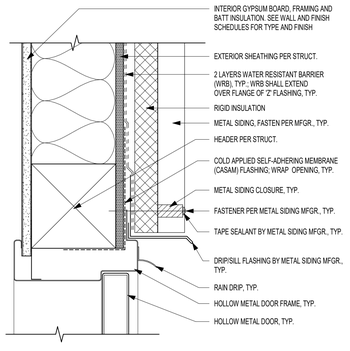
18 STOREFRONT WINDOW HEAD
AT STONE VENEER
3" = 1'-0"



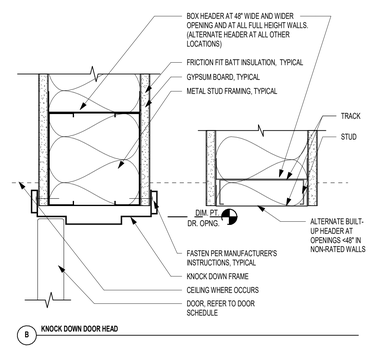
14 THRESHOLD
CARPET TO SEALED CONCRETE
3"-1'-0"



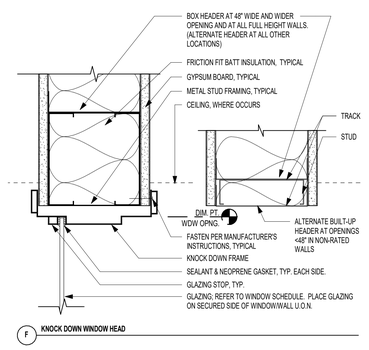
10 EXTERIOR HOLLOW METAL DOOR
HEAD AT METAL SIDING
3" = 1'-0"



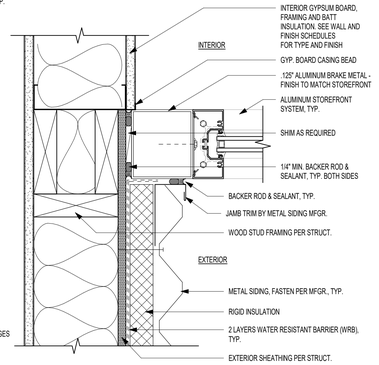
B KNOCK DOWN DOOR HEAD



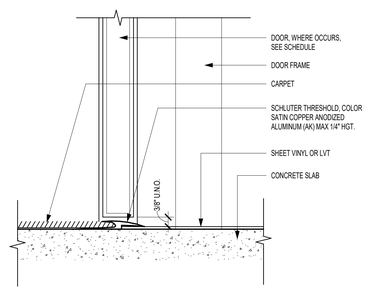
F KNOCK DOWN WINDOW HEAD



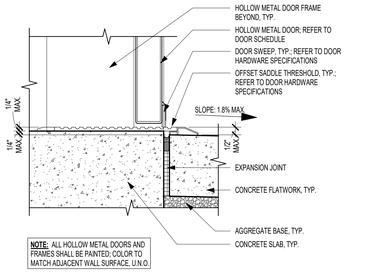
19 STOREFRONT WINDOW JAMB
AT METAL SIDING
3"=1'-0"



15 THRESHOLD
CARPET TO RESILIENT FLOORING
3"=1'-0"

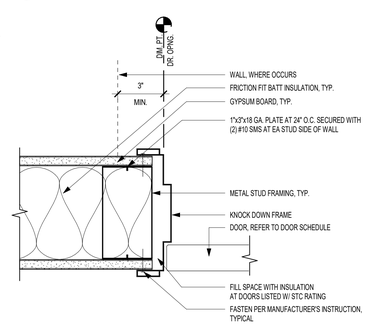


11 EXTERIOR HOLLOW METAL DOOR
THRESHOLD AT CONCRETE
3" = 1'-0"

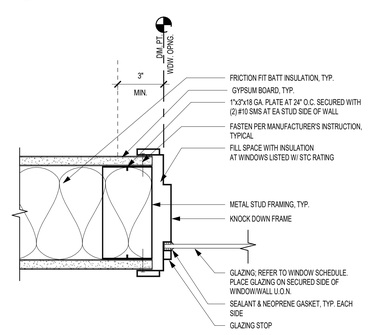


NOTE: ALL HOLLOW METAL DOORS AND FRAMES SHALL BE PAINTED; COLOR TO MATCH ADJACENT WALL SURFACE, U.N.O.

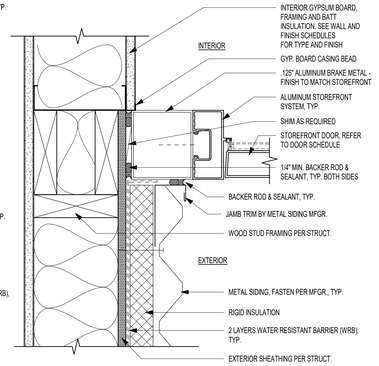
C KNOCK DOWN DOOR JAMB



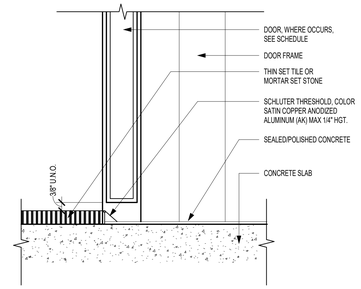
G KNOCK DOWN WINDOW JAMB
KNOCK DOWN WINDOW RAISED SILL, SIM.



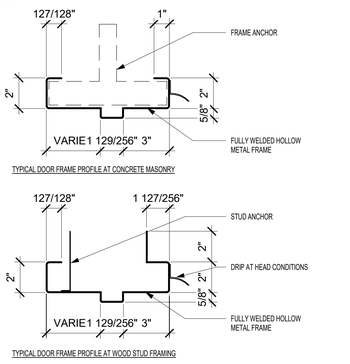
20 STOREFRONT DOOR JAMB
AT METAL SIDING
3"=1'-0"



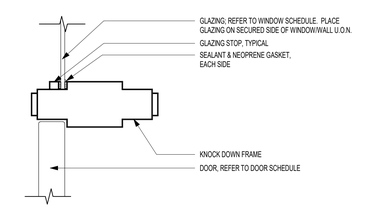
16 THRESHOLD
THIN SET TILE TO SEALED CONCRETE
3"=1'-0"



12 EXTERIOR DOOR
HOLLOW METAL HEAD / JAMB FRAME
3"=1'-0"

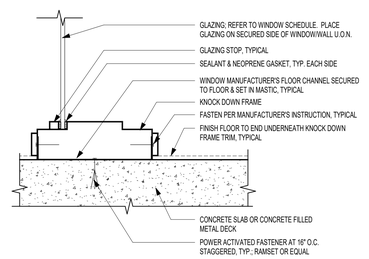


D KNOCK DOWN DOOR HEAD AT TRANSOM WINDOW
(KNOCK DOWN DOOR JAMB AT SIDELIGHT SIM.)

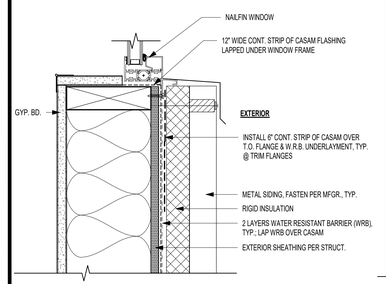


GENERAL NOTES:
1. PROVIDE RATED FRAME ASSEMBLY WITH FIRE SEAL WHERE NOTED ON DOOR SCHEDULE.
2. INSTALL DOOR FRAMES WITH FRAME MANUFACTURER'S CLOSER REINFORCING FOR SPECIFIED CLOSER TYPE

H KNOCK DOWN WINDOW SILL



24 WINDOW
AT METAL SIDING
3" = 1'-0"



8 KNOCK DOWN DOORS AND WINDOWS
HEAD, JAMB, AND SILL AT METAL STUD WALLS
3" = 1'-0"

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
DOOR AND WINDOW DETAILS

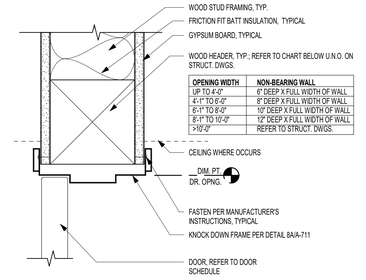
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SHEET NO.
A-711

DATE: May 29, 2024

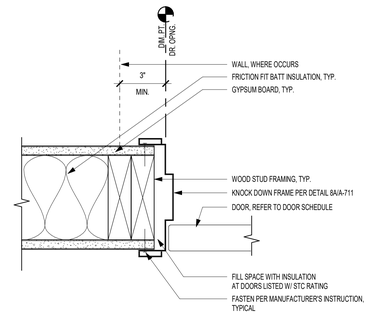
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BID SET (PRELIMINARY)



OPENING WIDTH	NON-BEARING WALL
UP TO 4'-0"	6" DEEP X FULL WIDTH OF WALL
4'-1" TO 6'-0"	8" DEEP X FULL WIDTH OF WALL
6'-1" TO 8'-0"	10" DEEP X FULL WIDTH OF WALL
8'-1" TO 10'-0"	12" DEEP X FULL WIDTH OF WALL
>10'-0"	REFER TO STRUCT. DWGS.

1 KNOCK DOWN DOOR — 3" = 1'-0"
HEAD AT WOOD STUD WALL



2 KNOCK DOWN DOOR — 3" = 1'-0"
JAMB AT WOOD STUD WALL

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT — ROBERT W. TOUPS III — No. C18850 — Ref. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
DOOR AND WINDOW DETAILS

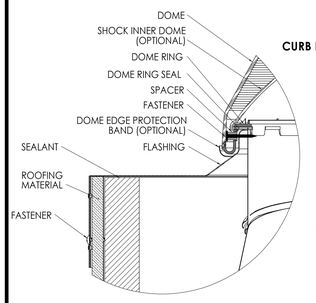
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SHEET NO.
A-712

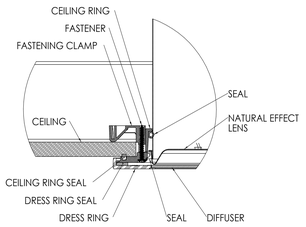
DATE: May 29, 2024

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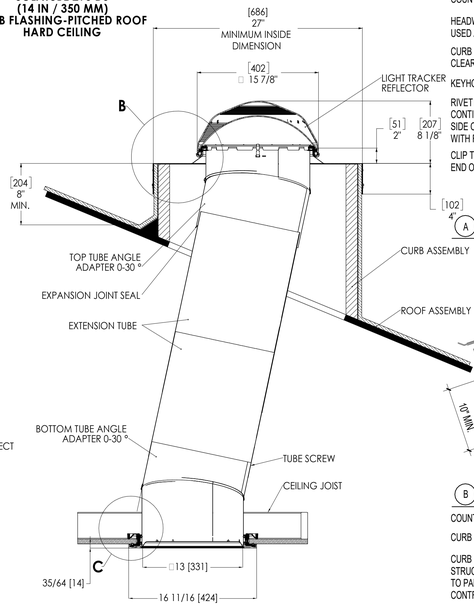


DETAIL B
SCALE: NTS

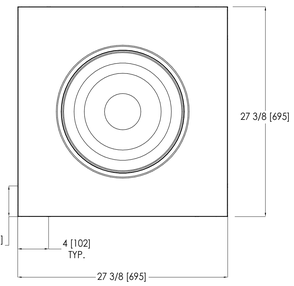


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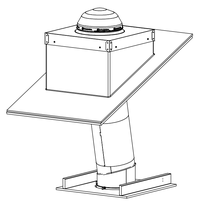
SOLATUBE 290 DS
(14 IN / 350 MM)
CURB FLASHING-PITCHED ROOF
HARD CEILING



SECTION A-A
SCALE 1 : 1



TOP VIEW

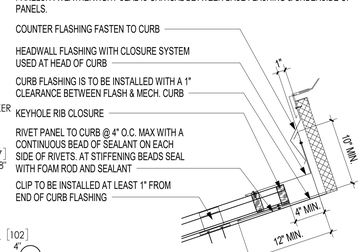


NOTES:

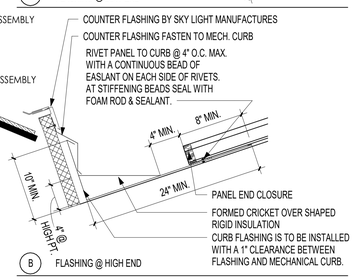
1. STRUCTURAL ELEMENTS (PLYWOOD, RAFTERS, DRYWALL ETC.) BY OTHERS & SHOWN FOR REFERENCE ONLY.
2. ALL TUBE JOINTS & SEAMS TAPED WITH 2" FOIL TAPE (NOT SHOWN).
3. DIMENSIONS IN BRACKETS ARE METRIC UNLESS OTHERWISE SPECIFIED.
4. 6" MIN. CLEARANCE SHOULD BE MAINTAINED FROM ALL SOLATUBE COMPONENTS AND OTHER PLENUM COMPONENTS.

23 SOLATUBE 290DS
CURB FLASHING @ PITCHED ROOF & HARD CEILING CONDITION
NTS

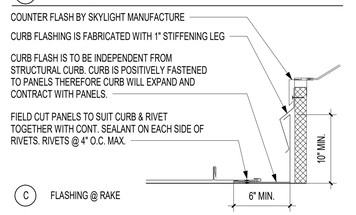
GENERAL NOTES:
CURB FLASHINGS ARE DESIGNED TO FLOAT WITH EXPANSION AND CONTRACTION OF THE PANELS. A WEATHERTIGHT SEAL IS CRITICAL BETWEEN BASE FLASHING & UNDERSIDE OF PANELS.



A FLASHING @ LOW END

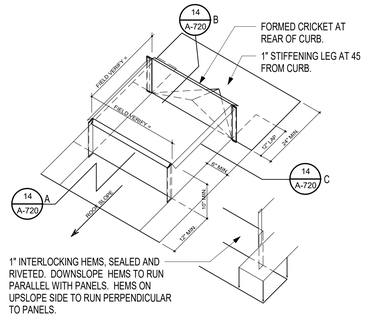


B FLASHING @ HIGH END



C FLASHING @ RAKE

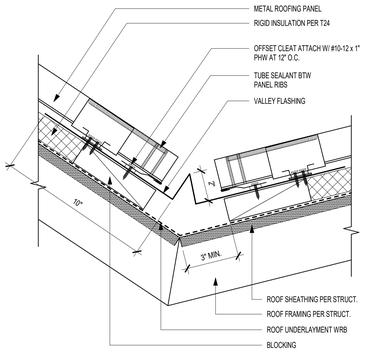
14 SKYLIGHT FLASHING
1-1/2" = 1'-0"



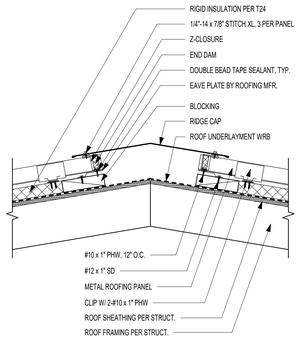
4 PIECE CURB

FOR FLASHING SECTIONS, REFER TO

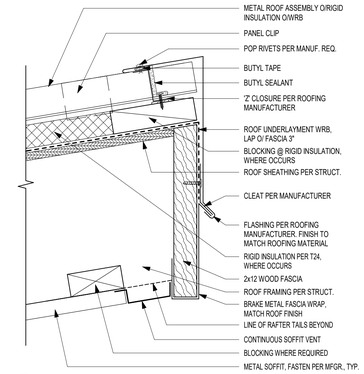
15 SKYLIGHT FLASHING
PLAN
3/4"=1'-0"



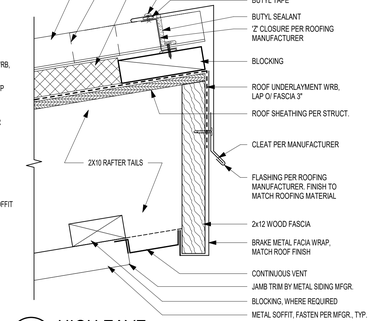
9 ROOF VALLEY
METAL ROOFING
3" = 1'-0"



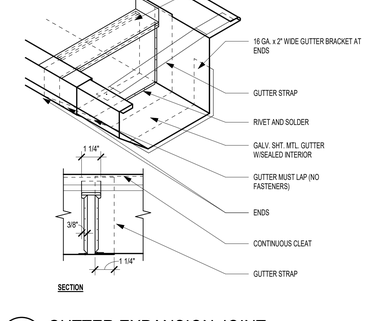
5 RIDGE CAP
METAL ROOFING
1 1/2" = 1'-0"



1 HIGH EAVE
METAL ROOFING
3" = 1'-0"

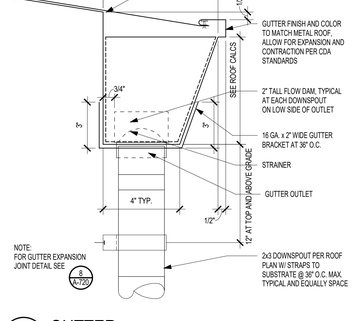


11 METAL ROOFING FLASHING
SHED ROOF AT METALSIDING
3" = 1'-0"

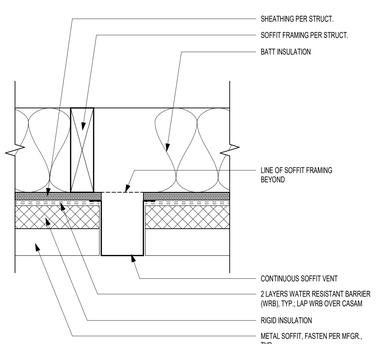


6 RIDGE VENTING
METAL ROOFING
1 1/2" = 1'-0"

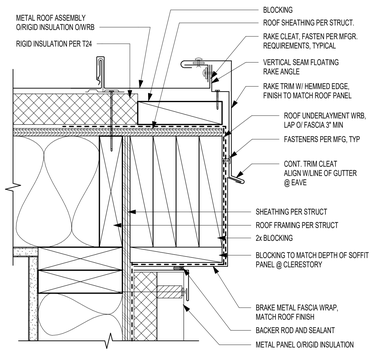
7 PIPE PENETRATION
METAL ROOFING
1 1/2" = 1'-0"



2 RAKE / FASCIA CONDITION
METAL ROOFING
3" = 1'-0"



20 METAL SIDING
AT EXTERIOR SOFFIT VENT
3" = 1'-0"



16 TIGHT RAKE
METAL ROOFING
3" = 1'-0"

12 HIGH EAVE
METAL ROOFING
3" = 1'-0"

8 GUTTER EXPANSION JOINT
LAP TYPE
NTS

4 GUTTER
PROFILE
3" = 1' - 0"

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT
JEREMY M. TRAVIS
No. C18650
Ref. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

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DCWWTP OPERATIONS AND LAB BLDG
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Roseville, CA 95747

SHEET TITLE
METAL ROOF DETAILS

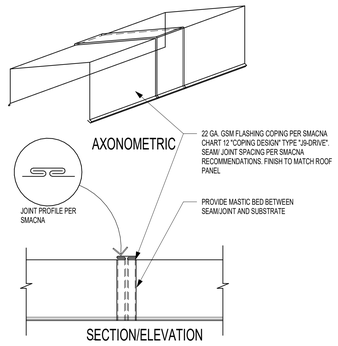
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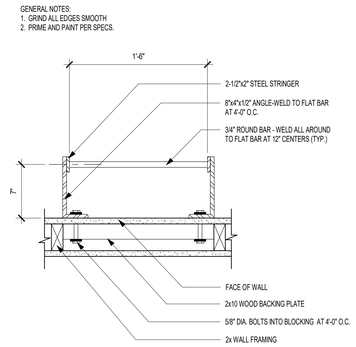
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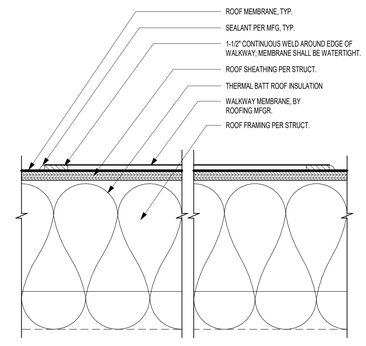
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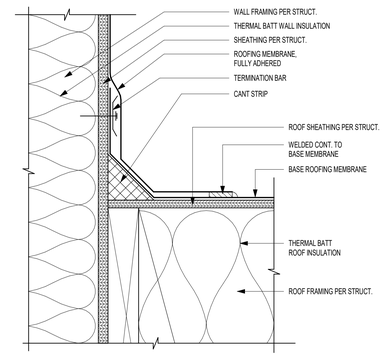
12 PARAPET COPING
AT SEAM / JOINT
1 1/2" = 1'-0"



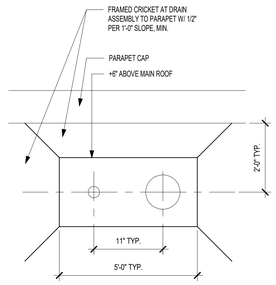
8 ROOF ACCESS LADDER
AT STUD WALL
1 1/2" = 1'-0"



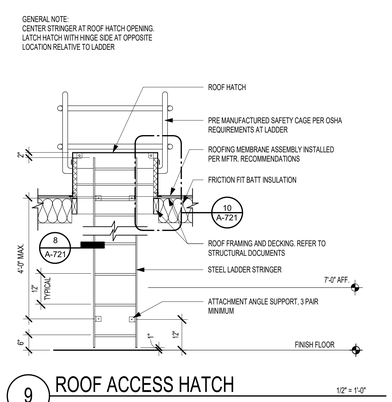
4 ROOF WALKWAY
SINGLE PLY ROOFING
3" = 1' - 0"



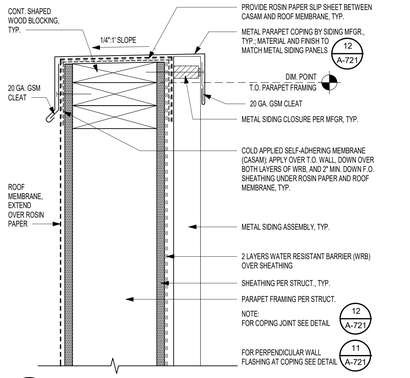
1 WALL / PARAPET TRANSITION
SINGLE PLY ROOFING
3" = 1' - 0"



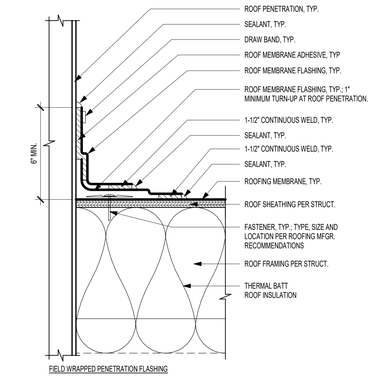
PLAN N.T.S.



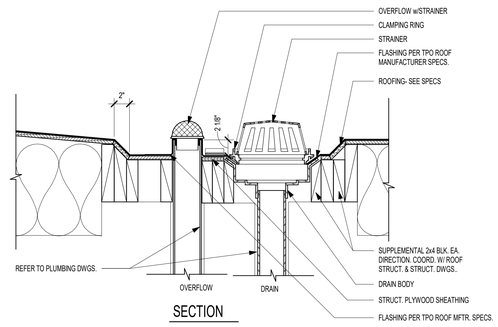
9 ROOF ACCESS HATCH
1/2" = 1'-0"



5 PARAPET CAP
AT METAL SIDING (NO RIGID INSULATION)
3" = 1' - 0"



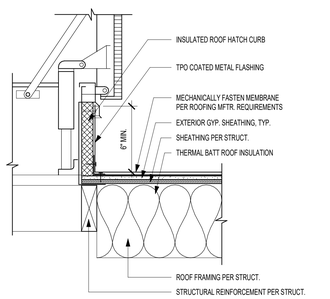
FIELD WRAPPED PENETRATION FLASHING



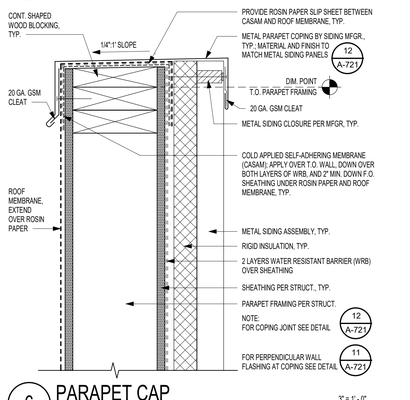
SECTION

NOTE: COORDINATE AND COMPLY WITH ALL SPECIFIC REQ. OF ROOFING MFTR. DETAILS TO BE USED IN CONJUNCTION WITH STANDARD GUIDE SPECS CONTAINING REQUIREMENTS FOR NAILERS, INSULATION, SLIPSHEETS, SEALANT ETC..

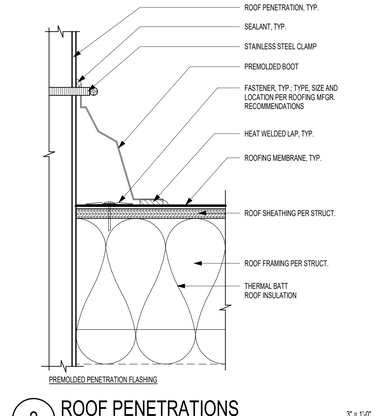
14 ROOF DRAIN & OVERFLOW
AT TPO OVER RIGID INSULATION CRICKET
1 1/2" = 1'-0"



10 ROOF SCUTTLE
AT ROOF ACCESS HATCH
1 1/2" = 1'-0"

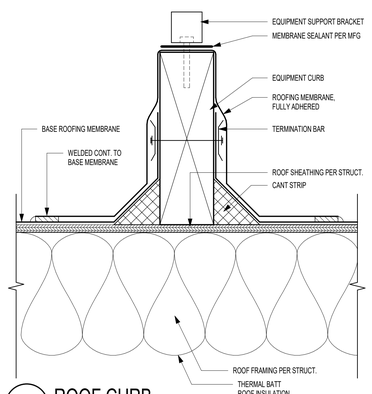


6 PARAPET CAP
AT METAL SIDING
3" = 1' - 0"

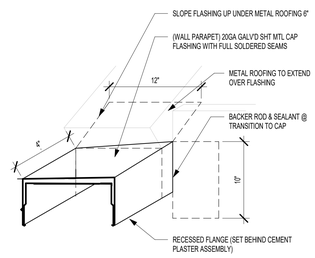


PREMOLDED PENETRATION FLASHING

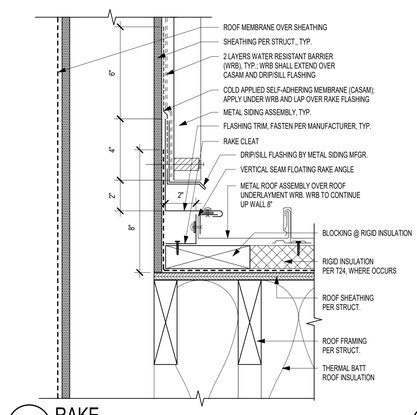
2 ROOF PENETRATIONS
SINGLE PLY ROOFING
3" = 1'-0"



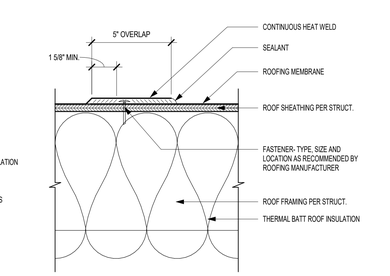
13 ROOF CURB
SINGLE PLY ROOFING
3" = 1' - 0"



11 PARAPET FLASHING
AT PERPENDICULAR WALL
1 1/2" = 1'-0"



7 RAKE
METAL ROOFING AT METAL SIDING
3" = 1' - 0"



3 TYPICAL FASTENER & LAP
SINGLE PLY ROOFING
3" = 1' - 0"

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2237 DOUGLAS BLVD, SUITE 160
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TEL (916) 786-8178

ARCHITECT STAMP

CONSULTANT STAMP

LICENSED ARCHITECT
ROBERT M. TOWERS
No. C18650
Ren. 2/28/25
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
TPO ROOF DETAILS

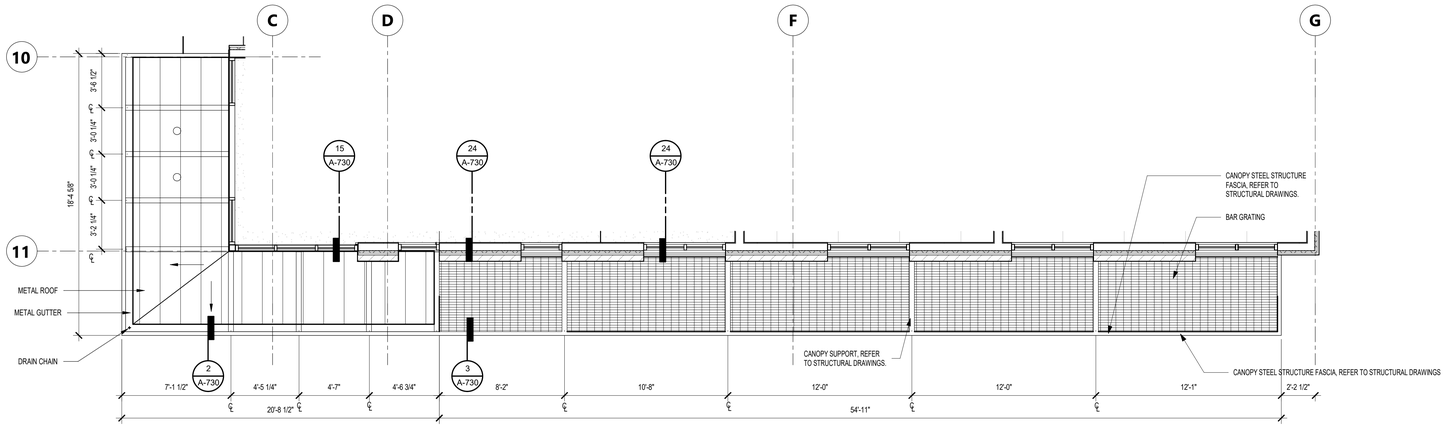
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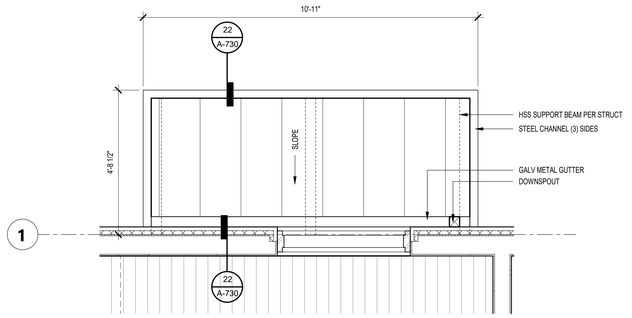
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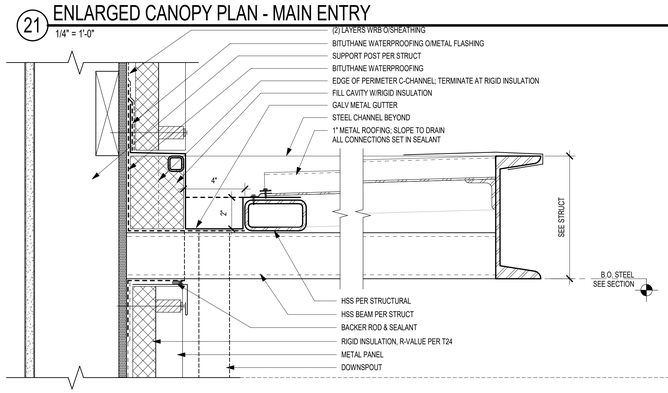
DATE PLOTTED: 7/3/2024 12:48:38 PM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4TT455.rvt



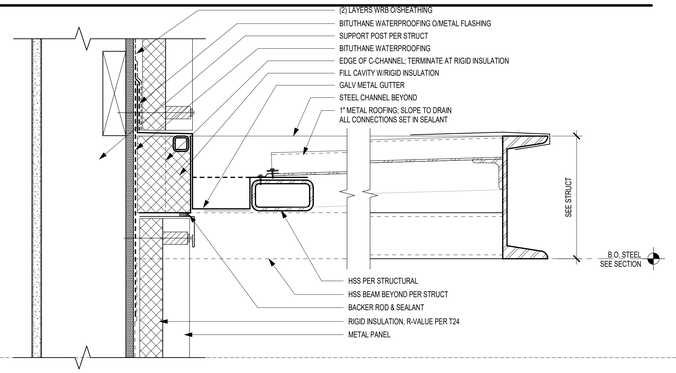
21 ENLARGED CANOPY PLAN - MAIN ENTRY
1/4" = 1'-0"



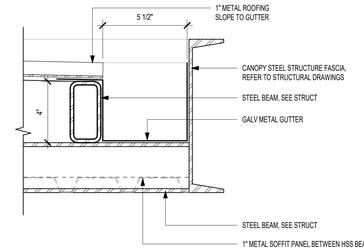
5 ENLARGED CANOPY - LABORATORY ENTRY
1/2" = 1'-0"



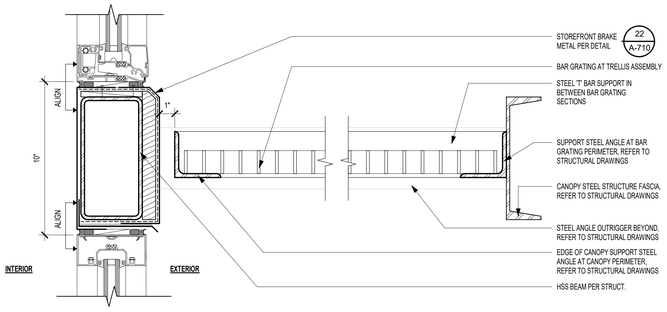
22 A - LAB CANOPY AT METAL SIDING @ SUPPORT HSS BEAM
3" = 1'-0"



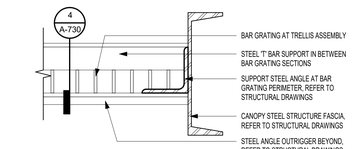
B - LAB CANOPY AT METAL SIDING, TYP CONDITION
3" = 1'-0"



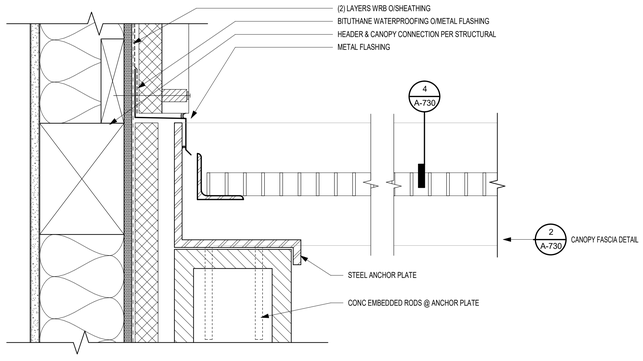
2 CANOPY EDGE DETAIL - MTL PANEL
3"=1'-0"



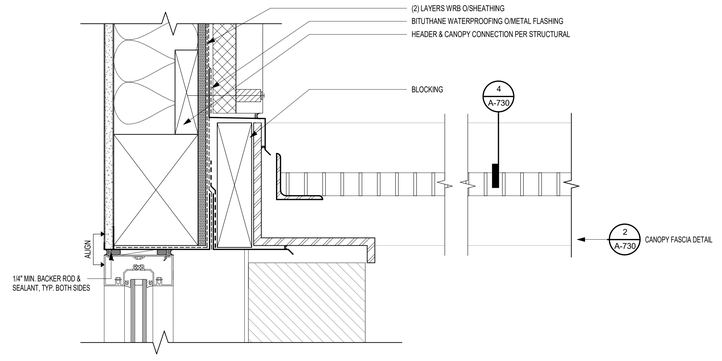
15 CANOPY DETAIL AT ENTRY STOREFRONT
3" = 1'-0"



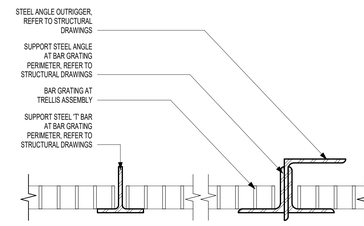
3 CANOPY FASCIA DETAIL - GRATE
3"=1'-0"



24 SOUTH CANOPY DETAIL AT CMU
3"=1'-0"



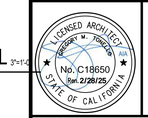
SOUTH CANOPY DETAIL AT STOREFRONT
3"=1'-0"



4 CANOPY SECTION
3"=1'-0"

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP



CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
CANOPY DETAILS

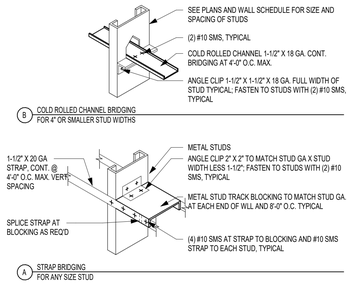
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
A-730

DATE: May 29, 2024

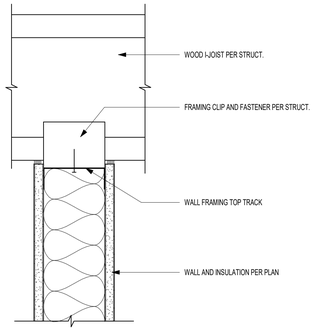
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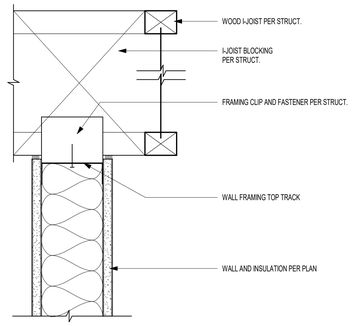
NOTES:
1. BRIDGING FOR 4" AND SMALLER STUDS SHALL BE CONSTRUCTED OF COLD ROLLED CHANNEL, U.O.N.
2. WHERE FULL HEIGHT SHEATHING OR GYP. BOARD. OCCURS ON BOTH SIDES OF METAL STUD FRAMING, THE BRIDGING MAY BE OMITTED, U.O.N.
3. AT CONDITIONS WHERE STRAP BRIDGING IS USED AND WHERE WALL SHEATHING OR GYP. BOARD. OCCURS ON ONE SIDE OF WALL ONLY, STRAP MAY BE OMITTED ON SIDE OF WALL WHERE SHEATHING OR GYP. BOARD. OCCURS. IF DETAIL (B) IS USED, THEN COLD ROLLED CHANNEL IS REQUIRED.

17 METAL STUD BRIDGING
NTS

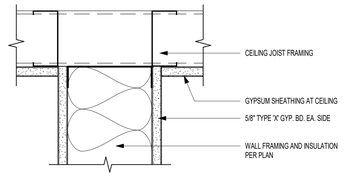


TOP OF WALL PERPENDICULAR TO I-JOIST

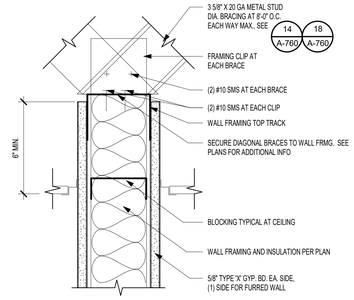
13 TOP OF FULL HEIGHT WALL AT I-JOIST NON-RATED
3" = 1'-0"



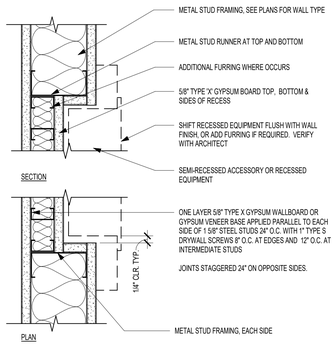
TOP OF WALL PARALLEL TO I-JOIST



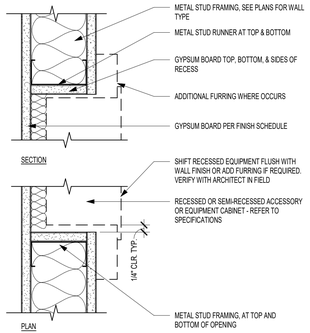
5 PARTITION WALL T.O.W. AT CEILING JOIST
3" = 1'-0"



1 PARTITION WALL T.O.W. - NON-RATED
3" = 1'-0"

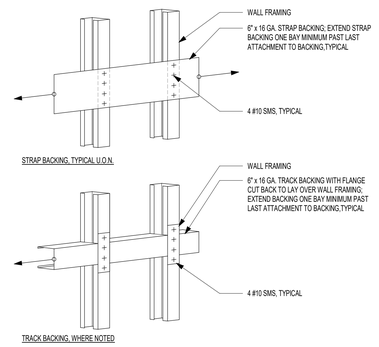


1 HR RATED CONDITION



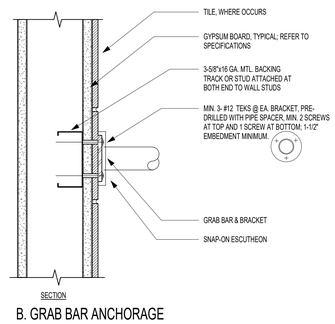
NON - RATED CONDITION

23 PARTITION WALL RECESS METAL STUD FRAMING
3" = 1'-0"



A. BACKING

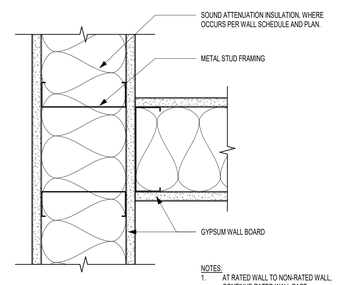
19 WALL FRAMING INTERSECTION
3"=1'-0"



B. GRAB BAR ANCHORAGE

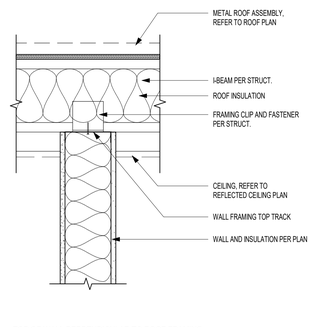
24 BACKING AND GRAB BAR ANCHORAGE AT METAL STUD FRAMED WALLS
3" = 1'-0"
wp1.1

CORNER INTERSECTION

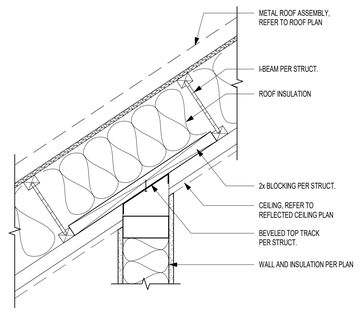


'T' INTERSECTION

NOTES:
1. AT RATED WALL TO NON-RATED WALL, CONTINUE RATED WALL PAST INTERSECTING NON-RATED WALL.
2. AT SOUND WALL TO STANDARD WALL, CONTINUE ENTIRE SOUND WALL PAST STANDARD WALL.

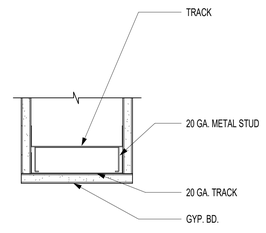


TOP OF WALL PERPENDICULAR TO ROOF FRAMING



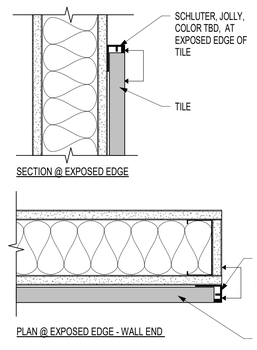
TOP OF WALL PARALLEL TO SLOPED ROOF FRAMING

14 TOP OF FULL HEIGHT WALL AT METAL ROOF NON-RATED
1 1/2" = 1'-0"

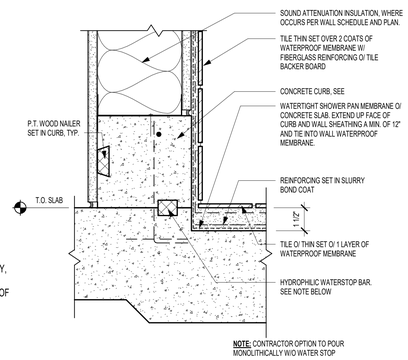


ALTERNATE BUILT-UP HEADER @ 48" AND LESS OPENINGS IN NON RATED WALLS

15 METAL STUD WALL AT HEADER - SECTION
3" = 1'-0"



11 END OF WALL
3"=1'-0"

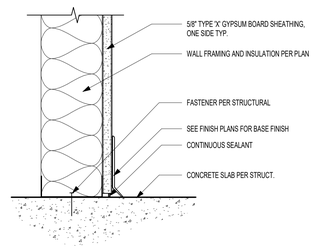


NOTE: CONTRACTOR OPTION TO POUR MONOLITHICALLY W/O WATER STOP

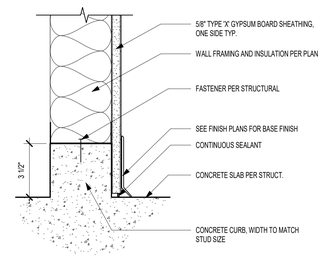
16 EXPOSED TILE EDGE FINISH
3"=1'-0"

12 MORTAR SET AT SHOWER
3"=1'-0"

6 BOTTOM OF RESTROOM WALL NON-RATED
3" = 1'-0"

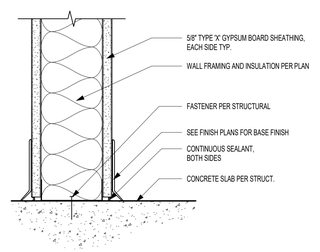


A AT FLOOR SLAB

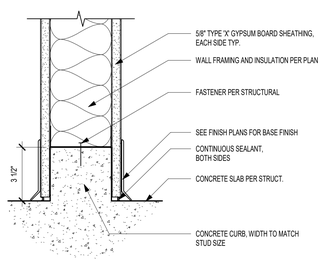


B AT CONCRETE CURB

7 BOTTOM OF FURRED WALL NON-RATED
3" = 1'-0"

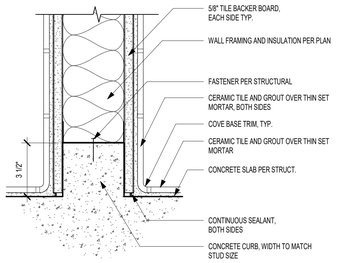


A AT FLOOR SLAB

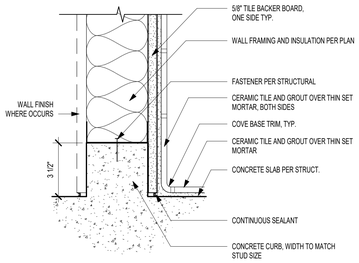


B AT CONCRETE CURB

8 BOTTOM OF WALL TYPICAL
3" = 1'-0"



A TILE ON BOTH SIDES



B TILE ON ONE SIDE

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT JEFFREY W. TIBBETTS No. C18650 Exp. 2/28/25 STATE OF CALIFORNIA

REVISIONS

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311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR WALL DETAILS

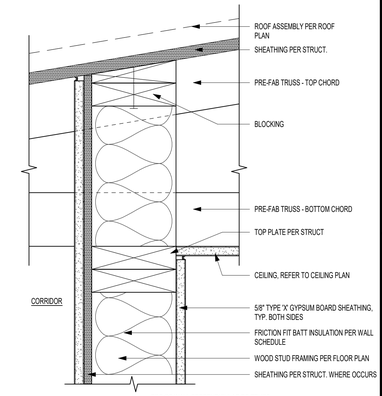
DRAWN BY: 19six | JOB NUMBER: 210015.01

SHEET NO.
A-740

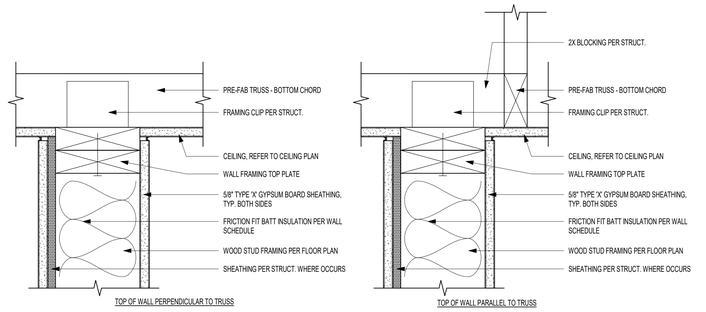
DATE: May 29, 2024

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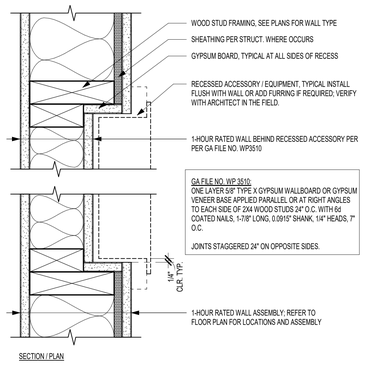
BID SET (PRELIMINARY)



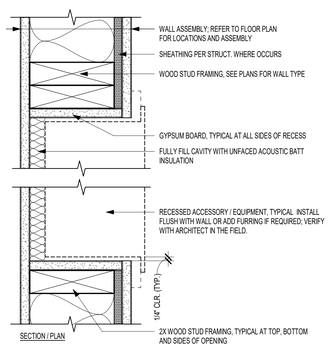
1 TOP OF FULL HEIGHT SHEAR WALL 3" = 1'-0"
AT PRE-FAB TRUSS - NON-RATED



6 TOP OF WALL AT PRE-FAB TRUSS 3" = 1'-0"
NON-RATED

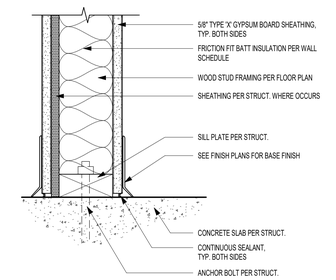


1 HR RATED CONDITION

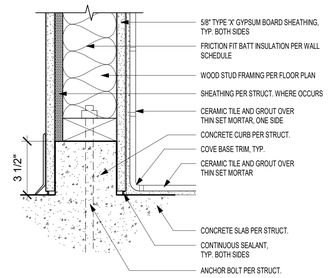


NON - RATED CONDITION

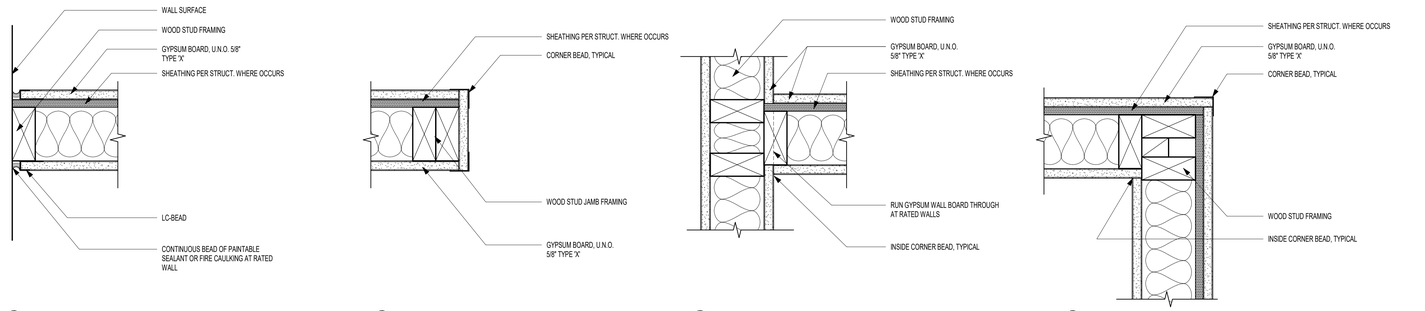
8 PARTITION WALL RECESS 3" = 1'-0"
WOOD STUD FRAMING



3 BOTTOM OF WALL AT SLAB 3" = 1'-0"
NON-RATED



4 BOTTOM OF TILE WALL AT CURB 3" = 1'-0"
NON-RATED



24 TYPICAL WALL INTERSECTIONS 3" = 1'-0"
PLAN VIEWS

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT JEFFREY M. TISDALE No. C18850 Exp. 2/28/25 STATE OF CALIFORNIA

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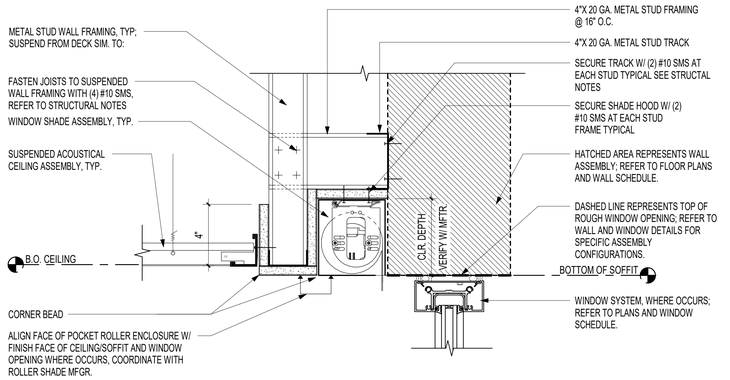
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A-741

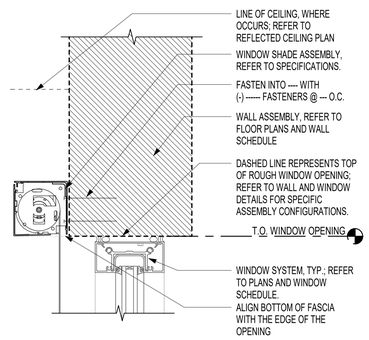
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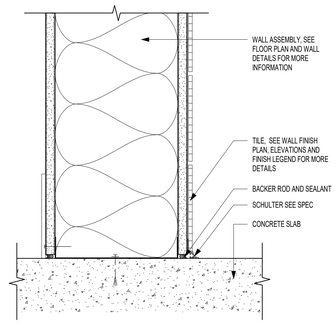
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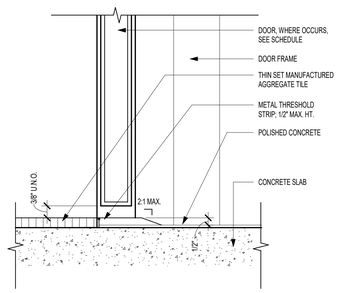
19 WINDOW SHADE MOUNTING (MOTORIZED)
RECESSED POCKET @ ACOUSTICAL TILE CEILING
3"=1'-0"



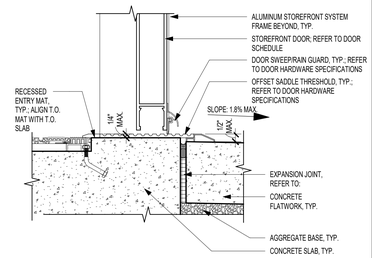
18 WINDOW SHADE
SURFACE MOUNTED TO WALL
3"=1'-0"



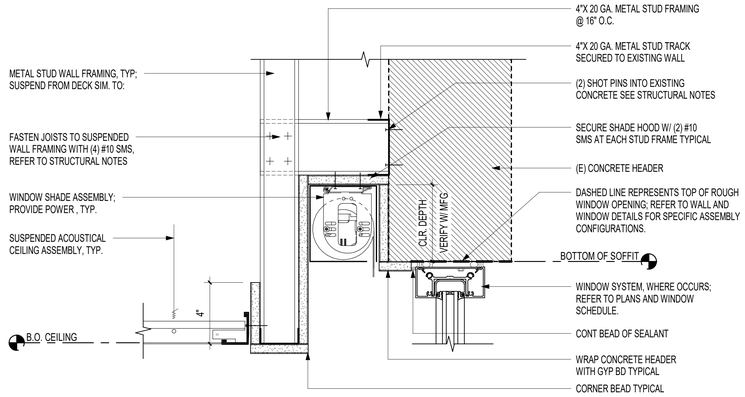
9 COVE BASE
CONCRETE TO TILE
3" = 1'-0"



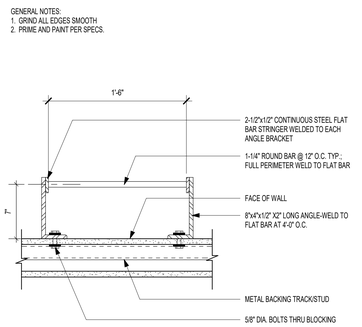
5 THRESHOLD
THIN SET TILE TO POLISHED CONCRETE
3" = 1'-0"



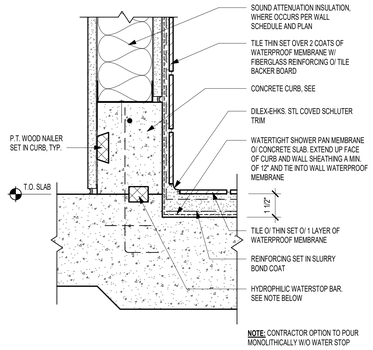
1 EXTERIOR STOREFRONT DOOR
THRESHOLD AT RECESSED ENTRY MAT
3" = 1'-0"



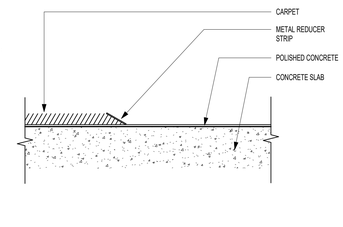
20 WINDOW SHADE MOUNTING (MOTORIZED)
RECESSED POCKET @ ACOUSTICAL TILE CEILING
3"=1'-0"



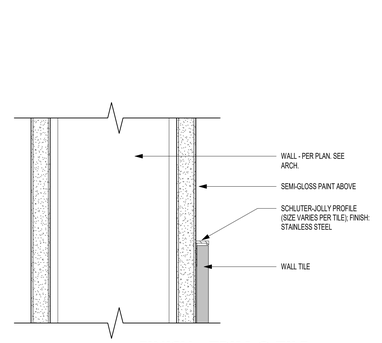
10 ACCESS LADDER
PLAN VIEW
1 1/2" = 1'-0"



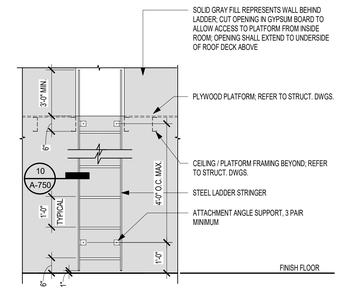
6 MORTAR SET AT SHOWER
3" = 1'-0"



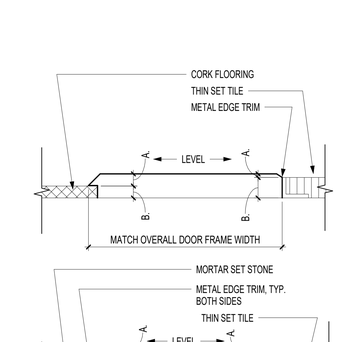
2 FLOOR TRANSITION
CARPET TO POLISHED CONCRETE
3" = 1'-0"



FINISH - TRIM @ TILE 6" = 1'-0" 16

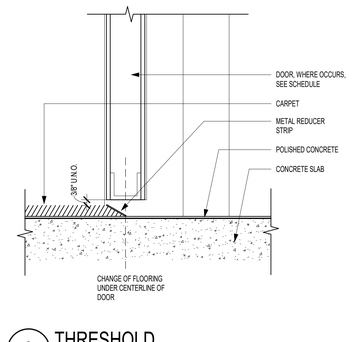


11 ACCESS LADDER
ELEVATION
1/2" = 1'-0"

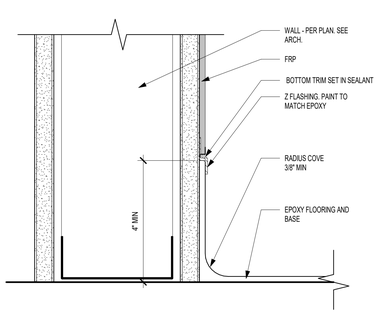


NOTES:
A. 1/4 MAXIMUM HEIGHT SET AT 45 DEGREE ANGLE, TYP.
B. DIMENSION SHALL MATCH INSTALLED HEIGHT OF MATERIAL AND ALLOW FOR INSTALLED HEIGHT OF THRESHOLD TRANSITION SILL.

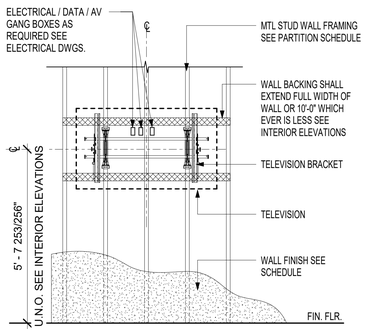
8 THRESHOLD TRANSITIONS
SOLID POLYMER FABRICATIONS
3"=1'-0"



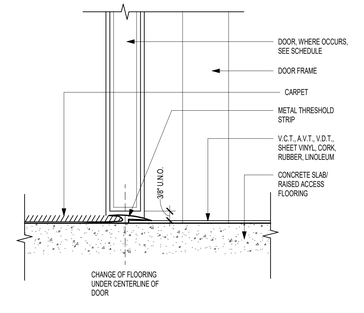
3 THRESHOLD
CARPET TO POLISHED CONCRETE
3" = 1'-0"



FINISH - COVE BASE AT EPOXY 6" = 1'-0" 15



14 WALL MOUNTED TELEVISION
1/2" = 1'-0"



4 THRESHOLD
CARPET TO VARIOUS RESILIENT FLOORING
3" = 1'-0"

19-6
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT JEFFREY W. TSUDA No. C18850 Ref. 2/28/25 STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR DETAILS

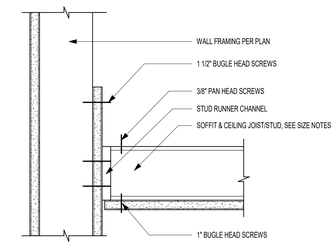
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SHEET NO.
A-750

DATE: May 29, 2024

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BID SET (PRELIMINARY)



SOFFIT AND CEILING JOIST SIZES

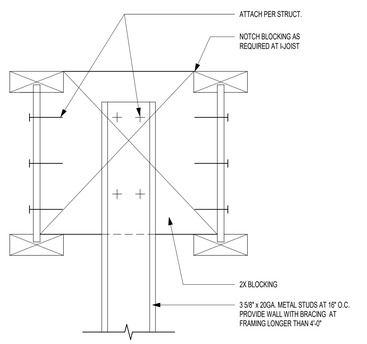
TYPICAL: (U.N.O.)
-LESS THAN 4'-0" SPAN - 3-5/8" x 1.625" x 20 GA. AT 24" O.C.
-4'-1" SPAN TO 12'-0" SPAN - 6" x 1.625" x 20 GA. AT 16" O.C.
-12'-1" SPAN TO 18'-0" SPAN - 6" x 1.625" x 18 GA. AT 12" O.C.

RESTROOMS:
-USE 6" x 1.625" x 18 GA. AT 12"O.C.

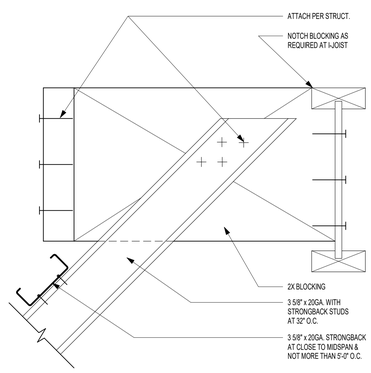
NOTE: FOR FIXTURE ALIGNMENT, REFER TO DETAIL 11/A-760

21 JOIST FRAMED GYPSUM BOARD CEILING AT PARTITION

3" = 1' - 0"



PARALLEL TO FRAMING MEMBERS



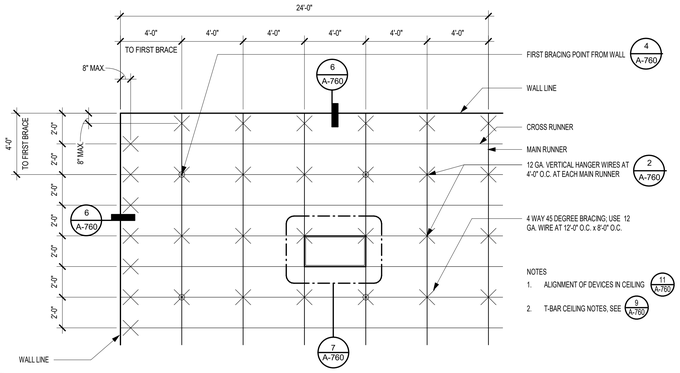
PERPENDICULAR TO FRAMING MEMBERS

T-BAR CEILING NOTES:

1. ALL GAUGES SHALL BE DESIGNED AND CONFIRMED BY T-BAR MANUFACTURER TO MEET THE HEAVY DUTY CBC STANDARD.
2. FOR ATTACHMENT TO STRUCTURE, SEE 12/A-760
3. FOR ROOMS WITH SPAN IN EITHER DIRECTION LESS THAN 25', MAIN RUNNERS AND CROSS RUNNERS MAY BE ATTACHED TO THE PERMITER OF TWO ADJACENT WALLS WITH 3/8" CLEARANCE BETWEEN THE RUNNERS AND THE OTHER TWO WALLS. WHERE THE SPAN OF THE CEILING SYSTEM BETWEEN PERIMETER WALLS EXCEED 25' IN BOTH DIRECTIONS, A MINIMUM WALL ANGLE SIZE OF AT LEAST 2" HORIZONTAL LEG SHALL BE USED AT PERIMETER WALLS AND INTERIOR FULL HEIGHT PARTITION. THE FIRST TILE SHALL BE 3/4" CLEAR FROM THE WALL SURFACE.
4. THE ENDS OF MAIN RUNNERS AND CROSS RUNNERS SHALL BE TIED TOGETHER TO PREVENT SPREADING.
5. THE SUSPENDED CEILING GRID MAY BE ATTACHED TO TWO ADJACENT WALLS, BUT MUST NOT BE ATTACHED AT THE OTHER TWO WALLS.

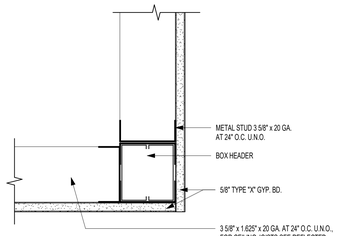
9 T-BAR CEILING NOTES

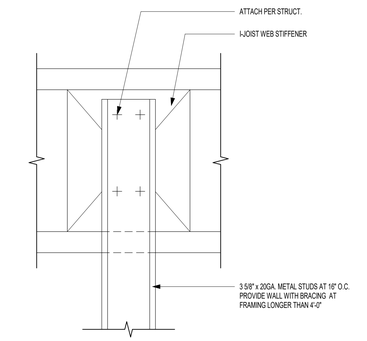
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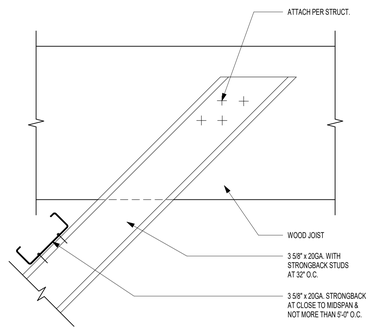
5 DIAGRAMATIC PLAN AT LAY-IN ACOUSTICAL CEILING

1/4" = 1'-0"

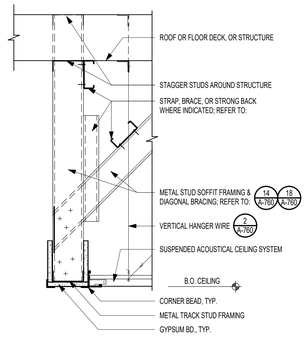


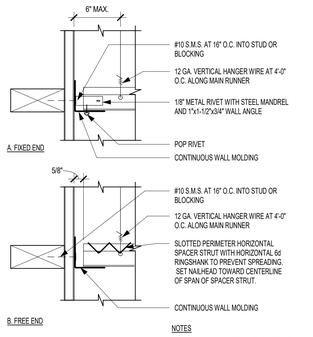


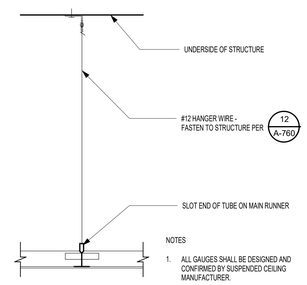
PERPENDICULAR TO FRAMING MEMBERS



PARALLEL TO FRAMING MEMBERS

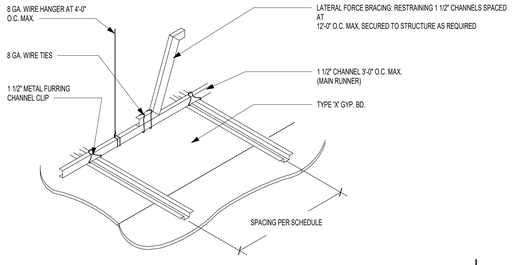




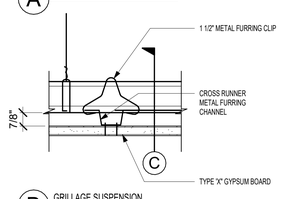


22 FRAMED GYPSUM BOARD SOFFIT SECTION

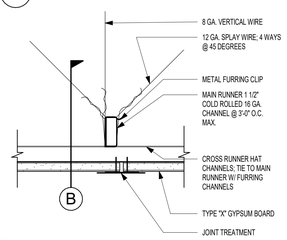
3" = 1' - 0"



A ISOMETRIC VIEW



B GRILLAGE SUSPENSION



C GRILLAGE SUSPENSION - SECTION

24 SUSPENDED GYPSUM BOARD CEILING

3" = 1'-0"

18 VERTICAL BRACE AT WOOD STRUCTURE

3"=1'-0"

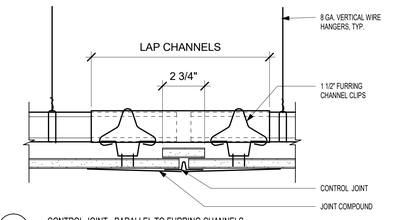
14 ANGLE BRACE AT WOOD STRUCTURE

3"=1'-0"

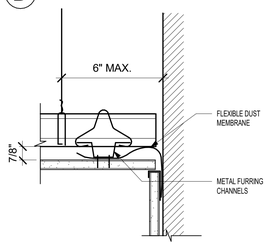
LIMITING SPAN - METAL FURRING CHANNEL MEMBER SCHEDULE

FURRING CHANNEL (HAT CHANNEL)	SPACING (IN. O.C.)	SINGLE LAYER GYP. BD. (3 PSF MAX.) 1-SPAN	SINGLE LAYER GYP. BD. (3 PSF MAX.) 2-SPAN	DOUBLE LAYER GYP. BD. (13 PSF MAX.) 1-SPAN	DOUBLE LAYER GYP. BD. (13 PSF MAX.) 2-SPAN
FC-25	12	4'-11"	6'-7"	3'-0"	4'-0"
	16	4'-6"	6'-0"	N/A	3'-5"
	24	3'-11"	5'-3"	N/A	N/A
FC-22	16	5'-2"	7'-0"	3'-2"	4'-3"
	24	4'-6"	6'-1"	N/A	3'-8"

1. MAIN RUNNERS - 1 1/2" COLD ROLLED CHANNELS SPACED AT 3'-0" MAX.
2. LIMITING SPANS FOR 5/8" THICK GYP. BD. MAX. L/360 DEFLECTION PER ASTM C645 AND UNIFORM LOAD SHOWN. INSTALLED CONCENTRATED LOADS SUCH AS LIGHT FIXTURES AND EXHAUST FANS SHALL BE SEPERATELY SUSPENDED.
3. 2 - SPAN INDICATES TWO EQUAL SPANS WITH CHANNELS CONTINUOUS OVER CENTER SUPPORT.
4. DESIGN IN ACCORDANCE WITH THE "METAL STUD MANUFACTURERS ASSOCIATION"



D CONTROL JOINT - PARALLEL TO FURRING CHANNELS



E WALL INTERSECTION UNLESS OTHERWISE DETAILED

GENERAL NOTES

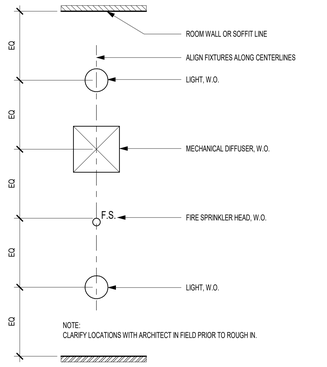
A. SPLICE JOINTS

1. INSTALL 16" LENGTH OF TRACK AND FASTEN TO MAIN RUNNER WITH 2 PAN HEAD SCREWS EACH END OF RUNNER.

   INSTALL 6" MIN. LENGTH OF FURRING CHANNEL AND SECURE TO
2. BUTT JOINT OF FURRING CHANNELS WITH WIRE TIES.

10 CEILING TRANSITION ACT TO GYPSUM BOARD

1 1/2" = 1'-0"

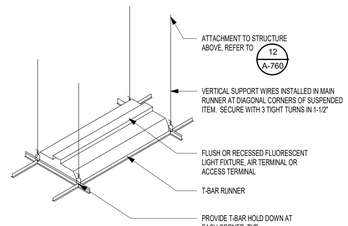


11 CEILING FIXTURE ALIGNMENT TYPICAL

NTS.

6 ACT CEILING AT WALL INTERSECTION

3" = 1' - 0"



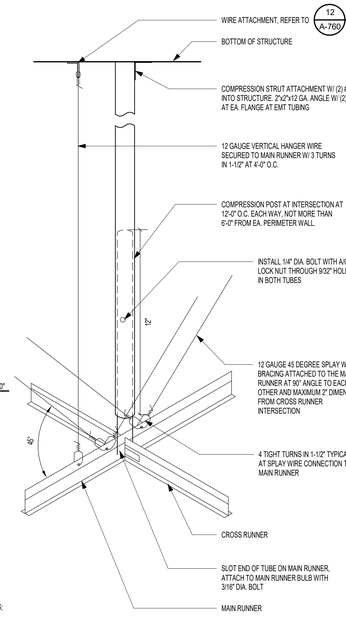
NOTES:
1. FIXTURES AT LESS THAN 56 LBS: INSTALL (2) #12 GA. SAFETY WIRES (SLACK), ONE ON EACH END OF FIXTURE, DIAGONALLY OPPOSED AND CONNECTED TO STRUCTURE ABOVE.
2. FIXTURES AT 56 LBS OR GREATER: INSTALL (4) #12 GA. SUPPORT WIRES (TAUT), ONE ON EACH CORNER OF FIXTURE CONNECTED TO STRUCTURE. WIRES SHALL SUPPORT (4) TIMES THE WEIGHT OF THE FIXTURE.
3. ALL FIXTURES 4'x4' MIN IN SIZE: INSTALL (4) #12 GA. SAFETY WIRES (SLACK) AT EACH CORNER OF THE FIXTURE.

7 SUSPENDED FIXTURE

3" = 1' - 0"

2 VERTICAL HANGER WIRE TYPICAL

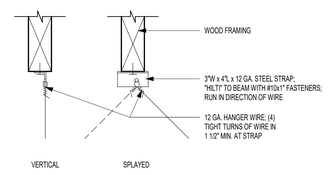
3" = 1' - 0"



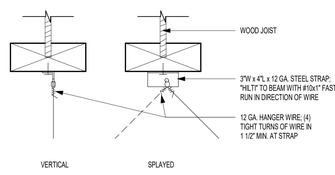
NOTE: COMPRESSION STRUT SHALL NOT REPLACE VERTICAL HANGER WIRE

COMPRESSION STRUT SCHEDULE

HEIGHT	NOMINAL EMT DIA.	AREA (SQ.IN.)	RADIUS OF GYRATION	WALL THICK. (IN)	OUTSIDE DIA. (IN)
UP TO 3'-10"	1/2"	.045	.235	.021	.706
5'-0"	3/4"	.069	.309	.025	.922
6'-6"	1"	.096	.391	.027	1.163
8'-6"	1 1/4"	.151	.511	.033	1.51
9'-10"	1 1/2"	.174	.604	.033	1.74



A AT WOOD FRAMING



B AT WOOD JOISTS

12 CEILING WIRE ATTACHMENT TO STRUCTURE

3" = 1'-0"

4 COMPRESSION STRUT AND HANGER/SPLAY WIRES

3" = 1'-0"

1906
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT — REGINA M. ROBERTS — No. C18650 — Exp. 2/28/25 — STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
CEILING DETAILS

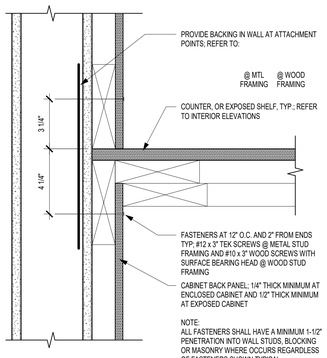
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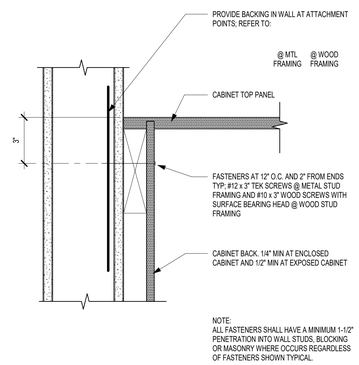
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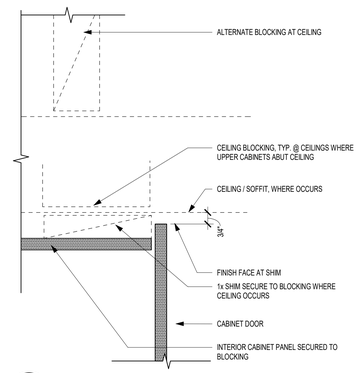
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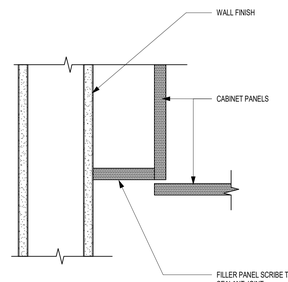
20 BASE TO UPPER CAB ANCHORAGE
FULL HEIGHT CAB @ WALL
3"=1'-0" wp1.1



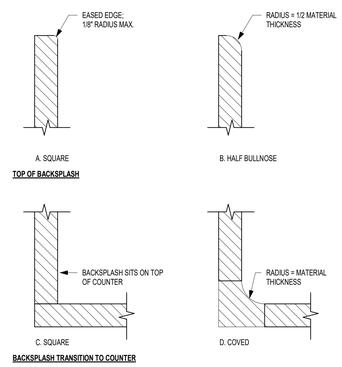
19 UPPER CABINET ANCHORAGE
T.O. CABINET @ WALL
3"=1'-0" wp1.1



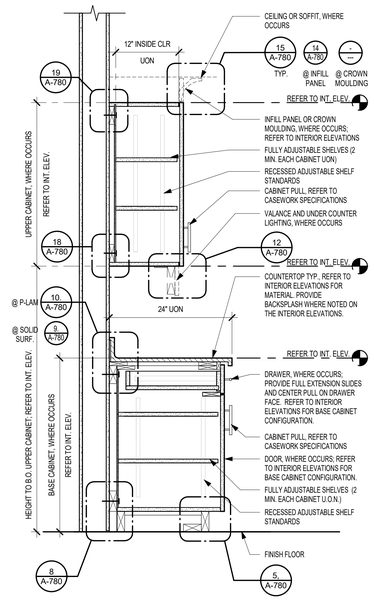
15 UPPER CABINET
T.O. CABINET
3"=1'-0" wp1.1



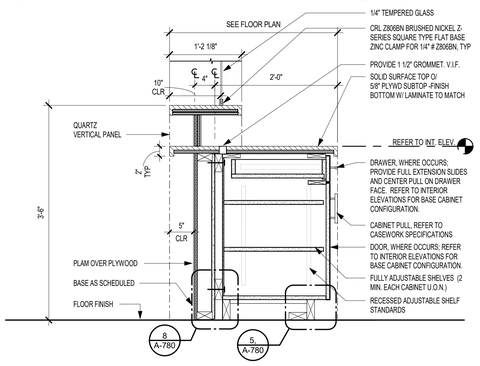
11. BASE AND UPPER CABINET
FILLER PANEL TO WALL (PLAN VIEW)
3"=1'-0" wp1.1



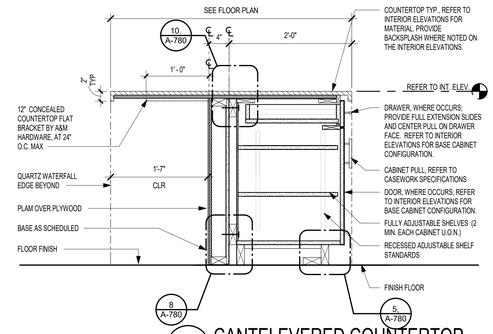
7 BACKSPLASH PROFILES
6" = 1'-0" wpv1.1



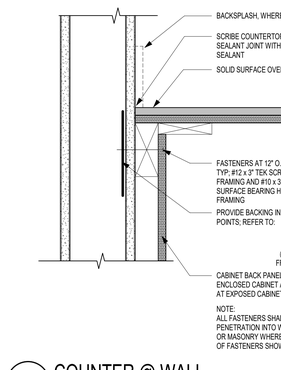
2 TYPICAL CASEWORK SECTION
BASE AND UPPER CABINET
1" = 1'-0" wp1.1



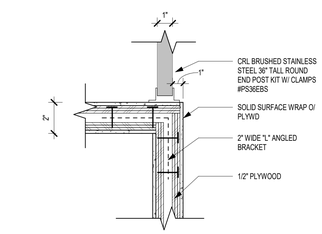
23 RECEPTION DESK
SECTION 1
1"=1'-0"



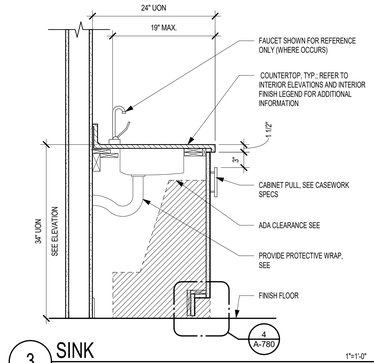
13. CANTELEVERED COUNTERTOP
@ KITCHEN
1"=1'-0"



10. COUNTER @ WALL
PLASTIC LAMINATE
3" = 1'-0" wp1.1

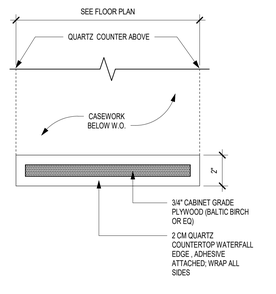


SOLID SURFACE CORNER 3" = 1'-0" **6**

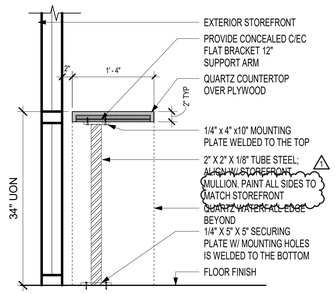


9. COUNTER @ WALL
SOLID SURFACE
3"=1'-0" wp1.1

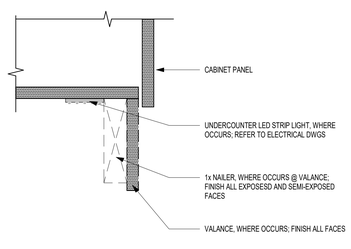
3 SINK
@ BASE CABINET
1"=1'-0" wp1.1



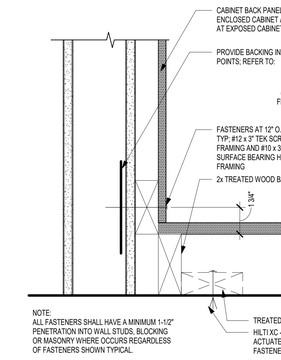
24 WATERFALL EDGE
@ QUARTZ
3" = 1'-0"



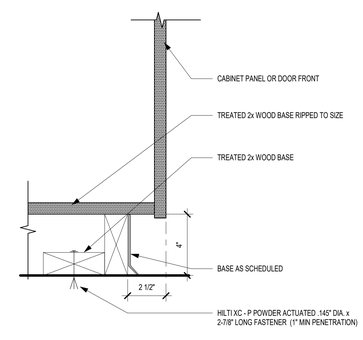
16 COUNTERTOP
@ BREAK ROOM STOREFRONT
1"=1'-0"



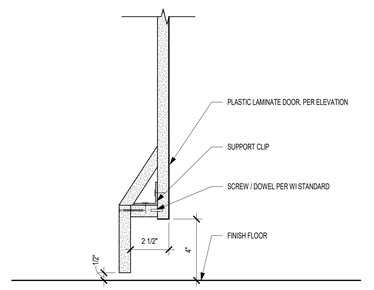
12 UPPER CABINET
B.O. CABINET @ VALANCE
3"=1'-0" wp1.1



8 BASE CABINET
ANCHORAGE @ WALL
3"=1'-0" wp1.1



5, BASE CABINET
ANCHORAGE @ FRONT
3"=1'-0" wp1.1



4 INTEGRAL TOE KICK
DOORS @ BASE CABINET WITH DOORS
3"=1'-0" wp1.1

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT GREGORY W. YOUNG No. C18650 Ref. 2/28/25 STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
CASEWORK DETAILS

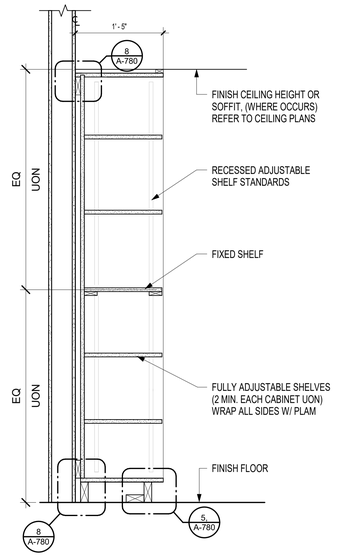
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A-780

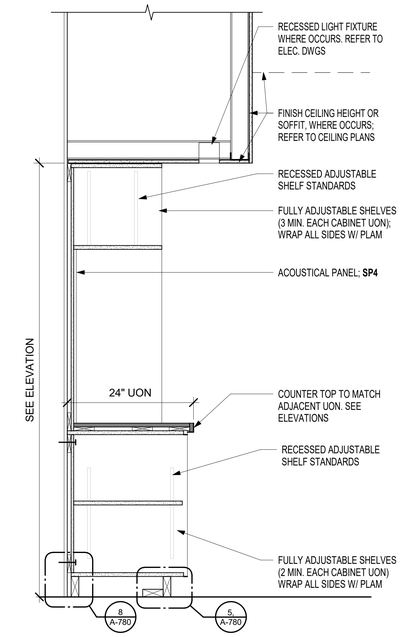
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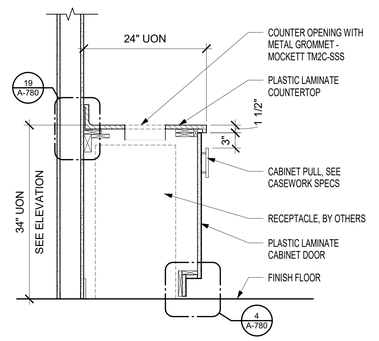
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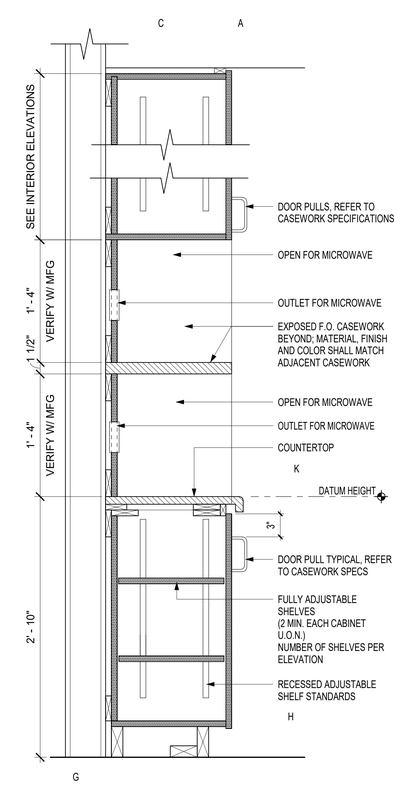
4 FULL HEIGHT STORAGE
DOUBLE PAIR DOOR
1" = 1'-0"
wp1.0

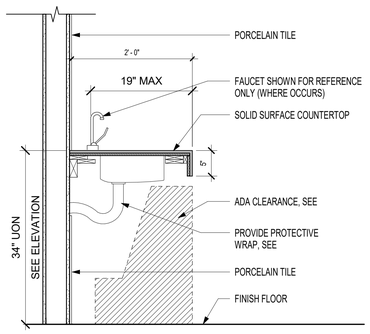


5 OPEN SHELVING
CASEWORK SECTION
1"=1'-0"
wp1.0



2 TRASH/RECYCLE CABINET
WITH TOE KICK
1"=1'-0"
wp1.0





3 SINK AT SOLID SURFACE COUNTER
OPEN BELOW
1"=1'-0"
wp1.0

1 MICROWAVE STORAGE CABINET
1-1/2" = 1'-0"

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT
ROBERT W. TRUCKER
No. C18650
Ref. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
CASEWORK DETAILS

DRAWN BY: 19six JOB NUMBER: 210015.01

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A-781

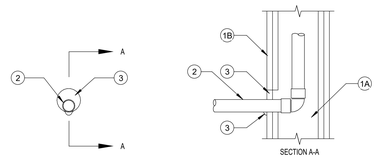
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System No. W-L-1527

ANSI/UL 1479 (ASTM E814)
F RATING - 1 and 2 Hr (See Item 1)
T RATING - 1 and 2 Hr (See Item 1)
L RATING AT AMBIENT - Less than 1 CFM/sq ft
L RATING AT 400F - Less than 1 CFM/sq ft



1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One or two layers of nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm).
      • The hourly F, T, FT, FH and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Metallic Penetrant - One metallic pipe, conduit or tube to be installed either concentrically or eccentrically, penetrating wall assembly on one side of wall. The annular space between the pipe, conduit or tubing and the periphery of opening shall be min 0 in. (point contact) to max 7/8 in. (22 mm). Pipe, conduit or tubing shall be rigidly supported within the wall and on the penetrated side of the wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe - Nom 3 in. (76 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe - Nom 3 in. (76 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit - Nom 3 in. (76 mm) diam (or smaller) steel electrical metallic tubing (EMT), nom 3 in. (76 mm) diam steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
   D. Copper Tubing - Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe - Nom 1 in. (25 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with surfaceof wall assembly. At point contact location, min 3/8 in. (10 mm) diam bead of fill material to be applied at the penetrant/gypsum board interface.

SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

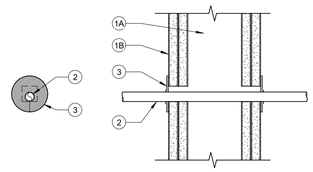
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

21.12.14 - 0000

W-L-1527: PIPE @ MEMBRANE N.T.S. **3**

System No. W-L-1506

F RATING - 1 and 2 Hr (See Item 1)
T RATING - 1 and 2 Hr (See Item 1)
L RATING AT AMBIENT - Less than 1 CFM/Opening
L RATING AT 400F - Less than 1 CFM/Opening



1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 in. (51 mm) by 4 in. (102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (1219 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Opening may be round, rectangular or irregular with a max diam or dimension of 1 in. (25 mm), or round with a max diam of 1-1/8 in. (29 mm).
      • The hourly F, FH, FT and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through-Penetrant — Max one metallic pipe, tubing or conduit installed either concentrically or eccentrically within the firestop system. The annular space between penetrant and periphery of the opening shall be min 0 in. (point contact). When opening dimension exceeds 1 in. (25 mm), the max annular space is 3/8 in. (9.5 mm). Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of pipes, tubing or conduit may be used:
   A. Steel Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe — Nom 3/4 in. (19 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Tubing — Nom 1/2 in. (13 mm) diam (or smaller) Type L and Type K (or heavier) copper tubing.
   D. Copper Pipe — Nom 1/2 in. (13 mm) diam (or smaller) Regular (or heavier) copper pipe.
   E. Conduit — Nom 3/4 in. (19 mm) diam (or smaller) rigid or flexible steel conduit.
   F. Conduit — Nom 3/4 in. (19 mm) diam (or smaller) electrical metallic tubing (EMT).
3. Fill, Void or Cavity Material* — Nom 60 mm diam by 3 mm thick putty disc with one seam at radius. Paper-backer of disc to be removed and disc firmly pressed around the penetrant lapping nom 5 mm onto penetrant to completely cover opening and firmly pressed to lap onto the wall around periphery of opening. Disc seam to be firmly pressed and sealed tight. Disc to be installed at both surfaces of wall.
   • HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-D 1" Firestop Cable Disc

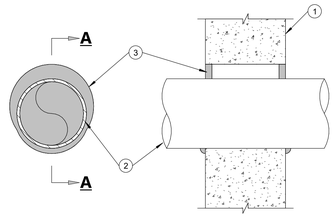
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

21.12.14 - 0000

W-L-1506: PIPE @ WALL ASSEMBLY N.T.S. **4**

System No. W-L-1065

ANSI/UL 1479 (ASTM E814)
F RATING - 1 and 2 Hr (See Items 1 and 3)
T RATING - 0 Hr
L RATING AT AMBIENT - Less than 1 CFM/sq ft
L RATING AT 400F - Less than 1 CFM/sq ft



1. Wall Assembly — Min 3-3/4 in. and 5 in. (95 and 127 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete for 1 and 2 h rated assemblies, respectively. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of openings 32-1/4 in. (819 mm).is 32-1/4 in. (819 mm) See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Through—Penetrants — One metallic pipe, conduit or tubing to be centered within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tube may be installed at an an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) diam (or smaller) steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. Fill, Void or Cavity Material* — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe-wall interface on both surfaces of wall. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

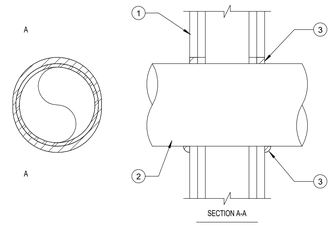
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

21.12.14 - 0000

W-L-1065: PIPE @ CONC WALL N.T.S. **2**

System No. W-L-1290

F RATING - 1 and 2 Hr (See Item 1)
T RATING - 0 Hr
L RATING AT AMBIENT - Less than 1 CFM/sq ft
L RATING AT 400F - Less than 1 CFM/sq ft



1. Wall Assembly – The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features.
   A. Studs – The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features.
   B. Gypsum Board* – Nom 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the Fire Resistance Directory. Max diam of opening is 5 in.
      • The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrant – One metallic pipe, conduit or tubing installed concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tube to be rigidly supported on both sides of wall assembly. The annular space between the pipe or tube and periphery of the opening shall be min 0 in (point contact) to max 1/2 in. The following types and sizes of metallic pipes, conduit or tube may be used:
   A. Steel Pipe – Nom 4 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.
   B. Iron Pipe – Nom 4 in. diam (or smaller) cast or ductile iron pipe.
   C. Conduit – Nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT) or steel conduit.
   D. Copper Tube – Nom 4 in. diam (or smaller) Type L (or heavier) copper tube.
   E. Copper Pipe – Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material*-Sealant – Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe and wall, a min ½ in diam bead of fill material shall be applied at the pipe/wall interface.
   • HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC – CP606 Flexible Firestop Sealant

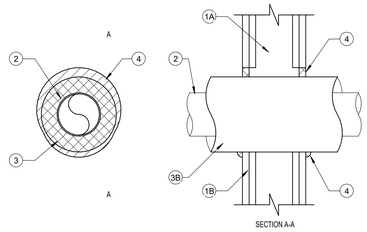
*Bearing the UL Classification Mark

21.12.14 - 0000

W-L-1290: PIPE @ WALL ASSEMBLY N.T.S. **5**

System No. W-L-5257

F RATING - 1 and 2 Hr (See Item 1)
T RATING - 0 and 1 Hr (See Item 1)
L RATING AT AMBIENT - 4 CFM/Sq Ft (See Item 4)
L RATING AT 400F - Less Than 1 CFM/Sq Ft (See Item 4)



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide, with square or tapered edges. Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 8 in. (203 mm).
      • The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T Rating of the firestop system is 1 hr for 2 hr fire rated walls and 0 hr for 1 hr fire rated walls.
2. Through Penetrant — One metallic pipe or tube to be installed eccentrically or concentrically within the firestop system. Pipe or tube to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes and tubes may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   C. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe.
   D. Copper Tube — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tube.
3. Pipe Covering* — Nom 1-1/2 in. (38 mm) thick hollow cylindrical heavy density (3.5 pcf or 24 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the periphery of the opening shall be min 0 in. (point contact) to max 7/8 in. (22 mm).
   • See Pipe Equipment Covering — Materials— (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At point contact location, min 1/2 in. (13 mm) diam bead of fill material applied at insulated metallic pipe/wall interface on both surfaces of wall. L Ratings apply only when FS-One Sealant is used.
   • HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant, CP 606 Sealant or CP 601S Sealant

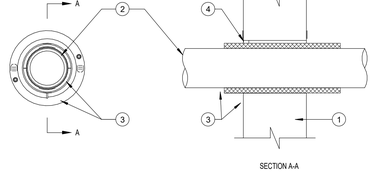
*Bearing the UL Classification Mark

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W-L-5257: PIPE @ WALL ASSEMBLY N.T.S. **6**

System No. W-J-1215

F RATING - 2 Hr
T RATING - 3/4 Hr



1. Wall Assembly — Min 5⅝ in. (143 mm) reinforced lightweight or normal weight (100150 pcf or 1600 2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Opening in wall to be 2-1/2 in. (64 mm) diam for nominal 2 in. (51 mm) firestop device and 4 1/2 in. (114 mm) diam for nominal 4 in. (102 mm) firestop device. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Through Penetrant — One metallic pipe, conduit or tubing to be installed concentrically within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of the wall assembly. The following types and sizes of metallic pipes, conduits and tubes may be used:
   A. Steel Pipe — Nom 3 in. (76 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Iron Pipe — Nom 3 in. (76 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 3 in. (76 mm) diam (or smaller) rigid steel conduit or steel electrical metallic tubing (EMT).

3. Firestop Device* — Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings, tightly twisted inner fabric smoke seal, flanges and gasketing material (not shown). Firestop device to be installed in accordance with the accompanying installation instructions. Device slid into wall such that ends project an equal distance from the approximate centerline of the wall assembly. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact). Device provided with flanges that are spun clockwise onto device threads, over gasketing material butting tightly to both sides of wall. As an alternate to gasket material, sealant (Item 4) maybe used.
   • HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 653 2" Speed Sleeve and CP 653 4" Speed Sleeve

4. Fill, Void or Cavity Material* Sealant — As an alternate to gasket material (see Item 3), min ½ in. (13 mm) thickness of fill material applied within the annulus between firestop device and wall, flush with both surfaces of wall. An additional 1/4 in. (6 mm) bead shall be applied around periphery of device on each side of wall prior to securing device flanges.
   • HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 606 or FSONE Sealant or FSONE MAX Intumescent Sealant.

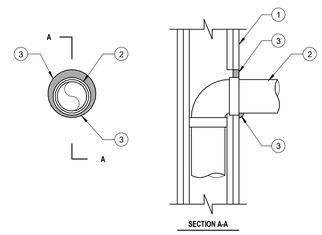
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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W-J-1215: PIPE @ CONC WALL N.T.S. **8**

System No. W-L-1410

ANSI/UL 1479 (ASTM E814)
F RATING - 1 and 2 HR (See Item 1)
T RATING - 0 Hr



1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — One or two layers of nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm).
      • The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly.
2. Through penetrants — One metallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space shall be 0 in. (point contact) to 1 in. (25 mm). Pipe or conduit to be rigidly supported on the penetrated side of the wall assembly. The following types and sizes of metallic pipes or conduits may be used.
   A. Steel pipe — Nom 3 in. (76 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Conduit — Nom 3 in. (76 mm) diam (or smaller) steel electrical metallic tubing (EMT), nom 3 in. (76 mm) diam steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
   C. Copper Tubing — Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tubing.
   D. Copper Pipe — Nom 1 in. (25 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material*-Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. Min 1/2 in. (13 mm) diam bead of sealant applied at point contact location.
   • HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, FS-ONE MAX Intumescent Sealant, CFS-S-SIL GG Sealant, CP601S Elastomeric Sealant, CP 606 Sealant;or CP618 Putty.

++ Bearing the UL Classification Mark

21.12.14 - 0000

W-L-1410: PIPE @ MEMBRANE N.T.S. **1**

1996
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ARCHITECT STAMP | CONSULTANT STAMP

LICENSED ARCHITECT — ROBERT M. TOMASI — No. C18650 — Ref. 2/28/25 — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

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ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
FIRESTOPPING PENETRATIONS - HORIZONTAL PIPES

DRAWN BY: Author JOB NUMBER: 210015.01

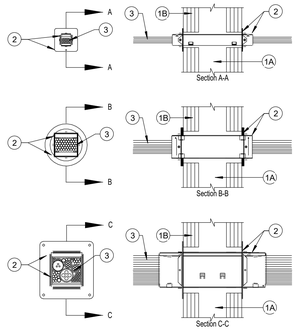
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A-790
DATE: May 29, 2024

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BID SET (PRELIMINARY)

System No. W-L-3377

F RATING - 1, 2, 3 and 4 Hr (See Items 1 and 3)
T RATING - 3/4, 1, 1-1/2 and 2 Hr (See Item 3)
FT RATING3/4, 1, 1-1/2 and 2 Hr (See Item 3)
L RATING AT AMBIENT - Less than 1 to 7 CFM/Device Module (See Item 2)
L RATING AT 400F - Less than 1 to 3 CFM/Device Module (See Item 2)



1. **Wall Assembly —** The 1, 2, 3 or 4 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described within the individual U300, U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. **Gypsum Board* —** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. See Table for opening sizes.
      - The hourly F and FH Ratings are dependent upon the hourly rating of the wall in which it is installed.

2. **Firestop Device* —** Series 22 EZ Path device modules consist of a 1.4 by 1.4 by 10-1/2 in. (36 by 36 by 267 mm) long galv steel tube with an intumescent material lining. Series 33 EZ Path device modules consist of a 3 by 3 by 10-1/2 in. (76 by 76 by 267 mm) long galv steel tube with an intumescent material lining. Series 44+ EZ Path device modules consist of a 4 by 4-5/8 by 14 in. (102 by 118 by 356 mm) long galv steel tube with an intumescent material lining. Firestop device modules to be installed in accordance with the accompanying installation instructions. Firestop device modules secured in place by means of steel wall plates installed with gasketing material supplied with product. Steel wall plates installed on both sides of wall and secured to each device by means of steel screws provided with device. Firestop device module is to be installed with ends projecting an equal distance beyond each surface of the wall assembly. The annular space between the device and opening shall be min 0 in. (point contact) to max 1/8 in. (3 mm) for Series 22 device, max 1/2 in. (13 mm) for Series 33 device and max 1/4 in. (6 mm) for Series 44 device. The opening size and L Ratings for each device vary according to whether device module is blank (no cables) or loaded (with cables) and which cable type and size is used, as tabulated below:

Device	Max Cable Fill	Cable Type	L-Rating (CFM)		Opening Size Diam or Dimensions, in. (mm)
			Ambient	400° F	
Series 22	0%	-	1.4	1.4	2 (51) or 1-3/4 x 1-3/4 (44 x 44)
Series 22	1-25%	3A	Less Than 1	Less Than 1	2 (51) or 1-3/4 x 1-3/4 (44 x 44)
Series 22	26-50%	3A	Less Than 1	Less Than 1	2 (51) or 1-3/4 x 1-3/4 (44 x 44)
Series 22	51-75%	3A	Less Than 1	Less Than 1	2 (51) or 1-3/4 x 1-3/4 (44 x 44)
Series 22	76-100%	3A	Less Than 1	Less Than 1	2 (51) or 1-3/4 x 1-3/4 (44 x 44)
Series 22	100%	3F	Less Than 1	Less Than 1	2 (51) or 1-3/4 x 1-3/4 (44 x 44)
Series 33	0%	-	Less Than 1	Less Than 1	4 (102) or 3-1/4 x 3-1/4 (82 x 82)
Series 33	100%	3A	4	3	4 (102) or 3-1/4 x 3-1/4 (82 x 82)
Series 33	100%	3F	1.3	Less Than 1	4 (102) or 3-1/4 x 3-1/4 (82 x 82)
Series 33	100%	3G, 3H	7	2	4 (102) or 3-1/4 x 3-1/4 (82 x 82)
Series 33	100%	3I	1.8	1.8	4 (102) or 3-1/4 x 3-1/4 (82 x 82)
Series 44+	0%	-	Less Than 1	Less Than 1	6 (152) or 4-1/8 x 4-3/4 (120 x 120)
Series 44+	1-25%	3A-3I	1.5	1.5	6 (152) or 4-1/8 x 4-3/4 (120 x 120)
Series 44+	26-50%	3A-3I	2.3	2.3	6 (152) or 4-1/8 x 4-3/4 (120 x 120)
Series 44+	51-75%	3A-3I	2.3	2.3	6 (152) or 4-1/8 x 4-3/4 (120 x 120)
Series 44+	76%-100%	3A-3I	2.3	2.3	6 (152) or 4-1/8 x 4-3/4 (120 x 120)

SPECIFIED TECHNOLOGIES INC — EZ PATH Series 22, 33 or 44+ Fire Rated Pathway

- **Firestop Device* — Extension Module —** (Optional, Not Shown) — Module attached to ends of Series 33, Series 44+ firestop device (Item 2) to increase its length to facilitate installation in thicker walls. Each module consists of a galv steel tube with an intumescent material lining. Extension module to be installed in accordance with the accompanying installation instructions. When module is used, firestop device (Item 2) and extension module(s) secured in place by means of steel wall plates installed with gasketing material supplied with product. Steel wall plates installed on both sides of wall and secured to each device or extension module(s) by means of steel set screws provided with wall plates. Firestop device and extension module(s) assembly to be installed with ends projecting an equal distance beyond each surface of the wall assembly.
  SPECIFIED TECHNOLOGIES INC — EZ PATH Series 33 or Series 44+ Extension

3. **Cables —** Cables may represent a 0 to max 100 percent visual fill within the loading area for the firestop device module. Cables to be rigidly supported on both sides of the wall assembly. Any combination of the following types of cables may be used:
   A. Max 400 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) or plenum-rated jacketing and insulation.
   B. Max 750 kcmil single copper conductor power cable with XLPE jacket and insulation
   C. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.
   D. Max 3/C No. 2/0 AWG metal clad or armored cable with steel or aluminum jacket.
   E. Max 3/C No. 8 AWG NM cable (Romex) with PVC insulation and jacket.
   F. Max fiber optic cable with PVC or polyethylene (PE) jacket and insulation and having a max diam of 5/8 in. (16 mm).
   G. Coaxial cable with fluorinated ethylene or PVC insulation and jacketing having a max diam of 5/8 in. (16 mm).
   H. Optical fiber cable with PVC or polyethylene (PE) jacket and insulation and having a max diam of 5/8 in. (16 mm).
   I. Max RG6/U coaxial cable with fluorinated ethylene, polyethylene (PE), PVC or plenum rated jacketing and insulation.

When Series 22 EZ Path device modules are used and when the hourly rating of the wall assembly is 1 hr, the T, FT and FTH Ratings are 3/4 hr except that for Items 3F, 3G and 3H, the T, FT and FTH Ratings are 1 hr. When the hourly fire rating of the wall assembly is 2 hr or greater, the T, FT and FTH Ratings are 3/4 hr when cables are installed. When no cables are installed within the device module, the T, FT and FTH Ratings are 1 hr in 1 hr walls and 1-1/2 hr for 2, 3 and 4 hr walls. When Item 3A, 3B, 3C, 3D or 3E is used, the maximum F and FH Ratings are 2 hr. When max 200 pair No. 24 AWG telecommunication cable and/or 350 kcmil power cable is used or when Item 3F, 3G, 3H or 3I is used, the maximum F and FH Ratings are 4 hr.

When Series 33 EZ Path device modules are used and when the hourly rating of the wall assembly is 1 hr, the T, FT and FTH Ratings are 3/4 hr. When the hourly fire rating of the wall assembly is greater than 1 hr, the T, FT and FTH Ratings are 3/4 hr when Item 3A, 3B, 3C, 3D or 3E is used. Otherwise the T, FT and FTH Ratings are 1 hr. When Item 3A, 3B, 3C, 3D or 3E is used, the maximum F and FH Ratings are 2 hr. When max 200 pair No. 24 AWG telecommunication cable is used or when Item 3F, 3G, 3H or 3I is used, the maximum F and FH Ratings are 4 hr.

When Series 44 + EZ Path device modules are used and when Item 3A, 3B, 3C, 3D or 3E is used, the max F and FH Ratings are 3 hr and the T, FT and FTH Ratings are 1 hr. When Item 3F or 3G is used, the max F and FH Ratings are 4 hr and the T, FT and FTH Ratings are 1-1/2 hr. When Item 3H or 3I is used, the max F and FH Ratings are 4 hr and the T, FT and FTH Ratings are 2 hr. When device empty, the T, FT and FTH Ratings are 1-1/2 Hr.

+Bearing the UL Listing Mark

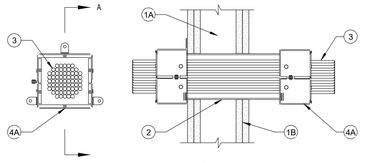
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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W-L-3377: EZ PATH 22 12" = 1'-0" **5**

W-L-3435

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 0 and 1/2 Hr (See Item 2)	FT Ratings - 0 and 1/2 Hr (See Item 2)
L Rating at Ambient - Less than 1 to 10.7 CFM/Device (Seeitem 4C)	FH Ratings - 1 and 2 Hr (See Item 1)
L Rating at 400 F - Less than 1 to 10.7 CFM/Device (See Item 4C)	FTH Ratings - 0 and 1/2 Hr (See Item 2)
	L Rating at Ambient - Less than 0.47 to 5.05 L/s/Device (Seeitem 4C)
	L Rating at 204 C- Less than 0.47 to 5.05 L/s/Device (See Item 4C)



1. 1.**Wall Assembly -** The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, V300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. **Gypsum Board* -** Thickness, type, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, V300, U400 , V400 or W400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 5-1/2 in. (140 mm) when sleeve (Item 2) extends from wall surface. When sleeve is flush with wall surface, opening sized to outside diameter of sleeve. Max diam of opening is 4 in. (102 mm) when sleeve is not used.
      - The F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall in which it is installed.
2. **Steel Sleeve -** (Optional) - Nom 1-1/2 in. (38 mm), 2 in. (51 mm), 3 in. (76 mm) or 4 in. (102 mm) diam steel electrical metallic tubing (EMT), steel conduit, Schedule 5 (or heavier) steel pipe sleeve or min 0.016 in. thick (0.41 mm, No. 28 ga) galv sheet steel sleeve installed flush with wall surfaces. The annular space between the steel sleeve and periphery of opening shall be min 0 in. (continuous point contact) to max 1 in. (25 mm). Sheet steel sleeve to be installed in continuous point contact only. When Schedule 5 steel pipe, steel conduit or EMT is used, sleeve may be installed flush with or extend up to 3 in. (76 mm) beyond one or both wall surfaces. When sleeve projects from wall suface, it may be provided with a metallic or nonmetallic conduit bushing. Steel sleeve may be installed at an angle not greater than 45 degrees from perpendicular. Schedule 5 steel pipe, steel conduit or EMT sleeves may extend continuously beyond one wall surface. Sleeve to be rigidly supported when extending from the wall surfaces.
   - When sleeve is flush with wall surface in 2 hr rated assemblies, the T, FT, and FTH Ratings are 1/2 Hr. Otherwise, the T, FT, and FTH Ratings are 0 Hr.
3. **Cables -** Cables may represent a min 50 to max 100 percent visual fill within the loading area for the sleeve, a nom 2 in. (51 mm) diam opening or a nom 4 in. (102 mm) diam opening. Cables to be rigidly supported on both sides of the wall assembly. Any combination of the following types and sizes of cables may be used:
   A. Max 400 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) or plenum-rated jacketing and insulation.
   B. Max 750 kcmil single copper conductor power cable with XLPE jacket and insulation.
   C. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.
   D. Max 3/C No. 2/0 AWG metal clad or armored cable with steel or aluminum jacket.
   E. Max 3/C No. 8 AWG NM cable (Romex) with PVC insulation and jacket.
   F. Max four pair No. 22 AWG (or smaller) copper conductor data cable with PVC or plenum rated jacketing and insulation.
   G. Max four pair No. 22 AWG (or smaller) Cat 5, Cat 5E, Cat 6 or Cat 6A cable with PVC or plenum rated jacketing and insulation.
   H. Coaxial cable with fluorinated ethylene or PVC insulation and jacketing having a max diam of 5/8 in. (16 mm).
   I. Optical fiber cable with PVC or polyethylene (PE) jacket and insulation and having a max diam of 5/8 in. (16 mm).
   J. Max RG6/U coaxial cable with fluorinated ethylene, polyethylene (PE), PVC or plenum rated jacketing and insulation.
4. **Firestop System* -** The firestop system shall consist of the following:
   A. **Firestop Device -** A firestop device consisting of a rectangular galv steel housing with intumescent curtain sized to the specific diam of the sleeve or opening. Firestop device installed in accordance with the accompanying installation instructions on each side of the wall. Firestop device secured to end of sleeve when sleeve extends from wall surface. When sleeve extends continuously beyond one wall surface, firestop device shall be installed only on the side of the wall with a sleeve termination. When sleeve is flush with wall surface or when sleeve is not used, firestop device secured to assembly using provided anchor tabs by means of 1/8 in. (3.2 mm) diam by 1-3/4 in. (44 mm) long steel molly bolts or toggle bolts in conjunction with min 1-1/4 in. (32 mm) diam steel fender washers.
   B. **Fill, Void or Cavity Material* - Sealant or Putty -** (Optional, Not Shown) Any existing XHHW sealant or putty either partially or fully installed into one or both ends of the steel sleeve. When annular space is present between the sleeve and the periphery of the opening, a min 5/8 in. (16 mm) thickness of any existing XHHW sealant or putty shall be applied within the annulus, flush with both surfaces of wall.
   C. **Fill, Void or Cavity Material* - Sealant or Putty -** (Optional, Not Shown) - Min 1/2 in. (13 mm) thickness of sealant or putty applied within annulus, flush with both ends of sleeve. When annular space is present between the sleeve and the periphery of the opening, a min 1/2 in. (13 mm) thickness of sealant or putty shall be applied within the annulus, flush with both surfaces of the wall.
      - **Firestop Device* -** (Not Shown) - When nom 1-1/2 in. (38 mm) or nom 3 in. (76 mm) diam steel sleeve is used, an appropriately sized steel plate adaptor kit shall be used in conjunction with Item 4A. The steel plate shall be installed in accordance with the accompanying installation instructions.

Device	Max Visual Cable Fill	Putty or Sealant	L-Rating (CFM)		Sleeve Size in. (mm)
			Ambient	400°F	
EZDR200	50%	No	3.3	3.3	2 (51)
EZDR200	51% - 75%	No	3.7	3.7	2 (51)
EZDR200	76% - 100%	No	4	4	2 (51)
EZDR200	50%	Yes	Less Than 1	Less Than 1	2 (51)
EZDR200	51% - 75%	Yes	1.5	1.5	2 (51)
EZDR200	76% - 100%	Yes	1.8	1.8	2 (51)
EZDR400	50%	No	7.8	7.8	4 (102)
EZDR400	51% - 75%	No	8	8	4 (102)
EZDR400	76% - 100%	No	10.7	10.7	4 (102)
EZDR400	50%	Yes	1.3	1.3	4 (102)
EZDR400	51% - 75%	Yes	3.7	3.7	4 (102)
EZDR400	76% - 100%	Yes	5.2	5.2	4 (102)

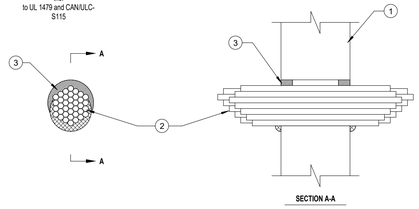
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W-L-3435: EZ PATH RETROFIT N.T.S. **9**

System No. W-J-3190

ANSI/UL 1479 (ASTM E814)
F RATING - 2 and 3 Hr (See Item 3)
T RATING - 0 Hr

CLASSIFIED C UL US
Classified by Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115



1. Wall Assembly — Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 4 in. (102 mm). See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Cables — Aggregate cross-sectional area of cable in opening to be max 45 percent of the cross-sectional area of the opening. The annular space between the cable bundle and the periphery of the opening to be min 0 in. (point contact) to max 7/8 in. (22 mm) Cables to be tightly bundled and rigidly supported on both sides of the wall assembly. Any combination of the following types and sizes of copper conductor cables may be used.
   A. Max 7/C No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.
   B. Max 25 pair No. 24 AWG telephone cable with PVC insulation and jacket.
   C. Max 4 pr No. 22 AWG Cat 5 or Cat 6 computer cables.
   D. Type RG/U coaxial cable with polyethylene (PE) insulation and PVC jacket having a max outside diameter of ½ in. (13 mm).
   E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.
   F. Multiple fiber optical communication cable jacketed with PVC and having a max OD of 5/8 in. (16 mm).
   G. Max three copper conductor No. 8 AWG Metal-Clad Cable+.
   H. Max 3/C (with ground) (or smaller) No. 8 AWG copper conductor cable with PVC insulation and jacketing.
   I. Through Penetrating Product* — Any cables, Metal-Clad Cable+ or Armored Cable+ currently Classified under the Through Penetrating Products category.
3. Fill, Void or Cavity Material*– Sealant — Fill material applied within the annulus, flush with both surfaces of wall. A min 5/8 in. (16 mm) thickness of sealant is required for 2 hr F Rating. A min 1 in. (25 mm) thickness of sealant is required for the 3 hr F Rating. An additional 1/2 in. (13 mm) diam bead of fill material shall be applied at the point contact location of cable bundle/concrete interface on both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606, FS-One Sealant or FS-ONE MAX Intumescent Sealant

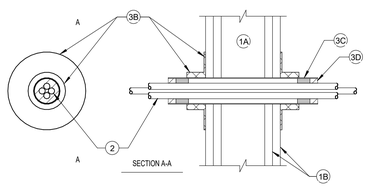
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.
+Bearing the UL Listing Mark

21.12.14 - 00000

W-L-3190: CABLES @ WALL ASSEMBLY 12" = 1'-0" **2**

System No. W-L-3122

F RATING - 1 and 2 Hr (See Item 1)
T RATING - 0 Hr
L RATING AT AMBIENT - 22 or 54 CFM / Sq Ft (See Item 3B)
L RATING AT 400F - 18 or 47 CFM / Sq Ft (See Item 3B)



1. Wall Assembly — The 1 or 2 hr fire rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. Gypsum Board* — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 4-1/2 in.

The hourly F rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Cables — Aggregate cross-sectional area of cables in steel sleeve to be 45 percent of the aggregate cross-sectional area of the sleeve.
Cables to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes of copper conductor cable may be used:

   A. Max 300 kcmil single conductor Type MTW, THHN, THWN or AWM power cables; cross-linked polyethylene (XLPE) insulation.
   B. Max 4 pair No. 24 AWG telephone cable intended for plenum applications.
   C. Max 3/C No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.

3. Firestop System — The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material* — Sealant — (not shown) — Min 1/2 in. diam of sealant shall be applied around the perimeter of the firestop device on each side of the wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — FS-ONE Sealant
   B. Firestop Device* — One of the following firestop devices may be used:

      1. Smooth steel sleeve device incorporating flat washers secured by sliding compression couplers. Device shall be installed in accordance with the accompanying installation instructions. Device provided in nom 1, 2 and 4 in. sizes. Max diam of opening in wall for 1, 2 and 4 in. sizes are 1-1/8, 2-1/4 and 4-1/2 in., respectively.
      UNIQUE FIRE STOP PRODUCTS INC — Smooth Sleeve
      2. Threaded steel sleeve device incorporating flat washers secured by threaded couplings. Device shall be installed in accordance with the accompanying installation instructions. Device provided in nom 1, 2 and 4 in. sizes. Max diam of opening in wall for 1, 2 and 4 in. size devices are 1-5/16, 2-3/8 and 4-1/2 in., respectively.
      UNIQUE FIRE STOP PRODUCTS INC — Threaded Sleeve
      3. Threaded steel sleeve halves incorporating split nuts and split washers sized to fit the specific diam of the opening. Device shall be installed around cables in accordance with the accompanying installation instructions. Device provided in nom 1, 2 and 4 in. sizes. Max diam of opening in wall for 1, 2 and 4 in size devices are 1-1/4, 2-7/16 and 4-1/2 respectively.
      UNIQUE FIRE STOP PRODUCTS INC — Split Sleeve

Firestop Device	L Rating, CFM/sq ft (CFM/firestop device)	
	Ambient	400F
Smooth Sleeve	22 (2)	18 (2)
Threaded Sleeve	22 (2)	18 (2)
Split Sleeve	54 (5)	47 (4)

The L Rating of the firestop system is dependent upon the type of firestop device as tabulated below:

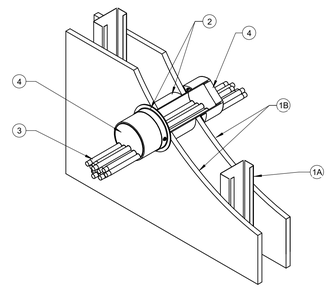
C. Packing Material - (Optional) — Min 1 in. thickness of min 4.0 pcf mineral wool batt insulation firmly packed into each end of firestop device as a permanent form. Packing material to be recessed from each end of firestop device as required to accommodate the required thickness of fill material.
D. Fill, Void or Cavity Material* — Putty — Min 5/8 in. thickness of fill material applied within the firestop device, flush with both ends.
HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC — CP618 Firestop Putty Stick
*Bearing the UL Classification Mark

21.12.14 - 00000

W-L-3122: CABLES @ WALL ASSEMBLY 3" = 1'-0" **1**

System No. W-L-3376

F RATING - 1 and 2 HR (See Item 1)
T RATING - 0 Hr
L RATING AT AMBIENT - 11.92 CFM (See Item 3)
L RATING AT 400F - 5.19 CFM (See Item 3)



1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 4-1/2 in. (114 mm).
      - The hourly F rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Firestop Device* — Steel sleeve device centered within opening and installed in accordance with the accompanying installation instructions. Steel sleeve device secured in place by means of steel escutcheon plates installed with gasketing material supplied with product. Steel escutcheon plates installed on both sides of wall and secured to device by means of steel screws provided with device. Steel sleeve device provided in nom 1, 2 and 4 in. (25, 51 and 102 mm) sizes. The min and max opening sizes for each sleeve device are shown in the table below:

DEVICE SIZE	MIN OPENING SIZE	MAX OPENING SIZE
1 in. (25mm)	1.12 in. (28mm)	1.25 in. (32mm)
2 in. (51mm)	2.38 in. (60mm)	2.50 in. (64mm)
4 in. (102mm)	4.50 in. (114mm)	4.50 in. (114mm)

SPECIFIED TECHNOLOGIES INC — FS100, FS200, FS201, FS400 and FS401 SpecSeal Ready-Sleeves

3. Cables — Aggregate cross-sectional area of cables in steel sleeve to be max 33 percent of the aggregate cross-sectional area of the sleeve. Cables to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes of copper conductor cable may be used:
   A. Max 2/0 pair No. AWG (or smaller) copper conductor cable with polyvinyl chloride (PVC) jacketing and insulation.
   B. Max 3/C No. 2/0 AWG (or smaller) aluminum or copper conductor service entrance cable with PVC insulation and jacket.
   C. Max 3/C No. 8 AWG (or smaller) nonmetallic sheathed (Romex) cable with copper conductors, PVC insulation and jacket.
   D. Max 7/C No. 2/0 AWG (or smaller) multiconductor power and control cables with XLPE or PVC insulation and XLPE or PVC jacket.
   E. Max RG/U (or smaller) coaxial cable with fluorinated ethylene insulation and jacketing.
   F. Max 6/2 5/48 fiber optic cable with PVC insulation and jacketing.
   G. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with PVC insulation and jacket.
   H. Max 4/C No. 2/0 aluminum or copper conductor aluminum or steel Metal-Clad® or Armored-Clad® cable.
      - When Item 3G is used, the L Rating is 11.9 CFM/device at ambient and 5.2 CFM/device at 400F.
4. Fill, Void or Cavity Material* - Putty — Fill material supplied with firestop device (Item 2) applied to 1 in. (25 mm) thickness flush with each end of steel sleeve device. At point contact location, min 3/8 in. (9 mm) diam bead of fill material applied at grouped cable/steel sleeve interface on each side of wall.
   - SPECIFIED TECHNOLOGIES INC — SpecSeal Putty

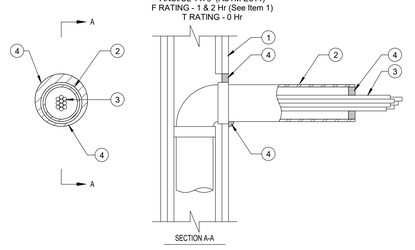
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

21.12.14 - 00000

W-L-3376: CABLES @ WALL ASSEMBLY 1 1/2" = 1'-0" **3**

System No. W-L-3320

ANSI/UL 1479 (ASTM E814)
F RATING - 1 & 2 Hr (See Item 1)
T RATING - 0 Hr



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (1219 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Opening may be round, rectangular or irregular with a max diam or dimension of 1 in. (25 mm).
      - The hourly F, FT, FH and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Cables — Single or tight bundle of cables penetrating wall assembly on one side of wall. Aggregate cross-sectional area of cables in opening to have a visual fill of min 0% to max 100%. The annular space between the cable bundle and the periphery of the opening to be min 0 in. (point contact). Cables to be rigidly supported on penetrating side of and within the wall assembly. Any combination of the following types and sizes of cables may be used:
   A. Max 3/C No. 8 AWG NM copper conductor cable (Romex) with PVC insulation and jacket.
   B. Max 4 pr No. 22 AWG (or smaller) Cat 5 or Cat 6 computer cables with PVC or plenum rated insulation and jacketing.
   C. Type RG/U coaxial cable with fluorinated ethylene or PVC insulation and jacketing having a max outside diameter of 1/2 in. (13 mm).
   D. Max 24 fiber optic cable with polyvinyl chloride (PVC) or polyethylene (PE) jacket and insulation.
   E. Max 25 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) or plenum-rated jacketing and insulation.
   F. Through Penetrating Product* — Max two copper conductor No. 18 AWG (or smaller) Power or Non-Power Limited Fire Alarm Cable with or without a jacket under a metal armor.
      - AFC CABLE SYSTEMS INC
   G. Maximum 3/C No. 10 AWG copper conductor metal-clad cable.
3. Fill, Void or Cavity Material* — Nom 60 mm diam by 3 mm thick putty disc with one seam at radius. Paper-backer of disc to be removed and disc firmly pressed around the cable/cable bundle lapping nom 5 mm onto cables to completely cover opening and firmly pressed to lap onto the wall around periphery of opening. Disc seam to be firmly pressed and sealed tight, Disc to be installed at penetrated side of wall.
   - HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-D T Firestop Cable Disc

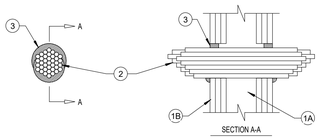
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

21.12.14 - 00000

W-L-3320: CABLES @ MEMBRANE 12" = 1'-0" **4**

System No. W-L-3385

ANSI/UL 1479 (ASTM E814)
F RATING - 1, 2, and 3 Hr (See Item 1)
T RATING - 0 Hr



1. 1. Wall Assembly — The 1, 2 or 3 fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 in. (51 mm) by 4 in. (102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board, with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory. Max diam of opening is 4 in. (102 mm).
      - The F Rating of the firestop system is equal to the fire rating of the wall assembly.
2. Cables — Aggregate cross-sectional area of cable in opening to be max 45 percent of the cross-sectional area of the opening. The annular space between the cable bundle and the periphery of the opening to be min 0 in. (point contact) to max 7/8 in. (22 mm) Cables to be tightly bundled and rigidly supported on both sides of the wall assembly. Any combination of the following types and sizes of copper conductor cables may be used:
   A. Max 7/C No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.
   B. Max 25 pair No. 24 AWG telephone cable with PVC insulation and jacket.
   C. Max 4 pr No. 22 AWG Cat 5 or Cat 6 computer cables.
   D. Type RG/U coaxial cable with polyethylene (PE) insulation and PVC jacket having a max outside diameter of ½ in. (13 mm).
   E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.
   F. Multiple fiber optical communication cable jacketed with PVC and having a max OD of 5/8 in. (16 mm).
   G. Max three copper conductor No. 8 AWG Metal-Clad Cable+.
   H. Max 3/C (with ground) (or smaller) No. 8 AWG copper conductor cable with PVC insulation and jacketing.
   I. Through Penetrating Product* — Any cables, Metal-Clad Cable+ or Armored Cable+ currently Classified under the Through Penetrating Products category.
3. Fill, Void or Cavity Material*— Sealant — Fill material applied within the annulus, flush with both surfaces of wall. A min 5/8 in. (16 mm) thickness of sealant is required for the 1 or 2 hr F Rating. A min 1 in. (25 mm) thickness of sealant is required for the 3 hr F Rating. An additional 1/2 in. (13 mm) diam bead of fill material shall be applied at the point contact location of cable bundle/concrete interface on both surfaces of wall.

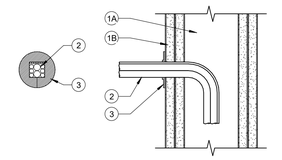
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606 or FS-One Sealant or FS-ONE MAX Intumescent Sealant
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

21.12.14 - 00000

W-L-3385: CABLES @ WALL ASSEMBLY 12" = 1'-0" **8**

System No. W-L-3415

F RATING - 1 and 2 HR (See Item 1)
T RATING - 1 and 2 HR (See Item 1)
L RATING AT AMBIENT - Less than 1 CFM/Opening
L RATING AT 400F - Less than 1 CFM/Opening



1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick, 4 ft (1219 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Opening may be round, rectangular or irregular with a max diam or dimension of 1 in. (25 mm).
      - The hourly F, FT, FH and FTH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Cables — Single or tight bundle of cables penetrating wall assembly on one side of wall. Aggregate cross-sectional area of cables in opening to have a visual fill of min 0% to max 100%. The annular space between the cable bundle and the periphery of the opening to be min 0 in. (point contact). Cables to be rigidly supported on penetrating side of and within the wall assembly. Any combination of the following types and sizes of cables may be used:
   A. Max 3/C No. 8

DOOR SCHEDULE

MARK	FIRE RATING	SIZE			DOOR			FRAME			DETAILS			PANIC HARDWARE	HARDWARE GROUP	NOTES
		WIDTH	HEIGHT	THICKNESS	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	HEAD	JAMB	SILL			
101.1	NR	6'-0"	8'-0"	1 3/4"	7	AL	AL	KNOCK DOWN	AL	AL	14/A-710	14/A-710	16/A-710	P.H.	9	EXT STOREFRONT
101.2	NR	3'-0"	8'-0"	1 3/4"	6	AL	AL		AL	AL				-	2	INT STOREFRONT
102.1	NR	3'-0"	8'-0"	1 3/4"	6	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711	14/A-711	-	15	
103.1	NR	3'-0"	7'-0"	1 3/4"	3	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	14	
104.1	NR	3'-0"	7'-0"	1 3/4"	3	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	14	
105.1	NR	3'-0"	7'-0"	1 3/4"	3	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	14	
107.1	NR	3'-0"	8'-0"	1 3/4"	6	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	15	INT STOREFRONT
108.1	NR	3'-0"	8'-0"	1 3/4"	6	AL	AL	KNOCK DOWN	AL	AL	14/A-710	14/A-710	16/A-710	-	1	EXT STOREFRONT
110.1	NR	3'-0"	7'-0"	1 3/4"	3	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	14	
111.1	NR	3'-0"	7'-0"	1 3/4"	3	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	14	
112.1	NR	6'-0"	8'-0"	1 3/4"	4	HM	SP	HM	HM	P	10/A-711	13/A-711	11/A-711	P.H.	2	
112.2	NR	3'-0"	7'-0"	1 3/4"	3	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	11	
113.1	NR	3'-0"	8'-0"	1 3/4"	5	HM	SP	HM	HM	P	10/A-711	13/A-711	11/A-711	-	6	
114.1	NR	3'-0"	7'-0"	1 3/4"	3	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	14	
115.1	NR	3'-0"	7'-0"	1 3/4"	3	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	14	
116.1	NR	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	18	
117.1	NR	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	18	
118.1	NR	3'-0"	8'-0"	1 3/4"	6	AL	AL	KNOCK DOWN	AL	AL	14/A-710	20/A-711	16/A-710	-	4	EXT STOREFRONT
118.2	NR	6'-0"	7'-0"	1 3/4"	2	WD	WS	KNOCK DOWN	AL	AL	1/A-712	2/A-712		-	20	
118.3	NR	6'-0"	7'-0"	1 3/4"	2	WD	WS	KNOCK DOWN	AL	AL	1/A-712	2/A-712		-	20	
118.4	NR	3'-0"	8'-0"	1 3/4"	6	AL	AL	KNOCK DOWN	AL	AL	14/A-710	14/A-710	16/A-710	P.H.	3	EXT STOREFRONT
119.1	NR	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	19	
120.1	NR	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	19	
121.1	NR	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	17	
122.1	NR	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711	16/A-711	-	16	
123.1	NR	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711	16/A-711	-	16	
126.1	20 MIN.	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	12	
127.1	20 MIN.	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	12	
128.1	20 MIN.	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	12	
129.1	20 MIN.	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	12	
130.1	20 MIN.	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	12	
131.1	20 MIN.	3'-0"	7'-0"	1 3/4"	1	WD	WS	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	12	
132.1	NR	3'-0"	7'-0"	1 3/4"	1	HM		KNOCK DOWN	AL	AL	1/A-712	2/A-712		-	13	
133.1	NR	3'-0"	7'-0"	1 3/4"	1	HM		KNOCK DOWN	AL	AL	1/A-712	2/A-712		-	10	
134.1	NR	3'-0"	8'-0"	1 3/4"	1	HM	SP	HM	HM	P	10/A-711	13/A-711	11/A-711	-	5	
135.1	NR	3'-0"	8'-0"	1 3/4"	1	HM	SP	HM	HM	P	10/A-711	13/A-711	11/A-711	-	7	
136.1	NR	4'-0"	8'-0"	1 3/4"	1	HM	SP	HM	HM	P	10/A-711	13/A-711	11/A-711	-	3	
136.2	NR	3'-0"	1'-0 5/8"												1	ROOF ACCESS HATCH
137.1	NR	3'-0"	8'-0"	1 3/4"	6	AL	AL	KNOCK DOWN	AL	AL	14/A-710	14 & 15/A-710	16/A-710	-	9	EXT STOREFRONT
137.2	NR	3'-0"	8'-0"	1 3/4"	6	AL	AL	KNOCK DOWN	AL	AL	8B/A-711	8C/A-711		-	2	INT STOREFRONT

⚠1

DOOR HARDWARE GROUPS

⚠1 REFER TO DOOR HARDWARE SPECIFICATION SECTION 08 71 00 FOR ADDITIONAL INFORMATION

GROUP NO. 01 – EXTERIOR STOREFRONT (SINGLE)

1	EA	CONT. HINGE	112XY TWP	628 IVE
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-98-NL-OP-110MD	626 VON
1	EA	LONG DOOR PULL	9264F 36" 20" O	630 IVE
1	EA	OH STOP	100S	630 GLY
1	EA	SURFACE CLOSER	4040XP EDA	689 LCN
1	SET	SEAL SET WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
1	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	PER DETAIL	A ZER
		CARD READER - WORK OF DIVISION 28		
		POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 02 – EXTERIOR LAB

1	EA	CONT. HINGE	700 EPT	630 IVE
1	EA	POWER TRANSFER	EPT10	689 VON
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-98-L-NL-06	626 VON
1	EA	RIM CYLINDER	20-057	626 SCH
1	EA	SURF. AUTO OPERATOR	9542 AS REQ (120/240 VAC)	ANCLR LCN
2	EA	SWITCH	8310-806R	LCN
2	EA	ACTUATOR, TOUCH	8310-836T	630 LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630 IVE
1	EA	GASKETING	188SBK PSA	BK ZER
1	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	PER DETAIL	A ZER
		CARD READER - WORK OF DIVISION 28		
		POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 03 – EXTERIOR LAB EQUIPMENT ROOM

1	EA	CONT. HINGE	700 TW8	630 IVE
1	EA	ELEC PANIC HARDWARE	RX-PA-AX-98-L-M996-06-FSE	626 VON
1	EA	RIM CYLINDER	20-057	626 SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689 LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630 IVE
1	EA	HEADER RAIN DRIP	142AA DOOR WIDTH + 4"	AA ZER
1	EA	GASKETING	188SBK PSA	BK ZER
1	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	PER DETAIL	A ZER
		CARD READER - WORK OF DIVISION 28		
		POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 04 – EXTERIOR STOREFRONT

1	EA	CONT. HINGE	112XY	628 IVE
1	EA	PANIC HARDWARE	PA-AX-98-EO	626 VON
1	EA	SURFACE CLOSER	4040XP SCUSH	689 LCN
1	SET	SEAL SET WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
1	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	PER DETAIL	A ZER

GROUP NO. 05 – EXTERIOR ELECTRICAL ROOM

4	EA	HINGE	5BB1 4.5 X 4.5 NRP	630 IVE
1	EA	PANIC HARDWARE	PA-AX-98-L-NL-06	626 VON
1	EA	RIM CYLINDER	20-057	626 SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689 LCN
1	EA	HEADER RAIN DRIP	142AA DOOR WIDTH + 4"	AA ZER
1	EA	GASKETING	188SBK PSA	BK ZER
1	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	PER DETAIL	A ZER

GROUP NO. 06 – EXTERIOR WORK ROOM

1	EA	CONT. HINGE	700 TW8	630 IVE
1	EA	ELEC PANIC HARDWARE	RX-PA-AX-98-L-M996-06-FSE	626 VON
1	EA	RIM CYLINDER	20-057	626 SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689 LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630 IVE
1	EA	GASKETING	188SBK PSA	BK ZER
1	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	PER DETAIL	A ZER
		CARD READER - WORK OF DIVISION 28		
		POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 07 – EXTERIOR FIRE RISER ROOM

4	EA	HINGE	5BB1 4.5 X 4.5 NRP	630 IVE
1	EA	STOREROOM LOCK	L9080R 06A	626 SCH
1	EA	SURFACE CLOSER	4040XP SHCUSH	689 LCN
1	EA	HEADER RAIN DRIP	143AA DOOR WIDTH + 4"	AA ZER
1	EA	GASKETING	188SBK PSA	BK ZER
1	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	PER DETAIL	A ZER

GROUP NO. 08 – EXTERIOR LOBBY ENTRANCE (DOUBLE)

2	EA	CONT. HINGE	112XY EPT	628 IVE
2	EA	POWER TRANSFER	EPT10	689 VON
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-9849-EO-LBL	626 VON
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-9849-NL-OP-110MD-LBL	626 VON
1	EA	RIM CYLINDER	20-057	626 SCH
2	EA	LONG DOOR PULL	9264F 36" 20" O	630 IVE
2	EA	OH STOP	100S	630 GLY
2	EA	SURFACE CLOSER	4040XP EDA	689 LCN
1	SET	SEAL SET WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
2	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	PER DETAIL	A ZER
		CARD READER - WORK OF DIVISION 28		
		POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 09 – INTERIOR BREAK ROOM

1	EA	CONT. HINGE	112XY	628 IVE
1	EA	PASSAGE SET	ND10S RHO	626 SCH
1	EA	FLOOR STOP	F9439	662 IVE
1	EA	DOOR BOTTOM	364AA	AA ZER
1	EA	THRESHOLD	PER DETAIL	A ZER
1	SET	BULB SEAL BY AL FRAME MFR		

GROUP NO. 10 – MDF ROOM

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	EU STOREROOM LOCK	ND80RDEU RHO RX CON 12V/24V DC	626 SCH
1	EA	SURFACE CLOSER	4040XP	689 LCN
1	EA	WALL STOP	WS401/402CVX	626 IVE
1	EA	GASKETING	188SBK OR BY AL FRAME MFR	BK ZER
		CARD READER - WORK OF DIVISION 28		
		POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 11 – LAB INTERIOR

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	EU STOREROOM LOCK	ND80RDEU RHO RX CON 12V/24V DC	626 SCH
1	EA	SURFACE CLOSER	4040XP EDA	689 LCN
1	EA	WALL STOP	WS401/402CVX	626 IVE
		CARD READER - WORK OF DIVISION 28		
		POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 12 – BUNK ROOM

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50RD RHO	626 SCH
1	EA	SURFACE CLOSER	4040XP	689 LCN
1	EA	WALL STOP	WS401/402CVX	626 IVE
1	EA	GASKETING	188SBK OR BY AL FRAME MFR	BK ZER

GROUP NO. 13 – MECHANICAL ROOM

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50RD RHO	626 SCH
1	EA	SURFACE CLOSER	4040XP SCUSH	689 LCN
1	EA	GASKETING	188SBK OR BY AL FRAME MFR	BK ZER

GROUP NO. 14 - OFFICE

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50RD RHO	626 SCH
1	EA	WALL STOP	WS401/402CVX	626 IVE

GROUP NO. 15 – CONFERENCE ROOM

4	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	PASSAGE SET	ND10S RHO	626 SCH
1	EA	WALL STOP	WS401/402CVX	626 IVE

GROUP NO. 16 – LOCKER ROOM

4	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	PASSAGE SET	ND10S RHO	626 SCH
1	EA	SURFACE CLOSER	4040XP	689 LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630 IVE
1	EA	WALL STOP	WS401/402CVX	626 IVE

GROUP NO. 17 – JANITOR ROOM

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	STOREROOM LOCK	ND80RD RHO	626 SCH
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630 IVE

GROUP NO. 18 – STORAGE ROOM

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	STOREROOM LOCK	ND80RD RHO	626 SCH
1	EA	FLOOR STOP	F9439	662 IVE
		RECORD ROOM:		
		CARD READER - WORK OF DIVISION 28		
		POWER SUPPLY - WORK OF DIVISION 28		

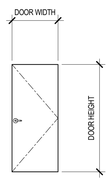
GROUP NO. 19 – RESTROOM (UNISEX)

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	ND40S RHO OS-OCC	626 SCH
1	EA	SURFACE CLOSER	4040XP	689 LCN
1	EA	WALL STOP	WS402/402CVX	626 IVE

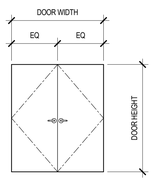
GROUP NO. 20 (UNIFORM CLOSET)

6	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	MANUAL FLUSH BOLT	FB338	626 IVE
1	EA	STOREROOM LOCK	ND80RD RHO	626 SCH
2	EA	OH STOP	450S	630 GLY

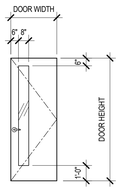
DOOR TYPE '1'



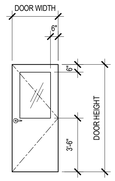
DOOR TYPE '2'



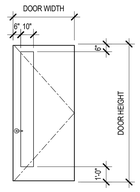
DOOR TYPE '3'



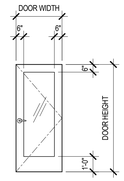
DOOR TYPE '4'



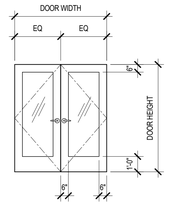
DOOR TYPE '5'



DOOR TYPE '6'



DOOR TYPE '7'



DOOR GENERAL NOTES

A. RATED DOORS SHALL BE POSITIVE LATCHING. RATED DOORS SHALL HAVE A MAXIMUM GAP OF 1/8" ON THE SIDES AND TOP, AND 3/8" ON THE BOTTOM. RATED ASSEMBLIES SHALL BE PROVIDED WITH APPROVED GASKET MATERIAL INSTALLED TO PREVENT A SEAL WHERE THE DOOR MEETS THE STOPS ON BOTH SIDES AND THE TOP. MANUFACTURERS INSTALLATION INSTRUCTIONS SHALL BE AVAILABLE ON THE JOB SITE. HARDWARE SHALL BE FIRE RATED.
B. DOOR OPENING FORCE - EFFORT OF OPERATION (CBC 11B-404.2.9)
   * 5 POUNDS FOR INTERIOR & EXTERIOR DOORS
   * 15 POUNDS FOR FIRE DOORS.
C. ALL DOOR CLOSERS SHALL BE MOUNTED ON ROOM SIDE OF DOORS, CONCEALED FROM CORRIDORS & COMMON AREAS. THE SWEEP PERIOD SHALL BE 5 SECONDS MINIMUM FROM 90° OPEN TO 12° FROM THE LATCH. CBC 11B-404.2.8.1
D. LATCHING AND LOCKING DOORS THAT ARE HAND ACTIVATED SHALL BE OPERABLE W A SINGLE EFFORT BY LEVER TYPE HARDWARE. BY PANIC BARS, PUSH-PULL ACTIVATING BARS,DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE.
E. EGRESS DOORS SHALL BE READILY OPERABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT. (CBC 11B-404.2.7)
F. 11B-404.2.7 DOOR AND GATE HARDWARE. HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERABLE PARTS ON DOORS AND GATES SHALL COMPLY WITH SECTION 11B-309.4. OPERABLE PARTS OF SUCH HARDWARE SHALL BE 34 INCHES (864 MM) MINIMUM AND 44 INCHES (1118 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. WHERE SLIDING DOORS ARE IN THE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES.
G. THE UNLATCHING OF ANY DOOR OR LEAF SHALL NOT REQUIRE MORE THAN ONE OPERATION. (CBC 1010.1.9.5).
H. SPECIFIC FINISHES SHALL BE PER THE INTERIOR DESIGNER.
I. DOOR STOPS SHALL BE PROVIDED ON ALL DOORS. DOOR STOPS ON NON-RATED DOORS SHALL BE HINGE STOPS (HAGER 301D UNO. DOOR STOPS ON RATED DOORS SHALL BE INTEGRAL WITH THE CLOSING DEVICE.
J. SIGN ADJACENT TO MAIN EXIT DOOR SHALL STATE "DOORS TO REMAIN UNLOCKED DURING BUSINESS HOURS" WITH 1" HIGH CONTRASTING LETTERS.
K. PROVIDE A SIGN ON OR ADJACENT TO EACH BUILDING ENTRANCE OF THE INTERNATIONAL SIGN OF ACCESSIBILITY AT +60" AFF. MAX.
L. ALL KEYED LOCKS ARE TO BE PER FACILITY STANDARDS.
M. ALL NON-RATED DOORS SHALL HAVE DOOR SILENCERS ON THE DOOR FRAME.
N. ALL DOORS SHALL HAVE STAINLESS STEEL EDGE GUARDS, BEVELED FLUSH WITH LAMINATE 1/2" MAXIMUM RETURN. MOUNT ON BOTH SIDES OF DOOR.
O. DOOR ACCESSORIES
   -PROVIDE KICK PLATES WHERE SPECIFIED
   -PROVIDE LOUVERS WHERE SPECIFIED
P. DOORS SHALL BE 1-3/4" THICK UNLESS NOTED OTHERWISE.
Q. THE SYMBOL (P) FOLLOWING THE 'DOOR TYPE' DESIGNATION IN THE DOOR SCHEDULE INDICATES PAIR OF DOORS. BOTH LEAVES ARE THE SAME SIZE, U.N.O.
R. ALL DOORS IN BUILDINGS, INCLUDING, BUT NOT LIMITED TO DOORS OF TOILETS AND STORAGE ROOMS, SHALL CONFORM WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE.
   a. EXIT DOOR SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
   b. HAND ACTIVATED DOOR OPENING HARDWARE SHALL BE CENTERED BETWEEN 34" AND 44" ABOVE FINISH FLOOR.
   c. DEAD BOLTS ARE NOT PERMITTED UNLESS OPERABLE WITH A SINGLE EFFORT LEVER TYPE HARDWARE.
   d. ALL ROOMS SERVING AN OCCUPANCY LOAD OF 50 OR GREATER AND DOORS LOCATED ON THE DISCHARGE OF EXIT CORRIDORS ARE REQUIRED TO BE PROVIDED WITH PANIC HARDWARE (CBC 1008.1.10).
   e. ALL FIRE DOOR LABELS SHALL COMPLY WITH CBC 716.2.9.
S. FIRE ASSEMBLIES REQUIRED TO HAVE A ONE-HOUR FIRE-PROTECTION RATING SHALL BE EITHER AUTOMATIC OR SELF-CLOSING FIRE ASSEMBLIES TO BE ACTIVATED BY AN INCREASE IN TEMPERATURE SHALL HAVE HEAT-ACTIVATING DEVICES INSTALLED ON EACH SIDE OF THE WALL AT THE CEILING HEIGHT WHERE THE CEILING IS MORE THAN 3 FEET ABOVE THE TOP OF THE OPENING OR BY A SINGLE FUSIBLE LINK IN THE OPENING INCORPORATED IN THE CLOSING DEVICE.
T. ALL FIRE-RESISTIVE ASSEMBLIES FOR PROTECTED OPENING SHOULD COMPLY WITH SECTION 716 CBC.
U. EXTERIOR: STEELCRAFT "L" SERIES 16 GA HONEYCOMB CORE OR "S" OR "A" SERIES 16 GA TUBULAR FOR FULL GLASS, GALVANIZED, WITH GALVANIZED 14 GA FRAMES. USE MINIMUM 6" WIDE STILE ON ALL STILE & RAIL TYPE DOORS TO ACCOMMODATE EXIT DEVICES.
V. INTERIOR STEEL DOORS: STEELCRAFT "L" SERIES HONEYCOMB CORE, OR "S" OR "A" SERIES FOR FULL GLASS, 18 GA WITH 16 GA FRAMES. USE MINIMUM 6" WIDE STILE ON ALL STILE & RAIL TYPE DOORS TO ACCOMMODATE EXIT DEVICES.
W. ALL INTERIOR HOLLOW METAL DOOR AND FRAMES TO HAVE JAMB AND HEAD GASKETING. PEMKO 319 OR EQUAL.
X. PROVIDE ACCESS CONTROL WIRING AND DOOR SWITCH WIRING PER HARDWARE SCHEDULE.
Y. ALL GLAZING SHALL BE 1/4" CLEAR GLASS UNLESS DOOR IS FIRE-RATED. THEN SAFETY GLAZING HALL BE AT CURRENT FEDERAL STANDARDS WHERE GLAZING OCCURS IN RATED DOOR ASSEMBLY. (WIRE GLASS IS NOT ACCEPTABLE)

DOOR GENERAL NOTES

A. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
B. ALL DOORS AND HARDWARE SHALL BE INSTALLED IN STRICT COMPLIANCE WITH CALIFORNIA TITLE 24 ACCESSIBLE CODE OF REGULATIONS (ACCESS CODE) AND THE FEDERAL AMERICANS WITH DISABILITIES ACT GUIDELINES (2010 ADA STANDARDS).
C. EXIT DOORS SHALL BE ABLE TO BE OPENED FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
D. THE MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR EXTERIOR AND INTERIOR DOORS, EXCEPT FIRE DOORS, WHICH MAY HAVE A MAXIMUM EFFORT OF 15 LBS. OF FORCE APPLIED AT RIGHT ANGLES TO THE DOOR.
E. WHEN ADDITIONAL DOORS ARE PROVIDED FOR EGRESS PURPOSES, THEY SHALL COMPLY WITH ALL PROVISIONS OF CBC 1008.
F. SWINGING DOORS AND GATE SURFACES WITHIN 10 INCHES OF THE FINISH FLOOR OR GROUND MEASURED VERTICALLY SHALL HAVE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR OR GATE PER PER CBC SECTION 11B-404.2.10.
G. RATED DOORS MAY BE UNDERCUT A MAXIMUM OF 3/4" PER NFPA80 4.8.4.1, BUT SHALL BE 1/4" U.N.O.
H. FIRE DOORS AND FRAMES SHALL BE LABELED IN ACCORDANCE WITH CBC SECTION 716.5.7.1 AND 716.5.7.4.
I. SMOKE AND DRAFT CONTROL DOORS SHALL HAVE AN APPROVED "S" RATING PER SECTION 716.5.7.3.
J. ALL HARDWARE SHALL BE LEVER TYPE OR PANIC TYPE MOUNTED AT HEIGHT INDICATED IN THE SPECIFICATIONS AND SHALL BE MOUNTED NOT LESS THAN 34" NOR HIGHER THAN 44" ABOVE FINISH FLOOR.
K. DOOR CLOSERS SHALL BE ADJUSTED SUCH THAT FROM AN OPEN POSITION OF 70 DEGREES THE DOOR WILL TAKE A MINIMUM OF THREE SECONDS TO MOVE 3° FROM THE LATCH MEASURED FROM LEADING EDGE OF THE DOOR. FROM AN OPEN POSITION OF 90 DEGREES THE DOOR WILL TAKE A MINIMUM OF FIVE SECONDS TO MOVE 12° FROM THE LATCH MEASURED FROM LEADING EDGE OF THE DOOR.
L. OPERATION OF ELECTRIC EXIT HARDWARE (ELECTRIC PANIC DEVICES) SHALL UNLOCK THE DOOR TO PROVIDE EGRESS.
M. LOSS OF POWER TO ELECTRIC EXIT HARDWARE (ELECTRIC PANIC DEVICES) SHALL AUTOMATICALLY UNLOCK THE DOOR (FAIL SAFE) TO PROVIDE EGRESS.
N. PROVIDE SAFETY GLAZING IN ACCORDANCE WITH CHAPTER 26 OF THE CALIFORNIA BUILDING CODE AND AS HEREIN IDENTIFIED.
O. VISION LIGHTS WITHIN DOORS SHALL BE LOCATED SUCH THAT THE BOTTOM OF THE GLASS DOES NOT EXCEED 43 INCHES ABOVE THE FINISH FLOOR.
P. ALL OVERALL WINDOW DIMENSIONS SHOWN ARE MEASURED TO ROUGH OPENING, TYPICAL.
Q. ALLOW FOR AND PROVIDE SHIM SPACE AT ALL STOREFRONT AND CURTAIN WALL WINDOW FRAMES, REFER TO DETAILS.
R. REFER TO WINDOW DETAILS FOR ROUGH OPENING REFERENCE POINTS.
S. FOR GENERAL EXTERIOR WINDOW AND DOOR FLASHING NOTES, REFER TO.----

LEGEND - DOOR MATERIALS

DOOR CONSTRUCTION AND MATERIAL:-
HM - HOLLOW METAL
AL - ALUMINUM
WD - WOOD

DOOR FACING AND FINISH:
AL - CLEAR ANNODIZED ALUMINUM
K - KYNAR FINISH ON ALUMINUM
SP - STEEL, PAINTED
WS - WOOD VENEER, STAINED

FRAME MATERIAL:
HM - HOLLOW METAL, PAINTED
AL - ALUMINUM

FRAME FINISH:
AL - CLEAR ANNODIZED ALUMINUM
P - PAINTED STEEL
K - KYNAR FINISH ON ALUMINUM

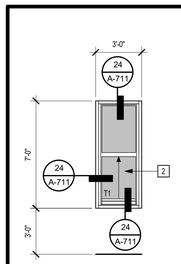
FRAME TYPES:
A, B

GLASS:
ALL GLASS IS TEMPERED (SG - SAFETY GLAZING)

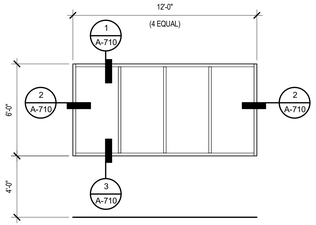
HARDWARE:
P.H. - PANIC HARDWARE

DOOR GLAZING GENERAL NOTES

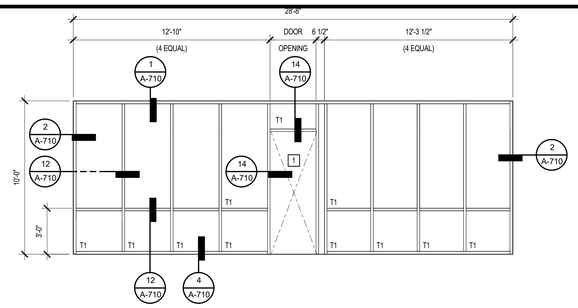
A. ALL GLAZING SHALL BE TEMPERED 1/4" CLEAR GLASS UNLESS DOOR IS FIRE-RATED. THEN SAFETY GLAZING SHALL MEET CURRENT FEDERAL STANDARDS WHERE GLAZING OCCURS IN RATED DOOR ASSEMBLY. (WIRE GLASS IS NOT ACCEPTABLE)
B. RATED GLAZING NOTES:
   a. FIRE-RESISTANCE-RATED GLAZING SHALL BE PERMITTED IN FIRE DOOR AND FIRE WINDOW ASSEMBLIES WHERE TESTED AND INSTALLED IN ACCORDANCE WITH THEIR LISTINGS AND WHERE IN COMPLIANCE WITH THE REQUIREMENTS OF CBC SECTION 716.3.
   b. CBC 716.3 MARKING FIRE-RATED GLAZING ASSEMBLIES: FIRE-RATED ASSEMBLIES SHALL BE MARKED IN ACCORDANCE WITH TABLES 716.3, 716.5, AND 716.6.
   c. CBC 716.3.1 FIRE-RATED GLAZING IDENTIFICATION: FOR FIRE-RATED GLAZING, THE LABEL SHALL BEAR THE IDENTIFICATION REQUIRED IN TAB



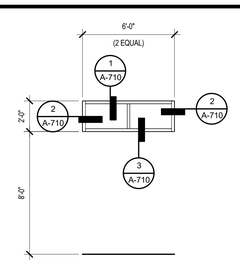
WINDOW - A
1/4" = 1'-0"



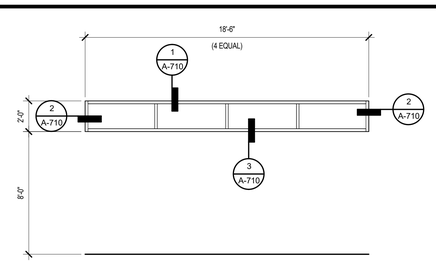
WINDOW - B
1/4" = 1'-0"



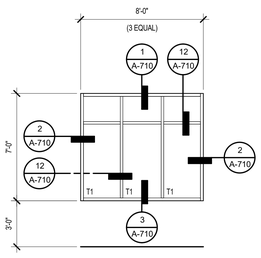
WINDOW - C
1/4" = 1'-0"



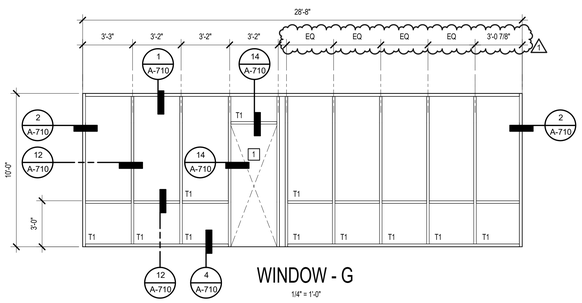
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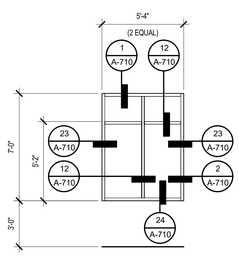
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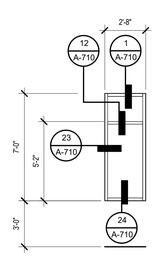
WINDOW - F
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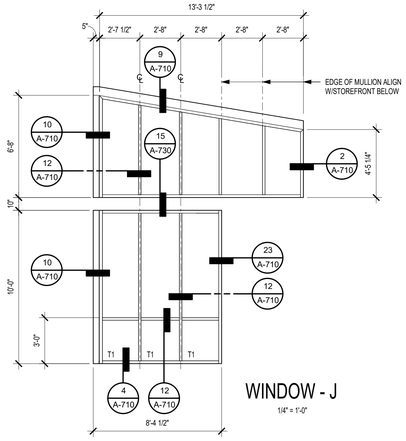
WINDOW - G
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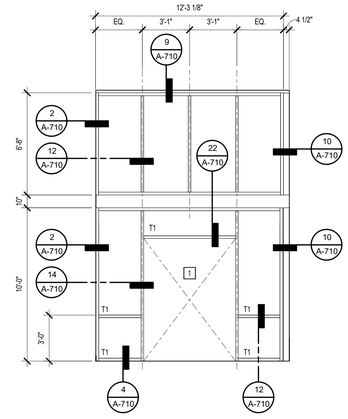
WINDOW - H
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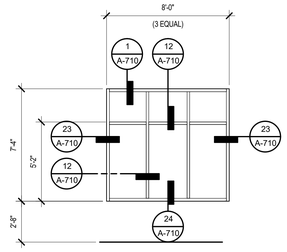
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1/4" = 1'-0"



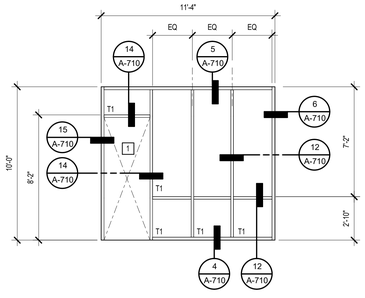
WINDOW - J
1/4" = 1'-0"



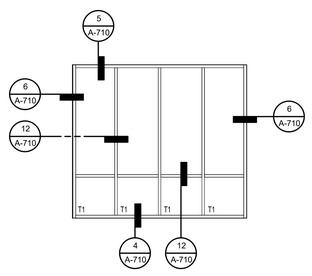
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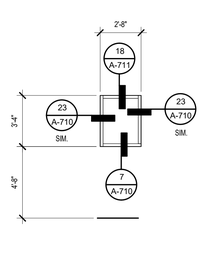
WINDOW - L
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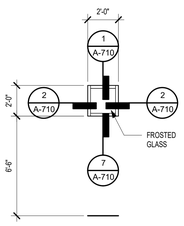
WINDOW - M
1/4" = 1'-0"



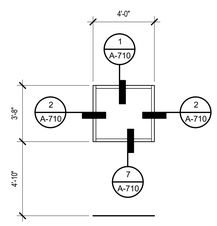
WINDOW - N
1/4" = 1'-0"



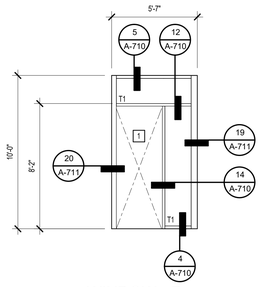
WINDOW - O
1/4" = 1'-0"



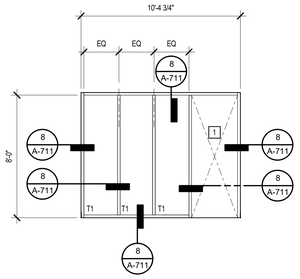
WINDOW - P
1/4" = 1'-0"



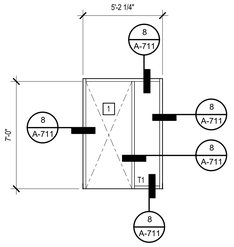
WINDOW - Q
1/4" = 1'-0"



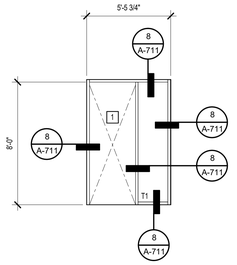
WINDOW - R
1/4" = 1'-0"



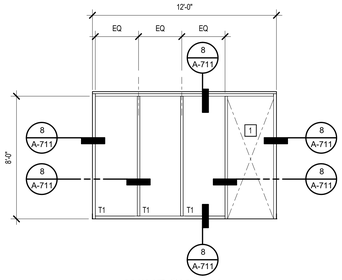
WINDOW - S
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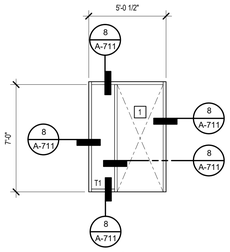
WINDOW - T
1/4" = 1'-0"



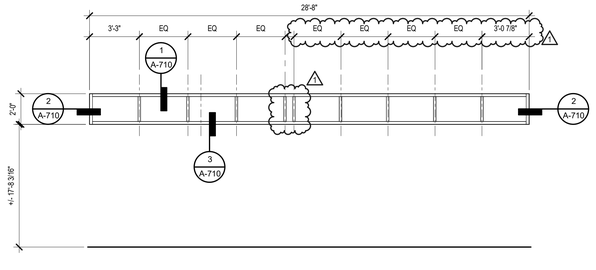
WINDOW - U
1/4" = 1'-0"



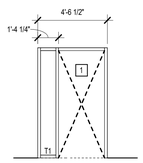
WINDOW - V
1/4" = 1'-0"



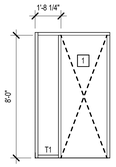
WINDOW - W
1/4" = 1'-0"



WINDOW - X
1/4" = 1'-0"



WINDOW - Y
1/4" = 1'-0"



WINDOW-Z
1/4" = 1'-0"

KEYNOTES

SHEET NOTES A-811

1 DOOR OPENING PER DOOR SCHEDULE
2 EMERGENCY ESCAPE & RESCUE OPENINGS SHALL COMPLY W/CBC 1031.3

WINDOW GENERAL NOTES

A. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
B. ALL OVERALL WINDOW DIMENSIONS SHOWN ARE MEASURED TO ROUGH OPENING, TYPICAL.
C. PROVIDE SAFETY GLAZING IN ACCORDANCE WITH CALIFORNIA BUILDING CODE AND AS HEREIN LISTED.
D. ALLOW FOR AND PROVIDE SHIM SPACE AT ALL STOREFRONT AND CURTAIN WALL WINDOW FRAMES, REFER TO DETAILS.
E. REFER TO WINDOW DETAILS FOR ROUGH OPENING REFERENCE POINTS.
F. FOR WINDOW DETAILS REFER TO SHEET....
G. GLAZING IN DOORS, GLAZING WITHIN 18" OF FLOOR, OR GLAZING WITHIN 24" OF A DOOR AND LESS THAN 60" ABOVE WALKING SURFACE SHALL BE TEMPERED SAFETY GLAZING.

GLAZING GENERAL NOTES

A. EXTERIOR WINDOWS, SKYLIGHTS AND EXTERIOR GLAZED DOOR ASSEMBLIES SHALL BE CONSTRUCTED OF MULTI-PANED GLAZING WITH A MINIMUM OF ONE TEMPERED PANE MEETING THE REQUIREMENTS OF SECTION R308 SAFETY GLAZING.
B. EMERGENCY ESCAPE & RESCUE OPENINGS SHALL BE PER CBC 1031.3
   a. MINIMUM SIZE PER CBC 1031.3.1
      - EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5.7 SF
      - EXCEPTION: MINIMUM NET CLEAR OPENING FOR GRADEFLOOR EMERGENCY ESCAPE AND RESCUE OPENINGS = 5 SF MIN
   b. MINIMUM DIMENSIONS PER CBC 1031.3.2
      - MINIMUM NET CLEAR OPENING HEIGHT = 24"
      - MINIMUM NET CLEAR OPENING WIDTH = 20"
   c. MAXIMUM HEIGHT FROM FLOOR PER CBC 1031.3.3
      - EMERGENCY ESCAPE OPENINGS SHALL HAVE BOTTOM OF CLEAR OPENING 44" MAXIMUM FROM THE FLOOR

LEGEND - GLAZING

GLAZING TYPES:
1" LOW-E: TYPICAL AT EXTERIOR WINDOWS & DOORS, U.N.O.
1/4" CLEAR: TYPICAL AT INTERIOR WINDOWS & DOORS, U.N.O.

1" LOW-E SPANDREL: WHERE INDICATED ON DRAWINGS

T1 TEMPERED SAFETY GLAZING:
CATEGORY CLASS I PER CPSC 16 SFR 1201 PER CBC TABLE 2406
OR CATEGORY CLASS B PER ANSI Z97.1 PER CBC TABLE 2406(2)

T2 TEMPERED SAFETY GLAZING:
CATEGORY CLASS II PER CPSC 16 SFR 1201 PER CBC TABLE 2406
OR CATEGORY CLASS A PER ANSI Z97.1 PER CBC TABLE 2406(2)

FR FIRE RESISTANT GLAZING LOCATIONS
PRODUCT: TECHNICAL GLASS PRODUCTS, FIRE LITE PLUS (FIRE AND SAFETY RATED) IN 20 MIN. 45 MIN. AND/OR 60 MIN. RATING AS INDICATED IN SCHEDULES.

19six
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

ARCHITECT STAMP

LICENSED ARCHITECT
GREGORY W. TROTTER
No. C18650
Exp. 2/28/25
STATE OF CALIFORNIA

CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/24	PC Comments

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
WINDOW SCHEDULE

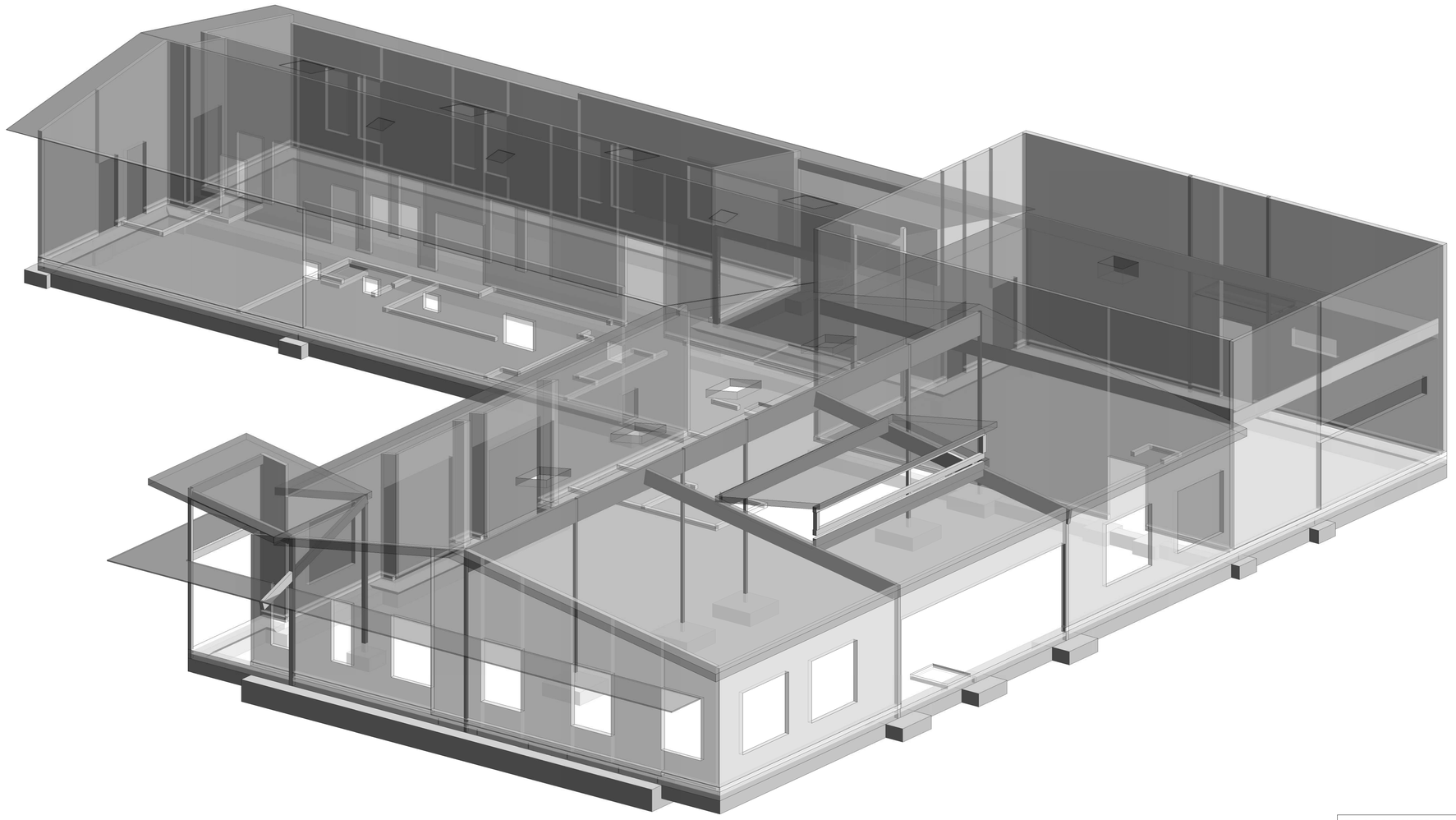
DRAWN BY: 19six JOB NUMBER: 210015.01

SHEET NO.
A-811

DATE: May 29, 2024

BID SET (PRELIMINARY)

DATE PLOTTED: 9/20/2024 11:24:46 AM FILE LOCATION: C:\Users\kaleksandrov\OneDrive - Williams & Paddon\Documents\210015.01_CITY OF ROSEVILLE_DCWWTP ADMIN BLDG_A22_kaleksandrov4TT455.rvt



3D - BUEHLER STRUCTURAL

STRUCTURAL SHEET INDEX	
S100	COVER
S101	GENERAL NOTES
S111	STRUCT SPECIAL INSPECTIONS & TESTING
S121	PLAN NOTES
S200	CURB PLAN
S201	FOUNDATION PLAN
S202	ROOF FRAMING PLAN
S301	BUILDING SECTIONS
S302	BUILDING SECTIONS
S501	TYPICAL CONCRETE DETAILS
S511	TYPICAL FRAMING AND NAILING DETAILS
S512	TYPICAL SHEAR WALL AND HOLDOWN DETAIL
S513	INTERIOR TYPICAL NON-STRUCTURAL DETAILS
S514	TYPICAL I-JOIST DETAILS
S515	TYPICAL WOOD TRUSS NOTES AND DETAILS
S516	MISC DETAILS

196

2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

BUEHLER

600 Q STREET, SUITE 200
SACRAMENTO, CA 95811
916 443 0303

REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. RADER
No. 3592
STRUCTURAL
STATE OF CALIFORNIA

ARCHITECT STAMP	CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
COVER

DRAWN BY: Author JOB NUMBER: 2100 15.01

SHEET NO.
S100

DATE:

DATE PLOTTED: 10/23/2024 5:26:06 PM FILE LOCATION: c:\revit\2023-0123_DRY CREEK WWTP_rvt22_CENTRAL_Francisco_O_Rodriguez.rvt

BID SET (PRELIMINARY)

GENERAL NOTES

APPLICABLE TO ALL DRAWINGS UNLESS NOTED OR SHOWN OTHERWISE

GENERAL NOTES
1000N001

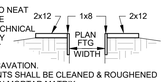
1. INTERPRETATION OF DRAWINGS & SPECIFICATIONS
   A. WHERE SPECIFICATIONS HAVE BEEN PREPARED FOR THIS PROJECT, THEY ARE ARRANGED IN SEVERAL SECTIONS, BUT SUCH SEPARATION SHALL NOT BE CONSIDERED AS THE LIMITS OF THE WORK REQUIRED OF ANY SEPARATE TRADE. THE TERMS AND CONDITIONS OF SUCH LIMITATIONS ARE WHOLLY BETWEEN THE CONTRACTOR AND THEIR SUBCONTRACTORS.
   B. IN GENERAL, THE WORKING DETAILS WILL INDICATE DIMENSIONS, POSITION AND KIND OF CONSTRUCTION, AND THE SPECIFICATIONS, QUALITIES AND METHODS. ANY WORK INDICATED ON THE WORKING DETAILS AND NOT MENTIONED IN THE SPECIFICATIONS, OR VICE VERSA, SHALL BE FURNISHED AS THOUGH FULLY SET FORTH IN BOTH. WORK NOT PARTICULARLY DETAILED, MARKED OR SPECIFIED, SHALL BE IDENTICAL OR SIMILAR TO LIKE CASES OF CONSTRUCTION THAT ARE DETAILED OR SPECIFIED. IF CONFLICTS OCCUR ON DRAWINGS AND/OR SPECIFICATIONS, THE MOST EXPENSIVE MATERIALS OR METHODS WILL PREVAIL.
   C. SHOULD AN ERROR APPEAR IN THE WORKING DETAILS OR SPECIFICATIONS OR IN WORK DONE BY OTHERS AFFECTING THIS WORK, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AT ONCE AND IN WRITING. IF THE CONTRACTOR PROCEEDS WITH THE WORK SO AFFECTED WITHOUT HAVING GIVEN SUCH WRITTEN NOTICE AND WITHOUT RECEIVING THE NECESSARY APPROVAL, DECISION OR INSTRUCTIONS IN WRITING FROM THE OWNER, THEN THE CONTRACTOR SHALL HAVE NO VALID CLAIM AGAINST THE OWNER FOR THE COST OF SO PROCEEDING AND SHALL MAKE GOOD ANY RESULTING DAMAGE OR DEFECT. NO VERBAL APPROVAL, DECISION, OR INSTRUCTION SHALL BE VALID OR BE THE BASIS FOR ANY CLAIM AGAINST THE OWNER, ITS OFFICERS, EMPLOYEES OR AGENTS. THE FOREGOING INCLUDES TYPICAL ERRORS IN THE SPECIFICATIONS OR NOTATIONAL ERRORS IN THE WORKING DETAILS WHERE THE INTERPRETATION IS DOUBTFUL OR WHERE THE ERROR IS SUFFICIENTLY APPARENT AS TO PLACE A REASONABLY PRUDENT CONTRACTOR ON NOTICE THAT, SHOULD THE CONTRACTOR ELECT TO PROCEED, THEY ARE DOING SO AT THEIR OWN RISK.
2. CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES AND REGULATIONS.
3. SHOP DRAWING NOTE:
   A. WHEN NOT ADDRESSED BY DIVISION 1 OF THE SPECIFICATIONS, SUBMITTALS SHALL BE ELECTRONIC PDF FORMAT.
   B. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE STRUCTURAL ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIAL THE CONTRACTOR INTENDS TO FURNISH AND INSTALL, AND BY DETAILING THE FABRICATION AND INSTALLATION METHODS THE CONTRACTOR INTENDS TO USE ON A STAND ALONE SET OF DOCUMENTS. DUPLICATION OF DESIGN DOCUMENTS FOR THE PURPOSE OF SHOP DRAWINGS IS NOT ACCEPTABLE.
   C. PRIOR TO FABRICATION, SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER. SHOP DRAWING SUBMITTALS SHALL INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, STRUCTURAL STEEL, REINFORCING STEEL, & GLUE-LAMINATED BEAMS.
   D. PRIOR TO SUBMISSION THE CONTRACTOR SHALL REVIEW ALL SUBMITTALS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND SHALL STAMP SUBMITTALS AS BEING "REVIEWED FOR CONFORMANCE".
   E. SHOP DRAWING SUBMITTALS PROCESSED BY THE STRUCTURAL ENGINEER ARE NOT CHANGE ORDERS.
   F. ANY DETAIL ON THE SHOP DRAWINGS THAT DEVIATES FROM THE CONTRACT DOCUMENTS SHALL CLEARLY BE MARKED WITH THE NOTE "THIS IS A CHANGE".
   G. SHOP DRAWINGS OR CALCULATIONS SUBMITTED FOR REVIEW THAT REQUIRE RESUBMITTAL FOR RE-REVIEW SHALL BE BILLED HOURLY FOR SUCH TIME TO THE GENERAL CONTRACTOR. RE-REVIEW WILL NOT PROCEED WITHOUT WRITTEN APPROVAL FROM THE GENERAL CONTRACTOR FOR ADDITIONAL ENGINEERING REVIEW SERVICES.
4. SAFETY NOTE:
   A. IT IS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH THE PERTINENT SECTIONS, AS THEY APPLY TO THIS PROJECT, OF THE "CONSTRUCTION SAFETY ORDERS" ISSUED BY THE STATE OF CALIFORNIA LATEST EDITION, AND ALL OSHA REQUIREMENTS.
   B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS AND SHORING REQUIRED. SHORING INDICATIONS (SIZE, SPACING, INSPECTION, DURATION, ETC.) ARE ONLY SHOWN ON THE STRUCTURAL DWGS WHEN REQUIRED TO IMPLEMENT THE DESIGN INTENT OF THE FINAL WORK PRODUCT. DETERMINATION WHETHER SHORING IS REQUIRED FOR TEMPORARY OR INTERMEDIATE CONDITIONS DURING CONSTRUCTION IS WHOLLY THE RESPONSIBILITY OF THE CONTRACTOR.
   C. THE OWNER AND THE STRUCTURAL ENGINEER DO NOT ACCEPT ANY RESPONSIBILITY FOR THE CONTRACTOR'S FAILURE TO COMPLY WITH THESE REQUIREMENTS.
5. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER WHERE A CONFLICT OR DISCREPANCY OCCURS BETWEEN THE STRUCTURAL DRAWINGS AND ANY OTHER PORTION OF THE CONTRACT DOCUMENTS OR EXISTING FIELD CONDITIONS. SUCH NOTIFICATION SHALL BE GIVEN IN DUE TIME SO AS NOT TO AFFECT THE CONSTRUCTION SCHEDULE. IN CASE OF A CONFLICT BETWEEN STRUCTURAL DRAWINGS AND SPECIFICATIONS THE MORE RESTRICTIVE CONDITION SHALL TAKE PRECEDENCE UNLESS WRITTEN APPROVAL HAS BEEN GIVEN FOR THE LEAST RESTRICTIVE. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECTURAL PRIOR TO COMMENCING ANY WORK.
6. WHEN CONSTRUCTION ATTACHES TO OR IS WITHIN AN EXISTING BUILDING, A COMPLETE SET OF DRAWINGS OF THE EXISTING BUILDING SHALL BE KEPT ON THE JOB SITE. CONTRACTOR TO OBTAIN THESE DRAWINGS FROM THE OWNER (IF THEY ARE AVAILABLE).
7. CONTRACTOR SHALL PROVIDE AN ALLOWANCE EQUAL TO 2% OF THE BID FOR STRUCTURAL STEEL, MISC. IRON AND REINFORCING STEEL TO BE USED AT THE DISCRETION OF THE STRUCTURAL ENGINEER. UNUSED AMOUNT TO REVERT TO THE OWNER UPON COMPLETION OF THE JOB.
8. ANY SUBSTITUTIONS FOR STRUCTURAL MEMBERS, HARDWARE OR DETAILS SHALL BE REVIEWED BY THE ARCHITECT AND STRUCTURAL ENGINEER. SUCH REVIEW WILL BE BILLED ON A TIME AND MATERIALS BASIS TO THE GENERAL CONTRACTOR WITH NO GUARANTEE THAT THE SUBSTITUTION WILL BE ALLOWED.
9. DO NOT SCALE DRAWINGS. CONTACT THE ARCHITECT OR STRUCTURAL ENGINEER FOR ANY DIMENSIONS NOT SHOWN.
10. THESE DRAWINGS ARE NOT COMPLETE UNTIL REVIEWED AND ACCEPTED BY LOCAL BUILDING OFFICIALS AND THE OWNER AND SIGNED BY THE STRUCTURAL ENGINEER.

DESIGN CRITERIA
1000N002

1. CODES AND STANDARDS
   2022 CALIFORNIA BUILDING CODE (CBC)
   ASCE 7-16
   ACI 318-19
   AISC 360-16, 341-16, 358-16
   AISI S100-16 w/ S2-20, S240-20, S400-20
   TMS 402/602-16
   2018 NDS, 2021 SDPWS
2. VERTICAL LOADS
   SOLAR ZONE ROOF DEAD LOAD = 4 PSF
   (INCLUDES 4 PSF FUTURE PV LOAD)
   ROOF LIVE LOAD = 20 PSF
   LIVE LOADS ARE REDUCED WHERE PERMITTED BY CODE.
3. SOILS VALUES
   ALLOWABLE SOILS PRESSURE
   A. DL + LL 3000 PSF
   B. DL + LL + SEISMIC 4000 PSF
   FOOTING
   MINIMUM DEPTH = 18"
   MINIMUM WIDTH = 12"
4. LATERAL LOADS
   SEISMIC:
   SITE CLASS D
   S_S = 0.45 ; S_{DS} = 0.43
   S_1 = 0.22 ; S_{D1} = 0.473
   R = 6.5 ; I_E = 1.0
   Ω_0 = 3.0 ; C_D = 4.0
   I_P = 1.0 TYPICAL
   I_P = 1.5 PER ASCE 7-16 SECT 13.1.3
   RISK CATEGORY: II
   SEISMIC DESIGN CATEGORY: D
   SEISMIC BASE SHEAR
   V = 26 KIPS (NS DIR.)
   = 26 KIPS (EW DIR.)
   SEISMIC FORCE RESISTING SYSTEM:
   LIGHT FRAMED WOOD BEARING SHEAR WALL
   ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE
   WIND:
   V = 95 MPH
   RISK CATEGORY: II
   EXPOSURE CATEGORY: C
   GC_{Pi} = ±0.18

FOUNDATIONS
2000N001

1. THE BASIS OF DESIGN AND ALLOWABLE CAPACITIES OF THE FOUNDATION SYSTEM HAVE BEEN PROPORTIONED IN ACCORDANCE WITH THE RECOMMENDATIONS OF GEOTECHNICAL REPORT # 4438.000.002 BY ENGEO DATED MAY 10,2022. THE CONTRACTOR SHALL OBTAIN THE GEOTECHNICAL REPORT FROM THE OWNER. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PRESENTED IN THE GEOTECHNICAL REPORT.
2. FOUNDATIONS SHALL BEAR ON COMPETENT NATIVE SOIL OR COMPACTED FILL. SEE NOTES AND DETAILS ON SHEET **S501**
3. ALL FILLING, BACKFILLING AND COMPACTION SHALL BE DONE UNDER THE OBSERVATION OF A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER AND MUST BE COMPACTED TO THE MINIMUM DENSITY SPECIFIED IN ACCORDANCE WITH THE PROCEDURE OUTLINED IN THE GEOTECHNICAL REPORT.
4. BUILDING PAD CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT. THE EXTENT AND DEPTH OF OVEREXCAVATION AND PLACEMENT OF ENGINEERED FILL SHALL AT A MINIMUM BE AS SHOWN ON THE PLANS. FINAL DEPTH AND EXTENT OF EXCAVATION AND FILL SHALL BE DETERMINED AT TIME OF CONSTRUCTION BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER. FOUNDATION DEPTHS INDICATED ON PLANS ARE FOR ESTIMATING PURPOSES ONLY.
5. BOTTOMS OF ALL FOUNDATIONS SHALL BE LEVEL. CHANGES IN BOTTOM OF FOUNDATION ELEVATION SHALL BE MADE ACCORDING TO STEPPED FOOTING DETAIL ON THE TYPICAL DETAIL SHEET.
6. FOUNDATION CONCRETE MAY BE PLACED DIRECTLY INTO NEAT EXCAVATIONS PROVIDED THE EXCAVATIONS ARE STABLE (AS DETERMINED BY A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER), OTHERWISE, FOUNDATIONS SHALL BE FULLY FORMED. USE MINIMUM PLANKING SHOWN TO PROTECT AGAINST SLOUGHING, AS REQUIRED. PLANKING DOES NOT REPLACE FORMWORK REQUIRED TO STABILIZE EXCAVATION.



7. THE SURFACE OF ALL HORIZONTAL CONSTRUCTION JOINTS SHALL BE CLEANED & ROUGHENED BY EXPOSING CLEAN AGGREGATE SOLIDLY EMBEDDED IN MORTAR MATRIX.
8. NOTIFY THE STRUCTURAL ENGINEER 48 HOURS BEFORE CASTING FOUNDATIONS.
9. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL ADVISE THE BUILDING OFFICIAL IN WRITING THAT:
   A. THE BUILDING PAD WAS PREPARED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
   B. THE UTILITY TRENCHES HAVE BEEN PROPERLY BACKFILLED AND COMPACTED.
   C. THE FOUNDATION EXCAVATION DEPTH AND MATERIAL ARE ADEQUATE TO ACHIEVE DESIGN BEARING CAPACITY.
   D. FORMING COMPLIES WITH THE GEOTECHNICAL REPORT AND APPROVED PLAN.

CONCRETE
3000N001

1. CONCRETE SHALL ATTAIN 28 DAY COMPRESSIVE STRENGTH AS REQUIRED IN NOTE #28. MAXIMUM SLUMP SHALL NOT EXCEED 4 INCHES.
2. CONCRETE MIX DESIGNS SHALL BE PREPARED ACCORDING TO ACI 318-14 CHAPTER 26.4 AND ACI 301-10 SECTION 4, REVIEWED BY OWNER'S TESTING LABORATORY AND SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.
3. CEMENTITIOUS MATERIALS:
   CEMENT SHALL CONFORM TO ASTM C-150 TYPE II OR V.
   FLY ASH SHALL CONFORM TO ASTM C-618. MAX. QUANTITY OF FLY ASH SHALL BE 25% OR AS GIVEN IN SPECS.
4. CONCRETE AGGREGATES SHALL CONFORM TO ASTM C-33 FOR NORMAL WEIGHT CONCRETE AND ASTM C-330 FOR LIGHTWEIGHT CONCRETE.
5. NON-SHRINK GROUT OR DRYPACK SHALL CONSIST OF A PREMIXED NONMETALLIC FORMULA.
6. REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60 UNO. REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A-706 GRADE 60. CONTRACTOR SHALL SUBMIT REBAR MILL CERTIFICATES. REINFORCING STEEL IN SPECIAL REINFORCED SHEAR WALLS OR MOMENT FRAMES, EXCEPT TIES AND HOOPS, SHALL CONFORM TO ASTM A-706.
7. ALL PREHEATING AND WELDING OF REINFORCING BARS SHALL BE DONE IN ACCORDANCE WITH AWS D1.4 LATEST EDITION AND SHALL BE CONTINUOUSLY INSPECTED BY A QUALIFIED LABORATORY. CONTRACTOR SHALL FURNISH WPS FOR ALL REBAR WELDING TO THE LABORATORY.
8. REINFORCING STEEL SHALL BE FABRICATED ACCORDING TO "MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION".
9. WIRE FABRIC SHALL CONFORM TO ASTM A-185.
10. DIMENSIONS SHOWN FOR LOCATION OF REINFORCING ARE TO THE FACE OF BARS LISTED AND DENOTE CLEAR COVERAGE. NON-PRESTRESSED, CAST-IN-PLACE CONCRETE COVERAGE SHALL BE AS FOLLOWS, UNO:
    CONCRETE DEPOSITED DIRECTLY AGAINST GROUND (EXCEPT SLABS)---------- 3"
    CONCRETE EXPOSED TO GROUND OR WEATHER BUT PLACED IN FORMS:
    #5 AND SMALLER---------- 1-1/2"
    #6 AND LARGER---------- 2"
    BEAMS & COLUMNS (TIES)---------- 1-1/2"
    BEAMS & COLUMNS (MAIN REINFORCING)---------- 2"
    CAST-IN-PLACE WALLS (EXTERIOR FACE & SOIL SIDE)---------- SEE ABOVE
    CAST-IN-PLACE WALLS (INTERIOR FACE-#11 & SMALLER)---------- 3/4"
    TILT-UP WALLS---------- SEE DETAILS
    SLABS (ON FORMS)---------- 3/4"
    SLABS (ON GROUND)---------- 2" CLEAR FROM TOP
11. SPLICES IN CONTINUOUS REINFORCEMENT SHALL BE LAPPED UNO, SEE SCHEDULE THIS SHEET. SPLICES IN ADJACENT BARS SHALL BE GREATER THAN 5'-0" APART. SPLICE CONTINUOUS BARS IN SOIL-BEARING GRADE BEAMS, STRUCTURAL SLABS ON GRADE AND MAT FOUNDATIONS AS FOLLOWS UNO: TOP BARS AT CENTERLINE OF SUPPORT; BOTTOM BARS AT MID-SPAN. SPLICE CONTINUOUS BARS IN ELEVATED SLABS AND BEAMS, ETC. AS FOLLOWS UNO: TOP BARS AT MID-SPAN; BOTTOM BARS AT SUPPORT. ALL BARS SIZE #14 AND LARGER SHALL BE CONTINUOUS FOR FULL LENGTH SHOWN OR SPLICED WITH MECHANICAL COUPLERS AS NOTED IN DETAILS. SPLICES IN WWF SHALL BE 1-1/2 MESHES WIDE.
12. THE MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS IN A LAYER SHALL NOT BE LESS THAN THE LARGER OF BAR DIAMETER, 1", OR 33% GREATER THAN THE MAXIMUM AGGREGATE SIZE (NOMINAL), WHICHEVER IS GREATEST. THIS REQUIREMENT ALSO APPLIES TO THE CLEAR SPACING BETWEEN DIFFERENT LAPPED SPLICE BARS AND TO THE CLEAR DISTANCE BETWEEN A CONTACT LAP SPLICE AND ADJACENT SPLICES OR BARS.
13. ALL HOOKS SHALL BE STANDARD HOOKS UNLESS OTHERWISE SHOWN OR NOTED. AT WALLS, PROVIDE HOOKS AT ENDS OF ALL REINFORCING AT ENDS, CORNERS AND INTERSECTIONS, UNO.
14. CONSTRUCTION JOINTS SHALL BE MADE ROUGH AND ALL LAITANCE REMOVED FROM THE SURFACE OF THE PREVIOUS POUR BY CHIPPING THE ENTIRE SURFACE, SAND BLASTING, OR RAKING THE SURFACE TO PROVIDE 1/4" DEEP DEFORMATIONS.
15. REMOVE ALL DEBRIS FROM FORMS BEFORE CASTING ANY CONCRETE.
16. REINFORCING, ANCHOR BOLTS, BOLTS, ETC. TO BE EMBEDDED IN CONCRETE SHALL BE SECURELY POSITIONED BEFORE PLACING CONCRETE.
17. ANCHOR BOLTS (AB'S) CAST IN CONCRETE FOR WALL SILL AND LEDGER APPLICATIONS SHALL BE HEADED BOLTS WITH CUT THREADS CONFORMING TO ASTM F1554, GRADE 36, REFER TO "WOOD" NOTES FOR ADDITIONAL REQUIREMENTS FOR BOLTS IN CONTACT WITH PRESSURE TREATED OR FIRE RETARDANT MATERIAL. REFER TO 'STRUCTURAL STEEL' NOTE FOR REQUIREMENTS FOR ANCHOR RODS (AR'S) CAST IN CONCRETE FOR CUSTOM BASE PLATE AND STEEL EMBED APPLICATIONS.
18. WALLS SHALL BE CAST IN HORIZONTAL LAYERS OF 2'-0" MAXIMUM DEPTH.
19. CONCRETE IN WALLS, PIERS OR COLUMNS SHALL SET AT LEAST 2 HOURS BEFORE PLACING CONCRETE IN BEAMS, SPANDRELS, OR SLABS SUPPORTED THEREON.
20. HORIZONTAL WALL BARS IN MULTI-CURTAIN CAST IN PLACE WALLS SHALL BE STAGGERED.
21. DOWELS IN WALLS, PIERS OR COLUMNS SHALL BE CENTERED ON FOOTING OR SLAB WITH SAME SIZE BAR.
22. CONSOLIDATE CONCRETE PLACED IN FORMS BY MECHANICAL VIBRATING EQUIPMENT SUPPLEMENTED BY HAND-SPADING, RODDING OR TAMPING. USE EQUIPMENT AND PROCEDURES FOR CONSOLIDATION OF CONCRETE IN ACCORDANCE WITH THE RECOMMENDED PRACTICES OF ACI 309 TO SUIT THE TYPE OF CONCRETE AND PROJECT CONDITIONS. CONCRETE SHALL NOT BE DEPOSITED IN RETAINING WALLS (AND BACKFILLS AS IN WALLS) SO AS TO CAUSE SEGREGATION OF AGGREGATES. IN SUCH CASES HOPPERS AND CHUTES OR TRUNKS OF VARIABLE LENGTHS SHALL BE USED SO THAT THE FREE UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED 6 FEET.
23. NO WOOD SPREADERS ALLOWED. NO WOOD STAKES ALLOWED IN AREAS TO BE CONCRETED.
24. ADDITIONAL REINFORCING IN PRECAST OR TILT-UP PANELS REQUIRED FOR LIFTING STRESSES SHALL BE SUPPLIED BY CONTRACTOR.
25. PROVIDE #4x4'-0" DIAGONAL REINFORCING AT EACH REINFORCING LAYER OF SLAB AT ALL RE-ENTRANT CORNERS TYPICAL UNO, THIS APPLIES TO SLAB ON GRADE, CONCRETE OVER METAL DECK, AND ELEVATED STRUCTURAL SLAB CONDITIONS.
26. ALL SAW CUTTING SHALL BE DONE AFTER INITIAL SET HAS OCCURRED TO AVOID TEARING OR DAMAGE BY THE SAW BLADE, BUT BEFORE INITIAL SHRINKAGE HAS OCCURRED.
27. NOTIFY STRUCTURAL ENGINEER A MINIMUM OF 48 HOURS BEFORE PLACING ANY CONCRETE.
28. CONCRETE STRENGTHS & MIX PROPERTIES:

ITEM	F'C @ 28 DAYS	MAX AGGR SIZE	WEIGHT	MAX W/CM* RATIO
A. FOUNDATIONS	3000 PSI	1-1/2"	NW	0.58
B. SLAB ON GRADE	3500 PSI	1"	NW	0.45
SITE & MISCELLANEOUS - SEE CIVIL OR ARCH DRAWINGS				

* W/CM = WATER : CEMENTITIOUS MATERIAL RATIO

STRUCTURAL STEEL
5000N001

1. FABRICATION, ERECTION AND MATERIALS SHALL CONFORM WITH THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, THE AISC SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS AND THE AISC CODE OF STANDARD PRACTICE. LATEST EDITIONS ADOPTED BY THE BUILDING CODE SPECIFIED IN THE DESIGN CRITERIA NOTES, UNO.
2. ALL HOT ROLLED STEEL SHAPES, PLATES AND BARS SHALL BE NEW STEEL CONFORMING TO ASTM A6, UNO IN THE STRUCTURAL DRAWINGS. STRUCTURAL STEEL SHALL BE AS FOLLOWS:
   A. WIDE FLANGE AND WT SHAPES: ASTM A992
   B. M- AND S- SHAPES: ASTM A36
   C. C- AND MC- SHAPES: ASTM A992
   D. L- SHAPES: ASTM A572 GRADE 50
   E. ROUND HSS: ASTM A500 GRADE C (F_Y = 46 KSI)
   F. RECTANGULAR HSS: ASTM A500 GRADE C (F_Y = 50 KSI)
   G. PIPE: ASTM A53, GRADE B (F_Y = 35 KSI)
   H. BASE PLATES UP TO 4" THICK: ASTM A572 GRADE 50
   I. ALL OTHER PLATE MATERIAL: ASTM A572 GRADE 50, UNO
   J. BUILT UP COLUMNS: ASTM A572 GRADE 50
   K. PLATE GIRDERS: ASTM A572 GRADE 50
   L. CONNECTION MATERIAL
      a. COLUMN CONTINUITY PLATES AND DOUBLER PLATES: ASTM A572 GRADE 50
      b. BRACED FRAME GUSSET PLATES: ASTM A572 GRADE 50
3. ALL STRUCTURAL STEEL SHALL RECEIVE A MINIMUM OF ONE SHOP COAT OF RED PRIMER PAINT. DO NOT PAINT AREAS TO BE FIELD WELDED, FIREPROOFED, GALVANIZED, TO RECEIVE SLIP-CRITICAL HIGH STRENGTH BOLTS, OR TO BE EMBEDDED IN CONCRETE. PROVIDE ADDITIONAL PAINTING AS NOTED IN THE SPECIFICATIONS.
4. ALL STRUCTURAL STEEL SHALL BE ERECTED PLUMB AND TRUE TO LINE. TEMPORARY BRACING SHALL BE INSTALLED AND SHALL BE LEFT IN PLACE UNTIL OTHER MEANS ARE PROVIDED TO ADEQUATELY BRACE THE STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL BASE PLATE AND SUPPORT CONDITIONS DURING ERECTION AND BRACING AS REQUIRED. SEE AISC AND OSHA REQUIREMENTS.
5. GROUT BELOW BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI UNO. COLUMN BASE PLATES SHALL BE PROMPTLY GROUTED AFTER STEEL FRAME HAS BEEN PLUMBED AND PRIOR TO INSTALLATION OF METAL DECKING.
6. STRUCTURAL STEEL BELOW GRADE SHALL HAVE 3 INCHES MINIMUM OF CONCRETE COVER.
7. STRUCTURAL BOLTS AND THREADED FASTENERS
   A. BOLTED CONNECTIONS SHALL CONSIST OF UNFINISHED BOLTS CONFORMING TO ASTM F3125 GRADE A325 UNO.
   B. WHERE HIGH STRENGTH BOLTS ARE SPECIFIED, BOLTS CONFORMING TO ASTM F3125 GRADE A325 OR GRADE A490 SHALL BE PROVIDED AS INDICATED. HIGH STRENGTH BOLTS IN SLIP-CRITICAL AND PRETENSION JOINTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1852 FOR TWIST OFF TYPE TENSION CONTROL BOLT. PRETENSIONING SHALL BE PROVIDED WITH DIRECT TENSION INDICATOR WASHERS CONFORMING TO THE REQUIREMENTS OF ASTM F959.
   C. ANCHOR RODS CAST IN CONCRETE OR MASONRY SHALL BE HEADED BOLTS WITH CUT THREAD, FULL DIAMETER BODY (OR CONFORMING TO ASTM F1554 GRADE 36, S5 WELDABLE PER S1 SUPPLEMENTARY REQUIREMENTS), OR GRADE 105 AS INDICATED ON DRAWINGS. IN LIEU OF HEADED ANCHOR RODS, THREADED ROD CONFORMING TO THE ABOVE SPECIFICATIONS MAY BE USED WHEN THE ROD OR DOUBLE NUTS TIGHTENED TO PREVENT ROTATION. ANCHOR ROD PROJECTION ABOVE TOP OF FOUNDATION SHALL BE AS NOTED ON THE DRAWINGS.
   D. BOLTED CONNECTIONS SHALL HAVE WASHERS CONFORMING TO ASTM F436 UNO. WASHERS MAY BE OMITTED AT SNUG-TIGHTENED AND SLIP-CRITICAL CONNECTIONS, EXCEPT WHERE REQUIRED BY THE RCSC SPECIFICATION FOR STRUCTURAL JOINTS, LATEST EDITION.
   E. BASE PLATES SHALL HAVE FLAT TOP AND BOTTOM SURFACES. HARDENED WASHERS FOR BASE PLATES SHALL BE A36 SQUARE OR CIRCULAR PLATE UNLESS ASTM F844 WASHERS ARE PERMITTED. SEE BASE PLATE DETAILS FOR PLATE WASHER SIZE AND PERMISSIBLE WASHER USE.
   F. THREADED RODS SHALL CONFORM TO ASTM A36 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   G. PINS: ALL PINS IN PIN CONNECTED MEMBERS SHALL CONFORM TO ASTM A36 OR ASTM A108 AS INDICATED ON THE DRAWINGS.
8. ADDITIONAL REQUIREMENTS FOR "SLIP-CRITICAL" BOLTED CONNECTIONS:
   A. "SLIP-CRITICAL" BOLTS WITH CUT THREADS (CONFORMING TO ASTM F1554, UNO, REFER TO "WOOD" NOTES FOR ADDITIONAL REQUIREMENTS FOR BOLTS IN CONTACT WITH PRESSURE TREATED OR FIRE RETARDANT MATERIAL. REFER TO 'STRUCTURAL STEEL' NOTE FOR REQUIREMENTS FOR ANCHOR RODS (AR'S) CAST IN CONCRETE FOR CUSTOM BASE PLATE AND STEEL EMBED APPLICATIONS.
   B. THE SPECIAL INSPECTOR MUST BE PRESENT DURING THE INSTALLATION AND TIGHTENING OPERATION OF "SLIP-CRITICAL" CONNECTIONS.
9. PROVIDE FILLER PLATES WITH STITCH BOLTS AND RING FILLS, SPACED AT NOT MORE THAN 2'-0" ON CENTER FOR ALL DOUBLE ANGLE MEMBERS UNO.
10. AT WOOD TO STEEL PARALLEL CONTACT, BOLT WITH 1/2" DIAMETER BOLTS AT MAXIMUM 24"CC UNLESS NOTED OTHERWISE IN THE DRAWINGS.
11. BOLT HOLES SHALL BE AISC STANDARD HOLES UNLESS SPECIFIED OTHERWISE. USE STANDARD AISC GAGE AND PITCH FOR BOLTS EXCEPT AS NOTED OTHERWISE.
12. WELDING SHALL BE DONE BY THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH AMERICAN WELDING SOCIETY STANDARDS, USING ONLY CERTIFIED WELDERS. ALL GROOVE WELDS SHALL HAVE COMPLETE PENETRATION UNLESS NOTED OTHERWISE. ALL ELECTRODES FOR WELDING SHALL COMPLY WITH GRADES 70 AND 80 REQUIREMENTS OF E70 SERIES MINIMUM.
13. WELD LENGTHS SPECIFIED ON PLANS ARE THE NET EFFECTIVE LENGTHS REQUIRED.
14. MINIMUM FILLET WELDS: (T = THICKNESS OF THINNER PART JOINED)
    3/16" @ T =< 1/2"
    1/4" @ T < 3/4"
    5/16" @ T > 3/4"
15. WELDING PROCEDURE SPECIFICATIONS (WPS) FOR SHOP AND FIELD PREQUALIFIED WELD JOINTS AND WELD JOINTS QUALIFIED BY TEST SHALL BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER AND THE OWNER'S TESTING LABORATORY PRIOR TO FABRICATION. ALL WELDING PROCEDURE ITEMS SUCH AS BASE METALS, WELDING PROCESSES, FILLER METALS AND JOINT DETAILS THAT MEET THE REQUIREMENTS OF AWS D1.1 SECTION 3 SHALL BE CONSIDERED AS PREQUALIFIED. ANY CHANGE OR SUBSTITUTION THAT IS BEYOND THE RANGE OR TOLERANCE OR REQUIREMENTS FOR PREQUALIFICATION SHALL BE QUALIFIED BY TEST PER AWS D1.1 SECTION 4 PART B. SUBMIT TEST REPORTS SHOWING SUCCESSFUL PASSAGE OF QUALIFICATION TESTS FOR ALL NON-PREQUALIFIED WELDING PROCEDURE SPECIFICATIONS.

METAL DECK NOTES
5800N001

1. PROVIDE METAL DECKING OF TYPE AND GAUGE AS SHOWN ON PLANS AND AS INDICATED IN THE METAL DECK SCHEDULE.
2. METAL FLOOR DECK SHALL BE COMPOSITE TYPE, CONFORMING TO ASTM A653, STRUCTURAL QUALITY, AND SHALL BE ZINC COATED PER ASTM A653, G60 COATING DESIGNATION.
3. METAL ROOF DECK SHALL CONFORM TO ASTM A653, STRUCTURAL QUALITY, AND SHALL BE ZINC COATED PER ASTM A653, G60 COATING DESIGNATION.
4. PRIOR TO FABRICATION, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE METAL DECKING, SHOWING DECK GAUGE, SIZE AND LAYOUT AS WELL AS CLOSURE CONDITIONS, WELDS TO SUPPORTS AND SIDE LAP DETAILS.
5. CONNECTION AND WELDING OF DECKING TO STRUCTURAL SUPPORTS AND DECK SIDE SEAMS SHALL BE AS SPECIFIED IN THE STRUCTURAL DRAWINGS. ALL ELECTRODES FOR WELDING SHALL COMPLY WITH AWS CODE, E60 SERIES MINIMUM.
6. ALL REINFORCED OPENINGS IN METAL DECK SHALL BE INSTALLED BY METAL DECK SUBCONTRACTOR.
7. AT METAL DECKS TO RECEIVE CONCRETE, ABSOLUTELY NO CONDUIT OR PIPING OF ANY TYPE IS TO BE PLACED HORIZONTALLY WITHIN THE DEPTH OF THE CONCRETE ABOVE THE METAL DECK.
8. AT METAL DECK WITHOUT CONCRETE FILL THE FOLLOWING MAY BE ATTACHED WITHOUT SPECIFIC APPROVAL OF THE STRUCTURAL ENGINEER: ACOUSTICAL TILE AND GYPSUM BOARD CEILINGS ONLY; NO PIPING, DUCTING OR CONDUIT. MAXIMUM CEILING WEIGHT - 3.5 PSF. MAXIMUM WIRE HANGER LOAD = 60#.
9. WHERE SUSPENSION OR HANGER WIRES ARE REQUIRED BY OTHERS, VERIFY AND COORDINATE LOCATIONS, PATTERNS, SPACINGS, ETC. WITH THE APPROPRIATE TRADE. DRILL OR PUNCH HOLES AT BOTTOM OF DECK FLUTES OF SUFFICIENT SIZE TO PASS SUPPORT WIRES. WIRE SUSPENSION SHALL BE SECURED WITH A MINIMUM OF THREE (3) TIGHT TURNS AROUND A MINIMUM 1-1/2" x 12" LONG FURRING CHANNEL OR NO. 3 x 12" LONG REINFORCING BAR CENTERED ABOVE THE HOLE AND LAID IN THE DECK FLUTES.

WINDOW SYSTEM DESIGN CRITERIA
1000N070

1. THE FOLLOWING DESIGN CRITERIA APPLIES TO ALL GLAZED OPENINGS (WINDOW SYSTEMS, STOREFRONT, CURTAIN WALL, WINDOW WALL, ETC). WINDOW SYSTEMS ARE A DELEGATED DESIGN SYSTEM TO BE OVERSEEN BY THE GENERAL CONTRACTOR.
2. ELEMENTS OF THE WINDO

STRUCTURAL SPECIAL INSPECTIONS AND TESTING

APPLICABLE TO ALL DRAWINGS UNLESS NOTED OR SHOWN OTHERWISE

STATEMENT OF STRUCTURAL SPECIAL INSPECTIONS AND TESTING
1105N001

1. SPECIAL INSPECTIONS AND TESTING SHALL BE PROVIDED BY A TESTING AND INSPECTION AGENCY, EMPLOYED BY THE OWNER (OR OWNER'S AUTHORIZED AGENT), AND APPROVED BY THE BUILDING OFFICIAL TO PROVIDE SPECIAL INSPECTIONS AND TESTING FOR THE PARTICULAR TYPE OF CONSTRUCTION.
2. TABLES OF SPECIAL INSPECTIONS AND TESTING ARE DERIVED FROM THE STRUCTURAL PROVISIONS OF THE CBC AND REFERENCED STANDARDS AND ARE FOR REFERENCE ONLY. THE INCLUDED TABLES ARE PROVIDED FOR THE CONVENIENCE OF THE OWNER, TESTING AGENCY AND CONTRACTOR IN DEVELOPING THE SCOPE OF WORK FOR REQUIRED TESTING AND INSPECTION OF STRUCTURAL MATERIALS AND COMPONENTS. FINAL DEFINITION OF THIS SCOPE OF WORK IS TO BE DETERMINED BY THE TESTING AGENCY AND THE OWNER (OR OWNER'S AUTHORIZED AGENT).
3. FREQUENCY OF SPECIAL INSPECTIONS AND TESTING SHALL BE, AT A MINIMUM, AS NOTED FOR THE INDIVIDUAL ELEMENTS WITHIN THE TABLES BELOW. THE CONTRACTOR SHALL COORDINATE TIMING OF SPECIAL INSPECTIONS AND TESTING WITH THE SPECIAL INSPECTION AND TESTING AGENCY.
4. PRIOR TO THE START OF CONSTRUCTION, THE TESTING AND INSPECTION AGENCY SHALL PROVIDE DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING OF THE SPECIAL INSPECTORS WHO WILL PERFORM THE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION, IN ACCORDANCE WITH CBC SECTION 1704.2.1.
5. THE TESTING AND INSPECTION AGENCY SHALL SUBMIT REPORTS OF SPECIAL INSPECTIONS AND TESTS TO THE BUILDING OFFICIAL, STRUCTURAL ENGINEER OF RECORD AND THE CONTRACTOR, PER CBC SECTION 1704.2.4. THE REPORTS SHALL INDICATE WHETHER WORK INSPECTED OR TESTED CONFORMED TO THE APPROVED CONSTRUCTION DOCUMENTS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF DISCREPANCIES ARE NOT CORRECTED, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE STRUCTURAL ENGINEER OF RECORD.
6. SPECIAL INSPECTION AND TESTING RECORDS SHALL BE RETAINED BY THE CONTRACTOR ON SITE UNTIL COMPLETION OF CONSTRUCTION.
7. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT TO THE BUILDING OFFICIAL ACKNOWLEDGING RESPONSIBILITY FOR CONSTRUCTION OF THE MAIN LATERAL-FORCE RESISTING SYSTEM PRIOR TO COMMENCEMENT OF THAT WORK AS REQUIRED BY CBC SECTION 1704.4.
8. THE OWNER OR THE OWNER'S AUTHORIZED AGENT SHALL SUBMIT TO THE BUILDING OFFICIAL, A FINAL REPORT DOCUMENTING SPECIAL INSPECTIONS AND TESTS PER CBC SECTION 1704.2.4, AND REPORTS AND CERTIFICATES PER CBC SECTION 1704.5.
9. ALL SOILS AND FOUNDATION EXCAVATION INSPECTIONS SHALL BE BY THE GEOTECHNICAL ENGINEER OF RECORD, OR A GEOTECHNICAL FIRM HIRED BY THE OWNER PER CBC SECTION 1705.6.
10. SPECIAL INSPECTION IS REQUIRED FOR ALL SHOP FABRICATED MEMBERS OR ASSEMBLIES UNLESS WAIVED PER THE EXCEPTIONS IN CBC SECTION 1704.2.5.
11. DEFINITIONS:
    a. CONTINUOUS - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS CONTINUOUSLY PRESENT WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED.
    b. PERIODIC - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHERE THE WORK TO BE INSPECTED HAS BEEN OR IS BEING PERFORMED.
    c. QUALITY ASSURANCE (QA) - MONITORING AND INSPECTION TASKS PERFORMED BY AN AGENCY OR FIRM OTHER THAN THE FABRICATOR OR ERECTOR TO ENSURE THAT THE MATERIAL PROVIDED AND WORK PERFORMED BY THE FABRICATOR AND ERECTOR MEET THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS. QUALITY ASSURANCE INCLUDES THOSE TASKS DESIGNATED 'SPECIAL INSPECTION' BY THE APPLICABLE CODE.
    d. QUALITY CONTROL (QC) - CONTROLS AND INSPECTIONS IMPLEMENTED BY THE FABRICATOR OR ERECTOR, AS APPLICABLE, TO ENSURE THAT THE MATERIAL PROVIDED AND WORK PERFORMED MEET THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS.
    e. OBSERVE (O) - OBSERVE THESE ITEMS ON A RANDOM BASIS (DAILY FOR LFRS). OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
    f. PERFORM (P) - PERFORM THOSE TASKS PRIOR TO FINAL ACCEPTANCE FOR EACH ITEM OR ELEMENT.
    g. DOCUMENT (D) - THE INSPECTOR SHALL PREPARE REPORTS INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE REPORT NEED NOT PROVIDE DETAILED MEASUREMENTS FOR JOINT FIT-UP, WPS SETTINGS, COMPLETED WELDS, OR OTHER INDIVIDUAL ITEMS LISTED IN THE TABLES. FOR SHOP FABRICATION, THE REPORT SHALL INDICATE THE PIECE MARK OF THE PIECE INSPECTED. FOR FIELD WORK, THE REPORT SHALL INDICATE THE REFERENCE GRID LINES AND FLOOR OR ELEVATION INSPECTED. WORK NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS AND WHETHER THE NONCOMPLIANCE HAS BEEN SATISFACTORILY REPAIRED SHALL BE NOTED IN THE INSPECTION REPORT.
12. SPECIAL INSPECTIONS AND TESTING SHALL BE PERFORMED DURING CONSTRUCTION ON THE WORK SHOWN IN THE CONSTRUCTION DOCUMENTS AS REQUIRED BY CBC CHAPTER 17, THE TABLES LISTED BELOW, AND THE JURISDICTION'S SPECIAL INSPECTION AND TESTING FORM. IF DISCREPANCIES ARE NOTED, CONTACT THE SEOR. ALL EXCEPTIONS INCLUDED IN CBC CHAPTER 17 ARE PERMITTED TO BE USED.
    - SOILS
    - CONCRETE CONSTRUCTION (POST-INSTALLED ANCHORS)
    - MASONRY CONSTRUCTION - LEVEL 2 (POST-INSTALLED ANCHORS)

SOILS - REQUIRED SPECIAL INSPECTIONS AND TESTS
CBC TABLE 1705.6
1105N201

TYPE	CONTINUOUS	PERIODIC
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	-	X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	-	X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	-	X
4. DURING FILL PLACEMENT, VERIFY USE OF PROPER MATERIALS AND PROCEDURES IN ACCORDANCE WITH THE PROVISIONS OF THE APPROVED GEOTECHNICAL REPORT. VERIFY DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	-
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	-	X

CONCRETE CONSTRUCTION - REQUIRED SPECIAL INSPECTIONS AND TESTS
CBC TABLE 1705.3
1105N301

TYPE	CONTINUOUS	PERIODIC	REFERENCED STANDARD[B]
1. INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT.	-	X	ACI 318 CH. 20, 25.2, 25.3, 26.6.1-26.6.3
2. REINFORCING BAR WELDING:			AWS D1.4 ACI 318: 26.6.4
A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706	-	X	
B. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"	-	X	
C. INSPECT ALL OTHER WELDS	X	-	
3. INSPECT ANCHORS CAST IN CONCRETE.	-	X	ACI 318: 17.8.2
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS. [A]			ACI 318: 17.8.2.4, 17.8.2
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	x	-	
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	-	X	
5. VERIFY USE OF REQUIRED DESIGN MIX.	-	X	ACI 318: CH. 19, 26.4.3, 26.4.4
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	-	ASTM C172 ASTM C31 ACI 318: 26.5, 26.12
7. INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	-	ACI 318: 26.5
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	-	X	ACI 318: 26.5.3-26.5.5
9. INSPECT PRESTRESSED CONCRETE FOR:			ACI 318: 26.10
A. APPLICATION OF PRESTRESSING FORCES	X	-	
B. GROUTING OF BONDED PRESTRESSING TENDONS.	X	-	
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS.	-	X	ACI 318: CH. 26.9
11. FOR PRECAST CONCRETE DIAPHRAGM CONNECTIONS OR REINFORCEMENT AT JOINTS CLASSIFIED AS MODERATE OR HIGH DEFORMABILITY ELEMENTS (MDE OR HDE) IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C, D, E OR F, INSPECT SUCH CONNECTIONS AND REINFORCEMENT IN THE FIELD FOR:			ACI 318: 26.13.1.3 ACI 550.5
A. INSTALLATION OF THE EMBEDDED PARTS.	X	-	
B. COMPLETION OF THE CONTINUITY OF REINFORCEMENT ACROSS JOINTS.	X	-	
C. COMPLETION OF CONNECTIONS IN THE FIELD.	X	-	
12. INSPECT INSTALLATION TOLERANCES OF PRECAST CONCRETE DIAPHRAGM CONNECTIONS FOR COMPLIANCE WITH ACI 550.5.	-	X	ACI 318: 26.13.1.3
13. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS.	-	X	ACI 318: 26.11.2
14. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	-	X	ACI 318: 26.11.1.2(b)

A. WHERE APPLICABLE, SEE SECTION 1705.13.

B. SPECIFIC REQUIREMENTS FOR SPECIAL INSPECTION SHALL BE INCLUDED IN THE RESEARCH REPORT FOR THE ANCHOR ISSUED BY AN APPROVED SOURCE IN ACCORDANCE WITH 17.8.2 IN ACI 318, OR OTHER QUALIFICATION PROCEDURES. WHERE SPECIFIC REQUIREMENTS ARE NOT PROVIDED, SPECIAL INSPECTION REQUIREMENTS SHALL BE SPECIFIED BY THE REGISTERED DESIGN PROFESSIONAL AND SHALL BE APPROVED BY THE BUILDING OFFICIAL PRIOR TO COMMENCEMENT OF THE WORK.

STRUCTURAL WOOD LFRS - REQUIRED SPECIAL INSPECTIONS
CBC SECTION 1705.12.1, 1705.13.2
1105N611

TYPE	CONTINUOUS	PERIODIC
1. FIELD GLUING OPERATIONS OF ELEMENTS OF THE LFRS.	X	-
2. NAILING, BOLTING, ANCHORING AND OTHER FASTENING OF ELEMENTS OF THE LFRS, INCLUDING WOOD SHEAR WALLS, WOOD DIAPHRAGMS, DRAG STRUTS, BRACES, SHEAR PANELS AND HOLD-DOWNS.	-	X

2

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SHEET TITLE
STRUCT SPECIAL INSPECTIONS & TESTING

DRAWN BY: Author JOB NUMBER: 2100 15.01

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S111

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FOUNDATION PLAN NOTES

1. NOTES AND DETAILS ON SHEETS LABELED AS "GENERAL" OR "TYPICAL" ARE APPLICABLE TO ALL DRAWINGS, UNO.
2. VERIFY ALL BUILDING DIMENSIONS AND ELEVATIONS w/ ARCH DRAWINGS. NOTIFY THE ARCHITECT IMMEDIATELY IF THERE ARE ANY CONFLICTS w/ DIMENSIONS SHOWN.
3. DIMENSIONS SHOWN ARE TO THE CL OF COLUMN, FACE OF STUD.
4. SITE PREPARATION AND BUILDING PAD CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT LISTED IN THE FOUNDATION GENERAL NOTES. BOTTOM OF FOOTING EXCAVATIONS SHALL BE REVIEWED BY GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL. THE BOTTOM OF ALL FOOTINGS SHALL BE AT LEAST 18" BELOW ADJACENT MINIMUM PREPARED BUILDING PAD ELEVATION ON ALL SIDES, TYP UNO OR AS SHOWN ON SECTIONS.
5. SLAB ON GRADE SHALL BE 6" THICK CONCRETE w/ #3 @ 18"CC EW AT MID-DEPTH. CONCRETE SHALL BE INSTALLED OVER 15 MIL VAPOR RETARDER OVER 4" CLEAN CRUSHED ROCK. TOP OF CONCRETE SLAB IS 0'-0" UNO.
6. CONTRACTOR SHALL SUBMIT AN EDGE OF SLAB PLAN TO ARCHITECT & SEOR FOR REVIEW. SUBMITTAL SHALL BE DIMENSIONED AND LOCATED RELATIVE TO STRUCTURAL GRIDS.
7. PROVIDE SLAB ON GRADE CONTROL JOINTS (SJ) AS INDICATED PER **6/S501** TYP AT ALL INTERIOR SLABS. CONSTRUCTION JOINTS (CJ) MAY REPLACE CONTROL JOINTS AS REQUIRED.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE SLAB CONTROL JOINTS WITH ANY ARCHITECTURALLY EXPOSED SLAB AREAS OR THE LOCATION OF TILE CRACK CONTROL JOINTS. VERIFY SPECIAL CONDITION CONTROL JOINTS WITH ARCH DRAWINGS.
9. CONTRACTOR TO COORDINATE EXACT DIMENSIONS AND LOCATIONS OF THICKENED SLABS, HOUSEKEEPING PADS, ETC. WITH ALL OTHER DISCIPLINE'S DRAWINGS AS WELL AS WITH THE EQUIPMENT PROVIDED, PRIOR TO COMMENCING WORK.
10. ALL DEPRESSIONS, SLOPES, ETC. ARE SHOWN FOR REFERENCE ONLY. FOR EXACT DEPTHS, SLOPES, EXTENTS, ETC. SEE OTHER DISCIPLINES' DRAWINGS.
11. COORDINATE CURB LOCATIONS AND EXTENTS WITH ARCH DRAWINGS. FOR CURBS BELOW NON-STRUCTURAL WALLS, SEE **10/S501** & **11/S501** .
12. TEMPORARY LOADS APPLIED DURING CONSTRUCTION HAVE NOT BEEN CONSIDERED IN SLAB ON GRADE DESIGN.
13. SEE ARCH & CIVIL DRAWINGS FOR ALL EXTERIOR CURBS, FLATWORK, PLANTERS, RAMPS, ETC.
14. PROVIDE 3" MIN. CONCRETE COVER AT STRUCTURAL STEEL AND ANCHOR BOLTS BELOW GRADE, TYP.
15. CONTINUE ALL REINFORCING IN CONTINUOUS FOOTINGS THROUGH SPREAD FOOTINGS, TYP UNO.
16. FACE OF CONCRETE AT PERIMETER OF BLDG SHALL BE 1/2" OUTSIDE FACE OF STUD, TYP UNO. COORDINATE WITH ARCH DWGS.
17. ANCHOR BOLTS AT NON-SHEARWALLS SHALL BE AS INDICATED ON **2/S511** .
18. All WOOD STUD WALLS ARE TO BE 2x6 @ 16" CC UNO ON THE PLANS, SECTIONS, OR SCHEDULES. COORDINATE STUD SIZE WITH ARCH DWGS.

FOUNDATION LEGEND

- (Mk) FOOTING MARK. SEE FOOTING SCHEDULE FOR TYPICAL TOF ELEVATION. ELEVATION IS RELATIVE TO REFERENCE ELEVATION (0'-0").
- (Mk -X'-XX") FOOTING MARK WITH TOP OF FOOTING ELEVATION. ELEVATION IS RELATIVE TO REFERENCE ELEVATION (0'-0").
- CONCRETE CURB. VERIFY EXTENT w/ ARCH DWGS.
- CONCRETE HOUSEKEEPING PAD PER **12/S801** . SEE ARCH FOR EXTENT. SEE NOTE#11 FOR ADDL INFO.
- SLOPED AND/OR DEPRESSED SLAB. DEPRESS BUILDING PAD AND PROVIDE FULL SLAB AND BASE THICKNESS. SEE **9/S501** & **8/S501** . WHERE DEPRESSION IS GREATER THAN 2" AND ADJACENT TO BUILDING FOUNDATION ELEMENT IT MAY BE NECESSARY TO STEP FOOTING IN ORDER TO MAINTAIN MINIMUM FOOTING EMBEDMENT PER SECTIONS. CONTRACTOR TO COORDINATE IN FIELD.
- MECHANICAL UNIT. THE CONTRACTOR SHALL COORDINATE ALL MECHANICAL EQUIPMENT FOR SIZE & LOCATION WITH OTHER TRADES & THE STRUCTURAL DRAWINGS. UNIT SIZES & LOCATIONS SHOWN ARE APPROXIMATE.
- 8" CMU WALL. FOR REINFORCING, SEE **1/S516** AND CMU GENERAL NOTES. CONDUITS IN CMU TO BE PER CMU GENERAL NOTES.
- WOOD STRUCTURAL WALL.
- WOOD POST, 6x6 @ 6" NOMINAL WALLS
- (X') (Mk) X'-X" SHEAR WALL TYPE, EXTENT, AND ANCHOR BOLT LAYOUT, SEE **A/S512** FOR SCHEDULE, UNO. EXTENT INDICATES MINIMUM REQUIRED SHEAR WALL LENGTH.
- 2 (2)6 SIMPSON HOLDOWN LOCATION. REFERENCE NUMBER INDICATES HDU HOLDOWN TYPE. SEE **B/S512** & **4/S512** .

FRAMING PLAN NOTES

1. NOTES AND DETAILS ON SHEETS LABELED AS "GENERAL" OR "TYPICAL" ARE APPLICABLE TO ALL DRAWINGS, UNO.
2. VERIFY ALL BUILDING DIMENSIONS AND ELEVATIONS w/ ARCH DRAWINGS. NOTIFY THE ARCHITECT IMMEDIATELY IF THERE ARE ANY CONFLICTS w/ DIMENSIONS SHOWN.
3. DIMENSIONS SHOWN ARE TO CL OF COLUMN, FACE OF STUD.
4. DESIGN, FABRICATION AND INSTALLATION OF MANUFACTURED STAIRS IS BY OTHERS.
5. FOR GUIDELINES AND LIMITATIONS FOR SUPPORTING FROM STRUCTURE, SEE SPECIFICATIONS.
6. SEPARATION JOINT DIMENSIONS SHOWN ON PLAN INDICATE MINIMUM CLEAR DISTANCE REQUIRED BETWEEN ADJACENT BLDG ELEMENTS. WHERE BLDG FINISHES/FIRE PROTECTION OCCUR, CLEAR DIMENSION SHALL BE MAINTAINED BTWN THOSE ELEMENTS.
7. ALL WOOD STUD WALLS ARE TO BE 2x6 @ 16"CC UNO ON THE PLANS, SECTIONS, OR SCHEDULES. COORDINATE STUD SIZE WITH ARCH DWGS.
8. ROOF SHEATHING SHALL BE 15/32" (1/2" NOMINAL) APA RATED SHEATHING/ STRUCTURAL 1 GRADE CD w/ EXTERIOR GLUE. MIN SPAN RATING SHALL BE 24/0. LAY LONG DIMENSION PERPENDICULAR TO SUPPORTS. ENDS STAGGERED AS SHOWN ON PLAN. NAIL w/ 10d NAILS @ 6"CC EDGES, 12"CC FIELD UNO ON PLANS. WHERE BLOCKING IS NOTED, USE 2x4 FLAT AT ALL SHTG EDGES SUPPORTED IN Z2 CLIPS. USE PLYCLIPS AT MIDSPAN OF UNSUPPORTED ROOF SHEATHING EDGES.
9. ALIGN JOISTS OVER STUDS BELOW WHERE FRAMING IS PERPENDICULAR TO WALL.
10. PROVIDE AN ADDITIONAL JOIST UNDER INTERIOR PARTITION WALLS THAT ARE PARALLEL TO THE JOISTS.
11. PROVIDE JOIST HANGERS WHERE SPECIFIED ON PLANS, SECTIONS, OR WHERE JOIST IS NOT IN DIRECT BEARING. FOR JOIST HANGER SCHEDULE AND NOTES, SEE .
12. FOR WOOD BEAM TO HSS COLUMN CONNECTION, SEE **10/S514** TYP, UNO.
13. SPLICES AT CMST STRAPS SHALL BE LAPPED A MINIMUM OF 16" w/ NAILS DRIVEN THRU BOTH.
14. INSTALL STRAPS OVER SHTG UNO. STRAP NAILS MAY REPLACE TYP DIAPHRAGM NAILING.
15. WHERE HSS COLUMNS INTERRUPT PLATES, SPLICE PER **4/S516** .
16. SEE ARCH DRAWINGS FOR FLOOR TOPPING MATERIAL AND THICKNESS. MAX WEIGHT OF TOPPING SHALL NOT EXCEED 10 PSF.
17. SEE ARCH DWGS FOR INFORMATION REGARDING VENT OPENINGS AT BLOCKING AND SHEATHING.
18. WHERE EXTENT OF SHEAR WALL DOES NOT COINCIDE WITH EXTENT OF WALL FACE, PROVIDE GYPSUM BOARD FURRING TO PLANE OUT FINISHES. COORDINATE SIDE OF WALL TO BE SHEATHED WITH ARCH DRAWINGS, UNO.
19. WHERE FRAMING HARDWARE IS REQUIRED TO BE IN THE SAME PLANE AS THE WALL FINISHES, HARDWARE SHALL BE "LET-IN" TO FINISHES FOR A FLAT, SMOOTH APPEARANCE. TYPICAL ALL FLOORS.
20. VERIFY ALL FLOOR OR ROOF OPENING DIMENSIONS w/ ARCH & MECH DRAWINGS PRIOR TO STAIR FABRICATION. GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION AND LOCATION OF PLACEMENT OF BEAMS ADJACENT TO STAIR OPENINGS.
21. WHERE WOOD STUD WALLS ABUT MASONRY WALLS, PROVIDE 5/8"Ø ANCHOR BOLTS w/ 5" EMBED @ 24"CC & 6" FROM T&B @ STUD END.
22. SEE ARCH FOR LOCATION OF CRICKETS REQUIRED FOR DRAINAGE. ROOF SHEATHING BELOW SHALL BE CONTINUOUS.
23. GENERAL CONTRACTOR TO COORDINATE SKYLIGHT LOCATIONS WITH ROOF TRUSS MANUFACTURER AND ARCH.
24. SEE PRE-MANUFACTURED WOOD TRUSS NOTES FOR LOADING AND CONFIGURATION INFORMATION.

FRAMING LEGEND

- OPENING. LOCATE OPENING PER AMEP DRAWINGS. FOR SUPPORT SEE **S202** .
- CONCRETE CURB. SEE **10/S501**.
- CONCRETE WALL. SEE FOUNDATION PLAN FOR ADDL INFO.
- TOP OF WALL. TYPE INDICATED AT BASE OF WALL ONLY.
- CONCRETE COLUMN. SIZE INDICATED AT BASE LEVEL OF COLUMN ONLY.
- X'-XX" TOW TOP OF WALL ELEVATION ABOVE REFERENCE TOP OF CONCRETE (0'-0").
- SOLID GROUTED CMU WALL. SEE FOUNDATION PLAN FOR ADDL INFO.
- TOP OF WALL. TYPE INDICATED AT BASE OF WALL ONLY.
- WALL BELOW, SEE FOUNDATION OR FRAMING LEVEL BELOW FOR WALL TYPE.
- CMU COLUMN. SIZE INDICATED AT BASE LEVEL OF COLUMN ONLY.
- X'-XX" TOW TOP OF WALL ELEVATION ABOVE REFERENCE TOP OF CONCRETE (0'-0").
- WOOD STRUCTURAL WALL BELOW.
- (X') (Mk) X'-X" SHEAR WALL ABOVE; TYPE AND EXTENT, SEE **A/S512** FOR SCHEDULE, UNO. EXTENT INDICATES MINIMUM REQUIRED SHEAR WALL LENGTH.
- SHEAR WALL BELOW
- LSL 3 1/2" WIDE x 11 7/8" DEEP LAMINATED STRAND LUMBER BEAM, TYP UNO.
- LVL 1 3/4" WIDE x 11 7/8" DEEP LAMINATED VENEER LUMBER BEAM, TYP UNO.
- PSL 5 1/4" WIDE x 11 7/8" DEEP PARALLEL STRAND LUMBER BEAM, TYP UNO.
- C= HEIGHT OF CL OF BEAM CAMBER AS NOTED ON PLANS. WHERE C IS NOT NOTED, BEAMS ARE NOT CAMBERED. FABRICATE AND ERECT ALL BEAMS WITH NATURAL BEAM CAMBER UP WHERE NO CAMBER IS INDICATED ON PLANS.
- RT1 ROOF TRUSS TYPE AND EXTENT. FOR PROFILES SEE SHEET **S515**
- RGT ROOF GIRDER TRUSS. COORDINATE GIRDER TRUSS PROFILE WITH ROOF CONFIGURATION.
- RCT ROOF COLLECTOR TRUSS. COORDINATE COLLECTOR TRUSS PROFILE WITH ROOF CONFIGURATION.
- DBL DOUBLE JOIST. TYPE AND SIZE TO MATCH ADJACENT JOISTS. CONNECT PER NAILING SCHEDULE OR **4/S514** .
- HDR HEADER BELOW. SEE **2/S511** UNO ON PLAN.
- MST48 SIMPSON STRAP PER PLAN.
- 2 (2)6 SIMPSON HOLDOWN LOCATION. REFERENCE NUMBER INDICATES HDU HOLDOWN TYPE. SEE **B/S512** & **8/S512** .
- (Mk) TOP PLATE SPLICE. TYPE PER **3/S512** . WHERE NO INDICATION OCCURS, SEE **2/S511** .
- (Mk) STRAP
- (Mk) NAILING
- X'-XX" TOF TOP OF FRAMING ELEVATION (i.e. UNDERSIDE OF FLOOR SHTG) ABOVE REFERENCE TOP OF CONCRETE (0'-0") TYP, UNO.
- X'-XX" TOW TOP OF WALL ELEVATION ABOVE REFERENCE TOP OF CONCRETE (0'-0") (i.e. TOP OF DBL TOP PL, TYP UNO).
- WOOD POST, 6x6 STUDS @ 6" NOMINAL WALLS, TYP UNO.
- (A) POST IS ABOVE ONLY
- EXTENT OF BLOCKED DIAPHRAGM.
- AREA OF OVERBUILD FRAMING. ROOF SHEATHING BELOW SHALL BE CONTINUOUS.
- MECHANICAL UNIT. THE CONTRACTOR SHALL COORDINATE ALL MECHANICAL EQUIPMENT FOR SIZE & LOCATION WITH OTHER TRADES & THE STRUCTURAL DRAWINGS. UNIT SIZES & LOCATIONS SHOWN ARE APPROXIMATE.

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REVISIONS

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SHEET TITLE
PLAN NOTES

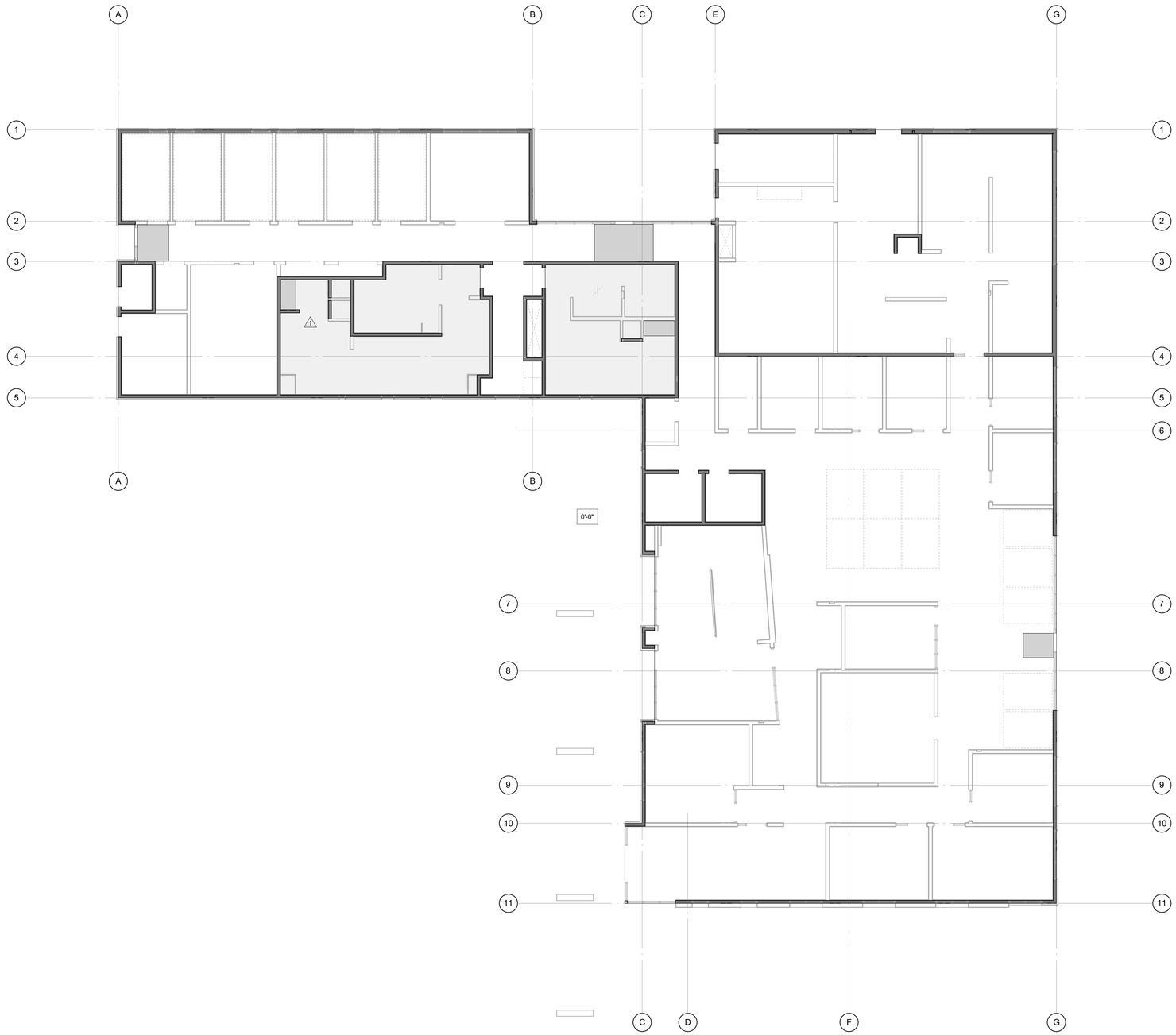
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BID SET (PRELIMINARY)



CURB PLAN
⚠1 SEE S121 FOR NOTES
N
1/8" = 1'-0"

CURB PLAN KEY
- DEPRESSED SLAB
- CONCRETE CURB

⚠1

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CURB PLAN

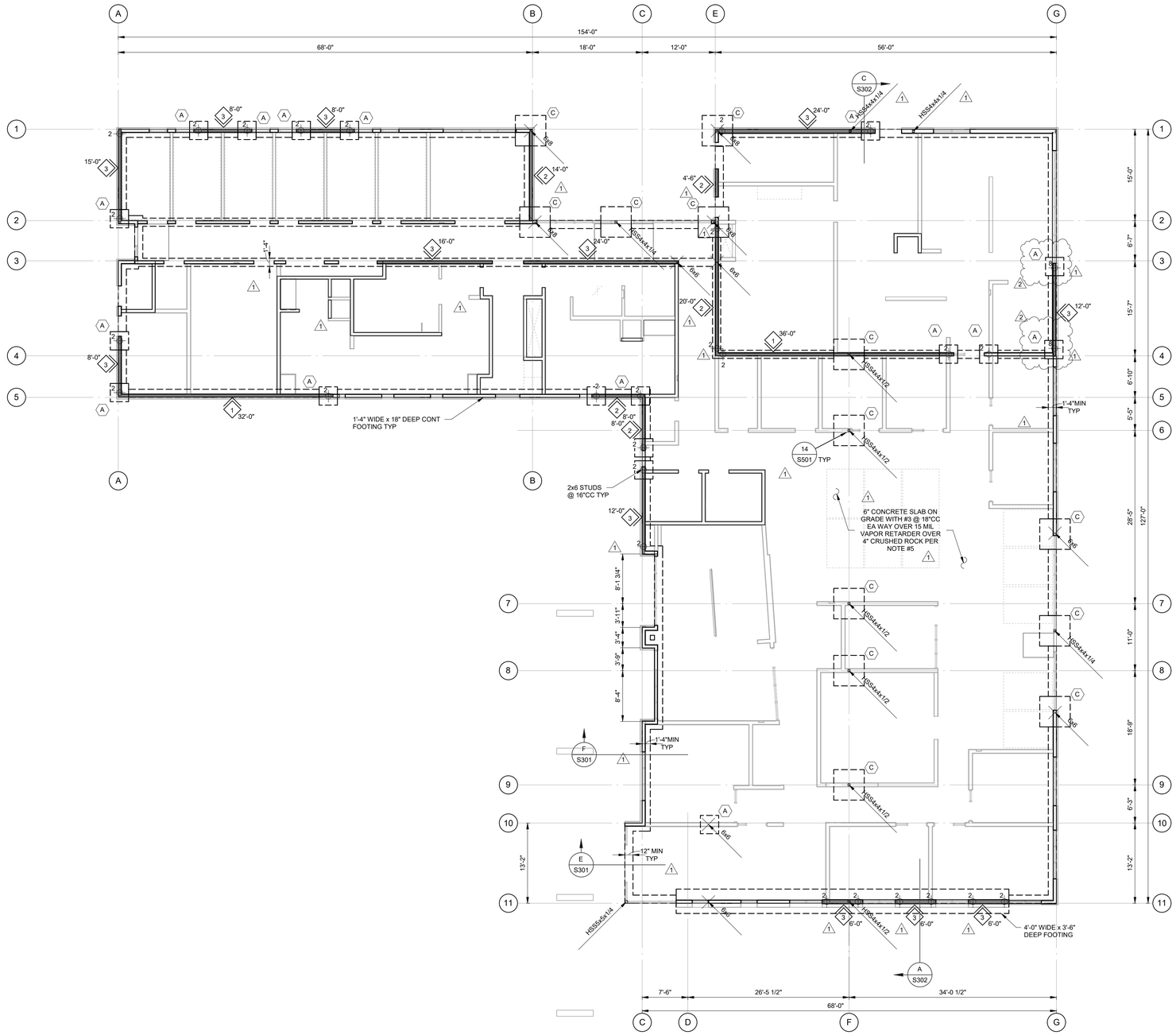
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FOUNDATION PLAN
SEE S121 FOR NOTES

1/8" = 1'-0"

FOOTING SCHEDULE

NOTE:
TOP OF FOOTING AT -1'-0" TYP UNO ON PLANS.

Mk	SIZE (WxLxD)	BOTT REINF	TOP REINF
A	3'-0" x 3'-0" x 1'-6"	(4) #5 EW	
C	5'-0" x 5'-0" x 1'-6"	(7) #5 EW	

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SHEET TITLE
FOUNDATION PLAN

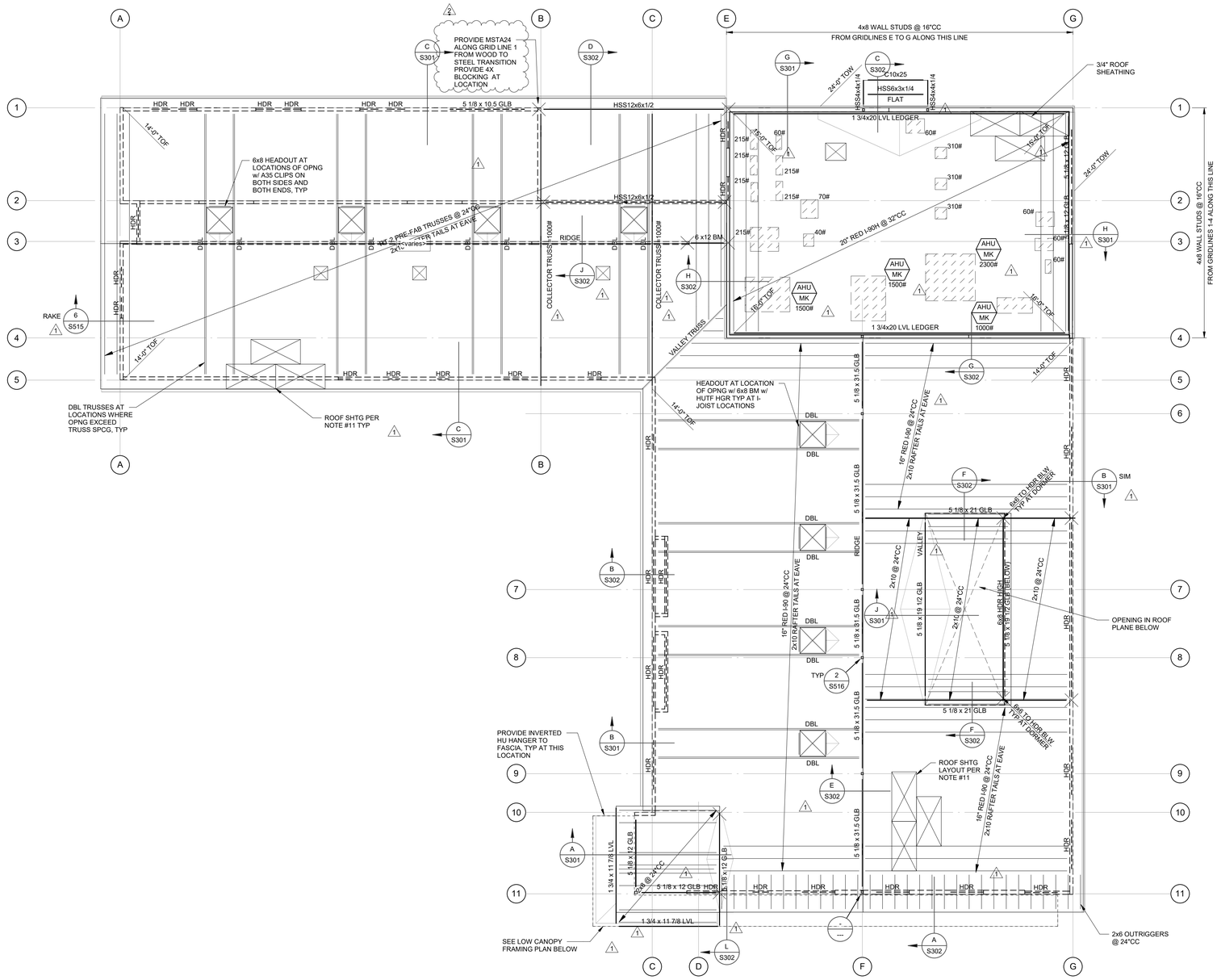
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S201

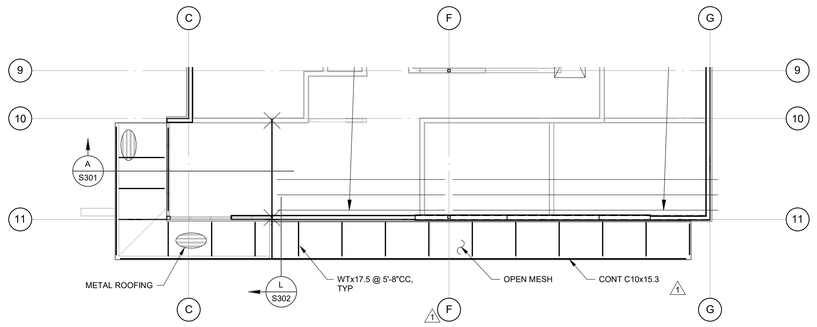
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ROOF FRAMING PLAN
SEE S121 FOR NOTES
1/8" = 1'-0"



LOW CANOPY FRAMING PLAN
1/8" = 1'-0"

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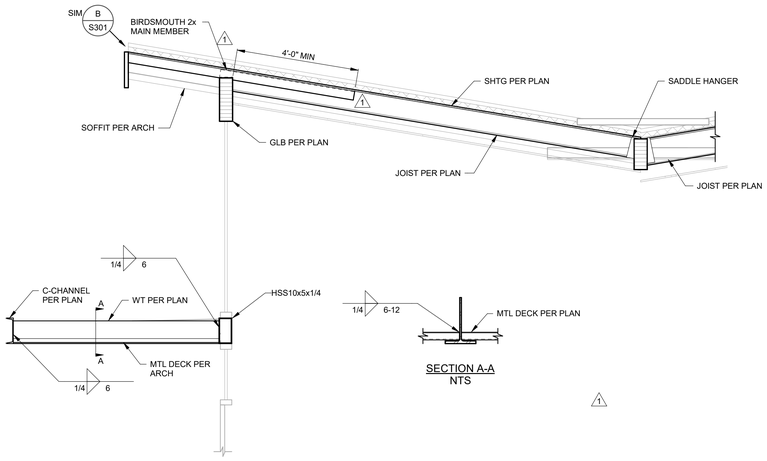
SHEET TITLE
ROOF FRAMING PLAN

DRAWN BY: Author | JOB NUMBER: 2100 15.01

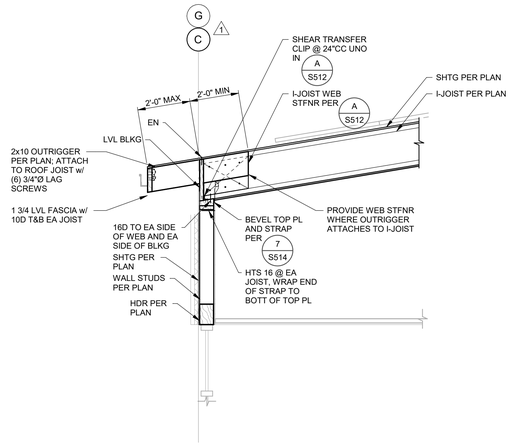
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S202

DATE:

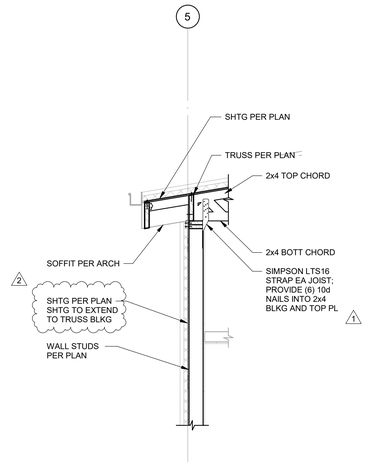
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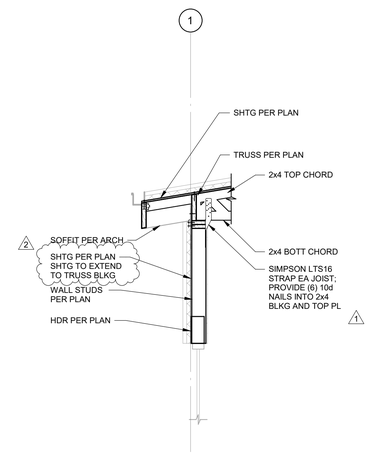
SECTION A S301 **1/2" = 1'-0"**



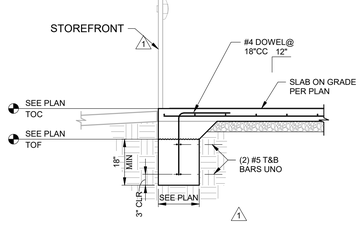
SECTION B S301 **1/2" = 1'-0"**



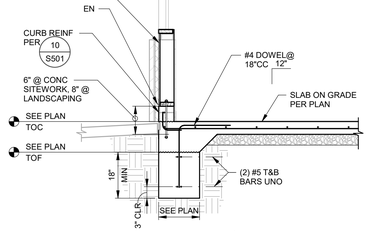
SECTION C S301 **1/2" = 1'-0"**



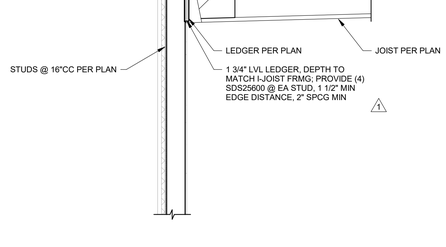
SECTION D S301 **1/2" = 1'-0"**



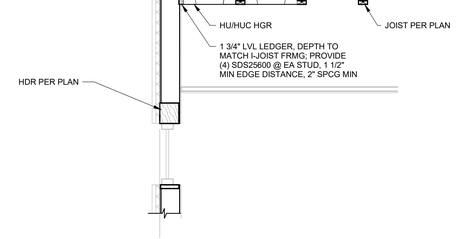
SECTION E S301 **1/2" = 1'-0"**



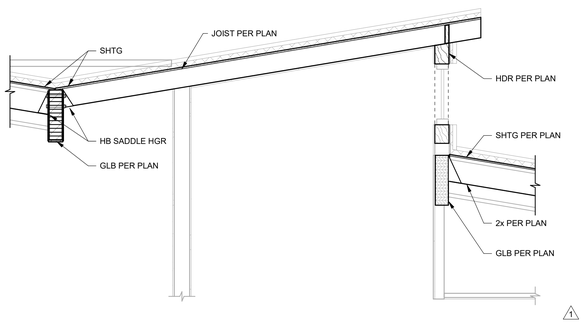
SECTION F S301 **1/2" = 1'-0"**



SECTION G S301 **1/2" = 1'-0"**



SECTION H S301 **1/2" = 1'-0"**



SECTION J S301 **1/2" = 1'-0"**

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

BUEHLER
600 Q STREET, SUITE 200
SACRAMENTO, CA 95811
916 443 0303

REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. RADER
No. 3592
STRUCTURAL
STATE OF CALIFORNIA

ARCHITECT STAMP	CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/2024	PC Revisions
2	10/23/2024	PC Revisions 2

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PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
BUILDING SECTIONS

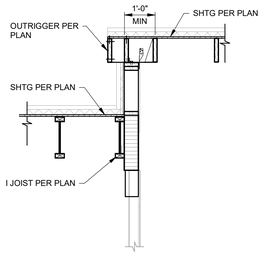
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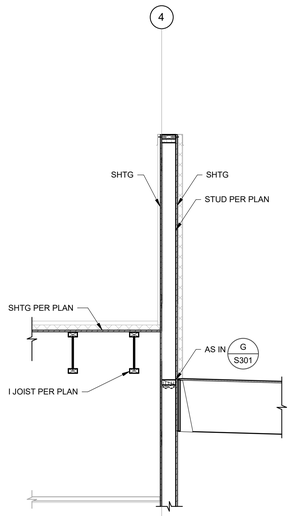
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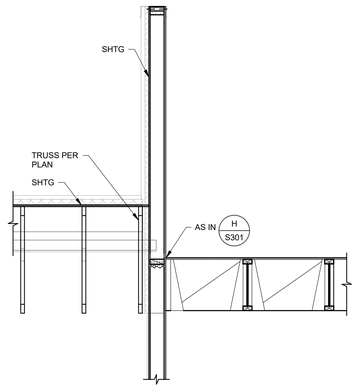
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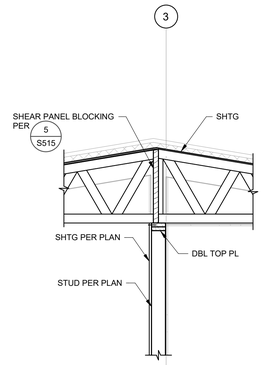
DETAIL F S302 1/2" = 1'-0"



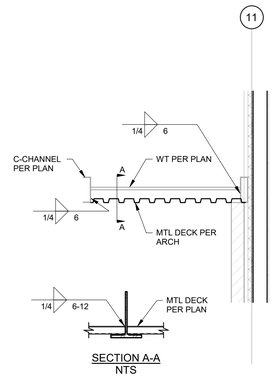
DETAIL G S302 1/2" = 1'-0"



DETAIL H S302 1/2" = 1'-0"



DETAIL J S302 1/2" = 1'-0"

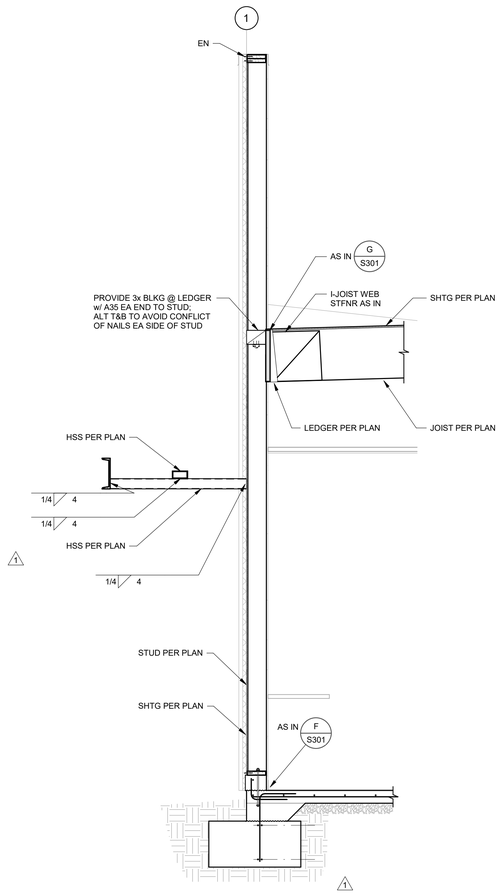


SECTION A-A
NTS

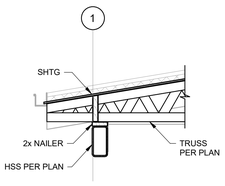
DETAIL L S302 1/2" = 1'-0"

SECTION A S302 1/2" = 1'-0"

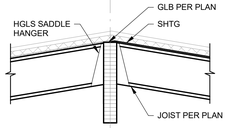
SECTION B S302 1/2" = 1'-0"



SECTION C S302 1/2" = 1'-0"



DETAIL D S302 1/2" = 1'-0"



DETAIL E S302 1/2" = 1'-0"

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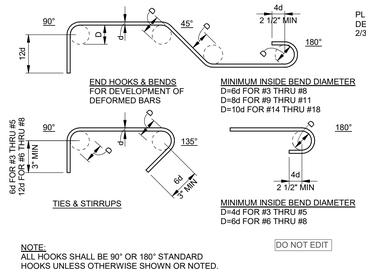
DRAWN BY: Author JOB NUMBER: 2100 15.01

SHEET NO.
S302

DATE:

BID SET (PRELIMINARY)

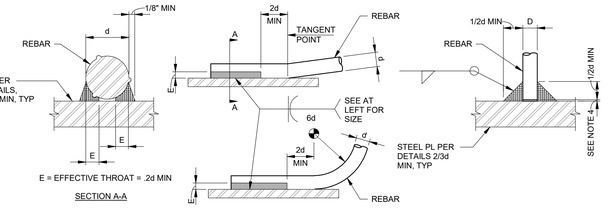
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NOTE:
ALL HOOKS SHALL BE 90° OR 180° STANDARD HOOKS UNLESS OTHERWISE SHOWN OR NOTED.

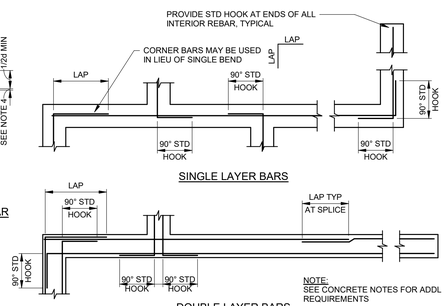
DO NOT EDIT

DETAIL 1/S501 — STANDARD REBAR HOOKS & BENDS
NO SCALE



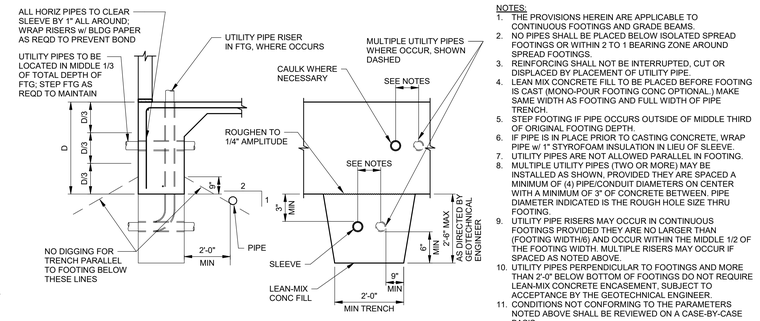
NOTES:
1. REINFORCING TO BE WELDED, EXCEPT ASTM A706, SHALL CONFORM TO THE MATERIAL PROPERTY REQUIREMENTS OF ANSI/AWS D1.4, NEWEST EDITION.
2. ALL PREHEATING AND WELDING SHALL BE DONE IN ACCORDANCE WITH ANSI/AWS D1.4, NEWEST EDITION. ALL ELECTRODES FOR WELDING SHALL COMPLY WITH AWS CODE, E80 SERIES MINIMUM FOR ASTM A706 GR60 AND E90 SERIES MINIMUM FOR ASTM A615 GR60. FOR HIGHER GRADE REINFORCING, REFER TO AWS D1.4, NEWEST EDITION, FOR ELECTRODE REQUIREMENTS.
3. ALL WELDING SHALL BE CONTINUOUSLY INSPECTED BY A QUALIFIED LABORATORY.
4. GAPS BETWEEN REBAR AND PLATE SHALL NOTE EXCEED 1/4d OR 3/16", WHICHEVER IS LESS.

DETAIL 2/S501 — REBAR WELDING
NO SCALE



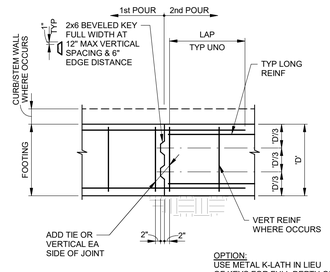
NOTE:
SEE CONCRETE NOTES FOR ADDL REQUIREMENTS

DETAIL 3/S501 — INTERSECTION & CORNER REINF AT FTGS
NO SCALE



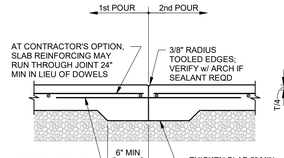
NOTES:
1. THE PROVISIONS HEREIN ARE APPLICABLE TO CONTINUOUS FOOTINGS AND GRADE BEAMS.
2. NO PIPES SHALL BE PLACED BELOW ISOLATED SPREAD FOOTINGS OR WITHIN 2 TO 1 BEARING ZONE AROUND SPREAD FOOTINGS.
3. REINFORCING SHALL NOT BE INTERRUPTED, CUT OR DISPLACED BY PLACEMENT OF UTILITY PIPE.
4. LEAN MIX CONCRETE FILL TO BE PLACED BEFORE FOOTING IS CAST (MOND-POUR FOOTING CONC OPTIONAL) MAKE SAME WIDTH AS FOOTING AND FULL WIDTH OF PIPE TRENCH.
5. STEP FOOTING IF PIPE OCCURS OUTSIDE OF MIDDLE THIRD OF ORIGINAL FOOTING DEPTH.
6. IF PIPE IS IN PLACE PRIOR TO CASTING CONCRETE, WRAP PIPE w/ 1" STYROFOAM INSULATION IN LIEU OF SLEEVE.
7. UTILITY PIPES ARE NOT ALLOWED PARALLEL IN FOOTING.
8. MULTIPLE UTILITY PIPES (TWO OR MORE) MAY BE INSTALLED AS SHOWN, PROVIDED THEY ARE SPACED A MINIMUM OF (4) PIPE/CONDUIT DIAMETERS ON CENTER WITH A MINIMUM OF 3" OF CONCRETE BETWEEN. PIPE DIAMETER INDICATED IS THE ROUGH HOLE SIZE THRU FOOTING.
9. UTILITY PIPE RISERS MAY OCCUR IN CONTINUOUS FOOTINGS PROVIDED THEY ARE NO LARGER THAN (FOOTING WIDTH/6) AND OCCUR WITHIN THE MIDDLE 1/2 OF THE FOOTING WIDTH. MULTIPLE RISERS MAY OCCUR IF SPACED AS NOTED ABOVE.
10. UTILITY PIPES PERPENDICULAR TO FOOTINGS AND MORE THAN 2'-0" BELOW BOTTOM OF FOOTINGS DO NOT REQUIRE LEAN-MIX CONCRETE ENCASEMENT, SUBJECT TO ACCEPTANCE BY THE GEOTECHNICAL ENGINEER.
11. CONDITIONS NOT CONFORMING TO THE PARAMETERS NOTED ABOVE SHALL BE REVIEWED ON A CASE-BY-CASE BASIS.

DETAIL 4/S501 — FOOTINGS AT UTILITY PIPES
NO SCALE

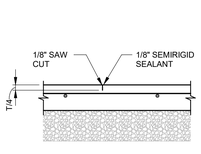


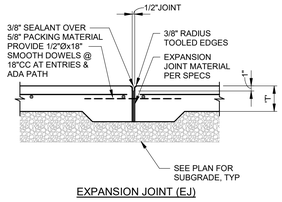
OPTION:
USE METAL K-LATH IN LIEU OF KEYS FOR FULL DEPTH OF FOUNDATION AT UNEXPOSED FOUNDATIONS ONLY.

DETAIL 5/S501 — FOUNDATION CONSTRUCTION JOINT
NO SCALE



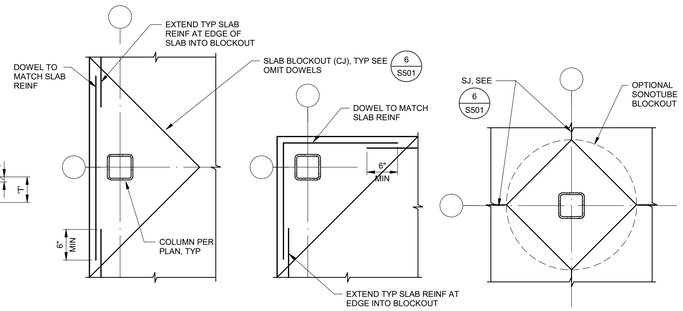
DETAIL 6/S501 — SLAB ON GRADE JOINTS
NO SCALE



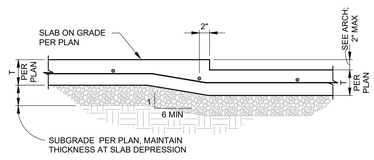


NOTES:
1. CONSTRUCTION JOINTS AND CONTROL JOINTS SHALL DIVIDE SLAB INTO AREAS NOT EXCEEDING 225 SQ FT WITHOUT REENTRANT CORNERS AND WITH LENGTH TO WIDTH RATIOS NOT EXCEEDING 1 1/2 TO 1. JOINT SPACING SHALL NOT EXCEED 15 FEET IN EITHER DIRECTION.
2. CONTRACTOR SHALL SUBMIT LAYOUT PLAN SHOWING PROPOSED CONTROL AND CONSTRUCTION JOINT LOCATIONS TO ARCHITECT & STRUCTURAL ENGINEER FOR REVIEW & APPROVAL.
3. SEMIRIGID SEALANT TO BE EUCLID EUCO #700 OR EQUAL.

DETAIL 7/S501 — SLAB ON GRADE BLOCKOUT
NO SCALE

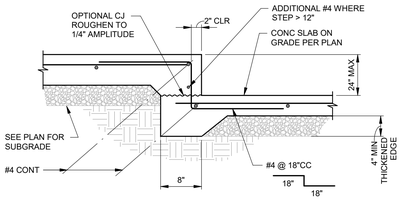


NOTES:
1. SLAB BLOCKOUT SHALL NOT EXTEND BEYOND FOOTING.
2. AT EXPOSED CONCRETE CONDITIONS, COORDINATE BLOCKOUT SHAPE AND SIZE w/ ARCH DWGS.

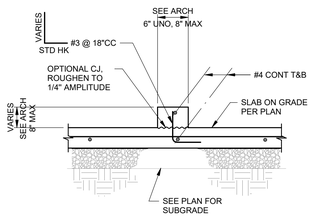


NOTE:
DETAIL APPLIES TO DEPRESSION / STEPS ≤ 2". FOR LARGER DEPRESSION / STEPS, SEE **9/S501**

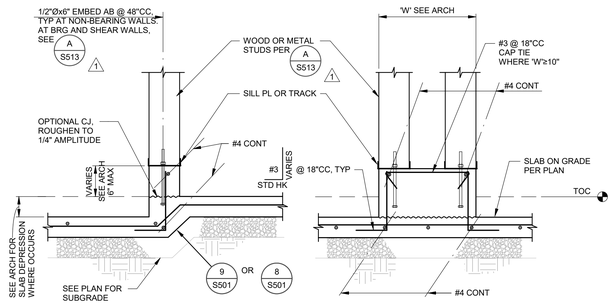
DETAIL 8/S501 — SLAB DEPRESSION
NO SCALE



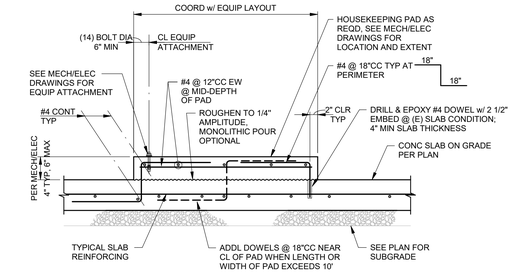
DETAIL 9/S501 — STEP IN SLAB
NO SCALE



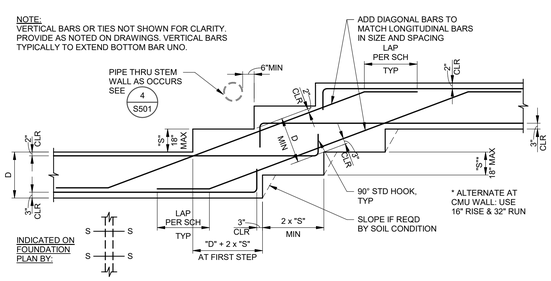
DETAIL 10/S501 — CURB AT SOG
NO SCALE



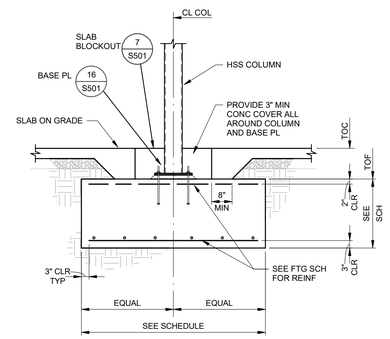
DETAIL 11/S501 — CURB AT SLAB DEPRESSION
NO SCALE



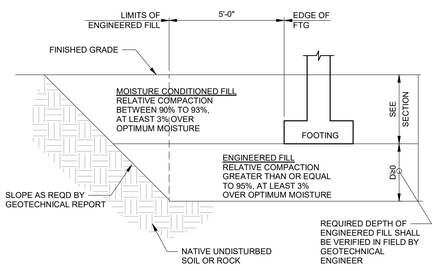
DETAIL 12/S501 — HOUSEKEEPING PAD AT SLAB ON GRADE
NO SCALE



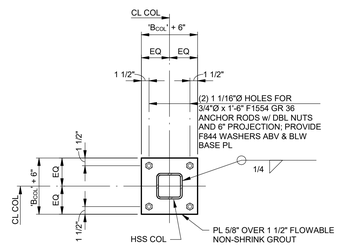
DETAIL 13/S501 — FOOTING STEP
NO SCALE



DETAIL 14/S501 — SPREAD FOOTING
NO SCALE



DETAIL 15/S501 — ENGINEERED FILL
NO SCALE



DETAIL 16/S501 — BASE PLATE AT HSS COLUMN
NO SCALE

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SHEET TITLE
TYPICAL CONCRETE DETAILS

DRAWN BY: Author JOB NUMBER: 2100 15.01

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S501

DATE:

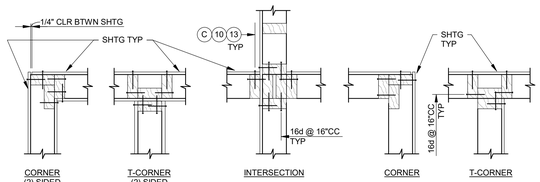
NAILING SCHEDULE
600SN002

ALL NAILS FOR STRUCTURAL WORK SHALL BE COMMON WIRE NAILS UNO, CONFORMING TO THE FOLLOWING MINIMUM SIZES:

8d	- 0.131" SHANK DIA (0.281" HEAD DIA) x 2-1/2"
10d	- 0.148" SHANK DIA (0.312" HEAD DIA) x 3"
10d SHORT	- 0.148" SHANK DIA (0.312" HEAD DIA) x 1 1/2"
16d	- 0.162" SHANK DIA (0.344" HEAD DIA) x 3 1/2"
20d	- 0.192" SHANK DIA (0.406" HEAD DIA) x 4"
20d BOX	- 0.148" SHANK DIA (0.375" HEAD DIA) x 4"
40d BOX	- 0.162" SHANK DIA (0.406" HEAD DIA) x 5"
RSRS-03	- 0.131" SHANK DIA (0.281" HEAD DIA) x 2 1/2" (ROOF SHTG RING SHANK)

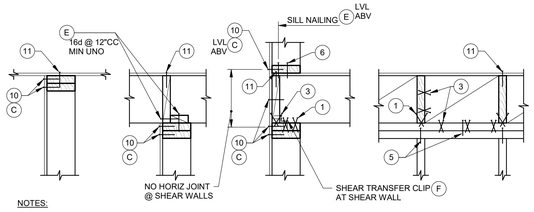
HOLES SHALL BE PRE-DRILLED WHERE NECESSARY TO PREVENT SPLITTING. NAILING NOT NOTED BELOW OR ON PLANS SHALL BE A MINIMUM OF TWO NAILS AT EACH CONTACT. 8d FOR 1x MATERIAL AND 16d FOR 2x MATERIAL.

1. JOISTS OR RAFTERS------SAWN LUMBER BRG ON PLATES — TN EACH SIDE----------(2)10d
   I-JOISTS BRG ON PLATES — EACH SIDE OF WEB----------(2)10d
   LAPPED TO SIDES OF STUDS — 2x4, 2x6 ----------(3)16d
   2x8 - 2x12 ----------(4)16d
2. STUDS TO BEARINGS-----2x4 STUDS (3x, 4x SIM) — TN EACH SIDE----------(2)10d
   EN IN LIEU OF TN----------(2)16d
   2x6 AND 2x8 STUDS — TN EACH SIDE----------(3)10d
   EN IN LIEU OF TN----------(3)16d
   2x10 AND 2x12 STUDS — TN EACH SIDE----------(4)10d
   EN IN LIEU OF TN----------(4)16d
3. BLOCKING----------BETWEEN JOISTS, RAFTERS OR STUDS — TN EACH SIDE EACH END----(2)10d
   BETWEEN JOIST OR RAFTER BEARINGS (PLATES) — EN IN PLACE OF TN----------(2)16d
   TN EA SIDE ----------(3)10d
4. CONTINUOUS RIM----------TO DBL TOP PLATES — TN EA SIDE----------16d @ 16"CC OMIT WHERE SHEAR TRANSFER FASTENERS PER **2/SS11** OCCUR ⚠1
5. LEDGERS ----------TO STUDS — 1x LEDGER ----------(2)8d; 2x LEDGER----------(3)16d
6. DOUBLE TOP PLATES -----LOWER PLATE TO 2x4 STUD----------(2)16d
   LOWER PLATE TO 2x6 OR 2x8 STUD----------(3)16d
   UPPER PLATE TO LOWER PLATE ----------SEE **2/SS11**
7. SILL PLATES ----------TO PARALLEL FRAMING----------16d @ 12"CC
   TO PERPENDICULAR FRAMING -------EACH CONTACT----------(2)16d
8. MULTIPLE STUDS---------- STAGGER FOR WIDTHS MORE THAN 4" ----------16d @ 12"CC
9. BUILT UP BEAMS ----------(2)2x MEMBERS, TOP AND BOTTOM ----------16d @ 12"CC CLINCHED
   3 OR MORE 2x MEMBERS ----------1/2" DIA BOLTS @ 12"CC STAGGERED
10. CEILING STRIPPING ----- HOLES SHALL BE PRE-DRILLED FOR NAILS AT ENDS OF STRIPPING BOARDS. WHERE CEILING IS PLASTER OR 5/8" GYPSUM USE ANNULAR RING NAILS (NO SLANT). — 1x ---------- (2)8d (1-SLANT); 2x ----------(2)16A (1-SLANT)
11. SHEAR WALL NAILING----------SEE **1/SS12** . ⚠1
12. FLOOR OR ROOF NAILING----------SEE PLAN NOTES AND **9/SS11**
13. NON-STRUCTURAL --------AT EDGES AND INTERIOR SIDING SUPPORTS — HDG CASING NAILS----------6d @ 6"CC
14. NON-STRUCTURAL ---------AT EDGES SHEATHING — AT FIELD — NAILS TO MATCH SHEAR WALLS @ 6"CC; NAILS TO MATCH SHEAR WALLS @ 12"CC ⚠1
15. USE DEFORMED SHANK NAILS FOR ALL FLOOR SHEATHING.
16. ALL EXPOSED FASTENERS SHALL HAVE A ZINC-COATING CORROSION RESISTIVE SURFACE.
17. NAILS USED INTO PRESSURE TREATED OR FIRE RETARDANT MATERIAL SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123 OR STAINLESS STEEL.



NOTES:
(#) INDICATES CORRESPONDING NOTE FROM NAILING SCHEDULE ON GENERAL NOTES SHEET. THIS IS THE MINIMUM REQUIRED NAILING, SHEAR WALL SCHEDULE NAILING SUPERCEDES THIS DETAIL.
(X) INDICATES CORRESPONDING NAILING FROM SHEAR WALL SCHEDULE **2/SS11**.

DETAIL 3/S511 — STRUCTURAL STUD FRAMING CONDITIONS — NO SCALE

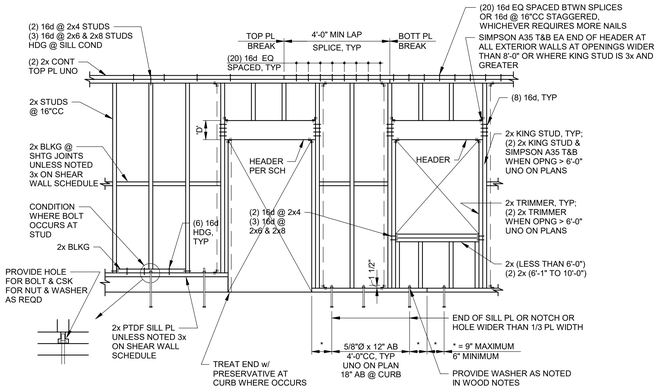


NOTES:
(#) INDICATES CORRESPONDING NOTE FROM NAILING SCHEDULE. THIS IS THE MINIMUM REQUIRED NAILING, SHEAR WALL SCHEDULE NAILING SUPERCEDES THIS DETAIL.
(X) INDICATES CORRESPONDING NAILING FROM SHEAR WALL SCHEDULE . 610SD001

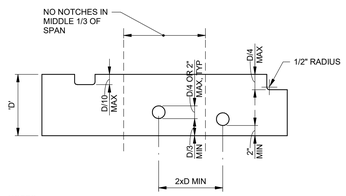
DETAIL 1/S511 — TYPICAL NAILING — NO SCALE

HEADER SCHEDULE	
WIDTH OF OPENING	NOMINAL HEADER DEPTH 'D'
0 TO 4'-0"	8"
4'-1" TO 6'-0"	10"
6'-1" TO 8'-0"	12"
> 8'-0"	SEE PLAN
TYP UNO ON PLAN OR IN PLAN NOTES	

NOTES:
1. HEADER SHALL BE FULL WIDTH OF STUD WALL.
2. PROVIDE POSTS & ANCHORS AT HOLDOWNS WHERE OCCUR PER PLAN, SEE **4/SS12**
3. AT OPENINGS FOR MECH DUCTS, SEE **4/SS12**
4. FOR SHEAR WALL NAILING, SEE SCH AND **4/SS12**
5. LOCATE TOP PLATE BREAKS OVER STUDS.

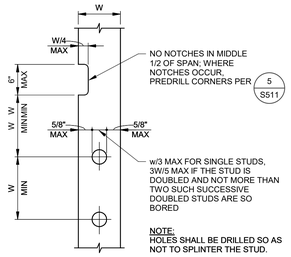


DETAIL 2/S511 — STRUCTURAL WALL FRAMING — NO SCALE



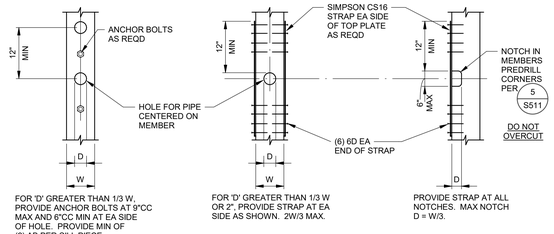
NOTES:
1. PREDRILL CORNERS OF NOTCHES SO AS NOT TO OVER CUT.
2. NOTCHES IN THE BOTTOM OF JOISTS ALLOWED ONLY WHERE SPECIFICALLY SHOWN ON DRAWINGS.
3. APPLIES TO SAWN LUMBER MEMBERS ONLY. NO NOTCHES ALLOWED IN OTHER TYPES OF MEMBER UNLESS SPECIFICALLY DETAILED IN THE DRAWINGS.

DETAIL 5/S511 — NOTCHES IN JOISTS & HEADERS — NO SCALE



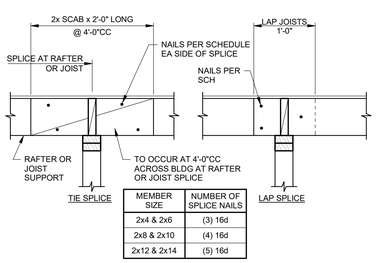
NOTE:
HOLES SHALL BE DRILLED SO AS NOT TO SPLINTER THE STUD.

DETAIL 4/S511 — HOLE OR NOTCH AT STUD — NO SCALE



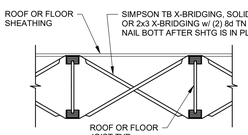
NOTE:
FOR MULTIPLE HOLES AND NOTCHES, MAINTAIN 18" CLEAR MIN AND EXTEND STRAP 12" PAST LAST HOLE OR NOTCH.

DETAIL 6/S511 — HOLE OR NOTCH THRU PLATES — NO SCALE



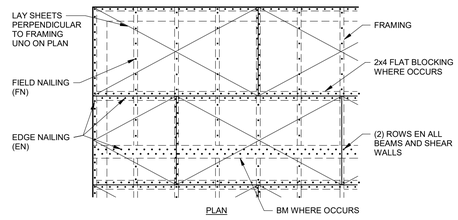
MEMBER SIZE	NUMBER OF SPLICE NAILS
2x4 & 2x6	(3) 16d
2x8 & 2x10	(4) 16d
2x12 & 2x14	(5) 16d

DETAIL 7/S511 — JOIST & RAFTER SPLICE — NO SCALE



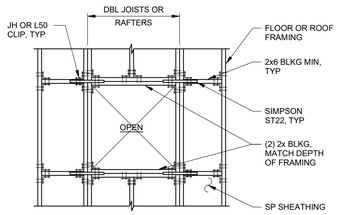
NOTE:
SIMILAR AT SOLID SAWN FRAMING. DETAIL OCCURS AT 8'-0"CC AT FLOORS AND 10'-0"CC AT ROOFS. OMIT AT SOLID SAWN ROOF RAFTERS 8" DEEP AND SMALLER, UNO.

DETAIL 8/S511 — CROSS BRIDGING — NO SCALE



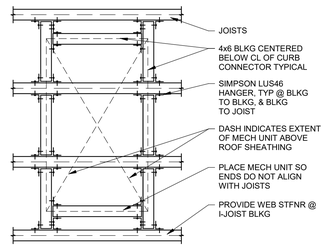
NOTES:
1. SEE PLAN FOR SHEATHING TYPE AND NAIL SIZE AND SPACING.
2. PROVIDE EN AT ALL SHEET EDGES, BEAMS, SHEAR WALLS, BLOCKING, AND MECHANICAL UNITS.
3. EN SHALL BE PER PLAN.
   FN SHALL BE @ 12"CC. NAIL SIZE TO MATCH EN.
4. PROVIDE FLAT BLOCKING AND EN AT ALL UNSUPPORTED EDGES WHERE BLOCKING AND NAILING ARE INDICATED ON PLAN.
5. STAGGER SP JOINTS AS SHOWN. MINIMUM PANEL DIMENSION IN EITHER DIRECTION IS 24".
6. EN SHALL BE 10d NAILS, UNO.
7. FRAMING AT PANEL EDGES, SHALL BE 3x WHERE NAILS ARE SPACED < 3"CC.
8. ALL 3x AND GREATER MATERIAL IN DIAPHRAGMS SHALL BE LESS THAN 19% MOISTURE CONTENT UNLESS SPECIFICALLY ALLOWED BY SEOR IN WRITING.

DETAIL 9/S511 — FLOOR & ROOF NAILING — NO SCALE



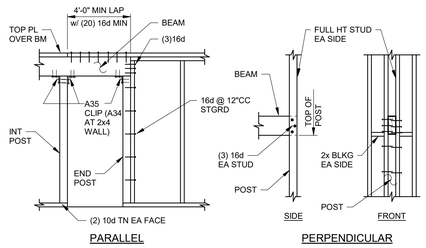
NOTE:
OPENINGS TO BE 4'-0" SQUARE MAXIMUM
SPACING NO CLOSER THAN 6'-0"CC

DETAIL 10/S511 — OPENING IN FLOOR OR ROOF — NO SCALE

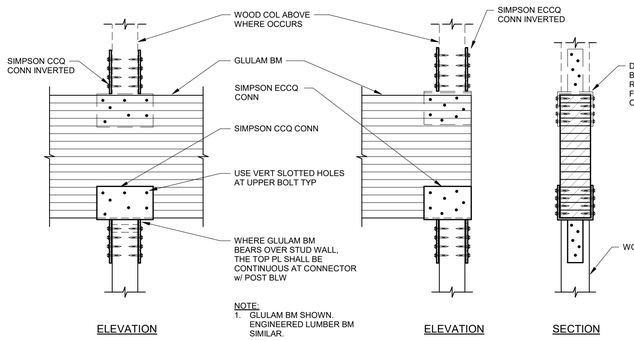


NOTE:
ALL UNITS SHALL BE PLACED TO ELIMINATE JOISTS WHICH MUST BE HEADED OFF FOR PLENUMS

DETAIL 11/S511 — MECHANICAL UNIT SUPPORT AT JOISTS — NO SCALE

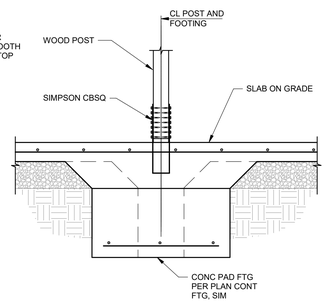


DETAIL 12/S511 — POST & BEAM CONNECTION — NO SCALE



NOTE:
1. GLULAM BM SHOWN. ENGINEERED LUMBER BM SIMILAR.

DETAIL 13/S511 — BEAM AT POST w/ CAP — NO SCALE



DETAIL 14/S511 — POST BASE — NO SCALE

1996
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

BUEHLER
600 Q STREET, SUITE 200
SACRAMENTO, CA 95811
916 443 0303

REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. RADER
No. 3592
STRUCTURAL
STATE OF CALIFORNIA

ARCHITECT STAMP | CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/2024	PC Revisions

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
TYPICAL FRAMING AND NAILING DETAILS

DRAWN BY: Author JOB NUMBER: 2100 15.01

SHEET NO.
S511

DATE:

DATE PLOTTED: 10/23/2024 5:26:14 PM FILE LOCATION: c:\revit\2023-0123_DRY CREEK WWTP_rvt22_CENTRAL_Francisco_O_Rodriguez.rvt

BID SET (PRELIMINARY)

A S512 SHEAR WALL SCHEDULE

15/32" APA RATED SHEATHING

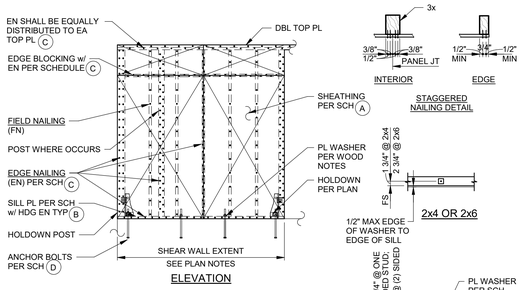
Mk	SHEATHING MATERIAL (A)	STUDS & BLKG @ PANEL JOINTS	SILL & TOP PLATES (B)	SHEATHING EDGE NAILING (C)	ANCHOR BOLT SPACING (D)	SHEAR/SILL TRANSFER FASTENERS (E)	SHEAR TRANSFER CLIPS (F)
1	15/32" SHTG (1) SIDE	2x	2x	10d @ 6"CC	5/8"Ø @ 48"CC	SDS @ 12"CC	@ 12"CC
2	15/32" SHTG (1) SIDE	2x	2x	10d @ 4"CC	5/8"Ø @ 32"CC	SDS @ 8"CC	@ 8"CC
3	15/32" SHTG (1) SIDE	3x	2x TYP UNO 3x @ FND	10d @ 3"CC STAGGERED	5/8"Ø @ 32"CC	SDS @ 8"CC	@ 8"CC
4	15/32" SHTG (1) SIDE	3x	2x TYP UNO 3x @ FND	10d @ 2"CC STAGGERED	5/8"Ø @ 24"CC	SDS @ 6"CC	@ 6"CC
5	15/32" SHTG (2) SIDES	3x ALL STUDS	2x TYP UNO 3x @ FND	10d @ 4"CC	5/8"Ø @ 24"CC	SDS @ 8"CC INTO RIM & 8"CC INTO 2x BLKG	@ 8"CC (2) SIDES
6	15/32" SHTG (2) SIDES	3x ALL STUDS	2x TYP UNO 3x @ SILL PL	10d @ 3"CC STAGGERED	5/8"Ø @ 16"CC	SDS @ 8"CC INTO RIM & 8"CC INTO 2x BLKG	@ 8"CC (2) SIDES
7	15/32" SHTG (2) SIDES	3x ALL STUDS	2x TYP UNO 3x @ SILL PL	10d @ 2"CC STAGGERED	5/8"Ø @ 12"CC	SDS @ 6"CC INTO RIM & 6"CC INTO 2x BLKG	@ 6"CC (2) SIDES

NOTES:
A. APA RATED SHEATHING GRADE.
B. ALL TOP PLATES SHALL BE (2) 2x NOMINAL UNO ON SECTIONS OR DETAILS. NAILING SHALL BE STAGGERED BETWEEN PLATES.
C. FOR SHEAR WALL NAILING AND FRAMING REQUIREMENTS, SEE **1/S512**
D. PROVIDE 12" LONG ANCHOR BOLTS EXCEPT AT CONCRETE OVER METAL DECK WHERE A MINIMUM OF 5" EMBEDMENT IS REQUIRED. PROVIDE 18" LONG ANCHOR BOLTS AT CURBS, TYP. SEE WOOD NOTES ON GENERAL NOTES SHEET FOR WASHER REQUIREMENTS.
E. SHEAR/SILL FASTENERS ONLY REQUIRED WHERE INDICATED ON SECTIONS AND DETAILS. WHERE INDICATED, FASTENERS SHALL BE SIMPSON SDS 1/4" DIAMETER SCREWS x 4-1/2" LONG AT 2x SILLS AND 6" LONG @ 3x SILLS.
F. SHEAR TRANSFER CLIPS ARE ONLY REQD WHERE INDICATED ON SECTIONS AND DETAILS. WHERE INDICATED, CLIPS SHALL BE SIMPSON LTP4 WITH 0.131x2 1/2" NAILS (INSTALLED WITH LONG DIMENSION HORIZONTAL)OR A35 CLIPS.

B S512 HD ANCHOR AND POST SCHEDULE

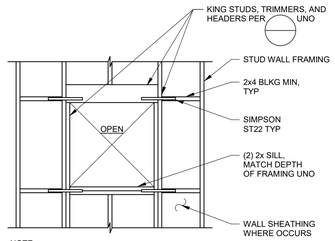
Ø Mk	HOLDOWN	ROD DIAMETER	ALTERNATE ANCHOR @ FOUNDATION	ALTERNATE STRAP @ FLOOR FRAMING	POST @ SINGLE HD MINIMUM	POST @ DOUBLE HD MINIMUM
2	HDU2	5/8"	SSTB20 (16 5/8" MIN EMBED)	MSTC66	(2) 2x	4x
4	HDU4	5/8"	SSTB20 (16 5/8" MIN EMBED)	MSTC78	(2) 2x	4x
5	HDU5	5/8"	SSTB24 (20 5/8" MIN EMBED)	NONE	(2) 2x	4x
8	HDU8	7/8"	SSTB34 (28 7/8" MIN EMBED)	NONE	4x	6x
11	HDU11	1"	NONE	NONE	6x	8x
14	HDU14	1"	NONE	NONE	6x	8x

NOTES:
1. HD ANCHORS DO NOT REPLACE SILL BOLTS AT FOUNDATION.
2. DOUBLE HOLDOWN CONDITION, INDICATED WITH (2).



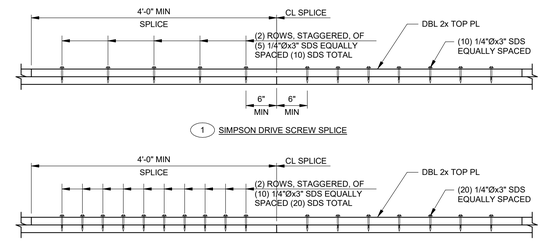
NOTES:
1. SEE SCHEDULE FOR SHEATHING TYPE AND NAIL SIZE AND SPACING.
2. PROVIDE EN AT ALL SHEET EDGES, SILL PL, TOP PL, BLOCKING, AND POSTS. AT ALL SHTG SHOWN ON THE STRUCTURAL DRAWINGS, EN SHALL BE 6"CC MIN.
3. EN SHALL BE 10d NAILS, UNO.
4. FN SHALL BE @ 12"CC. NAIL SIZE TO MATCH EN.
5. MINIMUM PANEL DIMENSION IN EITHER DIRECTION IS 12".
6. SEE SHEAR WALL SCHEDULE FOR INFORMATION NOT NOTED.
7. EDGE NAILING INTO ALL PRESSURE TREATED LUMBER SHALL BE HOT DIPPED GALVANIZED. STAINLESS STEEL MAY BE USED AS AN OPTION.
8. SHEAR WALL LENGTH ON PLAN INDICATES MINIMUM, CONTINUOUS REQUIRED LENGTH. ACTUAL SHEAR WALL LENGTH SHALL EXTEND TO WALL ENDS, CORNERS, OR OPENINGS PER ARCH DWGS UNO.
9. COORDINATE SIDE OF WALL TO RECEIVE SHEATHING WITH ARCH DWGS. NOTIFY ARCHITECT OF CONFLICTS PRIOR TO COMMENCING ANY WORK.

DETAIL **SHEAR WALL NAILING** 1/S512 NO SCALE



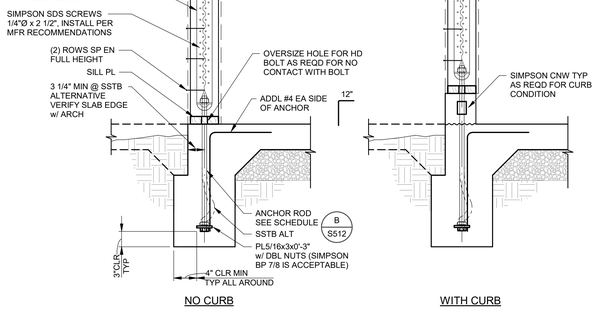
NOTE:
1. OPENINGS TO BE 4'-0" SQUARE MAXIMUM SPACING NO CLOSER THAN 6'-0"CC
2. OPENINGS IN DESIGNATED SHEAR WALLS NOT PERMITTED UNLESS SPECIFICALLY DETAILED ON PLAN

DETAIL **OPENING IN WALL SHEATHING** 2/S512 NO SCALE

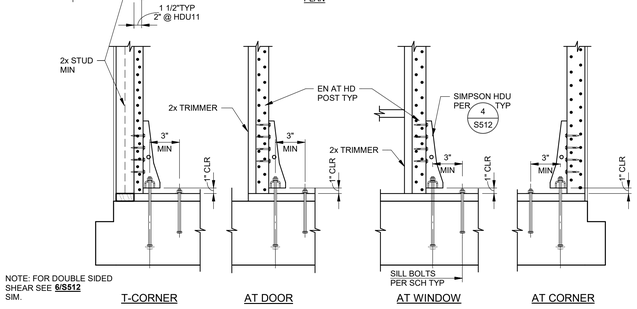


NOTE:
FASTENERS WILL OCCUR AT EA SIDE OF SPLICE TO ESTABLISH CONTINUITY OF DBL TOP PL.

DETAIL **TOP PLATE SDS SPLICE** 3/S512 NO SCALE

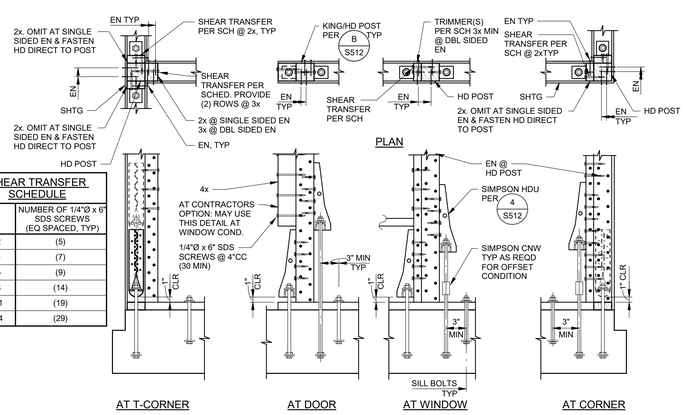


DETAIL **HOLDOWN AT FOUNDATION** 4/S512 NO SCALE



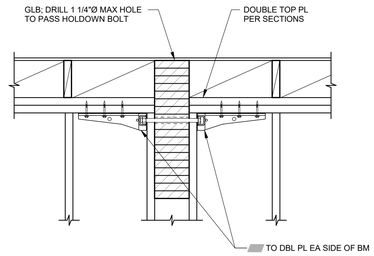
NOTE: FOR DOUBLE SIDED SHEAR SEE **6/S512** SIM.

DETAIL **HOLDOWN PLACEMENT AT FOUNDATION** 5/S512 NO SCALE

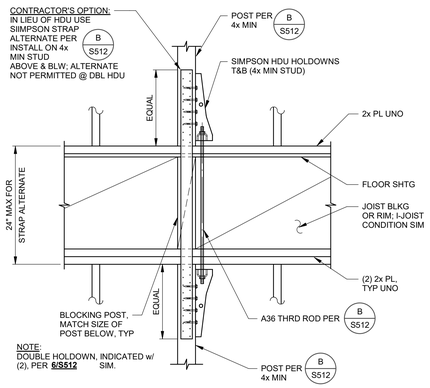


SHEAR TRANSFER SCHEDULE	
Ø Mk	NUMBER OF 1/4"Ø x 6" SDS SCREWS (EQ SPACED, TYP)
(2) 2	(5)
(2) 4	(7)
(2) 5	(9)
(2) 8	(14)
(2) 11	(19)
(2) 14	(29)

DETAIL **DOUBLE HOLDOWN PLACEMENT AT FDN** 6/S512 NO SCALE

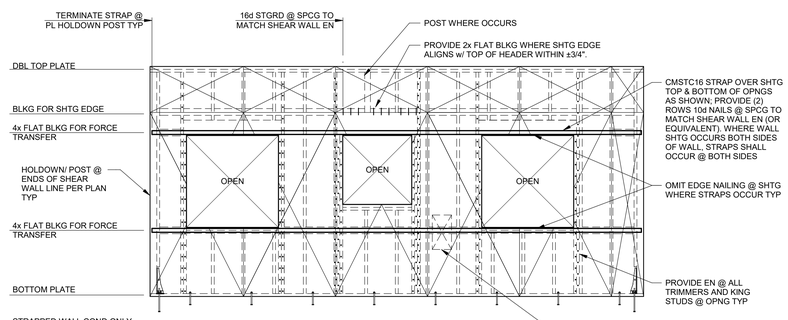


DETAIL **TOP PLATE HOLDOWN AT BEAM** 7/S512 NO SCALE



NOTE:
DOUBLE HOLDOWN, INDICATED w/ (2), PER **8/S512** SIM.

DETAIL **HOLDOWN AT FLOOR** 8/S512 NO SCALE



NOTES:
1. FOR ADDL WALL FRAMING INFO, SEE **2/S511**
2. FOR ADDL SHEAR WALL NAILING INFO, SEE **1/S512**

DETAIL **STRAPPED SHEAR WALL FRAMING** 9/S512 NO SCALE

196
2237 DOUGLAS BLVD, SUITE 160
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BUEHLER
600 Q STREET, SUITE 200
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. RADER
No. 3592
STRUCTURAL
STATE OF CALIFORNIA

ARCHITECT STAMP | CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
TYPICAL SHEAR WALL AND HOLDOWN DETAIL

DRAWN BY: Author JOB NUMBER: 2100 15.01

SHEET NO.
S512

DATE:

DATE PLOTTED: 10/23/2024 5:26:16 PM FILE LOCATION: c:\revit\2023-0123_DRY CREEK WWTP_rvt22_CENTRAL_Francisco_O_Rodriguez.rvt

BID SET (PRELIMINARY)

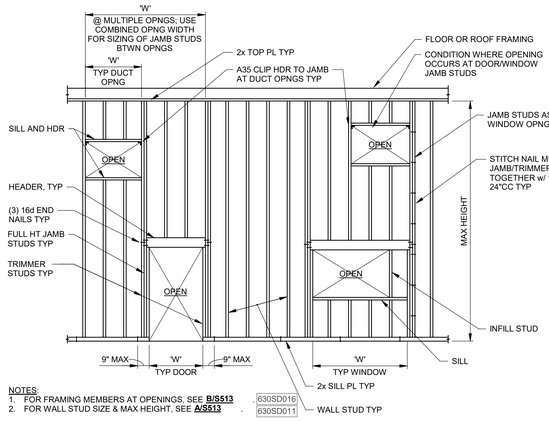
A S513 NON-BEARING INTERIOR STUD MAX HEIGHT SCHEDULE

STUD SIZE	SPACING		
	@ 12"CC	@ 16"CC	@ 24"CC
2x4	15'-6"	14'-0"	12'-4"
2x6	22'-0"	20'-0"	18'-6"

NOTE:
ALL STUDS SHALL BE DF #2 OR BETTER.

B S513 NON-BEARING INTERIOR HEADER AND JAMB FRAMING SCHEDULE

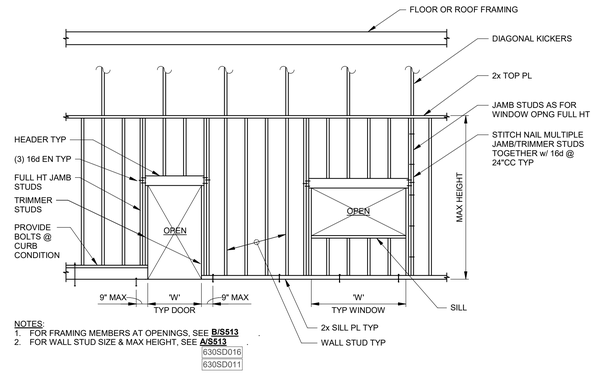
OPENING TYPE	'W' WIDTH	HEADER SIZE	SILL SIZE	JAMB STUDS	TRIMMER STUDS
1	1'-4" TO 4'-8"	STUD WIDTH x 6" D	2x FLAT	2x	2x
2	4'-9" TO 9'-10"	STUD WIDTH x 8" D	2x FLAT	2x	2x
3	9'-11" TO 14'-4"	STUD WIDTH x 10" D	2x FLAT	(2) 2x	(2) 2x
4	14'-5" TO 18'-0"	STUD WIDTH x 12" D	(3) 2x FLAT	(3) 2x	(2) 2x



NOTES:
1. FOR FRAMING MEMBERS AT OPENINGS, SEE **B/S513**
2. FOR WALL STUD SIZE & MAX HEIGHT, SEE **A/S513**

630SD016
630SD011

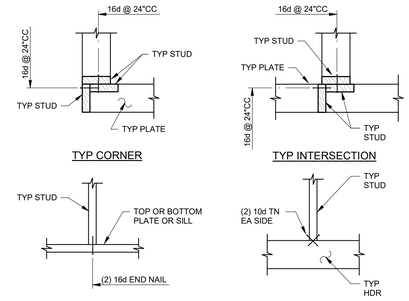
DETAIL **FULL HT INTERIOR WOOD STUD WALL ELEVATION** — 1 / S513 — NO SCALE



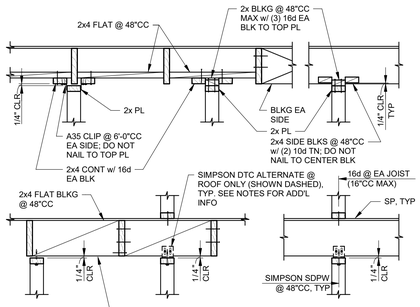
NOTES:
1. FOR FRAMING MEMBERS AT OPENINGS, SEE **B/S513**
2. FOR WALL STUD SIZE & MAX HEIGHT, SEE **A/S513**

630SD016
630SD011

DETAIL **PARTIAL HEIGHT INTERIOR WALL FRAMING** — 2 / S513 — NO SCALE

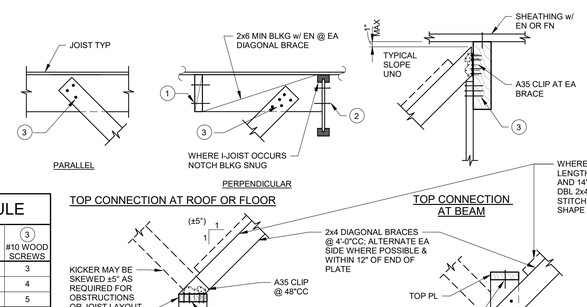


DETAIL **NON-STRUCTURAL FRAMING CONDITIONS** — 3 / S513 — NO SCALE



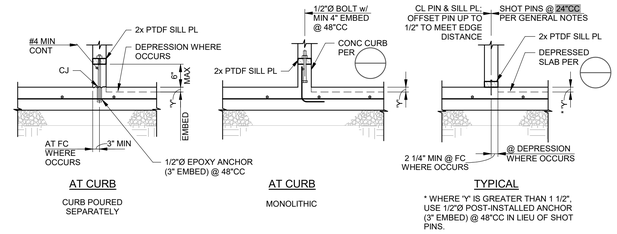
NOTES:
1. AT CONTRACTORS OPTION USE DTC CLIPS @ 48"CC IN LIEU OF SDPW SCREWS AT ROOF FRAMING ONLY.
2. FOR WALLS > 10' USE (2) SIMPSON SDPW SCREWS @ 48" CC. AT CONTRACTOR'S OPTION USE (2) DTC CLIPS AT 48"CC AT ROOF FRAMING ONLY.

DETAIL **INTERIOR NON-BEARING PARTITION AT TOP PLATE** — 4 / S513 — NO SCALE



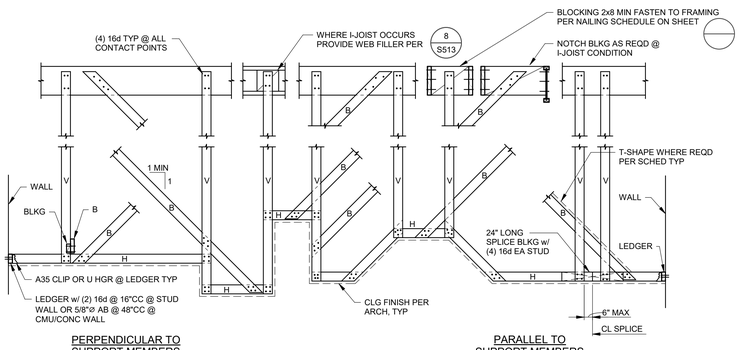
FASTENER SCHEDULE			
MAX HEIGHT OF PARTITION WALL	(1) 16d END NAILS	(2) 10d END NAILS	(3) #10 WOOD SCREWS
10'-0"	2	3	3
14'-0"	3	4	4
18'-6"	4	6	5

DETAIL **INTERIOR PARTIAL HEIGHT WALL BRACING** — 5 / S513 — NO SCALE



* WHERE 'Y' IS GREATER THAN 1 1/2", USE 1/2"Ø POST-INSTALLED ANCHOR (3" EMBED) @ 48"CC IN LIEU OF SHOT PINS.

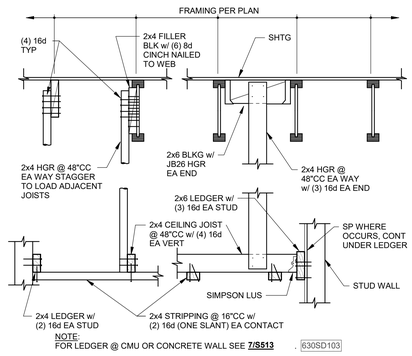
DETAIL **INTERIOR NON-BEARING PARTITION AT SILL PLATE** — 6 / S513 — NO SCALE



SOFFIT FRAMING SCHEDULE				
	H	V	B	
MAX MEMBER SPACING	2'-0"	2'-0"	8'-0"	
MAX ALLOW AREA SUPP	16 FT²	18 FT²	64 FT²	
	20 FT²*			
MAX LENGTH OF MEMBER	8'-0"	8'-0"	<6'-0"	6'-1" TO 14'-0" DBL 2x4 "I" SHAPE BRACE**
	10'-0"*			

NOTES:
1. BRACE REQUIRED IN ALL VERTICAL OFFSETS. ALTERNATE DIRECTION OF BRACE WHERE POSSIBLE.
2. SCHEDULE BASED ON:
   - 2x4 DF #2 MEMBERS UNO
   - 13.0 PSF DL + 10 PSF LL
   - MAX DL DEFLECTION = L/360
   - * 2x6 DF #2
   - ** REQUIRES DBL 2x4 w/ 16d @ 12"CC STITCH NAILING IN "I" SHAPE THUS:

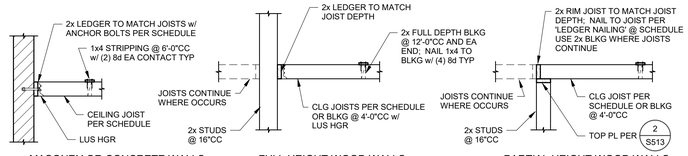
DETAIL **SOFFIT FRAMING** — 7 / S513 — NO SCALE



NOTE:
FOR LEDGER @ CMU OR CONCRETE WALL SEE **7/S513**

630SD103

DETAIL **SUSPENDED FRAMING** — 8 / S513 — NO SCALE



CEILING JOIST SCHEDULE			
MAXIMUM SPAN	SIZE & SPACING	LEDGER NAILING	LEDGER BOLTING
UP TO 7'-6"	2x4 @ 16"CC	(2) 16d / CONTACT	5/8"Ø @ 4'-0"CC
7'-7" TO 14'-0"	2x6 @ 16"CC	(2) 16d / CONTACT	5/8"Ø @ 4'-0"CC
14'-1" TO 18'-0"	2x8 @ 16"CC	(3) 16d / CONTACT	5/8"Ø @ 2'-8"CC

DETAIL **CEILING FRAMING** — 9 / S513 — NO SCALE

196
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REGISTERED PROFESSIONAL ENGINEER
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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
INTERIOR TYPICAL NON-STRUCTURAL DETAILS

DRAWN BY: Author JOB NUMBER: 2100 15.01

SHEET NO.
S513

DATE:

DATE PLOTTED: 10/23/2024 5:26:17 PM FILE LOCATION: c:\revit\2023-0123_DRY CREEK WWTP_rvt22_CENTRAL_Francisco_O_Rodriguez.rvt

BID SET (PRELIMINARY)

I-JOIST
6405N001

FLAT ROOF DESIGN LOAD 16 PSF DL 20 PSF LL

SLOPPED ROOF DESIGN LOAD 17 PSF DL 20 PSF LL

NET WIND UPLIFT LOAD (0.6D+0.6W) FOR ZONE 1' -2 PSF

NET WIND UPLIFT LOAD (0.6D+0.6W) FOR ZONE 1 -6 PSF

NET WIND UPLIFT LOAD (0.6D+0.6W) FOR ZONE 2 & 3 -10 PSF

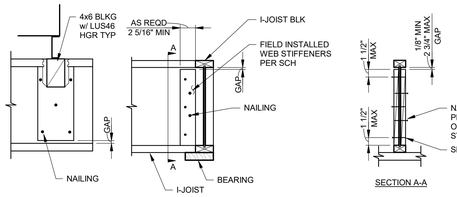
WIND LOAD ZONES DEFINED IN ASCE 7-16 FIG 30.3

DISCONTINUITY DISTANCE 'A' = 8.4 FT.

1. I-JOISTS AS INDICATED ON DRAWINGS ARE I-LEVEL (OR RED-BUILT) DESIGNATIONS AND ARE FOR REFERENCE TO INDICATE REQUIRED DEPTH, SPACING AND CAPACITY ONLY. SUBMIT ALLOWABLE LOAD TABLES AND ICC-ESR FOR EQUIVALENT I-JOIST AND HARDWARE REVIEW BY DIRECT COMPARISON. FOR MINIMUM MATERIAL PROPERTIES AT NORMAL DURATION SEE TABLE BELOW.

JOIST TYPE	DEPTH	FLANGE	FLANGE GRADE	WEB	RESIST MOMENT	RESIST SHEAR	MIN E/x10^6
-	"	"X"	2.0DF	7/16"	'#'	#	#IN²
-	"	"X"	2.0DF	7/16"	'#'	#	#IN²
-	"	"X"	2.0DF	7/16"	'#'	#	#IN²
-	"	"X"	2.0DF	7/16"	'#'	#	#IN²
-	"	"X"	2.0DF	7/16"	'#'	#	#IN²

2. CHORD MATERIAL SHALL BE LAMINATED VENEER LUMBER (LVL) OR MACHINE STRESS RATED LUMBER WITH A MINIMUM SPECIFIC GRAVITY OF 0.50.
3. WEB MATERIAL SHALL BE OSB.
4. DESIGN AND FABRICATION SHALL CONFORM TO THE MANUFACTURERS ICC-ESR.
5. ALLOWABLE STRESS INCREASE FOR LOAD DURATION SHALL BE:
   WIND/SEISMIC - 60% ROOF - 25% SNOW - 15% FLOOR - 0%
6. I-JOIST SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO THE ARCHITECT AND/OR STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION. DRAWINGS SHALL BE "STAND ALONE" WITH NO REFERENCES TO STRUCTURAL PLANS OR DETAILS. DETAILING FOR INSTALLATION SHALL BE COMPLETE. DUPLICATION (I.E. PHOTOCOPYING) OF DESIGN DRAWINGS IS NOT ACCEPTABLE.
7. I-JOIST SHOP DRAWINGS SHALL DETAIL THE REQUIRED BRIDGING AT ANY UNBRACED CHORD IN COMPRESSION UNDER ANY APPLICABLE LOAD COMBINATION. SPACING OF BRIDGING SHALL BE AS REQUIRED BY MANUFACTURER'S ICC REPORT OR ENGINEERING ANALYSIS.
8. MANUFACTURER TO PROVIDE LOCATIONS WHERE WEB STIFFENERS ARE REQUIRED (AT EACH SIDE OF WEB) AS PART OF THE I-JOIST SHOP DRAWINGS
9. CALCULATIONS SHALL BE SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED.
10. I-JOIST DESIGNER SHALL INCORPORATE ONE 400# (150#DL, 250#LL NON-CONCURRENT) VERTICAL LOAD ON THE BOTTOM CHORD OF ALL JOISTS FROM ONE SPRINKLER LINE. JOIST MUST BE DESIGNED TO CARRY THE LOAD AT ANY POINT.
11. I-JOISTS SHALL BE DESIGNED FOR ALL CONCENTRATED LOADS SHOWN ON DRAWINGS IN ADDITION TO THE UNIFORM LOADINGS SHOWN ABOVE.
12. SEE FRAMING PLANS AND MECHANICAL PLANS FOR LOCATIONS AND WEIGHTS OF MECHANICAL UNITS. COORDINATE ADDITIONAL EQUIPMENT LOADS WITH THE MECHANICAL CONTRACTOR PRIOR TO FABRICATION.
13. FLOOR JOISTS SHALL BE DESIGNED FOR A MAXIMUM L/VE LOAD DEFLECTION OF L/360 AND TOTAL LOAD DEFLECTION OF L/240. ROOF JOISTS SHALL BE DESIGNED FOR A MAXIMUM LIVE LOAD DEFLECTION OF L/240 AND A MAXIMUM TOTAL LOAD DEFLECTION OF L/180. IF ROOF JOISTS SUPPORT PLASTER CEILINGS A MAXIMUM TOTAL LOAD DEFLECTION OF L/240 IS REQUIRED.
14. PROVIDE FULL HEIGHT BLOCKING AND/OR RIM JOIST AT ALL BOTTOM CHORD BEARING CONDITIONS AND WHERE NOTED ON DRAWINGS.
15. GENERAL CONTRACTOR TO PROVIDE TEMPORARY ERECTION BRACING AS REQUIRED BY MANUFACTURER'S ICC-ESR.
16. MANUFACTURER TO VERIFY AND GENERAL CONTRACTOR TO APPROVE ALL DIMENSIONS REQUIRING COORDINATION BETWEEN STRUCTURAL DRAWINGS WITH ARCHITECTURAL DRAWINGS. ADDITIONALLY, GENERAL CONTRACTOR SHALL VERIFY SUPPORT DIMENSIONS AND WALL LAYOUT IN FIELD PRIOR TO FABRICATION.
17. MANUFACTURER TO COORDINATE I-JOIST LAYOUT WITH PLUMBING DRAWINGS. PROVIDE ADDITIONAL I-JOIST AS REQUIRED TO MAINTAIN I-JOIST SPACING LIMITS EACH SIDE OF PIPE OR FIXTURE.
18. PROVIDE AN ADDITIONAL I-JOIST UNDER INTERIOR PARTITION WALLS THAT ARE PARALLEL TO THE I-JOISTS WHERE WALL LENGTH IS GREATER THAN 1/3 OF THE JOIST SPAN AND WHERE JOIST IS OFFSET UP TO WIDTH OF WALL.
19. WHERE DOUBLE I-JOISTS ARE REQUIRED OR INDICATED ON DESIGN DRAWINGS PROVIDE LOAD TRANSFER PER DOUBLE I-JOIST ATTACHMENT DETAIL **4/S514**.
20. FIRE SPRINKLER INSTALLER SHALL USE CONNECTORS WITH ICC APPROVAL.
21. CONTRACTOR TO PROVIDE BEVELED WOOD PLATES, BEAMS, NAILERS ETC. AT ALL SLOPED BEARING CONDITIONS 1/4:12 OR GREATER.
22. ALLOWABLE PENETRATIONS IN I-JOISTS SHALL BE COORDINATED WITH AND APPROVED BY I-JOIST MANUFACTURER PRIOR TO CONSTRUCTION. ALLOWABLE PENETRATIONS IN I-JOISTS SHALL BE PER **5/S514**.



MECH UNIT OR OTHER CONCENTRATED LOAD

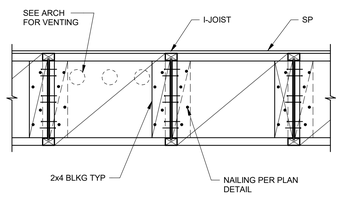
BEARING

SECTION A-A

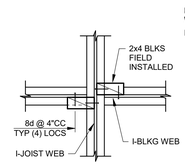
WEB STIFFENER SCHEDULE	
FLANGE SIZE	STIFFENER/NAILS
1 3/4	5/8" SHTG w/ (2) ROWS 8d @ 4"CC STGRD & CLINCHED
2 1/16	3/4" SHTG w/ (2) ROWS 8d @ 4"CC STGRD & CLINCHED
2 5/16	7/8" SHTG w/ (2) ROWS 8d @ 8"CC STGRD EA SIDE
2 1/2	1" SHTG w/ (2) ROWS 8d @ 8"CC STGRD EA SIDE
3 1/2	2x4 DF#2 w/ (2) ROWS 16d @ 8"CC STGRD EA SIDE

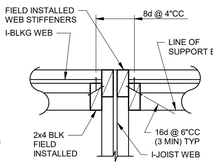
NOTES:
1. WEB STIFFENERS TO BE FIELD INSTALLED AT ALL BEARING POINTS AND CONCENTRATED LOADS (MECH UNITS ETC) WHERE INDICATED ON THE SHOP DRAWINGS.
2. GAP MUST BE AT TOP AT ALL BEARING LOCATIONS AND AT BOTTOM AT CONCENTRATED LOADS.

DETAIL 1/S514 — I-JOIST WEB STIFFENERS — NO SCALE



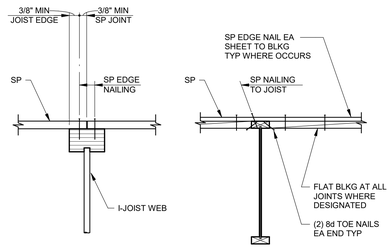
PLAN AT NON-BRG COND



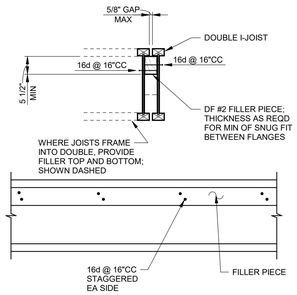


PLAN AT BRG COND

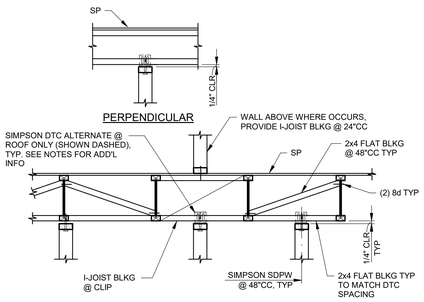
DETAIL 2/S514 — I-JOIST BLOCKING — NO SCALE



DETAIL 3/S514 — I-JOIST NAILING — NO SCALE

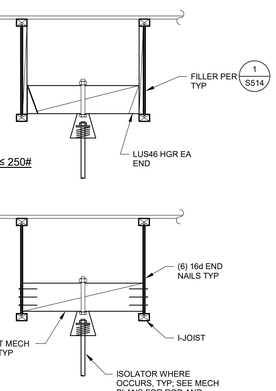


DETAIL 4/S514 — DOUBLE I-JOIST ATTACHMENT — NO SCALE

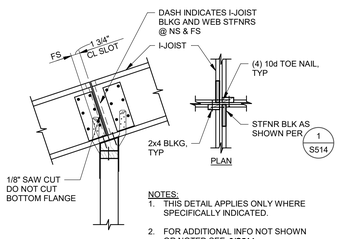


NOTES:
1. AT CONTRACTOR'S OPTION USE SIMPSON DTC CLIPS @ 48"CC IN LIEU OF SDPW SCREWS AT ROOF FRAMING ONLY.
2. FOR WALLS > 10' USE (2) SIMPSON SDPW SCREWS @ 48" CC. AT CONTRACTOR'S OPTION USE (2) DTC CLIPS AT 48"CC AT ROOF FRAMING ONLY.

DETAIL 5/S514 — INTERIOR NON-BEARING PARTITION AT TOP PLATE — NO SCALE

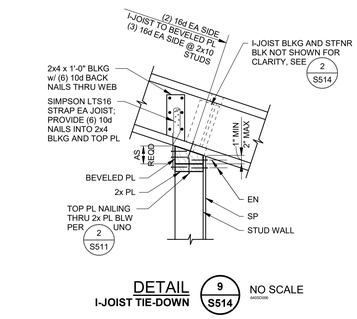


DETAIL 6/S514 — BLOCKING SUPPORT IN I-JOIST — NO SCALE

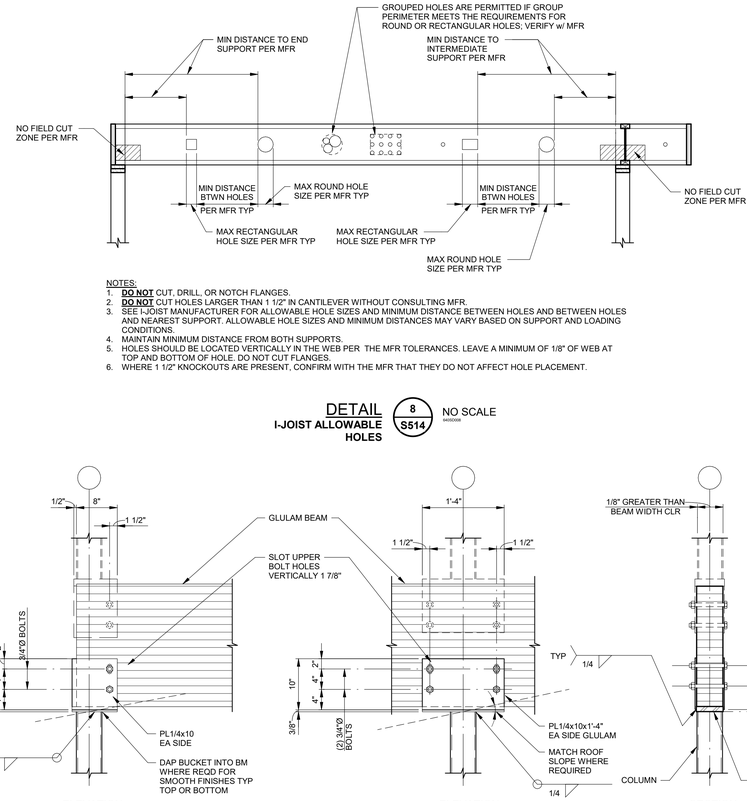


NOTES:
1. THIS DETAIL APPLIES ONLY WHERE SPECIFICALLY INDICATED.
2. FOR ADDITIONAL INFO NOT SHOWN OR NOTED SEE **9/S514**.

DETAIL 7/S514 — I-JOIST CONTINUITY BREAK — NO SCALE



DETAIL 9/S514 — I-JOIST TIE-DOWN — NO SCALE



NOTES:
1. **DO NOT** CUT, DRILL, OR NOTCH FLANGES.
2. **DO NOT** CUT HOLES LARGER THAN 1 1/2" IN CANTILEVER WITHOUT CONSULTING MFR.
3. SEE I-JOIST MANUFACTURER FOR ALLOWABLE HOLE SIZES AND MINIMUM DISTANCE BETWEEN HOLES AND BETWEEN HOLES AND NEAREST SUPPORT. ALLOWABLE HOLE SIZES AND MINIMUM DISTANCES MAY VARY BASED ON SUPPORT AND LOADING CONDITIONS.
4. MAINTAIN MINIMUM DISTANCE FROM BOTH SUPPORTS.
5. HOLES SHOULD BE LOCATED VERTICALLY IN THE WEB PER THE MFR TOLERANCES. LEAVE A MINIMUM OF 1/8" OF WEB AT TOP AND BOTTOM OF HOLE. DO NOT CUT FLANGES.
6. WHERE 1 1/2" KNOCKOUTS ARE PRESENT, CONFIRM WITH THE MFR THAT THEY DO NOT AFFECT HOLE PLACEMENT.

DETAIL 8/S514 — I-JOIST ALLOWABLE HOLES — NO SCALE

DETAIL 10/S514 — GLULAM BEAM OVER STEEL COLUMN — NO SCALE

196

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ARCHITECT STAMP | CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
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SHEET TITLE
TYPICAL I-JOIST DETAILS

DRAWN BY: Author JOB NUMBER: 2100 15.01

SHEET NO.
S514

DATE:

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BID SET (PRELIMINARY)

PRE-MANUFACTURED WOOD TRUSS NOTES
6505N001

TYP ROOF DESIGN LOADS UNO, SEE **3/S515** .

SLOPED TOP CHORD 11 PSF DL
20 PSF LL

NET WIND UPLIFT LOAD (0.6D+0.6W) FOR ZONE 1 -7 PSF WL_{NU}

NET WIND UPLIFT LOAD (0.6D+0.6W) FOR ZONE 2 -16 PSF WL_{NU}

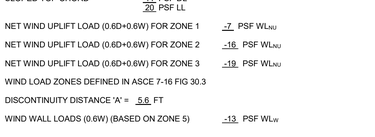
NET WIND UPLIFT LOAD (0.6D+0.6W) FOR ZONE 3 -19 PSF WL_{NU}

WIND LOAD ZONES DEFINED IN ASCE 7-16 FIG 30.3

DISCONTINUITY DISTANCE 'A' = 5.6 FT

WIND WALL LOADS (0.6W) (BASED ON ZONE 5) -13 PSF WL_W

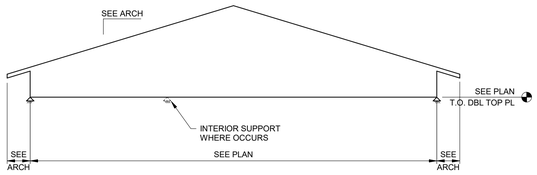
1. ALL MEMBERS SHALL BE 2x4 MIN UNO.
2. ALL TOP CHORD MEMBERS SHALL BE OF MATERIAL w/ A MINIMUM SPECIFIC GRAVITY OF 0.50.
3. PLATE MATERIAL SHALL BE ASTM A-446 GRADE A OR BETTER.
4. DESIGN AND FABRICATION SHALL CONFORM TO THE CODE AS DESIGNATED IN THE DESIGN CRITERIA NOTES AND ANSI/TPI 1-2014.
5. DESIGN AND CONSTRUCTION OF CONNECTIONS SHALL BE IN ACCORDANCE WITH PUBLISHED APPROVALS OF MANUFACTURER'S ICC-ESR. HEEL JOINT DESIGN SHALL CONSIDER THE EFFECTS OF ECCENTRIC LOADING IN ACCORDANCE WITH TRUSS PLATE INSTITUTE (TPI).
6. TRUSS DESIGNER SHALL OVERSIZE PLATES FOR CHORD MEMBERS TO ACCOUNT FOR WOOD DEFECTS LIKE KNOTS, KNOT HOLES AND GREATLY DISTORTED GRAINS. MAXIMUM ALLOWABLE DEFECT SIZE PER MEMBER SHALL BE 2 SQUARE INCHES. NO DEFECTS ALLOWED UNDER PLATES FOR WEB MEMBERS.
7. STRUCTURAL DESIGN OF BEAMS, POSTS & FOUNDATIONS SUPPORTING ROOF TRUSSES HAS BEEN BASED ON FRAMING CONFIGURATIONS SHOWN ON PLANS. DEVIATIONS TO THE FRAMING CONFIGURATIONS SHOWN WILL REQUIRE ADDITIONAL DESIGN COORDINATION AND POTENTIAL REVISIONS TO FRAMING AND FOUNDATIONS. ANY REQUIRED REVISIONS TO THE STRUCTURAL DRAWINGS WILL BE PREFORMED ON A TIME AND MATERIAL BASIS AND WILL BE CHARGED TO THE GENERAL CONTRACTOR.
8. ALL HARDWARE REQUIRED FOR CONNECTING TRUSSES (JACK TO HIP, HIP TO GIRDER OR GIRDER TO GIRDER, ETC.) SHALL BE DESIGNED, DETAILED AND PROVIDED BY TRUSS DESIGNER/MANUFACTURER.
9. TRUSS DESIGNER TO ACCOUNT FOR THE WEIGHT AND LATERAL RESTRAINT FORCES OF ALL EQUIPMENT IN THE DESIGN OF ALL TRUSSES WHICH SUPPORT SUCH EQUIPMENT. SEE OTHER DISCIPLINES DRAWINGS FOR WEIGHTS AND DETAILING. ADDITIONALLY, TRUSS DESIGNER SHALL INCORPORATE WEIGHT AND SEISMIC RESTRAINT FORCES OF ALL PIPING AND CONDUIT IN TRUSS DESIGN. SEE OTHER DISCIPLINES DWGS FOR TYPE AND LOCATION.
10. TRUSS DESIGNER SHALL INCORPORATE ONE 400# (150#DL, 250#LL NON-CONCURRENT) VERTICAL LOAD ON THE BOTTOM CHORD OF ALL TRUSSES FROM ONE SPRINKLER LINE. TRUSS MUST BE DESIGNED TO CARRY THE LOAD AT ANY POINT ALONG THE TOP AND BOTTOM CHORDS.
11. TRUSS DESIGNER SHALL INCORPORATE COLLECTOR LOADS FOR ALL COLLECTOR TRUSSES SHOWN ON PLANS. COLLECTOR LOADS ARE SHOWN @ 0.7E OR 0.6W (ASD FORCE LEVELS). WHERE LOAD NOT INDICATED ON PLAN, COLLECTOR LOAD = 2500 LBS MIN. TRUSS MUST BE DESIGNED TO RESIST FULL COLLECTOR LOAD APPLIED AXIALLY AT ANY POINT ALONG THE TOP OR BOTTOM CHORD AND TO TRANSFER THE COLLECTOR LOAD THROUGH WEB MEMBERS AND CONNECTIONS FROM TOP CHORD DOWN TO BOTTOM CHORD (APPLIED IN POUNDS PER FOOT) ALONG THE LENGTH OF THE TRUSS.
12. THE STRUCTURAL DRAWINGS GENERALLY INDICATE THE WIND UPLIFT CONNECTION DETAILING AT THE TRUSS SUPPORTS. TRUSS MANUFACTURER SHALL REVIEW THE STRUCTURAL DRAWINGS FOR UPLIFT DESIGN AND SHALL MAKE A STATEMENT ON THE SHOP DRAWING SUBMITTAL STATING SUCH. ANY CONNECTIONS THAT ARE INCOMPATIBLE WITH THE TRUSS SYSTEM SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER FOR REVIEW AND INPUT DURING THE SHOP DRAWING SUBMITTAL PROCESS.
13. TRUSS MANUFACTURER SHALL PROVIDE DESIGNS THAT DO NOT EXCEED A BEARING STRESS OF 600 PSI AT THE REACTION POINTS. AT TRUSS MANUFACTURER'S OPTION, BEARING PLATES OR OTHER CONNECTORS AS REQUIRED TO REDUCE BEARING STRESS AT SUPPORTING MEMBER TO 600 PSI MAX MAY BE DESIGNED, DETAILED, AND SUBMITTED FOR REVIEW TO THE ARCHITECT/STRUCTURAL ENGINEER.
14. ROOF JOISTS SHALL BE DESIGNED FOR A MAXIMUM TOTAL LOAD DEFLECTION OF L/180. IF ROOF JOISTS SUPPORT PLASTER CEILINGS A MAXIMUM TOTAL LOAD DEFLECTION OF L/240 IS REQUIRED.
15. TRUSS DESIGNER/MANUFACTURER SHALL CLEARLY DESIGNATE TRUSS MEMBER BRACING LOCATIONS IN THE SHOP DRAWINGS.
16. TRUSS MANUFACTURER TO VERIFY ALL DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS WITH ARCHITECTURAL DRAWINGS AND IN FIELD WITH WALL LAYOUT PRIOR TO FABRICATION. PROVIDE SHOP DRAWINGS WHICH SHALL INCLUDE PLAN DRAWING SHOWING TRUSS LOCATIONS AND TRUSS PROFILES, WITH DIMENSIONS REVIEWED AND APPROVED BY GENERAL CONTRACTOR, PRIOR TO FABRICATION.
17. TRUSS LAYOUT AND PROFILE DRAWINGS, CALCULATIONS AND THE LATEST ICC APPROVED TEST DATA FOR TRUSS METAL PLATE CONNECTORS SHALL BE SUBMITTED TO THE ARCHITECT AND/OR ENGINEER FOR REVIEW AND SHALL ADDRESS ALL COMMENTS FROM THAT REVIEW PRIOR TO SUBMITTAL TO THE BUILDING DEPARTMENT.
18. TRUSS LAYOUT, PROFILE DRAWINGS AND CALCULATIONS FOR TRUSS DESIGNS AND ANY BEARING DETAILING PER NOTE 13 SHALL BE SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED. IT SHALL BE THE RESPONSIBILITY OF THE MANUFACTURER TO OBTAIN BUILDING DEPARTMENT APPROVAL PRIOR TO FABRICATION.
19. BUILT UP GIRDER TRUSSES SHALL BE LAMINATED USING 1/2"Ø BOLTS AT 24"CC MAXIMUM THROUGH ALL MEMBERS (OR OTHER METHOD BY WRITTEN REQUEST).
20. GABLE END TRUSSES SHALL HAVE 2x VERTICALS AT 16"CC TYPICAL UNLESS NOTED OTHERWISE. WHERE GABLE END TRUSSES ARE REQUIRED TO SPAN OVER OPENINGS OR TRANSFER COLLECTOR LOADS VERTICALS SHALL BE INFILLED AROUND TYPICAL WEB MEMBERS. TRUSS MANUFACTURER SHALL DESIGN, DETAIL AND PROVIDE INTERMEDIATE BRACING OF THE GABLE TRUSS WEBS AND VERTICALS AS REQUIRED TO RESIST OUT-OF-PLANE WIND LOADS.
21. GENERAL CONTRACTOR TO DETERMINE AND PROVIDE TEMPORARY ERECTION BRACING AS REQUIRED.
22. FIRE SPRINKLER INSTALLER SHALL USE CONNECTORS WITH ICC APPROVAL.



LEGEND:
DL = DEAD LOAD
LL = LIVE LOAD
WL_{NU} = WIND NET UPLIFT LOAD
DLm = DEAD LOAD AT MECHANICAL UNIT, SEE PLAN FOR WEIGHT AND VERIFY LOCATIONS w/ MECH
WLw = WIND LOAD AT WALL (APPLY WALL LOAD TO GABLE TRUSS VERTICAL AND WEB ELEMENTS)

NOTE:
SEE PLANS, SECTIONS AND DETAILS FOR ADDITIONAL LOADS.

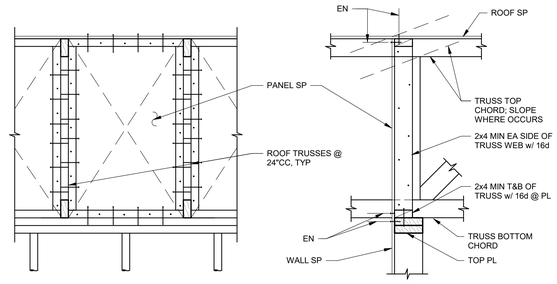
DETAIL 1/S515 NO SCALE
ROOF TRUSS LOADING GABLE/MANSARD



RT-2

NOTES:
1. SEE PRE-MANUFACTURED ROOF TRUSS NOTES FOR DESIGN REQUIREMENTS AND TYPICAL ROOF TRUSS LOADING.
2. SEE ARCH FOR TRUSS DIMENSIONS, SLOPES, OVERHANGS, ETC.
3. SEE PLANS FOR SUPPORT LOCATIONS.

DETAIL 3/S515 NO SCALE
TRUSS PROFILES



ELEVATION SECTION

NOTES:
1. BLOCKING PANEL SP TO MATCH WALL SP THICKNESS & EDGE NAILING UNO. (1/2" SHEATHING w/ 10d @ 6"CC, MIN)
2. NAIL 2x4 BLKG TO TRUSS AND TOP PL w/ 16d, SPACING TO MATCH ROOF SP EN.
3. PROVIDE PREFABRICATED PANEL PER **5/S515** IN LIEU OF SHEATHED PANEL @ CONTRACTOR'S OPTION. PANEL BLOCKING OPTION IS NOT RECOMMENDED AT POTENTIAL CONFLICTS WITH PANEL WEBS AND MECHANICAL OR PLUMBING ELEMENTS.
4. AT BLOCKING PANELS DIRECTLY BELOW A STRAP, PROVIDE 10d @ 3"CC BLOCKING PANEL EDGE NAILING AND 16d @ 3"CC BLOCKING TO TRUSS AND TOP PLATE NAILING MIN.

DETAIL 4/S515 NO SCALE
TRUSS BLOCKING PANEL

CONTRACTOR'S OPTION:
PROVIDE LSL BLOCKING (UP TO 24" DEEP) OR TRUSS BLOCKING PANEL PER **4/S515** IN LIEU OF PRE-FAB BLOCKING PANEL.

ELEVATION SECTION

DETAIL 5/S515 NO SCALE
PREFABRICATED PANEL BLOCKING

NOTE:
SEE SHEAR WALL SCHEDULE ON SHEET **S512** FOR NAILING AND MK

DETAIL 6/S515 NO SCALE
EXTERIOR WALL TRUSS PARALLEL

△1

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SACRAMENTO, CA 95811
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REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. RADER
No. 3592
STRUCTURAL
STATE OF CALIFORNIA

ARCHITECT STAMP | CONSULTANT STAMP

REVISIONS
△1

NO.	DATE	DESCRIPTION
1	8/28/2024	PC Revisions

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City of Roseville Approval

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CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG
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Roseville, CA 95747

SHEET TITLE
TYPICAL WOOD TRUSS NOTES AND DETAILS

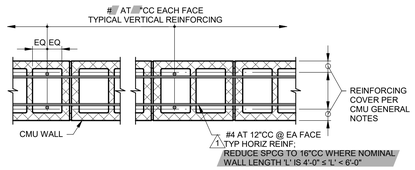
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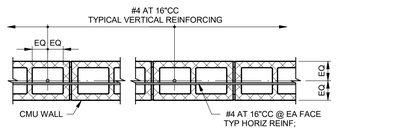
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BID SET (PRELIMINARY)



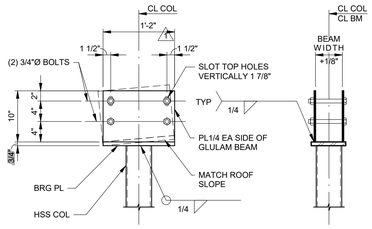
REINFORCING - EACH FACE



REINFORCING - CENTERED

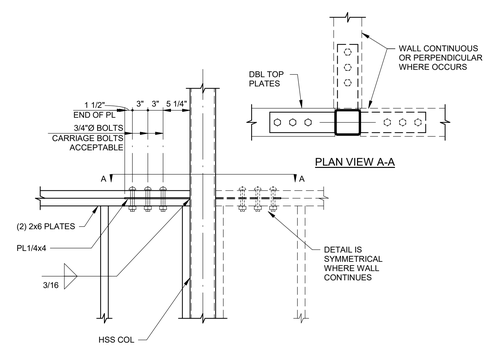
1. REFER TO CMU GENERAL NOTES ON SHEET FOR CONCRETE BLOCK UNITS, MORTAR AND GROUT REQUIREMENTS.
2. VERTICAL REINFORCING:
   A. DOWELS WITH STANDARD 90° HOOKS INTO THE FOUNDATION SHALL MATCH AND LAP VERTICAL REINFORCING.
   B. WHERE VERTICAL REINFORCING IS LOCATED AT EACH FACE, THE BARS DO NOT NEED TO BE PLACED IN THE SAME CELL, BUT THE SPACING NOTED NEEDS TO BE MAINTAINED FOR EACH SIDE OF THE WALL.
3. HORIZONTAL REINFORCING:
   A. INSTALL STD 180° HOOK AROUND VERTS AT WALL ENDS AND JOINTS IN ALL HORIZONTAL REINFORCING BARS.
   B. WHERE THE VERTICAL BARS ARE CENTERED IN THE WALL, HORIZONTAL REINFORCING BARS SHALL BE LOCATED ON ONE SIDE (OR BOTH SIDES) OF THE VERTICAL BARS, ALLOWING THE VERTICAL BARS TO BE CENTERED.
   C. WHERE THE VERTICAL BARS ARE AT EACH FACE IN THE WALL, HORIZONTAL REINFORCING BARS SHALL BE LOCATED TOWARD THE CENTER OF THE CELL, ALLOWING THE VERTICAL BARS TO BE LOCATED BETWEEN THE HORIZONTAL REINFORCING AND THE NEAREST FACE OF THE WALL.

DETAIL 1/S516 NO SCALE
CMU WALL REINFORCING



NOTES:
1. SPLICE BEAMS AT CL OF COLUMN EXCEPT AT CANTILEVER CONDITION.
2. INCREASE WIDTH OF BEARING PLATE AS REQUIRED WHERE COLUMN IS WIDER THAN SUPPORTED BEAM.

DETAIL 2/S516 NO SCALE
BM OVER STL COL



ELEVATION

DETAIL 4/S516 NO SCALE
TOP PLATE AT COLUMN

2

196

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REGISTERED PROFESSIONAL ENGINEER
WILLIAM B. RADER
No. 3592
STRUCTURAL
STATE OF CALIFORNIA

ARCHITECT STAMP | CONSULTANT STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	8/28/2024	PC Revisions
2	10/23/2024	PC Revisions 2

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CITY OF ROSEVILLE - DCWWTP

DCWWTP OPERATIONS AND LAB BLDG
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SHEET TITLE
MISC DETAILS

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BID SET (PRELIMINARY)

GENERAL NOTES

1. PLANS ARE NOT FOR CONSTRUCTION UNTIL APPROVED BY THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL NOT ORDER ANY MATERIALS OR INSTALL ANY EQUIPMENT, PIPING, ETC. UNTIL PLANS ARE APPROVED BY THE AUTHORITY HAVING JURISDICTION.
2. ALL WORK SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, CITY AND LOCAL CODES AND ORDINANCES.
3. THE CONTRACTOR SHALL READ ALL OF THE GENERAL NOTES, SPECIFICATIONS AND PLANS AND SHALL BE SATISFIED TO THEIR TRUE MEANING AND INTENT AND SHALL BE RESPONSIBLE FOR COMPLYING WITH EACH. WHEREVER TWO OR MORE SPECIFICATIONS MAY CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL TAKE PRECEDENCE.
4. IT IS INTENDED THAT THESE PLANS AND SPECIFICATIONS REQUIRE ALL LABOR AND MATERIAL NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THAT THIS WORK BE COMPLETED IN ACCORDANCE WITH THEIR TRUE INTENT AND PURPOSE. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY REGARDING ANY DISCREPANCIES OR AMBIGUITIES THAT MAY EXIST IN THE PLANS AND/OR SPECIFICATIONS PRIOR TO SUBMITTING BID. THE OWNER'S REPRESENTATIVE AND THE ENGINEER'S INTERPRETATION THEREOF SHALL BE CONCLUSIVE.
5. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNERS REPRESENTATIVE.
6. CONTRACTOR SHALL INSTALL ALL PIPING AND DUCTWORK SYSTEMS TO BEST SUIT FIELD CONDITIONS, AND COORDINATE WITH THE INSTALLATION WORK OF OTHER TRADES. THE DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION OF PIPING. NOTIFY CONSTRUCTION MANAGER OF ANY DEVIATIONS FROM THESE DRAWINGS PRIOR TO FABRICATION AND/OR INSTALLATION.
6. LOCATIONS AND DIMENSIONS OF EQUIPMENT, PIPING, AND THEIR SUPPORTS ARE SHOWN DIAGRAMMATICALLY AND SHALL NOT BE SCALED TO DETERMINE EXACT LOCATION OF PIPING OR DUCTWORK. ACTUAL DIMENSIONS AND LOCATIONS ARE DEPENDENT ON MATERIAL SUPPLIED BY CONTRACTORS. CONTRACTORS SHALL PROVIDE OR DETERMINE DIMENSIONS AND PROVIDE LAYOUT DRAWINGS FOR COORDINATION WITH OTHER TRADES IN ACCORDANCE WITH THE SPECIFICATIONS.
7. CONTRACTOR SHALL REMOVE RUBBISH WASTE MATERIALS ON DAILY BASIS AND PROTECT AREAS FROM DAMAGE WHICH MAY OCCUR DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE WHICH MAY OCCUR.
8. ALL WORK SHOWN ANYWHERE ON THE DRAWINGS IS INCLUDED; SHOULD AN ITEM (SUCH AS A VALVE) BE SHOWN ON A DETAIL OR SCHEMATIC BUT NOT ON A PLAN VIEW OR VICE VERSA, IT MUST BE PROVIDED AS THOUGH IT WERE SHOWN IN ALL PLACES ON THE DRAWINGS.
9. CONTRACTOR SHALL FURNISH ALL NECESSARY STRUCTURES, INSERTS, SLEEVES, HANGING DEVICES, MISCELLANEOUS ANGLES, CHANNELS, UNISTRUT ETC. FOR INSTALLATION OF MECHANICAL AND PLUMBING EQUIPMENT, DUCTWORK AND PIPING, ETC. CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR AND ALL BUILDING TRADES TO AVOID CONFLICTS AND TO MAINTAIN EQUIPMENT ACCESS AND SERVICEABILITY.
10. EACH MECHANICAL APPLIANCE SHALL BE APPROVED BY THE ADMINISTRATIVE AUTHORITY FOR SAFE USE OR COMPLY WITH APPLICABLE NATIONALLY RECOGNIZED STANDARDS AS EVIDENCED BY THE LISTING AND LABEL OF AN APPROVED AGENCY.
11. THERMOSTAT SETPOINTS SHALL BE PER CALIFORNIA T-24 REQUIREMENT. ANY DEVIATION FROM THESE SETPOINTS BECOMES THE RESPONSIBILITY OF THE USER OR CONTRACTOR.
12. SEISMIC BRACING FOR PIPING CARRYING HAZARDOUS OR COMBUSTIBLE MATERIALS (SUCH AS NATURAL LINES) SHALL BE PROVIDED FOR ALL PIPES > 1" DIAMETER IN SIZE. BRACING SHALL BE PER CBC SECTION 1616A.1.26. ACCEPTABLE SEISMIC BRACING DETAILS INCLUDE THOSE SHOWN IN EATON/COOPER B-LINE OPM-0052-13.
13. SEISMIC BRACING FOR PIPING CARRYING HAZARDOUS OR COMBUSTIBLE MATERIALS (SUCH AS WATER LINES) SHALL BE PROVIDED FOR ALL PIPES > 3" DIAMETER IN SIZE. BRACING SHALL BE PER CBC SECTION 1616A.1.26. ACCEPTABLE SEISMIC BRACING DETAILS INCLUDE THOSE SHOWN IN EATON/COOPER B-LINE OPM-0052-13.

DIFFUSER, REGISTER AND GRILLE SCHEDULE

MARK	MFR MODEL	BORDER TYPE	OBD	FINISH	DESCRIPTION
SG-1	TITUS 300RS	SIDEWALL	NO	WHITE	SURFACE MOUNTED STEEL DOUBLE DEFLECTION SUPPLY GRILLE. 3/4" BLADE SPACING, FRONT BLADES PARALLEL TO SHORT DIMENSION. PROVIDE WITH STD. FINISH.
SD-S	TITUS MCD	SURFACE	NO	WHITE	SURFACE MOUNTED STEEL MODULAR CORE, ADJUSTABLE, SURFACE MOUNTED CEILING DIFFUSER. PROVIDE WITH STD. FINISH.
SD-L	TITUS MCD	SURFACE	NO	WHITE	24"x24" STEEL MODULAR CORE, ADJUSTABLE, LAY-IN CEILING DIFFUSER. PROVIDE WITH STD. FINISH.
LD	PRICE RFD	T-BAR LAY-IN	NO	WHITE	24"x24" STEEL, LAY-IN CEILING DIFFUSER. PROVIDE WITH STD. FINISH.
RG-L	50F	T-BAR LAY-IN	NO	WHITE	24"x24" ALUMINUM LAY-IN CEILING RETURN GRILLE WITH ⅛"x⅛"x½" ALUMINUM EGG CRATE GRILLE. PROVIDE WITH STD. FINISH.
RG-1	350RL	SIDEWALL	NO	WHITE	SIDEWALL STEEL SURFACE MOUNTED LOUVERED RETURN GRILLE. 3/4" BLADE SPACING, 35 DEGREE° DEFLECTION, BLADES PARALLEL TO LONG DIRECTION, PROVIDE WITH STD. FINISH.
EG-S	50F	SURFACE	NO	WHITE	ALUMINUM SURFACE MOUNTED CEILING EXHUAST GRILLE WITH ½"x½"x½" ALUMINUM EGG CRATE GRILLE. PROVIDE WITH STD. FINISH.
EG-L	50F	T-BAR LAY-IN	NO	WHITE	24"x24" ALUMINUM LAY-IN CEILING EXHAUST GRILLE WITH ⅛"x⅛"x⅛" ALUMINUM EGG CRATE GRILLE. PROVIDE WITH STD. FINISH.
TG-L	50F	T-BAR LAY-IN	NO	WHITE	24"x24" ALUMINUM LAY-IN CEILING TRANSFER GRILLE WITH ⅛"x⅛"x⅛" ALUMINUM EGG CRATE GRILLE. PROVIDE WITH STD. FINISH.
TG-1	350RL	SIDEWALL	NO	WHITE	SIDEWALL STEEL SURFACE MOUNTED LOUVERED TRANSFER GRILLE. 3/4" BLADE SPACING, 35 DEGREE° DEFLECTION, BLADES PARALLEL TO LONG DIRECTION, PROVIDE WITH STD. FINISH.

GENERAL NOTES:
1. FURNISH ALL CEILING AIR TERMINALS WITH BORDER STYLES THAT COORDINATE WITH APPLICABLE CEILING TYPE. SEE ARCHITECTURAL DRAWINGS FOR CEILING TYPES
2. PROVIDE RECTANGULAR TO ROUND DUCT ADAPTORS AND ROUND TO RECTANGULAR AS NEEDED TO MAKE DUCT CONNECTIONS PER PLANS.
3. TERMINAL NECK SIZE, TERMINAL FACE SIZE AND AIRFLOW DIRECTION DEFLECTIONS ARE PER PLANS.
4. PAINT INSIDE OF DUCT PLENUMS ABOVE GRILLES, VISIBLE FROM OCCUPIED SPACE BELOW, FLAT BLACK. REFER TO SPECIFICATIONS.

MECHANICAL LEGEND

AC	AIR CONDITIONING	MIN.	MINIMUM
AD	ACCESS DOOR	MOCP	MAXIMUM OVER CURRENT PROTECTION
AE	AIR EXTRACTOR	M	MOTORIZED DAMPER
AFF	ABOVE FINISHED FLOOR	MVD	MANUAL VOLUME DAMPER
AL	ACOUSTICAL LINING	(N)	NEW
BDD	BACKDRAFT DAMPER	OBD	OPPOSED BLADE DAMPER
BHP	BRAKE HORSEPOWER	OC	ON CENTER
BOD	BOTTOM OF DUCT	OPNG.	OPENING
C	CO2 SENSOR	OSA	OUTSIDE AIR
CD	CONDENSATE DRAIN	OSH	OUTSIDE AIR HOOD
CFM	CUBIC FEET PER MINUTE	Ø	PHASE
CEF	CEILING EXHAUST FAN	POC	POINT OF CONNECTION
℄	CENTERLINE	POD	POINT OF DISCONNECTION
CHWR	CHILLED WATER RETURN	QTY	QUANTITY
CHWS	CHILLED WATER SUPPLY	RA	RETURN AIR
DB	DRY BULB	RD	RETURN DIFFUSER
DL	DOOR LOUVER	REF	ROOF EXHAUST FAN
DN.	DOWN	RH	RADIANT HEATER
EA	EXHAUST AIR	RL	REFRIGERANT LIQUID
EAL	EXHAUST AIR LOUVER	RPM	REVOLUTION PER MINUTE
EAT	ENTERING AIR TEMPERATURE	RR(G)	RETURN REGISTER (GRILLE)
EF	EXHAUST FAN	RS	REFRIGERANT SUCTION
(E)	EXISTING	S	SENSOR
EG	EXHAUST GRILLE	SD	SMOKE DETECTOR
ESP	EXTERNAL STATIC PRESSURE	SM	SHEET METAL
°F	DEGREES FAHRENHEIT	SA	SUPPLY AIR
FA	FRESH AIR	SD(R)(G)	SUPPLY DIFFUSER (REGISTER) (GRILLE)
FAL	FRESH AIR LOUVER	SS	STAINLESS STEEL
FC	FLEXIBLE CONNECTION	T	THERMOSTAT
FD	FIRE DAMPER	TBD	TO BE DETERMINED
FSD	FIRE/SMOKE DAMPER	TCP	TEMPERATURE CONTROL PANEL
FPM	FEET PER MINUTE	TEMP.	TEMPERATURE
FLA	FULL LOAD AMPS	TD	TRANSFER DUCT
FT	FOOT OR FEET	TG	TRANSFER GRILLE
GA	GAUGE	TSP	TOTAL STATIC PRESSURE
GI	GALVANIZED IRON	TV	TURNING VANES
GSM	GALVANIZED SHEET METAL	TYP	TYPICAL
H	SPACE HUMIDITY SENSOR	UCD	UNDERCUT DOORS
H&V	HEATING & VENTILATION	UTR	UP THRU ROOF
HZ	HERTZ	V	VOLTS
HP	HORSE POWER	VAV	VARIABLE AIR VOLUME
IF	INDOOR FAN	VFD	VARIABLE FREQUENCY DRIVE
LAT	LEAVING AIR TEMPERATURE	W/	WITH
LBS.	POUNDS	WB	WET BULB
LRA	LOCK ROTOR AMPS	WT.	WEIGHT
MBH	THOUSAND BTU PER HOUR		
MAX.	MAXIMUM		
MCA	MINIMUM CIRCUIT AMPACITY		
MFR	MANUFACTURER		

AIR TERMINAL TAG DESCRIPTION

12x12 SD-L	(NECK SIZE) (TERMINAL TYPE)
300,12"Ø	(TERMINAL CFM), (ENTERING DUCT)

RELIEF HOOD SCHEDULE

MARK	GREENHECK OR EQUAL MODEL NO.	CFM	THROAT SIZE	FPM	CURB SIZE	HOOD SIZE	HOOD HEIGHT	APPROX. OPER. WT. LBS.	MOUNTING DETAIL	REMARKS
RH-1	FGR	2060	24"x24"	515	30"x30"x12"	34"x36"	19"	69	6/M-401	SEE NOTES
RH-2	FGR	300	10"x10"	432	16"x16"x12"	20"x24"	14"	37	6/M-401	SEE NOTES
RH-3	FGR	995	14"x20"	512	20"x26"x12"	24"x36"	16"	51	6/M-401	SEE NOTES
RH-4	FGR	1470	18"x24"	490	24"x30"x16"	28"x36"	16"	57	6/M-401	SEE NOTES
RH-5	FGR	1470	18"x24"	490	24"x30"x16"	28"x36"	16"	57	6/M-401	SEE NOTES
RH-6	FGR	460	10"x14"	460	16"x20"x12"	24"x14"	16"	38	6/M-401	SEE NOTES

NOTES:
1. PROVIDE 12" FACTORY STANDARD ROOF CURB.
2. PROVIDE ALUMINUM BIRDSCREEN.
3. PROVIDE BACKDRAFT DAMPER.

ACCEPTANCE TESTING REQUIREMENT

THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.

LIGHTING CONTROLS ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).

MECHANICAL SYSTEM ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021.

A LISTING OF CERTIFIED ATT CAN BE FOUND AT HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDER-PROGRAM/ACCEPTANCE

THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.

PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.

DUCT SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
1	LINED DUCT; SECTION AT EXHAUST DUCT RISER; R=1 W; R 24x12; EXHAUST DUCT DROP	14	10/14 14x10 24x12 16x12; 10" 14x10 TRANSITIONAL RADIUS ELBOW 10/14 SPLIT 24x12 AIR FLOW 14" 16x12
2	24x12 12x12; 24x12 R=1.5 W 12x12; SECTION AT RETURN DUCT RISER; TRANSITIONAL TURN R=36; RETURN DUCT DROP	15	10/14 14x10 MVD 24x12 16x12; 10" 14x10 SQUARE ELBOW W/ DUCT TURN 10/14 MVD 24x12 14" 16x12
3	24x12; TURNING VANES; SECTION AT SUPPLY DUCT RISER; 24x12; SUPPLY DUCT DROP	16	4/36/8 10x8 48x12 38x12 12x12; 10x8 4" TRANSITIONAL RADIUS ELBOW 36" 4/36/8 48x12 8" 38x12 12x12 TRANSITION
4	24x12 12x12; VANE ANGLE; CONVERGING OR DIVERGING; 24x12; TURNING VANES; 12x12; VANE ANGLE / TURNING VANES: 20°-29° / 15° DEFLECTROL, 30°-50° / AIRTURN	17	4/36/8 10x12 48x12 38x12 12x12; 10x8 4" SQUARE ELBOW W/ DUCT TURN 36" 4/36/8 48x12 8" 38x12 12x12 TRANSITION
5	12x12 12"□ MVD; 12"□ 12x12 MVD; SQUARE TO ROUND TRANSITION	18	12x12 24x12; 12x12 1 IN 6 MAX. 24x12 CONCENTRIC 24x12 1 IN 2 MAX.; 12x12 1 IN 6 MAX. 24x12 1 IN 2 MAX. 24x12 ECCENTRIC; DIVERGING FLOW
6	24x12 16x12 30x5 7/5; 24x7 ABOVE; 7/5 SPLIT TRANSITION 16x12 TRANSITIONAL RADIUS ELBOW 24x12 24x5 BELOW 30x5	19	12x12 24x12; 1 IN 2 MAX. 24x12 12x12 CONCENTRIC; 1 IN 2 MAX. 24x12 12x12 ECCENTRIC; CONTRACTING FLOW
7	24x12 7/5 30x5 16x12; 24x7 ABOVE; SQUARE ELBOW W/ TURNING VANES 16x12 24x12 24x5 BELOW 30x5	20	24x12 12x6; DEFLECTROL & BRANCH DUCT SAME SIZE 24x12 12x6 10'MAX. LENGTH - OVER 10' USE NO. 6,7,8 OR 9 CEILING DIFFUSER
8	14/10 16x12 24x12 14x10; 14" TRANSITION 24x12 16x12 10" TRANSITIONAL RADIUS ELBOW 14/10 14x10	21	24x12 F; DEFLECTROL AND BRANCH SAME SIZE 24x12 SIDEWALL REGISTER OR GRILLE; F FIRE DAMPER 10'MAX. LENGTH - OVER 10' USE NO. 6,7,8 OR 9
9	14/10 16x12 24x12 14x12 INCHES UNLESS OTHERWISE NOTED.; 14" TRANSITION 24x12 16x12 10" SQUARE ELBOW W/ TURNING VANES 14/10 14x12	22	24x12; CAP AT END OF RUN DEFLECTROL AND BRANCH SAME SIZE AS NECK SIZE 24x12 CEILING DIFFUSER
10	12"□ 10"□ INDICATES ROUND DUCTS IN INCHES, TYPICAL; 12"□ 10"□ 45□ TEE; 12"□ 10"□ ELONGATED TEE	23	FLEX DUCT; BRANCH-SEE PLAN FOR SIZE FLEX. DUCT DIFFUSER CEILING DIFFUSER
11	SUPPLY DUCT RISE AIR FLOW AIR FLOW SUPPLY DUCT DROP	24	AIR FLOW SHOE FITTING WITH MVD
12	RETURN OR EXHAUST AIR RISE AIR FLOW AIR FLOW RETURN OR EXHAUST AIR DROP	25	AIR FLOW CONICAL FITTING WITH MVD
13	CONICAL FITTING	26	24 x 36 AL; ACOUSTICALLY LINED SHEET METAL DUCT SIZE SHOWN IS NET INSIDE DIMENSION 24 x 36 AL

AIR COOLED CONDENSER UNIT SCHEDULE

MARK	LIEBERT MODEL NO.	FANS QTY.	FANS HP (EA.)	FANS FLA (EA.)	ELECTRICAL SERVICE VOLTAGE	PHASE	HZ	MCA	MOCP	UNIT SERVED	OPERATING WT. LBS.	LBS. OF REFRIGERANT	REFRIGERANT SEE NOTE 5 RS	REFRIGERANT SEE NOTE 5 RL	REMARKS
ACCU-1	MCM040E1	1	1.25	1.4	460	3	60	1.8	15	CRAC-1	468	10.6	7/8"	5/8"	SEE NOTES 1-3,5

NOTES:
1. PROVIDE WITH SINGLE CIRCUIT LINE SETS FROM CONDENSER TO INDOOR UNITS.
2. PROVIDE CONTROLS WIRING BEWTEEN OUTDOOR ACCU UNITS AND INDOOR CRAC UNITS.
3. REFRIGERANT 410A.
4. CONTRACTOR SHALL COORDINATE AND PROVIDE THE MANUFACTURER'S REPRESENTATIVE THE FINAL REFRIGERANT ROUTE (PRIOR TO ORDERING OR INSTALLING ANY PIPING) TO VERIFY SIZES. MAXIMUM LENGTH = 150 FT. AND 20 FEET MAX. VERTICAL DIFFERENCE BETWEEN INDOOR AND OUTDOOR UNIT. CONTRACTOR SHALL HAVE MANUFACTURER PROVIDE AN ENGINEERED SHOP DRAWING IN THE SUBMITTAL.

COMPUTER ROOM AIR CONDITIONING UNITS SCHEDULE

MARK	LIEBERT MODEL NO.	SUPPLY FAN (UPFLOW) TOTAL CFM	EXTERNAL S.P. (IN)	MOTOR QTY.	HP	COOLING TOTAL BTU/H	SENSIBLE BTU/H	ELECTRICAL SERVICE VOLTAGE	PHASE	HZ	MCA	MOCP	PIPING SIZES REFRIGERANT RS	REFRIGERANT RL	DRAIN DIA.	FILTERS SIZE (QTY)INCHES	EFF	WEIGHT (LBS)	COMMENTS
CRAC-1	PX018	2800	0.20	1	0.90	66,500	54,800	460	3	60	18.8	25	5/8	1/2	3/4	29.5"x28.5"x2"	MERV 8	670	SEE COMMENTS

NOTES:
1. PROVIDE WITH STANDARD FEATURES.
2. PROVIDE UNIT MOUNT CONDENSATE PUMP.
3. COOLING CAPACITIES ARE BASED ON 105°F AMBIENT, 75°F EDB, 61°F EWB, 45% RH. LAT = 54.3°F.
4. COOLING CAPACITY OF UNITS IS BASED ON A MAXIMUM OF 3 KW COMPUTER RACK LOAD.
5. PROVIDE UNIT WITH CONTACTS FOR AUTO-SHUT OFF.
6. PROVIDE UNIT WITH PIPE ROUTING THRU TOP.
7. COORDINATE WITH ELECTRICAL FOR POWER AND DISCONNECTS.
8. R-410A REFRIGERANT.
9. PROVIDE REMOTE UNIT START/STOP AND ALARM DRY CONTACT.

Lbs. of Refrigerant in Split-System Calculations (2022 CMC CHAPTER 11)

System Mark	Indoor Model Number	Refrigerant Type	2022 CMC T1102.2 Safety Group	Nominal Refrigerant Charge in System (lbs)	Additional charge (lbs)	Total Refrigerant in System (Lbs.)	Smallest Room/Area Served	Service Area (Square Feet)	service Height (Feet)	Room Volume Served by System² (Cubic Feet)	Installed Lbs Charge/1000 Cubic Feet	Allowed lbs of Ref/1000 Cubic Feet (CMC T1102.2)	Requirement Met?
VRF-A	DAIKIN FXSQ07TBVJU	R410A	A1	6.39	0	6.39	BUNK RM	115	8	920	**6.9**	**26**	**Yes**
VRF-B	DAIKIN FXSQ05TBVJU	R410A	A1	42.3	0	42.3	KITCHEN 109	580	8	4640	**9.1**	**26**	**Yes**
FC-1D	DAIKIN FDMQ09RVJU	R410A	A1	2.09	0.2	2.29	CONTROL ROOM 125	240	8	1920	**1.2**	**26**	**Yes**
FC-1E	DAIKIN FDMQ09RVJU	R410A	A1	2.09	0.2	2.29	CONTROL ROOM 106	340	8	2720	**0.8**	**26**	**Yes**
DFC-1F	MITSUBISHI TPKA0A0361KA70A	R410A	A1	10	0	10	EQUIPMENT RM	150	14	2100	**4.8**	**26**	**Yes**
DFC-1G	MITSUBISHI TPKA0A0361KA70A	R410A	A1	10	0	10	MDF	300	15	4500	**2.2**	**26**	**Yes**
CRAC-1	LIEBERT PX018	R410A	A1	10.6	0	10.6	MDF	300	15	4500	**2.4**	**26**	**Yes**
DFC-1H	MITSUBISHI TPKA0A0361KA70A	R410A	A1	10	0	10	ELECTRICAL	140	15	2100	**4.8**	**26**	**Yes**
DFC-2H	MITSUBISHI TPKA0A0361KA70A	R410A	A1	10	0	10	ELECTRICAL	140	15	2100	**4.8**	**26**	**Yes**

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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER — EVAN R. T. TICHENOR — No. M21178 — EXP. 12/31/25 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SYMBOLS AND NOTES

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
M-001

DATE: 4/24/18

DATE PLOTTED: 9/16/2024 3:25:44 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\dwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

BID SET (PRELIMINARY)

VARIABLE REFRIGERANT FLOW (VRF) OUTDOOR UNIT SCHEDULE

MARK	DAIKIN MODEL NO.	DESIGN COOLING (MBH)	DESIGN HEATING (MBH)	CONNECTION RATIO	ELECTRICAL SERVICE V/PH/HZ	MCA	MOCP	ARI EER	ARI IEER (SEER)	ARI COP (HSPF)	DIMENSIONS (HxWxD)	OPER. WEIGHT (LBS)	MOUNTING DETAIL	CONTROL DETAIL	REMARKS
VRF-A	RXTQ36TAVJ9A	29	36	86.9	208/1/60	16.5	20	10	(16)	(9)	39"x37"x14"	172	2/M-401	3/M-501	SEE NOTES
VRF-B	REYQ216AAYDA	164	185	98.4	460/3/60	29.9	30	11	20.5	3.25	65"x69"x28"	972	2/M-401	3/M-501	SEE NOTES

NOTES:
1. REFRIGERANT TYPE R410A
2. CAPACITIES SHOWN HERE ARE AT AHRI NOMINAL CONDITIONS (AHRI 1230)
3. THIS MARK HAS TWO ELECTRICAL SERVICES/POINTS OF CONNECTION.
4. COORDINATE DISCONNECTS AND SERVICE WITH ELECTRICAL PLANS.
5. SEE 8/M-403 FOR REFRIGERANT PIPE SIZES. THE CONTRACTOR SHALL COORDINATE WITH MANUFACTURER'S SUBMITTAL FOR FULL PIPING LAYOUT AND PROVIDE SHOP DRAWINGS PRIOR TO SUBMITTAL

VRF BRANCH CIRCUIT CONTROLLER BOX SCHEDULE

MARK	DAIKIN MODEL NO.	SERVICE	PORTS	ELECTRICAL SERVICE V/PH/HZ	MCA	MOCP	MAX CAPACITY (MBH)	DIMENSIONS (LxWxH)	WEIGHT (LBS)	REMARKS
BCC-1	BS10Q54TAVJ	VRF-2	10	208/1/60	1.0	15	290	32"x12"x19"	101	SEE NOTES

NOTES:
1. COORDINATE DISCONNECT AND SERVICE WITH ELECTRICAL PLANS.
2. SEE SHEET 8/M-403 FOR REFRIGERANT PIPE SIZES. THE CONTRACTOR SHALL COORDINATE WITH MANUFACTURER'S SUBMITTAL FOR FULL PIPING LAYOUT AND PROVIDE SHOP DRAWINGS PRIOR TO SUBMITTAL
3. PROVIDE FULL PORT BALL VALVES ON EACH BRANCH SELECTOR BOX REFRIGERATION LIQUID AND SUCTION LINE BRANCH.

VRF INDOOR FAN COIL UNIT SCHEDULE

MARK	NOMINAL TONS	DAIKIN MODEL NO.	SERVED BY	SPACE SERVED	TYPE	SUPPLY FAN			DX COOLING COIL			HEAT PUMP HEATING			ELECTRICAL SERVICE V/PH/HZ	MCA	MCOP	DIMENSIONS (L"xW"xH")	WEIGHT (LBS)	OUTSIDE AIR (CFM)	REMARKS
						CFM	ESP	FLA	MBH SENS/TOT	EAT (°F) DB/WB	LAT (°F) DB	MBH	EAT (°F)	LAT (°F)							
FC-1A	0.6	FXSQ07TBVJU	VRF-A	BUNK ROOM 129-131	DUCTED	281	0.6"	0.6	5.3/5.9	76/61	59	8.4	70	98	208/1/60	0.8	15	22"x10"x32"	55	55	SEE NOTES
FC-2A	0.5	FXSQ05TBVJU	VRF-A	BUNK ROOM 126-128	DUCTED	281	0.6"	0.6	4.8/4.8	76/61	61	6.4	70	91	208/1/60	0.8	15	22"x10"x32"	55	55	SEE NOTES
FC-3A	1.5	FXSQ18TBVJU	VRF-A	CORRIDOR STORAGE/LAUNDRY	DUCTED	600	0.6"	1.3	13.2/14.5	74/61	56	19.8	70	100	208/1/60	1.6	15	39"x10"x32"	77	175	SEE NOTES
FC-1B	0.6	FXSQ05TBVJU	VRF-B	OFFICE 114,115	DUCTED	281	0.6	0.6	4.8/4.8	76/61	61	6.4	70	91	208/1/60	0.8	15	22"x10"x32"	55	35	SEE NOTES
FC-2B	1.25	FXSQ15TBVJU	VRF-B	OFFICE 110,111	DUCTED	530	0.6	1.2	10.6/12.0	75/61	57	16.8	70	99	208/1/60	2.88	15	28"x29"x32"	60	35	SEE NOTES
FC-3B	1.5	FXSQ18TBVJU	VRF-B	OPEN OFFICE 108 CORRIDOR 118	DUCTED	600	0.6	1.3	13.2/14.5	76/61	56	19.8	70	100	208/1/60	1.6	15	39"x29"x32"	77	185	SEE NOTES
FC-4B	0.6	FXSQ05TBVJU	VRF-B	CONFERENCE ROOM 107	DUCTED	281	0.6"	0.6	4.7/4.8	75/61	61	6.4	70	91	208/1/60	0.8	15	22"x29"x32"	55	80	SEE NOTES
FC-5B	2.5	FXSQ30TBVJU	VRF-B	OPEN OFFICE 108	DUCTED	812	0.6"	1.5	21.0/24.0	75/61	51	33.6	70	108	208/1/60	1.8	15	39"x29"x32"	82	95	SEE NOTES
FC-6B	1.5	FXSQ18TBVJU	VRF-B	OFFICE 104,105	DUCTED	600	0.6"	1.3	12.7/14.5	75/61	56	19.8	70	100	208/1/60	1.6	15	39"x29"x32"	77	70	SEE NOTES
FC-7B	1.0	FXSQ12TBVJU	VRF-B	OFFICE 103	DUCTED	335	0.6	0.7	9.3/9.6	75/61	51	13.3	70	107	208/1/60	0.8	15	22"x29"x32"	55	45	SEE NOTES
FC-8B	4.0	FXSQ48TBVJU	VRF-B	RECEPTION 101	DUCTED	1307	0.6	2.2	31.6/38.7	75/61	53	53.4	70	108	208/1/60	2.8	15	55"x29"x32"	104	75	SEE NOTES
FC-9B	1.0	FXSQ12TBVJU	VRF-B	CONFERENCE ROOM 102	DUCTED	335	0.6	0.7	9.3/9.6	75/61	51	13.3	70	107	208/1/60	0.8	15	22"x29"x32"	55	126	SEE NOTES
FC-10B	4.0	FXSQ48TBVJU	VRF-B	KITCHEN 109	DUCTED	1307	0.6	2.2	31.6/38.7	75/61	53	53.4	70	108	208/1/60	2.8	15	55"x29"x32"	104	289	SEE NOTES

NOTES:
1. SELECTED WITH 102°F DB/70°F WB (SUMMER) AND 24°F DB (WINTER) TEMPERATURES.
2. PROVIDE DIRECT-DRIVE PLENUM FAN WITH ECM MOTOR.
3. REFRIGERANT PIPES SIZED PER 8/M-403.
4. SEE ELECTRICAL DRAWINGS FOR DISCONNECT LOCATION.
5. MANUFACTURER PROVIDED INTEGRAL CONDENSATE LIFT PUMP. SEE PLUMBING DRAWINGS FOR CONDENSATE ROUTING.
6. MFR PROVIDED FILTER BOX WITH MERV 13 FILTERS. COORDINATE FILTER SIZE WITH FILTER BOX CUTSHEETS.

OUTDOOR AIR COOLED CONDENSING UNIT SCHEDULE

MARK	MANUFACTURER AND MODEL NO.	NOMINAL TONS	ELECTRICAL SERVICE V/PH/HZ	CONDENSER		COMPRESSOR			MCA	MOCP	AHRI EER	AHRI SEER	COP	UNIT SERVED	WEIGHT (LBS)	MOUNTING DETAIL	CONTROL DETAIL	REMARKS
				NO.	FLA	NO.	RLA	LRA										
HP-1D	DAIKIN RX09RMVJU9A	.75	208/1/60	1	.13	1	11.6	73	15	15	11.10	17.80	4.0	FC-1D	60	2/M-401	1/M-502	SEE NOTES
HP-1E	DAIKIN RX09RMVJU9A	.75	208/1/60	1	.13	1	11.6	73	15	15	11.10	17.80	4.0	FC-1E	60	2/M-401	1/M-502	SEE NOTES
HP-1F	MITSUBISHI TRUZA0361KA70BA	3	208/1/60	2	0.5 0.5	1	8	13	25	31	10.8	18.8	4.52	FC-1F	214	2/M-401	1/M-502	SEE NOTES
HP-1G	MITSUBISHI TRUZA0361KA70BA	3	208/1/60	2	0.5 0.5	1	8	13	25	31	10.8	18.8	4.52	FC-1G	214	2/M-401	1/M-502	SEE NOTES
HP-1H	MITSUBISHI TRUZA0361KA70BA	3	208/1/60	2	0.5 0.5	1	8	13	25	31	10.8	18.8	4.52	FC-1H	214	2/M-401	1/M-502	SEE NOTES
HP-2H	MITSUBISHI TRUZA0361KA70BA	3	208/1/60	2	0.5 0.5	1	8	13	25	31	10.8	18.8	4.52	FC-2H	214	2/M-401	1/M-502	SEE NOTES

NOTES:
1. REFRIGERANT TYPE R410A.
2. REFRIGERANT PIPE SIZES PER FAN COIL SCHEDULE.
3. REFRIGERANT LINE LENGTH IS RATED FOR UP TO 165' TOTAL LENGTH, 100' HEIGHT DIFFERENCE AND UP TO 15 BENDS AT THE SCHEDULED LINE SIZES. CONTRACTOR TO NOTIFY OF DISCREPANCIES.

INDOOR FAN COIL UNIT SCHEDULE

MARK	MANUFACTURER AND MODEL NO.	TYPE	ROOM SERVED	SUPPLY FAN			DX COOLING			HEAT PUMP HEATING			REFRIGERANT		ELECTRICAL SERVICE V/PH/HZ	MCA	MCOP	OSA (CFM)	WEIGHT (LBS)	MOUNTING DETAIL	CONTROL DETAIL	REMARKS
				CFM	QTY	FLA	MBH SENS/TOT	EAT DB °F WB °F	LAT DB °F WB °F	TOTAL MBH	EAT DB °F	LAT DB °F	LIQUID	SUCTION								
FC-1D	DAIKIN FDMQ09RVJU	DUCTED	CONTROL ROOM 125	343	1	0.63	9/9	95 75	80 67	39	43	86	1/4	3/8	208/1/60	9	15	40	64	3/M-401	1/M-502	SEE NOTES
FC-1E	DAIKIN FDMQ09RVJU	DUCTED	CONTROL ROOM	343	1	0.63	9/9	95 75	80 67	39	43	86	1/4	3/8	208/1/60	9	15	55	64	3/M-401	1/M-502	SEE NOTES
DFC-1F	MITSUBISHI TPKA0A0361KA70A	DUCTLESS	EQUIPMENT ROOM	920	1	0.57	36/36	95 75	-	HEATING LOCKED OUT			3/8	5/8	208/1/60	1	-	-	46	7/M-401 8/M-401	1/M-502	SEE NOTES
DFC-1G	MITSUBISHI TPKA0A0361KA70A	DUCTLESS	MDF	920	1	0.57	36/36	95 75	-	HEATING LOCKED OUT			3/8	5/8	208/1/60	1	-	-	64	7/M-401 8/M-401	1/M-502	SEE NOTES
DFC-1H	MITSUBISHI TPKA0A0361KA70A	DUCTLESS	ELECTRICAL	920	1	0.57	36/36	95 75	-	HEATING LOCKED OUT			3/8	5/8	208/1/60	1	-	-	64	7/M-401 8/M-401	1/M-502	SEE NOTES
DFC-2H	MITSUBISHI TPKA0A0361KA70A	DUCTLESS	ELECTRICAL	920	1	0.57	36/36	95 75	-	HEATING LOCKED OUT			3/8	5/8	208/1/60	1	-	-	64	7/M-401 8/M-401	1/M-502	SEE NOTES

NOTES:
1. REFRIGERANT TYPE R410A
2. WIRED REMOTE CONTROLLER
3. DRAIN PIPE CONNECTION SIZE 5/8"
4. REFRIGERANT PIPE SIZES MAY NEED TO BE MODIFIED PER MANUFACTURER INSTRUCTIONS BASED ON IN FIELD LENGTHS.
5. PROVIDE UNIT WITH MERV 13 FILTERS.

ELECTRIC HEATER

MARK	QMARK MODEL NO. (W"xD"xH")	CFM	BTU/h	ELECTRICAL SERVICE 120/1PH/60HZ.		WEIGHT (LBS)	REMARKS
				WATTS	AMPS		
EH-1	SED1012C (WALL) (10.5x1.125x17.25)	50	3413	1000	8.3	20	SEE NOTES BELOW

NOTES:
1. FIELD PROVIDED WALL MOUNTED THERMOSTAT WITH PROTECTIVE SCREEN AND SET TO MAINTAIN 40°F.
2. FACTORY PROVIDED SURFACE MOUNTING FRAME - STAINLESS STEEL - MODEL SEDSMC.
3. FACTORY PROVIDED STAINLESS STEEL FINISH.
4. STANDARD DUAL PROTECTION: THERMAL CUTOUT WITH INDICATOR LIGHT AND ONE TIME THERMAL FUSE.

DEDICATED OUTSIDE AIR SYSTEM

MARK	NOMINAL TONS	DAIKIN MODEL NO.	SUPPLY FAN							DX COOLING						HEAT PUMP HEATING			SUPPLEMENTAL ELECTRIC HEATING				COMPRESSORS			CONDENSER FAN			ELECTRICAL				EER	IEER	WEIGHT (LBS)	MINIMUM OUTSIDE AIR (CFM)	PRE FILTERS			REMARKS
			CFM	ESP (IN.)	TSP (IN.)	RPM	BHP	HP	FLA	MBH		EAT °F		LAT °F		MBH	EAT °F	LAT °F	kW	FLA	EAT °F	LAT °F	QTY.	LRA (EA)	RLA (EA)	QTY.	HP (EA)	FLA (EA)	V/PH/HZ	UNIT FLA	MCA	MOCP					QTY.	SIZE (IN.)	MERV	
										SENS.	TOTAL	DB	WB	DB	WB																								
DOAS-A	6	DPSH06B	2060	1.0	2.0	2121	0.99	1.7	2.3	77.3	77.3	102	70	64	57	59.8	43	69	30	36.1	28	74	1	-	11.6	1	1/2	0.9	460/3/60	52.5	64.5	70	-	-	1258	2060	4 -	16"x16"x2" -	13 -	SEE NOTES
DOAS-B	4	DPSH04B	1295	1.0	1.6	1692	0.51	1.7	2.3	52.3	52.3	102	70	62	57	42.4	43	72	18	21.7	28	72	1	-	11.6	1	1/2	0.9	460/3/60	38.1	46.5	50	-	-	1195	1295	4 -	16"x16"x2" -	13 -	SEE NOTES: 1,2,4
DOAS-C	12	DPSH12B	4100	1.0	2.4	1877	2.43	4.3	4.6	164.3	164.3	102	70	62	57	126.4	43	70	54	65	28	69	1	-	25.0	2	1	3.4	460/3/60	99.6	105.8	125	-	-	2104	4100	6 -	18"x24"x2" -	13 -	SEE NOTES

NOTES:
1. SELECTION/DESIGN CRITERIA: 102°F DB/70°F WB. (SUMMER), 24°F DB (WINTER).
2. PROVIDE DIRECT DRIVE ECM SUPPLY FAN.
3. PROVIDE DUCT SMOKE DETECTOR, PROVIDED BY ELECTRICAL, INSTALLED BY MECHANICAL FOR AUTOMATIC SHUTDOWN PER 2022 CMC 609.1.
4. PROVIDE NEMA 3R DISCONNECT SWITCH.

FUME HOOD SCHEDULE

MARK	LABCONCO MODEL NO. (OR EQUAL)	SIZE (IN.)		AIR VOLUME		DUCT SIZE	ELECTRICAL V/□/HZ	WEIGHT (LBS)	LOCATION	REMARKS
		WIDTH (IN.)	DEPTH (IN.)	CFM	S.P. (IN.)	COLLAR (I.D.)				
FH-1	PROTECTOR XL -	60	37.7"	765	0.22"	12.8"	115/1/60	450	LABORATORY	SEE NOTES
FH-2	PROTECTOR XL -	60	37.7"	765	0.22"	12.8"	115/1/60	450	LABORATORY	SEE NOTES
FH-3	PROTECTOR XL -	60	37.7"	765	0.22"	12.8"	115/1/60	450	LABORATORY	SEE NOTES

NOTES:
1. CFM IS AT 100 FPM WITH SASH AT (18"). PROVIDE STOP.
2. STAINLESS STEEL EXHAUST COLLAR TRANSITION T0 12" DIAMETER.
3. FOR CHEMICAL FUME HOOD DUCT MATERIALS, SEE SPECS.
4. CONTRACTOR SHALL HIRE "TECHNICAL SAFETY SERVICES" (TSS) TO TEST HOOD FOR ASHRAE 110 CODE COMPLIANCE. COORDINATE TESTING WITH THE OWNER AND CONTRACTOR.
5. FH-1, FH-2, & FH-3 SHALL BE ACCESSIBLE. HEIGHT OF HOOD & UTILITIES SHALL MEET ALL ACCESSIBILITY REQUIREMENTS.
6. COORDINATE WITH LAB FURNITURE PROVIDER FOR ALL REQUIREMENTS.
7. HOOD SHALL BE 316 STAINLESS STEEL INTERIOR ACID TYPE HOOD, WASHDOWN SYSTEM, INTEGRAL WORK SURFACE, DRAINAGE TROUGHS AND CONTROL PANEL.
8. REMOVABLE FRONT ACCESS PANELS, LIGHT WITH ON-OFF SWITCH.
9. PROVIDE OVAL CUPSINK (BACK -LEFT) FOR FH-1 & (FRONT-LEFT) FOR FH-2 & FH-3. ORIENTATION PER USER.
10. PROVIDE OUTLETS AND FAUCET FOR VACUUM, AIR, NITROGEN & DI WATER. SEE PLUMBING PLANS FOR LOCATIONS.
11. PROVIDE FUME HOOD ALARM.
12. VERIFY ALL MODEL NUMBERS WITH MANUFACTURER.
13. FUME HOODS SHALL BE PROVIDED BY CONTRACTOR.
14. PROVIDE CABINET BASED UNDER HOOD.
15. PROVIDE STAINLESS STEEL CLOSURE PANELS ABOVE HOOD TO CEILING.

EXHAUST FAN SCHEDULE

MARK	MANUFACTURER/ MODEL NO.	FAN			MOTOR				LOCATION	SONES (INLET/ RADIATED)	ROOMS SERVED	OPER. WEIGHT (LBS)	MOUNTING DETAIL	CONTROL DETAIL	REMARKS
		CFM	E.S.P.	RPM	INPUT (W)	DRIVE TYPE	SERVICE V/PH/HZ	MOTOR ENCLOSURE							
IEF-1	GREENHECK SQ-130-VG	2060	.35"	1640	380	DIRECT DRIVE	208/1/60	TENV	CEILING	15.1/11.7	MENS LOCKER ROOM WOMENS LOCKER ROOM	66	4/M-401	2/M-501	SEE NOTES: 1-2
IEF-2	GREENHECK SQ-80-VG	300	.35"	1566	45	DIRECT DRIVE	115/1/60	TENV	CEILING	7.4/6.5	RESTROOM 119-120	56	4/M-401	2/M-501	SEE NOTES: 1-2
IEF-3	GREENHECK SQ-120	1470	.35"	1487	323	DIRECT DRIVE	460/3/60	ODP	CEILING	10.3/7.8	LABORATORY	66	4/M-401	1/M-503	SEE NOTES: 1-2
IEF-4	GREENHECK SQ-120	1470	.35"	1487	323	DIRECT DRIVE	460/3/60	ODP	CEILING	10.3/7.8	LABORATORY	66	4/M-401	1/M-503	SEE NOTES: 1-2
IEF-5	GREENHECK SQ-90-VG	460	.35"	1525	45	DIRECT DRIVE	115/1/60	TENV	CEILING	7.2/6.1	LABORATORY	56	4/M-404	1/M-503	SEE NOTES: 1-2
HEF-1	GREENHECK VEKTOR-H-10	765	.35"	2444	201	BELT DRIVE	460/3/60	TEFC	ROOF	-	FH-1	308	5/M-401	1/M-503	SEE NOTES: 1,2,4
HEF-2	GREENHECK VEKTOR-H-10	765	.35"	2444	201	BELT DRIVE	460/3/60	TEFC	ROOF	-	FH-2	308	5/M-401	1/M-503	SEE NOTES: 1,2,4
HEF-3	GREENHECK VEKTOR-H-10	765	.35"	2444	201	BELT DRIVE	460/3/60	TEFC	ROOF	-	FH-3	308	5/M-401	1/M-503	SEE NOTES: 1,2,4
WEF-1	BROAN 512M	70		2660	48		120/1/60	-	WALL	0.9	JANITOR	-	9/M-401	-	SEE NOTES: 1-2
CEF-1	GREENHECK SP-B150	150	.25"	1050	128	DIRECT DRIVE	115/1/60	ODP	CEILING	3.0	MECHANICAL 132	10	2/M-404	-	SEE NOTES: 1-3

NOTES:
1. COORDINATE WITH ELECTRICAL FOR POWER AND DISCONNECT
2. PROVIDE WITH BACKDRAFT DAMPER
3. INSTALL WITH LINE VOLTAGE THERMOSTAT. ON AT 90° F AND OFF AT 80° F.
4. PROVIDE WITH MOTOR STARTER EQUIVALENT TO GREENHECK MSAC-1-9/J-G1.6-40

VARIABLE FREQUENCY DRIVE SCHEDULE

MARK	MANUFACTURER / MODEL #	HP	VOLTS/PH/HZ	LOCATION	SERVES	WEIGHT	MOUNTING DETAIL	REMARKS
VFD-1	ABB, INC / ACH580	1.0	460/3/60	EQUIPMENT ROOM 136	IEF-3	18	8/M-404	SEE NOTES
VFD-1	ABB, INC / ACH580	1.0	460/3/60	EQUIPMENT ROOM 136	IEF-4	18	8/M-404	SEE NOTES

NOTES:
1. COMPLETE WITH MANUAL BYPASS. SEE ELECTRICAL FOR FUSED DISCONNECT
2. NEMA-3 RATED ENCLOSURE TYPE
3. A PASS THROUGH I/O SHALL OPEN VALVES IN THE SYSTEM IF VFD GOES INTO BYPASS MODE TO ALLEVIATE OVER PRESSURIZATION

196
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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER JEAN R. TICHENOR No. M15178 EXP. 12/31/25 MECHANICAL STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

MECHANICAL SCHEDULES

DRAWN BY: Author JOB NUMBER: 210015.01

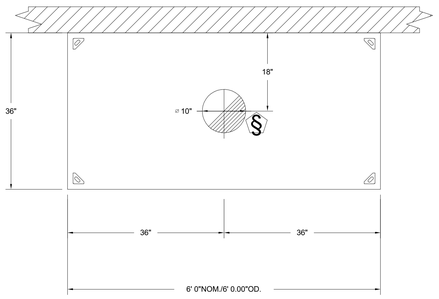
SHEET NO.

M-002

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 9/16/2024 3:25:45 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\dwgs\REVIT\23.020 Dry Creek WWTP MEP _r22.rvt



PLAN VIEW – HOOD #1
6' 0.00" LONG 3624VHB-G

EXHAUST FAN INFORMATION – JOB#7007677

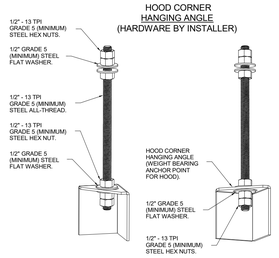
FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	REF-1	1	DU33HFA	CAPTIVEAIRE	900	0.500	1498	TEAO-ECM	0.333	0.2090	1	115	4.3	446 FPM	65	15.6

FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	REF-1	1	
		1	ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CCW ROTATION
		1	2 YEAR PARTS WARRANTY

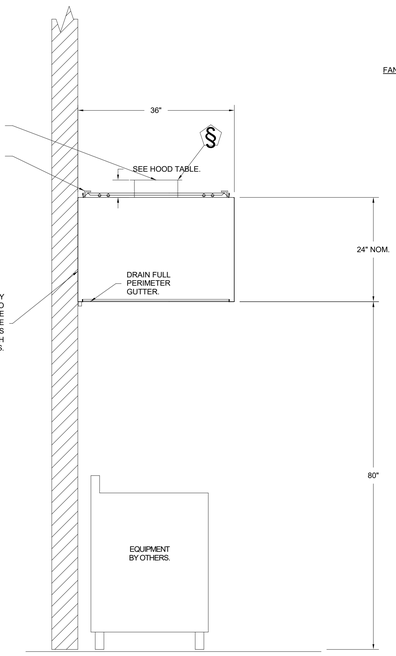
CURB ASSEMBLIES

NO	ON FAN	WEIGHT	ITEM	SIZE
1	# 1	18 LBS	CURB	19.500"W X 19.500"L X 12.000"H.



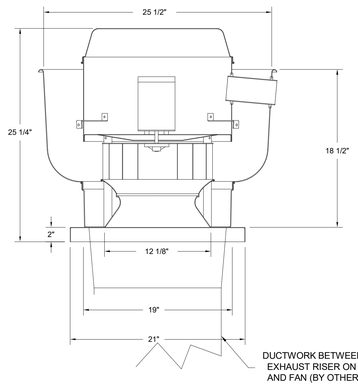
ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD. SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

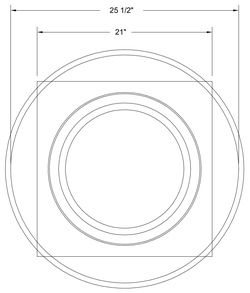


SECTION VIEW – MODEL 3624VHB-G
HOOD – #1

FAN #1 DU33HFA - EXHAUST FAN



DUCTWORK BETWEEN EXHAUST RISER ON HOOD AND FAN (BY OTHERS).



TOP VIEW

FEATURES:

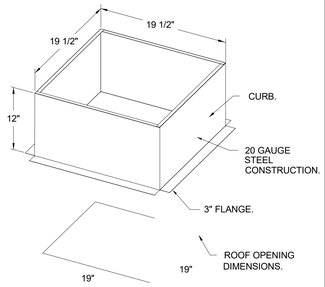
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).

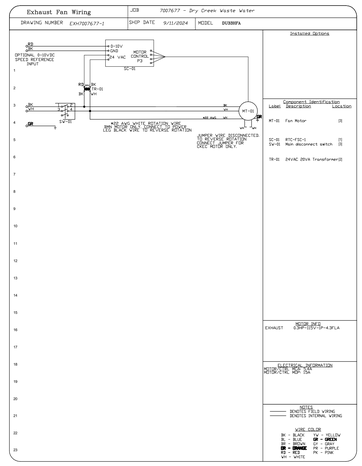
- NEMA 3R SAFETY DISCONNECT SWITCH.

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

OPTIONS

- ECM WIRING PACKAGE - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -RTC- (TELCO MOTOR), CCW ROTATION.
- 2 YEAR PARTS WARRANTY.





HOOD INFORMATION – JOB#7007677

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	HOOD CONSTRUCTION	HOOD CONFIG END TO END	ROW
1	H-1	3624 VHB-G	CAPTIVEAIRE	6' 0"	700 DEG	II	N/A	150	900			4"	10"	900	1650	-0.154"	430 SS 100%	ALONE	ALONE

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	UTILITY CABINET(S) LOCATION	SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1							0									NO	157 LBS

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SEAN R. TICHENOR
No. M31178
EXP. 12/31/25
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments

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City of Roseville Approval

Dry Creek Waste Water

9/11/2024

7007677

MRE

3/4" = 1'-0"

MASTER DRAWING

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
MECHANICAL SCHEDULES

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
M-003

DATE: 4/24/18

DATE PLOTTED: 9/16/2024 3:25:45 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\drwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

BID SET (PRELIMINARY)

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 3 of 23)**

C1. COMPLIANCE SUMMARY

COMPLIES[3]

	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft² - yr)	**Total[2] (kBtu/ft² - yr)**	**Total[2] (kBtu/ft² - yr)**
Standard Design	467.79	372.4	43.51
Proposed Design	452.82	347.16	36.22
Compliance Margins	**14.97**	**25.24**	**7.29**
	Pass	**Pass**	**Pass**

[1] Efficiency measures include improvements like a better building envelope and more efficient equipment
[2] Compliance Totals include efficiency, photovoltaics and batteries
[3] New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 2 of 23)**

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance					Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Performance	Solar Thermal Water Heating (See Table I3)	☐ Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒ Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see Table J)	☐ Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒ Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Not Included	Covered Process: Laboratory Exhaust (see Table J)	☒ Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☐ Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☒ Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☐ Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐ Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒ Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 1 of 23)**

Project Name: **Dry Creek Admin Building** — **Date Prepared:** **2024-09-13**

A. General Information

1	Project Name	Dry Creek Admin Building			
2	Run Title	Title 24 Analysis			
3	Project Location	1800 Booth Road			
4	City	Roseville	**5**	Standards Version	Compliance 2022
6	Zip code	95747	**7**	Compliance Software (version)	EnergyPro 9.3
8	Climate Zone	11	**9**	Building Orientation (deg)	0
10	Building Type(s)	• Nonresidential	**11**	Weather File	RED-BLUFF_STYP20.epw
12	Project Scope	• New envelope and mechanical	**13**	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft²)	11099	**15**	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft²)	0	**17**	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	11099	**19**	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 6 of 23)**

C4. SOURCE ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual SOURCE Energy Use, kBtu/ft² /yr)

COMPLIES[2]

Energy Component	Standard Design (SOURCE)	Proposed Design (SOURCE)	Compliance Margin (SOURCE)[1]
Space Heating	19.95	15.06	4.89
Space Cooling	7.41	9.62	-2.21
Indoor Fans	15.84	10.85	4.99
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	1.53	1.53	0
Indoor Lighting	3	3	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**47.73**	**40.06**	**7.67 (16.1%)**
Photovoltaics	-3.43	-3.84	0.41
Batteries	-0.79	---	-0.79
TOTAL COMPLIANCE	**43.51**	**36.22**	**7.29 (16.8%)**

[1] Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 5 of 23)**

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	133.86	133.86	---
Process	80.33	80.33	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**586.59**	**561.35**	**25.24 (4.3%)**

[1] Notes: This table is not used for Energy Code Compliance.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 4 of 23)**

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES[2]

Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Space Heating	88.52	108.84	-20.32
Space Cooling	163.2	189.62	-26.42
Indoor Fans	172.42	110.71	61.71
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	6.71	6.71	0
Indoor Lighting	36.94	36.94	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**467.79**	**452.82**	**14.97 (3.2%)**
Photovoltaics	-93.42	-105.66	12.24
Batteries	-1.97	---	-1.97
TOTAL COMPLIANCE	**372.4**	**347.16**	**25.24 (6.8%)**

[1] Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 9 of 23)**

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	102.97	92.63	10.34	10.04
NET EUI[1]	86.74	74.55	12.19	14.05

[1] Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.

C9. UNMET LOAD HOURS

Thermal Zone Name	Cooling Unmet Load Hour Limit for Thermal Zone	Proposed Cooling Unmet Load Hours	Heating Unmet Load Hour Limit for Thermal Zone	Proposed Heating Unmet Load Hours
16-DOAS SUPPLIED	150	0	150	1969.25
17-DOAS-C	150	0	150	693.5

D1. EXCEPTIONAL CONDITIONS

• The project uses the Simplified Geometry Performance Modeling Approach which is not capable of modeling daylighting controls and assumes the prescriptive Secondary Daylit Control requirements are met. PRESCRIPTIVE COMPLIANCE documentation (form NRCC-LTI-02-E) for the requirements of section 140.6(d) Automatic Daylighting Controls in Secondary Daylit Zones is required.
• The building does not include service water heating. Verify that service water heating is not required and is not included in the design.
• The user model includes space(s) that are designed to be served by mechanical cooling systems, but the cooling systems were not included in the simulation model. A cooling system has been modeled for both the proposed and standard cases.
• The user model includes space(s) without sufficient cooling equipment. Cooling equipment has been added to the model to meet cooling loads.
• PV/Battery Building Type has been modified from software defaults for one or more spaces. Review project's PV/Battery Building Type(s) with documentation author. Refer to Energy Code section 140.10 for Nonresidential or 170.2(g) for more information.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 8 of 23)**

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	19.1	43.5	-24.4	157.1	---	---
Space Cooling	43	53.8	-10.8	---	---	---
Indoor Fans	65.8	43.3	22.5	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	1.5	1.5	0	14.9	14.9	0
Indoor Lighting	16.4	16.4	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**145.8**	**158.5**	**-12.7**	**172**	**14.9**	**157.1**
Photovoltaics	-52.8	-58.8	6	---	---	---
Batteries	0.3	---	---	---	---	---
ENERGY USE SUBTOTAL	**93.3**	**99.7**	**-6.4**	**172**	**14.9**	**157.1**
Receptacle	41.3	41.3	0	195	195	0
Process	40	40	0	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	---	---	---	---	---	---
ENERGY USE TOTAL	**174.6**	**181**	**-6.4**	**367**	**209.9**	**157.1**

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — **NRCC-PRF-E**

Nonresidential Performance Compliance Method — **(Page 7 of 23)**

C5. SOURCE ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (SOURCE)	Proposed Design (SOURCE)	Compliance Margin (SOURCE)[1]
Receptacle	23.22	23.22	---
Process	5.91	5.91	---
Other Ltg	---	---	---
Process Motors	---	---	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**72.64**	**65.35**	**7.29 (10%)**

[1] Notes: This table is not used for Energy Code Compliance.

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

196
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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER — ADAM R. TICHENOR — EXP. 12/31/25 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
TITLE 24

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
M-101

DATE: 4/24/18

DATE PLOTTED: 9/16/2024 3:25:57 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\dtwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

BID SET (PRELIMINARY)

G5. OPAQUE SURFACE ASSEMBLY SUMMARY

01	02	03	04	05	06		07	08	09	10
Surface Name	Construction Type	Area (ft²)	Framing Type	Cavity R-Value	Continuous R-Value		Units	Value	Description of Assembly Layers	Status[1]
					Interior	Exterior				
Exterior Wall6	Exterior Wall	9,332.6	Wood	21	N/A	7.5	U-factor	0.0424	Metal Siding - 1/16 in. Extruded Polystyrene - XPS - 1 1/2 in. R7.50 Vapor permeable felt - 1/8 in. Composite-1 Gypsum Board - 5/8 in.	N
Slab On Grade9	Underground Floor	11,063	N/A	0	N/A	N/A	F-factor	0.73	Slab Type =Unheated slab on grade Insulation Orientation =None Insulation R-Value =none	N
R-21 Roof Truss11	Roof	9,138	Wood	21	N/A	N/A	U-factor	0.0515	Metal Standing Seam - 1/16 in. Vapor permeable felt - 1/8 in. Plywood - 1/2 in. Composite-2	N
Lab 20 TJI R-3821	Roof	2,030	Wood	38	N/A	N/A	U-factor	0.0291	Single Ply Roofing - 1/4 in. Vapor permeable felt - 1/8 in. Plywood - 1/2 in. Composite-3	N
Exterior Wall61	Interior Wall	441	Wood	21	N/A	7.5	U-factor	0.0414	Metal Siding - 1/16 in. Extruded Polystyrene - XPS - 1 1/2 in. R7.50 Vapor permeable felt - 1/8 in. Composite-1 Gypsum Board - 5/8 in.	N

[1] *Status: N - New, A - Altered, E - Existing*

G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)

01	02	03	04
Opaque Surfaces & Orientation	Total Gross Surface Area (ft²)	Total Fenestration Area (ft²)	Window to Wall Ratio (%)
North-Facing[1]	2260	338	14.07
East-Facing[2]	2210	474	21.45
South-Facing[3]	2899.6	310	10.69
West-Facing[4]	1963	400.75	20.42
Total	**9332.6**	**1502.75**	**16.1**
Roof	11168	140	1.25

Notes
[1] *North-Facing is oriented to within 45 degrees of true north, including 45 00'00" east of north (NE), but excluding 45 00'00" west of north (NW),*
[2] *East-Facing is oriented to within 45 degrees of true east, including 45 00'00" south of east (SE), but excluding 45 00'00" north of east (NE),*
[3] *South-Facing is oriented to within 45 degrees of true south, including 45 00'00" west of south (SW), but excluding 45 00'00" east of south (SE),*
[4] *West-Facing is oriented to within 45 degrees of true west, including 45 00'00" north of west (NW), but excluding 45 00'00" south of west (SW),*

G4. NONRESIDENTIAL AIR BARRIER

01	02
Building Story Name	Air Barrier
Com-Floor 1	No air barrier

F1. REQUIRED PV SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	Exception[1]	Module Type	Array Type	Power Electronics	CFI	Azimuth (deg)	Tilt Input	Array Angle (deg)	Tilt: (x in 12)	Inverter Eff. (%)	Annual Solar Access (%)
37		Standard (14-17%)	Fixed	Microinverters	false	180	Degrees	22	4.85	96	100

[1] *See Table D1 for any PV exceptions used.*

F1B. PV BATTERY BUILDING TYPE(S)

01	02	03
Building Occupancy Type* (From Table 140.10-A/B and 170.2-U/V)	Conditioned Floor Area (ft²)	Unconditioned Floor Area (ft²)
Grocery	0	0
High-Rise Multifamily	0	0
Office, Financial Institutions, Unleased Tenant Space	11099	0
Retail	0	0
School	0	0
Warehouse	0	0
Auditorium, Convention Center, Hotel/Motel, Library, Medical Office Building/Clinic, Restaurant, Theater	0	0
None	0	0

* *Building Occupancy Types are defined in Section 100.1 of the Energy Code*

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
VRF-A	Variable Refrigerant Flow	1	36	N/A	COP HSPF	9 9	29	EER SEER	10 16	N/A	N
VRF-B	Variable Refrigerant Flow	1	185	N/A	COP	3.25	164	EER	11	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
DOAS-A	Single Zone Heat Pump (SZHP) Air System	1	59.8	0	COP	6	77.3	EER	12.6	No Economizer	N
DOAS-B	DOAS CV Air System	1	42.4	0	COP HSPF	3.45 9	52.3	EER SEER	12.3 14	No Economizer	N
DOAS-C	Single Zone Heat Pump (SZHP) Air System	1	126.4	0	COP	3.4	164.3	EER	12.6	No Economizer	N
CRAC-1 ACCU-1	Single Zone Air Conditioner (SZAC) Air System	1	0	0	N/A	NA	66.5	EER	11.2	No Economizer	N
FC-1D	Single Zone Heat Pump	1	11.35	0	COP HSPF	3.85 10.3	8.64	EER SEER	11.1 17.8	N/A	N
FC-1E	Single Zone Heat Pump	1	11.35	0	COP HSPF	3.85 10.3	8.64	EER SEER	11.1 17.8	N/A	N
DFC-1F	MiniSplit AC	1	0	0	N/A	NA - See Electric Resistance	36	EER SEER	11 18.8	N/A	N
DFC-1G HP-1G	MiniSplit AC	1	0	0	N/A	NA - See Electric Resistance	36	EER SEER	11 18.8	N/A	N
DFC-1H2H	MiniSplit AC	1	0	0	N/A	NA - See Electric Resistance	36	EER SEER	11 18.8	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

G6A. OPAQUE DOOR SUMMARY (NONRESIDENTIAL)

01	02	03	04
Assembly Name	Area (ft²)	Overall U-factor	Status[1]
Insulated Door25	122	0.2	N

[1] *Status: N - New, A - Altered, E - Existing*

G7A. FENESTRATION ASSEMBLY SUMMARY (NONRESIDENTIAL)

01	02	03	04	05	06	07	08	09
Fenestration Assembly Name	Fenestration Type/ Product Type / Frame Type	Certification Method[1]	Assembly Method	Area (ft²)	Overall U-factor	Overall SHGC	Overall VT	Status[2]
Prescriptive Windows	Vertical fenestration Fixed window N/A	NFRC	Manufactured	1,190.75	0.34	0.22	0.42	N
Prescriptive Skylights	Skylight Fixed window N/A	NFRC	Manufactured	140	0.88	0.83	0.64	N
Storefront Prescriptive	Vertical fenestration Fixed window N/A	NFRC	Manufactured	312	0.34	0.22	0.46	N

[1] *Notes: Newly installed fenestration shall have a certified NFRC Label Certificate or use the CEC default tables found in Table 110.6-A and Table 110.6-B. Center of Glass (COG) values are for the glass-only, determined by the manufacturer, and are shown for ease of verification. Site-built fenestration values are calculated per Nonresidential Appendix NA6 and are used in the analysis.*
[2] *Status: N - New, A - Altered, E - Existing*

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
7-FC-4B	General - Conference/meeting	5.17	77.5	0	155	N/A
8-FC-5B	Office - Office space	3.17	95.25	0	635	N/A
9-FC-6B	Office - Office space	2.3	69	0	460	N/A
10-FC-7B	Office - Office space	1.5	45	0	300	N/A
11-FC-8B	General - Break rooms	16	240	0	480	N/A
12-FC-9B	General - Conference/meeting	8.5	127.5	0	255	N/A
13-FC-10B	Office - Breakrooms	19.33	290	0	580	N/A
14-FC-1D	Misc - All others	1.2	36	0	240	N/A
15-FC-1E	Misc - All others	1.73	51.75	0	345	N/A
16-DOAS SUPPLIED	Misc - All others	7.05	211.5	2360	1410	N/A
17-DOAS-C	Misc - All others	8.8	4300	938.67	1760	N/A
18-DFC-1F	General - Unoccupied	0.23	0	0	150	N/A
19-MDF	General - Unoccupied	0.46	0	0	305	N/A
20-DFC-1G HP-1-G	General - Unoccupied	0.46	0	0	305	N/A
21-DFC-1H2H	General - Unoccupied	0.22	0	0	145	N/A

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
16-DOAS SUPPLIED-Trm	Uncontrolled	1	N/A	N/A	2,060	N/A	0	N/A	N/A	N/A	☐
14-FC-1D-Trm	Uncontrolled	1	N/A	N/A	335	N/A	0	N/A	N/A	N/A	☐

H5. GENERAL EXHAUST FAN SUMMARY

01	02	03	04	05	06	07	08
System ID	Zone Name	Qty	CFM	Power	Power Units	Continuous Operation?	Status[1]
DOAS SUPPLIED144-EF	16-DOAS SUPPLIED	1	2360	0.49	BHP	No	N
DOAS-C165-EF	17-DOAS-C	1	4300	0.79	BHP	No	N

[1] *Status: N - New, A - Altered, E - Existing*

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
DOAS-B	DOAS CV Air System	N/A	Single Maximum Reheat Controls

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-E.

[1] *Yes = interlocks are provided, No = interlocks are not provided, NA means no operable openings.*

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03	04	05	06	07
Zone Name	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
	Ventilation Function	# of People	Supply OA CFM	Exhaust CFM		
1-FC-1A	Misc - All others	1.73	51.75	0	345	N/A
2-FC-3A	General - Corridors	5.86	175.65	0	1171	N/A
3-FC-2A	Misc - All others	1.73	51.75	0	345	N/A
4-FC-1B	Office - Office space	1.2	36	0	240	N/A
5-FC-2B	Office - Office space	1.19	35.7	0	238	N/A
6-FC-3B	Office - Office space	6.17	185.25	0	1235	N/A

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	Supply Fan				Return / Relief Fan					Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
DOAS-A	1	526.65	2,060	0.99	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
DOAS-B	1	1252.95	1,300	0.51	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
DOAS-C	1	4300	4,100	2.43	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
CRAC-1 ACCU-1	1	0	2,800	0.9	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
2-FC-1A-VRF	1	0	281	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
3-FC-3A-VRF	1	0	600	0.31	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
4-FC-2A-VRF	1	0	281	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
5-FC-1B-VRF	1	0	281	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
6-FC-2B-VRF	1	0	530	0.31	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
7-FC-3B-VRF	1	0	600	0.31	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
8-FC-4B-VRF	1	0	281	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
9-FC-5B-VRF	1	0	812	0.31	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
10-FC-6B-VRF	1	0	600	0.31	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
11-FC-7B-VRF	1	0	335	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
12-FC-8B-VRF	1	0	1,307	0.4	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
13-FC-9B-VRF	1	0	335	0.1	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
14-FC-10B-VRF	1	0	1,307	0.4	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC-1D	1	0	335	0.15	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
FC-1E	1	0	335	0.15	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
DFC-1F	1	0	920	0.14	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
DFC-1G HP-1G	1	0	920	0.14	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
DFC-1H2H	1	0	920	0.14	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

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JOAN R. TICHENOR
EXP. 12/31/25
MECHANICAL
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REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
TITLE 24

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
M-102

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 9/16/2024 3:26:09 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\drwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 21 of 23)

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
PropNoClg-NonResZnSys-15	Single Zone Air Conditioner	1	0	5.36	173.33	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-16	Single Zone Air Conditioner	1	0	133.09	4,341.29	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-17	Single Zone Air Conditioner	1	0	131.37	4,284.93	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-18	Single Zone Air Conditioner	1	0	5.43	177.15	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-19	Single Zone Air Conditioner	1	0	8.14	265.6	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-20	Single Zone Air Conditioner	1	0	8.14	265.6	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-21	Single Zone Air Conditioner	1	0	65.45	2,134.99	N/A	N/A	0	W/cfm	Cycling	☐

J3. LABORATORY/PROCESS EXHAUST

1	2	3	4	5	6
Space Name	Design Exhaust Flow Rate (cfm)	Minimum Exhaust Flow Rate (cfm)	Total Fume Hood Length (ft)	Exhaust Flow for Fume Hoods with Vertical Sashes (cfm)	Fraction of Fume Hoods with Vertical Sash with automatic control (%)
S-17-DOAS-C	4300	938.67	21	3,195	1

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Envelope	NRCI-ENV-01-E - Must be submitted for all buildings
Envelope	NRCI-ENV-E - Envelope (for all buildings)
Mechanical	NRCI-MCH-01-E - Must be submitted for all buildings
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems
	NRCI-SAB-E - Solar Water Heating, PV and Battery Storage Systems
Covered Process	NRCI-PRC-01-E - Must be submitted for all Covered Processes

STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-PLB-E

This document is used to demonstrate compliance for nonresidential occupancies with requirements in 110.1, 110.3, 120.3, and 140.5, and with requirements in 141.0 for additions and alterations, for domestic water heating scopes using the prescriptive path. For high-rise residential and hotel/motel occupancies compliance is demonstrated with requirements in 110.1, 110.3, 160.4 and 170.2(d), and with requirements 180.1 for additions and 180.2 for alterations.

Project Name: Dry Creek | **Report Page:** (Page 1 of 6)

Project Address: 1800 Booth Road | **Date Prepared:** 9/13/2024

A. GENERAL INFORMATION

01	Project Location (city)	Roseville	02	Climate Zone	11
03	Occupancy Types Within Project (select all that apply):				

● Office ● Support Areas ● All Other Occupancies

B. PROJECT SCOPE

This table includes domestic water heating systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive paths outlined in 140./170.2(d) and 141.0(a)/ 180.1, or 141.0(b)2N / 180.2 for additions or alterations. Solar water heating systems are documented on the NRCC-SAB compliance document. Combined hydronic water heating systems are documented on the NRCC-MCH compliance document.

01	02	03		
My project consists of (check all that apply):	System Type[1,2]	System Components		
☒ New system (DHW system being installed for the first time)	Individual System (serving nonresidential spaces)	☒ Equipment	☒ Distribution	☒ Controls
☐ System Alteration (equipment, distribution or controls)		☐ Equipment	☐ Distribution	☐ Controls

FOOTNOTES: Point of use water heaters, or other non-central systems used to serve nonresidential spaces, are considered individual systems.

[2] *Dwelling units refers to hotel/motel guest rooms and units in a multifamily residential occupancy.*

[3] *DHW systems serving 2 or more dwelling units are considered "Central Systems" for multifamily occupancies*

C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with water heating requirements. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. or the table indicated as not compliant for guidance.

01	02	03	04
Domestic Hot Water Equipment	Distribution Systems	Controls	**Compliance Results**
Table F	Table G	Table H	
Yes	Yes	Yes	COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 20 of 23)

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
10-FC-6B-VRF	Variable Refrigerant Flow	1	19.8	14.5	600	N/A	N/A	0.31	BHP	Cycling	☐
11-FC-7B-VRF	Variable Refrigerant Flow	1	13.3	9.6	335	N/A	N/A	0.1	BHP	Cycling	☐
12-FC-8B-VRF	Variable Refrigerant Flow	1	53.4	38.7	1,307	N/A	N/A	0.4	BHP	Cycling	☐
13-FC-9B-VRF	Variable Refrigerant Flow	1	13.3	9.6	335	N/A	N/A	0.1	BHP	Cycling	☐
14-FC-10B-VRF	Variable Refrigerant Flow	1	53.4	38.7	1,307	N/A	N/A	0.4	BHP	Cycling	☐
FC-1D	Single Zone Heat Pump	1	11.35	8.64	335	N/A	N/A	0.15	BHP	Continuous	☐
FC-1E	Single Zone Heat Pump	1	11.35	8.64	335	N/A	N/A	0.15	BHP	Continuous	☐
DFC-1F	MiniSplit AC	1	0	36	920	N/A	N/A	0.14	BHP	Continuous	☐
DFC-1G HP-1G	MiniSplit AC	1	0	36	920	N/A	N/A	0.14	BHP	Continuous	☐
DFC-1H2H	MiniSplit AC	1	0	36	920	N/A	N/A	0.14	BHP	Continuous	☐
PropNoClg-NonResZnSys	Single Zone Air Conditioner	1	0	8.47	276.42	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-2	Single Zone Air Conditioner	1	0	32.87	1,072.07	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-3	Single Zone Air Conditioner	1	0	7.51	244.83	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-4	Single Zone Air Conditioner	1	0	4.45	145.14	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-5	Single Zone Air Conditioner	1	0	11.01	359.23	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-6	Single Zone Air Conditioner	1	0	35.17	1,147.22	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-7	Single Zone Air Conditioner	1	0	4.79	135.79	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-8	Single Zone Air Conditioner	1	0	23.95	781.08	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-9	Single Zone Air Conditioner	1	0	15.63	509.73	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-10	Single Zone Air Conditioner	1	0	8.72	284.57	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-11	Single Zone Air Conditioner	1	0	29.92	913.73	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-12	Single Zone Air Conditioner	1	0	9.85	297.67	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-13	Single Zone Air Conditioner	1	0	30.63	885.55	N/A	N/A	0	W/cfm	Cycling	☐
PropNoClg-NonResZnSys-14	Single Zone Air Conditioner	1	0	6.12	199.59	N/A	N/A	0	W/cfm	Cycling	☐

STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-PLB-E

Project Name: Dry Creek | **Report Page:** (Page 4 of 6)

Date Prepared: 9/13/2024

H. DOMESTIC HOT WATER CONTROLS

This table is used to demonstrate compliance with control requirements in 110.3 for all occupancies. For multifamily residential and hotel/motel occupancies, compliance is also demonstrated with requirements in 160.4(e) / 170.2(d).

	Yes	No	Not Applicable	Requirement
01	☒	☐	☐	Construction documents require manufacturer certification that service water-heating systems are equipped with automatic temperature controls capable of adjusting temperature settings per 110.3(a).
02	☒	☐	☐	Systems with capacity > 167,000 BTUH equipped with outlet temperature controls per 110.3(c)1 unless covered by California Plumbing Code 613.0.
03	☐	☐	☒	Controls for circulating pumps or electrical heat trace systems are capable of automatically turning off the system per §110.3(c)2 unless systems serves healthcare facility.
04	☐	☐	☒	For recirculation systems serving multiple dwelling units, design includes automatic pump controls per 170.2(d) or 180.1(b)3 for additions.
05	☐	☐	☒	For recirculation systems serving individual dwelling units, design includes manual on/off controls as specified in Reference Appendix RA4.4.9 per 170.2(d).
06	☐	☐	☒	Combustion air positive shut-off shall be provided per 160.4(3) on all newly installed commercial boilers as follows: • Boilers with input capacity >= 2.5 MMBtu/h, in which the boiler is designed to operate with a nonpositive vent static pressure • Boilers where one stack serves two or more boilers with a total combined input capacity per stack of 2.5 MMBtu/h.
07	☐	☐	☒	Boiler combustion air fans with motor >= 10 hp shall meet one of the following • The fan motor shall be driven by a variable speed drive OR • The fan motor shall include controls that limit the fan motor demand to <=30% of the total design wattage at 50% of the design air volume.
08	☐	☐	☒	Newly installed boilers with an input capacity [d.gte/] 5MMBtu/h and a steady state full-load combustion efficiency < 90% shall maintain excess (stack-gas) oxygen concentrations <= 5% by volume on a dry basis over firing rates of 20-100%. Combustion air volume shall be controlled with respect to firing rate or flue gas oxygen concentration. Use of a common gas and combustion air control linkage or jack shaft is prohibited.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 19 of 23)

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
3-FC-2A-Trm	Uncontrolled	1	N/A	N/A	281	N/A	0	N/A	N/A	N/A	☐
2-FC-3A-Trm	Uncontrolled	1	N/A	N/A	600	N/A	0	N/A	N/A	N/A	☐
1-FC-1A-Trm	Uncontrolled	1	N/A	N/A	281	N/A	0	N/A	N/A	N/A	☐
15-FC-1E-Trm	Uncontrolled	1	N/A	N/A	335	N/A	0	N/A	N/A	N/A	☐
13-FC-10B-Trm	Uncontrolled	1	N/A	N/A	1,307	N/A	0	N/A	N/A	N/A	☐
12-FC-9B-Trm	Uncontrolled	1	N/A	N/A	335	N/A	0	N/A	N/A	N/A	☐
11-FC-8B-Trm	Uncontrolled	1	N/A	N/A	1,307	N/A	0	N/A	N/A	N/A	☐
10-FC-7B-Trm	Uncontrolled	1	N/A	N/A	335	N/A	0	N/A	N/A	N/A	☐
9-FC-6B-Trm	Uncontrolled	1	N/A	N/A	600	N/A	0	N/A	N/A	N/A	☐
8-FC-5B-Trm	Uncontrolled	1	N/A	N/A	812	N/A	0	N/A	N/A	N/A	☐
7-FC-4B-Trm	Uncontrolled	1	N/A	N/A	281	N/A	0	N/A	N/A	N/A	☐
6-FC-3B-Trm	Uncontrolled	1	N/A	N/A	600	N/A	0	N/A	N/A	N/A	☐
5-FC-2B-Trm	Uncontrolled	1	N/A	N/A	530	N/A	0	N/A	N/A	N/A	☐
4-FC-1B-Trm	Uncontrolled	1	N/A	N/A	281	N/A	0	N/A	N/A	N/A	☐
17-DOAS C-Trm	Uncontrolled	1	N/A	N/A	4,100	N/A	0	N/A	N/A	N/A	☐
19-MDF-Trm	Uncontrolled	1	N/A	N/A	2,800	N/A	0	N/A	N/A	N/A	☐
2-FC-1A-VRF	Variable Refrigerant Flow	1	8.4	5.9	281	N/A	N/A	0.1	BHP	Cycling	☐
3-FC-3A-VRF	Variable Refrigerant Flow	1	19.8	14.5	600	N/A	N/A	0.31	BHP	Cycling	☐
4-FC-2A-VRF	Variable Refrigerant Flow	1	6.4	4.8	281	N/A	N/A	0.1	BHP	Cycling	☐
5-FC-1B-VRF	Variable Refrigerant Flow	1	6.4	4.8	281	N/A	N/A	0.1	BHP	Cycling	☐
6-FC-2B-VRF	Variable Refrigerant Flow	1	16.8	12	530	N/A	N/A	0.31	BHP	Cycling	☐
7-FC-3B-VRF	Variable Refrigerant Flow	1	19.8	14.5	600	N/A	N/A	0.31	BHP	Cycling	☐
8-FC-4B-VRF	Variable Refrigerant Flow	1	8.4	5.9	281	N/A	N/A	0.1	BHP	Cycling	☐
9-FC-5B-VRF	Variable Refrigerant Flow	1	33.6	24.2	812	N/A	N/A	0.31	BHP	Cycling	☐

STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-PLB-E

Project Name: Dry Creek | **Report Page:** (Page 3 of 6)

Date Prepared: 9/13/2024

G. DOMESTIC HOT WATER DISTRIBUTION SYSTEM

This table is used to demonstrate compliance for nonresidential occupancies with distribution requirements in 120.3 and 140.5. For multifamily and hotel/motel occupancies, compliance is demonstrated with requirements 110.3(c), 160.4, 170.2(d).

Mandatory Pipe Insulation All Occupancies

13	☐	For systems serving dwelling units, pipe insulation must meet the minimum insulation requirements in Table 160.4-A (see blow) except: • Piping that penetrates framing members shall not be required to have pipe insulation for the distance of the framing penetration. Piping that penetrates metal framing shall use grommets, plugs, wrapping or other insulating material to assure that no contact is made with the metal framing. Insulation shall abut securely against all framing members • Piping installed in interior or exterior walls shall not be required to have pipe insulation if all of the requirements are met for compliance with Quality Insulation Installation (QII) as specified in the Reference Residential Appendix RA3.5. • Piping surrounded with a minimum of 1 inch of wall insulation, 2 inches of crawlspace insulation, or 4 inches of attic insulation, shall not be required to have pipe insulation.
14	☒	For systems serving nonresidential spaces, pipe insulation for the following applications is specified to comply with Table 120.3-A (see below) per 120.3: • Recirculating system piping, including supply and return piping of the water heater • The first 8 ft of hot and cold outlet piping, including between storage tank and heat trap, for a nonrecirculating storage system • Pipes that are externally heated
15	☒	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service per 120.3(b) / 160.4(f). Pipe insulation buried below grade must be installed in a water proof and non-crushable casing or sleeve.

TABLE 120.3-A / 160.4-A PIPE INSULATION THICKNESS

Fluid Temperature Range (°F)	Conductivity Range (Btu-in per hour per ft² per °F)	Insulation Mean Rating Temp (°F)	Nominal Pipe Diameter (in)			
			< 1	1 to < 1.5	1.5 to < 4	1.5 to < 4 Multifamily & Hotel/Motel
			Minimum Insulation Required			
105-140	0.22 - 0.28	100	1.0 in or R-7.7	1.5 in or R-12.5	1.5 in or R-11	2.0 in or R-16

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 23 of 23)

Documentation Author's Declaration Statement

I. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Gino Romano	Documentation Author Signature:
Company: Peters Engineering	Signature Date:
Address: 7750 College Town Drive Suite 101	CEA/HERS Certification Identification (if applicable): E17247
City/State/Zip: Sacramento, CA 95826	Phone: 9164472841

Responsible Person's Declaration statement

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections, and I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy, and I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:	
Company:		
Address:	Date Signed:	
City/State/Zip: ,	License #:	
Phone:	Title:	Scope:

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD NRCC-PRF-E

Nonresidential Performance Compliance Method (Page 22 of 23)

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title & System Name(s)
Envelope	NRCA-ENV-02-F - NRFC label verification for fenestration
Covered Process	NRCA-PRC-14-F Lab Exhaust Ventilation System
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
	DOAS-A, DOAS-B, DOAS-C and CRAC-1 ACCU-1., FC-1D, FC-1E, DFC-1F, DFC-1G HP-1G and DFC-1H2H.
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC
	DOAS-A, DOAS-B, DOAS-C and CRAC-1 ACCU-1., FC-1D, FC-1E, DFC-1F, DFC-1G HP-1G and DFC-1H2H.

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE NRCC-PLB-E

Project Name: Dry Creek | **Report Page:** (Page 2 of 6)

Date Prepared: 9/13/2024

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. DOMESTIC HOT WATER EQUIPMENT

This table is used to demonstrate compliance with mandatory equipment requirements in 110.1 and 110.3. Compliance with prescriptive requirements in 140.5(c) / 170.2(d) must also be demonstrated and with 141.0 / 180.1/ 180.2 for addition and alteration scopes.

Equipment Schedule: Water Heating Efficiency and Standby Loss

03	04			05		06		
System Name	EWH-1	Exception to 140.5(c)/ 170.2(d)3		☐	Gas Service Water Heating System >= 1MMBtu/h[1]	Capacity-weighted Average Efficiency %		
07	08	09	10	11	12	13	14	15
Name or Item Tag	Equipment Type	Volume (gal)	Rated Input Capacity (Btu/h)	Max GPM/ First Hour Rating (FHR)	Rated Efficiency	Minimum Efficiency Required	Efficiency Unit	Designed Standby Loss	Maximum Standby Loss
EWH-1	Commercial Electric Storage Water Heater	100	307,170	FHR >=75	0.9	2.13	UEF		

[1] *FOOTNOTE: In systems >= 1MMBtu/h with multiple units, gas water heaters with input capacity > 100,000 Btu/h may meet 90% Et requirements via an input capacity-weighted average.*

Water Heating Equipment All Occupancies

	Yes	No	Not Applicable	Requirement
18	☐	☐	☒	Unfired storage tank insulation shall have Internal + External >=R-16 OR External >=R-3.5. Label required per 110.3(c)3
19	☐	☐	☒	New state buildings 60% of energy for service water heating from site solar energy or recovered energy per 110.3(c)5
20	☐	☐	☒	Isolation valves for instantaneous water heater with input rating >6.8 kBTUH or 2 kW has been specified per 110.3(c)6
21	☐	☐	☒	School buildings < 25,000 ft² and < 4 stories must install a heat pump water heating system per 140.5(a)1. Water heating systems serving an individual bathroom space may be an instantaneous electric water heater.

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

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ARCHITECT STAMP | CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER JOAN R. TICHENOR EXP. 12/31/25 MECHANICAL STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG

1800 Booth Road
Roseville, CA 95747

SHEET TITLE

TITLE 24

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

M-103

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 9/16/2024 3:26:21 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\dwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

STATE OF CALIFORNIA
Domestic Water Heating System
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-PLB-E
This document is used to demonstrate compliance for nonresidential occupancies with requirements in 110.1, 110.3, 120.3, and 140.5, and with requirements in 141.0 for additions and alterations, for domestic water heating scopes using the prescriptive path. For high-rise residential and hotel/motel occupancies compliance is demonstrated with requirements in 110.1, 110.3, 160.4 and 170.2(d), and with requirements 180.1 for additions and 180.2 for alterations.	
Project Name: Dry Creek	**Report Page:** (Page 1 of 8)
Project Address:	**Date Prepared:** 2024-09-13T14:02:10-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Roseville	02	Climate Zone	11
03	Occupancy Types Within Project (select all that apply):				

● All Other Occupancies ● Office

B. PROJECT SCOPE

This table includes domestic water heating systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive paths outlined in 140./ 170.2(d) and 141.0(a)/ 180.1, or 141.0(b)2N / 180.2 for additions or alterations. Solar water heating systems are documented on the NRCC-SAB compliance document. Combined hydronic water heating systems are documented on the NRCC-MCH compliance document.

01	02	03	
My project consists of (check all that apply):	System Type[1,2]	System Components	
☒ New system (DHW system being installed for the first time)	Central System (serving nonresidential spaces)	☒ Equipment ☒ Distribution	☒ Controls
☐ System Alteration (equipment, distribution or controls)		☐ Equipment ☐ Distribution	☐ Controls

[1]FOOTNOTES: Point of use water heaters, or other non-central systems used to serve nonresidential spaces, are considered individual systems.
[2] Dwelling units refers to hotel/motel guest rooms and units in a multifamily residential occupancy.
[3] DHW systems serving 2 or more dwelling units are considered "Central Systems" for multifamily occupancies

C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with water heating requirements. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. or the table indicated as not compliant for guidance.

01	02	03	04
Domestic Hot Water Equipment	Distribution Systems	Controls	**Compliance Results**
Table F	Table G	Table H	
Yes	Yes	Yes	COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE	NRCC-PLB-E
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G. DOMESTIC HOT WATER DISTRIBUTION SYSTEM

This table is used to demonstrate compliance for nonresidential occupancies with distribution requirements in 120.3 and 140.5. For multifamily and hotel/motel occupancies, compliance is demonstrated with requirements 110.3(c), 160.4, 170.2(d).

Recirculation Loops in Central Systems Serving Dwelling Units or Nonresidential Spaces

	Yes	No	Not Applicable	Requirement
01	●	○	○	Air release valve or vertical pump installation per 110.3(c)4A
02	●	○	○	Check valve or similar located between recirculation pump and water heating equipment to prevent backflow per 110.3(c)4B
03	●	○	○	Hose bibb installed between pump and equipment and isolation valve between hose bibb and equipment per 110.3(c)4C
04	●	○	○	Isolation valves on both sides of the pump per 110.3(c)4D
05	●	○	○	Cold water and recirculation loop piping shall not be connected to the hot water storage tank drain port per 110.3(c)4E
06	●	○	○	Check valve installed on cold water supply between hot water system and next closest tee on cold water supply per 110.3(c)4F
07	○	○	●	DWELLING UNITS ONLY: For central systems serving multiple dwelling units, design includes a recirculation system serving separate dwelling units per 170.2(d) unless building has <=8 dwelling units.
08	○	○	●	DWELLING UNITS ONLY: For heat pump water heating systems, the hot water return from the recirculation loop shall connect to a recirculation loop tank and shall not directly connect to the primary heat pump water heater inlet or the primary thermal storage tanks per 170.2(d)2A.
09	○	○	●	DWELLING UNITS ONLY: For heat pump water heating systems, the fuel source for the recirculation loop tank shall be electricity if auxiliary heating is needed. The recirculation loop heater shall be capable of multi-pass water heating operation per 170.2(d)2B.

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CERTIFICATE OF COMPLIANCE	NRCC-PLB-E
Project Name: Dry Creek	**Report Page:** (Page 6 of 8)
Project Address: 1800 Booth Road	**Date Prepared:** 9/13/2024

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Tyler Chandara	Documentation Author Signature:
Company: Peters Engineering	Signature Date: 9/13/24
Address: 7750 College Town Dr, Suite 101	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Sacramento, CA 95826	Phone: 9164472841

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Sean Tichenor	Responsible Designer Signature:
Company: Peters Engineering	Date Signed: 9/13/24
Address: 7750 College Town Dr, Suite 101	License: M31176
City/State/Zip: Sacramento, CA 95826	Phone: 9164472841

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F. DOMESTIC HOT WATER EQUIPMENT

This table is used to demonstrate compliance with mandatory equipment requirements in 110.1 and 110.3. Compliance with prescriptive requirements in 140.5(c) / 170.2(d) must also be demonstrated and with 141.0 / 180.1/ 180.2 for addition and alteration scopes.

Equipment Schedule: Water Heating Efficiency and Standby Loss

03	04			05		06		
System Name	EWH-1	Exception to 140.5(c)/ 170.2(d)3	Exceptions Do Not Apply	☐	Gas Service Water Heating System >= 1MMBtu/h[1]	Capacity-weighted Average Efficiency %		
07	08	09	10	11	12	13	14	15
Name or Item Tag	Equipment Type	Volume (gal)	Rated Input Capacity (Btu/h)	Max GPM/ First Hour Rating (FHR)	Rated Efficiency	Minimum Efficiency Required	Efficiency Unit	Designed Standby Loss	Maximum Standby Loss
EWH-1	Commercial Electric Storage Water Heater	100						0.57	0.57

[1]FOOTNOTE: In systems >= 1MMBtu/h with multiple units, gas water heaters with input capacity > 100,000 Btu/h may meet 90% Et requirements via an input capacity-weighted overage.
[1]FOOTNOTE: Compliant equipment may be found in the Modernized Appliance Efficiency Database System (MAEDBS) on the Energy Commission website: https://cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx

Water Heating Equipment All Occupancies

	Yes	No	Not Applicable	Requirement
18	☒	☐	☐	Unfired storage tank insulation shall have Internal + External >=R-16 OR External >=R-3.5. Label required per 110.3(c)3
19	☐	☐	☒	New state buildings 60% of energy for service water heating from site solar energy or recovered energy per 110.3(c)5
20	☐	☐	☒	Isolation valves for instantaneous water heater with input rating >6.8 kBTUH or 2 kW has been specified per 110.3(c)6
21	☐	☐	☒	School buildings < 25,000 ft² and < 4 stories must install a heat pump water heating system per 140.5(a)1. Water heating systems serving an individual bathroom space may be an instantaneous electric water heater.

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H. DOMESTIC HOT WATER CONTROLS

This table is used to demonstrate compliance with control requirements in 110.3 for all occupancies. For multifamily residential and hotel/motel occupancies, compliance is also demonstrated with requirements in 160.4(e) / 170.2(d).

	Yes	No	Not Applicable	Requirement
01	☒	☐	☐	Construction documents require manufacturer certification that service water-heating systems are equipped with automatic temperature controls capable of adjusting temperature settings per 110.3(a).
02	☐	☐	☒	Systems with capacity > 167,000 BTUH equipped with outlet temperature controls per 110.3(c)1 unless covered by California Plumbing Code 613.0.
03	☐	☐	☒	Controls for circulating pumps or electrical heat trace systems are capable of automatically turning off the system per 9110.3(c)2 unless systems serves healthcare facility.
04	☐	☐	☒	For recirculation systems serving multiple dwelling units, design includes automatic pump controls per 170.2(d) or 180.1(b)3 for additions.
05	☐	☐	☒	For recirculation systems serving individual dwelling units, design includes manual on/off controls as specified in Reference Appendix RA4.4.9 per 170.2(d).
06	☐	☐	☒	Combustion air positive shut-off shall be provided per 160.4(3).on all newly installed commercial boilers as follows: • Boilers with input capacity >= 2.5 MMBtu/h, in which the boiler is designed to operate with a nonpositive vent static pressure • Boilers where one stack serves two or more boilers with a total combined input capacity per stack of 2.5 MMBtu/h.
07	☐	☐	☒	Boiler combustion air fans with motor >= 10 hp shall meet one of the following • The fan motor shall be driven by a variable speed drive OR • The fan motor shall include controls that limit the fan motor demand to <=30% of the total design wattage at 50% of the design air volume.
08	☐	☐	☒	Newly installed boilers with an input capacity (d:gte/] 5MMBtu/h and a steady state full-load combustion efficiency < 90% shall maintain excess (stack-gas) oxygen concentrations <= 5% by volume on a dry basis over firing rates of 20-100%. Combustion air volume shall be controlled with respect to firing rate or flue gas oxygen concentration. Use of a common gas and combustion air control linkage or jack shaft is prohibited.

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CERTIFICATE OF COMPLIANCE	NRCC-PLB-E
Project Name: Dry Creek	**Report Page:** (Page 5 of 8)
	Date Prepared: 2024-09-13T14:02:10-04:00

I. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-PLB-E - Must be submitted for all buildings

J. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

K. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no forms required for this project.

STATE OF CALIFORNIA
Domestic Water Heating System
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-PLB-E
Project Name: Dry Creek	**Report Page:** (Page 2 of 8)
	Date Prepared: 2024-09-13T14:02:10-04:00

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

G. DOMESTIC HOT WATER DISTRIBUTION SYSTEM

Mandatory Pipe Insulation All Occupancies

13	☐	For systems serving dwelling units, pipe insulation must meet the minimum insulation requirements in Table 160.4-A (see blow) except: • Piping that penetrates framing members shall not be required to have pipe insulation for the distance of the framing penetration. Piping that penetrates metal framing shall use grommets, plugs, wrapping or other insulating material to assure that no contact is made with the metal framing. Insulation shall abut securely against all framing members • Piping installed in interior or exterior walls shall not be required to have pipe insulation if all of the requirements are met for compliance with Quality Insulation Installation (QII) as specified in the Reference Residential Appendix RA3.5. • Piping surrounded with a minimum of 1 inch of wall insulation, 2 inches of crawlspace insulation, or 4 inches of attic insulation, shall not be required to have pipe insulation.
14	☒	For systems serving nonresidential spaces, pipe insulation for the following applications is specified to comply with Table 120.3-A (see below) per 120.3: • Recirculating system piping, including supply and return piping of the water heater • The first 8 ft of hot and cold outlet piping, including between storage tank and heat trap, for a nonrecirculating storage system • Pipes that are externally heated
15	☒	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service per 120.3(b) / 160.4(f). Pipe insulation buried below grade must be installed in a water proof and non-crushable casing or sleeve.

TABLE 120.3-A / 160.4-A PIPE INSULATION THICKNESS

Fluid Temperature Range (°F)	Conductivity Range (Btu-in per hour per ft² per °F)	Insulation Mean Rating Temp (°F)	Nominal Pipe Diameter (in)			
			< 1	1 to < 1.5	1.5 to < 4	1.5 to < 4 Multifamily & Hotel/Motel
			Minimum Insulation Required			
105-140	0.22 - 0.28	100	1.0 in or R-7.7	1.5 in or R-12.5	1.5 in or R-11	2.0 in or R-16

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ARCHITECT STAMP | CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER SEAN R. TICHENOR M31176 EXP. 12/31/25 MECHANICAL STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP
311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
TITLE 24

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
M-104
DATE: 4/24/18

DATE PLOTTED: 9/16/2024 3:26:24 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\drwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt
BID SET (PRELIMINARY)

STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PLB-E
Project Name: Dry Creek	**Report Page:**	**(Page 8 of 8)**
Project Address:	**Date Prepared:**	2024-09-13T14:02:10-04:00

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Address: 7750 College Town Dr, Suite 101	License: M31176
City/State/Zip: Sacramento, CA 95826	Phone: 9164472841

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Generated Date/Time:

Report Version: 2022.0.000
Schema Version: rev 20220101

Documentation Software: Energy Code Ace

Compliance ID: 145146-0924-0002
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REGISTERED PROFESSIONAL ENGINEER
SEAN R. TICHENOR
EXP. 12/31/25
MECHANICAL
STATE OF CALIFORNIA

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City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG

1800 Booth Road
Roseville, CA 95747

SHEET TITLE

TITLE 24

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

M-105

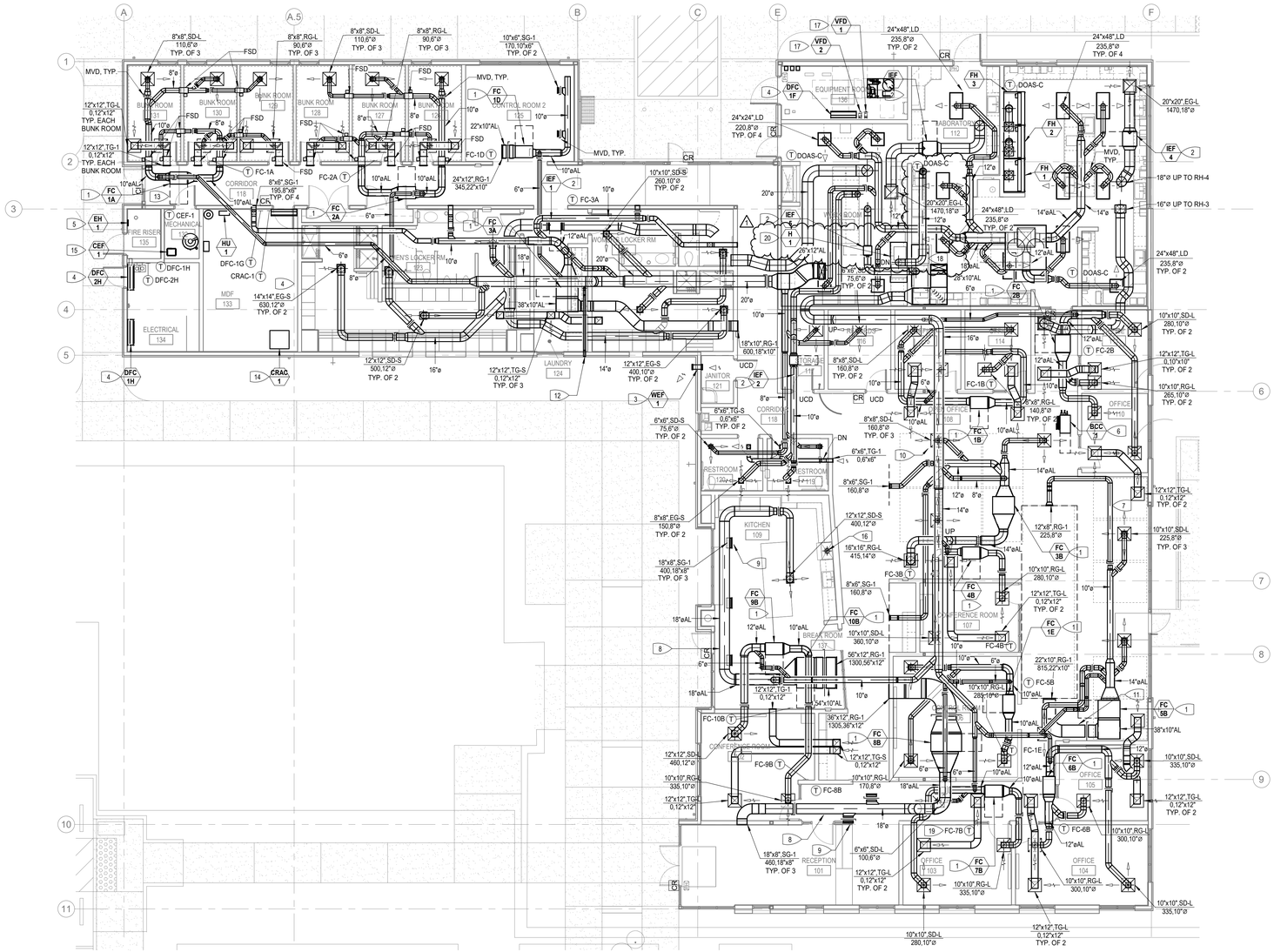
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DATE PLOTTED: 9/16/2024 3:26:24 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\dwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

BID SET (PRELIMINARY)

KEYED NOTES:

1. INSTALL FAN COIL TIGHT TO STRUCTURE PER DETAIL **3/M-401**.
2. INSTALL INLINE EXHAUST FAN TIGHT TO STRUCTURE PER DETAIL **4/M-401**.
3. INSTALL WALL EXHAUST FAN PER DETAIL **9/M-401**.
4. INSTALL DUCTLESS FAN COIL ON WALL PER DETAIL **7/M-401** AND **8/M-401**.
5. INSTALL ELECTRIC WALL HEATER PER DETAIL **1/M-403**.
6. INSTALL BRANCH CIRCUIT CONTROLLER TIGHT TO STRUCTURE PER DETAIL **6/M-402**.
7. SUPPORT CONCEALED ROUND DUCT TIGHT TO STRUCTURE PER DETAIL **1/M-402** TYP.
8. SUPPORT EXPOSED ROUND SPIRAL DUCT PER DETAIIL **1/M-402**. SUPPORT DUCT CENTERED AT 13'-6" A.F.F.
9. INSTALL AIR TERMINAL ON EXPOSED DUCT PER DETAIL **4/M-402**. TYP.
10. INSTALL AIR TERMINAL PER DETAIL **3/M-402**. TYP.
11. SUPPORT RECTANGULAR DUCT PER DETAIL **2/M-402**. TYP.
12. 4" DRYER VENT TO EXTERIOR WALL CAP. SEE DETAIL **3/M-403**.
13. DASHED AREA INDICATES SERVICE CLEARANCE, TYP.
14. INSTALL CRAC UNIT TO SLAB PER DETAIL **3/M-404**.
15. INSTALL CEILING EXHAUST FAN TIGHT TO STRUCTURE PER DETAIL **2/M-404**.
16. ARCHITECTURAL RANGE HOOD, SEE ARCH SHEETS. TRANSITION FROM HOOD INLET SIZE TO 8"ø EXHAUST DUCT. ROUTE EXHAUST DUCT THRU ROOF PER DETAIL **8/M-404**.
17. INSTALL VFD ON WALL PER DETAIL **8/M-404**.
18. 8' STAINLESS STEEL WALL CANOPY HOOD, SIMILAR TO INTER DYNE SYSTEMS WCH-9630-18.
19. WALL MOUNTED THERMOSTAT LOCATED AT 48" TO TOP OF DEVICE AT LOCATION SHOWN. COORDINATE LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.
20. NEW TYPE II HOOD, INSTALL PER DETAIL **9/M-404**.



1 **FLOOR PLAN - MECHANICAL**
1/8" = 1'-0"

N

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SHEET TITLE
FLOOR PLAN - MECHANICAL

DRAWN BY: Author JOB NUMBER: 210015.01

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M-201

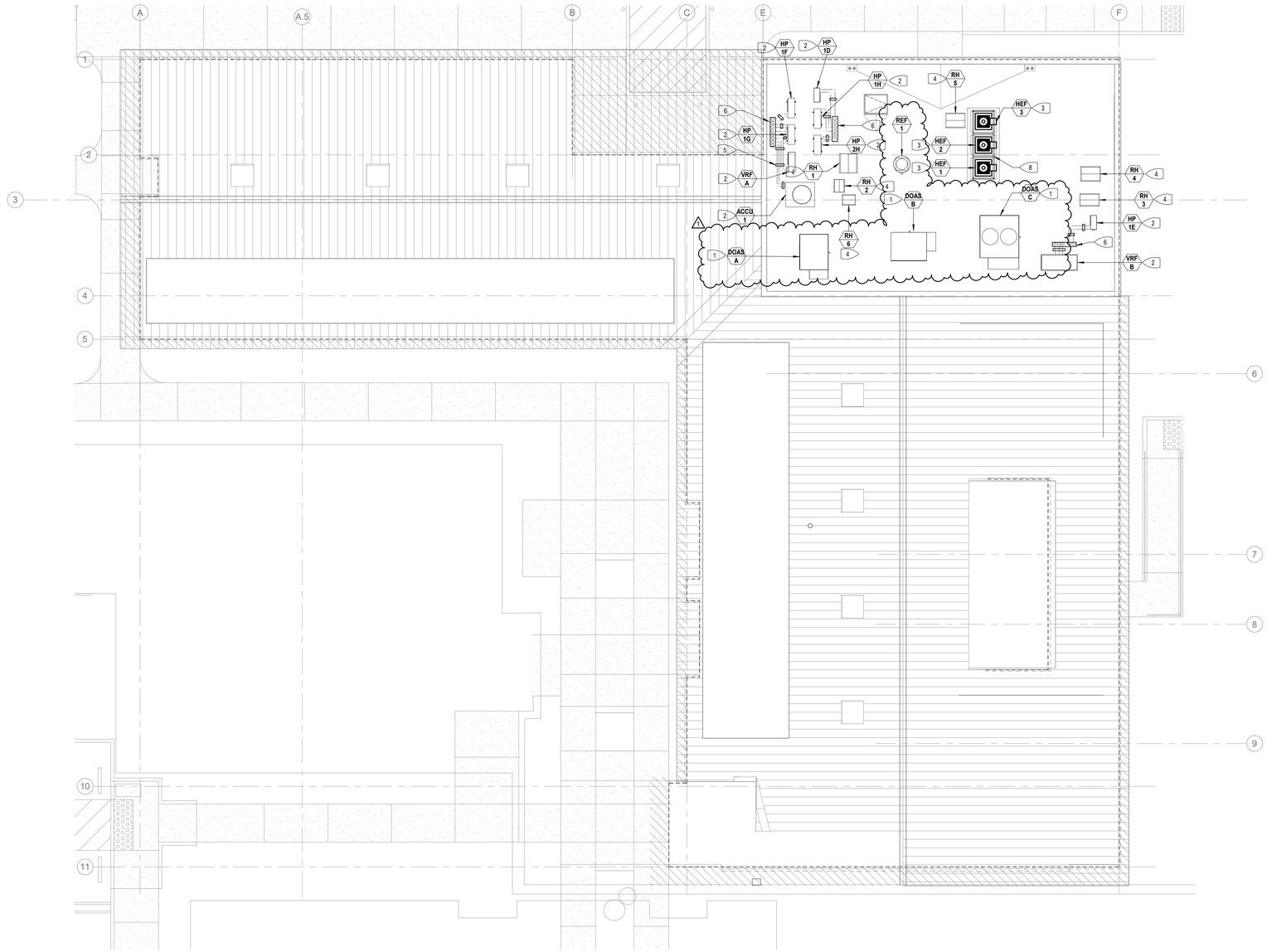
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DATE PLOTTED: 9/16/2024 3:26:42 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\dwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

KEYED NOTES:

1. INSTALL DOAS ON ROOF PER DETAIL **1/M-401**. MAINTAIN 10' CLEARANCE BETWEEN OUTSIDE AIR INTAKE AND ANY EXHAUST OR VENTS THRU ROOF.
2. INSTALL OUTDOOR VRF/HP UNIT ON ROOF PER DETAIL **2/M-401**.
3. INSTALL HOOD EXHAUST FAN ON ROOF PER DETAIL **5/M-401**.
4. INSTALL RELIEF HOOD ON ROOF PER DETAIL **6/M-401**.
5. SUPPORT REFRIGERANT PIPES ON ROOF PER DETAIL **8/M-402**. TYP. SEE **1/M-301** FOR CONTINUATION AND DETAIL **8/M-403** FOR SIZES.
6. REFRIGERANT PIPES THRU ROOF PER DETAIL **7/M-402**.
7. INSTALL ACCU ON ROOF PER DETAIL **4/M-404**.
8. UNISTRUT SHROPRT FOR HOOD EXHAUST FANS. SEE DETAIL **7/M-404**.
9. NEW ROOF EXHAUST FAN, INSTALL PER DETAIL **10/M-401**.



1 **ROOF PLAN - MECHANICAL**
1/8" = 1'-0"

N

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SHEET TITLE

ROOF PLAN - MECHANICAL

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

M-221

DATE: 4/24/18

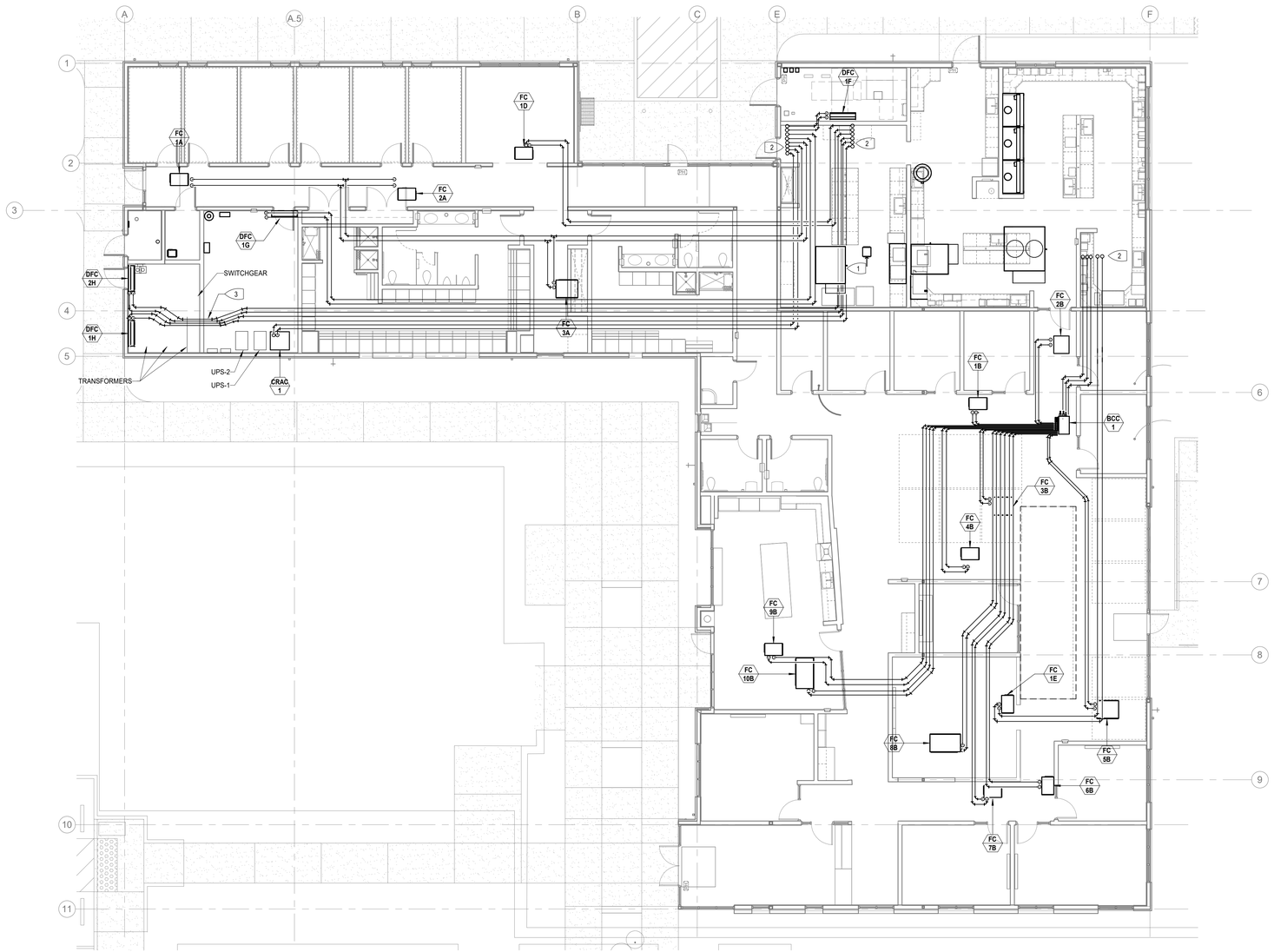
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FILE LOCATION: S:\23.020 Dry Creek WWTP\drwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

BID SET (PRELIMINARY)

KEYED NOTES:

1. SEE SHEET **8/M-403** FOR REFRIGERANT PIPE SYSTEM DIAGRAM SHOWING SIZES AND TRACKING OF PIPES THROUGH BUILDING. SUPPORT PIPES TIGHT TO STRUCTURE PER DETAIL **9/M-402**, TYP.
2. REFRIGERANT PIPES FROM ROOF PER DETAIL **7/M-402**. SEE **1/M-221** FOR CONTINUATION.
3. AVOID ROUTING REFRIGERANT ABOVE ELECTRICAL EQUIPMENT, TYP.



1 **FLOOR PLAN - MECHANICAL REFRIGERANT PIPING**
1/8" = 1'-0"

196

2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

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REGISTERED PROFESSIONAL ENGINEER
ADAM R. TICHENOR
EXP. 12/31/25
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
REFRIGERANT PIPING PLAN

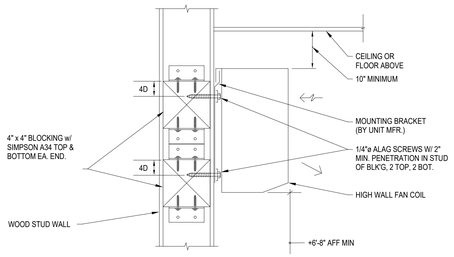
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SHEET NO.
M-301

DATE: 4/24/18

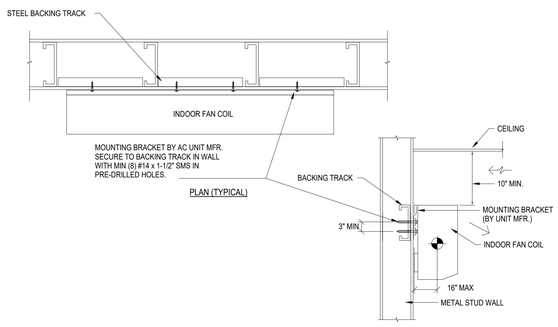
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BID SET (PRELIMINARY)

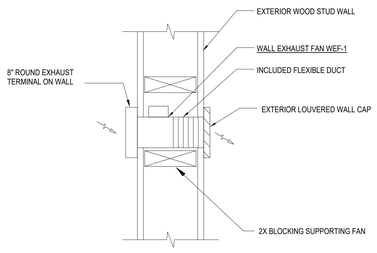


NOTES:
1. SEE STRUCTURAL DRAWINGS FOR BACKING BEHIND MANUFACTURER'S MOUNTING BRACKET.

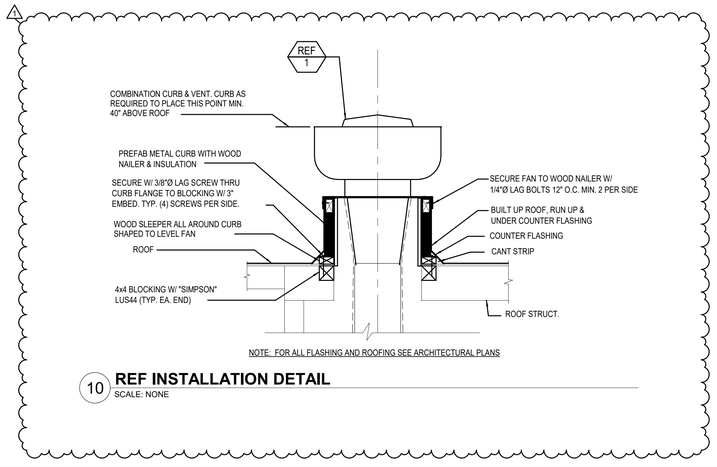
7 DUCTLESS WALL MOUNTED UNIT DETAIL
SCALE: NONE



8 DUCTLESS WALL MOUNTED DETAIL (METAL STUD)
SCALE: NONE

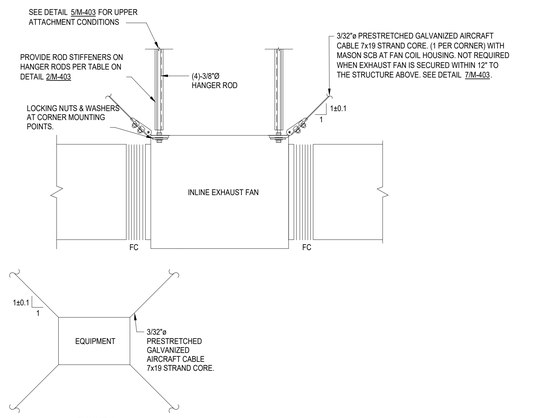


9 WALL EXHAUST MOUNTING DETAIL
SCALE: NONE

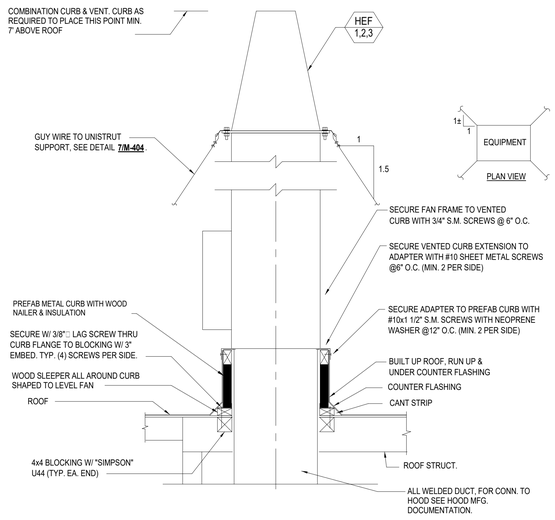


NOTE: FOR ALL FLASHING AND ROOFING SEE ARCHITECTURAL PLANS

10 REF INSTALLATION DETAIL
SCALE: NONE

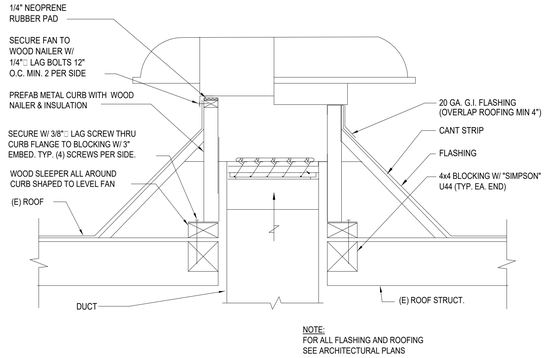


4 INLINE EXHAUST FAN DETAIL
SCALE: NONE



NOTE:
1. FOR ALL FLASHING AND ROOFING SEE ARCHITECTURAL PLANS

5 HOOD EXHAUST FAN MOUNTING DETAIL
SCALE: NONE

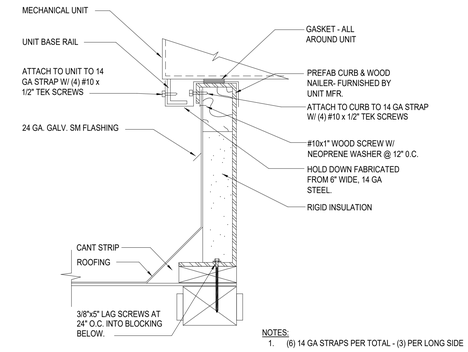


NOTE:
FOR ALL FLASHING AND ROOFING
SEE ARCHITECTURAL PLANS

6 RELIEF HOOD MOUNTING DETAIL
SCALE: NONE

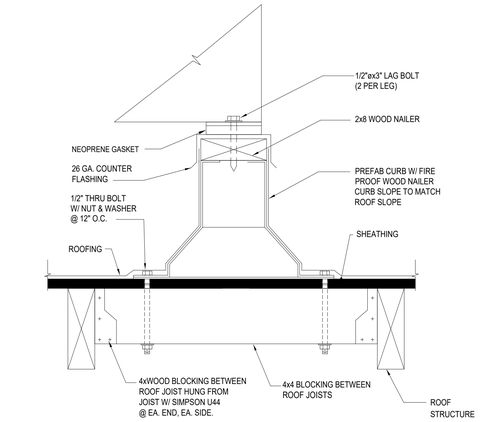


TYPICAL 14 GA STRAP DETAIL

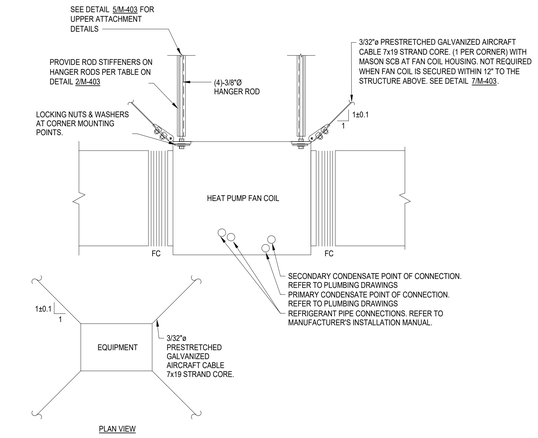


NOTES:
1. (6) 14 GA STRAPS PER TOTAL - (3) PER LONG SIDE

1 DOAS UNIT ON ROOF DETAIL
SCALE: NONE



2 HP/VRF UNIT ON ROOF DETAIL
SCALE: NONE



3 FAN COIL DETAIL
SCALE: NONE

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1	08/28/2024	PC Comments

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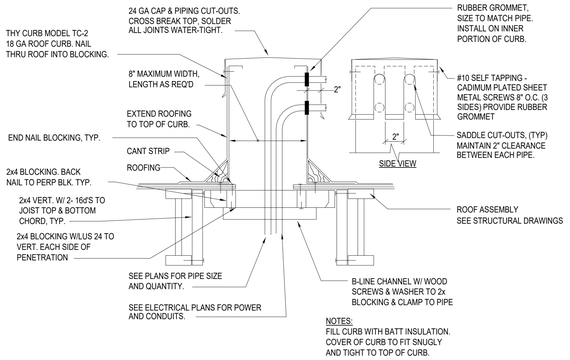
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SHEET NO.
M-401

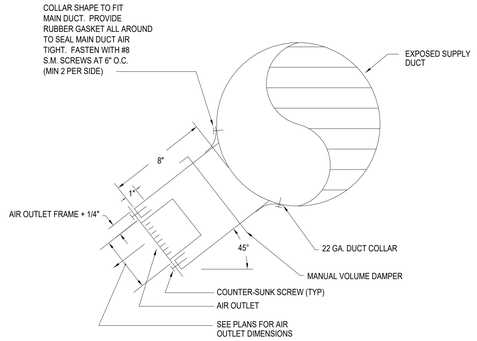
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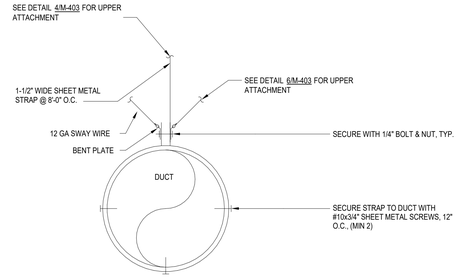
BID SET (PRELIMINARY)



7 REFRIGERANT PIPE THRU ROOF DETAIL
SCALE: NONE

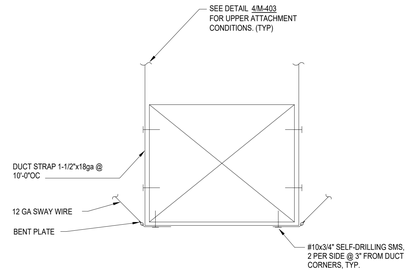


4 EXPOSED DUCT TERMINAL DETAIL
SCALE: NONE



NOTES:
1. DUCT SUPPORT SHALL BE SPACED MAX. 8'-0" AND EACH TURN OF DIRECTION. PROVIDE SUPPORT AT ALL FLEXIBLE CONNECTIONS & DUCT MOUNTED EQUIPMENT.
2. SWAY WIRE MAY BE OMITTED WHEN SECURING TOP OF DUCT WITHIN 12" OF STRUCTURE ABOVE. SWAY WIRE PROVISIONS TO BE USED FOR PROTECTING DUCT FROM SWINGING TO HIT OTHER DUCTING OR MECHANICAL EQUIPMENT

1 ROUND DUCT SUPPORT DETAIL
SCALE: NONE



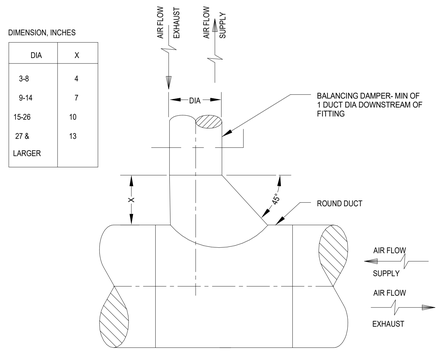
NOTES:
1. SWAY WIRE MAY BE OMITTED WHEN SECURING TOP OF DUCT WITHIN 12" OF STRUCTURE ABOVE. SWAY WIRE PROVISIONS TO BE USED FOR PROTECTING DUCT FROM SWINGING TO HIT OTHER DUCTING OR MECHANICAL EQUIPMENT.
2. SEISMICALLY BRACED DUCTS EXCEEDING 6 SQ FT IN CROSS SECTIONAL AREA SHALL BE SECURED PER DETAIL 6/M-403.

2 RECTANGULAR DUCT MOUNTING DETAIL
SCALE: NONE

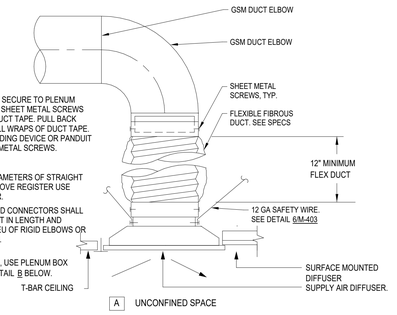
8 REFRIGERANT PIPES ON ROOF
SCALE: NONE

DIMENSION, INCHES

DIA	X
3-8	4
9-14	7
15-26	10
27 & LARGER	13

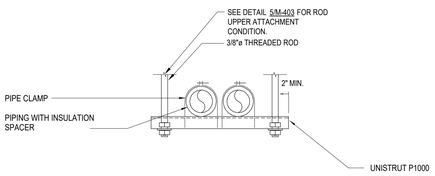


5 ROUND DUCT TAP DETAIL
SCALE: NONE



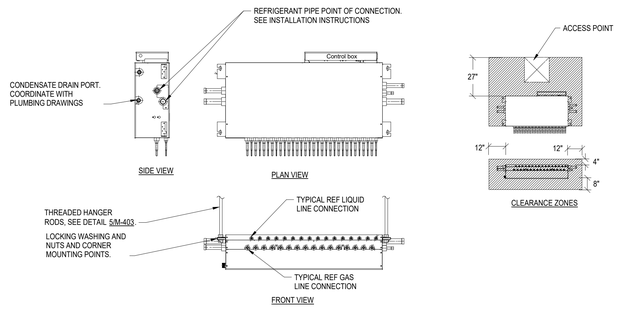
NOTES:
1. PEEL BACK JACKET AND SECURE TO PLENUM COLLAR. USE A MIN. OF (3) SHEET METAL SCREWS AND (2) FULL WRAPS OF DUCT TAPE. PULL BACK JACKET AND APPLY (2) FULL WRAPS OF DUCT TAPE. ALTERNATE METHOD: BANDING DEVICE OR PANDUIT STRAP, IN LIEU OF SHEET METAL SCREWS.
2. IF A MINIMUM 3 DUCT DIAMETERS OF STRAIGHT RUN IS NOT AVAILABLE ABOVE REGISTER USE PLENUM ABOVE REGISTER.
3. FLEXIBLE AIR DUCTS AND CONNECTORS SHALL BE NOT MORE THAN 5 FEET IN LENGTH AND SHALL NOT BE USED IN LIEU OF RIGID ELBOWS OR FITTINGS PER CMC 603.4.1.
4. FOR CONFINED SPACES, USE PLENUM BOX ABOVE DIFFUSER. SEE DETAIL B BELOW.

3 DIFFUSER INSTALLATION DETAILS
SCALE: NONE



NOTES:
1. PROVIDE PIPE SUPPORT AT ALL CHANGES IN DIRECTION.
2. HORIZONTAL PIPE SUPPORTS SHALL BE SPACED MAX. 6'-0" O.C.
3. FIRE PROTECTION WATER PIPING CANNOT BE SUPPORTED WITH THIS SYSTEM.
4. PROJECT MAX LOAD: 8.8 LBS./FT.
5. USE A CUSHIONED CLAMP TO PROTECT INTERFACE FROM DISSIMILAR METALS
6. AIRCRAFT CABLE MAY BE OMITTED WHEN HANGER ROD LENGTH DOES NOT EXCEED 12"

9 PIPE HANGER TRAPEZE SUPPORT
SCALE: NONE



NOTE: PROVIDE ROD STIFFENERS ON HANGER RODS PER TABLE ON DETAIL 2/M-403

6 BRANCH CIRCUIT CONTROLLER DETAIL
SCALE: NONE

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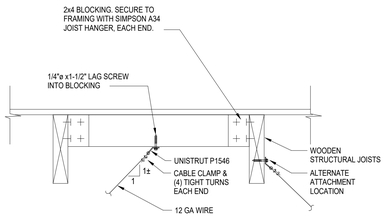
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M-402

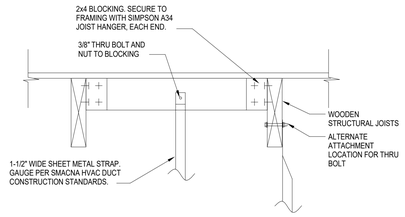
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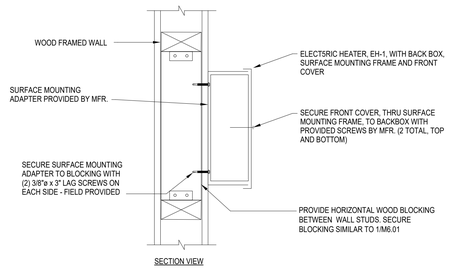
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6 12 GA WIRE UPPER ATTACHMENT
SCALE: NONE

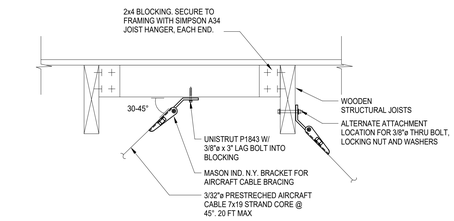


4 METAL STRAP UPPER ATTACHMENT
SCALE: NONE

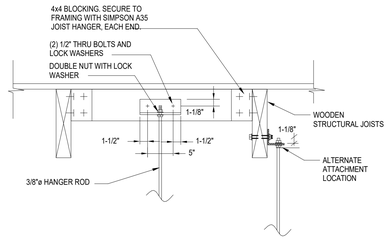


NOTE:
1. MAINTAIN CLEARANCES: 4.5" ON SIDES AND 12" ON TOP AND KEEP ALL COMBUSTIBLES AWAY FROM HEATER. SEE MFR INSTALLATION INSTRUCTIONS.
2. MOUNT UNIT AT AND FIELD PROVIDED THERMOSTAT +48" TO TOP OF UNIT IN FIRE RISER ROOM.

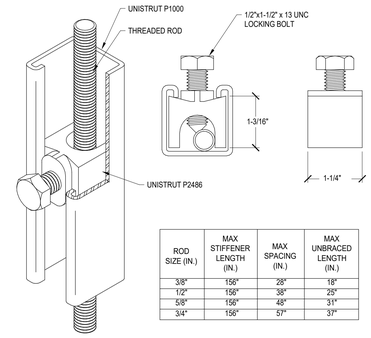
1 ELECTRIC WALL HEATER DETAIL
SCALE: NONE



7 AIR CRAFT CABLE UPPER ATTACHMENT
SCALE: NONE

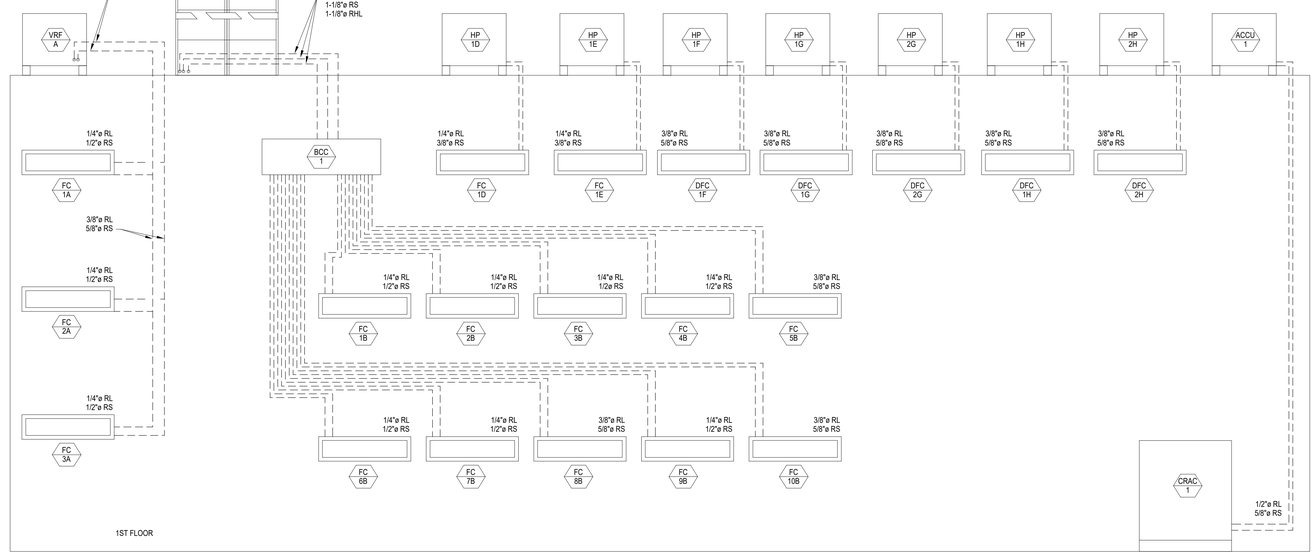


5 HANGER ROD UPPER ATTACHMENT
SCALE: NONE

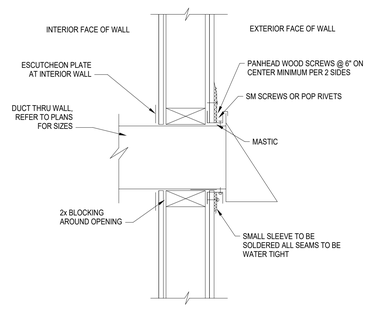


ROD SIZE (IN.)	MAX STIFFENER LENGTH (IN.)	MAX SPACING (IN.)	MAX UNBRACED LENGTH (IN.)
3/8"	156"	28"	18"
1/2"	156"	38"	25"
5/8"	156"	48"	31"
3/4"	156"	57"	37"

2 ROD STIFFENER DETAIL
SCALE: NONE



8 REFRIGERANT PIPING DIAGRAM
SCALE: NONE



3 WALL CAP DETAIL
SCALE: NONE

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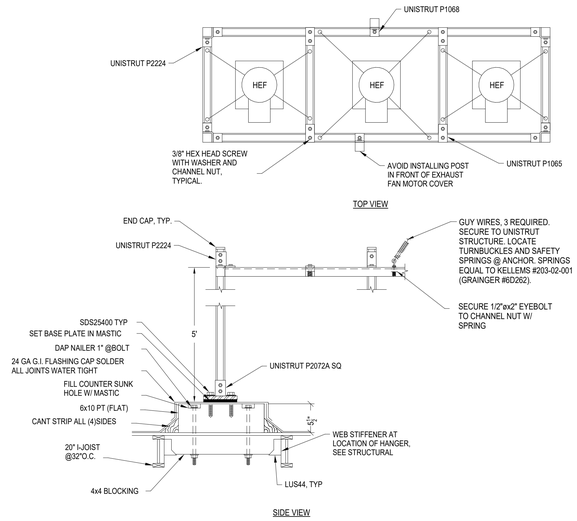
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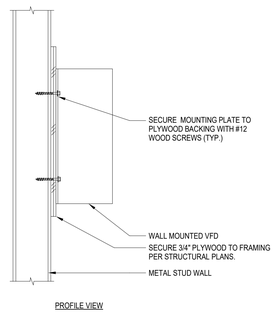
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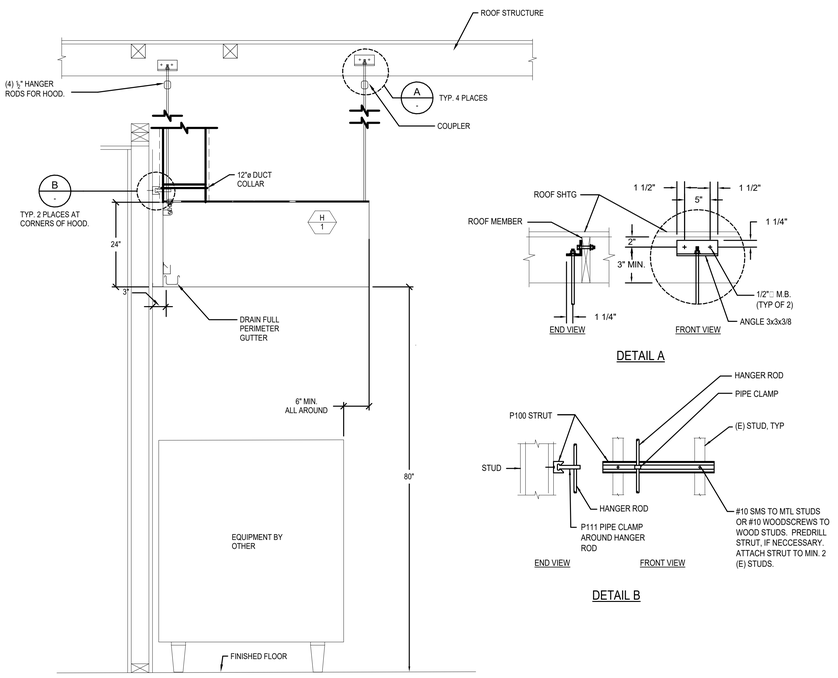
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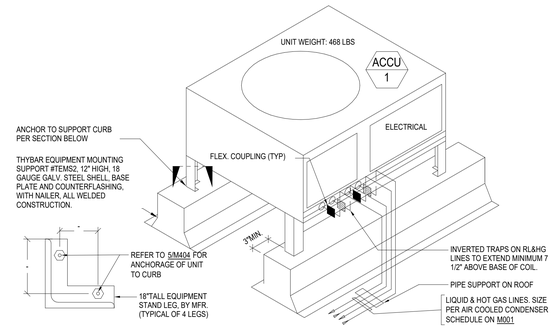
7 HEF UNISTRUT SUPPORT DETAIL
SCALE: NONE



8 VFD ON WALL DETAIL
SCALE: NONE

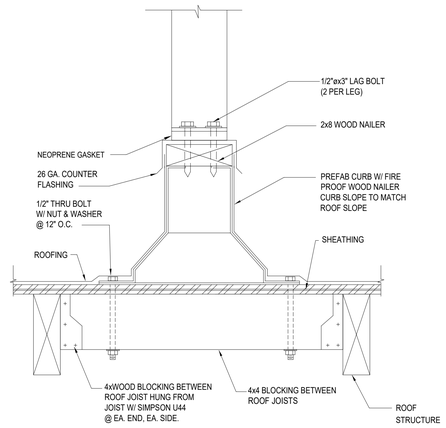


9 TYPE II INSTALLATION DETAIL
SCALE: NONE

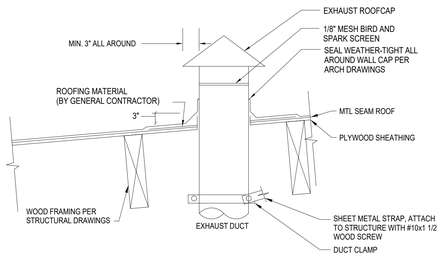


1. TYPICAL FOR EACH LEG.
2. COORDINATE WITH MANUFACTURER'S RECOMMENDED PIPING DIAGRAMS PRIOR TO ORDERING OR FABRICATION OF ANY PIPING. DIAGRAM IS INTENDED FOR REFERENCE ONLY.
3. CURB ANCHORAGE DETAIL, SEE 5/M404.

4 ACCU ANCHORAGE AND PIPING DETAIL
SCALE: NONE



5 ACCU ANCHORAGE DETAIL
SCALE: NONE

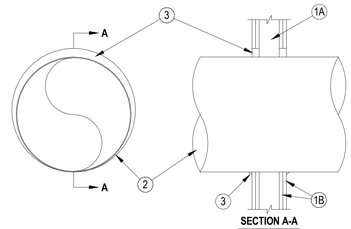


6 KITCHEN EXHAUST THRU ROOF
SCALE: NONE

System No. W-L-7042

Classified by Underwriters Laboratories, Inc. to UL 1479

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Items 1 and 3)	F Ratings - 1 and 2 Hr (See Items 1 and 3)
T Rating - 0 Hr	FT Rating - 0 Hr
	FH Ratings - 1 and 2 Hr (See Items 1 and 3)
	FTH Rating - 0 Hr



SECTION A-A

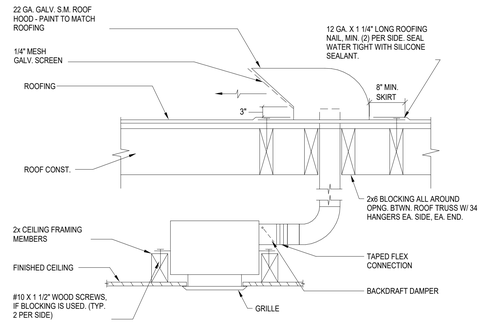
1. Wall Assembly — The 1 or 2 hr fire rated wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features.
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced 24 in. (610 mm) OC.
   B. Gypsum Board* — For 1 hr assembly, one layer of min 5/8 in. (16 mm) thick wallboard as required in the individual Wall and Partition Design. For 2 hr assembly, two layers of min 5/8 in. (16 mm) thick wallboard as required in the individual Wall and Partition Design. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls and 21-3/4 in. (552 mm) for steel stud walls.
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrant — Galv steel duct to be installed concentrically or eccentrically within the firestop system. The annular space between the duct and periphery of opening shall be 0 in. (0 mm, point contact) and max 1-1/2 in. (64 mm) Duct to be rigidly supported on both sides of wall assembly.
   A. Spiral Wound HVAC Duct — Nom 20 in. (502 mm) diam (or smaller) No. 24 MSG (or heavier) galv steel spiral wound duct.
   B. Sheet Metal Duct — Nom 12 in. (305 mm) diam (or smaller) No. 28 MSG (or heavier) galv sheet steel duct.
3. Fill, Void or Cavity Material*—Sealant — Min 5/8 in. (16 mm) and 1-1/4 in. (32 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly for 1 or 2 hr rated walls, respectively. At the point contact location between duct and wallboard, a min 1/2 in. (13 mm) diam bead of sealant shall be applied at the wallboard/duct interface on both surfaces of wall assembly.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S Elastomeric Firestop Sealant, FS-ONE Sealant, FS-ONE MAX Intumescent Sealant or CP606 Flexible Firestop Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

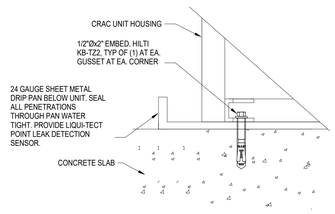
Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 27, 2015

1 DUCT THRU RATED WALL DETAIL
SCALE: NONE



NOTE: MAINTAIN A MINIMUM 10'-0" CLEARANCE FROM OUTSIDE AIR INTAKES TO EXHAUST.

2 CEF MOUNTING DETAIL
SCALE: NONE



3 CRAC UNIT ANCHORAGE DETAIL
SCALE: NONE

1960

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ARCHITECT STAMP

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REGISTERED PROFESSIONAL ENGINEER JOAN R. TICHENOR MECHANICAL STATE OF CALIFORNIA
EXP. 12/31/25

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
DETAILS

DRAWN BY: Author JOB NUMBER: 210015.01

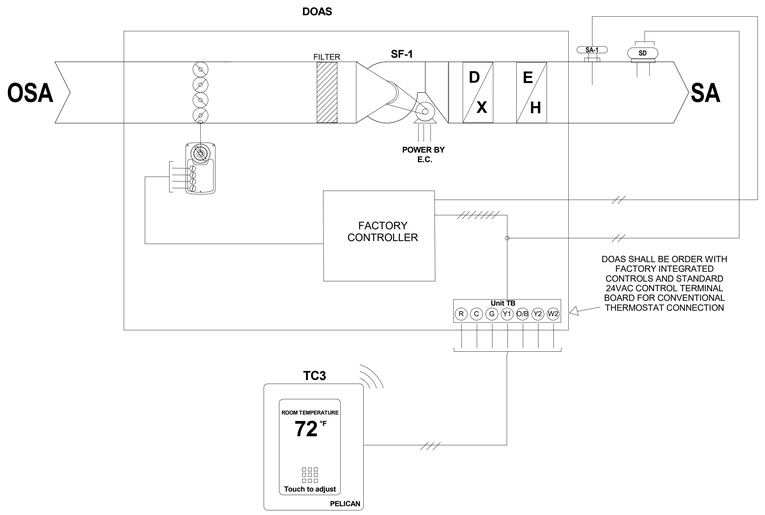
SHEET NO.
M-404

DATE: 4/24/18

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DATE PLOTTED: 9/16/2024 3:26:49 PM

BID SET (PRELIMINARY)



1 DOAS SYSTEM CONTROL DETAIL
SCALE: NONE

SEQUENCE OF OPERATION

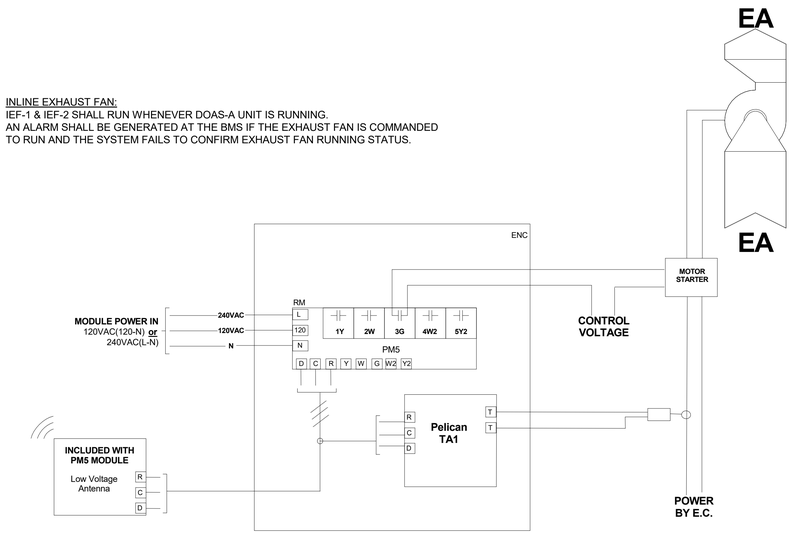
GENERAL:
THE NETWORK THERMOSTAT SHALL BE PROGRAMMED AS DIRECTED BY THE OWNER FOR OCCUPIED PERIODS, UNOCCUPIED PERIODS AND HOLIDAYS. DURING PERIODS OF OCCUPANCY, THE SUPPLY FAN SHALL BE ENABLED AND STAGED HEATING OR COOLING SHALL BE PROVIDED TO MAINTAIN TEMPERATURE SETPOINT. THE OUTSIDE AIR DAMPER SHALL MODULATE FULLY CLOSED WHENEVER THE UNIT IS DISABLED.

COOLING:
ON A CALL FOR COOLING, STAGES OF DX COOLING SHALL BE ENABLED TO MAINTAIN ROOM COOLING SETPOINT.

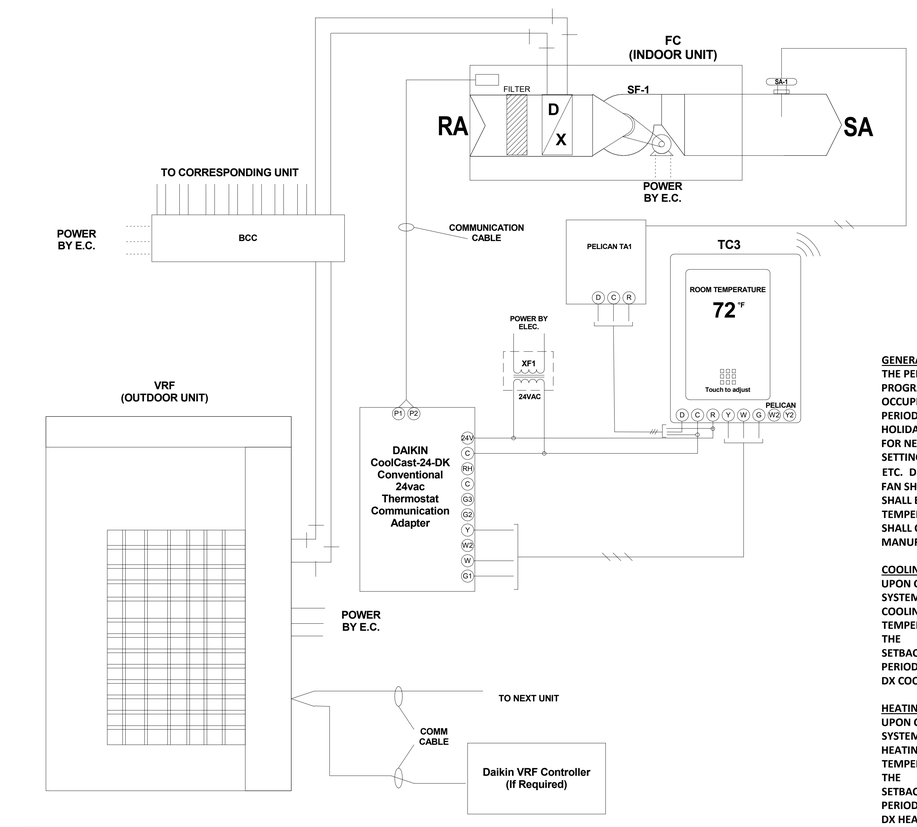
HEATING:
ON A CALL FOR HEATING, STAGES OF HEATING SHALL BE ENABLED TO MAINTAIN ROOM HEATING SETPOINT.

SAFETIES:
THE DUCT SMOKE DETECTOR(S) SHALL BE HARD WIRED TO STOP THE EQUIPMENT WHEN PRODUCTS OF COMBUSTION ARE DETECTED IN THE AIR STREAM. PROVIDED BY ELECTRICAL CONTRACTOR (E.C.) INSTALLED BY MECHANICAL CONTRACTOR (M.C.)

INLINE EXHAUST FAN:
IEF-1 & IEF-2 SHALL RUN WHENEVER DOAS-A UNIT IS RUNNING.
AN ALARM SHALL BE GENERATED AT THE BMS IF THE EXHAUST FAN IS COMMANDED TO RUN AND THE SYSTEM FAILS TO CONFIRM EXHAUST FAN RUNNING STATUS.



2 INLINE EXHAUST FAN CONTROL DETAIL
SCALE: NONE



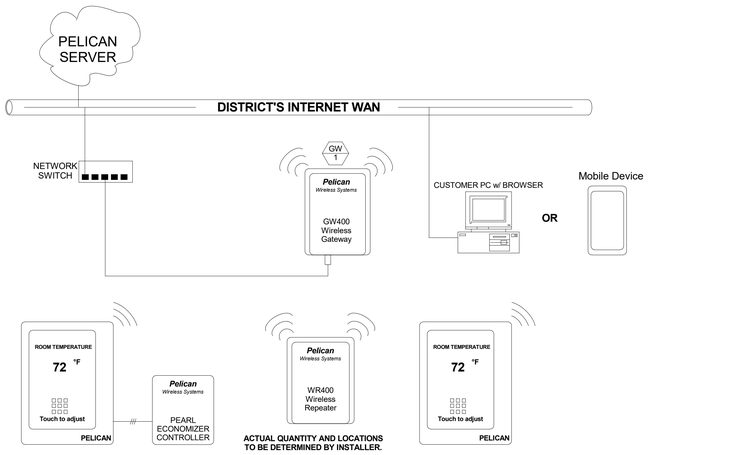
3 VRF SYSTEM CONTROL DETAIL
SCALE: NONE

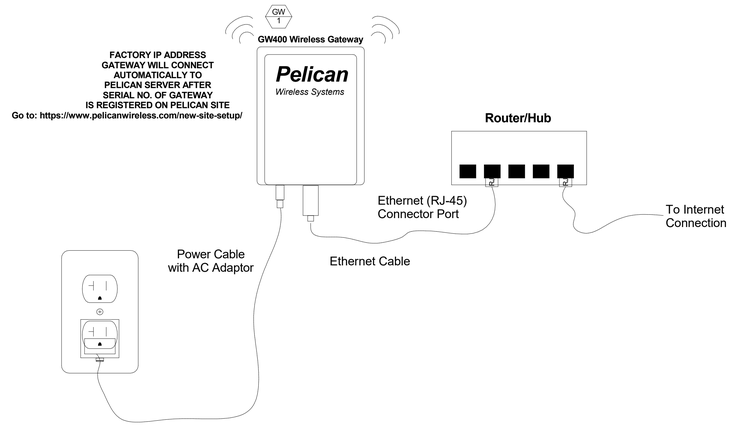
SEQUENCE OF OPERATION: VRF INDOOR UNITS:

GENERAL:
THE PELICAN NETWORK THERMOSTAT SHALL BE PROGRAMMED AS DIRECTED BY THE DISTRICT FOR OCCUPIED
PERIODS, UNOCCUPIED PERIODS AND HOLIDAYS.COORDINATE WITH DISTRICT REPRESENTATIVE FOR NETWORK
SETTINGS, OCCUPANCY SCHEDULES, SETPOINTS, SETBACK, ETC. DURING PERIODS OF OCCUPANCY, THE SUPPLY FAN SHALL BE ENABLED AND STAGED HEATING OR COOLING SHALL BE PROVIDED TO MAINTAIN ROOM TEMPERATURE SETPOINT. PELICAN WIRELESS THERMOSTAT SHALL COMMUNICATE WITH THE FAN COIL THROUGH MANUFACTURER'S 24VAC THERMOSTAT ADAPTER.

COOLING:
UPON CALL FROM PELICAN ZONE THERMOSTAT, THE VRF SYSTEM INTERNAL CONTROL LOGIC ACTIVATES DX COOLING AS REQUIRED TO MAINTAIN THE ZONE TEMPERATURE SETPOINT DURING OCCUPIED PERIODS OR THE
SETBACK TEMPERATURE SETPOINT DURING UNOCCUPIED PERIODS. AFTER SETPOINT TEMPERATURE IS SATISFIED DX COOLING DEACTIVATES.

HEATING:
UPON CALL FROM PELICAN ZONE THERMOSTAT, THE VRF SYSTEM INTERNAL CONTROL LOGIC ACTIVATES DX HEATING AS REQUIRED TO MAINTAIN THE ZONE TEMPERATURE SETPOINT DURING OCCUPIED PERIODS OR THE
SETBACK TEMPERATURE SETPOINT DURING UNOCCUPIED PERIODS. AFTER SETPOINT TEMPERATURE IS SATISFIED DX HEATING DEACTIVATES.





4 PELICAN WIRELESS LAN LAYOUT
SCALE: NONE

196
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REGISTERED PROFESSIONAL ENGINEER JOHN R. TICHENOR M41378 EXP. 12/31/25 MECHANICAL STATE OF CALIFORNIA

REVISIONS

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1800 Booth Road
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CONTROLS

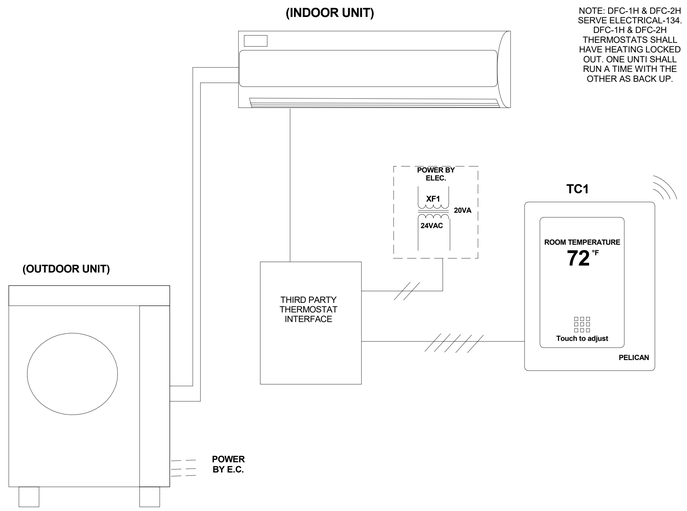
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SHEET NO.
M-501

DATE: 4/24/18

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BID SET (PRELIMINARY)



NOTE: DFC-1H & DFC-2H SERVE ELECTRICAL-134. DFC-1H & DFC-2H THERMOSTATS SHALL HAVE HEATING LOCKED OUT. ONE UNTI SHALL RUN A TIME WITH THE OTHER AS BACK UP.

SEQUENCE OF OPERATION

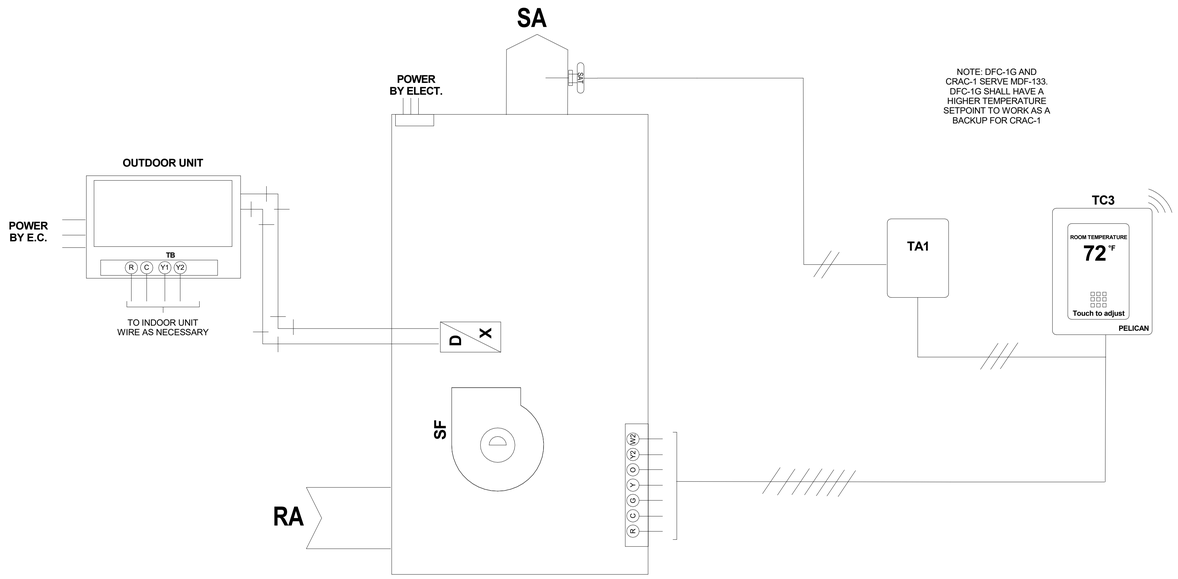
GENERAL:
THE NETWORK THERMOSTAT SHALL BE PROGRAMMED AS DIRECTED BY THE DISTRICT FOR REQUIRE SETPOINTS AND ALARMS DURING OCCUPIED AND UNOCCUPIED PERIODS. THE UNIT SHALL ENABLE THE SUPPLY FAN AND DX COOLING OR HEATING TO MAINTAIN ZONE TEMPERATURE SETPOINT AS COMMANDED BY THE ZONE THERMOSTAT.

COOLING:
ON A CALL FOR COOLING, DX COOLING SHALL BE ENABLED TO MAINTAIN ROOM COOLING SETPOINT.

HEATING:
ON A CALL FOR HEATING, DX HEATING SHALL BE ENABLED TO MAINTAIN ROOM HEATING SETPOINT.

ALARMS:
TEMPERATURE ALARM SHALL ACTIVATE ANYTIME THE SPACE TEMPERATURE EXCEEDS THE DEFINED LIMITS.

1 **INDOOR FAN COIL UNIT CONTROL DETAIL**
SCALE: NONE



NOTE: DFC-1G AND CRAC-1 SERVE MDF-133. DFC-1G SHALL HAVE A HIGHER TEMPERATURE SETPOINT TO WORK AS A BACKUP FOR CRAC-1

SEQUENCE OF OPERATION

GENERAL:
THE NETWORK THERMOSTAT SHALL BE PROGRAMMED AS DIRECTED BY THE DISTRICT FOR REQUIRE SETPOINTS AND ALARMS DURING OCCUPIED AND UNOCCUPIED PERIODS. THE UNIT SHALL ENABLE THE SUPPLY FAN AND DX COOLING TO MAINTAIN ZONE TEMPERATURE SETPOINT AS COMMANDED BY THE ZONE THERMOSTAT.

COOLING:
ON A CALL FOR COOLING, STAGES OF DX COOLING SHALL BE ENABLED TO MAINTAIN ROOM COOLING SETPOINT.

ALARMS:
SAFE TEMPERATURE ALARM SHALL ACTIVATE ANYTIME THE SPACE TEMPERATURE EXCEEDS THE DEFINED LIMITS.
SUPPLY SAFE TEMPERATURE ALARM SHALL ACTIVATE ANYTIME DURING HEATING OR COOLING IF THE LEAVING AIR TEMPERATURE EXCEEDS THE DEFINED LIMITS.

2 **CRAC UNIT CONTROL DETAIL**
SCALE: NONE

1.96
2237 DOUGLAS BLVD, SUITE 160
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REGISTERED PROFESSIONAL ENGINEER — JOHN R. TICHENOR — EXP. 12/31/25 — MECHANICAL — STATE OF CALIFORNIA

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311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

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SHEET NO.
M-502

DATE: 4/24/18

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BID SET (PRELIMINARY)

SEQUENCE OF OPERATION

GENERAL:
THE NETWORK THERMOSTAT SHALL BE PROGRAMMED AS DIRECTED BY THE OWNER FOR OCCUPIED PERIODS, UNOCCUPIED PERIODS AND HOLIDAYS. DURING PERIODS OF OCCUPANCY, THE SUPPLY FAN SHALL BE ENABLED AND STAGED HEATING OR COOLING SHALL BE PROVIDED TO MAINTAIN TEMPERATURE SETPOINT. THE OUTSIDE AIR DAMPER SHALL MODULATE FULLY CLOSED WHENEVER THE UNIT IS DISABLED.

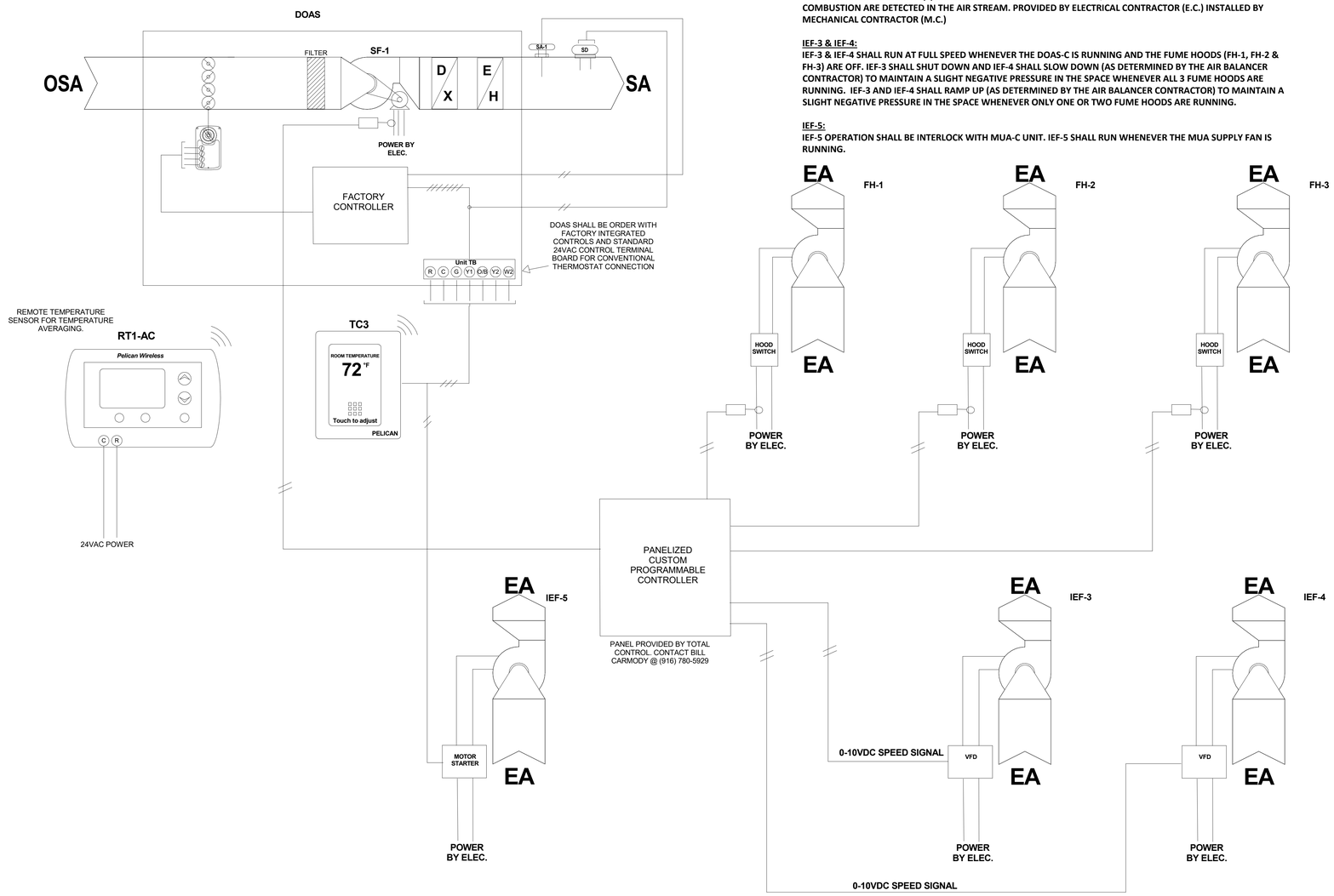
COOLING:
ON A CALL FOR COOLING, STAGES OF DX COOLING SHALL BE ENABLED TO MAINTAIN ROOM COOLING SETPOINT.

HEATING:
ON A CALL FOR HEATING, STAGES OF HEATING SHALL BE ENABLED TO MAINTAIN ROOM HEATING SETPOINT.

SAFETIES:
THE DUCT SMOKE DETECTOR(S) SHALL BE HARD WIRED TO STOP THE EQUIPMENT WHEN PRODUCTS OF COMBUSTION ARE DETECTED IN THE AIR STREAM. PROVIDED BY ELECTRICAL CONTRACTOR (E.C.) INSTALLED BY MECHANICAL CONTRACTOR (M.C.)

IEF-3 & IEF-4:
IEF-3 & IEF-4 SHALL RUN AT FULL SPEED WHENEVER THE DOAS-C IS RUNNING AND THE FUME HOODS (FH-1, FH-2 & FH-3) ARE OFF. IEF-3 SHALL SHUT DOWN AND IEF-4 SHALL SLOW DOWN (AS DETERMINED BY THE AIR BALANCER CONTRACTOR) TO MAINTAIN A SLIGHT NEGATIVE PRESSURE IN THE SPACE WHENEVER ALL 3 FUME HOODS ARE RUNNING. IEF-3 AND IEF-4 SHALL RAMP UP (AS DETERMINED BY THE AIR BALANCER CONTRACTOR) TO MAINTAIN A SLIGHT NEGATIVE PRESSURE IN THE SPACE WHENEVER ONLY ONE OR TWO FUME HOODS ARE RUNNING.

IEF-5:
IEF-5 OPERATION SHALL BE INTERLOCK WITH MUA-C UNIT. IEF-5 SHALL RUN WHENEVER THE MUA SUPPLY FAN IS RUNNING.



1 **LAB AREA CONTROL DETAIL**
SCALE: NONE

196
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311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
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DRAWN BY: Author JOB NUMBER: 210015.01

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M-503

DATE: 4/24/18

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BID SET (PRELIMINARY)

COLD WATER CALCULATIONS

DESIGN CRITERIA

Total estimated demand (GPM) from fixture calc sheet:			76
1. Pressure @ Street Main (Static Pressure - information can be aquired from the local Water Purveyor)			75
2. Pressure loss due to height (from buried depth below grade to the highest most point in the system - above ceiling, floor level of a multi-story building, etc…)	17	ft. x .434	7.378
3. Pressure loss thru meter (Note: losses may vary from 2 PSI up to 5 PSI - verify meter type and losses with the local Water Purveyor)			5
4. Pressure loss thru other devices (i.e., BFP) (Note: losses may vary from 8 PSI up to 15 PSI - verify BFP type and losses with the local Water Purveyor)			10
5. Total pressure loss (add lines 2, 3 & 4)			22.378
6. Pressure required at highest fixture (Note: 20 PSI for a Flush Tank Water Closet and 25 PSI for a Flush Valve Water Closet)			25
7. Pressure available for Friction Loss (line1-line 5-line 6)			27.622
8. Total developed length of run (Note: Add an addition 25% of total pipe length to account for equivalent length of fittings and valves).			350

FRICTION LOSS CALCULATION

from line 7 27.622 PSI X 100 = 7.89 PSI/100 ft.
from line 8 350

NOTE: IF YOU END UP WITH A (-) NEGATIVE VALUE, A BOOSTER PUMP WILL BE REQUIRED.
IF SO, REFER TO BOOSTER PUMP CALCULATION SHEET.

Cold Water Service Required: 2

Water meter size required, based on above demand: -

WATER SIZING

(SIZED PER CPC 2022 - APPENDIX A)

COLD WATER - FT FU'S	SIZE	FU'S	GPM	VELOCITY	PSI LOSS/100'
	3/4"	8.0	7.0	4.5	6.0
	1"	15.0	11.0	4.5	4.0
	1-1/4"	30.0	20.0	4.5	3.0
	1-1/2"	46.0	27.0	4.5	2.8
	2"	264.0	78.0	7.2	4.0
COLD WATER - FV FU'S	1-1/2"	10.0	27.0	4.5	2.8
	2"	53.0	54.0	6.0	3.0
HOT WATER	3/4"	8.0	7.0	4.5	6.0
	1"	15.0	11.0	4.5	4.0
	1-1/4"	30.0	20.0	4.5	3.0
	1-1/2"	46.0	27.0	4.5	2.8
	2"	107.0	45.0	4.5	2.0

PLUMBING LEGEND

- SANITARY SEWER (SS)/ WASTE (W)
- SANITARY VENT (V)
- AW — ACID WASTE
- AV — ACID VENT
- COLD WATER (CW)
- HOT WATER (140° F) (HW)
- HOT WATER RETURN (140° F) (HWR)
- A — COMPRESSED AIR
- DI — DEIONIZED WATER
- LA — LABORATORY AIR
- LV — LABORATORY VACUUM
- CD — CONDENSATE DRAIN
- D — DRAIN LINE
- G — GAS (G)
- MG — GAS - MEDIUM PRESSURE
- HP — GAS - HIGH PRESSURE
- OF — RAIN WATER LEADER OVERFLOW (OF)
- RWL — RAIN WATER LEADER (RWL)
- SD — STORM DRAIN (SD)
- T — TEMPERED WATER (110° F) (TW)
- SHUT OFF VALVE IN VALVE BOX
- GAS PRESSURE REGULATOR
- BALL VALVE
- CIRCUIT SETTER
- CHECK VALVE
- BALANCING VALVE
- UNION
- STRAINER & BLOW-OFF VALVE
- THERMOMETER
- PRESSURE GAUGE
- PUMP
- VACUUM OUTLET (DECK)
- MEDICAL GAS OUTLET (DECK)
- MEDICAL AIR OUTLET (DECK)
- MEDICAL AIR OUTLET (WALL/BACK)
- MEDICAL AIR OUTLET (WALL/BACK)
- MEDICAL AIR OUTLET (WALL/BACK)

ABC	ABOVE CEILING
ADA	AMERICAN DISABILITIES ACT
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AO	AIR OUTLET
BFF/G	BELOW FINISH FLOOR/GRADE
BV	BALL VALVE
CD	CONDENSATE DRAIN
COTG	CLEAN OUT TO GRADE
CO	CLEAN OUT
CW	COLD WATER
CWR	COLD WATER RISER
DIO	DI OUTLET
EWH	ELECTRIC WATER HEATER
FA	FROM ABOVE
FB	FROM BELOW
FCO	FLOOR CLEANOUT
FFE	FINISHED FLOOR ELEVATION
FM	FLOOR MOUNT
FSR	FIRE SPRINKLER RISER
G	GAS
GR/D	GAS RISER/DROP
GCO	GRADE CLEANOUT
GPR	GAS PRESSURE REGULATOR
GWH	GAS WATER HEATER
HW	HOT WATER
HWR	HOT WATER RETURN
IE	INVERT ELEVATION
MV	MIXING VALVE
OF	OVER FLOW
P&TRV	PRESSURE & TEMP RELIEF VALVE
PSI	POUNDS PER SQUARE INCH
RD	ROOF DRAIN
RWL	RAIN WATER LEADER
SD	SECONDARY DRAIN
SMD	SEE MECHANICAL DRAWINGS
SAD	SEE ARCHITECTURAL DRAWINGS
SPD	SEE PLUMBING DRAWING
SOC	SHUT OFF COCK
SOV	SHUT OFF VALVE
TYP	TYPICAL
UF	UNDER FLOOR
US	UNDER SLAB
VB	VALVE BOX
V	VENT
VO	VACUUM OUTLET
VR	VENT RISER
VTR	VENT THRU ROOF
WCO	WALL CLEANOUT
SS	SANITARY SEWER
W	WASTE
WHA	WATER HAMMER ARRESTOR
WM	WALL MOUNT

PLUMBING FIXTURE CONNECTION SCHEDULE

FIXTURE	SYMBOL	WASTE BRANCH	WASTE OUTLET	WASTE VENT	WASTE TRAP	COLD WATER BRANCH	COLD WATER OUTLET	HOT WATER BRANCH	HOT WATER OUTLET
WATER CLOSET (FLUSH VALVE)	WC	4"	4"	2"	4"	1-1/2"	1"	——	——
LAVATORY (2)	L	2"	1-1/2"	1-1/2"	1-1/2"	1/2"	3/8"	1/2"	3/8"
SINK (2)	S	2"	1-1/2"	1-1/2"	1-1/2"	1/2"	1/2"	1/2"	1/2
URINAL	UR	2"	2"	1-1/2"	2"	1-1/2"	3/4"	——	——
FLOOR DRAIN (1)	FD	2"	2"	1 1/2"	2"	——	——	——	——
FLOOR SINK (1) (3)	FS	3"	3"	2"	3"	——	——	——	——
SERVICE SINK	SS	3"	3"	2"	3"	3/4"	1/2"	3/4"	1/2"
SHOWER	SH	2"	2"	1-1/2"	2"	3/4"	1/2"	3/4"	1/2"
ELECTRIC WATER COOLER/DRINKIING FOUNTAIN	DF	2"	1-1/2"	1-1/2"	1-1/2"	1/2"	3/8"	——	——
HOSE BIBB	HB	——	——	——	——	3/4"	3/4"	——	——
TRENCH DRAIN (1)	TD	2"	2"	1-1/2"	2"	——	——	——	——
EMERGENCY EYEWASH	EEW	——	——	——		3/4"	3/4"	——	——
EMERGENCY SHOWER EYEWASH	ESH	2"	1-1/4"	1-1/2"	2"	1-1/2"	1-1/2"	——	——

NOTES:
(1) TRAP PRIMER CONNECTION ONLY WHERE NOTED ON PLANS.
(2) TEMPERED OR HOT WATER ONLY WHERE INDICATED ON PLANS.
(3) FLOOR SINKS SERVING FIRE SPRINKLER RISER ROOMS REQUIRE A 6" WASTE AND 3" VENT CONNECTION.

PLUMBING GENERAL NOTES

1. PLANS ARE NOT FOR CONSTRUCTION UNTIL APPROVED BY THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL NOT ORDER ANY MATERIALS OR INSTALL ANY EQUIPMENT, PIPING, ETC. UNTIL PLANS ARE APPROVED BY THE AUTHORITY HAVING JURISDICTION.
2. ALL FIXTURES WHITE UNLESS OTHERWISE NOTED.
3. ALL FIXTURES SHALL BE PROVIDED WITH STOP VALVES. VALVES MAY BE IN SUPPLY PIPES OR INTEGRAL WITH SUPPLY FITTINGS.
4. WHERE FLUSHOMETER VALVE CONFLICTS WITH GRAB BARS, CONTRACTOR SHALL MODIFY VACUUM BREAKER TUBE TO ENSURE VALVE AND GRAB BAR ARE ADEQUATELY SEPARATED.
5. CONTRACTOR SHALL COORDINATE ALL PLUMBING LINE LOCATIONS WITH OTHER TRADES.
6. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF FIXTURES AND MOUNTING HEIGHTS.
7. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND PAY ALL COSTS INVOLVED.
8. INSULATE HOT & COLD WATER SUPPLY PIPES, STOPS, P-TRAP AND DRAIN LINE AT EACH ADA LAVATORY AND SINK WITH ANTI-MICROBIAL, SEAMLESS, VANDAL RESISTANT PROTECTIVE PIPE COVER "PROWRAP" OR EQUAL.
9. ALL PIPE PENETRATIONS THROUGH ROOF SHALL BE FLASHED SIMILAR TO VTR'S.
10. ALL SANITARY SEWER VENT PIPE PENETRATIONS THROUGH ROOF SHALL TERMINATE AT A MINIMUM DISTANCE OF 25' FROM ANY FRESH AIR INTAKE.
11. MINIMUM LOCAL CONNECTION SIZES SHALL BE MADE IN ACCORDANCE WITH THE SCHEDULE OF CONNECTIONS.
12. ALL WATER PIPING SIZED IN ACCORDANCE WITH 2022 CPC, APPENDIX A.
13. GAS PIPING SIZED IN ACCORDANCE WITH TABLE 1216.2, 2022 CPC. FOR XXXX MBH AND A MAXIMUM LENGTH OF XXXX'.
14. ALL WASTE, WATER, FIRE AND STORM DRAIN PIPING SHALL BE STUBBED 5' OUTSIDE BUILDING TO CONNECTION POINT SHOWN. SEE CIVIL DRAWINGS FOR CONTINUATION. CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO SITE PIPING.
15. COORDINATE ALL TRENCHING WITH CONTRACTOR.
16. ALL HOSE BIBBS SHALL BE 3/4" AND MOUNTED AT 12" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. ALL HOSE BIBBS SHALL HAVE A NON-REMOVABLE VACUUM BREAKER.
17. PROVIDE MATERIALS IN ACCORDANCE WITH 2022 CALIFORNIA PLUMBING CODE AND STATE CODE REGULATIONS.
18. SEISMIC SUPPORTS AND BRACING FOR ALL PIPING SHALL BE PROVIDED IN ACCORDANCE WITH 2022 CBC SECTION 1613, LATEST EDITION OF ASCE/SEI 7, CCR SECTION 13.6.1 AND NFPA 13 STANDARDS FOR SUPPORT AND ANCHORAGE. METHODS AND MATERIALS PUBLISHED BY SMACNA AND APPROVED BY STATE AGENCIES SHALL BE USED.
19. THE CONDENSATE DRAIN RECEPTACLE (CDR) AND ASSOCIATED WASTE AND VENT PIPING IS NOT REQUIRED AT SITES WHERE THE ROOF DRAINS CONNECT TO A STORM DRAIN SYSTEM. CD LINES FROM ROOFTOP MECHANICAL EQUIPMENT MAY SPILL OVER ROOF DRAINS WITH A TURNED-DOWN ELBOW.
20. THE WATER CLOSET CONTROLS (FLUSH HANDLE) MUST BE LOCATED ON THE CLEAR/ WIDE SIDE OF THE ACCESSIBLE WATER CLOSETS.
21. HAZARDOUS AND COMBUSTIBLE MATERIAL LINES (E.G. GAS LINES) GREATER THAN 1" IN DIAMETER AND NON-HAZARDOUS LINES (E.G. WATER LINES) GREATER THAN 3" IN DIAMETER REQUIRE SEISMIC BRACING PER 2022 CBC SECTION 1617A.1.26. ACCEPTABLE SEISMIC BRACING DETAILS INCLUDE THOSE SHOWN IN THE EATON/COOPER B-LINE OPM-0052-13 WITH 2022 REVISIONS OR MASON INDUSTRIES OPM-0043-13 WITH 2022 REVISIONS. CONTRACTOR TO CONFIRM BRACING DETAILS WITH DESIGN TEAM.
22. ANY HORIZONTAL DRAINAGE PIPE SERVING SINKS OR URINALS SHALL BE PROVIDED WITH A CLEANOUT AT ITS UPPER TERMINAL PER CPC 2022 707.4. A CLEANOUT SHALL BE FURNISHED ABOVE THE FIXTURE CONNECTION FITTING SERVING EACH URINAL, REGARDLESS OF THE LOCATION OF THE URINAL IN THE BUILDING.
23. A CLEANOUT IS REQUIRED ON ALL RAINWATER AND OVERFLOW LEADERS AT THE BASE OF THE LEADER BEFORE IT DROPS BELOW GRADE TO CONNECT TO THE HORIZONTAL DRAIN. CLEANOUTS SHALL ALSO BE INSTALLED ON LEADERS AT INTERVALS NOT TO EXCEED 100 FET IN STRAIGHT HORIZONTAL RUNS, AND FOR EACH AGGREGATE HORIZONTAL CHANGE IN DIRECTION EXCEEDING 135 DEGREES.
24. ALL PIPING SHALL BE LABELED AS PER SPECIFICATION 22 05 53.
25. ALL NEW WATER PIPING SHALL BE DISINFECTED PER SPECIFICATION SECTION 22 11 16.

T-24 PIPING INSULATION REQUIREMENTS

FLUID TEMPERATURE RANGE (°F)	CONDUCTIVITY RANGE (IN BTU-INCH PER HOUR PER SQUARE FOOT PER °F	INSULATION MEAN RATING TEMPERATURE (°F)	NOMINAL PIPE DIAMETER (IN INCHES) <1	1 TO <1.5	1.5 TO <4	4 TO <8	≥8
SPACE HEATING AND SERVICE WATER HEATING SYSTEMS (STEAM, STEAM CONDENSATE AND HOT WATER);			INSULATION THICKNESS REQUIRED (IN INCHES)				
ABOVE 350	0.32-0.34	250	4.5	5.0	5.0	5.0	5.0
251-350	0.29-0.32	200	3.0	4.0	4.5	4.5	4.5
201-250	0.27-0.30	150	2.5	2.5	2.5	3.0	3.0
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0
105-140	0.22-0.28	100	1.0	1.5	1.5	1.5	1.5
SPACE COOLING SYSTEMS (CHILLED WATER, REFRIGERANT AND BRINE)							
-	-	-	NONRES	RES	NONRES	RES	
40-60	0.21-0.27	75	0.5	0.75	0.5	0.75	1.0	1.0	1.0
BELOW 40	0.20-0.26	50	1.0		1.5	1.5	1.5	1.5	1.5

Plumbing Sheet List

Sheet Number	Sheet Name
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P-002	PLUMBING SCHEDULES
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P-102	SITE PLAN - PLUMBING PHASE 2
P-200	FLOOR PLAN - PLUMBING FIXTURE IDENTIFICATION
P-201	FLOOR PLAN - PLUMBING WASTE & VENT
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P-301	ENLARGED LAB WATER & WASTE PLANS
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P-400	DETAILS
P-401	DETAILS
P-402	DETAILS
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REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

SYMBOLS AND NOTES

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

P-001

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 2/11/2025 1:47:43 PM FILE LOCATION: C:\Users\gsettles\Documents\23.020 Dry Creek WWTP MEP_r22_gsettles.rvt

PLUMBING FIXTURE SCHEDULE

SYMBOL	MAKE	NUMBER	DESCRIPTION/TRIM	SUPPORT	MATERIAL	LOCATION
LS-1 ACCESSIBLE	DURCON	A25	LAB SINK, 18" X 15" X 5" EPOXY-RESIN, CORNER DRAIN LOCATION, PROVIDE WITH S03-R GRID STRAINER, P-TRAP, SUPPLIES AND STOPS.	COUNTER	EPOXY RESIN	LAB RM 112
	CHICAGO FAUCET (MANUAL)	930-317SAM	HOT AND COLD SUPPLY. DECK MOUNTED SINGLE HOLE HOT AND COLD WATER MIXING FAUCET. 6" SWING GOOSENECK SPOUT WITH ATMOSPHERIC VACUUM BREAKER. PROVIDE WITH DECK PLATE.			
		969-317PLCTF	DI WATER DECK-MOUNTED TIN-LINED LABORATORY PURE WATER FITTING. 5-1/4" SWING GOOSENECK SERRATED SPOUT. MOUNT TO THE RIGHT OF 930-317SAM WITH HANDLE TO OPEN DECK/COUNTER SIDE.			
LS-2	DURCON	D55	LAB SINK, 25" X 15" X 10" EPOXY-RESIN, CORNER DRAIN LOCATION, PROVIDE WITH S03-R GRID STRAINER, P-TRAP, SUPPLIES AND STOPS.	COUNTER	EPOXY RESIN	LAB RM 112
	CHICAGO FAUCET (MANUAL)	930-317SAM	HOT AND COLD SUPPLY. DECK MOUNTED SINGLE HOLE HOT AND COLD WATER MIXING FAUCET. 6" SWING GOOSENECK SPOUT WITH ATMOSPHERIC VACUUM BREAKER. PROVIDE WITH DECK PLATE.			
		969-317PLCTF	DI WATER DECK-MOUNTED TIN-LINED LABORATORY PURE WATER FITTING. 5-1/4" SWING GOOSENECK SERRATED SPOUT. MOUNT TO THE RIGHT OF 930-317SAM WITH HANDLE TO OPEN DECK/COUNTER SIDE.			
SS-1	ELKAY	DLSR272210	LAB SINK, 27" X 22" X 10" 4 HOLE, 18 GAUGE 304 STAINLESS STEEL. CENTER DRAIN LOCATION, PROVIDE WITH LKAD174 OFFSET GRID STRAINER, P-TRAP, SUPPLIES AND STOPS.	COUNTER	STAINLESS STEEL	LAB RM 112
	CHICAGO FAUCET (MANUAL)	930-317SAM	HOT AND COLD SUPPLY. DECK MOUNTED SINGLE HOLE HOT AND COLD WATER MIXING FAUCET. 6" SWING GOOSENECK SPOUT WITH ATMOSPHERIC VACUUM BREAKER. PROVIDE WITH DECK PLATE.			
		969-317PLCTF	DI WATER DECK-MOUNTED TIN-LINED LABORATORY PURE WATER FITTING. 5-1/4" SWING GOOSENECK SERRATED SPOUT. MOUNT TO THE RIGHT OF 930-317SAM WITH HANDLE TO OPEN DECK/COUNTER SIDE.			
WB-1	ADVANCE TABCO	6-41-48D	48"x29"x14" WASH BASIN, LEFT PORTS 2 HOLES, AND 8" CENTERS. 16 GAUGE 304 STAINLESS STEEL, REAR DRAIN LOCATION, PROVIDE WITH 3-1/2" BASKET DRAIN, P-TRAP, SUPPLIES AND STOPS.	FLOOR	STAINLESS STEEL	WORK RM 113
	T&S (MANUAL)	5PR-8D14	HOT AND COLD SUPPLY . 8" CENTERS, DECK MOUNT PRE-RINSE UNIT WITH 1.15 GPM SPRAY VALVE, 6" ADJUSTABLE WALL BRACKET, ADD-ON FAUCET WITH 2.2 GPM 14" L-TYPE SWING SPOUT AND 1/2" INLETS. PROVIDE SUPPLIES AND STOPS.			
EEWISH	GUARDIAN	GBF2150	RECESSED SAFETY STATION WITH DRAIN PAN, EXPOSED SHOWER HEAD, SHOWER AND EYE/FACE WASH, 16 GAUGE STAINLESS STEEL COMBINATION COVER AND DRAIN PAN AT EYE/FACE WASH. 1"IPS BRASS STAY-OPEN BALL VALVE WITH STAINLESS STEEL "PANIC BAR" ACTUATOR.	WALL	STAINLESS STEEL	LAB RM 112
	GUARDIAN	G6040	THERMOSTATIC MIXING VALVE, SET TO 75 DEGREES FAHRENHEIT OUTPUT TEMPERATURE. (ANSI/ASSE 1071)			
FS	ZURN	Z-1901-2-KC-2	12" X 12" X 8" DEEP, HALF GRATE, DOME STRAINER, ACID RESISTING EPOXY COATED INTERIOR WITH NICKEL BRONZE RIM. 2" WASTE CONNECTION.	---	---	---
RC	J.R. SMITH	3960	ROOF CEPTOR, INDIRECT WASTE DRAIN, 8-1/2" ROUND SOLID WATER DAM WITH VANDAL PROOF BOTTOM DOME STRAINER. 2" OUTLET.	ROOF	CAST IRON	---
TD	ZURN	Z513	FLOOR DRAIN (CONCRETE FLOOR) - SEE PLAN FOR SIZE, CAST IRON P-TRAP. 9" SQUARE HINGED HEAVY-DUTY DRAIN WITH SEDIMENT BUCKET.	---	CAST IRON BODY W/ NICKEL-BRONZE STRAINER	EXTERIOR COVERED SPACE RM 138
AP	ELMDOR	FRC 24X24	FIRE RATED ACCESS PANEL 24" X 24", 16 GAUGE GALVANNEALED STEEL WITH PRIME COAT FINISH. AUTOMATIC CLOSER, SELF-LATCHING, 2" THICK FIRE RATED INSULATION, WELDED PAN TYPE. 1-1/2 HOUR FIRE RATING.	CEILING	PRIMER COATED	---
	ELMDOR	DW SERIES	ACCESS PANEL, 14 GAUGE GALVANNEALED STEEL WITH PRIME COAT FINISH.	WALL	PRIMER COATED	
FD	ZURN	Z415B	FLOOR DRAIN (CONCRETE FLOOR) - SEE PLAN FOR SIZE, CAST IRON P-TRAP.	---	CAST IRON BODY W/ NICKEL-BRONZE STRAINER	---
		Z415S	FLOOR DRAIN (TILE FLOOR) - SEE PLANS FOR SIZE, CAST IRON P-TRAP.			
		Z415SL	FLOOR DRAIN (COMPOSITION TYPE FLOOR) -SEE PLAN FOR SIZE. CAST IRON P-TRAP.			
		Z415BL	FLOOR DRAIN (EPOXY TYPE FLOOR) -SEE PLAN FOR SIZE, CAST IRON P-TRAP.			
TP	SIOUX CHIEF	695-01	TRAP PRIMER VALVE. PROVIDE WITH UNION AND BALL VALVE. PROVIDE MANIFOLD AS NECESSARY	---	BRASS	---
WHA	SIOUX CHIEF	---	PISTON OPERATED WATER HAMMER ARRESTER. SIZE AS RECOMMENDED BY MANUFACTURER.	---	LEAD FREE	---
IMB	GUY GRAY	AB9700HA	ICE MAKER CONNECTION BOX, LEAD FREE 1/2" QUARTER TURN BALL VALVE WITH HAMMER ARRESTOR.	WALL	----	---
WMB	GUY GRAY	SSWB3	WASHING MACHINE BOX: CENTER DRAIN, 1/2" QUARTER TURN BALL VALVES WITH HAMMER ARRESTORS.	WALL	PVC RESIN	---
AG DISHWASHER	ZURN	CD3P	SPEEDFLEX AIR GAP FITTING FOR KS-1 MOUNTED ON SINK LEDGE.	---	LEAD FREE	---
HB	ACORN	8151	HOSE BIBB (INTERIOR) W/ INTEGRAL VACUUM BREAKER, STAINLESS STEEL RECESSED BOX WITH KEY.	WALL	STAINLESS STEEL	---
		8126-LF	HOSE BIBB (ROOF/EXTERIOR) W/ INTEGRAL VACUUM BREAKER.	ROOF	ROUGH BRONZE	

PLUMBING FIXTURE SCHEDULE

SYMBOL	MAKE	NUMBER	DESCRIPTION/TRIM	SUPPORT	MATERIAL	LOCATION
WC-1 ACCESSIBLE	KOHLER	K-96057-0 HIGHLINE	FLUSH VALVE WATER CLOSET WITH ELONGATED BOWL, TOP SPUD, 16-5/8" RIM HEIGHT.	FLOOR	VIT. CHINA	---
	SLOAN VALVE (SENSOR) BATTERY	OPTIMA 111-1.28	LOW CONSUMPTION SENSOR FLUSH VALVE (1.28 GPF), PROVIDED WITH MANUAL OVERRIDE BUTTON. KOHLER K-4731-C OPEN FRONT WHITE SEAT. PROVIDE SUPPLY AND STOP, COMMERCIAL CLOSET CARRIER. MOUNTING HEIGHT PER ARCHITECTURAL PLANS, FLUSH VALVE LEVER ON WIDE SIDE OF STALL.			
WC-2	KOHLER	K-96053-0 WELLCOMME	FLUSH VALVE WATER CLOSET WITH ELONGATED BOWL, TOP SPUD, 15-1/4" RIM HEIGHT.	FLOOR	VIT. CHINA	---
	SLOAN VALVE (SENSOR) BATTERY	OPTIMA 111-1.28	LOW CONSUMPTION SENSOR FLUSH VALVE (1.28 GPF), PROVIDED WITH MANUAL OVERRIDE BUTTON. KOHLER K-4731-C OPEN FRONT WHITE SEAT. PROVIDE SUPPLY AND STOP, COMMERCIAL CLOSET CARRIER. MOUNTING HEIGHT PER ARCHITECTURAL PLANS, FLUSH VALVE LEVER ON WIDE SIDE OF STALL.			
UR-1 ACCESSIBLE	KOHLER	K-4991-ET BARDON	WASHOUT URINAL, 3/4" TOP SPUD, 2" THREADED OUTLET.	WALL	VIT. CHINA	---
	SLOAN VALVE (SENSOR) BATTERY	SFSM 186-0.125	LOW CONSUMPTION SENSOR FLUSH VALVE (0.125 GPF), PROVIDED WITH MANUAL OVERRIDE BUTTON. PROVIDE COMMERCIAL CARRIER AND WALL CLEANOUT. MOUNTING HEIGHT PER ARCHITECTURAL PLANS.			
L-1 ACCESSIBLE	KOHLER	K-2209 CAXTON	LAVATORY, 14" X 17" OVAL, UNDERMOUNT SINK, PROVIDE P-TRAP, FLAT GRID STRAINER AND STOPS.	COUNTER	VIT. CHINA	LOCKER RM
	CHICAGO FAUCET (MANUAL)	420-T41E2805 ABCP	HOT AND COLD SUPPLY , 4" CENTERS, 4-1/4" LEVER HANDLE, 0.5 GPM, 4-5/8" CENTER TO CENTER SPOUT LOCATION, ANTI-SCALD. (ASSE 1070 CERITIFIED)			
L-2 ACCESSIBLE	KOHLER	K-2031 GREENWICH	LAVATORY, 20-1/4" X 18-1/4" X 4-1/4, SINGLE HOLE. PROVIDE "CHICAGO" 327-XCP FLAT GRID STRAINER, P-TRAP, SUPPLIES AND STOPS, AND COMMERCIAL FLOOR MOUNTED WALL CARRIER WITH CONCEALED ARMS.	WALL	VIT. CHINA	RESTROOM
	CHICAGO FAUCET (SENSOR) BATTERY	116.221.AB.1	HOT AND COLD SUPPLY, SINGLE HOLE, SENSOR OPERATED FAUCET, 0.5 GPM, SET TIMER TO 20 SECONDS. USER ADJUSTABLE TEMPERATURE CONTROL MIXER, 6 VOLT LITHIUM BATTERY INCLUDED.			
	LEONARD	170-ALF-BP BRKT	THERMOSTATIC MIXING VALVE, INTEGRAL CHECK VALVES, MOUNTING BRACKET, LEAD FREE, 0.25 GPM MIN. FLOW, LOCKING TEMPERATURE REGULATOR, 3/8" INLETS, 3/8" OUTLET, SET AT A MAX. TEMP. OF 110° F	BRACKET		
SH-1 ACCESSIBLE	MOEN	3988EP SERIES	SHOWER TRIM, SINGLE FUNCTION HAND SHOWER WITH 30" SLIDE BAR, DOUBLE CHECK VALVE IN HANDLE, 69" HOSE, 1.75 GPM. PROVIDE WITH "MOEN" A721 SERIES DROP ELL FOR HANDSHOWER, PROVIDE "MOEN" S1001EP SERIES 10" RAINSHOWER HEAD @ 1.75 GPM, PROVIDE "MOEN" S110 SERIES 14" SHOWER ARM AND FLANGE FOR THE SHOWERHEAD. PROVIDE "MOEN" M-CORE 3 SERIES VALVE TRIM WITH INTEGRATED DIVERTER, TEMPERATURE AND PRESSURE BALANCE SYSTEM CERTIFIED TO (ASME A112.18.1/CSA B-125-1, ASSE 1016)	WALL	---	LOCKER RM
MS-1	ACORN	TCR-28	28" x 28" x 12" HIGH TERRAZZO CORNER MOP SINK WITH INTEGRAL STAINLESS STEEL CAP, INTEGRAL 3" FLOOR DRAIN SUPPLIED WITH REMOVABLE STAINLESS STEEL GRID STRAINER. PROVIDE 1453-BB STRAINER AND P-TRAP. PROVIDE ACORN KH36 HOSE WITH WALL HANGER, KMH MOP HANGER WITH 3 SPRING LOADED GRIPS ON BRACKET.	FLOOR (CORNER)	PORTLAND CEMENT (WHITE W/WHITE CHIPS)	JANITOR RM 121
	CHICAGO (FAUCET)	897-CP	WALL MOUNTED H & CW FAUCET WITH VACUUM BREAKER SPOUT WITH PAIL HOOK, WALL BRACE, LEVER HANDLES, PROVIDE SUPPLIES AND STOPS.			
DF-1 ACCESSIBLE	ELKAY (SURFACE)	LZSTLG8W SLK	DUAL HEIGHT DRINKING FOUNTAIN AND BOTTLER FILLER. FILTERED, REFRIGERATED, 8.0 GPH OF 50°F. "FLEXI-GUARD" BUBBLERS, ELECTRONIC FRONT AND SIDE PUSH BUTTONS. ELECTRONIC SENSOR BOTTLER FILLER. PROVIDE MLP200 MOUNTING FRAME, P-TRAPS, SUPPLY AND ISOLATION BALL VALVE. ELEC.: 115V, 60Hz, 360W, 6 FLA	WALL	LIGHT GRAY FINISH	CORRIDOR RM 118
KS-1 KITCHEN	ELKAY	ELUHAD 281655	SINGLE COMPARTMENT UNDERMOUNT SINK, 18-1/2" X 30-1/2" X 5-3/8" DEPTH, 18 GAUGE TYPE 304 STAINLESS STEEL, 8" CENTERS, REAR CENTER DRAIN LOCATION. PROVIDE BASKET STRAINER AND TAILPIECE, P-TRAP. SUPPLIES AND STOP.	COUNTER	STAINLESS STEEL	KITCHEN RM 109
	CHICAGO FAUCET (MANUAL)	1100-E35-317ABCP	HOT AND COLD SUPPLY, 8" CENTERS, L-TYPE SWING SPOUT, 4" WRIST BLADES, 1.5 GPM AERATOR.			
GD	INSINKERATOR	EVOLUTION COMPACT	FOOD WASTE DISPOSER, MULTI GRIND. PROVIDE WITH INSINKERATOR "QUICK LOCK" MOUNTING CONFIGURATION.			
	LEONARD	170-ALF-BP BRKT	THERMOSTATIC MIXING VALVE, INTEGRAL CHECK VALVES, MOUNTING BRACKET, LEAD FREE, 0.25 GPM MIN. FLOW, LOCKING TEMPERATURE REGULATOR, 3/8" INLETS, 3/8" OUTLET, SET AT A MAX. TEMP. OF 110° F	BRACKET		
DSN	ZURN	Z199	DOWNSPOUT NOZZLE, NICKEL BRONZE BODY. DECORATIVE FACE OF WALL FLANGE AND OUTLET NOZZLE.	WALL	CERAMIC	NORTH EXTERIOR
RD/OFD	ZURN	Z165	COMBINATION ROOF AND OVERFLOW DRAINS WITH UNDERDECK CLAMP, SUMP RECEIVER AND CAST IRON DOME	ROOF	CAST IRON	ROOF

EQUIPMENT SCHEDULE

SYMBOL	MAKE	NUMBER	DESCRIPTION/TRIM	LOCATION	DETAIL
EWH 1	A.O. SMITH	DSE-100A	ELECTRIC WATER HEATER, 70-1/4" HIGH X 28"□. 100 GALLON CAPACITY, 88 GPH RECOVERY AT 80° F. TEMP. RISE, DIRECT VENT. SET AT 140° F. OPERATING WEIGHT. = 1400 LBS., **ELECTRICAL: 15KW, 208V, 1PH, 72.1 AMPS.**	MECHANICAL ROOM 132	2 P-402
CP 1	B & G	NBF-36	CIRCULATION PUMP, LEAD FREE BRONZE CONSTRUCTION, 10 GPM, 25' HEAD. PROVIDE TIMER KIT AND AQUASTAT. 1-1/4" CONNECTION, 3-SPEED OPERATION. WEIGHT: 13.1 LBS **ELECTRICAL: 115V, 60 HZ, 270W, 1PH**	MECHANICAL ROOM 132	2 P-402
ET 1	THERM-X-TROL	ST-5C	THERMAL EXPANSION TANK, 2 GALLONS TOTAL VOLUME, 0.45 MAXIMUM ACCEPTANCE FACTOR. SECURE WITH HOLDRITE QUICK STRAP #QS-U BRACKET.	MECHANICAL ROOM 132	2 P-402
LAC 1 3	BEACON MEDAES	LAS02D-080 V-D	OIL-LESS SCROLL LABORATORY AIR, SINGLE POINT CONNECTION, BASE MOUNT, DUPLEX DESSICANT DRYING SYSTEM WITH PURGE CONTROL, PIPED 3-VALVE BYPASS ASSEMBLY, ELECTRONIC DRAIN VALVE, LIQUID LEVEL GUAGE GLASS, SAFETY RELIEF VALVE AND MANUAL DRAIN VALVE. V-BELT DRIVEN COMPRESSOR, 3600 RPM, ONE INLET AIR FILTER, INTEGRAL AIR-COOLED AFTERCOOLER, INTEGRATED DRAIN TRAP WITH AUTOMATIC SOLENOID DRAIN VALVE, INCLUDES FLEX CONNECTOR, SAFETY RELIEF VALVE, ISOLATION VALVE AND CHECK VALVE. PROVIDE WITH HCAI (OSHPD) PRE-APPROVED SEISMICALLY RESTRAINED ISOLATION. DRYING INCLUDES PREFILTER RATED FOR 0.01 MICRON WITH AUTOMATIC DRAIN AND ELEMENT CHANGE INDICATOR. CONTROL SYSTEM INCLUDES TOUCH SCREEN CONTROLS, CIRCUIT BREAKER DISCONNECTS FOR EACH MOTOR. WEIGHT: 1,134 LBS ELECTRICAL: 460V, 3PH, 2 HP SYSTEM	EQUIPMENT ROOM 136	1 P-403
VAC 1	POWEREX	IBVS0202	DIRECT DRIVEN SYSTEM, 2 HP SYSTEM, ROTARY VANE VACUUM PUMP. VERTICAL TANK MOUNT, 11 SCFM AT 19"HgV, AIR COOLED, OIL DRAIN VALVE ASSEMBLY, MOUNTED ON VIBRATION ISOLATORS, 10 MICRON INLET FILTER. FLEXIBLE CONNECTOR. VACUUM RECEIVER RATED FOR MINIMUM 200 PSIG DESIGN PRESSURE. CHECK VALVE BETWEEN INLET FILTER AND VACUUM PUMP. EPOXY LINED 30 GALLON VERTICAL RECEIVER WITH VACUUM GAUGE AND MANUAL DRAIN. EXHAUST FLEX HOSE WITH DRIP LEG AND VALVE. PURCHASE WITH SPEEDAIRE XDV SERIES TIMED ELECTRIC AUTO DRAIN. 115V WEIGHT: 326 LBS **ELECTRICAL: 208V, 3PH, 8.0 FLA.**	EQUIPMENT ROOM 136	1 P-402
DI 1 2	CULLIGAN	D-350-MB	CULLIGAN DEIONIZER SYSTEM, PORTABLE EXCHANGE DEIONIZERS. PROVIDE: CATION RESIN TANK, ANION RESIN TANK, MIXED BED POLISHER, 1 MICRON FILTER, RESIN TRAP FILTER, WATER QUALITY MONITOR, RESISTIVITY SENSOR AND GAUGES.	EQUIPMENT ROOM 136	4 P-401
DIWP 1 1	GOULDS	3SV5GC4 F60N	DIONIZED WATER PUMP. MULTI STAGE, 15 GPM, 126.8FT HEAD. **ELEC: 208V, 1HP, 4.1A**	EQUIPMENT ROOM 136	4 P-401
RPBFP 1	ZURN	975XL	REDUCED PRESSURE BACKFLOW PREVENTER. PROVIDE WITH FULL PORT BALL VALVES, UNION AND "Y" STRAINER. 1-1/4" SIZE.	EQUIPMENT ROOM 136	4 P-401

1 PUMP INFORMATION CONTACT: KURT ECKROTH, CALHYDRONICS, E: KECKROTH@CHCHYDRO.COM, 916-315-2001

2 CULLIGAN INFORMATION CONTACT: GREG IBSEN, 916-927-5005, E: GIBSEN@CULLIGANWATERCO.COM/ MARK FELTON 800-464-7373 E: MFELTON@CULLIGANWATERCO.COM

3 BEACON MEDAES INFORMATION CONTACT: MARK PERKINS, 916-709-3505, E: MARK.PERKINS@BEACONMEDAES.COM

196

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MECHANICAL
STATE OF CALIFORNIA
EXP. 12/31/25

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
PLUMBING SCHEDULES

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
P-002

DATE: 4/24/18

BID SET (PRELIMINARY)

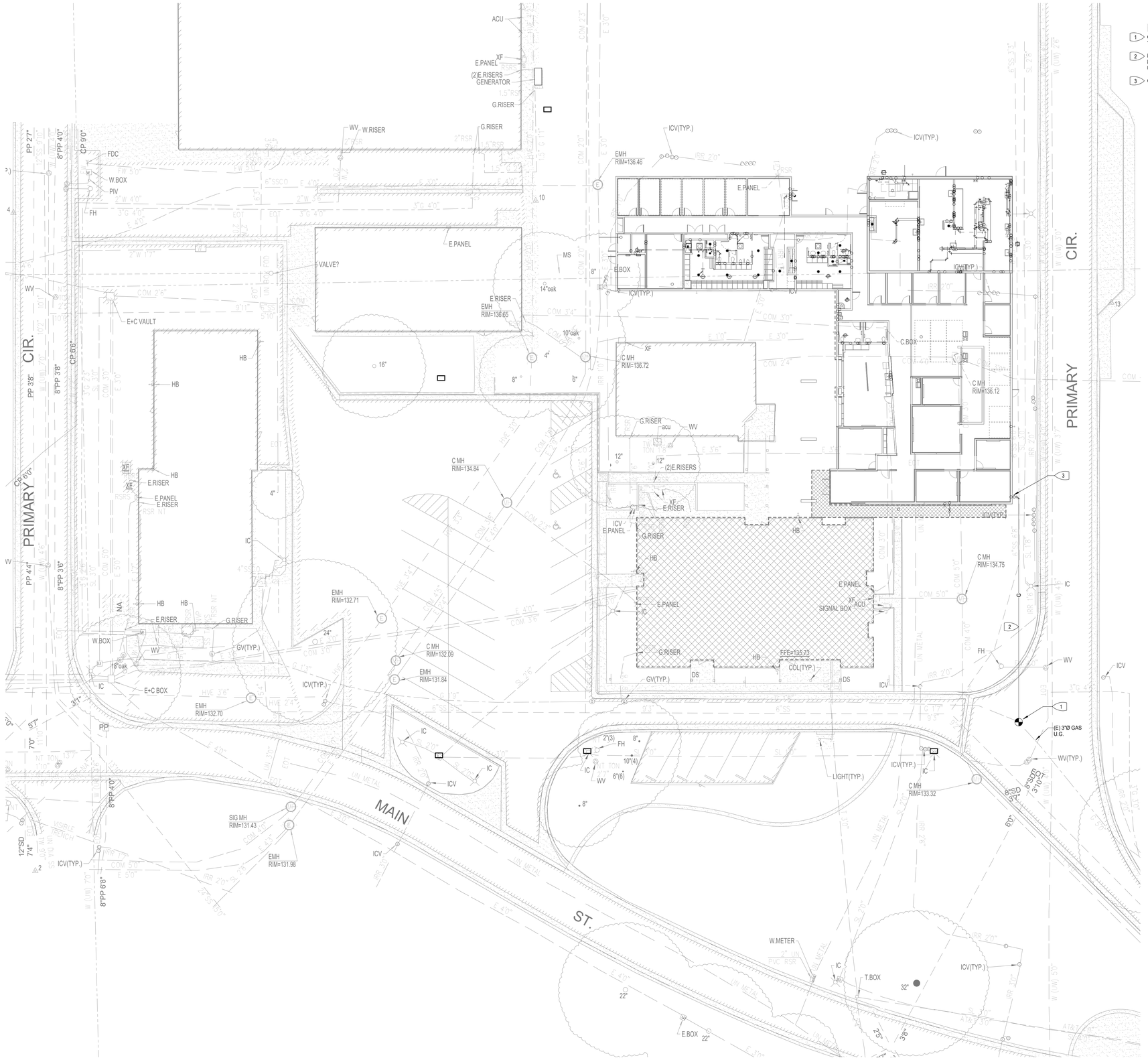
DATE PLOTTED: 9/16/2024 3:38:04 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\drwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

SHEET NOTES:

1. ALL EXISTING EQUIPMENT, PIPE ROUTING, VAVLES, ETC., SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DRAWINGS AND LIMITED SITE SURVEYS, AND SHOWN FOR CLARITY ONLY.

KEYED NOTES:

1. CONNECT NEW 3/4"Ø GAS POLYETHYLENE PIPE TO EXISTING. CONTRACTOR TO VERIFY EXACT POINT OF CONNECTION.
2. NEW UNDERGROUND NATURAL 3/4"Ø GAS POLYETHYLENE PIPE. LOCATE MINIMUM 24" BELOW SUBGRADE. COORDINATE WITH ALL NEW AND EXISTING UNDERGROUND UTLITIES. SEE SHEET **C3.1**.
3. GAS RISER AT BUILDING. SEE SHEET **P-202**.


PRIMARY CIR.
PRIMARY
MAIN ST.
ACU
E.PANEL
XF
(2)E.RISERS
GENERATOR
G.RISER
W.RISER
WV
FDC
W.BOX
PIV
FH
VALVE?
E+C VAULT
E.RISER
EMH RIM=136.65
MS
14"oak
10"oak
16"
HB
E.RISER
E.PANEL
G.RISER
EMH RIM=132.71
C.MH RIM=132.09
EMH RIM=131.84
EMH RIM=132.70
18"oak
E+C BOX
GV(TYP.)
ICV(TYP.)
ICV
IC
SIG MH RIM=131.43
EMH RIM=131.98
12"SD
8"PP 6'8"
8"PP 4'0"
8"PP 3'6"
8"PP 3'8"
CP 9'0"
CP 6'6"
PP 27'
PP 38'
PP 44'
EMH RIM=136.46
E.BOX
C.MH RIM=136.72
C.MH RIM=134.84
C.MH RIM=136.12
C.MH RIM=134.75
C.MH RIM=133.32
(2)E.RISERS
acu
SIGNAL BOX
ACU
FFE=135.73
COL(TYP.)
DS
LIGHT(TYP.)
W.METER
T.BOX
(E) 3"Ø GAS U.G.
WV(TYP.)
8"SD 3'1"
8"SD 3'10"
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SHEET NOTES:

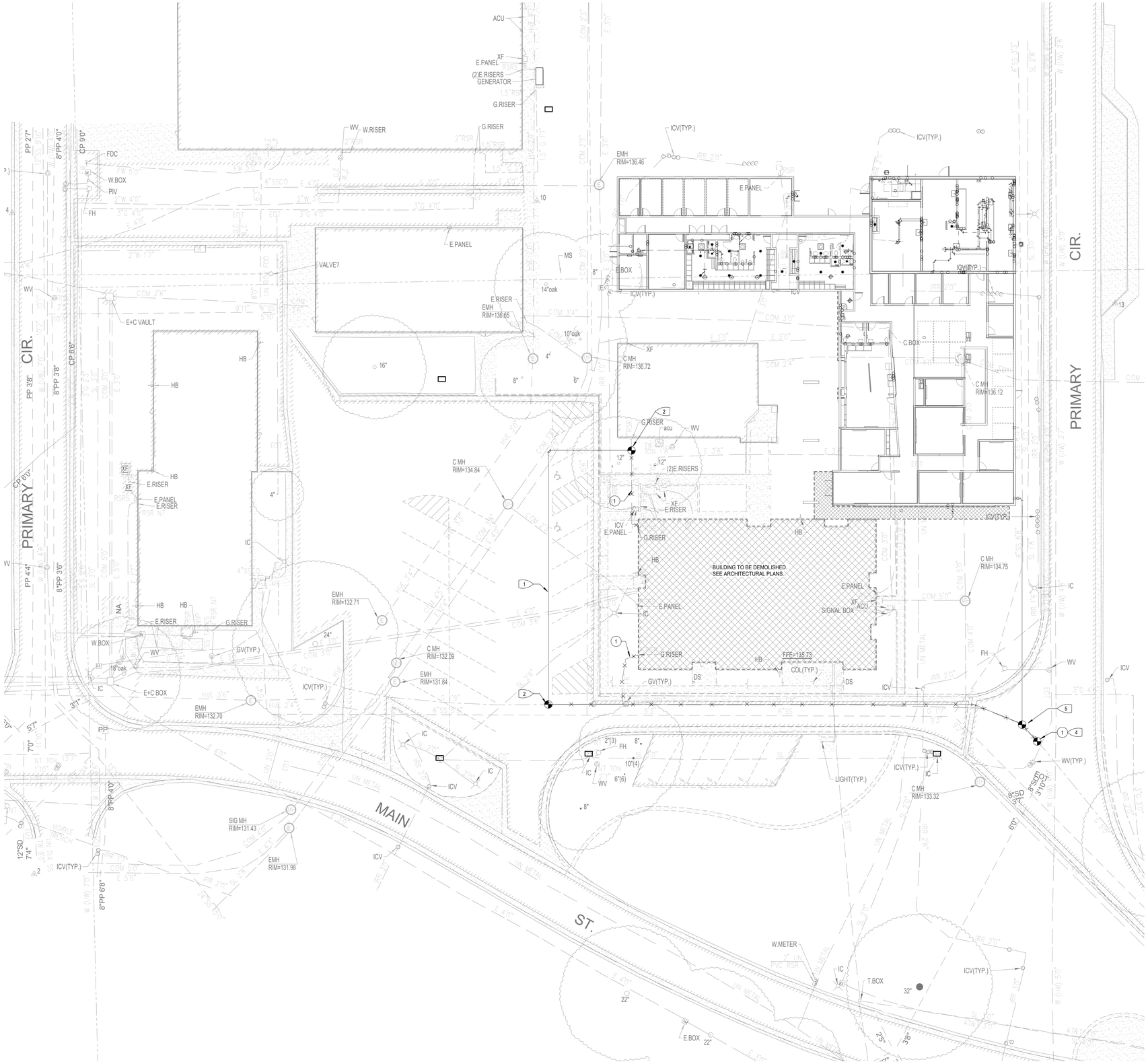
1. ALL EXISTING EQUIPMENT, PIPE ROUTING, VAVLES, ETC., SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DRAWINGS AND LIMITED SITE SURVEYS, AND SHOWN FOR CLARITY ONLY.
2. CONTRACTOR SHALL VEIFY EXISTING UNDERGROUND GAS PIPE MATERIAL AND CONTACT ENGINEER.

KEYED NOTES:

1. NEW 1"Ø GAS PIPE UNDERGROUND. LOCATE A MINIMUM 24" BELOW SUBGRADE. COORDINATE WITH ALL NEW AND EXISTING UNDERGROUND UTILITIES. SEE SHEET **C3.1**.
2. CONNECT NEW 1"Ø GAS PIPE TO EXISTING WITH SHUT-OFF VALVE AND VALVE BOX.
3. CONNECT NEW 1"Ø GAS PIPE TO EXISTING UNDERGOUND.
4. PROVIDE NEW 3"Ø UNDERGROUND GAS PIPE. LOCATE AT 24" BELOW SUBGRADE.
5. RECONNECT GAS PIPING FROM PHASE 1 TO NEW GAS PIPING IN PHASE 2.

DEMOLITION KEYED NOTES:

1. REMOVE EXISTING UNDERGROUND GAS PIPE AND ALL APPURTENENCES. INSTALL A NEW PIPE.



1 **SITE PLAN - PLUMBING PHASE 2**
1/16" = 1'-0"

DATE PLOTTED: 2/11/2025 1:47:47 PM FILE LOCATION: C:\Users\gsettles\Documents\23.020 Dry Creek WWTP MEP_r22_gsettles.rvt

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STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
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DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE PLAN - PLUMBING PHASE 2

DRAWN BY: Author JOB NUMBER: 210015.01

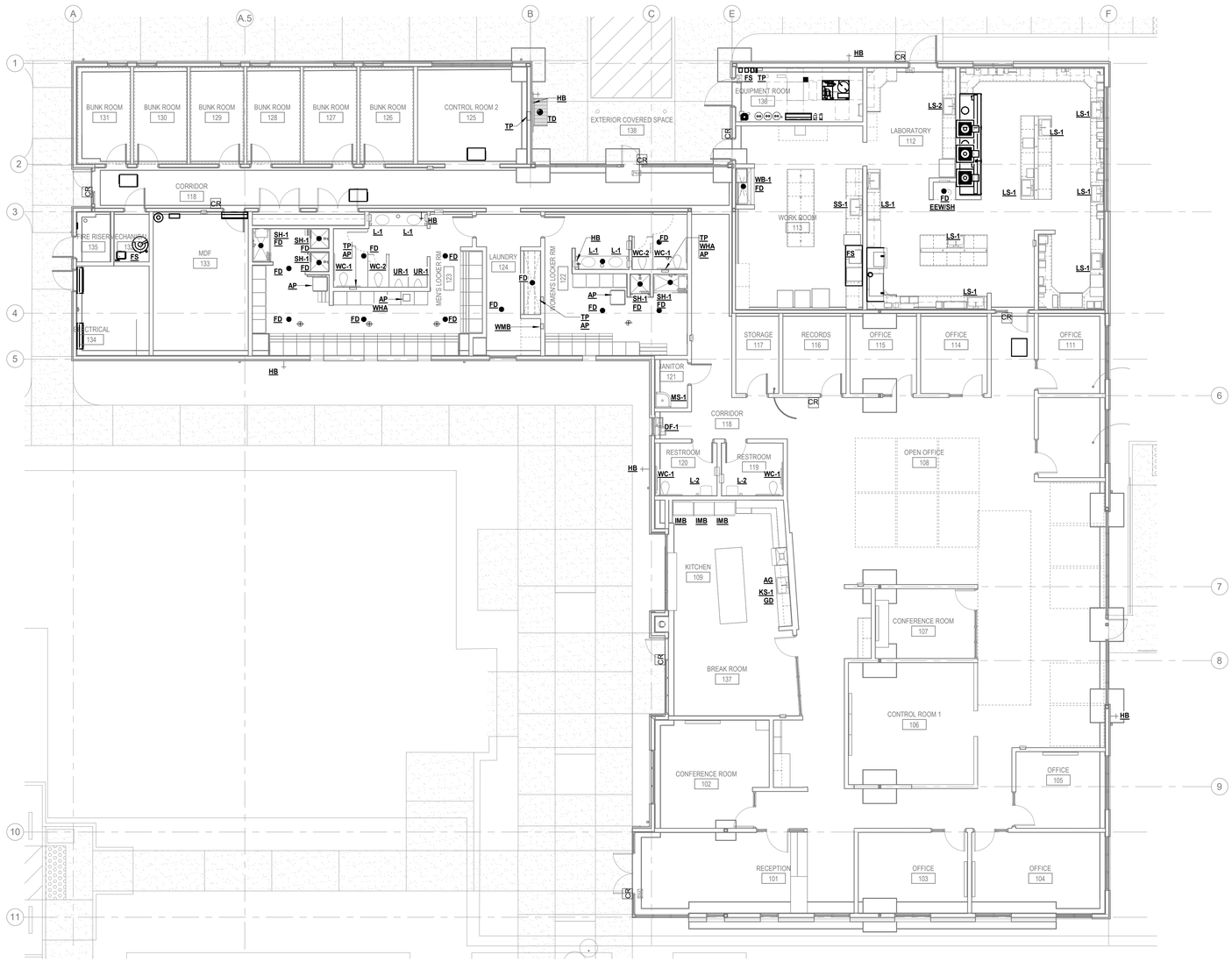
SHEET NO.
P-102

DATE: 4/24/18

BID SET (PRELIMINARY)

SHEET NOTES:

1. SEE SHEET **P-201** FOR WASTE AND VENT LAYOUT.
2. SEE SHEET **P-202** FOR WATER AND NATURAL GAS LAYOUT.
3. SEE ENLARGED SHEET **P-302** FOR AIR, VACUUM AND DI WATER LAYOUT.
4. FOR MODEL TYPES LISTED ON THIS SHEET REFER TO SHEET **P-002** ON THE PLUMBING SCHEDULES.



1 **FLOOR PLAN - PLUMBING FIXTURE IDENTIFICATION**
1/8" = 1'-0"

N

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ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
FLOOR PLAN - PLUMBING FIXTURE IDENTIFICATION

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
P-200

DATE: 4/24/18

DATE PLOTTED: 2/13/2025 3:14:21 PM FILE LOCATION: C:\Users\gsettles\Documents\23.020 Dry Creek WWTP MEP_r22_gsettles.rvt

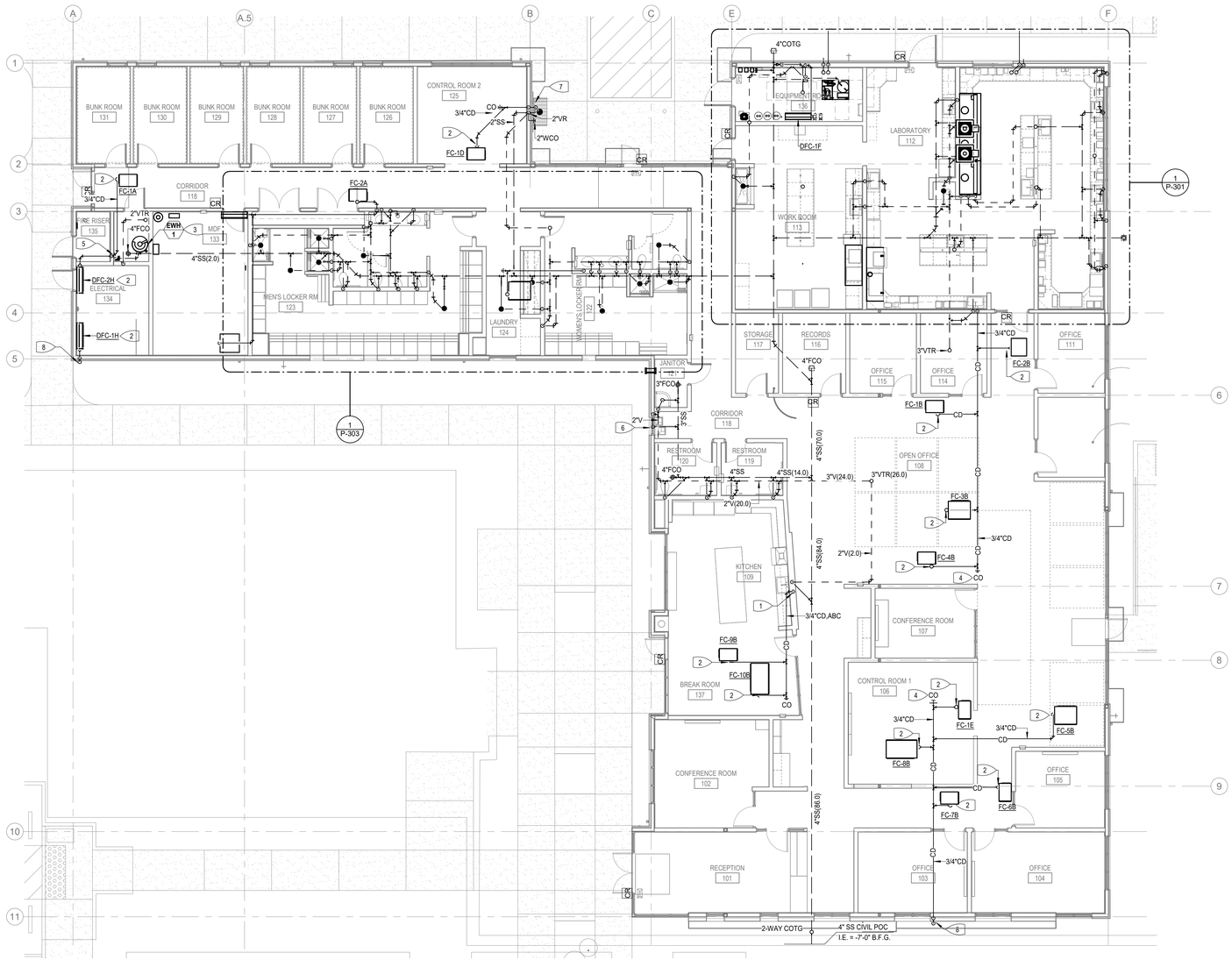
BID SET (PRELIMINARY)

SHEET NOTES:

1. RUN ALL WASTE AND VENT AT 1/4" PER FOOT SLOPE.
2. SEE SHEET **P-200** FOR FIXTURE IDENTIFICATION.
3. SEE SHEET **P-202** FOR WATER AND NATURAL GAS LAYOUT.
4. SEE ENLARGED SHEET **P-302** FOR AIR, VACUUM AND DI WATER LAYOUT.
5. FOR DETAILED NOTES NOT LISTED ON THIS SHEET REFER TO ENLARGED PLANS.

KEYED NOTES:

1. DROP 3/4"CD IN WALL TO SINK TAIL PIECE. SEE DETAIL **3/P-402**.
2. CONNECT 3/4"CD TO MECHANICAL EQUIPMENT WITH CLEANOUT. RISE CONDENSATE UP TIGHT TO STRUCTURE AND GRAVITY DRAIN TO DROP.
3. RUN T&PRV TO FLOOR SINK AND SPILL WITH 6" AIRGAP. RUN DRAIN LINE TO FLOOR SINK WITH 1" AIRGAP. SEE DETAIL **5/P-402**.
4. PROVIDE CLEANOUT ACCESSIBLE ABOVE T-BAR CEILING.
5. 3/4" CD TO RUN DOWN IN WALL, SPILL OVER FLOOR SINK WITH 1" AIRGAP.
6. 2"V TO RUN BELOW WINDOW AND ROUTE AS SHOWN. SEE DETAIL **7/P-400**.
7. 3/4"CD TO RUN DOWN IN WALL, DAYLIGHT 6" ABOVE MOP SINK WITH TURNED DOWN ELL, TERMINATE 1" ABOVE FLOODRIM OF MOP SINK.
8. DROP 3/4"CD IN WALL AND DAYLIGHT 6" ABOVE GRADE. SPILL OVER LANDSCAPE WITH 1" AIRGAP.



1 **FLOOR PLAN - PLUMBING WASTE & VENT**
1/8" = 1'-0"

N

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ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
FLOOR PLAN - PLUMBING WASTE & VENT

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
P-201

DATE: 4/24/18

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DATE PLOTTED: 9/16/2024 3:38:15 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\drwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

SHEET NOTES:

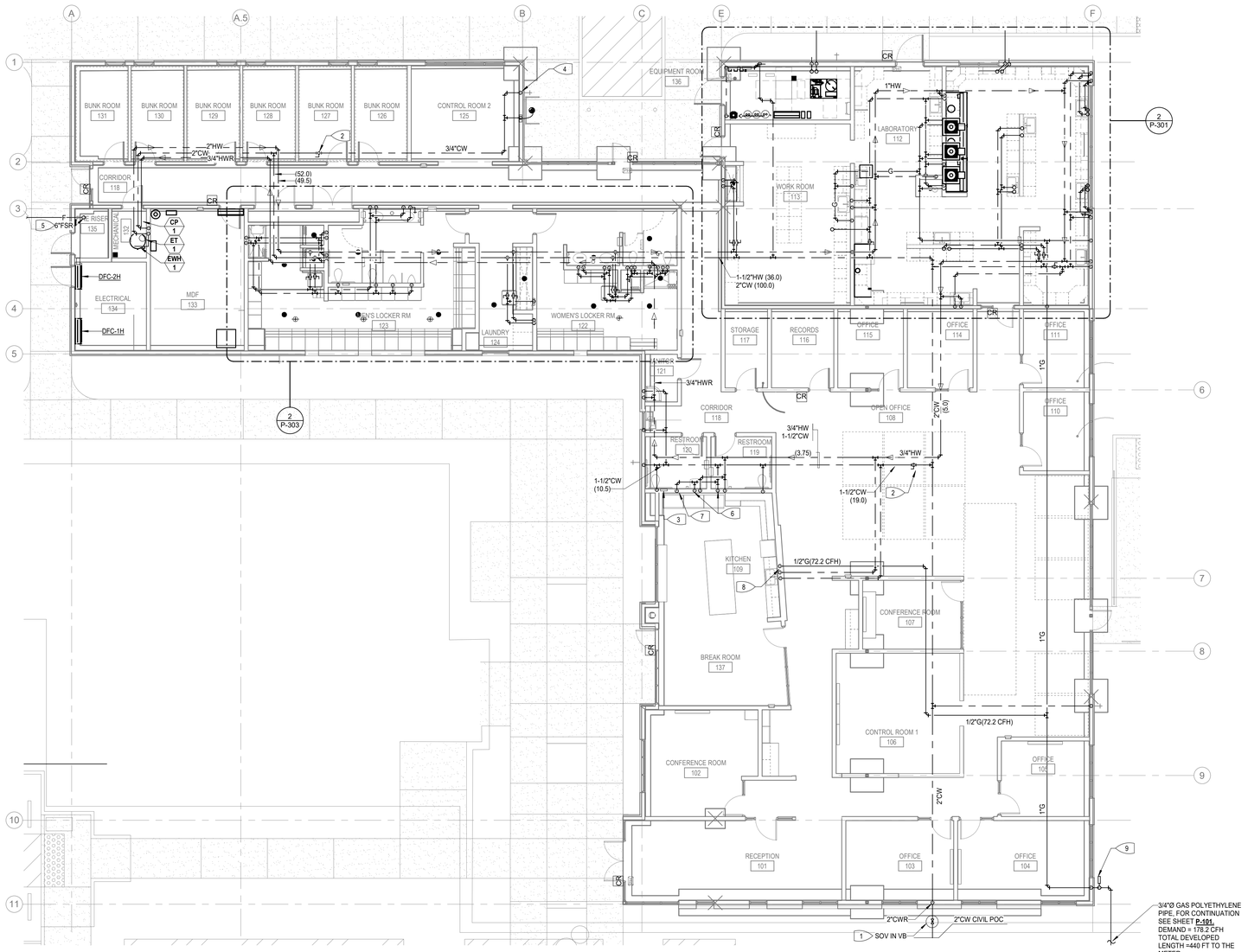
1. SEE SHEET **P-200** FOR FIXTURE IDENTIFICATION.
2. SEE SHEET **P-201** FOR WASTE AND VENT LAYOUT.
3. SEE ENLARGED SHEET **P-302** FOR AIR, VACUUM AND DI WATER LAYOUT.
4. FOR DETAILED NOTES NOT LISTED ON THIS SHEET REFER TO ENLARGED PLANS.
5. NUMBERS LISTED ON THE PLANS IN PARENTHESIS ARE WATER FIXTURE UNIT VALUES.

KEYED NOTES:

1. PROVIDE PRESSURE REDUCING VALVE IN VALVE BOX AND SET TO 75 PSI.
2. PROVIDE LINE SIZED ISOLATION BALL VALVE ACCESSIBLE ABOVE THE T-BAR CEILING.
3. PROVIDE WATER HAMMER ARRESTOR BEHIND 12" X 16" WALL ACCESS PANEL. MOUNT PANEL BELOW GRAB BAR. PROVIDE WITH ISOLATION BALL VALVE.
4. DROP 3/4"Ø COLD WATER DOWN WALL TO EXTERIOR HOSE BIB. TEE 1/2" COLD WATER LINE TO TRAP PRIMER LOCATION AND RUN TRAP PRIMER LINE TO TRENCH DRAIN. MOUNT HOSE BIB AT 30" A.F.G.
5. REFER TO FIRE SPRINKLER PLANS FOR FIRE SPRINKLER RISER LOCATION.
6. DROP 1/2"Ø CW TO FEED LAVATORY AND ICE MAKER BOX FOR REFRIGERATORS. LOCATE IMB AT 24" ABOVE FINISHED FLOOR.
7. DROP 1/2"Ø CW TO ICE MAKER BOX FOR REFRIGERATORS. LOCATE IMB AT 24" ABOVE FINISHED FLOOR.
8. DROP 1/2"Ø GAS DOWN IN WALL TO 12" ABOVE FINISHED FLOOR. PROVIDE 1/2" SHUT OFF VALVE AND FLEX PIPE FOR FUTURE CONNECTION TO GAS BURNER. TERMINATE WITH MALE PIPE THREAD FOR CONNECTION TO APPLIANCE PRESSURE REGULATOR.
9. 1"Ø GAS RISER WITH GAS PRESSURE REGULATOR FROM 9.5 PSI TO 7" W.C. INSIDE THE BUILDING.

GAS LOAD:

RANGE/STOVE = 72.2 MBH
BUNSEN BURNES = 4 MBH EACH (4 TOTAL)
FUME HOOD = 30 MBH EACH (3 TOTAL)
TOTAL MBH = **178.2 MBH**
TOTAL DEVELOPED LENGTH FROM GAS REGULATOR= 220 FEET
2022 CPC TABLE 1215.2
LESS THAN 2 PSI, PRESSURE DROP 0.5 IN W.C.



1 **FLOOR PLAN - PLUMBING WATER & GAS**
1/8" = 1'-0"

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311 VERNON ST
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Roseville, CA 95747

SHEET TITLE
FLOOR PLAN - PLUMBING WATER & GAS

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
P-202

DATE: 4/24/18

N

CONSTRUCTION DOCUMENTS

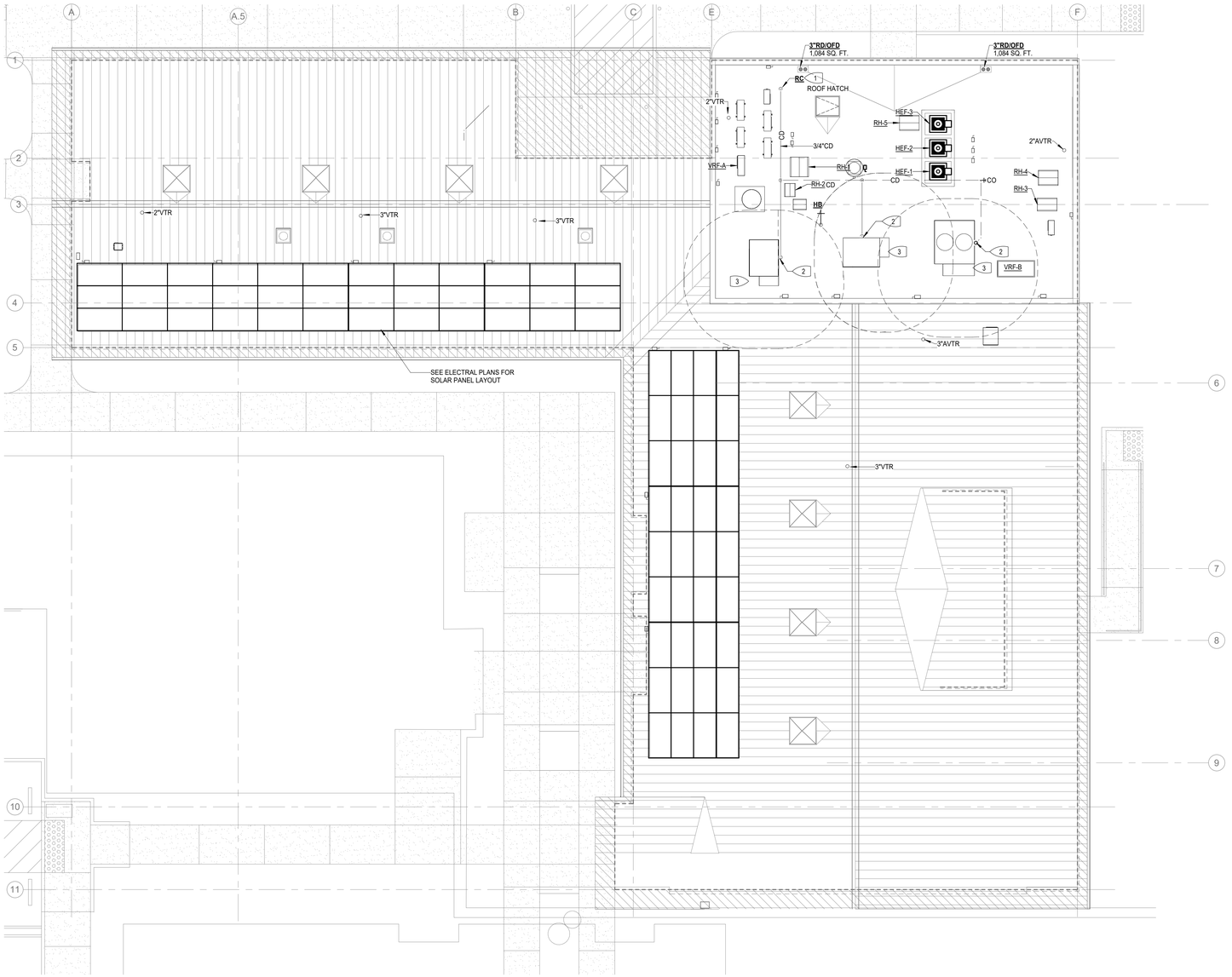
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SHEET NOTES:

1. LOCATE VENT MINIMUM OF 10' FROM AIR INTAKE.

KEYED NOTES:

1. DROP 3/4"CONDENSATE DOWN ROOF CEPTOR INTO CEILING SPACE. SEE SHEET **P-301** FOR CONTINUTAION.
2. CONNECT 3/4" CONDENSATE TO MECHANICAL EQUIPMENT WITH P-TRAP AND CLEANOUT. SEE DETAIL **4/P-402**.
3. MAINTAIN 10' CLEARANCE FOR OUTSIDE AIR INTAKE OF ALL VTR LOCATIONS.



1 **ROOF PLAN - PLUMBING**
1/8" = 1'-0"

N

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SHEET TITLE

ROOF PLAN - PLUMBING

DRAWN BY: Author JOB NUMBER: 210015.01

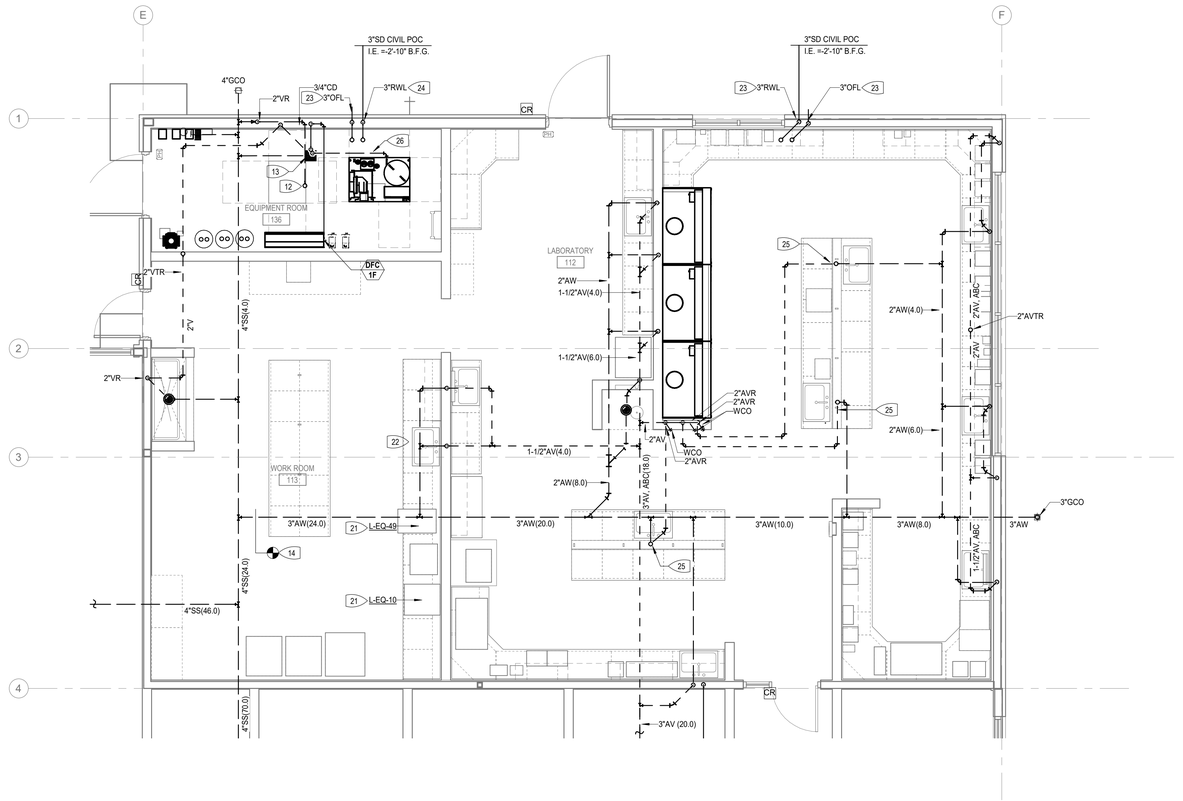
SHEET NO.

P-221

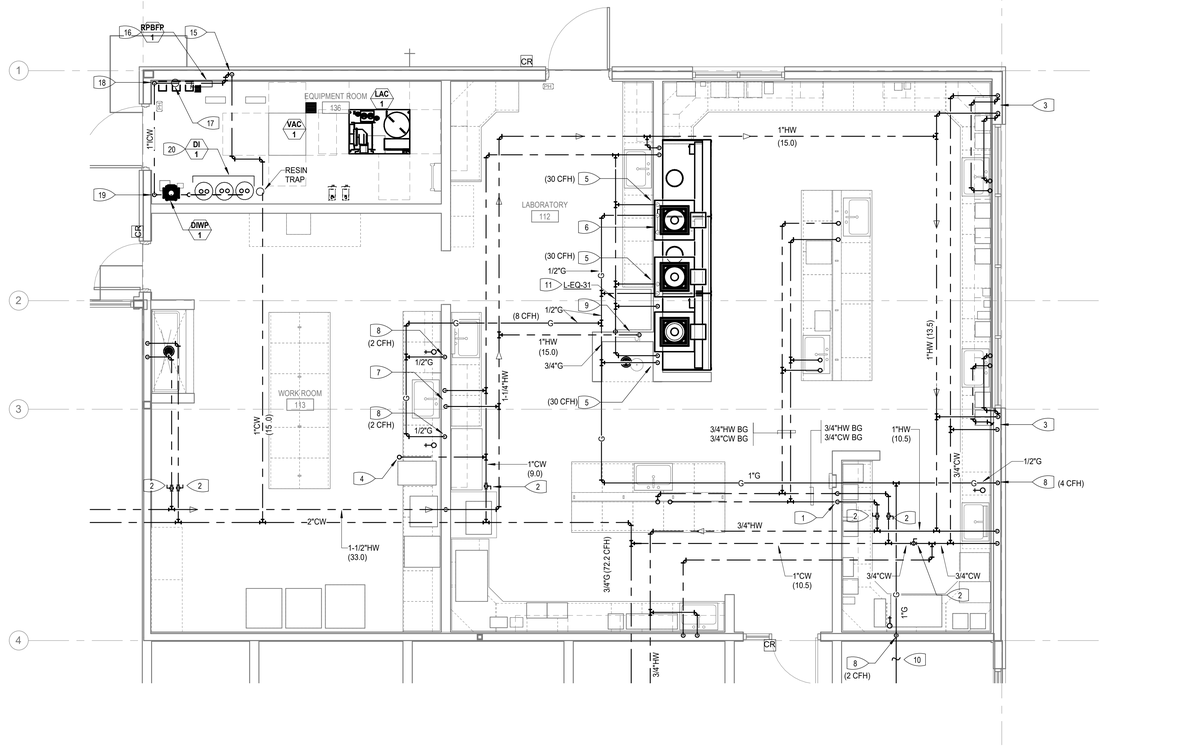
DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 9/16/2024 3:38:22 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\drwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt



1 **ENLARGED LAB PLAN - WASTE & VENT**
1/4" = 1'-0"



2 **ENLARGED LAB PLAN - WATER & GAS**
1/4" = 1'-0"

SHEET NOTES:

1. RUN ALL WASTE AND VENT AT 1/4" PER FOOT SLOPE.
2. SEE SHEET **P-200** FOR FIXTURE IDENTIFICATION.
3. SEE OVERALL PLANS **P-201** AND **P-202** FOR CONTINUATION OF PIPING LAYOUT.
4. SEE SHEET **P-302** FOR AIR, VACUUM AND DI WATER LAYOUT.
5. NUMBERS LISTED ON THE PLANS IN PARENTHESIS ARE WATER FIXTURE UNIT VALUES. UNLESS NOTED OTHERWISE IN THE CASE OF NATURAL GAS.
6. ALL LAB EQUIPMNET IS PROVIDED BY OTHERS. FOR EQUIPMENT LAYOUT AND LIST REFER TO ARCHITECTURAL PLANS.

KEYED NOTES:

1. DROP 1"Ø HOT AND COLD WATER DOWN WALL TO BELOW FLOOR AND RUN TO SERVE THE LAB SINKS SHOWN.
2. PROVIDE LINE SIZED ISOLATION BALL VALVE ACCESSIBLE ABOVE THE T-BAR CEILING.
3. DROP 3/4"Ø HOT AND COLD WATER DOWN WALL AND RUN HORIZONTALLY BELOW THE WINDOW TIGHT TO THE BACK OF THE CABINET TO SERVE THE LAB SINK. PIPING TO THE SINK IS SHOWN OFFSET FOR CLARITY.
4. 3/4"Ø COLD WATER RISER TO ROOF HOSE BIBB.
5. 1/2"Ø COLD WATER DROP AND 1/2"Ø GAS DROP DOWN TO FUME HOOD. PROVIDE END OF LINE WATER CONNECTION WITH SOV. CONNECT GAS TO OUTLET AT THE FUME HOOD
6. DROP 1/2"Ø GAS LINE DOWN WALL AND PROVIDE EMERGENCY GAS SHUT OFF VALVE BEHIND ACCESS PANEL AND RISE GAS BACK UP TO CEILING SPACE TO FEED EACH OUTLET SHOWN ON PLANS. FOR DETAIL SEE **3/P-400**.
7. DROP 3/4"Ø HOT AND COLD WATER DOWN WALL AND TEE TO FEED EACH BACK TO BACK SINK.
8. DROP 1/2"Ø GAS DOWN WALL AND RUN TO GAS OUTLET TURRET AT THE DECK.
9. DROP 3/4"Ø HOT AND COLD WATER DOWN WALL AND RUN THROUGH THE THERMOSTATIC MIXING VALVE AND RUN TO THE EMERGENCY EYE WASH AND EMERGENCY SHOWER. SEE DETAIL **6/P-400**.
10. FOR CONTINUATION SEE SHEET **P-202.**
11. DROP 1/2"Ø COLD WATER DOWN WALL AND STUB EXPOSED BEHIND EQUIPMENT. PROVIDE 6' MINIMUM OF COILED COPPER TUBING, TO ALLOW FOR EQUIPMENT TO MOVE AWAY FROM WALL. PROVIDE WITH SHUT OFF VALVE AND 1/4"Ø COMPRESSION FITTING FOR CONNECTION TO ICE MAKER.
12. 3/4"Ø CONDENSATE DROP FROM MECHANICAL EQUIPMENT ON ROOF. ROUTE TIGHT TO UNDERSIDE OF STRUCTURE AND GRAVITY DRAIN TO DROP.
13. SPILL 3/4"Ø CONDENSATE, **LAC-1** DRAINAGE, AND **VAC-1** DRAINAGE OVER FLOOR SINK WITH 1" AIRGAP.
14. CONNECT 3"Ø ACID WASTE TO 4"Ø SANITARY SEWER.
15. DROP 1"Ø CW DOWN WALL AND DAYLIGHT TO EQUIPMENT ROOM TO RUN THROUGH **RPBFP/1**. FOR PIPE SUPPORT ON WALL SEE DETAIL **5/P-401**.
16. DROP AND RUN DRAIN FROM **RPBFP/1** TO FLOOR SINK WITH 1" AIRGAP. FOR PIPING DIAGRAM WITH VALVES SEE DETAIL **4/P-401.**
17. 1 MICRON DI WATER PRE-FILTER FOR DI WATER SYSTEM. FOR PIPING DIAGRAM REFER TO DETAIL **4/P-401**.
18. RISE 1"Ø ICW HIGH ON WALL AND RUN OVER DOORWAY AS SHOWN. FOR PIPE SUPPORT ON WALL SEE DETAIL **5/P-401**.
19. DROP 1"Ø ICW DOWN WALL AND RUN TO DIP/1. FOR PIPING DETAIL SEE **4/P-401**. FOR PIPE SUPPORT ON WALL SEE DETAIL **5/P-401**.
20. DI PIPING IS SHOWN ON ENLARGED PLAN SHEET **P-302**. THIS SHEET SHOWS DOMESTIC COLD WATER PIPING ONLY. FOR CONTINUATION OF WATER PIPING, DI WATER, REFER TO REFERENCED SHEET.
21. MOUNT DRAIN TIGHT TO WALL AND ROUTE TO SINK.
22. CONNECT DRAIN FROM **L-EQ-10** AND **L-EQ-49** TO SINK TAILBIECE. SEE DETAIL **3/P402**
23. PROVIDE **DSN** AT OVERFLOW TERMINATION POINT. REFER TO ARCHITECTURAL PLANS FOR OVERFLOW SPOUT LOCATION.
24. 3"Ø RAIN WATER LEADER TO DROP IN WALL TO BELOW GRADE. RUN AT 1/4" PER FOOT SLOPE. REFER TO CIVIL PLANS FOR POINT OF CONNECTION.
25. 2"Ø AV FROM ISLAND SINKS DROP TO BELOW GRADE AND ROUTE TO RISER LOCATION. SEE DETAIL **7/P-400**.
26. ROUTE DRAIN FROM AIR COMPRESSOR AT 1/4" PER FOOT TO FLOOR SINK WITH 1" AIRGAP.

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SHEET TITLE
ENLARGED LAB WATER & WASTE PLANS

DRAWN BY: Author JOB NUMBER: 210015.01

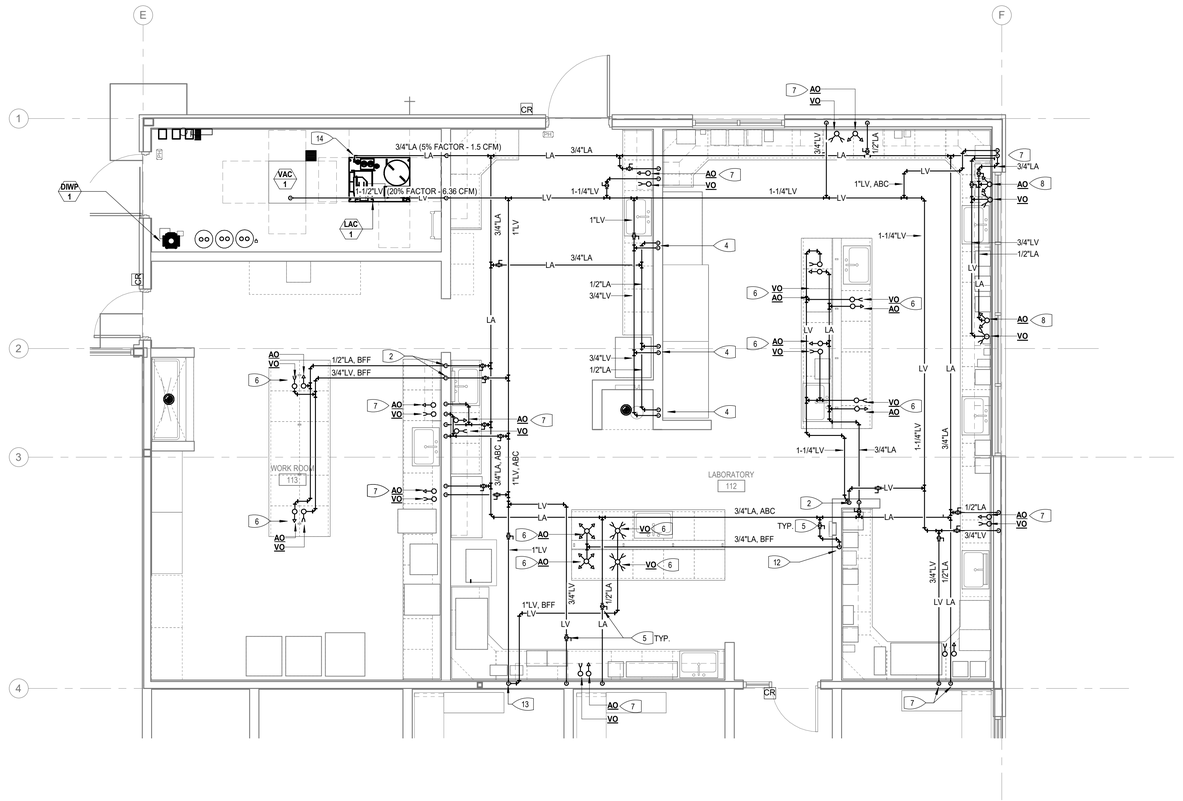
SHEET NO.
P-301

DATE: 4/24/18

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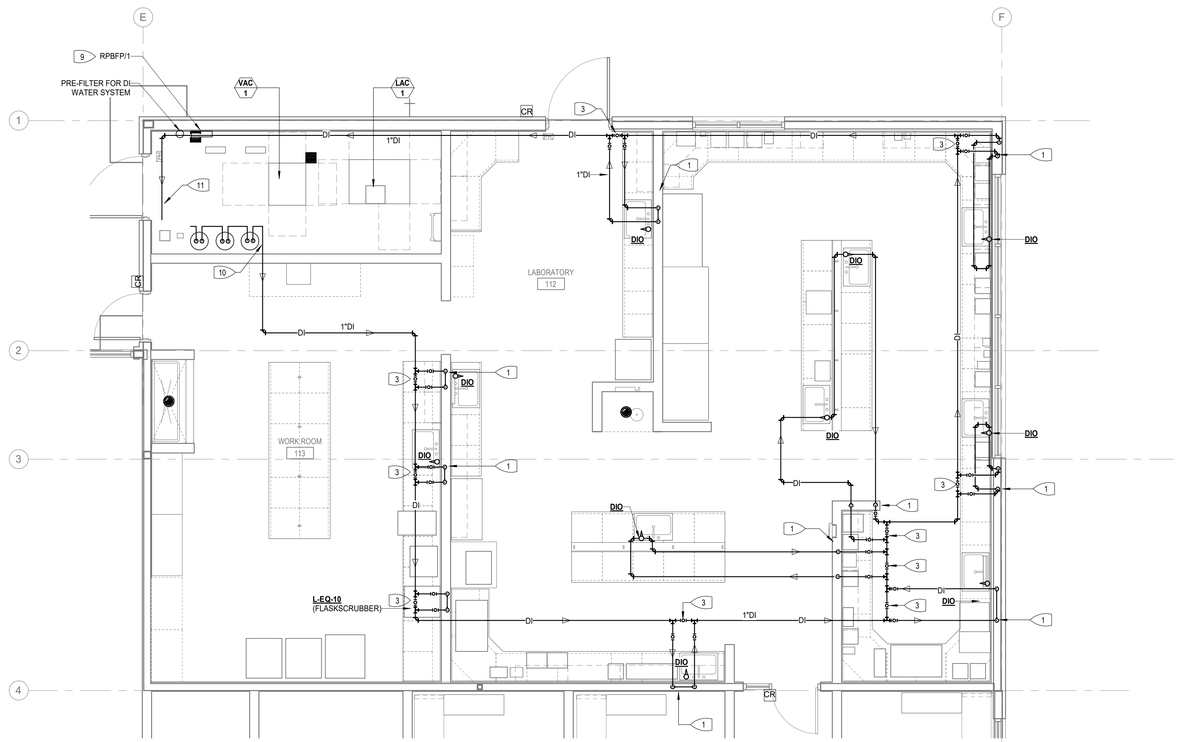
CONSTRUCTION DOCUMENTS

DATE PLOTTED: 2/20/2025 9:45:50 AM FILE LOCATION: C:\Users\gsettles\Documents\23.020 Dry Creek WWTP MEP _r22_gsettles.rvt



1 ENLARGED LAB PLAN - VAC & AIR

1/4" = 1'-0"



2 ENLARGED LAB PLAN - DI WATER

1/4" = 1'-0"

SHEET NOTES:

1. SEE SHEET **P-200** FOR FIXTURE IDENTIFICATION.
2. SEE OVERALL PLAN **P-202** FOR CONTINUATION OF PIPING LAYOUT.
4. SEE SHEET **P-301** FOR WATER, WASTE AND VENT LAYOUT.
5. VACUUM LINE SIZING IS PER 2022 CPC TABLE 1323.1.4(6).

KEYED NOTES:

1. DROP A 1"DI WATER LOOP DOWN TO SINK AND RISE BACK UP WITH SHUT OFF VALVES AND BYPASS. CONNECT DI TO DI FAUCET AT COUNTER. TYPICAL.
2. DROP LA AND LV TO BELOW GRADE.
3. LINE-SIZE BYPASS VALVES ON DI WATER LOOP TO BE ACCESSIBLE ABOVE T-BAR CEILING. BYPASS VALVE TO REMAIN CLOSED.
4. 1/2" LA AND 3/4" LV DOWN IN WALL TO FUME HOOD. PROVIDE LINE-SIZE ISOLATION VALVES ACCESSIBLE BEHIND ACCESS PLATE ON THE HOOD. CONNECT VACUUM AND AIR TO CONTROLLED SERVICE FIXTURE VALVE WITH QUICK RELEASE FOR CONNECTION TO HOOD.
5. PROVIDE LINE-SIZE BYPASS VALVE ACCESSIBLE ABOVE T-BAR CEILING, TYP.
6. LA AND LV TO RISE ABOVE GRADE AND CONNECT TO THE OUTLETS ON THE COUNTERS. SEE PLANS FOR SIZING.
7. DROP LA AND LV IN WALL TO ROUTE BELOW THE COUNTERS. SEE PLANS FOR SIZING.
8. LA AND LV TO RISE TO CONNECT TO OUTLETS ON THE COUNTER.
9. FOR DOMESTIC COLD WATER SUPPLY FEEDING THE BACKFLOW PREVENTER AND THE DI WATER PRE-FILTER REFER TO ENLARGED DOMESTIC WATER PLAN **2/P-301**. AND FOR PIPING RELATED TO THE DI WATER SYSTEM REFER TO DETAIL **4/P-401**.
10. DI WATER SUPPLY TO LAB AREA.
11. DI WATER RETURN. REFER TO DETAIL **4/P-401** FOR VALVES AND CONNECTION POINT.
12. LA TO DROP BELOW GRADE. SEE PLANS FOR SIZING.
13. LV TO DROP BELOW GRADE. SEE PLANS FOR SIZING.
14. DROP 3/4" LA TO 3'-2-3/4" ABOVE FINISHED FLOOR WITH LINE-SIZED SOV. TERMINATE WITH SOUTH FACING ELL 3/4"NPT MALE ADAPTER FOR CONNECTION TO AIR COMPRESSOR.

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2237 DOUGLAS BLVD, SUITE 160
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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER
EVAN R. TICHENOR
EXP. 12/31/25
MECHANICAL
STATE OF CALIFORNIA

REVISIONS

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
ENLARGED LAB DI WATER, AIR AND VAC PLANS

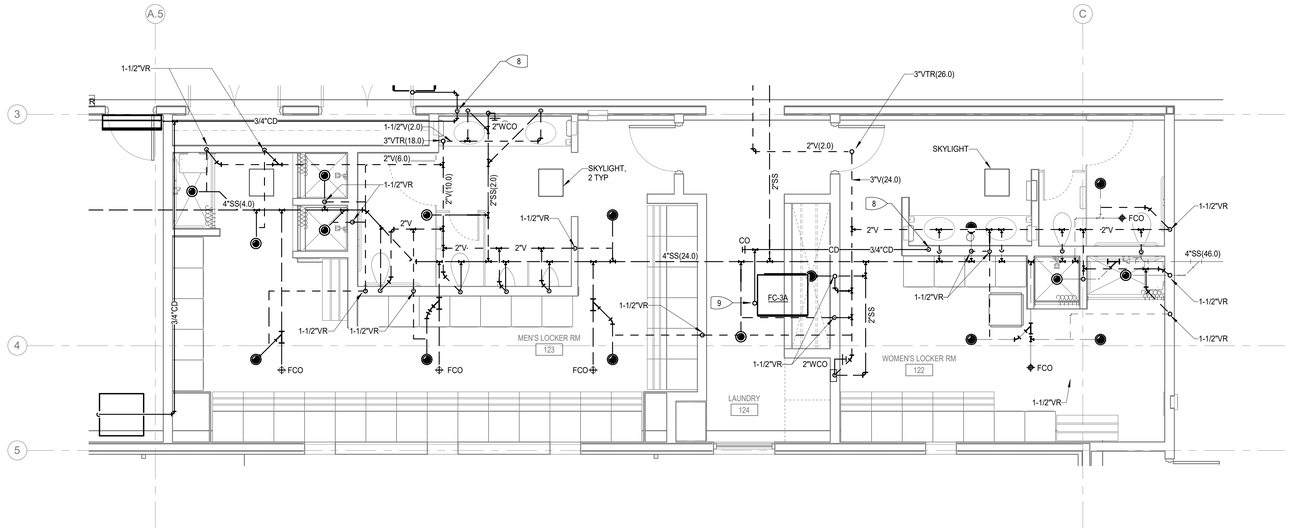
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SHEET NO.
P-302

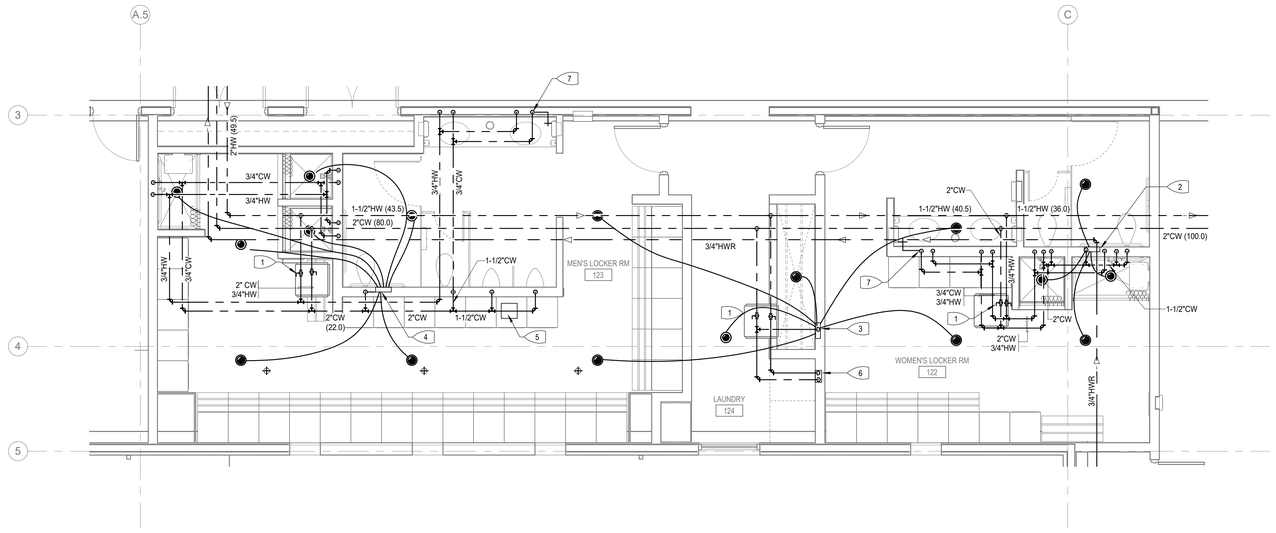
DATE: 4/24/18

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DATE PLOTTED: 9/16/2024 3:38:31 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\dwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt



1 **ENLARGED FLOOR PLAN - PLUMBING WASTE & VENT**
1/4" = 1'-0"



2 **ENLARGED FLOOR PLAN - PLUMBING WATER & GAS**
1/4" = 1'-0"

SHEET NOTES:

1. RUN ALL WASTE AND VENT AT 1/4" PER FOOT SLOPE.
2. SEE SHEET **P-200** FOR FIXTURE IDENTIFICATION.
3. SEE OVERALL PLANS **P-201** AND **P-202** FOR CONTINUATION OF PIPING LAYOUT.
4. NUMBERS LISTED ON THE PLANS IN PARENTHESIS ARE WATER OR WASTE FIXTURE UNIT VALUES.

KEYED NOTES:

1. PROVIDE LINE SIZED ISOLATION BALL VALVE ACCESSIBLE ABOVE 24" X 24" CEILING ACCESS PANEL.
2. PROVIDE TRAP PRIMER AND WATER HAMMER ARRESTOR BEHIND 12" X 16" WALL ACCESS PANEL. MOUNT PANEL BELOW GRAB BAR. MAINTAIN 12" A.F.F. FOR THE TRAP PRIMER LOCATION PER CODE. RUN TO FLOOR DRAINS SHOWN ON PLAN. SEE DETAIL **5/P-400**.
3. PROVIDE TRAP PRIMER BEHIND 12" X 16" WALL ACCESS PANEL. MOUNT PANEL ABOVE LAUNDRY FOLDING TABLE. RUN TO FLOOR DRAINS SHOWN ON PLANS. SEE DETAIL **2/P-401**.
4. PROVIDE TRAP PRIMER BEHIND 12" X 16" WALL ACCESS PANEL. MOUNT PANEL BELOW GRAB BAR. MAINTAIN 12" A.F.F. FOR THE TRAP PRIMER LOCATION PER CODE. RUN TO FLOOR DRAINS SHOWN ON PLAN. SEE DETAIL **2/P-401**.
5. PROVIDE WATER HAMMER ARRESTOR ABOVE 14" X 14" CEILING ACCESS PANEL. PROVIDE WITH ISOLATION BALL VALVE.
6. DROP 3/4" HOT AND COLD WATER DOWN WALL AND RUN TO WASHING MACHINE BOX. MAKE FINAL CONNECTION TO CLOTHES WASHER.
7. DROP 3/4" COLD WATER DOWN WALL FOR LAVATORY CONNECTION AND TEE 3/4" IN WALL FOR HOSE BIBB BELOW LAV COUNTER.
8. DROP 3/4"CONDENSATE IN WALL TO SINK TAIL PIECE. SEE DETAIL **3/P-402**.
9. CONNECT 3/4"CONDENSATE TO MECHANICAL EQUIPMENT WITH CLEANOUT. RISE CONDENSATE UP TIGHT TO STRUCTURE AND GRAVITY DRAIN TO DROP.

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ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
ENLARGED LOCKER ROOM PLANS

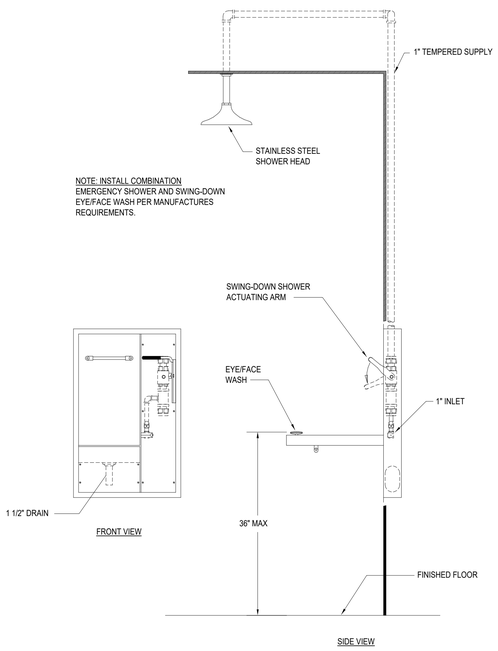
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SHEET NO.
P-303

DATE: 4/24/18

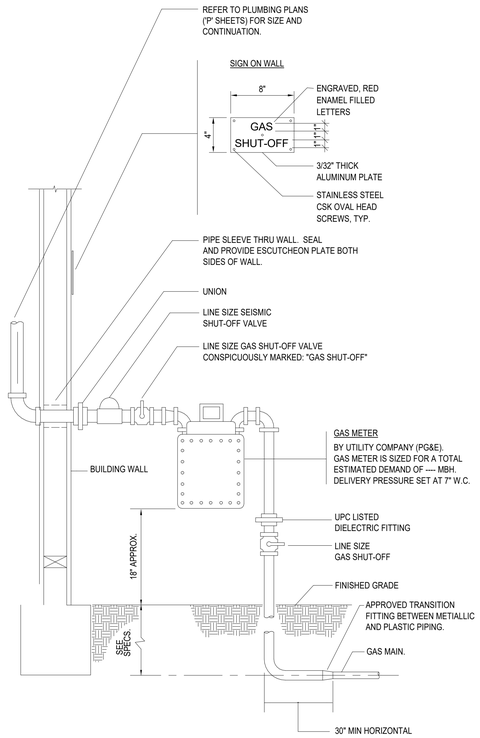
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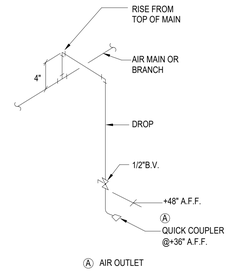
6 BARRIER-FREE COMBINATION EMERGENCY SHOWER AND SWING-DOWN EYE/FACE WASH

SCALE: NONE



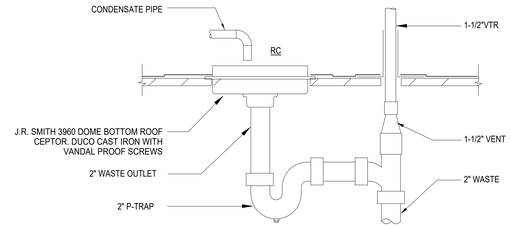
4 GAS METER DETAIL

SCALE: NONE



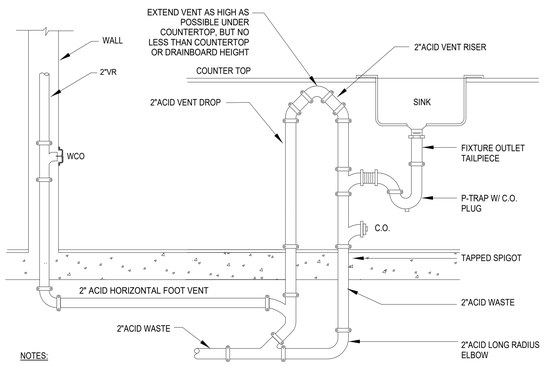
1 COMPRESSED AIR DROP

SCALE: NONE



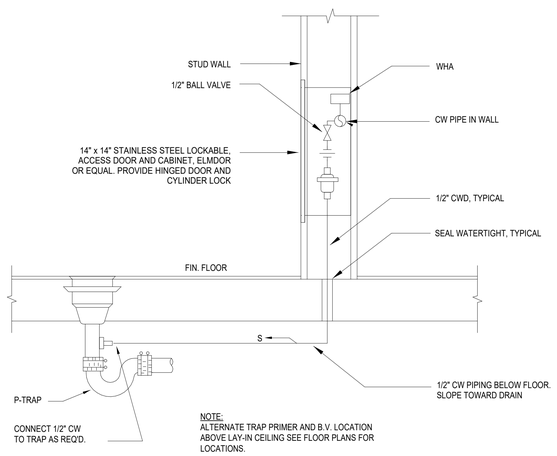
2 ROOF CEPTOR

SCALE: NONE



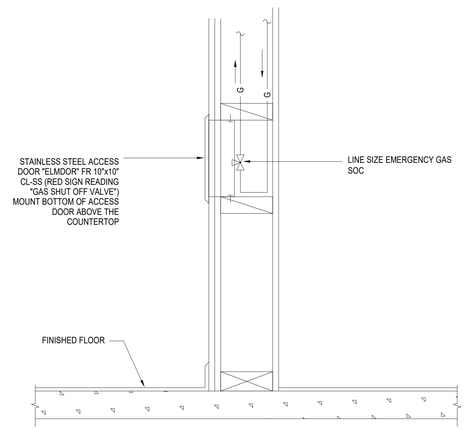
7 ISLAND VENT

SCALE: NONE



5 TRAP PRIMER/WATER HAMMER ARRESTOR DETAIL

SCALE: NONE



3 EMERGENCY GAS SOC DETAIL

SCALE: NONE

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PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG

1800 Booth Road
Roseville, CA 95747

SHEET TITLE

DETAILS

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

P-400

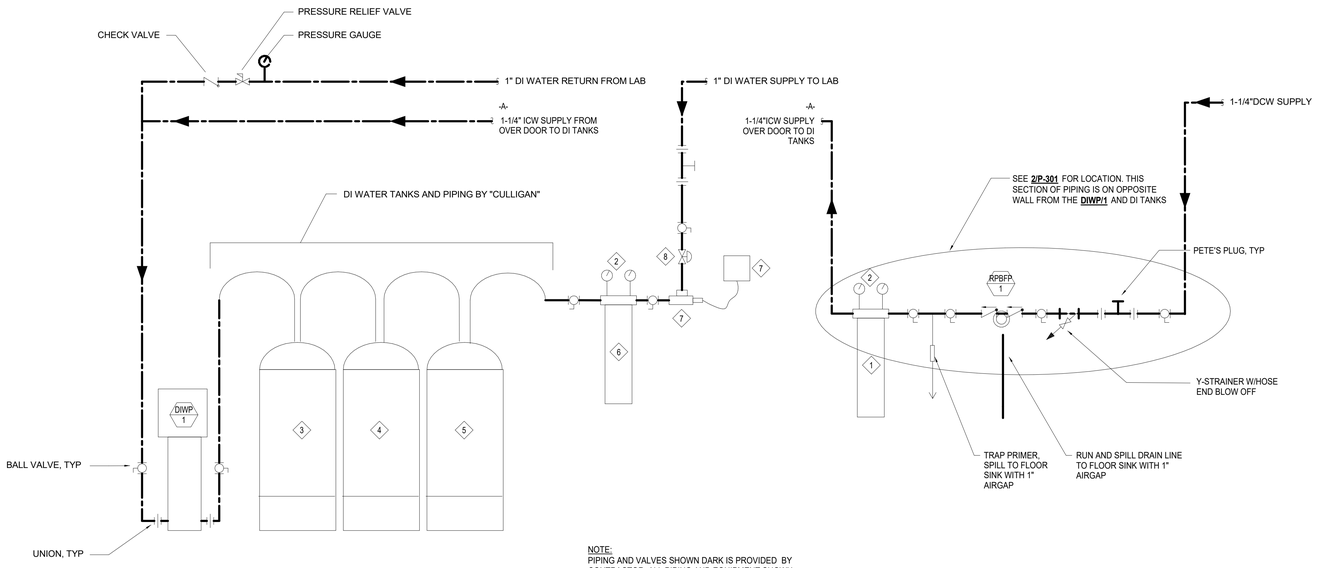
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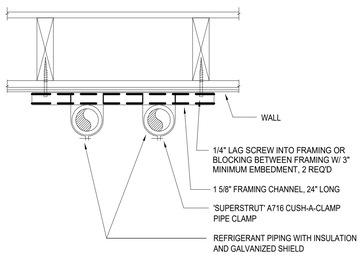
PROVIDED BY:
CULLIGAN

LABEL	DESCRIPTION
1	PRE-FILTER ASSEMBLY, 1 MICRON
2	PRESSURE GAUGES, STAINLESS STEEL
3	CATION RESIN TANK, 14" X 48"
4	ANION RESIN TANK, 14" X 48"
5	MIXED BED POLISHER TANK, 14" X 48"
6	FILTER ASSEMBLY, RESIN TRAP
7	MONITOR, WATER QUALITY
8	FLOW CONTROL, 15 GPM



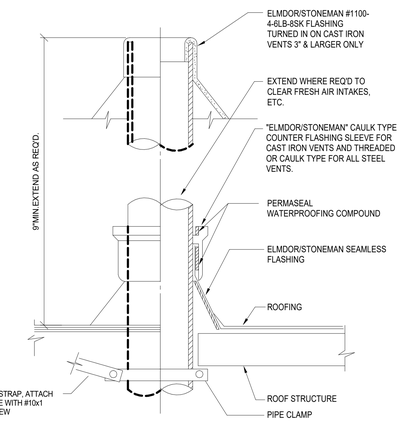
NOTE:
PIPING AND VALVES SHOWN DARK IS PROVIDED BY CONTRACTOR, ALL PIPING AND EQUIPMENT SHOWN LIGHT IN COLOR IS PER "CULLIGAN". FOR CONTACT SEE EQUIPMENT PLANS SHEET P-002.

4 DI WATER PIPING DIAGRAM
SCALE: NONE

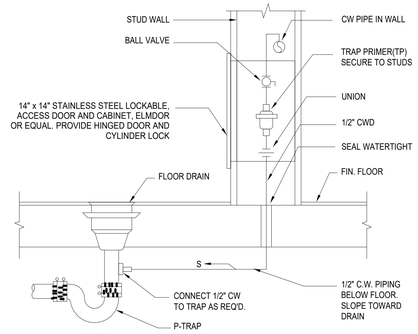


NOTES:
1. SUPPORT AT ALL CHANGES IN DIRECTION.
2. VERTICAL PIPE SUPPORT SHALL BE SPACED MAX. 4'-0" O.C.
3. HORIZONTAL PIPE SUPPORT SHALL BE SPACED MAX. 8'-0" O.C.

5 PIPE SUPPORT ON WOOD WALL
SCALE: NONE



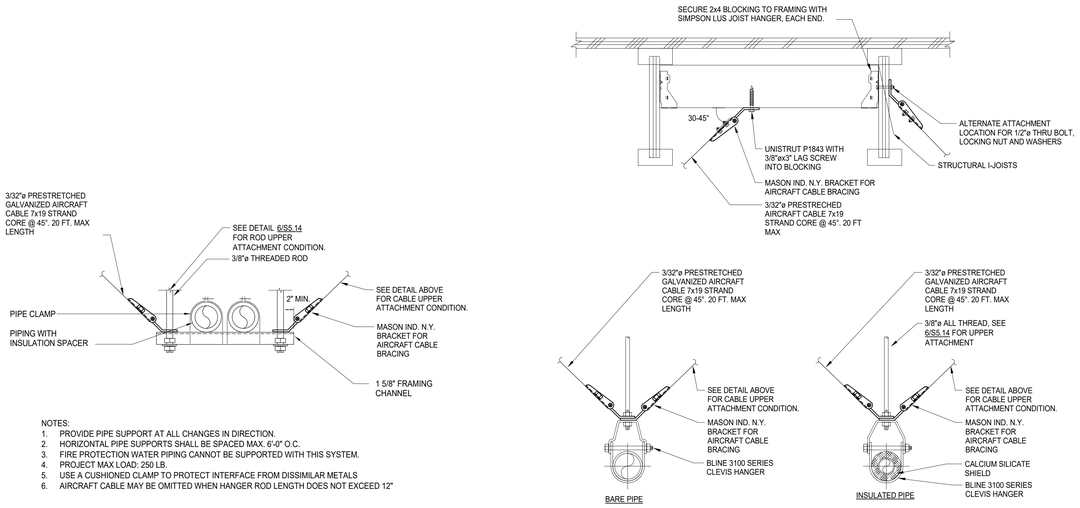
1 VENT THRU ROOF DETAIL
SCALE: NONE



NOTE:
ALTERNATE TRAP PRIMER AND B.V. LOCATION ABOVE LAY-IN CEILING SEE FLOOR PLANS FOR LOCATIONS.

2 FLOOR DRAIN TRAP PRIMER DETAIL
SCALE: NONE

3 PIPE SUPPORT
SCALE: NONE



NOTES:
1. PROVIDE PIPE SUPPORT AT ALL CHANGES IN DIRECTION.
2. HORIZONTAL PIPE SUPPORTS SHALL BE SPACED MAX. 6'-0" O.C.
3. FIRE PROTECTION WATER PIPING CANNOT BE SUPPORTED WITH THIS SYSTEM.
4. PROJECT MAX LOAD: 250 LB.
5. USE A CUSHIONED CLAMP TO PROTECT INTERFACE FROM DISSIMILAR METALS
6. AIRCRAFT CABLE MAY BE OMITTED WHEN HANGER ROD LENGTH DOES NOT EXCEED 12"

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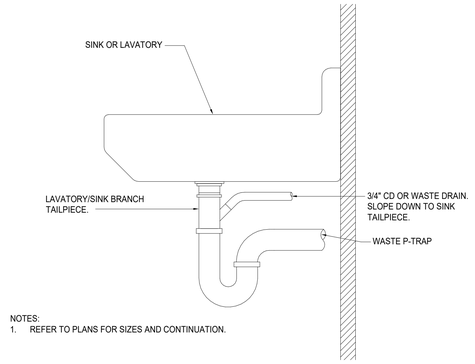
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SHEET NO.
P-401

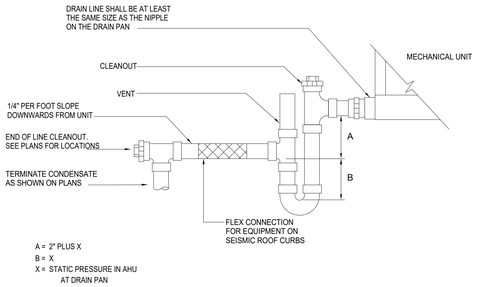
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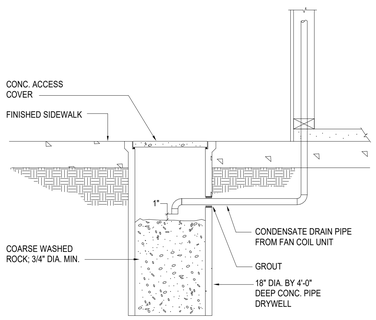
BID SET (PRELIMINARY)



3 CONDENSATE/WASTE CONNECTION TO TAILPIECE
SCALE: NONE

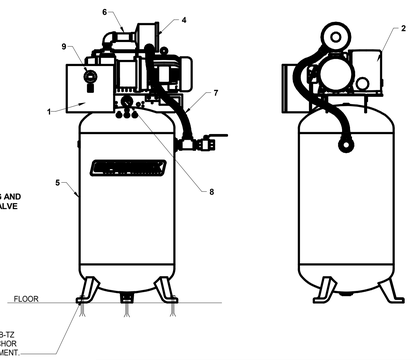


4 CONDENSATE P-TRAP TO MECHANICAL UNIT DETAIL
SCALE: NONE

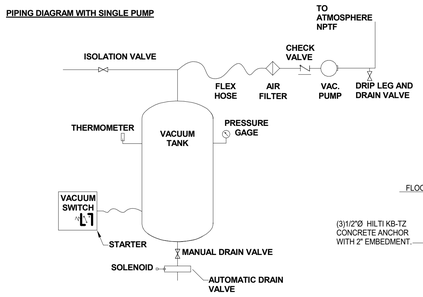


5 CONDENSATE TO DRYWELL
SCALE: NONE

VERTICAL SYMPLEX TANKMOUNT MODEL #IVS0202



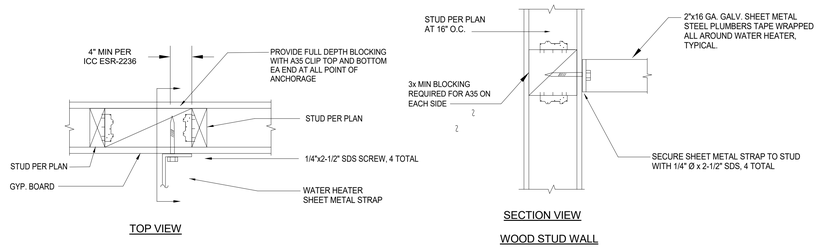
PIPING DIAGRAM WITH SINGLE PUMP



NOTES:
1. DRIP LEG AND DRAIN VALVE MUST BE INSTALLED NEAR EXHAUST FITTING OF PUMP.
2. MINIMUM CLEARANCE OF 36" AROUND AND ABOVE THE SYSTEM.
3. USE FLEXIBLE HOSE TO CONNECT THE INLET AND OUTLET OF THE UNIT TO PIPING.

REF. NO	DESCRIPTION	MODEL NO.	QTY.
1	MOTOR STARTER 208V	PVI10022AJ	1
2	VACUUM PUMP/ MOTOR ASSEMBLY	VPB02000AV	1
3	VACUUM SWITCH (NOT SHOWN)	VP001303AV	1
4*	INLET AIR FILTER ELEMENT	PVI10022AJ	1
5	RECIEVER TANK 30 GAL.	---	1
6	CHECK VALVE	VP00406AV	1
7	VACUUM HOSE	HA001301AV	1
8	VACUUM GAUGE	GA031600AV	1
9	HOUR METER	PE001004AV	1
-	OIL	VP000801AJ	1
-	OIL FILTER	0531.002.00	1
-	SEPERATOR FILTER	V532.140.156	1
*=2,500 HOUR REPLACEMENT			

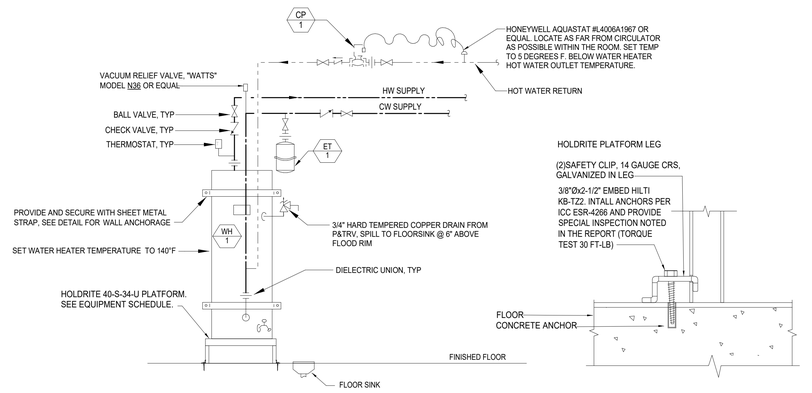
1 VACUUM - POWEREX DETAIL
SCALE: NONE



TOP VIEW

SECTION VIEW

WOOD STUD WALL



HOLDRITE 40-S-24-A FLOOR MOUNTING

NOTE:
1. PROVIDE AND SECURE WITH SHEET METAL STRAP, UPPER AND BOTTOM THIRD OF WATER HEATER. STRAPS TO BE A MINIMUM DISTANCE OF 4" FROM CONTROLS. ALSO PLACE ONE STRAP AT CENTER OF EXPANSION TANK. ATTACH TO WALL PER DETAIL.
2. REFER TO PLANS FOR COLD WATER, HOT WATER, AND HOT WATER RETURN SIZING.
3. MOUNT WATER HEATER TO BE IN CONTACT WITH THE WALL OR PROVIDE A SADDLE FOR TIGHT FIT.

2 WATER HEATER PIPING DIAGRAM AND MOUNTING TO WOOD STUD WALL
NTS

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REGISTERED PROFESSIONAL ENGINEER JUAN R. TICHENOR 18726 EXP. 12/31/25 MECHANICAL STATE OF CALIFORNIA

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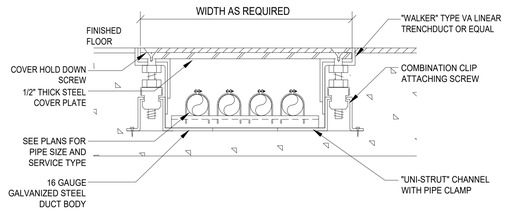
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SHEET NO.
P-402

DATE: 4/24/18

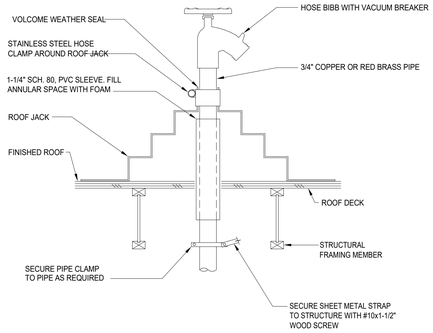
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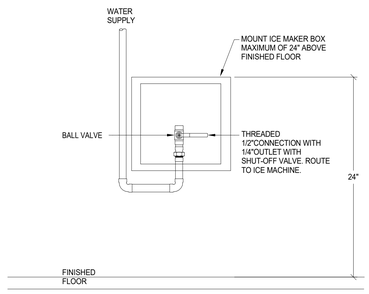


NOTE:
INSTALL PER MANUFACTURER'S INSTRUCTIONS.

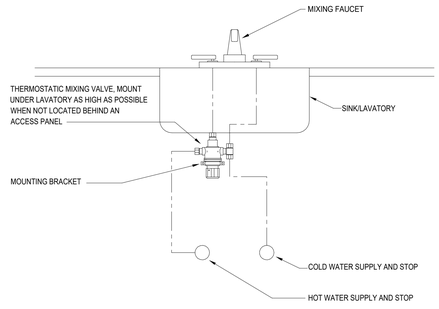
5 UTILITY PIPE TRENCH
SCALE: NONE



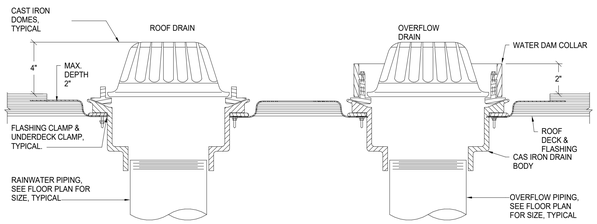
2 HOSE BIBB ON ROOF DETAIL
SCALE: NONE



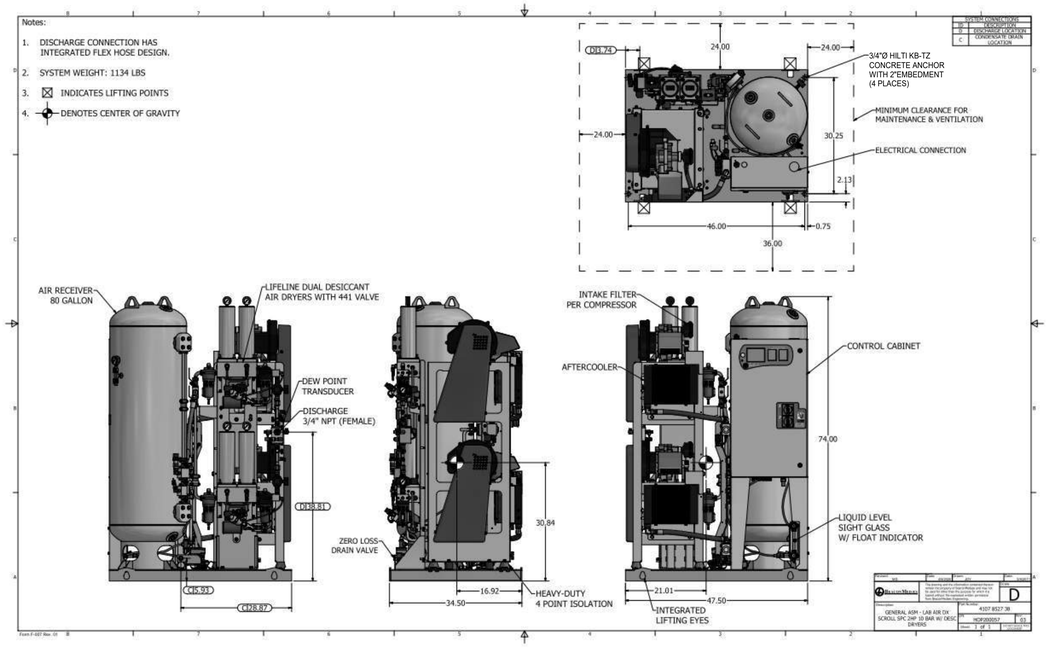
6 ICE MAKER BOX DETAIL
SCALE: NONE

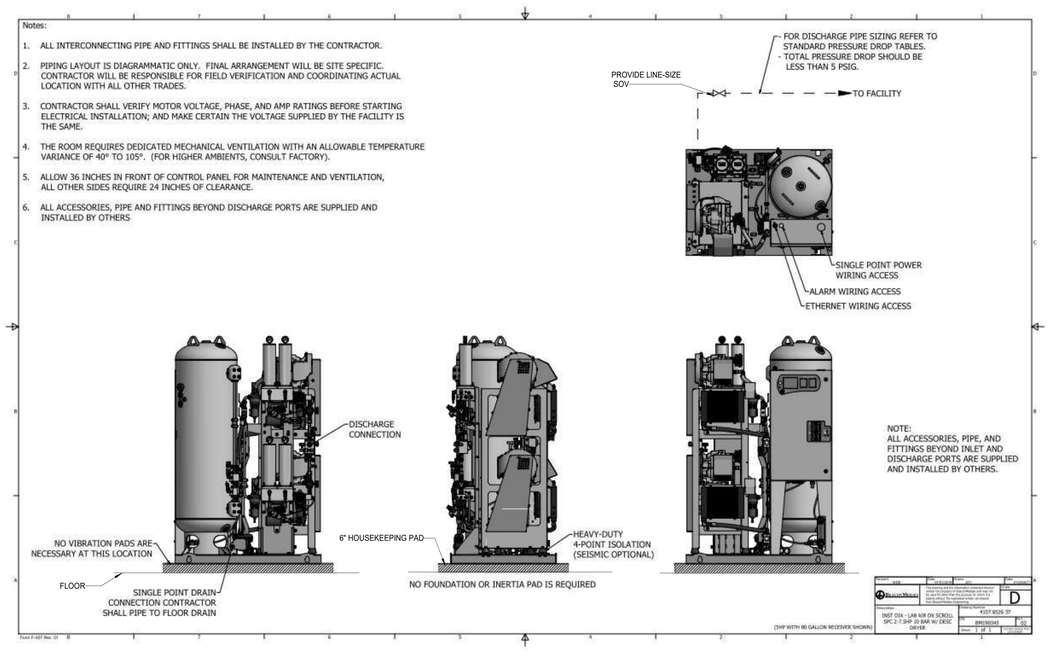


THERMOSTATIC MIXING VALVE BELOW SINK/LAV
3
SCALE: NONE



4 ROOF DRAIN AND OVERFLOW DRAIN
SCALE: NONE





1 BEACON MEDAES AIR COMPRESSOR DETAIL
SCALE: NONE

196
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REGISTERED PROFESSIONAL ENGINEER SEAN R. TICHENOR EXP. 12/31/25 MECHANICAL STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
DETAILS

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
P-403

DATE: 4/24/18

DATE PLOTTED: 9/16/2024 3:38:36 PM FILE LOCATION: S:\23.020 Dry Creek WWTP\drwgs\REVIT\23.020 Dry Creek WWTP MEP_r22.rvt

BID SET (PRELIMINARY)

MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE AHJ APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED AND BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVEABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/20 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVEABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORTS THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY THE AHJ.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORTS THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY THE AHJ. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8 AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☐ MD ☐ PP ☐ E ■ OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP ☐ MD ☐ PP ☐ E ☐ OPTION 2: SHALL COMPLY WITH THE APPLICABLE HCAI PRE-APPROVAL (OPM #) #_____.

120V BRANCH CIRCUIT VOLT DROP CONDUCTOR LENGTH CHART

LOAD IN VOLT AMPERES	LENGTH OF CONDUCTOR WIRE SIZE IN (GAUGE)				
	#12	#10	#8	#6	#4
1200VA	74	121	183	284	434
1560VA	57	93	141	218	334
1800VA	49	81	122	189	289
1920VA	46	76	115	178	271
2340VA	X	62	94	146	223
2880VA	X	51	76	118	181
3000VA	X	48	73	114	174
3900VA	X	X	56	87	134
4800VA	X	X	46	71	108

NOTES
1. THIS CHART IS FOR COPPER CONDUCTORS ONLY.
2. THIS CHART ASSUMES AN 80% POWER FACTOR AND STEEL RACEWAYS.
3. 2019 CALIFORNIA ENERGY CODE, 130.5(c) ALLOWS A MAXIMUM COMBINED VOLTAGE DROP OF 5%. THIS CHART ASSUMES A MAXIMUM DROP OF 3% FOR FEEDERS. THIS CHART PROVIDES THE MAXIMUM LENGTH OF CONDUCTORS FOR LESS THAN 2% VOLTAGE DROP ON A BRANCH CIRCUIT AT GIVEN VA LOAD.
4. USE WIRE SIZE FROM THIS CHART UNLESS LARGER CONDUCTOR SIZES ARE NOTED ON THE DRAWINGS.
5. FOR VA VALUES NOT SHOWN USE NEXT HIGHEST VALUE FROM THE CHART

GENERAL NOTES

1. PLANS ARE NOT FOR CONSTRUCTION UNTIL APPROVED BY THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL NOT ORDER ANY MATERIALS OR INSTALL ANY EQUIPMENT, PIPING, ETC. UNTIL PLANS ARE APPROVED BY THE AUTHORITY HAVING JURISDICTION.
2. PROTECT EXISTING EQUIPMENT AND FURNISHINGS FROM ANY DAMAGE DUE TO DUST, MOISTURE OR CONTACT WITH WORK CREW OR MATERIALS.
3. ADEQUATELY STRAP AND SUPPORT ALL CONDUIT WORK PER CEC. IN GENERAL, SUPPORT ALL CONDUIT WITHIN THREE FEET (3') OF OUTLET BOX, CABINET OR PANEL AND MAXIMUM TEN FEET (10') ON CENTER THEREAFTER.
4. CORE BORE SHALL BE 1" DIAMETER LARGER THAN EACH CONDUIT. SPACE CONDUIT HOLES 3" APART. SEAL AROUND CONDUIT WITH NON-SHRINK, NON-METALLIC GROUT.
5. ALL CONDUCTORS INSTALLED IN PANELBOARDS SHALL BE TRAINED, LACED, AND INSTALLED WITH PHASE TAPE ON ALL CONDUCTORS.
6. LABEL DEVICES (I.E. RECEPTACLES, ETC.) ON EACH COVER PLATE IDENTIFYING CIRCUIT AND PANEL DEVICE IS CONNECTED TO.
7. CLEAN ALL EXTERIOR AND INTERIOR SURFACES OF PANELS AND ALL MATERIAL AND METAL SHAVINGS FROM PANEL AND CABINET INTERIORS. ALL OPENINGS SHALL BE SEALED AND APPLY TOUCH-UP SPRAY PAINT WHERE NEEDED.
8. FIELD COORDINATE DEVICE LOCATIONS PRIOR TO ROUGH-IN.
9. CONTRACTOR WILL PROVIDE WARNING LABELS NOTING THE POTENTIAL FOR ELECTRIC ARC FLASH HAZARDS PER CEC 110.16. PROVIDE LABELS ON EQUIPMENT SUCH AS SWITCHBOARDS, SWITCHGEAR, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKET ENCLOSURES, MOTOR CONTROL CENTERS, MOTOR STARTER / CONTACTOR PANELS, DISCONNECTS, ETC.
   9.1. CONTRACTOR TO PROVIDE BREAKER COORDINATION STUDY COMPLETE WITH BREAKER SETTINGS.
   9.2. CONTRACTOR WILL PROVIDE ARC FLASH LABELS FOR ELECTRICAL POWER PANELS INCLUDED IN THE PROJECT SCOPE IN ACCORDANCE WITH NFPA 70E AND SPECIFICATION SECTION 26 05 73 'OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY'. THE ARC-FLASH LABELS MESSAGE OR CONTENT SHALL BE PROVIDED BY THE CONTRACTOR.
10. INSTALLATION SHALL COMPLY WITH CEC 210.4 - EACH MULTIWIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH A MEANS THAT WILL SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE POINT WHERE THE BRANCH CIRCUIT ORIGINATES. THEREFORE ANY CIRCUIT SHARING A COMMON NEUTRAL SHALL BE CAPABLE OF SIMULTANEOUS DISCONNECT OR DEDICATED NEUTRALS SHALL BE INSTALLED. ⚠
11. ALL EQUIPMENT AND APPURTENANCES USE IN THIS PROJECT SHALL BE UL (NRTL) LISTED AND LABELED FOR THE PURPOSE AS PER CEC-2019ART.110.3 AND 690.4B.
12. SUPPORT ENCLOSURES, BOXES AND CONDUIT INSTALLATIONS PER CEC 314.23 (A) THROUGH (H).
13. SEAL CONDUIT OPENINGS THROUGH WALLS AND CEILINGS. INSTALL ESCUTCHEON PLATES AT BUILDING INTERIOR. WHERE EQUIPMENT IS INSTALLED ON THE EXTERIOR WALL, STUB CONDUITS THROUGH WALL AND SEAL CONDUIT OPENINGS, THEN INSTALL EXTERIOR EQUIPMENT. ALSO, SEAL AROUND THE PERIMETER EDGE OF THE EQUIPMENT ENCLOSURE BETWEEN THE ENCLOSURE AND BUILDING.
14. RACEWAY SEALS. ALL RACEWAYS ENTERING/EXITING A BUILDING SHALL BE SEALED AT BOTH ENDS TO PREVENT MOISTURE AND RODENTS FROM ENTERING THE BUILDING. SEALANTS SHALL BE LISTED FOR USE WITH CABLE INSULATION, CONDUCTOR INSULATION, BARE CONDUCTOR, SHIELD, OR OTHER COMPONENTS.
15. CONDUITS INSTALLED ON ROOF AND BUILDING EXTERIOR SHALL BE RIGID GALV. STEEL (HEAVY WALL) WITH THREADED FITTINGS. CONDUIT AND WALL TO BE PAINTED OUT TO MATCH EXTERIOR FINISH.
16. EXPOSED CONDUITS TRANSITIONING FROM BELOW OR AT GRADE TO A HEIGHT OF 8 FEET AFG SHALL BE RMC OR IMC.
17. SPLICES AND TERMINALS SHALL BE COMPRESSION TYPE OF SEAMLESS PURE COPPER, TIN PLATED, LONG BARREL (TERMINALS WITH TWO-HOLE PAD AND INSPECTION WINDOW WITH NEMA DRILLING), AS MANUFACTURED BY BURNDY TYPE YS, YAZ-2N OR EQUAL. CLEAN ALL SURFACES AND INSTALL WITH OXIDE INHIBITING COMPOUND, BURNDY PENETROX-E OR EQUAL. APPLY COMPOUND BETWEEN BUS AND LUG PAD AND BETWEEN CONDUCTOR AND LUG BARREL. INSTALL COMPRESSION CONNECTORS WITH 360° CIRCUMFERENTIAL COMPRESSION DYE, BURNDY HYPRESS OR EQUAL. THE INDENTER OR OTHER TYPE TOOLS WILL NOT BE ACCEPTABLE.
18. INSTALL 'MECHANICALLY FASTENED PHENOLIC NAMEPLATE WITH WHITE LETTERING ON BLACK BACKGROUND ON ALL EQUIPMENT, INCLUDING PULL BOXES, WITH DESCRIPTION INDICATED ON DRAWINGS. NAMEPLATES SHALL READ EXACTLY AS DESCRIBED ON THE DRAWINGS. IN GENERAL NAMEPLATE LETTERING SIZE SHALL BE 3/16" HIGH FOR ALL NAMEPLATES SERVING FEEDER AND BRANCH CIRCUIT BREAKERS. ON MAIN SERVICE PANEL, DISTRIBUTION PANELS AND ALL OTHER NAMEPLATES LETTERING SHALL BE 1/4" HIGH.
   18.1. ALL SWITCHBOARDS, SWITCHGEAR, PANELBOARDS, VFD'S, MOTORS, JUNCTION BOXES, PULL BOXES, DISCONNECT SWITCHES, ETC., SHALL BE MARKED TO INDICATE EACH DEVICE OR EQUIPMENT WHERE THE POWER ORIGINATES PER CEC 408.4, FIELD IDENTIFICATION REQUIRED, (B) SOURCE OF SUPPLY.
19. EVERY CIRCUIT SHALL BE IDENTIFIED IN A CIRCUIT DIRECTORY AND AT EACH SWITCH OR CIRCUIT BREAKER PER CEC 408.4, FIELD IDENTIFICATION REQUIRED, (A) CIRCUIT DIRECTORY OR IDENTIFICATION. CIRCUIT DIRECTORIES (NEW AND MODIFIED) SHALL BE TYPE WRITTEN. HAND MADE MODIFICATIONS TO PANEL DIRECTORIES WILL NOT BE ACCEPTABLE. CIRCUIT NUMBERS AT SWITCHES OR CIRCUIT BREAKERS SHALL BE ENGRAVED OR A PERMANENTLY AFFIXED PRE-PRINTED LABELS.
20. COORDINATE EQUIPMENT LOCATIONS, CONTROL AND POWER WIRING REQUIREMENTS AND CONNECT POINTS WITH ALL APPLICABLE DISCIPLINES.
21. PROVIDE AND INSTALL FUSES PER UNIT NAMEPLATE DATA ON THE EQUIPMENT PROVIDED.
22. VERIFY CEILING TYPES PRIOR TO ORDERING LUMINAIRES. CONFIRM THAT FEATURES DESCRIBED IN THE SPECIFICATION OF THE LUMINAIRE ARE INCLUDED AS WELL AS PART NUMBERS LISTED ON SCHEDULE IN THE SUBMITTAL PACKAGE. CLARIFY NOTED DISCREPANCIES WITH ENGINEER PRIOR TO BID.
23. A LAMINATED COPY OF THE FINAL RECORD ONE LINE DIAGRAM SHALL BE PLACED IN EACH ELEC ROOM.
24. PROVIDE WIRING DEVICES AND COVER PLATES IN COLOR(S) SELECTED BY ARCHITECT. THE COLOR OF THE WIRING DEVICE AND COVER PLATE SHALL BE THE SAME UNLESS SPECIFICALLY NOTED OTHERWISE.
25. RECEPTACLE WEATHERPROOF COVERS SHALL BE LISTED "EXTRA DUTY", LOCAKBLE, METAL, IN-USE TYPE.
   25.1. GROUND FAULT CIRCUIT INTERRUPTER DUPLEX OUTLETS INSTALLED OUTDOORS SHALL BE "WEATHER RESISTANT", (WR) LISTED.
26. ALL CONDUITS PASSING THROUGH A BUILDING SHOULD BE METALLIC PER NEC ART.690.31E. ⚠
27. FOR ROOF PENETRATIONS, REFER TO ARCHITECTURAL PLANS FOR INSTALLATION REQUIREMENTS.
28. FOR WALL PENETRATION INSTALLATIONS, REFER TO ARCHITECTURAL PLANS FOR REQUIREMENTS.
29. PROVIDE "LOCK-ON" DEVICE FOR ALL CIRCUIT BREAKERS ON EMERGENCY DEDICATED CIRCUITS.
30. DRAWINGS ARE TO BE CONSIDERED DIAGRAMMATIC. CONTRACTOR SHALL ACCEPT RESPONSIBILITY IN FAMILIARIZING THEMSELVES WITH ARCHITECTURAL AND STRUCTURAL CONDITIONS ALONG WITH INHERENT SPACE LIMITATIONS. WITH THAT UNDERSTANDING SHALL PROVIDE ALL ITEMS OF LABOR, MATERIALS AND TOOLS REQUIRED TO PROVIDE A COMPLETE INSTALLATION.
31. PROVIDE SWITCHED/CONTROLLED RECEPTACLES WITH PERMANENT MARKINGS PER THE CALIFORNIA ENERGY CODE. MARKING SHALL BE AS PROVIDED BY THE MANUFACTURER OF THE RECEPTACLE, STAMPED INTO THE FACE (IE, LEVITON #5362-1PW OR EQUAL.) SYMBOL SHALL BE OF CONTRASTING COLOR TO THE DEVICE COLOR.
32. PROVIDE DATA SHEETS FOR ALL ELECTRICAL AND LOW VOLTAGE EQUIPMENT (INCLUDING BUT NOT LIMITED TO LIGHTING CONTROLS, FIRE ALARM, INTRUSION ALARM, CCTV, ACCESS CONTROL, INTERCOM, DATA/TELECOMMUNICATIONS AND SOUND REINFORCEMENT SYSTEMS) INCLUDED IN THIS PROJECT FOR REVIEW AND APPROVAL PRIOR TO ORDERING ANY EQUIPMENT OR DEVICES. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SUBMITTAL REQUIREMENTS.
33. SUBMIT SHOP DRAWINGS FOR ALL ELECTRICAL AND LOW VOLTAGE SYSTEMS (INCLUDING BUT NOT LIMITED TO LIGHTING CONTROLS, FIRE ALARM, INTRUSION ALARM, CCTV, ACCESS CONTROL, INTERCOM, DATA/TELECOMMUNICATIONS AND SOUND REINFORCEMENT SYSTEMS) FOR REVIEW AND APPROVAL PRIOR TO THE INSTALLATION OF ANY EQUIPMENT, DEVICES, RACEWAY OR WIRING. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL SUBMITTAL REQUIREMENTS.

ABBREVIATION LIST

@	AT
A	AMPERE
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONING
AER	ARC ENERGY REDUCTION
AF	AMP FRAME RATING OR AMP FUSE SIZE
AFF	ABOVE FINISHED FLOOR
AIC	AMPERES INTERRUPTING CAPACITY
AS	AMP SWITCH RATING
AT	AMP TRIP SETTING
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER
BD	BOARD
BFC	BELOW FINISHED CEILING
BRKR	BREAKER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
BPS	BOOSTER POWER SUPPLY
C	CONDUIT
C/B	CIRCUIT BREAKER
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CIRC	CIRCUIT
CLG	CEILING
CO	CONDUIT ONLY, WITH PULL LINE
CONT	CONTINUOUS
CPT	CONTROL POWER TRANSFORMER
CU	COPPER
CWP	METALLIC COLD WATER PIPE
(D)	DEMOLISH
DC	DIRECT CURRENT
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
(E)	EXISTING
E/W	EACH WITH
EA	EACH
EL	EVENING LIGHT
ELEC	ELECTRIC
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE DEVICE
EQUIP	EQUIPMENT
(ER)	EXISTING RELOCATED
EWC	ELECTRICAL WATER COOLER
EWH	ELECTRIC WATER HEATER
(F)	FUTURE
FACP	FIRE ALARM CONTROL PANEL
FAEP	FIRE ALARM EXTENDER PANEL
FATC	FIRE ALARM TERMINAL CABINET
FBO	FURNISHED BY OTHERS
FLUOR	FLUORESCENT
FT	FOOT
GA	GAUGE
GFCI	GROUND FAULT CIRCUIT INTERRUPT
GLZ	GENERAL LIGHTING ZONE
GND	GROUND
GP	METALLIC GAS PIPE
GYP	GYPSUM
HID	HIGH INTENSITY DISCHARGE
HP	HORSE POWER
HT	HEIGHT
HZ	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
IN	INCH
ISC	SHORT CIRCUIT CURRENT (RMS SYMMETRICAL)
ISO	ISOLATED
J-BOX	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILO VOLT AMP
KW	KILOWATT
LC	LIGHTING CONTROL PANEL
LV	LOW VOLTAGE
MCM	THOUSAND CIRCULAR MILLS
MECH	MECHANICAL
MDP	MAIN DISTRIBUTION PANEL
MH	METAL HALIDE
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MPOE	MAIN POINT OF ENTRY
MSB	MAIN SWITCHBOARD
(N)	NEW
NIC	NOT IN CONTRACT
NIES	NOT IN ELECTRICAL SECTION OF THESE PLANS & SPECS.
NL	NIGHT LIGHT
NO, #	NUMBER
NTS	NOT TO SCALE
OC.	ON CENTER
OFCI	OWNER FURNISHED, CONTRTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
P	POLE
PB	PULL BOX
PFB	PROVISION FOR FUTURE BREAKER W/ MOUNTING HARDWARE
PDZ	PRIMARY DAYLIT ZONE
PFCT	PROVISION FOR FUTURE CURRENT TRANSFORMER
PH, Ø	PHASE
PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PVC	POLYVINYL CHLORIDE CONDUIT
(R)	EXISTING RELOCATED
REQ'D	REQUIRED
RM	ROOM
RMC	RIGID METAL CONDUIT
(RR)	REMOVE AND REPLACE
SDZ	SECONDARY DAYLIT ZONE
SKZ	SKYLIGHT DAYLIT ZONE
SPEC	SPECIFICATION
STC	SIGNAL TERMINAL CABINET
SQ	SQUARE
SW	SWITCH
TEL	TELEPHONE
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLTS
WP	WEATHERPROOF
WT	WEIGHT
W	WATT
W/	WITH
XFMR	TRANSFORMER
&	AND

SYMBOLS LIST

- A2 2a — LED LIGHT FIXTURE { CONTROLLED BY SWITCH "a" / CONNECTED TO CIRCUIT 2 / FIXTURE TYPE: A2 } APPLIES TO ALL FIXTURES
- LED WALL SCONCE
- LED RECESSED DOWN LIGHT
- LED LIGHT FIXTURE - SEE FIXTURE SCHEDULE FOR MOUNTING
- LED LIGHT FIXTURE - WALL MOUNTED
- EXIT SIGN FIXTURE
- SHADING INDICATES FIXTURE HAS EMERGENCY BATTERY BACKUP
- SITE LIGHTING FIXTURE AND POLE
- BOLLARD AND/OR POLE TOP LIGHT FIXTURE
- GROUND MOUNTED FLOODLIGHT FIXTURE
- $ SINGLE POLE SWITCH
- $2 TWO POLE SWITCH
- $3 THREE WAY SWITCH
- $4 FOUR WAY SWITCH
- $K KEYED SWITCH
- $LV LOW VOLTAGE SWITCH
- $M MANUAL MOTOR CONTROL SWITCH
- $F FAN / LIGHT / NIGHT LIGHT SWITCH, PER MECHANICAL
- $OS WALL MOUNTED OCCUPANCY AUTO-OFF LIGHT SWITCH
- $OS DIMMER SWITCH WITH OCCUPANCY SENSOR, LINE VOLTAGE
- $ DIMMER SWITCH, LOW VOLTAGE
- OS CEILING MOUNTED OCCUPANCY AUTO-OFF LIGHT SWITCH. INSTALL PER MANUFACTURER REQUIREMENTS.
- DL CEILING MOUNTED DAY LIGHT SENSOR INSTALL PER MANUFACTURER REQUIREMENTS.
- RM ROOM CONTROLLER INSTALL PER MANUFACTURER REQUIREMENTS.
- PM PLUG CONTROLLER INSTALL PER MANUFACTURER REQUIREMENTS.
- DISCONNECT SWITCH
- F FUSED DISCONNECT SWITCH
- DUPLEX CONVENIENCE OUTLET
- DOUBLE DUPLEX CONVENIENCE OUTLET
- GROUND FAULT CIRCUIT INTERRUPTER DUPLEX OUTLET
- GROUND FAULT CIRCUIT INTERRUPTER DOUBLE DUPLEX OUTLET
- SPLIT DUPLEX OUTLET WITH: ONE CONVENIENCE OUTLET / ONE CONTROLLED OUTLET
- DOUBLE DUPLEX OUTLET WITH: ONE DUPLEX CONVENIENCE OUTLET / ONE CONTROLLED DUPLEX OUTLET
- SPECIAL OUTLET TO MATCH CAP PROVIDED WITH MACHINE
- FLUSH FLOOR BOX OR "POKE-THRU" UNIT EQUIPPED WITH FLUSH OR PEDESTAL DUPLEX RECEPTACLE AND VOICE/DATA OUTLETS AS NOTED, OR REFER TO SCHEDULE ON DRAWINGS.
- PLUGMOLD/WIREMOLD RECEPTACLE SYSTEM
- TRANSFORMER
- JUNCTION BOX, SIZE AS REQUIRED BY CODE
- FLEX CONNECTION TO FIXTURE
- TELEPHONE OUTLET BOX
- DATA OUTLET BOX
- TELEPHONE/DATA OUTLET BOX
- WAP WIRELESS ACCESS POINT OUTLET BOX IN ACCESSIBLE CEILING
- CR CARD READER OUTLET BOX AT +48"
- M CR CARD READER, MULLION MOUNT AT +48"
- PANELBOARD, RECESSED MOUNTED
- PANELBOARD, SURFACE MOUNTED
- MAIN SWITCHBOARD
- TERMINAL CABINET, RECESSED MOUNTED
- TERMINAL CABINET, SURFACE MOUNTED
- HOMERUN TO PANELBOARD OR RESPECTIVE TERMINAL
- CONDUIT RUN CONCEALED IN CEILING OR WALL, SEE SYMBOLS LIST NOTES
- CONDUIT RUN UNDERGROUND OR UNDER FLOOR
- EM EMERGENCY SYSTEM CONDUIT AND WIRES
- INSULATED GREEN GROUND CONDUCTOR
- INSULATED ISOLATED GROUND CONDUCTOR, GREEN WITH TRACER STRIPE
- CONDUIT RISER
- EXISTING EQUIPMENT, LIGHTING, DEVICES, CONDUIT, WIRING, ETC., ARE SHOWN LIGHT. NEW OR RELOCATED EQUIPMENT, LIGHTING, DEVICES, CONDUIT, WIRING, ETC., ARE SHOWN DARK.
- EXISTING ELECTRICAL EQUIPMENT TO BE REMOVED
- WIREMOLD SURFACE RACEWAY(S) WITH OUTLETS AS SHOWN OR NOTED, SEE SURFACE RACEWAY SCHEDULE
- 1 1 SYMBOLS REFERRING TO KEYED NOTES ON SAME SHEET
- EM MECHANICAL EQUIPMENT BY OTHERS, CONNECTED BY ELECTRICAL CONTRACTOR
- A DETAIL DESIGNATION, "A" SIGNIFIES DETAIL, "E-1" SIGNIFIES SHEET NUMBER
- (1)1-1/2"C INDICATES SIZE OF CONDUIT = ONE AND ONE HALF INCH CONDUIT
- NUMBER WITHIN PARENTHESIS INDICATES QUANTITY OF CONDUITS

SYMBOLS LIST NOTES:

1. MOUNT SWITCH BOXES AT +48" TO TOP OF BOX UNLESS OTHERWISE NOTED.
2. MOUNT OUTLET BOXES AT +15" TO BOTTOM OF BOX UNLESS OTHERWISE NOTED.
3. "A" ADJACENT TO OUTLET INDICATES OUTLET BOX TO BE MOUNTED ABOVE COUNTER. COORDINATE WITH COUNTER HEIGHT AND DEPTH PRIOR TO ROUGH IN. MOUNT OUTLET ABOVE COUNTERS AT:
   3.1. +46" MAX TO TOP OF BOX WHERE BOX IS INSTALLED OVER BASE CABINET.
   3.2. +44" MAX TO TOP OF BOX WITH OPEN COUNTERS WITH FORWARD APPROACH.
4. OUTLET BOXES SHALL BE:
   4.1. WALL MOUNTED - 4" SQ. x 2-1/8" DEEP MINIMUM
   4.2. CEILING MOUNTED - 4" SQ. OR 4" OCT. x 2-1/8" DEEP MINIMUM
5. OUTLET BOXES REQUIRING 1-1/4", 1-1/2" OR 2" CONDUITS SHALL BE 4-11/16" x 3-1/4" DEEP MINIMUM.
6. FLUSH MOUNTED OUTLET BOXES SHALL UTILIZE TRIM RINGS. COORDINATE TRIM RING DEPTH WITH WALL FINISH PRIOR TO ROUGH-IN.
7. NO CROSSBARS ON CONDUIT RUN INDICATES MINIMUM 3/4" CONDUIT (OR SURFACE RACEWAY EQUIVALENT), TWO #12 CU CONDUCTORS PLUS 1#12 CU GND. CROSSBARS INDICATE NUMBER OF #12 CU CONDUCTORS IN CONDUIT. CONDUCTOR SIZES OTHER THAN #12 NOTED ON DRAWINGS. INCREASE CONDUIT SIZE AS REQUIRED TO ACCOMMODATE C.E.C. WIRE FILL REQUIREMENTS. INCLUDE ADDITIONAL BOND WIRE IN ALL PVC AND FLEXIBLE CONDUIT. LONG CROSSBAR INDICATES NEUTRAL CONDUCTOR, SHORT CROSSBAIRS INDICATE PHASE CONDUCTORS.
8. INCREASE BRANCH CIRCUIT CU CONDUCTOR SIZES AS REQUIRED BY THE 120V BRANCH CIRCUIT VOLT DROP CONDUCTOR LENGTH CHART BELOW. USE CONDUCTOR LENGTHS AS FIELD MEASURED, BASED UPON MEASURED FIELD ROUTING LENGTHS. INCREASE MINIMUM CONDUIT SIZE AS REQUIRED TO ACCOMMODATE A MAXIMUM 40% CONDUCTOR FILL OF THE BRANCH CIRCUIT CONDUCTORS. WHERE NECESSARY, PROVIDE A JUNCTION BOX AT ACCESSIBLE CEILING SPACE TO CONVERT THE LAST 15 FEET OF CONDUCTORS TO #10 AWG TO ACCOMMODATE TERMINATION OF CONDUCTORS AT WIRING DEVICES, LIGHTING FIXTURES, CIRCUIT BREAKER, ETC.
9. INSTALL CU GROUND CONDUCTOR IN ALL BRANCH CIRCUITS FOR LIGHT FIXTURES AND POWER DEVICES.

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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER G. NO R. ROMANO E17247 EXP. 6/30/24 ELECTRICAL STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG

1800 Booth Road
Roseville, CA 95747

SHEET TITLE

SYMBOLS AND NOTES

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

E-001

DATE: 4/24/18

DATE PLOTTED: 10/23/2024 1:17:17 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

BID SET (PRELIMINARY)

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER	MODEL	LAMP	FIXTURE WATTS	MOUNTING	DESCRIPTION	QTY	NOTES
A1	FINELITE	HP-X-P-ID-4ft-S-H-835-WSO-F-120-SC-FC-10%-FIN-DMX-FA50-C1-SW	LED	40 VA	PEDANT/ T-BAR CEILING	LINEAR DIRECT/INDIRECT	16	QTY AND WATTS ARE SHOWN FOR 4' UNIT
A1E	FINELITE	HP-X-P-ID-8'-S-S-835-WSO-ELD-DMX-FA50-C1-CW-LGD10W	LED	40 VA	PENDANT/ T-BAR CEILING	LINEAR DIRECT/INDIRECT	2	QTY AND WATTS ARE SHOWN FOR 4' UNIT
A2	FINELITE	HP-X-P-ID-12ft-S-H-835-TG-F-120-SC-FC-10%-FIN-DMX-FA50-C1-SW	LED	40 VA	PEDANT/ T-BAR CEILING	LINEAR DIRECT/INDIRECT	18	QTY AND WATTS ARE SHOWN FOR 4' UNIT
A2E	FINELITE	HP-XP-P-ID-12ft-S-H-835-TG-F-120-SC-FC-10%-FIN-DMX-FA50-C1-SW-LGD10W	LED	40 VA	PEDANT/ T-BAR CEILING	LINEAR DIRECT/INDIRECT W/10 WATT EM BATTERY PACK	3	QTY AND WATTS ARE SHOWN FOR 4' UNIT
A3	FINELITE	HP-X-P-ID-8ft-H-H-835-WSO-F-120-SC-FC-10%-FIN-DMXFA50-C1-SW	LED	53 VA	PEDANT/ T-BAR CEILING	LINEAR DIRECT/INDIRECT	23	QTY AND WATTS ARE SHOWN FOR 4' UNIT
A3E	FINELITE	HP-X-P-ID-8ft-H-H-835-WSO-F-120-SC-FC-10%-FIN-DMX-FA50-C1-SW-LGD10W	LED	53 VA	PENDANT/ T-BAR CEILING	LINEAR DIRECT/INDIRECT W/10 WATT EM BATTERY PACK	7	QTY AND WATTS ARE SHOWN FOR 4' UNIT
A4	FINELITE	HP-X-P-ID-8ft-S-H-835-TG-F-120-SC-FC-10%-FIN-DMFA50-C4-SW	LED	40 VA	PENDANT/ HARD CEILING	LINEAR DIRECT/INDIRECT	16	FOR GROUP R-3 OCCUPANCY. QTY AND WATTS ARE SHOWN FOR 4' UNIT
A5	FINELITE	HP-X-P-ID-24ft-S-H-835-TG-F--120-SC-FC-10%-FIN-DMFA50-C1-SW	LED	40 VA	PEDANT/ T-BAR CEILING	LINEAR DIRECT/INDIRECT	9	
A5E	FINELITE	HP-X-P-ID-24ft-S-H-835-TG-F--120-SC-FC-10%-FIN-DMX-FA50-C1-SW-LGD10W	LED	40 VA	PEDANT/ T-BAR CEILING	LINEAR DIRECT/INDIRECT	3	QTY AND WATTS ARE SHOWN FOR 4' UNIT
B	WIILLIAMS	6DR-TL-L15-835-DIM-UNV-OW-OF-CS	LED	14 VA	RECESSED	RECESSED DOWNLIGHT	34	
B1	WIILLIAMS	6DR-TL-L15-835-DIM-UNV-OW-OF-CS-WET-CC	LED	14 VA	RECESSED	RECESSED SHOWER DOWNLIGHT	5	
B1E	WIILLIAMS	6DR-TL-L15-835-DIM-UNV-OW-OF-CS-WET-CC-EM	LED	14 VA	RECESSED	RECESSED SHOWER DOWNLIGHT W/10W BATTERY PACK	4	
BE	WIILLIAMS	6DR-TL-L15-835-DIM-UNV-OW-OF-CS-EM/10W	LED	14 VA	RECESSED	RECESSED DOWNLIGHT	14	
C	WIILLIAMS	LT-24-L82-835-AF-DIM-UNV	LED	64 VA	RECESSED	LAY-IN TROFFER	2	
D	WIILLIAMS	NW-4-L74-835-RA-DIM-UNV	LED	56 VA	PENDANT	PEDANT LINEAR	5	QTY AND WATTS ARE SHOWN FOR 4' UNIT
DE	WIILLIAMS	NW-4-L74-835-RA-DIM-UNV-EM	LED	56 VA	PENDANT	PEDANT LINEAR W/10 W BATTERY PACK	6	QTY AND WATTS ARE SHOWN FOR 4' UNIT
F	DMF LIGHTING	DC4-C2-S-D15-WF-00000-35-BZ-O	LED	17 VA	PENDANT	CORRIDOR AND KITCHEN LIGHTS ⚠1	20	
F1E	DMF LIGHTING	DC4-T2-W-D15-WF-00000-35-BZ-EM	LED	17 VA	PENDANT	EXTERIOR COVERED SPACE W/10W EM DRIVER	4	
FE	DMF LIGHTING	DC4-C2-S-D15-WF-00000-35-BZ-O-EM	LED	17 VA	PENDANT	CORRIDOR AND KITCHEN LIGHTS W/ 10W EM DRIVER	12	
G	FINELITE	E3-P-WW-D-4ft-H-835-F-X-120-OTi-10%-FA50-FM-C4-SW	LED	15 VA	PEDANT	LED ACCENT	3	
H	FLUXWERX ILLUMINATION	PF1-B-A-35-W-02-S-F2-M	LED	10 VA	PENDANT	PROFILE 100 DN LED	6	
J	FLUXWERX ILLUMINATION	TC1-P-09-D-06-W-W-2-8-35-E	LED	28 VA	PENDANT	PORTAL PENDANT 9"	1	
K	AFX	BARV2403L30D1SN	LED	20 VA	SURFACE	INTERIOR WALL	6	
SP	LINMORE	LL-SL1-SM-75WD-35K-T5-UNV-G2-CUS-RMB-LOCCDIM12	LED	75 VA	POLE @ 18'-0" U.O.N.	POLE MOUNTED SINGLE HEAD LED	11	
SW	GARDCO	GWM-A07-830-T2M-UNV-BZ	LED	23 VA	WALL	WALL MOUNTED EXTERIOR LIGHT	4	
SWE	GARDCO	GWM-A07-830-T2M-UNV-ES-BZ	LED	23 VA	WALL	RECESSED SHOWER DOWNLIGHT W/10W BATTERY PACK	2	
T1	AFX	ELNU32WH-LCX-OCC	LED	16 VA	SURFACE	ELENA TASK LIGHTING ELNU SERIES 32"	5	
T2	AFX	ELNU40WH-LCX-OCC	LED	20 VA	SURFACE	ELENA TASK LIGHTING ELNU SERIES 40"	1	
X	EVENLITE	TLX-EM-GU-W-SD	LED	2 VA	SURFACE	EXIT SIGN	9	

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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER
G NO R. ROMANO
E17247
EXP. 6/30/24
ELECTRICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

LUMINAIRE SCHEDULE

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

E-002

DATE: 4/24/18

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DATE PLOTTED: 10/23/2024 1:17:18 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 3 of 10)
	Date Prepared:	5/9/2024

F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all planned permanent and portable lighting other than dwelling unit/ hotel/ motel room lighting. Multifamily dwelling unit and hotel/motel room lighting is documented in Table T. If using Table T to document lighting in multifamily common use areas providing shared provisions for living, eating, cooking or sanitation, those luminaires are not included here.

Designed Wattage: Conditioned Spaces

01	02	03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description	Modular (Track) Fixture	Small Aperture & Color Change[1]	Watts per luminaire[2]	How is Wattage determined	Total Number of Luminaires	Excluded per 140.6(a)3 / 170.2(e)2C	Design Watts	Field Inspector	
									Pass	Fail
A1/A1E	40W LED Linear Direct/Indirect	No	NA	39.9	Mfr. Spec	18	No	718.2	☐	☐
A2/A2E	40W LED Linear Direct/Indirect	No	NA	39.9	Mfr. Spec	25	No	997.5	☐	☐
A3/A3E	53W LED Linear Direct/Indirect	No	NA	52.9	Mfr. Spec	30	No	1,587	☐	☐
A5/A5E	40W LED Linear Direct/Indirect	No	NA	39.9	Mfr. Spec	12	No	478.8	☐	☐
B/BE	14W LED Downlight	No	NA	13.8	Mfr. Spec	48	No	662.4	☐	☐
B1	14W LED Downlight Wet	No	NA	13.8	Mfr. Spec	5	No	69	☐	☐
C	64W LED 2x4 Lay-In	No	NA	64	Mfr. Spec	2	No	128	☐	☐
D/DE	55.6W LED Linear	No	NA	55.6	Mfr. Spec	10	No	556	☐	☐
F/FE	16.5W LED Pendant LGHTS	No	NA	16.5	Mfr. Spec	31	No	511.5	☐	☐
G	15W LED Accent Luminare	No	NA	15	Mfr. Spec	3	No	45	☐	☐
H	16.5W LED Pendant LGHTS	No	NA	16.5	Mfr. Spec	6	No	99	☐	☐
J	28W LED Pendand Light	No	NA	28	Mfr. Spec	1	No	28	☐	☐
K	20.4W LED Wall Surface	No	NA	20.4	Mfr. Spec	6	No	122.4	☐	☐
T1	16W LED UNDERCABINET	No	NA	16	Mfr. Spec	5	No	80	☐	☐
T2	20W LED UNDERCABINET	No	NA	20	Mfr. Spec	1	No	20	☐	☐
						Total Designed Watts: CONDITIONED SPACES		6,103		

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 2 of 10)
	Date Prepared:	5/9/2024

C. COMPLIANCE RESULTS

If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per 140.6(b)1 / 170.2(e)	Allowed Lighting Power per 140.6(b) / 170.2(e) (Watts)						Adjusted Lighting Power per 140.6(a) / 170.2(e) (Watts)				Compliance Results
	01	02	03	04	05		06	07	08		09
	Complete Building 140.6(c)1	Area Category 140.6(c)2 / 170.2(e)4	Area Category Additional 140.6(c)2G / 170.2(e)4Av (+)	Tailored 140.6(c)3 / 170.2(e)4B (+)			Total Designed (Watts)	Adjustments PAF Lighting Control Credits 140.6(a)2 / 170.2(e)1B (-)	Total Adjusted (Watts) *Includes Adjustments		05 must be >= 08 140.6 / 170.2(e)
	(See Table I)	(See Table I)	(See Table J)	(See Table K)			(See Table F)	(See Table P)			
Conditioned		6,190.5	0		=	6,191	≥ 6,103	0	= 6103		COMPLIES
Unconditioned					=		≥		=		
Controls Compliance (See Table H for Details)											COMPLIES
Rated Power Reduction Compliance (See Table Q for Details)											

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 1 of 10)
Project Address: 1800 Booth Road	**Date Prepared:**	5/9/2024

This document is used to demonstrate compliance with requirements in 110.9, 110.12(c), 130.0, 130.1, 140.6 and 141.0(b)2 for indoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e) and 180.2(b)4 for indoor lighting scopes using the prescriptive path for multifamily occupancies. Multifamily includes dormitory and senior living facilities.

A. GENERAL INFORMATION

01	Project Location (city)	Roseville	04 Total Conditioned Floor Area (ft²)	10,160
02	Climate Zone	11	05 Total Unconditioned Floor Area (ft²)	0
03	Occupancy Types Within Project (select all that apply):		06 # of Stories (Habitable Above Grade)	1

● Office ● Support Areas ● All Other Occupancies

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)2 / 180.2(b)4 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☒ New Lighting System	Area Category Method	10160	Area Category Method	0
☐ New Lighting System - Parking Garage				
Total Area of Work (ft²)	10160		0	

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 6 of 10)
	Date Prepared:	5/9/2024

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Laundry	Laundry	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No ☐ ☐
Restroom	Restroom	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No ☐ ☐
					13		
					Plan Sheet Showing Daylit Zones:		

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per 140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per 140.6(c) or adjustments per 140.6(a) are being used .

Conditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft²)	Area (ft²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment	
					Area Category	PAF
Laboratory	Laboratory Area, Scientific	0.9	1,778	1,600.2	No	No
Open Office	Office (>250 square feet)	0.6	1,655	993	No	No
Office <250 SF	Office (<=250 square feet)	0.65	1,169	759.8	No	No
Control Room	Copy Room	0.7	575	402.5	No	No
Conference Room	Convention, Conference, Multipurpose and Meeting Center	0.75	408	306	No	No
Kitchen	Lounge	0.55	584	321.2	No	No
Corridor	Corridor	0.4	1,575	630	No	No
Lobby/Reception	Main Entry Lobby	0.7	395	276.5	No	No
Locker Room	Locker/Dressing Room	0.45	1,090	490.5	No	No
Electrical, Mech, FR, Equipment, MDF Rooms	Electrical Mechancial Telephone Room	0.4	666.5	266.6	No	No
Storage	All Other Space Types	0.4	76	30.4	No	No

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 5 of 10)
	Date Prepared:	5/9/2024

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Area Level Controls

04	05	06	07	08	09	10	11	12	
Area Description	Complete Building or Area Category Primary Function Area	Manual Area Controls 130.1(a) / 160.5(b)4A	Multi-Level Controls 130.1(b) / 160.5(b)4B	Shut-Off Controls 130.1(c) // 160.5(b)4C	Primary/Sky lit Daylighting 130.1(d) / 160.5(b)4D	Secondary Daylighting 130.1(d) / 160.5(b)4D	Interlocked Systems 140.6(a)1/ 170.2(e)2A	Field Inspector	
								Pass	Fail
Laboratory	Laboratory Area, Scientific	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐
Office <250 sf	Office (<=250 square feet)	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐
Open Office	Office (>250 square feet)	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐	☐
Control Room	Copy Room	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐
Conference Room	Convention, Conference, Multipurpose and Meeting Center	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐
Kitchen	Lounge	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐
Corridor	Corridor	Readily Accessible	Dimmer	Occupancy Sensor	Included	NA: Skylight shaded	No	☐	☐
Lobby/Reception	Main Entry Lobby	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐
Locker Room	Locker/Dressing Room	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐
Electrical, Mech, FR, Equipment, MDF Rooms	Electrical Mechancial Telephone Room	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐
Storage	All Other Space Types	Readily Accessible	Dimmer	Occupancy Sensor	NA: Rm < 24sf Glazing	NA: Rm < 24sf Glazing	No	☐	☐

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 4 of 10)
	Date Prepared:	5/9/2024

F. INDOOR LIGHTING FIXTURE SCHEDULE

[1]*FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per 140.6(a)4B / 170.2(e)2D is adjusted to be 75% /80% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.*

[2]*Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b). Wattage used must be the maximum rated for the luminaire, not the lamp.*

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

This table includes lighting controls for conditioned and unconditioned spaces.

Building Level Controls

01	02	03	
		Field Inspector	
		Pass	Fail
Mandatory Demand Response 110.12(c)	Shut-off controls 130.1(c) / 160.5(b)4C	☐	☐
Required >= 4,000W subject to multilevel	See Area/Space Level Controls		

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 9 of 10)
	Date Prepared:	5/9/2024

V. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selections have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title	Systems/Spaces To Be Field Verified
NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	Laboratory; Office <250 sf; Open Office; Control Room; Conference Room; Kitchen; Corridor; Lobby/Reception; Locker Room; Electrical, Mech, FR, Equipment, MDF Rooms; Storage; Laundry; Restroom;
NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	Open Office; Corridor;
NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	Whole Building Demand Response;

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 8 of 10)
	Date Prepared:	5/9/2024

Q. RATED POWER REDUCTION COMPLIANCE FOR ONE-FOR-ONE ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

T. DWELLING UNIT LIGHTING

This section does not apply to this project.

U. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selections have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-LTI-E - Must be submitted for all buildings

STATE OF CALIFORNIA
Indoor Lighting CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name: Dry Creel WWTP	**Report Page:**	(Page 7 of 10)
	Date Prepared:	5/9/2024

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Laundry	Laundry	0.45	43.5	19.6	No	No
Restroom	Restroom	0.65	145	94.2	No	No
		TOTALS:	10,160	6,190.5	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED DECORATIVE /SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

196
2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

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www.peterseng.com
Job no. 23.020
consulting mechanical and electrical engineers

ARCHITECT STAMP | CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER — TING R. ROMULO — E17247 — EXP. 6/30/24 — ELECTRICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
TITLE 24 INDOOR LIGHTING

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-003

DATE: 4/24/18

DATE PLOTTED: 10/23/2024 1:17:31 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

BID SET (PRELIMINARY)

STATE OF CALIFORNIA

Indoor Lighting

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTI-E
Project Name:	Dry Creel WWTP	**Report Page:** **(Page 10 of 10)**
Project Address:	1800 Booth Road	**Date Prepared:** 5/23/2024

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
I certify that this Certificate of Compliance documentation is accurate and complete.	
Documentation Author Name: Gino Romano	Documentation Author Signature:
Company: Peters Engineering	Signature Date: 2024-05-23
Address: 7750 College Town Drive Suite 101	CEA/ HERS Certification Identification (if applicable): E17247
City/State/Zip: Sacramento CA 95826	Phone: 9164472841
RESPONSIBLE PERSON'S DECLARATION STATEMENT I certify the following under penalty of perjury, under the laws of the State of California: 1. The information provided on this Certificate of Compliance is true and correct. 2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer) 3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. 4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. 5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.	
Responsible Designer Name: Gino Romano	Responsible Designer Signature:
Company: Peters Engineering	Date Signed: 2024-05-23
Address: 7750 College Town Drive Suite 101	License: E17247
City/State/Zip: Sacramento CA 95826	Phone: 9164472841

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance

Generated Date/Time:

Report Version: 2022.0.000
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Compliance ID: EnergyPro-30027-0524-0636
Report Generated: 2024-05-23 13:17:44

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City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

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ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
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SHEET TITLE

TITLE 24 INDOOR LIGHTING

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

E-004

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 10/23/2024 1:17:32 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

F. OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with 140.7 / 170.2(e)6 all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Table below. For altered lighting systems using the Existing Power method per 141.0(b)2L only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (ie, existing luminaires remaining or existing luminaires being moved are not included). Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Designed Wattage:

01	02		03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description		Watts per luminaire[1, 2]	How is Wattage determined	Total Number Luminaires [2]	Luminaire Status[3]	Excluded per 140.7(a) / 170.2(e)6A	Design Watts	Cutoff Req. > 6,200 initial lumen output 130.2(b) / 160.5(c)1[4]	Field Inspector	
										Pass	Fail
B1/B1E	14W LED Downlight Wet	☐ Linear	13.8	Mfr. Spec	4	New	☐	55.2	NA: < 6200 lumens	☐	☐
F1/F1E	16.5W LED Pendand LGHTS Wet Loc.	☐ Linear	16.5	Mfr. Spec	4	New	☐	66	NA: < 6200 lumens	☐	☐
SP	75W LED Pole Lights	☐ Linear	75	Mfr. Spec	11	New	☐	825	NA: < 6200 lumens	☐	☐
SW/SWE	30W LED Wall Packs	☐ Linear	30	Mfr. Spec	6	New	☐	180	NA: < 6200 lumens	☐	☐
							Total Design Watts:	1126			

* NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.
EX: Luminaire is lighting a statue; EXCEPTION 2 to 130.2(b)

[1] FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b)
[2] For linear luminaires, wattage should be indicated as W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires.
[3] Select "New" for new luminaires in a new outdoor lighting project, or for added luminaires in an alteration. Select "Altered" for replacement luminaires in an alteration. Select "Existing to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing Reinstalled" for existing luminaires which are being removed and reinstalled as part of the project scope.
[4] Compliance with mandatory shielding requirements is required for luminaires with initial lumen output >= 6,200 unless exempted by 130.2(b)/ 160.5(c)

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through N. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

Calculations of Total Allowed Lighting Power (Watts) 140.7 / 170.2(e)6 or 141.0(b)2L / 180.2(b)4Bv												Compliance Results		
01		02		03		04		05		06		07		08	09
General Hardscape Allowance 140.7(d)1 / 170.2(e)6 (See Table I)	+	Per Application 140.7(d)2 / 170.2(e)6 (See Table J)	+	Sales Frontage 140.7(d)2 (See Table K)	+	Ornamental 140.7(d)2 / 170.2(e)6 (See Table L)	+	Per Specific Area 140.7(d)2 / 170.2(e)6 (See Table M)	OR	Existing Power Allowance 141.0(b)2L / 180.2(b)4Bv (See Table N)	=	**Total Allowed** (Watts)	≥	**Total Actual** (Watts)	**07 must be >= 08**
1,461	+	---	+	---	+	---	+	---	OR	---	=	1,461	≥	1,126	COMPLIES
Shielding Compliance (See Table G for Details)															N/A
Controls Compliance (See Table H for Details)															COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

This document is used to demonstrate compliance with requirements in 110.9, 130.0, 130.2, 140.7, and 141.0(b)2L for outdoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e)6, 180.1(a) and 180.2(b)4Bv for outdoor lighting scopes using the prescriptive path for multifamily and mixed-use occupancies. Multifamily includes dormitory and senior living facilities.

A. GENERAL INFORMATION

01	Project Location (city)	Roseville	04	Total Illuminated Hardscape Area (ft²)	50671
02	Climate Zone	11			
03	Outdoor Lighting Zone per Title 24 Part 1 10.114 or as designated by Authority Having Jurisdiction (AHJ):				
☐	LZ-0: Very Low - Undeveloped Parkland	☒ LZ-2: Moderate - Urban Clusters	☐ LZ-4: High - Must be reviewed by CA Energy Commission for Approval		
☐	LZ-1: Low - Rural Areas	☐ LZ-3: Moderately High - Urban Areas			
05	Occupancy Types within Project				

● Office ● Support Areas ● All Other Occupancies

B. PROJECT SCOPE

This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.7 / 170.2(e)6 or 141.0(b)2L / 180.2(b)4Bv for alterations.

My Project Consists of:

01	02	
☒ New Lighting System	Must Comply with Allowances from 140.7 / 170.2(e)6	
☐ Altered Lighting System	Is your alteration increasing the connected lighting load (Watts)?	◯ Yes ◯ No
03	04	05
% of Existing Luminaires Being Altered[1]	Sum Total of Luminaires Being Added or Altered	Calculation Method
☐ < 10% ☐ >= 10% and < 50% ☐ >= 50%		

Please proceed to Table F. Outdoor Lighting Fixture Schedule to define the project's luminaires.

[1] FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA

This section does not apply to this project.

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)

This section does not apply to this project.

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection has been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-LTO-E - Must be submitted for all buildings

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selection has been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title	Systems/Spaces To Be Field Verified
NRCA-LTO-02-A - Must be submitted for all outdoor lighting controls except for alterations where controls are added to <= 20 luminaires.	Pedestrian Hardscape; Automotive Hardscape;

I. LIGHTING POWER ALLOWANCE (per 140.7 / 170.2(e))

This table includes areas using allowance calculations per 140.7 / 170.2(e). General Hardscape Allowance is per Table 140.7-A/Table 170.2-R while "Use it or lose it" Allowances are per Table 140.7-B /Table 170.2-S. Indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance.
Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H. and are not included here. All other multifamily outdoor lighting is included here.

	01				
	☒ General Hardscape Allowance Table I (below)	"Use it or lose it" Allowance (select all that apply) (select all that apply)			
		☐ Per Application Table J	☐ Sales Frontage Table K	☐ Ornamental Table L	☐ Per Specific Area Table M

Calculated General Hardscape Lighting Power Allowance per Table 140.7-A for Nonresidential & Hotel/Motel

02	03	04	05	06	07	08	09
Area Description	Area Wattage Allowance (AWA)			Linear Wattage Allowance (LWA)			Total General AWA + LWA (Watts)
	Illuminated Area (ft²)	Allowed Density (W/ft²)	Area Allowance (Watts)	Perimeter Length (lf)	Allowed Density (W/lf)	Linear Allowance (Watts)	
Parking lot	28085	0.019	533.6	1334	0.2	200.1	734
Pedestrian Hardscape	22586	0.019	429.1	657	0.2	98.6	528
Initial Wattage Allowance for Entire Site (Watts):							200
Instances of Initial Wattage Allowance (LZ 0 only)[1]							
Total General Hardscape Allowance (Watts):							1461

J. LIGHTING ALLOWANCE: PER APPLICATION

This section does not apply to this project.

K. LIGHTING ALLOWANCE: SALES FRONTAGE

This section does not apply to this project.

L. LIGHTING ALLOWANCE: ORNAMENTAL

This section does not apply to this project.

G. SHIELDING REQUIREMENTS (BUG)

This section does not apply to this project.

H. OUTDOOR LIGHTING CONTROLS

This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.
Outdoor lighting for nonresidential buildings, parking garages and common service areas in multifamily buildings must be documented separately from outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit

Mandatory Controls for Nonresidential Occupancies, Parking Garages & Common Areas in Multifamily Buildings

01	02	03	04	05	
Area Description	Shut-Off 130.2(c)1 / 160.5(c)	Auto-Schedule 130.2(c)2 / 160.5(c)	Motion Sensor 130.2(c)3 / 160.5(c)	Field Inspector	
				Pass	Fail
Pedestrian Hardscape	Photocontrol	Provided	Provided	☐	☐
Automotive Hardscape	Photocontrol	Provided	Provided	☐	☐

[1] FOOTNOTE: Text has been abbreviated, please refer to Table 160.5-A to confirm compliance with the specific light source technologies listed.
[2] Authority having jurisdiction may ask for cutsheets or other documentation to confirm compliance of light source.
[3] Recessed luminaires marked for use in fire-rated installations, and recessed luminaires installed in non-insulated ceilings are excepted from ii and iii.

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Gino Romano	Documentation Author Signature:
Company: Peters Engineering	Signature Date: 2024-05-23
Address: 7750 College Town Drive Suite 101	CEA/ HERS Certification Identification (if applicable): E17247
City/State/Zip: Sacramento CA 95826	Phone: 9164472841

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Gino Romano	Responsible Designer Signature:
Company: Peters Engineering	Date Signed: 2024-05-23
Address: 7750 College Town Drive Suite 101	License: E17247
City/State/Zip: Sacramento CA 95826	Phone: 9164472841

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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER — GINO R. ROMANO — E17247 EXP. 6/30/24 — ELECTRICAL — STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

TITLE 24 OUTDOOR LIGHTING

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

E-005

DATE: 4/24/18

DATE PLOTTED: 10/29/2024 1:17:40 PM FILE LOCATION: C:\Users\nikovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

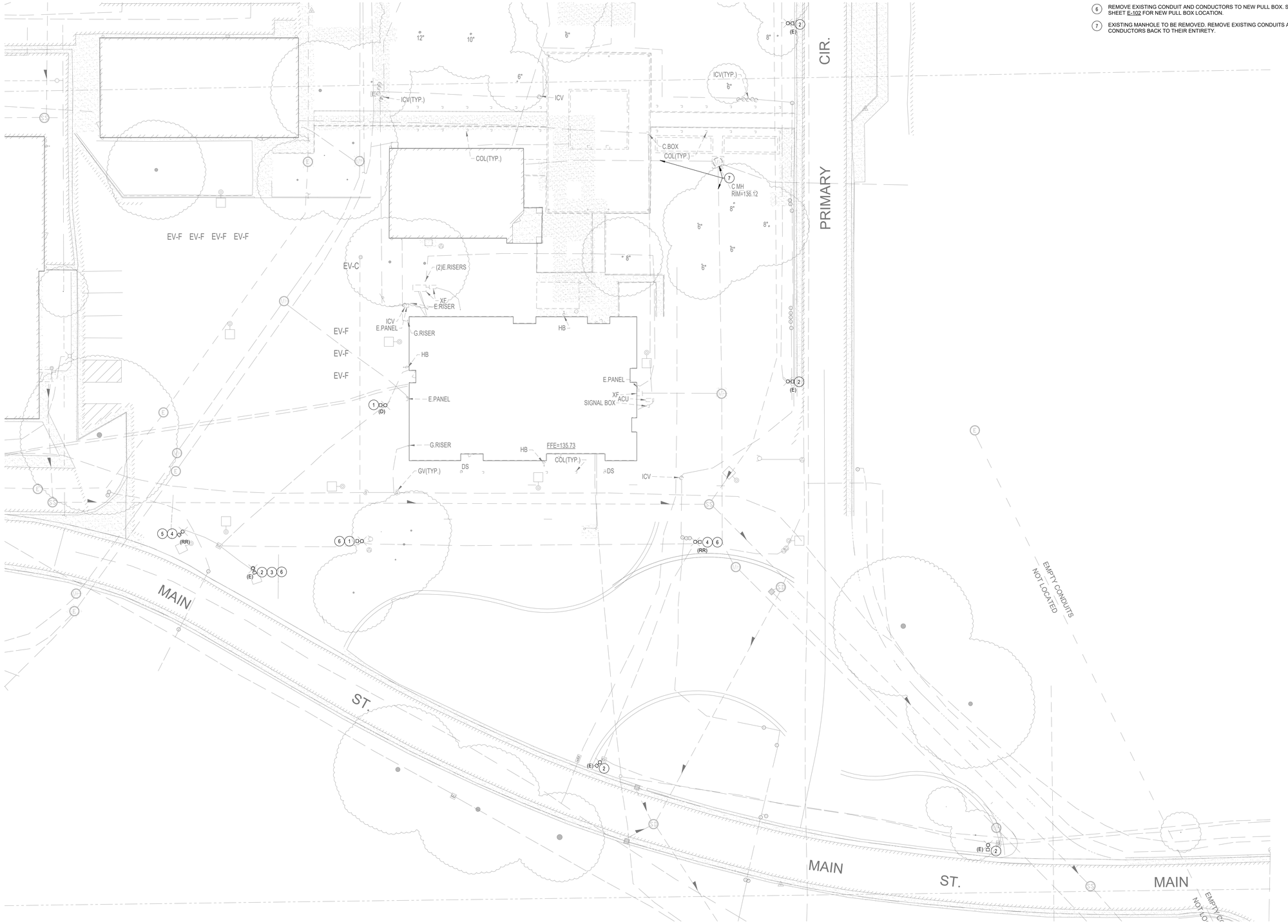
BID SET (PRELIMINARY)

SHEET NOTES:

1. ALL EXISTING EQUIPMENT, DEVICES, CONDUIT AND WIRING, ETC., SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DRAWINGS AND LIMITED SITE SURVEYS, AND SHOWN FOR CLARITY ONLY.

KEYED NOTES:

1. DISCONNECT AND REMOVE EXISTING SITE LIGHTING POLE .
2. EXISTING SITE LIGHTING POLE TO REMAIN. PROTECT EXISTING POLE, LIGHTS, CONDUIT, CONDUCTORS, AND CONTROL DEVICES DURING DEMOLITION AND NEW CONSTRUCTION.
3. INTERCEPT AND EXTEND THE EXISTING STREET LIGHTING CIRCUIT TO POWER THE (E) POLE LIGHTS FROM NEAREST VERIFIED EXISTING ELECTRICAL PANEL IN THE EXISTING BUILDING NOT IN THE SCOPE OF DEMO AND CONSTRUCTION WORK.
4. REMOVE EXISTING LIGHT POLE AND PROTECT FOR RE-USE. SEE SHEET E-102 FOR NEW LOCATION. PROTECT EXISTING POLE, LIGHTS, CONDUIT, CONDUCTORS, AND CONTROL DEVICES DURING DEMOLITION AND NEW CONSTRUCTION.
5. REMOVE EXISTING CONDUIT AND CONDUCTORS BACK TO EXISTING PULL BOX.
6. REMOVE EXISTING CONDUIT AND CONDUCTORS TO NEW PULL BOX. SEE SHEET E-102 FOR NEW PULL BOX LOCATION.
7. EXISTING MANHOLE TO BE REMOVED. REMOVE EXISTING CONDUITS AND CONDUCTORS BACK TO THEIR ENTIRETY.



1 **SITE PLAN - ELECTRICAL DEMOLITION**
1/16" = 1'-0"

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

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ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE PLAN - ELECTRICAL DEMOLITION

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-100

DATE: 4/24/18

DATE PLOTTED: 10/23/2024 1:17:41 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

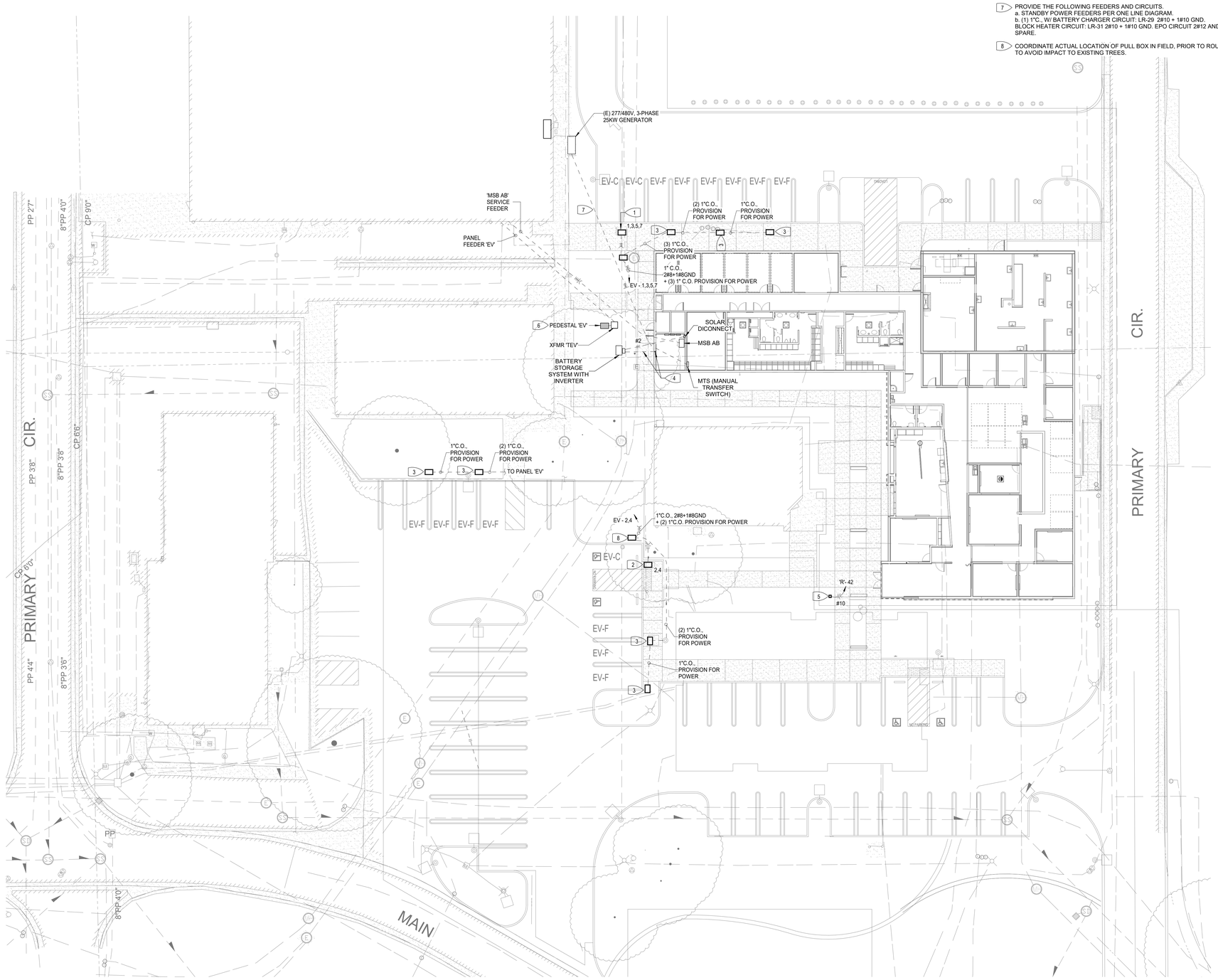
BID SET (PRELIMINARY)

SHEET NOTES:

1. LOCATE CONDUIT STUBS WITHIN 5 FEET OF BUILDING.
2. REFER TO ONE LINE DIAGRAM E-401 AND ONE LINE DIAGRAM - SOLAR E-402 FOR FEEDER CONDUIT AND CONDUCTOR SIZES.
3. PV INVERTERS SHALL BE LISTED AND LABELED WITH UL1741, AND SYSTEMS CONNECTED TO UTILITY GRID SHALL USE INVERTERS LISTED FOR UTILITY INTERACTION PER CBC3111.3.1 EQUIPMENT.
4. PROVIDE CONDUIT MINIMUM 1" SIZE FOR SITE WORK.
5. PROVIDE TRENCH PLATES FOR ANY TRENCH WORK CROSSING DRIVE AISLES.

KEYED NOTES:

1. PROVIDE TWO(2) OPCONNECT TYPE HCS-40R OR EQUAL ELECTRIC VEHICLE CHARGERS ON DUAL MOUNT PEDESTAL.
2. PROVIDE ONE(1) OPCONNECT TYPE HCS-40R OR EQUAL ELECTRIC VEHICLE CHARGER ON SINGLE MOUNT PEDESTAL.
3. PROVIDE CHRISTY N09 UNDERGROUND PULL BOX IN CONCRETE WALK WITH CONCRETE AND LOCK BOLTS LABELED 'ELECTRICAL' FOR FUTURE EV CHARGING STATION . TYPICAL FOR (7) LOCATIONS.
4. RISE UP IN WALL TO THE PULL BOX ON ROOF. SEE SHEETS E-205 AND E-402 FOR REFERENCE.
5. PROVIDE CHRISTY N09 UNDERGROUND PULL BOX FOR WATER FEATURE. COORDINATE POWER CONNECTION AND CONTROLS REQUIREMENTS WITH SHOP DRAWINGS. COORDINATE LOCATION WITH LANDSCAPE.
6. ELECTRIC VEHICLE CHARGING PEDESTAL 'EV'. REFER TO EV PEDESTAL DETAIL 1/E-605.
7. PROVIDE THE FOLLOWING FEEDERS AND CIRCUITS.
   a. STANDBY POWER FEEDERS PER ONE LINE DIAGRAM.
   b. (1) 1"C., W/ BATTERY CHARGER CIRCUIT: LR-29 2#10 + 1#10 GND.
   BLOCK HEATER CIRCUIT: LR-31 2#10 + 1#10 GND. EPO CIRCUIT 2#12 AND 4#12 SPARE.
8. COORDINATE ACTUAL LOCATION OF PULL BOX IN FIELD, PRIOR TO ROUGH-IN, TO AVOID IMPACT TO EXISTING TREES.



1 **SITE PLAN - ELECTRICAL**
1/16" = 1'-0"

N

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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER
ANTHONY A. ROMANO
E17247
EXP. 6/30/26
ELECTRICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE PLAN - ELECTRICAL

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-101

DATE: 4/24/18

BID SET (PRELIMINARY)

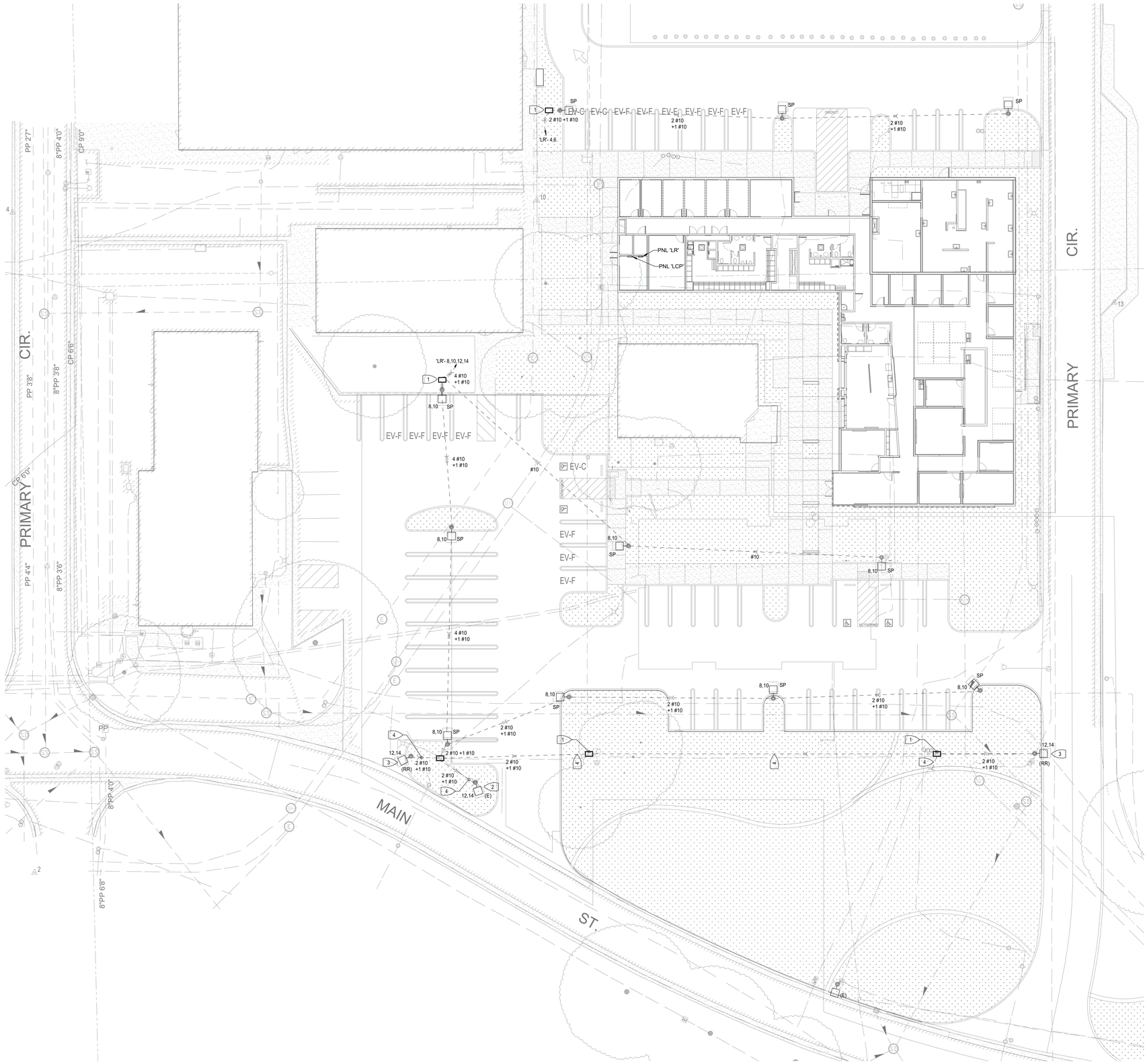
DATE PLOTTED: 2/13/2025 3:46:41 PM FILE LOCATION: C:\Users\jmoberly\Documents\23.020 Dry Creek WWTP MEP_r22_jmoberly.rvt

SHEET NOTES:

1. EACH EXTERIOR LIGHT FIXTURE TO BE CONTROLLED BY WATTSTOPPER DAYLIGHT SENSOR. NO SUBSTITUTION IS ALLOWED.
2. EACH LIGHT FIXTURE TO BE CONTROLLED BY WATTSTOPPER OCCUPANCY SENSOR. POLE MOUNTED FIXTURES ARE SPECIFIED WITH INTERNAL OCCUPANCY SENSORS. OTHER EXTERIOR LIGHT FIXTURES, NOT SHOWN ON PLAN, REQUIRE EXTERNAL SENSORS TO BE FIELD ADDED. NO SUBSTITUTION IS ALLOWED.
3. PROVIDE CONDUIT MINIMUM 1" SIZE FOR SITE WORK.
4. SEE LUMINAIRE SCHEDULE ON SHEET E-002 FOR LIGHT FIXTURE TYPES.
5. ALL EXISTING EQUIPMENT, DEVICES, CONDUIT AND WIRING, ETC., SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DRAWINGS AND LIMITED SITE SURVEYS, AND SHOWN FOR CLARITY ONLY.

KEYED NOTES:

1. PROVIDE CHRISTY N09 UNDERGROUND PULL BOX IN CONCRETE WALK. PROVIDE WITH CONCRETE LID AND LOCK BOLTS. COORDINATE EXACT LOCATION IN FIELD PRIOR TO ROUGH-IN.
2. EXISTING LIGHT POLE. DISCONNECT TEMPORARY CIRCUIT AND CONNECT TO NEW CIRCUIT AFTER COMPLETION OF CONSTRACTION WORK. SEE PANEL SCHEDULE ON SHEET E-501 FOR REFERENCE.
3. EXISTING LIGHT POLE IN NEW LOCATION. PROVIDE POLE BASE PER POLE BASE DETAIL 5/E-602.
4. CONNECT EXISTING CONDUCTORS INTO NEW LIGHTING CIRCUIT IN NEW PULL BOX.



1 **SITE PLAN - LIGHTING**
1/16" = 1'-0"

N

196
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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE PLAN - LIGHTING

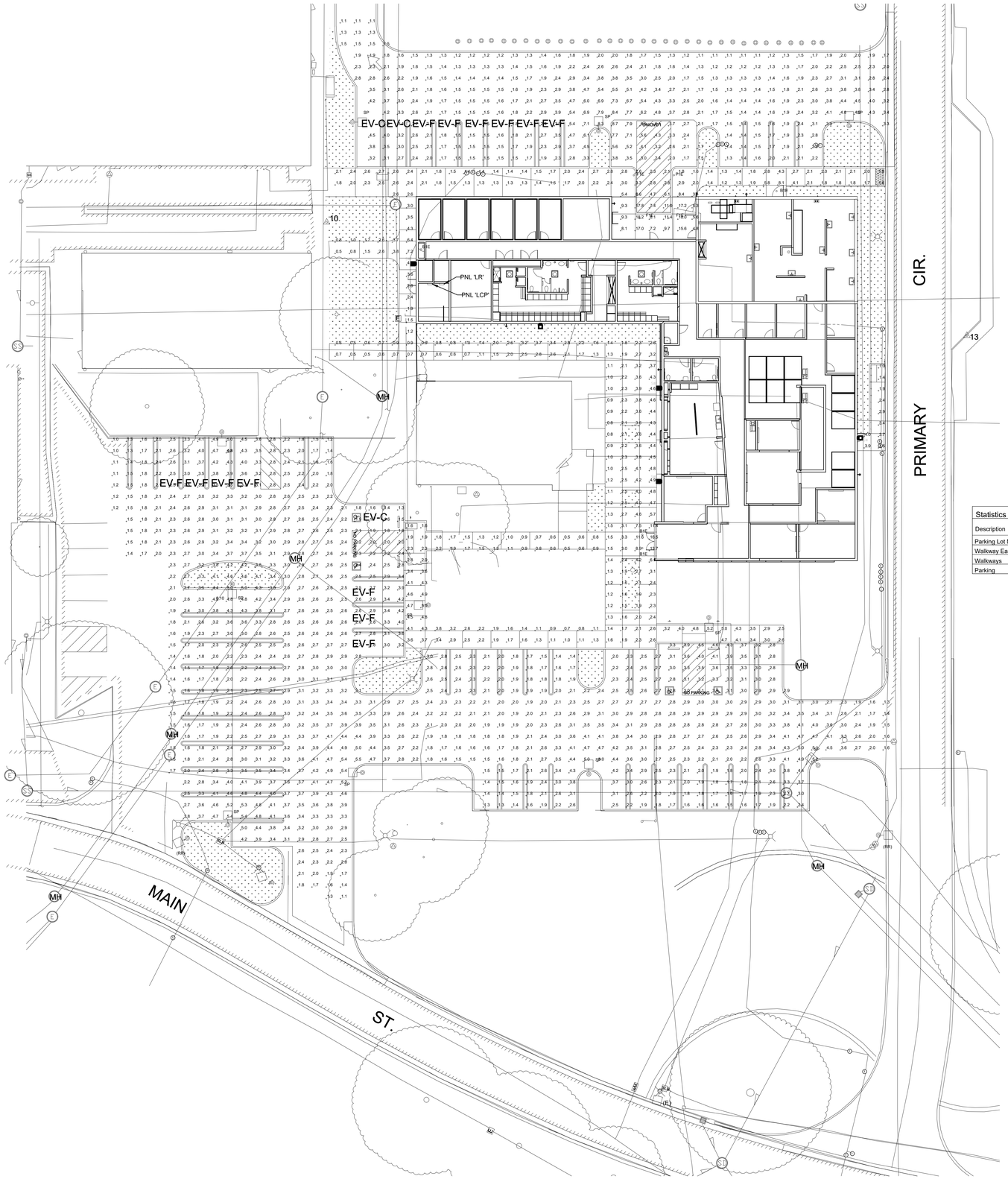
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SHEET NO.
E-102

DATE: 4/24/18

BID SET (PRELIMINARY)

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1 **SITE PLAN - LIGHTIG PHOTOMETRICS**
3/4" = 1'-0"

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking Lot North	+	2.5 fc	8.7 fc	1.1 fc	7.9:1	2.3:1
Walkway East	+	2.8 fc	4.0 fc	1.0 fc	4.0:1	2.8:1
Walkways	+	2.7 fc	18.2 fc	0.5 fc	36.4:1	5.4:1
Parking	+	2.7 fc	5.5 fc	1.0 fc	5.5:1	2.7:1

N

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE PLAN - LIGHTING PHOTOMETRICS

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-103

DATE: 4/24/18

BID SET (PRELIMINARY)

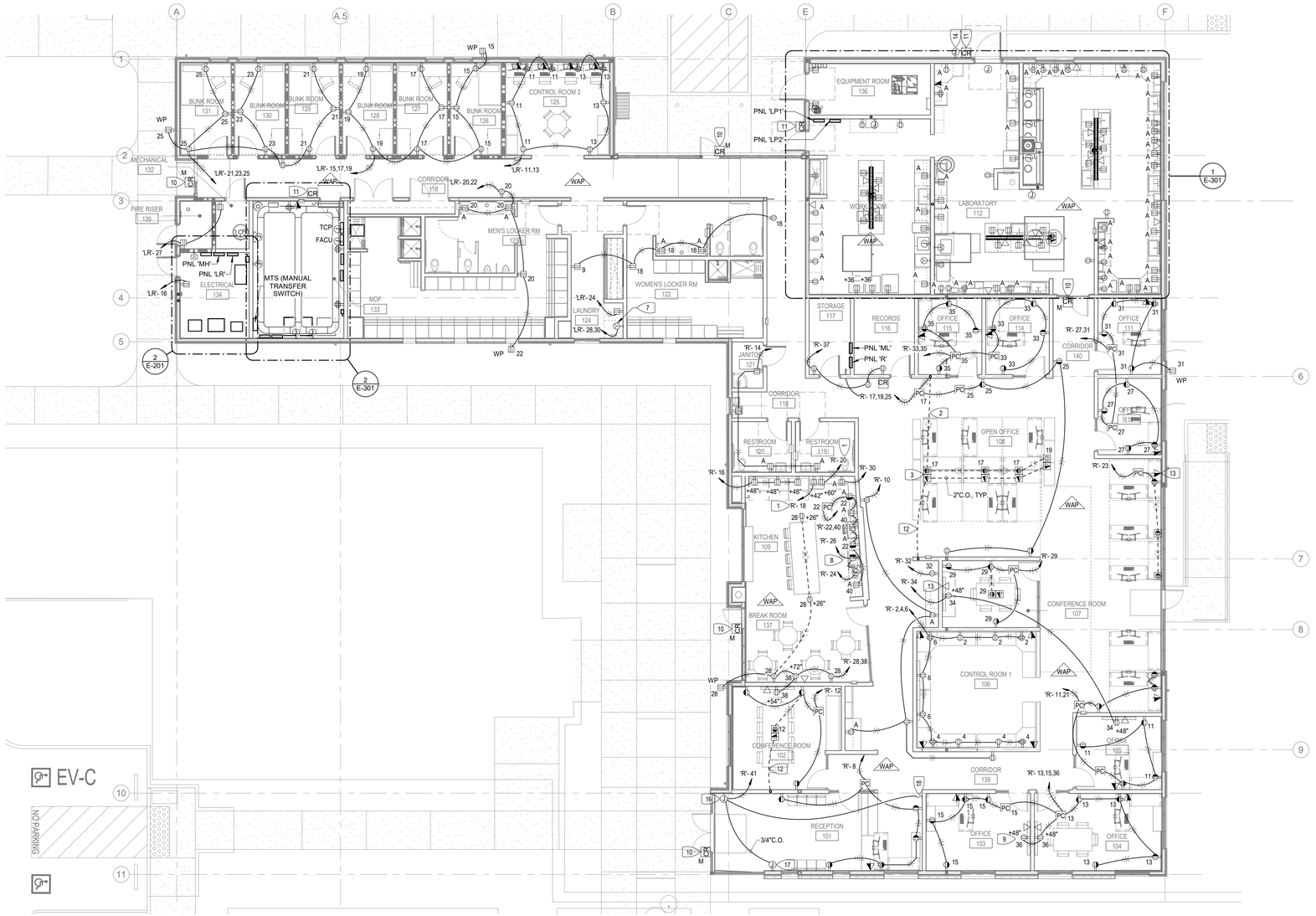
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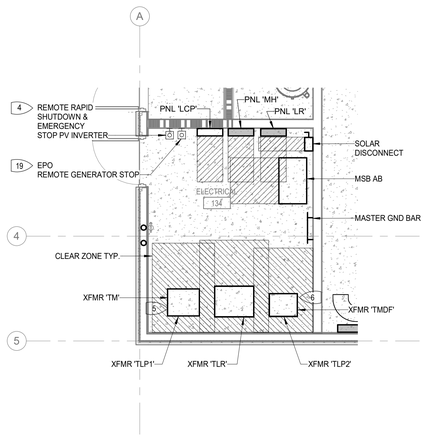
KEYED NOTES:

1. PROVIDE DEDICATED CIRCUITS FOR MICROWAVES.
2. PROVIDE 1"CONDUIT FROM FLOOR BOX UNDER FLOOR TO NEAREST WALL AND RISE IN WALL AND STUB IN ACCESSIBLE CEILING SPACE. TYPICAL.
3. PROVIDE RECESSED 2-GANG FLOOR BOX HUBBEL #GFB2G25R WITH (2) 1 INCH KO TRADE FOR POWER, (2) 2 INCH KO TRADE FOR DATA AND COVER # 24GTCVR. COORDINATE COVER FINISH WITH ARCHITECT PRIOR TO ORDERING. TYPICAL OF (6) LOCATIONS.
4. PROVIDE REMOTE RAPID SHUTDOWN BUTTON AND EMERGENCY STOP FOR PV INVERTER. SEE DETAILS AND SIGNAGE REQUIREMENTS ON SHEET E402.
5. TRANSFORMERS STACKED ON RACK PER DETAIL **7/E601**. TRANSFORMER "TLP1' BELOW "TMH".
6. TRANSFORMERS STACKED ON RACK PER DETAIL **8/E601**. TRANSFORMER "TLP2' BELOW "TMDF".
7. DRYER RECEPTACLE VOLTAGE AND STYLE TO BE DETERMINED ON SELECTION OF EQUIPMENT.
8. UNDERCOUNTER RECEPTACLE WIRED VIA SWITCH FOR GARBAGE DISPOSAL.
9. PROVIDE POWER AND DATA RECEPTACLES FOR TV. COORDINATE EXACT LOCATIONS WITH ARCITECTURAL DROWINGS PRIOR TO INSTALLATION. TYPICAL OF (6) LOCATIONS.
10. PROVIDE 1"C.O. FROM STORE FRONT MULLION INTO ACCESSIBLE CEILING SPACE ON SECURED SIDE OF DOORWAY.
11. PROVIDE 1"C.O. FROM OUTLET BOX INTO ACCESSIBLE CEILING SPACE ON SECURED SIDE OF DOORWAY.
12. PROVIDE 2"C.O. DATA FROM FLOOR BOX TO ACCESSIBLE CEILING SPACE.
13. PROVIDE 1-1/4"C.O. FROM OUTLET BOX TO ACCESSIBLE CEILING SPACE. TYPICAL FROM EACH DATA, TELEPHONE AND TELEPHONE/DATA OUTLET BOX.
14. PROVIDE OUTLET BOX FLUSH IN WALL, ADJACENT TO CARD READER OUTLET BOX, FOR AUTOMATIC DOOR OPENER PUSH BUTTON.
15. LOCATE FOR AND CONNECT TO DOOR ACTUATOR. COORDINATE EXACT LOCATION IN FIELD PRIOR TO ROUGH-IN.
16. PROVIDE FOR AND CONNECT TO MOTORIZED BLINDS. COORDINATE EXACT LOCATION IN FIELD PRIOR TO ROUGH-IN.
17. PROVIDE EMPTY OUTLET BOX FOR FUTURE MOTORIZED BLINDS. COORDINATE LOCATION USING OUTLET BOX INSTALLED FOR OTHER BLINDS FOR REFERENCE.
18. SWITCH FOR MOTORIZED BLINDS. PROVIDE WIRING BETWEEN SWITCH AND BLINDS PER MANUFACTURER'S REQUIREMENTS.
19. PROVIDE REMOTE EMERGENCY POWER OFF (EPO) BUTTON FOR GENERATOR. PROVIDE AND PLACE ABOVE THE EPO A WARNING SIGN INDICATING EMERGENCY GENERATOR SHUTOFF.

SHEET NOTES:

1. SEE ONE LINE DIAGRAM ON SHEET E401 FOR REFERENCE.
2. SEE PANEL SCHEDULES ON SHEETS E501 AND E502 FOR REFERENCE.
3. GFCI RECEPTACLES NEED TO BE ACCESSIBLE FOR RESETTING.
4. PROVIDE A PERMANENT PLAQUE PER CEC705.10, IDENTIFICATION OF POWER SOURCES. MARKINGS SHALL COMPLY WITH CEC 110.21(B). LOCATE ON DESIGNATED WALL IN THE ELECTRICAL ROOM.
5. ALL RECEPTACLES IN BUNK ROOMS SHALL BE AFCI LISTED. ⚠1





2 ENLARGED FLOOR PLAN - ELECTRICAL ROOM
1/4" = 1'-0"

1 FLOOR PLAN - POWER & SIGNAL
1/8" = 1'-0"

N

196
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ARCHITECT STAMP

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REGISTERED PROFESSIONAL ENGINEER — E17247 EXP. 6/30/26 — ELECTRICAL — STATE OF CALIFORNIA

REVISIONS

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1	08/28/2024	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
FLOOR PLAN - POWER & SIGNAL

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-201

DATE: 4/24/18

BID SET (PRELIMINARY)

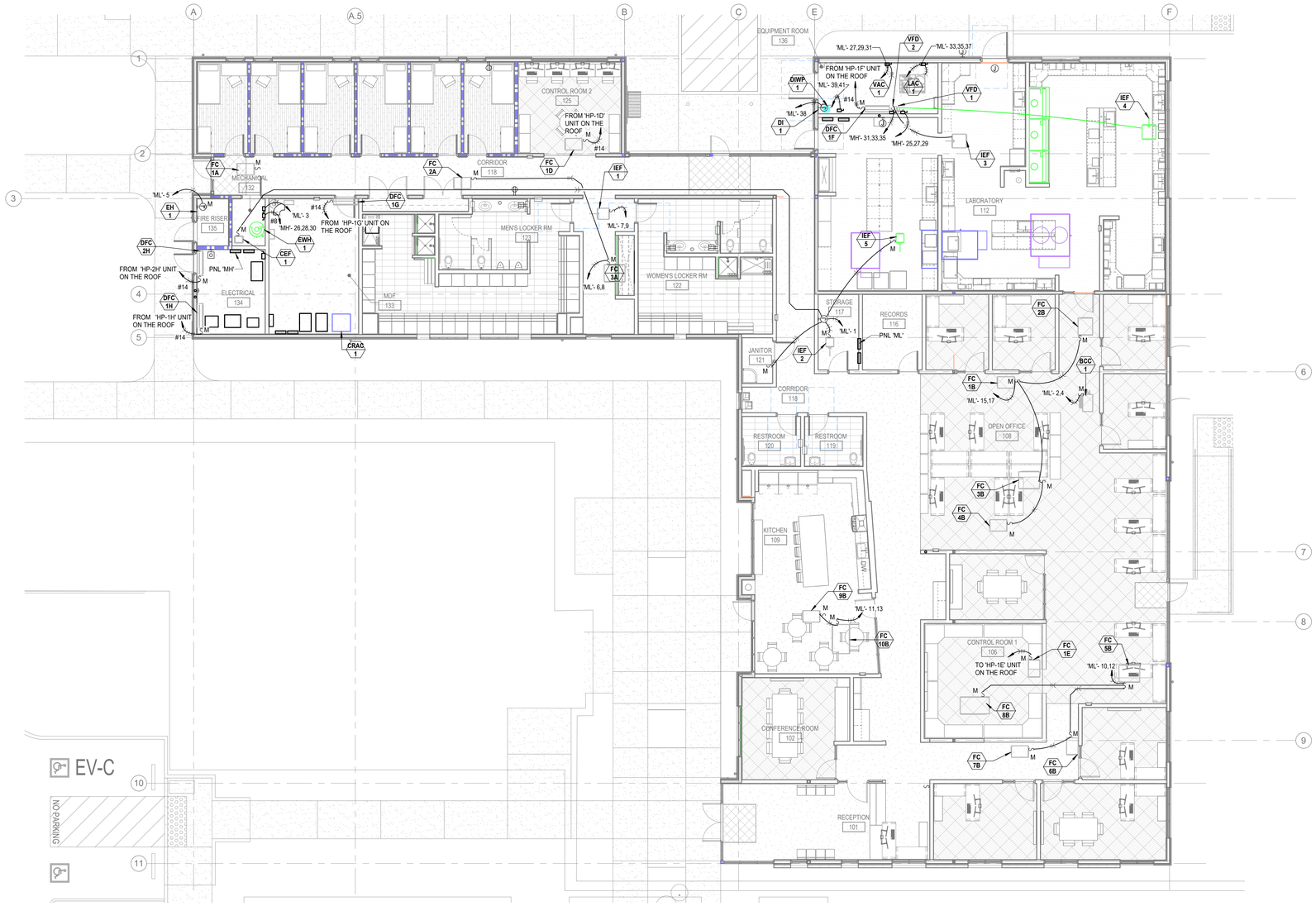
DATE PLOTTED: 2/13/2025 3:46:46 PM FILE LOCATION: C:\Users\jmoberly\Documents\23.020 Dry Creek WWTP MEP_r22_jmoberly.rvt

SHEET NOTES:

1. PROVIDE FUSED DISCONNECT SWITCH TO EACH MECHANICAL UNIT.
2. SEE ONE LINE DIAGRAM ON SHEET E-401 FOR REFERENCE.
3. SEE PANEL SCHEDULES ON SHEETS E-501 AND E-502 FOR REFERENCE.

KEYED NOTES:

1. PROVIDE FUSED DISCONNECT SWITCH FOR CIR. PUMP.
2. PROVIDE J-BOX FOR ELECTRIC HEATER.
3. PROVIDE FUSED DISCONNECT SWITCH FOR WATER HEATER.



1 **FLOOR PLAN - POWER MECHANICAL**
1/8" = 1'-0"

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PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

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ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
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SHEET TITLE
FLOOR PLAN - POWER MECHANICAL

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-202

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 10/23/2024 1:18:03 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

SHEET NOTES:

1. LOBBY AND CORRIDOR LIGHTING FIXTURES SHALL DIM TO 50% WHEN NO OCCUPANT DETECTED.
2. SEE ONE LINE DIAGRAM ON SHEET E-401 FOR REFERENCE.
3. SEE PANEL SCHEDULES ON SHEET E-501 FOR REFERENCE.
4. ONLY POWER CONDUCTORS TO LIGHT FIXTURES ARE SHOWN. PROVIDE 0-10V CONTROL WIRING TO FIXTURES AND CAT 5 CONTROL CABLING BETWEEN LIGHTING CONTROL DEVICES PER LIGHTING CONTROL DETAILS 6/E-602 AND 9/E-602.
5. CONTRACTOR IS RESPONSIBLE TO PROVIDE SENSORS FOR FULL COVERAGE.
6. SEE LUMINAIRE SCHEDULE ON SHEET E-002 FOR LIGHT FIXTURE TYPES.
7. PROVIDE UNSWITCHED HOT LEG TO EMERGENCY AND EXIT LIGHT FIXTURES.

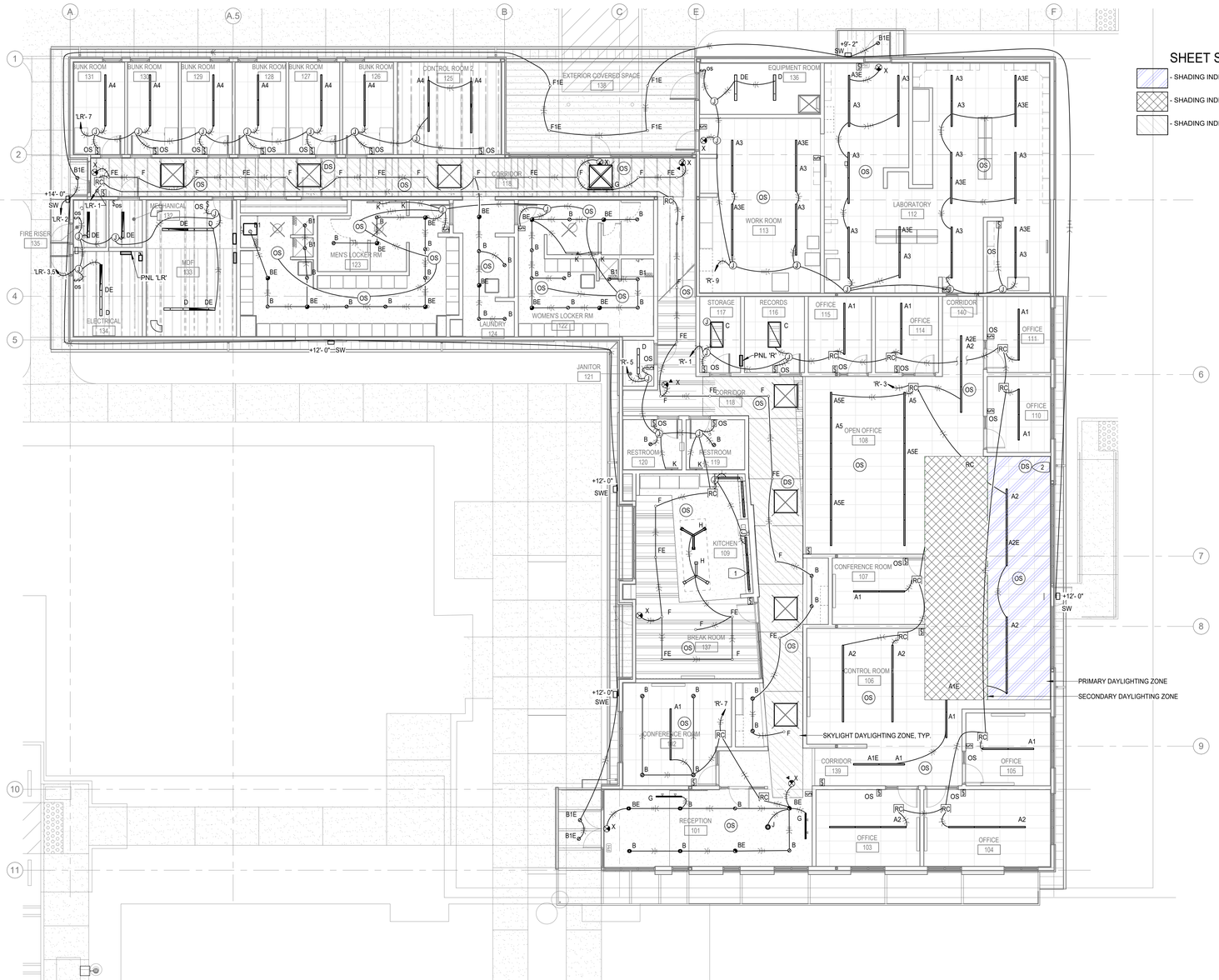
KEYED NOTES:

1 PROVIDE UNDERCUBINET LIGHTING FIXTURES WITN INTEGRATED OCCUPANCY SENSOR.

2 EACH LIGHT FIXTURES IN THE SKYLIGHT DAYLIGHTING ZONE AND PRIMARY AND SECONDARY DAYLIGHTING ZONES TO BE CONTROLLED BY WATTSTOPPER DAYLIGHT SENSOR. TYPICAL OF (3) LOCATIONS.

SHEET SYMBOLS LIST:

- SHADING INDICATES PRIMARY DAYLIGHTING ZONE
- SHADING INDICATES SECONDARY DAYLIGHTING ZONE
- SHADING INDICATES SKYLIGHT DAYLIGHTING ZONE



1 **FLOOR PLAN - LIGHTING**
1/8" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER — G NO R ROMANO — E17247 EXP. 6/30/24 — ELECTRICAL — STATE OF CALIFORNIA

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PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
FLOOR PLAN - LIGHTING

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-203

DATE: 4/24/18

N

DATE PLOTTED: 10/23/2024 1:18:07 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

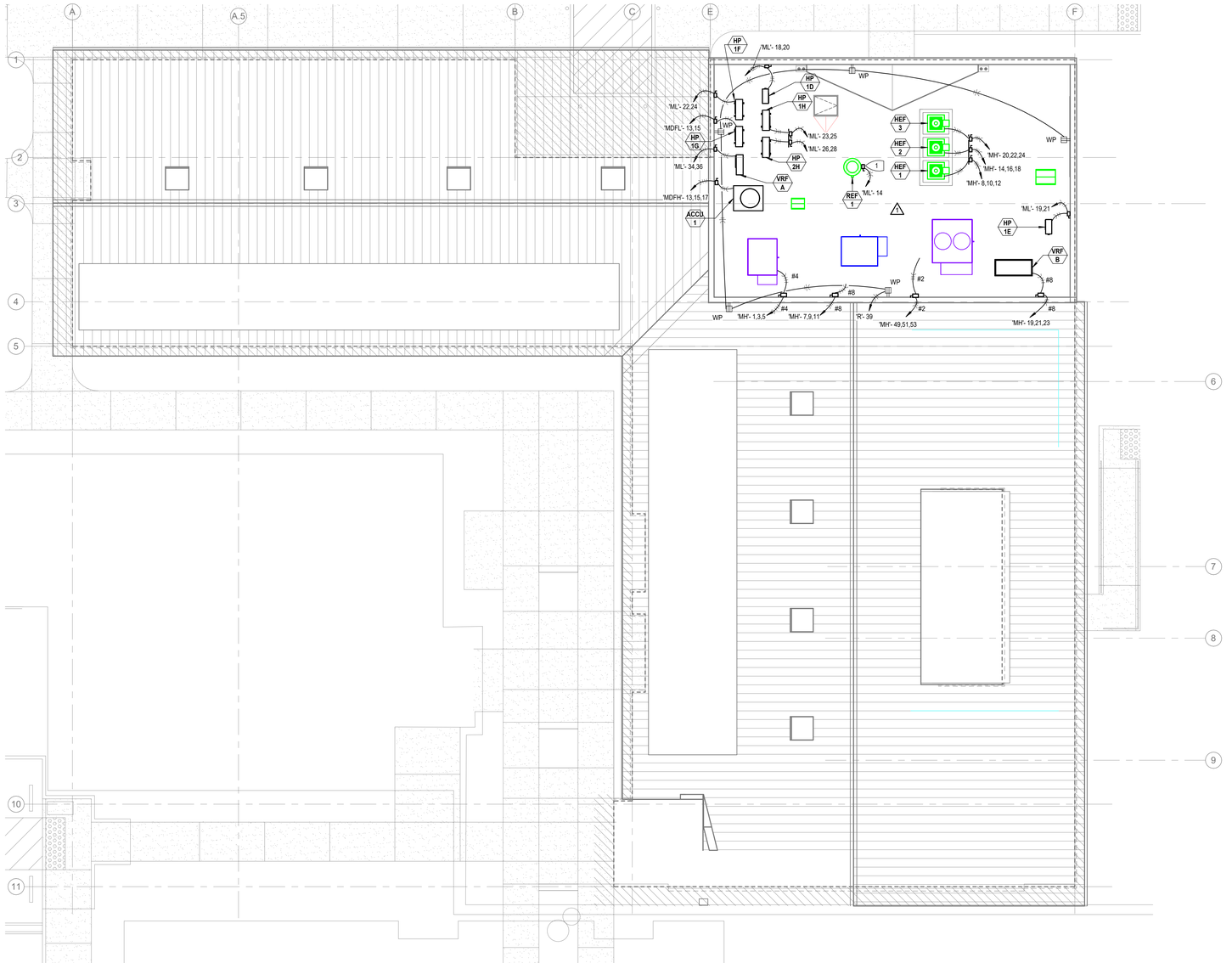
BID SET (PRELIMINARY)

SHEET NOTES:

1. PROVIDE FUSED DISCONNECT SWITCH TO EACH MECHANICAL UNIT.
2. SEE GENERAL NOTE #24 ON SHEET **E-001** FOR WEATHERPROOF RECEPTACLE REQUIREMENTS.

KEYED NOTES:

1 MECHANICAL UNIT COMPLETE WITH FUSED DISCONNECT. SEE MECHANICAL SCHEDULE SHEET M-003.



1 **ROOF PLAN - ELECTRICAL**
1/8" = 1'-0"

N

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ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
ROOF PLAN - POWER

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-204

DATE: 4/24/18

DATE PLOTTED: 10/23/2024 1:18:08 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

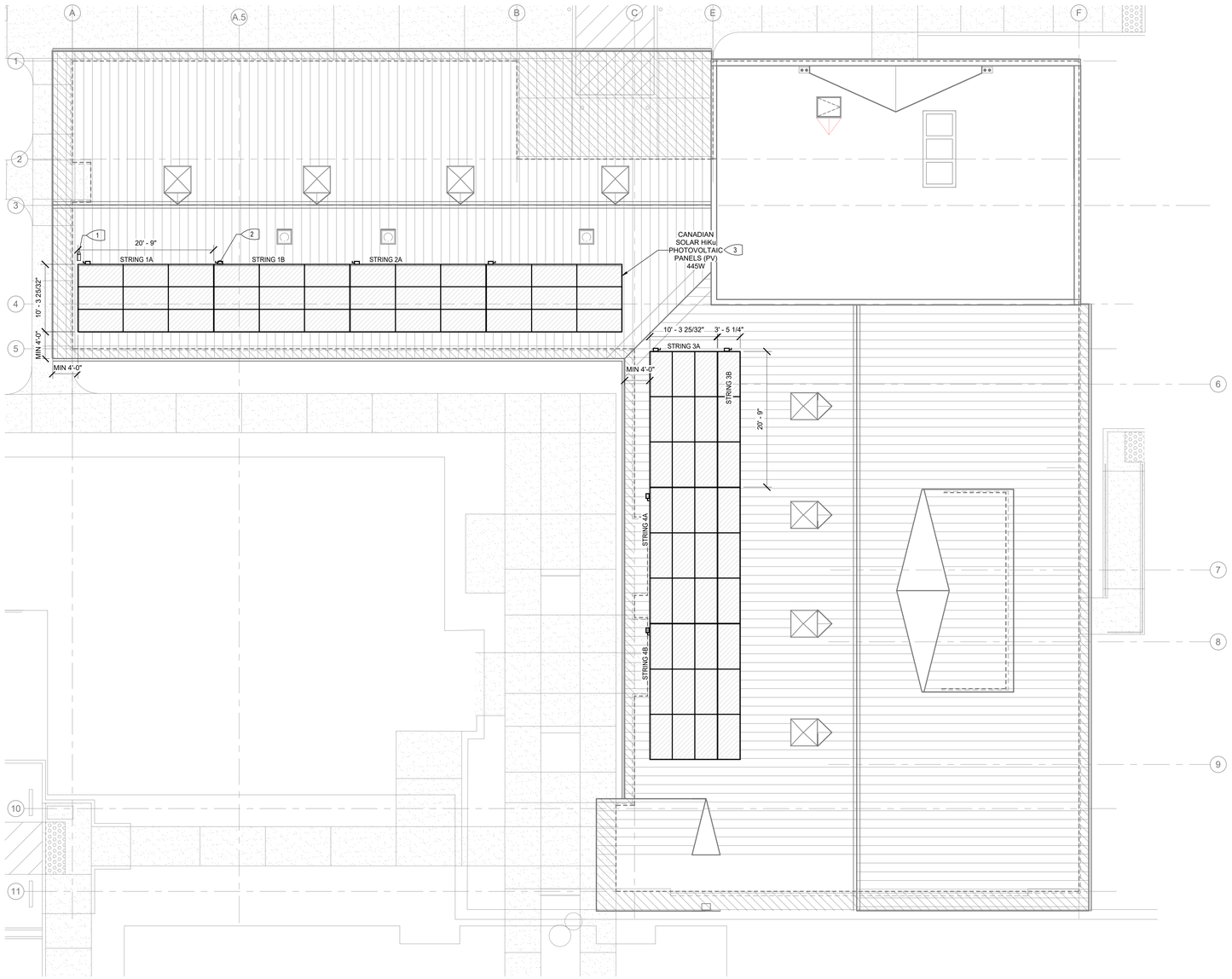
BID SET (PRELIMINARY)

SHEET NOTES:

1. REFER TO ONE LINE DIAGRAM - SOLAR ON SHEET E-402 FOR CONDUITS AND CONDUCTOR SIZES.
2. 2MAINTAIN ACCESS TO ROOF TOP UNITS AND DISCONNECTS, DISCONNECTS AND THE POWER CONNECTION POINTS REQUIRE 30" WIDE PATH AND 36"CLEARANCE.
3. MAINTAIN MIN. 4.0 FEET CLEAR FROM ROOF TOP PERIMETER.
4. SEE SHEET E-402 FOR PV SYSTEM SIGNAGE REQUIREMENTS.
5. ROOFTOP MOUNTED PHOTOVOLTAIC PANELS, MODULES, AND PANEL SYSTEMS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL1703 OR WITH BOTH UL61730-1 AND UL61730-2, PER CSC 3111.3.1.
6. CONTRACTOR TO PROVIDE A COMPLETE AND SEPARATE SUBMITTAL WITH SHOP DRAWINGS TO CITY OF ROSEVILLE FIRE DEPARTMENT PRIOR TO INSTALLATION. SEPARATE PERMIT REQUIRED FOR ROOF MOUNTED PHOTOVOLTAIC SYSTEMS.
7. MAINTAIN MINIMUM 3' FROM ALL MECHANICAL MOTORS AND FANS.

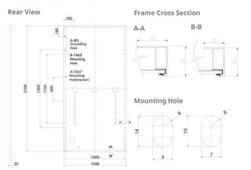
KEYED NOTES:

1. PROVIDE NEMA 3R 12" X 12" X 6" PULL BOX. SEE SHEET E-402 AND DETAIL 9/E-603 FOR REFERENCE.
2. PROVIDE 30A DC FUSED WEATHERPROOF DISCONNECT SWITCH LISTED FOR SOLAR SYSTEM USE. TYPICAL AT EACH SOLAR PANEL STRING. SEE SHEET E-402 FOR REFERENCE
3. PV PANELS TO BE MOUNTED WITH S-5! PVKIT 2.0 OR EQUAL. SEE DETAIL 6/E-604 FOR MOUNTING.

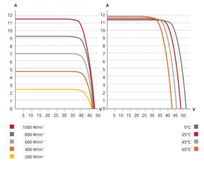


1 ROOF PLAN - SOLAR
1/8" = 1'-0"

ENGINEERING DRAWING (mm)



CS3W-435MS / I-V CURVES



ELECTRICAL DATA | STC*

CS3W	435MS	440MS	445MS	450MS	455MS	460MS	465MS
Nominal Max. Power (Pmax)	435 W	440 W	445 W	450 W	455 W	460 W	465 W
Opt. Operating Voltage (Vmp)	40.5 V	40.7 V	40.9 V	41.1 V	41.3 V	41.5 V	41.7 V
Opt. Operating Current (Imp)	10.75 A	10.82 A	10.89 A	10.96 A	11.02 A	11.09 A	11.16 A
Open Circuit Voltage (Voc)	48.5 V	48.7 V	48.9 V	49.1 V	49.3 V	49.5 V	49.7 V
Short Circuit Current (Isc)	11.42 A	11.48 A	11.54 A	11.60 A	11.66 A	11.72 A	11.78 A
Module Efficiency	19.7%	19.9%	20.1%	20.4%	20.6%	20.8%	21.0%
Operating Temperature	-40°C ~ +85°C						
Max. System Voltage	1500V (IEC/UL) or 1000V (IEC/UL)						
Module Fire Performance	TYPE 1 (UL 61730 1500V) or TYPE 2 (UL 61730 1000V) or CLASS C (IEC 61730)						
Max. Series Fuse Rating	20 A						
Application Classification	Class A						
Power Tolerance	0 ~ + 10 W						

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

ELECTRICAL DATA | NMOT*

CS3W	435MS	440MS	445MS	450MS	455MS	460MS	465MS
Nominal Max. Power (Pmax)	326 W	330 W	334 W	338 W	341 W	345 W	349 W
Opt. Operating Voltage (Vmp)	38.0 V	38.2 V	38.3 V	38.5 V	38.7 V	38.9 V	39.1 V
Opt. Operating Current (Imp)	8.59 A	8.65 A	8.71 A	8.76 A	8.82 A	8.87 A	8.92 A
Open Circuit Voltage (Voc)	45.8 V	46.0 V	46.2 V	46.4 V	46.6 V	46.8 V	47.0 V
Short Circuit Current (Isc)	9.21 A	9.26 A	9.31 A	9.35 A	9.40 A	9.45 A	9.50 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m² spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline
Cell Arrangement	144 [2 X (12 X 6)]
Dimensions	2108 X 1048 X 35 mm (83.0 X 41.3 X 1.38 in)
Weight	24.3 kg (53.6 lbs)
Front Cover	3.2 mm tempered glass with anti-reflective coating
Frame	Anodized aluminium alloy
J-Box	IP68, 3 bypass diodes
Cable	4 mm² (IEC), 12 AWG (UL)
Cable Length (Including Connector)	500 mm (19.7 in) (+) / 350 mm (13.8 in) (-) or customized length*
Connector	T4 series or MC4-EVO2
Per Pallet	30 pieces
Per Container (40' HQ)	660 pieces

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.34 % / °C
Temperature Coefficient (Voc)	-0.26 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	41 ± 3°C

PARTNER SECTION

* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. CSI Solar Co., Ltd. reserves the right to make necessary adjustment to the information described herein at any time without further notice.
Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

CSI SOLAR (USA) CO., LTD.

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ELECTRICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

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DCWWTP OPERATIONS AND LAB BLDG
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Roseville, CA 95747

SHEET TITLE
ROOF PLAN - SOLAR

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-205

DATE: 4/24/18

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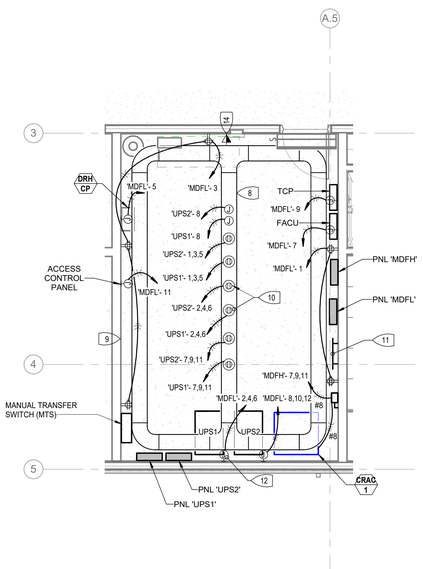
BID SET (PRELIMINARY)

SHEET NOTES:

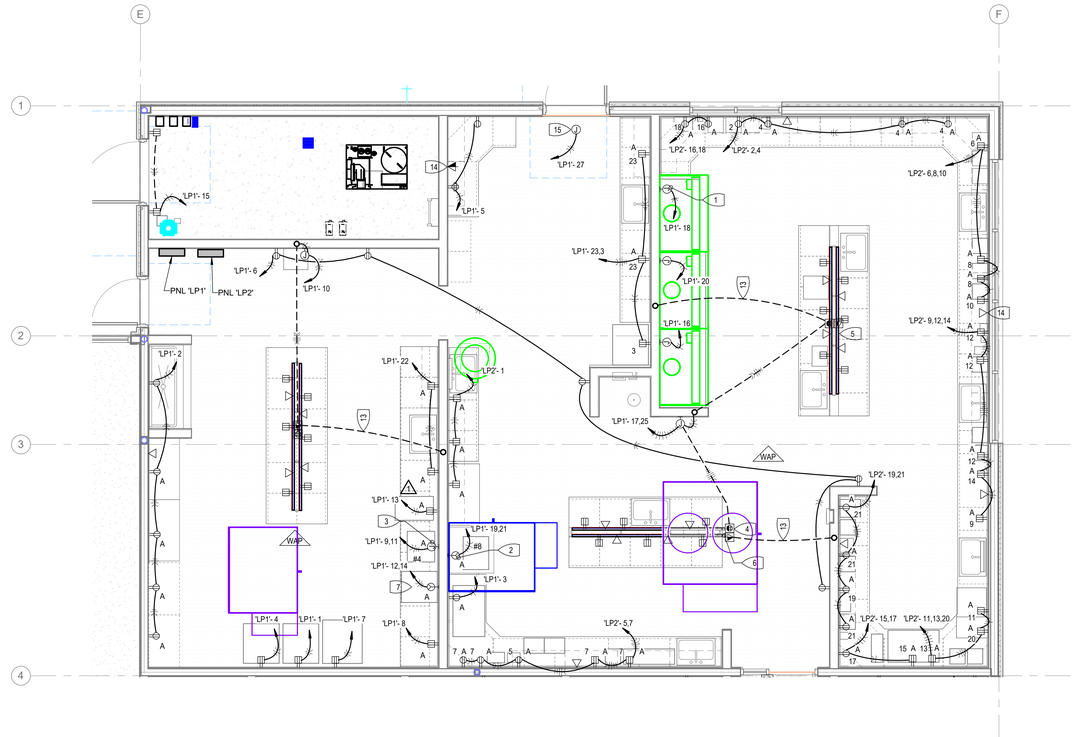
1. SEE ONE LINE DIAGRAM ON SHEET E-401 FOR REFERENCE.
2. SEE PANEL SCHEDULES ON SHEETS E-501 AND E-502 FOR REFERENCE.
3. GFCI RECEPTACLES NEED TO BE ACCESSIBLE FOR RESETTING.
4. PROVIDE FUSED DISCONNECT SWITCH TO EACH MECHANICAL UNIT.

KEYED NOTES:

1. PROVIDE JUNCTION BOX FOR FUME HOOD. COORDINATE LOCATION WITH MANUFACTURE REQUIREMENTS PRIOR TO ROUGH-IN.
2. EQUIPMENT RECEPTACLE VOLTAGE AND STYLE TO BE DETERMINED ON SELECTION OF EQUIPMENT.
3. PROVIDE JUNCTION BOX FOR AUTOCLAVE. COORDINATE LOCATION WITH MANUFACTURE REQUIREMENTS PRIOR TO ROUGH-IN.
4. PROVIDE RECESSED 2-GANG FLOOR BOX HUBBEL #GFB2G25R WITH (1) 1/2 INCH KO TRADE FOR POWER, (1) 1 INCH KO TRADE FOR DATA AND COVER # 24GTCVR. COORDINATE COVER FINISH WITH ARCHITECT PRIOR TO ORDERING. TYPICAL OF (3) LOCATIONS.
5. PROVIDE WIREMOLD LEGRAND SERIES #4000 WITH DIVIDER MOUNTED TO THE SHELVING SYSTEM STATION 12" ABOVE TOP OF THE WORKSTATION. COORDINATE EXACT LOCATION AND MOUNTING DETAILS WITH SHELVES MANUFACTURER REQUIREMENTS PRIOR TO ORDERING AND MOUNTING. SEE DETAIL 8/E-604 FOR REFERENCE. TYPICAL OF (6) LOCATIONS.
6. PROVIDE VERTICAL MOUNTED TO THE WORKSTATION SIDE WIREMOLD TO HORIZONTAL WIREMOLD. COORDINATE EXACT LOCATION AND MOUNTING DETAILS WITH WORKSTATIONS MANUFACTURER REQUIREMENTS PRIOR TO ORDERING AND MOUNTING. TYPICAL OF (6) LOCATIONS.
7. PROVIDE 5-20P PLUG FOR LAB DISHWASHER.
8. PROVIDE 12" LADDER RACK. MOUNT ALONG WALLS AND OVER DATA RACKS. COORDINATE EXACT LOCATION WITH MDF ROOM DRAWINGS PRIOR TO ROUGH-IN
9. LINE FULL LENGTH OF WEST, SOUTH AND EAST WALLS WITH 3/4" VOID FREE, FIRE RATED, PLYWOOD. PAINT PLYWOOD WITH (2) COATS WHITE PAINT. MASK FIRE RATED LABELS TO REMAIN VISIBLE AFTER PLYWOOD IS PAINTED.
10. PROVIDE (2) LOCKING RECEPTACLES L14-30R OR EQUAL FOR EACH SERVER RACKS. COORDINATE EXACT LOCATION WITH MDF ROOM DRAWINGS PRIOR TO ROUGH-IN. TYPICAL OF (3) LOCATION.
11. PROVIDE 2" BY 12" BY 1/4" GROUND BAR ON STANDOFFS IN THE MDF ROOM.
12. PROVIDE JUNCTION BOX FOR UPS. COORDINATE LOCATION WITH UPS MANUFACTURE REQUIREMENTS PRIOR TO ROUGH-IN. TYPICAL OF (2) LOCATIONS.
13. PROVIDE 2"C.O. DATA FROM FLOOR BOX TO ACCESSIBLE CEILING SPACE.
14. PROVIDE 1-1/4"C.O. FROM OUTLET BOX TO ACCESSIBLE CEILING SPACE. TYPICAL FROM EACH DATA, TELEPHONE AND TELEPHONE/DATA OUTLET BOX.
15. LOCATE FOR AND CONNECT TO DOOR ACTUATOR. COORDINATE EXACT LOCATION IN FIELD PRIOR TO ROUGH-IN.



2 **ENLARGED FLOOR PLAN - MDF ROOM**
1/4" = 1'-0"



1 **ENLARGED FLOOR PLAN - LABORATORY**
1/4" = 1'-0"

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

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DCWWTP OPERATIONS AND LAB BLDG
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SHEET TITLE
ENLARGED FLOOR PLAN - POWER AND SIGNAL

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-301

DATE: 4/24/18

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BID SET (PRELIMINARY)

LOAD CALCULATIONS (E) SHOP BLDG MSB

EXISTING SERVICE: **480 Volts** **3 ∅**

RECORDED PEAK POWER DEMAND = **92.7 KW**

EXISTING LOADS:	DEMAND POWER	KVA @ 0.9 p.f.	DERIVED AMPERAGE
EXISTING SERVICE PEAK DEMAND	92.7 KW	103.0 KVA	123.9 AMPS
PEAK DEMAND @ 125% (NEC 220-87)	115.9 KW	128.8 KVA	154.9 AMPS
NEW LOADS:	**POWER**	**KVA @ 0.9 p.f.**	**AMPERAGE**
PANEL "DHP-ADMIN BLDG"	323.2 KW	359.2 KVA	432.0 AMPS
PANEL "EV"	89.9 KW	99.8 KVA	120.1 AMPS
Total	**529.0 KW**	**587.8 KVA**	**707.0 AMPS**

THE EXISTING 800A SERVICE IS ADEQUATE FOR EXISTING AND NEW LOADS COMBINED.

Voltage Drop Calculations Copper

Job Name: DRY CREEK WWTP Job #: 23.020
Date: 4/24/2024
VOLTAGE: 480 PHASE: 3 POWER FACTOR: 80% CONDUIT: Steel

AIC Rating
AVAILABLE FAULT CURRENT: 65000
SYSTEM VOLTAGE RATING: 600

FEEDER NUMBER	AMPS AT LOAD	KVA TOTAL	VOLTS AT LOAD	DISTANCE FEET	WIRES/PHASE	LOAD/WIRE	WIRE SIZE	WIRE FACTOR	VOLTS DROP	PERCENT VOLT DROP	'C' Values	F FACTOR	MULTIPLIER 'M'	SHORT CIRCUIT CURRENT	AIC RATING
MSB AB	432	359.2	475.88	180	2	216.00	350	106	4.12	0.86%	19704	1.07	0.48	31380.89	35k
EVC	90	74.8	477.80	150	1	90.00	3/0	163	2.20	0.46%				16435.68	22k*

* SHORT CIRCUIT CURRENT AND AIC RATING ARE SHOWN FOR 208V PANEL 'EV'

LOAD CALCULATIONS 'MSB AB'

RECEPTACLES		
LR	33840 VA	
LP1	6740 VA	
LP2	4152 VA	
TOTAL		
FIRST 10,000 VA @100%		10000 VA
REMAINDER @ 50%		17366 VA
LIGHTING		
LR	8867 VA	
TOTAL @ 125%		11084 VA
MECHANICAL		
MH	207637 VA	
MDFH	13943 VA	
TOTAL	221580 VA	
25% LARGEST MECH LOAD	17129 VA	238709 VA
KITCHEN EQUIPMENT		
RL	8750 VA	
KITCHEN TOTAL @ 65%		5688 VA
LAB LOADS		
LP1	24200 VA	
LP2	13099 VA	
TOTAL		37299 VA
OTHER LOADS		
RL	7127 VA	
MDFH	3252 VA	
TOTAL		10379 VA
MDF EQUIPMENT		
MDFH		3000 VA
SOLAR SYSTEM LOADS		
PV		25630 VA
TOTAL MSB		**359155 VA**

359 KVA @ 480 VOLTS, 3ø = 432 AMPS
25% GROWTH 108 AMPS
MSB PREFERRED DISTRIBUTION WITH GROWTH 540 AMPS

PROPOSED 480V, 3-PHASE, 4-WIRE 600 AMP SWITCHBOARD IS ADEQUATE

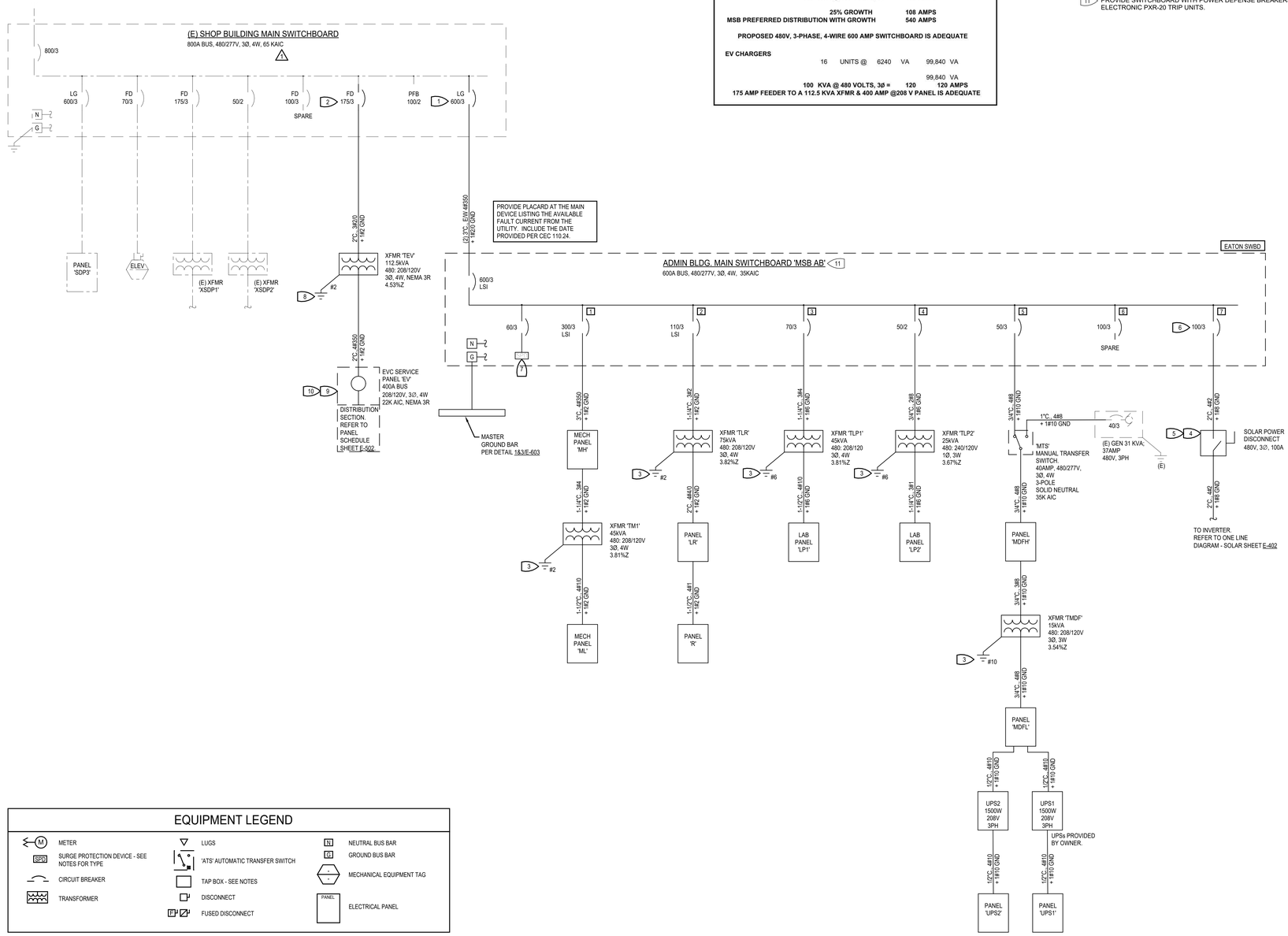
EV CHARGERS
16 UNITS @ 6240 VA 99,840 VA
99,840 VA
100 KVA @ 480 VOLTS, 3ø = 120 120 AMPS
175 AMP FEEDER TO A 112.5 KVA XFMR & 400 AMP @208 V PANEL IS ADEQUATE

SHEET NOTES:

1. ALL EXISTING EQUIPMENT, DEVICES, CONDUIT AND WIRING, ETC., SHOWN ON PLANS ARE BASED ON AVAILABLE EXISTING DRAWINGS AND LIMITED SITE SURVEYS, AND SHOWN FOR CLARITY ONLY.
2. ALL CONDUCTORS SHALL BE COPPER WITH THWN-2 INSULATION, INCLUDING GROUNDS, UNLESS OTHERWISE NOTED.
3. SEE DETAIL 1/E-601 FOR MAIN SWITCHBOARD ELEVATION.

KEYED NOTES:

1. PROVIDE SUITABLE BREAKER CONNECTOR, HARDWARE AND DEADFRONT COVER.
2. CONNECT TO THE EXISTING BREAKER CONNECTOR AND HARDWARE.
3. CONNECT TO BUILDING GROUND BAR. SEE DETAIL **1/E-603**
4. PROVIDE DISCONNECT SWITCH SQUARE-D #VHU363N OR EQUAL WITH VIEWING WINDOW PER UTILITY REQUIREMENTS.
5. PROVIDE WARNING LABEL ON SOLAR POWER DISCONNECT PER CEC 690.13(B):
   "WARNING"
   "ELECTRICAL SHOCK HAZARD. TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION."
6. PROVIDE PERMANENT WARNING SIGN AT SOLAR POWER SOURCE BREAKER PER CEC 705.12 (B)(3)(b).
   "WARNING"
   "SOLAR POWER SOURCE OUTPUT CONNECTION"
   "DO NOT RELOCATE THIS OVERCURRENT DEVICE"
7. PROVIDE INTEGRAL SURGE PROTECTION DEVICE, EATON SPD SERIES 250KA OR EQUAL. PROVIDE 125KA PER MODE. PROVIDE BREAKER DISCONNECT AS SHOWN.
8. BOND TO (2) 3/4 DIA BY 10 FOOT GROUND RODS SPACED 10 FEET APART.
9. PROVIDE PAD MOUNT TESCO 24-400 METER, CT & PULL SECTION PAINTED GALVALIZED STEEL METERED SERVICE ENCLOSURE OR EQUAL. SEE DETAIL 1/E-605.
10. PROVIDE SCHNEIDER ELECTRIC METERING SYSTEM PER SPECIFICATION SECTION 26 27 13 ELECTRICITY METERING FOR MAINS AND DISTRIBUTION FEEDERS.
11. PROVIDE SWITCHBOARD WITH POWER DEFENSE BREAKERS WITH ELECTRONIC PXR-20 TRIP UNITS.



EQUIPMENT LEGEND

- METER
- SURGE PROTECTION DEVICE - SEE NOTES FOR TYPE
- CIRCUIT BREAKER
- TRANSFORMER
- LUGS
- 'ATS' AUTOMATIC TRANSFER SWITCH
- TAP BOX - SEE NOTES
- DISCONNECT
- FUSED DISCONNECT
- NEUTRAL BUS BAR
- GROUND BUS BAR
- MECHANICAL EQUIPMENT TAG
- ELECTRICAL PANEL

1 **ONE LINE DIAGRAM**
NONE

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SHEET TITLE
ONE LINE DIAGRAM

DRAWN BY: Author JOB NUMBER: 210015.01

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E-401

DATE: 4/24/18

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DC VOLTAGE DROP						
PV PANEL VOLTS			55.7 V	STRING VOLTAGE		502 V
PV PANELS/STRING			9 UNITS			
STRING	AMPERES	LENGTH FEET	WIRE SIZE	WIRE FACTOR	VOLT DROP	PERCENT
1A	10.89	90	10	2420	4.74	0.95%
1B	10.89	100	10	2420	5.27	1.05%
2A	10.89	110	10	2420	5.80	1.16%
2B	10.89	130	10	2420	6.85	1.37%
3A	10.89	150	10	2420	7.91	1.58%
3B	10.89	145	10	2420	7.64	1.52%
4A	10.89	165	10	2420	8.70	1.73%
4B	10.89	185	10	2420	9.75	1.94%

SOLAR CALCULATIONS

CANADIAN SOLAR HiKu PHOTOVOLTAIC PANELS (PV)
PERFORMANCE @ STC
- MAX POWER (PMAX) = 445 WATTS
- EFFICENCY = 19.9 %
- OPEN CIRCUIT VOLTAGE (VOC) = 48.9 VOLTS
- CITY OF SACRAMENTO RECORDED AVERAGE LOW TEMPERATURE
- CEC 690.7 TEMPERATURE FACTOR = 1.14
- SHORT CIRCUIT CURRENT (ISC) = 11.54 AMPS
- MAX POWER VOLTAGE (VPM) = 40.9 VOLTS
- MAX POWER CURRENT (IPM) = 10.89 AMPS

1 — 72 PV PANELS AT 410 WATTS/1000 = 32.04 KW
USE ONE (1) 60 KW INVERTER UNIT(S).
W/ MAX POWER PER INVERTER = 25.63 KW
2 — 60 KW INVERTER AT UNITY P.F. = 72 AMPS @ 480V, 3ø
72 AMPS AT 125% = 90 AMPS
USE 100 AMP BREAKER FOR EACH UNIT
TOTAL BREAKER TRIP VALUE = 100 AMPS

100 AMP INPUT BREAKER CONNECTED AHEAD OF THE MAIN BREAKER. INCREASE OF BUS SIZE NOT REQUIRED.

3 — MAXIMUM SOLAR POWER DC VOLTAGE (VOC)
ONE(1) PV VOC = 48.9 VOLTS
48.9 VOC AT 1.14 FOR 26°F PER CEC 690.7 = 55.7 VOC
9 PV PANELS PER STRING @55.746VOC = 501.7 Voc

1000 VDC MAX / 55.746 VOC FOR 9 PV PANELS PER STRING IS ADEQUATE

4 — MAXIMUM CURRENT PER MPPT INPUT
IMP= 10.89 AMPS PER STRING
2 STRINGS PER MPPT = 21.78 AMPS
MAXIMUM INPUT PER MPPT 36 AMPS

THE INVERTER MPPT INPUT AT 36 AMPS IS ADEQUATE FOR 2 STRINGS AT 10.68 AMPS EACH TOTALING 21.36 AMPS.

5 — MAXIMUM SOLAR PANEL ARRAY SHORT CIRCUIT CURRENT
PV (ISC) = 11.54 AMPS
9 PV PANELS IN SERIES = ONE(1) STRING
ONE(1) STRING ISC = 11.54 AMPS
ONE(1) ARRAY = EIGHT(8) STRINGS
EIGHT (8) CIRCUITS ISC = 8 x 11.54 AMPS
ISC AMPS PER INVERTER 92.32 AMPS
INVERTER CIRCUITS MAX = 2
TOTAL ISC = 184.64 AMPS
184.64 AMPS AVAILABLE SHORT CIRCUIT CURRENT

DERATING CALCULATION PER CEC-2022 TABELS 310.15 AND 310.16

#10 AWG 90°C = 40AMP

ADJUSTMENT FACTORS FOR (4) AND (6) CONDUCTORS IS 80%

4-6 #10 AWG = 32AMP

PV STRING INPUT IS 10.89AMP

#10 CONDUCTOR(S) EXCEED(S) STRING INPUT LOADS.

SHEET NOTES:

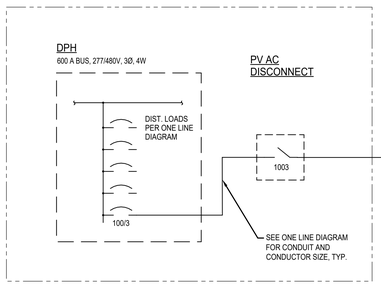
1. PV INVERTERS SHALL BE LISTED AND LABELED WITH UL1741 AND SYSTEMS CONNECTED TO UTILITY GRID SHALL USE INVERTERS LISTED FOR UTILITY INTERACTION PER CBC3111.3.1 EQUIPMENT.
2. ROOFTOP MOUNTED PHOTOVOLTAIC PANELS, MODULES, AND PANEL SYSTEMS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL1703 OR WITH BOTH UL61730-1 AND UL61730-2, PER CBC 3111.3.1.

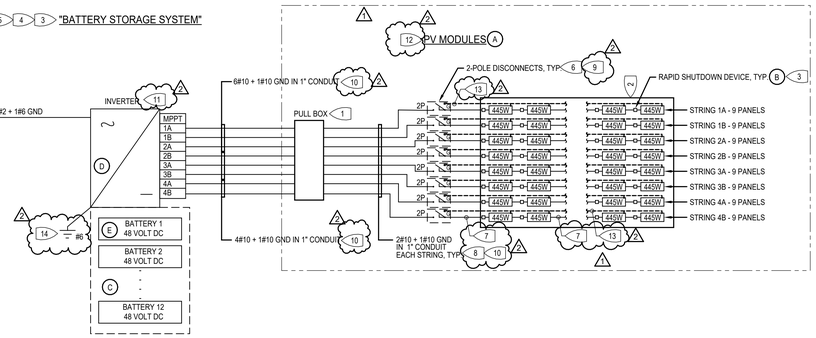
KEYED NOTES:

1. PROVIDE HOFFMAN #ASE18X18X6SSNK PULL BOX.
2. PROVIDE WARNING SIGNS PER CEC 690.31(G)(3)&(4) "WARNING- PHOTOVOLTAIC POWER SOURCE " WITH PERMANENT MARKING ON REFLECTIVE LABELS, CAPITALIZED LABELS, MINIMUM 3/8-INCH WHITE LETTERING ON RED BACKGROUND. SPACING OF LABELS SHALL NOT EXCEED 10 FEET. LABELS SHALL BE APPLIED TO THE FOLLOWING :
   1. EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS.
   2. COVERS OR ENCLOSURES OF PULL BOXES AND JUNCTION BOXES.
   3. CONDUIT BODIES IN WHICH ANY OF THE AVAILABLE CONDUIT OPENINGS ARE UNUSED.
3. PROVIDE LABELS FOR SOLAR PV SYSTEM RAPID SHUTDOWN PER CEC 690.56 (C)(1)(a). SEE CEC FIGURE 690.56 (C)(1)(A) FOR LABEL REQUIREMENTS. PER CEC 690.56(C)(3) PROVIDE LABELS WITHIN 3 FEET OF THE RAPID SHUTDOWN SWITCH NOTING "RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM". LABELING SHALL HAVE MINIMUM 3/8 IN. HIGH WHITE LETTERING ON RED BACKGROUND. SEE DETAIL 2/E-402 FOR REFERENCE
4. PROVIDE FOUR (4) SEPARATE LABELS AND A DIRECTORY WITHIN 3 FEET OF INTEGRAL BATTERY SYSTEM DISCONNECTING MEANS PER CEC 480.7 (A)(F)(G), 705.10, 705.12., 706.15 (C) WITH PERMANENT MARKING ON REFLECTIVE LABELS, CAPITALIZED LABELS, MINIMUM 3/8-INCH WHITE LETTERING ON RED BACKGROUND PER 110.21(B). SEE BELOW FOR THE REQUIRED WORDING OF EACH LABEL:
   1. "ENERGY STORAGE SYSTEM DISCONNECT
      NOMINAL ESS AC VOLTAGE: ____
      MAXIMUM ESS DC VOLTAGE: _____
      AVAILABLE FAULT CURRENT: _____
      DATE CALCULATION PERFOMED: ____ "
   2. "CAUTION: MULTIPLE SOURCES OF POWER"
   3. "WARNING: DUAL POWER SOURCE
      SECOND SOURCE IS PV SYSTEM"
   4. "MAIN BATTERY SYSTEM DISCONNECT"

   AN ADDITIONAL ARC-FLASH LABEL MUST ALSO BE APPLIED.
5. PROVIDE SOLARK LIMITER SENSOR CT'S ON THE LOAD SIDE CONDUCTORS OF THE AUTOMATIC TRANSFER SWITCH IN THE MAIN ELECTRICAL ROOM. PROVIDE SHORTING TERMINAL BLOCKS FOR THE C.T.'S. CONNECT THE C.T.'S VIA THE SHORTING TERMINAL BLOCKS TO INVERTER WITH CAT6A CABLES, (1) PER CT. COORDINATE WITH MANUFACTURER'S INSTRUCTIONS.
6. PROVIDE EATON #DCU2061PMW PHOTOVOLTAIC STRING DISCONNECT ON ROOF NEXT TO STRING OUTPUT: (1) CIRCUIT, 600VDC, 30A, 20A FUSES, NEMA 4, WITH VIEWING WINDOW. MOUNT DISCONNECT ON 7/8" BY 1-5/8" 12 GAUGE STRUT SPANNING ROOFING SEAMS USING CLIPS AS SPECIFIED FOR THE PV PANELS IN DETAIL 6/E-604. (DISCONNECT WEIGHT: 10 LBS).
7. #12 AWG PV WIRE TO BE PROVIDED WITH EACH PV PANEL
8. SEE DETAIL 2/E-604 FOR ROOF CONDUITS MOUNTING. TYP. FOR ALL CONDUITS ON THE ROOF.
9. PROVIDE MARKING LABEL PER CEC 690.13(B). "PV SYSTEM DISCONNECT" WITH PERMANENT MARKING ON REFLECTIVE LABELS, CAPITALIZED LABELS, MINIMUM 3/8-INCH WHITE LETTERING ON RED BACKGROUND. REFER TO KEYED NOTE #6 ON SHEET E-601 FOR WARNING SIGN. PROVIDE VISIBLE LABEL PER CEC 690.53 INDICATING THE HIGHEST MAXIMUM SOLAR POWER DC VOLTAGE AND MAXIMUM CIRCUIT CURRENT. APPLIED TO ALL PV DC DISCONNECTS.
10. PROVIDE MARKING LABEL FOR CIRCUIT CONDUCTORS WITH THE POLARITY INDICATION PER CEC 690.55 .
11. PROVIDE MARKING LABEL FOR INVERTER PER CEC 690.54 AT AN ACCESSIBLE LOCATION AS A POWER SOURCE AND WITH THE RATED AC OUTPUT CURRENT AND THE NOMINAL OPERATING AC VOLTAGE.
12. MARKING LABEL FOR MODULES SHALL BE PROVIDED BY MANUFACTURER PER CEC 690.51 WITH IDENTIFICATION OF TERMINALS OR LEADS AS TO POLARITY, MAXIMUM OVERCURRENT DEVICE RATING FOR MODULE PROTECTION, AND WITH THE FOLLOWING RATINGS:
    - OPEN-CIRCUIT VOLTAGE
    - OPERATING VOLTAGE
    - MAXIMUM PERMISSIBLE SYSTEM VOLTAGE
    - OPERATING CURRENT
    - SHORT-CIRCUIT CURRENT
    - MAXIMUM POWER
13. PROVIDE #6 AWG PV WIRE. ATTACH COPPER GROUNDING WIRE TO A PRE-RILLED GROUNDING HOLE ON PV PANEL FRAME AT EACH PANEL WITH A GROUNDING KIT CONTAINING AN M5 (3/16") SS CAP BOLT, AN M5 (3/16") SS FLAT WASHER, AN M5 (3/16") SS CUP WASHER, AND AN M5 (3/16") SS NUT (WITH TEETH).
14. BOND TO (2) 3/4 DIA BY 10 FOOT GROUND RODS SPACED 10 FEET APART.

ELECTRICAL ROOM

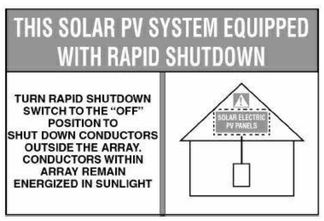




PV SYSTEM EQUIPMENT SCHEDULE

ID	ITEM	QTY	MODEL	SPECIFICATIONS
A	PV MODULES	96	CANADIAN SOLAR HIKU CS3W-445	445W; DIMENTIONS 83.0 X 41.3 X 1.38 IN; 53.6LBS
B	RAPID SHUTDOWN			
C	BATTERY STORAGE SYSTEM	1	SOL-ARK L3-HVR-60	BCC 61.44KWH; 614.4V; 100A NOM.CHARGE/DISCHARGE BUILT-IN DC DISCONNECT 200A W/160A INTERNAL FUSE
D	INVERTER	1	SOL-ARK 60K-3P-480V-N	OUTPUT: 60KW, 277/480V, 3Ø, 4W, 72.2A MAX 1000V, 144A MAX (36A MAX PER INPUT)
E	BATTERIES	12	ENDURENERGY SYSTEM ESP-5100	5.12 kWh, 48VDC

NOTE:
(X) X - INDICATES ID OF ITEM IN PV SYSTEM EQUIPMENT SCHEDULE



PROVIDE A LABEL IN ACCORDANCE WITH CFC 1205.4.1 THROUGH 1205.4.3: THE FIRST TWO LINES OF THE LABEL SHALL BE UPPERCASE CHARACTERS WITH A MINIMUM HEIGHT OF 3/8 INCH (10mm) IN WHITE ON A RED BACKGROUND AND THE REMAINING CHARACTERS SHALL BE CAPITALIZED WITH A MINIMUM HEIGHT OF 3/16 INCH (5mm) IN BLACK ON A WHITE BACKGROUND.

2 SOLAR PV RAPID SHUTDOWN SIGNAGE
NONE

1 ONE LINE DIAGRAM - SOLAR
NONE

196
2237 DOUGLAS BLVD, SUITE 160
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G NO R ROMANO
E17247
EXP. 6/30/24
ELECTRICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments
2	10/23/24	PC Comments

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
ONE LINE DIAGRAM - SOLAR

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-402

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 10/23/2024 1:18:19 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

Branch Panel: MH

Location: ELECTRICAL 134
Supply From: MSB AB
Mounting: Surface
Enclosure: Type 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22K
Mains Type: LUGS
Mains Rating: 400 A
MCB Rating: 400 A

Notes:
PRL2A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				12827	11314								2
3	DOAS-A	70 A	3			12827	11805			3	70 A	XFMR 'TM' [45KVA]	4
5								12827	11578				6
7				8525	67								8
9	DOAS-B	50 A	3			8525	67			3	15 A	HEF-1	10
11								8525	67				12
13	SPARE	20 A	1	0	67								14
15	SPACE	--	1			--	67			3	15 A	HEF-2	16
17	SPACE	--	1					--	67				18
19				6629	67								20
21	VRF-B	40 A	3			6629	67			3	15 A	HEF-3	22
23								6629	67				24
25				443	5000								26
27	IEF-3 VIA VFD-1 - EQUIPMENT ROOM/LAB	20 A	3			443	5000			3	80 A	WATER HEATER 'EWH-1'	28
29								443	5000				30
31				443	0					1	20 A	SPARE	32
33	IEF-4 VIA VFD-2 - EQUIPMENT ROOM/LAB	20 A	3			443	0			1	20 A	SPARE	34
35								443	0	1	20 A	SPARE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
43	SPACE	--	1	--	--					1	--	SPACE	44
45	SPACE	--	1			--	--			1	--	SPACE	46
47	SPACE	--	1					--	--	1	--	SPACE	48
49				22839	0								50
51	DOAS-C (SUBFEED BREAKER)	100 A	3			22839	0			3	30 A	SURGE PROTECTION	52
53								22839	0				54
			Total Load:	68222 VA		68713 VA		68486 VA					
			Total Amps:	246 A		248 A		247 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	202688 VA	100.00%	202688 VA		
Motor	853 VA	125.00%	1066 VA	**Total Conn. Load:**	205421 VA
Other	1880 VA	100.00%	1880 VA	**Total Est. Demand:**	205634 VA
				Total Conn.:	247 A
				Total Est. Demand:	247 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: R

Location: STORAGE 117
Supply From: LR
Mounting: FLUSH
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22K
Mains Type: 150/3
Mains Rating: 150 A
MCB Rating: 225 A

Notes:
PRL2A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LIGHTING-OFFICES	20 A	1	1117	720					1	20 A	RECEPTS- CONTROL 106	2
3	LIGHTING-OPEN OFFICE, CONTR,RM,...	20 A	1			1518	1080			1	20 A	RECEPTS- CONTROL 106	4
5	LIGHTING-KITCHEN, JAN.ROOM....	20 A	1					343	720	1	20 A	RECEPTS- CONTROL 106	6
7	LIGHTING - RECEPTION, CONF.RM 102	20 A	1	397	1080					1	20 A	RECEPTS-LOBBY, RECEPTION	8
9	LIGHTING-LAB, EQUIPMENT ROOM	20 A	1			1518	900			1	20 A	RECEPTS-CORRIDOR	10
11	RECEPTS-OFFICE 105	20 A	1					900	900	1	20 A	RECEPTS-CONFERENCE ROOM 102	12
13	RECEPTS-OFFICE 104	20 A	1	900	1360					1	20 A	RECEPTS-RESTROOMS	14
15	RECEPTS-OFFICE 103	20 A	1			900	1890			1	20 A	REFRIGERATORS	16
17	RECEPTS-OFFICE 108	20 A	1					1080	1500	1	20 A	MICROWAVE	18
19	COPIER RECEPTS-OFFICE 108	20 A	1	1500	1500					1	20 A	MICROWAVE	20
21	RECEPTS-OPEN OFFICE 108	20 A	1			900	360			1	20 A	RECEPTS-KITCHEN 109	22
23	RECEPTS-OFFICE 108	20 A	1					1080	1140	1	20 A	DISHWASHER	24
25	RECEPTS-OPEN OFFICE 108	20 A	1	720	680					1	20 A	GARBAGE DISPOSAL	26
27	RECEPTS-OFFICE 110	20 A	1			900	1220			1	20 A	RECEPTS-KITCHEN 109	28
29	RECEPTS-CONFERENCE ROOM 107	20 A	1					900	1500	1	20 A	RECEPTS-KITCHEN 109	30
31	RECEPTS-OFFICE 111	20 A	1	1080	1500					1	20 A	COPIER RECEPTS-CORRIDOR 118	32
33	RECEPTS-OFFICE 114	20 A	1			900	540			1	20 A	TV RECEPTS-CONFERENCE ROOM...	34
35	RECEPTS- OFFICE 115	20 A	1					900	360	1	20 A	TV RECEPTS-OFFICE 104,103	36
37	RECEPTS-116,117	20 A	1	540	360					1	20 A	TV RECEPTS-KITCHEN, CONF ROOM 102	38
39	RECEPTS ROOF	20 A	1			900	540			1	20 A	RECEPTS-KITCHEN 109	40
41	MOTORIZED BLINDS	20 A	1					500	1000	1	20 A	WATER FEATURE - SITE	42
43	SPARE	20 A	1	0	--					1	--	SPACE	44
45	SPACE	--	1			--	--			1	--	SPACE	46
47	SPACE	--	1					--	--	1	--	SPACE	48
49	SPACE	--	1	--	0								50
51	SPACE	--	1			--	0			3	30 A	SURGE PROTECTION [3]	52
53	SPACE	--	1					--	0				54
			Total Load:	13449 VA		14065 VA		12822 VA					
			Total Amps:	113 A		118 A		107 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Kitchen Equipment - Non-Dwelling Unit	8750 VA	65.00%	5688 VA		
Lighting	4776 VA	125.00%	5970 VA	**Total Conn. Load:**	40337 VA
Other	1612 VA	100.00%	1612 VA	**Total Est. Demand:**	30868 VA
Receptacle	25200 VA	69.84%	17600 VA	**Total Conn.:**	112 A
				Total Est. Demand:	86 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: LR

Location: ELECTRICAL 134
Supply From: TLR
Mounting: FLUSH
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22K
Mains Type: LUGS
Mains Rating: 225 A
MCB Rating: 225 A

Notes:
PRL2A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LIGHTING - CORRIDOR	20 A	1	625	195					1	20 A	EXTERIOR LIGHTING	2
3	LIGHTING - ELECTR. & MECH RMs,FR,MDF	20 A	1			913	113			2	20 A	SITE LIGHTS - PARKING NORTH	4
5	LIGHTING-LOCKER RMS, RMS 133,134,135	20 A	1					478	113				6
7	LIGHTING-BUNK ROOMS	20 A	1	638	300					2	20 A	SITE LIGHTS - PARKING SOUTH	8
9	RECEPTS-CORRIDOR	20 A	1			180	300						10
11	RECEPTS-CONTROL ROOM 125	20 A	1					1080	300	2	20 A	STREET LIGHTS	12
13	RECEPTS-CONTROL ROOM 125	20 A	1	1080	300								14
15	RECEPTS-BUNK ROOM 126	20 A	1			720	180			1	20 A	RECEPTS-ELECTRICAL 134	16
17	RECEPTS-BUNK ROOM 127	20 A	1					540	720	1	20 A	RECEPTS-WOMEN'S LOCKER RM	18
19	RECEPTS-BUNK ROOM 128	20 A	1	540	720					1	20 A	RECEPTS-CORRIDOR, MEN'S LOCKER RM	20
21	RECEPTS-BUNK ROOM 129	20 A	1			540	180			1	20 A	RECEPTS-EXTERIOR WALL	22
23	RECEPTS-BUNK ROOM 130	20 A	1					720	900	1	20 A	WASHING MACHINE-LAUNDRY	24
25	RECEPTS-BUNK ROOM 131	20 A	1	720	0					1	20 A	SPARE	26
27	RECEPTS-FIRE RISER 135	20 A	1			360	2500			2	40 A	DRYER-LAUNDRY	28
29	GENERATOR CHARGER	20 A	1					500	2500				30
31	GENERATOR HEATER	20 A	1	500	0					1	20 A	SPARE	32
33	SPACE	--	1			--	0			1	20 A	SPARE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37				0	--					1	--	SPACE	38
39	SURGE PROTECTION [3]	30 A	3			0	--			1	--	SPACE	40
41								0	--	1	--	SPACE	42
			Total Load:	18937 VA		20002 VA		20618 VA					
			Total Amps:	158 A		168 A		173 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Kitchen Equipment - Non-Dwelling Unit	8750 VA	65.00%	5688 VA		
Lighting	8867 VA	125.00%	11084 VA	**Total Conn. Load:**	59556 VA
Other	6627 VA	100.00%	6627 VA	**Total Est. Demand:**	46513 VA
Power	1000 VA	100.00%	1000 VA	**Total Conn.:**	165 A
Receptacle	34380 VA	64.54%	22190 VA	**Total Est. Demand:**	129 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: LP2

Location: WORK ROOM 113
Supply From: TLP2
Mounting: SURFACE
Enclosure: Type 1

Volts: 120/240 Single
Phases: 1
Wires: 3

A.I.C. Rating: 22K
Mains Type: 125/2
Mains Rating: 125 A
MCB Rating: 225 A

Notes:
PRL2A

CKT	Circuit Description	Trip	Poles	A		B		Poles	Trip	Circuit Description	CKT
1	RCPTS	20 A	1	540	500			1	20 A	COD HEATING BIOCK	2
3	REFRIGERATOR	20 A	1			1000	684	1	20 A	RCPTS (EC METER, STIRRER)	4
5	DRYING OVEN	20 A	1	1452	144			1	20 A	RCPTS (PH METER, STIRRER)	6
7	RCPTS	20 A	1			1620	540	1	20 A	RCPTS/ OIA COMPUTER, ANALYZER	8
9	BATTERY CHARGER	20 A	1	1800	720			1	20 A	RCPTS/ OIA PRINTER	10
11	BACTI REFRIGERATOR	20 A	1			300	791	1	20 A	RCPTS/ EC & FLUORIDE METER & STIRRER	12
13	STIRRER/HOT PLATE	20 A	1	1070	1000			1	20 A	RCPTS/ MICROBIO INCUBATOR	14
15	STIRRER/HOTE PLATE	20 A	1			1070	1000	1	20 A	RCPTS	16
17	RCPTS/MEDIA DISP,UV LAMP,MICROSCOPE	20 A	1	1200	132			1	20 A	RCPTS/CENTRIFUGE	18
19	QUANTI-TRAY SEALER	20 A	1			180	1080	1	20 A	DUAL WATER BATH	20
21	RCPTS	20 A	1	428	0			1	20 A	SPARE	22
23	SPARE	20 A	1			0	0	1	20 A	SPARE	24
25	SPARE	20 A	1	0	0			1	20 A	SPARE	26
27	SPACE	--	1			--	--	1	--	SPACE	28
29	SPACE	--	1	--	--			1	--	SPACE	30
31	SPACE	--	1			--	--	1	--	SPACE	32
33	SPACE	--	1	--	--			1	--	SPACE	34
35	SPACE	--	1			--	--	1	--	SPACE	36
37	SPACE	--	1	--	--			1	--	SPACE	38
39	SURGE PROTECTION [3]	30 A	2			0	--	1	--	SPACE	40
41				0	--			1	--	SPACE	42
			Total Load:	8986 VA		8265 VA					
			Total Amps:	75 A		69 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	13099 VA	100.00%	13099 VA		
Receptacle	4152 VA	100.00%	4152 VA	**Total Conn. Load:**	17251 VA
				Total Est. Demand:	17251 VA
				Total Conn.:	72 A
				Total Est. Demand:	72 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: LP1

Location: WORK ROOM 113
Supply From: TLP1
Mounting: SURFACE
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22K
Mains Type: 125/3
Mains Rating: 125 A
MCB Rating: 225 A

Notes:
PRL2A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	MEDIA REFRIGERATOR	20 A	1	360	900					1	20 A	RCPTS	2
3	DRYING OVEN	20 A	1			540	780			1	20 A	CHEMICAL REFRIG/ FREEZER	4
5	RCPTS	20 A	1					540	900	1	20 A	RCPTS	6
7	BOD INCUBATOR	20 A	1	1200	1200					1	20 A	BOD INCUBATOR	8
9	AUTOCLAVE	80 A	2			6000	860			1	20 A	WORKSTATION RCPTS	10
11								6000	1320	2	20 A	LAB DISHWASHER	12
13	GLASSWARE DRYING OVEN	20 A	1	1872	1320								14
15	RCPTS	20 A	1			360	500			1	20 A	FH-1	16
17	WORKSTATION RCPTS	20 A	1					360	500	1	20 A	FH-2	18
19	MUFFLE FURNACE	30 A	2	1924	500					1	20 A	FH-3	20
21						1924	360			1	20 A	RCPTS	22
23	RCPTS	20 A	1					360	0	1	20 A	SPARE	24
25	WORKSTATION RCPTS	20 A	1	360	0					1	20 A	SPARE	26
27	DOOR ACTUATOR	20 A	1			500	0			1	20 A	SPARE	28
29	SPARE	20 A	1					0	0	1	20 A	SPARE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37				0	--					1	--	SPACE	38
39	SURGE PROTECTION [3]	30 A	3			0	--			1	--	SPACE	40
41								0	--	1	--	SPACE	42
			Total Load:	9636 VA		11824 VA		9980 VA					
			Total Amps:	80 A		99 A		84 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	24200 VA	100.00%	24200 VA		
Other	0 VA	0.00%	0 VA	**Total Conn. Load:**	31440 VA
Power	500 VA	100.00%	500 VA	**Total Est. Demand:**	31440 VA
Receptacle	6740 VA	100.00%	6740 VA	**Total Conn.:**	87 A
				Total Est. Demand:	87 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: ML

Location: STORAGE 117
Supply From: TM
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: 22K
Mains Type: 125/3
Mains Rating: 125 A
MCB Rating: 225 A

Notes:
PRL2A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	IEF-2, WEF-1, IEF-5	20 A	1	183	104					2	20 A	BCC-1	2
3	CP-1	20 A	1			270	104						4
5	EH-1	20 A	1					1000	260	2	20 A	FC-1A, FC-2A, FC-3A	6
7	IEF-1	20 A	2	190	260								8
9						190	593			2	20 A	FC-5B, FC-6B, FC-7B, FC-8B	10
11	FC-9B, FC-10B	20 A	2					302	593				12
13				302	500				⚠1	1	20 A	REF-1 - ROOF	14
15	FC-1B, FC-2B, FC-3B, FC-4B	20 A	2			510	0			1	20 A	SPARE	16
17								510	936	2	20 A	HP-1D - ROOF	18
19	HP-1E - ROOF	30 A	2	2162	936								20
21						2162	2080			2	20 A	HP-1F - ROOF	22
23	HP-1H - ROOF	30 A	2					2080	2080				24
25				2080	2080					2	30 A	HP-2H - ROOF	26
27						769	2080						28
29	VAC-1 - EQUIPMENT ROOM	20 A	3					769	0	1	20 A	SPARE	30
31				769	0					1	20 A	SPARE	32
33						1249	1373			2	20 A	VRF-A- ROOF	34
35	LAC-1 - EQUIPMENT ROOM	20 A	3					1249	1373				36
37				1249	500					1	20 A	DI-1 - EQUIPMENT ROOM	38
39	DIWP-1 - EQUIPMENT ROOM	20 A	2			427	0			1	20 A	SPARE	40
41								427	0	1	20 A	SPARE	42
43	SPACE	--	1	--	--					1	--	SPACE	44
45	SPACE	--	1			--	--			1	--	SPACE	46
47	SPACE	--	1					--	--	1	--	SPACE	48
49	SPACE	--	1	--	0								50
51	SPACE	--	1			--	0			3	30 A	SURGE PROTECTION	52
53	SPACE	--	1					--	0				54
			Total Load:	11314 VA		11805 VA		11578 VA					
			Total Amps:	94 A		99 A		97 A					

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	31964 VA	100.00%	31964 VA		
Motor	853 VA	125.00%	1066 VA	**Total Conn. Load:**	34697 VA
Other	1880 VA	100.00%	1880 VA	**Total Est. Demand:**	34910 VA
				Total Conn.:	96 A
				Total Est. Demand:	97 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

PANEL SCHEDULE NOTES:

1. PROVIDE COPPER BUSSING INCLUDING GROUND BUSS.
2. DOOR-IN-DOOR CONSTRUCTION
3. PROVIDE SURGE PROTECTION DEVICE (SPD), SCHNEIDER SURLOGIC SERIES OR EQUAL. LOCATE SPD BREAKER ON BUSSING RELATIVE TO INCOMING FEED. LOCATE AT TOP OF BUSSING FOR TOP FED PANELS AND AT BOTTOM OF BUSSING FOR BOTTOM FED PANELS. 120KA PER PHASE AND 60KA PER MODE.
4. FOR EACH RECESSED PANELBOARD, STUB FOUR(4) 3/4" EMPTY CONDUITS FROM PANELBOARD INTO ACCESSIBLE CEILING SPACE.

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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER
ROY A. ROMANO
E17247
EXP. 6/30/26
ELECTRICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments

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City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE

PANEL SCHEDULES

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

E-501

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 2/13/2025 3:46:47 PM FILE LOCATION: C:\Users\jmoberly\Documents\23.020 Dry Creek WWTP MEP_r22_jmoberly.rvt

Branch Panel: UPS1

Location: MDF 133 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 14K
Supply From: UPS1 | **Phases:** 3 | **Mains Type:** LUGS
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1 | **MCB Rating:** 100 A

Notes:
PRL2X

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1				100	100					2
3	SERVER RACK RCPTS	20 A	3			100	100			4
5								3	20 A	SERVER RACK RCPTS	6
7				100	500					8
9	SERVER RACK RCPTS	20 A	3			100	--	1	20 A	PLC PANEL	10
11											12
13	SPACE	--	1	--	--			100	--	1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
		Total Load:		800 VA		300 VA			300 VA		
		Total Amps:		7 A		3 A			3 A		

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	500 VA	100.00%	500 VA	
Receptacle	900 VA	100.00%	900 VA	**Total Conn. Load:** 1400 VA
				Total Est. Demand: 1400 VA
				Total Conn.: 4 A
				Total Est. Demand: 4 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: MDFL

Location: MDF 133 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 14K
Supply From: TMDF | **Phases:** 3 | **Mains Type:** Main Lugs
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1 | **MCB Rating:** 100 A

Notes:
PRL2A

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	RCPTS	20 A	1	720	500					2
3	RCPTS	20 A	1			1080	500			4
5	DRH - HUMIDIFIER	20 A	1					1752	500	6
7	FACP [4]	20 A	1	500	500					8
9	TCP	20 A	1			500	500			10
11	ACCESS CONTROL PANEL	20 A	1					500	500	12
13	HP-1G - ROOF	20 A	2	2080	0					14
15						2080	0			16
17	SPARE	20 A	1					0	0	18
19	SPARE	20 A	1	0	--					20
21	SPARE	20 A	1			0	--			22
23	SPACE	--	1					--	--	24
25				0	--					26
27	SURGE PROTECTION [3]	30 A	3			0	--			28
29								0	--	30
		Total Load:		4300 VA		4660 VA			3252 VA	
		Total Amps:		37 A		40 A			27 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Equipment	3000 VA	100.00%	3000 VA	
HVAC	4160 VA	100.00%	4160 VA	**Total Conn. Load:** 12212 VA
Other	3252 VA	100.00%	3252 VA	**Total Est. Demand:** 12212 VA
Receptacle	1800 VA	100.00%	1800 VA	**Total Conn.:** 34 A
				Total Est. Demand: 34 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: MDFH

Location: MDF 133 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 14K
Supply From: MTS 40AMP | **Phases:** 3 | **Mains Type:** LUGS
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1 | **MCB Rating:** 100 A

Notes:
PRL2A

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1				4300	0					2
3	XFMR 'TMDF1' [15 kVA]	30 A	3			4660	0			4
5								3252	0	6
7				4276	--					8
9	CRAC-1 - MDF ROOM	30 A	3			4276	--			10
11								4276	--	12
13				372	--					14
15	ACCU-1 - ROOF	20 A	3			372	--			16
17								372	--	18
19	SPACE	--	1	--	--					20
21	SPACE	--	1			--	--			22
23	SPACE	--	1					--	--	24
25	SPACE	--	1	--	--					26
27	SPACE	--	1			--	--			28
29	SPACE	--	1					--	--	30
31	SPACE	--	1	--	--					32
33	SPACE	--	1			--	--			34
35	SPACE	--	1					--	--	36
37				0	--					38
39	SURGE PROTECTION [3]	30 A	3			0	--			40
41								0	--	42
		Total Load:		8948 VA		9308 VA			7900 VA	
		Total Amps:		33 A		34 A			29 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Equipment	3000 VA	100.00%	3000 VA	
HVAC	18103 VA	100.00%	18103 VA	**Total Conn. Load:** 26155 VA
Other	3252 VA	100.00%	3252 VA	**Total Est. Demand:** 26155 VA
Receptacle	1800 VA	100.00%	1800 VA	**Total Conn.:** 31 A
				Total Est. Demand: 31 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: EV

Location: | **Volts:** 120/208 Wye | **A.I.C. Rating:** 22K
Supply From: TEV | **Phases:** 3 | **Mains Type:** 300/3
Mounting: FREE STAND | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: NEMA 3R | **MCB Rating:** 400 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	EV CHARGER	40 A	2	3328	3328					2
3						3328	3328			4
5	EV CHARGER	40 A	2					3328	3328	6
7				3328	3328					8
9	SPARE FOR EV CHARGER	40 A	2			3328	3328			10
11								3328	3328	12
13	SPARE FOR EV CHARGER	40 A	2	3328	3328					14
15						3328	3328			16
17	SPARE FOR EV CHARGER	40 A	2					3328	3328	18
19				3328	3328					20
21	SPARE FOR EV CHARGER	40 A	2			3328	3328			22
23								3328	3328	24
25	SPACE	--	1	--	3328					26
27	SPACE	--	1			--	3328			28
29	SPACE	--	1					--	3328	30
31	SPACE	--	1	--	3328					32
33	SPACE	--	1			--	--			34
35								--		36
37					--					38
39						--				40
41										42
		Total Load:		33280 VA		29952 VA			29952 VA	
		Total Amps:		277 A		250 A			250 A	

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	19968 VA	100.00%	19968 VA	
Spare	73216 VA	100.00%	73216 VA	**Total Conn. Load:** 93184 VA
				Total Est. Demand: 93184 VA
				Total Conn.: 259 A
				Total Est. Demand: 259 A

Notes:
REFER TO PANEL SCHEDULE NOTES ON THIS SHEET.

Branch Panel: UPS2

Location: MDF 133 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 14K
Supply From: UPS2 | **Phases:** 3 | **Mains Type:** LUGS
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1 | **MCB Rating:** 100 A

Notes:
PRL2X

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1				100	100					2
3	SERVER RACK RCPTS	20 A	3			100	100			4
5								3	20 A	SERVER RACK RCPTS	6
7				100	500					8
9	SERVER RACK RCPTS	20 A	3			100	--	1	20 A	PLC PANEL	10
11											12
13	SPACE	--	1	--	--			100	--	1	--	SPACE	14
15	SPACE	--	1			--	--			1	--	SPACE	16
17	SPACE	--	1					--	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
		Total Load:		800 VA		300 VA			300 VA		
		Total Amps:		7 A		3 A			3 A		

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Power	500 VA	100.00%	500 VA	
Receptacle	900 VA	100.00%	900 VA	**Total Conn. Load:** 1400 VA
				Total Est. Demand: 1400 VA
				Total Conn.: 4 A
				Total Est. Demand: 4 A

Notes:

PANEL SCHEDULE NOTES:

1. PROVIDE COPPER BUSSING INCLUDING GROUND BUSS.
2. DOOR-IN-DOOR CONSTRUCTION
3. PROVIDE SURGE PROTECTION DEVICE (SPD), SCHNEIDER SURLOGIC SERIES OR EQUAL. LOCATE SPD BREAKER ON BUSSING RELATIVE TO INCOMING FEED. LOCATE AT TOP OF BUSSING FOR TOP FED PANELS AND AT BOTTOM OF BUSSING FOR BOTTOM FED PANELS. 120KA PER PHASE AND 60KA PER MODE.
4. PROVIDE RED COLORED BRANCH CIRCUIT BREAKER LOCK-OUT DEVICE FOR BRANCH CIRCUIT BREAKER SUPPLYING POWER TO FIRE ALARM PANELS.

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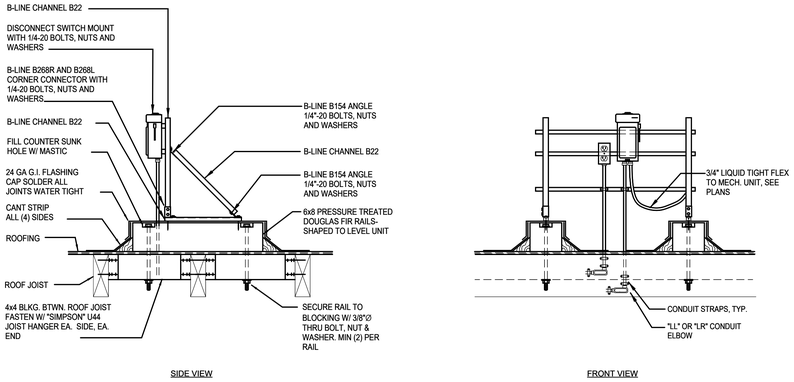
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E-502

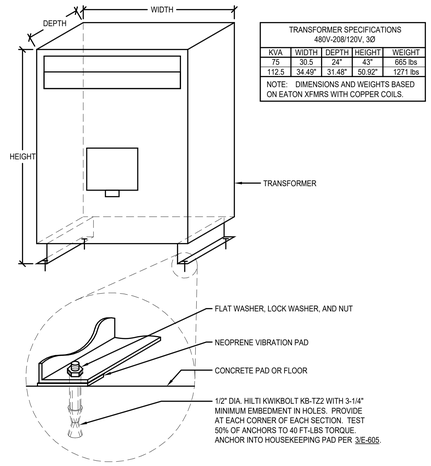
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DATE PLOTTED: 10/23/2024 1:18:23 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

BID SET (PRELIMINARY)



6 DISC. MOUNTING ON ROOF
NONE

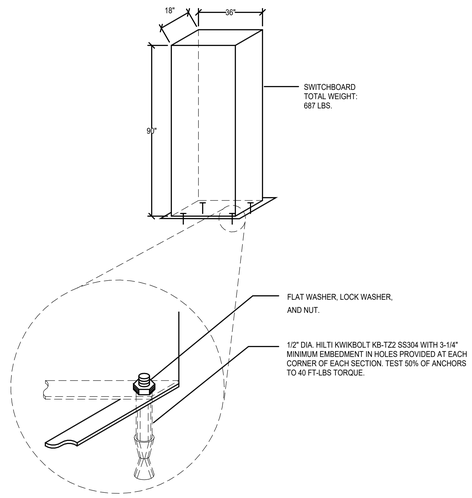


TRANSFORMER SPECIFICATIONS 480Y-208/120V, 3Ø				
KVA	WIDTH	DEPTH	HEIGHT	WEIGHT
75	30.5	24"	43"	665 lbs
112.5	34.49"	31.48"	50.92"	1271 lbs

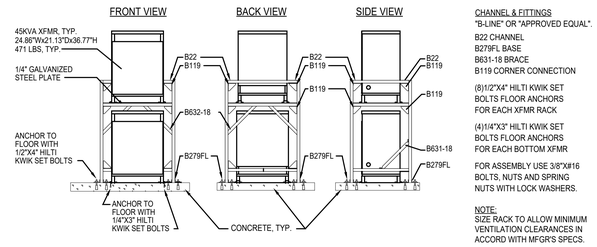
NOTE: DIMENSIONS AND WEIGHTS BASED ON EATON XFMRS WITH COPPER COILS.

NOTES:
1. PROVIDE VENTILATED TRANSFORMERS WITH RODENT SCREENS AND DRIP SHIELDS ON ALL TRANSFORMERS UNLESS OTHERWISE NOTED.
2. PROVIDE 115°C TRANSFORMERS UNLESS OTHERWISE NOTED
3. PROVIDE K1 K FACTOR TRANSFORMERS UNLESS OTHERWISE NOTED.
4. PROVIDE HOUSEKEEPING PAD AT 112.5KVA TRANSFORMER. SEE SHEET E-101 AND DETAIL 3/E-605 FOR REFERENCE.
5. REMOVE SHIPPING BOLTS FROM TRANSFORMERS DURING INSTALLATION.

3 XFMR MOUNTING DETAIL
NONE



1 MAIN SWITCHBOARD ANCHORAGE
NONE



CHANNEL & FITTINGS
"B-LINE" OR "APPROVED EQUAL".

B22 CHANNEL
B279FL BASE
B631-18 BRACE
B119 CORNER CONNECTION

(8)1/2"X4" HILTI KWIK SET BOLTS FLOOR ANCHORS FOR EACH XFMR RACK

(4)1/4"X3" HILTI KWIK SET BOLTS FLOOR ANCHORS FOR EACH BOTTOM XFMR

FOR ASSEMBLY USE 3/8"X#16 BOLTS, NUTS AND SPRING NUTS WITH LOCK WASHERS.

NOTE:
SIZE RACK TO ALLOW MINIMUM VENTILATION CLEARANCES IN ACCORD WITH MFGR'S SPECS.

7 STACKED XFMR MOUNTING 45KVA XFMRS
NONE

PANEL WEIGHTS	
PANEL AMPS	WEIGHT
100	125 LBS
225	250 LBS
400	410 LBS

4 RECESSED PANEL MOUNTING - WOOD
NONE

SWITCHBOARD NOTES

1. SWITCHBOARD CONSTRUCTION SHALL BE OF THE TYPE, CLASS AND ARRANGEMENT AS INDICATED. BREAKER FRAME CLASS AND SIZES SHALL BE AS NOTED. DESIGN IS BASED ON EATON.
2. THE CONSTRUCTION OF THE SWITCHBOARD SHALL BE DEAD FRONT TYPE COMPLETELY METAL ENCLOSED WITH SELF SUPPORTING STRUCTURE OF THE UNIVERSAL FRAME TYPE USING DIE-FORMED, WELDED AND BOLTED MEMBERS. FORMED FRONT AND SIDE COVERS SECTIONALIZED AND REMOVABLE WITH SCREW-ON PLATES. FORMED HINGED DOORS WITH KNURLED KNOBS OR THREE POINT LATCH WHERE SHOWN. COMPONENTS SHALL BE MOUNTED ON BACK PANS OR STRUCTURAL FRAMING AND NOT ON SIDE OR BACK COVERS OF THE ENCLOSURE.
3. ALL BUSSING SHALL BE COPPER WITH SILVER PLATED CONNECTIONS AND JOINTS. BUSSING SHALL BE SIZED TO LIMIT TEMPERATURE RISE OF 55°C PER U.L. STANDARDS BRACED TO WITHSTAND A MINIMUM SHORT CIRCUIT CURRENT OF 65,000 RMS SYMMETRICAL AMPERES OR AS OTHERWISE NOTED. ALL BUSSES SHALL BE RATED 100% AND SHALL EXTEND THE FULL LENGTH AND HEIGHT OF THE USABLE SPACE. TAPERING OF BUS OR FLEX BUS IS NOT PERMITTED.
4. BREAKERS SHALL BE FULLY RATED FOR THE SYMMETRICAL SHORT CIRCUIT CURRENT RATING NOTED IN THE DRAWINGS.
5. WHERE SPACES ARE INDICATED ALL REQUIRED PROVISIONS INCLUDING HARDWARE AND TRIM SHALL BE INSTALLED TO ALLOW FUTURE INSTALLATION OF BREAKERS.
6. CABLE AND CONDUCTOR LUGS SHALL BE TWO-HOLE PAD, NEMA DRILLED, UN-INSULATED COPPER, LONG BARRELED, TIN PLATED COMPRESSION TERMINALS. BURNDY TYPE YZ-2N OR EQUAL.
7. CONSTRUCTION IS NEMA 1, INDOOR.
   7.1. PROVIDE SWITCHBOARD WITH 1-1/2" HIGH BASE CHANNEL.
   7.2. GROUT SEAL ANY GAPS BETWEEN BASE AND CONCRETE PAD.
   7.3. RODENTPROOF THE ASSEMBLY
8. PAINT COAT SHALL BE A POLYESTER PLASTIC DRY POWDER COAT ELECTROSTATICALLY APPLIED. COLOR: ANSI 70 (GRAY)
9. EQUIPMENT SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND TESTED PRIOR TO DELIVERY. DESIGN AND CONSTRUCTION SHALL MEET ALL OF THE REQUIREMENTS OF THE CEC, NEC, NEMA, OHSA AND SHALL BE U.L. LISTED.
10. MANUFACTURER SHALL PROVIDE THE EQUIPMENT TO MEET THE SPACE PROVIDED AND SHALL NOT REDUCE THE NUMBER OF SECTIONS SHOWN ON THE DRAWINGS.
11. THE BOTTOM OF THE SWITCHBOARD SHALL BE OPEN.
12. ALIGN THE FRONT OF THE SWITCHBOARD
13. REFER TO SPECIFICATION 26 24 13 SWITCHBOARDS FOR ADDITIONAL REQUIREMENTS.
14. SEE DETAIL 1/E601 FOR MOUNTING ANCHORAGE.
15. GROUND BUS BAR SHALL BE 1/4" X 2 1/4" MINIMUM. NEMA DRILLED FOR 2-HOLE PAD LUGS AND EXTEND THE ENTIRE WIDTH OF THE ENCLOSURE.
16. NEUTRAL BAR SHALL BE ACCESSIBLE FROM THE FRONT, INSTALL BELOW THE CHASIS AND TO THE FRONT.
17. ELECTRICAL EQUIPMENT SHALL BE FIELD MARKED WITH A WARNING TO QUALIFIED PERSONNEL OF THE POTENTIAL ARC FLASH HAZARDS PER NFPA-70E AND NEC 110-16.
18. MAIN SERVICE DISCONNECT SHALL BE PERMANENTLY MARKED TO IDENTIFY IT AS A SERVICE DISCONNECT PER CEC 230.70(B).

2 MAIN SWITCHBOARD ELEVATION
NONE

CHANNEL & FITTINGS
"B-LINE" OR "APPROVED EQUAL".

B22 CHANNEL
B279FL BASE
B631-18 BRACE
B119 CORNER CONNECTION

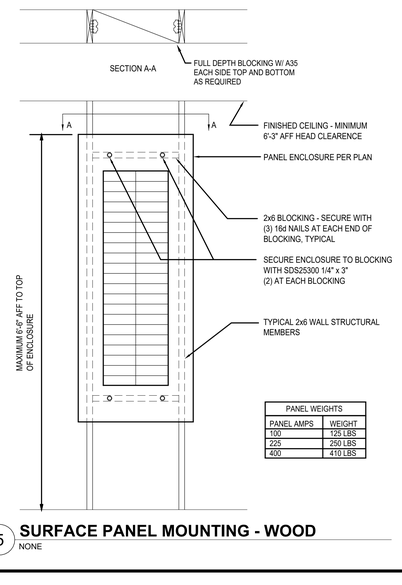
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FOR ASSEMBLY USE 3/8"X#16 BOLTS, NUTS AND SPRING NUTS WITH LOCK WASHERS.

NOTE:
SIZE RACK TO ALLOW MINIMUM VENTILATION CLEARANCES IN ACCORD WITH MFGR'S SPECS.

8 STACKED XFMR MOUNTING
NONE



PANEL WEIGHTS	
PANEL AMPS	WEIGHT
100	125 LBS
225	250 LBS
400	410 LBS

5 SURFACE PANEL MOUNTING - WOOD
NONE

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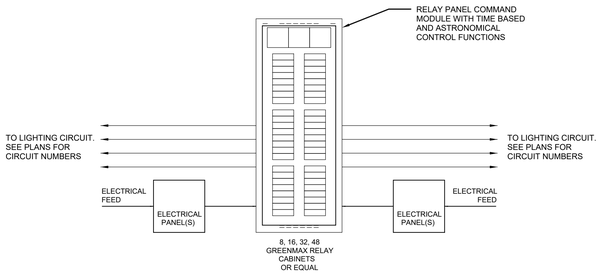
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SHEET NO.
E-601

DATE: 4/24/18

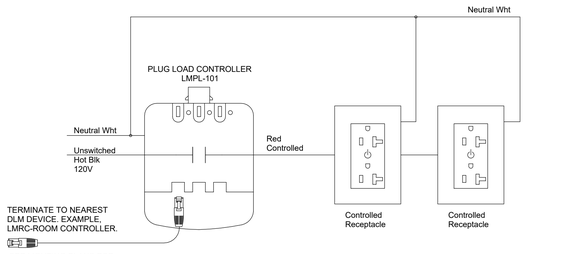
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BID SET (PRELIMINARY)

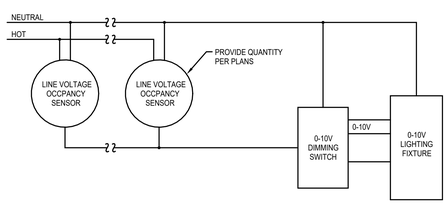


NOTES:
1. PROVIDE CONTROL PANEL WITH INTEGRAL ASTRONOMICAL TIME CLOCK.
2. THE PANEL SHALL BE CAPABLE OF DEMAND RESPONSE. SEE WIRING DIAGRAM ON SHEET
3. BEST PRACTICES TO FEED SAME SIDE AS LOAD RELAY(S). CABINET HAS BOTTOM WIREWAY CONNECTING SIDE WIREWAYS.
4. CONSULT FACTORY DOCUMENTS FOR LOADING WITH EMERGENCY AND NORMAL CIRCUITS.
5. USE REMOTE LOW VOLTAGE INPUT CABINETS WHEN ADDITIONAL POWER FOR GREENMAX DIGITAL CONTROLS IS REQUIRED, OR WHEN UP TO 16 ADDITIONAL LOCAL ANALOG INPUTS ARE NECESSARY.
6. ONLY EIGHT(8) CONTROLLED LIGHTING CIRCUITS ARE SHOWN. ADDITIONAL CIRCUITS MAY BE SPECIFIED TO BE PROVIDED ON FLOOR PLANS.
7. PROVIDE A MINIMUM OF FOUR(4) SPARE RELAYS.
8. ALL PRODUCTS SPECIFIED OR INDICATED HEREIN TO BE PROVIDED AS A WIRED PRODUCT SHALL NOT BE SUBMITTED WITH A WIRELESS PRODUCT AS PROPOSED SUBSTITUTION. ONLY ITEMS SPECIFICALLY IDENTIFIED TO BE PROVIDED AS A WIRELESS PRODUCT MAY HAVE A PROPOSED SUBSTITUTION WITH ANOTHER WIRELESS PRODUCT.

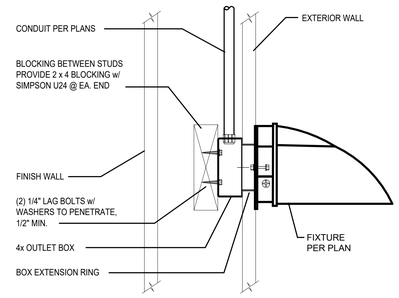
7 LIGHTING CONTROL PANEL
NONE



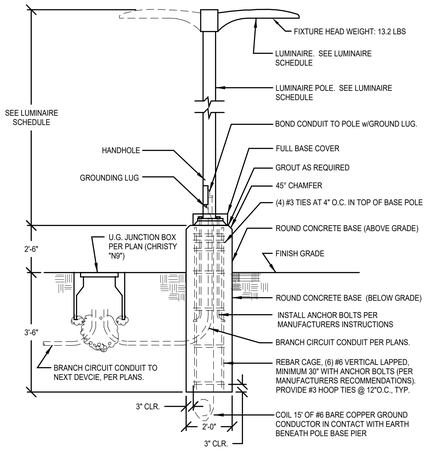
8 PLUG LOAD CONTROLLER
NONE



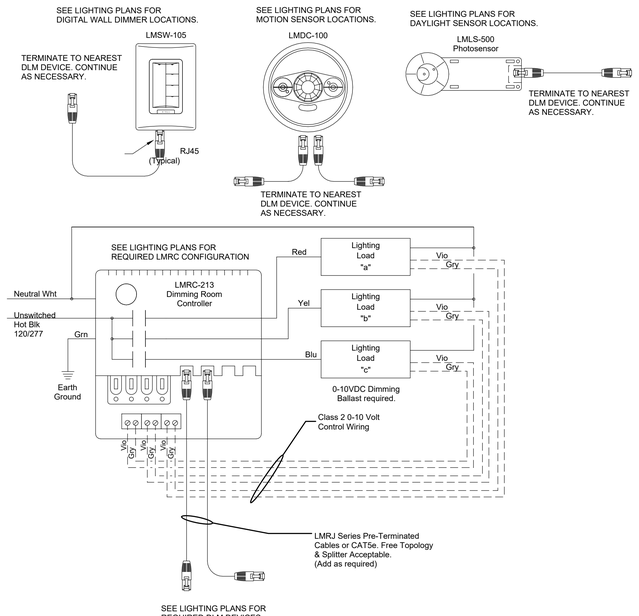
9 OCCUPANCY SENSOR SWITCH WIRING DIAGRAM
NONE



4 EXTERRIOR WALL MOUNTED FIXTURE
NONE

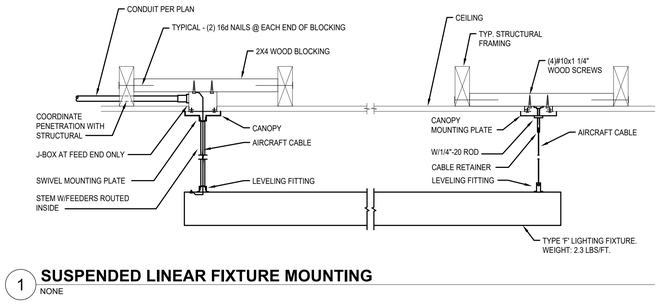


5 POLE MOUNTED LIGHT FIXTURE
NONE

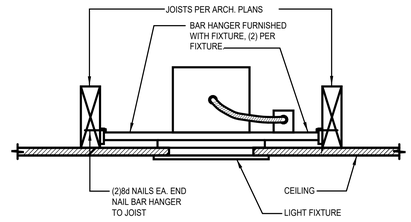


NOTE:
ALL PRODUCTS SPECIFIED OR INDICATED HEREIN TO BE PROVIDED AS A WIRED PRODUCT SHALL NOT BE SUBMITTED WITH A WIRELESS PRODUCT AS PROPOSED SUBSTITUTION. ONLY ITEMS SPECIFICALLY IDENTIFIED TO BE PROVIDED AS A WIRELESS PRODUCT MAY HAVE A PROPOSED SUBSTITUTION WITH ANOTHER WIRELESS PRODUCT.

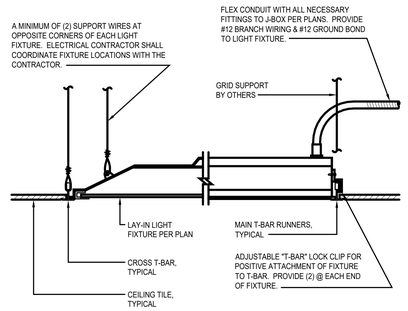
6 LIGHTING CONTROL WIRING
NONE



1 SUSPENDED LINEAR FIXTURE MOUNTING
NONE



2 RECESSED MOUNTED FIXTURE IN GYP. BOARD
NONE



3 T-BAR FIXTURE MOUNTING
NONE

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REGISTERED PROFESSIONAL ENGINEER G. NO R. ROMANO E17247 EXP. 6/30/24 ELECTRICAL STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

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CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
DETAILS

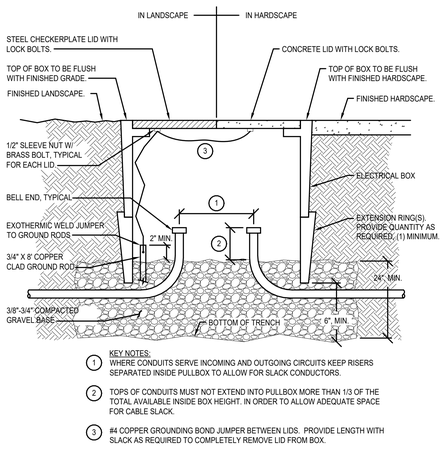
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E-602

DATE: 4/24/18

DATE PLOTTED: 10/23/2024 1:18:26 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP _22_nkovtash.rvt

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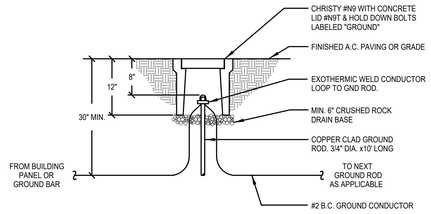


KEY NOTES:

1. WHERE CONDUITS SERVE INCOMING AND OUTGOING CIRCUITS KEEP RISERS SEPARATED INSIDE PULLBOX TO ALLOW FOR SLACK CONDUCTORS.
2. TOPS OF CONDUITS MUST NOT EXTEND INTO PULLBOX MORE THAN 1/3 OF THE TOTAL AVAILABLE INSIDE BOX HEIGHT. IN ORDER TO ALLOW ADEQUATE SPACE FOR CABLE SLACK.
3. #4 COPPER GROUNDING BOND JUMPER BETWEEN LIDS. PROVIDE LENGTH WITH SLACK AS REQUIRED TO COMPLETELY REMOVE LID FROM BOX.

7 NON-TRAFFIC RATED PULL BOX

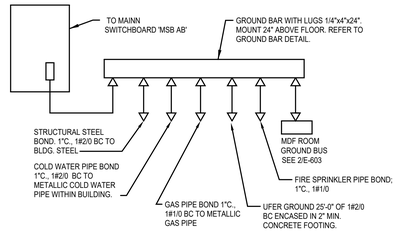
NONE



NOTE: PROVIDE A MINIMUM OF (2) GROUND RODS PER CEC 250.53(A)(2).

4 GROUND ROD AND INSPECTION WELL

NONE

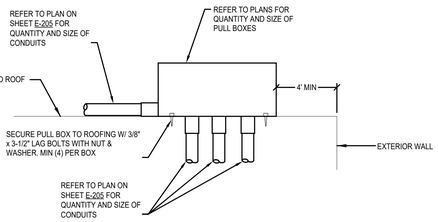


NOTES:

1. TYPICAL AT EACH BUILDING.
2. UFER GROUND, 25' BARE COPPER CONDUCTOR ENCASED IN CONCRETE FOOTING 3" FROM BOTTOM.
3. PROVIDE A MINIMUM OF (2) GROUND RODS PER CEC 250.53(2).
4. PROVIDE BOND TO BUILDING STEEL, METALLIC COLD WATER PIPE, MAIN GAS PIPE AND FIRE SPRINKLER PIPE AT BUILDINGS WHERE APPLICABLE.
5. PROVIDE GROUND CONDUCTOR TO IT ROOM/DF SIZED PER BICSI STANDARDS UNLESS OTHERWISE NOTED, WHERE APPLICABLE.

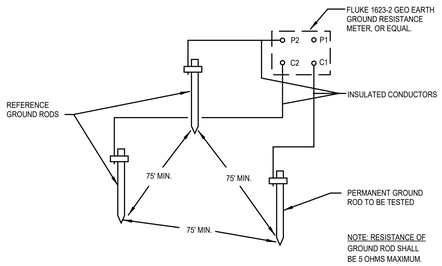
1 MAIN GROUND BUS

NONE



8 ROOF MOUNTED PV J-BOX

NONE



NOTE: RESISTANCE OF GROUND ROD SHALL BE 5 OHMS MAXIMUM.

5 METHOD OF TESTING GROUND RODS

NONE

FALL OF POTENTIAL TEST METHOD

NOTES:

1. POWER EQUIPMENT OR SYSTEMS WITH CAPACITY OF 500KVA OR LESS: 10 OHMS.
2. POWER EQUIPMENT OR SYSTEMS WITH CAPACITY OF 500 TO 1000KVA: 5 OHMS.
3. POWER EQUIPMENT OR SYSTEMS WITH CAPACITY GREATER THAN 1000KVA: 3 OHMS.
4. POWER DISTRIBUTION UNITS OR PANELBOARDS SERVING ELECTRONIC I.T. EQUIPMENT: 3 OHMS.
5. MAN-HOLE GROUNDS: 10 OHMS.

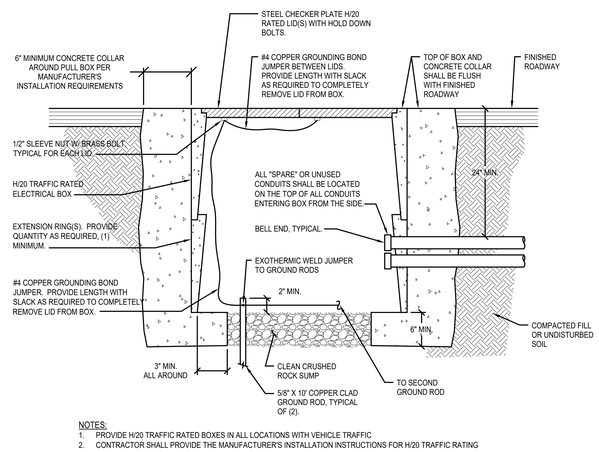
FALL OF POTENTIAL 3-POINT TEST:

GROUND RING, I.E. 10 BY 10 RING, 14' DIAGONAL LENGTH ISOLATION FROM UTILITY NEUTRAL PROBE Z IS DRIVEN A DISTANCE OF 10 TIMES DIAGONAL LENGTH OF THE GROUNDING ROD SYSTEM (ROD X). A SECOND PROBE (Y) IS PLACED IN LINE AT A DISTANCE FROM ROD X EQUAL TO THE DIAGONAL LENGTH OF THE GROUNDING SYSTEM.

AT THIS POINT, A KNOWN CURRENT IS APPLIED ACCROSS X & Z, WHILE THE RESULTING VOLTAGE IS MEASURED ACROSS X & Y. OHMS LAW APPLIED R=V/I. THEN (Y) MOVED TO 2 TIMES THE DIAGONAL LENGTH, THEN MOVE OUT TO 3 TIMES(3X). 4X... 9X THE DIAGONAL LENGTH TO COMPLETE THE 3 POINT TEST WITH A TOTAL OF NINE RESISTANCE MEASUREMENTS.

2 MDF ROOM GROUND BUS

NONE

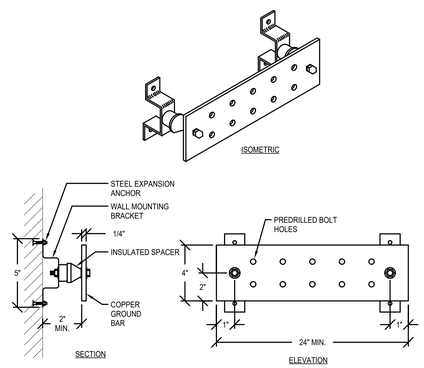


NOTES:

1. PROVIDE H/20 TRAFFIC RATED BOXES IN ALL LOCATIONS WITH VEHICLE TRAFFIC
2. CONTRACTOR SHALL PROVIDE THE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR H/20 TRAFFIC RATING REQUIREMENTS AS PART OF THE SUBMITTALS.

6 TRAFFIC RATED PULL BOX

NONE



NOTES:

1. PROVIDE A MINIMUM OF 1 MOUNTING POINT PER 12" OF BAR LENGTH.
2. PROVIDE QUANTITY OF PREDRILLED STANDARD NEMA BOLT HOLES SIZED AND SPACED AS REQUIRED FOR CONNECTIONS USED.
3. FOR ALL ADDITIONAL INSTALLATION REQUIREMENTS REFER TO SPEC SECTIONS 26 05 26.

3 GROUND BAR DETAIL

NONE

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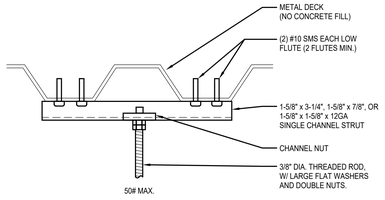
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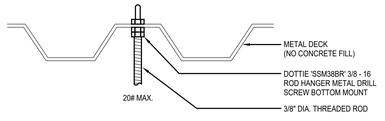
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DATE PLOTTED: 10/23/2024 1:18:27 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

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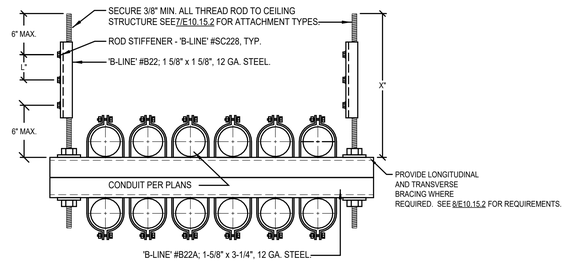
NOTES:
1. UPON INSTALLATION OF SMS TO UNISTRUT TO METAL DECK, CONTRACTOR TO PATCH AND REPAIR DAMAGE TO (E) SPRAY APPLIED FIREPROOFING. RESTORE TO ORIGINAL FIREPROOFING THICKNESS AND FIRE RATING.



NOTES:
1. UPON INSTALLATION OF ROD HANGER TO METAL DECK, CONTRACTOR TO PATCH AND REPAIR DAMAGE TO (E) SPRAY APPLIED FIREPROOFING. RESTORE TO ORIGINAL FIREPROOFING THICKNESS AND FIRE RATING.

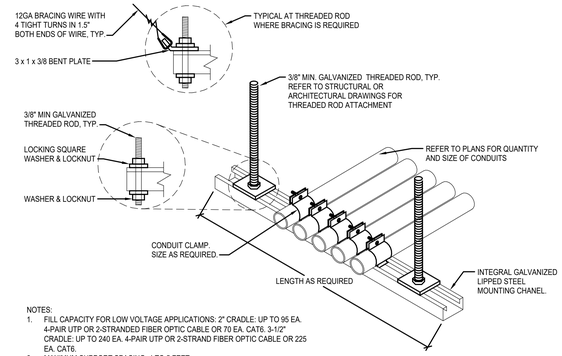
7 ROD TO METAL DESK
NONE

ROD STIFFENER SCHEDULE	
ROD Ø	**'L' MAX**
3/8"	10"
1/2"	14"
5/8"	16"
3/4"	20"



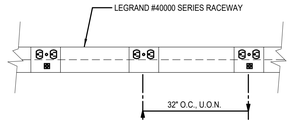
NOTES:
1. WHERE 'X' = 24" OR LESS, ROD STIFFENERS ARE NOT REQUIRED.
2. PROJECT MAX LOAD: 15 LBS/FT.
3. CHANNEL TRAPEZE SHALL BE SPACED MAX. 6'-0" O.C.
4. AIRCRAFT CABLE MAY BE OMITTED WHEN HANGER ROD LENGTH DOES NOT EXCEED 12".

4 CONDUIT TRAPEZE - DUBLE SIDED
NONE



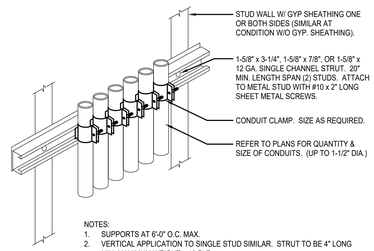
NOTES:
1. FILL CAPACITY FOR LOW VOLTAGE APPLICATIONS: 2" CRADLE: UP TO 95 EA. 4-PAIR UTP OR 2-STRANDED FIBER OPTIC CABLE OR 70 EA. CAT6. 3-1/2" CRADLE: UP TO 240 EA. 4-PAIR UTP OR 2-STRAND FIBER OPTIC CABLE OR 225 EA. CAT6.
2. MAXIMUM SUPPORT SPACING: 4 TO 5 FEET.
3. MAXIMUM TOTAL UNIFORM LOAD, 10 LBS/SF. MAXIMUM LOAD PER "COMFORT CRADLE", 25 LBS.
4. MAXIMUM TOTAL PER HANGER, 45 LBS.
5. PROVIDE A MINIMUM WORKING CLEARANCE OF 18" ON THE CABLE PLACEMENT SIDE OF THE CABLE SUPPORTS.
6. DETAIL WILL APPLY TO CABLE TRAY. PROVIDE LONGITUDINAL BRACING PARALLEL CABLE TRAY AT 20'-0" MAX. SPACING, EACH SIDE OF TRAY.

1 CONDUIT TRAPEEZE
NONE



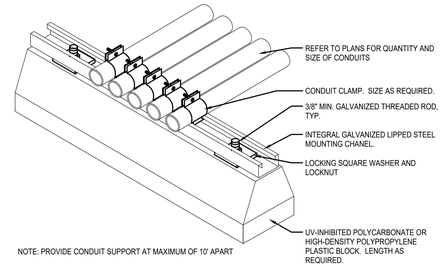
NOTE: THE POWER COMPARTMENT OF THE WIREWAY SHALL BE WIRED THROUGHOUT WITH CIRCUIT CONDUCTOR PER PLAN TO ALL RECEPTACLES. FURNISH & INSTALL (8) CABLE TYPE "H" THE ENTIRE LENGTH OF ALL DATA COMPARTMENTS FOR TERMINATION/CONNECTION BY OWNER.

8 PWR & SIG WIREWAY DETAIL
NONE

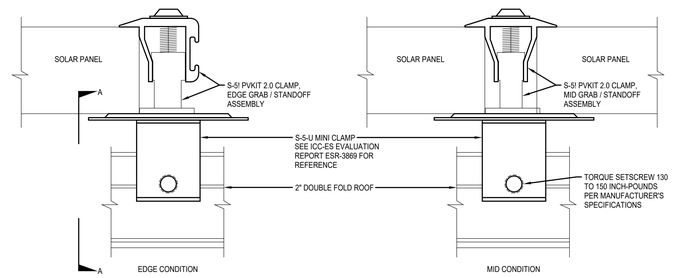


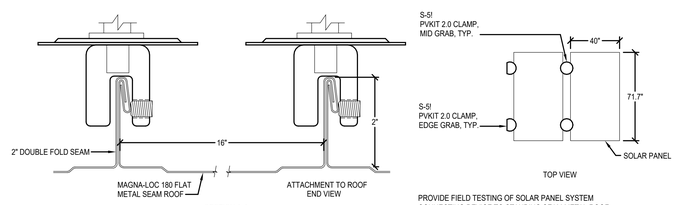
NOTES:
1. SUPPORTS AT 6'-0" O.C. MAX.
2. VERTICAL APPLICATION TO SINGLE STUD SIMILAR. STRUT TO BE 4" LONG MIN. MAXIMUM WEIGHT + 10 PLF.

5 VERTICAL CONDUIT SUPPORT
NONE



2 ROOF CONDUIT SUPPORT
NONE



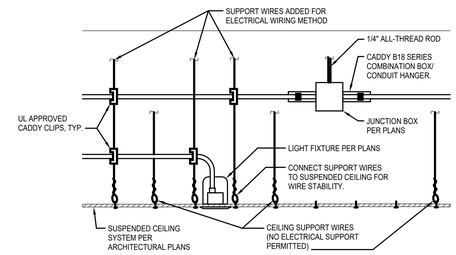


FIELD TESTS ARE REQUIRED TO VERIFY PROPER INSTALLATION OF THE SEAM CONNECTING DEVICE. AFTER ALL THE CONNECTING DEVICES HAVE BEEN INSTALLED, TEST A MINIMUM OF 20 CONSECUTIVE DEVICES TO TWICE THE MAXIMUM ALLOWABLE STRESS DESIGN (ASD) WIND UPLIFT LOAD TRIBUTARY TO THE CONNECTING DEVICE BASED ON THE WIND PRESSURE AT AREAS OF DISCONTINUITY SUCH AS ROOF EDGES AND RIDGES. IF THERE IS NO FAILURE IN 20 CONSECUTIVE TESTS, TEST 10 PERCENT OF THE REMAINING INSTALLED CONNECTING DEVICES. IF FAILURE OCCURS BEFORE 20 CONSECUTIVE SUCCESSFUL TESTS ARE COMPLETED, THEN ADDITIONAL TESTS SHALL BE PERFORMED UNTIL 20 CONSECUTIVE SUCCESSFUL TESTS ARE COMPLETED, THEN CONTINUE AT A RATE OF 10 PERCENT ON THE REMAINING INSTALLED DEVICES.

PROVIDE FIELD TESTING OF SOLAR PANEL SYSTEM CONNECTING DEVICE TO STANDING SEAM METAL ROOF PER DSA IR 16-8, 5.1.3.1.

SOLAR PANEL PULL TEST REPORT SHALL INCLUDE:
NUMBER OF TESTS PERFORMED AT EACH BUILDING IN EACH WIND ZONE.
ANY FAILURES DURING TESTING.
ANY NOTICEABLE DEFORMATION AFTER TESTING.

6 PV MOUNTING DETAIL
NONE



IN ACCORDANCE WITH CEC 300.11, RACEWAYS, CABLE ASSEMBLIES, BOXES, CABINETS, AND FITTINGS SHALL NOT BE SECURED TO, OR SUPPORTED BY, THE CEILING ASSEMBLY, INCLUDING THE CEILING SUPPORT WIRES. AN INDEPENDENT MEANS OF SECURE SUPPORT SHALL BE PROVIDED AND SHALL BE SECURED AT BOTH ENDS. IN FIRE-RATED ASSEMBLIES THE INDEPENDENT SUPPORT WIRES SHALL BE DISTINGUISHABLE BY COLOR, TAGGING, OR OTHER EFFECTIVE MEANS FROM THOSE THAT ARE PART OF THE FIRE-RATED DESIGN.

3 SUSPENDED CONDUIT SUPPORT
NONE

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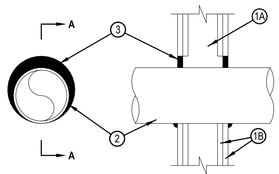
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System No. W-L-1054

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings —1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating at Ambient— Less Than 1 CFM/sq ft	FH Ratings —1 and 2 Hr (See Items 1 and 3)
L Rating at 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 1 CFM/sq ft L Rating at 400 F — Less Than 1 CFM/sq ft

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.

   The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.
2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) . diam steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.

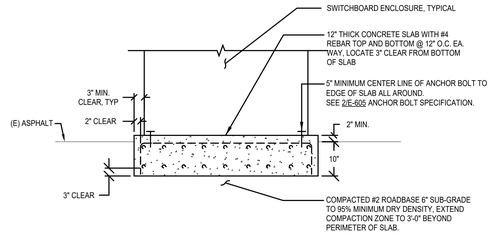
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC— FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

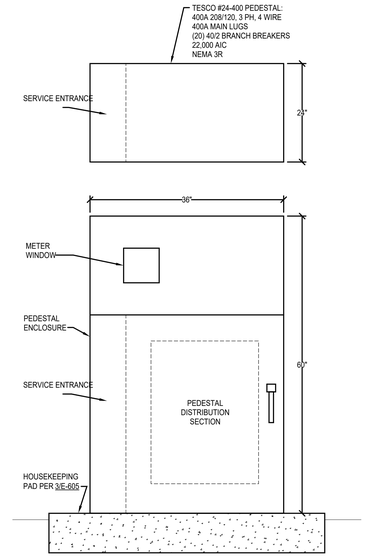
Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 23, 2015

5 FIRESTOP DETAIL - GYP
NONE



NOTES:
1. CONCRETE SHALL ATTAIN A 28 DAY STRENGTH OF 3,000 PSI MINIMUM.
2. REBAR SHALL BE ASTM A615 GRADE 60.
3. CONCRETE MIX SHALL CONTAIN MIN. OF 5 SACKS OF CEMENT PER CUBIC YARD WITH A WATER:CEMENT RATIO OF .5 MAXIMUM.
4. CONCRETE SHALL HAVE 4" MAX. SLUMP & 1" MAX. AGGREGATE PER ASTM C33.
5. INSTALL UFER GROUND CONDUCTOR AROUND PERIMETER OF SLAB, NEAR BOTTOM WITH MINIMUM 3" ENCASEMENT WHERE SPECIFIED. BOND TO REBAR WITH EXOTHERMIC WELD.
6. PAD SHALL EXTEND OUT 36" MIN. FROM FRONT OF SWITCHBOARD.

3 12" CONCRETE HOUSEKEEPING PAD DETAIL
NONE



1 EV PEDESTAL DETAIL
NONE

Product information

FIRESTOP CP 617 PUTTY PADS





Product description
- A moldable firestop putty designed to help protect electrical outlet boxes, junction boxes, and large steel boxes

Applications for use
- Protection of electrical outlet boxes, large steel boxes and junction boxes
- General gypsum wall assemblies with wood or metal studs
- When two outlets on opposite sides of the wall are located within a single stud / cavity or within 24" measured horizontally (not back-to-back unless specified by specific UL approval)

Advantages
- Applied by hand, no tools required. Pad can be molded without leaving residue on hands
- No electrical conductivity
- Quick and simple to install
- Can be used for commercial and residential applications
- Asbestos, formaldehyde and LABS free
- Red list compliant
- No oil migration. Putty remains flexible over time
- Excellent adhesion to gypsum, metal and plastic
- Hilti-branded paper has integrated IFU on each pad
- No methylene diisocynate, phthalates, volatile solvents or abestos fibers

Installation instructions
- See Hilti literature or third-party listings for complete application and installation details

Technical Data

Chemical basis	Butyl rubber
Color	Red
Recommended application temperature	32° to 104° F
Storage and transportation temperature range	23° to 104° F
Density	1.6 g/cm³
Temperature resistance range	-4° to 104° F
Mold and mildew performance	Class 0 (ASTM G21-96)
Tested in accordance with	UL 1479, CAN / ULC-S115, ASTM E814
Surface burning characteristics	Flame spread 15 (ASTM E84) Smoke development 10 (ASTM E84)
LEED v4.1 compliance	Complies with CDPH standard method v1.2-2017
LEED VOC	2 g/L
Dimensions (LxWxH)	CP 617 6"x7": 6"x7"x1/8" (15x18x0.3 cm) CP 617 L 7"x7": 7"x7"x1/8" (18x18x0.3 cm) CP 617 XL 9"x9": 9"x9"x1/8" (23x23x0.3 cm)
Package includes	20 pcs per box
Acoustics performance	64 (relates to specific construction) ASTM E90
Shelf life	Not relevant
Curing time	Non-curing

Order designation	Sales pack quantity	Item number
CP 617 6"x7"	20	309760
CP 617 L 7"x7"	20	333583
CP 617 XL 9"x9"	20	373387

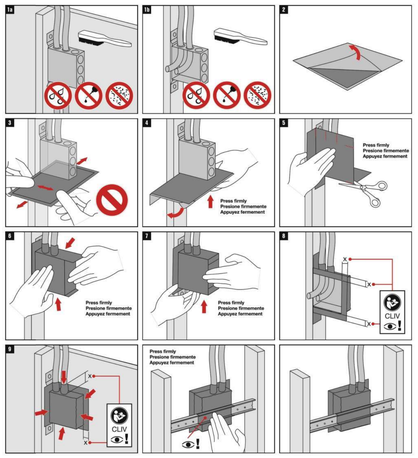
Hilti Firestop
Saving lives through innovation and education

www.hilti.com
www.hilti.ca
www.hilti.group

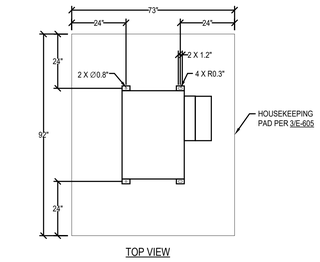
CP 617

2167686-05.2022

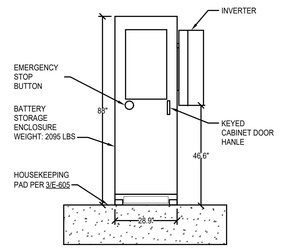
- Before handling and for specific application details, refer to Hilti product literature, 3rd party published listings and national approvals. For industrial use only.
- Avant toute utilisation et pour tout détail concernant une application, se référer à la documentation Hilti, à la liste de publications des tierces parties et aux approbations nationales. Seulement pour utilisateurs professionnels.
- Antes de usar y para detalles específicos de aplicación, véase la información que acompaña al producto Hilti, el listado publicado por terceros y las aprobaciones nacionales. Solamente para los usuarios profesionales.



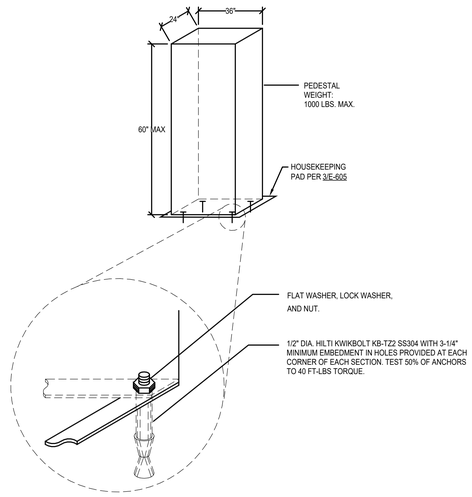
6 FIRESTOP DETAIL - PUTTY PADS
NONE



TOP VIEW



4 PV BATTERY STORAGE DETAIL
NONE



2 PEDESTAL ANCHORAGE DETAIL
NONE

196
2237 DOUGLAS BLVD, SUITE 160
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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER G. NO. R. ROMANO E17247 EXP. 6/30/24 ELECTRICAL STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION
1	08/28/2024	PC Comments

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
DETAILS

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
E-605

DATE: 4/24/18

BID SET (PRELIMINARY)

DATE PLOTTED: 10/23/2024 1:18:32 PM FILE LOCATION: C:\Users\rkovash\Documents\23.020 Dry Creek WWTP MEP_r22_rkovtash.rvt

S:\23.020 Dry Creek WWTP\Design\Electrical\E – FIRESTOP DETAIL – PUTTY PADS.dwg, 8/19/2024 10:20:16 AM, rkovtash, 1:1.03936

FIRE ALARM SYSTEM NOTES

1. THE INSTALLATION OF THE FIRE ALARM SYSTEM SHALL CONFORM TO THE APPLICABLE EDITION OF THE FOLLOWING CODES AND STANDARDS MATCHING WITH TITLE SHEET EDITION:
   a. CODE OF FEDERAL REGULATIONS (CFR)
   b. AMERICAN NATIONAL DISABILITY ACT (ADA)
   c. ENVIRONMENTAL PROTECTION AGENCY (EPA)
   d. FEDERAL COMMUNICATIONS COMMISSION (FCC)
   e. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
   f. UNDERWRITERS LABORATORIES INC. (UL)
   g. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
   h. NATIONAL FIRE PROTECTION ASSOCIATION 72 (NFPA 72) WITH CALIFORNIA AMENDMENTS.
   i. CALIFORNIA ELECTRICAL CODE (CEC)
   j. CALIFORNIA BUILDING CODE (CBC)
   k. CALIFORNIA FIRE CODE (CFC)
2. FIRE ALARM PACKAGE SHALL INCLUDE DETAILED SHOP DRAWINGS, CUT SHEETS, AND COPIES OF THE APPROVED CSFM (CALIFORNIA STATE FIRE MARSHAL) LISTINGS FOR DEVICES, PROGRAMING, COMMISSIONING, STARTUP, AND ONE YEAR OF MAINTENANCE AFTER THE INSTALLATION IS ACCEPTED AND SIGNED OFF BY THE INSPECTOR OF RECORD.
3. PRIOR TO ORDERING AND INSTALLATION THE FIRE ALARM SYSTEM AND ASSOCIATED EQUIPMENT PREPARE AND SUBMIT A COMPLETE SUBMITTAL PACKAGE COMPLETE WITH DETAILED SHOP DRAWINGS (INCLUSIVE OF CALCULATIONS AND POINT BY POINT WIRING DIAGRAMS), CUT SHEETS AND COPIES OF THE APPROVED CALIFORNIA STATE FIRE MARSHAL LISTINGS FOR EACH COMPONENT OF THE SYSTEM TO BE INSTALLED.
4. ANY DISCREPANCIES IN THE DRAWING SET WITH APPLICABLE CODES OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER PRIOR TO ORDERING AND INSTALLING EQUIPMENT.
5. INFORMATION SHOWN ON THESE PLANS RELATING TO THE EXISTING FIRE ALARM SYSTEM HAS BEEN OBTAINED FROM THE ORIGINAL AND "AS BUILT/RECORD" DRAWINGS AND FROM FIELD OBSERVATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL EXISTING WIRING AND RELATED CONDITIONS BEFORE PROCEEDING WITH THE EXECUTION OF WORK. MODIFICATIONS TO THE EXISTING WIRING SYSTEMS SHALL ENSURE CIRCUIT CONTINUITY TO ALL REMAINING EXISTING DEVICES OR EQUIPMENT ASSOCIATED WITH THE EXISTING REMAINING WIRING SYSTEM.
6. A STAMPED SET OF APPROVED FIRE ALARM SHOP DRAWINGS SHALL BE KEPT ON THE JOB SITE AND USED FOR INSTALLATION. ANY DEVIATION FROM THE APPROVED DOCUMENTS, INCLUDING SUBSTITUTION OF DEVICES, SHALL BE APPROVED BY THE INSPECTOR OF RECORD. ALL DEVIATIONS SHALL BE MARKED-UP ON THE JOB SITE SET OF THE APPROVED DOCUMENTS. THE APPROVED DOCUMENTS SHALL BE KEPT UP-TO-DATE WITH ALL DEVIATIONS (INCLUDING CONDUIT/CABLE ROUTING CHANGES, WIRING CHANGES AND DEVICE ADDRESS CHANGES) AND SHALL BE USED AS REDLINES FOR THE FINAL AS AS-BUILT SET OF DRAWINGS.
7. UPON ACTIVATION OF ANY INITIATION DEVICE THE FIRE ALARM SYSTEM SHALL TRANSMIT AN ALARM OR SUPERVISORY SIGNAL TO THE MONITORING STATION OF THE OWNER'S CHOICE.
8. UPON RECEIPT OF ANY TROUBLE CONDITION THE FIRE ALARM SYSTEM SHALL TRANSMIT A TROUBLE SIGNAL TO THE MONITORING STATION OF THE OWNER'S CHOICE.
9. THE TOTAL SOUND PRESSURE LEVEL PRODUCED BY COMBINING THE AMBIENT SOUND PRESSURE LEVEL WITH ALL AUDIBLE NOTIFICATION APPLIANCES OPERATING SHALL NOT EXCEED 110 dBA AT THE MINIMUM HEARING DISTANCE (NFPA 72, 2019 EDITION SECTION 18.4.1.2).
10. TO ENSURE THAT AUDIBLE PUBLIC MODE SIGNALS ARE CLEARLY HEARD THEY SHALL HAVE A SOUND LEVEL AT LEAST 15 dB ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dB ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, MEASURED 5 FT ABOVE THE FLOOR IN THE AREA REQUIRED TO BE SERVED BY THE SYSTEM USING THE A-WEIGHTED SCALE (dBA) (NFPA 72, 2019 EDITION CBC CHAPTER 35).
11. THE ALARM AUDIBLE SIGNAL PATTERN USED TO NOTIFY OCCUPANTS OF THE NEED TO EVACUATE (LEAVE THE BUILDING) OR RELOCATE (FROM ONE AREA TO ANOTHER) SHALL BE THE STANDARD ALARM EVACUATION SIGNAL CONSISTING OF A THREE-PULSE TEMPORAL PATTERN (NFPA 72, 2019 EDITION CBC CHAPTER 35).
12. VISUAL DEVICES SHALL NOT EXCEED 2 FLASHES PER SECOND AND SHALL NOT BE SLOWER THAN 1 FLASH EVERY SECOND. THE DEVICE SHALL HAVE A PULSING LIGHT SOURCE NOT LESS THAN .0375 LUMENS PER SQUARE FEET AND MEET ADA COMPLIANCE. WHEN THERE IS MORE THAN TWO VISUAL APPLIANCES OR GROUPS OF SYNCHRONIZED VISUAL APPLIANCES WITHIN THE FIELD OF VIEW ALL APPLIANCES SHALL BE SYNCHRONIZED.
13. AN AVERAGE AMBIENT SOUND LEVEL GREATER THAN 105 dBA SHALL REQUIRE THE USE OF A VISIBLE NOTIFICATION APPLIANCE (NFPA 72, 2016 EDITION CBC CHAPTER 35).
14. THE FLASH RATE SHALL NOT EXCEED TWO FLASHES PER SECOND (2 Hz) NOR BE LESS THAN ONE FLASH EVERY SECOND (1 Hz) THROUGHOUT THE LISTED VOLTAGE RANGE OF THE APPLIANCE (NFPA 72, 2019 EDITION SECTION 18.5.3.1)
15. WHERE MORE THAN TWO VISIBLE NOTIFICATION APPLIANCES OR GROUPS OF SYNCHRONIZED APPLIANCES ARE IN THE SAME ROOM OR ADJACENT SPACE IN THE FIELD OF VIEW ALL APPLIANCES ARE REQUIRED SYNCHRONIZE TOGETHER (NFPA 72, 2019 EDITION SECTION 18.5.5.4.2)
16. T-TAP ONLY WHERE SHOWN ON THE DRAWINGS AND APPROVED BY THE MANUFACTURER'S DOCUMENTATION.
17. FIRE ALARM CIRCUITS SHALL BE INSTALLED IN A MINIMUM OF 3/4" CONDUITS. CONDUIT FILL SHALL BE MAINTAINED PER THE APPLICABLE CEC.
18. PENETRATIONS THROUGH RATED ASSEMBLIES AND WALLS SHALL BE SEALED WITH A LISTED SYSTEM THAT IS EQUAL TO OR EXCEEDS THE RATING OF THE ASSEMBLY. REFER TO FIRESTOP DETAIL.
19. WIRING SHALL BE UL APPROVED AS DESIGNATED IN THE FIRE ALARM SYSTEM WIRING SCHEDULE OR THE MANUFACTURER'S INSTALLATION MANUAL. FIRE ALARM CABLES SHALL BE PROVIDED WITH RED PVC JACKET. WIRING INSTALLED UNDERGROUND SHALL BE LISTED FOR WET LOCATION.
20. WIRING PULLED THROUGH A JUNCTION BOX OR BACK BOX SHALL TERMINATE AT A DEVICE, SYSTEM PANEL OR TERMINAL CABINET WITH NO SPLICES. SIZE BOXES PER WIRE FILL AS DEFINED IN THE CEC. PROVIDE A MINIMUM OF 6 " OF LEAD WIRE FROM THE BOX TO CONNECT EACH DEVICE.
21. FIRE ALARM CABLES/CONDUCTORS SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.
22. UPON COMPLETION OF INSTALLATION CONDUCT A TEST OF THE SYSTEMS OPERATION IN ACCORDANCE WITH NFPA 72, 2016 EDITION CBC CHAPTER 35 IN THE PRESENCE OF THE ARCHITECT AND THE INSPECTOR OF RECORD. COMPLETE REQUIRED DOCUMENTATION IN ACCORDANCE WITH NFPA 72, 2019 EDITION CBC CHAPTER 35. PROVIDE ORIGINAL TO INSPECTOR OF RECORD AND COPIES TO OWNER'S REPRESENTATIVE AND INSPECTOR OF RECORD.
23. THE INSPECTOR OF RECORD, AND THE OWNER'S REPRESENTATIVE SHALL RECEIVE FORTY EIGHT (48) HOURS NOTICE PRIOR TO THE DATE OF A FUNCTIONAL TEST AND FINAL INSPECTION.
24. THE INSPECTOR OF RECORD AND THE ARCHITECT SHALL RECEIVE ONE (1) WEEKS NOTICE FOR A FINAL PUNCH LIST WALK.
25. INITIATING DEVICES SHALL BE INSTALLED IN A MANNER THAT PROVIDES ACCESSIBILITY FOR PERIODIC INSPECTION, TESTING AND MAINTENANCE (NFPA 72, 2019 EDITION CBC CHAPTER 35).
26. THE FOLLOWING SHALL BE COMPLETED AND SUBMITTED TO THE ENGINEER FOR A FINAL TO BE GRANTED:
   a. AS-BUILT DRAWINGS, PROGRAMMING DOCUMENTS, SCHEMATICS (DEVICE & EQUIPMENT CUTSHEETS), AND MANUALS PER SPECIFICATIONS. PROVIDE SUCH DOCUMENTS IN PAPER FORM AND ON CD.
   b. A 1/2 SIZE LAMINATED POSTING OF THE AS-BUILT PRINTS AT THE FIRE ALARM CONTROL PANEL.
   c. TYPED RECORD OF COMPLETION PER NFPA 72.
   d. ITEMS ON A PUNCH LIST SHALL BE COMPLETE AND SIGNED OFF BY THE INSPECTOR OF RECORD.
   e. ACCEPTANCE OF THE FUNCTIONAL TEST SIGNED OFF BY THE INSPECTOR OF RECORD.
28. PER CEC 760.41(B) THE BRANCH CIRCUIT SUPPLYING THE FIRE ALARM EQUIPMENT(S) SHALL SUPPLY NO OTHER LOADS. THE LOCATION OF THE BRANCH-CIRCUIT OVERCURRENT PROTECTIVE DEVICE SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CONTROL UNIT OR NOTIFICATION POWER SUPPLY. THE CIRCUIT DISCONNECTING MEANS SHALL HAVE RED IDENTIFICATION, SHALL BE ACCESSIBLE ONLY TO QUALIFIED PERSONNEL, AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT".
29. AUTOMATIC FIRE ALARM SYSTEM SHALL BE MONITORED AND SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH NFPA 72. AS AMENDED BY CFC CHAPTER 80. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX (CENTRAL STATION) OR UUJS (REMOTE & PROPRIETARY) BY UNDERWRITERS LABORATORY INC. (UL) OR OTHER APPROVED LISTING AND TESTING LABORATORY OR SHALL COMPLY WITH THE REQUIREMENTS OF STANDARD, FACTORY MUTUAL (FM) 3011. TERMINATION OF MONITORING SERVICES SHALL BE IN ACCORDANCE WITH CBC/CFC SECTION 907.6.6.2.

SCOPE OF WORK

THE FOLLOWING IS A BRIEF DESCRIPTION OF THE SCOPE OF WORK FOR THIS PROJECT. IT IS GENERAL IN NATURE AND DOES NOT CONSTITUTE ALL THAT IS TO BE DONE NOR DOES IT INDICATE THE SEQUENCE OF INSTALLATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FULLY COMPLETE THE WORK IDENTIFIED IN THE PLAN DOCUMENTS.

1. PROVIDE REMOTE ANNUNCIATOR IN RECEPTION
2. PROVIDE AUTOMATIC INITIATION FOR INDICATED MECHANICAL UNITS
3. PROVIDE NOTIFICATION THROUGHOUT PUBLIC AREAS OF BUILDING

FIRE ALARM DEFERRED APPROVAL

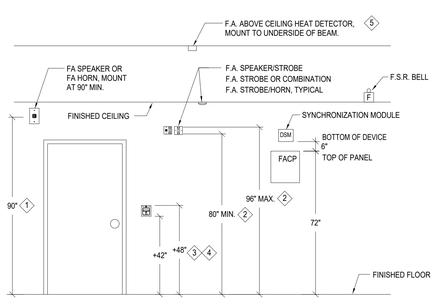
THE FIRE ALARM PLAN HEREWITH THIS DRAWING SET IS SHOWN FOR DEFERRED APPROVAL AND BID PURPOSES ONLY. THE CONTRACTOR SHALL SUBMIT A COMPLETE SET OF FIRE ALARM SUBMITTALS TO THE BUILDING DEPARTMENT FOR FIRE ALARM PLAN CHECK REVIEW. THE SUBMITTAL SHALL INCLUDE THE FOLLOWING:

1. FIRE ALARM SYSTEM OPERATIONS MATRIX
2. FIRE ALARM SYSTEM RISER DIAGRAM
3. VOLTAGE DROP & BATTERY CALCULATIONS
4. EQUIPMENT SCHEDULE
5. MANUFACTURER CUT SHEETS AND CALIFORNIA STATE FIRE MARSHAL LISTINGS
6. COMPLETE FIRE ALARM PLANS PER NFPA 72
7. COPY OF CENTRAL STATION MONITORING CONTRACT

CABLE SCHEDULE

	MANUFACTURER	DESCRIPTION	USAGE	O.D. (INCHES)	AREA (SQ IN.)
A	WEST PENN	2#16, FPLR #990	AUDIO NOTIFICATION APPLIANCE CIRCUIT (SPEAKERS)	.168	.022
AU	WEST PENN	2#14, FPL #AQC226	UNDERGROUND AUDIO NOTIFICATION APPLIANCE CIRCUIT (SPEAKERS)	.294	.068
I	WEST PENN	2#14 FPLR #994	INITIATION DEVICE CIRCUIT	.210	.035
IU	WEST PENN	2#14, FPL #AQC226	UNDERGROUND INITIATION DEVICE CIRCUIT	.294	.068
S	WEST PENN	2#18, FPLR #980	SIGNALING LINE CIRCUIT	.146	.017
SU	WEST PENN	2#18, FPL #AQC224	UNDERGROUND SIGNALING LINE CIRCUIT	.218	.037
SB	WEST PENN	4#16, FPLR #992	SBUS	.198	.031
P	WEST PENN	2#18, FPLR #980	POWER	.146	.017
R	WEST PENN	4#18, FPLR #982	REMOTE ANNUNCIATOR OR REMOTE MICROPHONE	.170	.023
V	WEST PENN	2#12 FPLR #998	VISUAL NOTIFICATION APPLIANCE CIRCUIT (STROBES)	.244	.047
VU	WEST PENN	2#12 FPL #AQC227	UNDERGROUND VISUAL NOTIFICATION APPLIANCE CIRCUIT (STROBES)	.325	.083
VB	WEST PENN	2#16, FPLR #990	VBUS	.168	.022

NOTES:
1. ALL CABLES & WIRES SHALL TERMINATE AT TERMINALS. NO SPLICES.
2. ENDS OF STRANDED CABLES SHALL BE TWISTED AND SOLDERED.
3. ALL CABLES LISTED ABOVE MAY NOT BE USED ON THIS PROJECT.



DETAIL NOTES:

1. NFPA 18.4.8.1 "WHERE CEILING HEIGHTS ALLOW, AUDIBLE APPLIANCES SHALL HAVE THEIR TOPS AT HEIGHTS ABOVE FINISH FLOOR OF NOT LESS THAN 90" AND BELOW FINISHED CEILING OF NOT LESS THAN 6".
2. NFPA 18.5.4.1 VISUAL APPLIANCES SHALL HAVE ENTIRE LENS AT HEIGHTS ABOVE FINISHED FLOOR OF NOT LESS THAN 80" AND NO GREATER THAN 96" OR 6" BELOW CEILING, WHICHEVER IS LOWER.
3. NFPA 17.14.4 THE OPERABLE PART OF EACH MANUAL FIRE ALARM BOX SHALL NOT BE LESS THAN 42" AND NOT MORE THAN 48" ABOVE THE FLOOR.
4. MAINTAIN CONSISTENT HEIGHTS THROUGH OUT PROJECT.
5. INSTALL CEILING ACCESS PANEL AT ALL NON-LAYIN TYPE CEILINGS, WHERE HEAT DETECTOR ABOVE CEILING IS INDICATED.

TYPICAL FIRE ALARM DEVICE MOUNTING DETAIL

1 SCALE: NONE

FIRE ALARM SYSTEM COMPONENTS

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL #	CSFM #
FACU	FIRE ALARM CONTROL UNIT PROVIDE 18AH BATTERIES	SILENT KNIGHT VARIOUS	6820 VARIOUS	7165-0559:0500 N/A
LCD	REMOTE ANNUNCIATOR	SILENT KNIGHT	6860	7165-0559:0500
S LF	ADDRESSABLE PHOTOELECTRIC SMOKE DETECTOR DETECTOR BASE WITH LOW FREQUENCY SOUNDER	SILENT KNIGHT SYSTEM SENSOR	SK-PHOTO-W B200S-LF-WH	7272-0559:0512 7300-1653:0238
DSD	ADDRESSABLE DUCT SMOKE DETECTOR	SILENT KNIGHT	SK-MONITOR-2	7300-0559:0155
F	ADDRESSABLE MANUAL PULL STATION	SILENT KNIGHT	SK-PULL-DA	7150-0559:0161
AM	ADDRESSABLE INPUT MODULE	SILENT KNIGHT	SK-MONITOR	7300-0559:0155
AM D	ADDRESSABLE DUAL INPUT MODULE	SILENT KNIGHT	SK-MONITOR-2	7300-0559:0155
X	WALL MOUNTED MULTI-CANDELA STROBE ONLY (X = CANDELA SETTING)	WHEELOCK	ELSTR	7135-0785:0504
X	CEILING MOUNTED MULTI-CANDELA STROBE ONLY (X = CANDELA SETTING)	WHEELOCK	ELSTRC	7135-0785:0504
WP 15	CEILING MOUNTED WEATHERPROOF STROBE ONLY (15 CANDELA RATING) WEATHERPROOF BACKBOX	WHEELOCK WHEELOCK	RSSWP-2475C-FR WPSBB-R	7300-0785:0154 N/A
WP	CELING MOUNTED WEATHERPROOF HORN/STROBE (X = CANDELA SETTING) WEATHERPROOF BACKBOX	WHEELOCK WHEELOCK	ASWP-2475C-FR WPBB-R	7125-0785:0131 N/A
X	WALL MOUNTED MULTI-CANDELA HORN/STROBE (X = CANDELA SETTING)	WHEELOCK	ELHSR	7135-0785:0504
X	CEILING MOUNTED MULTI-CANDELA HORN/STROBE (X = CANDELA SETTING)	WHEELOCK	ELHSRC	7135-0785:0504
F	WALL MOUNTED EXTERIOR HORN WEATHERPROOF BACKBOX	WHEELOCK WHEELOCK	AH-24WP-R WBB-R	7125-0785:0131 N/A
SRD	SYSTEM RECORD DOCUMENTS BOX	SPACE AGE	SSU00689	N/A

FIRE ALARM SYMBOLS LIST

- HOMERUN TO CONTROL PANEL OR RESPECTIVE TERMINAL
- CONDUIT/SURFACE RACEWAY, SIZE AS REQUIRED
- UNDERGROUND CONDUIT RUN, SIZE AS REQUIRED
- FREE-AIR CABLE(S) RUN IN CONCEALED SPACES
- (1) <1> SYMBOL REFERING TO KEYED NOTE ON SAME SHEET

ABBREVIATION LIST

@	AT
&	AND
A	AMPERE
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONING
AF	AMP FRAME
AFF	ABOVE FINISHED FLOOR
AIC	AMPERES INTERRUPTING CAPACITY
AT	AMP TRIP SETTING
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER
BD	BOARD
BFC	BELOW FINISHED CEILING
BRKR	BREAKER
BLDG	BUILDING
BPS	BOOSTER POWER SUPPLY
C	CONDUIT
C/B	CIRCUIT BREAKER
CIRC	CIRCUIT
CLG	CEILING
CO	CONDUIT ONLY, WITH PULL LINE
CONT	CONTINUOUS
CU	COPPER
CWP	METALLIC COLD WATER PIPE
(D)	DEMOLISH
DC	DIRECT CURRENT
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
(E)	EXISTING
E/W	EACH WITH
EA	EACH
EL	EVENING LIGHT
ELEC	ELECTRIC
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE DEVICE
EQUIP	EQUIPMENT
(ER)	EXISTING RELOCATED
EWC	ELECTRICAL WATER COOLER
EWH	ELECTRIC WATER HEATER
(F)	FUTURE
FACP	FIRE ALARM CONTROL PANEL
FACU	FIRE ALARM CONTROL UNIT
FATC	FIRE ALARM TERMINAL CABINET
FBO	FURNISHED BY OTHERS
FLUOR	FLUORESCENT
FT	FOOT
GA	GAUGE
GFCI	GROUND FAULT CIRCUIT INTERRUPT
GND	GROUND
GP	METALLIC GAS PIPE
GYP	GYPSUM
HID	HIGH INTENSITY DISCHARGE
HP	HORSE POWER
HT	HEIGHT
HZ	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
IN	INCH
ISC	SHORT CIRCUIT CURRENT (RMS SYMMETRICAL)
ISO	ISOLATED
J-BOX	JUNCTION BOX
KCMIL	THOUSAND CIRCULAR MILLS
KVA	KILO VOLT AMP
KW	KILOWATT
LCP	LIGHTING CONTROL PANEL
LV	LOW VOLTAGE
MCM	THOUSAND CIRCULAR MILLS
MECH	MECHANICAL
MDP	MAIN DISTRIBUTION PANEL
MH	METAL HALIDE
MISC	MISCELLANEOUS
MSB	MAIN SWITCHBOARD
(N)	NEW
NIC	NOT IN CONTRACT
NIES	NOT IN ELECTRICAL SECTION OF THESE PLANS & SPECS.
NL	NIGHT LIGHT
NO. #	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
P	POLE
PB	PULL BOX
PFB	PROVISION FOR FUTURE BREAKER W/ MOUNTING HARDWARE
PFCT	PROVISION FOR FUTURE CURRENT TRANSFORMER
PH, Ø	PHASE
PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PVC	POLYVINYL CHLORIDE CONDUIT
(R)	RELOCATE/RELOCATED
REQD	REQUIRED
RM	ROOM
RMC	RIGID METAL CONDUIT
(RR)	REMOVE AND REPLACE
SPEC	SPECIFICATION
STC	SIGNAL TERMINAL CABINET
SQ	SQUARE
SW	SWITCH
TEL	TELEPHONE
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
V	VOLTS
WP	WEATHERPROOF
WT	WEIGHT
W	WATT
W/	WITH
XFMR	TRANSFORMER

196
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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER G. NO. R. ROMANO E17247 EXP. 6/30/24 ELECTRICAL STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

THE ARCHITECT DOES NOT REPRESENT THAT THESE PLANS OR THE SPECIFICATIONS ARE SUITABLE FOR ANY SITE OTHER THAN THE ONE FOR WHICH THEY WERE SPECIFICALLY PREPARED. THE ARCHITECT DISCLAIMS RESPONSIBILITY FOR THESE PLANS AND SPECIFICATIONS IF THEY ARE USED IN WHOLE OR IN PART AT ANY OTHER SITE. WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS.

City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SYMBOLS AND NOTES

DRAWN BY: Author JOB NUMBER: 210015.01

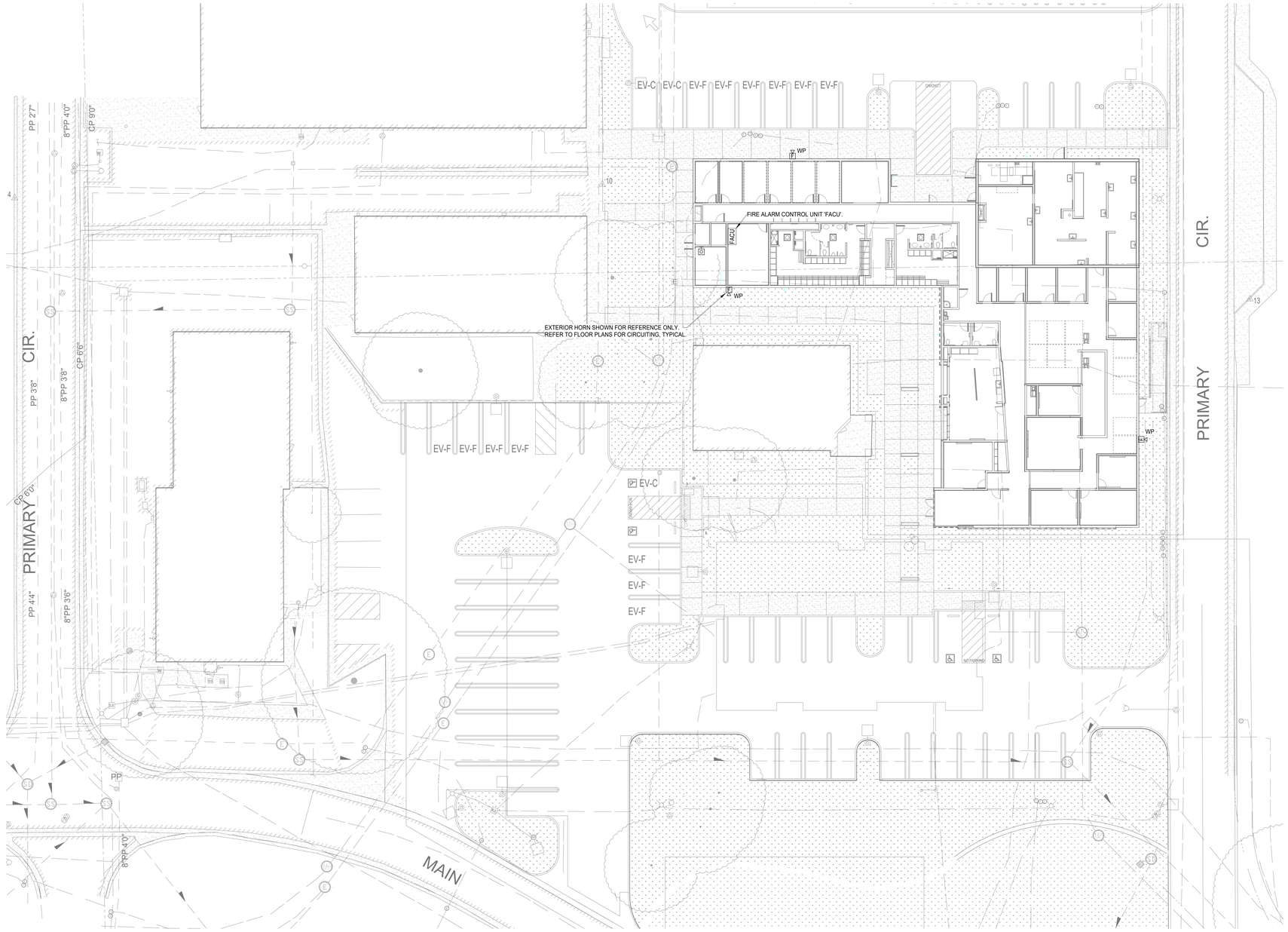
SHEET NO.
FA-001

DATE: 4/24/18

FIRE ALARM UNDER SEPARATE PERMIT
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DATE PLOTTED: 9/16/2024 3:30:26 PM FILE LOCATION: C:\Users\nkovash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovash.rvt



1 **SITE PLAN - FIRE ALARM**
1/16" = 1'-0"

FIRE ALARM UNDER SEPARATE PERMIT
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N

DATE PLOTTED: 9/16/2024 3:30:28 PM

FILE LOCATION: C:\Users\rkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_rkovtash.rvt

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ELECTRICAL
STATE OF CALIFORNIA

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PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
Roseville, CA 95747

SHEET TITLE
SITE PLAN - FIRE ALARM

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
FA-101

DATE: 4/24/18

KEYED NOTES:

1. PROVIDE DUAL INPUT MODULE TO MONITOR WATERFLOW AND TAMPER SWITCHES.
2. PROVIDE DUCT SMOKE DETECTOR FOR ROOFTOP UNIT.



1 **FLOOR PLAN - FIRE ALARM**
1/8" = 1'-0"

1960

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ELECTRICAL
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CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
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DCWWTP OPERATIONS AND LAB BLDG
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SHEET TITLE
FLOOR PLAN - FIRE ALARM

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.
FA-201

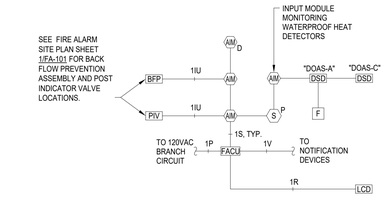
DATE: 4/24/18

FIRE ALARM UNDER SEPARATE PERMIT
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1 **ONE LINE DIAGRAM - FIRE ALARM**
NONE

FIRE ALARM SYSTEM OPERATION MATRIX

INPUTS	OUTPUTS: ACTIVATE ALARM AT FIRE ALARM PANEL	ACTIVATE ALARM AT REMOTE ANNUNCIATOR	ACTIVATE TROUBLE AT FIRE ALARM PANEL	ACTIVATE TROUBLE AT REMOTE ANNUNCIATOR	ACTIVATE SUPERVISORY SIGNAL AT FIRE ALARM PANEL	ACTIVATE SUPERVISORY SIGNAL AT REMOTE ANNUNCIATOR	SEND ALARM SIGNAL TO MONITORING STATION	SEND TROUBLE SIGNAL TO MONITORING STATION	SEND SUPERVISORY SIGNAL TO MONITORING STATION	ACTIVATE GENERAL ALARM AUDIBLE/VISUAL SIGNALS	SHUTDOWN HVAC UNITS	CLOSE FIRE DAMPERS	ACTIVATE BATTERY BACK-UP	DEACTIVATE NOTIFICATION APPLIANCES	SYSTEM NORMAL	NOTES
MANUAL PULL STATION	X	X					X			X	X					
SMOKE DETECTOR	X	X					X			X	X	X				
SMOKE DUCT DETECTOR					X	X					X			X	X	
HEAT DETECTOR	X	X					X				X	X	X			
FIRE SPRINKLER WATERFLOW SWITCH	X	X					X				X	X	X			
FIRE SPRINKLER TAMPER SWITCH					X	X				X						
KITCHEN SUPPRESSION SYSTEM					X	X				X						
BACKFLOW PREVENTER					X	X				X						
POST INDICATOR VALVE					X	X				X						
WIRING CONDITIONS:																
SIGNAL LINE CIRCUIT (SLC)																
WIRE-TO-WIRE SHORT				X	X					X						
SINGLE OPEN				X	X					X						
SINGLE GROUND				X	X					X						
INITIATING DEVICE CIRCUIT (IDC)																
WIRE-TO-WIRE SHORT	X	X					X									
SINGLE OPEN				X	X					X						
SINGLE GROUND				X	X					X						
NOTIFICATION APPLIANCE CIRCUIT (NAC)																
WIRE-TO-WIRE SHORT				X	X					X						
SINGLE OPEN				X	X					X						
SINGLE GROUND				X	X					X						
NAC POWER SUPPLY TROUBLE				X	X					X						
AC POWER LOSS				X	X					X			X			
SIGNAL SILENCE															X	
RESET FIRE ALARM PANEL																X

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PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
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DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
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SHEET TITLE
ONE LINE DIAGRAM & OPERATIONS MATRIX

DRAWN BY: Author JOB NUMBER: 210015.01

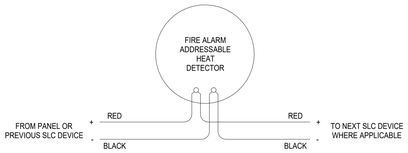
SHEET NO.
FA-301

DATE: 4/24/18

FIRE ALARM UNDER SEPARATE PERMIT
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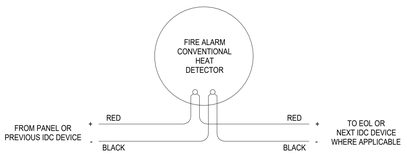


NOTES:

1. ON CEILINGS 10 FT TO 30 FT HIGH, HEAT DETECTOR SPACING SHALL BE REDUCED IN ACCORDANCE WITH TABLE 17.6.3.5.1 PRIOR TO ANY ADDITIONAL REDUCTIONS FOR BEAMS, JOIST OR SLOPE, WHERE APPLICABLE (NFPA 72, 2016 EDITION SECTION 17.6.3.5.1).
2. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. INPUT AND OUTPUT WIRING DEVICE CONNECTIONS SHALL BE MADE ON SEPARATE TERMINALS OR SHALL BE SEPARATE WIRE LEADS MOUNTED UNDER A COMMON TERMINAL. THE MONITORING OF CIRCUIT INTEGRITY RELIES ON THE INTERRUPTION OF THE WIRING CONTINUITY WHEN THE CONNECTION TO THE INITIATING DEVICE IS LOST (NFPA 72, 2016 EDITION SECTION A.17.4.6).
3. WHERE DETECTORS ARE INSTALLED BUT NOT OPERATIONAL DURING CONSTRUCTION, THEY SHALL BE PROTECTED FROM CONSTRUCTION DEBRIS, DIRT, AND DAMAGE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND VERIFIED TO BE OPERATING IN ACCORDANCE WITH THE LISTED SENSITIVITY, OR THEY SHALL BE REPLACED PRIOR TO THE FINAL COMMISSIONING OF THE SYSTEM (NFPA 72, 2016 EDITION SECTION 17.7.1.11.2).
4. WHERE DETECTION IS NOT REQUIRED DURING CONSTRUCTION, DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER ALL OTHER CONSTRUCTION TRADES HAVE COMPLETED CLEANUP (NFPA 72, 2016 EDITION SECTION 17.7.1.11.3).
5. FIRE ALARM WIRING SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREM ENTS.

7 TYPICAL ADDRESSABLE HEAT DETECTOR - WIRING DIAGRAM

NONE

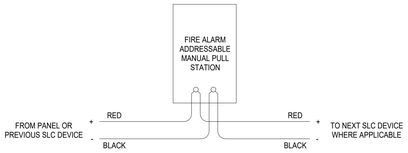


NOTES:

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5. FIRE ALARM WIRING SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.

8 TYPICAL CONVENTIONAL HEAT DETECTOR - WIRING DIAGRAM

NONE

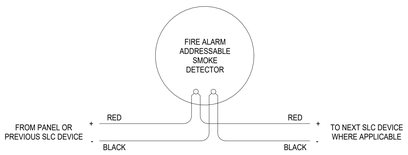


NOTES:

1. WHERE SHOWN ON DRAWINGS, MANUAL FIRE ALARM BOXES SHALL BE LOCATED WITHIN 5 FT OF EACH EXIT DOORWAY ON EACH FLOOR (NFPA 72, 2016 EDITION SECTION 17.14.8.4).
2. WHERE MANUAL FIRE ALARM BOXES ARE INSTALLED, ADDITIONAL MANUAL FIRE ALARM BOXES SHALL BE PROVIDED SO THAT THE TRAVEL DISTANCE TO THE NEAREST MANUAL FIRE ALARM BOX WILL NOT EXCEED 200 FT, MEASURED HORIZONTAL ON THE SAME FLOOR (NFPA 72, 2016 EDITION SECTION 17.14.8.5).
3. WHERE SHOWN ON DRAWINGS, MANUAL FIRE ALARM BOXES SHALL BE MOUNTED ON BOTH SIDES OF GROUPED OPENINGS OVER 40FT IN WIDTH, AND WITHIN 5 FT OF EACH SIDE OF THE GROUPED OPENING (NFPA 72, 2016 EDITION SECTION 17.14.8.6).
4. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. INPUT AND OUTPUT WIRING DEVICE CONNECTIONS SHALL BE MADE ON SEPARATE TERMINALS OR SHALL BE SEPARATE WIRE LEADS MOUNTED UNDER A COMMON TERMINAL. THE MONITORING OF CIRCUIT INTEGRITY RELIES ON THE INTERRUPTION OF THE WIRING CONTINUITY WHEN THE CONNECTION TO THE INITIATING DEVICE IS LOST (NFPA 72, 2016 EDITION SECTION A.17.4.6).
5. FIRE ALARM WIRING SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.

4 TYPICAL ADDRESSABLE MANUAL PULL STATION - WIRING DIAGRAM

NONE

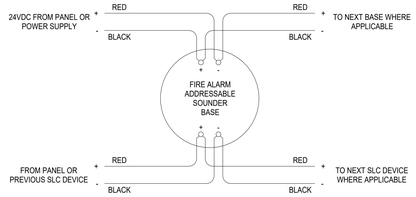


NOTES:

1. SMOKE DETECTORS SHALL NOT BE INSTALLED WITHIN 1'-0" OF A FIRE SPRINKLER HEAD.
2. DETECTORS SHOULD NOT BE LOCATED IN A DIRECT AIRFLOW OR CLOSER THAN 36 IN. FROM AN AIR SUPPLY DIFFUSER OR RETURN AIR OPENING. SUPPLY OR RETURN SOURCES LARGER THAN THOSE COMMONLY FOUND IN RESIDENTIAL AND SMALL COMMERCIAL ESTABLISHMENTS CAN REQUIRE GREATER CLEARANCE TO SMOKE DETECTORS. SIMILARLY, SMOKE DETECTORS SHOULD BE LOCATED FARTHER AWAY FROM HIGH VELOCITY AIR SUPPLIES (NFPA 72, 2019 EDITION SECTION A.17.7.4.1).
3. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. INPUT AND OUTPUT WIRING DEVICE CONNECTIONS SHALL BE MADE ON SEPARATE TERMINALS OR SHALL BE SEPARATE WIRE LEADS MOUNTED UNDER A COMMON TERMINAL. THE MONITORING OF CIRCUIT INTEGRITY RELIES ON THE INTERRUPTION OF THE WIRING CONTINUITY WHEN THE CONNECTION TO THE INITIATING DEVICE IS LOST (NFPA 72, 2019 EDITION SECTION A.17.4.6).
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5. WHERE DETECTION IS NOT REQUIRED DURING CONSTRUCTION, DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER ALL OTHER CONSTRUCTION TRADES HAVE COMPLETED CLEANUP (NFPA 72, 2019 EDITION SECTION 17.7.1.11.3).
6. FIRE ALARM WIRING SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.

5 TYPICAL ADDRESSABLE SMOKE DETECTOR - WIRING DIAGRAM

NONE

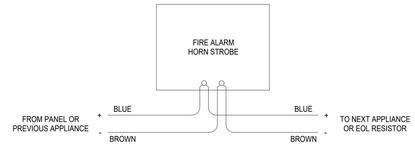


NOTES:

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2. FIRE ALARM WIRING SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.

6 TYPICAL ADDRESSABLE SOUNDER BASE - WIRING DIAGRAM

NONE

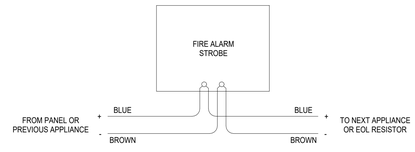


NOTES:

1. AN AVERAGE AMBIENT SOUND LEVEL GREATER THAN 105 dBA SHALL REQUIRE THE USE OF A VISIBLE NOTIFICATION APPLIANCE (NFPA 72, 2016 EDITION SECTION 18.4.1.1)
2. THE TOTAL SOUND PRESSURE LEVEL PRODUCED BY COMBINING THE AMBIENT SOUND PRESSURE LEVEL WITH ALL AUDIBLE NOTIFICATION APPLIANCES OPERATING SHALL NOT EXCEED 110 dBA AT THE MINIMUM HEARING DISTANCE (NFPA 72, 2016 EDITION SECTION 18.4.1.2)
3. THE ALARM AUDIBLE SIGNAL PATTERN USED TO NOTIFY OCCUPANTS OF THE NEED TO EVACUATE (LEAVE THE BUILDING) OR RELOCATE (FROM ONE AREA TO ANOTHER) SHALL BE THE STANDARD ALARM EVACUATION SIGNAL CONSISTING OF A THREE-PULSE TEMPORAL PATTERN (NFPA 72, 2016 EDITION SECTION 18.4.2.1).
4. TO ENSURE THAT AUDIBLE PUBLIC MODE SIGNALS ARE CLEARLY HEARD THEY SHALL HAVE A SOUND LEVEL AT LEAST 15 dB ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dB ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, MEASURED 5 FT ABOVE THE FLOOR IN THE AREA REQUIRED TO BE SERVED BY THE SYSTEM USING THE A-WEIGHTED SCALE (dBA) (NFPA 72, 2016 EDITION SECTION 18.4.3.1).
5. THE FLASH RATE SHALL NOT EXCEED TWO FLASHES PER SECOND (2 Hz) NOR BE LESS THAN ONE FLASH EVERY SECOND (1 Hz) THROUGHOUT THE LISTED VOLTAGE RANGE OF THE APPLIANCE (NFPA 72, 2016 EDITION SECTION 18.5.3.1).
6. WHERE MORE THAN TWO VISIBLE NOTIFICATION APPLIANCES OR GROUPS OF SYNCHRONIZED APPLIANCES ARE IN THE SAME ROOM OR ADJACENT SPACE IN THE FIELD OF VIEW ALL APPLIANCES ARE REQUIRED SYNCHRONIZE TOGETHER (NFPA 72, 2016 EDITION SECTION 18.5.5.4.2).
7. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. INPUT AND OUTPUT WIRING DEVICE CONNECTIONS SHALL BE MADE ON SEPARATE TERMINALS OR SHALL BE SEPARATE WIRE LEADS MOUNTED UNDER A COMMON TERMINAL. THE MONITORING OF CIRCUIT INTEGRITY RELIES ON THE INTERRUPTION OF THE WIRING CONTINUITY WHEN THE CONNECTION TO THE INITIATING DEVICE IS LOST (NFPA 72, 2016 EDITION SECTION A.17.4.6).
8. FIRE ALARM WIRING SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.

1 TYPICAL 2-WIRE HORN STROBE - WIRING DIAGRAM

NONE

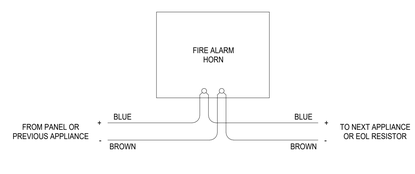


NOTES:

1. AN AVERAGE AMBIENT SOUND LEVEL GREATER THAN 105 dBA SHALL REQUIRE THE USE OF A VISIBLE NOTIFICATION APPLIANCE (NFPA 72, 2016 EDITION SECTION 18.4.1.1)
2. THE FLASH RATE SHALL NOT EXCEED TWO FLASHES PER SECOND (2 Hz) NOR BE LESS THAN ONE FLASH EVERY SECOND (1 Hz) THROUGHOUT THE LISTED VOLTAGE RANGE OF THE APPLIANCE (NFPA 72, 2016 EDITION SECTION 18.5.3.1).
3. WHERE MORE THAN TWO VISIBLE NOTIFICATION APPLIANCES OR GROUPS OF SYNCHRONIZED APPLIANCES ARE IN THE SAME ROOM OR ADJACENT SPACE IN THE FIELD OF VIEW ALL APPLIANCES ARE REQUIRED SYNCHRONIZE TOGETHER (NFPA 72, 2016 EDITION SECTION 18.5.5.4.2).
4. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. INPUT AND OUTPUT WIRING DEVICE CONNECTIONS SHALL BE MADE ON SEPARATE TERMINALS OR SHALL BE SEPARATE WIRE LEADS MOUNTED UNDER A COMMON TERMINAL. THE MONITORING OF CIRCUIT INTEGRITY RELIES ON THE INTERRUPTION OF THE WIRING CONTINUITY WHEN THE CONNECTION TO THE INITIATING DEVICE IS LOST (NFPA 72, 2016 EDITION SECTION A.17.4.6).
5. FIRE ALARM WIRING SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.

2 TYPICAL STROBE - WIRING DIAGRAM

NONE



NOTES:

1. THE TOTAL SOUND PRESSURE LEVEL PRODUCED BY COMBINING THE AMBIENT SOUND PRESSURE LEVEL WITH ALL AUDIBLE NOTIFICATION APPLIANCES OPERATING SHALL NOT EXCEED 110 dBA AT THE MINIMUM HEARING DISTANCE (NFPA 72, 2016 EDITION SECTION 18.4.1.2).
2. THE ALARM AUDIBLE SIGNAL PATTERN USED TO NOTIFY OCCUPANTS OF THE NEED TO EVACUATE (LEAVE THE BUILDING) OR RELOCATE (FROM ONE AREA TO ANOTHER) SHALL BE THE STANDARD ALARM EVACUATION SIGNAL CONSISTING OF A THREE-PULSE TEMPORAL PATTERN (NFPA 72, 2016 EDITION SECTION 18.4.2.1).
3. TO ENSURE THAT AUDIBLE PUBLIC MODE SIGNALS ARE CLEARLY HEARD THEY SHALL HAVE A SOUND LEVEL AT LEAST 15 dB ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dB ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, MEASURED 5 FT ABOVE THE FLOOR IN THE AREA REQUIRED TO BE SERVED BY THE SYSTEM USING THE A-WEIGHTED SCALE (dBA) (NFPA 72, 2016 EDITION SECTION 18.4.3.1).
4. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. INPUT AND OUTPUT WIRING DEVICE CONNECTIONS SHALL BE MADE ON SEPARATE TERMINALS OR SHALL BE SEPARATE WIRE LEADS MOUNTED UNDER A COMMON TERMINAL. THE MONITORING OF CIRCUIT INTEGRITY RELIES ON THE INTERRUPTION OF THE WIRING CONTINUITY WHEN THE CONNECTION TO THE INITIATING DEVICE IS LOST (NFPA 72, 2016 EDITION SECTION A.17.4.6).
5. FIRE ALARM WIRING SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.

3 TYPICAL HORN - WIRING DIAGRAM

NONE

FIRE ALARM UNDER SEPARATE PERMIT
SHEETS SHOWN FOR REFERENCE ONLY

1996

2237 DOUGLAS BLVD, SUITE 160
ROSEVILLE, CA 95661
TEL (916) 786-8178

PETERS engineering
7750 College Town Dr. Ste. 101
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ARCHITECT STAMP

CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER
ETHAN R. ROMANO
E17247
EXP. 6/30/24
ELECTRICAL
STATE OF CALIFORNIA

REVISIONS

NO.	DATE	DESCRIPTION

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City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG

1800 Booth Road
Roseville, CA 95747

SHEET TITLE

DETAILS

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

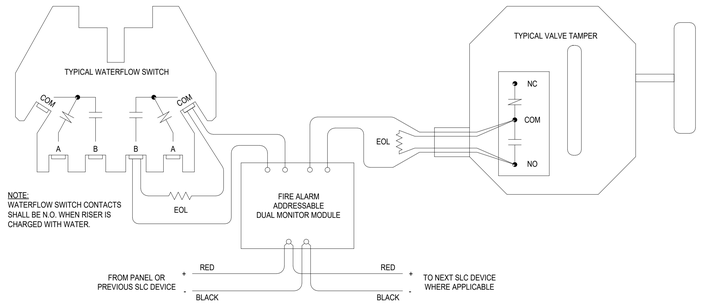
FA-401

DATE: 4/24/18

FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

DATE PLOTTED: 9/16/2024 3:30:34 PM

BID SET (PRELIMINARY)



NOTES:

1. COMMON AND B CONNECTIONS WILL CLOSE WHEN VANE IS DEFLECTED, I.E., WHEN WATER IS FLOWING. DUAL SWITCHES PERMIT APPLICATIONS TO BE COMBINED ON A SINGLE DETECTOR.
2. USE END OF THE LINE RESISTORS WITH INTEGRAL SPADE CONNECTORS TO PREVENT LOOSE CONNECTIONS.
3. INITIATION OF THE ALARM SIGNAL SHALL OCCUR WITHIN 90 SECONDS OF WATERFLOW AT THE ALARM-INITIATING DEVICE WHEN FLOW OCCURS THAT IS EQUAL TO OR GREATER THAN THAT FROM A SINGLE SPRINKLER OF THE SMALLEST ORIFICE SIZE INSTALLED IN THE SYSTEM (NFPA 72, 2019 EDITION SECTION 17.12.2). MOVEMENT OF WATER DUE TO WASTE, SURGES, OR VARIABLE PRESSURE SHALL NOT INITIATE AN ALARM SIGNAL (NFPA 72, 2019 EDITION SECTION 17.12.3).
4. WIRING SHALL NOT BE LOOPED THROUGH DEVICE TERMINALS. INPUT AND OUTPUT WIRING DEVICE CONNECTIONS SHALL BE MADE ON SEPARATE TERMINALS OR SHALL BE SEPARATE WIRE LEADS MOUNTED UNDER A COMMON TERMINAL. THE MONITORING OF CIRCUIT INTEGRITY RELIES ON THE INTERRUPTION OF THE WIRING CONTINUITY WHEN THE CONNECTION TO THE INITIATING DEVICE IS LOST (NFPA 72, 2019 EDITION SECTION A.17.4.6).
5. FIRE ALARM CABLES SHALL BE LABELED AT BOTH ENDS. REFER TO SPECIFICATIONS FOR LABELING REQUIREMENTS.

1 TYPICAL WATERFLOW AND TAMPER SWITCH - WIRING DIAGRAM

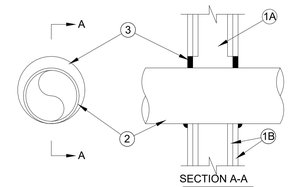
NONE

C UL US

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

System No. W-L-1054

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating at Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Items 1 and 3)
L Rating at 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 1 CFM/sq ft L Rating at 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.

   The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.
2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) . diam steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 23, 2015

2 FIRESTOP DETAIL

NONE

196

2237 DOUGLAS BLVD, SUITE 160
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City of Roseville Approval

PROJECT OWNER & TITLE

CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG

1800 Booth Road
Roseville, CA 95747

SHEET TITLE

DETAILS

DRAWN BY: Author JOB NUMBER: 210015.01

SHEET NO.

FA-402

DATE: 4/24/18

FIRE ALARM UNDER SEPARATE PERMIT
SHEETS SHOWN FOR REFERENCE ONLY

BID SET (PRELIMINARY)

DATE PLOTTED: 9/16/2024 3:30:34 PM FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

GENERAL CLEAN AGENT SYSTEM NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO SHOW THE LOCATIONS OF ALL CLEAN AGENT SYSTEM COMPONENTS OR ALL REQUIRED SYSTEM COMPONENTS. THE CONTRACTOR SHALL COORDINATE COMPONENT LOCATIONS WITH THE ND-USER AND OTHER TRADES.
2. THE DESIGN SHALL INCLUDE COMPLETE CALCULATIONS AND SHOP DRAWINGS PER NFPA 2001 SECTION 5.1.2.
3. THE MINIMUM DESIGN CONCENTRATION SHALL MEET THE REQUIREMENTS OF CURRENT APPROVED NFPA OR LOCAL CODES AND REGULATIONS FOR A CLASS C HAZARD FOR THIS SYSTEM TYPE.
4. PIPING AND FITTINGS SHALL MEET THE REQUIREMENTS OF CURRENT APPROVED NFPA.
5. DETECTION AND CONTROL COMPONENTS SHALL BE LISTED AND APPROVED FOR US IN FIRE ALARM SYSTEMS AND FULLY ADDRESSABLE.
6. THE FSCU SHALL INCLUDE THE FOLLOWING MONITORING POINTS

-1ST ALARM
-2ND ALARM
-TROUBLE
-SUPERVISORY
-SYSTEM DISCHARGED
-SYSTEM ABORTED

GENERAL CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE BEFORE COMMENCING WORK.
2. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT ALL FIELD INSTALLATION PERSONNEL HAVE ACCESS TO A COMPLETE AND CURRENT SET OF CONSTRUCTION DRAWINGS AT THE JOB SITE.
3. ALL REQUIRED MATERIALS AND WORK SHALL COMPLY WITH THE ADOPTED STATE CODES AND REGULATIONS LISTED IN THE PROJECT PLANS AS WELL AS WITH FEDERAL, LOCAL CODES AND CUSTOMER CONTRACT SPECIFICATIONS WHERE APPLICABLE.
4. ALL FIRE PROTECTION EQUIPMENT SHOWN ON THE DRAWINGS SHALL BE REPLACED EXCEPT AS NOTED.
5. ALL FIRE ALARM EQUIPMENT INSTALLED OUTSIDE OR IN A WET ENVIRONMENT SHALL BE INSTALLED IN A PROTECTIVE ENCLOSURE THAT IS FURNISHED BY THE INSTALLER, UNLESS OTHER WISE NOTED ON THE DRAWINGS.
6. PENETRATIONS OF WALLS AND WALL MEMBRANES REQUIRED TO HAVE PROTECTED OPENINGS HALL BE PROTECTED WITH THROUGH-PENETRATION FIRE STOPS SUITABLE FOR THE METHOD OF PENETRATION. THROUGH-PENETRATION FIRE STOPS SHALL CONFORM TO THE ASTM E 814 OR UL1479. SEE THE ARCHITECTURAL DRAWINGS FOR SYSTEM INFORMATION.

GENERAL CLEAN AGENT INSTALLATION NOTES:

1. THE FOLLOWING NOTES APPLY TO FK-5-1-12 CLEAN AGENT SYSTEMS.
2. ALL PIPE AND FITTINGS MUST COMPLY WITH THE 2018 NFPA 2001 CLEAN AGENT FIRE EXTINGUISHING SYSTEMS. REFER TO THE FSSA PIPE DESIGN GUIDE FOR ALLOWED WORKING PRESSURES.
3. PIPE HANGERS, BRACING AND OTHER MEANS OF PIPE SUPPORTS SHALL BE INSTALLED IN ACCORDANCE WITH STATE AND LOCAL CODES AND STANDARDS. REFER TO NFPA 13 AND THE FSSA PIPE DESIGN GUIDE.
4. PIPING SHALL BE RIGIDLY BRACED. REFER TO NFPA 13 AND THE FSSA PIPE DESIGN GUIDE.
5. NOZZLES SHALL BE ORIENTED PER MANUFACTURER REQUIREMENTS.
6. NOZZLES SHALL BE LOCATED PER MANUFACTURER REQUIREMENTS.
7. NOZZLES SHALL BE RIGIDLY SUPPORTED TO PREVENT MOVEMENT DURING A DISCHARGE.
8. PIPING SHALL BE PRESSURE TESTED PER 2018 NFPA 2001.
9. THE PIPING SHALL BE PUFF TESTED PER 2018 NFPA 2001 TO CONFIRM THE PIPING NETWORK IS UNOBSTRUCTED.
10. PIPE RUNS IN THESE DRAWINGS ARE FOR ILLUSTRATION PURPOSES ONLY. NEW PIPES RUNS SHALL BE COORDINATED IN THE FIELD.

APPLICABLE CODES:

2022 CALIFORNIA BUILDING CODE (CBC) PART 2
2022 CALIFORNIA ELECTRICAL CODE (CEC) PART 3
2022 CALIFORNIA MECHANICAL CODE (CMC) PART 4
2022 CALIFORNIA FIRE CODE (CFC) PART 9
2022 CALIFORNIA REFERENCED STANDARD CODES PART 12
2022 NFPA 72 NATIONAL FIRE ALARM CODE
2018 NFPA 2001 CLEAN AGENTS FIRE EXTINGUISHING SYSTEMS

RECORD DRAWINGS:

THE INSTALLING CONTRACTOR SHALL MAINTAIN A COMPLETE SET OF UP TO DATE DRAWINGS AT THE JOB SITE FOR US IN MAKING AS-BUILT DRAWINGS.

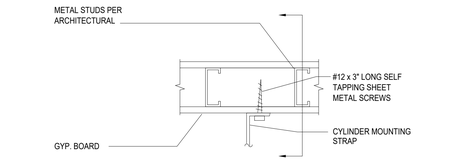
FK-5-1-12 CLEAN AGENT FIRE EXTINGUISHING SYSTEM HAZARD DATA

ENCLOSURE DATA ESTIMATES					ESTIMATED AGENT REQUIREMENTS				
ENCLOSURE NAME	VOL. (CU.FT.)	MINIMUM TEMP (F)	MAXIMUM TEMP (F)	HAZARD CLASS	MIN. DESIGN CONCENTRATION (%)	FLOOD. FACTOR (LB/CU.FT.)	ALTITUDE FACTOR	QTY. REQ.D (LBS)	ESTIMATED SUPPLIED (LBS)
MDF 133	4620	65	75	C	4.50%	0.0412	1.00	186.29	187

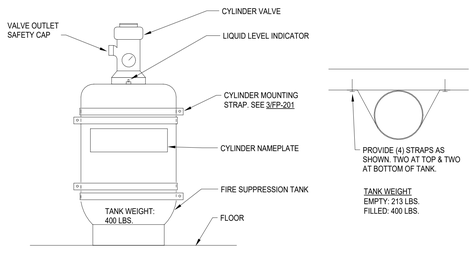
PROJECT ALTITUDE (FT.) : 0
ALTITUDE CORRECTION FACTOR NOT REQUIRED BETWEEN -3000 AND 3000 FT.
REQUIRED CLEAN AGENT RETENTION PERIOD: 10 MINUTES.

FORMULA W = V/s x (C/100-C) x ALTITUDE CORRECTION FACTOR:

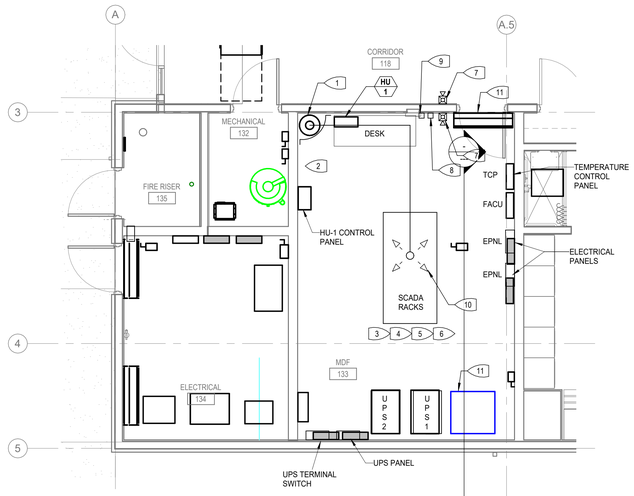
W = WEIGHT OF AGENT REQUIRED
V = VOLUME (CU.FT.)
s =0.9856 + 0.00244(t)
t =TEMPERATURE (F)
C =DESIGN CONCENTRATION



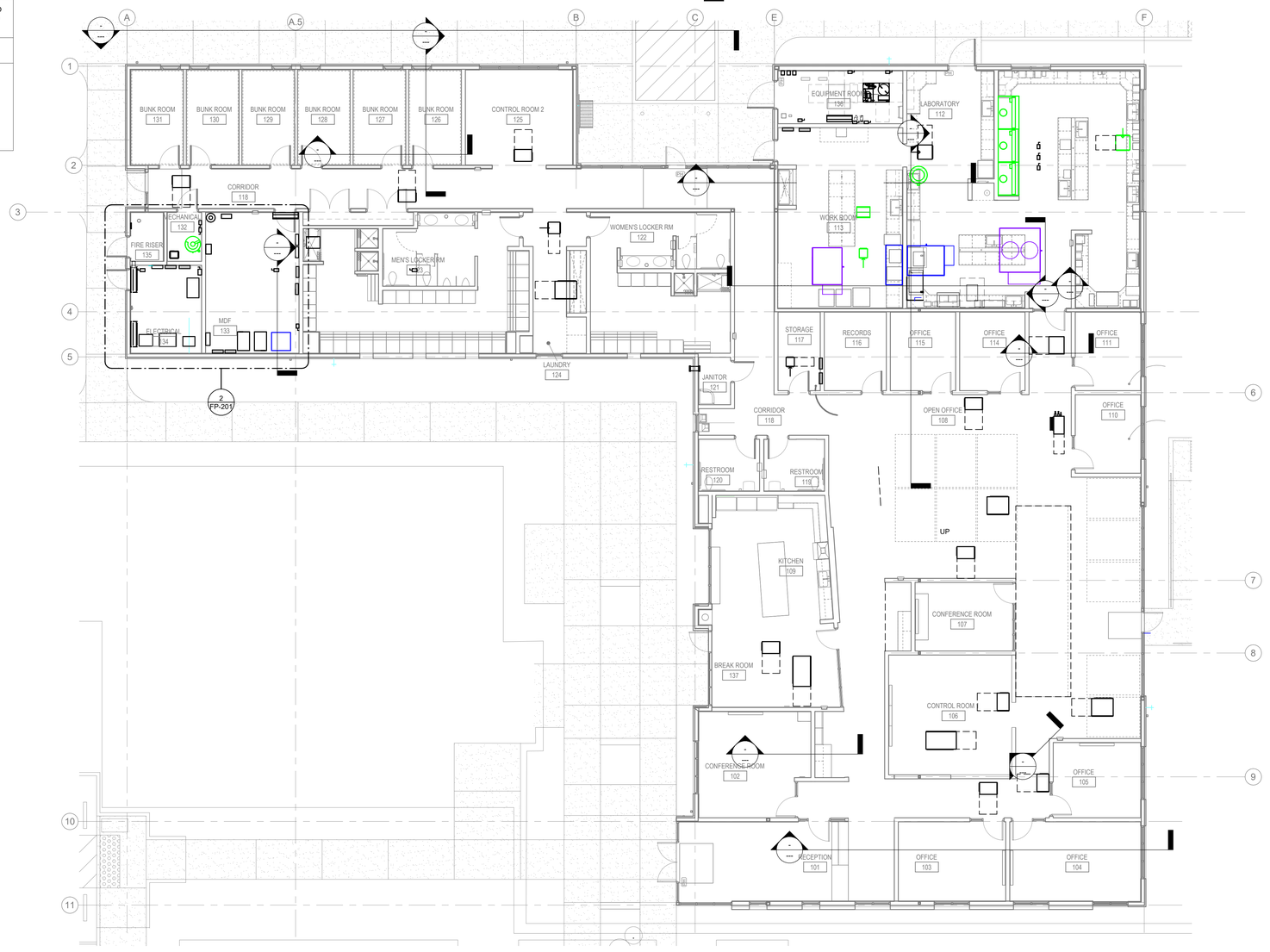
3 CYLINDER MOUNTING STRAP DETAIL
SCALE: NONE



4 FIRE SUPPRESSANT CYLINDER MOUNTING
SCALE: NONE



2 ENLARGED FLOOR PLAN - FIRE PROTECTION
1/4" = 1'-0"



1 FLOOR PLAN - MDF FIRE PROTECTION (THIS SCOPE OF WORK IS DEFERRED APPROVAL. THIS SHEET IS FOR REFERENCE ONLY)
1/8" = 1'-0"

KEYED NOTES:

1. PROVIDE A JANUS FIRE SYSTEMS MV 500 SERIES CLEAN AGENT FIRE SUPPRESSION SYSTEM (NOVEC 1230 FIRE PROTECTION FLUID)
2. PROVIDE JANUS FIRE SYSTEMS ADDRESSABLE FIRE ALARM PANEL. PROVIDE 120V-1PH, 3 AMPS.
3. PROVIDE ENTIRE ROOM COVERAGE "NOVEC 1230" CLEAN AGENT FIRE SUPPRESSION SYSTEM.
4. PROVIDE A MINIMUM OF (2) SPACE PHOTOELECTRIC DETECTORS. DETECTORS SHALL BE CONFIGURED IN A "CROSS-ZONE" DESIGN. CONNECT TO FIRE ALARM & FIRE SUPPRESSION SYSTEMS.
5. SEAL ALL OPENINGS IN WALLS, ROOFS, FLOORS ETC. WITH APPROPRIATE SEALANT TO ALLOW FOR ROOM PRESSURE TEST.
6. FIRE SPRINKLER HEADS IN THIS ROOM NEED TO BE RATED FOR 200°F AND HAVE CAGE PROTECTION.
7. PROVIDE JANUS FIRE SYSTEMS ALARM/STROBE 24 VDC.
8. PROVIDE JANUS FIRE SYSTEMS MANUAL ABORT/RELEASING STATION.
9. KEYED DISCONNECT.
10. 360° NOZZLE.
11. PROVIDE ADDRESSABLE RELAY FOR HVAC EQUIPMENT SHUTDOWN.

196
2237 DOUGLAS BLVD, SUITE 160
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ARCHITECT STAMP | CONSULTANT STAMP

REGISTERED PROFESSIONAL ENGINEER — SEAN R. T. O'HANLON — M31176 — EXP. 12/31/25 — MECHANICAL — STATE OF CALIFORNIA

REVISIONS

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City of Roseville Approval

PROJECT OWNER & TITLE
CITY OF ROSEVILLE - DCWWTP

311 VERNON ST
ROSEVILLE, CA 95768

DCWWTP OPERATIONS AND LAB BLDG
1800 Booth Road
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SHEET TITLE
FLOOR PLAN - FIRE PROTECTION

DRAWN BY: Author | JOB NUMBER: 210015.01

SHEET NO.
FP-201

DATE: 4/24/18

N

BID SET (PRELIMINARY)

DATE PLOTTED: 9/16/2024 3:30:38 PM
FILE LOCATION: C:\Users\nkovtash\Documents\23.020 Dry Creek WWTP MEP_r22_nkovtash.rvt

COUNCIL COMMUNICATION

CC #: 3829
File #: 0800-03

Title:	Maintenance of the Gas Conditioning Systems at the Dry Creek and Pleasant Grove Wastewater Treatment Plants – Sole Source Contract Purchase Agreements
Contact:	Audrey Ficker 916-746-1865 agficker@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.7.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution to approve Contract Purchase Agreement #3004434 and #3004433 with Unison Solutions, Inc. to provide materials, parts and services for the gas condition systems at the Dry Creek and Pleasant Grove Wastewater Treatment Plants, and authorize the City Manager to execute them on behalf of the City of Roseville.

Additionally, staff requests authority for the City Manager or his designee to execute four (4) additional one (1) year renewals for both contract purchase agreements without further City Council approval, provided that the applicable budget is approved by the City Council each year, or until City staff determines that continuing with the same vendors is not in the City's best interest.

BACKGROUND

The Environmental Utilities Department (EUD) has gas conditioning systems at both the Dry Creek and Pleasant Grove Wastewater Treatment Plants (WWTPs) that use filtering media for the removal of hydrogen sulfide and siloxane as part of the biogas treatment. Conditioned biogas is used as fuel for generator systems at both plants and for renewable natural gas (rNG) at the Pleasant Grove WWTP that is used by the Environmental Utilities Waste Service's vehicles. These gas conditioning systems were designed and manufactured by Unison Solutions Inc. and require the filtering media and certain parts to be periodically replaced to maintain filter compliance. Unison Solutions Inc. also provides the media change out services where their factory trained contracted technicians perform the media change out process according to the manufacturer's standards. Sourcing the replacement filtering media, replacement parts, and the media change out, gas testing, and support services from the equipment manufacturer guarantees the certified performance of the system as designed.

EUD is recommending a one-year contract purchase agreement with Unison Solutions Inc. for each WWTP, both with four optional renewal years at one-year intervals for a total of five (5) years.

FISCAL IMPACT

The estimated total cost for the services for the two agreements is $930,000 for year one; $1,030,000 for year two; $1,130,000 for year three; $1,255,000 for year four; and $1,365,000 for year five. The total not-to-exceed cost for the two agreements including the four additional one (1) year renewals is $5,710,000. Funding source will be provided from the Environmental Utilities Department's annual budgets in the Wastewater Operations Fund.

ENVIRONMENTAL REVIEW

The proposed project involves the maintenance of existing facilities. This activity is categorically exempt from CEQA as a Class 1 Exemption (State CEQA Guidelines Section 15301). The Exemption has been prepared and no further CEQA action is required.

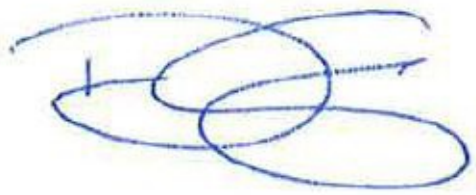
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal C - Maintain a safe and healthy community
Goal E - Deliver exceptional city services
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Audrey Ficker, Administrative Technician

Sean Bigley, Environmental Utilities Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-088

CPA No. 3004434 for Dry Creek WWTP - signed by vendor

Resolution 25-089

CPA No. 3004433 for Pleasant Grove WWTP - signed by vendor

CEQA - Notice of Exemption - Class 1

RESOLUTION NO. 25-088

APPROVING A CONTRACT PURCHASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND UNISON SOLUTIONS, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a contract purchase agreement (3004434) to provide hydrogen sulfide and siloxane removal media for the Dry Creek Wastewater Treatment Plant, by and between the City of Roseville and Unison Solutions, Inc., has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said agreement is hereby approved and the City Manager is authorized to execute it on behalf of the City of Roseville.

BE IT FURTHER RESOLVED, that the City Manager or his or her designee is authorized to execute four (4) additional one (1) year renewals without further City Council approval, provided that the applicable budget is approved by the City Council, or until staff determines that continuing with this consultant is not in the best interest of the City.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 20__, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

Docusign Envelope ID: 6EE97DC4-7D4F-4135-B575-17A4A30A0C14

Contract Purchase Agreement 3004434

Supplier Details:

Company	Unison Solutions Inc
Contact	Kim Murdock-Timmerman
Address	5451 Chavenelle Rd
	Dubuque, IA 52002

Submit your response to:

Company	City of Roseville
Contact	Joanna Oukrop
Address	Purchasing Division
	311 Vernon St
	Roseville, CA 95678
Phone	(916) 746-1102
Fax	(916) 746-1115
E-mail	JOukrop@roseville.ca.us

This Contract Purchase Agreement is sent for your review and acceptance. Notify the Buyer via email of any needed changes to the company name, address, and contact information. The Buyer will update the agreement prior to you signing the document.

Return signed copies of the agreement to the Buyer noted on the agreement. Alterations or modifications to the agreement are not allowed. Upon receipt of all necessary documents, the City will sign the agreement and return a fully executed copy to you. Receipt of the signed copy will be your notice to proceed with the work in accordance with the terms and conditions of the agreement. Work must not begin until the contract has been fully executed.

The following guidelines must be followed for the signature block on the agreement:

Sole proprietorship - **By owner**

Partnership - **Any general partner**

Corporation - **Two options:**
(1) A signature from the President and the corporate seal; **OR**
(2) One signature from the Chairman of the Board, President, or any Vice President **AND** one signature from the Secretary, any Assistant Secretary, Chief Financial Officer, or any Treasurer or Assistant Treasurer of the corporation

*General Manager, Office Manager and/or Sales Manager are **not** corporate officer titles. The agreement will be rejected if not signed in accordance with these guidelines.

Insurance requirements:
The City's insurance requirements are referenced on Attachment A of the agreement. By signing the agreement, you are confirming that your company has the minimum insurance limits required.

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CITY OF ROSEVILLE CALIFORNIA

Contract Purchase Agreement 3004434

Agreement	**3004434**
Agreement Date	**06-MAR-2025**
Change Order	
Change Order Date	**12-MAR-2025**
Revision	
Agreement Amount	**345,000.00 USD**

Invoice To
City of Roseville
Accounts Payable
311 Vernon St
ROSEVILLE CA 95678
Phone: (916) 774-5488
Fax: (916) 784-3796
Email: accountspayable@roseville.ca.us

Supplier
Unison Solutions Inc
5451 Chavenelle Rd
Dubuque, IA 52002
Phone: (563) 585-0967
Fax: (563) 585-0970
Email: kmtimmerman@unisonsolutions.com

Description of Labor, equipment and/or materials

The vendor shall provide H2S and Siloxane removal media for the Dry Creek Wastewater Treatment Plant gas conditioning system, biogas testing services, media change out and support services, and gas conditioning system replacement parts on an as-needed basis in accordance with the attached Unison Solutions, Inc. proposal #'s PM-125.2061 dated 3/3/25, GT-125.698 dated 3/5/25, and PM-424.2034.1 dated 3/4/25. The Siloxane removal media and any parts for the gas conditioning system must be quoted and approved in advance by an authorized member of the Environmental Utilities (EU) Department on an as-needed basis.

Contact Audrey Ficker in the EU Dept. at (916)746-1865 or agficker@roseville.ca.us for any questions regarding this agreement.

**Total amount listed is an approximation only. The City does not guarantee whatsoever the actual value of this agreement.

Customer #	Supplier #	Payment Terms	Freight Terms	FOB	Shipping Method
	12800	**Net 30**	**Freight on Board at the destination**	**Destination**	**Best Method**

Start Date	End Date	Confirm To
02-Apr-2025	**01-Apr-2026**	**Joanna Oukrop** Phone **1-916-746-1102**

Attention: Total Cost not to exceed the agreement amount without prior approval of the Purchasing office.

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Contract Terms and Conditions

Negotiated T&Cs for Unison Solutions, Inc., 3/12/25

1. To the fullest extent allowed by law, Contractor shall defend, indemnify, and save and hold harmless the City, its officers, agents, employees and volunteers from any claims, suits or actions of every name, kind and description brought forth, or on account of, injuries to or death of any person (including but not limited to workers and the public), or damage to property, resulting from or arising out of Contractor's willful misconduct or negligent act or omission while engaged in the performance of obligations or exercise of rights created by this Agreement, except to the extent those matter arise from City's active negligence or willful misconduct. Contractor's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Agreement for the full period of time allowed by law. The defense and indemnity obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Agreement. In no event shall Contractor be liable for consequential damages nor shall Contractor's liability exceed the required insurance limits.

2. Contractor is an independent contractor, and shall not be considered an officer, agent, or employee of the City.

3. Without the written consent of the City, this Agreement is not assignable by Contractor either in whole or in part.

4. Time is of the essence of this Agreement.

5. At any time during the term of this Agreement, the City has the right to terminate this Agreement, provided Contractor is given thirty (30) days written notice. City's termination shall be without further liability to City; however, Contractor shall be entitled to all costs reasonably incurred prior to the date of termination. Contractor acknowledges that City may terminate this Agreement should funds not be appropriated by its governing body to continue services under this Agreement.

6. This Agreement may only be amended or modified in writing. It is integrated and contains the complete understanding of the parties.

7. All equipment, supplies and services sold to the City of Roseville shall conform to the general safety orders of the State of California.

8. Unless notified to the contrary, in writing, the City assumes that the Contractor has accepted the work in accordance with the plans and specifications (if any) and agrees to do the work in compliance with this Agreement.

9. All prevailing wages and fair employment practices must be adhered to. For prevailing wage contracts over $25,000, copies of certified payroll must be submitted with invoices. Prevailing wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm. In compliance with Labor Code Section 1773.2, as may be amended from time to time, Contractor shall cause a copy of this website to be posted at each jobsite, as applicable.

10. Contractor agrees to the below insurance requirements:

    a. Unless otherwise specified, the Contractor shall maintain the policies of

Docusign Envelope ID: 6EE97DC4-7D4F-4135-B575-17A4A30A0C14

insurance outlined in Attachment A, incorporated herein by this reference, in full force and effect during the term of this Agreement. The City of Roseville retains sole discretion in determining the types and proper levels of insurance coverage.

b. Form. Contractor shall submit a certificate evidencing such coverage for the period covered by this Agreement in a form satisfactory to Risk Management and the City Attorney, prior to undertaking any work hereunder. Any insurance written on a claims made basis is subject to the approval of Risk Management and the City Attorney.

c. Additional Insureds. Contractor shall also provide a separate endorsement or section of the policy showing City, its officers, agents, employees, and volunteers as additional insureds for each type of coverage (except Workers' Compensation) and for ongoing and completed operations. Such insurance shall specifically cover the contractual liability of Contractor. The additional insured coverage under the Contractor's policy shall be primary and noncontributory, as evidenced by a separate endorsement or section of the policy, and shall not seek contribution from City's insurance or self-insurance. In addition, the additional insured coverage shall be at least as broad as the Insurance Services Office (ISO) CG 20 01 Endorsement. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be:

(1) the minimum coverage and limits specified in this Agreement; or
(2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

d. Cancellation/Modification. Contractor shall provide thirty (30) days written notice to City prior to cancellation or modification of any insurance required by this Agreement.

e. Umbrella/Excess Insurance. The limits of insurance required in this Agreement may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of City (if agreed to in a written contract) before City's own insurance shall be called upon to protect it as a named insured.

f. Subcontractors. Contractor agrees to include in its contracts with all subcontractors the same requirements and provisions of this Agreement, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, Contractor shall require its subcontractors to agree to be bound to Contractor and City in the same manner and to the same extent as Contractor is bound to City under this Agreement. Additionally, Contractor shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of City's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request.

g. Self-Insured Retentions. All self-insured retentions (SIR) must be disclosed to Risk Management for approval and shall not reduce the limits of liability. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City. City reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

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h. Waiver of Subrogation. Contractor hereby agrees to waive subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss under a Workers Compensation, Commercial General Liability or Automobile Liability policy. All Workers Compensation, Commercial General Liability and Automobile Liability policies shall be endorsed with a waiver of subrogation in favor of City, its officers, agents, employees and volunteers for all work performed by Contractor, its employees, agents and subcontractors.

i. Liability/Remedies. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve Contractor of liability in excess of such coverage, nor shall it preclude City from taking such other actions as are available to it under any other provisions of this Agreement or law.

11. Contractor shall comply with all federal, state and local laws and ordinances, including but not limited to the City's storm water regulations, as may be applicable to the performance of services under this Agreement. Failure to comply with local ordinances may result in monetary fines and cancellation of this Agreement. Refer to www.roseville.ca.us/stormwater for links to more information on the City's storm water regulations.

12. In the event that the terms of any attachment or exhibit conflict with any terms of this Agreement, the terms of this Agreement shall control.

13. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

14. If either party commences any legal action against the other party arising out of this Agreement or the performance thereof, the prevailing party in such action shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorneys' fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

15. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

16. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

17. For purposes of this Agreement, the terms "Contractor," "Consultant," and "Supplier" are used interchangeably.

18. No contractor or subcontractor may work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. During the performance of this agreement, Contractor and its subcontractors shall have a continuing legal obligation to maintain current registration with the Department of Industrial Relations. Contractor is hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

19. Vehicles with a gross vehicle weight rating (GVWR) greater than 8,500 lbs. and light-duty package delivery vehicles operated in California may be subject to the California Air Resources Board (CARB) Advanced Clean Fleets regulations. Such vehicles may

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therefore be subject to requirements to reduce emissions and air pollutants. For more information, visit the CARB Advanced Clean Fleet webpage at https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets.

20. Contractor/consultant's duties and services under this agreement shall not include preparing or assisting the public entity with any portion of the public entity's preparation of a request for proposals, request for qualifications, or any other solicitation regarding a subsequent or additional contract with the public entity. The public entity entering this agreement shall at all times retain responsibility for public contracting, including with respect to any subsequent phase of this project. Contractor/consultant's participation in the planning, discussions, or drawing of project plans or specifications, if any, shall be limited to conceptual, preliminary, or initial plans or specifications. Contractor/consultant shall cooperate with the public entity to ensure that all bidders for a subsequent contract on any subsequent phase of this project have access to the same information, including all conceptual, preliminary, or initial plans or specifications prepared by contractor pursuant to this agreement.

21. Contractor must submit all claims as defined in and in accordance with the claim resolution process set forth in Section 9204 of the Public Contract Code. Each such claim must be sent to the City by registered mail or certified mail with return receipt requested and must contain reasonable documentation to support the claim. All claims must be received prior to acceptance of the work.

22. Contractor certifies that Contractor, its employees, directors, officers, agents, subcontractors, vendors, and volunteers are not presently debarred, excluded, suspended, declared ineligible, voluntarily excluded, or proposed for debarment, exclusion, suspension, or ineligibility by any federal, state, or local department or agency.

23. The Levine Act (Govt. Code, Section 84308) requires a Party (and its agent(s), if any) to a Proceeding before the City of Roseville that involves any action or consideration related to their contract, license, permit, or other entitlement for use, to disclose any campaign contributions made to City elected or appointed officers totaling more than $250 within the twelve (12) months prior to the City decision and while a proceeding is pending, and includes certain prohibitions on contribution activity thereafter. If applicable campaign contributions have been made by Contractor and/or its agent(s), Contractor is responsible for compliance, including for its disclosure obligations, if any, as further described at: https://www.roseville.ca.us/government/departments/city_clerk/transparency/levine_act.

24. This Agreement may be amended via change order, but only if such change order is made in writing, approved by the City, and signed by both parties.

25. CONTRACTOR agrees to defend and indemnify CITY if, despite the parties intent and practice, any venue, agency, or court with competent jurisdiction determines that CONTRACTOR and/or any of its agents, officers, employees, volunteers, independent contractors, or subcontractors, are characterized as employee(s) of CITY.

CONTRACTOR and CITY agree that: (a) CONTRACTOR is free from the control and direction of CITY in connection with the performance of the work; (b) CONTRACTOR is providing services directly to CITY; (c) CONTRACTOR has and will maintain at all relevant times a business license; (d) CONTRACTOR maintains a business location that is separate from CITY; (e) CONTRACTOR is customarily engaged in an independently established business of the same nature as that involved in the work performed hereunder; (f) CONTRACTOR actually contracts with other businesses to provide the same or similar services and maintains a clientele without restrictions from CITY; (g) CONTRACTOR advertises and holds itself out to the public as available to provide the same or similar services; (h) CONTRACTOR provides its own tools, vehicles, and equipment to perform the services; (i) CONTRACTOR has negotiated its own rates; (j) CONTRACTOR set its own hours and location of work in accomplishing CITY's on-call

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needs; and (k) CONTRACTOR has the right to control the manner and means of accomplishing the result desired and exercises its own expert independent judgement.

The supplier named hereon by the acceptance of this order agrees to the provisions of this document titled "Contract Purchase Agreement" and all accompanying terms, conditions, and attachments.

Roseville Business License No. 00851332

Contractor License No. n/a

DIR Registration No. **1000051165**

Check mark the applicable company type below:

____**X**_____ **Corporation**

_____ **Limited Liability Company**

_____ **Partnership**

_____ **Sole Proprietor**

City Reserves the right to withhold any payments to contractor in the event of noncompliance with insurance requirements or if required by law.
Construction T&C
Negotiated T&Cs for Unison Solutions, Inc., REV 3/12/25 JS

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ATTACHMENT A
HUMAN RESOURCES/RISK MANAGEMENT DIVISION
INSURANCE REQUIREMENTS
AGREEMENT OVER FORMAL BID LIMIT OR INVOLVING HIGH RISK ACTIVITIES

General - Required Coverage/Documentation

- General Liability: $1 Million per occurrence /$2 Million aggregate
- Automobile Liability: $1 Million combined single limit
- Workers' Compensation: Statutory *Must provide a Waiver of subrogation
- Additional Insured Endorsement (AIE) - General Liability policy: CG 20 38 04 13 or an equivalent, blanket endorsement or section of the policy. Endorsement shall cover the City of Roseville, its officers, agents, employees and volunteers as additional insured.
- Policies must be primary and non-contributory
- A 30 day notice of cancellation must be provided
- List certificate holder as: The City of Roseville - Insurance Compliance, PO Box 100085-R1, Duluth, GA 30096

Additional Liability/Insurance Requirements if required by Agreement (and marked below):

Construction:_X__
General Liability:
$2 Million/occurrence
$4 Million aggregate

Design Professional:____
General Liability:
$2 Million/occurrence
$4 Million aggregate
Professional Liability:
$2 Million/occurrence

Professional Consultant:____
Professional Liability:
$1 Million/occurrence

IT Services:____
Professional Liability:
$1 Million/occurrence
No auto required
Cyber Liability:
$1 Million/occurrence

Hazardous Materials:____
Pollution Liability:
$1 Million/occurrence

Special Events/Caterers-Vendors:____
No auto required
No workers' comp required

Professional Counseling/ Psychological:____
Professional Liability:
$1 Million/occurrence
No auto required

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Pyrotechnics:____
General Liability:
$5 Million/occurrence
$10 Million aggregate
Auto - $2 Million/occurrence

Chemical/Environmental:____
General Liability:
$3 Million/occurrence
$6 Million aggregate
Pollution – $2 Million/Occurrence
Auto - $2 Million/Occurrence

Insurance Submission Process

The City of Roseville Human Resources/Risk Management Department uses a service called EBIX to manage our insurance certificate tracking.

How It Works

- The vendor's contact information is entered into EBIX. EBIX will contact the vendor to request proof of insurance.
- The Vendor can forward the request to their Insurance Agent(s) if necessary.
- Vendor/Insurance Agent submits insurance to EBIX by email to roseville@ebix.com or by fax to (770) 325-5727. After faxing or emailing the certificate, please DO NOT send the certificate by mail to EBIX. Please do not mail, email or fax any certificates to the City of Roseville.
- Once submitted, EBIX reviews the insurance documentation. If there are deficiencies, EBIX will send a follow up letter or email requesting additional information.

Questions Regarding Insurance Submission: Contact EBIX at (951) 652-4239
Questions Regarding Insurance Requirements Contact Risk Management at (916) 774-5202

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Asbestos-Containing Materials in City-Owned Buildings

California Health and Safety Code Section 25915 requires that all City of Roseville employees, contractors and lessees be notified annually of the presence of asbestos in City-owned buildings constructed prior to 1979. Please post this notice in an area(s) accessible to all employees, contractors and lessees. Contact Facility Maintenance & Operations at (916) 774-5740 for more information about Asbestos Containing Materials (ACMs) in specific City-owned buildings. For more information about asbestos refer to the OSHA website.

The City of Roseville is committed to maintaining a safe and healthy work environment. The City's Facility Maintenance & Operations staff conducts ongoing inspections to identify and safely manage previously installed asbestos-containing products. Renovation of City-owned buildings **MUST** be reviewed in advance by Facility Maintenance & Operations to ensure the City is in compliance with building codes, Americans with Disabilities Act and that no ACMs are disturbed without proper safeguards. Work that requires removal or repair of ACMs is restricted to trained and qualified persons only. **Facility Maintenance & Operations will need to approve the qualified contractors**.

Use the following measures to protect you and others from exposure to airborne asbestos:

- Presume all building materials contain asbestos until determined otherwise by Facility Maintenance & Operations.
- Do not install walls, closets, cabinets, ceilings.
- Do not remove, cut, drill, sand, grind or otherwise disturb any material in the buildings, including carpet and tile.
- Do not paint (this includes any walls, ceilings, floors and electrostatic painting of office furniture).
- Do not remove any items nailed or screwed to the walls (this includes pictures, cabinets, electrical, etc.).
- Do not go above ceilings, behind walls or into building spaces such as attics and crawlspaces unless these areas have been inspected and cleared by Facility Maintenance & Operations.
- Do not pull cable or wiring through above-ceiling spaces with asbestos.
- Do not install screws, pins, nails or hangers into asbestos ceiling or wall plaster.
- Be careful not to damage walls, ceilings or floors when moving furniture or equipment. It is recommended that Facility Maintenance & Operations be contacted prior to moving furniture or equipment.
- Do not brush, sweep or vacuum textured asbestos ceiling plaster or plaster debris.
- Immediately report any damage or deterioration of suspect building materials to Facility Maintenance & Operations or Risk Management.

It is important to note that the presence of asbestos does not mean you have been exposed. Exposure results when friable asbestos particles are inhaled or ingested. Asbestos becomes friable when material containing asbestos is drilled, sanded or disturbed by remodeling or demolition work or when the ACM has deteriorated. Intact, bonded, sealed or undisturbed asbestos does not pose a hazard.

Employees may review the asbestos survey reports, results of bulk sampling or air monitoring conducted in City-owned buildings. All asbestos data will be available by appointment with Facility Maintenance & Operations.

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Facilities Built Pre 1979 That May Contain Asbestos	Year Built
Downtown Library - 225 Taylor Street 95678	1974
Carnegie Museum - 557 Lincoln Street 95678	1912
Tower Theatre - 415 Vernon Street 95678	1940
Fire Station #3 - 1300 Cirby Way 95661	1963
Old Corp Yard - 100 Old Corp Yard Road 95678	1940
Water Treatment Plant Operations Bldg.- 9595 Barton Road 95746	1965
Waste Water Treatment Plant Operations Bldg. - 1800 Booth Road 95747	1962
Royer Recreation Bldg. - 190 Park Drive 95678	1950
Fire Museum - 400 Lincoln Street 95678	1930
Diamond Oaks Golf - 349 Diamond Oaks Road 95678	1965
Johnson Pool, 4th & D Street	1950
330 Vernon Street	1940
107 Sutter Avenue	1962

Sign to acknowledge receipt of asbestos notification:

SIGNATURE	Signed by: Dave Broilakis BB4F1C8C69BD47A...
COMPANY NAME	Unison Solutions, Inc.
DATE	3/13/2025

Asbestos
Rev 01/16/19

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CALIFORNIA AIR RESOURCES BOARD REGULATION COMPLIANCE

Please indicate whether the Contractor is subject to, and/or in compliance with, the following regulations of the California Air Resources Board.

In-Use Off-Road Diesel-Fueled Fleets Regulation

1) Will vehicles subject to Cal. Code Regs., tit. 13, §§ 2449 et seq. be used for the project? This includes, but is not limited to:
   a) Vehicles with a diesel-fueled or alternative diesel fueled off-road compression-ignition engine with maximum power (max hp) of 25 horsepower (hp) or greater provided that the vehicle cannot be registered and driven safely on-road or was not designed to be driven on-road, even if it has been modified so that it can be driven safely on-road
   b) Workover rigs
   c) Certain two-engine vehicles

   Yes ____ No X

2) If you answered "Yes" to 1), you **must** submit a valid Certificate of Reported Compliance to the City as provided in Cal. Code Regs., tit. 13, § 2449(n).

Advanced Clean Fleets Regulation

Pursuant to Cal. Code Regs., tit. 13, § 2013(i)(1), the Contractor shall submit to the City a document evidencing that it is listed on the CARB Advanced Clean Fleets webpage as a compliant fleet **OR** a signed statement stating that it is not subject to the High Priority and Federal Fleets regulation of title 13, CCR section 2015 through 2015.6.

The High Priority Fleets regulation applies to, without limitation, entities with more than $50 million in gross annual revenues and/or which own, operate, or direct the operation of 50 or more vehicles in the total fleet.

1) Is the Contractor subject to the High Priority and Federal Fleets regulation of title 13, CCR section 2015 through 2015.6?

   Yes ____ No X

2) If you answered "Yes" to 1), you **must** submit a document evidencing that you are listed on the CARB Advanced Clean Fleets webpage as a compliant fleet.

Signature: Signed by: Dave Broilalin BB4F1C8C69BD47A...

Title: President

CARB Compliance
Rev 2/15/24 MC

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Supplier

Signature: Signed by: Dave Broihahn BB4F1C8C69BD47A...

Print Name: Dave Broihahn

Title: President

Date: 3/13/2025

Supplier

Signature: Signed by: Kevin McDonnell 6EBAD7E823C2409...

Print Name: Kevin McDonnell

Title: CFO

Date: 3/17/2025

City of Roseville, A Municipal Corporation

Signature: _____

Print Name: **Dominick Casey**

Title: **City Manager**

Date: _____

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CITY OF ROSEVILLE CALIFORNIA

April, 2022

RE: Contractor and Grantee Compliance with Economic Sanctions Imposed in Response to Russia's Actions in Ukraine

Dear Vendor:

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (EO) regarding sanctions in response to Russian aggression in Ukraine. The EO is located at https://www.gov.ca.gov/wp-content/uploads/2022/03/3.4.22-Russia-Ukraine-Executive-Order.pdf.

The EO directs all agencies and departments that are subject to the Governor's authority to take certain immediate steps, including notifying all contractors and grantees of their obligations to comply with existing economic sanctions imposed by the U.S. government in response to Russia's actions in Ukraine, as well as any sanctions imposed under state law.

This correspondence serves as a notice under the EO that as a contractor or grantee, compliance with the economic sanctions imposed in response to Russia's actions in Ukraine is required, including with respect to, but not limited to, the federal executive orders identified in the EO and the sanctions identified on the U.S. Department of the Treasury website (https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-country-information/ukraine-russia-related-sanctions). Failure to comply may result in the termination of contracts or grants, as applicable.

Please note that for any agreements or grants valued at $5 million or more you must report to the City of Roseville your compliance with economic sanctions including steps you have taken in response to Russia's actions in Ukraine, including, but not limited to, desisting from making new investments in, or engaging in financial transactions with, Russian entities, not transferring technology to Russia or Russian entities, and directly providing support to the government and people of Ukraine.

Sincerely,

DocuSigned by:
Shannon Wiest
A3035660A19747F...

4/25/2022

Shannon Wiest
City of Roseville
Purchasing and Warehouse Manager

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UNISON

Date: 03/03/2025
Expires: 04/01/2026
Attn: Audrey Ficker
Location: Roseville, CA 95747 - Dry Creek Plant

Proposal Number: PM-125.2061
Proposal Name: 280 - Dry Creek H2S Removal Media

Dear Audrey,

Unison Solutions, Inc. is pleased to provide you with the following quote for replacement H2S removal media for your biogas conditioning system at the Dry Creek plant.

Description	Quantity	Unit Cost	Total
H2S Removal Media			
Unison Part Number UNI-H2SK	52,800.00 lbs.	$ 1.45 /lb.	$ 76,560.00
Packaged in 2200 lb bulk bags			
Estimated Shipping	1.00	$ 3,600.00 each	$ 3,600.00
98" Diameter Foam Filter (for 8' diameter vessel)	2.00	$ 1,300.00 each	$ 2,600.00
Estimated Shipping	1.00	$ 750.00 each	$ 750.00

All costs noted above for shipping are estimates only. Actual cost of shipping will be determined at time of shipment.

Grand Total: $ 83,510.00

MEDIA: PRICING SUMMARY

- Prices do not reflect any taxes that may be applicable and are valid until April 1, 2026.
- Price does not include the following: labor for unloading media from the truck, disposal of spent media or labor for loading new media into vessels.
- Estimated delivery upon order receipt is 7- 21 days depending on availability

PAYMENT SCHEDULE

- 100% upon order acceptance. Net 30 days on all payments.

Thank you for giving Unison Solutions the opportunity to propose our services. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,
Kim Murdock-Timmerman
Unison Solutions, Inc.
563-585-0967

Docusign Envelope ID: 6EE97DC4-7D4F-4135-B575-17A4A30A0C14

GAS TESTING PROPOSAL

March 5, 2025

Attn: Jim Cryan, City of Roseville

Proposal Number: GT-125.698
Project Name: Dry Creek WWTP

Thank you for your interest in our biogas testing services. Please note the following per your request.

GENERAL DESCRIPTION

Unison will provide the Gas Testing Kit:

- Instructions
- 1 L summa canister
- 3 pc. Compression fittings
- Flexible Tubing
- Chain of Custody Form

Lab analysis and results will be provided. Unison will also provide any phone support required.

Gas sampling instructions will be included in each kit. We ask that the gas sample be taken Monday-Thursday, and shipped FedEx-Ground to the address included with the sample kit. Lab analysis and results will be provided.

PRICING SUMMARY/SAMPLE

Compound Speciation - Siloxanes	$495.00	Standard Lead Time - 5 Business Days
Compound Speciation - Sulfur Components	$520.00	Standard Lead Time - 5 Business Days
Gas Testing Kit*	$150.00	Includes 1 week rental on canisters

*Includes shipping materials to site.

Pricing is valid through April 1, 2026

Thank you for giving Unison Solutions the opportunity to offer our services. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

Kim Murdock-Timmerman

Unison Solutions, Inc.

Docusign Envelope ID: 6EE97DC4-7D4F-4135-B575-17A4A30A0C14

March 4, 2025

Dry Creek WWTP, Roseville CA

Attn: Audrey Ficker

PM-424.2034.1 - Media Change Out Services

Dear Audrey,

Unison Solutions, Inc. is pleased to provide you with this proposal for media change out services for the H2S and siloxane removal media used in your biogas conditioning system. This proposal includes removal of spent media, installation of new material, and purging the vessels with nitrogen. The spent H2S removal media will be removed from the vessel and left on site for disposal by others. Due to its reaction with oxygen, the H2S removal media should be spread on a non-flammable surface and kept wet until its exothermic reaction has completed. Siloxane removal media may be a candidate for recycling for other applications. If not suitable for recycling, spent media will be left onsite in bulk bags.

H2S AND SILOXANE REMOVAL MEDIA CHANGE OUT SERVICES

Includes the following:

- Assumes no changes to current site conditions
- Media and foam pads must be at the site, ready for the change out services on scheduled dates.
- H2S vessels must be vented and flooded at least 24 hours prior technicians arrival
- Removal of spent media, H2S – 52,800 lb., Siloxane – 4,730 lb.
- Spent H2S removal media to be left on site at customer specified location(s), ideally within 200 feet of vessels
- Loading of new media in all vessels
- Industrial grade nitrogen purge of vessels
- Confirmation of tight seals with an air monitor.
- 54 ft, grade all forklift to be provided
- Meeting prevailing wage criteria for the state of California, contractor DIR registration number 1000009862. Based on 3 technicians working no more than 32 total hours over no more than 4 days.

PRICING SUMMARY

Included in pricing is transportation to/from site; (1) nitrogen purge, vacuum truck removal, removal of spent media and new media filling.....**$ 42,500.00/change**

Spent carbon media testing, 8260 TCLP and CAM 17.....$550.00

Your existing spent media profile is valid until 11/8/2025. Depending on the timing of your change out, a spent siloxane removal media sample may need to be taken at least 3 weeks prior to change out and sent to a lab for testing. Unless your raw biogas has changed significantly, we're assuming that the media will be suitable for regeneration, and can be removed from the site immediately after the change out.

Docusign Envelope ID: 6EE97DC4-7D4F-4135-B575-17A4A30A0C14

The spent product becomes the property of the recycling company. Note that regenerated media is not suitable for siloxane removal but can be used for applications such as odor control. Pulling and shipping a spent media sample to be completed by plant personnel.

Terms – Net 30, Prices do not reflect any taxes that may be applicable and are valid until April 1, 2026.

All testing of spent material and disposal costs are the responsibility of the plant, for both media types.

I hope this information is helpful. Please feel free to contact me if you have any questions or concerns.

Sincerely,



Kim Murdock-Timmerman, Unison Solutions Inc.

RESOLUTION NO. 25-089

APPROVING A CONTRACT PURCHASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND UNISON SOLUTIONS, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a contract purchase agreement (3004433) to provide hydrogen sulfide and siloxane removal media for the Pleasant Grove Wastewater Treatment Plant, by and between the City of Roseville and Unison Solutions, Inc., has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said agreement is hereby approved and the City Manager is authorized to execute it on behalf of the City of Roseville.

BE IT FURTHER RESOLVED, that the City Manager or his or her designee is authorized to execute four (4) additional one (1) year renewals without further City Council approval, provided that the applicable budget is approved by the City Council, or until staff determines that continuing with this consultant is not in the best interest of the City.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 20__, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

Docusign Envelope ID: CADFDF4A-67A3-4E1B-991A-E81ECCCF1C21

Contract Purchase Agreement 3004433

Supplier Details:

Company	Unison Solutions Inc
Contact	Kim Murdock-Timmerman
Address	5451 Chavenelle Rd
	Dubuque, IA 52002

Submit your response to:

Company	City of Roseville
Contact	Joanna Oukrop
Address	Purchasing Division
	311 Vernon St
	Roseville, CA 95678
Phone	(916) 746-1102
Fax	(916) 746-1115
E-mail	JOukrop@roseville.ca.us

This Contract Purchase Agreement is sent for your review and acceptance. Notify the Buyer via email of any needed changes to the company name, address, and contact information. The Buyer will update the agreement prior to you signing the document.

Return signed copies of the agreement to the Buyer noted on the agreement. Alterations or modifications to the agreement are not allowed. Upon receipt of all necessary documents, the City will sign the agreement and return a fully executed copy to you. Receipt of the signed copy will be your notice to proceed with the work in accordance with the terms and conditions of the agreement. Work must not begin until the contract has been fully executed.

The following guidelines must be followed for the signature block on the agreement:

Sole proprietorship - **By owner**

Partnership - **Any general partner**

Corporation - **Two options:**
(1) A signature from the President and the corporate seal; **OR**
(2) One signature from the Chairman of the Board, President, or any Vice President **AND** one signature from the Secretary, any Assistant Secretary, Chief Financial Officer, or any Treasurer or Assistant Treasurer of the corporation

*General Manager, Office Manager and/or Sales Manager are **not** corporate officer titles. The agreement will be rejected if not signed in accordance with these guidelines.

Insurance requirements:
The City's insurance requirements are referenced on Attachment A of the agreement. By signing the agreement, you are confirming that your company has the minimum insurance limits required.

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Contract Purchase Agreement 3004433

Agreement	**3004433**
Agreement Date	**06-MAR-2025**
Change Order	
Change Order Date	**12-MAR-2025**
Revision	
Agreement Amount	**585,000.00 USD**

Invoice To
City of Roseville
Accounts Payable
311 Vernon St
ROSEVILLE CA 95678
Phone: (916) 774-5488
Fax: (916) 784-3796
Email: accountspayable@roseville.ca.us

Supplier
Unison Solutions Inc
5451 Chavenelle Rd
Dubuque, IA 52002
Phone: (563) 585-0967
Fax: (563) 585-0970
Email: kmtimmerman@unisonsolutions.com

Description of Labor, equipment and/or materials

The vendor shall provide H2S and Siloxane removal media and foam pad for the Pleasant Grove Wastewater Treatment Plant gas upgrading system, biogas testing services, media change out and support services, and gas upgrading system replacement parts on an as-needed in accordance with the attached Unison Solutions, Inc. proposal #'s PM-125.2059 dated 3/3/25, GT-125.699 dated 3/5/25, PM-424.2033.1 dated 3/4/25, and PM-424.2032.1 dated 3/4/25. The Siloxane removal media and any parts for the gas upgrading system must be quoted and approved in advance by an authorized member of the Environmental Utilities (EU) Department on an as-needed basis.

Contact Audrey Ficker in the EU Dept. at (916)746-1865 or agficker@roseville.ca.us for any questions regarding this agreement.

**Total amount listed is an approximation only. The City does not guarantee whatsoever the actual value of this agreement.

Customer #	Supplier #	Payment Terms	Freight Terms	FOB	Shipping Method
	12800	**Net 30**	**Freight on Board at the destination**	**Destination**	**Best Method**

Start Date	End Date	Confirm To
02-Apr-2025	**01-Apr-2026**	**Joanna Oukrop** Phone **1-916-746-1102**

Attention: Total Cost not to exceed the agreement amount without prior approval of the Purchasing office.

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Contract Terms and Conditions

Negotiated T&Cs for Unison Solutions, Inc., 3/12/25

1. To the fullest extent allowed by law, Contractor shall defend, indemnify, and save and hold harmless the City, its officers, agents, employees and volunteers from any claims, suits or actions of every name, kind and description brought forth, or on account of, injuries to or death of any person (including but not limited to workers and the public), or damage to property, resulting from or arising out of Contractor's willful misconduct or negligent act or omission while engaged in the performance of obligations or exercise of rights created by this Agreement, to the extent those matters arise from City's active negligence or willful misconduct. Contractor's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Agreement for the full period of time allowed by law. The defense and indemnity obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Agreement. In no event shall Contractor be liable for consequential damages nor shall Contractor's liability exceed the required insurance limits.

2. Contractor is an independent contractor, and shall not be considered an officer, agent, or employee of the City.

3. Without the written consent of the City, this Agreement is not assignable by Contractor either in whole or in part.

4. Time is of the essence of this Agreement.

5. At any time during the term of this Agreement, the City has the right to terminate this Agreement, provided Contractor is given thirty (30) days written notice. City's termination shall be without further liability to City; however, Contractor shall be entitled to all costs reasonably incurred prior to the date of termination. Contractor acknowledges that City may terminate this Agreement should funds not be appropriated by its governing body to continue services under this Agreement.

6. This Agreement may only be amended or modified in writing. It is integrated and contains the complete understanding of the parties.

7. All equipment, supplies and services sold to the City of Roseville shall conform to the general safety orders of the State of California.

8. Unless notified to the contrary, in writing, the City assumes that the Contractor has accepted the work in accordance with the plans and specifications (if any) and agrees to do the work in compliance with this Agreement.

9. All prevailing wages and fair employment practices must be adhered to. For prevailing wage contracts over $25,000, copies of certified payroll must be submitted with invoices. Prevailing wage rates may be obtained from the State Department of Industrial Relations and/or the following website address: http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm. In compliance with Labor Code Section 1773.2, as may be amended from time to time, Contractor shall cause a copy of this website to be posted at each jobsite, as applicable.

10. Contractor agrees to the below insurance requirements:

    a. Unless otherwise specified, the Contractor shall maintain the policies of

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insurance outlined in Attachment A, incorporated herein by this reference, in full force and effect during the term of this Agreement. The City of Roseville retains sole discretion in determining the types and proper levels of insurance coverage.

b. Form. Contractor shall submit a certificate evidencing such coverage for the period covered by this Agreement in a form satisfactory to Risk Management and the City Attorney, prior to undertaking any work hereunder. Any insurance written on a claims made basis is subject to the approval of Risk Management and the City Attorney.

c. Additional Insureds. Contractor shall also provide a separate endorsement or section of the policy showing City, its officers, agents, employees, and volunteers as additional insureds for each type of coverage (except Workers' Compensation) and for ongoing and completed operations. Such insurance shall specifically cover the contractual liability of Contractor. The additional insured coverage under the Contractor's policy shall be primary and noncontributory, as evidenced by a separate endorsement or section of the policy, and shall not seek contribution from City's insurance or self-insurance. In addition, the additional insured coverage shall be at least as broad as the Insurance Services Office (ISO) CG 20 01 Endorsement. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be:

(1) the minimum coverage and limits specified in this Agreement; or
(2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

d. Cancellation/Modification. Contractor shall provide thirty (30) days written notice to City prior to cancellation or modification of any insurance required by this Agreement.

e. Umbrella/Excess Insurance. The limits of insurance required in this Agreement may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of City (if agreed to in a written contract) before City's own insurance shall be called upon to protect it as a named insured.

f. Subcontractors. Contractor agrees to include in its contracts with all subcontractors the same requirements and provisions of this Agreement, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, Contractor shall require its subcontractors to agree to be bound to Contractor and City in the same manner and to the same extent as Contractor is bound to City under this Agreement. Additionally, Contractor shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of City's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request.

g. Self-Insured Retentions. All self-insured retentions (SIR) must be disclosed to Risk Management for approval and shall not reduce the limits of liability. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City. City reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

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h. Waiver of Subrogation. Contractor hereby agrees to waive subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss under a Workers Compensation, Commercial General Liability or Automobile Liability policy. All Workers Compensation, Commercial General Liability and Automobile Liability policies shall be endorsed with a waiver of subrogation in favor of City, its officers, agents, employees and volunteers for all work performed by Contractor, its employees, agents and subcontractors.

i. Liability/Remedies. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve Contractor of liability in excess of such coverage, nor shall it preclude City from taking such other actions as are available to it under any other provisions of this Agreement or law.

11. Contractor shall comply with all federal, state and local laws and ordinances, including but not limited to the City's storm water regulations, as may be applicable to the performance of services under this Agreement. Failure to comply with local ordinances may result in monetary fines and cancellation of this Agreement. Refer to www.roseville.ca.us/stormwater for links to more information on the City's storm water regulations.

12. In the event that the terms of any attachment or exhibit conflict with any terms of this Agreement, the terms of this Agreement shall control.

13. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

14. If either party commences any legal action against the other party arising out of this Agreement or the performance thereof, the prevailing party in such action shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorneys' fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

15. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

16. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

17. For purposes of this Agreement, the terms "Contractor," "Consultant," and "Supplier" are used interchangeably.

18. No contractor or subcontractor may work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. During the performance of this agreement, Contractor and its subcontractors shall have a continuing legal obligation to maintain current registration with the Department of Industrial Relations. Contractor is hereby notified that this project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

19. Vehicles with a gross vehicle weight rating (GVWR) greater than 8,500 lbs. and light-duty package delivery vehicles operated in California may be subject to the California Air Resources Board (CARB) Advanced Clean Fleets regulations. Such vehicles may

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therefore be subject to requirements to reduce emissions and air pollutants. For more information, visit the CARB Advanced Clean Fleet webpage at https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets.

20. Contractor/consultant's duties and services under this agreement shall not include preparing or assisting the public entity with any portion of the public entity's preparation of a request for proposals, request for qualifications, or any other solicitation regarding a subsequent or additional contract with the public entity. The public entity entering this agreement shall at all times retain responsibility for public contracting, including with respect to any subsequent phase of this project. Contractor/consultant's participation in the planning, discussions, or drawing of project plans or specifications, if any, shall be limited to conceptual, preliminary, or initial plans or specifications. Contractor/consultant shall cooperate with the public entity to ensure that all bidders for a subsequent contract on any subsequent phase of this project have access to the same information, including all conceptual, preliminary, or initial plans or specifications prepared by contractor pursuant to this agreement.

21. Contractor must submit all claims as defined in and in accordance with the claim resolution process set forth in Section 9204 of the Public Contract Code. Each such claim must be sent to the City by registered mail or certified mail with return receipt requested and must contain reasonable documentation to support the claim. All claims must be received prior to acceptance of the work.

22. Contractor certifies that Contractor, its employees, directors, officers, agents, subcontractors, vendors, and volunteers are not presently debarred, excluded, suspended, declared ineligible, voluntarily excluded, or proposed for debarment, exclusion, suspension, or ineligibility by any federal, state, or local department or agency.

23. The Levine Act (Govt. Code, Section 84308) requires a Party (and its agent(s), if any) to a Proceeding before the City of Roseville that involves any action or consideration related to their contract, license, permit, or other entitlement for use, to disclose any campaign contributions made to City elected or appointed officers totaling more than $250 within the twelve (12) months prior to the City decision and while a proceeding is pending, and includes certain prohibitions on contribution activity thereafter. If applicable campaign contributions have been made by Contractor and/or its agent(s), Contractor is responsible for compliance, including for its disclosure obligations, if any, as further described at: https://www.roseville.ca.us/government/departments/city_clerk/transparency/levine_act.

24. This Agreement may be amended via change order, but only if such change order is made in writing, approved by the City, and signed by both parties.

25. CONTRACTOR agrees to defend and indemnify CITY if, despite the parties intent and practice, any venue, agency, or court with competent jurisdiction determines that CONTRACTOR and/or any of its agents, officers, employees, volunteers, independent contractors, or subcontractors, are characterized as employee(s) of CITY.

CONTRACTOR and CITY agree that: (a) CONTRACTOR is free from the control and direction of CITY in connection with the performance of the work; (b) CONTRACTOR is providing services directly to CITY; (c) CONTRACTOR has and will maintain at all relevant times a business license; (d) CONTRACTOR maintains a business location that is separate from CITY; (e) CONTRACTOR is customarily engaged in an independently established business of the same nature as that involved in the work performed hereunder; (f) CONTRACTOR actually contracts with other businesses to provide the same or similar services and maintains a clientele without restrictions from CITY; (g) CONTRACTOR advertises and holds itself out to the public as available to provide the same or similar services; (h) CONTRACTOR provides its own tools, vehicles, and equipment to perform the services; (i) CONTRACTOR has negotiated its own rates; (j) CONTRACTOR set its own hours and location of work in accomplishing CITY's on-call

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needs; and (k) CONTRACTOR has the right to control the manner and means of accomplishing the result desired and exercises its own expert independent judgement.

The supplier named hereon by the acceptance of this order agrees to the provisions of this document titled "Contract Purchase Agreement" and all accompanying terms, conditions, and attachments.

Roseville Business License No. 00851332

Contractor License No. n/a

DIR Registration No. **1000051165**

Check mark the applicable company type below:

____**X**_____ **Corporation**

_____ **Limited Liability Company**

_____ **Partnership**

_____ **Sole Proprietor**

City Reserves the right to withhold any payments to contractor in the event of noncompliance with insurance requirements or if required by law.
Construction T&C
Negotiated T&Cs for Unison Solutions, Inc., REV 3/12/25 JS

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ATTACHMENT A
HUMAN RESOURCES/RISK MANAGEMENT DIVISION
INSURANCE REQUIREMENTS
AGREEMENT OVER FORMAL BID LIMIT OR INVOLVING HIGH RISK ACTIVITIES

General - Required Coverage/Documentation

- General Liability: $1 Million per occurrence /$2 Million aggregate
- Automobile Liability: $1 Million combined single limit
- Workers' Compensation: Statutory *Must provide a Waiver of subrogation
- Additional Insured Endorsement (AIE) - General Liability policy: CG 20 38 04 13 or an equivalent, blanket endorsement or section of the policy. Endorsement shall cover the City of Roseville, its officers, agents, employees and volunteers as additional insured.
- Policies must be primary and non-contributory
- A 30 day notice of cancellation must be provided
- List certificate holder as: The City of Roseville - Insurance Compliance, PO Box 100085-R1, Duluth, GA 30096

Additional Liability/Insurance Requirements if required by Agreement (and marked below):

Construction:_X__
General Liability:
$2 Million/occurrence
$4 Million aggregate

Design Professional:____
General Liability:
$2 Million/occurrence
$4 Million aggregate
Professional Liability:
$2 Million/occurrence

Professional Consultant:____
Professional Liability:
$1 Million/occurrence

IT Services:____
Professional Liability:
$1 Million/occurrence
No auto required
Cyber Liability:
$1 Million/occurrence

Hazardous Materials:____
Pollution Liability:
$1 Million/occurrence

Special Events/Caterers-Vendors:____
No auto required
No workers' comp required

Professional Counseling/ Psychological:____
Professional Liability:
$1 Million/occurrence
No auto required

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Pyrotechnics:____
General Liability:
$5 Million/occurrence
$10 Million aggregate
Auto - $2 Million/occurrence

Chemical/Environmental:____
General Liability:
$3 Million/occurrence
$6 Million aggregate
Pollution – $2 Million/Occurrence
Auto - $2 Million/Occurrence

Insurance Submission Process

The City of Roseville Human Resources/Risk Management Department uses a service called EBIX to manage our insurance certificate tracking.

How It Works

- The vendor's contact information is entered into EBIX. EBIX will contact the vendor to request proof of insurance.
- The Vendor can forward the request to their Insurance Agent(s) if necessary.
- Vendor/Insurance Agent submits insurance to EBIX by email to roseville@ebix.com or by fax to (770) 325-5727. After faxing or emailing the certificate, please DO NOT send the certificate by mail to EBIX. Please do not mail, email or fax any certificates to the City of Roseville.
- Once submitted, EBIX reviews the insurance documentation. If there are deficiencies, EBIX will send a follow up letter or email requesting additional information.

Questions Regarding Insurance Submission: Contact EBIX at (951) 652-4239
Questions Regarding Insurance Requirements Contact Risk Management at (916) 774-5202

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Asbestos-Containing Materials in City-Owned Buildings

California Health and Safety Code Section 25915 requires that all City of Roseville employees, contractors and lessees be notified annually of the presence of asbestos in City-owned buildings constructed prior to 1979. Please post this notice in an area(s) accessible to all employees, contractors and lessees. Contact Facility Maintenance & Operations at (916) 774-5740 for more information about Asbestos Containing Materials (ACMs) in specific City-owned buildings. For more information about asbestos refer to the OSHA website.

The City of Roseville is committed to maintaining a safe and healthy work environment. The City's Facility Maintenance & Operations staff conducts ongoing inspections to identify and safely manage previously installed asbestos-containing products. Renovation of City-owned buildings **MUST** be reviewed in advance by Facility Maintenance & Operations to ensure the City is in compliance with building codes, Americans with Disabilities Act and that no ACMs are disturbed without proper safeguards. Work that requires removal or repair of ACMs is restricted to trained and qualified persons only. **Facility Maintenance & Operations will need to approve the qualified contractors**.

Use the following measures to protect you and others from exposure to airborne asbestos:

- Presume all building materials contain asbestos until determined otherwise by Facility Maintenance & Operations.
- Do not install walls, closets, cabinets, ceilings.
- Do not remove, cut, drill, sand, grind or otherwise disturb any material in the buildings, including carpet and tile.
- Do not paint (this includes any walls, ceilings, floors and electrostatic painting of office furniture).
- Do not remove any items nailed or screwed to the walls (this includes pictures, cabinets, electrical, etc.).
- Do not go above ceilings, behind walls or into building spaces such as attics and crawlspaces unless these areas have been inspected and cleared by Facility Maintenance & Operations.
- Do not pull cable or wiring through above-ceiling spaces with asbestos.
- Do not install screws, pins, nails or hangers into asbestos ceiling or wall plaster.
- Be careful not to damage walls, ceilings or floors when moving furniture or equipment. It is recommended that Facility Maintenance & Operations be contacted prior to moving furniture or equipment.
- Do not brush, sweep or vacuum textured asbestos ceiling plaster or plaster debris.
- Immediately report any damage or deterioration of suspect building materials to Facility Maintenance & Operations or Risk Management.

It is important to note that the presence of asbestos does not mean you have been exposed. Exposure results when friable asbestos particles are inhaled or ingested. Asbestos becomes friable when material containing asbestos is drilled, sanded or disturbed by remodeling or demolition work or when the ACM has deteriorated. Intact, bonded, sealed or undisturbed asbestos does not pose a hazard.

Employees may review the asbestos survey reports, results of bulk sampling or air monitoring conducted in City-owned buildings. All asbestos data will be available by appointment with Facility Maintenance & Operations.

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Facilities Built Pre 1979 That May Contain Asbestos	Year Built
Downtown Library - 225 Taylor Street 95678	1974
Carnegie Museum - 557 Lincoln Street 95678	1912
Tower Theatre - 415 Vernon Street 95678	1940
Fire Station #3 - 1300 Cirby Way 95661	1963
Old Corp Yard - 100 Old Corp Yard Road 95678	1940
Water Treatment Plant Operations Bldg.- 9595 Barton Road 95746	1965
Waste Water Treatment Plant Operations Bldg. - 1800 Booth Road 95747	1962
Royer Recreation Bldg. - 190 Park Drive 95678	1950
Fire Museum - 400 Lincoln Street 95678	1930
Diamond Oaks Golf - 349 Diamond Oaks Road 95678	1965
Johnson Pool, 4th & D Street	1950
330 Vernon Street	1940
107 Sutter Avenue	1962

Sign to acknowledge receipt of asbestos notification:

SIGNATURE	Signed by: Dave Broilakis BB4F1C8C69BD47A...
COMPANY NAME	Unison Solutions, Inc.
DATE	3/13/2025

Asbestos
Rev 01/16/19

Docusign Envelope ID: CADFDF4A-67A3-4E1B-991A-E81ECCCF1C21

CALIFORNIA AIR RESOURCES BOARD REGULATION COMPLIANCE

Please indicate whether the Contractor is subject to, and/or in compliance with, the following regulations of the California Air Resources Board.

In-Use Off-Road Diesel-Fueled Fleets Regulation

1) Will vehicles subject to Cal. Code Regs., tit. 13, §§ 2449 et seq. be used for the project? This includes, but is not limited to:
   a) Vehicles with a diesel-fueled or alternative diesel fueled off-road compression-ignition engine with maximum power (max hp) of 25 horsepower (hp) or greater provided that the vehicle cannot be registered and driven safely on-road or was not designed to be driven on-road, even if it has been modified so that it can be driven safely on-road
   b) Workover rigs
   c) Certain two-engine vehicles

   Yes ____ No X

2) If you answered "Yes" to 1), you **must** submit a valid Certificate of Reported Compliance to the City as provided in Cal. Code Regs., tit. 13, § 2449(n).

Advanced Clean Fleets Regulation

Pursuant to Cal. Code Regs., tit. 13, § 2013(i)(1), the Contractor shall submit to the City a document evidencing that it is listed on the CARB Advanced Clean Fleets webpage as a compliant fleet **OR** a signed statement stating that it is not subject to the High Priority and Federal Fleets regulation of title 13, CCR section 2015 through 2015.6.

The High Priority Fleets regulation applies to, without limitation, entities with more than $50 million in gross annual revenues and/or which own, operate, or direct the operation of 50 or more vehicles in the total fleet.

1) Is the Contractor subject to the High Priority and Federal Fleets regulation of title 13, CCR section 2015 through 2015.6?

   Yes ____ No X

2) If you answered "Yes" to 1), you **must** submit a document evidencing that you are listed on the CARB Advanced Clean Fleets webpage as a compliant fleet.

Signature: Signed by: Dave Broilakis BB4F1C8C69BD47A...

Title: President

CARB Compliance
Rev 2/15/24 MC

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Supplier

Signed by:
Signature: Dave Broihahn
BB4F1C8C69BD47A...

Print Name: Dave Broihahn

Title: President

Date: 3/13/2025

Supplier

Signed by:
Signature: Kevin McDonnell
6EBAD7E823C2409...

Print Name: Kevin McDonnell

Title: CFO

Date: 3/17/2025

City of Roseville, A Municipal Corporation

Signature: _____

Print Name: **Dominick Casey**

Title: **City Manager**

Date: _____

Docusign Envelope ID: CADFDF4A-67A3-4E1B-991A-E81ECCCF1C21

DocuSign Envelope ID: 4749B558-6FCA-43A5-91D4-B595639FE9FA

CITY OF ROSEVILLE CALIFORNIA

April, 2022

RE: Contractor and Grantee Compliance with Economic Sanctions Imposed in Response to Russia's Actions in Ukraine

Dear Vendor:

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (EO) regarding sanctions in response to Russian aggression in Ukraine. The EO is located at https://www.gov.ca.gov/wp-content/uploads/2022/03/3.4.22-Russia-Ukraine-Executive-Order.pdf.

The EO directs all agencies and departments that are subject to the Governor's authority to take certain immediate steps, including notifying all contractors and grantees of their obligations to comply with existing economic sanctions imposed by the U.S. government in response to Russia's actions in Ukraine, as well as any sanctions imposed under state law.

This correspondence serves as a notice under the EO that as a contractor or grantee, compliance with the economic sanctions imposed in response to Russia's actions in Ukraine is required, including with respect to, but not limited to, the federal executive orders identified in the EO and the sanctions identified on the U.S. Department of the Treasury website (https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-country-information/ukraine-russia-related-sanctions). Failure to comply may result in the termination of contracts or grants, as applicable.

Please note that for any agreements or grants valued at $5 million or more you must report to the City of Roseville your compliance with economic sanctions including steps you have taken in response to Russia's actions in Ukraine, including, but not limited to, desisting from making new investments in, or engaging in financial transactions with, Russian entities, not transferring technology to Russia or Russian entities, and directly providing support to the government and people of Ukraine.

Sincerely,

DocuSigned by:
Shannon Wiest
A3035660A19747F...

4/25/2022

Shannon Wiest
City of Roseville
Purchasing and Warehouse Manager

Docusign Envelope ID: CADFDF4A-67A3-4E1B-991A-E81ECCCF1C21

UNISON

Date: 03/03/2025
Expires: 04/01/2026
Attn: Audrey Ficker
Location: Roseville, CA 95747 - Pleasant Grove Plant

Proposal Number: PM-125.2059
Proposal Name: 319-Pleasant Grove_H2S Media

Dear Audrey,

Unison Solutions, Inc. is pleased to provide you with the following quote for H2S, media and foam pad for your biogas upgrading system at the Pleasant Grove plant.

Description	Quantity	Unit Cost	Total
H2S Removal Media			
Unison Part Number UNI-H2SK	44,000.00 lbs.	$ 1.45 /lb.	$ 63,800.00
Estimated Shipping	1.00	$ 2,100.00 each	$ 2,100.00
122" Diameter Foam Filter (for 10' diameter vessel)	2.00	$ 1,500.00 each	$ 3,000.00
Estimated Shipping	1.00	$ 750.00 each	$ 750.00

All costs noted above for shipping are estimates only. Actual cost of shipping will be determined at time of shipment.

Grand Total: $ 69,650.00

MEDIA: PRICING-SUMMARY

- Prices do not reflect any taxes that may be applicable and are valid until April 1, 2026.
- Price does not include the following: labor for unloading media from the truck, disposal of spent media or labor for loading new media into vessels.
- Estimated delivery upon order receipt is 7- 21 days depending on availability

PAYMENT SCHEDULE

- 100% upon order acceptance. Net 30 days on all payments.

Thank you for giving Unison Solutions the opportunity to propose our services. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,
Kim Murdock-Timmerman
Unison Solutions, Inc.
563-585-0967

Docusign Envelope ID: CADFDF4A-67A3-4E1B-991A-E81ECCCF1C21

UNISON

GAS TESTING PROPOSAL

March 5, 2025

Attn: Jim Cryan, City of Roseville

Proposal Number: GT-125.699
Project Name: Pleasant Grove WWTP

Thank you for your interest in our biogas testing services. Please note the following per your request.

GENERAL DESCRIPTION

Unison will provide the Gas Testing Kit:

- Instructions
- 1 L summa canister
- 3 pc. Compression fittings
- Flexible Tubing
- Chain of Custody Form

Lab analysis and results will be provided. Unison will also provide any phone support required.

Gas sampling instructions will be included in each kit. We ask that the gas sample be taken Monday-Thursday, and shipped FedEx-Ground to the address included with the sample kit. Lab analysis and results will be provided.

PRICING SUMMARY/SAMPLE

Compound Speciation - Siloxanes	$495.00	Standard Lead Time - 5 Business Days
VOCs Full Panel	$575.00	Standard Lead Time - 5 Business Days
Compound Speciation - Sulfur Components	$520.00	Standard Lead Time - 5 Business Days
Gas Testing Kit*	$150.00	Includes 1 week rental on canisters

*Includes shipping materials to site.

Pricing is valid through April 1, 2026

Thank you for giving Unison Solutions the opportunity to offer our services. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

Kim Murdock-Timmerman

Unison Solutions, Inc.

Docusign Envelope ID: CADFDF4A-67A3-4E1B-991A-E81ECCCF1C21

March 4, 2025

City of Roseville, Pleasant Grove WWTP
Attn: Audrey Ficker
Proposal Number: PM-424.2033.1

Dear Audrey,

Unison Solutions, Inc. is pleased to provide you with this proposal for media change out services for your siloxane vessels used on the Pleasant Grove biogas upgrading system. This proposal includes spent siloxane media removal, and new siloxane media installation only.

SILOXANE REMOVAL MEDIA CHANGE OUT SERVICES

Includes the following:

- Assumes no changes to current site conditions and good access to vessels
- Removal of spent siloxane media from all vessels, 4,950 lbs.
- Loading of new siloxane media, UNI-CC5V & UNI-CL3E
- Industrial grade nitrogen purge of vessels
- Transportation and disposal of spent siloxane media if non-hazardous, (Approximately 4,950 lbs.)
- Contractor license 842091, Exp. 7/3/26
- Based on 2 technicians working 1 day, no more than 6 hours on site.

PRICING SUMMARY

Included in pricing is transportation to/from site; (1) nitrogen purge, vacuum truck removal, new media filling, transportation, and disposal of spent media if non-hazardous.....**$ 14,**700**.00 /change**

New media must be at the site, ready for the change out services on scheduled dates. Terms – Net 30, Prices do not reflect any taxes that may be applicable and are valid until April 1, 2026.

Spent media testing .....$ 550.00/test, 2 required $ 1,100.00
Approximately 1 month prior to service, plant personnel will pull a spent media samples from siloxane vessels #1 and #2 and ship them for testing. Based on the testing results, a spent media profile will be done and suitability for recycling the media will be determined at that time. Note that spent media will not be removed from site without this profile being up to date. The spent product becomes the property of the recycling company. Note that regenerated media is not suitable for siloxane removal but can be used for applications such as odor control. Pulling and shipping a spent media sample to be completed by plant personnel.

I hope this information is helpful. Please feel free to contact me if you have any questions or concerns.

Sincerely,

Kim Murdock-Timmerman, Unison Solutions Inc.

5451 Chavenelle Road, Dubuque, Iowa 52002 ■ [O] 563.585.0967 [F] 563.585.0970 ■ www.unisonsolutions.com

Docusign Envelope ID: CADFDF4A-67A3-4E1B-991A-E81ECCCF1C21

March 4, 2025

City of Roseville, Pleasant Grove WWTP

Attn: Audrey Ficker

Proposal Number: PM-424.2032.1 - H2S Media Change Out

Dear Audrey,

Unison Solutions, Inc. is pleased to provide you with this proposal for media change out services for your (2) H2S vessels used on the Pleasant Grove biogas upgrading system. This proposal includes spent H2S media removal and new H2S media installation only. Disposal of spent media to be by others.

HYDROGEN SULFIDE REMOVAL MEDIA CHANGE OUT SERVICES

Includes the following:

- Assumes no changes to current site conditions and good access to vessels.
- Media and foam pads must be at the site, ready for the change out services on scheduled dates.
- H2S vessels must be vented and flooded at least 24 hours prior technicians arrival.
- An operator must be available to operate any valves.
- Spent H2S removal media to be left on site at customer specified location(s), ideally within 200 feet of vessels.
- Removal of spent H2S media from two vessels, 44,000 lbs total.
- Loading of new H2S removal media, UNI-H2S
- 42' Reach forklift
- Based on 4 technicians, on site no more than 3 days, 8 hours each.
- DIR #1000009862, expires 6/30/2025

PRICING SUMMARY

Included in pricing is transportation to/from site, vacuum truck removal, new media filling

.....**$ 43,000.00/change**

Terms – Net 30, Prices do not reflect any taxes that may be applicable and are valid until April 1, 2026.

I hope this information is helpful. Please feel free to contact me if you have any questions or concerns.

Sincerely,

Kim Murdock-Timmerman, Unison Solutions Inc.

Notice of Exemption

To: Placer County Clerk
Recorder's Office
2954 Richardson Drive
Auburn, CA 95603

From: City of Roseville
Development Services Dept.
311 Vernon Street
Roseville, CA 95678

Project Title: Replacement Filtering Media, Parts, and Services for the Maintenance of the Gas Conditioning Systems at the Dry Creek and Pleasant Grove Wastewater Treatment Plants – Contract Purchase Agreements

Project Location(s): 1800 Booth Road (APNs 474-080-009-000, 474-110-001-000, 474-110-002-000, 473-080-000-000, and 473-080-002-000) and 5051 Westpark Drive (APN 017-101-025-000, Roseville, CA 95747.

Project Description: Environmental Utilities (EU) staff requests approval and award of two (2) contract purchase agreements including four (4) additional one-year renewals with Union Solutions, Inc. provide replacement filtering media and parts, gas testing, and media change out and support services for the maintenance of the gas conditioning systems at the Dry Creek and Pleasant Grove Wastewater Treatment Plants (DCWWTP and PGWWTP). The gas conditioning systems at the WWTPs use filtering media for the removal of hydrogen sulfide and siloxane as part of the biogas treatment. The gas conditioning systems require the filtering media and certain parts to be periodically replaced to maintain filter compliance. The contract purchase agreements would include media change out services. These components and services are necessary for ongoing maintenance and operation at the WWTPs would not result in an expansion of use.

Public Agency Approving Project: Roseville City Council

Agency/Individual Carrying Out Project: City of Roseville Environmental Utilities Department

Reason why this Project is Exempt: The project qualifies for a Class 1 Categorical Exemption as described in Section 15301 of the California Environmental Quality Act (CEQA) guidelines which states:

> "Class 1 (Existing Facilities) consists of the operation… of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use.

The project consists of two contracts with Synagro to haul biosolids from the DCWWTP and PGWWTP. This is consistent with standard ongoing operation practices for wastewater treatment facilities and would not result in expansion of use. Consequently, the Class 1 Categorical Exemption applies.

Lead Agency Contact Person: Audrey Ficker, Roseville Department of Environmental Utilities (916-746-1865).

Signature: Jessica Lynch Date: 2/27/2024

Jessica Lynch, Environmental Coordinator
City of Roseville

COUNCIL COMMUNICATION

CC #: 3832
File #: 0203-07

Title: Distribution Transformers (RFQ 10-3385) - Purchase Orders
Contact: Sue Jessup 916-746-1107 sjessup@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.8.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution to approve open purchase orders with Anixter, Inc.; First Philec, Inc.; Hyundai Corporation USA; Mader Supply LLC, and Next Gen Power, Inc. as the lowest responsive and responsible bidders for the purchase of distribution transformers in response to Request for Quotations No. 10-3385.

The bid allowed for four optional renewal years at one-year intervals. Staff requests authorization to continue utilizing the remaining optional renewal years without further Council approval, provided that the applicable budget is approved by the City Council each year, until the contract expires, or until City staff determines that continuing with the same vendors is not in the City's best interest.

BACKGROUND

The Electric Department has a recurring requirement for distribution transformers. The purpose of a transformer is to convert power to a lower voltage to be used for new development construction and replacement of aged and failed equipment. A formal bid was issued where vendors were asked to provide pricing for 33 different transformers. The City received eight responses and, of those, five were deemed responsive after staff review.

Along with other electric utilities nationwide, Roseville Electric has been confronted with a shortage of electric utility transformers. Manufacturers are struggling to get the specialized raw materials, including “core” steel used in transformer production. The shortage is exacerbated by competition for that same steel from the auto industry and labor shortages. Given these procurement difficulties and the uncertainty of potential tariffs, Roseville Electric staff believes that it is in the City’s best interest to award a contract to each of the (5) responsive bidders to diversify orders as much as possible. There is no guarantee that the City will purchase transformers from any or all of the (5) responsive bidders. Staff is requesting that the individual contract awards allow Roseville Electric the ability to order all line items from any of the (5) responsive bidders based on the needs of the City at the time of the order. When placing orders for transformers, staff will make purchases from one or more of the responsive bidders based on objective factors such as price, lead time, past performance, current order quantities, and factory location or proximity to the City.

A formal bid was issued, and the vendor responses are listed on the attached bid summary sheet.

JST Power, JSHP Transformer, MVA Power, Inc., and Power Electronics were deemed non-responsive for not providing the requested information.

FISCAL IMPACT

The total spending authority for the initial contract period and optional renewal years through FY2028-29 is a not-to-exceed amount of $9,500,000.

Purchase of these materials are done on an as-needed basis; there are no set not-to-exceed amounts per fiscal year. Funding is included in the Electric Fund budget for FY2024-25. Future year funding will be included in proposed department budgets and will be contingent upon Council approval of budgets.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. The purchase of the distribution transformers meets the above criteria and is not subject to CEQA. No additional environmental review is required.

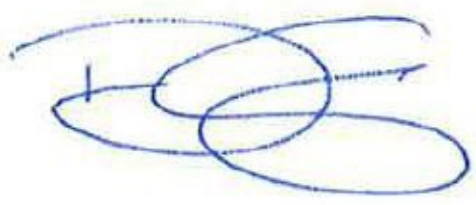
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Sue Jessup, Buyer

Scott Pettingell, Finance Director



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-090

RESOLUTION NO. 25-090

APPROVING PURCHASE ORDERS
FOR DISTRIBUTION TRANSFORMERS

WHEREAS, purchase order for distribution transformers, by and between the City of Roseville and Anixer, Inc., First Philec, Inc., Hyundai Corporation USA, Mader Supply LLC, and Next Gen Power, Inc., have been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said purchase orders are approved.

BE IT FURTHER RESOLVED, that the City Manager or his or her designee is authorized to execute four (4) additional one (1) year renewals without further City Council approval, provided that the applicable budget is approved by the City Council, or until staff determines that continuing with this consultant is not in the best interest of the City.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

COUNCIL COMMUNICATION

CC #: 3853
File #: 0203-08-01

Title:	2025/2026 Landscaping and Lighting Districts Assessments - Initiate Proceedings, Intent to Levy, Approval of Engineer's Reports
Contact:	Jeannine Thrash 916-774-5473 jthrash@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.9.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt the following resolutions:

1. Resolution of the City Council of the City of Roseville, California, Initiating Proceedings for the Annual Levy of Assessments for the Historic District Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Declaring Its Intention to Levy Annual Assessments for the Historic District Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Preliminary Approval of the Engineer's Annual Levy Report for the Historic District Landscaping and Lighting District for Fiscal Year 2025/2026.

2. Resolution of the City Council of the City of Roseville, California, Initiating Proceedings for the Annual Levy of Assessments for the Infill Area Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Declaring Its Intention to Levy Annual Assessments for the Infill Area Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Preliminary Approval of the Engineer's Annual Levy Report for the Infill Area Landscaping and Lighting District for Fiscal Year 2025/2026.

3. Resolution of the City Council of the City of Roseville, California, Initiating Proceedings for the Annual Levy of Assessments for the Johnson Ranch Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Declaring Its Intention to Levy

Annual Assessments for the Johnson Ranch Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Preliminary Approval of the Engineer's Annual Levy Report for the Johnson Ranch Landscaping and Lighting District for Fiscal Year 2025/2026.

4. Resolution of the City Council of the City of Roseville, California, Initiating Proceedings for the Annual Levy of Assessments for the North Central Roseville Specific Plan Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Declaring Its Intention to Levy Annual Assessments for the North Central Roseville Specific Plan Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Preliminary Approval of the Engineer's Annual Levy Report for the North Central Roseville Specific Plan Landscaping and Lighting District for Fiscal Year 2025/2026.

5. Resolution of the City Council of the City of Roseville, California, Initiating Proceedings for the Annual Levy of Assessments for the Northwest Roseville Specific Plan Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Declaring Its Intention to Levy Annual Assessments for the Northwest Roseville Specific Plan Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Preliminary Approval of the Engineer's Annual Levy Report for the Northwest Roseville Specific Plan Landscaping and Lighting District for Fiscal Year 2025/2026.

6. Resolution of the City Council of the City of Roseville, California, Initiating Proceedings for the Annual Levy of Assessments for the Olympus Pointe Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Declaring Its Intention to Levy Annual Assessments for the Olympus Pointe Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Preliminary Approval of the Engineer's Annual Levy Report for the Olympus Pointe Landscaping and Lighting District for Fiscal Year 2025/2026.

7. Resolution of the City Council of the City of Roseville, California, Initiating Proceedings for the Annual Levy of Assessments for the Riverside Avenue Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Declaring Its Intention to Levy Annual Assessments for Riverside Avenue Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Preliminary Approval of the Engineer's Annual Levy Report for the Riverside Avenue Landscaping and Lighting District for Fiscal Year 2025/2026.

8. Resolution of the City Council of the City of Roseville, California, Initiating Proceedings for the Annual Levy of Assessments for the Vernon Street Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Declaring Its Intention to Levy Annual Assessments for the Vernon Street Landscaping and Lighting District for Fiscal Year 2025/2026.

Resolution of the City Council of the City of Roseville, California, Preliminary Approval of the Engineer's Annual Levy Report for the Vernon Street Landscaping and Lighting District for Fiscal Year 2025/2026.
Staff also recommends that May 21, 2025 at 6 p.m. be set as the date and time to hold the public hearing.

Each Engineer's Report submitted for the Public Hearing will include an affidavit signed by the Engineer. The Engineer shall sign the affidavit for each following Council's preliminary approval of the Engineer's Reports.

BACKGROUND

The City of Roseville currently has eight active Landscaping and Lighting Districts (LLDs). These districts were formed within the City of Roseville to levy and collect assessments for maintenance of public improvements pursuant to the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code (the Act) Sections 22500, et seq., and Article XIII D of the California Constitution.

The Historic District Landscaping and Lighting District was formed in 2006 to levy and collect assessments for the maintenance and operation of improvements benefiting parcels within the District. The cost of maintaining the streetscape improvements is spread equally to the subject properties, based on their percentage of the total front footage of all affected parcels. The District is located in the Historic Old Town area in Downtown Roseville.

The Infill Area Landscaping and Lighting District was formed in 1995 to levy and collect assessments to maintain certain public improvements that benefit parcels within the District. The District is located in the Infill Plan area.

The Johnson Ranch Landscaping and Lighting District was formed in 1989 to levy and collect assessments for maintaining certain public landscape, open space, floodway and stream courses located within the Southeast Roseville Specific Plan area.

The North Central Roseville Specific Plan Landscaping and Lighting District was formed in 1990 to levy and collect assessments for the maintenance of certain public improvements within the North Central Roseville Specific Plan area. In 2004, the property owners in the District approved, through a mailed ballot, an assessment increase and the addition of an annual escalation factor.

This enables the City to keep up with increased costs associated with maintaining the landscaping at proper levels.

The Northwest Roseville Specific Plan Landscaping and Lighting District was formed in 1989 to levy and collect assessments for maintenance of certain public landscape medians and corridors, vernal pool preserves, bike trails, and park improvements. In 2004, the Dunmore Junction subdivision was annexed into the LLD as Zone A, and the Legacy subdivision was annexed into Zone B. In 2011, the property owners voted against an overlay LLD for the Northwest Specific Plan. In 2006 and, most recently, in 2021, the property owners voted against an assessment increase as well as the addition of an annual escalation factor.

The Olympus Pointe Landscaping and Lighting District was formed in 1989 to levy and collect assessments for the maintenance of certain public improvements within the Northeast Roseville Specific Plan Area. In 2005, the property owners in the District approved, through a mailed ballot, an assessment increase and an annual escalation factor. This enables the City to keep up with increased costs associated with maintaining the landscaping at proper levels.

The Riverside Avenue Landscaping and Lighting District was formed in 2007 to levy and collect assessments for the maintenance and operation of improvements benefiting parcels within the District. The cost of maintaining the streetscape improvements is spread equally among the subject properties based on their percentage of the total front footage of all affected parcels.

The Vernon Street Landscaping and Lighting District was formed in 2001 to levy and collect assessments for maintenance of improvements installed by the Vernon Streetscape. The cost of maintaining the streetscape improvements is spread equally to the subject properties on their percentage of the total front footage of all affected parcels.

Assessment Statistics

					Prior year
District	**Proposed FY 2025-26 Levy**	**Maximum Annual Assessment**	**Levied Parcels**	**% Change from FY 2024-25**	**FY 2024-25 Levy**
Historic District LLD	$44,812.42	$44,812.91	60	3%	$43,507.08
Infill Area LLD	$30,983.04	$44,132.80	222	25%	$24,794.92
Johnson Ranch LLD	$48,053.02	$55,957.72	1,044	-2%	$49,087.04
North Central LLD	$786,101.16	$818,932.07	3,507	4%	$758,970.68
Northwest LLD	$481,336.00	$481,336.00	4,752	0%	$481,336.00
Olympus Pointe LLD	$236,613.82	$468,374.76	826	8%	$219,329.08
Riverside Avenue LLD	$50,048.54	$50,049.17	76	2.38%	$48,885.16
Vernon Street LLD	$46,593.08	$46,593.66	60	2.39%	$45,505.40
Totals	**$1,724,541.08**	**$2,010,189.09**	**10,547**		

The Infill Area LLD assessment increases are due to higher project expenditures and lower use of operating reserves planned for FY 2025-26. The Olympus Pointe LLD assessment increases are due to higher project expenditures and utility costs in FY2025-26. Both of these district

assessments are well below the maximum annual assessment amounts.

FISCAL IMPACT

All charges are needed to fund landscape services in each LLD. There is no impact to the General Fund.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Adoption of these resolutions meets the above criteria and is not subject to CEQA. No additional environmental review is required.

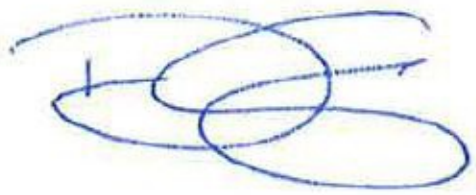
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Remain fiscally responsible in a changing world
Goal E - Deliver exceptional city services

Respectfully Submitted,

Jeannine Thrash, Management Analyst

Scott Pettingell, Finance Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-106

Resolution 25-107

Resolution 25-108

Historic District LLD-FY25-26 Engineer's Report

Resolution 25-109

Resolution 25-110

Resolution 25-111

Infill LLD-FY25-26 Engineer's Report

Resolution 25-112

Resolution 25-113

Resolution 25-114

Johnson Ranch LLD-FY25-26 Engineer's Report

Resolution 25-115

Resolution 25-116

Resolution 25-117

North Central LLD-FY25-26 Engineer's Report

Resolution 25-118

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Resolution 25-120

Northwest Specific Plan LLD-FY25-26 Engineer's Report

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Olympus Pointe LLD-FY25-26 Engineer's Report

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Resolution 25-125

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Riverside Avenue LLD-FY25-26 Engineer's Report

Resolution 25-127

Resolution 25-128

Resolution 25-129

Vernon Street LLD-FY25-26 Engineer's Report

RESOLUTION NO. 25-106

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, FOR FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Historic District Landscaping and Lighting District (hereafter referred to as the "District") pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California, beginning with Section 22500* (hereafter referred to as the "Act"), that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance and services of street lighting, landscaping, and all appurtenant facilities and operations related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer") for the purpose of assisting with the establishment of the assessments, the annexation of territory, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act, and in accordance with the California Constitution, Articles XIIIC and XIIID;

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 Engineer's Report: The City Council hereby orders the Engineer to prepare and file with the City Clerk the Engineer's Report concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22622* of the Act.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: maintenance and operation of and the furnishing of services, materials and/or improvements for landscape, lighting, streetscape and hardscape areas, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report describes all new improvements or substantial changes in existing improvements.

RESOLUTION NO. 25-106

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-107

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Historic District Landscaping and Lighting District (hereafter referred to as the "District"), and initiated proceedings for Fiscal Year 2025/2026, pursuant to the provisions of the *Landscaping and Lighting Act of 1972*, *Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereafter referred to as the "Act") that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance, operation and servicing of all improvements and facilities related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services for the purpose of assisting with the Annual Levy of the District, and to prepare and file a report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, PURSUANT TO *CHAPTER 3, SECTION 22624* OF THE ACT, AS FOLLOWS:

Section 1 Intention: The City Council hereby declares that it is its intention to seek the Annual Levy of the District pursuant to the Act, over and including the land within the District boundary, and to levy and collect assessments on all such land to pay for the annual costs of the improvements.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials or improvements for landscape, lighting, streetscape and hardscape areas, including fencing, walls, signage, monuments, ground cover, shrubs, plants, irrigation systems, drainage systems, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

Section 3 Boundaries and Designation: The boundaries of the District are described as the boundaries previously defined in the formation documents of the original District. The District is known and designated as:

"Historic District Landscaping and Lighting District"

Section 4 Proposed Assessment Amounts: The proposed assessments are outlined in the Engineer's Report. District Assessments are calculated in accordance with the method of apportionment established for the District and do not exceed the assessment rates and annual inflationary adjustment previously authorized by the City Council and approved by the property owners in accordance with the provisions of the California State Constitution, Article XIIID.

Section 5 Public Hearing(s): The City Council hereby declares its intention to conduct a Public Hearing annually concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22626* of the Act.

Section 6 Notice: The City Clerk shall give notice of the time and place of the Public Hearing by causing this Resolution to be published once in the local newspaper not less than ten (10) days before the date of the hearing and by posting a copy of this Resolution on the official bulletin board customarily used by the City Council for the posting of notices.

Section 7 Time and Place of Public Hearing: Notice is hereby given that a Public Hearing on these matters will be held by the City Council on **Wednesday, May 21, 2025 at 6:00 p.m.**, or as soon thereafter as feasible in the regular meeting chambers located at 311 Vernon Street, Roseville, California.

RESOLUTION NO. 25-107

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-108

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, the City Council has, by previous Resolutions, ordered the preparation of an Annual Levy Report (hereafter referred to as the "Engineer's Report") for the district known and designated as the Historic District Landscaping and Lighting District (hereafter referred to as the "District"), pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereinafter referred to as the "Act"); and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer"), for the purpose of assisting with the establishment of the assessments and to prepare and file an Engineer's Report with the City Clerk in accordance with the Act, and in accordance with the requirements of the California Constitution, Articles XIIIC and XIIID; and,

WHEREAS, there has now been presented to this City Council the Engineer's Report as required by *Chapter 1, Article 4, Section 22566* of said Act; and,

WHEREAS, this City Council has carefully examined and reviewed the Engineer's Report as presented, and is preliminarily satisfied with the District, each and all of the budget items and documents as set forth therein, and is satisfied that the assessments, on a preliminary basis, have been spread in accordance with the benefits received from the improvements, operation, maintenance and services to be performed within the District, as set forth in said Engineer's Report; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 That the above recitals are all true and correct.

Section 2 That the Engineer's Report, as presented, consists of the following:

a. A Description of Improvements
b. The Annual Budget (Costs and Expenses of Maintenance, Services, Operations and District Administration)
c. The Assessment Roll containing the Fiscal Year 2025/2026 Levy for each Assessor Parcel within the District

Section 3 The Engineer's Report is hereby approved on a preliminary basis and ordered to be filed in the Office of the City Clerk as a permanent record and to remain open to public inspection.

Section 4 That the City Clerk shall certify to the passage and adoption of this Resolution, and the minutes of this meeting shall so reflect the presentation of the Engineer's Report.

RESOLUTION NO. 25-108

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said Council held on the _____ day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

City of Roseville

Historic District Landscaping and Lighting District

FY 2025/26 Engineer's Annual Levy Report

Intent Meeting: April 16, 2025
Public Hearing: May 21, 2025

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ENGINEER'S REPORT AFFIDAVIT

Establishment of Annual Rates and Charges for the:

Historic District
Landscaping and Lighting District

City of Roseville

Placer County, State of California

This Report describes the District and any relevant zones therein, including the improvements, budgets, parcels and assessments to be levied for Fiscal Year 2025/26 as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Placer County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the City Council.

Dated this _____ day of _____, 2025

Willdan Financial Services
Assessment Engineer
On Behalf of the City of Roseville

By: _____

Mickey Ashley
Project Manager
District Administration Services

By: _____

Tyrone Peter
PE # C 81888

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I. OVERVIEW

A. INTRODUCTION

The City of Roseville ("City") annually levies and collects special assessments in order to maintain the improvements within the Historic District Landscaping and Lighting District ("District"). The District was formed on April 5, 2006 and is levied annual assessments pursuant to the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code ("1972 Act").

The Engineer's Report ("Report") describes the District, any new annexations, changes to the District, and the proposed assessments for the period of July 1, 2025 through June 30, 2026. The special benefit assessments are based on historical and estimated costs to maintain the District improvements. These assessments, which provide a direct and special benefit to properties within the District, will provide funding for the operation and maintenance of District improvements.

The word "parcel," for the purposes of this Report, refers to an individual property assigned its own Assessor's Parcel Number ("APN") by the Placer County Assessor's Office. The Placer County Auditor/Controller uses Assessor's Parcel Numbers and specific Tax Code Accounts, to identify on the County's tax roll, properties assessed for special district benefit assessments.

Following approval of the Report, the City Council will by resolution order the improvements to be made and confirm the levy and collection of assessments herein pursuant to the 1972 Act. The assessment rates and method of apportionment described in this Report as approved or modified by the City Council define the assessments to be applied to each parcel within the District for Fiscal Year ("FY") 2025/26. The assessments as approved will be submitted to the Placer County Auditor/Controller to be included on the property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the Current Fiscal Year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved by the City Council.

B. COMPLIANCE WITH THE CURRENT LEGISLATION

The City Council, pursuant to the provisions of the "Landscaping and Lighting Act of 1972", being Division 15, Part 2 of the Streets and Highways Code of the State of California, beginning with Section 22500 (the "1972 Act"); Article XIIID of the Constitution of the State of California ("Article XIIID"); and the Proposition 218 Omnibus Implementation Act, beginning with Government Code Section 53750 (the "Implementation Act") (the 1972 Act, Article XIIID and the Implementation Act are referred to collectively as the "Assessment Law") initiated proceedings for the formation of the District on February 15, 2006 and to levy and collect annual assessments against lots and parcels within the District for FY 2006/07. On April 5, 2006, pursuant to Assessment Law, the City conducted a Public Hearing and tabulated the returned ballots. The City determined that a majority protest did not exist and approved the District's maximum assessment rate and annual inflationary adjustment factor.

Pursuant to the 1972 Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments, to review the Engineer's Annual Levy Report prior to approving the annual assessments to be levied on the County tax rolls. The assessments described in this Report have been prepared in accordance with the 1972 Act and Assessment Law.

C. DESCRIPTION OF DISTRICT BOUNDARIES

The territory within the District consists of all lots, parcels and subdivisions of land as shown on the Boundary Map titled "Boundary Map of Historic District Landscaping and Lighting District" as referenced in Appendix A-1 of this Report.

The District is located within the City's Historic Old Town, west of Highway 80, south of Pleasant Street, north and east of Washington Boulevard, and north and west of the Union Pacific Railroad. The District consists of mostly commercial parcels in a concentrated area of the Downtown primarily fronting the following streets: Church Street northeast of Washington Boulevard, Main Street between Washington Boulevard and Lincoln Street, Pacific Street and Lincoln Street where the improvements end approximately one block south of Pleasant Street.

D. IMPROVEMENTS AUTHORIZED BY THE 1972 ACT

As applicable or may be applicable to a proposed District, the 1972 Act defines improvements to mean one or any combination of the following:

- The installation or planting of landscaping.
- The installation or construction of statuary, fountains, and other ornamental structures and facilities.
- The installation or construction of public lighting facilities.
- The installation or construction of any facilities which are appurtenant to any of the foregoing or which are necessary or convenient for the maintenance or servicing thereof, including, but not limited to, grading, clearing, removal

of debris, the installation or construction of curbs, gutters, walls, sidewalks, or paving, or water, irrigation, drainage, or electrical facilities.

- The maintenance or servicing, or both, of any of the foregoing.
- The acquisition of any existing improvement otherwise authorized pursuant to this section.

Incidental expenses associated with the improvements including, but not limited to:

The cost of preparation of the report, including plans, specifications, estimates, diagram, and assessment;

- The costs of printing, advertising, and the publishing, posting, and mailing of notices;
- Compensation payable to the County for collection of assessments;
- Compensation of any engineer or attorney employed to render services;
- Any other expenses incidental to the construction, installation, or maintenance and servicing of the improvements;
- Any expenses incidental to the issuance of bonds or notes pursuant to Section 22662.5.
- Costs associated with any elections held for the approval of a new or increased assessment.

The 1972 Act defines "Maintain" or "maintenance" to mean furnishing of services and materials for the ordinary and usual maintenance, operation, and servicing of any improvement, including:

- Repair, removal, or replacement of all or any part of any improvement.
- Providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury.
- The removal of trimmings, rubbish, debris, and other solid waste.
- The cleaning, sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Furthermore, the 1972 Act specifies that where the cost of improvements (other than maintenance and operations) is greater than can be conveniently raised from a single annual assessment, an assessment to be levied and collected in annual installments. In that event, the governing body may choose to do any of the following:

- Provide for the accumulation of the moneys in an improvement fund until there are sufficient moneys to pay all or part of the cost of the improvements.
- Provide for a temporary advance to the improvement fund from any available and unencumbered funds of the local agency to pay all or part of

the cost of the improvements and collect those advanced moneys from the annual installments collected through the assessments.

- Borrow an amount necessary to finance the estimated cost of the proposed improvements. The amount borrowed, including amounts for bonds issued to finance the estimated cost of the proposed improvements.

E. DESCRIPTION OF THE IMPROVEMENTS AND MAINTENANCE

The District, through the levy of special assessments, provides funding for ongoing maintenance, operation and servicing of landscaping and lighting improvements located within the public rights-of-ways and dedicated easements located within the District. These improvements may include, but are not limited to, all materials, equipment, utilities, labor, and appurtenant facilities related to the ongoing maintenance of the improvements. Maintenance services will be provided by City personnel and/or private contractors. The proposed improvements to be maintained and services are generally described as follows:

Landscaping Improvements

The landscaping improvements have been designed to enhance the area within the District and may include, but are not limited to ground cover, shrubs and plants, trees, irrigation and drainage systems, trash receptacles, ornamental lighting, masonry walls or other fencing, hardscape improvements, monuments and landmarks, recreational facilities and associated appurtenances located within the street rights-of-way and public areas within the District. Specifically, the proposed landscape improvement areas for this District are:

- Parkway landscaping and hardscape improvements within the public right of ways of the streets within the district including, but not limited to, Lincoln Street, Main Street, Church Street, Pacific Street, and the northeast side of Washington Boulevard estimated at 14,450 square feet of landscaping;
- Various amenities associated with the landscape improvements and public areas within the District, including, but not limited to, trash receptacles, street furniture, bike racks, entry signs, sidewalks, fencing, and retaining walls.

Specifically, not included as District improvements are those improvements located on private property, improvements and facilities that are outside the boundaries of the District and/or are funded by other sources available to the City, including those portions of the median and parkway landscaping on Washington Boulevard (southwest side of the street) that are outside the District boundaries.

Public Lighting Improvements

The lighting improvements may include, but are not limited to, the cost of providing, maintaining, and servicing of lighting fixtures, poles, meters, conduits, electrical cable, and associated appurtenant facilities associated with:

- Lighting facilities within the landscaped areas and public areas including safety lights, security lights or ornamental lights installed as part of the District improvements; and
- Public street light improvements located on the streets within the District.

Specifically excluded from the assessment are the street light energy costs. These costs will continue to be paid for by the City from other revenue sources.

Detailed maps of the locations and descriptions of the specific improvements to be maintained by the District are on file in the Office of Public Works and by reference are made part of this Report.

Description of Maintenance and Services

Maintenance means the furnishing of services and materials for the ordinary and usual maintenance, operation and servicing of landscaping and street lighting improvements facilities and appurtenant facilities, including repair, removal or replacement of all or part of any of the landscaping and street lighting improvements, or appurtenant facilities; providing for the life, growth, health and beauty of landscaping improvements including cultivation, irrigation, trimming, mowing, spraying, fertilizing and treating for disease or injury; the removal of trimmings, rubbish, debris and other solid waste; and the cleaning sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Servicing means the furnishing of water and electricity for the irrigation of the landscape improvements or appurtenant facilities and the furnishing of electric current or energy for the operation of the landscaping improvements or appurtenant facilities. The street lighting improvements shall be maintained to provide adequate illumination; however, the City will be paying the actual energy costs to provide illumination.

II. METHOD OF APPORTIONMENT

A. GENERAL

The 1972 Act permits the establishment of assessment districts by agencies for the purpose of providing certain public improvements which include the construction, maintenance and servicing of public lights, landscaping, and appurtenant facilities. The 1972 Act further requires that the cost of these improvements be levied according to benefit rather than assessed value:

> *"The net amount to be assessed upon lands within an assessment district may be apportioned by any formula or method which fairly distributes the net amount among all assessable lots or parcels in proportion to the estimated benefits to be received by each such lot or parcel from the improvements."*

The formula used for calculating assessments in the District therefore reflects the composition of the parcels, and the Improvements and services provided, to fairly apportion the costs based on estimated benefit to each parcel.

B. BENEFIT ANALYSIS

In conjunction with the provisions of the 1972 Act, the California Constitution Article XIIID addresses several key criteria for the levy of assessments, notably:

Article XIIID Section 2d defines District as follows:

"District means an area determined by an agency to contain all parcels which will receive a special benefit from a proposed public improvement or property-related service";

Article XIIID Section 2i defines Special Benefit as follows:

"Special benefit" means a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large. General enhancement of property value does not constitute "special benefit."

Article XIIID Section 4a defines proportional special benefit assessments as follows:

"An agency which proposes to levy an assessment shall identify all parcels which will have a special benefit conferred upon them and upon which an assessment will be imposed. The proportionate special benefit derived by each identified parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. No assessment shall be

imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."

This District was formed to establish and provide for the improvements that enhance the presentation of the surrounding properties and developments. These improvements will directly benefit the parcels to be assessed within the District. The assessments and method of apportionment is based on the premise that the assessments will be used to construct and install landscape and lighting improvements within the District as well as provide for the annual maintenance of those improvements, and the assessment revenues generated by District will be used solely for such purposes.

The costs of the proposed improvements have been identified and allocated to properties within the District based on special benefit. The improvements to be provided by this District and for which properties will be assessed have been identified as an essential component and local amenity that provides a direct reflection and extension of the properties within the District which the property owners and residents have expressed a high level of support.

The method of apportionment (method of assessment) set forth in the Report is based on the premise that each assessed property receives special benefits from the landscape and lighting improvements within the District, and the assessment obligation for each parcel reflects that parcel's proportional special benefits as compared to other properties that receive special benefits.

To identify and determine the proportional special benefit to each parcel within the District, it is necessary to consider the entire scope of the improvements provided as well as the properties that benefit from those improvements. The improvements and the associated costs described in this Report, have been carefully reviewed and have been identified and allocated based on a benefit rationale and calculations that proportionally allocate the net cost of only those improvements determined to be of special benefit to properties within the District. The various public improvements and the associated costs have been identified as either "general benefit" (not assessed) or "special benefit".

The City initiated and conducted property owner protest ballot proceedings in accordance with Article XIIID. Each of the proposed Improvements, the associated costs and assessments were identified and allocated based on special benefit pursuant to the provisions of Article XIIID and 1972 Act. Additionally, the Improvements and the annual costs of ensuring the maintenance and operation of the Improvements are of direct and special benefit to the properties.

The City annually levies and collects special benefit assessments in order to maintain and service the District Improvements. The District provides for specific Improvements and services that include the maintenance and operation of landscaping and lighting Improvements and associated appurtenances located within the District's public rights-of-way and dedicated easements. The annual

assessment is based on the historical and estimated costs to maintain the Improvements that provide a benefit to properties within these Districts. The Improvements within the District and the costs of those Improvements are identified and budgeted separately, including all expenditures, deficits, surpluses, revenues, and reserves.

All Improvements within the District and the properties associated with those Improvements were reviewed for benefit prior to the formation of the District. Because the Improvements affront the benefited parcels, it has been determined that there is no measurable general benefit to properties outside the District or to the public at large. In making this determination it should be noted that similar improvements within California are typically maintained by individual property owners, through some type of association or a special district as allowed by State Law since the on-going maintenance of these improvements are a special benefit to the properties associated with those improvements.

The method of apportionment (method of assessment) for the District is based on the premise that each of the assessed parcels within the District receives special benefit from the Improvements maintained and financed by District assessments. The presence of these Improvements and the close proximity of the Improvements to the properties within the District enhance the desirability and security of properties within the District.

The landscape Improvements provided by the District may include landscaped parkways, perimeters, entryways, local medians, slopes, internal amenities and appurtenant facilities. Street lighting Improvements may include all energy costs and necessary maintenance to the facilities related thereto. The annual assessments outlined in this Report are proposed to cover the estimated costs to provide all necessary service, operation, administration, and maintenance required to keep these Improvements in a healthy, vigorous, and satisfactory condition. The special benefits associated with the local landscaping Improvements are specifically:

The special benefits associated with all landscaping Improvements are specifically:

- Enhanced desirability of properties through association with the Improvements.
- Improved aesthetic appeal of properties providing a positive representation of the area and properties.
- Enhanced adaptation of the urban environment within the natural environment from adequate landscaping.
- Environmental enhancement through improved dust and debris control, and fire prevention.
- Increased sense of pride in ownership of property within the District resulting from well-maintained Improvements associated with the properties.

- Enhanced quality of life through well-maintained landscaped areas.
- Reduced criminal activity and property-related crimes (especially vandalism) against properties in the District through well-maintained surroundings and amenities including abatement of graffiti.
- Enhanced environmental quality of the parcels by moderating temperatures, providing oxygenation and attenuating noise.

The special benefits of street lighting are the convenience, safety, and security of property, improvements, and goods. Specifically:

- Enhanced deterrence of crime and the aid to police protection.
- Increased nighttime safety on streets and roads within the Districts.
- Improved ability of pedestrians and motorists to see.
- Improved ingress and egress to property.
- Reduced vandalism and other criminal acts and damage to Improvements or property.
- Improved traffic circulation and reduced nighttime accidents and personal property loss.
- Increased promotion of business during nighttime hours in the case of commercial properties.

All of the preceding special benefits contribute to a specific enhancement and desirability of each of the assessed parcels within the District.

C. DESCRIPTION OF THE METHOD OF APPORTIONMENT

To establish the special benefit to the individual parcels within the District a formula that spreads the costs of the maintenance based on the special benefit must be established. The improvements have been reviewed and the following formula has been established to apportion the maintenance costs based on benefit.

For purposes of the Assessment Methodology, the terms hereinafter set forth have been the following meanings:

Acreage means the land area of an Assessor's Parcel as shown on an Assessor's Parcel map-, or if the land area is not shown on an Assessor's parcel map, the land area shown on the applicable final map, parcel map, condominium plan, record of survey or other recorded document creating and describing such area of land.

Multi-Family Residential means a residence for which building permits have been issued for attached residential units for rental purposes.

Single-Family Residential Unit means a single residential home. This land use includes detached or attached for sale units intended for single-family occupancy.

Commercial means property being used or zoned for either commercial or industrial use.

Three components were used in the methodology to determine each parcels assessment; 1) Front footage of parcels along the proposed street improvements; 2) acreage of benefiting parcels; and 3) Current land use of parcels. Based on these three components the assessments were determined as follows:

First, the parcels Front Footage was determined based on Assessor's Parcel maps or other sources. Only Front footage on streets that will be improved was used. For parcels with Front Footage on more than one side (corner lots), the total Front Footage was divided by two to provide an average Front Footage. It was determined that twenty percent (20%) of the total budget was reasonably attributed to Front Footage; therefore twenty percent (20%) of the budget was spread to Front Footage.

Second, each parcel's Acreage was calculated based on Assessors Parcels map. It was determined that eighty percent (80%) of the budget was reasonably attributed to Acreage; therefore eighty (80%) of the budget was spread on Acreage. In the event that common area parcels are created subsequent to the formation of the District, the acreage of any such common area parcels shall be apportioned to the remaining assessable parcels of the subdivision and/or parcel split(s) related to the creation of the common area parcel(s).

Third, the current land use of the parcel was determined using the County's secured roll. Parcels currently used as a Single-Family Residence or Multi-Family Residences were determined to receive twenty-five (25%) of the benefit in relation to commercial parcels. Additionally, it was determined that single Family Residential Parcels benefit equally from the improvements, therefore the total assessment calculated based on the formula was averaged between the five Single Family Residential parcels to determine a Single-Family Residential rate per Unit.

The base year maximum assessment rates approved to be levied in FY 2006/07 are provided in the table below.

Base Year (FY 2006/07) Maximum Assessment Rates			
Land Use	Front Footage	Acreage Rate	Flat Rate
Commercial	$1.99 per Front Foot	$2,582.41 per Acre	N/A
Multi-Family Residential	$0.50 per Front Foot	$645.60 per Acre	N/A
Single-Family Residential	N/A	N/A	$132.00 per Unit

The following formula is used to calculate each parcel's assessment (proportional benefit) for those parcels that are not Single-Family Residential parcels.

Front Footage Rate x Parcel's Adjusted Front Footage = Parcel Front Footage Levy

Acreage Rate x Parcel's Adjusted Acreage = Parcel Acreage Levy

Proposed Levy per Parcel = Parcel Front Footage Levy + Parcel Acreage Levy

The Assessment Range Formula shall be applied to all future assessments within the District beginning in fiscal year 2007/08. Generally, if the proposed annual assessment for the current fiscal year is less than or equal to the calculated Maximum Assessment, then the Assessment is equal to the initial Assessment (approved by property owners within the District) adjusted annually by three percent (3%).

Beginning in the second fiscal year (Fiscal Year 2007/08) and each fiscal year thereafter, the Maximum Assessment would be recalculated, and a new Maximum Assessment established within the District.

The Maximum Assessment is adjusted annually and is calculated independent of the District's annual budget and proposed annual assessment. Any proposed annual assessment is not considered an increased assessment, even if the proposed assessment is greater than the assessment applied in the prior fiscal year.

Although the Maximum Assessment will increase each year, the actual assessment may remain unchanged. The Maximum Assessment adjustment is designed to establish a reasonable limit on assessments. The Maximum Assessment calculated each year does not require or facilitate an increase to the annual assessment and neither does it restrict assessments to the adjustment maximum amount. If the budget and assessment for the fiscal year do not require an increase, or the increase is less than the adjusted Maximum Assessment, the required budget and assessment may be applied without additional property owner balloting. If the budget and assessments calculated requires an increase greater than the adjusted Maximum Assessment, then the assessment is considered an increased assessment and would be subject to balloting.

D. ANNUAL INFLATIONARY ADJUSTMENT

If the proposed assessment rates increase over the prior fiscal year's maximum assessment rates by a percentage no greater than the 3%, then the proposed assessment rates are not considered an increase.

III. DISTRICT BUDGET

A. FY 2025/26 BUDGET

DESCRIPTION	AMOUNT (FUND 2021)
DIRECT COSTS	
Contract Maintenance - Landscaping	$13,452.00
Repair & Maintenance - Landscaping	7,800.00
Repair & Maintenance - Lighting	1,500.00
Repair and Maintenance - Streetscape and Signage	
Repair and Maintenance - Tree Work	2,128.00
Utilities	12,600.00
Rehab Reserve Expenditures - Non-Routine Tree Work	2,553.00
Rehab Reserve Project Expenditures	7,400.00
Total Direct Costs	**$47,433.00**
ADMINISTRATION COSTS	
City Administration	$844.00
Contract Administration - Park's Dept	2,200.00
County Auditor Fees	448.13
Consulting & Professional Services	4,249.00
Public Hearing Publishing Costs	376.00
Total Administrative Costs	**$8,117.13**
Total Direct and Administration Costs	**$55,550.13**
BUDGET ADJUSTMENTS	
Replenishment/(Use) of Operating Reserve	($784.22)
Contribution for /(Use of) Rehab Reserve	(9,953.00)
Rounding Adjustment	(0.49)
Total Adjustments	**($10,737.71)**
BALANCE TO LEVY	**$44,812.42**

Fund balance information is reported in Section C on the following page.

B. FY 2025/26 ASSESSMENT RATES

DESCRIPTION	AMOUNT (FUND 2021)
FY 2025/26 ASSESSMENT DATA	
Number of Assessable Parcels	60
Total Front Footage - Commercial	2,283.19
Total Front Footage - MFR	691.68
Total Assessable Acreage - Commercial	6.3090
Total Assessable Acreage - MFR	2.4819
Total Single Family Residences	21
Applied Assessment Rate per Front Foot - Commercial	$3.4895
Applied Assessment Rate per Front Foot - MFR	$0.8768
Applied Assessment Rate per Acre - Commercial	$4,528.2716
Applied Assessment Rate per Acre - MFR	$1,132.0635
Applied Assessment Rate per SF Residence	$231.4628
Maximum Assessment Rate per Front Foot - Commercial	$3.4895
Maximum Assessment Rate per Front Foot - MFR	$0.8768
Maximum Assessment Rate per Acre - Commercial	$4,528.2716
Maximum Assessment Rate per Acre - MFR	$1,132.0635
Maximum Assessment Rate per SF Residence	$231.4628
Potential Maximum Assessment	**$44,812.91**

C. FY 2025/26 FUND BALANCE INFORMATION

DESCRIPTION	AMOUNT (FUND 2021)
OPERATING RESERVE	
Beginning Operating Reserve Balance 7-1-2025 (est.)	**$26,819.50**
add: Replenishment from FY 2025/26 Levy	
less: Use for FY 2025/26 Expenses	(784.22)
Transfer from/(to) the Rehab Reserve	(2,318.78)
Ending Operating Reserve Balance 6-30-2026 (est.)	**$23,716.50**
REHABILITATION RESERVE	
Beginning Rehab Reserve Balance 7-1-2025 (est.)	**$62,555.50**
add: Collect from FY 2025/26 Levy	
less: Use for FY 2025/26 Rehab Projects	(9,953.00)
Transfer from/(to) the Operating Reserve	2,318.78
Ending Rehab Reserve Balance 6-30-2026 (est.)	**$54,921.28**

D. DESCRIPTION OF BUDGET ITEMS

Description of the terms used in the preceding Budget, Assessment Rates and Fund Balance tables are listed below:

BUDGET:

DIRECT COSTS

Contract Maintenance - Landscaping - Includes all regularly scheduled contract labor, required to properly maintain and ensure the satisfactory condition of all landscaping, irrigation and drainage systems and appurtenant facilities.

Repair and Maintenance - Landscaping - This item includes landscape improvement repair and maintenance costs that are generally unforeseen and not normally included in the annual maintenance contract costs. This may include repair of damaged amenities due to vandalism, storms, etc. Planned replacements or upgrades that provide a direct benefit to the District during the Current Fiscal Year may also be included. Costs could include the renovation of improvements such as irrigation systems.

Repair and Maintenance - Lighting - This item includes lighting improvement repair and maintenance costs. This may include repair of damaged amenities due to vandalism, storms, etc. Planned replacements or upgrades that provide a direct benefit to the District during the Current Fiscal Year may also be included.

Repair and Maintenance - **Streetscape and Signage** - This item includes repair and maintenance costs of streetscape and sign improvements. Streetscape improvements include street furniture, sidewalks, curbs, gutters, parking stripes, brick pavers, benches, bike racks, and trash receptacles. This may include repair of damaged amenities due to vandalism, storms, etc. May include planned replacements or upgrades not listed below that provide a direct benefit to the District.

Repair & Maintenance – Tree Work - This line item includes annual costs for tree maintenance not included in the annual contract maintenance portion of the budget. If zero, this line item may not be shown in the budget.

Utilities - The furnishing of water and electricity required for the operation and maintenance of the improvements.

Rehab Reserve Expenditures - Non-Routine Tree Work – Expected costs to maintain trees other than costs of annual repair and maintenance. If zero, this line item may not be shown in the budget.

Rehab Reserve Project Expenditures – Expected costs for installation, replacement or planned upgrades of District improvements for the current year that

were previously funded or accumulated in the Rehabilitation Reserve. The Rehabilitation Reserve is used to accumulate funds for costs associated with the future rehabilitation or replacement of District improvements that cannot be conveniently raised from a single year's assessment. If zero, this line item may not be shown in the budget.

ADMINISTRATION COSTS

City Administration – Estimated costs incurred by the City Finance Department and other Departments in preparing the annual budget for the Engineer's Report, together with other financial information required to determine the annual assessment. These costs would also include the preparation, posting and publishing of public notices required for City Council action relating to the District, as well as the costs to perform legal review of documents.

Contract Administration – Park's Dept – Estimated Costs of Park and Recreation Department staff to coordinate and oversee the maintenance contracts and overall repair and maintenance of the District. This amount also includes the cost of the Department's estimates and analysis of certain budget items, estimated costs and useful lives of certain District Improvements.

County Auditor Fees - A fee of 1% of the total levy amount that is charged to the District by the County for placing assessments on property tax bills.

Consulting and Professional Services – Includes the costs and expenses of contracting with various professionals to provide legal, engineering and district administration services directly related to the District, including the calculation of the annual assessment amounts, the preparation of the Engineer's' Report.

Public Hearing Publishing Costs –Includes the out of pocket costs to publish public notices required for City Council action relating to the District.

Total Direct and Administration Costs – The total expected costs of the District.

BUDGET ADJUSTMENTS

Replenishment/(Use) of Operating Reserve – A "Replenishment" increases the levy in order to replenish the Operating Reserve. On the other hand, a "Use" of the Operating Reserve decreases the levy by drawing funds from the Operating Reserve for current year expenditures. If zero, this line item may not be shown in the budget. Further information regarding the function of the Operating Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Contribution for / (Use of) Rehab Reserve — A "Contribution" increases the levy in order to generate funding for the Rehabilitation Reserve. This reserve allows for the accumulation of funds for possible rehabilitation projects or replacements in future years. On the other hand, a "Use of" of the Rehabilitation Reserve provides current year funding of rehabilitation projects or replacements from available funds within the Rehabilitation Reserve. If zero, this line item may not be shown in the budget. Further information regarding the function of the Rehabilitation Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Rounding Adjustment – The necessary rounding adjustment(s) due to limitations of the County property tax system that requires even penny levy amounts to be placed on the secured tax roll.

BALANCE TO LEVY - This is the total amount to be levied and collected through assessments for the current fiscal year for each zone. The Balance to Levy represents the sum of the total District costs together with any applicable adjustments to the budget as described above.

ASSESSMENT RATES:

Number of Assessable Parcels - The total number of parcels that are expected to be assessed. Non-assessable lots or parcels include government-owned land, public utility-owned property, land principally encumbered by public rights-of-way or easements, common areas, and/or parcels within the boundaries of the District currently do not benefit from the improvements and are therefore not assessed.

Total Assessable Front Footage – the total number of Front Feet within the District, adjusted for corner parcels, Multi-Family Residential and Single-Family Residential Parcels will be assessed as calculated in accordance with the methodology set out in Section C of this Report.

Total Assessable Acreage – the total Acreage within the District, adjusted for Multi-Family Residential and Single-Family Residential Parcels that will be assessed as calculated in accordance with the methodology set out in Section C of this Report.

Total Single-Family Residential Parcels – the total number of parcels currently being used as Single-Family Residences.

Applied Assessment Rates – The applied assessment rates for each of the District's land use types.

Maximum Assessment Rates per Front Foot – The maximum dollar amount that can be assessed per Adjusted Front Foot for the District's land use type for the current fiscal year.

Maximum Assessment Rates per Acre – The maximum dollar amount that can be assessed per Adjusted Acreage Foot for the District's land use type for the current fiscal year.

Maximum Assessment Rate per SF Residential Unit – The maximum dollar amount that can be assessed per Single Family Unit within the District for the current fiscal year.

Potential Maximum Assessment – The total amount that is expected to be assessed against all parcels within the District for the Current Fiscal Year.

FUND BALANCE INFORMATION:

OPERATING RESERVE

Beginning Operating Reserve Balance 7-1-2025 (est.) - The anticipated beginning balance of cash and receivables net of any unpaid prior year obligations for each Zone. These beginning balances shall be used to fund each Zone's expenditures from July 1, 2025 to December 31, 2025, as the Operating Reserve is required to compensate for the approximate six-month delay between the start of the District's fiscal year and the receipt of the collections from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

Replenish from FY 2025/26 Levy – This amount is added to the FY 2025/26 levy in order to replenish the Operating Reserve. Due to the six-month delay from the District's receipt of assessment collections, the Operating Reserve balance shall be sufficiently funded to provide for expenditures from the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Expenses – The amount of the Operating Reserve to be used to fund FY 2025/26 expenses. Portions of the Operating Reserve may be slated for current year expenditures in order to reduce the Ending Operating Reserve Balance to an amount no greater than the expected District costs for the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Rehab Reserve — The amount of Operating Reserve monies to be transferred to or from the Rehabilitation Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department or

equivalent, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Operating Reserve Balance 6-30-2026 (est.) - This amount represents the anticipated Operating Reserve balance/(deficit) for each Zone as of June 30, 2026. The size of each Zone's Operating Reserve is limited by Streets and Highways Code 22569 which states that an Operating Reserve shall not exceed the estimated costs of maintenance, service and incidental expenses from the first day of the fiscal year (July 1) to the date that the Agency expects to receive the first apportionment of collections from the County, which is estimated to be December 31. Therefore, each Zone may retain an Operating Reserve amounting to the District's first six-months of expenses in order to meet ongoing obligations until the first collections are received from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

REHABILITATION RESERVE

Beginning Rehab Reserve Balance 7-1-2025 (est.) — The projected balance of funds in the Rehabilitation Reserve as of July 1, 2025. Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

Collect from FY 2025/26 Levy — This amount is added to the FY 2025/26 levy to accumulate funding of future year rehabilitation projects, replacements, restorations or upgrades of District improvements. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Rehab Projects – The amount of Rehabilitation Reserve monies expected to be transferred out of the Rehabilitation Reserve to fund the costs of installation, replacement or planned upgrades of District improvements for the current year. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Operating Reserve — The amount of Rehabilitation Reserve monies to be transferred to or from the Operating Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Rehab Reserve Balance 6-30-2026 (est.) - The projected balance of funds in the Rehabilitation Reserve as of June 30, 2026. These funds shall be used to provide for future year rehabilitation projects, replacements, restorations or

upgrades of District improvements which cannot be conveniently raised from a single year's assessment.

Should the District have no Rehabilitation Reserve balances or related activity, no Rehabilitation Reserve information shall be presented in the Report.

E. REHABILITATION RESERVE – CAPITAL IMPROVEMENT PLAN

Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

The Report provides a five-year Capital Improvement Plan ("CIP") which shows projected expenditures related to the rehabilitation, restoration and/or replacement of District improvements, and other allowable costs. The Current Fiscal Year CIP is shown in the preceding Budget Section A. The projected CIP costs for the remaining four years are provided below.

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Repair, replace and/or refurbish street furniture (pots)	$2,500	$2,500	$2,500	$3,400	$10,900
Repair, replace streetscape and hardscape	2,500	2,500	2,500	2,500	10,000
Replace, repair, renovate and/or refurbish plants, landscape & related mat'ls	4,000	4,000	4,000	4,000	16,000
Replace, repair lighting fixtures	2,400	2,500	2,500	1,500	8,900
Non-routine tree work	2,420	2,420	1,750	2,553	9,143
Total Projected Expenditures	**$13,820**	**$13,920**	**$13,250**	**$13,953**	**$54,943**

From time to time, funds held in a Rehabilitation Reserve may be needed to respond to changing needs due to the condition of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the Districts' Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and/or operation of the improvements.

APPENDIX A – DISTRICT BOUNDARY MAP

The boundary map for the District has previously been submitted to the Clerk of the City in the format required under the 1972 Act and is, by reference, hereby made part of this Report. These District Boundary Maps are available for inspection at the office of the City Clerk during normal business hours.

For general reference purposes, a summary of the District's Boundaries is presented herein.

BOUNDARY MAP OF
HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT

CITY OF ROSEVILLE
COUNTY OF PLACER
STATE OF CALIFORNIA

LOT DESIGNATION

LOT NO.	ASSESSOR'S PARCEL NUMBER
1	011-143-008
2	011-145-005
3	011-146-008
4	011-146-011
5	011-146-012
6	011-146-013
7	011-146-014
8	011-146-016
9	011-146-017
10	011-146-018
11	011-146-019
12	011-146-024
13	011-148-025
14	011-147-002
15	011-147-003
16	011-147-006
17	011-147-007
18	011-147-008
19	011-147-009
20	011-147-010
21	011-147-011
22	011-147-012
23	011-147-014
24	012-121-001
25	012-121-002
26	012-121-003
27	012-121-007
28	012-121-009

LOT DESIGNATION

LOT NO.	ASSESSOR'S PARCEL NUMBER
29	012-121-012
30	012-121-013
31	012-121-014
32	012-122-001
33	012-122-003
34	012-200-001
35	012-200-002
36	012-200-004
37	012-200-005
38	012-200-006
39	012-200-007
40	012-200-008
41	012-200-009
42	012-200-010
43	012-200-011
44	012-200-012
45	012-200-013
46	012-200-014
47	012-200-015
48	012-200-016
49	012-200-017
50	012-200-022
51	012-200-023
52	012-200-024
53	012-200-025
54	012-200-026
55	012-200-027
56	012-200-028



VICINITY MAP
NOT TO SCALE

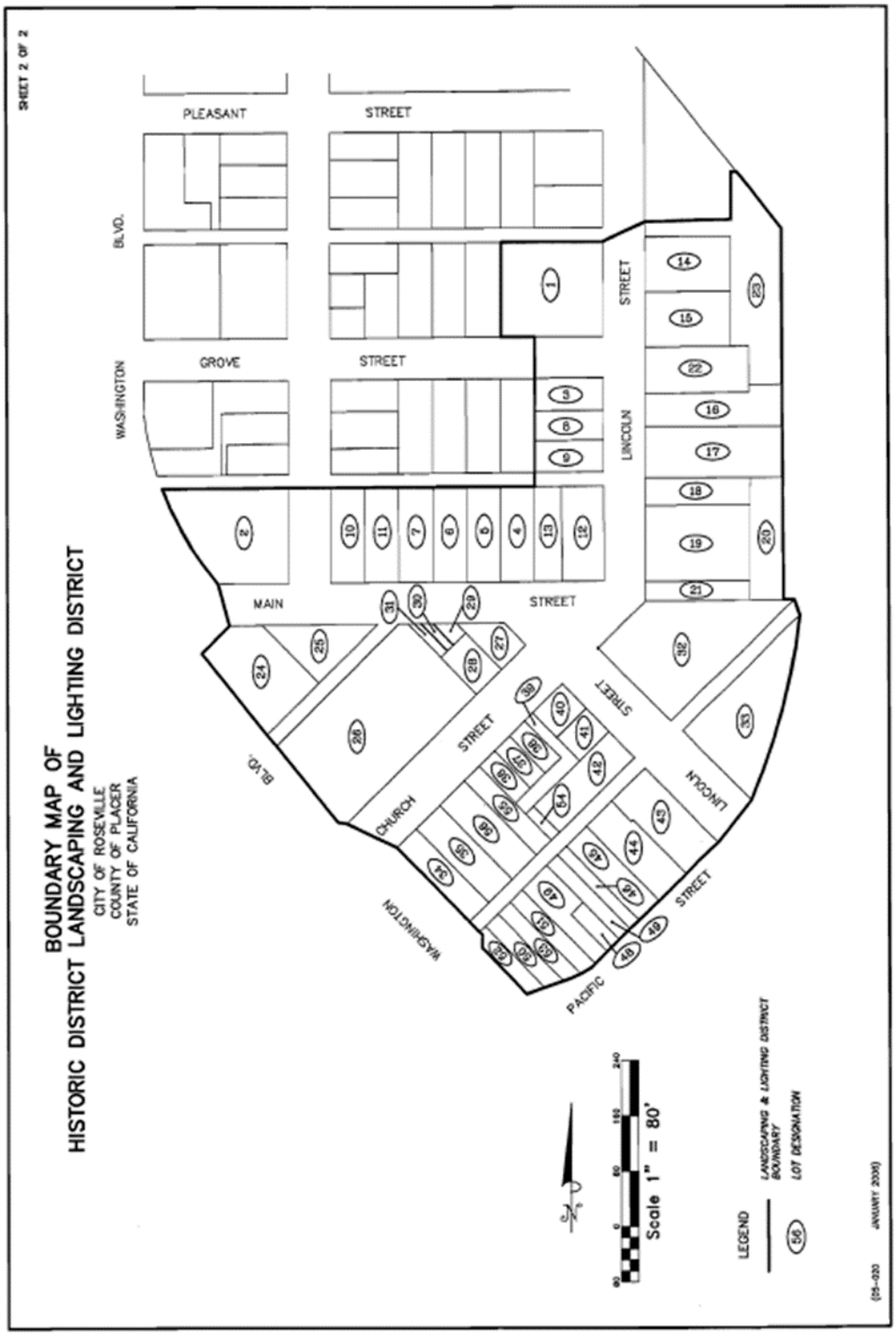
FILED IN THE OFFICE OF THE CITY CLERK THIS _____ DAY OF _____ 2006

I HEREBY CERTIFY THAT THE MAP SHOWING THE BOUNDARIES OF HISTORIC LANDSCAPING AND LIGHTING DISTRICT, CITY OF ROSEVILLE, COUNTY OF PLACER, STATE OF CALIFORNIA, WAS APPROVED BY THE CITY COUNCIL OF THE CITY OF ROSEVILLE AT A REGULAR MEETING THEREOF, HELD ON THE _____ DAY OF _____, 2006, BY ITS RESOLUTION NO. _____

_____
CITY CLERK
CITY OF ROSEVILLE

KOPPEL GRUBER
PUBLIC FINANCE
334 Via Vera Cruz, Suite 256
San Marcos, California 92078
Tel: (760) 510-0290 Fax: (760) 510-0288

(05-020 JANUARY 2006)


SHEET 2 OF 2
BOUNDARY MAP OF
HISTORIC DISTRICT LANDSCAPING AND LIGHTING DISTRICT
CITY OF ROSEVILLE
COUNTY OF PLACER
STATE OF CALIFORNIA
PLEASANT
STREET
BLVD.
WASHINGTON
GROVE
STREET
LINCOLN
STREET
MAIN
STREET
BLVD.
CHURCH
STREET
LINCOLN
STREET
WASHINGTON
PACIFIC
Scale 1" = 80'
LEGEND
LANDSCAPING & LIGHTING DISTRICT BOUNDARY
LOT DESIGNATION
JANUARY 2000

APPENDIX B — FY 2025/26 ASSESSMENT ROLL

Parcel identification, for each lot or parcel within the District, shall be the parcel as shown on the Placer County Assessor's map for the year in which this Report is prepared.

A listing of parcels to be assessed within this District, along with the proposed assessment amounts, shall be submitted to the City Clerk, under separate cover, and by reference is made part of this Report.

Non-assessable lots or parcels may include areas of public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas and rights-of-ways including public greenbelts and parkways; utility rights-of-ways; common areas; landlocked parcels, small parcels vacated by the County, bifurcated lots, and any other property that cannot be developed, excepting common area parcels. These types of parcels are considered to receive little or no benefit from the improvements and are therefore exempted from assessment.

At the conclusion of the public hearing for the District and the proposed assessments, approval of the Report (as submitted or as modified) confirms the method of apportionment and the assessment rate to be levied against each eligible parcel and thereby constitutes the approved levy and collection of assessments for FY 2025/26. The listing of parcels and the amount of assessment to be levied shall be submitted to the County Auditor/Controller and included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the Current Fiscal Year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved in this Report. Therefore, if a single parcel has changed to multiple parcels, the assessment amount applied to each of the new parcels shall be recalculated and applied according to the approved method of apportionment and assessment rate rather than a proportionate share of the original assessment.

City of Roseville
Historic District Landscape and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	LAND USE	CHARGE	MAXIMUM ASMT	FRONT FOOTAGE	ACRES	SF UNITS	LEGAL DESCRIPTION
011-143-008-000	MFR	$ 668.50	$ 668.52	140.0	0.4821	0.0	LOTS 1 2 3 BLK 5 MCRAE ADDN
011-145-008-000	MFR	649.72	649.74	120.0	0.481	0.0	PARCEL 1 MAIN STREET PLAZA APTS OF PARCEL MAP 36-5
011-146-008-000	SFR	231.46	231.46	0.0	0.0	1.0	FR LOTS 8 9 BLK 2 MCRAE ADDN
011-146-011-000	COM	898.98	899.00	50.0	0.16	0.0	LOT 12 BLK 2 MCRAE ADDN
011-146-012-000	COM	898.98	899.00	50.0	0.16	0.0	L 13 BLK 2 MCRAE ADDN
011-146-013-000	COM	898.98	899.00	50.0	0.16	0.0	LOT 14 BLK 2 MCRAE ADDN
011-146-016-000	SFR	231.46	231.46	0.0	0.0	1.0	FR LOTS 8 9 BLK 2 MCRAE ADDN
011-146-017-000	SFR	231.46	231.46	0.0	0.0	1.0	POR LOTS 8 & 9 BLK 2 MCRAE ADDN MOR A-38
011-146-024-000	COM	1,229.86	1,229.87	100.31	0.1943	0.0	L 10 & P L 11 BLK 2 MCRAE ADD
011-146-025-000	COM	726.98	727.00	39.64	0.13	0.0	POR L 11 BLK 2 MCRAE ADDITION
011-146-026-000	MFR	676.48	676.50	150.0	0.4814	0.0	PARCEL 2 MAIN STREET PLAZA APTS OF PARCEL MAP 36-5
011-147-002-000	COM	1,318.84	1,318.85	80.0	0.2296	0.0	FR LOTS 9 10 BLK 1 MCRAE ADDN
011-147-006-000	COM	1,265.78	1,265.79	50.0	0.241	0.0	FR LOT 7 BLK 1 MCRAE ADDN
011-147-007-000	COM	1,821.24	1,821.25	75.0	0.3444	0.0	LOTS 5 6 BLK 1 MCRAE ADDN
011-147-008-000	COM	763.12	763.12	40.0	0.1377	0.0	LOT 4 BLK 1 MCRAE ADDN
011-147-009-000	COM	2,000.42	2,000.44	110.0	0.357	0.0	LOTS 2 3 FR 1 BLK 1 MCRAE ADDN
011-147-010-000	COM	935.54	935.54	0.0	0.2066	0.0	LOT IN RSVL
011-147-011-000	COM	572.44	572.46	30.0	0.1033	0.0	FR LOT 1 BLK 1 MCRAE ADDN
011-147-016-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 1 THE BELVEDERE GG-69
011-147-017-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 2 THE BELVEDERE GG-69
011-147-018-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 3 THE BELVEDERE GG-69
011-147-019-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 4 THE BELVEDERE GG-69
011-147-020-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 5 THE BELVEDERE GG-69
011-147-021-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 6 THE BELVEDERE GG-69
011-147-022-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 7 THE BELVEDERE GG-69
011-147-023-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 8 THE BELVEDERE GG-69
011-147-024-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 9 THE BELVEDERE GG-69
011-147-025-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 10 THE BELVEDERE GG-69
011-147-026-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 11 THE BELVEDERE GG-69
011-147-027-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 12 THE BELVEDERE GG-69
011-147-028-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 13 THE BELVEDERE GG-69
011-147-029-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 14 THE BELVEDERE GG-69
011-147-030-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 15 THE BELVEDERE GG-69
011-147-031-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 16 THE BELVEDERE GG-69
011-147-032-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 17 THE BELVEDERE GG-69
011-147-033-000	SFR	231.46	231.46	0.0	0.0	1.0	LOT 18 THE BELVEDERE GG-69
011-147-034-000	Exempt	-	-	0.0	0.0	0.0	LOT A THE BELVEDERE GG-69
012-121-001-000	COM	2,039.96	2,039.97	160.0	0.3272	0.0	FR LOTS 11 14 15 16 BLK 38 R
012-121-002-000	COM	1,200.82	1,200.83	140.0	0.1573	0.0	FR L 12 13 BLK 38 RSVL
012-121-003-000	COM	4,839.76	4,839.78	201.0	0.9139	0.0	LOTS BLK 38 RSVL

City of Roseville
Historic District Landscape and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	LAND USE	CHARGE	MAXIMUM ASMT	FRONT FOOTAGE	ACRES	SF UNITS	LEGAL DESCRIPTION
012-121-007-000	COM	643.16	643.17	81.15	0.0795	0.0	LOT 8 BLK 38 RSVLE
012-121-009-000	COM	534.92	534.93	50.0	0.0796	0.0	POR L 7 BLOCK 38 ROSEVILLE
012-121-011-000	EXE	-	-	0.0	0.0	0.0	L 1 113 MAIN ST O-70
012-121-012-000	COM	184.00	184.01	26.0	0.0206	0.0	UNIT 1 113 MAIN STREET CONDO
012-121-013-000	COM	146.04	146.05	22.0	0.0153	0.0	UNIT 2 113 MAIN STREET CONDO
012-121-014-000	COM	135.18	135.18	22.0	0.0129	0.0	UNIT 3 113 MAIN STREET CONDO
012-122-001-000	COM	3,253.50	3,253.52	150.0	0.6029	0.0	L 12 THRU 16 RSVLLE
012-122-003-000	COM	2,637.88	2,637.90	208.59	0.4218	0.0	L 5 BLK 21 ROSEVILLE
012-200-004-000	COM	349.98	349.98	31.0	0.0534	0.0	LOT 7 BANK CORNER ADDN
012-200-005-000	COM	349.98	349.98	31.0	0.0534	0.0	LOT 6 BANK CORNER ADDN
012-200-006-000	COM	349.98	349.98	31.0	0.0534	0.0	OWL CLUB FRNSHNGS/FXTRS LOT 5 BANK CORNER ADDN
012-200-007-000	COM	418.08	418.09	16.0	0.08	0.0	POR BANK CORNER SUBD
012-200-008-000	COM	499.84	499.85	55.0	0.068	0.0	L 3 4 BANK CORNER ADDN
012-200-009-000	COM	456.98	456.99	47.0	0.0647	0.0	LOTS 1 2 BANK CORNER ADDN
012-200-010-000	COM	1,023.12	1,023.13	53.0	0.1851	0.0	FR LOTS 9 10 11 12 BLK 22 RSVL
012-200-011-000	COM	1,388.54	1,388.55	107.5	0.2238	0.0	LOT 8 FR 7 BLK 22 RSVLE
012-200-012-000	COM	1,049.56	1,049.58	55.0	0.1894	0.0	FR LOTS 6 7 BLK 22 RSVLE
012-200-013-000	COM	763.12	763.12	40.0	0.1377	0.0	FR LOTS 5 6 BLK 22 RSVLE
012-200-026-000	COM	104.60	104.60	0.0	0.0231	0.0	FR L 12 BLK 22 RSVLE
012-200-027-000	COM	420.62	420.63	31.0	0.069	0.0	FR L 12 BLK 22 L 8 BANK C
012-200-030-000	COM	414.92	414.93	50.0	0.0531	0.0	POR LOT 13 BLK 22 ROSEVILLE
012-200-032-000	MFR	1,421.36	1,421.38	281.68	1.0374	0.0	1.32 AC PAR 1 PM 36-66

Summary Fields	Value
ACTIVE PARCELS	62
LEVIED PARCELS	60
CHARGE	$44,812.42
MAXIMUM ASMT	$44,812.91
FRONT FEET	2,974.87
ACRES	8.7909
SF UNITS	21

RESOLUTION NO. 25-109

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, FOR FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Infill Area Landscaping and Lighting District and annexed territory therein (hereafter referred to as the "District") and annexed territory therein pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California, beginning with Section 22500* (hereafter referred to as the "Act"), that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance and services relating to landscaping, all appurtenant facilities and operations related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer") for the purpose of assisting with the establishment of the assessments, the annexation of territory, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act, and in accordance with the California Constitution, Articles XIIIC and XIIID;

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 Engineer's Report: The City Council hereby orders the Engineer to prepare and file with the City Clerk the Engineer's Report concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22622* of the Act.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: maintenance and operation of and the furnishing of services, materials and/or improvements for the landscape and lighting areas adjacent to property within the Pheasant Run, Cirby Oaks II and Reuter Ranch subdivisions, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

RESOLUTION NO. 25-109

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-110

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Infill Area Landscaping and Lighting District (hereafter referred to as the "District"), and initiated proceedings for Fiscal Year 2025/2026, pursuant to the provisions of the *Landscaping and Lighting Act of 1972*, *Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereafter referred to as the "Act") that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance, operation and servicing of all improvements and facilities related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services for the purpose of assisting with the Annual Levy of the District, and to prepare and file a report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, PURSUANT TO *CHAPTER 3, SECTION 22624* OF THE ACT, AS FOLLOWS:

Section 1 Intention: The City Council hereby declares that it is its intention to seek the Annual Levy of the District pursuant to the Act, over and including the land within the District boundary, and to levy and collect assessments on all such land to pay for the annual costs of the improvements.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: maintenance and operation of and the furnishing of services, materials or improvements for the landscape and lighting areas, including turf, ground cover, shrubs and trees, irrigation systems, drainage systems, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

Section 3 Boundaries and Designation: The boundaries of the District are described as the boundaries previously defined in the formation documents of the original District and any annexations thereto. The District includes the parcels within the areas known as the Pheasant Run, Cirby Oaks II and Reuter Ranch subdivisions. The District is known and designated as:

"Infill Area Landscaping and Lighting District"

Section 4 Proposed Assessment Amounts: The proposed assessments are outlined in the Engineer's Report. District Assessments are calculated in accordance with the method of apportionment established for the District and do not exceed the assessment rates.

Section 5 Public Hearing(s): The City Council hereby declares its intention to conduct a Public Hearing annually concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22626* of the Act.

Section 6 Notice: The City Clerk shall give notice of the time and place of the Public Hearing by causing this Resolution to be published once in the local newspaper not less than ten (10) days before the date of the hearing and by posting a copy of this Resolution on the official bulletin board customarily used by the City Council for the posting of notices.

Section 7 Time and Place of Public Hearing: Notice is hereby given that a Public Hearing on these matters will be held by the City Council on **Wednesday, May 21, 2025 at 6:00 p.m.**, or as soon thereafter as feasible in the regular meeting chambers located at 311 Vernon Street, Roseville, California.

RESOLUTION NO. 25-110

PASSED, APPROVED, AND ADOPTED THIS_____DAY OF_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-111

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, the City Council has, by previous Resolutions, ordered the preparation of an Annual Levy Report (hereafter referred to as the "Engineer's Report") for the district known and designated as the Infill Area Landscaping and Lighting District (hereafter referred to as the "District"), pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereinafter referred to as the "Act"); and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer"), for the purpose of assisting with the establishment of the assessments and to prepare and file an Engineer's Report with the City Clerk in accordance with the Act, and in accordance with the requirements of the California Constitution, Articles XIIIC and XIIID; and

WHEREAS, there has now been presented to this City Council the Engineer's Report as required by *Chapter 1, Article 4, Section 22566* of said Act; and,

WHEREAS, this City Council has carefully examined and reviewed the Engineer's Report as presented, and is preliminarily satisfied with the District, each and all of the budget items and documents as set forth therein, and is satisfied that the assessments, on a preliminary basis, have been spread in accordance with the benefits received from the improvements, operation, maintenance and services to be performed within each Zone, as set forth in said Engineer's Report; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE INFILL AREA LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 That the above recitals are all true and correct.

Section 2 That the Engineer's Report, as presented, consists of the following:

a. A Description of Improvements
b. The Annual Budget (Costs and Expenses of Maintenance, Services, Operations and District Administration)
c. The Assessment Roll containing the Fiscal Year 2025/2026 Levy for each Assessor Parcel within the District

Section 3 The Engineer's Report is hereby approved on a preliminary basis, and ordered to be filed in the Office of the City Clerk as a permanent record and to remain open to public inspection.

Section 4 That the City Clerk shall certify to the passage and adoption of this Resolution, and the minutes of this meeting shall so reflect the presentation of the Engineer's Report.

RESOLUTION NO. 25-111

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

City of Roseville

Infill Area Landscaping and Lighting District

FY 2025/26 Engineer's Annual Levy Report

Intent Meeting: April 16, 2025
Public Hearing: May 21, 2025

27368 Via Industria
Suite 200
Temecula, CA 92590
T 951.587.3500 | 800.755.6864
F 951.587.3510

www.willdan.com

ENGINEER'S REPORT AFFIDAVIT

Establishment of Annual Rates and Charges for the:

Infill Area
Landscaping and Lighting District

City of Roseville

Placer County, State of California

This Report describes the District and any relevant zones therein, including the improvements, budgets, parcels and assessments to be levied for Fiscal Year 2025/26 as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Placer County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the City Council.

Dated this _____ day of _____, 2025

Willdan Financial Services
Assessment Engineer
On Behalf of the City of Roseville

By: _____

Mickey Ashley
Project Manager
District Administration Services

By: _____

Tyrone Peter
PE # C 81888

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I. OVERVIEW

A. INTRODUCTION

The City of Roseville ("City") annually levies and collects special assessments in order to maintain the improvements within the City's existing Infill Area Landscaping and Lighting District ("District"). The District was formed and levies annual assessments pursuant to the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code (the "Act").

The Engineer's Report ("Report") describes the District, any new annexations, changes to the District, and the proposed assessments for the period of July 1, 2025 through June 30, 2026 (hereafter "Fiscal Year" or "FY 2025/26"). The special benefit assessments are based on historical and estimated costs to maintain the District improvements. These assessments, which provide a direct and special benefit to properties within the District, will provide funding for the operation and maintenance of District improvements.

The District consists of three (3) zones of benefit, Zones A, B and C (individually the "Zone" and collectively the "Zones"). The improvements that benefit properties within each Zone and the costs to maintain and service those improvements are identified and budgeted separately by Zone. The total cost of landscape maintenance within a Zone is equitably spread among only the benefiting parcels.

The word "parcel," for the purposes of this Report, refers to an individual property assigned its own Assessor's Parcel Number ("APN") by the County of Placer ("County") Assessor. The County Auditor-Controller ("Auditor-Controller") uses Assessor's Parcel Numbers and specific tax code accounts, to identify on the County's tax roll, properties assessed for special district benefit assessments.

Following approval of the Report, the Roseville City Council (the "City Council") will by resolution, order the improvements to be made, if any, and confirm the levy and collection of assessments pursuant to the Act. The assessment rates and method of apportionment described in this Report, as approved, or modified by the City Council, define the assessments to be applied to each parcel within the District and respective Zones for FY 2025/26. The assessments as approved will be submitted to the Placer County Auditor-Controller to be included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor-Controller to be an invalid parcel number for the current Fiscal Year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the Auditor-Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rates approved by the City Council.

B. COMPLIANCE WITH CURRENT LEGISLATION

All assessments described in this Report and approved by the City Council are prepared in accordance with the Act and are in compliance with the substantive and procedural requirements of the California State Constitution Articles XIIIC and XIIID ("Articles XIIIC and XIIID") and the provisions of the Proposition 218 Omnibus Implementation Act [Government Code Section 53750 and following] (the "Implementation Act"). Articles XIIIC and XIIID and the Implementation Act collectively are hereinafter referred to as "Proposition 218".

Pursuant to the California Constitution Article XIIID Section 5, certain existing assessments are exempt from the substantive and procedural requirements of Article XIIID Section 4 and property owner balloting for the assessments is not required until such time that the assessments are increased. Specifically, the City determined that all improvements and the annual assessments originally established for the District were part of the conditions of property development and approved by the original property owner (developer). As such, pursuant to Article XIIID Section 5(b), all the property owners approved the existing District assessments at the time the assessments were created (originally imposed pursuant to a 100% landowner petition). Therefore, the pre-existing assessment amounts (the maximum assessment rates of Zones A, B, & C identified in this Report) are exempt from the procedural requirements Article XIIID Section 4, provided the assessments are not increased above these previously approved maximum assessment rates.

The District and all Zones therein have been formed pursuant to the Act. Pursuant to the Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments, to review the Report prior to approving the annual assessments to be levied on the County tax rolls. The assessments described in this Report have been prepared in accordance with the Act.

C. DESCRIPTION OF DISTRICT BOUNDARIES

The three Zones within the District are comprised of three non-contiguous residential subdivisions, namely Pheasant Run, Cirby Oaks II and Reuter Ranch, are located in the southern portion of the City and are within the boundaries of the City's "Infill Planning Area." A general depiction of the boundaries of each Zone can be found in Appendix A of this Report.

D. IMPROVEMENTS AUTHORIZED BY THE 1972 ACT

As applicable or may be applicable to a proposed District, the 1972 Act defines improvements to mean one or any combination of the following:

- The installation or planting of landscaping.
- The installation or construction of statuary, fountains, and other ornamental structures and facilities.
- The installation or construction of public lighting facilities.
- The installation or construction of any facilities which are appurtenant to any of the foregoing, or which are necessary or convenient for the maintenance or servicing thereof, including, but not limited to, grading, clearing, removal of debris, the installation or construction of curbs, gutters, walls, sidewalks, or paving, or water, irrigation, drainage, or electrical facilities.
- The maintenance or servicing, or both, of any of the foregoing.
- The acquisition of any existing improvement otherwise authorized pursuant to this section.

Incidental expenses associated with the improvements including, but not limited to:

- The cost of preparation of the Report, including plans, specifications, estimates, diagram, and assessment;
- The costs of printing, advertising, and the publishing, posting, and mailing of notices;
- Compensation payable to the County for collection of assessments;
- Compensation of any engineer or attorney employed to render services;
- Any other expenses incidental to the construction, installation, or maintenance and servicing of the improvements;
- Any expenses incidental to the issuance of bonds or notes pursuant to Section 22662.5.
- Costs associated with any elections held for the approval of a new or increased assessment.

The 1972 Act defines "maintain" or "maintenance" to mean furnishing of services and materials for the ordinary and usual maintenance, operation, and servicing of any improvement, including:

- Repair, removal, or replacement of all or any part of any improvement.
- Providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury.
- The removal of trimmings, rubbish, debris, and other solid waste.

- The cleaning, sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Furthermore, the 1972 Act specifies that where the cost of improvements (other than maintenance and operations) is greater than can be conveniently raised from a single annual assessment, an assessment to be levied and collected in annual installments. In that event, the governing body may choose to do any of the following:

- Provide for the accumulation of the moneys in an improvement fund until there are sufficient moneys to pay all or part of the cost of the improvements.
- Provide for a temporary advance to the improvement fund from any available and unencumbered funds of the local agency to pay all or part of the cost of the improvements and collect those advanced moneys from the annual installments collected through the assessments.
- Borrow an amount necessary to finance the estimated cost of the proposed improvements. The amount borrowed, including amounts for bonds issued to finance the estimated cost of the proposed improvements.

E. DESCRIPTION OF IMPROVEMENTS AND BENEFITS

This District, by special benefit assessments, provides funding for the maintenance and operation of certain landscaping improvements located within the public rights-of-way and dedicated easements:

The District provides all services necessary to maintain the landscaped corridors adjacent to the privately-owned parcels comprising the three subdivisions. Improvements include shrubs, trees, and other landscaping vegetation, as well as irrigation controllers, automatic valves, and irrigation systems. Services provided include all necessary services, operations, and maintenance required in keeping the improvements in a healthy, vigorous condition and in proper working order.

The District encompasses three subdivisions, each of which is located in a separate Zone. The Zones have specific improvements and costs associated with those improvements that benefit the parcels within each respective Zone. The total cost of landscape maintenance within a Zone is equitably spread among only the benefiting parcels within the Zone and only parcels that receive a Special Benefit from the improvements are assessed.

The specific locations of the improvements within each Zone of the District are described as follows:

Zone A – Pheasant Run

Maintenance of 6,880 square feet of landscaping and related improvements within the Pheasant Run subdivision.

Zone B – Cirby Oaks

Maintenance of 7,447 square feet of landscaping and related improvements within the Cirby Oaks II subdivision.

Zone C – Reuter Ranch

Maintenance of 24,700 square feet of landscaping and related improvements within the Reuter Ranch subdivision. A larger amount of landscaping benefits the properties within Reuter Ranch and typically results in a larger per parcel assessment for these properties as compared to Zones A and B.

II. METHOD OF APPORTIONMENT

A. GENERAL

The Act permits the establishment of assessment districts by agencies for the purpose of providing certain public improvements which include the construction, maintenance and servicing of public lights, landscaping, and appurtenant facilities. The Act further requires that the cost of these improvements be levied according to benefit rather than assessed value:

> *"The net amount to be assessed upon lands within an assessment district may be apportioned by any formula or method which fairly distributes the net amount among all assessable lots or parcels in proportion to the estimated benefits to be received by each such lot or parcel from the improvements."*

The formula used for calculating assessments in each Zone of the District therefore reflects the composition of the parcels, and the improvements and services provided, to fairly apportion the costs based on estimated benefit to each parcel.

B. SPECIAL BENEFIT ANALYSIS

In conjunction with the provisions of the 1972 Act, the California Constitution Article XIIID addresses several key criteria for the levy of assessments, notably:

Article XIIID Section 2d defines District as follows:

"District means an area determined by an agency to contain all parcels which will receive a Special Benefit from a proposed public improvement or property-related service;"

Article XIIID Section 2i defines Special Benefit as follows:

"Special Benefit" means a particular and distinct benefit over, and above general benefits conferred on real property located in the district or to the public at large. General enhancement of property value does not constitute "Special Benefit."

Article XIIID Section 4a defines proportional Special Benefit assessments as follows:

"An agency which proposes to levy an assessment shall identify all parcels which will have a Special Benefit conferred upon them and upon which an assessment will be imposed. The proportionate Special Benefit derived by each identified parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. No

assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional Special Benefit conferred on that parcel."

These improvements will directly benefit the parcels to be assessed within the District. The assessments and method of apportionment is based on the premise that the assessments will be used to construct and install landscape and lighting improvements within the District as well as provide for the annual maintenance of those improvements, and the assessment revenues generated by District will be used solely for such purposes.

Each of the proposed improvements; the associated costs and assessments have been reviewed, identified, and allocated based on Special Benefit pursuant to the Act. All improvements associated with the Zones were necessary and required through the conditions of property development. Therefore, the improvements and the annual costs of ensuring the maintenance and operation of the improvements are of direct and Special Benefit to the properties.

The method of apportionment (method of assessment) is based on the premise that each assessed parcel within each Zone receives a Special Benefit from the improvements. The desirability and security of properties is enhanced by well-maintained landscaping in close proximity to those properties.

The special benefits associated with all landscaping improvements are specifically:

- Enhanced desirability of properties through association with the improvements.
- Improved aesthetic appeal of properties providing a positive representation of the area and properties.
- Enhanced adaptation of the urban environment within the natural environment from adequate green space and landscaping.
- Environmental enhancement through improved erosion resistance, dust and debris control, and fire prevention.
- Increased sense of pride in ownership of property within the Zones resulting from well-maintained improvements associated with the properties.
- Enhanced quality of life through well-maintained green belts and landscaped areas.
- Reduced criminal activity and property-related crimes (especially vandalism) against properties in the Zones through well-maintained surroundings and amenities including abatement of graffiti.
- Enhanced environmental quality of the parcels by moderating temperatures, providing oxygenation, and attenuating noise.

All of the preceding special benefits allowed the property to be developed for the enjoyment of the property owners and contribute to a specific enhancement and desirability of each of the assessed parcels within the Zones.

The improvements are for Special Benefit, enhancement, and use of properties within the Zones. Although the improvements include public easements, rights-of-way, streets, and other amenities available or visible to the public at large, the construction and installation of these improvements are only necessary for the development of properties within the Zones and are not required nor necessarily desired by any properties or developments outside the Zone's boundaries. Therefore, any public access or use of the improvements by others is incidental and there is no measurable general benefit to properties outside the Zones or to the public at large.

C. RATE AND METHOD OF APPORTIONMENT

Pursuant to the Act, the costs of each Zone of the District must be spread to each parcel based upon a benefit formula. Each assessable parcel in the District receives a direct and Special Benefit from the improvements in the Zone. This direct and Special Benefit was determined to be equal for all dwelling units within each Zone; costs for each Zone shall be calculated separately within each respective Zone. Each single-family residence is equal to one dwelling unit (unit) and the formula used to arrive at each parcel's annual assessment is described below. Public parcels lying within the landscape corridors are considered to receive no benefit from the improvements and are therefore not assessed.

Costs associated with each Zone are to be charged only to assessable parcels within the respective Zone as follows:

$$\frac{\textit{Balance to Levy in Zone}}{\textit{Total Units in Zone}} = \textit{Assessment Per Unit in Zone}$$

The Maximum Annual Assessment Rates are not to exceed $193.32 per unit for Zone A and $200.00 per unit for Zones B and C.

III. DISTRICT BUDGET

A. FY 2025/26 BUDGET

DESCRIPTION	ZONE A (Pheasant Run) Fund 2014	ZONE B (Cirby Oaks II) Fund 2015	ZONE C (Reuter Ranch) Fund 2017
DIRECT COSTS			
Contract Maintenance - Landscaping	$1,488.00	$2,172.00	$4,248.00
Repair & Maintenance - Landscaping	3,000.00	3,000.00	2,000.00
Repair & Maintenance - Tree Work	522.00	754.00	1,452.00
Utilities	3,166.00	1,340.00	2,998.60
Utilities – Telecom	0.00	200.00	0.00
Rehab Reserve Expenditures - Non-Routine Tree Work	422.00	712.00	1,583.00
Rehab Reserve Project Expenditures	0.00	2,500.00	9,000.00
Total Direct Costs	**$8,598.00**	**$10,678.00**	**$21,281.60**
ADMINISTRATION COSTS			
City Administration	$90.00	$260.00	$148.00
Contract Administration - Park's Dept	1,150.00	1,213.00	1,954.00
County Auditor Fees	77.33	100.50	132.00
Consulting & Professional Services	834.00	2,422.00	1,376.00
Public Hearing Publishing Costs	68.00	197.00	112.00
Total Administrative Costs	**$2,219.33**	**$4,192.50**	**$3,722.00**
Total Direct and Administration Costs	**$10,817.33**	**$14,870.50**	**$25,003.60**
BUDGET ADJUSTMENTS			
Replenishment/(Use) of Operating Reserve	($2,662.53)	($1,608.00)	($1,220.60)
Contribution for /(Use of) Rehab Reserve	(422.00)	(3,212.00)	(10,583.00)
Rounding Adjustment		(0.26)	
Total Adjustments	**($3,084.53)**	**($4,820.26)**	**($11,803.60)**
BALANCE TO LEVY	**$7,732.80**	**$10,050.24**	**$13,200.00**

Fund balance information for each Zone is reported in Section C on the following page. Total balance to levy for the District is $30,983.04.

B. FY 2025/26 ASSESSMENT RATES

DESCRIPTION	ZONE A (Pheasant Run) Fund 2014	ZONE B (Cirby Oaks II) Fund 2015	ZONE C (Reuter Ranch) Fund 2017
FY 2025/26 ASSESSMENT DATA			
Number of Assessable Units	40	116	66
Applied Assessment Rate Per Unit	$193.32	$86.64	$200.00
Maximum Assessment Rate Per Unit	$193.32	$200.00	$200.00
Potential Maximum Assessment Per Zone	**$7,732.80**	**$23,200.00**	**$13,200.00**

C. FY 2025/26 FUND BALANCE INFORMATION

DESCRIPTION	ZONE A (Pheasant Run) Fund 2014	ZONE B (Cirby Oaks II) Fund 2015	ZONE C (Reuter Ranch) Fund 2017
OPERATING RESERVE			
Beginning Operating Reserve Balance 7-1-2025 (est.)	**$1,349.81**	**$1,774.42**	**$5,566.56**
add: Replenishment from FY 2025/26 Levy			
less: Use for FY 2025/26 Expenses	(2,662.53)	(1,608.00)	(1,220.60)
Transfer from/(to) the Rehab Reserve	5,611.72	5,172.58	6,294.84
Ending Operating Reserve Balance 6-30-2026 (est.)	**$4,299.00**	**$5,339.00**	**$10,640.80**
REHABILITATION RESERVE			
Beginning Rehab Reserve Balance 7-1-2025 (est.)	**$6,426.13**	**$44,109.58**	**$30,386.16**
add: Collect from FY 2025/26 Levy			
less: Use for FY 2025/26 Rehab Projects	(422.00)	(3,212.00)	(10,583.00)
Transfer from/(to) the Operating Reserve	(5,611.72)	(5,172.58)	(6,294.84)
Ending Rehab Reserve Balance 6-30-2026 (est.)	**$392.41**	**$35,725.00**	**$13,508.32**

D. DESCRIPTION OF BUDGET ITEMS

Description of the terms used in the preceding Budget, Assessment Rates and Fund Balance tables are listed below:

BUDGET:

DIRECT COSTS

Contract Maintenance - Landscaping - Includes all regularly scheduled contract labor, materials, supplies, and equipment required to properly maintain and ensure the satisfactory condition or maintenance of all landscaping corridors, street medians, entryways, irrigation, and related drainage systems as well as maintenance of appurtenant facilities (the “improvements”).

Repair & Maintenance – Landscaping - This line item includes repairs that are generally unforeseen and not normally included in the annual maintenance contract costs. This may include repair of damaged amenities due to vandalism, storms, etc. If zero, this line item may not be shown in the budget.

Repair & Maintenance – Tree Work - This line item includes annual costs for tree maintenance not included in the annual contract maintenance portion of the budget. If zero, this line item may not be shown in the budget.

Utilities - The furnishing of water and electricity required for the operation and maintenance of the improvements.

Utilities Telecom – connectivity services required for the operation of certain improvements.

Rehab Reserve Expenditures – Non-Routine Tree Work – Expected costs to maintain trees other than costs of annual repair and maintenance. If zero, this line item may not be shown in the budget.

Rehab Reserve Project Expenditures – Expected costs for installation, replacement, or planned upgrades of District improvements for the current year that were previously funded or accumulated in the Rehabilitation Reserve. The Rehabilitation Reserve is used to accumulate funds for costs associated with the future rehabilitation or replacement of District improvements that cannot be conveniently raised from a single year's assessment. If zero, this line item may not be shown in the budget.

ADMINISTRATION COSTS

City Administration – Estimated costs incurred by the City's Finance Department and other Departments in preparing the annual budget for the Report, together with other financial information required to determine the annual assessment. These costs would also include the preparation, posting and publishing of public notices required for City Council action relating to the District, as well as costs to perform legal review of documents.

Contract Administration – Park's Dept – Estimated Costs of Park and Recreation Department staff to coordinate and oversee the maintenance contracts and overall repair and maintenance of the District. This amount also includes the cost of the Department's estimates and analysis of certain budget items, estimated costs and useful lives of certain District Improvements.

County Auditor Fees - A fee of 1% of the total levy amount that is charged to the District by the County for placing assessments on property tax bills.

Consulting and Professional Services – Includes the costs and expenses of contracting with various professionals to provide legal, engineering and district

administration services directly related to the District, including the calculation of the annual assessment amounts and the preparation of the Report and any out-of-pocket costs related to district administration.

Public Hearing Publishing Costs –Includes the out-of-pocket costs to publish public notices required for City Council action relating to the District.

Total Direct and Administration Costs – The total expected costs of the District.

BUDGET ADJUSTMENTS

Replenishment/(Use) of Operating Reserve – A "Replenishment" increases the levy in order to replenish the Operating Reserve. On the other hand, a "Use" of the Operating Reserve decreases the levy by drawing funds from the Operating Reserve for current year expenditures. If zero, this line item may not be shown in the budget. Further information regarding the function of the Operating Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Contribution for / (Use of) Rehab Reserve — A "Contribution" increases the levy in order to generate funding for the Rehabilitation Reserve. This reserve allows for the accumulation of funds for possible rehabilitation projects or replacements in future years. On the other hand, a "Use of" the Rehabilitation Reserve provides current year funding of rehabilitation projects or replacements from available funds within the Rehabilitation Reserve. If zero, this line item may not be shown in the budget. Further information regarding the function of the Rehabilitation Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Rounding Adjustment – The necessary rounding adjustment(s) due to limitations of the County property tax system that requires even penny levy amounts to be placed on the secured tax roll.

BALANCE TO LEVY - This is the total amount to be levied and collected through assessments for the current Fiscal Year for each Zone. The Balance to Levy represents the sum of the total District costs together with any applicable adjustments to the budget as described above.

ASSESSMENT RATES:

Number of Assessable Units - The total number of residential units that are expected to be assessed. Non-assessable lots or parcels include government-owned land, public utility-owned property, land principally encumbered by public rights-of-way or easements, common areas, and/or parcels within the boundaries of the District currently do not benefit from the improvements and are therefore not assessed.

Applied Assessment Rate per Unit - The per unit assessment rates to be applied to the non-exempt parcels within the District for the current Fiscal Year.

Maximum Assessment Rate per Unit - The per unit maximum assessment rates for the current Fiscal Year.

Potential Maximum Assessment Per Zone – The total amount that can be assessed against all parcels within each Zone for the current Fiscal Year based upon the expected number of units to be assessed.

FUND BALANCE INFORMATION:

OPERATING RESERVE

Beginning Operating Reserve Balance 7-1-2025 (est.) - The anticipated beginning balance of cash and receivables net of any unpaid prior year obligations for each Zone. These beginning balances shall be used to fund each Zone's expenditures from July 1, 2025 to December 31, 2025, as the Operating Reserve is required to compensate for the approximate six-month delay between the start of the District's Fiscal Year and the receipt of the collections from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

Replenish from FY 2025/26 Levy – This amount is added to the FY 2025/26 levy in order to replenish the Operating Reserve. Due to the six-month delay from the District's receipt of assessment collections, the Operating Reserve balance shall be sufficiently funded to provide for expenditures from the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Expenses – The amount of the Operating Reserve to be used to fund FY 2025/26 expenses. Portions of the Operating Reserve may be slated for current year expenditures in order to reduce the Ending Operating Reserve Balance to an amount no greater than the expected District costs for the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Rehab Reserve — The amount of Operating Reserve money to be transferred to or from the Rehabilitation Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same Zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Operating Reserve Balance 6-30-2026 (est.) - This amount represents the anticipated Operating Reserve balance/(deficit) for each Zone as of June 30, 2026. The size of each Zone's Operating Reserve is limited by Streets and Highways Code 22569 which states that an Operating Reserve shall not exceed the estimated costs of maintenance, service and incidental expenses from the first day of the fiscal year (July 1) to the date that the Agency expects to receive the first apportionment of collections from the County, which is estimated to be December 31. Therefore, each Zone may retain an Operating Reserve amounting to the District's first six-months of expenses in order to meet ongoing obligations until the first collections are received from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

REHABILITATION RESERVE

Beginning Rehab Reserve Balance 7-1-2025 (est.) — The projected balance of funds in the Rehabilitation Reserve as of July 1, 2025. Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

Collect from FY 2025/26 Levy — This amount is added to the FY 2025/26 levy to accumulate funding for future year rehabilitation projects, replacements, restorations, or upgrades of District improvements. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Rehab Projects – The amount of Rehabilitation Reserve money expected to be transferred out of the Rehabilitation Reserve to fund the costs of installation, replacement, or planned upgrades of District improvements in FY 2025/26. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Operating Reserve — The amount of Rehabilitation Reserve moneys to be transferred to or from the Operating Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same Zone's Operating Reserve, at the discretion of the Parks and Recreation Department, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Rehab Reserve Balance 6-30-2026 (est.) - The projected balance of funds in the Rehabilitation Reserve as of June 30, 2026. These funds shall be used to provide for future year rehabilitation projects, replacements, restorations, or upgrades of District improvements which cannot be conveniently raised from a single year's assessment.

E. REHABILITATION RESERVE – CAPITAL IMPROVEMENT PLAN

Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

The Report provides a five-year Capital Improvement Plan ("CIP") which shows projected expenditures by Zone related to the rehabilitation, restoration and/or replacement of District improvements, and other allowable costs. The Current Fiscal Year CIP is shown in the preceding Budget Section A. The projected CIP costs for the remaining four years are shown in the table below.

Zone A

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Repair and/or refurbish sound wall improvements	$0	$0	$0	$3,000	$3,000
Replace, repair, renovate and/or refurbish plants, landscape & related mat'ls	500	500	500	500	2,000
Non-routine tree work	400	$0	400	500	1,300
Total Projected Expenditures	**$900**	**$500**	**$900**	**$4,000**	**$6,300**

Zone B

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Repair and/or refurbish sound wall improvements	$0	$0	$8,200	$10,000	$18,200
Replace, repair, renovate and/or refurbish plants, landscape & related mat'ls	2,000	2,000	1,500	7,800	13,300
Non-routine tree work	675	675	675	2,200	4,225
Total Projected Expenditures	**$2,675**	**$2,675**	**$10,375**	**$20,000**	**$35,725**

Zone C

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Repair and/or refurbish sound wall improvements	$0	$0	$7,000	$0	$7,000
Replace, repair, renovate and/or refurbish plants, landscape & related mat'ls	3,000	1,300	3,000	3,000	10,300
Non-routine tree work	1,500	1,500	1,700	1,700	6,400
Total Projected Expenditures	**$4,500**	**$2,800**	**$11,700**	**$4,700**	**$23,700**

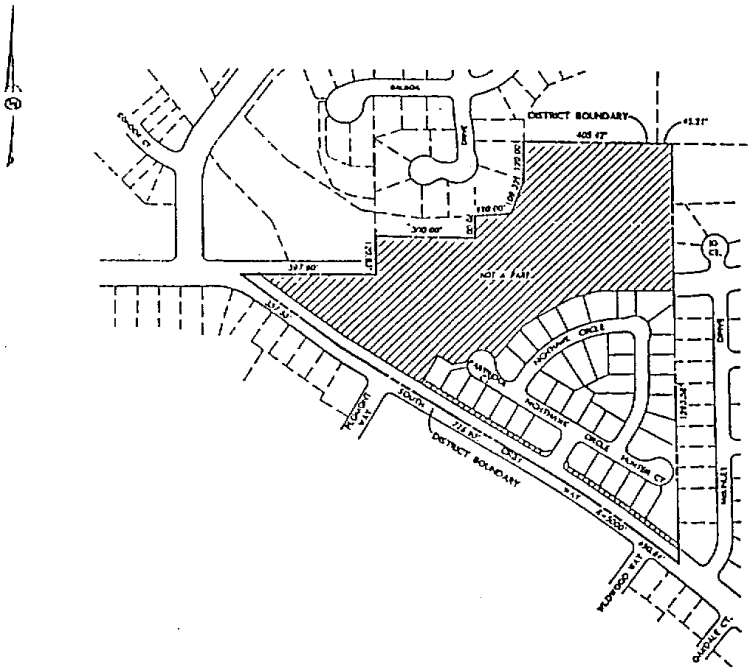
Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same Zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements.

APPENDIX A – DISTRICT BOUNDARY MAPS

The Assessment Diagrams for the District have previously been submitted to the City Clerk in the format required under the Act and are, by reference, made part of this Report. The boundary maps are available for inspection at the office of the City Clerk during normal business hours.

For general reference purposes, a rendering of the District and Zone Boundaries are presented herein.

PROPOSED BOUNDARIES OF
PHEASANT RUN
LIGHTING AND LANDSCAPING DISTRICT
ASSESSMENT YEAR 1996–1997
PLACER COUNTY, CITY OF ROSEVILLE, CALIFORNIA
MAY, 1996 SCALE 1"=200'
MORTON & PITALO, INC.
SHEET 1 OF 1 SHEET



LEGEND

_____..ASSESSMENT DISTRICT BOUNDARY

18.....SUBDIVISION LOT NUMBER

////////..NOT A PART OF THIS ASSESSMENT DISTRICT

NOTES

1. DISTANCES ALONG CURVED LINES ARE CHORD MEASUREMENT.

CLERK'S MAP FILING STATEMENT

FILED IN THE OFFICE OF THE CITY CLERK OF THE CITY OF ROSEVILLE, STATE OF CALIFORNIA, THIS _____ DAY OF _____, 199__.

_____
CITY CLERK, CITY OF ROSEVILLE

CLERK'S MAP STATEMENT

I HEREBY STATE THAT THE WITHIN MAP SHOWING PROPOSED BOUNDARIES OF PHEASANT RUN LIGHTING AND LANDSCAPING DISTRICT, CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA, WAS APPROVED BY THE CITY COUNCIL OF THE CITY OF ROSEVILLE AT A REGULAR MEETING THEREOF, HELD ON THE _____ DAY OF _____, 199__, BY ITS RESOLUTION NO. _____.

_____
CITY CLERK, CITY OF ROSEVILLE
COUNTY OF PLACER

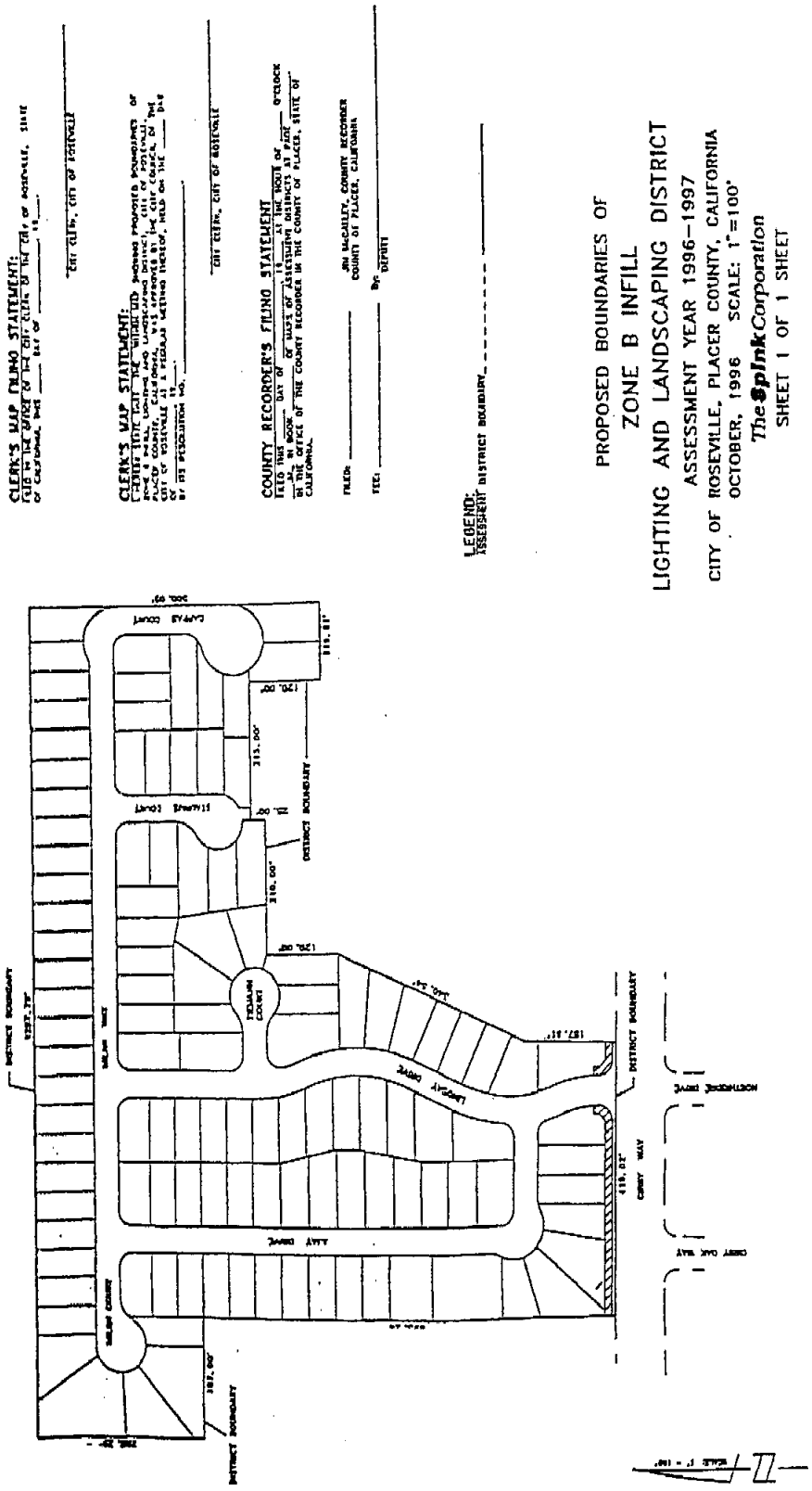
COUNTY RECORDER'S FILING STATEMENT

FILED THIS ____ DAY OF _____, 199__, AT THE HOUR OF ____ O'CLOCK __M., IN BOOK ____ OF MAPS OF ASSESSMENT DISTRICTS AT PAGE ____, IN THE OFFICE OF THE COUNTY RECORDER IN THE COUNTY OF PLACER STATE OF CALIFORNIA.

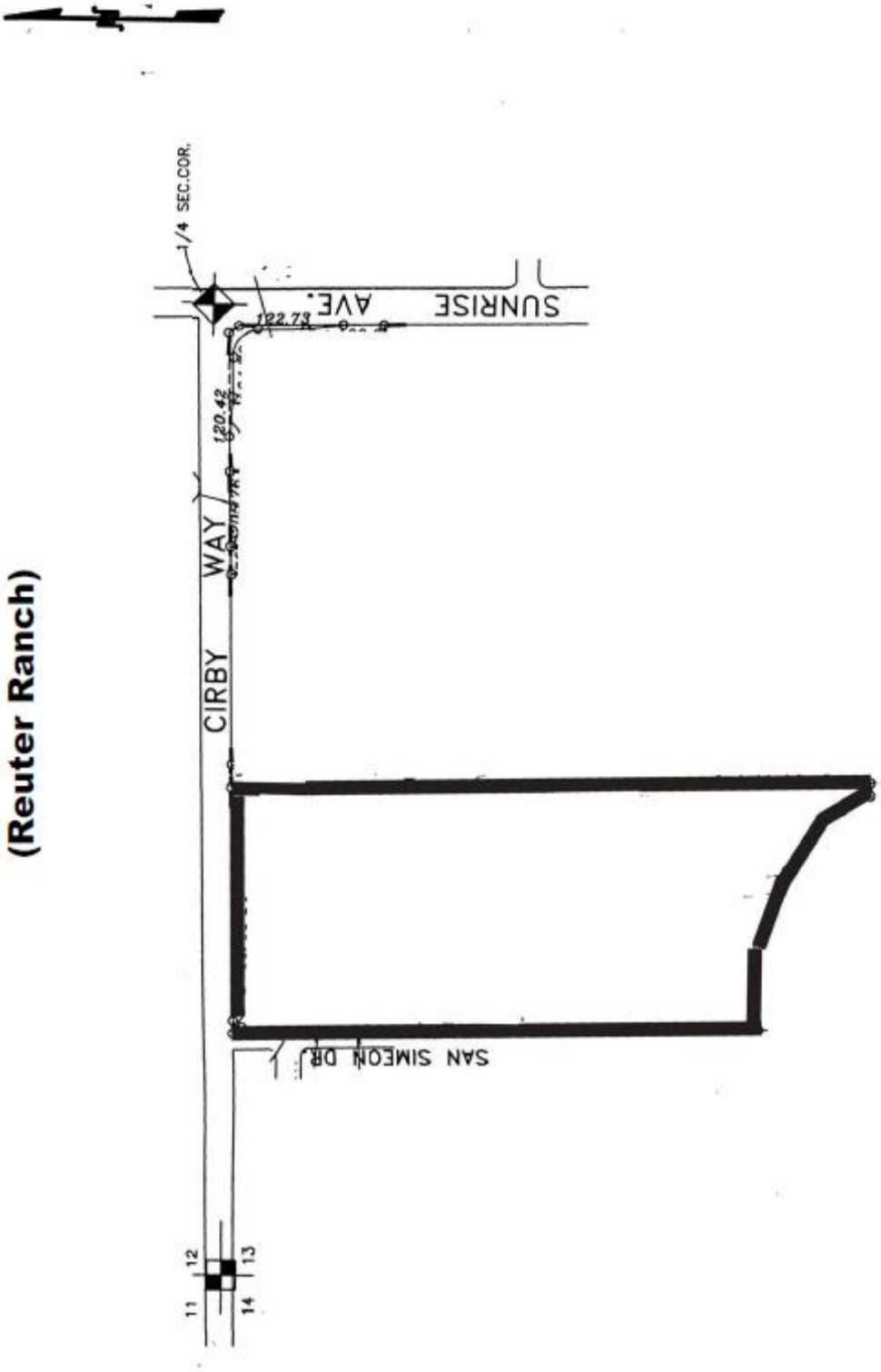
FILE#_____ JIM McCAULEY, COUNTY RECORDER
COUNTY OF PLACER, CALIFORNIA

FEE:_____ BY:_____
DEPUTY

Zone B


CLERK'S MAP FILING STATEMENT:
CLERK'S MAP STATEMENT:
COUNTY RECORDER'S FILING STATEMENT
LEGEND:
ASSESSMENT DISTRICT BOUNDARY
PROPOSED BOUNDARIES OF
ZONE B INFILL
LIGHTING AND LANDSCAPING DISTRICT
ASSESSMENT YEAR 1996-1997
CITY OF ROSEVILLE, PLACER COUNTY, CALIFORNIA
OCTOBER, 1996 SCALE: 1"=100'
The Spink Corporation
SHEET 1 OF 1 SHEET
DISTRICT BOUNDARY
CAMPAS COURT
TILLMAN COURT
HELEN COURT
TEHAMA COURT
ALLEY DRIVE
CHERRY WAY
NORTHRIDGE DRIVE
CHERRY OAK WAY

Zone C
(Reuter Ranch)



APPENDIX B — FY 2025/26 ASSESSMENT ROLL

Parcel identification, for each lot or parcel within the District, shall be the parcel as shown on the Placer County Assessor's map for the year in which this Report is prepared.

A listing of parcels to be assessed within this District, along with the proposed assessment amounts, may be submitted to the City Clerk, under a separate cover, and by reference is made part of this Report.

Non-assessable lots or parcels may include areas of public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas and rights-of-way, including public greenbelts and parkways; utility rights-of-way; small parcels vacated by the County, bifurcated lots, and other property that cannot be developed, excepting common area parcels. These types of parcels are considered to receive little or no benefit from the improvements and are therefore exempt from assessment.

At the conclusion of the public hearing for the District and the proposed assessments, approval of the Report (as submitted or as modified) confirms the method of apportionment and the assessment rate to be levied against each eligible parcel and thereby constitutes the approved levy and collection of assessments for FY 2025/26. The listing of parcels and the amount of assessment to be levied shall be submitted to the County Auditor/Controller and included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current Fiscal Year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved in this Report. Therefore, if a single parcel has changed to multiple parcels, the assessment amount applied to each of the new parcels shall be recalculated and applied according to the approved method of apportionment and assessment rate rather than a proportionate share of the original assessment.

City of Roseville
Infill Area Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	NO OF UNITS	LEGAL DESCRIPTION
469-370-001-000	A	193.32	193.32	1.0	LOT 1 PHEASANT RUN MOR T-20
469-370-002-000	A	193.32	193.32	1.0	LOT 2 PHEASANT RUN MOR T-20
469-370-003-000	A	193.32	193.32	1.0	LOT 3 PHEASANT RUN MOR T-20
469-370-004-000	A	193.32	193.32	1.0	LOT 4 PHEASANT RUN MOR T-20
469-370-005-000	A	193.32	193.32	1.0	LOT 5 PHEASANT RUN MOR T-20
469-370-006-000	A	193.32	193.32	1.0	LOT 6 PHEASANT RUN MOR T-20
469-370-007-000	A	193.32	193.32	1.0	LOT 7 PHEASANT RUN MOR T-20
469-370-008-000	A	193.32	193.32	1.0	LOT 8 PHEASANT RUN MOR T-20
469-370-009-000	A	193.32	193.32	1.0	LOT 9 PHEASANT RUN MOR T-20
469-370-010-000	A	193.32	193.32	1.0	LOT 10 PHEASANT RUN MOR T-20
469-370-011-000	A	193.32	193.32	1.0	LOT 11 PHEASANT RUN MOR T-20
469-370-012-000	A	193.32	193.32	1.0	LOT 12 PHEASANT RUN MOR T-20
469-370-013-000	A	193.32	193.32	1.0	LOT 13 PHEASANT RUN MOR T-20
469-370-014-000	A	193.32	193.32	1.0	LOT 14 PHEASANT RUN MOR T-20
469-370-015-000	A	193.32	193.32	1.0	LOT 15 PHEASANT RUN MOR T-20
469-370-016-000	A	193.32	193.32	1.0	LOT 16 PHEASANT RUN MOR T-20
469-370-017-000	A	193.32	193.32	1.0	LOT 17 PHEASANT RUN MOR T-20
469-370-018-000	A	193.32	193.32	1.0	LOT 18 PHEASANT RUN MOR T-20
469-370-019-000	A	193.32	193.32	1.0	LOT 19 PHEASANT RUN MOR T-20
469-370-020-000	A	193.32	193.32	1.0	LOT 20 PHEASANT RUN MOR T-20
469-370-021-000	A	193.32	193.32	1.0	LOT 21 PHEASANT RUN MOR T-20
469-370-022-000	A	193.32	193.32	1.0	LOT 22 PHEASANT RUN MOR T-20
469-370-023-000	A	193.32	193.32	1.0	LOT 23 PHEASANT RUN MOR T-20
469-370-024-000	A	193.32	193.32	1.0	LOT 24 PHEASANT RUN MOR T-20
469-370-025-000	A	193.32	193.32	1.0	LOT 25 PHEASANT RUN MOR T-20
469-370-026-000	A	193.32	193.32	1.0	LOT 26 PHEASANT RUN MOR T-20
469-370-027-000	A	193.32	193.32	1.0	LOT 27 PHEASANT RUN MOR T-20
469-370-028-000	A	193.32	193.32	1.0	LOT 28 PHEASANT RUN MOR T-20
469-370-029-000	A	193.32	193.32	1.0	LOT 29 PHEASANT RUN MOR T-20
469-370-030-000	A	193.32	193.32	1.0	LOT 30 PHEASANT RUN MOR T-20
469-370-031-000	A	193.32	193.32	1.0	LOT 31 PHEASANT RUN MOR T-20
469-370-032-000	A	193.32	193.32	1.0	LOT 32 PHEASANT RUN MOR T-20
469-370-033-000	A	193.32	193.32	1.0	LOT 33 PHEASANT RUN MOR T-20
469-370-034-000	A	193.32	193.32	1.0	LOT 34 PHEASANT RUN MOR T-20
469-370-035-000	A	193.32	193.32	1.0	LOT 35 PHEASANT RUN MOR T-20
469-370-036-000	A	193.32	193.32	1.0	LOT 36 PHEASANT RUN MOR T-20
469-370-037-000	A	193.32	193.32	1.0	LOT 37 PHEASANT RUN MOR T-20
469-370-038-000	A	193.32	193.32	1.0	LOT 38 PHEASANT RUN MOR T-20
469-370-039-000	A	193.32	193.32	1.0	LOT 39 PHEASANT RUN MOR T-20
469-370-040-000	A	193.32	193.32	1.0	LOT 40 PHEASANT RUN MOR T-20
471-150-018-000	C	200.00	200.00	1.0	LOT 34 REUTER RANCH PH 1
471-150-019-000	C	200.00	200.00	1.0	LOT 35 REUTER RANCH PH 1
471-150-020-000	C	200.00	200.00	1.0	LOT 36 REUTER RANCH PH 1
471-150-021-000	C	200.00	200.00	1.0	LOT 41 REUTER RANCH PH 1
471-320-001-000	C	200.00	200.00	1.0	LOT 1 REUTER RANCH UNIT 1 PH 2 U-68
471-320-002-000	C	200.00	200.00	1.0	LOT 2 REUTER RANCH UNIT 1 PH 2 U-68
471-320-003-000	C	200.00	200.00	1.0	LOT 3 REUTER RANCH UNIT 1 PH 2 U-68
471-320-004-000	C	200.00	200.00	1.0	LOT 4 REUTER RANCH UNIT 1 PH 2 U-68
471-320-005-000	C	200.00	200.00	1.0	LOT 5 REUTER RANCH UNIT 1 PH 2
471-320-006-000	C	200.00	200.00	1.0	LOT 6 REUTER RANCH UNIT 1 PH 2
471-320-007-000	C	200.00	200.00	1.0	LOT 7 REUTER RANCH UNIT 1 PH 2 U-68
471-320-008-000	C	200.00	200.00	1.0	LOT 8 REUTER RANCH UNIT 1 PH 2 U-68
471-320-009-000	C	200.00	200.00	1.0	LOT 9 REUTER RANCH UNIT 1 PH 2 U-68
471-320-010-000	C	200.00	200.00	1.0	LOT 10 REUTER RANCH UNIT 1 PH 2
471-320-011-000	C	200.00	200.00	1.0	LOT 11 REUTER RANCH UNIT 1 PH 2
471-320-012-000	C	200.00	200.00	1.0	LOT 12 REUTER RANCH UNIT 1 PH 2 U-68

City of Roseville
Infill Area Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	NO OF UNITS	LEGAL DESCRIPTION
471-320-013-000	C	200.00	200.00	1.0	LOT 13 REUTER RANCH UNIT 1 PH 2
471-320-014-000	C	200.00	200.00	1.0	LOT 14 REUTER RANCH UNIT 1 PH 2
471-320-015-000	C	200.00	200.00	1.0	LOT 15 REUTER RANCH UNIT 1 PH 2 U-68
471-320-016-000	C	200.00	200.00	1.0	LOT 16 REUTER RANCH UNIT 1 PH 2
471-320-017-000	C	200.00	200.00	1.0	LOT 17 REUTER RANCH UNIT 1 PH 2
471-320-018-000	C	200.00	200.00	1.0	LOT 18 REUTER RANCH UNIT 1 PH 2
471-320-019-000	C	200.00	200.00	1.0	LOT 19 REUTER RANCH UNIT 1 PH 2
471-320-020-000	C	200.00	200.00	1.0	LOT 20 REUTER RANCH UNIT 1 PH 2 U-68
471-320-021-000	C	200.00	200.00	1.0	LOT 21 REUTER RANCH UNIT 1 PH 2
471-320-022-000	C	200.00	200.00	1.0	LOT 22 REUTER RANCH UNIT 1 PH 2
471-320-023-000	C	200.00	200.00	1.0	LOT 23 REUTER RANCH UNIT 1 PH 2
471-320-024-000	C	200.00	200.00	1.0	LOT 24 REUTER RANCH UNIT 1 PH 2
471-320-025-000	C	200.00	200.00	1.0	LOT 25 REUTER RANCH UNIT 1 PH 2
471-320-026-000	C	200.00	200.00	1.0	LOT 26 REUTER RANCH UNIT 1 PH 2 U-68
471-320-027-000	C	200.00	200.00	1.0	LOT 27 REUTER RANCH UNIT 1 PH 2 U-68
471-320-028-000	C	200.00	200.00	1.0	LOT 28 REUTER RANCH UNIT 1 PH 2
471-320-029-000	C	200.00	200.00	1.0	LOT 29 REUTER RANCH UNIT 1 PH 2
471-320-030-000	C	200.00	200.00	1.0	LOT 30 REUTER RANCH UNIT 1 PH 2
471-320-031-000	C	200.00	200.00	1.0	LOT 31 REUTER RANCH UNIT 1 PH 2
471-320-032-000	C	200.00	200.00	1.0	LOT 32 REUTER RANCH UNIT 1 PH 2
471-320-033-000	C	200.00	200.00	1.0	LOT 33 REUTER RANCH UNIT 1 PH 2 U-68
471-330-001-000	C	200.00	200.00	1.0	LOT 37 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-002-000	C	200.00	200.00	1.0	LOT 38 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-003-000	C	200.00	200.00	1.0	LOT 39 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-004-000	C	200.00	200.00	1.0	LOT 40 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-005-000	C	200.00	200.00	1.0	LOT 42 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-006-000	C	200.00	200.00	1.0	LOT 43 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-007-000	C	200.00	200.00	1.0	LOT 44 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-008-000	C	200.00	200.00	1.0	LOT 45 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-009-000	C	200.00	200.00	1.0	LOT 46 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-010-000	C	200.00	200.00	1.0	LOT 47 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-011-000	C	200.00	200.00	1.0	LOT 48 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-012-000	C	200.00	200.00	1.0	LOT 49 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-013-000	C	200.00	200.00	1.0	LOT 50 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-014-000	C	200.00	200.00	1.0	LOT 51 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-015-000	C	200.00	200.00	1.0	LOT 52 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-016-000	C	200.00	200.00	1.0	LOT 53 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-017-000	C	200.00	200.00	1.0	LOT 54 REUTER RANCH UNIT 1 PH 3 MOR BK V
471-330-018-000	C	200.00	200.00	1.0	LOT 55 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-019-000	C	200.00	200.00	1.0	LOT 56 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-020-000	C	200.00	200.00	1.0	LOT 57 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-021-000	C	200.00	200.00	1.0	LOT 58 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-022-000	C	200.00	200.00	1.0	LOT 59 REUTER RANCH UNIT 1 PH 3 MOR BK V
471-330-023-000	C	200.00	200.00	1.0	LOT 60 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-024-000	C	200.00	200.00	1.0	LOT 61 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-025-000	C	200.00	200.00	1.0	LOT 62 REUTER RANCH UNIT 1 PH 3 MOR BK V
471-330-026-000	C	200.00	200.00	1.0	LOT 63 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-027-000	C	200.00	200.00	1.0	LOT 64 REUTER RANCH UNIT 1 PH 3 MOR BK V
471-330-028-000	C	200.00	200.00	1.0	LOT 65 REUTER RANCH UNIT 1 PH 3 MOR V-66
471-330-029-000	C	200.00	200.00	1.0	LOT 66 REUTER RANCH UNIT 1 PH 3 MOR BK V
472-420-001-000	B	86.64	200.00	1.0	LOT 1 CIRBY OAKS II T-57
472-420-002-000	B	86.64	200.00	1.0	LOT 2 CIRBY OAKS II T-57
472-420-003-000	B	86.64	200.00	1.0	LOT 3 CIRBY OAKS II T-57
472-420-004-000	B	86.64	200.00	1.0	LOT 4 CIRBY OAKS II T-57
472-420-005-000	B	86.64	200.00	1.0	LOT 5 CIRBY OAKS II T-57
472-420-006-000	B	86.64	200.00	1.0	LOT 6 CIRBY OAKS II T-57

City of Roseville
Infill Area Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	NO OF UNITS	LEGAL DESCRIPTION
472-420-007-000	B	86.64	200.00	1.0	LOT 7 CIRBY OAKS II T-57
472-420-008-000	B	86.64	200.00	1.0	LOT 8 CIRBY OAKS II T-57
472-420-009-000	B	86.64	200.00	1.0	LOT 9 CIRBY OAKS II T-57
472-420-010-000	B	86.64	200.00	1.0	LOT 10 CIRBY OAKS II T-57
472-420-011-000	B	86.64	200.00	1.0	LOT 11 CIRBY OAKS II T-57
472-420-012-000	B	86.64	200.00	1.0	LOT 12 CIRBY OAKS II T-57
472-420-013-000	B	86.64	200.00	1.0	LOT 13 CIRBY OAKS II T-57
472-420-014-000	B	86.64	200.00	1.0	LOT 14 CIRBY OAKS II T-57
472-420-015-000	B	86.64	200.00	1.0	LOT 15 CIRBY OAKS II T-57
472-420-016-000	B	86.64	200.00	1.0	LOT 16 CIRBY OAKS II T-57
472-420-017-000	B	86.64	200.00	1.0	LOT 34 CIRBY OAKS II T-57
472-420-018-000	B	86.64	200.00	1.0	LOT 35 CIRBY OAKS II T-57
472-420-019-000	B	86.64	200.00	1.0	LOT 36 CIRBY OAKS II T-57
472-420-020-000	B	86.64	200.00	1.0	LOT 37 CIRBY OAKS II T-57
472-420-021-000	B	86.64	200.00	1.0	LOT 38 CIRBY OAKS II T-57
472-420-022-000	B	86.64	200.00	1.0	LOT 39 CIRBY OAKS II T-57
472-420-023-000	B	86.64	200.00	1.0	LOT 40 CIRBY OAKS II T-57
472-420-024-000	B	86.64	200.00	1.0	LOT 41 CIRBY OAKS II T-57
472-420-025-000	B	86.64	200.00	1.0	LOT 42 CIRBY OAKS II T-57
472-420-026-000	B	86.64	200.00	1.0	LOT 43 CIRBY OAKS II T-57
472-420-027-000	B	86.64	200.00	1.0	LOT 44 CIRBY OAKS II T-57
472-420-028-000	B	86.64	200.00	1.0	LOT 45 CIRBY OAKS II T-57
472-420-029-000	B	86.64	200.00	1.0	LOT 46 CIRBY OAKS II T-57
472-420-030-000	B	86.64	200.00	1.0	LOT 47 CIRBY OAKS II T-57
472-420-031-000	B	86.64	200.00	1.0	LOT 48 CIRBY OAKS II T-57
472-420-032-000	B	86.64	200.00	1.0	LOT 49 CIRBY OAKS II T-57
472-420-033-000	B	86.64	200.00	1.0	LOT 50 CIRBY OAKS II T-57
472-420-034-000	B	86.64	200.00	1.0	LOT 51 CIRBY OAKS II T-57
472-420-035-000	B	86.64	200.00	1.0	LOT 52 CIRBY OAKS II T-57
472-420-036-000	B	86.64	200.00	1.0	LOT 53 CIRBY OAKS II T-57
472-420-037-000	B	86.64	200.00	1.0	LOT 54 CIRBY OAKS II T-57
472-420-038-000	B	86.64	200.00	1.0	LOT 101 CIRBY OAKS II T-57
472-420-039-000	B	86.64	200.00	1.0	LOT 102 CIRBY OAKS II T-57
472-420-040-000	B	86.64	200.00	1.0	LOT 103 CIRBY OAKS II T-57
472-420-041-000	B	86.64	200.00	1.0	LOT 104 CIRBY OAKS II T-57
472-420-042-000	B	86.64	200.00	1.0	LOT 105 CIRBY OAKS II T-57
472-420-043-000	B	86.64	200.00	1.0	LOT 106 CIRBY OAKS II T-57
472-420-044-000	B	86.64	200.00	1.0	LOT 107 CIRBY OAKS II T-57
472-420-045-000	B	86.64	200.00	1.0	LOT 108 CIRBY OAKS II T-57
472-420-046-000	B	86.64	200.00	1.0	LOT 109 CIRBY OAKS II T-57
472-420-047-000	B	86.64	200.00	1.0	LOT 110 CIRBY OAKS II T-57
472-420-048-000	B	86.64	200.00	1.0	LOT 111 CIRBY OAKS II T-57
472-420-049-000	B	86.64	200.00	1.0	LOT 112 CIRBY OAKS II T-57
472-420-050-000	B	86.64	200.00	1.0	LOT 113 CIRBY OAKS II T-57
472-420-051-000	B	86.64	200.00	1.0	LOT 114 CIRBY OAKS II T-57
472-420-052-000	B	86.64	200.00	1.0	LOT 115 CIRBY OAKS II T-57
472-420-053-000	B	86.64	200.00	1.0	LOT 116 CIRBY OAKS II T-57
472-430-001-000	B	86.64	200.00	1.0	LOT 17 CIRBY OAKS II T-57
472-430-002-000	B	86.64	200.00	1.0	LOT 18 CIRBY OAKS II T-57
472-430-003-000	B	86.64	200.00	1.0	LOT 19 CIRBY OAKS II T-57
472-430-004-000	B	86.64	200.00	1.0	LOT 20 CIRBY OAKS II T-57
472-430-005-000	B	86.64	200.00	1.0	LOT 21 CIRBY OAKS II T-57
472-430-006-000	B	86.64	200.00	1.0	LOT 22 CIRBY OAKS II T-57
472-430-007-000	B	86.64	200.00	1.0	LOT 23 CIRBY OAKS II T-57
472-430-008-000	B	86.64	200.00	1.0	LOT 24 CIRBY OAKS II T-57
472-430-009-000	B	86.64	200.00	1.0	LOT 25 CIRBY OAKS II T-57

City of Roseville
Infill Area Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	NO OF UNITS	LEGAL DESCRIPTION
472-430-010-000	B	86.64	200.00	1.0	LOT 26 CIRBY OAKS II T-57
472-430-011-000	B	86.64	200.00	1.0	LOT 27 CIRBY OAKS II T-57
472-430-012-000	B	86.64	200.00	1.0	LOT 28 CIRBY OAKS II T-57
472-430-013-000	B	86.64	200.00	1.0	LOT 29 CIRBY OAKS II T-57
472-430-014-000	B	86.64	200.00	1.0	LOT 30 CIRBY OAKS II T-57
472-430-015-000	B	86.64	200.00	1.0	LOT 31 CIRBY OAKS II T-57
472-430-016-000	B	86.64	200.00	1.0	LOT 32 CIRBY OAKS II T-57
472-430-017-000	B	86.64	200.00	1.0	LOT 33 CIRBY OAKS II T-57
472-430-018-000	B	86.64	200.00	1.0	LOT 55 CIRBY OAKS II T-57
472-430-019-000	B	86.64	200.00	1.0	LOT 56 CIRBY OAKS II T-57
472-430-020-000	B	86.64	200.00	1.0	LOT 57 CIRBY OAKS II T-57
472-430-021-000	B	86.64	200.00	1.0	LOT 58 CIRBY OAKS II T-57
472-430-022-000	B	86.64	200.00	1.0	LOT 59 CIRBY OAKS II T-57
472-430-023-000	B	86.64	200.00	1.0	LOT 60 CIRBY OAKS II T-57
472-430-024-000	B	86.64	200.00	1.0	LOT 61 CIRBY OAKS II T-57
472-430-025-000	B	86.64	200.00	1.0	LOT 62 CIRBY OAKS II T-57
472-430-026-000	B	86.64	200.00	1.0	LOT 63 CIRBY OAKS II T-57
472-430-027-000	B	86.64	200.00	1.0	LOT 64 CIRBY OAKS II T-57
472-430-028-000	B	86.64	200.00	1.0	LOT 65 CIRBY OAKS II T-57
472-430-029-000	B	86.64	200.00	1.0	LOT 66 CIRBY OAKS II T-57
472-430-030-000	B	86.64	200.00	1.0	LOT 67 CIRBY OAKS II T-57
472-430-031-000	B	86.64	200.00	1.0	LOT 68 CIRBY OAKS II T-57
472-430-032-000	B	86.64	200.00	1.0	LOT 69 CIRBY OAKS II T-57
472-430-033-000	B	86.64	200.00	1.0	LOT 70 CIRBY OAKS II T-57
472-430-034-000	B	86.64	200.00	1.0	LOT 71 CIRBY OAKS II T-57
472-430-035-000	B	86.64	200.00	1.0	LOT 72 CIRBY OAKS II T-57
472-430-036-000	B	86.64	200.00	1.0	LOT 73 CIRBY OAKS II T-57
472-430-037-000	B	86.64	200.00	1.0	LOT 74 CIRBY OAKS II T-57
472-430-038-000	B	86.64	200.00	1.0	LOT 75 CIRBY OAKS II T-57
472-430-039-000	B	86.64	200.00	1.0	LOT 76 CIRBY OAKS II T-57
472-430-040-000	B	86.64	200.00	1.0	LOT 77 CIRBY OAKS II T-57
472-430-041-000	B	86.64	200.00	1.0	LOT 78 CIRBY OAKS II T-57
472-430-042-000	B	86.64	200.00	1.0	LOT 79 CIRBY OAKS II T-57
472-430-043-000	B	86.64	200.00	1.0	LOT 80 CIRBY OAKS II T-57
472-430-044-000	B	86.64	200.00	1.0	LOT 81 CIRBY OAKS II T-57
472-430-045-000	B	86.64	200.00	1.0	LOT 82 CIRBY OAKS II T-57
472-430-046-000	B	86.64	200.00	1.0	LOT 83 CIRBY OAKS II T-57
472-430-047-000	B	86.64	200.00	1.0	LOT 84 CIRBY OAKS II T-57
472-430-048-000	B	86.64	200.00	1.0	LOT 85 CIRBY OAKS II T-57
472-430-049-000	B	86.64	200.00	1.0	LOT 86 CIRBY OAKS II T-57
472-430-050-000	B	86.64	200.00	1.0	LOT 87 CIRBY OAKS II T-57
472-430-051-000	B	86.64	200.00	1.0	LOT 88 CIRBY OAKS II T-57
472-430-052-000	B	86.64	200.00	1.0	LOT 89 CIRBY OAKS II T-57
472-430-053-000	B	86.64	200.00	1.0	LOT 90 CIRBY OAKS II T-57
472-430-054-000	B	86.64	200.00	1.0	LOT 91 CIRBY OAKS II T-57
472-430-055-000	B	86.64	200.00	1.0	LOT 92 CIRBY OAKS II T-57
472-430-056-000	B	86.64	200.00	1.0	LOT 93 CIRBY OAKS II T-57
472-430-057-000	B	86.64	200.00	1.0	LOT 94 CIRBY OAKS II T-57
472-430-058-000	B	86.64	200.00	1.0	LOT 95 CIRBY OAKS II T-57
472-430-059-000	B	86.64	200.00	1.0	LOT 96 CIRBY OAKS II T-57
472-430-060-000	B	86.64	200.00	1.0	LOT 97 CIRBY OAKS II T-57
472-430-061-000	B	86.64	200.00	1.0	LOT 98 CIRBY OAKS II T-57
472-430-062-000	B	86.64	200.00	1.0	LOT 99 CIRBY OAKS II T-57
472-430-063-000	B	86.64	200.00	1.0	LOT 100 CIRBY OAKS II T-57

City of Roseville
Infill Area Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	NO OF UNITS	LEGAL DESCRIPTION

Summary Fields	Zone A	Zone B	Zone C	Total
ACTIVE PARCELS	40	116	66	222
LEVIED PARCELS	40	116	66	222
CHARGE	$7,732.80	$10,050.24	$13,200.00	$30,983.04
MAXIMUM ASMT	$7,732.80	$23,200.00	$13,200.00	$44,132.80
NO OF UNITS	40	116	66	222

RESOLUTION NO. 25-112

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, INITIATING PROCEEDINGS FOR THE LEVY OF ASSESSMENTS FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Johnson Ranch Landscaping and Lighting District and annexed territory therein (hereafter referred to as the "District") pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California, beginning with Section 22500* (hereafter referred to as the "Act"), that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance and services of street lighting, landscaping, and all appurtenant facilities and operations related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer") for the purpose of assisting with the establishment of the assessments, the annexation of territory, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act, and in accordance with the California Constitution, Articles XIIIC and XIIID;

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 Engineer's Report: The City Council hereby orders the Engineer to prepare and file with the City Clerk the Engineer's Report concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22622* of the Act.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials and/or improvements for landscape, lighting, open space, floodway, stream course and wetland areas, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

RESOLUTION NO. 25-112

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-113

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Johnson Ranch Landscaping and Lighting District (hereafter referred to as the "District"), and initiated proceedings for Fiscal Year 2025/2026, pursuant to the provisions of the *Landscaping and Lighting Act of 1972*, *Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereafter referred to as the "Act") that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance, operation and servicing of all improvements and facilities related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services for the purpose of assisting with the Annual Levy of the District, and to prepare and file a report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, PURSUANT TO *CHAPTER 3, SECTION 22624* OF THE ACT, AS FOLLOWS:

Section 1 Intention: The City Council hereby declares that it is its intention to seek the Annual Levy of the District pursuant to the Act, over and including the land within the District boundary, and to levy and collect assessments on all such land to pay for the annual costs of the improvements.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials or improvements for landscape, lighting, open space, floodway, stream course and wetland areas, including certain mitigation monitoring activities therein, turf, ground cover, shrubs and trees, irrigation systems and drainage systems, bike trails, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

Section 3 Boundaries and Designation: The boundaries of the District are described as the boundaries previously defined in the formation documents of the original District and any annexations thereto. The District generally includes the parcels within the area known as the Southeast Roseville Specific Plan. The District is known and designated as

"Johnson Ranch Landscaping and Lighting District"

Section 4 Proposed Assessment Amounts: The proposed assessments are outlined in the Engineer's Report. District Assessments are calculated in accordance with the method of apportionment established for the District and do not exceed the assessment rates and applicable annual inflationary adjustment previously authorized by the City Council and approved by the property owners in accordance with the provisions of the California State Constitution, Article XIIID.

Section 5 Public Hearing(s): The City Council hereby declares its intention to conduct a Public Hearing annually concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22626* of the Act.

Section 6 Notice: The City Clerk shall give notice of the time and place of the Public Hearing by causing this Resolution to be published once in the local newspaper not less than ten (10) days before the date of the hearing and by posting a copy of this Resolution on the official bulletin board customarily used by the City Council for the posting of notices.

Section 7 Time and Place of Public Hearing: Notice is hereby given that a Public Hearing on these matters will be held by the City Council on **Wednesday, May 21, 2025 at 6:00 p.m.**, or as soon thereafter as feasible in the regular meeting chambers located at 311 Vernon Street, Roseville, California.

RESOLUTION NO. 25-113

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-114

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, the City Council has, by previous Resolutions, ordered the preparation of an Annual Levy Report (hereafter referred to as the "Engineer's Report") for the district known and designated as the Johnson Ranch Landscaping and Lighting District (hereafter referred to as the "District"), pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereinafter referred to as the "Act"); and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer"), for the purpose of assisting with the establishment of the assessments and to prepare and file an Engineer's Report with the City Clerk in accordance with the Act, and in accordance with the requirements of the California Constitution, Articles XIIIC and XIIID; and,

WHEREAS, there has now been presented to this City Council the Engineer's Report as required by *Chapter 1, Article 4, Section 22566* of said Act; and,

WHEREAS, this City Council has carefully examined and reviewed the Engineer's Report as presented, and is preliminarily satisfied with the District, each and all of the budget items and documents as set forth therein, and is satisfied that the assessments, on a preliminary basis, have been spread in accordance with the benefits received from the improvements, operation, maintenance and services to be performed within each Zone, as set forth in said Engineer's Report; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE JOHNSON RANCH LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 That the above recitals are all true and correct.

Section 2 That the Engineer's Report, as presented, consists of the following:

a. A Description of Improvements
b. The Annual Budget (Costs and Expenses of Maintenance, Services, Operations and District Administration)
c. The Assessment Roll containing the Fiscal Year 2025/2026 Levy for each Assessor Parcel within the District

Section 3 The Engineer's Report is hereby approved on a preliminary basis and ordered to be filed in the Office of the City Clerk as a permanent record and to remain open to public inspection.

Section 4 That the City Clerk shall certify to the passage and adoption of this Resolution, and the minutes of this meeting shall so reflect the presentation of the Engineer's Report.

RESOLUTION NO. 25-114

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

City of Roseville

Johnson Ranch
Landscaping and Lighting District

FY 2025/26 Engineer's Annual Levy Report

Intent Meeting: April 16, 2025
Public Hearing: May 21, 2025

27368 Via Industria
Suite 200
Temecula, CA 92590
T 951.587.3500 | 800.755.6864
F 951.587.3510

www.willdan.com

ENGINEER'S REPORT AFFIDAVIT

Establishment of Annual Rates and Charges for the:

Johnson Ranch
Landscaping and Lighting District

City of Roseville

Placer County, State of California

This Report describes the District and any relevant zones therein, including the improvements, budgets, parcels and assessments to be levied for Fiscal Year 2025/26 as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Placer County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the City Council.

Dated this _____ day of _____, 2025

Willdan Financial Services
Assessment Engineer
On Behalf of the City of Roseville

By: _____

Mickey Ashley
Project Manager
District Administration Services

By: _____

Tyrone Peter
PE # C 81888

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I. OVERVIEW

A. INTRODUCTION

The City of Roseville ("City") annually levies and collects special assessments in order to maintain the improvements in the southeast section of the City of Roseville, known as Johnson Ranch Landscaping and Lighting District ("District"). The District was formed and is levied annual assessments pursuant to the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code (the "1972 Act").

The Engineer's Report ("Report") describes the District, any new annexations, changes to the District, and the proposed assessments for the period of July 1, 2025 through June 30, 2026. The special benefit assessments are based on historical and estimated costs to maintain the District improvements. These assessments, which provide a direct and special benefit to properties within the District, will provide funding for the operation and maintenance of District improvements.

The District consists of five (5) zones of benefit, Zones A, B, C, D and E (individually the "Zone" and collectively the "Zones"). The improvements that benefit properties within each Zone and the costs to maintain and service those improvements are identified and budgeted separately by Zone. The total cost of landscape maintenance within a Zone is equitably spread among only the benefiting parcels.

The word "parcel," for the purposes of this Report, refers to an individual property assigned its own Assessor's Parcel Number ("APN") by the Placer County Assessor's Office. The Placer County Auditor/Controller uses Assessor's Parcel Numbers and specific Tax Code Accounts, to identify on the County's tax roll, properties assessed for special district benefit assessments.

Following approval of the Report, the City Council will, by resolution, order the improvements to be made, if any, and confirm the levy and collection of assessments pursuant to the 1972 Act. The assessment rates and method of apportionment described in this Report as approved or modified by the City Council define the assessments to be applied to each parcel within the District and respective Zones for Fiscal Year ("FY") 2025/26. The assessments as approved will be submitted to the Placer County Auditor/Controller to be included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current fiscal year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the

resubmitted parcel or parcels shall be based on the method of apportionment and assessment rates approved by the City Council.

B. COMPLIANCE WITH CURRENT LEGISLATION

All assessments described in this Report and approved by the City Council are prepared in accordance with the 1972 Act and are in compliance with the substantive and procedural requirements of the California State Constitution Articles XIIIC and XIIID ("Articles XIIIC and XIIID") and the provisions of the Proposition 218 Omnibus Implementation Act [Government Code Section 53750 and following] (the "Implementation Act"). Articles XIIIC and XIIID and the Implementation Act collectively are hereinafter referred to as "Proposition 218".

Pursuant to the California Constitution Article XIIID, Section 5, certain existing assessments are exempt from the substantive and procedural requirements of Article XIIID Section 4 and property owner balloting for the assessments is not required until such time that the assessments are increased. Specifically, the City determined that all improvements and the annual assessments originally established for the District were part of the conditions of property development and approved by the original property owner (developer). As such, pursuant to Article XIIID Section 5(b), all the property owners approved the existing District assessments at the time the assessments were created (originally imposed pursuant to a 100% landowner petition). Therefore, the pre-existing assessment amounts (the maximum assessment rates of Zones A, B, C & D identified in this Report) are exempt from the procedural requirements of Article XIIID Section 4, provided the assessments are not increased above these previously approved maximum assessment rates.

In Fiscal Year 1999/00, the City initiated and conducted property owner protest ballot proceedings in accordance with Article XIIID for Zone E in order to increase the assessment to cover additional costs for services. The proposed assessment increase presented to property owners included an annual inflationary factor of 3%. In Fiscal Year 1999/00 the maximum assessment rate was $623.10 per acre. At the conclusion of the Public Hearing, all property owner ballots returned were tabulated and the City determined that a majority protest did not exist. The City Council then approved the increased assessment and the inflationary factor for maintaining the improvements within the District.

The District and all Zones therein have been formed pursuant to the 1972 Act. Pursuant to the 1972 Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments, to review the Engineer's Annual Levy Report prior to approving the annual assessments to be levied on the County tax rolls. The assessments described in this Report have been prepared in accordance with the Act.

C. DISTRICT BOUNDARIES

The District lies within a portion of the Southeast Roseville Specific Plan, which is located in the southeast section of the City of Roseville. The District is generally located east of I-80 on the south side of Douglas Boulevard. See Appendix A for a rendering of the District boundary map.

D. IMPROVEMENTS AUTHORIZED BY THE 1972 ACT

As applicable or may be applicable to a proposed District, the 1972 Act defines improvements to mean one or any combination of the following:

- The installation or planting of landscaping.
- The installation or construction of statuary, fountains, and other ornamental structures and facilities.
- The installation or construction of public lighting facilities.
- The installation or construction of any facilities which are appurtenant to any of the foregoing, or which are necessary or convenient for the maintenance or servicing thereof, including, but not limited to, grading, clearing, removal of debris, the installation or construction of curbs, gutters, walls, sidewalks, or paving, or water, irrigation, drainage, or electrical facilities.
- The maintenance or servicing, or both, of any of the foregoing.
- The acquisition of any existing improvement otherwise authorized pursuant to this section.

Incidental expenses associated with the improvements including, but not limited to:

- The cost of preparation of the report, including plans, specifications, estimates, diagram, and assessment;
- The costs of printing, advertising, and the publishing, posting, and mailing of notices;
- Compensation payable to the County for collection of assessments;
- Compensation of any engineer or attorney employed to render services;
- Any other expenses incidental to the construction, installation, or maintenance and servicing of the improvements;
- Any expenses incidental to the issuance of bonds or notes pursuant to Section 22662.5.
- Costs associated with any elections held for the approval of a new or increased assessment.

The 1972 Act defines "Maintain" or "maintenance" to mean furnishing of services and materials for the ordinary and usual maintenance, operation, and servicing of any improvement, including:

- Repair, removal, or replacement of all or any part of any improvement.

- Providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury.
- The removal of trimmings, rubbish, debris, and other solid waste.
- The cleaning, sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Furthermore, the 1972 Act specifies that where the cost of improvements (other than maintenance and operations) is greater than can be conveniently raised from a single annual assessment, an assessment to be levied and collected in annual installments. In that event, the governing body may choose to do any of the following:

- Provide for the accumulation of the moneys in an improvement fund until there are sufficient moneys to pay all or part of the cost of the improvements.
- Provide for a temporary advance to the improvement fund from any available and unencumbered funds of the local agency to pay all or part of the cost of the improvements and collect those advanced moneys from the annual installments collected through the assessments.
- Borrow an amount necessary to finance the estimated cost of the proposed improvements. The amount borrowed, including amounts for bonds issued to finance the estimated cost of the proposed improvements.

E. DESCRIPTION OF THE IMPROVEMENTS AND BENEFITS

Zones A, B and C

Zones A, B and C of the District, by special benefit assessments, provide annual funding for the continual maintenance of certain landscaping, open space areas; including floodway and stream course areas as well as the maintenance of bike trails. The specific locations of the floodways, stream courses and areas adjacent thereto to be maintained are described below:

- Parcel 70 - Floodway that feeds Cirby Creek and is located between Douglas Boulevard and Eureka Road. (7.76 acres) - Zone C
- Parcel 71 - Strap Ravine floodway between Douglas Boulevard and East Roseville Parkway. (3.38 acres) - Zone A
- Parcel 72 - Floodway between Roseville Parkway east to commercial development. (8.98 acres) - Zone C
- Parcel 73 - Recreational floodway in Strap Ravine between East Roseville Parkway and Sierra College Boulevard. (16.11 acres) - Zone A
- Parcels 74 & 75 - Recreational floodway that eventually feeds Linda Creek, beginning at Sierra College Boulevard then east to the Roseville City limits. (6.2 acres and 10.8 acres, respectively) - Zone B

Zone D

Zone D of the District, by special benefit assessments, provides annual funding for the costs of mitigation monitoring and costs to maintain landscaped open space areas within certain wetland / riparian area(s) to comply with a Section 404 Permit. The issuance of this Section 404 permit was a condition of the development of the Johnson Ranch East Project, which represents the parcels comprising Zone D.

Zone E

Zone E of the District, by special benefit assessments, provides annual funding for the maintenance of certain landscaping, bike trails and open space areas that include floodway and stream course areas and the costs of mitigation monitoring to comply with both a Section 404 Permit (Federal) and a 1603 Permit (State). The issuance of these permits was a condition of the development of Parcel 9. The specific locations of the floodway and stream courses to be maintained are described as:

- Parcel 76 - Streambed and floodway area located at Cirby Creek from the southwest side of Eureka Boulevard to the end of the Coker Development. (2.79 acres)

II. METHOD OF APPORTIONMENT

A. GENERAL

The Act permits the establishment of assessment districts by agencies for the purpose of providing certain public improvements which include the construction, maintenance and servicing of public lights, landscaping, and appurtenant facilities. The Act further requires that the cost of these improvements be levied according to benefit rather than assessed value:

> *"The net amount to be assessed upon lands within an assessment district may be apportioned by any formula or method which fairly distributes the net amount among all assessable lots or parcels in proportion to the estimated benefits to be received by each such lot or parcel from the improvements."*

The formula used for calculating assessments in each Zone of the District therefore reflects the composition of the parcels, and the improvements and services provided, to fairly apportion the costs based on estimated benefit to each parcel.

B. PROPOSITION 218 BENEFIT ANALYSIS

In conjunction with the provisions of the 1972 Act, the California Constitution Article XIIID addresses several key criteria for the levy of assessments regarding Zone E, notably:

Article XIIID Section 2d defines District as follows:

"District means an area determined by an agency to contain all parcels which will receive a special benefit from a proposed public improvement or property-related service;"

Article XIIID Section 2i defines Special Benefit as follows:

"Special benefit" means a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large. General enhancement of property value does not constitute "special benefit."

Article XIIID Section 4a defines proportional special benefit assessments as follows:

"An agency which proposes to levy an assessment shall identify all parcels which will have a special benefit conferred upon them and upon which an assessment will be imposed. The proportionate special benefit derived by each identified parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. No assessment shall be

imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."

The method of apportionment (method of assessment) set forth in the Report is based on the premise that each assessed property receives special benefits from the improvements within the District, and the assessment obligation for each parcel reflects that parcel's proportional special benefits as compared to other properties that receive special benefits.

C. DESCRIPTION OF METHOD OF APPORTIONMENT

Pursuant to the Act, the costs of the District must be spread to each parcel based upon a benefit formula. Each assessable parcel in the District receives a direct and special benefit from the improvements in the District. The formula used to arrive at each parcel's annual levy amount in each zone is as follows:

Zones A and B

Thirty percent (30%) of the total budgeted costs of Zones A & B are to be levied to floodway Parcel 82 (APN 458-020-001). The remaining Seventy percent (70%) of costs are then allocated equally on a per acre basis to all assessable parcels within these Zones. Acreage of common area parcels shall be apportioned to the remaining assessable parcels of a subdivision and/or parcel split(s) related to the creation of the common area parcel(s).

Zones C, D and E

The budgeted costs of Zones C, D and E are to be allocated equally on a per acre basis to all assessable parcels within each respective Zone. Acreage of common area parcels shall be apportioned to the remaining assessable parcels of a subdivision and/or parcel split(s) related to the creation of the common area parcel(s).

D. INFLATIONARY ADJUSTMENT FACTOR

For Zone E only, if the proposed assessment rate increases over the prior fiscal year's maximum assessment rate by a percentage no greater than the 3%, then the proposed assessment rate is not considered an increase.

III. DISTRICT BUDGET

A. FY 2025/26 BUDGET

DESCRIPTION	ZONE A [1] Fund 2001	ZONE B [1] Fund 2002	ZONE C Fund 2003	ZONE D Fund 2004	ZONE E Fund 2005
DIRECT COSTS					
Contract Maintenance - Open Space (2521-4801-10001)	$13,112.72	$5,097.58	$4,872.71	$132.61	$8,021.46
Maintenance - Bike Trails (3380-4801-10001)	n/a	2,546.16	2,898.38	n/a	1,317.64
Utilities	657.80	0.00	0.00	0.00	0.00
Rehab Reserve Project Expenditures	0.00	0.00	0.00	0.00	0.00
Total Direct Costs	**$13,770.52**	**$7,643.74**	**$7,771.09**	**$132.61**	**$9,339.10**
ADMINISTRATION COSTS					
City Administration	$358.00	$247.00	$193.00	$7.00	$179.00
Contract Administration- Park's Dept	150.00	36.00	100.00	36.00	116.00
Contract Administration - Open Space	1,350.00	36.00	780.00	36.00	906.00
County Auditor Fees	167.50	97.15	90.07	2.76	122.96
Consulting & Professional Services	2,265.00	1,559.00	1,218.00	44.00	1,132.00
Public Hearing Publishing Costs	140.00	96.00	75.00	3.00	70.00
Total Administrative Costs	**$4,430.50**	**$2,071.15**	**$2,456.07**	**$128.76**	**$2,525.96**
Total Direct and Administration Costs	**$18,201.02**	**$9,714.89**	**$10,227.16**	**$261.37**	**$11,865.06**
BUDGET ADJUSTMENTS					
Replenishment/(Use) of Operating Reserve	($1,446.00)	$0.00	($1,219.32)	$14.82	$436.00
Contribution for /(Use of) Rehab Reserve	0.00	0.00	0.00	$0.00	0.00
Rounding Adjustment	(0.59)	(0.43)	(0.79)	($0.14)	(0.04)
Total Adjustments	**($1,446.59)**	**($0.43)**	**($1,220.11)**	**$14.68**	**$435.96**
BALANCE TO LEVY [2]	**$16,754.44**	**$9,714.46**	**$9,007.05**	**$276.05**	**$12,301.02**

Parcel 82 Levy Recap [1]	ZONE A [1] Fund 2001	ZONE B [1] Fund 2002
Non-Parcel 82 Levy (70% of Costs)	$11,728.11	$6,800.12
Parcel 82 Levy - 458-020-001 (30% of Total Costs)	5,026.33	2,914.34
Total Assessment	**$16,754.44**	**$9,714.46**

(1) Thirty percent (30%) of the total budgeted costs of Zones A & B are to be levied to floodway Parcel 82 (APN 458-020-001). 70% of costs are to be assessed to the remaining parcels. See "Parcel 82 Levy Recap" above for calculation.

(2) Slight variations in levy amounts shown in this Report may occur due to rounding limitations.

Fund balance information of each Zone is reported in Section C on the following page. The total balance to levy for the district is $48,053.02.

B. FY 2025/26 ASSESSMENT RATES

DESCRIPTION	ZONE A [1] Fund 2001	ZONE B [1] Fund 2002	ZONE C Fund 2003	ZONE D Fund 2004	ZONE E Fund 2005
FY 2025/26 ASSESSMENT DATA					
Number of Assessable Parcels	194	812	174	505	4
Total Assessable Acres	101.5984	227.5064	132.6061	140.9012	13.6282
Assessment Rates to be Applied:					
Per Acre - Zones C, D & E			$67.9234	$1.9592	$902.6152
Per Acre - Non-Parcel 82 Parcels (70% of costs)[1]	$115.4359	$29.8898			
Parcel 82 Only (30% of Costs)[1]	$5,026.33	$2,914.34			
Maximum Assessment Rates:					
Per Acre - Zones C, D & E			$67.9293	$2.3023	$1,343.7720
Per Acre - Non-Parcel 82 Properties	$115.4398	$35.5600			
Parcel 82 Only	$5,026.20	$3,467.21			
Potential Maximum Assessment	**$16,755.00**	**$11,557.30**	**$9,007.84**	**$324.40**	**$18,313.18**

(1) Thirty percent (30%) of the total budgeted costs of Zones A & B are to be levied to floodway Parcel 82 (APN 458-020-001). 70% of costs are to be assessed to the remaining parcels. See "Parcel 82 Levy Recap" above for calculation.

C. FY 2025/26 FUND BALANCE INFORMATION

DESCRIPTION	ZONE A Fund 2001	ZONE B Fund 2002	ZONE C Fund 2003	ZONE D Fund 2004	ZONE E Fund 2005
OPERATING RESERVE					
Beginning Operating Reserve Balance 7-1-2025 (est.)	**$8,160.76**	**$4,938.00**	**$1,686.00**	**$62.49**	**$4,586.43**
add: Replenishment from FY 2025/26 Levy				14.82	436.00
less: Use for FY 2025/26 Expenses	(1,446.00)		(1,219.32)		
Transfer from/(to) the Rehab Reserve	170.50	(1,116.13)		(11.00)	(352.88)
Ending Operating Reserve Balance 6-30-2026 (est.)	**$6,885.26**	**$3,821.87**	**$466.68**	**$66.31**	**$4,669.55**
REHABILITATION RESERVE					
Beginning Rehab Reserve Balance 7-1-2025 (est.)	**$619.26**	**$0.00**	**$0.00**	**$252.51**	**$202.57**
add: Collect from FY 2025/26 Levy					
less: Use for FY 2025/26 Rehab Projects	0.00	0.00	0.00	0.00	0.00
Transfer from/(to) the Operating Reserve	(170.50)	1,116.13	0.00	11.00	352.88
Ending Rehab Reserve Balance 6-30-2026 (est.)	**$448.76**	**$1,116.13**	**$0.00**	**$263.51**	**$555.45**

D. DESCRIPTION OF BUDGET ITEMS

Description of the terms used in the preceding Budget, Assessment Rates and Fund Balance tables are listed below:

BUDGET:

DIRECT COSTS

Contract Maintenance - Open Space – Includes all regularly scheduled contract labor, materials, supplies, and equipment required to properly maintain and ensure the satisfactory condition of all open space landscaping, irrigation, drainage systems, lighting, floodplain improvements and appurtenant facilities (the "improvements").

Maintenance - Bike Trails - Costs associated with the resurfacing of the Bike trail. If zero, this line item will not be shown in the budget.

Utilities - The furnishing of water and electricity required for the operation and maintenance of the improvements. If zero, this line item will not be shown in the budget.

Mitigation Monitoring – Costs associated with monitoring certain impacts to riparian areas in or near the District under the terms of a Section 404 or 1603 permit. If zero, this line item will not be shown in the budget.

Water Hyacinth Eradication – Costs associated with the eradication of the Water Hyacinth plant in the creek beds. If zero, this line item will not be shown in the budget.

Rehab Reserve Project Expenditures – Expected costs for installation, replacement, or planned upgrades of District improvements for the current year that were previously funded or accumulated in the Rehabilitation Reserve. The Rehabilitation Reserve is used to accumulate funds for costs associated with the future rehabilitation or replacement of District improvements that cannot be conveniently raised from a single year's assessment. If zero, this line item may not be shown in the budget.

ADMINISTRATION COSTS

City Administration – Estimated costs incurred by the City Finance Department and other Departments in preparing the annual budget for the Engineer's Report, together with other financial information required to determine the annual assessment. These costs would also include the preparation, posting and publishing of public notices required for City Council action relating to the District, as well as costs to perform legal review of documents.

Contract Administration – Park's Dept – Estimated costs of Park and Recreation Department staff to coordinate and oversee the maintenance contracts and overall repair and maintenance of the District. This amount also includes the cost of the Department's estimates and analysis of certain budget items, estimated costs and useful lives of certain District Improvements.

Contract Administration – Open Space – Estimated costs of City staff to coordinate and oversee the maintenance contracts and non-contract maintenance of the open space areas of the District. This amount also includes the cost of the Department's estimates and analysis of certain budget items.

County Auditor Fees - A fee of 1% of the total levy amount that is charged to the District by the County for placing assessments on property tax bills.

Consulting and Professional Services – Includes the costs and expenses of contracting with various professionals to provide legal, engineering and district administration services directly related to the District, including the calculation of the annual assessment amounts and the preparation of the Engineer's' Report.

Public Hearing Publishing Costs –Includes the out-of-pocket costs to publish public notices required for City Council action relating to the District.

Total Direct and Administration Costs – The total expected costs of the District.

BUDGET ADJUSTMENTS

Replenishment/(Use) of Operating Reserve – A "Replenishment" increases the levy in order to replenish the Operating Reserve. On the other hand, a "Use" of the Operating Reserve decreases the levy by drawing funds from the Operating Reserve for current year expenditures. If zero, this line item may not be shown in the budget. Further information regarding the function of the Operating Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Contribution for / (Use of) Rehab Reserve — A "Contribution" increases the levy in order to generate funding for the Rehabilitation Reserve. This reserve allows for the accumulation of funds for possible rehabilitation projects or replacements in future years. On the other hand, a "Use of" of the Rehabilitation Reserve provides current year funding of rehabilitation projects or replacements from available funds within the Rehabilitation Reserve. If zero, this line item may not be shown in the budget. Further information regarding the function of the Rehabilitation Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Rounding Adjustment – The necessary rounding adjustment(s) due to limitations of the County property tax system that requires even penny levy amounts to be placed on the secured tax roll.

BALANCE TO LEVY - This is the total amount to be levied and collected through assessments for the current fiscal year for each Zone. The Balance to Levy represents the sum of the total District costs together with applicable adjustments related to the Reserve Fund replenishments or reductions and/or Capital Improvement Fund activity.

Parcel 82 Levy Recap – A recap of the cost breakdown between certain parcels. Thirty percent (30%) of the total budgeted costs of Zones A & B are to be levied to floodway Parcel 82 (APN 458-020-001). 70% of costs are to be assessed to the remaining parcels.

ASSESSMENT RATES:

Number of Assessable Parcels - The total number of parcels within each Unit that are expected to be assessed. Non-assessable lots or parcels include government-owned land, public utility-owned property, land principally encumbered by public rights-of-way or easements, common areas, and/or parcels within the boundaries of the District that currently do not benefit from the improvements due possibly to development restrictions.

Total Assessable Acres – Non-Parcel 82 Properties - The total number of acres within Zones A and B that are to be assessed on an acreage basis for the current fiscal year; this acreage excludes Parcel 82.

Applied Assessment Rates - The assessment rates to be applied to the non-exempt parcels within the District for the current fiscal year.

Maximum Assessment Rates - The maximum assessment rates for the current fiscal year.

Maximum Potential Assessment – The total amount that is expected to be assessed against all parcels within the District for the Current Fiscal Year.

FUND BALANCE INFORMATION:

OPERATING RESERVE

Beginning Operating Reserve Balance 7-1-2025 (est.) - The anticipated beginning balance of cash and receivables net of any unpaid prior year obligations for each Zone. These beginning balances shall be used to fund each Zone's expenditures from July 1, 2025 to December 31, 2025, as the Operating Reserve is required to compensate for the approximate six-month delay between the start of the District's fiscal year and the receipt of the collections from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

Replenish from FY 2025/26 Levy – This amount is added to the FY 2025/26 levy in order to replenish the Operating Reserve. Due to the six-month delay from the District's receipt of assessment collections, the Operating Reserve balance shall be sufficiently funded to provide for expenditures from the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Expenses – The amount of the Operating Reserve to be used to fund FY 2025/26 expenses. Portions of the Operating Reserve may be slated for current year expenditures in order to reduce the Ending Operating Reserve Balance to an amount no greater than the expected District costs for the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Rehab Reserve — The amount of Operating Reserve monies to be transferred to or from the Rehabilitation Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Operating Reserve Balance 6-30-2026 (est.) - This amount represents the anticipated Operating Reserve balance/(deficit) for each Zone as of June 30, 2026. The size of each Zone's Operating Reserve is limited by Streets and Highways Code 22569 which states that an Operating Reserve shall not exceed the estimated costs of maintenance, service, and incidental expenses from the first day of the fiscal year (July 1) to the date that the Agency expects to receive the first apportionment of collections from the County, which is estimated to be December 31. Therefore, each Zone may retain an Operating Reserve amounting to the District's first six-months of expenses in order to meet ongoing obligations until the first collections are received from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

REHABILITATION RESERVE

Beginning Rehab Reserve Balance 7-1-2025 (est.) — The projected balance of funds in the Rehabilitation Reserve as of July 1, 2025. Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

Collect from FY 2025/26 Levy — This amount is added to the FY 2025/26 levy to accumulate funding of future year rehabilitation projects, replacements, restorations, or upgrades of District improvements. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Rehab Projects – The amount of Rehabilitation Reserve monies expected to be transferred out of the Rehabilitation Reserve to fund the costs of installation, replacement, or planned upgrades of District improvements for the current year. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Operating Reserve — The amount of Rehabilitation Reserve monies to be transferred to or from the Operating Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same Zone's Operating Reserve, at the discretion of the Parks and Recreation Department, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Rehab Reserve Balance 6-30-2026 (est.) - The projected balance of funds in the Rehabilitation Reserve as of June 30, 2026. These funds shall be used to provide for future year rehabilitation projects, replacements, restorations, or upgrades of District improvements which cannot be conveniently raised from a single year's assessment.

E. REHABILITATION RESERVE – CAPITAL IMPROVEMENT PLAN

Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

The Report provides a five-year Capital Improvement Plan ("CIP") which shows projected expenditures by Zone related to the rehabilitation, restoration and/or replacement of District improvements, and other allowable costs. The Current Fiscal Year CIP is shown in the preceding Budget Section A. The projected CIP costs for the remaining four years are shown in the table below.

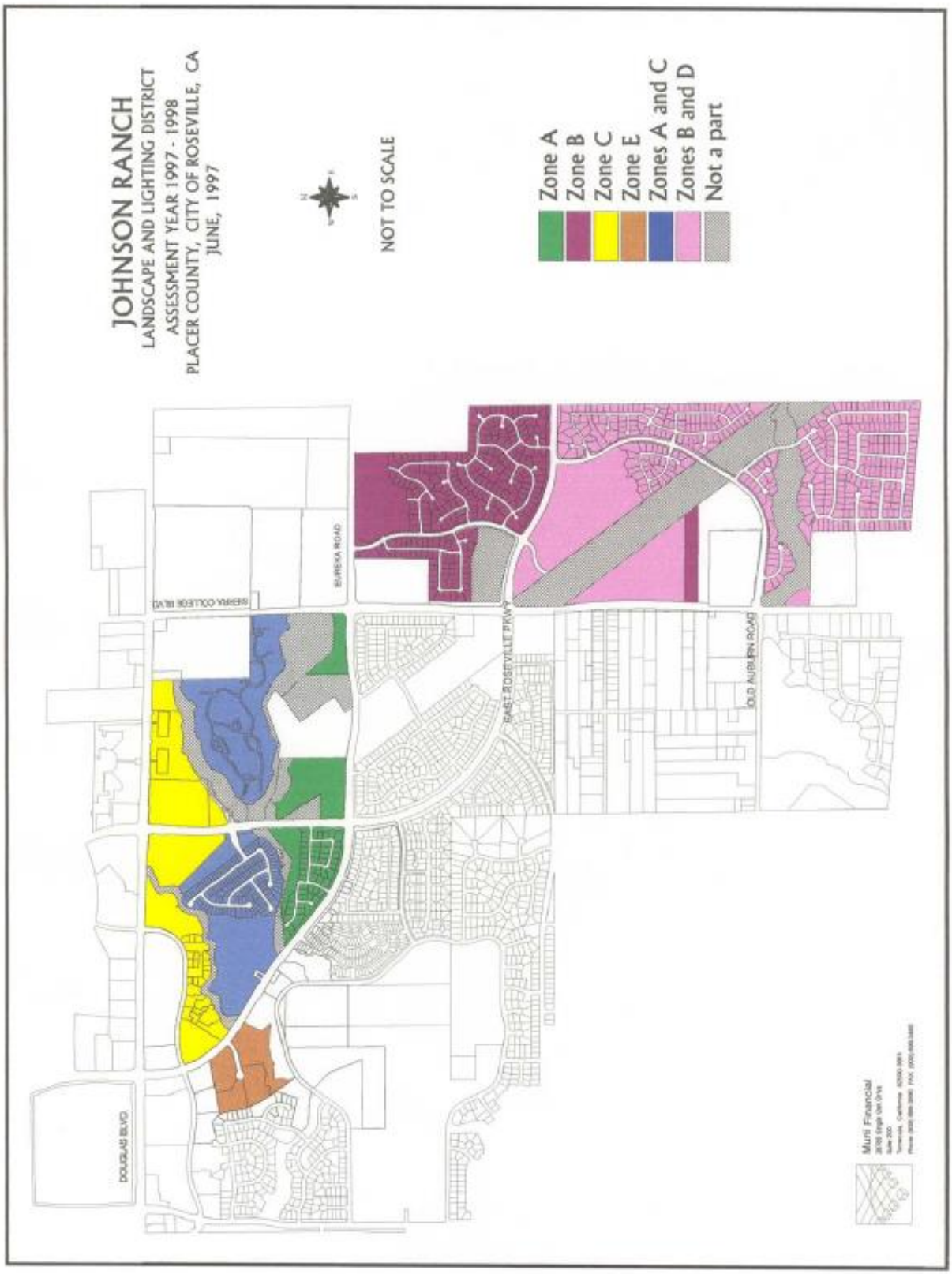
Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Zone A - General open space, creek rehab	$375	$375	$342	$600	$1,692
Zone B - General open space, creek rehab	$276	$280	$280	$280	$1,116
Zone D - General open space, creek rehab	$75	$50	$89	$50	$264
Zone E - General open space, creek rehab	$150	$150	$150	$105	$555

Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the District or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same Zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements.

APPENDIX A – DISTRICT BOUNDARY MAP

The Assessment Diagrams for the District have previously been submitted to the Clerk of the City in the format required under the Act and are, by reference, made part of this Report. The boundary maps are available for inspection at the office of the City Clerk during normal business hours.

For general reference purposes, a one-page rendering of the District's Boundaries is presented herein.


JOHNSON RANCH
LANDSCAPE AND LIGHTING DISTRICT
ASSESSMENT YEAR 1997 - 1998
PLACER COUNTY, CITY OF ROSEVILLE, CA
JUNE, 1997
NOT TO SCALE
Zone A
Zone B
Zone C
Zone E
Zones A and C
Zones B and D
Not a part
SIERRA COLLEGE BLVD
EUREKA ROAD
EAST ROSEVILLE PKWY
DOUGLAS BLVD
Muni Financial

APPENDIX B — FY 2025/26 ASSESSMENT ROLL

Parcel identification, for each lot or parcel within the District, shall be the parcel as shown on the Placer County Assessor's map for the year in which this Report is prepared.

A listing of parcels to be assessed within this District, along with the proposed assessment amounts, may be submitted to the City Clerk, under a separate cover, and by reference is made part of this Report.

Non-assessable lots or parcels may include areas of public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas and rights-of-way, including public greenbelts and parkways; utility rights-of-way; small parcels vacated by the County, bifurcated lots, and other property that cannot be developed, excepting common area parcels. These types of parcels are considered to receive little or no benefit from the improvements and are therefore exempt from assessment.

At the conclusion of the public hearing for the District and the proposed assessments, approval of the Report (as submitted or as modified) confirms the method of apportionment and the assessment rate to be levied against each eligible parcel and thereby constitutes the approved levy and collection of assessments for FY 2025/26. The listing of parcels and the amount of assessment to be levied shall be submitted to the County Auditor/Controller and included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current fiscal year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved in this Report. Therefore, if a single parcel has changed to multiple parcels, the assessment amount applied to each of the new parcels shall be recalculated and applied according to the approved method of apportionment and assessment rate rather than a proportionate share of the original assessment.

City of Roseville
Johnson Ranch Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
048-160-030-000	Assessable	A&C	$ 7,089.22	$ 7,089.05	38.66	0.0	38.66	0.0	0.0	38.7AL29JOHNSONRANCH N CENP100
048-160-032-000	Assessable	A	499.84	499.85	4.33	0.0	0.0	0.0	0.0	4.3ACL32JOHNSONRANCH N CENP100
048-160-036-000	Assessable	A	1,365.64	1,365.65	11.83	0.0	0.0	0.0	0.0	12.0AC POR L1 JOHNSON RANCH #3
048-160-040-000	Assessable	C	178.66	178.65	0.0	0.0	2.63	0.0	0.0	2.6 AC L30C JOHNSON RANCH N C
048-160-041-000	Assessable	C	76.08	76.08	0.0	0.0	1.12	0.0	0.0	1.1 AC PAR 1 PMOR 26-126
048-160-042-000	Assessable	C	76.08	76.08	0.0	0.0	1.12	0.0	0.0	1.1 AC PAR 2 PMOR 26-126
048-160-043-000	Assessable	C	506.10	506.07	0.0	0.0	7.45	0.0	0.0	7.5 AC PAR 3 PMOR 26-126
048-160-045-000	Assessable	C	170.50	170.50	0.0	0.0	2.51	0.0	0.0	2.5 AC PAR 2 PMOR 28-26
048-160-046-000	Assessable	C	211.74	211.74	0.0	0.0	3.117	0.0	0.0	PARCEL 1 PMOR 29-10
048-160-047-000	Assessable	C	315.02	315.02	0.0	0.0	4.6374	0.0	0.0	PARCEL 2 PMOR 29-10
048-160-048-000	Assessable	C	356.34	356.33	0.0	0.0	5.2456	0.0	0.0	PARCEL 3 PMOR 29-10
048-160-049-000	Common Area	C	-	-	0.0	0.0	0.0	0.0	0.0	8.8 AC PARCEL 4 PMOR 29-10
048-171-045-000	Assessable	C	739.12	739.07	0.0	0.0	10.88	0.0	0.0	10.9 AC L 21 SOUTHFORK Q-14
048-171-053-000	Assessable	A&C	3,509.76	3,509.69	19.14	0.0	19.14	0.0	0.0	19.6 AC LOT 8A & POR LOT 8B SOUTHFORK Q-14
457-070-001-000	Assessable	E	2,594.74	3,862.94	0.0	0.0	0.0	0.0	2.8747	2.7 AC PAR 9A PMOR 28-110
457-070-002-000	Assessable	E	3,363.60	5,007.57	0.0	0.0	0.0	0.0	3.7265	3.5 AC PAR 9B PMOR 28-110
457-070-003-000	Assessable	E	3,171.34	4,721.34	0.0	0.0	0.0	0.0	3.5135	3.3 AC PAR 9C PMOR 28-110
457-070-004-000	Assessable	E	3,171.34	4,721.34	0.0	0.0	0.0	0.0	3.5135	3.3 AC PAR 9D PMOR 28-110
458-010-001-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 1 BROADSTONE PLACE Q-11
458-010-002-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 2 BROADSTONE PLACE Q-11
458-010-003-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 3 BROADSTONE PLACE Q-11
458-010-004-000	Assessable	A	26.74	26.75	0.2317	0.0	0.0	0.0	0.0	L 4 BROADSTONE PLACE Q-11
458-010-005-000	Assessable	A	39.44	39.45	0.3417	0.0	0.0	0.0	0.0	LOT 5 BROADSTONE PLACE MOR BK Q PG 11
458-010-006-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	LOT 6 BROADSTONE PLACE MOR BK Q PG 11
458-010-007-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 7 BROADSTONE PLACE Q-11
458-010-008-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 8 BROADSTONE PLACE Q-11
458-010-009-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 9 BROADSTONE PLACE Q-11
458-010-010-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	LOT 10 BROADSTONE PLACE MOR BK Q PG 11
458-010-011-000	Assessable	A	35.98	35.98	0.3117	0.0	0.0	0.0	0.0	L 11 BROADSTONE PLACE Q-11
458-010-012-000	Assessable	A	27.90	27.90	0.2417	0.0	0.0	0.0	0.0	LOT 12 BROADSTONE PLACE MOR BK Q PG 11
458-010-013-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	LOT 13 BROADSTONE PLACE MOR BK Q PG 11
458-010-014-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 14 BROADSTONE PLACE Q-11
458-010-015-000	Assessable	A	32.50	32.52	0.2817	0.0	0.0	0.0	0.0	L 15 BROADSTONE PLACE Q-11
458-010-016-000	Assessable	A	30.20	30.21	0.2617	0.0	0.0	0.0	0.0	L 16 BROADSTONE PLACE Q-11
458-010-017-000	Assessable	A	31.36	31.37	0.2717	0.0	0.0	0.0	0.0	L 17 BROADSTONE PLACE Q-11
458-010-018-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	L 18 BROADSTONE PLACE Q-11
458-010-019-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	LOT 19 BROADSTONE PLACE MOR Q-11
458-010-020-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	L 20 BROADSTONE PLACE Q-11
458-010-021-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 21 BROADSTONE PLACE Q-11
458-010-022-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	LOT 22 BROADSTONE PLACE MOR Q-11
458-010-023-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	L 23 BROADSTONE PLACE Q-11
458-010-024-000	Assessable	A	26.74	26.75	0.2317	0.0	0.0	0.0	0.0	LOT 24 BROADSTONE PLACE MOR Q-11
458-010-025-000	Assessable	A	30.20	30.21	0.2617	0.0	0.0	0.0	0.0	L 25 BROADSTONE PLACE Q-11
458-010-026-000	Assessable	A	30.20	30.21	0.2617	0.0	0.0	0.0	0.0	LOT 45 BROADSTONE PLACE MOR BK Q PG 11
458-010-027-000	Assessable	A	30.20	30.21	0.2617	0.0	0.0	0.0	0.0	L 46 BROADSTONE PLACE Q-11
458-010-028-000	Assessable	A	16.34	16.36	0.1417	0.0	0.0	0.0	0.0	LOT 47 BROADSTONE PLACE MOR BK Q PG 11

City of Roseville
Johnson Ranch Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
458-010-029-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	L 48 BROADSTONE PLACE Q-11
458-010-030-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 49 BROADSTONE PLACE Q-11
458-010-033-000	Assessable	A	27.90	27.90	0.2417	0.0	0.0	0.0	0.0	L 52 BROADSTONE PLACE Q-11
458-010-035-000	Assessable	A	27.90	27.90	0.2417	0.0	0.0	0.0	0.0	POR L 50 BROADSTONE PL Q-11
458-010-036-000	Assessable	A	26.74	26.75	0.2317	0.0	0.0	0.0	0.0	L51 &POR L50 BROADSTONE PLQ-11
458-020-001-000	Flood	A&B	7,940.98	8,493.73	0.0	0.0	0.0	0.0	0.0	L 71C BROADSTONE PLACE Q-11
458-020-002-000	Assessable	A	35.98	35.98	0.3117	0.0	0.0	0.0	0.0	L 26 BROADSTONE PLACE Q-11
458-020-003-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 27 BROADSTONE PLACE Q-11
458-020-004-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 28 BROADSTONE PLACE Q-11
458-020-005-000	Assessable	A	38.28	38.29	0.3317	0.0	0.0	0.0	0.0	L 29 BROADSTONE PLACE Q-11
458-020-006-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	LOT 30 BROADSTONE PLACE MOR Q-11
458-020-007-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	L 31 BROADSTONE PLACE Q-11
458-020-008-000	Assessable	A	39.44	39.45	0.3417	0.0	0.0	0.0	0.0	L 32 BROADSTONE PLACE Q-11
458-020-009-000	Assessable	A	39.44	39.45	0.3417	0.0	0.0	0.0	0.0	L 33 BROADSTONE PLACE Q-11
458-020-010-000	Assessable	A	29.04	29.06	0.2517	0.0	0.0	0.0	0.0	L 34 BROADSTONE PLACE Q-11
458-020-011-000	Assessable	A	31.36	31.37	0.2717	0.0	0.0	0.0	0.0	LOT 35 BROADSTONE PLACE Q-11
458-020-012-000	Assessable	A	25.58	25.59	0.2217	0.0	0.0	0.0	0.0	LOT 36 BROADSTONE PLACE MOR BK Q PG 11
458-020-013-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 37 BROADSTONE PLACE Q-11
458-020-014-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 38 BROADSTONE PLACE Q-11
458-020-015-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 39 BROADSTONE PLACE Q-11
458-020-016-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 40 BROADSTONE PLACE Q-11
458-020-017-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 41 BROADSTONE PLACE Q-11
458-020-018-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 42 BROADSTONE PLACE Q-11
458-020-019-000	Assessable	A	23.28	23.28	0.2017	0.0	0.0	0.0	0.0	L 43 BROADSTONE PLACE Q-11
458-020-020-000	Assessable	A	24.42	24.44	0.2117	0.0	0.0	0.0	0.0	L 44 BROADSTONE PLACE Q-11
458-030-001-000	Assessable	C	296.18	296.17	0.0	0.0	4.36	0.0	0.0	4.3 AC PAR 7E PM 25-91
458-030-004-000	Assessable	C	21.04	21.06	0.0	0.0	0.31	0.0	0.0	PAR 3 PMOR 28-15
458-030-005-000	Assessable	C	17.66	17.66	0.0	0.0	0.26	0.0	0.0	PAR 4 PMOR 28-15
458-030-006-000	Assessable	C	37.36	37.36	0.0	0.0	0.55	0.0	0.0	PAR 5 PMOR 28-15
458-030-009-000	Assessable	C	31.92	31.93	0.0	0.0	0.47	0.0	0.0	PAR 8 PMOR 28-15
458-030-010-000	Assessable	C	45.50	45.51	0.0	0.0	0.67	0.0	0.0	PAR 6 & 7 PMOR 28-15
458-030-014-000	Assessable	C	40.08	40.08	0.0	0.0	0.59	0.0	0.0	LOT A PMOR 28-71
458-030-015-000	Assessable	C	28.52	28.53	0.0	0.0	0.42	0.0	0.0	LOT B PMOR 28-71
458-030-016-000	Assessable	C	84.90	84.91	0.0	0.0	1.25	0.0	0.0	1.3 AC PAR 1 & POR PAR 2 PMOR 28-15
458-030-017-000	Assessable	C	34.38	34.39	0.0	0.0	0.5062	0.0	0.0	PAR 7H PMOR 28-119
458-030-018-000	Assessable	C	16.64	16.66	0.0	0.0	0.2452	0.0	0.0	PAR 1 PMOR 28-120
458-030-019-000	Assessable	C	21.68	21.69	0.0	0.0	0.3193	0.0	0.0	PAR 2 PMOR 28-120
458-030-020-000	Assessable	C	26.00	26.00	0.0	0.0	0.3828	0.0	0.0	PAR 3 PMOR 28-120
458-030-021-000	Assessable	C	25.48	25.48	0.0	0.0	0.3751	0.0	0.0	PAR 4 PMOR 28-120
458-030-022-000	Assessable	C	16.62	16.64	0.0	0.0	0.2449	0.0	0.0	PAR 5 PMOR 28-120
458-030-026-000	Assessable	C	34.86	34.86	0.0	0.0	0.5132	0.0	0.0	PAR 6 & 7 PMOR 28-120
458-040-001-000	Assessable	A&C	20.16	20.17	0.11	0.0	0.11	0.0	0.0	LOT 1 THE VILLAGE S-101
458-040-002-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 2 THE VILLAGE S-101
458-040-003-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 3 THE VILLAGE S-101
458-040-004-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 4 THE VILLAGE S-101
458-040-005-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 5 THE VILLAGE S-101

City of Roseville
Johnson Ranch Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
458-040-006-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 6 THE VILLAGE S-101
458-040-007-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 7 THE VILLAGE S-101
458-040-008-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 8 THE VILLAGE S-101
458-040-009-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 9 THE VILLAGE S-101
458-040-010-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 10 THE VILLAGE S-101
458-040-011-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 11 THE VILLAGE S-101
458-040-012-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 12 THE VILLAGE S-101
458-040-013-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 13 THE VILLAGE S-101
458-040-014-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 14 THE VILLAGE S-101
458-040-015-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 15 THE VILLAGE S-101
458-040-016-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 16 THE VILLAGE S-101
458-040-017-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 17 THE VILLAGE S-101
458-040-018-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 18 THE VILLAGE S-101
458-040-019-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 19 THE VILLAGE S-101
458-040-020-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 20 THE VILLAGE S-101
458-040-021-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 21 THE VILLAGE S-101
458-040-022-000	Assessable	A&C	20.16	20.17	0.11	0.0	0.11	0.0	0.0	LOT 22 THE VILLAGE S-101
458-040-023-000	Assessable	A&C	34.84	34.84	0.19	0.0	0.19	0.0	0.0	LOT 23 THE VILLAGE S-101
458-040-024-000	Assessable	A&C	38.50	38.51	0.21	0.0	0.21	0.0	0.0	LOT 24 THE VILLAGE S-101
458-040-025-000	Assessable	A&C	20.16	20.17	0.11	0.0	0.11	0.0	0.0	LOT 25 THE VILLAGE S-101
458-040-026-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 26 THE VILLAGE S-101
458-040-027-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 27 THE VILLAGE S-101
458-040-028-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 28 THE VILLAGE S-101
458-040-029-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 29 THE VILLAGE S-101
458-040-030-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 30 THE VILLAGE S-101
458-040-031-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 31 THE VILLAGE S-101
458-040-032-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 32 THE VILLAGE S-101
458-040-033-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 33 THE VILLAGE S-101
458-040-034-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 34 THE VILLAGE S-101
458-040-035-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 35 THE VILLAGE S-101
458-040-036-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 36 THE VILLAGE S-101
458-040-037-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 37 THE VILLAGE S-101
458-040-038-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 38 THE VILLAGE S-101
458-040-039-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 39 THE VILLAGE S-101
458-040-040-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 40 THE VILLAGE S-101
458-040-041-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 41 THE VILLAGE S-101
458-040-042-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 42 THE VILLAGE S-101
458-040-043-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 55 THE VILLAGE S-101
458-040-044-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 56 THE VILLAGE S-101
458-040-045-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 57 THE VILLAGE S-101
458-040-046-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 58 THE VILLAGE S-101
458-040-047-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 59 THE VILLAGE S-101
458-040-048-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 60 THE VILLAGE S-101
458-040-049-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 61 THE VILLAGE S-101
458-040-050-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 62 THE VILLAGE S-101
458-040-051-000	Assessable	A&C	27.50	27.51	0.15	0.0	0.15	0.0	0.0	LOT 63 THE VILLAGE S-101

City of Roseville
Johnson Ranch Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
458-040-052-000	Assessable	A&C	38.50	38.51	0.21	0.0	0.21	0.0	0.0	LOT 64 THE VILLAGE S-101
458-040-053-000	Assessable	A&C	25.66	25.67	0.14	0.0	0.14	0.0	0.0	LOT 65 THE VILLAGE S-101
458-040-054-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 66 THE VILLAGE S-101
458-040-055-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 67 THE VILLAGE S-101
458-040-056-000	Assessable	A&C	27.50	27.51	0.15	0.0	0.15	0.0	0.0	LOT 68 THE VILLAGE S-101
458-040-057-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 69 THE VILLAGE S-101
458-040-058-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 70 THE VILLAGE S-101
458-040-059-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 71 THE VILLAGE S-101
458-040-060-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 72 THE VILLAGE S-101
458-040-061-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 73 THE VILLAGE S-101
458-040-062-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 74 THE VILLAGE S-101
458-040-063-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 75 THE VILLAGE S-101
458-040-064-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 76 THE VILLAGE S-101
458-040-065-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 77 THE VILLAGE S-101
458-040-066-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 78 THE VILLAGE S-101
458-040-067-000	Assessable	A&C	25.66	25.67	0.14	0.0	0.14	0.0	0.0	LOT 79 THE VILLAGE S-101
458-050-001-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 43 THE VILLAGE S-101
458-050-002-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 44 THE VILLAGE S-101
458-050-003-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 45 THE VILLAGE S-101
458-050-004-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 46 THE VILLAGE S-101
458-050-005-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 47 THE VILLAGE S-101
458-050-006-000	Assessable	A&C	25.66	25.67	0.14	0.0	0.14	0.0	0.0	LOT 48 THE VILLAGE S-101
458-050-007-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 49 THE VILLAGE S-101
458-050-008-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 50 THE VILLAGE S-101
458-050-009-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 51 THE VILLAGE S-101
458-050-010-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 52 THE VILLAGE S-101
458-050-011-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 53 THE VILLAGE S-101
458-050-012-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 54 THE VILLAGE S-101
458-050-013-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 80 THE VILLAGE S-101
458-050-014-000	Assessable	A&C	27.50	27.51	0.15	0.0	0.15	0.0	0.0	LOT 81 THE VILLAGE S-101
458-050-015-000	Assessable	A&C	33.00	33.01	0.18	0.0	0.18	0.0	0.0	LOT 82 THE VILLAGE S-101
458-050-016-000	Assessable	A&C	20.16	20.17	0.11	0.0	0.11	0.0	0.0	LOT 83 THE VILLAGE S-101
458-050-017-000	Assessable	A&C	25.66	25.67	0.14	0.0	0.14	0.0	0.0	LOT 84 THE VILLAGE S-101
458-050-018-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 85 THE VILLAGE S-101
458-050-019-000	Assessable	A&C	31.16	31.17	0.17	0.0	0.17	0.0	0.0	LOT 86 THE VILLAGE S-101
458-050-020-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 87 THE VILLAGE S-101
458-050-021-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 88 THE VILLAGE S-101
458-050-022-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 89 THE VILLAGE S-101
458-050-023-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 90 THE VILLAGE S-101
458-050-024-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 91 THE VILLAGE S-101
458-050-025-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 92 THE VILLAGE S-101
458-050-026-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 93 THE VILLAGE S-101
458-050-027-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 94 THE VILLAGE S-101
458-050-028-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 95 THE VILLAGE S-101
458-050-029-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 96 THE VILLAGE S-101
458-050-030-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 97 THE VILLAGE S-101

City of Roseville
Johnson Ranch Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
458-050-031-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 98 THE VILLAGE S-101
458-050-032-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 99 THE VILLAGE S-101
458-050-033-000	Assessable	A&C	33.00	33.01	0.18	0.0	0.18	0.0	0.0	LOT 100 THE VILLAGE S-101
458-050-034-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 101 THE VILLAGE S-101
458-050-035-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 102 THE VILLAGE S-101
458-050-036-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 103 THE VILLAGE S-101
458-050-037-000	Assessable	A&C	20.16	20.17	0.11	0.0	0.11	0.0	0.0	LOT 104 THE VILLAGE S-101
458-050-038-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 105 THE VILLAGE S-101
458-050-039-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 106 THE VILLAGE S-101
458-050-040-000	Assessable	A&C	20.16	20.17	0.11	0.0	0.11	0.0	0.0	LOT 107 THE VILLAGE S-101
458-050-041-000	Assessable	A&C	31.16	31.17	0.17	0.0	0.17	0.0	0.0	LOT 108 THE VILLAGE S-101
458-050-042-000	Assessable	A&C	20.16	20.17	0.11	0.0	0.11	0.0	0.0	LOT 109 THE VILLAGE S-101
458-050-043-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 110 THE VILLAGE S-101
458-050-044-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 111 THE VILLAGE S-101
458-050-045-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 112 THE VILLAGE S-101
458-050-046-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 113 THE VILLAGE S-101
458-050-047-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 114 THE VILLAGE S-101
458-050-048-000	Assessable	A&C	38.50	38.51	0.21	0.0	0.21	0.0	0.0	LOT 115 THE VILLAGE S-101
458-050-049-000	Assessable	A&C	51.34	51.34	0.28	0.0	0.28	0.0	0.0	LOT 116 THE VILLAGE S-101
458-050-050-000	Assessable	A&C	31.16	31.17	0.17	0.0	0.17	0.0	0.0	LOT 117 THE VILLAGE S-101
458-050-051-000	Assessable	A&C	27.50	27.51	0.15	0.0	0.15	0.0	0.0	LOT 118 THE VILLAGE S-101
458-050-052-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 119 THE VILLAGE S-101
458-050-053-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 120 THE VILLAGE S-101
458-050-054-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 121 THE VILLAGE S-101
458-050-055-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 122 THE VILLAGE S-101
458-050-056-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 123 THE VILLAGE S-101
458-050-057-000	Assessable	A&C	25.66	25.67	0.14	0.0	0.14	0.0	0.0	LOT 124 THE VILLAGE S-101
458-050-058-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 125 THE VILLAGE S-101
458-050-059-000	Assessable	A&C	27.50	27.51	0.15	0.0	0.15	0.0	0.0	LOT 126 THE VILLAGE S-101
458-050-060-000	Assessable	A&C	29.32	29.34	0.16	0.0	0.16	0.0	0.0	LOT 127 THE VILLAGE S-101
458-050-061-000	Assessable	A&C	29.32	29.34	0.16	0.0	0.16	0.0	0.0	LOT 128 THE VILLAGE S-101
458-050-062-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 129 THE VILLAGE S-101
458-050-063-000	Assessable	A&C	23.82	23.84	0.13	0.0	0.13	0.0	0.0	LOT 130 THE VILLAGE S-101
458-050-064-000	Assessable	A&C	27.50	27.51	0.15	0.0	0.15	0.0	0.0	LOT 131 THE VILLAGE S-101
458-050-065-000	Assessable	A&C	34.84	34.84	0.19	0.0	0.19	0.0	0.0	LOT 132 THE VILLAGE S-101
458-050-066-000	Assessable	A&C	22.00	22.00	0.12	0.0	0.12	0.0	0.0	LOT 133 THE VILLAGE S-101
458-050-067-000	Assessable	A&C	16.50	16.50	0.09	0.0	0.09	0.0	0.0	LOT 134 THE VILLAGE S-101
458-050-068-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 135 THE VILLAGE S-101
458-050-069-000	Assessable	A&C	18.32	18.34	0.1	0.0	0.1	0.0	0.0	LOT 136 THE VILLAGE S-101
458-050-070-000	Assessable	A&C	20.16	20.17	0.11	0.0	0.11	0.0	0.0	LOT 137 THE VILLAGE S-101
458-060-005-000	Assessable	C	21.94	21.94	0.0	0.0	0.323	0.0	0.0	PAR 12 PMOR 28-159
458-060-006-000	Assessable	C	10.58	10.59	0.0	0.0	0.1559	0.0	0.0	PAR 13 PMOR 28-159
458-060-007-000	Assessable	C	17.40	17.40	0.0	0.0	0.2562	0.0	0.0	PAR 14 PMOR 28-159
458-060-010-000	Assessable	C	24.20	24.21	0.0	0.0	0.3564	0.0	0.0	PAR 9 & 10 PMOR 28-159
458-060-011-000	Assessable	C	21.18	21.19	0.0	0.0	0.3119	0.0	0.0	PAR 8 & 11 PMOR 28-159
458-060-012-000	Assessable	C	123.56	123.56	0.0	0.0	1.819	0.0	0.0	PAR A PMOR 29-71

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
458-060-013-000	Assessable	C	123.56	123.56	0.0	0.0	1.819	0.0	0.0	PAR B PMOR 29-71
458-060-014-000	Assessable	C	105.90	105.90	0.0	0.0	1.559	0.0	0.0	PAR C PMOR 29-71
458-060-015-000	Assessable	C	105.90	105.90	0.0	0.0	1.559	0.0	0.0	PAR D PMOR 29-71
458-060-016-000	Assessable	C	70.64	70.65	0.0	0.0	1.04	0.0	0.0	PAR E PMOR 29-71
458-060-017-000	Common Area	C	-	-	0.0	0.0	0.0	0.0	0.0	4.0 AC PAR F COMMON AREA
464-010-001-000	Assessable	B&D	9.24	10.98	0.0	0.29	0.0	0.29	0.0	LOT 107 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-002-000	Assessable	B&D	8.60	10.22	0.0	0.27	0.0	0.27	0.0	LOT 108 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-003-000	Assessable	B&D	7.32	8.71	0.0	0.23	0.0	0.23	0.0	LOT 109 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-004-000	Assessable	B&D	9.88	11.74	0.0	0.31	0.0	0.31	0.0	LOT 110 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-005-000	Assessable	B&D	10.52	12.49	0.0	0.33	0.0	0.33	0.0	LOT 111 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-006-000	Assessable	B&D	14.02	16.66	0.0	0.44	0.0	0.44	0.0	LOT 112 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-007-000	Assessable	B&D	9.88	11.74	0.0	0.31	0.0	0.31	0.0	LOT 113 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-008-000	Assessable	B&D	19.76	23.47	0.0	0.62	0.0	0.62	0.0	LOT 114 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-009-000	Assessable	B&D	8.28	9.84	0.0	0.26	0.0	0.26	0.0	LOT 115 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-010-000	Assessable	B&D	7.32	8.71	0.0	0.23	0.0	0.23	0.0	LOT 116 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-011-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 117 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-012-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 118 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-013-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 119 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-014-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 120 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-015-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 121 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-016-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 122 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-017-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 123 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-018-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 124 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-019-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 125 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-020-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 126 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-021-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 127 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-010-022-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 128 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-001-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 129 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-002-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 130 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-003-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 131 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-004-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 132 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-005-000	Assessable	B&D	7.96	9.47	0.0	0.25	0.0	0.25	0.0	LOT 133 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-006-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 134 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-007-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 135 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-008-000	Assessable	B&D	8.60	10.22	0.0	0.27	0.0	0.27	0.0	LOT 136 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-009-000	Assessable	B&D	13.06	15.52	0.0	0.41	0.0	0.41	0.0	LOT 137 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-010-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 138 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-020-011-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 139 ASHLEY WOODS UNIT NO. 3 MOR T-26
464-030-001-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 1 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-002-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 2 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-003-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 3 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-004-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 4 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-005-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 5 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-006-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 6 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-007-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 7 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-008-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 8 ASHLEY WOODS UNIT NO 1-B MOR U-79

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
464-030-009-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 9 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-010-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 10 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-011-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 11 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-012-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 12 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-013-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 13 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-014-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 14 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-015-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 15 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-016-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 16 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-017-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 17 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-018-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 18 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-022-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 22 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-023-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 23 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-024-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 24 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-025-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 25 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-026-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 26 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-027-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 27 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-028-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 28 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-029-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 59 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-030-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 60 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-031-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 61 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-032-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 62 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-033-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 63 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-034-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 64 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-035-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 65 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-039-000	Assessable	B&D	13.70	16.26	0.0	0.4295	0.0	0.4295	0.0	POR LOT 19 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-030-040-000	Assessable	B&D	10.96	13.03	0.0	0.3441	0.0	0.3441	0.0	POR LOTS 19 & 20 ASHLEY WOODS UNIT NO 1-B MOF
464-030-041-000	Assessable	B&D	14.78	17.55	0.0	0.4636	0.0	0.4636	0.0	LOT 21 & POR 20 ASHLEY WOODS UNIT NO 1-B MOR
464-040-001-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 29 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-002-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 30 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-003-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 31 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-004-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 32 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-005-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 33 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-006-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 34 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-007-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 35 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-008-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 44 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-009-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 45 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-010-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 53 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-011-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 54 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-012-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 55 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-013-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 56 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-014-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 57 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-015-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 58 ASHLEY WOODS UNIT NO 1-B MOR U-79
464-040-016-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 66 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-017-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 67 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-018-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 68 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-019-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 69 ASHLEY WOODS UNIT NO 1-A MOR U-78

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464-040-020-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 70 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-021-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 71 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-022-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 72 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-023-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 73 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-024-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 74 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-025-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 75 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-026-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 76 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-027-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 77 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-028-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 78 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-029-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 79 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-040-030-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 80 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-001-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 36 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-002-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 37 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-003-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 38 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-004-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 39 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-005-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 40 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-006-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 41 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-007-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 42 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-008-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 43 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-015-000	Assessable	B&D	13.14	15.61	0.0	0.4124	0.0	0.4124	0.0	LOT 52 ASHLEY WOODS UNIT NO 1-A MOR U-78
464-050-021-000	Assessable	B&D	10.26	12.19	0.0	0.322	0.0	0.322	0.0	POR LOT 51 ASHLEY WOODS UNIT NO 1-A U-78
464-050-022-000	Assessable	B&D	13.00	15.44	0.0	0.4078	0.0	0.4078	0.0	LOT 50 & POR LOT 51 ASHLEY WOODS UNIT NO 1-A U
464-050-023-000	Assessable	B&D	12.44	14.78	0.0	0.3903	0.0	0.3903	0.0	LOT 49 & POR LOT 48 ASHLEY WOODS UNIT NO 1-A U
464-050-024-000	Assessable	B&D	12.12	14.41	0.0	0.3805	0.0	0.3805	0.0	POR LOT 48 ASHLEY WOODS UNIT NO 1-A U-78
464-050-025-000	Assessable	B&D	15.30	18.17	0.0	0.48	0.0	0.48	0.0	LOT 47 & P LOT 46&48 ASHLEY WOODS UNIT NO 1-A U
464-050-026-000	Assessable	B&D	15.74	18.69	0.0	0.4937	0.0	0.4937	0.0	POR LOT 46 ASHLEY WOODS UNIT NO 1-A U-78
464-060-001-000	Assessable	B&D	16.20	19.24	0.0	0.5072	0.0	0.5219	0.0	LOT 1 ASHLEY WOODS UNIT #5 & 6 PHASE 2 MOR W
464-060-002-000	Assessable	B&D	16.60	19.71	0.0	0.5197	0.0	0.5349	0.0	LOT 2 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-003-000	Assessable	B&D	11.94	14.19	0.0	0.3741	0.0	0.385	0.0	LOT 3 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-004-000	Assessable	B&D	17.34	20.60	0.0	0.5431	0.0	0.559	0.0	LOT 4 ASHLEY WOODS UNIT 5 & 6 PHASE 2 MOR W-2
464-060-005-000	Assessable	B&D	14.02	16.64	0.0	0.4388	0.0	0.4516	0.0	LOT 5 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-006-000	Assessable	B&D	11.94	14.19	0.0	0.3741	0.0	0.385	0.0	LOT 6 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-007-000	Assessable	B&D	12.00	14.26	0.0	0.3759	0.0	0.3868	0.0	LOT 7 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-008-000	Assessable	B&D	12.64	15.01	0.0	0.3957	0.0	0.4072	0.0	LOT 8 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-009-000	Assessable	B&D	13.38	15.89	0.0	0.419	0.0	0.4313	0.0	LOT 9 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-010-000	Assessable	B&D	12.92	15.35	0.0	0.4046	0.0	0.4164	0.0	LOT 49 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-011-000	Assessable	B&D	15.92	18.90	0.0	0.4982	0.0	0.5127	0.0	LOT 50 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-012-000	Assessable	B&D	12.52	14.87	0.0	0.3921	0.0	0.4035	0.0	LOT 51 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-013-000	Assessable	B&D	12.46	14.80	0.0	0.3903	0.0	0.4016	0.0	LOT 52 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-060-015-000	Common Area	B&D	-	-	0.0	0.0	0.0	0.0	0.0	5.2 AC POR LOT M2 COMMON AREA MOR W-20
464-060-016-000	Common Area	B&D	-	-	0.0	0.0	0.0	0.0	0.0	LOT M3 COMMON AREA MOR W-20
464-060-017-000	Common Area	B&D	-	-	0.0	0.0	0.0	0.0	0.0	POR LOT M4 COMMON AREA MOR W-20
464-070-001-000	Assessable	B&D	12.34	14.67	0.0	0.3867	0.0	0.3979	0.0	LOT 10 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-002-000	Assessable	B&D	12.34	14.67	0.0	0.3867	0.0	0.3979	0.0	LOT 11 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-003-000	Assessable	B&D	12.34	14.67	0.0	0.3867	0.0	0.3979	0.0	LOT 12 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-004-000	Assessable	B&D	12.34	14.67	0.0	0.3867	0.0	0.3979	0.0	LOT 13 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
464-070-005-000	Assessable	B&D	12.34	14.67	0.0	0.3867	0.0	0.3979	0.0	LOT 14 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-006-000	Assessable	B&D	13.60	16.17	0.0	0.4262	0.0	0.4387	0.0	LOT 15 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-007-000	Assessable	B&D	12.46	14.80	0.0	0.3903	0.0	0.4016	0.0	LOT 16 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-008-000	Assessable	B&D	10.80	12.82	0.0	0.3381	0.0	0.348	0.0	LOT 17 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-009-000	Assessable	B&D	10.80	12.82	0.0	0.3381	0.0	0.348	0.0	LOT 18 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-010-000	Assessable	B&D	10.44	12.41	0.0	0.3381	0.0	0.1666	0.0	LOT 19 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-011-000	Assessable	B	10.10	12.02	0.0	0.3381	0.0	0.0	0.0	LOT 20 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-012-000	Assessable	B	15.10	17.97	0.0	0.5054	0.0	0.0	0.0	LOT 21 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-013-000	Assessable	B	13.32	15.86	0.0	0.446	0.0	0.0	0.0	LOT 22 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-014-000	Assessable	B	11.60	13.82	0.0	0.3885	0.0	0.0	0.0	LOT 23 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-015-000	Assessable	B	12.08	14.39	0.0	0.4046	0.0	0.0	0.0	LOT 24 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-016-000	Assessable	B	20.42	24.30	0.0	0.6834	0.0	0.0	0.0	LOT 25 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-017-000	Assessable	B	11.06	13.17	0.0	0.3705	0.0	0.0	0.0	LOT 26 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-018-000	Assessable	B&D	11.42	13.59	0.0	0.3795	0.0	0.0426	0.0	LOT 27 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-019-000	Assessable	B&D	11.36	13.51	0.0	0.3561	0.0	0.3665	0.0	LOT 28 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-020-000	Assessable	B&D	12.64	15.01	0.0	0.3957	0.0	0.4072	0.0	LOT 29 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-021-000	Assessable	B&D	11.94	14.19	0.0	0.3741	0.0	0.385	0.0	LOT 30 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-022-000	Assessable	B&D	12.92	15.35	0.0	0.4046	0.0	0.4164	0.0	LOT 31 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-023-000	Assessable	B&D	13.94	16.56	0.0	0.437	0.0	0.4442	0.0	LOT 32 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-024-000	Assessable	B&D	12.54	14.90	0.0	0.4046	0.0	0.2221	0.0	LOT 33 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-025-000	Assessable	B&D	11.52	13.71	0.0	0.3795	0.0	0.0925	0.0	LOT 34 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-026-000	Assessable	B	12.84	15.28	0.0	0.4298	0.0	0.0	0.0	LOT 35 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-027-000	Assessable	B	21.76	25.90	0.0	0.7284	0.0	0.0	0.0	LOT 36 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-028-000	Assessable	B&D	21.36	25.37	0.0	0.6744	0.0	0.6015	0.0	LOT 37 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-029-000	Assessable	B&D	11.14	13.23	0.0	0.3489	0.0	0.3591	0.0	LOT 38 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-030-000	Assessable	B&D	12.58	14.94	0.0	0.3939	0.0	0.4053	0.0	LOT 39 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-031-000	Assessable	B&D	12.58	14.94	0.0	0.3939	0.0	0.4053	0.0	LOT 40 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-032-000	Assessable	B&D	12.58	14.94	0.0	0.3939	0.0	0.4053	0.0	LOT 41 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-033-000	Assessable	B&D	12.58	14.94	0.0	0.3939	0.0	0.4053	0.0	LOT 42 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-034-000	Assessable	B&D	10.86	12.89	0.0	0.3399	0.0	0.3498	0.0	LOT 43 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-035-000	Assessable	B&D	13.20	15.69	0.0	0.4136	0.0	0.4257	0.0	LOT 44 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-036-000	Assessable	B&D	12.74	15.14	0.0	0.3992	0.0	0.4109	0.0	LOT 45 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-037-000	Assessable	B&D	12.68	15.07	0.0	0.3974	0.0	0.409	0.0	LOT 46 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-038-000	Assessable	B&D	12.68	15.07	0.0	0.3974	0.0	0.409	0.0	LOT 47 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-039-000	Assessable	B&D	13.32	15.82	0.0	0.4172	0.0	0.4294	0.0	LOT 48 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-040-000	Assessable	B&D	11.94	14.19	0.0	0.3741	0.0	0.385	0.0	LOT 53 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-041-000	Assessable	B&D	11.94	14.19	0.0	0.3741	0.0	0.385	0.0	LOT 54 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-042-000	Assessable	B&D	13.10	15.55	0.0	0.41	0.0	0.422	0.0	LOT 55 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-043-000	Assessable	B&D	12.52	14.87	0.0	0.3921	0.0	0.4035	0.0	LOT 56 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-044-000	Assessable	B&D	20.56	24.42	0.0	0.6438	0.0	0.6626	0.0	LOT 57 ASHLEY WOODS UNITS 5 & 6 PH 2 MOR W-20
464-070-045-000	Common Area		-	-	0.0	0.0	0.0	0.0	0.0	POR LOT M2 COMMON AREA MOR W-20
466-030-046-000	Assessable	B&D	39.54	46.95	0.0	1.24	0.0	1.24	0.0	POR LOT 54 JOHNSON RANCH EAST #2 MOR Q-13
466-030-047-000	Common Area		-	-	0.0	0.0	0.0	0.0	0.0	POR LOT 54 JOHNSON RANCH EAST #2 MOR Q-13
466-190-001-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 122 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-002-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 123 HILLSBOROUGH UNIT 3 MOR R-34
466-190-003-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 124 HILLSBOROUGH UNIT 3 MOR BK R PG 34

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466-190-004-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 125 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-005-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 126 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-006-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 127 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-007-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 128 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-008-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 129 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-009-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 171 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-010-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 172 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-011-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 173 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-012-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 174 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-013-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 175 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-014-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 176 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-015-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 177 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-016-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 178 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-017-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 179 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-190-018-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 180 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-001-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 130 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-002-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 131 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-003-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 132 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-004-000	Assessable	B	9.14	10.89	0.0	0.3063	0.0	0.0	0.0	LOT 133 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-005-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 134 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-006-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 135 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-007-000	Assessable	B	10.64	12.67	0.0	0.3563	0.0	0.0	0.0	LOT 136 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-008-000	Assessable	B	12.74	15.16	0.0	0.4263	0.0	0.0	0.0	LOT 137 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-009-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 138 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-010-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 139 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-011-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 140 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-012-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 141 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-013-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 142 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-014-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 143 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-015-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 144 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-016-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 145 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-017-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 146 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-018-000	Assessable	B	11.84	14.09	0.0	0.3963	0.0	0.0	0.0	LOT 147 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-019-000	Assessable	B	8.56	10.18	0.0	0.2863	0.0	0.0	0.0	LOT 148 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-020-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 149 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-021-000	Assessable	B	9.74	11.60	0.0	0.3263	0.0	0.0	0.0	LOT 150 HILLSBOROUGH UNIT 3 BK R PG 34
466-200-022-000	Assessable	B	8.84	10.54	0.0	0.2963	0.0	0.0	0.0	LOT 151 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-023-000	Assessable	B	12.44	14.80	0.0	0.4163	0.0	0.0	0.0	LOT 152 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-024-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 153 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-025-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 154 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-026-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 155 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-027-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 156 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-028-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 157 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-029-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 158 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-030-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 159 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-031-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 160 HILLSBOROUGH UNIT 3 MOR BK R PG 34

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466-200-032-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 161 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-033-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 162 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-034-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 163 HILLSBOROUGH UNIT 3 MOR R-34
466-200-035-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 164 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-036-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 165 HILLSBOROUGH UNIT 3 MOR R-34
466-200-037-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 166 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-038-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 167 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-039-000	Assessable	B	8.56	10.18	0.0	0.2863	0.0	0.0	0.0	LOT 168 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-040-000	Assessable	B	9.44	11.25	0.0	0.3163	0.0	0.0	0.0	LOT 169 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-200-041-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 170 HILLSBOROUGH UNIT 3 MOR BK R PG 34
466-210-001-000	Assessable	B	8.56	10.18	0.0	0.2863	0.0	0.0	0.0	L19 HILLSBOROUGH #1 BK R PG 33
466-210-002-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 20 HILLSBOROUGH #1 BK R PG 33
466-210-003-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 21 HILLSBOROUGH #1 BK R PG 33
466-210-004-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 22 HILLSBOROUGH #1 BK R PG 33
466-210-005-000	Assessable	B	10.04	11.96	0.0	0.3363	0.0	0.0	0.0	LOT 23 HILLSBOROUGH #1 BK R PG 33
466-210-006-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 24 HILLSBOROUGH #1 BK R PG 33
466-210-007-000	Assessable	B	10.94	13.03	0.0	0.3663	0.0	0.0	0.0	LOT 25 HILLSBOROUGH #1 BK R PG 33
466-210-008-000	Assessable	B	11.24	13.38	0.0	0.3763	0.0	0.0	0.0	LOT 26 HILLSBOROUGH #1 BK R PG 33
466-210-009-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 27 HILLSBOROUGH #1 BK R PG 33
466-210-010-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 28 HILLSBOROUGH #1 BK R PG 33
466-210-011-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 29 HILLSBOROUGH #1 BK R PG 33
466-210-012-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 30 HILLSBOROUGH #1 BK R PG 33
466-210-013-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 31 HILLSBOROUGH #1 BK R PG 33
466-210-014-000	Assessable	B	8.56	10.18	0.0	0.2863	0.0	0.0	0.0	LOT 32 HILLSBOROUGH #1 BK R PG 33
466-210-015-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 33 HILLSBOROUGH #1 BK R PG 33
466-210-016-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 34 HILLSBOROUGH #1 BK R PG 33
466-210-017-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 35 HILLSBOROUGH #1 BK R PG 33
466-210-018-000	Assessable	B	5.86	6.98	0.0	0.1963	0.0	0.0	0.0	LOT 36 HILLSBOROUGH #1 MOR R-33
466-210-019-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 37 HILLSBOROUGH #1 BK R PG 33
466-210-020-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 38 HILLSBOROUGH #1 BK R PG 33
466-210-021-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 39 HILLSBOROUGH #1 BK R PG 33
466-210-022-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 40 HILLSBOROUGH #1 BK R PG 33
466-210-023-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 41 HILLSBOROUGH #1 BK R PG 33
466-210-024-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 42 HILLSBOROUGH #1 BK R PG 33
466-210-025-000	Assessable	B	8.56	10.18	0.0	0.2863	0.0	0.0	0.0	LOT 43 HILLSBOROUGH #1 BK R PG 33
466-210-026-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 44 HILLSBOROUGH #1 BK R PG 33
466-210-027-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 45 HILLSBOROUGH #1 BK R PG 33
466-210-028-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 46 HILLSBOROUGH #1 BK R PG 33
466-210-029-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 47 HILLSBOROUGH #1 BK R PG 33
466-210-030-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 48 HILLSBOROUGH #1 BK R PG 33
466-210-031-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 49 HILLSBOROUGH #1 BK R PG 33
466-210-032-000	Assessable	B	8.84	10.54	0.0	0.2963	0.0	0.0	0.0	LOT 50 HILLSBOROUGH #1 BK R PG 33
466-210-033-000	Assessable	B	10.04	11.96	0.0	0.3363	0.0	0.0	0.0	LOT 51 HILLSBOROUGH #1 BK R PG 33
466-210-034-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 65 HILLSBOROUGH #1 BK R PG 33
466-210-035-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 66 HILLSBOROUGH #1 BK R PG 33
466-210-036-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 67 HILLSBOROUGH #1 BK R PG 33

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-210-037-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 68 HILLSBOROUGH #1 BK R PG 33
466-210-038-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	L69 HILLSBOROUGH #1 MOR R-33
466-210-039-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 70 HILLSBOROUGH #1 BK R PG 33
466-210-040-000	Assessable	B	8.56	10.18	0.0	0.2863	0.0	0.0	0.0	LOT 71 HILLSBOROUGH #1 BK R PG 33
466-210-041-000	Assessable	B	8.56	10.18	0.0	0.2863	0.0	0.0	0.0	LOT 72 HILLSBOROUGH #1 BK R PG 33
466-210-042-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 73 HILLSBOROUGH #1 BK R PG 33
466-210-043-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 74 HILLSBOROUGH #1 BK R PG 33
466-210-044-000	Assessable	B	13.04	15.51	0.0	0.4363	0.0	0.0	0.0	LOT 75 HILLSBOROUGH #1 BK R PG 33
466-210-045-000	Assessable	B	11.54	13.74	0.0	0.3863	0.0	0.0	0.0	LOT 76 HILLSBOROUGH #1 BK R PG 33
466-210-046-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 77 HILLSBOROUGH #1 BK R PG 33
466-210-047-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 78 HILLSBOROUGH #1 BK R PG 33
466-210-048-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 79 HILLSBOROUGH #1 BK R PG 33
466-210-049-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 80 HILLSBOROUGH #1 BK R PG 33
466-210-050-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 81 HILLSBOROUGH #1 BK R PG 33
466-210-051-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 82 HILLSBOROUGH #1 BK R PG 33
466-210-052-000	Assessable	B	8.84	10.54	0.0	0.2963	0.0	0.0	0.0	LOT 83 HILLSBOROUGH #1 BK R PG 33
466-210-053-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 84 HILLSBOROUGH #1 BK R PG 33
466-210-054-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 85 HILLSBOROUGH #1 BK R PG 33
466-210-055-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 86 HILLSBOROUGH #1 BK R PG 33
466-210-056-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 87 HILLSBOROUGH #1 BK R PG 33
466-210-057-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 88 HILLSBOROUGH #1 BK R PG 33
466-210-058-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 89 HILLSBOROUGH #1 MOR R-33
466-210-059-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 90 HILLSBOROUGH #1 MOR R-33
466-210-060-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 91 HILLSBOROUGH #1 BK R PG 33
466-210-061-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 92 HILLSBOROUGH #1 BK R PG 33
466-210-062-000	Assessable	B	11.54	13.74	0.0	0.3863	0.0	0.0	0.0	LOT 93 HILLSBOROUGH #1 BK R PG 33
466-210-063-000	Assessable	B	10.94	13.03	0.0	0.3663	0.0	0.0	0.0	LOT 94 HILLSBOROUGH #1 BK R PG 33
466-210-064-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 95 HILLSBOROUGH #1 BK R PG 33
466-210-065-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 96 HILLSBOROUGH #1 BK R PG 33
466-210-066-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 97 HILLSBOROUGH #1 BK R PG 33
466-210-067-000	Assessable	B	10.34	12.31	0.0	0.3463	0.0	0.0	0.0	LOT 98 HILLSBOROUGH #1 MOR R-33
466-210-068-000	Assessable	B	9.74	11.60	0.0	0.3263	0.0	0.0	0.0	LOT 99 HILLSBOROUGH #1 BK R PG 33
466-220-001-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 1 HILLSBOROUGH #1 BK R PG 33
466-220-002-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 2 HILLSBOROUGH #1 BK R PG 33
466-220-003-000	Assessable	B	10.64	12.67	0.0	0.3563	0.0	0.0	0.0	LOT 3 HILLSBOROUGH #1 BK R PG 33
466-220-004-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 4 HILLSBOROUGH #1 BK R PG 33
466-220-005-000	Assessable	B	8.84	10.54	0.0	0.2963	0.0	0.0	0.0	LOT 5 HILLSBOROUGH UNIT #1 MOR BK R PG 33
466-220-006-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 6 HILLSBOROUGH #1 BK R PG 33
466-220-007-000	Assessable	B	5.86	6.98	0.0	0.1963	0.0	0.0	0.0	LOT 7 HILLSBOROUGH #1 BK R PG 33
466-220-008-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 8 HILLSBOROUGH #1 BK R PG 33
466-220-009-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 9 HILLSBOROUGH #1 BK R PG 33
466-220-010-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 10 HILLSBOROUGH #1 BK R PG 33
466-220-011-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 11 HILLSBOROUGH #1 BK R PG 33
466-220-012-000	Assessable	B	10.64	12.67	0.0	0.3563	0.0	0.0	0.0	LOT 12 HILLSBOROUGH #1 BK R PG 33
466-220-013-000	Assessable	B	9.14	10.89	0.0	0.3063	0.0	0.0	0.0	LOT 13 HILLSBOROUGH #1 BK R PG 33
466-220-014-000	Assessable	B	10.64	12.67	0.0	0.3563	0.0	0.0	0.0	LOT 14 HILLSBOROUGH #1 BK R PG 33

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-220-015-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 15 HILLSBOROUGH #1 BK R PG 33
466-220-016-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	L16 HILLSBOROUGH #1 BK R PG 33
466-220-017-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 17 HILLSBOROUGH #1 BK R PG 33
466-220-018-000	Assessable	B	9.14	10.89	0.0	0.3063	0.0	0.0	0.0	LOT 18 HILLSBOROUGH #1 BK R PG 33
466-220-019-000	Assessable	B	10.04	11.96	0.0	0.3363	0.0	0.0	0.0	LOT 52 HILLSBOROUGH #1 BK R PG 33
466-220-020-000	Assessable	B	8.84	10.54	0.0	0.2963	0.0	0.0	0.0	LOT 53 HILLSBOROUGH #1 BK R PG 33
466-220-021-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 54 HILLSBOROUGH #1 BK R PG 33
466-220-022-000	Assessable	B	8.56	10.18	0.0	0.2863	0.0	0.0	0.0	LOT 55 HILLSBOROUGH #1 BK R PG 33
466-220-023-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 56 HILLSBOROUGH #1 BK R PG 33
466-220-024-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 57 HILLSBOROUGH #1 BK R PG 33
466-220-025-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 58 HILLSBOROUGH #1 BK R PG 33
466-220-026-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 59 HILLSBOROUGH #1 BK R PG 33
466-220-027-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 60 HILLSBOROUGH #1 BK R PG 33
466-220-028-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 61 HILLSBOROUGH #1 BK R PG 33
466-220-029-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 62 HILLSBOROUGH #1 BK R PG 33
466-220-030-000	Assessable	B	8.84	10.54	0.0	0.2963	0.0	0.0	0.0	LOT 63 HILLSBOROUGH #1 BK R PG 33
466-220-031-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 64 HILLSBOROUGH #1 BK R PG 33
466-220-032-000	Assessable	B	9.14	10.89	0.0	0.3063	0.0	0.0	0.0	LOT 100 HILLSBOROUGH#1 BK R PG 33
466-220-033-000	Assessable	B	10.64	12.67	0.0	0.3563	0.0	0.0	0.0	LOT 101 HILLSBOROUGH#1 BK R PG 33
466-220-034-000	Assessable	B	9.14	10.89	0.0	0.3063	0.0	0.0	0.0	LOT 102 HILLSBOROUGH#1 BK R PG 33
466-220-035-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 103 HILLSBOROUGH#1 BK R PG 33
466-220-036-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 104 HILLSBOROUGH#1 BK R PG 33
466-220-037-000	Assessable	B	7.06	8.40	0.0	0.2363	0.0	0.0	0.0	LOT 105 HILLSBOROUGH#1 BK R PG 33
466-220-038-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 106 HILLSBOROUGH#1 BK R PG 33
466-220-039-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 107 HILLSBOROUGH#1 BK R PG 33
466-220-040-000	Assessable	B	6.46	7.69	0.0	0.2163	0.0	0.0	0.0	LOT 108 HILLSBOROUGH#1 BK R PG 33
466-220-041-000	Assessable	B	7.36	8.76	0.0	0.2463	0.0	0.0	0.0	LOT 109 HILLSBOROUGH#1 BK R PG 33
466-220-042-000	Assessable	B	7.66	9.11	0.0	0.2563	0.0	0.0	0.0	LOT 110 HILLSBOROUGH#1 BK R PG 33
466-220-043-000	Assessable	B	10.04	11.96	0.0	0.3363	0.0	0.0	0.0	LOT 111 HILLSBOROUGH#1 BK R PG 33
466-220-044-000	Assessable	B	9.74	11.60	0.0	0.3263	0.0	0.0	0.0	LOT 112 HILLSBOROUGH UNIT #1 MOR R-33
466-220-045-000	Assessable	B	9.74	11.60	0.0	0.3263	0.0	0.0	0.0	LOT 113 HILLSBOROUGH#1 BK R PG 33
466-220-046-000	Assessable	B	9.14	10.89	0.0	0.3063	0.0	0.0	0.0	LOT 114 HILLSBOROUGH#1 MOR BK R PG 33
466-220-047-000	Assessable	B	6.16	7.34	0.0	0.2063	0.0	0.0	0.0	LOT 115 HILLSBOROUGH#1 BK R PG 33
466-220-048-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 116 HILLSBOROUGH#1 BK R PG 33
466-220-049-000	Assessable	B	8.26	9.83	0.0	0.2763	0.0	0.0	0.0	LOT 117 HILLSBOROUGH#1 BK R PG 33
466-220-050-000	Assessable	B	9.74	11.60	0.0	0.3263	0.0	0.0	0.0	LOT 118 HILLSBOROUGH#1 BK R PG 33
466-220-051-000	Assessable	B	11.54	13.74	0.0	0.3863	0.0	0.0	0.0	LOT 119 HILLSBOROUGH UNIT #1 MOR R-33
466-220-052-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 120 HILLSBOROUGH#1 BK R PG 33
466-220-053-000	Assessable	B	6.76	8.05	0.0	0.2263	0.0	0.0	0.0	LOT 121 HILLSBOROUGH#1 BK R PG 33
466-230-002-000	Common	B	-	-	0.0	0.0	0.0	0.0	0.0	L D HILLSBOROUGH #1 BK R PG 33
466-230-003-000	Common	B	-	-	0.0	0.0	0.0	0.0	0.0	L G HILLSBOROUGH #1 BK R PG 33
466-230-004-000	Common	B	-	-	0.0	0.0	0.0	0.0	0.0	L H HILLSBOROUGH #1 BK R PG 33
466-230-005-000	Common	B	-	-	0.0	0.0	0.0	0.0	0.0	L I HILLSBOROUGH #1 BK R PG 33
466-230-006-000	Common	B	-	-	0.0	0.0	0.0	0.0	0.0	L J HILLSBOROUGH #1 BK R PG 33
466-230-007-000	Common	B	-	-	0.0	0.0	0.0	0.0	0.0	L K HILLSBOROUGH #1 BK R PG 33
466-230-008-000	Common	B	-	-	0.0	0.0	0.0	0.0	0.0	L L HILLSBOROUGH #1 BK R PG 33

City of Roseville
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-230-009-000	Common	B	-	-	0.0	0.0	0.0	0.0	0.0	L M HILLSBOROUGH #1 BK R PG 33
466-280-001-000	Assessable	B&D	7.74	9.19	0.0	0.2427	0.0	0.2427	0.0	LOT 1 EASTRIDGE UNIT 1 S-66
466-280-002-000	Assessable	B&D	6.78	8.05	0.0	0.2127	0.0	0.2127	0.0	LOT 2 EASTRIDGE UNIT 1 S-66
466-280-003-000	Assessable	B&D	6.78	8.05	0.0	0.2127	0.0	0.2127	0.0	LOT 3 EASTRIDGE UNIT 1 S-66
466-280-004-000	Assessable	B&D	8.06	9.57	0.0	0.2527	0.0	0.2527	0.0	LOT 4 EASTRIDGE UNIT 1 S-66
466-280-005-000	Assessable	B&D	11.88	14.11	0.0	0.3727	0.0	0.3727	0.0	LOT 5 EASTRIDGE UNIT 1 S-66
466-280-006-000	Assessable	B&D	21.76	25.85	0.0	0.6827	0.0	0.6827	0.0	LOT 6 EASTRIDGE UNIT 1 S-66
466-280-007-000	Assessable	B&D	7.74	9.19	0.0	0.2427	0.0	0.2427	0.0	LOT 7 EASTRIDGE UNIT 1 S-66
466-280-008-000	Assessable	B&D	8.68	10.33	0.0	0.2727	0.0	0.2727	0.0	LOT 8 EASTRIDGE UNIT 1 S-66
466-280-009-000	Assessable	B&D	8.68	10.33	0.0	0.2727	0.0	0.2727	0.0	LOT 9 EASTRIDGE UNIT 1 S-66
466-280-010-000	Assessable	B&D	7.74	9.19	0.0	0.2427	0.0	0.2427	0.0	LOT 10 EASTRIDGE UNIT 1 S-66
466-280-011-000	Assessable	B&D	15.06	17.90	0.0	0.4727	0.0	0.4727	0.0	LOT 11 EASTRIDGE UNIT 1 S-66
466-280-012-000	Assessable	B&D	7.10	8.43	0.0	0.2227	0.0	0.2227	0.0	LOT 12 EASTRIDGE UNIT 1 S-66
466-280-013-000	Assessable	B&D	6.14	7.30	0.0	0.1927	0.0	0.1927	0.0	LOT 13 EASTRIDGE UNIT 1 S-66
466-280-014-000	Assessable	B&D	6.78	8.05	0.0	0.2127	0.0	0.2127	0.0	LOT 14 EASTRIDGE UNIT 1 S-66
466-280-015-000	Assessable	B&D	8.68	10.33	0.0	0.2727	0.0	0.2727	0.0	LOT 15 EASTRIDGE UNIT 1 S-66
466-290-001-000	Assessable	B&D	5.14	6.11	0.0	0.1613	0.0	0.1613	0.0	LOT 35 EASTRIDGE UNIT 1 S-66
466-290-002-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 36 EASTRIDGE UNIT 1 S-66
466-290-003-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 37 EASTRIDGE UNIT 1 S-66
466-290-004-000	Assessable	B&D	5.14	6.11	0.0	0.1613	0.0	0.1613	0.0	LOT 38 EASTRIDGE UNIT 1 S-66
466-290-005-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 39 EASTRIDGE UNIT 1 S-66
466-290-006-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 40 EASTRIDGE UNIT 1 S-66
466-290-007-000	Assessable	B&D	7.68	9.14	0.0	0.2413	0.0	0.2413	0.0	LOT 41 EASTRIDGE UNIT 1 S-66
466-290-008-000	Assessable	B&D	7.36	8.76	0.0	0.2313	0.0	0.2313	0.0	LOT 42 EASTRIDGE UNIT 1 S-66
466-290-009-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 43 EASTRIDGE UNIT 1 S-66
466-290-010-000	Assessable	B&D	7.68	9.14	0.0	0.2413	0.0	0.2413	0.0	LOT 44 EASTRIDGE UNIT 1 S-66
466-290-011-000	Assessable	B&D	7.68	9.14	0.0	0.2413	0.0	0.2413	0.0	LOT 45 EASTRIDGE UNIT 1 S-66
466-290-012-000	Assessable	B&D	9.28	11.03	0.0	0.2913	0.0	0.2913	0.0	LOT 46 EASTRIDGE UNIT 1 S-66
466-290-013-000	Assessable	B&D	14.06	16.71	0.0	0.4413	0.0	0.4413	0.0	LOT 47 EASTRIDGE UNIT 1 S-66
466-290-014-000	Assessable	B&D	13.42	15.95	0.0	0.4213	0.0	0.4213	0.0	LOT 48 EASTRIDGE UNIT 1 S-66
466-290-015-000	Assessable	B&D	11.20	13.30	0.0	0.3513	0.0	0.3513	0.0	LOT 49 EASTRIDGE UNIT 1 S-66
466-290-016-000	Assessable	B&D	9.28	11.03	0.0	0.2913	0.0	0.2913	0.0	LOT 50 EASTRIDGE UNIT 1 S-66
466-290-017-000	Assessable	B&D	8.96	10.65	0.0	0.2813	0.0	0.2813	0.0	LOT 51 EASTRIDGE UNIT 1 S-66
466-290-018-000	Assessable	B&D	13.10	15.57	0.0	0.4113	0.0	0.4113	0.0	LOT 52 EASTRIDGE UNIT 1 S-66
466-290-019-000	Assessable	B&D	9.92	11.79	0.0	0.3113	0.0	0.3113	0.0	LOT 53 EASTRIDGE UNIT 1 S-66
466-290-020-000	Assessable	B&D	22.04	26.17	0.0	0.6913	0.0	0.6913	0.0	LOT 54 EASTRIDGE UNIT 1 S-66
466-290-021-000	Assessable	B&D	8.96	10.65	0.0	0.2813	0.0	0.2813	0.0	LOT 55 EASTRIDGE UNIT 1 S-66
466-290-022-000	Assessable	B&D	7.68	9.14	0.0	0.2413	0.0	0.2413	0.0	LOT 56 EASTRIDGE UNIT 1 S-66
466-290-023-000	Assessable	B&D	8.00	9.51	0.0	0.2513	0.0	0.2513	0.0	LOT 57 EASTRIDGE UNIT 1 S-66
466-290-024-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 58 EASTRIDGE UNIT 1 S-66
466-290-025-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 59 EASTRIDGE UNIT 1 S-66
466-290-026-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 60 EASTRIDGE UNIT 1 S-66
466-290-027-000	Assessable	B&D	11.84	14.06	0.0	0.3713	0.0	0.3713	0.0	LOT 61 EASTRIDGE UNIT 1 S-66
466-290-028-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 62 EASTRIDGE UNIT 1 S-66
466-290-029-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 63 EASTRIDGE UNIT 1 S-66
466-290-030-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 64 EASTRIDGE UNIT 1 S-66

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-290-031-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 65 EASTRIDGE UNIT 1 S-66
466-290-032-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 66 EASTRIDGE UNIT 1 S-66
466-290-033-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 67 EASTRIDGE UNIT 1 S-66
466-300-001-000	Assessable	B&D	7.68	9.14	0.0	0.2413	0.0	0.2413	0.0	LOT 28 EASTRIDGE UNIT 1 S-66
466-300-002-000	Assessable	B&D	8.32	9.89	0.0	0.2613	0.0	0.2613	0.0	LOT 29 EASTRIDGE UNIT 1 S-66
466-300-003-000	Assessable	B&D	8.64	10.27	0.0	0.2713	0.0	0.2713	0.0	LOT 30 EASTRIDGE UNIT 1 S-66
466-300-004-000	Assessable	B&D	9.28	11.03	0.0	0.2913	0.0	0.2913	0.0	LOT 31 EASTRIDGE UNIT 1 S-66
466-300-005-000	Assessable	B&D	12.80	15.19	0.0	0.4013	0.0	0.4013	0.0	LOT 32 EASTRIDGE UNIT 1 S-66
466-300-006-000	Assessable	B&D	10.24	12.17	0.0	0.3213	0.0	0.3213	0.0	LOT 33 EASTRIDGE UNIT 1 S-66
466-300-007-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 34 EASTRIDGE UNIT 1 S-66
466-300-008-000	Assessable	B&D	8.00	9.51	0.0	0.2513	0.0	0.2513	0.0	LOT 68 EASTRIDGE UNIT 1 S-66
466-300-009-000	Assessable	B&D	7.36	8.76	0.0	0.2313	0.0	0.2313	0.0	LOT 69 EASTRIDGE UNIT 1 S-66
466-300-010-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 70 EASTRIDGE UNIT 1 S-66
466-300-011-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 71 EASTRIDGE UNIT 1 S-66
466-300-012-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 72 EASTRIDGE UNIT 1 S-66
466-300-013-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 73 EASTRIDGE UNIT 1 S-66
466-300-014-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 74 EASTRIDGE UNIT 1 S-66
466-300-015-000	Assessable	B&D	10.56	12.54	0.0	0.3313	0.0	0.3313	0.0	LOT 75 EASTRIDGE UNIT 1 S-66
466-300-016-000	Assessable	B&D	8.00	9.51	0.0	0.2513	0.0	0.2513	0.0	LOT 76 EASTRIDGE UNIT 1 S-66
466-300-017-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 77 EASTRIDGE UNIT 1 S-66
466-300-018-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 78 EASTRIDGE UNIT 1 S-66
466-300-019-000	Assessable	B&D	9.60	11.41	0.0	0.3013	0.0	0.3013	0.0	LOT 79 EASTRIDGE UNIT 1 S-66
466-300-020-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 80 EASTRIDGE UNIT 1 S-66
466-300-021-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 81 EASTRIDGE UNIT 1 S-66
466-300-022-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 82 EASTRIDGE UNIT 1 S-66
466-300-023-000	Assessable	B&D	5.46	6.49	0.0	0.1713	0.0	0.1713	0.0	LOT 83 EASTRIDGE UNIT 1 S-66
466-300-024-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 84 EASTRIDGE UNIT 1 S-66
466-300-025-000	Assessable	B&D	5.14	6.11	0.0	0.1613	0.0	0.1613	0.0	LOT 85 EASTRIDGE UNIT 1 S-66
466-300-026-000	Assessable	B&D	5.14	6.11	0.0	0.1613	0.0	0.1613	0.0	LOT 86 EASTRIDGE UNIT 1 S-66
466-300-027-000	Assessable	B&D	7.36	8.76	0.0	0.2313	0.0	0.2313	0.0	LOT 87 EASTRIDGE UNIT 1 S-66
466-300-028-000	Assessable	B&D	10.24	12.17	0.0	0.3213	0.0	0.3213	0.0	LOT 88 EASTRIDGE UNIT 1 S-66
466-300-029-000	Assessable	B&D	8.00	9.51	0.0	0.2513	0.0	0.2513	0.0	LOT 89 EASTRIDGE UNIT 1 S-66
466-300-030-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 90 EASTRIDGE UNIT 1 S-66
466-300-031-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 91 EASTRIDGE UNIT 1 S-66
466-300-032-000	Assessable	B&D	10.24	12.17	0.0	0.3213	0.0	0.3213	0.0	LOT 92 EASTRIDGE UNIT 1 S-66
466-300-033-000	Assessable	B&D	8.64	10.27	0.0	0.2713	0.0	0.2713	0.0	LOT 93 EASTRIDGE UNIT 1 S-66
466-300-034-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 94 EASTRIDGE UNIT 1 S-66
466-300-035-000	Assessable	B&D	10.56	12.54	0.0	0.3313	0.0	0.3313	0.0	LOT 95 EASTRIDGE UNIT 1 S-66
466-310-001-000	Assessable	B&D	14.16	16.82	0.0	0.4442	0.0	0.4442	0.0	LOT 16 EASTRIDGE UNIT 2 S-67
466-310-006-000	Assessable	B&D	10.34	12.27	0.0	0.3242	0.0	0.3242	0.0	LOT 21 EASTRIDGE UNIT 2 S-67
466-310-007-000	Assessable	B&D	7.78	9.25	0.0	0.2442	0.0	0.2442	0.0	LOT 22 EASTRIDGE UNIT 2 S-67
466-310-008-000	Assessable	B&D	9.70	11.52	0.0	0.3042	0.0	0.3042	0.0	LOT 23 EASTRIDGE UNIT 2 S-67
466-310-009-000	Assessable	B&D	10.96	13.03	0.0	0.3442	0.0	0.3442	0.0	LOT 24 EASTRIDGE UNIT 2 S-67
466-310-010-000	Assessable	B&D	8.74	10.38	0.0	0.2742	0.0	0.2742	0.0	LOT 25 EASTRIDGE UNIT 2 S-67
466-310-011-000	Assessable	B&D	8.74	10.38	0.0	0.2742	0.0	0.2742	0.0	LOT 26 EASTRIDGE UNIT 2 S-67
466-310-012-000	Assessable	B&D	11.28	13.41	0.0	0.3542	0.0	0.3542	0.0	LOT 27 EASTRIDGE UNIT 2 S-67

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-310-016-000	Assessable	B&D	12.74	15.14	0.0	0.4	0.0	0.4	0.0	POR LOT 17 EASTRIDGE UNIT 2 S-67
466-310-017-000	Assessable	B&D	14.98	17.80	0.0	0.47	0.0	0.47	0.0	POR LOTS 17 & 18 EASTRIDGE UNIT 2 S-67
466-310-018-000	Assessable	B&D	11.16	13.25	0.0	0.35	0.0	0.35	0.0	POR LOTS 18 & 19 EASTRIDGE UNIT 2 S-67
466-310-019-000	Assessable	B&D	15.62	18.55	0.0	0.49	0.0	0.49	0.0	LOT 20 & POR LOT 19 EASTRIDGE UNIT 2 S-67
466-320-001-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 96 EASTRIDGE UNIT 3 MOR S-68
466-320-002-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 97 EASTRIDGE UNIT 3 MOR S-68
466-320-003-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 98 EASTRIDGE UNIT 3 MOR S-68
466-320-004-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 99 EASTRIDGE UNIT 3 MOR S-68
466-320-005-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 100 EASTRIDGE UNIT 3 MOR S-68
466-320-006-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 101 EASTRIDGE UNIT 3 MOR S-68
466-320-007-000	Assessable	B&D	5.46	6.49	0.0	0.1713	0.0	0.1713	0.0	LOT 102 EASTRIDGE UNIT 3 MOR S-68
466-320-008-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 103 EASTRIDGE UNIT 3 MOR S-68
466-320-009-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 104 EASTRIDGE UNIT 3 MOR S-68
466-320-010-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 105 EASTRIDGE UNIT 3 MOR S-68
466-320-011-000	Assessable	B&D	8.32	9.89	0.0	0.2613	0.0	0.2613	0.0	LOT 106 EASTRIDGE UNIT 3 MOR S-68
466-320-012-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 107 EASTRIDGE UNIT 3 MOR S-68
466-320-013-000	Assessable	B&D	8.32	9.89	0.0	0.2613	0.0	0.2613	0.0	LOT 108 EASTRIDGE UNIT 3 MOR S-68
466-320-014-000	Assessable	B&D	8.96	10.65	0.0	0.2813	0.0	0.2813	0.0	LOT 109 EASTRIDGE UNIT 3 MOR S-68
466-320-015-000	Assessable	B&D	8.64	10.27	0.0	0.2713	0.0	0.2713	0.0	LOT 110 EASTRIDGE UNIT 3 MOR S-68
466-320-016-000	Assessable	B&D	12.48	14.82	0.0	0.3913	0.0	0.3913	0.0	LOT 111 EASTRIDGE UNIT 3 MOR S-68
466-320-017-000	Assessable	B&D	14.38	17.09	0.0	0.4513	0.0	0.4513	0.0	LOT 112 EASTRIDGE UNIT 3 MOR S-68
466-320-018-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 113 EASTRIDGE UNIT 3 MOR S-68
466-320-019-000	Assessable	B&D	7.68	9.14	0.0	0.2413	0.0	0.2413	0.0	LOT 114 EASTRIDGE UNIT 3 MOR S-68
466-320-020-000	Assessable	B&D	8.00	9.51	0.0	0.2513	0.0	0.2513	0.0	LOT 115 EASTRIDGE UNIT 3 MOR S-68
466-320-021-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 116 EASTRIDGE UNIT 3 MOR S-68
466-320-022-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 117 EASTRIDGE UNIT 3 MOR S-68
466-320-023-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 118 EASTRIDGE UNIT 3 MOR S-68
466-320-024-000	Assessable	B&D	8.00	9.51	0.0	0.2513	0.0	0.2513	0.0	LOT 119 EASTRIDGE UNIT 3 MOR S-68
466-320-025-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 120 EASTRIDGE UNIT 3 MOR S-68
466-320-026-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 121 EASTRIDGE UNIT 3 MOR S-68
466-320-027-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 122 EASTRIDGE UNIT 3 MOR S-68
466-320-028-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 123 EASTRIDGE UNIT 3 MOR S-68
466-320-029-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 124 EASTRIDGE UNIT 3 MOR S-68
466-320-030-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 125 EASTRIDGE UNIT 3 MOR S-68
466-320-031-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 126 EASTRIDGE UNIT 3 MOR S-68
466-320-032-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 127 EASTRIDGE UNIT 3 MOR S-68
466-320-033-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 128 EASTRIDGE UNIT 3 MOR S-68
466-320-034-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 129 EASTRIDGE UNIT 3 MOR S-68
466-320-035-000	Assessable	B&D	7.36	8.76	0.0	0.2313	0.0	0.2313	0.0	LOT 130 EASTRIDGE UNIT 3 MOR S-68
466-320-036-000	Assessable	B&D	5.14	6.11	0.0	0.1613	0.0	0.1613	0.0	LOT 131 EASTRIDGE UNIT 3 MOR S-68
466-320-037-000	Assessable	B&D	5.14	6.11	0.0	0.1613	0.0	0.1613	0.0	LOT 132 EASTRIDGE UNIT 3 MOR S-68
466-320-038-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 133 EASTRIDGE UNIT 3 MOR S-68
466-320-039-000	Assessable	B&D	5.14	6.11	0.0	0.1613	0.0	0.1613	0.0	LOT 134 EASTRIDGE UNIT 3 MOR S-68
466-320-040-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 135 EASTRIDGE UNIT 3 MOR S-68
466-320-041-000	Assessable	B&D	5.78	6.86	0.0	0.1813	0.0	0.1813	0.0	LOT 136 EASTRIDGE UNIT 3 MOR S-68
466-320-042-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 137 EASTRIDGE UNIT 3 MOR S-68

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-320-043-000	Assessable	B&D	7.68	9.14	0.0	0.2413	0.0	0.2413	0.0	LOT 138 EASTRIDGE UNIT 3 MOR S-68
466-320-044-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 139 EASTRIDGE UNIT 3 MOR S-68
466-320-045-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 140 EASTRIDGE UNIT 3 MOR S-68
466-320-046-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 141 EASTRIDGE UNIT 3 MOR S-68
466-320-047-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 142 EASTRIDGE UNIT 3 MOR S-68
466-320-048-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 143 EASTRIDGE UNIT 3 MOR S-68
466-320-049-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 144 EASTRIDGE UNIT 3 MOR S-68
466-320-050-000	Assessable	B&D	6.42	7.62	0.0	0.2013	0.0	0.2013	0.0	LOT 145 EASTRIDGE UNIT 3 MOR S-68
466-320-051-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 146 EASTRIDGE UNIT 3 MOR S-68
466-320-052-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 147 EASTRIDGE UNIT 3 MOR S-68
466-320-053-000	Assessable	B&D	6.10	7.24	0.0	0.1913	0.0	0.1913	0.0	LOT 148 EASTRIDGE UNIT 3 MOR S-68
466-320-054-000	Assessable	B&D	8.96	10.65	0.0	0.2813	0.0	0.2813	0.0	LOT 149 EASTRIDGE UNIT 3 MOR S-68
466-320-055-000	Assessable	B&D	8.00	9.51	0.0	0.2513	0.0	0.2513	0.0	LOT 150 EASTRIDGE UNIT 3 MOR S-68
466-320-056-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 151 EASTRIDGE UNIT 3 MOR S-68
466-320-057-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 152 EASTRIDGE UNIT 3 MOR S-68
466-320-058-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 153 EASTRIDGE UNIT 3 MOR S-68
466-320-059-000	Assessable	B&D	6.72	8.00	0.0	0.2113	0.0	0.2113	0.0	LOT 154 EASTRIDGE UNIT 3 MOR S-68
466-320-060-000	Assessable	B&D	7.04	8.38	0.0	0.2213	0.0	0.2213	0.0	LOT 155 EASTRIDGE UNIT 3 MOR S-68
466-320-061-000	Assessable	B&D	7.68	9.14	0.0	0.2413	0.0	0.2413	0.0	LOT 156 EASTRIDGE UNIT 3 MOR S-68
466-350-001-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 193 ASHLEY WOODS UNIT 4 MOR S-95
466-350-002-000	Assessable	B&D	8.26	9.81	0.0	0.2591	0.0	0.2591	0.0	LOT 194 ASHLEY WOODS UNIT 4 MOR S-95
466-350-003-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 195 ASHLEY WOODS UNIT 4 MOR S-95
466-350-004-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 196 ASHLEY WOODS UNIT 4 MOR S-95
466-350-005-000	Assessable	B&D	7.30	8.67	0.0	0.2291	0.0	0.2291	0.0	LOT 197 ASHLEY WOODS UNIT 4 MOR S-95
466-350-006-000	Assessable	B&D	9.22	10.95	0.0	0.2891	0.0	0.2891	0.0	LOT 198 ASHLEY WOODS UNIT 4 MOR S-95
466-350-007-000	Assessable	B&D	8.58	10.19	0.0	0.2691	0.0	0.2691	0.0	LOT 199 ASHLEY WOODS UNIT 4 MOR S-95
466-350-008-000	Assessable	B&D	6.66	7.92	0.0	0.2091	0.0	0.2091	0.0	LOT 200 ASHLEY WOODS UNIT 4 MOR S-95
466-350-009-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 201 ASHLEY WOODS UNIT 4 MOR S-95
466-350-010-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 202 ASHLEY WOODS UNIT 4 MOR S-95
466-350-011-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 203 ASHLEY WOODS UNIT 4 MOR S-95
466-350-012-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 204 ASHLEY WOODS UNIT 4 MOR S-95
466-350-013-000	Assessable	B&D	7.94	9.43	0.0	0.2491	0.0	0.2491	0.0	LOT 205 ASHLEY WOODS UNIT 4 MOR S-95
466-350-014-000	Assessable	B&D	6.34	7.54	0.0	0.1991	0.0	0.1991	0.0	LOT 206 ASHLEY WOODS UNIT 4 MOR S-95
466-350-015-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 207 ASHLEY WOODS UNIT 4 MOR S-95
466-350-016-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 208 ASHLEY WOODS UNIT 4 MOR S-95
466-350-017-000	Assessable	B&D	6.98	8.30	0.0	0.2191	0.0	0.2191	0.0	LOT 209 ASHLEY WOODS UNIT 4 MOR S-95
466-350-018-000	Assessable	B&D	6.34	7.54	0.0	0.1991	0.0	0.1991	0.0	LOT 210 ASHLEY WOODS UNIT 4 MOR S-95
466-350-019-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 211 ASHLEY WOODS UNIT 4 MOR S-95
466-350-020-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 212 ASHLEY WOODS UNIT 4 MOR S-95
466-350-021-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 213 ASHLEY WOODS UNIT 4 MOR S-95
466-350-022-000	Assessable	B&D	7.62	9.05	0.0	0.2391	0.0	0.2391	0.0	LOT 214 ASHLEY WOODS UNIT 4 MOR S-95
466-350-023-000	Assessable	B&D	8.58	10.19	0.0	0.2691	0.0	0.2691	0.0	LOT 215 ASHLEY WOODS UNIT 4 MOR S-95
466-350-024-000	Assessable	B&D	6.98	8.30	0.0	0.2191	0.0	0.2191	0.0	LOT 216 ASHLEY WOODS UNIT 4 MOR S-95
466-350-025-000	Assessable	B&D	7.62	9.05	0.0	0.2391	0.0	0.2391	0.0	LOT 217 ASHLEY WOODS UNIT 4 MOR S-95
466-350-026-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 218 ASHLEY WOODS UNIT 4 MOR S-95
466-350-027-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 219 ASHLEY WOODS UNIT 4 MOR S-95

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-360-001-000	Assessable	B&D	6.34	7.54	0.0	0.1991	0.0	0.1991	0.0	LOT 140 ASHLEY WOODS UNIT 4 MOR S-95
466-360-002-000	Assessable	B&D	6.66	7.92	0.0	0.2091	0.0	0.2091	0.0	LOT 141 ASHLEY WOODS UNIT 4 MOR S-95
466-360-003-000	Assessable	B&D	7.30	8.67	0.0	0.2291	0.0	0.2291	0.0	LOT 142 ASHLEY WOODS UNIT 4 MOR S-95
466-360-004-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 143 ASHLEY WOODS UNIT 4 MOR S-95
466-360-005-000	Assessable	B&D	6.34	7.54	0.0	0.1991	0.0	0.1991	0.0	LOT 144 ASHLEY WOODS UNIT 4 MOR S-95
466-360-006-000	Assessable	B&D	7.30	8.67	0.0	0.2291	0.0	0.2291	0.0	LOT 145 ASHLEY WOODS UNIT 4 MOR S-95
466-360-007-000	Assessable	B&D	8.26	9.81	0.0	0.2591	0.0	0.2591	0.0	LOT 146 ASHLEY WOODS UNIT 4 MOR S-95
466-360-008-000	Assessable	B&D	8.58	10.19	0.0	0.2691	0.0	0.2691	0.0	LOT 147 ASHLEY WOODS UNIT 4 MOR S-95
466-360-009-000	Assessable	B&D	7.30	8.67	0.0	0.2291	0.0	0.2291	0.0	LOT 148 ASHLEY WOODS UNIT 4 MOR S-95
466-360-010-000	Assessable	B&D	6.98	8.30	0.0	0.2191	0.0	0.2191	0.0	LOT 149 ASHLEY WOODS UNIT 4 MOR S-95
466-360-011-000	Assessable	B&D	6.66	7.92	0.0	0.2091	0.0	0.2091	0.0	LOT 164 ASHLEY WOODS UNIT 4 MOR S-95
466-360-012-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 165 ASHLEY WOODS UNIT 4 MOR S-95
466-360-013-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 166 ASHLEY WOODS UNIT 4 MOR S-95
466-360-014-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 167 ASHLEY WOODS UNIT 4 MOR S-95
466-360-015-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 168 ASHLEY WOODS UNIT 4 MOR S-95
466-360-016-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 169 ASHLEY WOODS UNIT 4 MOR S-95
466-360-017-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 170 ASHLEY WOODS UNIT 4 MOR S-95
466-360-018-000	Assessable	B&D	6.66	7.92	0.0	0.2091	0.0	0.2091	0.0	LOT 171 ASHLEY WOODS UNIT 4 MOR S-95
466-360-019-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 172 ASHLEY WOODS UNIT 4 MOR S-95
466-360-020-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 173 ASHLEY WOODS UNIT 4 MOR S-95
466-360-021-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 174 ASHLEY WOODS UNIT 4 MOR S-95
466-360-022-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 175 ASHLEY WOODS UNIT 4 MOR S-95
466-360-023-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 176 ASHLEY WOODS UNIT 4 MOR S-95
466-360-024-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 177 ASHLEY WOODS UNIT 4 MOR S-95
466-360-025-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 178 ASHLEY WOODS UNIT 4 MOR S-95
466-360-026-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 179 ASHLEY WOODS UNIT 4 MOR S-95
466-360-027-000	Assessable	B&D	6.34	7.54	0.0	0.1991	0.0	0.1991	0.0	LOT 180 ASHLEY WOODS UNIT 4 MOR S-95
466-360-028-000	Assessable	B&D	7.62	9.05	0.0	0.2391	0.0	0.2391	0.0	LOT 183 ASHLEY WOODS UNIT 4 MOR S-95
466-360-029-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 184 ASHLEY WOODS UNIT 4 MOR S-95
466-360-030-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 185 ASHLEY WOODS UNIT 4 MOR S-95
466-360-031-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 186 ASHLEY WOODS UNIT 4 MOR S-95
466-360-032-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 187 ASHLEY WOODS UNIT 4 MOR S-95
466-360-033-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 188 ASHLEY WOODS UNIT 4 MOR S-95
466-360-034-000	Assessable	B&D	7.94	9.43	0.0	0.2491	0.0	0.2491	0.0	LOT 189 ASHLEY WOODS UNIT 4 MOR S-95
466-360-035-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 190 ASHLEY WOODS UNIT 4 MOR S-95
466-360-036-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 191 ASHLEY WOODS UNIT 4 MOR S-95
466-360-037-000	Assessable	B&D	6.66	7.92	0.0	0.2091	0.0	0.2091	0.0	LOT 192 ASHLEY WOODS UNIT 4 MOR S-95
466-360-038-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 220 ASHLEY WOODS UNIT 4 MOR S-95
466-370-001-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 150 ASHLEY WOODS UNIT 4 MOR S-95
466-370-002-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 151 ASHLEY WOODS UNIT 4 MOR S-95
466-370-003-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 152 ASHLEY WOODS UNIT 4 MOR S-95
466-370-004-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 153 ASHLEY WOODS UNIT 4 MOR S-95
466-370-005-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 154 ASHLEY WOODS UNIT 4 MOR S-95
466-370-006-000	Assessable	B&D	5.38	6.40	0.0	0.1691	0.0	0.1691	0.0	LOT 155 ASHLEY WOODS UNIT 4 MOR S-95
466-370-007-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 156 ASHLEY WOODS UNIT 4 MOR S-95
466-370-008-000	Assessable	B&D	6.02	7.16	0.0	0.1891	0.0	0.1891	0.0	LOT 157 ASHLEY WOODS UNIT 4 MOR S-95

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466-370-009-000	Assessable	B&D	23.88	28.36	0.0	0.7491	0.0	0.7491	0.0	LOT 158 ASHLEY WOODS UNIT 4 MOR S-95
466-370-010-000	Assessable	B&D	10.48	12.46	0.0	0.3291	0.0	0.3291	0.0	LOT 159 ASHLEY WOODS UNIT 4 MOR S-95
466-370-011-000	Assessable	B&D	9.22	10.95	0.0	0.2891	0.0	0.2891	0.0	LOT 160 ASHLEY WOODS UNIT 4 MOR S-95
466-370-012-000	Assessable	B&D	6.34	7.54	0.0	0.1991	0.0	0.1991	0.0	LOT 161 ASHLEY WOODS UNIT 4 MOR S-95
466-370-013-000	Assessable	B&D	7.62	9.05	0.0	0.2391	0.0	0.2391	0.0	LOT 162 ASHLEY WOODS UNIT 4 MOR S-95
466-370-014-000	Assessable	B&D	8.28	9.84	0.0	0.26	0.0	0.26	0.0	LOT 163 ASHLEY WOODS UNIT 4 MOR S-95
466-370-015-000	Assessable	B&D	5.70	6.78	0.0	0.1791	0.0	0.1791	0.0	LOT 181 ASHLEY WOODS UNIT 4 MOR S-95
466-370-016-000	Assessable	B&D	6.98	8.30	0.0	0.2191	0.0	0.2191	0.0	LOT 182 ASHLEY WOODS UNIT 4 MOR S-95
466-390-001-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 161 EASTRIDGE UNIT NO 4 T-11
466-390-002-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 162 EASTRIDGE UNIT NO 4 T-11
466-390-003-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 163 EASTRIDGE UNIT NO 4 T-11
466-390-004-000	Assessable	B&D	7.32	8.71	0.0	0.23	0.0	0.23	0.0	LOT 164 EASTRIDGE UNIT NO 4 T-11
466-390-005-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 165 EASTRIDGE UNIT NO 4 T-11
466-390-006-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 166 EASTRIDGE UNIT NO 4 T-11
466-390-007-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 167 EASTRIDGE UNIT NO 4 T-11
466-390-008-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 168 EASTRIDGE UNIT NO 4 T-11
466-390-009-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 169 EASTRIDGE UNIT NO 4 T-11
466-390-010-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 170 EASTRIDGE UNIT NO 4 T-11
466-390-011-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 171 EASTRIDGE UNIT NO 4 T-11
466-390-012-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 172 EASTRIDGE UNIT NO 4 T-11
466-390-013-000	Assessable	B&D	7.64	9.09	0.0	0.24	0.0	0.24	0.0	LOT 173 EASTRIDGE UNIT NO 4 T-11
466-390-014-000	Assessable	B&D	7.64	9.09	0.0	0.24	0.0	0.24	0.0	LOT 174 EASTRIDGE UNIT NO 4 T-11
466-390-017-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 177 EASTRIDGE UNIT NO 4 T-11
466-390-018-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 178 EASTRIDGE UNIT NO 4 T-11
466-390-019-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 179 EASTRIDGE UNIT NO 4 T-11
466-390-020-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 180 EASTRIDGE UNIT NO 4 T-11
466-390-021-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 181 EASTRIDGE UNIT NO 4 T-11
466-390-022-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 182 EASTRIDGE UNIT NO 4 T-11
466-390-023-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 198 EASTRIDGE UNIT NO 4 T-11
466-390-024-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 199 EASTRIDGE UNIT NO 4 T-11
466-390-025-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 200 EASTRIDGE UNIT NO 4 T-11
466-390-026-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 201 EASTRIDGE UNIT NO 4 T-11
466-390-027-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 202 EASTRIDGE UNIT NO 4 T-11
466-390-028-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 203 EASTRIDGE UNIT NO 4 T-11
466-390-029-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 204 EASTRIDGE UNIT NO 4 T-11
466-390-030-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 205 EASTRIDGE UNIT NO 4 T-11
466-390-031-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 206 EASTRIDGE UNIT NO 4 T-11
466-390-032-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 207 EASTRIDGE UNIT NO 4 T-11
466-390-034-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 224 EASTRIDGE UNIT NO 4 T-11
466-390-035-000	Assessable	B&D	7.32	8.71	0.0	0.23	0.0	0.23	0.0	LOT 225 EASTRIDGE UNIT NO 4 T-11
466-390-036-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 226 EASTRIDGE UNIT NO 4 T-11
466-390-037-000	Assessable	B&D	8.28	9.84	0.0	0.26	0.0	0.26	0.0	LOT 227 EASTRIDGE UNIT NO 4 T-11
466-390-038-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 228 EASTRIDGE UNIT NO 4 T-11
466-390-039-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 229 EASTRIDGE UNIT NO 4 T-11
466-390-040-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 230 EASTRIDGE UNIT NO 4 T-11
466-390-041-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 231 EASTRIDGE UNIT NO 4 T-11

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-390-043-000	Assessable	B&D	10.20	12.12	0.0	0.32	0.0	0.32	0.0	POR LOT 175 EASTRIDGE UNIT NO 4 T-11
466-390-045-000	Assessable	B&D	9.88	11.74	0.0	0.31	0.0	0.31	0.0	LOT 176 & POR LOT 175 EASTRIDGE UNIT NO 4 T-11
466-400-001-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 157 EASTRIDGE UNIT NO 4 T-11
466-400-002-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 158 EASTRIDGE UNIT NO 4 T-11
466-400-003-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 159 EASTRIDGE UNIT NO 4 T-11
466-400-004-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 160 EASTRIDGE UNIT NO 4 T-11
466-400-005-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 183 EASTRIDGE UNIT NO 4 T-11
466-400-006-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 184 EASTRIDGE UNIT NO 4 T-11
466-400-007-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 185 EASTRIDGE UNIT NO 4 T-11
466-400-008-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 186 EASTRIDGE UNIT NO 4 T-11
466-400-009-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 187 EASTRIDGE UNIT NO 4 T-11
466-400-010-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 188 EASTRIDGE UNIT NO 4 MOR BK T PG 11
466-400-011-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 189 EASTRIDGE UNIT NO 4 MOR T-11
466-400-012-000	Assessable	B&D	7.96	9.47	0.0	0.25	0.0	0.25	0.0	LOT 190 EASTRIDGE UNIT NO 4 T-11
466-400-013-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 191 EASTRIDGE UNIT NO 4 T-11
466-400-014-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 192 EASTRIDGE UNIT NO 4 T-11
466-400-015-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 193 EASTRIDGE UNIT NO 4 T-11
466-400-016-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 194 EASTRIDGE UNIT NO 4 T-11
466-400-017-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 195 EASTRIDGE UNIT NO 4 T-11
466-400-018-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 196 EASTRIDGE UNIT NO 4 T-11
466-400-019-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 197 EASTRIDGE UNIT NO 4 T-11
466-400-020-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 208 EASTRIDGE UNIT NO 4 T-11
466-400-021-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 209 EASTRIDGE UNIT NO 4 T-11
466-400-022-000	Assessable	B&D	5.42	6.44	0.0	0.17	0.0	0.17	0.0	LOT 210 EASTRIDGE UNIT NO 4 T-11
466-400-023-000	Assessable	B&D	5.74	6.82	0.0	0.18	0.0	0.18	0.0	LOT 211 EASTRIDGE UNIT NO 4 T-11
466-400-024-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 212 EASTRIDGE UNIT NO 4 T-11
466-400-025-000	Assessable	B&D	7.32	8.71	0.0	0.23	0.0	0.23	0.0	LOT 213 EASTRIDGE UNIT NO 4 T-11
466-400-026-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 214 EASTRIDGE UNIT NO 4 T-11
466-400-027-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 215 EASTRIDGE UNIT NO 4 T-11
466-400-028-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 216 EASTRIDGE UNIT NO 4 T-11
466-400-029-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 217 EASTRIDGE UNIT NO 4 T-11
466-400-030-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 218 EASTRIDGE UNIT NO 4 T-11
466-400-031-000	Assessable	B&D	7.32	8.71	0.0	0.23	0.0	0.23	0.0	LOT 219 EASTRIDGE UNIT NO 4 T-11
466-400-032-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 220 EASTRIDGE UNIT NO 4 T-11
466-400-033-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 221 EASTRIDGE UNIT NO 4 T-11
466-400-034-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 222 EASTRIDGE UNIT NO 4 T-11
466-400-035-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 223 EASTRIDGE UNIT NO 4 T-11
466-400-036-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 232 EASTRIDGE UNIT NO 4 T-11
466-400-037-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 233 EASTRIDGE UNIT NO 4 T-11
466-400-038-000	Assessable	B&D	5.10	6.06	0.0	0.16	0.0	0.16	0.0	LOT 234 EASTRIDGE UNIT NO 4 T-11
466-400-039-000	Assessable	B&D	6.68	7.95	0.0	0.21	0.0	0.21	0.0	LOT 235 EASTRIDGE UNIT NO 4 T-11
466-400-040-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 236 EASTRIDGE UNIT NO 4 T-11
466-410-003-000	Assessable	B&D	17.22	20.45	0.0	0.54	0.0	0.54	0.0	LOT 83 ASHLEY WOODS UNIT 2 T-13
466-410-004-000	Assessable	B&D	14.02	16.66	0.0	0.44	0.0	0.44	0.0	LOT 84 ASHLEY WOODS UNIT 2 T-13
466-410-005-000	Assessable	B&D	11.80	14.01	0.0	0.37	0.0	0.37	0.0	LOT 85 ASHLEY WOODS UNIT 2 T-13
466-410-006-000	Assessable	B&D	10.52	12.49	0.0	0.33	0.0	0.33	0.0	LOT 86 ASHLEY WOODS UNIT 2 T-13

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-410-007-000	Assessable	B&D	13.70	16.28	0.0	0.43	0.0	0.43	0.0	LOT 87 ASHLEY WOODS UNIT 2 T-13
466-410-008-000	Assessable	B&D	9.88	11.74	0.0	0.31	0.0	0.31	0.0	LOT 88 ASHLEY WOODS UNIT 2 T-13
466-410-009-000	Assessable	B&D	11.16	13.25	0.0	0.35	0.0	0.35	0.0	LOT 89 ASHLEY WOODS UNIT 2 T-13
466-410-010-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 90 ASHLEY WOODS UNIT 2 T-13
466-410-011-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 91 ASHLEY WOODS UNIT 2 T-13
466-410-012-000	Assessable	B&D	6.06	7.19	0.0	0.19	0.0	0.19	0.0	LOT 92 ASHLEY WOODS UNIT 2 T-13
466-410-013-000	Assessable	B&D	7.32	8.71	0.0	0.23	0.0	0.23	0.0	LOT 93 ASHLEY WOODS UNIT 2 T-13
466-410-014-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 94 ASHLEY WOODS UNIT 2 T-13
466-410-015-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 95 ASHLEY WOODS UNIT 2 T-13
466-410-016-000	Assessable	B&D	7.96	9.47	0.0	0.25	0.0	0.25	0.0	LOT 96 ASHLEY WOODS UNIT 2 T-13
466-410-018-000	Assessable	B&D	14.02	16.66	0.0	0.44	0.0	0.44	0.0	LOT 98 ASHLEY WOODS UNIT 2 T-13
466-410-019-000	Assessable	B&D	7.96	9.47	0.0	0.25	0.0	0.25	0.0	LOT 99 ASHLEY WOODS UNIT 2 T-13
466-410-020-000	Assessable	B&D	6.36	7.57	0.0	0.2	0.0	0.2	0.0	LOT 100 ASHLEY WOODS UNIT 2 T-13
466-410-021-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 101 ASHLEY WOODS UNIT 2 T-13
466-410-022-000	Assessable	B&D	7.00	8.33	0.0	0.22	0.0	0.22	0.0	LOT 102 ASHLEY WOODS UNIT 2 T-13
466-410-023-000	Assessable	B&D	9.88	11.74	0.0	0.31	0.0	0.31	0.0	LOT 103 ASHLEY WOODS UNIT 2 T-13
466-410-024-000	Assessable	B&D	10.52	12.49	0.0	0.33	0.0	0.33	0.0	LOT 104 ASHLEY WOODS UNIT 2 T-13
466-410-025-000	Assessable	B&D	7.64	9.09	0.0	0.24	0.0	0.24	0.0	LOT 105 ASHLEY WOODS UNIT 2 T-13
466-410-034-000	Common	B&D	-	-	0.0	0.0	0.0	0.0	0.0	POR LOT C OPEN SPACE ASHLEY WOOD #2
466-410-036-000	Assessable	B&D	19.44	23.10	0.0	0.61	0.0	0.61	0.0	POR LOT 97 ASHLEY WOODS UNIT 2 T-13
466-410-041-000	Assessable	B&D	14.34	17.04	0.0	0.45	0.0	0.45	0.0	POR LOT 106 ASHLEY WOODS UNIT 2 T-13
466-410-043-000	Assessable	B&D	14.02	16.66	0.0	0.44	0.0	0.44	0.0	L82ASHLEY WOODS UN2T-13&P L J PUB UTLTY ESMT
466-410-044-000	Assessable	B&D	9.24	10.98	0.0	0.29	0.0	0.29	0.0	L81ASHLEY WOODS UN2T-13&P L J PUB UTLTY ESMT
466-490-001-000	Assessable	B	6.36	7.58	0.0	0.2132	0.0	0.0	0.0	LOT 223 HILLSBOROUGH UNIT NO 2A T-47
466-490-002-000	Assessable	B	7.06	8.40	0.0	0.2362	0.0	0.0	0.0	LOT 224 HILLSBOROUGH UNIT NO 2A T-47
466-490-003-000	Assessable	B	7.92	9.44	0.0	0.2654	0.0	0.0	0.0	LOT 225 HILLSBOROUGH UNIT NO 2A T-47
466-490-004-000	Assessable	B	9.88	11.77	0.0	0.3309	0.0	0.0	0.0	LOT 226 HILLSBOROUGH UNIT NO 2A T-47
466-490-005-000	Assessable	B	7.58	9.04	0.0	0.2541	0.0	0.0	0.0	LOT 227 HILLSBOROUGH UNIT NO 2A T-47
466-490-006-000	Assessable	B	7.52	8.95	0.0	0.2516	0.0	0.0	0.0	LOT 228 HILLSBOROUGH UNIT NO 2A T-47
466-490-007-000	Assessable	B	8.26	9.84	0.0	0.2768	0.0	0.0	0.0	LOT 229 HILLSBOROUGH UNIT NO 2A T-47
466-490-008-000	Assessable	B	10.38	12.35	0.0	0.3473	0.0	0.0	0.0	LOT 230 HILLSBOROUGH UNIT NO 2A T-47
466-490-009-000	Assessable	B	9.36	11.16	0.0	0.3137	0.0	0.0	0.0	LOT 231 HILLSBOROUGH UNIT NO 2A T-47
466-490-010-000	Assessable	B	7.96	9.47	0.0	0.2663	0.0	0.0	0.0	LOT 232 HILLSBOROUGH UNIT NO 2A T-47
466-490-011-000	Assessable	B	8.80	10.48	0.0	0.2947	0.0	0.0	0.0	LOT 233 HILLSBOROUGH UNIT NO 2A T-47
466-490-012-000	Assessable	B	11.72	13.96	0.0	0.3925	0.0	0.0	0.0	LOT 234 HILLSBOROUGH UNIT NO 2A T-47
466-490-013-000	Assessable	B	8.00	9.52	0.0	0.2676	0.0	0.0	0.0	LOT 235 HILLSBOROUGH UNIT NO 2A T-47
466-490-014-000	Assessable	B	7.64	9.09	0.0	0.2557	0.0	0.0	0.0	LOT 236 HILLSBOROUGH UNIT NO 2A T-47
466-490-015-000	Assessable	B	6.84	8.15	0.0	0.2291	0.0	0.0	0.0	LOT 237 HILLSBOROUGH UNIT NO 2A T-47
466-490-016-000	Assessable	B	8.88	10.57	0.0	0.2973	0.0	0.0	0.0	LOT 238 HILLSBOROUGH UNIT NO 2A T-47
466-490-017-000	Assessable	B	6.50	7.74	0.0	0.2176	0.0	0.0	0.0	LOT 239 HILLSBOROUGH UNIT NO 2A T-47
466-490-018-000	Assessable	B	8.02	9.55	0.0	0.2686	0.0	0.0	0.0	LOT 240 HILLSBOROUGH UNIT NO 2A T-47
466-490-019-000	Assessable	B	6.26	7.45	0.0	0.2094	0.0	0.0	0.0	LOT 241 HILLSBOROUGH UNIT NO 2A T-47
466-490-020-000	Assessable	B	6.34	7.55	0.0	0.2123	0.0	0.0	0.0	LOT 242 HILLSBOROUGH UNIT NO 2A T-47
466-490-021-000	Assessable	B	14.16	16.86	0.0	0.4742	0.0	0.0	0.0	LOT 269 HILLSBOROUGH UNIT NO 2A T-47
466-490-022-000	Assessable	B	10.90	12.97	0.0	0.3647	0.0	0.0	0.0	LOT 270 HILLSBOROUGH UNIT NO 2A T-47
466-490-023-000	Assessable	B	8.46	10.08	0.0	0.2836	0.0	0.0	0.0	LOT 271 HILLSBOROUGH UNIT NO 2A T-47

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-490-024-000	Assessable	B	9.92	11.80	0.0	0.3319	0.0	0.0	0.0	LOT 272 HILLSBOROUGH UNIT NO 2A T-47
466-490-025-000	Assessable	B	8.24	9.81	0.0	0.2759	0.0	0.0	0.0	LOT 273 HILLSBOROUGH UNIT NO 2A T-47
466-490-026-000	Assessable	B	7.12	8.49	0.0	0.2387	0.0	0.0	0.0	LOT 274 HILLSBOROUGH UNIT NO 2A T-47
466-490-027-000	Assessable	B	7.12	8.47	0.0	0.2383	0.0	0.0	0.0	LOT 275 HILLSBOROUGH UNIT NO 2A T-47
466-490-028-000	Assessable	B	6.50	7.74	0.0	0.2176	0.0	0.0	0.0	LOT 276 HILLSBOROUGH UNIT NO 2A T-47
466-490-029-000	Assessable	B	6.56	7.81	0.0	0.2197	0.0	0.0	0.0	LOT 277 HILLSBOROUGH UNIT NO 2A T-47
466-490-030-000	Assessable	B	6.58	7.85	0.0	0.2207	0.0	0.0	0.0	LOT 278 HILLSBOROUGH UNIT NO 2A T-47
466-490-031-000	Assessable	B	6.44	7.66	0.0	0.2154	0.0	0.0	0.0	LOT 279 HILLSBOROUGH UNIT NO 2A T-47
466-490-032-000	Assessable	B	6.34	7.56	0.0	0.2125	0.0	0.0	0.0	LOT 280 HILLSBOROUGH UNIT NO 2A T-47
466-490-033-000	Assessable	B	6.40	7.62	0.0	0.2142	0.0	0.0	0.0	LOT 281 HILLSBOROUGH UNIT NO 2A T-47
466-490-034-000	Assessable	B	7.46	8.89	0.0	0.25	0.0	0.0	0.0	LOT 282 HILLSBOROUGH UNIT NO 2A T-47
466-500-001-000	Assessable	B	11.02	13.13	0.0	0.3691	0.0	0.0	0.0	LOT 207 HILLSBOROUGH UNIT NO 2A T-47
466-500-002-000	Assessable	B	8.78	10.45	0.0	0.2939	0.0	0.0	0.0	LOT 208 HILLSBOROUGH UNIT NO 2A T-47
466-500-003-000	Assessable	B	6.76	8.05	0.0	0.2265	0.0	0.0	0.0	LOT 209 HILLSBOROUGH UNIT NO 2A T-47
466-500-004-000	Assessable	B	6.38	7.59	0.0	0.2134	0.0	0.0	0.0	LOT 210 HILLSBOROUGH UNIT NO 2A T-47
466-500-005-000	Assessable	B	6.38	7.59	0.0	0.2134	0.0	0.0	0.0	LOT 211 HILLSBOROUGH UNIT NO 2A T-47
466-500-006-000	Assessable	B	6.38	7.59	0.0	0.2134	0.0	0.0	0.0	LOT 212 HILLSBOROUGH UNIT NO 2A T-47
466-500-007-000	Assessable	B	6.38	7.59	0.0	0.2134	0.0	0.0	0.0	LOT 213 HILLSBOROUGH UNIT NO 2A T-47
466-500-008-000	Assessable	B	6.38	7.59	0.0	0.2134	0.0	0.0	0.0	LOT 214 HILLSBOROUGH UNIT NO 2A T-47
466-500-009-000	Assessable	B	6.38	7.59	0.0	0.2135	0.0	0.0	0.0	LOT 215 HILLSBOROUGH UNIT NO 2A T-47
466-500-010-000	Assessable	B	6.34	7.56	0.0	0.2126	0.0	0.0	0.0	LOT 216 HILLSBOROUGH UNIT NO 2A T-47
466-500-011-000	Assessable	B	10.30	12.25	0.0	0.3446	0.0	0.0	0.0	LOT 217 HILLSBOROUGH UNIT NO 2A T-47
466-500-012-000	Assessable	B	7.26	8.64	0.0	0.2431	0.0	0.0	0.0	LOT 218 HILLSBOROUGH UNIT NO 2A T-47
466-500-013-000	Assessable	B	6.36	7.58	0.0	0.2133	0.0	0.0	0.0	LOT 219 HILLSBOROUGH UNIT NO 2A T-47
466-500-014-000	Assessable	B	6.24	7.42	0.0	0.2088	0.0	0.0	0.0	LOT 220 HILLSBOROUGH UNIT NO 2A T-47
466-500-015-000	Assessable	B	6.00	7.16	0.0	0.2013	0.0	0.0	0.0	LOT 221 HILLSBOROUGH UNIT NO 2A T-47
466-500-016-000	Assessable	B	6.46	7.70	0.0	0.2165	0.0	0.0	0.0	LOT 222 HILLSBOROUGH UNIT NO 2A T-47
466-500-017-000	Assessable	B	9.08	10.82	0.0	0.3043	0.0	0.0	0.0	LOT 243 HILLSBOROUGH UNIT NO 2A T-47
466-500-018-000	Assessable	B	8.10	9.65	0.0	0.2714	0.0	0.0	0.0	LOT 244 HILLSBOROUGH UNIT NO 2A T-47
466-500-019-000	Assessable	B	10.08	12.01	0.0	0.3377	0.0	0.0	0.0	LOT 245 HILLSBOROUGH UNIT NO 2A T-47
466-500-020-000	Assessable	B	8.90	10.59	0.0	0.2977	0.0	0.0	0.0	LOT 246 HILLSBOROUGH UNIT NO 2A T-47
466-500-021-000	Assessable	B	6.98	8.32	0.0	0.2341	0.0	0.0	0.0	LOT 247 HILLSBOROUGH UNIT NO 2A T-47
466-500-022-000	Assessable	B	6.40	7.63	0.0	0.2146	0.0	0.0	0.0	LOT 248 HILLSBOROUGH UNIT NO 2A T-47
466-500-023-000	Assessable	B	7.64	9.10	0.0	0.2558	0.0	0.0	0.0	LOT 249 HILLSBOROUGH UNIT NO 2A T-47
466-500-024-000	Assessable	B	7.42	8.83	0.0	0.2484	0.0	0.0	0.0	LOT 250 HILLSBOROUGH UNIT NO 2A T-47
466-500-025-000	Assessable	B	6.38	7.60	0.0	0.2136	0.0	0.0	0.0	LOT 251 HILLSBOROUGH UNIT NO 2A T-47
466-500-026-000	Assessable	B	8.80	10.47	0.0	0.2945	0.0	0.0	0.0	LOT 252 HILLSBOROUGH UNIT NO 2A T-47
466-500-027-000	Assessable	B	6.94	8.25	0.0	0.2321	0.0	0.0	0.0	LOT 253 HILLSBOROUGH UNIT NO 2A T-47
466-500-028-000	Assessable	B	6.98	8.31	0.0	0.2338	0.0	0.0	0.0	LOT 254 HILLSBOROUGH UNIT NO 2A T-47
466-500-029-000	Assessable	B	6.34	7.54	0.0	0.2121	0.0	0.0	0.0	LOT 255 HILLSBOROUGH UNIT NO 2A T-47
466-500-030-000	Assessable	B	6.56	7.82	0.0	0.2199	0.0	0.0	0.0	LOT 256 HILLSBOROUGH UNIT NO 2A T-47
466-500-031-000	Assessable	B	9.06	10.78	0.0	0.3032	0.0	0.0	0.0	LOT 257 HILLSBOROUGH UNIT NO 2A T-47
466-500-032-000	Assessable	B	6.98	8.32	0.0	0.2339	0.0	0.0	0.0	LOT 258 HILLSBOROUGH UNIT NO 2A T-47
466-500-033-000	Assessable	B	6.72	8.00	0.0	0.2251	0.0	0.0	0.0	LOT 267 HILLSBOROUGH UNIT NO 2A T-47
466-500-034-000	Assessable	B	8.46	10.07	0.0	0.2833	0.0	0.0	0.0	LOT 268 HILLSBOROUGH UNIT NO 2A T-47
466-520-001-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 181 HILLSBOROUGH UNIT NO 2B T-86

City of Roseville
Johnson Ranch Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-520-002-000	Assessable	B	7.92	9.42	0.0	0.265	0.0	0.0	0.0	LOT 182 HILLSBOROUGH UNIT NO 2B T-86
466-520-003-000	Assessable	B	7.92	9.42	0.0	0.265	0.0	0.0	0.0	LOT 183 HILLSBOROUGH UNIT NO 2B T-86
466-520-004-000	Assessable	B	8.42	10.03	0.0	0.282	0.0	0.0	0.0	LOT 184 HILLSBOROUGH UNIT NO 2B T-86
466-520-005-000	Assessable	B	6.32	7.54	0.0	0.212	0.0	0.0	0.0	LOT 185 HILLSBOROUGH UNIT NO 2B T-86
466-520-006-000	Assessable	B	9.34	11.12	0.0	0.3127	0.0	0.0	0.0	LOT 186 HILLSBOROUGH UNIT NO 2B T-86
466-520-007-000	Assessable	B	9.50	11.31	0.0	0.318	0.0	0.0	0.0	LOT 187 HILLSBOROUGH UNIT NO 2B T-86
466-520-008-000	Assessable	B	8.54	10.18	0.0	0.2862	0.0	0.0	0.0	LOT 188 HILLSBOROUGH UNIT NO 2B T-86
466-520-009-000	Assessable	B	9.50	11.31	0.0	0.318	0.0	0.0	0.0	LOT 189 HILLSBOROUGH UNIT NO 2B T-86
466-520-010-000	Assessable	B	6.32	7.54	0.0	0.212	0.0	0.0	0.0	LOT 190 HILLSBOROUGH UNIT NO 2B T-86
466-520-011-000	Assessable	B	9.50	11.31	0.0	0.318	0.0	0.0	0.0	LOT 283 HILLSBOROUGH UNIT NO 2B T-86
466-520-012-000	Assessable	B	6.64	7.92	0.0	0.2226	0.0	0.0	0.0	LOT 284 HILLSBOROUGH UNIT NO 2B T-86
466-520-013-000	Assessable	B	7.72	9.20	0.0	0.2586	0.0	0.0	0.0	LOT 285 HILLSBOROUGH UNIT NO 2B T-86
466-520-014-000	Assessable	B	9.50	11.31	0.0	0.318	0.0	0.0	0.0	LOT 286 HILLSBOROUGH UNIT NO 2B T-86
466-520-015-000	Assessable	B	8.54	10.18	0.0	0.2862	0.0	0.0	0.0	LOT 287 HILLSBOROUGH UNIT NO 2B T-86
466-520-016-000	Assessable	B	7.28	8.67	0.0	0.2438	0.0	0.0	0.0	LOT 288 HILLSBOROUGH UNIT NO 2B T-86
466-520-017-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 289 HILLSBOROUGH UNIT NO 2B T-86
466-520-018-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 290 HILLSBOROUGH UNIT NO 2B T-86
466-520-019-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 291 HILLSBOROUGH UNIT NO 2B T-86
466-520-020-000	Assessable	B	6.64	7.92	0.0	0.2226	0.0	0.0	0.0	LOT 292 HILLSBOROUGH UNIT NO 2B T-86
466-520-021-000	Assessable	B	6.96	8.29	0.0	0.2332	0.0	0.0	0.0	LOT 293 HILLSBOROUGH UNIT NO 2B T-86
466-520-022-000	Assessable	B	7.28	8.67	0.0	0.2438	0.0	0.0	0.0	LOT 294 HILLSBOROUGH UNIT NO 2B T-86
466-520-023-000	Assessable	B	5.06	6.03	0.0	0.1696	0.0	0.0	0.0	LOT 295 HILLSBOROUGH UNIT NO 2B T-86
466-520-024-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 296 HILLSBOROUGH UNIT NO 2B T-86
466-520-025-000	Assessable	B	6.02	7.16	0.0	0.2014	0.0	0.0	0.0	LOT 297 HILLSBOROUGH UNIT NO 2B T-86
466-530-001-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 191 HILLSBOROUGH UNIT NO 2B T-86
466-530-002-000	Assessable	B	5.54	6.60	0.0	0.1855	0.0	0.0	0.0	LOT 192 HILLSBOROUGH UNIT NO 2B T-86
466-530-003-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 193 HILLSBOROUGH UNIT NO 2B T-86
466-530-004-000	Assessable	B	7.28	8.67	0.0	0.2438	0.0	0.0	0.0	LOT 194 HILLSBOROUGH UNIT NO 2B T-86
466-530-005-000	Assessable	B	6.96	8.29	0.0	0.2332	0.0	0.0	0.0	LOT 195 HILLSBOROUGH UNIT NO 2B T-86
466-530-006-000	Assessable	B	6.64	7.92	0.0	0.2226	0.0	0.0	0.0	LOT 196 HILLSBOROUGH UNIT NO 2B T-86
466-530-007-000	Assessable	B	6.32	7.54	0.0	0.212	0.0	0.0	0.0	LOT 197 HILLSBOROUGH UNIT NO 2B T-86
466-530-008-000	Assessable	B	6.32	7.54	0.0	0.212	0.0	0.0	0.0	LOT 198 HILLSBOROUGH UNIT NO 2B T-86
466-530-009-000	Assessable	B	6.32	7.54	0.0	0.212	0.0	0.0	0.0	LOT 199 HILLSBOROUGH UNIT NO 2B T-86
466-530-010-000	Assessable	B	6.64	7.92	0.0	0.2226	0.0	0.0	0.0	LOT 200 HILLSBOROUGH UNIT NO 2B T-86
466-530-011-000	Assessable	B	6.96	8.29	0.0	0.2332	0.0	0.0	0.0	LOT 201 HILLSBOROUGH UNIT NO 2B T-86
466-530-012-000	Assessable	B	6.64	7.92	0.0	0.2226	0.0	0.0	0.0	LOT 202 HILLSBOROUGH UNIT NO 2B T-86
466-530-013-000	Assessable	B	6.02	7.16	0.0	0.2014	0.0	0.0	0.0	LOT 203 HILLSBOROUGH UNIT NO 2B T-86
466-530-014-000	Assessable	B	6.02	7.16	0.0	0.2014	0.0	0.0	0.0	LOT 204 HILLSBOROUGH UNIT NO 2B T-86
466-530-015-000	Assessable	B	6.64	7.92	0.0	0.2226	0.0	0.0	0.0	LOT 205 HILLSBOROUGH UNIT NO 2B T-86
466-530-016-000	Assessable	B	6.96	8.29	0.0	0.2332	0.0	0.0	0.0	LOT 206 HILLSBOROUGH UNIT NO 2B T-86
466-530-017-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 259 HILLSBOROUGH UNIT NO 2B T-86
466-530-018-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 260 HILLSBOROUGH UNIT NO 2B T-86
466-530-019-000	Assessable	B	5.70	6.78	0.0	0.1908	0.0	0.0	0.0	LOT 261 HILLSBOROUGH UNIT NO 2B T-86
466-530-020-000	Assessable	B	5.38	6.41	0.0	0.1802	0.0	0.0	0.0	LOT 262 HILLSBOROUGH UNIT NO 2B T-86
466-530-021-000	Assessable	B	69.72	82.92	0.0	2.3319	0.0	0.0	0.0	LOT 263 HILLSBOROUGH UNIT NO 2B T-86
466-530-022-000	Assessable	B	72.88	86.69	0.0	2.4379	0.0	0.0	0.0	LOT 264 HILLSBOROUGH UNIT NO 2B T-86

City of Roseville
Johnson Ranch Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	TOTAL CHARGE	MAXIMUM ASMT	ACRES ZONE A	ACRES ZONE B	ACRES ZONE C	ACRES ZONE D	ACRES ZONE E	LEGAL DESCRIPTION
466-530-023-000	Assessable	B	66.54	79.15	0.0	2.2259	0.0	0.0	0.0	LOT 265 HILLSBOROUGH UNIT NO 2B T-86
466-530-024-000	Assessable	B	6.02	7.16	0.0	0.2014	0.0	0.0	0.0	LOT 266 HILLSBOROUGH UNIT NO 2B T-86

Summary Fields	Value
ACTIVE PARCELS	1,060
LEVIED PARCELS	1,044
TOTAL CHARGE	$48,053.02
MAXIMUM ASMT	$55,957.72
CHARGE ZONE A	$16,754.44
CHARGE ZONE B	$9,714.46
CHARGE ZONE C	$9,007.05
CHARGE ZONE D	$276.05
CHARGE ZONE E	$12,301.02
ACRES ZONE A	101.5984
ACRES ZONE B	227.5064
ACRES ZONE C	132.6061
ACRES ZONE D	140.9012
ACRES ZONE E	13.6282
TOTAL ACRES	616.2403

RESOLUTION NO. 25-115

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, INITIATING PROCEEDINGS FOR THE LEVY OF ASSESSMENTS FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the North Central Roseville Specific Plan Landscaping and Lighting District and annexed territory therein (hereafter referred to as the "District") pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California, beginning with Section 22500* (hereafter referred to as the "Act"), that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance and services of street lighting, landscaping, and all appurtenant facilities and operations related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer") for the purpose of assisting with the establishment of the assessments, the annexation of territory, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act, and in accordance with the California Constitution, Articles XIIIC and XIIID;

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 Engineer's Report: The City Council hereby orders the Engineer to prepare and file with the City Clerk the Engineer's Report concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22622* of the Act.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials and/or improvements for certain areas, including landscape, lighting, park, open space, parkway, slope and median areas together with trees, shrubs, turf and other ornamental vegetation, drainage and irrigation systems, recreation equipment, bike paths, pedestrian trails, walls and fences, and other public improvements within the street right-of-way areas and other appurtenant facilities as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

RESOLUTION NO. 25-115

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-116

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the North Central Roseville Specific Plan Landscaping and Lighting District (hereafter referred to as the "District"), and initiated proceedings for Fiscal Year 2025/2026, pursuant to the provisions of the *Landscaping and Lighting Act of 1972*, *Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereafter referred to as the "Act") that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance, operation and servicing of all improvements and facilities related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services for the purpose of assisting with the Annual Levy of the District, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, PURSUANT TO *CHAPTER 3, SECTION 22624* OF THE ACT, AS FOLLOWS:

Section 1 Intention: The City Council hereby declares that it is its intention to seek the Annual Levy of the District pursuant to the Act, over and including the land within the District boundary, and to levy and collect assessments on all such land to pay for the annual costs of the improvements.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials or improvements for certain areas, including landscape, lighting, park, open space, parkway, slope and median areas together with trees, shrubs, turf and other ornamental vegetation, drainage and irrigation systems, recreation equipment, bike paths, pedestrian trails, walls and fences, and other public improvements within the street right-of-way areas and other appurtenant facilities as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

Section 3 Boundaries and Designation: The boundaries of the District are described as the boundaries previously defined in the formation documents of the original District and any annexations thereto. The District generally includes the parcels within the area known as the North Central Roseville Specific Plan. The District is known and designated as

"North Central Roseville Specific Plan Landscaping and Lighting District"

Section 4 Proposed Assessment Amounts: The proposed assessments are outlined in the Engineer's Report. District Assessments are calculated in accordance with the method of apportionment established for the District and do not exceed the assessment rates and annual inflationary adjustment previously authorized by the City Council and approved by the property owners in accordance with the provisions of the California State Constitution, Article XIIID.

Section 5 Public Hearing(s): The City Council hereby declares its intention to conduct a Public Hearing annually concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22626* of the Act.

Section 6 Notice: The City Clerk shall give notice of the time and place of the Public Hearing by causing this Resolution to be published once in the local newspaper not less than ten (10) days before the date of the hearing and by posting a copy of this Resolution on the official bulletin board customarily used by the City Council for the posting of notices.

Section 7 Time and Place of Public Hearing: Notice is hereby given that a Public Hearing on these matters will be held by the City Council on **Wednesday, May 21, 2025 at 6:00 p.m.**, or as soon thereafter as feasible in the regular meeting chambers located at 311 Vernon Street, Roseville, California.

RESOLUTION NO. 25-116

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-117

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, the City Council has, by previous Resolutions, ordered the preparation of an Engineer's Annual Levy Report (hereafter referred to as the "Engineer's Report") for the district known and designated as the North Central Roseville Specific Plan Landscaping and Lighting District (hereafter referred to as the "District"), pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereinafter referred to as the "Act"); and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer"), for the purpose of assisting with the establishment of the assessments and to prepare and file an Engineer's Report with the City Clerk in accordance with the Act, and in accordance with the requirements of the California Constitution, Articles XIIIC and XIIID; and,

WHEREAS, there has now been presented to this City Council the Engineer's Report as required by *Chapter 1, Article 4, Section 22566* of said Act; and,

WHEREAS, this City Council has carefully examined and reviewed the Engineer's Report as presented, and is preliminarily satisfied with the District, each and all of the budget items and documents as set forth therein, and is satisfied that the assessments, on a preliminary basis, have been spread in accordance with the benefits received from the improvements, operation, maintenance and services to be performed within each Zone, as set forth in said Engineer's Report; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 That the above recitals are all true and correct.

Section 2 That the Engineer's Report, as presented, consists of the following:

a. A Description of Improvements
b. The Annual Budget (Costs and Expenses of Maintenance, Services, Operations and District Administration)
c. The Assessment Roll containing the Fiscal Year 2025/2026 Levy for each Assessor Parcel within the District

Section 3 The Engineer's Report is hereby approved on a preliminary basis and ordered to be filed in the Office of the City Clerk as a permanent record and to remain open to public inspection.

Section 4 That the City Clerk shall certify to the passage and adoption of this Resolution, and the minutes of this meeting shall so reflect the presentation of the Engineer's Report.

RESOLUTION NO. 25-117

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

City of Roseville

North Central Roseville Specific Plan Landscaping and Lighting District

FY 2025/26 Engineer's Annual Levy Report

Intent Meeting: April 16, 2025
Public Hearing: May 21, 2025

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ENGINEER'S REPORT AFFIDAVIT

Establishment of Annual Rates and Charges for the:

North Central Roseville Specific Plan
Landscaping and Lighting District

City of Roseville

Placer County, State of California

This Report describes the District and any relevant zones therein, including the improvements, budgets, parcels and assessments to be levied for Fiscal Year 2025/26 as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Placer County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the City Council.

Dated this _____ day of _____, 2025

Willdan Financial Services
Assessment Engineer
On Behalf of the City of Roseville

By: _____

Mickey Ashley
Project Manager
District Administration Services

By: _____

Tyrone Peter
PE # C 81888

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I. OVERVIEW

A. INTRODUCTION

The City of Roseville ("City") annually levies and collects special assessments in order to maintain the improvements within the existing North Central Roseville Specific Plan Landscaping and Lighting District ("District") within the City. The District was formed in 1990. The District was formed and is levied annual assessments pursuant to the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code (the "Act").

This Engineer's Annual Levy Report for Fiscal Year 2025/26 ("Report") describes the District, any annexations, changes to the District, and the proposed assessments for the period of July 1, 2025 through June 30, 2026. The maintenance, operation and servicing of the improvements associated with specific areas of the City that provide a special benefit to the properties in that area are identified as Zones. The costs of the improvements and services are identified and budgeted separately for each Zone and each parcel within a Zone is assessed proportionately for only those improvements and services that are a direct and special benefit to the properties within the Zone. The budgets and assessments are based on the estimated cost (considering historical costs) to maintain the District improvements that provide a direct and special benefit to properties within the District.

The District consists of four landscaping benefit Zones:

- District Wide Benefit Zone
- Local Benefit Zone
- Zone F
- Zone G

In 2003, the City initiated and conducted property owner protest ballot proceedings, in accordance with the Act and Proposition 218, for the territory now known as Zones F & G. After the results of the ballots were tabulated, the City determined that a majority protest did not exist. The City then approved the annexation of Zones F and G, the maximum assessment rates, and annual inflationary adjustment factor.

In 2004, the City initiated and conducted property owner protest ballot proceedings, in accordance with the Act and Proposition 218, to reengineer Zones A, B, C, D & E and approve the maximum assessment rates and annual inflationary adjustment factor. After the results of the ballots were tabulated, the City determined that a majority protest did not exist. The City then approved the Engineer's Annual Levy Report for FY 2004/05, which reconstituted the reengineered zones into the respective District Wide Benefit Zone or Local Benefit Zone.

Zones A, B, C, D and E were reengineered in order to more accurately identify the Zones and areas of special benefit within this portion of the District. These zones were combined into two new Zones based primarily on level of service, similarity of improvement types, and the proximity to improvements.

The word "parcel," for the purposes of this Report, refers to an individual property assigned its own Assessor's Parcel Number ("APN") by the Placer County Assessor's Office. The Placer County Auditor/Controller uses Assessor's Parcel Numbers and specific Tax Code Accounts, to identify on the County's tax roll, properties assessed for special district benefit assessments.

Following approval of the Report, the City Council will by resolution, order the improvements to be made, if any, and confirm the levy and collection of assessments pursuant to the Act. The assessment rates and method of apportionment described in this Report as approved or modified by the City Council define the assessments to be applied to each parcel within the District and respective Zones for Fiscal Year ("FY") 2025/26. The assessments as approved will be submitted to the Placer County Auditor/Controller to be included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current fiscal year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rates approved by the City Council.

B. COMPLIANCE WITH CURRENT LEGISLATION

All assessments described in this Report and approved by the City Council are prepared in accordance with the Act and are in compliance with the substantive and procedural requirements of the California State Constitution Articles XIIIC and XIIID ("Articles XIIIC and XIIID") and the provisions of the Proposition 218 Omnibus Implementation Act [Government Code Section 53750 and following] (the "Implementation Act"). Articles XIIIC and XIIID and the Implementation Act collectively are hereinafter referred to as "Proposition 218".

In compliance with the provisions of Proposition 218, property owner ballot proceedings have been conducted for all Zones within the District; such proceedings approved and confirmed the Maximum Assessments and the Inflationary Adjustment Factor as described in this Report.

The District and all Zones therein have been formed pursuant to the Act. Pursuant to the Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments, to review the Engineer's Annual Levy Report prior to approving the annual assessments to be levied on the County tax rolls.

C. DESCRIPTION OF DISTRICT BOUNDARIES

The District is located north of downtown Roseville between Interstate 80 and Washington Boulevard and generally encompasses the area within the North Central Roseville Specific Plan ("NCRSP") and two small residential developments in close proximity to the NCRSP near the corner of Diamond Oaks Road and Washington Boulevard. See Appendix A for District boundary map.

District Wide Zone This Zone includes all assessable property within the District with the exception of Zone F and Zone G.

Local Benefit Zone This Zone includes all single-family residential property within the District with the exception of Zone F and Zone G.

Zone F This Zone, which comprises the Diamond Oaks Unit No. 10 development, was created on January 8, 2003 through Resolution 03-2 and was first levied in FY 2003/04. Zone F was comprised of Assessor Parcel Number ("APN") 015-020-040 prior to being subdivided into 39 residential lots.

Zone G This Zone, which comprises the Diamond Oaks Unit No. 14 development, was created on May 28, 2003 through Resolution 03-220 and was first levied in FY 2003/04. Zone G was comprised of APNs 017-041-034 & 015-020-006 prior to being subdivided into 76 residential lots and 1 non-residential parcel.

D. IMPROVEMENTS AUTHORIZED BY THE 1972 ACT

As applicable or may be applicable to a proposed District, the Act defines improvements to mean one or any combination of the following:

- The installation or planting of landscaping.
- The installation or construction of statuary, fountains, and other ornamental structures and facilities.
- The installation or construction of public lighting facilities.
- The installation or construction of any facilities which are appurtenant to any of the foregoing or which are necessary or convenient for the maintenance or servicing thereof, including, but not limited to, grading, clearing, removal of debris, the installation or construction of curbs, gutters, walls, sidewalks, or paving, or water, irrigation, drainage, or electrical facilities.
- The maintenance or servicing, or both, of any of the foregoing.
- The acquisition of any existing improvement otherwise authorized pursuant to this section.

Incidental expenses associated with the improvements including, but not limited to:

- The cost of preparation of the report, including plans, specifications, estimates, diagram, and assessment;
- The costs of printing, advertising, and the publishing, posting, and mailing of notices;
- Compensation payable to the County for collection of assessments;
- Compensation of any engineer or attorney employed to render services;
- Any other expenses incidental to the construction, installation, or maintenance and servicing of the improvements;
- Any expenses incidental to the issuance of bonds or notes pursuant to Section 22662.5.
- Costs associated with any elections held for the approval of a new or increased assessment.

The 1972 Act defines "Maintain" or "maintenance" to mean furnishing of services and materials for the ordinary and usual maintenance, operation, and servicing of any improvement, including:

- Repair, removal, or replacement of all or any part of any improvement.
- Providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury.
- The removal of trimmings, rubbish, debris, and other solid waste.
- The cleaning, sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Furthermore, the 1972 Act specifies that where the cost of improvements (other than maintenance and operations) is greater than can be conveniently raised from a single annual assessment, an assessment to be levied and collected in annual installments. In that event, the governing body may choose to do any of the following:

- Provide for the accumulation of the moneys in an improvement fund until there are sufficient moneys to pay all or part of the cost of the improvements.
- Provide for a temporary advance to the improvement fund from any available and unencumbered funds of the local agency to pay all or part of the cost of the improvements and collect those advanced moneys from the annual installments collected through the assessments.
- Borrow an amount necessary to finance the estimated cost of the proposed improvements. The amount borrowed, including amounts for bonds issued to finance the estimated cost of the proposed improvements.

E. DESCRIPTION OF THE IMPROVEMENTS AND MAINTENANCE

The District provides and ensures the continued maintenance, servicing, administration and operation of various landscaping and lighting improvements, and associated appurtenances that benefit parcels within the District. Services provided include all necessary service, operations, administration, and maintenance required to keep the improvements in a healthy, vigorous, and satisfactory condition.

Specific improvements include all ground cover, turf, shrubs, trees, gardens, play areas and play equipment, picnic areas, bike paths, pedestrian trails, walls and fences, park maintenance facilities, irrigation and drainage systems, graffiti removal, and associated appurtenances. Improvements in each Zone include:

District Wide Zone This Zone provides for the maintenance of landscaping, fences, sound walls and other improvements within the arterial parkway right of ways, also described as scenic corridors, including but not limited to Roseville Parkway, Pleasant Grove Boulevard, Harding Boulevard and the east side of Washington Boulevard, pedestrian, and bike pathways.

Local Benefit Zone This Zone provides for the maintenance of landscaping and other improvements within the local street right of ways. This Zone is primarily a combination of the old Zone C and Zone D, which provided similar maintenance.

Zone F This Zone provides for the maintenance of parkway and perimeter landscaping and block wall adjacent to the development on the west side of Diamond Oaks Road; Parkway and perimeter landscaping, bike trails, block wall and wood fence adjacent to the development on the east side of Washington Boulevard; Open Space designated as Lot “B”, and; Landscaping within Lot “C”, “E” and “F” within the Diamond Oaks Unit No. 10 project.

Zone G This Zone provides for the maintenance of parkway and perimeter landscaping, bike path and masonry sound wall adjacent to the development on the south side of Pleasant Grove Boulevard; maintenance of parkway and perimeter landscaping, bike path and masonry sound wall adjacent to the development on the west side of Washington Boulevard from Pleasant Grove Boulevard to Emerald Oak Road; maintenance of the masonry sound wall on the western perimeter of the development; installation and maintenance of perimeter landscaping on the west side of the development located on Open Space Parcel C between

Emerald Oak Road and the masonry sound wall adjacent to the railroad right of way; and maintenance of Open Space, cobble swale (Lot “B”) and post and cable fencing for Lots “A”, “B”, and “C” within the Diamond Oaks Unit No. 14 project.

All assessable parcels identified as being within each Zone share in both the cost and the benefits of the improvements. The costs associated with the improvements are equitably spread among all benefiting parcels within each Zone. Only parcels that receive direct and special benefit from the improvements are assessed, and each parcel is assessed in proportion to the estimated benefit received. The funds collected from the assessments of each Zone are to be expended only for the services and operations within each respective Zone.

II. METHOD OF APPORTIONMENT

A. GENERAL

The Act permits the establishment of assessment districts by agencies for the purpose of providing certain public improvements which include the construction, maintenance and servicing of public lights, landscaping, and appurtenant facilities. The Act further requires that the cost of these improvements be levied according to benefit rather than assessed value:

> *"The net amount to be assessed upon lands within an assessment district may be apportioned by any formula or method which fairly distributes the net amount among all assessable lots or parcels in proportion to the estimated benefits to be received by each such lot or parcel from the improvements."*

The formula used for calculating assessments in each Zone of the District therefore reflects the composition of the parcels, and the improvements and services provided, to fairly apportion the costs based on estimated benefit to each parcel.

B. SPECIAL BENEFIT ANALYSIS

In conjunction with the provisions of the 1972 Act, the California Constitution Article XIIID addresses several key criteria for the levy of assessments, notably:

Article XIIID Section 2(d) defines District as follows:

"District means an area determined by an agency to contain all parcels which will receive a special benefit from a proposed public improvement or property-related service;"

Article XIIID Section 2(i) defines Special Benefit as follows:

"Special benefit" means a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large. General enhancement of property value does not constitute "special benefit."

Article XIIID Section 4(a) defines proportional special benefit assessments as follows:

"An agency which proposes to levy an assessment shall identify all parcels which will have a special benefit conferred upon them and upon which an assessment will be imposed. The proportionate special benefit derived by each identified parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. No assessment shall be

imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."

This District was formed to establish and provide for the improvements that enhance the presentation of the surrounding properties and developments. These improvements will directly benefit the parcels to be assessed within the District. The assessments and method of apportionment is based on the premise that the assessments will be used to construct and install landscape and lighting improvements within the District as well as provide for the annual maintenance of those improvements, and the assessment revenues generated by District will be used solely for such purposes.

The City has initiated and conducted property owner protest ballot proceedings in accordance with the Act and Proposition 218 for all Zones within the District. Each of the proposed improvements; the associated costs and assessments have been carefully reviewed, identified, and allocated based on special benefit pursuant to the provisions of Article XIIID and the Act. All improvements associated with the Zones have been identified as necessary, required and/or desired for the orderly development of the properties to their full potential. As such, these improvements would be necessary and required of individual property owners for the development of such properties and the ongoing operation, servicing and maintenance of these improvements would be the financial obligation of those properties. Therefore, the improvements and the annual costs of ensuring the maintenance and operation of the improvements are of direct and special benefit to the properties.

The method of apportionment (method of assessment) is based on the premise that each assessed parcel within these Zones receives special benefit from the improvements. The desirability and security of properties is enhanced by well-maintained landscaping in close proximity to those properties.

The special benefits associated with all landscaping improvements are specifically:

- Enhanced desirability of properties through association with the improvements.
- Improved aesthetic appeal of properties providing a positive representation of the area and properties.
- Enhanced adaptation of the urban environment within the natural environment from adequate green space and landscaping.
- Environmental enhancement through improved erosion resistance, dust and debris control, and fire prevention.
- Increased sense of pride in ownership of property within the Zones resulting from well-maintained improvements associated with the properties.
- Enhanced quality of life through well-maintained green belts and landscaped areas.

- Reduced criminal activity and property-related crimes (especially vandalism) against properties in the Zones through well-maintained surroundings and amenities including abatement of graffiti.
- Enhanced environmental quality of the parcels by moderating temperatures, providing oxygenation, and attenuating noise.

All of the preceding special benefits allow the property to be developed for the enjoyment of the property owners and contribute to a specific enhancement and desirability of each of the assessed parcels within the Zones.

The improvements are for the special benefit, enhancement, and use of properties within the Zones. Although the improvements include public easements, rights-of-way, streets, and other amenities available or visible to the public at large, the construction and installation of these improvements are only necessary for the development of properties within the Zones and are not required nor necessarily desired by any properties or developments outside the Zone's boundaries. Therefore, any public access or use of the improvements by others is incidental and there is no measurable general benefit to properties outside the Zones or to the public at large. In making this determination, it should be noted that all parkway and perimeter landscaping within the City is both funded and maintained by a special district, individual property owners or through some type of association.

C. DESCRIPTION OF THE METHOD OF APPORTIONMENT

Pursuant to the Act, the costs of each Zone may be apportioned by any formula or method that fairly distributes the net amount to be assessed, among all assessable parcels within the Zone in proportion to the estimated special benefits to be received by each such parcel from the improvements. The special benefit formula used for each Zone should reflect the composition of the parcels, and the improvements and services provided, to fairly proportion the Zone's costs based on estimated special benefit to each parcel within the Zone. All assessable parcels within each Zone shall receive a direct special benefit from the services and improvements provided by the Zone.

Considering the composition of the parcels within the Zone, each parcel is assigned an Equivalent Dwelling Unit ("EDU"), which reflects each parcel's estimated special benefit from the improvements as compared to other parcels within the Zone. Because all assessable parcels within each Zone are considered to benefit from the Zone improvements on an EDU basis, the amounts to levy to each Zone are then spread to each assessable parcel within the Zone on an EDU method as shown in the table below. Acreage of common area parcels shall be apportioned to the remaining assessable parcels of a subdivision and/or parcel split(s) related to the creation of the common area parcel(s).

The following formulas are used to calculate the assessment for each parcel:

ASSIGNED EDU	PROPERTY CLASS
1.0 per unit	Single-Family Residential Parcels
0.6 per unit	Multi-Family Residential Parcels
7.0 per acre	Non-Residential Parcels

For each Zone, the Applied Assessment Rate per Equivalent Dwelling Unit for each parcel in the Zone is the result of dividing the total Balance to Levy for each Zone, by the sum of the Zone EDUs for the fiscal year. This Applied Assessment Rate is multiplied by each parcel's individual EDU to determine the parcel's levy amount. The assessment cannot be greater than the current maximum assessment rate, as adjusted for the inflation factor.

Total Balance to Levy / Total EDU = Rate per EDU

Parcel EDU x Rate per EDU = Parcel Levy Amount

D. INFLATIONARY ADJUSTMENT FACTOR

Any new or increase in assessments require certain noticing and meeting requirements by law. Prior to the passage of Proposition 218, legislative changes in the Ralph M. Brown Act (the "Brown Act") defined a new or increased assessment to exclude certain conditions. These conditions include any assessment that does not exceed an assessment formula or range of assessments previously adopted by the agency or approved by the voters in the area where the assessment is imposed. This definition and conditions were later confirmed through Senate Bill 919 (the implementing legislation for Proposition 218).

The purpose of establishing an assessment range formula is to provide for reasonable increases and inflationary adjustment to annual assessments without requiring costly noticing and mailing procedures, which could add to the District costs and assessments. As part of the District formation, balloting of property owners is required, pursuant to Proposition 218. The property owner ballots included an Assessment to be approved, as well as the approval of an assessment range formula.

The assessment range formula shall be applied to all future assessments within the District. Generally, if the proposed annual assessment (levy per unit or rate) for the current fiscal year is less than or equals to the "Maximum Assessment" (or "Adjusted Maximum Assessment"), then the proposed annual assessment is not considered an increased assessment. The Maximum Assessment is equal to the initial Assessment approved by property owners adjusted annually by the following criteria:

1. Beginning in the second fiscal year and each fiscal year thereafter, the Maximum Assessment will be calculated.
2. The new Adjusted Maximum Assessment for the year represents the prior year's approved Maximum Assessment increased by three percent (3.0%).

The Maximum Assessment is adjusted annually and is calculated independent of the District's annual budget and proposed annual assessment. Any proposed annual assessment less than or equal to this Maximum Assessment is not considered an increased assessment, even if the proposed assessment is greater than the assessment applied in the prior fiscal year.

The approved base year maximum assessment rates and annual inflationary adjustment factors for all Zones are shown in the table below:

Zone	Year of Approved Maximum Rate and Annual Inflator (Base Year)	Maximum Assessment Rate per EDU (Base Year)	Annual Inflationary Adjustment Factor
District-Wide Benefit Zone	FY 2004/05	$40.82	3.00%
Local Benefit Zone	FY 2004/05	$43.92	3.00%
Zone F	FY 2003/04	$481.35	3.00%
Zone G	FY 2003/04	$264.22	3.00%

III. DISTRICT BUDGET

A. FY 2025/26 BUDGET

DESCRIPTION	District-Wide Benefit Zone Fund 2010	Local Benefit Zone Fund 2011	ZONE F (Diamond Oaks No. 10) Fund 2012	ZONE G (Diamond Oaks No. 14) Fund 2013
DIRECT COSTS				
Contract Maintenance - Landscaping	$197,520.00	$73,152.00	$15,696.00	$4,248.00
Repair & Maintenance - Landscaping	84,460.00	42,000.00	2,700.00	1,065.00
Repair and Maintenance - Parks	0.00	0.00	0.00	0.00
Repair & Maintenance - Lighting	0.00	0.00	0.00	0.00
Repair & Maintenance - Tree Work	37,347.00	16,446.00	874.00	835.00
Utilities	183,069.70	19,978.20	4,662.90	4,500.00
Maintenance - Bike Trails (3380-4801-10001)	0.00	598.35	4,031.42	2,741.37
Maintenance - Open Space (2521-4801-10001)	0.00	n/a	2,690.44	4,912.07
Rehab Reserve Expenditures - Non-Routine Tree Work	12,660.00	12,660.00	1,055.00	1,372.00
Rehab Reserve Project Expenditures	96,000.00	36,000.00	9,000.00	0.00
Total Direct Costs	**$611,056.70**	**$200,834.55**	**$40,709.76**	**$19,673.44**
ADMINISTRATION COSTS				
City Administration	$11,061.00	$3,369.00	$537.00	$216.00
Contract Admin- Park's Dept	32,500.00	9,500.00	1,708.00	1,606.00
Contract Administration - Open Space	n/a	n/a	0.00	0.00
County Auditor Fees	5,703.25	1,726.41	308.67	122.74
Consulting & Professional Services	7,712.00	2,349.00	375.00	150.00
Public Hearing Publishing Costs	305.00	93.00	15.00	6.00
Total Administrative Costs	**$57,281.25**	**$17,037.41**	**$2,943.67**	**$2,100.74**
Total Direct and Administration Costs	**$668,337.95**	**$217,871.96**	**$43,653.43**	**$21,774.18**
BUDGET ADJUSTMENTS				
Replenishment/(Use) of Operating Reserve	$10,647.50	$3,428.80	($2,731.00)	($8,127.28)
Contribution for /(Use of) Rehab Reserve	(108,660.00)	(48,660.00)	(10,055.00)	(1,372.00)
Rounding Adjustment	(4.26)	(2.75)	(0.49)	0.12
Total Adjustments	**($98,016.76)**	**($45,233.95)**	**($12,786.49)**	**($9,499.16)**
BALANCE TO LEVY	**$570,321.19**	**$172,638.01**	**$30,866.94**	**$12,275.02**

Fund balance information of each Zone is reported in Section C on the following page. Total balance to levy for the district is $786,101.16.

B. FY 2025/26 ASSESSMENT RATES

DESCRIPTION	District-Wide Benefit Zone Fund 2010	Local Benefit Zone Fund 2011	ZONE F (Diamond Oaks No. 10) Fund 2012	ZONE G (Diamond Oaks No. 14) Fund 2013
FY 2025/26 ASSESSMENT DATA				
Total Assessable Parcels [1]	3,389	2,112	39	79
Total Assessable Single Family Units [1]	2,113	2,113	39	79
Total Assessable Multi-Family Units	2,348	0	0	0
Total Assessable Non-Residential Acres	569.8126	0	0	0
Total Equivalent Dwelling Units ("EDUs") [1]	7,510.4883	2,113	39	79
Applied Assessment Rates Per EDU [2]	**$75.9366**	**$81.7028**	**$791.46**	**$155.38**
Maximum Assessment Rates per EDU	$75.9372	$81.7041	$922.32	$506.27
Potential Maximum Assessment per Zone	**$570,325.44**	**$172,640.76**	**$35,970.33**	**$39,995.54**

(1) Since each single family residential parcel lies within both the District-Wide Benefit Zone and the Local Benefit Zone, the number of single family EDUs, units and parcels within these zones are not combined in the District totals.
(2) Actual assessment rates may differ slightly due to County rounding requirements.

C. FY 2025/26 FUND BALANCE INFORMATION

DESCRIPTION	District-Wide Benefit Zone Fund 2010	Local Benefit Zone Fund 2011	ZONE F (Diamond Oaks No. 10) Fund 2012	ZONE G (Diamond Oaks No. 14) Fund 2013
OPERATING RESERVE				
Beginning Operating Reserve Balance 7-1-2025 (est.)	**$287,942.17**	**$114,628.91**	**28,141.45**	**$18,466.50**
add: Replenishment from FY 2025/26 Levy	10,647.50	3,428.80		
less: Use for FY 2025/26 Expenses			(2,731.00)	(8,127.28)
Transfer from/(to) the Rehab Reserve	6,938.68	(17,640.44)	(5,055.57)	(502.50)
Ending Operating Reserve Balance 6-30-2026 (est.)	**$305,528.35**	**$100,417.27**	**$20,354.88**	**$9,836.72**
REHABILITATION RESERVE				
Beginning Rehab Reserve Balance 7-1-2025 (est.)	**$301,452.83**	**$91,149.09**	**$19,127.55**	**$54,569.50**
add: Collect from FY 2025/26 Levy				
less: Use for FY 2025/26 Rehab Projects	(108,660.00)	(48,660.00)	(10,055.00)	(1,372.00)
Transfer from/(to) the Operating Reserve	(6,938.68)	17,640.44	5,055.57	502.50
Ending Rehab Reserve Balance 6-30-2026 (est.)	**$185,854.15**	**$60,129.53**	**$14,128.12**	**$53,700.00**

D. DESCRIPTION OF BUDGET ITEMS

Description of the terms used in the preceding Budget, Assessment Rates and Fund Balance tables are listed below:

BUDGET:

DIRECT COSTS

Contract Maintenance – Landscaping – Includes all regularly scheduled contract labor, materials, supplies, and equipment required to properly maintain and ensure the satisfactory condition or maintenance of all landscaping improvements, irrigation, and related drainage systems, as well as maintenance of appurtenant facilities (the “improvements”).

Repair & Maintenance – Landscaping – Projected costs for repairs and/or maintenance of landscaping improvements. This would include work and materials not covered under contract maintenance.

Repair & Maintenance – Parks - Projected costs for repairs and/or maintenance of park improvements. This would include work and materials not covered under contract maintenance such as repair of damaged amenities due to vandalism, storms, etc.

Repair & Maintenance – Lighting – This line item includes repairs that are generally unforeseen and not normally included in the annual maintenance contract costs. If zero, this line item may not be shown in the budget.

Repair & Maintenance – Tree Work – This line item includes annual costs for tree maintenance not included in the annual contract maintenance portion of the budget. If zero, this line item may not be shown in the budget.

Utilities – The furnishing of water and electricity required for the operation and maintenance of the improvements.

Maintenance – Bike Trails – Costs to perform the necessary maintenance of the bike trails within the District. If zero, this line item may not be shown in the budget.

Maintenance – Open Space – Costs to perform the necessary maintenance of the open space areas within the District. If zero, this line item may not be shown in the budget.

Rehab Reserve Expenditures – Non-Routine Tree Work – Expected costs to maintain trees other than costs of annual repair and maintenance. If zero, this line item may not be shown in the budget.

Rehab Reserve Project Expenditures – Expected costs for installation, replacement, or planned upgrades of District improvements for the current year that were previously funded or accumulated in the Rehabilitation Reserve. The Rehabilitation Reserve is used to accumulate funds for costs associated with the future rehabilitation or replacement of District improvements that cannot be conveniently raised from a single year's assessment. If zero, this line item may not be shown in the budget.

ADMINISTRATION COSTS

City Administration – Estimated costs incurred by the City Finance Department and other Departments in preparing the annual budget for the Engineer's Report, together with other financial information required to determine the annual assessment. These costs would also include the preparation, posting and publishing of public notices required for City Council action relating to the District, as well as costs to perform legal review of documents.

Contract Administration – Park's Dept – Estimated Costs of Park and Recreation Department staff to coordinate and oversee the maintenance contracts and overall repair and maintenance of the District. This amount also includes the cost of the Department's estimates and analysis of certain budget items, estimated costs and useful lives of certain District Improvements.

County Auditor Fees – A fee of 1% of the total levy amount that is charged to the District by the County for placing assessments on property tax bills.

Consulting and Professional Services – Includes the costs and expenses of contracting with various professionals to provide legal, engineering and district administration services directly related to the District, including the calculation of the annual assessment amounts and the preparation of the Engineer's' Report.

Public Hearing Publishing Costs – Includes the out-of-pocket costs to publish public notices required for City Council action relating to the District.

Total Direct and Administration Costs – The total expected costs of the District.

BUDGET ADJUSTMENTS

Replenishment/(Use) of Operating Reserve – A “Replenishment” increases the levy in order to replenish the Operating Reserve. On the other hand, a “Use” of the Operating Reserve decreases the levy by drawing funds from the Operating Reserve for current year expenditures. If zero, this line item may not be shown in the budget. Further information regarding the function of the Operating Reserve is provided under “FUND BALANCE INFORMATION” in the following pages of this Section.

Contribution for / (Use of) Rehab Reserve – A “Contribution” increases the levy in order to generate funding for the Rehabilitation Reserve. This reserve allows for the accumulation of funds for possible rehabilitation projects or replacements in future years. On the other hand, a “Use of” of the Rehabilitation Reserve provides current year funding of rehabilitation projects or replacements from available funds within the Rehabilitation Reserve. If zero, this line item may not be shown in the budget. Further information regarding the function of the Rehabilitation Reserve is provided under “FUND BALANCE INFORMATION” in the following pages of this Section.

Rounding Adjustment – The necessary rounding adjustment(s) due to limitations of the County property tax system that requires even penny levy amounts to be placed on the secured tax roll.

BALANCE TO LEVY – This is the total amount to be levied and collected in the District through assessments for the current fiscal year. The Balance to Levy represents the sum of the total District costs together with any applicable adjustments to the budget as described above.

ASSESSMENT RATES:

Total Assessable Single-Family Units – The total number of assessable single-family units within the District for the current fiscal year. Since each single-family residential parcel is in both the District-Wide Benefit Zone and the Local Benefit Zone, the single-family EDUs are only added once to arrive at the "Total Equivalent Dwelling Units"

Total Assessable Multi-Family Units – The total number of assessable multi-family units within the District for the current fiscal year.

Total Assessable Non-Residential Acres – The total assessable non-residential acres within the District for the current fiscal year.

Total Equivalent Dwelling Units ("EDUs") – Total assessable EDUs within the District for the current fiscal year.

Applied Assessment Rates per EDU – The assessment rates per EDU to be applied to the non-exempt parcels within the applicable Zone for the current fiscal year.

Maximum Assessment Rates per EDU – The maximum assessment rates per EDU for the parcels within the applicable Zone for the current fiscal year.

Potential Maximum Assessment Per Zone – The total amount that can be assessed against all parcels within each Zone for the current fiscal year based upon the expected number of parcels to be assessed.

FUND BALANCE INFORMATION:

OPERATING RESERVE

Beginning Operating Reserve Balance 7-1-2025 – The District's anticipated beginning balance of cash and receivables net of any unpaid prior year obligations. These beginning balances shall be used to fund the District's expenditures from July 1, 2025 to December 31, 2025, as the Operating Reserve is required to compensate for the approximate six-month delay between the start of the District's fiscal year and the receipt of the collections from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

Replenish from FY 2025/26 Levy – This amount is added to the FY 2025/26 levy in order to replenish the Operating Reserve. Due to the six-month delay from the District's receipt of assessment collections, the Operating Reserve balance shall be sufficiently funded to provide for expenditures from the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Expenses – The amount of the Operating Reserve to be used to fund FY 2025/26 expenses. Portions of the Operating Reserve may be slated for current year expenditures in order to reduce the Ending Operating Reserve Balance to an amount no greater than the expected District costs for the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Rehab Reserve – The amount of Operating Reserve monies to be transferred to or from the Rehabilitation Reserve. Periodically, funds

held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Operating Reserve Balance 6-30-2026 (est.) – This amount represents the anticipated Operating Reserve balance/(deficit) for each Zone as of June 30, 2026. The size of each Zone's Operating Reserve is limited by Streets and Highways Code 22569 which states that an Operating Reserve shall not exceed the estimated costs of maintenance, service and incidental expenses from the first day of the fiscal year (July 1) to the date that the Agency expects to receive the first apportionment of collections from the County, which is estimated to be December 31. Therefore, each Zone may retain an Operating Reserve amounting to the District's first six-months of expenses in order to meet ongoing obligations until the first collections are received from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

REHABILITATION RESERVE

Beginning Rehab Reserve Balance 7-1-2025 — The projected balance of funds in the Rehabilitation Reserve as of July 1, 2025. Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

Collect from FY 2025/26 Levy — This amount is added to the levy to accumulate funding of future year rehabilitation projects, replacements, restorations, or upgrades of District improvements. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Rehab Projects — The amount of Rehabilitation Reserve monies expected to be transferred out of the Rehabilitation Reserve to fund the costs of installation, replacement, or planned upgrades of District improvements for the current year. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Operating Reserve — The amount of Rehabilitation Reserve monies to be transferred to or from the Operating Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Rehab Reserve Balance 6-30-2026 — The projected balance of funds in the Rehabilitation Reserve as of June 30, 2026. These funds shall be used to provide for future year rehabilitation projects, replacements, restorations, or upgrades of District improvements which cannot be conveniently raised from a single year's assessment. Should the District have no Rehabilitation Reserve or related activity, the Rehabilitation Reserve information may not be presented in the Report.

E. REHABILITATION RESERVE – CAPITAL IMPROVEMENT PLAN

Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

The Report provides a five-year Capital Improvement Plan ("CIP") which shows projected expenditures by Zone related to the rehabilitation, restoration and/or replacement of District improvements, and other allowable costs. The Current Fiscal Year CIP is shown in the preceding Budget Section A. The projected CIP costs for the remaining four years are shown in the table below.

District Wide Zone

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Replace, repair, renovate and/or refurbish plants, landscape, irrigation & related mat'ls		$25,000	$35,101	$25,000	$85,101
Repair, replace and/or refurbish sound wall improvements	25,000		17,000		42,000
Irrigation controllers	10,000	10,000	10,000		30,000
Non-routine tree work	15,500	15,500	15,500	15,500	62,000
Total Projected Expenditures	**$50,500**	**$50,500**	**$77,601**	**$40,500**	**$219,101**

Local Benefit Zone

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Replace, repair, renovate and/or refurbish plants, landscape, irrigation & related mat'ls	$10,000	$10,000	$10,000	$10,000	$40,000
Repair, replace and/or refurbish sound wall improvements			2,500		2,500
Non-routine tree work	10,000	10,000	10,000	10,000	40,000
Total Projected Expenditures	**$20,000**	**$20,000**	**$22,500**	**$20,000**	**$82,500**

Zone F

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Replace, repair, renovate and/or refurbish plants, landscape, irrigation and related mat'ls				$2,000	$2,000
Repair, replace and/or refurbish fencing improvements			8,128		8,128
Non-routine tree work	1,000	1,000	1,000	1,000	4,000
Total Projected Expenditures	**$1,000**	**$1,000**	**$9,128**	**$3,000**	**$14,128**

Zone G

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Replace, repair, renovate and/or refurbish plants, landscape, irrigation and related mat'ls	$7,500	$7,500	$7,500	$10,000	$32,500
Repair, replace and/or refurbish sound wall improvements			16,000		16,000
Non-routine tree work	1,300	1,300	1,300	1,300	5,200
Total Projected Expenditures	**$8,800**	**$8,800**	**$24,800**	**$11,300**	**$53,700**

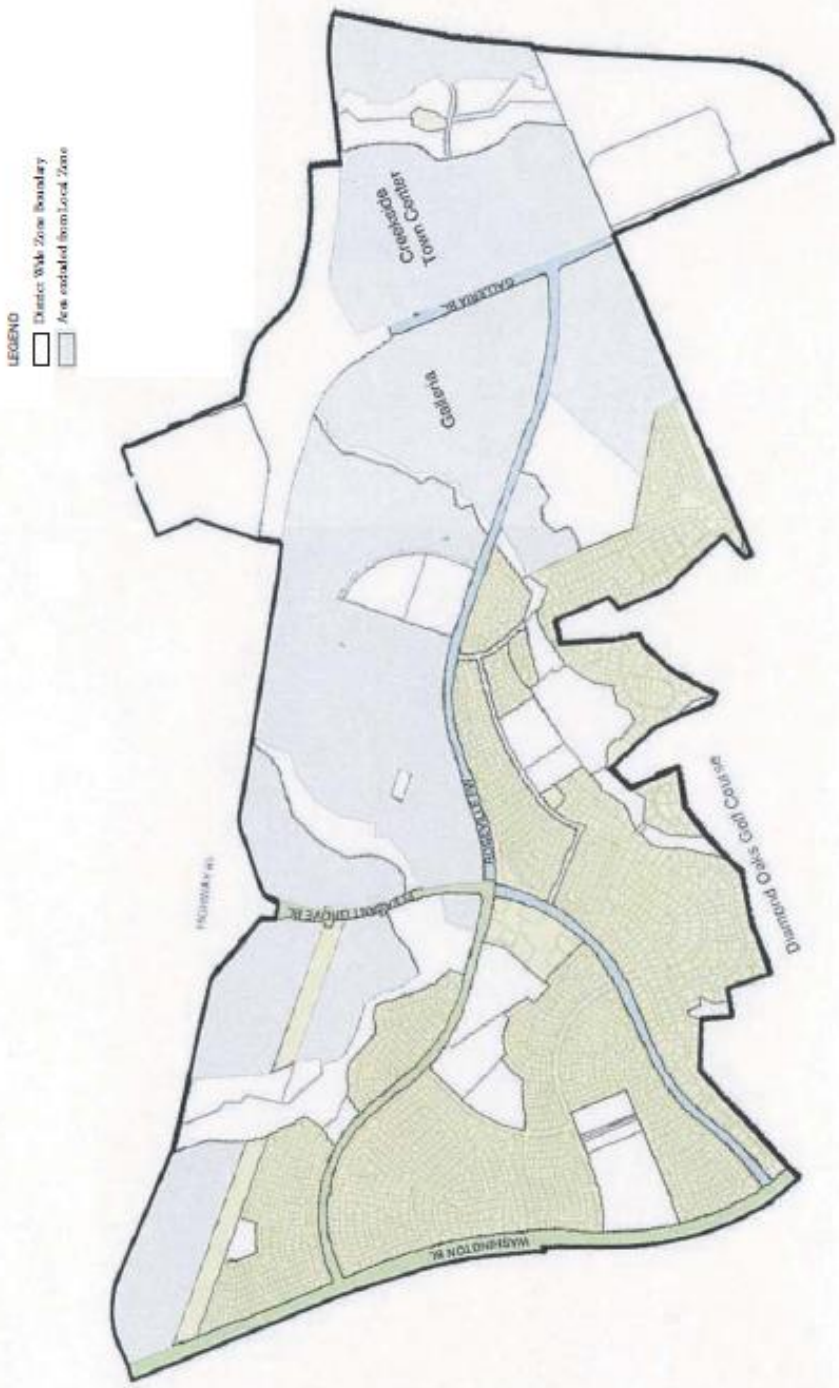
Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements.

APPENDIX A – DISTRICT BOUNDARY MAP

The boundary map for the District has previously been submitted to the Clerk of the City in the format required under the Act and is, by reference, hereby made part of this Report. These District Boundary Maps are available for inspection at the office of the City Clerk during normal business hours.

For general reference purposes, a rendering of the District's Boundaries is presented herein.

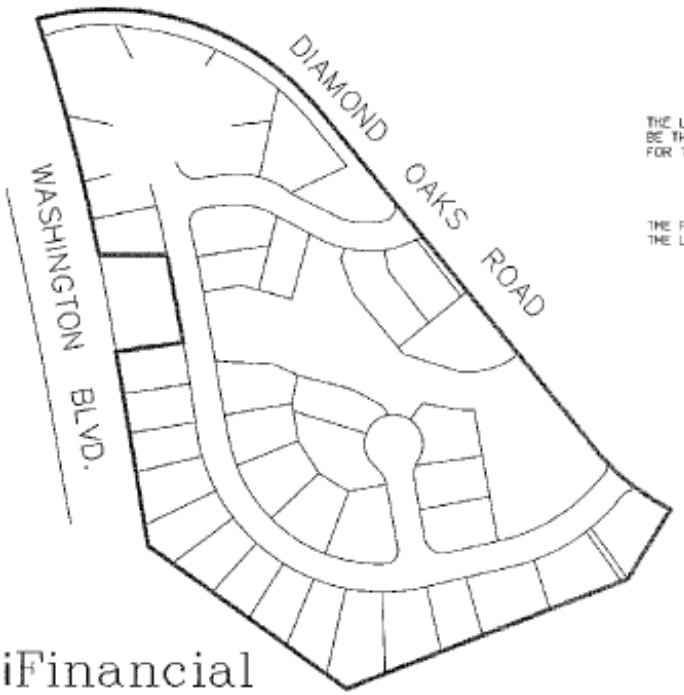
North Central Specific Plan Landscaping and Lighting District
District-Wide and Local Benefit Zone Boundaries



SHEET 1 OF 1

DIAMOND OAKS NO. 10 LANDSCAPE AND LIGHTING DISTRICT
(ZONE F DIAMOND OAKS NO. 10–NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPE AND LIGHTING DISTRICT)

COUNTY OF PLACER
STATE OF CALIFORNIA



THE LINES AND DIMENSIONS OF EACH LOT OR PARCEL SHOWN ON THIS DIAGRAM SHALL BE THOSE LINES AND DIMENSIONS AS SHOWN ON THE PLACER COUNTY ASSESSORS MAPS FOR THOSE PARCELS LISTED.

THE PLACER COUNTY ASSESSORS MAPS SHALL GOVERN FOR ALL DETAILS CONCERNING THE LINES AND DIMENSIONS OF SUCH LOTS OR PARCELS.

LEGEND

APPORTIONMENT BOUNDARY

N

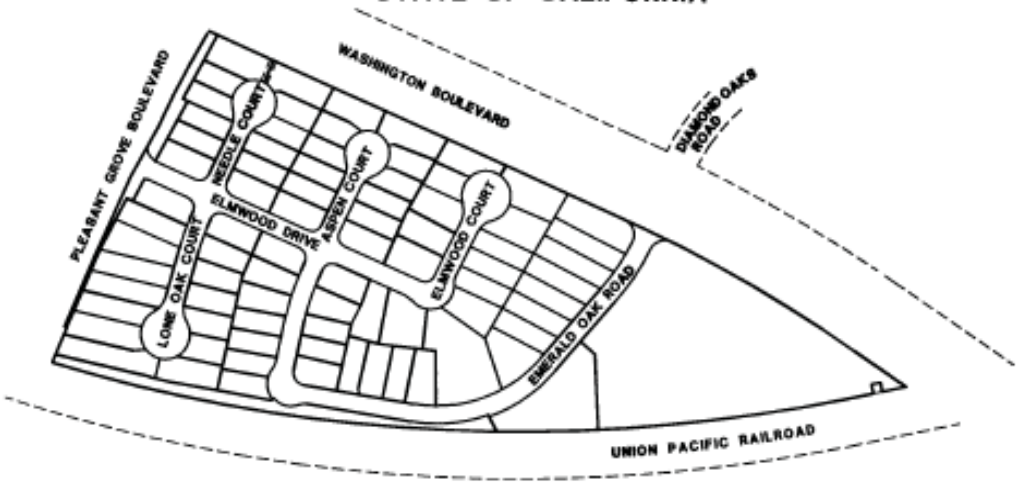
100' 50' 0' 100'
SCALE : 1" = 100'

MuniFinancial
28765 Single Oak Drive
Suite 200
Temecula, California 92590-3661
Phone (909) 699-3990 Fax (909) 699-3460

7900011-0701-79 (02-048) OCTOBER 2002

WILLDAN

DIAMOND OAKS NO. 14 LANDSCAPE AND LIGHTING DISTRICT
(ZONE G DIAMOND OAKS NO. 14-NORTH CENTRAL ROSEVILLE SPECIFIC PLAN LANDSCAPE AND LIGHTING DISTRICT)
CITY OF ROSEVILLE
COUNTY OF PLACER
STATE OF CALIFORNIA







THE LINE AND DIMENSIONS OF EACH LOT OR PARCEL SHOWN ON THIS DIAGRAM SHALL BE THOSE LINES AND DIMENSIONS AS SHOWN ON THE PLACER COUNTY ASSESSORS MAPS FOR THOSE PARCELS LISTED.

THE PLACER COUNTY ASSESSORS MAPS SHALL GOVERN FOR ALL DETAILS CONCERNING THE LINES AND DIMENSIONS OF SUCH LOTS OR PARCELS.

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APPENDIX B — FY 2025/26 ASSESSMENT ROLL

Parcel identification, for each lot or parcel within the District, shall be the parcel as shown on the Placer County Assessor's map for the year in which this Report is prepared.

Due to the size of the Assessment Roll, a listing of parcels to be assessed within this District, along with the proposed assessment amounts, may be submitted to the City Clerk, under a separate cover, and by reference is made part of this Report.

Non-assessable lots or parcels may include areas of public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas and rights-of-way, including public greenbelts and parkways; utility rights-of-way; small parcels vacated by the County, bifurcated lots, and other property that cannot be developed, excepting common area parcels. These types of parcels are considered to receive little or no benefit from the improvements and are therefore exempt from assessment.

At the conclusion of the public hearing for the District and the proposed assessments, approval of the Report (as submitted or as modified) confirms the method of apportionment and the assessment rate to be levied against each eligible parcel and thereby constitutes the approved levy and collection of assessments for FY 2025/26. The listing of parcels and the amount of assessment to be levied shall be submitted to the County Auditor/Controller and included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current fiscal year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved in this Report. Therefore, if a single parcel has changed to multiple parcels, the assessment amount applied to each of the new parcels shall be recalculated and applied according to the approved method of apportionment and assessment rate rather than a proportionate share of the original assessment.

City of Roseville
North Central Roseville Specific Plan Landscaping and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-011-088-000	District - Wide	15,346.14	15,346.15	202.09	0.0	0.0	28.87	28.9 AC PAR 2 PMOR 35-69
493-010-002-000	District - Wide	15,308.92	15,308.94	201.6	0.0	336.0	0.0	17.8 AC LOT A PMOR 35-20 THE PRESERVE AT CREEKSIDE
363-011-001-000	District - Wide	14,782.68	14,782.69	194.67	0.0	273.0	4.41	14.9 AC P LOTS42&42BHIGHLAND RESR PHVII LG LT U-50
363-011-057-000	District - Wide	11,896.20	11,896.22	156.6586	0.0	0.0	22.3798	19.5AC POR L39A & POR ROW REGIONAL 65 CENTER R-24
363-022-012-000	District - Wide	11,769.80	11,769.81	154.994	0.0	0.0	22.142	27.6 AC PAR A PMOR 31-118
363-011-040-000	District - Wide	11,208.32	11,208.33	147.6	0.0	246.0	0.0	12.1 AC PAR 1 PMOR 30-75
015-166-053-000	District - Wide	10,513.62	10,513.63	138.4516	0.0	0.0	19.7788	19.7 AC POR LOTS 1 2 4 & 5 CREEKSIDE CENTER V-17
017-123-055-000	District - Wide	9,638.08	9,638.09	126.9219	0.0	0.0	18.1317	20.3 AC PAR 1 PMOR 28-160
363-011-079-000	District - Wide	9,624.42	9,624.43	126.742	0.0	0.0	18.106	15.8 AC PAR 1 PMOR 35-11 GALLERIA AT ROSEVILLE
363-011-095-000	District - Wide	9,158.02	9,158.03	120.6	0.0	201.0	0.0	POR PAR 1 PM 35-159
363-022-028-000	District - Wide	8,528.82	8,528.83	112.3143	0.0	0.0	16.0449	RESULTANT PAR A OF LLA PL20-0222 (2021-0011252)
363-030-081-000	District - Wide	8,383.46	8,383.47	110.4	0.0	184.0	0.0	8.5 AC P LOT 21B HIGHLAND RESERVE PH VIII MOR U-50
015-166-074-000	District - Wide	7,378.04	7,378.06	97.16	0.0	0.0	13.88	POR 1,2,9 CRKSDE CNTR V-17, POR RES PAR A 00-29294
017-123-087-000	District - Wide	6,857.12	6,857.13	90.3	0.0	0.0	12.9	13.0 AC POR PAR 34A PM 28-67
015-166-009-000	District - Wide	6,498.84	6,498.86	85.582	0.0	0.0	12.226	11.9 AC POR PAR 46 PMOR 28-50
363-022-026-000	District - Wide	6,235.20	6,235.20	82.11	0.0	0.0	11.73	11.73 AC PAR 2 PMOR 36 11
015-167-018-000	District - Wide	6,130.42	6,130.43	80.7303	0.0	0.0	11.5329	11.5 AC P LOTS 14 15 17 & 22 CREEKSIDE CENTER V-17
363-022-016-000	District - Wide	6,123.56	6,123.58	80.64	0.0	0.0	11.52	11.5 AC LOT 8 NCRSP- PAR 49 SUB MOR DD-34
363-011-082-000	District - Wide	6,090.44	6,090.46	80.2039	0.0	0.0	11.4577	10.0 AC PAR 6 GALLERIA AT ROSEVILLE
363-022-025-000	District - Wide	5,241.18	5,241.19	69.02	0.0	0.0	9.86	9.86 AC PAR 1 PMOR 36 11
363-011-035-000	District - Wide	5,236.16	5,236.17	68.954	0.0	0.0	9.85057	7.8 AC PAR 13 PMOR 35-11 GALLERIA AT ROSEVILLE
363-011-093-000	District - Wide	5,225.22	5,225.24	68.81	0.0	0.0	9.83	POR PAR 2 PM 35-159
363-011-080-000	District - Wide	4,688.78	4,688.79	61.7456	0.0	0.0	8.8208	7.7 AC PAR 2 PMOR 35-11 GALLERIA AT ROSEVILLE
015-167-016-000	District - Wide	4,463.72	4,463.73	58.7818	0.0	0.0	8.3974	8.3 AC POR LOTS 19 THRU 22 CREEKSIDE CENTER V-17
363-021-011-000	District - Wide	4,224.62	4,224.63	55.6332	0.0	0.0	7.9476	7.3 AC PAR 4 PMOR 31-146
363-011-013-000	District - Wide	4,202.18	4,202.20	55.3378	0.0	0.0	7.9054	7.9AC PAR 40B PMOR 32-89
363-021-013-000	District - Wide	4,051.02	4,051.02	53.347	0.0	0.0	7.621	7.0 AC POR PAR 2 PMOR 31-146
363-011-083-000	District - Wide	4,022.26	4,022.26	52.9683	0.0	0.0	7.5669	6.6 AC PAR 8 PMOR 35-11 GALLERIA AT ROSEVILLE
363-011-098-000	District - Wide	3,986.70	3,986.70	52.5	0.0	0.0	7.5	7.5 A 1 PM35-55,POR 40D PM32-89 RES PAR 1 23-44944
363-021-012-000	District - Wide	3,703.74	3,703.75	48.7739	0.0	0.0	6.9677	6.4 AC PAR 3 PMOR 31-146
363-011-097-000	District - Wide	3,563.88	3,563.90	46.9322	0.0	0.0	6.7046	6.7AC POR 40D PM 32-89, RES PAR 40D MBR 2023-44944
363-030-070-000	District - Wide	3,409.00	3,409.00	44.8924	0.0	0.0	6.4132	POR PAR 1 PMOR 31-31
015-166-056-000	District - Wide	2,983.38	2,983.38	39.2875	0.0	0.0	5.6125	5.6 AC POR LOTS 24 & 25 CREEKSIDE CENTER V-17
363-030-091-000	District - Wide	2,981.68	2,981.68	39.2651	0.0	0.0	5.6093	LOT 1 PMOR BK36 PG84
363-011-081-000	District - Wide	2,976.72	2,976.74	39.2	0.0	0.0	5.6	5.6 AC PAR 5 PMOR 35-11 GALLERIA AT ROSEVILLE
363-011-007-000	District - Wide	2,779.30	2,779.32	36.6002	0.0	0.0	5.2286	5.2 AC PAR 6 PMOR 32-12
015-166-004-000	District - Wide	2,729.02	2,729.03	35.938	0.0	0.0	5.134	5.1 AC LOT 23 CREEKSIDE CENTER V-17
363-011-003-000	District - Wide	2,672.40	2,672.42	35.1925	0.0	0.0	5.0275	5.0 AC PAR 2 PMOR 32-12
015-166-058-000	District - Wide	2,545.74	2,545.75	33.5244	0.0	0.0	4.7892	4.8 AC POR LOTS 24 25 & 26 CREEKSIDE CENTER V-17
017-123-054-000	District - Wide	2,392.02	2,392.02	31.5	0.0	0.0	4.5	4.5 AC PAR 34 C-1 PMOR 28-84
015-166-063-000	District - Wide	2,334.70	2,334.72	30.7454	0.0	0.0	4.3922	4.4 AC POR LOTS 12 & 13 CREEKSIDE CENTER V-17

City of Roseville
North Central Roseville Specific Plan Landscaping and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-022-027-000	District - Wide	2,301.64	2,301.66	30.31	0.0	0.0	4.33	4.33 AC PAR 3 PMOR 36 11
363-022-024-000	District - Wide	2,131.54	2,131.56	28.07	0.0	0.0	4.01	4.01 AC POR LOTS 3, 4 & 5 NCRSP- PAR 49 MOR DD-34
363-022-023-000	District - Wide	1,945.50	1,945.51	25.62	0.0	0.0	3.66	3.66 AC POR LOTS 3, 4 & 5 NCRSP- PAR 49 MOR DD-34
363-011-009-000	District - Wide	1,924.14	1,924.14	25.3386	0.0	0.0	3.6198	3.6 AC PAR 9 PMOR 32-12
363-022-020-000	District - Wide	1,833.88	1,833.88	24.15	0.0	0.0	3.45	3.5 AC LOT 2 NCRSP- PAR 49 SUB MOR DD-34
015-166-064-000	District - Wide	1,818.88	1,818.89	23.9526	0.0	0.0	3.4218	3.4 AC POR LOTS 12 & 13 CREEKSIDE CENTER V-17
363-011-005-000	District - Wide	1,763.76	1,763.77	23.2267	0.0	0.0	3.3181	3.3 AC PAR 4 PMOR 32-12
363-011-008-000	District - Wide	1,763.76	1,763.77	23.2267	0.0	0.0	3.3181	3.3 AC PAR 8 PMOR 32-12
363-021-010-000	District - Wide	1,736.12	1,736.13	22.8627	0.0	0.0	3.2661	3.0 AC PAR 5 PMOR 31-146
363-011-010-000	District - Wide	1,710.34	1,710.35	22.5232	0.0	0.0	3.2176	3.2 AC PAR 1 PMOR 33-10
015-166-065-000	District - Wide	1,658.26	1,658.27	21.8374	0.0	0.0	3.11963	3.1 AC POR LOT 10 & 11 CREEKSIDE CENTER MOR V-17
363-011-078-000	District - Wide	1,657.66	1,657.67	21.8295	0.0	0.0	3.1185	2.7 AC PAR 12 PMOR 35-11 GALLERIA AT ROSEVILLE
363-011-036-000	District - Wide	1,611.12	1,611.13	21.2166	0.0	0.0	3.03095	2.4 AC PAR T THE GALLERIA AT RSVL REGNL MALL W-2
363-011-002-000	District - Wide	1,603.44	1,603.45	21.1155	0.0	0.0	3.0165	3.0 AC PAR 1 PMOR 32-12
363-011-004-000	District - Wide	1,603.44	1,603.45	21.1155	0.0	0.0	3.0165	3.0 AC PAR 3 PMOR 32-12
363-480-005-000	District - Wide	1,594.72	1,594.73	21.0007	0.0	0.0	3.0001	LOT 5 ROSEVILLE JUNCTION MOR GG-05
363-011-084-000	District - Wide	1,584.52	1,584.53	20.8663	0.0	0.0	2.9809	2.6 AC PAR 10 PMOR 35-11 GALLERIA AT ROSEVILLE
015-166-066-000	District - Wide	1,551.28	1,551.29	20.4286	0.0	0.0	2.91837	2.9 AC POR LOT 10 & 11 CREEKSIDE CENTER MOR V-17
363-011-006-000	District - Wide	1,549.96	1,549.98	20.4113	0.0	0.0	2.9159	2.9 AC PAR 5 PMOR 32-12
015-167-017-000	District - Wide	1,379.70	1,379.72	18.1692	0.0	0.0	2.5956	2.6 AC POR LOTS 19 THRU 22 CREEKSIDE CENTER V-17
363-030-071-000	District - Wide	1,348.02	1,348.04	17.752	0.0	0.0	2.536	POR PAR 4 PMOR 31-31
363-011-064-000	District - Wide	1,304.18	1,304.18	17.1745	0.0	0.0	2.4535	2.1 AC PAR 3 PMOR 35-11 GALLERIA AT ROSEVILLE
015-166-032-000	District - Wide	1,275.74	1,275.75	16.8	0.0	0.0	2.4	2.4 AC LOT 3 CREEKSIDE CENTER V-17
361-230-001-000	District - Wide	1,275.74	1,275.75	16.8	0.0	0.0	2.4	2.4 AC PAR 1 PMOR 34-93
363-021-004-000	District - Wide	1,230.98	1,230.99	16.2106	0.0	0.0	2.3158	2.2 AC PAR2 PMOR 33-122
363-011-016-000	District - Wide	1,208.34	1,208.35	15.9125	0.0	0.0	2.27321	1.8 AC PAR A THE GALLERIA AT RSVL REGNL MALL W-2
361-230-027-000	District - Wide	1,195.26	1,195.27	15.7402	0.0	0.0	2.2486	UNIT 200 CONDO PLAN THE FALLS AT ROSEVILLE COMM.
363-022-018-000	District - Wide	1,185.36	1,185.38	15.61	0.0	0.0	2.23	2.2 AC LOT 6 NCRSP- PAR 49 SUB MOR DD-34
015-165-002-000	District - Wide	1,180.06	1,180.06	15.54	0.0	0.0	2.22	2.2AC PAR 1 PMOR 35-06
363-480-002-000	District - Wide	1,169.42	1,169.43	15.4	0.0	0.0	2.2	LOT 2 ROSEVILLE JUNCTION MOR GG-05
363-021-003-000	District - Wide	1,119.08	1,119.09	14.7371	0.0	0.0	2.1053	2.0 AC POR PAR 3 PMOR 33-122
363-480-001-000	District - Wide	1,116.26	1,116.28	14.7	0.0	0.0	2.1	LOT 1 ROSEVILLE JUNCTION MOR GG-05
363-011-017-000	District - Wide	1,074.08	1,074.09	14.1444	0.0	0.0	2.02063	1.6 AC PAR B-1 PMOR 30-73
363-011-019-000	District - Wide	1,074.08	1,074.09	14.1444	0.0	0.0	2.02063	1.6 AC PAR C THE GALLERIA AT RSVL REGNL MALL W-2
015-166-014-000	District - Wide	1,031.22	1,031.23	13.58	0.0	0.0	1.94	1.9 AC LOT 27 CREEKSIDE CENTER V-17
363-022-032-000	District - Wide	994.00	994.02	13.09	0.0	0.0	1.87	1.87AC PARCEL 3 PM 36-97
363-030-090-000	District - Wide	978.52	978.53	12.8861	0.0	0.0	1.84087	1.8 AC PAR 2 PMOR 34-132
363-011-031-000	District - Wide	939.82	939.83	12.3764	0.0	0.0	1.76805	1.4 AC PAR O THE GALLERIA AT RSVL REGNL MALL W-2
361-230-014-000	District - Wide	929.58	929.59	12.2416	0.0	0.0	1.7488	PAR 6 & POR PAR 10 PMOR 34-93
361-230-024-000	District - Wide	910.24	910.24	11.9868	0.0	0.0	1.7124	RES PAR 4 LLA DOC 2019R0083073
015-165-004-000	District - Wide	903.64	903.65	11.9	0.0	0.0	1.7	1.7AC PAR 3 PMOR 35-06

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363-480-004-000	District - Wide	903.64	903.65	11.9	0.0	0.0	1.7	LOT 4 ROSEVILLE JUNCTION MOR GG-05
015-165-003-000	District - Wide	898.32	898.34	11.83	0.0	0.0	1.69	1.7AC PAR 2 PMOR 35-06
363-030-075-000	District - Wide	878.72	878.72	11.5717	0.0	0.0	1.6531	1.6 AC PAR 3 PMOR 31-31
363-022-006-000	District - Wide	876.86	876.86	11.5472	0.0	0.0	1.6496	2.1 AC PAR J - PMOR 32-50
363-030-089-000	District - Wide	869.80	869.81	11.4543	0.0	0.0	1.63633	1.6 AC PAR 1 PMOR 34-132
361-230-007-000	District - Wide	848.14	848.16	11.1692	0.0	0.0	1.5956	PAR 7 PMOR 34-93
363-030-093-000	District - Wide	846.88	846.88	11.1524	0.0	0.0	1.5932	LOT 3 PMOR BK36 PG84
363-022-004-000	District - Wide	834.80	834.82	10.9935	0.0	0.0	1.5705	2.0 AC PAR F - PMOR 32-50
363-022-021-000	District - Wide	829.22	829.23	10.92	0.0	0.0	1.56	1.56 AC POR LOT 1 NCRSP- PARCEL 49 MOR DD-34
015-165-005-000	District - Wide	823.90	823.92	10.85	0.0	0.0	1.55	1.6AC PAR 4 PMOR 35-06
363-022-031-000	District - Wide	823.90	823.92	10.85	0.0	0.0	1.55	1.55AC PARCEL 2 PM 36-97
017-123-086-000	District - Wide	802.64	802.66	10.57	0.0	0.0	1.51	1.5 AC PAR 34B & POR 34A PM 28-67
015-500-001-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 1 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-002-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 2 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-003-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 3 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-004-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 4 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-005-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 5 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-006-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 6 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-007-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 7 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-008-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 8 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-009-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 9 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-010-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 10 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-011-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 11 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-016-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 16 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-019-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 19 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-020-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 20 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-021-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 21 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-022-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 22 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-023-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 23 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-024-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 24 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-025-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 25 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-026-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 26 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-027-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 27 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-028-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 28 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-029-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 29 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-030-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 30 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-031-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 31 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-032-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 32 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-033-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 33 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-036-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 36 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-037-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 37 DIAMOND OAKS UNIT NO 10 MOR Y-72

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015-500-038-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 38 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-039-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 39 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-047-000	F	791.46	922.32	1.0	1.0	0.0	0.0	POR LOT15 DIAMOND OAKS UNIT #10 MOR 7-72
015-500-048-000	F	791.46	922.32	1.0	1.0	0.0	0.0	POR LOT 34 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-049-000	F	791.46	922.32	1.0	1.0	0.0	0.0	LOT 35 & POR 34 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-050-000	F	791.46	922.32	1.0	1.0	0.0	0.0	POR LOT 12 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-052-000	F	791.46	922.32	1.0	1.0	0.0	0.0	POR LOT 13 DIAMOND OAKS UNIT NO 10 MOR Y-72
015-500-054-000	F	791.46	922.32	1.0	1.0	0.0	0.0	POR LOTS 13 14 & 15 DIAMOND OAKS UNIT#10 MOR Y-72
015-500-056-000	F	791.46	922.32	1.0	1.0	0.0	0.0	POR LOT 17 DIAMOND OAKS UNIT NO 10 MOR BK Y PG 72
015-500-058-000	F	791.46	922.32	1.0	1.0	0.0	0.0	POR LOT 18 DIAMOND OAKS UNIT NO 10 MOR BK Y PG 72
363-030-095-000	District - Wide	756.66	756.68	9.9645	0.0	0.0	1.4235	LOT 5 PMOR BK36 PG84
363-022-005-000	District - Wide	751.52	751.52	9.8966	0.0	0.0	1.4138	1.8 AC PAR E - PMOR 32-50
363-011-054-000	District - Wide	744.18	744.18	9.8	0.0	0.0	1.4	1.4 AC POR L39B REGIONAL 65 CENTER
015-167-013-000	District - Wide	737.22	737.22	9.7083	0.0	0.0	1.3869	1.4 AC POR LOT 17 CREEKSIDE CENTER V-17
363-011-011-000	District - Wide	694.80	694.80	9.1497	0.0	0.0	1.3071	1.3 AC PAR 11 PMOR 32-12
363-011-058-000	District - Wide	691.02	691.03	9.1	0.0	0.0	1.3	1.3AC POR L39B & POR ROW REGIONAL 65 CENTER R-24
363-022-030-000	District - Wide	685.70	685.71	9.03	0.0	0.0	1.29	1.29AC PARCEL 1 PM 36-97
363-030-094-000	District - Wide	681.50	681.51	8.9747	0.0	0.0	1.2821	LOT 4 PMOR BK36 PG84
015-166-051-000	District - Wide	676.88	676.89	8.9138	0.0	0.0	1.2734	1.3 AC LOT 8 & POR 9 CREEKSIDE CENTER V-17
361-230-023-000	District - Wide	641.90	641.91	8.4532	0.0	0.0	1.2076	RES PAR 3 LLA DOC 2019R0083073
015-167-005-000	District - Wide	638.08	638.09	8.4028	0.0	0.0	1.2004	1.2 AC POR LOTS 14 15 & 22
017-123-043-000	District - Wide	637.86	637.87	8.4	0.0	0.0	1.2	1.2 AC POR PAR 34 C-2 PMOR 28-84
363-021-014-000	District - Wide	636.58	636.60	8.3832	0.0	0.0	1.1976	1.1 AC PAR 1 PMOR 31-146
015-166-055-000	District - Wide	620.58	620.60	8.1725	0.0	0.0	1.1675	1.3 AC LOT 6 & POR L 2 5 & 7 CREEKSIDE CENTER V-17
363-022-022-000	District - Wide	616.60	616.61	8.12	0.0	0.0	1.16	1.15 AC POR LOT 1 & 3 NCRSP- PARCEL 49 MOR DD-34
363-021-006-000	District - Wide	615.48	615.49	8.1053	0.0	0.0	1.1579	1.1 AC POR PAR 2 PMOR 33-94
015-167-015-000	District - Wide	613.58	613.58	8.0801	0.0	0.0	1.1543	1.1 AC POR LOTS 18 19 & 22 CREEKSIDE CENTER V-17
015-166-050-000	District - Wide	612.88	612.89	8.071	0.0	0.0	1.153	1.2 AC POR LOT 2 & 7 CREEKSIDE CENTER V-17
363-011-077-000	District - Wide	612.62	612.62	8.0675	0.0	0.0	1.1525	PAR 11 PMOR 35-11 GALLERIA @ ROSEVILLE
363-030-092-000	District - Wide	596.34	596.36	7.8533	0.0	0.0	1.1219	LOT 2 PMOR BK36 PG84
015-166-047-000	District - Wide	594.54	594.55	7.8295	0.0	0.0	1.1185	POR LOTS 2 & 5 CREEKSIDE CENTER V-17
363-030-082-000	District - Wide	579.60	579.61	7.6328	0.0	0.0	1.0904	1.0 AC POR LOT 47 REGIONAL 65 CENTRE
363-021-005-000	District - Wide	559.52	559.52	7.3682	0.0	0.0	1.0526	POR PAR 1 PMOR 33-122
363-021-007-000	District - Wide	559.52	559.52	7.3682	0.0	0.0	1.0526	1.0 AC POR PAR 4 PMOR 33-122
363-021-008-000	District - Wide	559.52	559.52	7.3682	0.0	0.0	1.0526	POR PAR 3 PMOR 33-94
363-022-008-000	District - Wide	542.50	542.51	7.1442	0.0	0.0	1.0206	1.3 AC PAR H - PMOR 32-50
363-011-018-000	District - Wide	537.04	537.04	7.0722	0.0	0.0	1.01032	PAR B-2 PMOR 30-73
017-123-058-000	District - Wide	535.44	535.44	7.0511	0.0	0.0	1.0073	1.0 AC PAR 2 PMOR 28-160
363-480-003-000	District - Wide	531.56	531.56	7.0	0.0	0.0	1.0	LOT 3 ROSEVILLE JUNCTION MOR GG-05
363-480-006-000	District - Wide	531.56	531.56	7.0	0.0	0.0	1.0	LOT 6 ROSEVILLE JUNCTION MOR GG-05
363-021-009-000	District - Wide	503.60	503.60	6.6318	0.0	0.0	0.9474	PAR 4 PMOR 33-94

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363-022-003-000	District - Wide	500.88	500.89	6.5961	0.0	0.0	0.9423	1.2 AC PAR G - PMOR 32-50
015-167-014-000	District - Wide	495.78	495.79	6.5289	0.0	0.0	0.9327	POR LOTS 18 & 22 CREEKSIDE CENTER MOR V-17
015-167-011-000	District - Wide	491.48	491.48	6.4722	0.0	0.0	0.9246	POR LOT 14 CREEKSIDE CENTER MOR V-17
363-030-074-000	District - Wide	489.82	489.83	6.4505	0.0	0.0	0.9215	PAR 2 PMOR 31-31
015-166-073-000	District - Wide	489.62	489.62	6.4477	0.0	0.0	0.9211	POR LOT 26 CREEKSIDE CENTER MOR BK V PG 17
361-230-016-000	District - Wide	488.06	488.08	6.4274	0.0	0.0	0.9182	UNIT 101 HIGHLAND VILLAGE PAR 9 CONDO 2018-0023620
363-030-078-000	District - Wide	484.46	484.46	6.3798	0.0	0.0	0.9114	PAR 5 PMOR 31-31
363-030-080-000	District - Wide	468.24	468.25	6.1663	0.0	0.0	0.8809	PAR 7 PMOR 31-31
363-022-007-000	District - Wide	459.26	459.27	6.048	0.0	0.0	0.864	1.1 AC PAR I - PMOR 32-50
361-230-008-000	District - Wide	454.68	454.70	5.9878	0.0	0.0	0.8554	PAR 8 PMOR 34-93
363-022-029-000	District - Wide	426.46	426.47	5.6161	0.0	0.0	0.8023	RESULTANT PAR B OF LLA PL20-0222 (2021-0011252)
361-230-026-000	District - Wide	399.40	399.41	5.2598	0.0	0.0	0.7514	UNIT 100 CONDO PLAN THE FALLS AT ROSEVILLE COMM.
015-167-003-000	District - Wide	350.28	350.30	4.613	0.0	0.0	0.659	LOT 16 CREEKSIDE CENTER V-17
363-030-079-000	District - Wide	340.24	340.25	4.4807	0.0	0.0	0.6401	PAR 6 PMOR 31-31
363-050-084-000	Local & DW	315.28	315.28	2.0	2.0	0.0	0.0	1.3 AC L 89 P LOTS 81 82&83 S-44 & LOTS 59&60 T-33
363-011-034-000	District - Wide	268.52	268.52	3.5361	0.0	0.0	0.50516	PAR 14 PMOR 35-11 GALLERIA AT ROSEVILLE
363-011-071-000	District - Wide	259.12	259.14	3.4125	0.0	0.0	0.4875	PAR 7 PMOR 35-11 GALLERIA AT ROSEVILLE
361-230-019-000	District - Wide	236.38	236.38	3.1129	0.0	0.0	0.4447	UNIT 104 HIGHLAND VILLAGE PAR 9 CONDO 2018-0023620
361-230-018-000	District - Wide	235.52	235.53	3.1017	0.0	0.0	0.4431	UNIT 103 HIGHLAND VILLAGE PAR 9 CONDO 2018-0023620
361-230-017-000	District - Wide	226.80	226.82	2.9869	0.0	0.0	0.4267	UNIT 102 HIGHLAND VILLAGE PAR 9 CONDO 2018-0023620
361-230-015-000	District - Wide	211.08	211.08	2.7797	0.0	0.0	0.3971	UNIT 100 HIGHLAND VILLAGE PAR 9 CONDO 2018-0023620
015-166-054-000	District - Wide	194.92	194.92	2.5669	0.0	0.0	0.3667	POR LOTS 2 & 4 CREEKSIDE CENTER V-17
363-011-087-000	District - Wide	170.08	170.10	2.24	0.0	0.0	0.32	PAR 1 PMOR 35-69
363-021-002-000	District - Wide	167.86	167.87	2.2106	0.0	0.0	0.3158	POR PAR 3 PMOR 33-122
359-010-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PAR "T" MOR V-83

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
359-010-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-010-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PAR "T" MOR V-83
359-020-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
359-020-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-020-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 34 HIGHLAND RESERVE WEST PAR WX&Y W-91
359-020-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR L 24 HIGHLAND RESERVE WEST PAR W X &Y MOR W-92
359-020-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	L 23 &P L 24 HIGHLAND RESERVE WEST PAR W X&Y W-92
359-020-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	L3 HIGHLND RES WEST W-92 & POR L 47 REG 65 CTR R24
359-020-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	L5 HIGHLND RES WEST W-92 & POR L47 REG 65 CTR R24
359-020-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	L6 HIGHLND RES WEST W-92 & POR L47 REG 65 CTR R-24
359-030-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-030-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PAR W X & Y MOR W-92
359-040-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PCL R MOR X-63

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
359-040-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PCL R MOR X-63

City of Roseville
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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
359-040-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-055-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-056-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-057-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-058-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-059-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-060-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-061-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-062-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-063-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-064-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-065-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-066-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-067-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-068-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-069-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-070-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE WEST PCL R MOR X-63
359-040-071-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE WEST PCL R MOR X-63
359-050-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56

City of Roseville
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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
359-050-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-050-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
359-060-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 PROMONTORY POINTE UNIT #2 SUBD 97-04 Z-56
360-010-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PAR I MOR V-47

City of Roseville
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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
360-010-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST PAR I MOR V-47
360-010-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR I MOR V-47

City of Roseville
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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
360-020-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT10 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT28 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 HIGHLAND RESERVE WEST PAR I MOR V-47
360-020-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 HIGHLAND RESERVE WEST,PAR.I, MOR V-47
360-030-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
360-030-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-030-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PAR D PH 2 MOR W-50
360-040-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
360-040-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-040-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE WEST PAR E PH 2 MOR W-51
360-051-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PCLS F G&H X-62

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
360-051-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-051-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 & P 31 HIGHLAND RESV WEST PCLS F G&H X-62
360-051-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 31 HIGHLAND RESV WEST PCLS F G & H X-62
360-052-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PCLS F G&H X-62

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
360-052-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-052-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 42 HIGHLAND RESV WEST PCLS F G & H X-62
360-052-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 & P 42 HIGHLAND RESV WEST PCLS F G&H X-62
360-053-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 76 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 77 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 79 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 80 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 81 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 82 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-053-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 83 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-054-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 84 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-054-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 85 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-054-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 86 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-054-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 89 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-054-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 90 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-054-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 91 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-054-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 92 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-054-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 87 HIGHLAND RESERVE WEST PARS F G & H X-62
360-054-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 88&P 87 HIGHLAND RESERVE WEST PARS F G&H X-62
360-055-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 101 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-055-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 102 HIGHLAND RESERVE WEST PCLS F G&H X-62

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
360-055-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 103 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-055-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 104 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-055-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 105 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-055-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 106 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-055-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 107 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-055-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 108 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-055-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 109 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 93 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 94 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 95 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 96 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 97 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 98 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 99 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 100 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 110 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 111 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 112 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 113 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 114 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 115 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 116 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 117 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 118 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 119 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 120 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 121 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 122 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 123 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 124 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 125 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 126 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 127 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 128 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 129 HIGHLAND RESERVE WEST PCLS F G&H X-62

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
360-060-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 130 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 131 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 132 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 133 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 134 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 135 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 136 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 137 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 138 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 139 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 140 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 141 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 142 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 143 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 144 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 145 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 146 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 147 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 148 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 149 HIGHLAND RESERVE WEST PCLS F G&H X-62
360-060-055-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 150 HIGHLAND RESERVE WEST PCLS F G&H X-62
362-010-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
362-010-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 76 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 77 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 79 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 80 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 81 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 82 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 83 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 84 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 85 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 86 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 87 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 88 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 89 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 90 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 91 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 92 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 93 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 94 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 95 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 96 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 97 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 98 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 99 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 100 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-010-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 101 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
362-020-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-020-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
362-030-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE 18 UNIT NO 2 MOR V-76
363-040-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PARCEL N S-42

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-040-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE WEST PARCEL N S-42
363-040-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PARCEL N PH B S-84

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-040-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-055-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-056-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-057-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-058-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-059-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-060-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-061-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-062-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-063-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-064-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-065-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-066-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-067-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-068-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-069-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-070-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-071-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-072-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-073-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-074-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-075-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-076-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-077-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-078-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-079-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-080-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-081-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-082-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 76 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-083-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 77 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-040-084-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 HIGHLAND RESERVE WEST PARCEL N PH B S-84
363-050-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 DIAMOND OAKS EAST S-44
363-050-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 DIAMOND OAKS EAST S-44
363-050-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 DIAMOND OAKS EAST S-44
363-050-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 DIAMOND OAKS EAST S-44
363-050-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 DIAMOND OAKS EAST S-44

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363-050-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 DIAMOND OAKS EAST S-44
363-050-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 DIAMOND OAKS EAST S-44
363-050-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 DIAMOND OAKS EAST S-44
363-050-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 DIAMOND OAKS EAST S-44
363-050-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 DIAMOND OAKS EAST S-44
363-050-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 DIAMOND OAKS EAST S-44
363-050-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 DIAMOND OAKS EAST S-44
363-050-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 DIAMOND OAKS EAST S-44
363-050-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 DIAMOND OAKS EAST S-44
363-050-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 DIAMOND OAKS EAST S-44
363-050-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 DIAMOND OAKS EAST S-44
363-050-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 DIAMOND OAKS EAST S-44
363-050-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 DIAMOND OAKS EAST S-44
363-050-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 DIAMOND OAKS EAST S-44
363-050-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 DIAMOND OAKS EAST S-44
363-050-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 DIAMOND OAKS EAST S-44
363-050-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 DIAMOND OAKS EAST S-44
363-050-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 DIAMOND OAKS EAST S-44
363-050-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 DIAMOND OAKS EAST S-44
363-050-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 DIAMOND OAKS EAST S-44
363-050-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 DIAMOND OAKS EAST S-44
363-050-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 DIAMOND OAKS EAST S-44
363-050-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 DIAMOND OAKS EAST S-44
363-050-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 DIAMOND OAKS EAST S-44
363-050-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 DIAMOND OAKS EAST S-44
363-050-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 DIAMOND OAKS EAST S-44
363-050-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 DIAMOND OAKS EAST S-44
363-050-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 DIAMOND OAKS EAST S-44
363-050-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 DIAMOND OAKS EAST S-44
363-050-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 DIAMOND OAKS EAST S-44
363-050-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 DIAMOND OAKS EAST S-44
363-050-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 DIAMOND OAKS EAST S-44
363-050-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 DIAMOND OAKS EAST S-44
363-050-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 DIAMOND OAKS EAST S-44
363-050-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 DIAMOND OAKS EAST S-44
363-050-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 DIAMOND OAKS EAST S-44
363-050-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 DIAMOND OAKS EAST S-44
363-050-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 DIAMOND OAKS EAST S-44
363-050-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 DIAMOND OAKS EAST S-44
363-050-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 DIAMOND OAKS EAST S-44
363-050-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 DIAMOND OAKS EAST S-44

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363-050-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 DIAMOND OAKS EAST S-44
363-050-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 DIAMOND OAKS EAST S-44
363-050-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 DIAMOND OAKS EAST S-44
363-050-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 DIAMOND OAKS EAST S-44
363-050-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 DIAMOND OAKS EAST S-44
363-050-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 DIAMOND OAKS EAST S-44
363-050-055-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 DIAMOND OAKS EAST S-44
363-050-056-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 DIAMOND OAKS EAST S-44
363-050-057-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 DIAMOND OAKS EAST S-44
363-050-058-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 DIAMOND OAKS EAST S-44
363-050-059-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 76 DIAMOND OAKS EAST S-44
363-050-060-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 77 DIAMOND OAKS EAST S-44
363-050-061-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 DIAMOND OAKS EAST S-44
363-050-062-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 79 DIAMOND OAKS EAST S-44
363-050-063-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 80 DIAMOND OAKS EAST S-44
363-050-067-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 84 DIAMOND OAKS EAST S-44
363-050-068-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 85 DIAMOND OAKS EAST S-44
363-050-069-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 86 DIAMOND OAKS EAST S-44
363-050-070-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 87 DIAMOND OAKS EAST S-44
363-050-071-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 88 DIAMOND OAKS EAST S-44
363-050-074-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 DIAMOND OAKS EAST S-44
363-050-076-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 & POR LOT 50 DIAMOND OAKS EAST S-44
363-050-077-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 83 DIAMOND OAKS EAST S-44
363-050-080-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 81 DIAMOND OAKS EAST MOR BK S PG 44
363-050-082-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 82 DIAMOND OAKS EAST S-44
363-060-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 DIAMOND OAKS EAST S-44
363-060-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 DIAMOND OAKS EAST S-44
363-060-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 DIAMOND OAKS EAST S-44
363-060-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 DIAMOND OAKS EAST S-44
363-060-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 DIAMOND OAKS EAST S-44
363-060-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 DIAMOND OAKS EAST S-44
363-060-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 DIAMOND OAKS EAST S-44
363-060-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 DIAMOND OAKS EAST S-44
363-060-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 DIAMOND OAKS EAST S-44
363-060-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 DIAMOND OAKS EAST S-44
363-060-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 DIAMOND OAKS EAST S-44
363-060-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 DIAMOND OAKS EAST S-44
363-060-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 DIAMOND OAKS EAST S-44
363-060-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 DIAMOND OAKS EAST S-44
363-060-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 DIAMOND OAKS EAST S-44
363-060-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 DIAMOND OAKS EAST S-44

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363-060-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 DIAMOND OAKS EAST S-44
363-070-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST S-78
363-070-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST S-78
363-070-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST S-78
363-070-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST S-78
363-070-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST S-78
363-070-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST S-78
363-070-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST S-78
363-070-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST S-78
363-070-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST S-78
363-070-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST S-78
363-070-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST S-78
363-070-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST S-78
363-070-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST S-78
363-070-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST S-78
363-070-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST S-78
363-070-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST S-78
363-070-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST S-78
363-070-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST S-78
363-070-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST S-78
363-070-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST S-78
363-070-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST S-78
363-070-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST S-78
363-070-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST S-78
363-070-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST S-78
363-070-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST S-78
363-070-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST S-78
363-070-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST S-78
363-070-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST S-78
363-070-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST S-78
363-070-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST S-78
363-070-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST S-78
363-070-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST S-78
363-070-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST S-78
363-070-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST S-78
363-070-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST S-78
363-070-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST S-78
363-070-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST S-78
363-070-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST S-78
363-070-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST S-78
363-070-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST S-78

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-070-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST S-78
363-070-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST S-78
363-070-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE WEST S-78
363-070-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST S-78
363-070-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST S-78
363-070-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST S-78
363-070-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST S-78
363-070-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE WEST S-78
363-070-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE WEST S-78
363-070-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE WEST S-78
363-070-055-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE WEST S-78
363-070-056-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE WEST S-78
363-070-057-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 HIGHLAND RESERVE WEST S-78
363-070-058-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 HIGHLAND RESERVE WEST S-78
363-070-061-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 HIGHLAND RESERVE WEST S-78
363-070-062-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 79 HIGHLAND RESERVE WEST S-78
363-070-063-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 80 HIGHLAND RESERVE WEST S-78
363-070-064-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 81 HIGHLAND RESERVE WEST S-78
363-070-065-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 82 HIGHLAND RESERVE WEST S-78
363-070-066-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 83 HIGHLAND RESERVE WEST S-78
363-070-067-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 84 HIGHLAND RESERVE WEST S-78
363-070-068-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 85 HIGHLAND RESERVE WEST S-78
363-070-070-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 1 & 2 HIGHLAND RESERVE WEST S-78
363-070-071-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 61 & 62 HIGHLAND RESERVE WEST S-78
363-070-072-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 76 & 77 HIGHLAND RESERVE WEST S-78
363-080-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST S-78
363-080-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST S-78
363-080-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST S-78
363-080-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST S-78
363-080-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST S-78
363-080-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST S-78
363-080-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST S-78
363-080-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST S-78
363-080-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST S-78
363-080-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST S-78
363-080-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST S-78
363-080-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST S-78
363-080-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST S-78
363-080-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST S-78
363-080-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST S-78
363-080-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 86 HIGHLAND RESERVE WEST S-78

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-080-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 87 HIGHLAND RESERVE WEST S-78
363-080-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 88 HIGHLAND RESERVE WEST S-78
363-080-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 89 HIGHLAND RESERVE WEST S-78
363-080-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 90 HIGHLAND RESERVE WEST S-78
363-080-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 91 HIGHLAND RESERVE WEST S-78
363-080-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 92 HIGHLAND RESERVE WEST S-78
363-080-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 93 HIGHLAND RESERVE WEST S-78
363-080-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 94 HIGHLAND RESERVE WEST S-78
363-080-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 37 & 38 HIGHLAND RESERVE WEST S-78
363-090-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST T-12
363-090-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST T-12
363-090-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST T-12
363-090-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST T-12
363-090-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST T-12
363-090-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST T-12
363-090-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST T-12
363-090-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST T-12
363-090-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST T-12
363-090-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST T-12
363-090-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST T-12
363-090-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST T-12
363-090-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST T-12
363-090-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST T-12
363-090-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST T-12
363-090-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST T-12
363-090-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST T-12
363-090-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST T-12
363-090-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST T-12
363-090-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST T-12
363-090-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST T-12
363-090-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST T-12
363-090-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST T-12
363-090-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST T-12
363-090-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST T-12
363-090-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST T-12
363-090-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST T-12
363-090-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST T-12
363-090-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST T-12
363-090-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST T-12
363-090-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST T-12
363-090-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST T-12

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-090-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST T-12
363-090-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST T-12
363-090-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST T-12
363-090-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST T-12
363-090-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST T-12
363-090-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST T-12
363-090-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST T-12
363-090-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST T-12
363-090-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST T-12
363-090-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST T-12
363-090-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST T-12
363-090-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST T-12
363-090-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST T-12
363-090-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST T-12
363-090-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST T-12
363-090-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST T-12
363-090-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST T-12
363-090-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST T-12
363-090-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST T-12
363-090-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST T-12
363-090-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST T-12
363-090-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST T-12
363-090-055-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST T-12
363-090-056-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST T-12
363-090-057-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST T-12
363-090-058-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST T-12
363-090-059-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST T-12
363-090-060-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST T-12
363-090-061-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST T-12
363-090-062-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST T-12
363-090-063-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST T-12
363-090-064-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE WEST T-12
363-090-065-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST T-12
363-090-066-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST T-12
363-090-067-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST T-12
363-090-068-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST T-12
363-100-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PARCEL P T-29

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-100-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PARCEL P T-29
363-100-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PARCEL P T-29

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-110-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PARCEL P T-29
363-110-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PARCEL P T-29
363-120-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-120-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 59 DIAMOND OAKS UN 12 PH 1 T-33
363-120-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 60 DIAMOND OAKS UN 12 PH 1 T-33
363-130-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 DIAMOND OAKS UNIT NO 12 PH 1 T-33

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-130-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-130-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-140-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 76 DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-150-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PARCEL J MOR T-34

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-150-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-150-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PARCEL J MOR T-34
363-160-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PARCEL L T-35

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-160-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-061-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PARCEL L T-35
363-160-064-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 59 HIGHLAND RESERVE WEST PAR L T-35
363-160-066-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 58 HIGHLAND RESERVE WEST PAR L T-35

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-160-068-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 60 HIGHLAND RESERVE WEST PAR L T-35
363-160-070-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 & POR LOT 60 HIGHLAND RES WEST PAR L T-35
363-160-071-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 & POR LOT 59 HIGHLAND RES WEST PARL T-35
363-160-072-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 & POR LOT 58 HIGHLAND RES WEST PARL T-35
363-170-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR B T-48
363-170-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PAR B T-48
363-170-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PAR B T-48
363-170-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PAR B T-48
363-170-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR B T-48
363-170-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR B T-48
363-170-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR B T-48
363-170-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR B T-48
363-170-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR B T-48
363-170-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR B T-48
363-170-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PAR B T-48
363-170-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PAR B T-48
363-170-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PAR B T-48
363-170-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PAR B T-48
363-170-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PAR B T-48
363-170-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PAR B T-48
363-170-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PAR B T-48
363-170-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST PAR B T-48
363-170-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST PAR B T-48
363-170-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PAR B T-48
363-170-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST PAR B T-48
363-170-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 16 & 17 HIGHLAND RESERVE WEST PAR B T-48
363-170-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 21 & 22 HIGHLAND RESERVE WEST PAR B T-48
363-170-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 23 & 24 HIGHLAND RESERVE WEST PAR B T-48
363-170-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 63 & 64 HIGHLAND RESERVE WEST PAR B T-48
363-180-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR B T-48
363-180-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR B T-48
363-180-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PAR B T-48
363-180-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PAR B T-48
363-180-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR B T-48
363-180-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR B T-48
363-180-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PAR B T-48
363-180-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PAR B T-48
363-180-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PAR B T-48
363-180-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PAR B T-48
363-180-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PAR B T-48
363-180-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PAR B T-48

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-180-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PAR B T-48
363-180-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PAR B T-48
363-180-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PAR B T-48
363-180-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PAR B T-48
363-180-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PAR B T-48
363-180-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PAR B T-48
363-180-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PAR B T-48
363-180-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PAR B T-48
363-180-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PAR B T-48
363-180-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PAR B T-48
363-180-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PAR B T-48
363-180-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PAR B T-48
363-180-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PAR B T-48
363-180-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PAR B T-48
363-180-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PAR B T-48
363-180-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PAR B T-48
363-180-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PAR B T-48
363-180-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PAR B T-48
363-180-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST PAR B T-48
363-180-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST PAR B T-48
363-180-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST PAR B T-48
363-180-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST PAR B T-48
363-180-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST PAR B T-48
363-180-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST PAR B T-48
363-180-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST PAR B T-48
363-180-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE WEST PAR B T-48
363-180-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE WEST PAR B T-48
363-180-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE WEST PAR B T-48
363-180-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 72 & 73 HIGHLAND RESERVE WEST PAR B T-48
363-180-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOTS 2 & 3 HIGHLAND RESERVE WEST PAR B T-48
363-190-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PARCEL M MORT-61

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-190-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-190-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PARCEL M MORT-61
363-200-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 BRIARCLIFF UNIT NO 1 MOR U-15

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-200-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 BRIARCLIFF UNIT NO 1 MOR U-15
363-200-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 BRIARCLIFF UNIT NO 1 MOR U-15

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363-210-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 BRIARCLIFF UNIT NO 1 MOR U-15
363-210-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 BRIARCLIFF UNIT NO 1 MOR U-15
363-220-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 4 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 5 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 6 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 7 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 8 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 9 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 10 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 11 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 12 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 13 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 14 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 15 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 16 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 17 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-220-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 18 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 19 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 20 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 21 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 22 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 29 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 30 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 31 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 32 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 33 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 34 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 35 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 36 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 37 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 44 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 45 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-220-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 46 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 1 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 2 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 3 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 23 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 24 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 25 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 26 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 27 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 28 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 38 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 39 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 40 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 41 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 42 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 43 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 47 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 48 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 49 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 50 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 51 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 52 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 53 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 54 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 55 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-230-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 56 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 57 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 58 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-230-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LT 59 HIGHLAND RESERVE PAR 17A UNIT NO 1 U-26
363-240-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 76 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 77 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 79 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 80 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 81 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 82 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 92 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 93 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 94 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 95 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 96 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 97 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 104 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 105 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 119 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 120 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 121 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 122 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 123 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 124 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 125 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 129 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 130 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 131 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 132 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 133 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 134 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 135 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 136 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 137 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 138 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 139 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 140 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 141 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 142 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 143 BRIARCLIFF UNIT NO 2 MOR U-27

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-240-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 144 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 145 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 146 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 147 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 148 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 149 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 150 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 151 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 152 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 153 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 154 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 155 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 156 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 157 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 158 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 159 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 160 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-055-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 161 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-056-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 162 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-057-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 163 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-058-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 164 BRIARCLIFF UNIT NO 2 MOR U-27
363-240-059-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 165 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 83 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 84 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 85 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 86 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 87 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 88 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 89 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 90 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 91 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 98 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 99 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 100 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 101 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 102 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 103 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 106 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 107 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 108 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 109 BRIARCLIFF UNIT NO 2 MOR U-27

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-250-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 110 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 111 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 112 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 113 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 114 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 115 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 116 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 117 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 118 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 126 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 127 BRIARCLIFF UNIT NO 2 MOR U-27
363-250-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 128 BRIARCLIFF UNIT NO 2 MOR U-27
363-260-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PARCEL Q MOR U-41

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-260-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-260-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PARCEL Q MOR U-41
363-270-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-270-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-280-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PARCEL U MOR U-42
363-290-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR A MOR U-43

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-290-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE WEST PAR A MOR U-43
363-290-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PAR A MOR U-43

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-300-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PAR A MOR U-43
363-300-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PAR A MOR U-43
363-310-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RES PAR 17B UN 1 U-48
363-310-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RES PAR 17B UN 1 U-48
363-310-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RES PAR 17B UN 1 U-48
363-310-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RES PAR 17B UN 1 U-48
363-310-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RES PAR 17B UN 1 U-48
363-310-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RES PAR 17B UN 1 U-48
363-310-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RES PAR 17B UN 1 U-48
363-310-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RES PAR 17B UN 1 U-48
363-310-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RES PAR 17B UN 1 U-48
363-310-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RES PAR 17B UN 1 U-48
363-310-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RES PAR 17B UN 1 U-48
363-310-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RES PAR 17B UN 1 U-48
363-310-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RES PAR 17B UN 1 U-48
363-310-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RES PAR 17B UN 1 U-48
363-310-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RES PAR 17B UN 1 U-48
363-310-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RES PAR 17B UN 1 U-48

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-310-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RES PAR 17B UN 1 U-48
363-320-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RES PAR 17B UN 1 U-48
363-320-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RES PAR 17B UN 1 U-48
363-320-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RES PAR 17B UN 1 U-48
363-320-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RES PAR 17B UN 1 U-48
363-320-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RES PAR 17B UN 1 U-48
363-320-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RES PAR 17B UN 1 U-48
363-320-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RES PAR 17B UN 1 U-48
363-320-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RES PAR 17B UN 1 U-48
363-320-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RES PAR 17B UN 1 U-48
363-320-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RES PAR 17B UN 1 U-48
363-320-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RES PAR 17B UN 1 U-48
363-320-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RES PAR 17B UN 1 U-48
363-320-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RES PAR 17B UN 1 U-48
363-320-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RES PAR 17B UN 1 U-48
363-320-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 41 HIGHLAND RES PAR 17B UN 1 U-48
363-320-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 42 HIGHLAND RES PAR 17B UN 1 U-48
363-320-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RES PAR 17B UN 1 U-48
363-320-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RES PAR 17B UN 1 U-48
363-320-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RES PAR 17B UN 1 U-48
363-320-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RES PAR 17B UN 1 U-48
363-320-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RES PAR 17B UN 1 U-48
363-320-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RES PAR 17B UN 1 U-48
363-320-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RES PAR 17B UN 1 U-48
363-320-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RES PAR 17B UN 1 U-48
363-320-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RES PAR 17B UN 1 U-48
363-320-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RES PAR 17B UN 1 U-48
363-320-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RES PAR 17B UN 1 U-48
363-320-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RES PAR 17B UN 1 U-48
363-320-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RES PAR 17B UN 1 U-48
363-320-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RES PAR 17B UN 1 U-48
363-320-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RES PAR 17B UN 1 U-48
363-320-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RES PAR 17B UN 1 U-48
363-330-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RES PAR 17B UN 1 U-48
363-330-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RES PAR 17B UN 1 U-48
363-330-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RES PAR 17B UN 1 U-48
363-330-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RES PAR 17B UN 1 U-48
363-330-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RES PAR 17B UN 1 U-48
363-330-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RES PAR 17B UN 1 U-48
363-330-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RES PAR 17B UN 1 U-48
363-330-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RES PAR 17B UN 1 U-48

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363-330-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RES PAR 17B UN 1 U-48
363-330-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RES PAR 17B UN 1 U-48
363-330-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RES PAR 17B UN 1 U-48
363-330-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RES PAR 17B UN 1 U-48
363-330-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RES PAR 17B UN 1 U-48
363-330-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RES PAR 17B UN 1 U-48
363-330-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RES PAR 17B UN 1 U-48
363-330-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RES PAR 17B UN 1 U-48
363-330-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RES PAR 17B UN 1 U-48
363-330-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RES PAR 17B UN 1 U-48
363-330-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RES PAR 17B UN 1 U-48
363-330-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RES PAR 17B UN 1 U-48
363-340-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 81 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 82 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 83 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 84 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 85 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 86 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 87 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 88 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 89 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 90 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 91 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 92 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 93 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 94 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 95 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 96 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 97 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 98 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 99 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 100 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 101 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 102 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 103 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 104 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 105 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 106 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 107 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 108 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 109 DIAMOND OAKS UNIT 12 PH II MOR U-58

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363-340-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 110 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 111 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 126 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 127 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 128 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-340-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 129 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 77 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 79 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 80 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 112 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 113 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 114 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 115 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 116 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 117 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 118 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 119 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 120 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 121 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 122 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 123 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 124 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 125 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 130 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 131 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 132 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-350-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 133 DIAMOND OAKS UNIT 12 PH II MOR U-58
363-360-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 134 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 135 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 136 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 137 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 138 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 139 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 140 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 141 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 142 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 143 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 144 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 145 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 146 DIAMOND OAKS UNIT NO.12 PH III MOR U-59

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363-360-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 147 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 148 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 149 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 150 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 162 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 163 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 164 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 165 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 166 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 167 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 168 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 169 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 170 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 171 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 172 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 173 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 174 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 175 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 176 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 177 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 181 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 182 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 183 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 184 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-360-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 185 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 151 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 152 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 153 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 154 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 155 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 156 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 157 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 158 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 159 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 160 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 161 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 178 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 179 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-370-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 180 DIAMOND OAKS UNIT NO.12 PH III MOR U-59
363-380-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-380-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 64 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 65 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 66 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 67 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 68 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 69 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 76 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 77 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 79 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 80 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 81 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 82 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 83 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 84 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 85 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 86 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 87 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 88 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 89 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 90 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 91 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 92 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 93 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 94 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-036-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 95 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-037-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 96 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-038-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 97 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-039-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 98 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-040-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 99 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-041-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 100 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-042-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 101 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-043-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 102 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60

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363-380-044-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 103 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-045-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 104 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-046-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 105 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-047-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 106 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-048-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 107 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-049-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 108 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-050-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 109 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-051-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 110 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-052-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 111 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-053-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 112 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-380-054-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 113 HIGHLAND RESERVE PARCEL 17A UN. 2 U-60
363-390-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 PROMONTORY POINTE U-77
363-390-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 PROMONTORY POINTE U-77
363-390-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 PROMONTORY POINTE U-77
363-390-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 PROMONTORY POINTE U-77
363-390-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 PROMONTORY POINTE U-77
363-390-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 PROMONTORY POINTE U-77
363-390-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 PROMONTORY POINTE U-77
363-390-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 PROMONTORY POINTE U-77
363-390-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 PROMONTORY POINTE U-77
363-390-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 PROMONTORY POINTE U-77
363-390-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 PROMONTORY POINTE U-77
363-390-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 PROMONTORY POINTE U-77
363-390-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 PROMONTORY POINTE U-77
363-390-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 PROMONTORY POINTE U-77
363-390-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 PROMONTORY POINTE U-77
363-390-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 PROMONTORY POINTE U-77
363-390-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 PROMONTORY POINTE U-77
363-390-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 PROMONTORY POINTE U-77
363-390-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 PROMONTORY POINTE U-77
363-390-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 PROMONTORY POINTE U-77
363-390-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 PROMONTORY POINTE U-77
363-390-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 PROMONTORY POINTE U-77
363-390-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 PROMONTORY POINTE U-77
363-390-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 PROMONTORY POINTE U-77
363-390-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 PROMONTORY POINTE U-77
363-390-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 PROMONTORY POINTE U-77
363-390-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 PROMONTORY POINTE U-77
363-390-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 PROMONTORY POINTE U-77
363-390-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 PROMONTORY POINTE U-77
363-390-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 PROMONTORY POINTE U-77

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363-390-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 PROMONTORY POINTE U-77
363-390-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 PROMONTORY POINTE U-77
363-400-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 70 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 74 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 75 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 76 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 77 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 78 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 79 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 80 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 81 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 82 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 83 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 84 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 85 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 86 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 87 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 88 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 89 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 90 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 91 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 92 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 93 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 94 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 95 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 96 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 97 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 98 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 99 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 100 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 101 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 102 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 103 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-400-035-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 104 HIGHLAND RESERVE LOT 17B UNIT 2 V-5
363-410-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR O V-6
363-410-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PAR O V-6
363-410-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PAR O V-6
363-410-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR O V-6

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-410-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PAR O V-6
363-410-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PAR O V-6
363-410-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR O V-6
363-410-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR O V-6
363-410-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR O V-6
363-410-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PAR O V-6
363-410-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PAR O V-6
363-410-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PAR O V-6
363-410-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR O V-6
363-410-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR O V-6
363-410-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR O V-6
363-410-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PAR O V-6
363-410-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PAR O V-6
363-410-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR O V-6
363-410-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR O V-6
363-410-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR O V-6
363-410-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PAR O V-6
363-410-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PAR O V-6
363-410-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PAR O V-6
363-410-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PAR O V-6
363-420-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST-PARS MORV-24
363-420-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST - PARCEL S MOR V-24
363-420-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST-PARS MORV-24
363-420-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST- PARCEL S MOR V-24

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363-420-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST-PARS MORV-24
363-420-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST-PARCEL S MOR V-24
363-420-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-420-034-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST- PARCEL S MOR V-24
363-430-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 DIAMOND OAKS UNIT 13, MOR V-33
363-430-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 DIAMOND OAKS UNIT 13, MOR V-33
363-430-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 DIAMOND OAKS UNIT 13, MOR V-33
363-430-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 DIAMOND OAKS UNIT 13, MOR V-33
363-430-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 DIAMOND OAKS UNIT 13, MOR V-33
363-430-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 DIAMOND OAKS UNIT 13, MOR V-33
363-430-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 DIAMOND OAKS UNIT 13, MOR V-33
363-430-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT8 DIAMOND OAKS UNIT 13, MOR V-33
363-430-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT9 DIAMOND OAKS UNIT 13, MOR V-33
363-430-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 DIAMOND OAKS UNIT 13, MOR V-33
363-430-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 DIAMOND OAKS UNIT 13, MOR V-33
363-430-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 DIAMOND OAKS UNIT 13, MOR V-33
363-430-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 DIAMOND OAKS UNIT 13, MOR V-33
363-430-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 DIAMOND OAKS UNIT 13, MOR V-33
363-430-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 DIAMOND OAKS UNIT 13, MOR V-33
363-430-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 DIAMOND OAKS UNIT 13, MOR V-33
363-430-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 DIAMOND OAKS UNIT 13, MOR V-33
363-430-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 DIAMOND OAKS UNIT 13, MOR V-33
363-430-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 DIAMOND OAKS UNIT 13, MOR V-33
363-430-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 DIAMOND OAKS UNIT 13, MOR V-33
363-430-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 DIAMOND OAKS UNIT 13, MOR V-33
363-440-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR V MOR V-36
363-440-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PAR V MOR V-36
363-440-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 11 HIGHLAND RESERVE WEST PAR V MOR V-36
363-440-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 12 HIGHLAND RESERVE WEST PAR V MOR V-36
363-440-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR V MOR V-36

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363-440-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR V MOR MOR BK V 36
363-440-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PAR V MOR V-36
363-440-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR V MOR MOR V PG 36
363-440-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PAR V MOR V-36
363-440-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 27 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 28 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 29 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 30 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 31 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 32 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 33 HIGHLAND RESERVE WEST PAR V MOR V-36
363-440-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 34 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 35 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 36 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-030-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 37 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 38 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 39 HIGHLAND RESERVE WEST PAR V MOR BK V PG 36
363-440-033-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 40 HIGHLAND RESERVE WEST PAR V MOR V-36
363-450-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR V MOR V-36
363-450-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PAR V MOR V-36
363-450-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PAR V MOR V-36
363-450-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR V MOR V-36
363-450-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PAR V MOR V-36
363-450-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PAR V MOR V-36
363-450-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR V MOR V-36
363-460-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 43 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 44 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 45 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 46 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 47 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 48 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
363-460-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 49 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 50 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-011-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 51 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-012-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 52 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 53 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 54 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 55 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 56 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 57 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 58 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 59 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 60 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 61 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 62 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-460-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 63 HIGHLAND RESERVE WEST PAR D PH 1 MOR V-40
363-470-001-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 1 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-002-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 2 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-003-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 3 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-004-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 4 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-005-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 5 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-006-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 6 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-007-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 7 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-008-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 8 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-009-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 9 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-010-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 10 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-013-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 13 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-014-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 14 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-015-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 15 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-016-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 16 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-017-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 17 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-018-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 18 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-019-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 19 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-020-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 20 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-021-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 21 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-022-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 22 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-023-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 23 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-024-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 24 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-025-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 25 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-026-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 26 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-027-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 71 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-028-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 72 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41

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363-470-029-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	LOT 73 HIGHLAND RESERVE WEST PAR E PH 1 MOR V-41
363-470-031-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	POR LOT 12 HIGHLAND RESERVE WEST PAR E PH 1 V-41
363-470-032-000	Local & DW	157.64	157.64	1.0	1.0	0.0	0.0	L 11 &P LOT12 HIGHLAND RESERVE WEST PAR E PH1V-41
017-420-002-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 2 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-003-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 3 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-004-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 4 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-005-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 5 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-006-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 6 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-007-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 7 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-008-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 8 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-009-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 9 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-010-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 10 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-011-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 11 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-012-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 12 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-013-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 20 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-014-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 21 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-015-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 22 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-016-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 23 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-017-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 24 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-018-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 25 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-019-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 26 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-420-023-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 1 PMOR 31-157
017-420-024-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 78 PMOR 31-157
017-420-025-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 79 PMOR 31-157
017-430-001-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 13 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-002-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 14 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-003-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 15 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-004-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 16 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-005-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 17 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-006-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 18 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-007-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 19 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-008-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 27 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-009-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 28 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-010-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 29 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-011-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 30 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-012-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 31 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-013-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 32 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-014-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 33 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-015-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 34 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-016-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 35 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-017-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 36 DIAMOND OAKS UNIT NO 14 MOR Z-01

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017-430-018-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 37 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-019-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 38 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-020-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 39 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-021-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 40 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-022-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 41 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-023-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 42 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-024-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 43 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-025-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 44 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-026-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 45 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-027-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 46 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-028-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 47 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-029-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 48 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-030-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 49 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-031-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 50 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-032-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 51 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-033-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 52 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-034-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 53 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-035-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 54 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-036-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 55 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-037-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 56 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-038-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 57 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-039-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 58 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-040-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 59 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-041-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 60 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-042-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 61 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-043-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 62 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-044-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 63 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-045-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 64 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-046-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 65 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-047-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 66 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-048-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 67 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-049-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 68 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-050-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 69 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-051-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 70 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-052-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 71 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-053-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 72 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-054-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 73 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-055-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 74 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-056-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 75 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-057-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 76 DIAMOND OAKS UNIT NO 14 MOR Z-01
017-430-058-000	G	155.38	506.27	1.0	1.0	0.0	0.0	LOT 77 DIAMOND OAKS UNIT NO 14 MOR Z-01

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361-220-002-000	District - Wide	116.14	116.15	1.5295	0.0	0.0	0.2185	L110 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-009-000	District - Wide	103.54	103.55	1.3636	0.0	0.0	0.1948	L190 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-023-000	District - Wide	88.68	88.69	1.168	0.0	0.0	0.16686	L270 &POR L290CNDO PLAN SHEA CTR RSVL OFC #0137260
361-220-024-000	District - Wide	87.34	87.36	1.1504	0.0	0.0	0.16434	POR L290 CNDO PLAN SHEA CTR RSVL OFC CDO #0137260
361-220-001-000	District - Wide	86.64	86.64	1.141	0.0	0.0	0.163	L100 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-011-000	District - Wide	86.64	86.64	1.141	0.0	0.0	0.163	L200 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-015-000	District - Wide	86.42	86.43	1.1382	0.0	0.0	0.1626	L230 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-004-000	District - Wide	77.70	77.71	1.0234	0.0	0.0	0.1462	L130 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-016-000	District - Wide	72.18	72.19	0.9506	0.0	0.0	0.1358	L240 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-018-000	District - Wide	69.36	69.37	0.9135	0.0	0.0	0.1305	L260 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-008-000	District - Wide	65.48	65.49	0.8624	0.0	0.0	0.1232	L170 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
015-011-032-000	District - Wide	65.38	65.38	0.861	0.0	0.0	0.123	POR LOT 26 CREEKSIDE CENTER V-17 & FR SEC 36 11 6
361-220-005-000	District - Wide	62.72	62.72	0.826	0.0	0.0	0.118	L140 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-006-000	District - Wide	62.44	62.46	0.8225	0.0	0.0	0.1175	L150 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-014-000	District - Wide	58.56	58.58	0.7714	0.0	0.0	0.1102	L220 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-003-000	District - Wide	56.92	56.93	0.7497	0.0	0.0	0.1071	L120 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-017-000	District - Wide	56.34	56.35	0.742	0.0	0.0	0.106	L250 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-007-000	District - Wide	53.20	53.21	0.7007	0.0	0.0	0.1001	L160 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-013-000	District - Wide	50.76	50.76	0.6685	0.0	0.0	0.0955	L210 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-012-000	District - Wide	48.42	48.43	0.6377	0.0	0.0	0.0911	L205 CNDO PLAN SHEA CTR RSVL OFC CNDO PRJ #0137260
361-010-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1111THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1112 THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1113THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1114THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1121THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1122THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1123THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1124THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1211THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1212 THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1213THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1214THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1221THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 1222THE RESERVES@GALLERIA PH3CONDO 03-0137570
361-010-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1223THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1224THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1311THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 1312THE RESERVES@GALLERIA PH3CONDO 03-0137570
361-010-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1313 HE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1314THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1321THE RESERVES@GALLERIA PH3 CONDO 03-0137570

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-010-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L1322 THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1323THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1324THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1411THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1412THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1413THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1414THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1421THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1422THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1423THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1424THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1511THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1512THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1513THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1514THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1521THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1522THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1523THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1524THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1611THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1612THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1613THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1614THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1621THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1622THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1623THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1624 THE RESEVES@GALLERIA PH3 CONDO 03-0137570
361-010-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1711THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1712THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1713THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1714THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1721THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1722THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1723THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1724THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1811THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1812THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-059-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1813THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-060-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1814THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-061-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1821THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-062-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1822THE RESERVES@GALLERIA PH3 CONDO 03-0137570

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-010-063-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1823 HE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-010-064-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LOT 1824THE RESERVES@GALLERIA PH3 CONDO 03-0137570
361-020-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 811 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 812 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 813 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 814 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 821 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 822 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 823 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 824 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 911 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 913 THE RESERVES @ GALLERIA PH2 CONDO 03-0137569
361-020-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1011 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1012 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1013 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1014 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1021 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1022 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1023 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1024 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1911 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1912 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 1913 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1914 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1921 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1922 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1923 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 1924 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 2011 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2012 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2013 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2014 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2021 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2022 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2023 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2024 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2111 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2112 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2113 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2114 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2121 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569

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361-020-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2122 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2123 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2124 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2211 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2212 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2213 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2214 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2221 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2222 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2223 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2224 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2311 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2312 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2313 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2314 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2321 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2322 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2323 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-020-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2324 THE RESERVES@ GALLERIA PH2 CONDO 03-0137569
361-030-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 211 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 212 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 213 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 214 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 221 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 222 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 223 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 224 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 311 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 312 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 313 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 314 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 321 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 322 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 323 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 324 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 411 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 412 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 413 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 414 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 421 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 422 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-030-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 423 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 424 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 511 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 512 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 513 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 514 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 521 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 522 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 523 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 524 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 611 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 612 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 613 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 614 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 621 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 622 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 623 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 624 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 711 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 712 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 713 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 714 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 721 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 722 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 723 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-030-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 724 THE RESERVES@GALLERIA PH 1B CONDO 03-0137568
361-040-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2411 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2412 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2413 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2414 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2421 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2422 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2423 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2424 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2511 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2512 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2513 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2514 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2521 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2522 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2523 THE RESERVES@GALLERIA PH1A CONDO 03-0137567

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361-040-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2524 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2611 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2612 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2613 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 2614 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2621 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 2622 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2623 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 2624 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2711 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2712 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2713 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2714 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2721 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2722 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	L 2723 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-040-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	U 2724 THE RESERVES@GALLERIA PH1A CONDO 03-0137567
361-050-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 211 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 212 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 213 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 214 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 215 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 216 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 217 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 218 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 221 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 222 VILLAGE OF THE GALLERIA CONDO 2005-0096026
361-050-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 223 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 224 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 225 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 226VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 227 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 228 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 233 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 234 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 235 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 236 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 411 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 412 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 413 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 414 VLG OFTHE GALLERIA CONDO PLN 05-0096026

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361-050-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 415 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 416 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 417 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 418 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 421 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 422 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 423 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 424 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 425 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 426 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 427 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 428 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 433 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 434VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 435 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 436 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 611 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 612 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 613 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 614 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 615 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 616 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 617 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 618 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 621 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 622 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 623 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 624 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 625 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 626 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 627 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 628 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 633 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 634 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-059-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 635 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-050-060-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 636 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 511 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 512 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 513 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 514 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 515 VLG OFTHE GALLERIA CONDO PLN 05-0096026

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-060-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 516 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 517 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 518 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 521 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 522 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 523 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 524 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 525 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 526 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 527 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 528 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 533 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 534 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 535 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 536 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 711 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 712 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 713 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 714 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 715 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 716 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 717 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 718 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 721 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 722 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 723 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 724 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 725 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 726 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 727 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 728 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 733 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 734 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 735 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 736 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 911 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 912 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 913 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 914 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 915 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 916 VLG OFTHE GALLERIA CONDO PLN 05-0096026

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-060-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 917 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 918 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 921 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 922 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 923 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 924 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 925 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 926 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 927 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 928 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 933 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 934 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-059-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 935 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-060-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 936 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-061-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 811 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-062-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 812 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-063-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 813 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-064-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 814 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-065-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 815 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-066-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 816 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-067-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 817 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-068-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 818 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-069-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 821 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-070-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 822 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-071-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 823 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-072-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 824 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-073-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 825 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-074-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 826 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-075-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 827 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-076-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 828 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-077-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 833 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-078-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 834 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-079-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 835 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-060-080-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 836 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1011 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1012 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1013 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1014 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1015 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1016 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1017 VLG OFTHE GALLERIA CONDO PLN 05-0096026

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-070-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1018 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1021 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1022 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1023 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1024 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1025 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1026 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1027 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1028 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1033 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1034 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1035 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1036 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1111 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1112 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1113 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1114 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1115 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1116 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1117 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1118 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1121 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1122 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1123 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1124 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1125 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1126 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1127 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1128 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1133 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1134 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1135 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1136 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1211 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1212 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1213 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1214 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1215 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1216 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1217 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1218 VLG OFTHE GALLERIA CONDO PLN 05-0096026

City of Roseville
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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-070-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1221 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1222 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1223 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1224 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1225 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1226 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1227 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1228 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1233 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1234 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-059-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1235 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-070-060-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1236 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1311 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1312 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1313 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1314 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1315 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1316 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1317 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1318 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1321 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1322 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1323 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1324 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1325 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1326 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1327 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1328 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1333 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1334 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1335 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1336 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1511 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1512 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1513 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1514 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1515 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1516 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1517 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1518 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1521 VLG OFTHE GALLERIA CONDO PLN 05-0096026

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-080-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1522 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1523 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1524 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1525 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1526 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1527 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1528 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1533 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1534 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1535 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-080-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1536 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1411 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1412 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1413 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1414 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1415 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1416 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1417 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1418 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1421 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1422 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1423 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1424 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1425 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1426 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1427 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1428 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1433 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1434 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1435 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1436 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1611 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1612 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1613 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1614 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1615 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1616 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1617 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1618 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1621 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1622 VLG OFTHE GALLERIA CONDO PLN 05-0096026

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-090-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1623 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1624 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1625 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1626 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1627 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1628 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1633 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1634 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1635 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1636 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1711 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1712 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1713 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1714 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1715 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1716 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1717 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1718 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1721 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1722 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1723 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1724 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1725 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1726 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1727 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1728 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1733 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1734 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-059-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1735 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-090-060-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1736 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 311 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 312 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 313 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 314 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 315 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 316 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 317 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 318 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 321 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 322 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 323 VLG OFTHE GALLERIA CONDO PLN 05-0096026

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-100-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 324 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 325 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 326 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 327 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 328 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 333 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 334 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 335 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 336 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1811 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1812 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1813 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1814 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1815 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1816 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1817VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1818 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1821 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1822 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1823 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1824 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1825 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1826 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1827 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1828 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1833 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1834 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1835 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-100-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1836 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1911 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1912 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1913 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1914 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1915 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1916 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1917 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1918 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1921 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1922 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1923 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1924 VLG OFTHE GALLERIA CONDO PLN 05-0096026

City of Roseville
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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-110-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1925 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1926 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1927 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1928 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1933 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1934 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1935 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 1936 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2011 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2012 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2013 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2014 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2015 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2016 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2017 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2018 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2021 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2022 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2023 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2024 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2025 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2026 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2027 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2028 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2033 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2034 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2035 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2036 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2111 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2112 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2113 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2114 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2115 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2116 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2117 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2117 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2121 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2122 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2123 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2124 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2125 VLG OFTHE GALLERIA CONDO PLN 05-0096026

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-110-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2126 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2127 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2128 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2133 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2134 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-059-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2135 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-110-060-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNT 2136 VLG OFTHE GALLERIA CONDO PLN 05-0096026
361-140-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT211 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT212 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT213 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT214 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT215 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT216 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT221, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT222, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT223, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT224, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT311, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT312, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT313, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT314, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT315, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT316, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT321, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT322, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT323, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT324, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT411, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT412, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT413, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT414, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT415, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-140-026-000	District - Wide							
361-140-027-000	District - Wide							
361-140-028-000	District - Wide							
361-140-029-000	District - Wide							
361-140-030-000	District - Wide							
361-150-002-000	District - Wide							
361-150-003-000	District - Wide							
361-150-004-000	District - Wide							
361-150-005-000	District - Wide							

A B C D E F G H

City of Roseville
North Central Roseville Specific Plan Landscaping and Lighting District
Fiscal Year 2024/25 Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	
017-420-025-000	G	227.78	491.53	1.0	1.0	0.0	0.0	LOT 79 PMOR 31-

City of Roseville
North Central Roseville Specific Plan Landscaping and Lighting District
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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-150-006-000	District - Wide	017-420-026-000		G	-	-	0.0	0.0 0.0 0.0 LOT A OPEN SPA
361-150-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT712, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT713, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT714, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT715, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT716, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT717, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT718, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT721, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT722, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT723, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT724, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT725, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT726, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT727, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT728, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT811, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT812, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT813, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT814, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT815, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT816, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT817, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT818, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT821, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT822, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT823, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT824, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT825, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT826, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT827, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT828, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT911, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT912, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT913, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT914, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT915, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT916, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT917, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT918, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT921, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-160-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT922, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT923, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT924, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT925, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT926, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT927, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT928, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1111, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1112, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1113, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1114, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1115, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1116, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1117, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1118, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1121, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1122, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1123, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1124, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1125, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1126, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1127, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-160-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1128, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1011, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1012, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1013, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1014, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1015, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1016, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1017, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1018, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1021, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1022, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1023, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1024, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1025, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1026, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1027, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1028, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1421, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1422, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-170-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1521, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1522, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1711, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1712, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1713, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1714, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1715, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1716, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1717, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1718, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1721, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1722, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1723, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1724, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1725, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1726, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1727 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1728 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2611 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2612 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2613 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2614 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2615 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2616 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2617 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2618 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2621 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2622 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2623 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2624 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2625 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2626 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2627 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-170-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2628 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1211 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1212 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1213 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1214 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1215 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1216 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1217 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711

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361-180-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1218 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1221 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1222 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1223 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1224 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1225 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1226 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1227 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1228 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1311 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1312 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1313 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1314 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1321 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1322 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1323 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1324 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1611 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1612 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1613 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1614 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1615 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1616 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1621 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1622 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1623 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-180-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1624 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1811 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1812 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1813 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1814 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1815 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1816 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1821 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1822 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1823 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1824 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2421 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2422 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2111 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2112 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711

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361-190-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2113 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2114 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2115 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2116 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2121 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2122 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2123 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2124 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2125 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-190-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2126 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1911 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1912 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1913 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1914 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1915 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1916 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1921 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1922 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1923 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT1924 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2011 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2012 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2013 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2014 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2015 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2016 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2021 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2022 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2023 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2024 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2211 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2212 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2213 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2214 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2215 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2216 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2221 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2222 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2223 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-200-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2224 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2311 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711

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361-210-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2312 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2313 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2314 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2315 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2316 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2321 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2322 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2323 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2324 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2511 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2512 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2513 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2514 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2515 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2516 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2521 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2522 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2523 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-210-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	LT2524 CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
362-040-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 1 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 2 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 3 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 4 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 5 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 6 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 7 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 8 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 9 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 10 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 11 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 12 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 13 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 14 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 15 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 16 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 17 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 18 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 19 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 20 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 27 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 28 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369

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362-040-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 29 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 30 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 31 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 32 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 33 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 34 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 35 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 36 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 37 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 38 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 39 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 40 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 41 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 42 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 43 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 44 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 45 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 46 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 47 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 48 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 49 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 50 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 51 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 52 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 53 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 54 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-040-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 55 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 21 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 22 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 23 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 24 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 25 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 26 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 84 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 85 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 86 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 87 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 88 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 89 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 90 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 91 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
362-050-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 92 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 93 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 94 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 95 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 96 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 97 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 98 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 99 CONDO PLAN FOR VILLEMONT, DOC 2005-0170369
362-050-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 100 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 101 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 102 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 103 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 104 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 105 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 106 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 107 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 108 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 109 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 110 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 111 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 112 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 113 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 114 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 115 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 116 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 150 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 151 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 152 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 153 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 154 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 155 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 196 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 197 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 198 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 199 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 200 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 201 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 202 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 203 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 204 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 205 CONDO PLAN FOR VILLEMONT DOC 2005-0170369

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362-050-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 206 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 207 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 208 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-059-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 209 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-060-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 210 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-061-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 211 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-062-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 212 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-063-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 213 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-050-064-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 214 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 117 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 118 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 119 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 120 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 121 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 122 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 123 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 124 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 125 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 126 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 127 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 128 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 129 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 130 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 131 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 132 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 133 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 134 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 135 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 136 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 137 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 138 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 139 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 140 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 141 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 142 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 143 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 144 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 145 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 146 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 147 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 148 CONDO PLAN FOR VILLEMONT DOC 2005-0170369

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
362-060-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 149 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 176 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 177 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 178 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 179 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 180 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 181 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 182 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 183 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 184 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 185 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 186 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 187 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 188 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 189 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 190 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 191 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 192 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 193 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 194 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-060-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 195 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 156 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 157 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 158 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 159 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 160 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 161 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 162 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 163 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 164 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 165 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 166 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 167 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 168 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 169 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 170 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 171 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 172 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 173 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 174 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-070-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 175 CONDO PLAN FOR VILLEMONT DOC 2005-0170369

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
362-080-001-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 56 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-002-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 57 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-003-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 58 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-004-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 59 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-005-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 60 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-006-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 61 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-007-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 62 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-008-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 63 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-009-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 64 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-010-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 65 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-011-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 66 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-012-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 67 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-013-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 68 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-014-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 69 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-015-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 70 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-016-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 71 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-017-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 72 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-018-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 73 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-019-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 74 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-020-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 75 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-021-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 76 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-022-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 77 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-023-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 78 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-024-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 79 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-025-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 80 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-026-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 81 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-027-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 82 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-028-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 83 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-029-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 215 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-030-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 216 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-031-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 217 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-032-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 218 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-033-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 219 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-034-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 220 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-035-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 221 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-036-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 222 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-037-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 223 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-038-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 224 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-039-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 225 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-040-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 226 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-041-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 227 CONDO PLAN FOR VILLEMONT DOC 2005-0170369

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ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
362-080-042-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 228 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-043-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 229 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-044-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 230 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-045-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 231 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-046-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 232 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-047-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 233 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-048-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 234 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-049-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 235 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-050-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 236 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-051-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 237 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-052-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 238 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-053-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 239 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-054-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 240 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-055-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 241 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-056-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 242 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-057-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 243 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-058-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 244 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-059-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 245 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-060-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 246 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-061-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 247 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
362-080-062-000	District - Wide	45.56	45.56	0.6	0.0	1.0	0.0	UNIT 248 CONDO PLAN FOR VILLEMONT DOC 2005-0170369
361-230-011-000	District - Wide	35.60	35.61	0.469	0.0	0.0	0.067	POR PAR 40C PMOR 32-89
359-040-072-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT A PUBLIC UTILITY/LANDSCAPE EASEMENT X-63
359-040-073-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT B PUBLIC UTILITY/LANDSCAPE EASEMENT X-63
359-050-021-000	Local & DW	-	-	0.0	0.0	0.0	0.0	P LOT A OPEN SPACE PROMONTORY POINTE UT #2 Z-56
359-050-022-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT C OPEN SPACE PROMONTORY POINTE UT #2 Z-56
359-060-037-000	Local & DW	-	-	0.0	0.0	0.0	0.0	P LOT A OPEN SPACE PROMONTORY POINTE UT #2 Z-56
359-060-038-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT B OPEN SPACE PROMONTORY POINTE UT #2 Z-56
360-030-041-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT A OPEN SPACE MOR W-50
360-051-036-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT A DRAINAGE EASEMENT X-62
360-051-037-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT B OPEN SPACE X-62
360-055-010-000	Local & DW	-	-	0.0	0.0	0.0	0.0	POR LOT C OPEN SPACE X-62
360-060-056-000	Local & DW	-	-	0.0	0.0	0.0	0.0	POR LOT C OPEN SPACE X-62
360-060-057-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT D OPEN SPACE X-62
360-060-058-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT E OPEN SPACE X-62
363-120-020-000	Local & DW	-	-	0.0	0.0	0.0	0.0	LOT I DIAMOND OAKS UNIT NO 12 PH 1 T-33
363-240-060-000	Local & DW	-	-	0.0	0.0	0.0	0.0	POR LOT A OPEN SPACE U-27
363-240-061-000	Local & DW	-	-	0.0	0.0	0.0	0.0	POR LOT E OPEN SPACE U-27
363-240-062-000	Local & DW	-	-	0.0	0.0	0.0	0.0	POR LOT F OPEN SPACE U-27
017-420-020-000	G	-	-	0.0	0.0	0.0	0.0	LOT A PUBLIC UTILITY EASEMENT MOR Z-01
017-420-021-000	G	-	-	0.0	0.0	0.0	0.0	3.7 AC LOT B PUBLIC UTILITY EASEMENT MOR Z-01

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017-420-022-000	G	-	-	0.0	0.0	0.0	0.0	POR LOT C PUBLIC UTILITY EASEMENT MOR Z-01
017-420-026-000	G	-	-	0.0	0.0	0.0	0.0	LOT A OPEN SPACE PMOR 31-157
017-420-027-000	G	-	-	0.0	0.0	0.0	0.0	LOT B OPEN SPACE PMOR 31-157
017-430-059-000	G	-	-	0.0	0.0	0.0	0.0	POR LOT C PUBLIC UTILITY EASEMENT MOR Z-01
017-430-060-000	G	-	-	0.0	0.0	0.0	0.0	LOT D PUBLIC UTILITY EASEMENT MOR Z-01
015-500-040-000	F	-	-	0.0	0.0	0.0	0.0	1.8 AC LOT A OPEN SPACE MOR Y-72
015-500-041-000	F	-	-	0.0	0.0	0.0	0.0	LOT C OPEN SPACE MOR Y-72
015-500-042-000	F	-	-	0.0	0.0	0.0	0.0	LOT D OPEN SPACE MOR Y-72
015-500-043-000	F	-	-	0.0	0.0	0.0	0.0	LOT E OPEN SPACE MOR Y-72
015-500-044-000	F	-	-	0.0	0.0	0.0	0.0	FR SEC 27 11 6
015-166-005-000	District - Wide	-	-	0.0	0.0	0.0	0.0	9.5 AC LOT 23 CREEKSIDE CENTER V-17
015-166-006-000	District - Wide	-	-	0.0	0.0	0.0	0.0	1.1 AC LOT 23 CREEKSIDE CENTER V-17
015-166-007-000	District - Wide	-	-	0.0	0.0	0.0	0.0	4.0 AC LOT 29B OPEN SPACE MOR V-17
015-166-013-000	District - Wide	-	-	0.0	0.0	0.0	0.0	3.9 AC LOT 30 CREEKSIDE CENTER V-17
015-166-016-000	District - Wide	-	-	0.0	0.0	0.0	0.0	8.4 AC LOT 31B OPEN SPACE V-17
015-167-012-000	District - Wide	-	-	0.0	0.0	0.0	0.0	POR LOT 14 CREEKSIDE CENTER MOR V-17
361-010-065-000	District - Wide	-	-	0.0	0.0	0.0	0.0	1.0 AC LOT 6 COMMON AREA THE RESERVES@GALLERIA PH3
361-010-066-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LOT 8 COMMON AREA THE RESERVES@GALLERIA PH3
361-010-067-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LOT 9 COMMON AREA THE RESERVES@GALLERIA PH3
361-020-059-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LOT 5 COMMON AREA THE RESERVES @ GALLERIA PH 2
361-020-060-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LOT 7 COMMON AREA THE RESERVES @ GALLERIA PH 2
361-020-061-000	District - Wide	-	-	0.0	0.0	0.0	0.0	1.1 AC LT 10 COMMON AREA THE RESERVES@GALLERIA PH2
361-030-049-000	District - Wide	-	-	0.0	0.0	0.0	0.0	1.1 AC L 2 COMMON AREA THE RESERVES@GALLERIA PH1B
361-030-050-000	District - Wide	-	-	0.0	0.0	0.0	0.0	1.4 AC L 3 COMMON AREA THE RESERVES@GALLERIA PH1B
361-040-033-000	District - Wide	-	-	0.0	0.0	0.0	0.0	1.1 AC LT 1 COMMON AREA THE RESERVES@GALLERIA PH1A
361-040-034-000	District - Wide	-	-	0.0	0.0	0.0	0.0	L 3 COMMON AREA THE RESERVES @ GALLERIA PH 1A
361-050-061-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA2 COM AREA VLG OFTHE GALRIA CONDO PLN05-0096026
361-050-062-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA4 COM AREA VLG OFTHE GALRIA CONDO PLN05-0096026
361-050-063-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA6 COM AREA VLG OFTHE GALRIA CONDO PLN05-0096026
361-050-064-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-B COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-060-081-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA5 COM AREA VLG OFTHE GALRIA CONDO PLN05-0096026
361-060-082-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA7 COM AREA VLG OFTHE GALRIA CONDO PLN05-0096026
361-060-083-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA8 COM AREA VLG OFTHE GALRIA CONDO PLN05-0096026
361-060-084-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA9 COM AREA VLG OFTHE GALRIA CONDO PLN05-0096026
361-060-085-000	District - Wide	-	-	0.0	0.0	0.0	0.0	ACAE COM AREA VLG OFTHE GALRIA CONDO PLN05-0096026
361-070-061-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-10 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-070-062-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-11 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-070-063-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-12 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-070-064-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-B COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-080-041-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-13 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-080-042-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-15 COM AREA VLG OFTHE GALRIA CONO PLN050096026

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361-080-043-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-A COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-080-044-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-B COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-090-061-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-14 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-090-062-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-16 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-090-063-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-17 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-090-064-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-A COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-090-065-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-D COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-100-041-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-3 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-100-042-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-18 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-100-043-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-D COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-100-044-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-D COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-100-045-000	District - Wide	-	-	0.0	0.0	0.0	0.0	ACA-F COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-110-061-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-19 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-110-062-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-20 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-110-063-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-21 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-110-064-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-A COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-110-065-000	District - Wide	-	-	0.0	0.0	0.0	0.0	PORACA-C COM AREA VLGOF GALRIA CONDO PLN05-0096026
361-120-001-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BCA-10 COM AREA VLG OFTHE GALRIA CONO PLN050096026
361-130-001-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-140-031-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-140-032-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-140-033-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-150-001-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LT1, CONDO PLAN VENU@GALLERIA, DOC#2006-0114711
361-150-022-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-150-023-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-150-024-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-150-025-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-160-049-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-160-050-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-160-051-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-170-053-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-170-054-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-170-055-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-170-056-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-170-057-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-180-035-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-180-036-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-180-037-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-190-025-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-190-026-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-190-027-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711

City of Roseville
North Central Roseville Specific Plan Landscaping and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ZONE	CHARGE	MAXIMUM ASMT	TOTAL EDUS	SF UNITS	MF UNITS	NON RES ACRES	LEGAL DESCRIPTION
361-200-031-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-200-032-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-200-033-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-210-021-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-210-022-000	District - Wide	-	-	0.0	0.0	0.0	0.0	CMN AREA VENU@GALLERIA CONDO PLAN,DOC#2006-0114711
361-220-010-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BLDG CMN AREA SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-021-000	District - Wide	-	-	0.0	0.0	0.0	0.0	BLDG CMN AREA SHEA CTR RSVL OFC CNDO PRJ #0137260
361-220-022-000	District - Wide	-	-	0.0	0.0	0.0	0.0	2.6A/L2 CMNAREA SHEA CTR RSV OFC CNDO PRJ #0137260
361-230-020-000	District - Wide	-	-	0.0	0.0	0.0	0.0	UNIT A1 BLD COM HIGHLAND VIL PAR9 CONDO 18-0023620
361-230-021-000	District - Wide	-	-	0.0	0.0	0.0	0.0	UNIT A2 BLD COM HIGHLAND VIL PAR9 CONDO 18-0023620
361-230-022-000	District - Wide	-	-	0.0	0.0	0.0	0.0	COM AREA HIGHLAND VILLAGE PAR 9 CONDOS 18-0023620
361-230-025-000	District - Wide	-	-	0.0	0.0	0.0	0.0	RES PAR 10 LLA DOC 2019R0083073
361-230-028-000	District - Wide	-	-	0.0	0.0	0.0	0.0	ASSOC COMMON AREA CONDO PLN THE FALLS AT ROSEVILLE
361-230-029-000	District - Wide	-	-	0.0	0.0	0.0	0.0	COMMON AREA CONDO PLAN THE FALLS AT ROSEVILLE
363-011-022-000	District - Wide	-	-	0.0	0.0	0.0	0.0	6.0 PAR F THE GALLERIA AT RSVL REGNL MALL W-2
363-011-032-000	District - Wide	-	-	0.0	0.0	0.0	0.0	2.3 AC PAR P THE GALLERIA AT RSVL REGNL MALL W-2
363-011-037-000	District - Wide	-	-	0.0	0.0	0.0	0.0	4.3 AC PAR U THE GALLERIA AT RSVL REGNL MALL W-2
363-011-043-000	District - Wide	-	-	0.0	0.0	0.0	0.0	1.5 AC POR LOT 54B COMMON AREA - PARKLAND
363-011-044-000	District - Wide	-	-	0.0	0.0	0.0	0.0	POR LOT 54A COMMON AREA - PARKLAND
363-011-045-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LOT A OPEN SPACE MOR Z-24 THE RESERVES AT GALLERIA
363-011-046-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LOT 12 THE RESERVES AT GALLERIA
363-011-049-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LOT 11 THE RESERVES AT GALLERIA
363-011-050-000	District - Wide	-	-	0.0	0.0	0.0	0.0	LOT B OPEN SPACE MOR Z-24 THE RESERVES AT GALLERIA
363-022-002-000	District - Wide	-	-	0.0	0.0	0.0	0.0	14.3A COMM AREA CONDO PLN FOR VILLEMONT 05-0170369
363-022-009-000	District - Wide	-	-	0.0	0.0	0.0	0.0	11.7A COMM AREA CONDO PLN FOR VILLEMONT 05-0170369
363-030-073-000	District - Wide	-	-	0.0	0.0	0.0	0.0	5.0 AC POR PAR 1 PMOR 31-31
363-030-076-000	District - Wide	-	-	0.0	0.0	0.0	0.0	1.8 AC POR PAR 4 PMOR 31-31
363-030-077-000	District - Wide	-	-	0.0	0.0	0.0	0.0	POR PAR 4 PMOR 31-31

Summary Fields	DW Zone	Local Zone	Zone F	Zone G	Total *
ACTIVE PARCELS	3,489	2,129	44	86	3,636
LEVIED PARCELS	3,389	2,112	39	79	3,507
CHARGE	$570,321.19	$172,638.01	$30,866.94	$12,275.02	$786,101.16
MAXIMUM ASMT	$570,325.44	$172,640.76	$35,970.33	$39,995.54	$818,932.07
TOTAL EDUS	7,510.4883	2,113.0000	39.0000	79.0000	7,628.4883
SF UNITS	2,113	2,113	39	79	2,231
MF UNITS	2,348	0	0	0	2,348
NON RES ACRES	569.8126	0.0000	0.0000	0.0000	569.8126

* Represents District totals; some zones overlap

RESOLUTION NO. 25-118

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Northwest Roseville Specific Plan Landscaping and Lighting District and annexed territory therein (hereafter referred to as the "District") pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California, beginning with Section 22500* (hereafter referred to as the "Act"), that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance and services of street lighting, landscaping, and all appurtenant facilities and operations related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer") for the purpose of assisting with the establishment of the assessments, the annexation of territory, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act, and in accordance with the California Constitution, Articles XIIIC and XIIID;

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 Engineer's Report: The City Council hereby orders the Engineer to prepare and file with the City Clerk the Engineer's Report concerning the levy of assessments for the District in accordance with Chapter 3, Section 22622 of the Act.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials and/or improvements for landscape, lighting, open space, natural and preserve areas, including turf, ground cover, shrubs and trees, irrigation systems, drainage systems, public pedestrian paths, bike trails, entry monuments, fencing, walls, signage, lighting systems, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

RESOLUTION NO. 25-118

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-119

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Northwest Roseville Specific Plan Landscaping and Lighting District (hereafter referred to as the "District"), and initiated proceedings for Fiscal Year 2025/2026, pursuant to the provisions of the *Landscaping and Lighting Act of 1972*, *Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereafter referred to as the "Act") that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance, operation and servicing of all improvements and facilities related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services for the purpose of assisting with the Annual Levy of the District, and to prepare and file a report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, PURSUANT TO *CHAPTER 3, SECTION 22624* OF THE ACT, AS FOLLOWS:

Section 1 Intention: The City Council hereby declares that it is its intention to seek the Annual Levy of the District pursuant to the Act, over and including the land within the District boundary, and to levy and collect assessments on all such land to pay for the annual costs of the improvements.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include the maintenance and operation of and the furnishing of services, materials or improvements for landscape, lighting, open space, natural and preserve areas, including turf, ground cover, shrubs and trees, irrigation systems, drainage systems, public pedestrian paths, bike trails, entry monuments, fencing, walls, signage, lighting systems, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

Section 3 Boundaries and Designation: The boundaries of the District are described as the boundaries previously defined in the formation documents of the District and any annexations thereto. The District generally includes the parcels within the area known as the Northwest Roseville Specific Plan. The District is known and designated as

"Northwest Roseville Specific Plan Landscaping and Lighting District"

Section 4 Proposed Assessment Amounts: The proposed assessments are outlined in the Engineer's Report. District Assessments are calculated in accordance with the method of apportionment established for the District and do not exceed the assessment rates.

Section 5 Public Hearing(s): The City Council hereby declares its intention to conduct a Public Hearing annually concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22626* of the Act.

Section 6 Notice: The City Clerk shall give notice of the time and place of the Public Hearing by causing this Resolution to be published once in the local newspaper not less than ten (10) days before the date of the hearing and by posting a copy of this Resolution on the official bulletin board customarily used by the City Council for the posting of notices.

Section 7 Time and Place of Public Hearing: Notice is hereby given that a Public Hearing on these matters will be held by the City Council on **Wednesday, May 21, 2025 at 6:00 p.m.**, or as soon thereafter as feasible in the regular meeting chambers located at 311 Vernon Street, Roseville, California.

RESOLUTION NO. 25-119

PASSED, APPROVED, AND ADOPTED THIS _____ day of _____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I, _____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No. _____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the _____ day of _____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-120

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, FOR PRELIMINARY APPROVAL OF THE ENGINEER'S LEVY REPORT FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, the City Council has, by previous Resolutions, ordered the preparation of an Engineer's Levy Report (hereafter referred to as the "Engineer's Report") for the district known and designated as the Northwest Roseville Specific Plan Landscaping and Lighting District (hereafter referred to as the "District"), pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereinafter referred to as the "Act"); and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer"), for the purpose of assisting with the establishment of the assessments and to prepare and file an Engineer's Report with the City Clerk in accordance with the Act, and in accordance with the requirements of the California Constitution, Articles XIIIC and XIIID; and,

WHEREAS, there has now been presented to this City Council the Engineer's Report as required by *Chapter 1, Article 4, Section 22566* of said Act; and,

WHEREAS, this City Council has carefully examined and reviewed the Engineer's Report as presented, and is preliminarily satisfied with the District, each and all of the budget items and documents as set forth therein, and is satisfied that the assessments, on a preliminary basis, have been spread in accordance with the benefits received from the improvements, operation, maintenance and services to be performed within each Zone, as set forth in said Engineer's Report; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE NORTHWEST ROSEVILLE SPECIFIC PLAN LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 That the above recitals are all true and correct.

Section 2 That the Engineer's Report, as presented, consists of the following:

a. A Description of Improvements
b. The Annual Budget (Costs and Expenses of Maintenance, Services, Operations and District Administration)
c. The Assessment Roll containing the Fiscal Year 2025/2026 Levy for each Assessor Parcel within the District

Section 3 The Engineer's Report is hereby approved on a preliminary basis, and ordered to be filed in the Office of the City Clerk as a permanent record and to remain open to public inspection.

Section 4 That the City Clerk shall certify to the passage and adoption of this Resolution, and the minutes of this meeting shall so reflect the presentation of the Engineer's Report.

RESOLUTION NO. 25-120

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

City of Roseville

Northwest Roseville Specific Plan Landscaping and Lighting District

FY 2025/26 Engineer's Annual Levy Report

Intent Meeting: April 16, 2025
Public Hearing: May 21, 2025

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Temecula, CA 92590
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F 951.587.3510

www.willdan.com

ENGINEER'S REPORT AFFIDAVIT

Establishment of Annual Rates and Charges for the:

Northwest Roseville Specific Plan
Landscaping and Lighting District

City of Roseville

Placer County, State of California

This Report describes the District and any relevant zones therein, including the improvements, budgets, parcels and assessments to be levied for Fiscal Year 2025/26 as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Placer County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the City Council.

Dated this _____ day of _____, 2025

Willdan Financial Services
Assessment Engineer
On Behalf of the City of Roseville

By: _____

Mickey Ashley
Project Manager
District Administration Services

By: _____

Tyrone Peter
PE # C 81888

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I. OVERVIEW

A. INTRODUCTION

The City of Roseville ("City") annually levies and collects special assessments in order to provide and maintain the improvements within the Northwest Roseville Specific Plan Area, known as Northwest Roseville Specific Plan Landscaping and Lighting District ("District") within the City. The District was formed and is levied annual assessments pursuant to *the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code* (the "1972 Act" or the "Act").

This Engineer's Levy Report ("Report") describes the District, any new annexations, changes to the District, and the proposed assessments for the period of July 1, 2025 through June 30, 2026. The assessments are based on historical and estimated costs to maintain the improvements that provide a direct and special benefit to properties within the District. The District consists of two (2) benefit zones ("Zones"). The improvements that benefit properties within each Zone and the costs of those improvements are identified and budgeted separately. Each parcel is assessed proportionately for the estimated costs of the parcel's respective Zone.

The word "parcel," for the purposes of this Report, refers to an individual property assigned its own Assessor's Parcel Number by the Placer County Assessor's Office. The Placer County Auditor/Controller ("County Auditor/Controller") uses Assessor's Parcel Numbers and specific Tax Code Accounts, to identify on the County's tax roll, properties assessed for special district benefit assessments.

Following consideration of public comments at a public hearing, and a final review of the Report, the City Council may order amendments to the Report or confirm the Report as submitted. Following approval of the Report, the City Council will by resolution, order the improvements to be made, if any, and confirm the levy and collection of assessments pursuant to the Act. The assessment rates and method of apportionment described in this Report as approved or modified by the City Council define the assessments to be applied to each parcel within the District and respective Zones for Fiscal Year ("FY") 2025/26. The assessments as approved will be submitted to the Placer County Auditor/Controller to be included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current fiscal year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved by the City Council.

B. COMPLIANCE WITH CURRENT LEGISLATION

All assessments described in this Report and approved by the City Council are prepared in accordance with the 1972 Act and are in compliance with the provisions of the *California Constitution Article XIIID* (Proposition 218). Pursuant to the *California Constitution Article XIIID ("Article XIIID") Section 5*, certain existing assessments are exempt from the substantive and procedural requirements of *Article XIIID Section 4* and property owner balloting for the assessments is not required until such time that the assessments are increased. Specifically, the City determined that all improvements and the annual assessments established for the original District were part of the conditions of property development and approved by the original property owner (developer). As such, pursuant to *Article XIIID Section 5(b),* the property owners approved these existing District assessments at the time the assessments were created (originally imposed pursuant to a 100% landowner petition). The assessments applied to the District's parcels at the time of passage of Proposition 2018 of $100 to each single-family residential parcel within Zone A and $147.20 to each single-family residential parcel within Zone B continue to be exempt from the procedural requirements *Article XIIID Section 4*.

The District and all Zones therein have been formed pursuant to the *1972 Act.* Pursuant to the 1972 Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments and to review the Report prior to approving the annual assessments to be levied on the County tax rolls. The assessments described in this Report have been prepared in accordance with the 1972 Act.

In November 2004, the City initiated and conducted property owner protest ballot proceedings, in accordance with the 1972 Act and Article XIIID, to annex into Zone A, and approve the maximum assessment of $100 per single family residential parcel. At the conclusion of the Public Hearing, the City determined that a majority protest did not exist. The City then approved the Engineer's Report, through the adoption of Resolution No. 04-507, which annexed the Dunmore Junction territory to Zone A. Dunmore Junction was first assessed by the District in FY 2005/06.

In April 2005, the City initiated and conducted property owner protest ballot proceedings, in accordance with the 1972 Act and Article XIIID, to annex into Zones B, and approve the maximum assessment of $147.20 per single family residential parcel. At the conclusion of the Public Hearing, the City determined that a majority protest did not exist. The City then approved the Engineer's Report, through the adoption of Resolution No. 05-165, which annexed the Legacy subdivision territory to Zone B. The Legacy subdivision was first assessed by the District in FY 2005/06.

C. DESCRIPTION OF DISTRICT BOUNDARIES

The Northwest Roseville Specific Plan Landscaping and Lighting District lies west of the existing urban area of the City of Roseville. The District is generally

bounded by Baseline Road to the north, Fiddyment Road to the west and Washington Boulevard to the east. The City annexed in Dunmore Junction, which is generally located on the east side of Porter Drive, south of Junction Boulevard and north of Lawton Avenue. The City also annexed in Legacy Subdivision, which is generally located on the northwest corner of Washington Boulevard and Junction Boulevard. For general reference purposes, renderings of the District's Boundaries are presented in Appendix A of the Report.

D. IMPROVEMENTS AUTHORIZED BY THE 1972 ACT

As applicable or may be applicable to a proposed District, the 1972 Act defines improvements to mean one or any combination of the following:

- The installation or planting of landscaping.
- The installation or construction of statuary, fountains, and other ornamental structures and facilities.
- The installation or construction of public lighting facilities.
- The installation or construction of any facilities which are appurtenant to any of the foregoing, or which are necessary or convenient for the maintenance or servicing thereof, including, but not limited to, grading, clearing, removal of debris, the installation or construction of curbs, gutters, walls, sidewalks, or paving, or water, irrigation, drainage, or electrical facilities.
- The maintenance or servicing, or both, of any of the foregoing.
- The acquisition of any existing improvement otherwise authorized pursuant to this section.

Incidental expenses associated with the improvements including, but not limited to:

- The cost of preparation of the report, including plans, specifications, estimates, diagram, and assessment;
- The costs of printing, advertising, and the publishing, posting, and mailing of notices;
- Compensation payable to the County for collection of assessments;
- Compensation of any engineer or attorney employed to render services;
- Any other expenses incidental to the construction, installation, or maintenance and servicing of the improvements;
- Any expenses incidental to the issuance of bonds or notes pursuant to Section 22662.5.
- Costs associated with any elections held for the approval of a new or increased assessment.

The 1972 Act defines "Maintain" or "maintenance" to mean furnishing of services and materials for the ordinary and usual maintenance, operation, and servicing of any improvement, including:

- Repair, removal, or replacement of all or any part of any improvement.
- Providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury.
- The removal of trimmings, rubbish, debris, and other solid waste.
- The cleaning, sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Furthermore, the 1972 Act specifies that where the cost of improvements (other than maintenance and operations) is greater than can be conveniently raised from a single annual assessment, an assessment to be levied and collected in annual installments. In that event, the governing body may choose to do any of the following:

- Provide for the accumulation of the moneys in an improvement fund until there are sufficient moneys to pay all or part of the cost of the improvements.
- Provide for a temporary advance to the improvement fund from any available and unencumbered funds of the local agency to pay all or part of the cost of the improvements and collect those advanced moneys from the annual installments collected through the assessments.
- Borrow an amount necessary to finance the estimated cost of the proposed improvements. The amount borrowed, including amounts for bonds issued to finance the estimated cost of the proposed improvements.

E. DESCRIPTION OF IMPROVEMENTS AND SERVICES

Zone A

Zone A of the District, by special benefit assessments, is to provide funding for the maintenance of the following improvements: landscaped street medians and landscaped corridors adjacent to property within the District including but not limited to, plantings, sound walls, and project identification signs; the maintenance of the vernal pool preserves identified in the Northwest Roseville Specific Plan; the installation and maintenance of bike trails within the Northwest Roseville Specific Plan Area; and the installation of park improvements and/or the payment of debt service related to the installation of bike trails and/or park improvements within the Northwest Roseville Specific Plan Area.

Zone B

Zone B of the District, by special benefit assessments, is to provide funding for the following:

- The maintenance of the landscaped street buffers or medians, certain natural areas within the subdivision and landscape corridors adjacent to the property within the Zone (including, but not limited to, planting, screen walls, project identification signs, and drainage and wetlands areas within the

property).

- The perpetual maintenance of the landscape strips adjacent to the Sierra Crossing subdivision contiguous to Foothills Boulevard and Booth Road, including but not limited to maintenance of the planting, screen walls, and project identification signs.

- The maintenance of the natural border adjoining and contiguous to the westerly border of Sierra Crossing.

- The maintenance of the wetland preserve area.

- The on-going maintenance of the landscape strips adjacent to the Legacy subdivision contiguous to Junction Boulevard, Washington Boulevard and Sawtell Road, including but not limited to maintenance of the planting, screen walls, and project identification signs.

- The maintenance of the natural border adjoining and contiguous to the westerly border of the Legacy subdivision.

II. METHOD OF APPORTIONMENT

A. GENERAL

The 1972 Act permits the establishment of assessment districts by agencies for the purpose of providing certain public improvements, which include the construction, maintenance, and servicing of public lights, landscaping, and appurtenant facilities. The 1972 Act further requires that the cost of these improvements be levied according to benefit rather than assessed value:

"The net amount to be assessed upon lands within an assessment district may be apportioned by any formula or method which fairly distributes the net amount among all assessable lots or parcels in proportion to the estimated benefits to be received by each such lot or parcel from the improvements."

The formula used for calculating assessments reflects the composition of the parcels, and the improvements and services provided, to fairly apportion the costs based on estimated benefit to each parcel.

B. DESCRIPTION OF METHOD OF APPORTIONMENT

Pursuant to the Act, the costs of each Zone may be apportioned by any formula or method that fairly distributes the net amount to be assessed, among all assessable parcels in proportion to the estimated special benefits to be received by each such parcel from the improvements. The special benefit formula used for any special benefit assessment should reflect the composition of the parcels, and the improvements and services provided, to fairly apportion the costs based on estimated special benefit to each parcel. All assessable parcels in each Zone receive a direct special benefit from the services and improvements provided by the District.

Each parcel within this District has been assigned an Equivalent Benefit Unit (EBU), which reflects each parcel's estimated special benefit from the improvements as compared to other parcels within each Zone of the District. The levy amount is spread evenly to each assessable parcel in the District, on a per benefit unit (per parcel) method.

For each Zone, the total eligible special benefit expenses ("Balance to Levy"), is divided by the total EBUs of all parcels. The result of this calculation establishes an assessment rate per EBU ("Levy per EBU" or "Assessment Rate") to be applied to each Zone.

The following formulas shall be applied to each Zone to calculate the assessment for each parcel:

Zone A

Total number of residential lots based on final filed maps, divided into the total annual estimated costs of Zone A.

Zone B

Total number of residential lots based on final filed maps, divided into the total annual estimated costs of Zone B.

The Maximum Annual Assessment is not to exceed $100.00 per parcel for Zone A and $147.20 per parcel for Zone B.

C. PROPOSITION 218 BENEFIT ANALYSIS

In conjunction with the provisions of the 1972 Act, the California Constitution Article XIIID addresses several key criteria for the levy of assessments regarding the Dunmore Junction subdivision Legacy subdivision annexations to the District, notably:

Article XIIID Section 2d defines District as follows:

"District means an area determined by an agency to contain all parcels which will receive a special benefit from a proposed public improvement or property-related service;"

Article XIIID Section 2i defines Special Benefit as follows:

"Special benefit" means a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large. General enhancement of property value does not constitute "special benefit."

Article XIIID Section 4a defines proportional special benefit assessments as follows:

"An agency which proposes to levy an assessment shall identify all parcels which will have a special benefit conferred upon them and upon which an assessment will be imposed. The proportionate special benefit derived by each identified parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. No assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."

Each of the proposed improvements, the associated costs and assessments have been carefully reviewed, identified, and allocated based

on special benefit pursuant to the provisions of the Constitution and 1972 Act. All improvements associated with this District have been identified as necessary, required and/or desired for the orderly development of the properties within the District to their full potential, consistent with the proposed development plans and applicable portions of the City General Plan and the Northwest Roseville Specific Plan. As such, the improvements for which each property shall be assessed would be necessary and required of individual property owners for the development of such properties and the ongoing operation, servicing and maintenance of these improvements would be the financial obligation of those properties. Therefore, the improvements and the annual costs of ensuring the maintenance and operation of the improvements are of direct and special benefit to the properties.

The method of apportionment (method of assessment) is based on the premise that each assessed parcel within the District receives benefit from the improvements. Well-maintained landscaping and recreational facilities in close proximity to those properties enhance the desirability of those properties.

The special benefits associated with the landscape improvements and associated appurtenants are specifically:

- Enhanced desirability of properties through association with the improvements.
- Improved aesthetic appeal of properties providing a positive representation of the area and properties.
- Enhanced adaptation of the urban environment within the natural environment from adequate green space and landscaping.
- Environmental enhancement through improved erosion resistance, dust and debris control, and fire prevention.
- Increased sense of pride in ownership of property within the District resulting from well-maintained improvements associated with the properties.
- Enhanced quality of life through well-maintained green belts, landscaped areas, and recreational facilities.
- Reduced criminal activity and property-related crimes (especially vandalism) against properties in the District through well-maintained surroundings and amenities including abatement of graffiti.
- Enhanced environmental quality of the parcels by moderating temperatures, providing oxygenation, and attenuating noise.

All of the preceding special benefits allow the property to be developed for the enjoyment of the property owners and contribute to a specific enhancement and desirability of each of the assessed parcels within the District.

The improvements are for the special benefit, enhancement, and use of properties within the District and the Northwest Roseville Specific Plan Area. Although the improvements include public easements, rights-of-way and other amenities available or visible to the public at large, it has been determined that the additional improvements installed in connection with this development and those installed as part of the overall Northwest Roseville Specific Plan, are only necessary for the development of properties within the specific plan area and were not required nor necessarily desired by any properties or developments outside the Northwest Roseville Specific Plan Area. Therefore, this District being part of that plan, receives similar and proportional special benefits from both the improvements installed in connection with developing properties in this District as well as existing and future shared amenities within the District. Any public access or use of the improvements by others is incidental and there is no measurable general benefit to properties outside the specific plan area or to the public at large.

III. DISTRICT BUDGET

A. FY 2025/26 BUDGET

DESCRIPTION	Zone A [1] Fund 2008	Zone B [2] Fund 2009
DIRECT COSTS		
Contract Maintenance - Landscaping	$205,300.00	$9,564.00
Repair & Maintenance - Landscaping	34,700.00	2,900.00
Repair and Maintenance - Parks	0.00	0.00
Repair & Maintenance - Tree Work	27,388.00	1,319.00
Utilities	180,000.00	3,765.00
Utilities – Telecom	200.00	0.00
Stormwater Management/Drainage (1130-4801-10001)		1,411.00
Rehab Reserve Project - Non-Routine Tree Work	15,825.00	0.00
Rehab Reserve Project - Landscape Rehab	20,000.00	0.00
Total Direct Costs	**$483,413.00**	**$18,959.00**
ADMINISTRATION COSTS		
City Administration	$9,244.00	$383.00
Contract Administration - Park's Dept	33,000.00	1,500.00
County Auditor Fees	4,622.00	191.36
Consulting & Professional Services	10,180.00	422.00
Public Hearing Publishing Costs	370.00	15.00
Total Administrative Costs	**$57,416.00**	**$2,511.36**
Total Direct and Administration Costs	**$540,829.00**	**$21,470.36**
BUDGET ADJUSTMENTS		
Replenishment/(Use) of Operating Reserve	($42,804.00)	($2,334.36)
Contribution for /(Use of) Rehab Reserve	(35,825.00)	0.00
Rounding Adjustment		
Total Adjustments	**($78,629.00)**	**($2,334.36)**
BALANCE TO LEVY	**$462,200.00**	**$19,136.00**

(1) The Dunmore Junction Subdivision was annexed into Zone A.
(2) The Legacy Subdivision was annexed into Zone B.

Fund balance information of each Zone is reported in Section C on the following page. The total balance to levy for the district is $481,336.00.

B. FY 2025/26 ASSESSMENT RATES

DESCRIPTION	Zone A Fund 2008	Zone B Fund 2009
FY 2025/26 ASSESSMENT DATA		
Total Assessable Parcels	4,622	130
Total Assessable EBUs	4,622	130
Applied Assessment Rates per EBU	$100.00	$147.20
Maximum Assessment Rates per EBU	$100.00	$147.20
Potential Maximum Assessment Per Zone	**$462,200**	**$19,136**

C. FY 2025/26 FUND BALANCE INFORMATION

DESCRIPTION	Zone A Fund 2008	Zone B Fund 2009
OPERATING RESERVE		
Beginning Operating Reserve Balance 7-1-2025 (est.)	**$242,845.61**	**$2,560.00**
add: Replenishment from FY 2025/26 Levy		
less: Use for FY 2025/26 Expenses	(42,804.00)	(2,334.36)
Transfer from/(to) the Rehab Reserve		
Ending Operating Reserve Balance 6-30-2026 (est.)	**$200,041.61**	**$225.64**
REHABILITATION RESERVE		
Beginning Rehab Reserve Balance 7-1-2025 (est.)	**$89,951.39**	**$0.00**
add: Collect from FY 2025/26 Levy		
less: Use for FY 2025/26 Rehab Projects	(35,825.00)	0.00
Transfer from/(to) the Operating Reserve	0.00	0.00
Ending Rehab Reserve Balance 6-30-2026 (est.)	**$54,126.39**	**$0.00**

D. DESCRIPTION OF BUDGET ITEMS

BUDGET:

DIRECT COSTS

Contract Maintenance - Landscaping - Includes all regularly scheduled contract labor, materials, supplies, and equipment required to properly maintain and ensure the satisfactory condition or maintenance of all landscaping corridors, street medians, entryways, irrigation, and related drainage systems as well as maintenance of appurtenant facilities (the “improvements”).

Repair & Maintenance – Landscaping – Projected costs for repairs and/or maintenance of landscaping improvements. This would include work and materials not covered under contract maintenance.

Repair & Maintenance – Parks - Projected costs for repairs and/or maintenance of park improvements. This would include work and materials not covered under

contract maintenance such as repair of damaged amenities due to vandalism, storms, etc.

Repair & Maintenance – Tree Work - This line item includes annual costs for tree maintenance not included in the annual contract maintenance portion of the budget. If zero, this line item may not be shown in the budget.

Utilities - The furnishing of water and electricity required for the operation and maintenance of the improvements.

Utilities Telecom – connectivity services required for the operation of certain improvements.

Stormwater Management / Drainage - This line item includes costs to properly maintain certain drainage and / or wetlands areas within the District. If zero, this line item may not be shown in the budget.

Rehab Reserve Expenditures – Non-Routine Tree Work – Expected costs to maintain trees other than costs of annual repair and maintenance. If zero, this line item may not be shown in the budget.

Rehab Reserve Project Expenditures – Expected costs for installation, replacement, or planned upgrades of District improvements for the current year that were previously funded or accumulated in the Rehabilitation Reserve. The Rehabilitation Reserve is used to accumulate funds for costs associated with the future rehabilitation or replacement of District improvements that cannot be conveniently raised from a single year's assessment. If zero, this line item may not be shown in the budget.

ADMINISTRATION COSTS

City Administration – Estimated costs incurred by the City Finance Department and other Departments in preparing the annual budget for the Engineer's Report, together with other financial information required to determine the annual assessment. These costs would also include the preparation, posting and publishing of public notices required for City Council action relating to the District, as well as costs to perform legal review of documents.

Contract Administration – Park's Dept – Estimated Costs of Park and Recreation Department staff to coordinate and oversee the maintenance contracts and overall repair and maintenance of the District. This amount also includes the cost of the Department's estimates and analysis of certain budget items, estimated costs and useful lives of certain District Improvements.

County Auditor Fees - A fee of 1% of the total levy amount that is charged to the District by the County for placing assessments on property tax bills.

Consulting and Professional Services – Includes the costs and expenses of contracting with various professionals to provide legal, engineering and district administration services directly related to the District, including the calculation of the annual assessment amounts, the preparation of the Engineer's' Report and incidental expenses of consultant.

Public Hearing Publishing Costs –Includes the out-of-pocket costs to publish public notices required for City Council action relating to the District.

Total Direct and Administration Costs – The total expected costs of the District.

BUDGET ADJUSTMENTS

Replenishment/(Use) of Operating Reserve – A "Replenishment" increases the levy in order to replenish the Operating Reserve. On the other hand, a "Use" of the Operating Reserve decreases the levy by drawing funds from the Operating Reserve for current year expenditures. If zero, this line item may not be shown in the budget. Further information regarding the function of the Operating Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Contribution for /(Use of) Rehab Reserve — A "Contribution" increases the levy in order to generate funding for the Rehabilitation Reserve. This reserve allows for the accumulation of funds for possible rehabilitation projects or replacements in future years. On the other hand, a "Use of" of the Rehabilitation Reserve provides current year funding of rehabilitation projects or replacements from available funds within the Rehabilitation Reserve. If zero, this line item may not be shown in the budget. Further information regarding the function of the Rehabilitation Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Rounding Adjustment – The necessary rounding adjustment(s) due to limitations of the County property tax system that requires even penny levy amounts to be placed on the secured tax roll.

BALANCE TO LEVY - This is the total amount to be levied and collected through assessments for the current fiscal year for each zone. The Balance to Levy represents the sum of the total District costs together with any applicable adjustments to the budget as described above.

ASSESSMENT RATES:

Total Assessable Parcels - The total number of expected parcels to be assessed in each of the District's Zones.

Total Assessable EBUs - The total number of expected Equivalent Benefit Units in each of the District's Zones.

Applied Assessment Rates per EBU - The assessment rates to be applied to the parcels lying within the respective Zone of the District for the fiscal year shown.

Maximum Assessment Rates per EBU - The maximum assessment rates for the parcels lying within the respective Zone of the District for the fiscal year shown.

Potential Maximum Assessment Per Zone – The total amount that can be assessed against all parcels within each Zone for the current fiscal year based upon the expected number of EBUs to be assessed.

FUND BALANCE INFORMATION:

OPERATING RESERVE

Beginning Operating Reserve Balance 7-1-2025 (est.) - The anticipated beginning balance of cash and receivables net of any unpaid prior year obligations for each Zone. These beginning balances shall be used to fund each Zone's expenditures from July 1, 2025 to December 31, 2025, as the Operating Reserve is required to compensate for the approximate six-month delay between the start of the District's fiscal year and the receipt of the collections from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

Replenish from FY 2025/26 Levy – This amount is added to the FY 2025/26 levy in order to replenish the Operating Reserve. Due to the six-month delay from the District's receipt of assessment collections, the Operating Reserve balance shall be sufficiently funded to provide for expenditures from the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Expenses – The amount of the Operating Reserve to be used to fund FY 2025/26 expenses. Portions of the Operating Reserve may be slated for current year expenditures in order to reduce the Ending Operating Reserve Balance to an amount no greater than the expected District costs for the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Rehab Reserve — The amount of Operating Reserve monies to be transferred to or from the Rehabilitation Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the

improvements. If zero, this line item may not be shown in the budget.

Ending Operating Reserve Balance 6-30-2026 (est.) - This amount represents the anticipated Operating Reserve balance/(deficit) for each Zone as of June 30, 2026. The size of each Zone's Operating Reserve is limited by Streets and Highways Code 22569 which states that an Operating Reserve shall not exceed the estimated costs of maintenance, service and incidental expenses from the first day of the fiscal year (July 1) to the date that the Agency expects to receive the first apportionment of collections from the County, which is estimated to be December 31. Therefore, each Zone may retain an Operating Reserve amounting to the District's first six-months of expenses in order to meet ongoing obligations until the first collections are received from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

REHABILITATION RESERVE

Beginning Rehab Reserve Balance 7-1-2025 (est.) — The projected balance of funds in the Rehabilitation Reserve as of July 1, 2025. Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

Collect from FY 2025/26 Levy — This amount is added to the FY 2025/26 levy to accumulate funding of future year rehabilitation projects, replacements, restorations, or upgrades of District improvements. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Rehab Projects – The amount of Rehabilitation Reserve monies expected to be transferred out of the Rehabilitation Reserve to fund the costs of installation, replacement, or planned upgrades of District improvements for the current year. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Operating Reserve — The amount of Rehabilitation Reserve monies to be transferred to or from the Operating Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Rehab Reserve Balance 6-30-2026 (est.) - The projected balance of funds in the Rehabilitation Reserve as of June 30, 2026. These funds shall be used to provide for future year rehabilitation projects, replacements, restorations, or upgrades of District improvements which cannot be conveniently raised from a single year's assessment.

Should the District have no Rehabilitation Reserve balances or related activity, no Rehabilitation Reserve information shall be presented in the Report.

E. REHABILITATION RESERVE – CAPITAL IMPROVEMENT PLAN

Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

The Report provides a five-year Capital Improvement Plan ("CIP") which shows projected expenditures by Zone related to the rehabilitation, restoration and/or replacement of District improvements, and other allowable costs. The Current Fiscal Year CIP is shown in the preceding Budget Section A. The projected CIP costs for the remaining four years are shown in the table below.

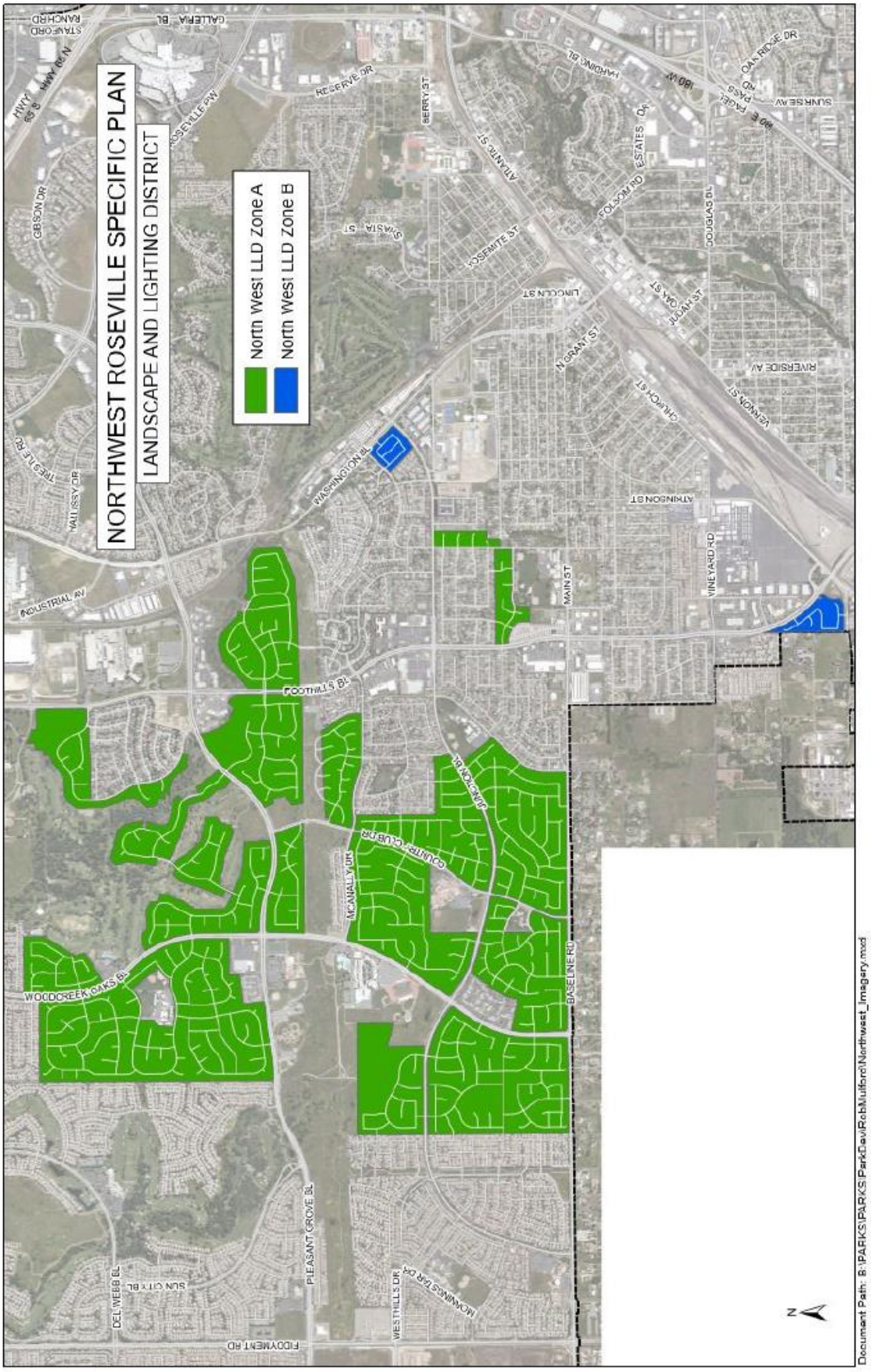
Zone A

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Irrigation controller	$10,000	$10,000	$10,000		$30,000
Non-routine tree work	10,000	10,000	4,194		24,194
Total Projected Expenditures	**$20,000**	**$20,000**	**$14,194**	**$0**	**$54,194**

APPENDIX A – DISTRICT BOUNDARY MAP

The boundary map of the District and Zones has previously been submitted to the Clerk of the City in the format required under the Act and are, by reference, hereby made part of this Report. The boundary maps are available for inspection at the office of the City Clerk during normal business hours.

For general reference purposes, a rendering of the District's Boundaries is represented herein.


NORTHWEST ROSEVILLE SPECIFIC PLAN
LANDSCAPE AND LIGHTING DISTRICT
North West LLD Zone A
North West LLD Zone B
FOOTHILLS BL
WOODCREEK OAKS BL
PLEASANT GROVE BL
BASELINE RD
MAIN ST
INDUSTRIAL AV
FIDDYMENT RD
Document Path: B:\PARKS\PARKS\ParkDev\Rob\Mulford\Northwest_Imagery.mxd

APPENDIX B — FY 2025/26 ASSESSMENT ROLL

Parcel identification, for each lot or parcel within the District, shall be the parcel as shown on the Placer County Assessor's map for the year in which this Report is prepared.

Due to the size of the Assessment Roll, a listing of parcels to be assessed within this District, along with the proposed assessment amounts, shall be submitted to the City Clerk, under separate cover, and by reference is made part of this Report.

Non-assessable lots or parcels may include areas of public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas and rights-of-way, including public greenbelts and parkways; utility rights-of-way; common areas; landlocked parcels, small parcels vacated by the County, bifurcated lots, and any other property that cannot be developed. These types of parcels are considered to receive little or no benefit from the improvements and are therefore exempt from assessment.

At the conclusion of the public hearing for the District and the proposed assessments, approval of the Report (as submitted or as modified) confirms the method of apportionment and the assessment rate to be levied against each eligible parcel and thereby constitutes the approved levy and collection of assessments for FY 2025/26. The listing of parcels and the amount of assessment to be levied shall be submitted to the County Auditor/Controller and included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current fiscal year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved in this Report. Therefore, if a single parcel has changed to multiple parcels, the assessment amount applied to each of the new parcels shall be recalculated and applied according to the approved method of apportionment and assessment rate rather than a proportionate share of the original assessment.

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
011-270-001-000	Assessable	A	$ 100.00	$ 100.00	LOT 1 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-002-000	Assessable	A	100.00	100.00	LOT 2 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-003-000	Assessable	A	100.00	100.00	LOT 3 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-004-000	Assessable	A	100.00	100.00	LOT 4 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-005-000	Assessable	A	100.00	100.00	LOT 5 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-006-000	Assessable	A	100.00	100.00	LOT 6 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-007-000	Assessable	A	100.00	100.00	LOT 7 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-008-000	Assessable	A	100.00	100.00	LOT 8 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-009-000	Assessable	A	100.00	100.00	LOT 9 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-010-000	Assessable	A	100.00	100.00	LOT 10 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-011-000	Assessable	A	100.00	100.00	LOT 11 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-012-000	Assessable	A	100.00	100.00	LOT 12 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-013-000	Assessable	A	100.00	100.00	LOT 13 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-014-000	Assessable	A	100.00	100.00	LOT 14 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-015-000	Assessable	A	100.00	100.00	LOT 15 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-016-000	Assessable	A	100.00	100.00	LOT 16 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-017-000	Assessable	A	100.00	100.00	LOT 17 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-018-000	Assessable	A	100.00	100.00	LOT 18 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-019-000	Assessable	A	100.00	100.00	LOT 19 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-020-000	Assessable	A	100.00	100.00	LOT 20 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-270-021-000	Exempt	A	-	-	LOT A PUE DUNMORE ROSEVILE PORTER DRIVE MOR AA-16
011-280-002-000	Assessable	A	100.00	100.00	LOT 21 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-003-000	Assessable	A	100.00	100.00	LOT 22 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-004-000	Assessable	A	100.00	100.00	LOT 23 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-005-000	Assessable	A	100.00	100.00	LOT 24 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-006-000	Assessable	A	100.00	100.00	LOT 25 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-010-000	Assessable	A	100.00	100.00	LOT 29 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-011-000	Assessable	A	100.00	100.00	LOT 30 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-012-000	Assessable	A	100.00	100.00	LOT 31 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-014-000	Assessable	A	100.00	100.00	LOT 33 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-015-000	Assessable	A	100.00	100.00	LOT 34 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-016-000	Assessable	A	100.00	100.00	LOT 35 DUNMORE ROSEVILLE PORTER DRIVE MOR AA-16
011-280-017-000	Assessable	A	100.00	100.00	POR LOT 26 DUNMORE ROSEVILLE PORTER DR AA-16
011-280-019-000	Assessable	A	100.00	100.00	POR LOT 27 DUNMORE ROSEVILLE PORTER DR AA-16
011-280-024-000	Assessable	A	100.00	100.00	POR LOT 28 DUNMORE ROSEVILLE PORTER DRIVE MORAA-16
011-280-026-000	Assessable	A	100.00	100.00	POR LOT 28 & 32 DUNMORE ROSEVILLE PORTER DR AA-16
015-520-001-000	Assessable	B	147.20	147.20	LT 1 LEGACY SUB MOR BK AA PG 71
015-520-002-000	Assessable	B	147.20	147.20	LT 2 LEGACY SUB MOR BK AA PG 71
015-520-003-000	Assessable	B	147.20	147.20	LT 3 LEGACY SUB MOR BK AA PG 71
015-520-004-000	Assessable	B	147.20	147.20	LT 4 LEGACY SUB MOR BK AA PG 71
015-520-005-000	Assessable	B	147.20	147.20	LT 5 LEGACY SUB MOR BK AA PG 71
015-520-006-000	Assessable	B	147.20	147.20	LT 6 LEGACY SUB MOR BK AA PG 71
015-520-007-000	Assessable	B	147.20	147.20	LOT 7 LEGACY SUB MOR BK AA PG 71
015-520-008-000	Assessable	B	147.20	147.20	LOT 8 LEGACY SUB MOR BK AA PG 71
015-520-009-000	Assessable	B	147.20	147.20	LOT 9 LEGACY SUB MOR BK AA PG 71
015-520-010-000	Assessable	B	147.20	147.20	LOT 10 LEGACY SUB MOR BK AA PG 71
015-520-011-000	Assessable	B	147.20	147.20	LOT 11 LEGACY SUB MOR BK AA PG 71
015-520-012-000	Assessable	B	147.20	147.20	LOT 12 LEGACY SUB MOR BK AA PG 71
015-520-013-000	Assessable	B	147.20	147.20	LOT 13 LEGACY SUB MOR BK AA PG 71
015-520-014-000	Assessable	B	147.20	147.20	LOT 14 LEGACY SUB MOR BK AA PG 71
015-520-015-000	Assessable	B	147.20	147.20	LOT 15 LEGACY SUB MOR BK AA PG 71
015-520-016-000	Assessable	B	147.20	147.20	LOT 16 LEGACY SUB MOR BK AA PG 71
015-520-017-000	Assessable	B	147.20	147.20	LOT 17 LEGACY SUB MOR BK AA PG 71
015-520-018-000	Assessable	B	147.20	147.20	LT 18 LEGACY SUB MOR BK AA PG 71
015-520-019-000	Assessable	B	147.20	147.20	LT 19 LEGACY SUB MOR BK AA PG 71
015-520-020-000	Assessable	B	147.20	147.20	LOT 20 LEGACY SUB MOR BK AA PG 71
015-520-021-000	Assessable	B	147.20	147.20	LOT 21 LEGACY SUB MOR BK AA PG 71

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
015-520-022-000	Assessable	B	147.20	147.20	LT 22 LEGACY SUB MOR BK AA PG 71
015-520-023-000	Assessable	B	147.20	147.20	LOT 23 LEGACY SUB MOR BK AA PG 71
015-520-024-000	Assessable	B	147.20	147.20	LOT 24 LEGACY SUB MOR BK AA PG 71
015-520-025-000	Assessable	B	147.20	147.20	LOT 25 LEGACY SUB MOR BK AA PG 71
015-520-026-000	Assessable	B	147.20	147.20	LOT 26 LEGACY SUB MOR BK AA PG 71
015-520-027-000	Assessable	B	147.20	147.20	LOT 27 LEGACY SUB MOR BK AA PG 71
015-520-028-000	Assessable	B	147.20	147.20	LOT 28 LEGACY SUB MOR BK AA PG 71
015-520-029-000	Assessable	B	147.20	147.20	LOT 29 LEGACY SUB MOR BK AA PG 71
015-520-030-000	Assessable	B	147.20	147.20	LOT 30 LEGACY SUB MOR BK AA PG 71
015-520-031-000	Assessable	B	147.20	147.20	LOT 31 LEGACY SUB MOR BK AA PG 71
015-520-032-000	Assessable	B	147.20	147.20	LOT 32 LEGACY SUB MOR BK AA PG 71
015-520-033-000	Assessable	B	147.20	147.20	LOT 33 LEGACY SUB MOR BK AA PG 71
015-520-034-000	Assessable	B	147.20	147.20	LOT 34 LEGACY SUB MOR BK AA PG 71
015-520-035-000	Assessable	B	147.20	147.20	LOT 35 LEGACY SUB MOR BK AA PG 71
015-520-036-000	Assessable	B	147.20	147.20	LOT 36 LEGACY SUB MOR BK AA PG 71
015-520-037-000	Assessable	B	147.20	147.20	LOT 37 LEGACY SUB MOR BK AA PG 71
015-520-038-000	Assessable	B	147.20	147.20	LOT 38 LEGACY SUB MOR BK AA PG 71
015-520-039-000	Assessable	B	147.20	147.20	LOT 39 LEGACY SUB MOR BK AA PG 71
015-520-040-000	Assessable	B	147.20	147.20	LOT 40 LEGACY SUB MOR BK AA PG 71
015-520-041-000	Assessable	B	147.20	147.20	LOT 41 LEGACY SUB MOR BK AA PG 71
015-520-042-000	Assessable	B	147.20	147.20	LOT 42 LEGACY SUB MOR BK AA PG 71
015-520-043-000	Assessable	B	147.20	147.20	LOT 43 LEGACY SUB MOR BK AA PG 71
015-520-044-000	Assessable	B	147.20	147.20	LOT 44 LEGACY SUB MOR BK AA PG 71
015-520-045-000	Assessable	B	147.20	147.20	LOT 45 LEGACY SUB MOR BK AA PG 71
015-520-046-000	Assessable	B	147.20	147.20	LOT 46 LEGACY SUB MOR BK AA PG 71
015-520-047-000	Assessable	B	147.20	147.20	LOT 47 LEGACY SUB MOR BK AA PG 71
015-520-048-000	Assessable	B	147.20	147.20	LOT 48 LEGACY SUB MOR BK AA PG 71
015-520-049-000	Assessable	B	147.20	147.20	LOT 49 LEGACY SUB MOR BK AA PG 71
015-520-050-000	Assessable	B	147.20	147.20	LOT 50 LEGACY SUB MOR BK AA PG 71
015-520-051-000	Assessable	B	147.20	147.20	LOT 51 LEGACY SUB MOR BK AA PG 71
015-520-052-000	Assessable	B	147.20	147.20	LOT 52 LEGACY SUB MOR BK AA PG 71
015-520-053-000	Assessable	B	147.20	147.20	LOT 53 LEGACY SUB MOR BK AA PG 71
015-520-054-000	Assessable	B	147.20	147.20	LOT 54 LEGACY SUB MOR BK AA PG 71
015-520-055-000	Assessable	B	147.20	147.20	LOT 55 LEGACY SUB MOR BK AA PG 71
015-520-056-000	Assessable	B	147.20	147.20	LOT 56 LEGACY SUB MOR BK AA PG 71
015-520-057-000	Assessable	B	147.20	147.20	LOT 57 LEGACY SUB MOR BK AA PG 71
015-520-058-000	Assessable	B	147.20	147.20	LOT 58 LEGACY SUB MOR BK AA PG 71
015-520-059-000	Assessable	B	147.20	147.20	LOT 59 LEGACY SUB MOR BK AA PG 71
015-520-060-000	Assessable	B	147.20	147.20	LOT 60 LEGACY SUB MOR BK AA PG 71
015-520-061-000	Assessable	B	147.20	147.20	LOT 61 LEGACY SUB MOR BK AA PG 71
015-520-062-000	Assessable	B	147.20	147.20	LOT 62 LEGACY SUB MOR BK AA PG 71
015-520-063-000	Assessable	B	147.20	147.20	LOT 63 LEGACY SUB MOR BK AA PG 71
015-520-064-000	Assessable	B	147.20	147.20	LOT 64 LEGACY SUB MOR BK AA PG 71
015-520-065-000	Assessable	B	147.20	147.20	LOT 65 LEGACY SUB MOR BK AA PG 71
015-520-066-000	Assessable	B	147.20	147.20	LOT 66 LEGACY SUB MOR BK AA PG 71
015-520-067-000	Assessable	B	147.20	147.20	LOT 67 LEGACY SUB MOR BK AA PG 71
015-520-068-000	Assessable	B	147.20	147.20	LOT 68 LEGACY SUB MOR BK AA PG 71
015-520-069-000	Assessable	B	147.20	147.20	LOT 69 LEGACY SUB MOR BK AA PG 71
015-520-070-000	Assessable	B	147.20	147.20	LOT 70 LEGACY SUB MOR BK AA PG 71
015-520-071-000	Assessable	B	147.20	147.20	LOT 71 LEGACY SUB MOR BK AA PG 71
015-520-072-000	Exempt	B	-	-	LOT A PUE - LEGACY SUB MOR BK AA PG 71
015-520-073-000	Exempt	B	-	-	LOT B PUE - LEGACY SUB MOR BK AA PG 71
015-520-074-000	Exempt	B	-	-	LOT C PUE - LEGACY SUB MOR BK AA PG 71
015-520-075-000	Exempt	B	-	-	LOT D PUE - LEGACY SUB MOR BK AA PG 71
015-520-076-000	Exempt	B	-	-	LOT E PUE - LEGACY SUB MOR BK AA PG 71
015-520-077-000	Exempt	B	-	-	LOT F OPEN SPACE - LEGACY SUB MOR BK AA PG 71
473-160-001-000	Assessable	B	147.20	147.20	LOT 1 SIERRA CROSSINGS T-27

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
473-160-004-000	Assessable	B	147.20	147.20	LOT 58 SIERRA CROSSINGS T-27
473-160-005-000	Assessable	B	147.20	147.20	LOT 59 SIERRA CROSSINGS T-27
473-160-007-000	Assessable	B	147.20	147.20	POR LOT 56 SIERRA CROSSINGS T-27
473-160-008-000	Assessable	B	147.20	147.20	LOT 57 & POR LOT 56 SIERRA CROSSINGS T-27
473-170-001-000	Assessable	B	147.20	147.20	LOT 2 SIERRA CROSSINGS T-27
473-170-002-000	Assessable	B	147.20	147.20	LOT 3 SIERRA CROSSINGS T-27
473-170-003-000	Assessable	B	147.20	147.20	LOT 4 SIERRA CROSSINGS T-27
473-170-004-000	Assessable	B	147.20	147.20	LOT 5 SIERRA CROSSINGS T-27
473-170-005-000	Assessable	B	147.20	147.20	LOT 6 SIERRA CROSSINGS T-27
473-170-006-000	Assessable	B	147.20	147.20	LOT 7 SIERRA CROSSINGS T-27
473-170-007-000	Assessable	B	147.20	147.20	LOT 8 SIERRA CROSSINGS T-27
473-170-008-000	Assessable	B	147.20	147.20	LOT 9 SIERRA CROSSINGS T-27
473-170-009-000	Assessable	B	147.20	147.20	LOT 10 SIERRA CROSSINGS T-27
473-170-010-000	Assessable	B	147.20	147.20	LOT 11 SIERRA CROSSINGS T-27
473-170-011-000	Assessable	B	147.20	147.20	LOT 12 SIERRA CROSSINGS T-27
473-170-012-000	Assessable	B	147.20	147.20	LOT 13 SIERRA CROSSINGS T-27
473-170-013-000	Assessable	B	147.20	147.20	LOT 14 SIERRA CROSSINGS T-27
473-170-014-000	Assessable	B	147.20	147.20	LOT 15 SIERRA CROSSINGS T-27
473-170-015-000	Assessable	B	147.20	147.20	LOT 16 SIERRA CROSSINGS T-27
473-170-016-000	Assessable	B	147.20	147.20	LOT 17 SIERRA CROSSINGS T-27
473-170-017-000	Assessable	B	147.20	147.20	LOT 28 SIERRA CROSSINGS T-27
473-170-018-000	Assessable	B	147.20	147.20	LOT 29 SIERRA CROSSINGS T-27
473-170-019-000	Assessable	B	147.20	147.20	LOT 30 SIERRA CROSSINGS T-27
473-170-020-000	Assessable	B	147.20	147.20	LOT 31 SIERRA CROSSINGS T-27
473-170-021-000	Assessable	B	147.20	147.20	LOT 32 SIERRA CROSSINGS T-27
473-170-022-000	Assessable	B	147.20	147.20	LOT 33 SIERRA CROSSINGS T-27
473-170-023-000	Assessable	B	147.20	147.20	LOT 34 SIERRA CROSSINGS T-27
473-170-024-000	Assessable	B	147.20	147.20	LOT 35 SIERRA CROSSINGS T-27
473-170-025-000	Assessable	B	147.20	147.20	LOT 36 SIERRA CROSSINGS T-27
473-170-026-000	Assessable	B	147.20	147.20	LOT 37 SIERRA CROSSINGS T-27
473-170-027-000	Assessable	B	147.20	147.20	LOT 38 SIERRA CROSSINGS T-27
473-170-028-000	Assessable	B	147.20	147.20	LOT 39 SIERRA CROSSINGS T-27
473-170-029-000	Assessable	B	147.20	147.20	LOT 40 SIERRA CROSSINGS T-27
473-170-030-000	Assessable	B	147.20	147.20	LOT 41 SIERRA CROSSINGS T-27
473-170-031-000	Assessable	B	147.20	147.20	LOT 42 SIERRA CROSSINGS T-27
473-170-032-000	Assessable	B	147.20	147.20	LOT 43 SIERRA CROSSINGS T-27
473-170-033-000	Assessable	B	147.20	147.20	LOT 44 SIERRA CROSSINGS T-27
473-170-034-000	Assessable	B	147.20	147.20	LOT 45 SIERRA CROSSINGS T-27
473-170-035-000	Assessable	B	147.20	147.20	LOT 46 SIERRA CROSSINGS T-27
473-170-036-000	Assessable	B	147.20	147.20	LOT 47 SIERRA CROSSINGS T-27
473-170-037-000	Assessable	B	147.20	147.20	LOT 48 SIERRA CROSSINGS T-27
473-170-038-000	Assessable	B	147.20	147.20	LOT 49 SIERRA CROSSINGS T-27
473-170-039-000	Assessable	B	147.20	147.20	LOT 50 SIERRA CROSSINGS T-27
473-170-040-000	Assessable	B	147.20	147.20	LOT 51 SIERRA CROSSINGS T-27
473-170-041-000	Assessable	B	147.20	147.20	LOT 52 SIERRA CROSSINGS T-27
473-170-042-000	Assessable	B	147.20	147.20	LOT 53 SIERRA CROSSINGS T-27
473-170-043-000	Assessable	B	147.20	147.20	LOT 54 SIERRA CROSSINGS T-27
473-170-044-000	Assessable	B	147.20	147.20	LOT 55 SIERRA CROSSINGS T-27
473-180-001-000	Assessable	B	147.20	147.20	LOT 18 SIERRA CROSSINGS T-27
473-180-002-000	Assessable	B	147.20	147.20	LOT 19 SIERRA CROSSINGS T-27
473-180-003-000	Assessable	B	147.20	147.20	LOT 20 SIERRA CROSSINGS T-27
473-180-004-000	Assessable	B	147.20	147.20	LOT 21 SIERRA CROSSINGS T-27
473-180-005-000	Assessable	B	147.20	147.20	LOT 22 SIERRA CROSSINGS T-27
473-180-006-000	Assessable	B	147.20	147.20	LOT 23 SIERRA CROSSINGS T-27
473-180-007-000	Assessable	B	147.20	147.20	LOT 24 SIERRA CROSSINGS T-27
473-180-008-000	Assessable	B	147.20	147.20	LOT 25 SIERRA CROSSINGS T-27
473-180-009-000	Assessable	B	147.20	147.20	LOT 26 SIERRA CROSSINGS T-27

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
473-180-010-000	Assessable	B	147.20	147.20	LOT 27 SIERRA CROSSINGS T-27
475-060-001-000	Assessable	A	100.00	100.00	LOT 12 PARKLAND ESTATES MOR BK Q PG 88
475-060-002-000	Assessable	A	100.00	100.00	LOT 13 PARKLAND ESTATES MOR BK Q PG 88
475-060-003-000	Assessable	A	100.00	100.00	LOT 15 PARKLAND ESTATES MOR BK Q PG 88
475-060-004-000	Assessable	A	100.00	100.00	LOT 14 PARKLAND ESTATES MOR BK Q PG 88
475-060-005-000	Assessable	A	100.00	100.00	LOT 16 PARKLAND ESTATES MOR BK Q PG 88
475-060-006-000	Assessable	A	100.00	100.00	LOT 17 PARKLAND ESTATES MOR BK Q PG 88
475-060-007-000	Assessable	A	100.00	100.00	LOT 18 PARKLAND ESTATES MOR BK Q PG 88
475-060-008-000	Assessable	A	100.00	100.00	LOT 19 PARKLAND ESTATES MOR BK Q PG 88
475-060-009-000	Assessable	A	100.00	100.00	LOT 20 PARKLAND ESTATES MOR BK Q PG 88
475-060-010-000	Assessable	A	100.00	100.00	LOT 21 PARKLAND ESTATES MOR BK Q PG 88
475-060-011-000	Assessable	A	100.00	100.00	LOT 22 PARKLAND ESTATES MOR BK Q PG 88
475-060-012-000	Assessable	A	100.00	100.00	LOT 23 PARKLAND ESTATES MOR BK Q PG 88
475-060-013-000	Assessable	A	100.00	100.00	LOT 24 PARKLAND ESTATES MOR BK Q PG 88
475-060-014-000	Assessable	A	100.00	100.00	LOT 25 PARKLAND ESTATES MOR BK Q PG 88
475-060-015-000	Assessable	A	100.00	100.00	LOT 26 PARKLAND ESTATES MOR BK Q PG 88
475-060-016-000	Assessable	A	100.00	100.00	LOT 27 PARKLAND ESTATES MOR BK Q PG 88
475-060-017-000	Assessable	A	100.00	100.00	LOT 28 PARKLAND ESTATES MOR BK Q PG 88
475-060-018-000	Assessable	A	100.00	100.00	LOT 29 PARKLAND ESTATES MOR BK Q PG 88
475-060-019-000	Assessable	A	100.00	100.00	LOT 30 PARKLAND ESTATES MOR BK Q PG 88
475-060-020-000	Assessable	A	100.00	100.00	LOT 31 PARKLAND ESTATES MOR BK Q PG 88
475-060-021-000	Assessable	A	100.00	100.00	LOT 32 PARKLAND ESTATES MOR BK Q PG 88
475-060-022-000	Assessable	A	100.00	100.00	LOT 33 PARKLAND ESTATES MOR PG Q PG 88
475-060-023-000	Assessable	A	100.00	100.00	LOT 34 PARKLAND ESTATES MOR BK Q PG 88
475-060-024-000	Assessable	A	100.00	100.00	LOT 35 PARKLAND ESTATES MOR BK Q PG 88
475-060-025-000	Assessable	A	100.00	100.00	LOT 36 PARKLAND ESTATES MOR BK Q PG 88
475-060-026-000	Assessable	A	100.00	100.00	LOT 37 PARKLAND ESTATES MOR BK Q PG 88
475-060-027-000	Assessable	A	100.00	100.00	LOT 38 PARKLAND ESTATES MOR BK Q PG 88
475-060-028-000	Assessable	A	100.00	100.00	LOT 39 PARKLAND ESTATES MOR BK Q PG 88
475-060-029-000	Assessable	A	100.00	100.00	LOT 40 PARKLAND ESTATES MOR BK Q PG 88
475-060-030-000	Assessable	A	100.00	100.00	LOT 41 PARKLAND ESTATES MOR BK Q PG 88
475-060-031-000	Assessable	A	100.00	100.00	LOT 42 PARKLAND ESTATES MOR BK Q PG 88
475-060-032-000	Assessable	A	100.00	100.00	LOT 43 PARKLAND ESTATES MOR BK Q PG 88
475-060-036-000	Assessable	A	100.00	100.00	LOT 47 PARKLAND ESTATES MOR BK Q PG 88
475-060-037-000	Assessable	A	100.00	100.00	LOT 48 PARKLAND ESTATES MOR BK Q PG 88
475-060-038-000	Assessable	A	100.00	100.00	LOT 49 PARKLAND ESTATES MOR BK Q PG 88
475-060-039-000	Assessable	A	100.00	100.00	LOT 50 PARKLAND ESTATES MOR BK Q PG 88
475-060-040-000	Assessable	A	100.00	100.00	LOT 51 PARKLAND ESTATES MOR BK Q PG 88
475-060-041-000	Assessable	A	100.00	100.00	LOT 52 PARKLAND ESTATES MOR BK Q PG 88
475-060-046-000	Assessable	A	100.00	100.00	LOT 57 PARKLAND ESTATES MOR BK Q PG 88
475-060-047-000	Assessable	A	100.00	100.00	LOT 58 PARKLAND ESTATES MOR BK Q PG 88
475-060-048-000	Assessable	A	100.00	100.00	LOT 59 PARKLAND ESTATES MOR BK Q PG 88
475-060-049-000	Assessable	A	100.00	100.00	LOT 60 PARKLAND ESTATES MOR BK Q PG 88
475-060-050-000	Assessable	A	100.00	100.00	LOT 61 PARKLAND ESTATES MOR BK Q PG 88
475-060-051-000	Assessable	A	100.00	100.00	LOT 62 PARKLAND ESTATES MOR BK Q PG 88
475-060-052-000	Assessable	A	100.00	100.00	LOT 63 PARKLAND ESTATES MOR BK Q PG 88
475-060-053-000	Assessable	A	100.00	100.00	LOT 64 PARKLAND ESTATES MOR BK Q PG 88
475-060-054-000	Assessable	A	100.00	100.00	POR PCL A LOT 44 PARKLAND ESTATES MOR Q-88
475-060-055-000	Assessable	A	100.00	100.00	POR LOT 45 PARKLAND ESTATES MOR BK Q PG 88
475-060-056-000	Assessable	A	100.00	100.00	POR L46 PARKLAND ESTATES Q-88
475-060-057-000	Assessable	A	100.00	100.00	LOT 53 & POR 46 PARKLAND ESTATES MOR BK Q PG 88
475-060-058-000	Assessable	A	100.00	100.00	L54&POR 45&46 PARKLAND EST Q88
475-060-059-000	Assessable	A	100.00	100.00	L55 & POR 45 PARKLAND EST Q-88
475-060-060-000	Assessable	A	100.00	100.00	L56 &POR44&45 PARKLAND EST Q88
475-090-001-000	Assessable	A	100.00	100.00	L 1 PARKLAND ESTATES Q-88
475-090-002-000	Assessable	A	100.00	100.00	L 2 PARKLAND ESTATES Q-88
475-090-003-000	Assessable	A	100.00	100.00	L 3 PARKLAND ESTATES Q-88

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
475-090-004-000	Assessable	A	100.00	100.00	L 4 PARKLAND ESTATES Q-88
475-090-005-000	Assessable	A	100.00	100.00	L 5 PARKLAND ESTATES Q-88
475-090-006-000	Assessable	A	100.00	100.00	L 6 PARKLAND ESTATES Q-88
475-090-007-000	Assessable	A	100.00	100.00	L 7 PARKLAND ESTATES Q-88
475-090-008-000	Assessable	A	100.00	100.00	L 8 PARKLAND ESTATES Q-88
475-090-009-000	Assessable	A	100.00	100.00	L 9 PARKLAND ESTATES Q-88
475-090-010-000	Assessable	A	100.00	100.00	L10 PARKLAND ESTATES Q-88
475-090-011-000	Assessable	A	100.00	100.00	L11 PARKLAND ESTATES Q-88
475-090-012-000	Assessable	A	100.00	100.00	L65 PARKLAND ESTATES Q-88
475-090-013-000	Assessable	A	100.00	100.00	L66 PARKLAND ESTATES Q-88
475-090-014-000	Assessable	A	100.00	100.00	L67 PARKLAND ESTATES Q-88
475-090-015-000	Assessable	A	100.00	100.00	L68 PARKLAND ESTATES Q-88
475-090-016-000	Assessable	A	100.00	100.00	L69 PARKLAND ESTATES Q-88
475-090-017-000	Assessable	A	100.00	100.00	L70 PARKLAND ESTATES Q-88
475-090-018-000	Assessable	A	100.00	100.00	L71 PARKLAND ESTATES Q-88
476-100-002-000	Assessable	A	100.00	100.00	L 1 AUTUMN GLEN UNIT 1
476-100-003-000	Assessable	A	100.00	100.00	L 2 AUTUMN GLEN UNIT 1
476-100-004-000	Assessable	A	100.00	100.00	LOT 3 AUTUMN GLEN UNIT #1 MOR Q-16
476-100-005-000	Assessable	A	100.00	100.00	L 4 AUTUMN GLEN UNIT 1
476-100-006-000	Assessable	A	100.00	100.00	L 5 AUTUMN GLEN UNIT 1
476-100-007-000	Assessable	A	100.00	100.00	L 6 AUTUMN GLEN UNIT 1
476-100-008-000	Assessable	A	100.00	100.00	L 7 AUTUMN GLEN UNIT 1 MOR Q-16
476-100-009-000	Assessable	A	100.00	100.00	L 8 AUTUMN GLEN UNIT 1
476-100-010-000	Assessable	A	100.00	100.00	L 9 AUTUMN GLEN UNIT 1
476-100-011-000	Assessable	A	100.00	100.00	L 10 AUTUMN GLEN UNIT 1
476-100-014-000	Assessable	A	100.00	100.00	LOT 32 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-015-000	Assessable	A	100.00	100.00	LOT 33 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-016-000	Assessable	A	100.00	100.00	LOT 34 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-017-000	Assessable	A	100.00	100.00	LOT 35 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-018-000	Assessable	A	100.00	100.00	LOT 36 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-019-000	Assessable	A	100.00	100.00	LOT 37 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-020-000	Assessable	A	100.00	100.00	LOT 38 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-021-000	Assessable	A	100.00	100.00	LOT 39 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-022-000	Assessable	A	100.00	100.00	LOT 40 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-023-000	Assessable	A	100.00	100.00	LOT 41 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-024-000	Assessable	A	100.00	100.00	LOT 42 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-025-000	Assessable	A	100.00	100.00	LOT 43 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-026-000	Assessable	A	100.00	100.00	LOT 44 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-027-000	Assessable	A	100.00	100.00	LOT 45 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-028-000	Assessable	A	100.00	100.00	LOT 46 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-029-000	Assessable	A	100.00	100.00	LOT 47 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-030-000	Assessable	A	100.00	100.00	LOT 48 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-031-000	Assessable	A	100.00	100.00	LOT 49 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-032-000	Assessable	A	100.00	100.00	LOT 50 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-033-000	Assessable	A	100.00	100.00	LOT 51 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-034-000	Assessable	A	100.00	100.00	LOT 52 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-035-000	Assessable	A	100.00	100.00	LOT 53 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-036-000	Assessable	A	100.00	100.00	LOT 54 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-037-000	Assessable	A	100.00	100.00	LOT 55 AUTUMN GLEN UNIT 2 Q-23
476-100-038-000	Assessable	A	100.00	100.00	LOT 56 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-039-000	Assessable	A	100.00	100.00	LOT 57 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-040-000	Assessable	A	100.00	100.00	LOT 58 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-041-000	Assessable	A	100.00	100.00	LOT 59 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-042-000	Assessable	A	100.00	100.00	LOT 60 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-043-000	Assessable	A	100.00	100.00	LOT 61 AUTUMN GLEN UNIT 2 MOR Q-23
476-100-044-000	Assessable	A	100.00	100.00	LOT 62 AUTUMN GLEN UNIT 2 Q-23
476-100-045-000	Assessable	A	100.00	100.00	LOT 63 AUTUMN GLEN UNIT 2 MOR Q-23

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-100-046-000	Assessable	A	100.00	100.00	L 82 AUTUMN GLEN UNIT 3 Q-24
476-100-047-000	Assessable	A	100.00	100.00	LOT 83 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-048-000	Assessable	A	100.00	100.00	LOT 84 AUTUMN GLEN UNIT 3 Q-24
476-100-049-000	Assessable	A	100.00	100.00	L 85 AUTUMN GLEN UNIT 3 Q-24
476-100-050-000	Assessable	A	100.00	100.00	LOT 86 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-051-000	Assessable	A	100.00	100.00	LOT 87 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-052-000	Assessable	A	100.00	100.00	LOT 88 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-053-000	Assessable	A	100.00	100.00	LOT 89 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-054-000	Assessable	A	100.00	100.00	LOT 90 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-055-000	Assessable	A	100.00	100.00	LOT 91 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-056-000	Assessable	A	100.00	100.00	LOT 92 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-057-000	Assessable	A	100.00	100.00	LOT 93 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-058-000	Assessable	A	100.00	100.00	LOT 94 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-059-000	Assessable	A	100.00	100.00	LOT 95 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-060-000	Assessable	A	100.00	100.00	LOT 96 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-061-000	Assessable	A	100.00	100.00	LOT 97 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-062-000	Assessable	A	100.00	100.00	LOT 98 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-063-000	Assessable	A	100.00	100.00	LOT 99 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-064-000	Assessable	A	100.00	100.00	LOT 100 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-065-000	Assessable	A	100.00	100.00	LOT 101 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-066-000	Assessable	A	100.00	100.00	L 102 AUTUMN GLEN UNIT 3 Q-24
476-100-067-000	Assessable	A	100.00	100.00	LOT 103 AUTUMN GLEN UNIT 3 MOR Q-24
476-100-068-000	Assessable	A	100.00	100.00	LOT 104 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-002-000	Assessable	A	100.00	100.00	LOT 11 AUTUMN GLEN UNIT 1 MOR Q-16
476-110-003-000	Assessable	A	100.00	100.00	L 12 AUTUMN GLEN UNIT 1
476-110-004-000	Assessable	A	100.00	100.00	L 13 AUTUMN GLEN UNIT 1
476-110-005-000	Assessable	A	100.00	100.00	L 14 AUTUMN GLEN UNIT 1
476-110-006-000	Assessable	A	100.00	100.00	L 15 AUTUMN GLEN UNIT 1
476-110-007-000	Assessable	A	100.00	100.00	L 16 AUTUMN GLEN UNIT 1
476-110-008-000	Assessable	A	100.00	100.00	L 17 AUTUMN GLEN UNIT 1
476-110-009-000	Assessable	A	100.00	100.00	LOT 18 AUTUMN GLEN UNIT 1 MOR BK Q PG 16
476-110-010-000	Assessable	A	100.00	100.00	L 19 AUTUMN GLEN UNIT 1
476-110-011-000	Assessable	A	100.00	100.00	L 20 AUTUMN GLEN UNIT 1
476-110-012-000	Assessable	A	100.00	100.00	L 21 AUTUMN GLEN UNIT 1
476-110-013-000	Assessable	A	100.00	100.00	LOT 22 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-014-000	Assessable	A	100.00	100.00	LOT 23 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-015-000	Assessable	A	100.00	100.00	L 24 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-016-000	Assessable	A	100.00	100.00	LOT 25 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-017-000	Assessable	A	100.00	100.00	LOT 26 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-018-000	Assessable	A	100.00	100.00	L 27 AUTUMN GLEN UNIT 2 Q-23
476-110-019-000	Assessable	A	100.00	100.00	L 28 AUTUMN GLEN UNIT 2 Q-23
476-110-020-000	Assessable	A	100.00	100.00	L 29 AUTUMN GLEN UNIT 2 Q-23
476-110-021-000	Assessable	A	100.00	100.00	L 30 AUTUMN GLEN UNIT 2 Q-23
476-110-022-000	Assessable	A	100.00	100.00	LOT 31 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-023-000	Assessable	A	100.00	100.00	LOT 64 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-024-000	Assessable	A	100.00	100.00	LOT 65 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-025-000	Assessable	A	100.00	100.00	LOT 66 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-026-000	Assessable	A	100.00	100.00	L 67 AUTUMN GLEN UNIT 2 Q-23
476-110-027-000	Assessable	A	100.00	100.00	LOT 68 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-028-000	Assessable	A	100.00	100.00	L 69 AUTUMN GLEN UNIT 2 Q-23
476-110-029-000	Assessable	A	100.00	100.00	LOT 70 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-030-000	Assessable	A	100.00	100.00	LOT 71 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-031-000	Assessable	A	100.00	100.00	LOT 72 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-032-000	Assessable	A	100.00	100.00	L 73 AUTUMN GLEN UNIT 2 MOR Q-23
476-110-033-000	Assessable	A	100.00	100.00	LOT 74 AUTUMN GLEN UNIT 3 MOR Q24
476-110-034-000	Assessable	A	100.00	100.00	LOT 75 AUTUMN GLEN UNIT 3 MOR Q24
476-110-035-000	Assessable	A	100.00	100.00	LOT 76 AUTUMN GLEN UNIT 3 MOR Q24

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-110-036-000	Assessable	A	100.00	100.00	LOT 77 AUTUMN GLEN UNIT 3 MOR Q24
476-110-037-000	Assessable	A	100.00	100.00	LOT 78 AUTUMN GLEN UNIT 3 MOR Q24
476-110-038-000	Assessable	A	100.00	100.00	LOT 79 AUTUMN GLEN UNIT 3 MOR Q24
476-110-039-000	Assessable	A	100.00	100.00	LOT 80 AUTUMN GLEN UNIT 3 MOR Q24
476-110-040-000	Assessable	A	100.00	100.00	LOT 81 AUTUMN GLEN UNIT 3 MOR Q24
476-110-041-000	Assessable	A	100.00	100.00	LOT 105 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-042-000	Assessable	A	100.00	100.00	L 106 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-043-000	Assessable	A	100.00	100.00	LOT 107 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-044-000	Assessable	A	100.00	100.00	LOT 108 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-045-000	Assessable	A	100.00	100.00	LOT 109 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-046-000	Assessable	A	100.00	100.00	LOT 110 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-047-000	Assessable	A	100.00	100.00	LOT 111 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-048-000	Assessable	A	100.00	100.00	LOT 112 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-049-000	Assessable	A	100.00	100.00	LOT 113 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-050-000	Assessable	A	100.00	100.00	L 114 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-051-000	Assessable	A	100.00	100.00	LOT 115 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-052-000	Assessable	A	100.00	100.00	LOT 116 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-053-000	Assessable	A	100.00	100.00	LOT 117 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-054-000	Assessable	A	100.00	100.00	LOT 118 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-055-000	Assessable	A	100.00	100.00	LOT 119 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-056-000	Assessable	A	100.00	100.00	LOT 120 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-057-000	Assessable	A	100.00	100.00	LOT 121 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-058-000	Assessable	A	100.00	100.00	LOT 122 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-059-000	Assessable	A	100.00	100.00	LOT 123 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-060-000	Assessable	A	100.00	100.00	LOT 124 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-061-000	Assessable	A	100.00	100.00	LOT 125 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-062-000	Assessable	A	100.00	100.00	LOT 126 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-063-000	Assessable	A	100.00	100.00	LOT 127 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-064-000	Assessable	A	100.00	100.00	LOT 128 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-065-000	Assessable	A	100.00	100.00	LOT 129 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-066-000	Assessable	A	100.00	100.00	LOT 130 AUTUMN GLEN UNIT 3 MOR Q-24
476-110-067-000	Assessable	A	100.00	100.00	LOT 131 AUTUMN GLEN UNIT 3 MOR Q-24
476-120-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-003-000	Assessable	A	100.00	100.00	L 3 SILVERADO OAKS #4 Q-20
476-120-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO OAKS #4 Q-20
476-120-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-015-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-016-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-017-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-018-000	Assessable	A	100.00	100.00	LOT 18 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-021-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-022-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-023-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-024-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-025-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO OAKS #4 Q-20

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-120-026-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-027-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO OAKS #4 MOR Q-20
476-120-028-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-029-000	Assessable	A	100.00	100.00	L 29 SILVERADO OAKS #4 Q-20
476-120-030-000	Assessable	A	100.00	100.00	LOT 30 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-031-000	Assessable	A	100.00	100.00	LOT 31 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-032-000	Assessable	A	100.00	100.00	LOT 32 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-033-000	Assessable	A	100.00	100.00	LOT 33 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-034-000	Assessable	A	100.00	100.00	LOT 34 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-035-000	Assessable	A	100.00	100.00	L 35 SILVERADO OAKS #4 Q-20
476-120-036-000	Assessable	A	100.00	100.00	LOT 36 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-037-000	Assessable	A	100.00	100.00	LOT 37 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-038-000	Assessable	A	100.00	100.00	L 38 SILVERADO OAKS #4 Q-20
476-120-039-000	Assessable	A	100.00	100.00	LOT 39 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-040-000	Assessable	A	100.00	100.00	LOT 40 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-041-000	Assessable	A	100.00	100.00	LOT 41 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-042-000	Assessable	A	100.00	100.00	LOT 42 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-043-000	Assessable	A	100.00	100.00	LOT 43 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-044-000	Assessable	A	100.00	100.00	LOT 44 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-045-000	Assessable	A	100.00	100.00	LOT 45 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-046-000	Assessable	A	100.00	100.00	LOT 46 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-047-000	Assessable	A	100.00	100.00	L 47 SILVERADO OAKS #4 Q-20
476-120-048-000	Assessable	A	100.00	100.00	LOT 48 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-049-000	Assessable	A	100.00	100.00	LOT 49 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-050-000	Assessable	A	100.00	100.00	LOT 50 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-051-000	Assessable	A	100.00	100.00	L 51 SILVERADO OAKS #4 Q-20
476-120-052-000	Assessable	A	100.00	100.00	LOT 52 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-053-000	Assessable	A	100.00	100.00	LOT 53 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-054-000	Assessable	A	100.00	100.00	LOT 54 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-055-000	Assessable	A	100.00	100.00	LOT 55 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-056-000	Assessable	A	100.00	100.00	L 56 SILVERADO OAKS #4 MOR Q-20
476-120-057-000	Assessable	A	100.00	100.00	LOT 57 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-058-000	Assessable	A	100.00	100.00	LOT 58 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-059-000	Assessable	A	100.00	100.00	L 59 SILVERADO OAKS #4 Q-20
476-120-060-000	Assessable	A	100.00	100.00	L 60 SILVERADO OAKS #4 Q-20
476-120-061-000	Assessable	A	100.00	100.00	L 61 SILVERADO OAKS #4 MOR Q-20
476-120-062-000	Assessable	A	100.00	100.00	LOT 62 SILVERADO OAKS #4 MOR Q-20
476-120-063-000	Assessable	A	100.00	100.00	L 63 SILVERADO OAKS #4 Q-20
476-120-064-000	Assessable	A	100.00	100.00	LOT 64 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-065-000	Assessable	A	100.00	100.00	LOT 65 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-066-000	Assessable	A	100.00	100.00	LOT 66 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-067-000	Assessable	A	100.00	100.00	LOT 67 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-068-000	Assessable	A	100.00	100.00	LOT 68 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-069-000	Assessable	A	100.00	100.00	LOT 69 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-070-000	Assessable	A	100.00	100.00	LOT 70 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-071-000	Assessable	A	100.00	100.00	LOT 71 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-072-000	Assessable	A	100.00	100.00	LOT 72 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-073-000	Assessable	A	100.00	100.00	LOT 73 SILVERADO OAKS #4 MOR BK Q PG 20
476-120-074-000	Assessable	A	100.00	100.00	LOT 74 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-001-000	Assessable	A	100.00	100.00	L 75 SILVERADO OAKS #4 Q-20
476-130-002-000	Assessable	A	100.00	100.00	LOT 76 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-003-000	Assessable	A	100.00	100.00	LOT 77 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-004-000	Assessable	A	100.00	100.00	LOT 78 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-005-000	Assessable	A	100.00	100.00	LOT 79 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-006-000	Assessable	A	100.00	100.00	LOT 80 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-007-000	Assessable	A	100.00	100.00	LOT 81 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-008-000	Assessable	A	100.00	100.00	LOT 82 SILVERADO OAKS #4 MOR BK Q PG 20

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-130-009-000	Assessable	A	100.00	100.00	LOT 83 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-010-000	Assessable	A	100.00	100.00	LOT 84 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-011-000	Assessable	A	100.00	100.00	LOT 85 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-012-000	Assessable	A	100.00	100.00	LOT 86 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-013-000	Assessable	A	100.00	100.00	LOT 87 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-014-000	Assessable	A	100.00	100.00	LOT 88 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-015-000	Assessable	A	100.00	100.00	LOT 89 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-016-000	Assessable	A	100.00	100.00	LOT 90 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-017-000	Assessable	A	100.00	100.00	LOT 91 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-018-000	Assessable	A	100.00	100.00	LOT 92 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-019-000	Assessable	A	100.00	100.00	LOT 93 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-020-000	Assessable	A	100.00	100.00	LOT 94 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-021-000	Assessable	A	100.00	100.00	LOT 95 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-022-000	Assessable	A	100.00	100.00	LOT 96 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-023-000	Assessable	A	100.00	100.00	LOT 97 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-024-000	Assessable	A	100.00	100.00	LOT 98 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-025-000	Assessable	A	100.00	100.00	LOT 99 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-026-000	Assessable	A	100.00	100.00	LOT 100 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-027-000	Assessable	A	100.00	100.00	LOT 101 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-028-000	Assessable	A	100.00	100.00	LOT 102 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-029-000	Assessable	A	100.00	100.00	LOT 103 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-030-000	Assessable	A	100.00	100.00	LOT 104 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-031-000	Assessable	A	100.00	100.00	LOT 105 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-032-000	Assessable	A	100.00	100.00	LOT 106 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-033-000	Assessable	A	100.00	100.00	LOT 107 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-034-000	Assessable	A	100.00	100.00	LOT 108 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-035-000	Assessable	A	100.00	100.00	LOT 109 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-036-000	Assessable	A	100.00	100.00	LOT 110 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-037-000	Assessable	A	100.00	100.00	LOT 111 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-038-000	Assessable	A	100.00	100.00	LOT 112 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-039-000	Assessable	A	100.00	100.00	LOT 113 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-040-000	Assessable	A	100.00	100.00	LOT 114 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-041-000	Assessable	A	100.00	100.00	LOT 115 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-042-000	Assessable	A	100.00	100.00	LOT 116 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-043-000	Assessable	A	100.00	100.00	LOT 117 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-044-000	Assessable	A	100.00	100.00	LOT 118 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-045-000	Assessable	A	100.00	100.00	LOT 119 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-046-000	Assessable	A	100.00	100.00	LOT 120 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-047-000	Assessable	A	100.00	100.00	LOT 121 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-048-000	Assessable	A	100.00	100.00	LOT 122 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-049-000	Assessable	A	100.00	100.00	LOT 123 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-050-000	Assessable	A	100.00	100.00	LOT 124 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-051-000	Assessable	A	100.00	100.00	LOT 125 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-052-000	Assessable	A	100.00	100.00	LOT 126 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-053-000	Assessable	A	100.00	100.00	LOT 127 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-054-000	Assessable	A	100.00	100.00	LOT 128 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-055-000	Assessable	A	100.00	100.00	LOT 129 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-056-000	Assessable	A	100.00	100.00	LOT 130 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-057-000	Assessable	A	100.00	100.00	LOT 131 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-058-000	Assessable	A	100.00	100.00	LOT 132 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-059-000	Assessable	A	100.00	100.00	LOT 133 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-060-000	Assessable	A	100.00	100.00	LOT 134 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-061-000	Assessable	A	100.00	100.00	LOT 135 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-062-000	Assessable	A	100.00	100.00	LOT 136 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-063-000	Assessable	A	100.00	100.00	LOT 137 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-064-000	Assessable	A	100.00	100.00	LOT 138 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-065-000	Assessable	A	100.00	100.00	LOT 139 SILVERADO OAKS #4 MOR BK Q PG 20

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-130-066-000	Assessable	A	100.00	100.00	LOT 140 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-067-000	Assessable	A	100.00	100.00	LOT 141 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-068-000	Assessable	A	100.00	100.00	LOT 142 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-069-000	Assessable	A	100.00	100.00	LOT 143 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-070-000	Assessable	A	100.00	100.00	LOT 144 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-071-000	Assessable	A	100.00	100.00	LOT 145 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-072-000	Assessable	A	100.00	100.00	LOT 146 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-073-000	Assessable	A	100.00	100.00	LOT 147 SILVERADO OAKS #4 MOR BK Q PG 20
476-130-074-000	Assessable	A	100.00	100.00	LOT 148 SILVERADO OAKS #4 MOR BK Q PG 20
476-150-001-000	Assessable	A	100.00	100.00	LOT 117 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-002-000	Assessable	A	100.00	100.00	LOT 118 SILVERADO OAKS #5 PH B MOR R-27
476-150-003-000	Assessable	A	100.00	100.00	LOT 119 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-004-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-005-000	Assessable	A	100.00	100.00	LOT 121 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-006-000	Assessable	A	100.00	100.00	LOT 122 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-007-000	Assessable	A	100.00	100.00	LOT 123 SILVERADO OAKS #5 PH B MOR R-27
476-150-008-000	Assessable	A	100.00	100.00	LOT 124 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-009-000	Assessable	A	100.00	100.00	LOT 125 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-010-000	Assessable	A	100.00	100.00	LOT 126 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-011-000	Assessable	A	100.00	100.00	LOT 127 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-012-000	Assessable	A	100.00	100.00	LOT 128 SILVERADO OAKS #5 PH B MOR R-27
476-150-013-000	Assessable	A	100.00	100.00	LOT 129 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-014-000	Assessable	A	100.00	100.00	LOT 130 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-015-000	Assessable	A	100.00	100.00	LOT 131 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-016-000	Assessable	A	100.00	100.00	LOT 132 SILVERADO OAKS UNIT #5 PHASE B MOR R-27
476-150-017-000	Assessable	A	100.00	100.00	LOT 133 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-018-000	Assessable	A	100.00	100.00	LOT 134 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-019-000	Assessable	A	100.00	100.00	LOT 135 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-020-000	Assessable	A	100.00	100.00	LOT 136 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-021-000	Assessable	A	100.00	100.00	LOT 137 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-022-000	Assessable	A	100.00	100.00	LOT 138 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-023-000	Assessable	A	100.00	100.00	LOT 139 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-024-000	Assessable	A	100.00	100.00	LOT 140 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-025-000	Assessable	A	100.00	100.00	LOT 141 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-026-000	Assessable	A	100.00	100.00	LOT 142 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-027-000	Assessable	A	100.00	100.00	LOT 143 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-028-000	Assessable	A	100.00	100.00	LOT 144 SILVERADO OAKS #5 PH B MOR R-28
476-150-029-000	Assessable	A	100.00	100.00	LOT 145 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-030-000	Assessable	A	100.00	100.00	LOT 146 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-031-000	Assessable	A	100.00	100.00	LOT 147 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-032-000	Assessable	A	100.00	100.00	LOT 148 SILVERADO OAKS #5 PH B MOR R-27
476-150-033-000	Assessable	A	100.00	100.00	LOT 149 SILVERADO OAKS #5 PH B MOR R-27
476-150-034-000	Assessable	A	100.00	100.00	LOT 150 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-035-000	Assessable	A	100.00	100.00	LOT 151 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-150-036-000	Assessable	A	100.00	100.00	LOT 152 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-001-000	Assessable	A	100.00	100.00	LOT 109 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-002-000	Assessable	A	100.00	100.00	LOT 110 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-003-000	Assessable	A	100.00	100.00	LOT 111 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-004-000	Assessable	A	100.00	100.00	LOT 112 SILVERADO OAKS #5 PH B MOR R-27
476-160-005-000	Assessable	A	100.00	100.00	LOT 113 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-006-000	Assessable	A	100.00	100.00	LOT 114 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-007-000	Assessable	A	100.00	100.00	LOT 115 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-008-000	Assessable	A	100.00	100.00	LOT 116 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-009-000	Assessable	A	100.00	100.00	LOT 153 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-010-000	Assessable	A	100.00	100.00	LOT 154 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-011-000	Assessable	A	100.00	100.00	LOT 155 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-012-000	Assessable	A	100.00	100.00	LOT 156 SILVERADO OAKS #5 PH B MOR BK R PG 27

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-160-013-000	Assessable	A	100.00	100.00	LOT 157 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-014-000	Assessable	A	100.00	100.00	LOT 158 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-015-000	Assessable	A	100.00	100.00	LOT 159 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-016-000	Assessable	A	100.00	100.00	LOT 160 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-017-000	Assessable	A	100.00	100.00	LOT 161 SILVERADO OAKS #5 PH B MOR R-27
476-160-018-000	Assessable	A	100.00	100.00	LOT 162 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-019-000	Assessable	A	100.00	100.00	LOT 163 SILVERADO OAKS #5 PH B MOR
476-160-020-000	Assessable	A	100.00	100.00	LOT 164 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-021-000	Assessable	A	100.00	100.00	LOT 165 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-022-000	Assessable	A	100.00	100.00	LOT 166 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-023-000	Assessable	A	100.00	100.00	LOT 167 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-024-000	Assessable	A	100.00	100.00	LOT 168 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-025-000	Assessable	A	100.00	100.00	LOT 169 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-026-000	Assessable	A	100.00	100.00	LOT 170 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-027-000	Assessable	A	100.00	100.00	LOT 171 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-028-000	Assessable	A	100.00	100.00	LOT 172 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-029-000	Assessable	A	100.00	100.00	LOT 173 SILVERADO OAKS #5 PH MOR BK R PG 27
476-160-030-000	Assessable	A	100.00	100.00	LOT 174 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-031-000	Assessable	A	100.00	100.00	LOT 175 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-032-000	Assessable	A	100.00	100.00	LOT 176 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-033-000	Assessable	A	100.00	100.00	LOT 177 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-034-000	Assessable	A	100.00	100.00	LOT 178 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-035-000	Assessable	A	100.00	100.00	LOT 195 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-036-000	Assessable	A	100.00	100.00	LOT 196 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-160-037-000	Assessable	A	100.00	100.00	LOT 197 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-001-000	Assessable	A	100.00	100.00	LOT 78 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-002-000	Assessable	A	100.00	100.00	LOT 79 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-003-000	Assessable	A	100.00	100.00	LOT 80 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-004-000	Assessable	A	100.00	100.00	LOT 81 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-005-000	Assessable	A	100.00	100.00	LOT 82 SILVERADO OAKS #5 PH B MOR R-27
476-170-006-000	Assessable	A	100.00	100.00	LOT 83 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-007-000	Assessable	A	100.00	100.00	LOT 84 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-008-000	Assessable	A	100.00	100.00	LOT 85 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-009-000	Assessable	A	100.00	100.00	LOT 86 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-010-000	Assessable	A	100.00	100.00	LOT 87 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-011-000	Assessable	A	100.00	100.00	LOT 88 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-012-000	Assessable	A	100.00	100.00	LOT 89 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-013-000	Assessable	A	100.00	100.00	LOT 90 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-014-000	Assessable	A	100.00	100.00	LOT 91 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-015-000	Assessable	A	100.00	100.00	LOT 92 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-016-000	Assessable	A	100.00	100.00	LOT 93 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-017-000	Assessable	A	100.00	100.00	LOT 94 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-018-000	Assessable	A	100.00	100.00	LOT 95 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-019-000	Assessable	A	100.00	100.00	LOT 96 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-020-000	Assessable	A	100.00	100.00	LOT 97 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-021-000	Assessable	A	100.00	100.00	LOT 98 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-022-000	Assessable	A	100.00	100.00	LOT 99 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-023-000	Assessable	A	100.00	100.00	LOT 100 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-024-000	Assessable	A	100.00	100.00	LOT 101 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-025-000	Assessable	A	100.00	100.00	LOT 102 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-026-000	Assessable	A	100.00	100.00	LOT 103 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-027-000	Assessable	A	100.00	100.00	LOT 104 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-028-000	Assessable	A	100.00	100.00	LOT 105 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-029-000	Assessable	A	100.00	100.00	LOT 106 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-030-000	Assessable	A	100.00	100.00	LOT 107 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-031-000	Assessable	A	100.00	100.00	LOT 108 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-032-000	Assessable	A	100.00	100.00	LOT 179 SILVERADO OAKS #5 PH B MOR BK R PG 27

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-170-033-000	Assessable	A	100.00	100.00	LOT 180 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-034-000	Assessable	A	100.00	100.00	LOT 181 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-035-000	Assessable	A	100.00	100.00	LOT 182 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-036-000	Assessable	A	100.00	100.00	LOT 183 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-037-000	Assessable	A	100.00	100.00	LOT 184 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-038-000	Assessable	A	100.00	100.00	LOT 185 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-039-000	Assessable	A	100.00	100.00	LOT 186 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-040-000	Assessable	A	100.00	100.00	LOT 187 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-041-000	Assessable	A	100.00	100.00	LOT 188 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-042-000	Assessable	A	100.00	100.00	LOT 189 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-043-000	Assessable	A	100.00	100.00	LOT 190 SILVERADO OAKS #5 PH B MOR R-27
476-170-044-000	Assessable	A	100.00	100.00	LOT 191 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-045-000	Assessable	A	100.00	100.00	LOT 192 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-046-000	Assessable	A	100.00	100.00	LOT 193 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-047-000	Assessable	A	100.00	100.00	LOT 194 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-048-000	Assessable	A	100.00	100.00	LOT 198 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-049-000	Assessable	A	100.00	100.00	LOT 199 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-050-000	Assessable	A	100.00	100.00	LOT 200 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-051-000	Assessable	A	100.00	100.00	LOT 201 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-052-000	Assessable	A	100.00	100.00	LOT 202 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-053-000	Assessable	A	100.00	100.00	LOT 203 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-054-000	Assessable	A	100.00	100.00	LOT 204 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-055-000	Assessable	A	100.00	100.00	LOT 205 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-056-000	Assessable	A	100.00	100.00	LOT 206 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-057-000	Assessable	A	100.00	100.00	LOT 207 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-058-000	Assessable	A	100.00	100.00	LOT 208 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-059-000	Assessable	A	100.00	100.00	LOT 209 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-060-000	Assessable	A	100.00	100.00	LOT 210 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-061-000	Assessable	A	100.00	100.00	LOT 211 SILVERADO OAKS #5 PH B MOR BK R BK 27
476-170-062-000	Assessable	A	100.00	100.00	LOT 212 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-063-000	Assessable	A	100.00	100.00	LOT 213 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-064-000	Assessable	A	100.00	100.00	LOT 214 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-065-000	Assessable	A	100.00	100.00	LOT 215 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-066-000	Assessable	A	100.00	100.00	LOT 216 SILVERADO OAKS #5 PH B MOR R-27
476-170-067-000	Assessable	A	100.00	100.00	LOT 217 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-068-000	Assessable	A	100.00	100.00	LOT 218 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-069-000	Assessable	A	100.00	100.00	LOT 219 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-070-000	Assessable	A	100.00	100.00	LOT 220 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-071-000	Assessable	A	100.00	100.00	LOT 221 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-170-072-000	Assessable	A	100.00	100.00	LOT 222 SILVERADO OAKS #5 PH B MOR BK R PG 27
476-180-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO OAKS #5 PH A MOR R-26
476-180-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO OAKS #5 PH A MOR R-26
476-180-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-015-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-016-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-017-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO OAKS #5 PH A MOR BK R PG 26

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-180-018-000	Assessable	A	100.00	100.00	LKOT 18 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-021-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-022-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-023-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-024-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-025-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-026-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-027-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-028-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO OAKS #5 PH A MOR R-26
476-180-029-000	Assessable	A	100.00	100.00	LOT 29 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-030-000	Assessable	A	100.00	100.00	LOT 30 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-031-000	Assessable	A	100.00	100.00	LOT 31 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-032-000	Assessable	A	100.00	100.00	LOT 32 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-033-000	Assessable	A	100.00	100.00	LOT 33 SILVERADO OAKS #5 PH A MOR R26
476-180-034-000	Assessable	A	100.00	100.00	LOT 34 SILVERADO OAKS #5 PH A MOR R-26
476-180-035-000	Assessable	A	100.00	100.00	LOT 35 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-036-000	Assessable	A	100.00	100.00	LOT 36 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-037-000	Assessable	A	100.00	100.00	LOT 37 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-038-000	Assessable	A	100.00	100.00	LOT 38 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-039-000	Assessable	A	100.00	100.00	LOT 39 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-040-000	Assessable	A	100.00	100.00	LOT 40 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-041-000	Assessable	A	100.00	100.00	LOT 41 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-042-000	Assessable	A	100.00	100.00	LOT 42 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-043-000	Assessable	A	100.00	100.00	LOT 43 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-044-000	Assessable	A	100.00	100.00	LOT 44 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-045-000	Assessable	A	100.00	100.00	LOT 45 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-046-000	Assessable	A	100.00	100.00	LOT 46 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-047-000	Assessable	A	100.00	100.00	LOT 47 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-048-000	Assessable	A	100.00	100.00	LOT 48 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-049-000	Assessable	A	100.00	100.00	LOT 49 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-050-000	Assessable	A	100.00	100.00	LOT 50 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-051-000	Assessable	A	100.00	100.00	LKOT 51 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-052-000	Assessable	A	100.00	100.00	LOT 52 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-053-000	Assessable	A	100.00	100.00	LOT 53 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-054-000	Assessable	A	100.00	100.00	LOT 54 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-055-000	Assessable	A	100.00	100.00	LOT 55 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-056-000	Assessable	A	100.00	100.00	LOT 56 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-057-000	Assessable	A	100.00	100.00	LOT 57 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-058-000	Assessable	A	100.00	100.00	LOT 58 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-059-000	Assessable	A	100.00	100.00	LOT 59 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-060-000	Assessable	A	100.00	100.00	LOT 60 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-061-000	Assessable	A	100.00	100.00	LOT 61 SILVERADO OAKS #5 PH A MOR R-26
476-180-062-000	Assessable	A	100.00	100.00	LOT 62 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-063-000	Assessable	A	100.00	100.00	LOT 63 SILVERADO OAKS #5 PH A MOR R-26
476-180-064-000	Assessable	A	100.00	100.00	LOT 64 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-065-000	Assessable	A	100.00	100.00	LOT 65 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-066-000	Assessable	A	100.00	100.00	LOT 66 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-067-000	Assessable	A	100.00	100.00	LOT 67 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-068-000	Assessable	A	100.00	100.00	LOT 68 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-069-000	Assessable	A	100.00	100.00	LOT 69 SILVERADO OAKS #5 PHASE A MOR BK R PG 26
476-180-070-000	Assessable	A	100.00	100.00	LOT 70 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-071-000	Assessable	A	100.00	100.00	LOT 71 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-072-000	Assessable	A	100.00	100.00	LOT 72 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-073-000	Assessable	A	100.00	100.00	LOT 73 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-074-000	Assessable	A	100.00	100.00	LOT 74 SILVERADO OAKS #5 PH A MOR BK R PG 26

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-180-075-000	Assessable	A	100.00	100.00	LOT 75 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-076-000	Assessable	A	100.00	100.00	LOT 76 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-180-077-000	Assessable	A	100.00	100.00	LOT 77 SILVERADO OAKS #5 PH A MOR BK R PG 26
476-200-001-000	Assessable	A	100.00	100.00	LOT 1 KERRY DOWNS UNIT 1 R-69
476-200-002-000	Assessable	A	100.00	100.00	LOT 2 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-003-000	Assessable	A	100.00	100.00	LOT 3 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-004-000	Assessable	A	100.00	100.00	LOT 4 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-005-000	Assessable	A	100.00	100.00	LOT 5 KERRY DOWNS UNIT NO 1 R-69
476-200-006-000	Assessable	A	100.00	100.00	LOT 6 KERRY DOWNS UNIT NO 1 R-69
476-200-007-000	Assessable	A	100.00	100.00	LOT 7 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-008-000	Assessable	A	100.00	100.00	LOT 56 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-009-000	Assessable	A	100.00	100.00	LOT 57 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-010-000	Assessable	A	100.00	100.00	LOT 58 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-011-000	Assessable	A	100.00	100.00	LOT 59 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-012-000	Assessable	A	100.00	100.00	LOT 60 KERRY DOWNS UNIT NO 1 R-69
476-200-013-000	Assessable	A	100.00	100.00	LOT 61 KERRY DOWNS UNIT NO 1 R-69
476-200-014-000	Assessable	A	100.00	100.00	LOT 62 KERRY DOWNS UNIT NO 1 R-69
476-200-015-000	Assessable	A	100.00	100.00	LOT 63 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-016-000	Assessable	A	100.00	100.00	LOT 64 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-017-000	Assessable	A	100.00	100.00	LOT 65 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-018-000	Assessable	A	100.00	100.00	LOT 66 KERRY DOWNS UNIT NO 1 R-69
476-200-019-000	Assessable	A	100.00	100.00	LOT 67 KERRY DOWNS UNIT NO 1 R-69
476-200-020-000	Assessable	A	100.00	100.00	LOT 68 KERRY DOWNS UNIT NO 1 MOR BK R PG 69
476-200-021-000	Assessable	A	100.00	100.00	LOT 69 KERRY DOWNS UNIT NO 1 R-69
476-200-022-000	Assessable	A	100.00	100.00	LOT 70 KERRY DOWNS UNIT NO 1 MOR R-69
476-200-027-000	Assessable	A	100.00	100.00	LOT 75 KERRY DOWNS UNIT NO 1 R-69
476-200-031-000	Assessable	A	100.00	100.00	POR LOT 76 KERRY DOWNS UNIT NO 1 R-69
476-200-033-000	Assessable	A	100.00	100.00	LOT 71 & POR 79 & 80 KERRY DOWNS UNIT 1 R-69
476-200-034-000	Assessable	A	100.00	100.00	LOT 72 & POR 78 & 79 KERRY DOWNS UNIT 1 R-69
476-200-035-000	Assessable	A	100.00	100.00	LOT 73 & POR 77 & 78 KERRY DOWNS UNIT #1 MOR R-69
476-200-036-000	Assessable	A	100.00	100.00	LOT 74 & POR 76 & 77 KERRY DOWNS UNIT 1 R-69
476-210-001-000	Assessable	A	100.00	100.00	LOT 8 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-002-000	Assessable	A	100.00	100.00	LOT 9 KERRY DOWNS UNIT NO 1 R-69
476-210-003-000	Assessable	A	100.00	100.00	LOT 10 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-004-000	Assessable	A	100.00	100.00	LOT 11 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-005-000	Assessable	A	100.00	100.00	LOT 12 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-006-000	Assessable	A	100.00	100.00	LOT 13 KERRY DOWNS UNIT NO 1 R-69
476-210-007-000	Assessable	A	100.00	100.00	LOT 14 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-008-000	Assessable	A	100.00	100.00	LOT 15 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-009-000	Assessable	A	100.00	100.00	LOT 16 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-010-000	Assessable	A	100.00	100.00	LOT 17 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-011-000	Assessable	A	100.00	100.00	LOT 18 KERRY DOWNS UNIT NO 1 R-69
476-210-012-000	Assessable	A	100.00	100.00	LOT 19 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-013-000	Assessable	A	100.00	100.00	LOT 20 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-014-000	Assessable	A	100.00	100.00	LOT 21 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-015-000	Assessable	A	100.00	100.00	LOT 22 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-016-000	Assessable	A	100.00	100.00	LOT 23 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-017-000	Assessable	A	100.00	100.00	LOT 24 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-018-000	Assessable	A	100.00	100.00	LOT 25 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-019-000	Assessable	A	100.00	100.00	LOT 26 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-020-000	Assessable	A	100.00	100.00	LOT 27 KERRY DOWNS UNIT NO 1 R-69
476-210-021-000	Assessable	A	100.00	100.00	LOT 28 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-022-000	Assessable	A	100.00	100.00	LOT 29 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-023-000	Assessable	A	100.00	100.00	LOT 30 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-024-000	Assessable	A	100.00	100.00	LOT 31 KERRY DOWNS UNIT NO 1 MOR BK R PG 69
476-210-025-000	Assessable	A	100.00	100.00	LOT 32 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-026-000	Assessable	A	100.00	100.00	LOT 33 KERRY DOWNS UNIT NO 1 R-69

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-210-027-000	Assessable	A	100.00	100.00	LOT 34 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-028-000	Assessable	A	100.00	100.00	LOT 35 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-029-000	Assessable	A	100.00	100.00	LOT 36 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-030-000	Assessable	A	100.00	100.00	LOT 37 KERRY DOWNS UNIT NO 1 R-69
476-210-031-000	Assessable	A	100.00	100.00	LOT 38 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-032-000	Assessable	A	100.00	100.00	LOT 39 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-033-000	Assessable	A	100.00	100.00	LOT 40 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-034-000	Assessable	A	100.00	100.00	LOT 41 KERRY DOWNS UNIT NO 1 R-69
476-210-035-000	Assessable	A	100.00	100.00	LOT 42 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-036-000	Assessable	A	100.00	100.00	LOT 43 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-037-000	Assessable	A	100.00	100.00	LOT 44 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-038-000	Assessable	A	100.00	100.00	LOT 45 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-039-000	Assessable	A	100.00	100.00	LOT 46 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-040-000	Assessable	A	100.00	100.00	LOT 47 KERRY DOWNS UNIT NO 1 R-69
476-210-041-000	Assessable	A	100.00	100.00	LOT 48 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-042-000	Assessable	A	100.00	100.00	LOT 49 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-043-000	Assessable	A	100.00	100.00	LOT 50 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-044-000	Assessable	A	100.00	100.00	LOT 51 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-045-000	Assessable	A	100.00	100.00	LOT 52 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-046-000	Assessable	A	100.00	100.00	LOT 53 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-047-000	Assessable	A	100.00	100.00	LOT 54 KERRY DOWNS UNIT NO 1 MOR R-69
476-210-048-000	Assessable	A	100.00	100.00	LOT 55 KERRY DOWNS NO UNIT NO 1 R-69
476-220-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO VILLAGE MOR BK R PG 71
476-220-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO VILLAGE MOR BK R PG 71
476-220-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO VILLAGE R-71
476-220-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO VILLAGE R-71
476-220-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO VILLAGE R-71
476-220-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO VILLAGE MOR R-71
476-220-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO VILLAGE R-71
476-220-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO VILLAGE R-71
476-220-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO VILLAGE MOR R-71
476-220-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO VILLAGE R-71
476-220-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO VILLAGE R-71
476-220-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO VILLAGE R-71
476-220-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO VILLAGE R-71
476-220-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO VILLAGE R-71
476-220-015-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO VILLAGE R-71
476-220-016-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO VILLAGE R-71
476-220-017-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO VILLAGE R-71
476-220-018-000	Assessable	A	100.00	100.00	LOT 18 SILVERADO VILLAGE R-71
476-220-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO VILLAGE R-71
476-220-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO VILLAGE R-71
476-220-021-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO VILLAGE R-71
476-220-022-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO VILLAGE R-71
476-220-023-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO VILLAGE R-71
476-220-024-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO VILLAGE R-71
476-220-025-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO VILLAGE R-71
476-220-026-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO VILLAGE R-71
476-220-027-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO VILLAGE MOR R-71
476-220-028-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO VILLAGE R-71
476-220-029-000	Assessable	A	100.00	100.00	LOT 29 SILVERADO VILLAGE R-71
476-220-030-000	Assessable	A	100.00	100.00	LOT 30 SILVERADO VILLAGE R-71
476-220-031-000	Assessable	A	100.00	100.00	LOT 31 SILVERADO VILLAGE R-71
476-220-032-000	Assessable	A	100.00	100.00	LOT 32 SILVERADO VILLAGE R-71
476-220-033-000	Assessable	A	100.00	100.00	LOT 33 SILVERADO VILLAGE R-71
476-220-034-000	Assessable	A	100.00	100.00	LOT 34 SILVERADO VILLAGE R-71
476-220-035-000	Assessable	A	100.00	100.00	LOT 35 SILVERADO VILLAGE R-71

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-220-036-000	Assessable	A	100.00	100.00	LOT 36 SILVERADO VILLAGE R-71
476-220-037-000	Assessable	A	100.00	100.00	LOT 37 SILVERADO VILLAGE R-71
476-220-038-000	Assessable	A	100.00	100.00	LOT 38 SILVERADO VILLAGE R-71
476-220-039-000	Assessable	A	100.00	100.00	LOT 39 SILVERADO VILLAGE R-71
476-220-040-000	Assessable	A	100.00	100.00	LOT 40 SILVERADO VILLAGE R-71
476-220-041-000	Assessable	A	100.00	100.00	LOT 41 SILVERADO VILLAGE MOR R-71
476-220-042-000	Assessable	A	100.00	100.00	LOT 42 SILVERADO VILLAGE R-71
476-220-043-000	Assessable	A	100.00	100.00	LOT 43 SILVERADO VILLAGE R-71
476-220-044-000	Assessable	A	100.00	100.00	LOT 44 SILVERADO VILLAGE R-71
476-220-045-000	Assessable	A	100.00	100.00	LOT 45 SILVERADO VILLAGE R-71
476-230-001-000	Assessable	A	100.00	100.00	LOT 46 SILVERADO VILLAGE R-71
476-230-002-000	Assessable	A	100.00	100.00	LOT 47 SILVERADO VILLAGE R-71
476-230-003-000	Assessable	A	100.00	100.00	LOT 48 SILVERADO VILLAGE R-71
476-230-004-000	Assessable	A	100.00	100.00	LOT 49 SILVERADO VILLAGE R-71
476-230-005-000	Assessable	A	100.00	100.00	LOT 50 SILVERADO VILLAGE R-71
476-230-006-000	Assessable	A	100.00	100.00	LOT 51 SILVERADO VILLAGE R-71
476-230-007-000	Assessable	A	100.00	100.00	LOT 52 SILVERADO VILLAGE R-71
476-230-008-000	Assessable	A	100.00	100.00	LOT 53 SILVERADO VILLAGE R-71
476-230-009-000	Assessable	A	100.00	100.00	LOT 54 SILVERADO VILLAGE R-71
476-230-010-000	Assessable	A	100.00	100.00	LOT 55 SILVERADO VILLAGE R-71
476-230-011-000	Assessable	A	100.00	100.00	LOT 56 SILVERADO VILLAGE R-71
476-230-012-000	Assessable	A	100.00	100.00	LOT 57 SILVERADO VILLAGE R-71
476-230-013-000	Assessable	A	100.00	100.00	LOT 58 SILVERADO VILLAGE R-71
476-230-014-000	Assessable	A	100.00	100.00	LOT 59 SILVERADO VILLAGE R-71
476-230-015-000	Assessable	A	100.00	100.00	LOT 60 SILVERADO VILLAGE R-71
476-230-016-000	Assessable	A	100.00	100.00	LOT 61 SILVERADO VILLAGE R-71
476-230-017-000	Assessable	A	100.00	100.00	LOT 62 SILVERADO VILLAGE R-71
476-230-018-000	Assessable	A	100.00	100.00	LOT 63 SILVERADO VILLAGE R-71
476-230-019-000	Assessable	A	100.00	100.00	LOT 64 SILVERADO VILLAGE R-71
476-230-020-000	Assessable	A	100.00	100.00	LOT 65 SILVERADO VILLAGE R-71
476-230-021-000	Assessable	A	100.00	100.00	LOT 66 SILVERADO VILLAGE R-71
476-230-022-000	Assessable	A	100.00	100.00	LOT 67 SILVERADO VILLAGE R-71
476-230-023-000	Assessable	A	100.00	100.00	LOT 68 SILVERADO VILLAGE R-71
476-230-024-000	Assessable	A	100.00	100.00	LOT 69 SILVERADO VILLAGE R-71
476-230-025-000	Assessable	A	100.00	100.00	LOT 70 SILVERADO VILLAGE R-71
476-230-026-000	Assessable	A	100.00	100.00	LOT 71 SILVERADO VILLAGE R-71
476-230-027-000	Assessable	A	100.00	100.00	LOT 72 SILVERADO VILLAGE R-71
476-230-028-000	Assessable	A	100.00	100.00	LOT 73 SILVERADO VILLAGE R-71
476-230-029-000	Assessable	A	100.00	100.00	LOT 74 SILVERADO VILLAGE R-71
476-230-030-000	Assessable	A	100.00	100.00	LOT 75 SILVERADO VILLAGE R-71
476-230-031-000	Assessable	A	100.00	100.00	LOT 76 SILVERADO VILLAGE R-71
476-230-032-000	Assessable	A	100.00	100.00	LOT 77 SILVERADO VILLAGE R-71
476-230-033-000	Assessable	A	100.00	100.00	LOT 78 SILVERADO VILLAGE R-71
476-230-034-000	Assessable	A	100.00	100.00	LOT 79 SILVERADO VILLAGE R-71
476-230-035-000	Assessable	A	100.00	100.00	LOT 80 SILVERADO VILLAGE R-71
476-230-036-000	Assessable	A	100.00	100.00	LOT 81 SILVERADO VILLAGE R-71
476-230-037-000	Assessable	A	100.00	100.00	LOT 82 SILVERADO VILLAGE R-71
476-230-038-000	Assessable	A	100.00	100.00	LOT 83 SILVERADO VILLAGE R-71
476-230-039-000	Assessable	A	100.00	100.00	LOT 84 SILVERADO VILLAGE R-71
476-230-040-000	Assessable	A	100.00	100.00	LOT 85 SILVERADO VILLAGE R-71
476-230-041-000	Assessable	A	100.00	100.00	LOT 86 SILVERADO VILLAGE R-71
476-240-001-000	Assessable	A	100.00	100.00	LOT 87 SILVERADO VILLAGE R-71
476-240-002-000	Assessable	A	100.00	100.00	LOT 88 SILVERADO VILLAGE R-71
476-240-003-000	Assessable	A	100.00	100.00	LOT 89 SILVERADO VILLAGE R-71
476-240-004-000	Assessable	A	100.00	100.00	LOT 90 SILVERADO VILLAGE MOR BK R PG 71
476-240-005-000	Assessable	A	100.00	100.00	LOT 91 SILVERADO VILLAGE R-71
476-240-006-000	Assessable	A	100.00	100.00	LOT 92 SILVERADO VILLAGE R-71

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Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-240-007-000	Assessable	A	100.00	100.00	LOT 93 SILVERADO VILLAGE R-71
476-240-008-000	Assessable	A	100.00	100.00	LOT 94 SILVERADO VILLAGE R-71
476-240-009-000	Assessable	A	100.00	100.00	LOT 95 SILVERADO VILLAGE R-71
476-240-010-000	Assessable	A	100.00	100.00	LOT 96 SILVERADO VILLAGE R-71
476-240-011-000	Assessable	A	100.00	100.00	LOT 97 SILVERADO VILLAGE R-71
476-240-012-000	Assessable	A	100.00	100.00	LOT 98 SILVERADO VILLAGE R-71
476-240-013-000	Assessable	A	100.00	100.00	LOT 99 SILVERADO VILLAGE R-71
476-240-014-000	Assessable	A	100.00	100.00	LOT 100 SILVERADO VILLAGE R-71
476-240-015-000	Assessable	A	100.00	100.00	LOT 101 SILVERADO VILLAGE R-71
476-240-016-000	Assessable	A	100.00	100.00	LOT 102 SILVERADO VILLAGE R-71
476-240-017-000	Assessable	A	100.00	100.00	LOT 103 SILVERADO VILLAGE R-71
476-240-018-000	Assessable	A	100.00	100.00	LOT 104 SILVERADO VILLAGE R-71
476-240-019-000	Assessable	A	100.00	100.00	LOT 105 SILVERADO VILLAGE R-71
476-240-020-000	Assessable	A	100.00	100.00	LOT 106 SILVERADO VILLAGE R-71
476-240-021-000	Assessable	A	100.00	100.00	LOT 107 SILVERADO VILLAGE R-71
476-240-022-000	Assessable	A	100.00	100.00	LOT 108 SILVERADO VILLAGE R-71
476-240-023-000	Assessable	A	100.00	100.00	LOT 109 SILVERADO VILLAGE R-71
476-240-024-000	Assessable	A	100.00	100.00	LOT 110 SILVERADO VILLAGE R-71
476-240-025-000	Assessable	A	100.00	100.00	LOT 111 SILVERADO VILLAGE R-71
476-240-026-000	Assessable	A	100.00	100.00	LOT 112 SILVERADO VILLAGE R-71
476-240-027-000	Assessable	A	100.00	100.00	LOT 113 SILVERADO VILLAGE R-71
476-240-028-000	Assessable	A	100.00	100.00	LOT 114 SILVERADO VILLAG R-71
476-240-029-000	Assessable	A	100.00	100.00	LOT 115 SILVERADO VILLAGE R-71
476-240-030-000	Assessable	A	100.00	100.00	LOT 116 SILVERADO VILLAGE R-71
476-240-031-000	Assessable	A	100.00	100.00	LOT 117 SILVERADO VILLAGE R-71
476-240-032-000	Assessable	A	100.00	100.00	LOT 118 SILVERADO VILLAGE R-71
476-240-033-000	Assessable	A	100.00	100.00	LOT 119 SILVERADO VILLAGE R-71
476-240-034-000	Assessable	A	100.00	100.00	LOT 120 SILVERADO VILLAGE R-71
476-240-035-000	Assessable	A	100.00	100.00	LOT 121 SILVERADO VILLAGE R-71
476-240-036-000	Assessable	A	100.00	100.00	LOT 122 SILVERADO VILLAGE R-71
476-240-037-000	Assessable	A	100.00	100.00	LOT 123 SILVERADO VILLAGE R-71
476-240-038-000	Assessable	A	100.00	100.00	LOT 124 SILVERADO VILLAGE R-71
476-250-001-000	Assessable	A	100.00	100.00	LOT 125 SILVERADO VILLAGE MOR BK R PG 71
476-250-002-000	Assessable	A	100.00	100.00	LOT 126 SILVERADO VILLAGE R-71
476-250-003-000	Assessable	A	100.00	100.00	LOT 127 SILVERADO VILLAGE MOR BK R PG 71
476-250-004-000	Assessable	A	100.00	100.00	LOT 128 SILVERADO VILLAGE MOR R-71
476-250-005-000	Assessable	A	100.00	100.00	LOT 129 SILVERADO VILLAGE MOR BK R PG 71
476-250-006-000	Assessable	A	100.00	100.00	LOT 130 SILVERADO VILLAGE R-71
476-250-007-000	Assessable	A	100.00	100.00	LOT 131 SILVERADO VILLAGE MOR BK R PG 71
476-250-008-000	Assessable	A	100.00	100.00	LOT 132 SILVERADO VILLAGE MOR BK R PG 71
476-250-009-000	Assessable	A	100.00	100.00	LOT 133 SILVERADO VILLAGE MOR BK R PG 71
476-250-010-000	Assessable	A	100.00	100.00	LOT 134 SILVERADO VILLAGE MOR BK R PG 71
476-250-011-000	Assessable	A	100.00	100.00	LOT 135 SILVERADO VILLAGE MOR BK R PG 71
476-250-012-000	Assessable	A	100.00	100.00	LOT 136 SILVERADO VILLAGE MOR BK R PG 71
476-250-013-000	Assessable	A	100.00	100.00	LOT 137 SILVERADO VILLAGE MOR BK R PG 71
476-250-014-000	Assessable	A	100.00	100.00	LOT 138 SILVERADO VILLAGE R-71
476-250-015-000	Assessable	A	100.00	100.00	LOT 139 SILVERADO VILLAGE R-71
476-250-016-000	Assessable	A	100.00	100.00	LOT 140 SILVERADO VILLAGE MOR BK R PG 71
476-250-017-000	Assessable	A	100.00	100.00	LOT 141 SILVERADO VILLAGE MOR BK R PG 71
476-250-018-000	Assessable	A	100.00	100.00	LOT 142 SILVERADO VILLAGE R-71
476-250-019-000	Assessable	A	100.00	100.00	LOT 143 SILVERADO VILLAGE MOR BK R PG 71
476-250-020-000	Assessable	A	100.00	100.00	LOT 144 SILVERADO VILLAGE MOR BK R PG 71
476-250-021-000	Assessable	A	100.00	100.00	LOT 145 SILVERADO VILLAGE MOR BK R PG 71
476-250-022-000	Assessable	A	100.00	100.00	LOT 146 SILVERADO VILLAGE MOR BK R PG 71
476-250-023-000	Assessable	A	100.00	100.00	LOT 147 SILVERADO VILLAGE MOR BK R PG 71
476-250-024-000	Assessable	A	100.00	100.00	LOT 148 SILVERADO VILLAGE R-71
476-250-025-000	Assessable	A	100.00	100.00	LOT 149 SILVERADO VILLAGE MOR BK R PG 71

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-250-026-000	Assessable	A	100.00	100.00	LOT 150 SILVERADO VILLAGE MOR BK R PG 71
476-250-027-000	Assessable	A	100.00	100.00	LOT 151 SILVERADO VILLAGE MOR BK R PG 71
476-250-028-000	Assessable	A	100.00	100.00	LOT 152 SILVERADO VILLAGE MOR BK R PG 71
476-250-029-000	Assessable	A	100.00	100.00	LOT 153 SILVERADO VILLAGE R-71
476-250-030-000	Assessable	A	100.00	100.00	LOT 154 SILVERADO VILLAGE R-71
476-250-031-000	Assessable	A	100.00	100.00	LOT 155 SILVERADO VILLAGE MOR BK R PG 71
476-250-032-000	Assessable	A	100.00	100.00	LOT 156 SILVERADO VILLAGE R-71
476-250-033-000	Assessable	A	100.00	100.00	LOT 157 SILVERADO VILLAGE MOR BK R PG 71
476-250-034-000	Assessable	A	100.00	100.00	LOT 158 SILVERADO VILLAGE MOR BK R PG 71
476-250-035-000	Assessable	A	100.00	100.00	LOT 159 SILVERADO VILLAGE MOR BK R PG 71
476-250-036-000	Assessable	A	100.00	100.00	LOT 160 SILVERADO VILLAGE MOR BK R PG 71
476-250-037-000	Assessable	A	100.00	100.00	LOT 161 SILVERADO VILLAGE MOR BK R PG 71
476-250-038-000	Assessable	A	100.00	100.00	LOT 162 SILVERADO VILLAGE MOR BK R PG 71
476-250-039-000	Assessable	A	100.00	100.00	LOT 163 SILVERADO VILLAGE MOR BK R PG 71
476-250-040-000	Assessable	A	100.00	100.00	LOT 164 SILVERADO VILLAGE MOR BK R PG 71
476-250-041-000	Assessable	A	100.00	100.00	LOT 165 SILVERADO VILLAGE R-71
476-250-042-000	Assessable	A	100.00	100.00	LOT 166 SILVERADO VILLAGE MOR BK R PG 71
476-250-043-000	Assessable	A	100.00	100.00	LOT 167 SILVERADO VILLAGE R-71
476-250-044-000	Assessable	A	100.00	100.00	LOT 168 SILVERADO VILLAGE MOR BK R PG 71
476-250-045-000	Assessable	A	100.00	100.00	LOT 169 SILVERADO VILLAGE MOR BK R PG 71
476-250-046-000	Assessable	A	100.00	100.00	LOT 170 SILVERADO VILLAGE MOR BK R PG 71
476-250-047-000	Assessable	A	100.00	100.00	LOT 171 SILVERADO VILLAGE MOR BK R PG 71
476-250-048-000	Assessable	A	100.00	100.00	LOT 172 SILVERADO VILLAGE MOR BK R PG 71
476-250-049-000	Assessable	A	100.00	100.00	LOT 173 SILVERADO VILLAGE MOR BK R PG 71
476-250-050-000	Assessable	A	100.00	100.00	LOT 174 SILVERADO VILLAGE MOR BK R PG 71
476-250-051-000	Assessable	A	100.00	100.00	LOT 175 SILVERADO VILLAGE MOR BK R PG 71
476-260-001-000	Assessable	A	100.00	100.00	LOT 1 PROSPECTOR POINT R-72
476-260-002-000	Assessable	A	100.00	100.00	LOT 2 PROSPECTOR POINT R-72
476-260-003-000	Assessable	A	100.00	100.00	LOT 3 PROSPECTOR POINT R-2
476-260-004-000	Assessable	A	100.00	100.00	LOT 4 PROSPECTOR POINT R-72
476-260-005-000	Assessable	A	100.00	100.00	LOT 5 PROSPECTOR POINT R-72
476-260-006-000	Assessable	A	100.00	100.00	LOT 6 PROSPECTOR POINT R-72
476-260-007-000	Assessable	A	100.00	100.00	LOT 7 PROSPECTOR POINT R-72
476-260-008-000	Assessable	A	100.00	100.00	LOT 8 PROSPECTOR POINT R-72
476-260-009-000	Assessable	A	100.00	100.00	LOT 9 PROSPECTOR POINT R-72
476-260-010-000	Assessable	A	100.00	100.00	LOT 10 PROSPECTOR POINT R-72
476-260-011-000	Assessable	A	100.00	100.00	LOT 11 PROSPECTOR POINT R-72
476-260-012-000	Assessable	A	100.00	100.00	LOT 12 PROSPECTOR POINT R-72
476-260-013-000	Assessable	A	100.00	100.00	LOT 13 PROPSCTOR POINT R-72
476-260-014-000	Assessable	A	100.00	100.00	LOT 14 PROSPECTOR POINT R-72
476-260-015-000	Assessable	A	100.00	100.00	LOT 15 PROSPECTOR POINT R-72
476-260-016-000	Assessable	A	100.00	100.00	LOT 16 PROSPECTOR POINT R-72
476-260-017-000	Assessable	A	100.00	100.00	LOT 17 PROSPECTOR POINT MOR R-72
476-260-018-000	Assessable	A	100.00	100.00	LOT 18 PROSPECTOR POINT R-72
476-260-019-000	Assessable	A	100.00	100.00	LOT 19 PROSPECTOR POINT R-72
476-260-020-000	Assessable	A	100.00	100.00	LOT 34 PROSPECTOR POINT R-72
476-260-021-000	Assessable	A	100.00	100.00	LOT 35 PROSPECTOR POINT R-72
476-260-022-000	Assessable	A	100.00	100.00	LOT 36 PROSPECTOR POINT R-72
476-260-023-000	Assessable	A	100.00	100.00	LOT 37 PROSPECTOR POINT R-72
476-260-024-000	Assessable	A	100.00	100.00	LOT 38 PROSPECTOR POINT R-72
476-260-025-000	Assessable	A	100.00	100.00	LOT 39 PROSPECTOR POINT R-72
476-260-026-000	Assessable	A	100.00	100.00	LOT 40 PROSPECTOR POINT R-72
476-260-027-000	Assessable	A	100.00	100.00	LOT 41 PROSPECTOR POINT MOR R-72
476-260-028-000	Assessable	A	100.00	100.00	LOT 42 PROSPECTOR POINT R-72
476-260-029-000	Assessable	A	100.00	100.00	LOT 43 PROSPECTOR POINT R-72
476-260-030-000	Assessable	A	100.00	100.00	LOT 44 PROSPECTOR POINT R-72
476-260-031-000	Assessable	A	100.00	100.00	LOT 45 PROSPECTOR POINT R-72

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-260-032-000	Assessable	A	100.00	100.00	LOT 46 PROSPECTOR POINT R-72
476-260-033-000	Assessable	A	100.00	100.00	LOT 47 PROSPECTOR POINT R-72
476-260-034-000	Assessable	A	100.00	100.00	LOT 48 PROSPECTOR POINT R-72
476-260-035-000	Assessable	A	100.00	100.00	LOT 197 PROSPECTOR POINT R-72
476-260-036-000	Assessable	A	100.00	100.00	LOT 198 PROSPECTOR POINT R-72
476-260-037-000	Assessable	A	100.00	100.00	LOT 199 PROSPECTOR POINT R-72
476-260-038-000	Assessable	A	100.00	100.00	LOT 200 PROSPECTOR POINT R-72
476-260-039-000	Assessable	A	100.00	100.00	LOT 201 PROSPECTOR POINT R-72
476-260-040-000	Assessable	A	100.00	100.00	LOT 202 PROSPECTOR POINT R-72
476-260-041-000	Assessable	A	100.00	100.00	LOT 203 PROSPECTOR POINT R-72
476-260-042-000	Assessable	A	100.00	100.00	LOT 204 PROSPECTOR POINT R-72
476-260-043-000	Assessable	A	100.00	100.00	LOT 205 PROSPECTOR POINT R-72
476-260-044-000	Assessable	A	100.00	100.00	LOT 206 PROSPECTOR POINT R-72
476-260-045-000	Assessable	A	100.00	100.00	LOT 207 PROSPECTOR POINT R-72
476-260-046-000	Assessable	A	100.00	100.00	LOT 208 PROSPECTOR POINT R-72
476-260-047-000	Assessable	A	100.00	100.00	LOT 209 PROSPECTOR POINT R-72
476-260-048-000	Assessable	A	100.00	100.00	LOT 210 PROSPECTOR POINT R-72
476-260-049-000	Assessable	A	100.00	100.00	LOT 211 PROSPECTOR POINT R-72
476-260-050-000	Assessable	A	100.00	100.00	LOT 212 PROSPECTOR POINT R-72
476-260-051-000	Assessable	A	100.00	100.00	LOT 213 PROSPECTOR POINT R-72
476-260-052-000	Assessable	A	100.00	100.00	LOT 214 PROSPECTOR POINT R-72
476-260-053-000	Assessable	A	100.00	100.00	LOT 230 PROSPECTOR POINT R-72
476-260-054-000	Assessable	A	100.00	100.00	LOT 231 PROSPECTOR POINT R-72
476-260-055-000	Assessable	A	100.00	100.00	LOT 232 PROSPECTOR POINT R-72
476-260-056-000	Assessable	A	100.00	100.00	LOT 233 PROSPECTOR POINT R-72
476-260-057-000	Assessable	A	100.00	100.00	LOT 234 PROSECTOR POINT R-72
476-260-058-000	Assessable	A	100.00	100.00	LOT 235 PROSPECTOR POINT R-72
476-260-059-000	Assessable	A	100.00	100.00	LOT 236 PROSPECTOR POINT
476-260-060-000	Assessable	A	100.00	100.00	LOT 237 PROSPECTOR POINT R-72
476-260-061-000	Assessable	A	100.00	100.00	LOT 238 PROSPECTOR POINT R-72
476-260-062-000	Assessable	A	100.00	100.00	LOT 239 PROSPECTOR POINT R-72
476-260-063-000	Assessable	A	100.00	100.00	LOT 240 PROSPECTOR POINT R-72
476-260-064-000	Assessable	A	100.00	100.00	LOT 241 PROSPECTOR POINT R-72
476-260-065-000	Assessable	A	100.00	100.00	LOT 242 PROSPECTOR POINT R-72
476-260-066-000	Assessable	A	100.00	100.00	LOT 243 PROSPECTOR POINT R-72
476-260-067-000	Assessable	A	100.00	100.00	LOT 244 PROSPECTOR POINT R-72
476-260-068-000	Assessable	A	100.00	100.00	LOT 245 PROSPECTOR POINT MOR R-72
476-260-069-000	Assessable	A	100.00	100.00	LOT 246 PROSPECTOR POINT R-72
476-260-070-000	Assessable	A	100.00	100.00	LOT 247 PROSPECTOR POINT R-72
476-260-071-000	Assessable	A	100.00	100.00	LOT 248 PROSPECTOR POINT R-72
476-260-072-000	Assessable	A	100.00	100.00	LOT 249 PROSPECTOR POINT R-72
476-270-001-000	Assessable	A	100.00	100.00	LOT 20 PROSPECTOR POINT R-72
476-270-002-000	Assessable	A	100.00	100.00	LOT 21 PROSPECTOR POINT R-72
476-270-003-000	Assessable	A	100.00	100.00	LOT 22 PROSPECTOR POINT R-72
476-270-004-000	Assessable	A	100.00	100.00	LOT 23 PROSPECTOR POINT R-72
476-270-005-000	Assessable	A	100.00	100.00	LOT 24 PROSPECTOR POINT R-72
476-270-006-000	Assessable	A	100.00	100.00	LOT 25 PROSPECTOR POINT R-72
476-270-007-000	Assessable	A	100.00	100.00	LOT 26 PROSPECTOR POINT R-72
476-270-008-000	Assessable	A	100.00	100.00	LOT 27 PROSPECTOR POINT R-72
476-270-009-000	Assessable	A	100.00	100.00	LOT 28 PROSPECTOR POINT MOR R-72
476-270-010-000	Assessable	A	100.00	100.00	LOT 29 PROSPECTOR POINT R-72
476-270-011-000	Assessable	A	100.00	100.00	LOT 30 PROSPECTOR POINT R-72
476-270-012-000	Assessable	A	100.00	100.00	LOT 31 PROSPECTOR POINT R-72
476-270-013-000	Assessable	A	100.00	100.00	LOT 32 PROSPECTOR POINT R-72
476-270-014-000	Assessable	A	100.00	100.00	LOT 33 PROSPECTOR POINT R-72
476-270-015-000	Assessable	A	100.00	100.00	LOT 49 PROSPECTOR POINT R-72
476-270-016-000	Assessable	A	100.00	100.00	LOT 50 PROSPECTOR POINT R-72

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-270-017-000	Assessable	A	100.00	100.00	LOT 51 PROSPECTOR POINT R-72
476-270-018-000	Assessable	A	100.00	100.00	LOT 52 PROSPECTOR POINT R-72
476-270-019-000	Assessable	A	100.00	100.00	LOT 53 PROSPECTOR POINT R-72
476-270-020-000	Assessable	A	100.00	100.00	LOT 54 PROSPECTOR POINT R-72
476-270-021-000	Assessable	A	100.00	100.00	LOT 55 PROSPECTOR POINT R-72
476-270-022-000	Assessable	A	100.00	100.00	LOT 56 PROSPECTOR POINT R-72
476-270-023-000	Assessable	A	100.00	100.00	LOT 57 PROSPECTOR POINT R-72
476-270-024-000	Assessable	A	100.00	100.00	LOT 58 PROSPECTOR POINT R-72
476-270-025-000	Assessable	A	100.00	100.00	LOT 59 PROSPECTOR POINT R-72
476-270-026-000	Assessable	A	100.00	100.00	LOT 60 PROSPECTOR POINT R-72
476-270-027-000	Assessable	A	100.00	100.00	LOT 81 PROSPECTOR POINT R-72
476-270-028-000	Assessable	A	100.00	100.00	LOT 82 PROSPECTOR POINT R-72
476-270-029-000	Assessable	A	100.00	100.00	LOT 83 PROSPECTOR POINT R-72
476-270-030-000	Assessable	A	100.00	100.00	LOT 84 PROSPECTOR POINT R-72
476-270-031-000	Assessable	A	100.00	100.00	LOT 85 PROSPECTOR POINT R-72
476-270-032-000	Assessable	A	100.00	100.00	LOT 86 PROSPECTOR POINT R-72
476-270-033-000	Assessable	A	100.00	100.00	LOT 87 PROSPECTOR POINT R-72
476-270-034-000	Assessable	A	100.00	100.00	LOT 88 PROSPECTOR POINT R-72
476-270-035-000	Assessable	A	100.00	100.00	LOT 89 PROSPECTOR POINT R-72
476-270-036-000	Assessable	A	100.00	100.00	LOT 90 PROSPECTOR POINT R-72
476-270-037-000	Assessable	A	100.00	100.00	LOT 91 PROSPECTOR POINT R-72
476-270-038-000	Assessable	A	100.00	100.00	LOT 92 PROSPECTOR POINT R-72
476-280-001-000	Assessable	A	100.00	100.00	LOT 61 PROSPECTOR POINT R-72
476-280-002-000	Assessable	A	100.00	100.00	LOT 62 PROSPECTOR POINT R-72
476-280-003-000	Assessable	A	100.00	100.00	LOT 63 PROSPECTOR POINT R-72
476-280-004-000	Assessable	A	100.00	100.00	LOT 64 PROSPECTOR POINT R-72
476-280-005-000	Assessable	A	100.00	100.00	LOT 65 PROSPECTOR POINT R-72
476-280-006-000	Assessable	A	100.00	100.00	LOT 66 PROSPECTOR POINT R-72
476-280-007-000	Assessable	A	100.00	100.00	LOT 67 PROSPECTOR POINT R-72
476-280-008-000	Assessable	A	100.00	100.00	LOT 68 PROSPECTOR POINT R-72
476-280-009-000	Assessable	A	100.00	100.00	LOT 69 PROSPECTOR POINT R-72
476-280-010-000	Assessable	A	100.00	100.00	LOT 70 PROSPECTOR POINT R-72
476-280-011-000	Assessable	A	100.00	100.00	LOT 71 PROSPECTOR POINT R-72
476-280-012-000	Assessable	A	100.00	100.00	LOT 72 PROSPECTOR POINT R-72
476-280-013-000	Assessable	A	100.00	100.00	LOT 73 POSPECTOR POINT R-72
476-280-014-000	Assessable	A	100.00	100.00	LOT 74 PROSPECTOR POINT R-72
476-280-015-000	Assessable	A	100.00	100.00	LOT 75 PROSPECTOR POINT R-72
476-280-016-000	Assessable	A	100.00	100.00	LOT 76 PROSPECTOR POINT R-72
476-280-017-000	Assessable	A	100.00	100.00	LOT 77 PROSPECTOR POINT R-72
476-280-018-000	Assessable	A	100.00	100.00	LOT 78 PROSPECTOR POINT R-72
476-280-019-000	Assessable	A	100.00	100.00	LOT 79 PROSPECTOR POINT R-72
476-280-020-000	Assessable	A	100.00	100.00	LOT 80 PROSPECTOR POINT R-72
476-280-021-000	Assessable	A	100.00	100.00	LOT 93 PROSPECTOR POINT R-72
476-280-022-000	Assessable	A	100.00	100.00	LOT 94 PROSPECTOR POINT R-72
476-280-023-000	Assessable	A	100.00	100.00	LOT 95 PROSPECTOR POINT R-72
476-280-024-000	Assessable	A	100.00	100.00	LOT 96 PROSPECTOR POINT R-72
476-280-025-000	Assessable	A	100.00	100.00	LOT 97 PROSPECTOR POINT R-72
476-280-026-000	Assessable	A	100.00	100.00	LOT 98 PROSPECTOR POINT R-72
476-280-027-000	Assessable	A	100.00	100.00	LOT 99 PROSPECTOR POINT R-72
476-280-028-000	Assessable	A	100.00	100.00	LOT 100 PROSPECTOR POINT R-72
476-280-029-000	Assessable	A	100.00	100.00	LOT 101 PROSPECTOR POINT R-72
476-280-030-000	Assessable	A	100.00	100.00	LOT 102 PROSPECTOR POINT R-72
476-280-031-000	Assessable	A	100.00	100.00	LOT 103 PROSPECTOR POINT R-72
476-280-032-000	Assessable	A	100.00	100.00	LOT 104 PROSPECTOR POINT R-72
476-280-033-000	Assessable	A	100.00	100.00	LOT 105 PROSPECTOR POINT R-72
476-280-034-000	Assessable	A	100.00	100.00	LOT 106 PROSPECTOR POINT R-72
476-280-035-000	Assessable	A	100.00	100.00	LOT 107 PROSPECTOR POINT R-72

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-280-036-000	Assessable	A	100.00	100.00	LOT 108 PROSPECTOR POINT R-72
476-280-037-000	Assessable	A	100.00	100.00	LOT 109 PROSPECTOR POINT R-72
476-280-038-000	Assessable	A	100.00	100.00	LOT 110 PROSPECTOR POINT R-72
476-280-039-000	Assessable	A	100.00	100.00	LOT 111 PROSPECTOR POINT R-72
476-280-040-000	Assessable	A	100.00	100.00	LOT 112 PROSPECTOR POINT R-72
476-280-041-000	Assessable	A	100.00	100.00	LOT 113 PROSPECTOR POINT R-72
476-280-042-000	Assessable	A	100.00	100.00	LOT 114 PROSPECTOR POINT MOR R-72
476-280-043-000	Assessable	A	100.00	100.00	LOT 115 PROSPECTOR POINT R-72
476-280-044-000	Assessable	A	100.00	100.00	LOT 116 PROSPECTOR POINT R-72
476-280-045-000	Assessable	A	100.00	100.00	LOT 117 PROSPECTOR POINT R-72
476-280-046-000	Assessable	A	100.00	100.00	LOT 118 PROSPECTOR POINT R-72
476-280-047-000	Assessable	A	100.00	100.00	LOT 119 PROSPECTOR POINT R-72
476-280-048-000	Assessable	A	100.00	100.00	LOT 120 PROSPECTOR POINT R-72
476-280-049-000	Assessable	A	100.00	100.00	LOT 121 PROSPECTOR POINT R-72
476-280-050-000	Assessable	A	100.00	100.00	LOT 122 PROSPECTOR POINT R-72
476-280-051-000	Assessable	A	100.00	100.00	LOT 123 PROSPECTOR POINT R-72
476-280-052-000	Assessable	A	100.00	100.00	LOT 124 PROSPECTOR POINT R-72
476-280-053-000	Assessable	A	100.00	100.00	LOT 125 PROSPECTOR POINT R-72
476-280-054-000	Assessable	A	100.00	100.00	LOT 126 PROSPECTOR POINT R-72
476-280-055-000	Assessable	A	100.00	100.00	LOT 127 PROSPECTOR POINT R-72
476-290-001-000	Assessable	A	100.00	100.00	LOT 128 PROSPECTOR POINT MOR R-72
476-290-002-000	Assessable	A	100.00	100.00	LOT 129 PROSPECTOR POINT R-72
476-290-003-000	Assessable	A	100.00	100.00	LOT 130 PROSPECTOR POINT R-72
476-290-004-000	Assessable	A	100.00	100.00	LOT 131 PROSPECTOR POINT MOR R-72
476-290-005-000	Assessable	A	100.00	100.00	LOT 132 PROSPECTOR POINT MOR R-72
476-290-006-000	Assessable	A	100.00	100.00	LOT 133 PROSPECTOR POINT MOR R-72
476-290-007-000	Assessable	A	100.00	100.00	LOT 134 PROSPECTOR POINT MOR R-72
476-290-008-000	Assessable	A	100.00	100.00	LOT 135 PROSPECTOR POINT MOR R-72
476-290-009-000	Assessable	A	100.00	100.00	LOT 136 PROSPECTOR POINT MOR BK R PG 72
476-290-010-000	Assessable	A	100.00	100.00	LOT 137 PROSPECTOR POINT R-72
476-290-011-000	Assessable	A	100.00	100.00	LOT 138 PROSPECTOR POINT MOR BK R PG 72
476-290-012-000	Assessable	A	100.00	100.00	LOT 139 PROSPECTOR POINT MOR BK R PG 72
476-290-013-000	Assessable	A	100.00	100.00	LOT 140 PROSPECTOR POINT MOR BK R PG 72
476-290-014-000	Assessable	A	100.00	100.00	LOT 141 PROSPECTOR POINT MOR BK R PG 72
476-290-015-000	Assessable	A	100.00	100.00	LOT 142 PROSPECTOR POINT MOR BK R PG 72
476-290-016-000	Assessable	A	100.00	100.00	LOT 143 PROSPECTOR POINT MOR BK R PG 72
476-290-017-000	Assessable	A	100.00	100.00	LOT 144 PROSPECTOR POINT MOR BK R PG 72
476-290-018-000	Assessable	A	100.00	100.00	LOT 145 PROSPECTOR POINT MOR BK R PG 72
476-290-019-000	Assessable	A	100.00	100.00	LOT 146 PROSPECTOR POINT MOR BK R PG 72
476-290-020-000	Assessable	A	100.00	100.00	LOT 147 PROSPECTOR POINT R-72
476-290-021-000	Assessable	A	100.00	100.00	LOT 148 PROSPECTOR POINT MOR BK R PG 72
476-290-022-000	Assessable	A	100.00	100.00	LOT 149 PROSPECTOR POINT MOR BK R PG 72
476-290-023-000	Assessable	A	100.00	100.00	LOT 150 PROSPECTOR POINT MOR BK R PG 72
476-290-024-000	Assessable	A	100.00	100.00	LOT 151 PROSPECTOR POINT MOR BK R PG 72
476-290-025-000	Assessable	A	100.00	100.00	LOT 152 PROSPECTOR POINT MOR BK R PG 72
476-290-026-000	Assessable	A	100.00	100.00	LOT 153 PROSPECTSOR POINT MOR BK R PG 72
476-290-027-000	Assessable	A	100.00	100.00	LOT 154 PROSPECTOR POINT MOR BK R PG 72
476-290-028-000	Assessable	A	100.00	100.00	LOT 155 PROSPECTOR POINT MOR BK R PG 72
476-290-029-000	Assessable	A	100.00	100.00	LOT 156 PROSPECTOR POINT R-72
476-290-030-000	Assessable	A	100.00	100.00	LOT 157 PROSPECTOR POINT MOR BK R PG 72
476-290-031-000	Assessable	A	100.00	100.00	LOT 158 PROSPECSTOR POINT MOR BK R PG 72
476-290-032-000	Assessable	A	100.00	100.00	LOT 159 PROSPECTOR POINT R-72
476-290-033-000	Assessable	A	100.00	100.00	LOT 160 PROSPECTOR POINT MOR BK R PG 72
476-290-034-000	Assessable	A	100.00	100.00	LOT 161 PROSPECTOR POINT MOR BK R PG 72
476-290-035-000	Assessable	A	100.00	100.00	LOT 162 PROSPECTOR POINT MOR BK R PG 72
476-290-036-000	Assessable	A	100.00	100.00	LOT 163 PROSPECTOR POINT MOR BK R PG 72
476-290-037-000	Assessable	A	100.00	100.00	LOT 164 PROSPECTOR POINT MOR BK R PG 72

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-290-038-000	Assessable	A	100.00	100.00	LOT 165 PROSPECTOR POINT MOR BK R PG 72
476-290-039-000	Assessable	A	100.00	100.00	LOT 166 PROSPECTOR POINT MOR BK R PG 72
476-290-040-000	Assessable	A	100.00	100.00	LOT 167 PROSPECTOR POINT MOR BK R PG 72
476-290-041-000	Assessable	A	100.00	100.00	LOT 168 PROSPECTOR POINT R-72
476-290-042-000	Assessable	A	100.00	100.00	LOT 169 PROSPECTOR POINT R-72
476-290-043-000	Assessable	A	100.00	100.00	LOT 170 PROSPECTOR POINT MOR BK R PG 72
476-290-044-000	Assessable	A	100.00	100.00	LOT 171 PROSPECTOR POINT MOR BK R PG 72
476-290-045-000	Assessable	A	100.00	100.00	LOT 172 PROSPECTOR POINT MOR BK R PG 72
476-290-046-000	Assessable	A	100.00	100.00	LOT 173 PROSPECTOR POINT MOR BK R PG 72
476-290-047-000	Assessable	A	100.00	100.00	LOT 174 PROSPECTOR POINT MOR BK R PG 72
476-290-048-000	Assessable	A	100.00	100.00	LOT 175 PROSPECTO POINT BK R PG 72
476-290-049-000	Assessable	A	100.00	100.00	LOT 176 PROSPECTOR POINT MOR BK R PG 72
476-290-050-000	Assessable	A	100.00	100.00	LOT 177 PROSPECTOR POINT R-72
476-290-051-000	Assessable	A	100.00	100.00	LOT 178 PROSPECTOR POINT R-72
476-290-052-000	Assessable	A	100.00	100.00	LOT 179 PROSPECTOR POINT MOR BK R PG 72
476-290-053-000	Assessable	A	100.00	100.00	LOT 180 PROSPECTOR POINT MOR BK R PG 72
476-290-054-000	Assessable	A	100.00	100.00	LOT 181 PROSPECTOR POINT MOR BK R PG 72
476-290-055-000	Assessable	A	100.00	100.00	LOT 182 PROSPECTOR POINT MOR BK R PG 72
476-290-056-000	Assessable	A	100.00	100.00	LOT 183 PROSPECTOR POINT MOR BK R PG 72
476-290-057-000	Assessable	A	100.00	100.00	LOT 184 PROSPECTOR POINT MOR BK R PG 72
476-290-058-000	Assessable	A	100.00	100.00	LOT 185 PROSPECTOR POINT MOR BK R PG 72
476-290-059-000	Assessable	A	100.00	100.00	LOT 186 PROSPECTOR POINT R-72
476-290-060-000	Assessable	A	100.00	100.00	LOT 187 PROSPECTOR POINT MOR BK R PG 72
476-290-061-000	Assessable	A	100.00	100.00	LOT 188 PROSPECTOR POINT MOR BK R PG 72
476-290-062-000	Assessable	A	100.00	100.00	LOT 189 PROSPECTOR POINT R-72
476-290-063-000	Assessable	A	100.00	100.00	LOT 190 PROSPECTOR POINT R-72
476-290-064-000	Assessable	A	100.00	100.00	LOT 191 PROSPECTOR POINT MOR BK R PG 72
476-290-065-000	Assessable	A	100.00	100.00	LOT 192 PROSPECTOR POINT MOR BK R PG 72
476-290-066-000	Assessable	A	100.00	100.00	LOT 193 PROSPECTOR POINT R-72
476-290-067-000	Assessable	A	100.00	100.00	LOT 194 PROSPECTOR POINT MOR BK R PG 72
476-290-068-000	Assessable	A	100.00	100.00	LOT 195 PROSPECTOR POINT MOR BK R PG 72
476-290-069-000	Assessable	A	100.00	100.00	LOT 196 PROSPECTOR POINT R-72
476-290-070-000	Assessable	A	100.00	100.00	LOT 215 PROSPECTOR POINT MOR BK R PG 72
476-290-071-000	Assessable	A	100.00	100.00	LOT 216 PROSPECTOR POINT MOR BK R PG 72
476-290-072-000	Assessable	A	100.00	100.00	LOT 217 PROSPECTOR POINT MOR BK R PG 72
476-290-073-000	Assessable	A	100.00	100.00	LOT 218 PROSPECTOR POINT R-72
476-290-074-000	Assessable	A	100.00	100.00	LOT 219 PROSPECTOR POINT MOR BK R PG 72
476-290-075-000	Assessable	A	100.00	100.00	LOT 220 PROSPECTO POINT MOR BK R PG 72
476-290-076-000	Assessable	A	100.00	100.00	LOT 221 PROSPECTO POINT R-72
476-290-077-000	Assessable	A	100.00	100.00	LOT 222 PROSPECTOR POINT R-72
476-290-078-000	Assessable	A	100.00	100.00	LOT 223 PROSPECTOR POINT MOR BK R PG 72
476-290-079-000	Assessable	A	100.00	100.00	LOT 224 PROSPECTOR POINT MOR BK R PG 72
476-290-080-000	Assessable	A	100.00	100.00	LOT 225 PROSPECTOR POINT MOR BK R PG 72
476-290-081-000	Assessable	A	100.00	100.00	LOT 226 PROSPECTOR POINT R-72
476-290-082-000	Assessable	A	100.00	100.00	LOT 227 PROSPECTOR POINT MOR BK R PG 72
476-290-083-000	Assessable	A	100.00	100.00	LOT 228 PROSPECTOR POINT R-72
476-290-084-000	Assessable	A	100.00	100.00	LOT 229 PROSPECTOR POINT R-72
476-300-001-000	Assessable	A	100.00	100.00	LOT 6 CALIFORNIA LEGEND UNIT 1 R-93
476-300-002-000	Assessable	A	100.00	100.00	LOT 7 CALIFORNIA LEGEND UNIT 1 R-93
476-300-003-000	Assessable	A	100.00	100.00	LOT 8 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-004-000	Assessable	A	100.00	100.00	LOT 9 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-005-000	Assessable	A	100.00	100.00	LOT 10 CALIFORNIA LEGEND UNIT 1 R-93
476-300-006-000	Assessable	A	100.00	100.00	LOT 11 CALIFORNIA LEGEND UNIT 1 MOR R PG 93
476-300-007-000	Assessable	A	100.00	100.00	LOT 12 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-008-000	Assessable	A	100.00	100.00	LOT 13 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-009-000	Assessable	A	100.00	100.00	LOT 14 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-010-000	Assessable	A	100.00	100.00	LOT 15 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-300-011-000	Assessable	A	100.00	100.00	LOT 16 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-012-000	Assessable	A	100.00	100.00	LOT 17 CALIFORNIA LEGEND UNIT 1 R-93
476-300-013-000	Assessable	A	100.00	100.00	LOT 18 CALIFORNIA LEGEND UNIT 1 MOR R-93
476-300-014-000	Assessable	A	100.00	100.00	LOT 19 CALIFORNIA LEGEND UNIT 1 R-93
476-300-015-000	Assessable	A	100.00	100.00	LOT 20 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-016-000	Assessable	A	100.00	100.00	LOT 21 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-017-000	Assessable	A	100.00	100.00	LOT 22 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-018-000	Assessable	A	100.00	100.00	LOT 23 CALIFORNIA LEGEND UNIT 1 R-93
476-300-019-000	Assessable	A	100.00	100.00	LOT 24 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-020-000	Assessable	A	100.00	100.00	LOT 25 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-021-000	Assessable	A	100.00	100.00	LOT 26 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-022-000	Assessable	A	100.00	100.00	LOT 27 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-023-000	Assessable	A	100.00	100.00	LOT 28 CALIFORNIA LEGEND UNIT 1 R-93
476-300-024-000	Assessable	A	100.00	100.00	LOT 29 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-025-000	Assessable	A	100.00	100.00	LOT 30 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-026-000	Assessable	A	100.00	100.00	LOT 31 CALIFORNIA LEGEND UNIT 1 R-93
476-300-027-000	Assessable	A	100.00	100.00	LOT 32 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-028-000	Assessable	A	100.00	100.00	LOT 33 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-029-000	Assessable	A	100.00	100.00	LOT 34 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-030-000	Assessable	A	100.00	100.00	LOT 35 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-031-000	Assessable	A	100.00	100.00	LOT 36 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-032-000	Assessable	A	100.00	100.00	LOT 37 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-033-000	Assessable	A	100.00	100.00	LOT 38 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-034-000	Assessable	A	100.00	100.00	LOT 39 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-035-000	Assessable	A	100.00	100.00	LOT 40 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-036-000	Assessable	A	100.00	100.00	LOT 41 CALIFORNIA LEGEND UNIT 1 R-93
476-300-037-000	Assessable	A	100.00	100.00	LOT 42 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-038-000	Assessable	A	100.00	100.00	LOT 43 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-039-000	Assessable	A	100.00	100.00	LOT 44 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-040-000	Assessable	A	100.00	100.00	LOT 45 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-041-000	Assessable	A	100.00	100.00	LOT 46 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-300-042-000	Assessable	A	100.00	100.00	LOT 47 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-001-000	Assessable	A	100.00	100.00	LOT 1 CALIFORNIA LEGEND UNIT #1 MOR R-93
476-310-002-000	Assessable	A	100.00	100.00	LOT 2 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-003-000	Assessable	A	100.00	100.00	LOT 3 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-004-000	Assessable	A	100.00	100.00	LOT 4 CALIFORNIA LEGEND UNIT 1 R-93
476-310-005-000	Assessable	A	100.00	100.00	LOT 5 CALIFORNIA LEGEND UNIT 1 R-93
476-310-006-000	Assessable	A	100.00	100.00	LOT 48 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-007-000	Assessable	A	100.00	100.00	LOT 49 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-008-000	Assessable	A	100.00	100.00	LOT 50 CALIFORNIA LEGEND UNIT 1 R-93
476-310-009-000	Assessable	A	100.00	100.00	LOT 51 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-010-000	Assessable	A	100.00	100.00	LOT 52 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-011-000	Assessable	A	100.00	100.00	LOT 53 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-012-000	Assessable	A	100.00	100.00	LOT 54 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-013-000	Assessable	A	100.00	100.00	LOT 55 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-014-000	Assessable	A	100.00	100.00	LOT 56 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-015-000	Assessable	A	100.00	100.00	LOT 57 CALIFORNIA LEGEND UNIT 1 MOR BK R-93
476-310-016-000	Assessable	A	100.00	100.00	LOT 58 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-017-000	Assessable	A	100.00	100.00	LOT 59 CALIFORNIA LEGEND UNIT 1 R-93
476-310-018-000	Assessable	A	100.00	100.00	LOT 60 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-019-000	Assessable	A	100.00	100.00	LOT 61 CALIFORNIA LEGEND UNIT 1 R-93
476-310-020-000	Assessable	A	100.00	100.00	LOT 62 CALIFORNIA LEGEND UNIT 1 R-93
476-310-021-000	Assessable	A	100.00	100.00	LOT 63 CALIFORNIA LEGEND UNIT 1 MOR BK R PG 93
476-310-022-000	Assessable	A	100.00	100.00	LOT 64 CALIFORNIA LEGEND UNIT 1 R-93
476-320-001-000	Assessable	A	100.00	100.00	LOT 117 CALIFORNIA LEGEND UNIT 3R-95
476-320-002-000	Assessable	A	100.00	100.00	LOT 118 CALIFORNIA LEGEND UNIT 3 MOR BK R PG 95
476-320-003-000	Assessable	A	100.00	100.00	LOT 119 CALIFORNIA LEGEND UNIT 3R-95

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-320-004-000	Assessable	A	100.00	100.00	LOT 120 CALIFORNIA LEGEND UNIT 3R-95
476-320-005-000	Assessable	A	100.00	100.00	LOT 121 CALIFORNIA LEGEND UNIT 3R-95
476-320-006-000	Assessable	A	100.00	100.00	LOT 122 CALIFORNIA LEGEND UNIT 3R-95
476-320-007-000	Assessable	A	100.00	100.00	LOT 123 CALIFORNIA LEGEND UNIT 3R-95
476-320-008-000	Assessable	A	100.00	100.00	LOT 124 CALIFORNIA LEGEND UNIT 3 MOR BK R PG 95
476-320-009-000	Assessable	A	100.00	100.00	LOT 125 CALIFORNIA LEGEND UNIT 3 BK R PG 95
476-320-010-000	Assessable	A	100.00	100.00	LOT 126 CALIFORNIA LEGEND UNIT 3 R-95
476-320-011-000	Assessable	A	100.00	100.00	LOT 127 CALIFORNIA LEGEND UNIT 3R-95
476-320-012-000	Assessable	A	100.00	100.00	LOT 128 CALIFORNIA LEGEND UNIT 3 R-95
476-320-013-000	Assessable	A	100.00	100.00	LOT 129 CALIFORNIA LEGEND UNIT 3 R-95
476-320-014-000	Assessable	A	100.00	100.00	LOT 130 CALIFORNIA LEGEND UNIT 3 R-95
476-320-015-000	Assessable	A	100.00	100.00	LOT 131 CALIFORNIA LEGEND UNIT 3 R-95
476-320-016-000	Assessable	A	100.00	100.00	LOT 132 CALIFORNIA LEGEND UNIT 3 R-95
476-320-017-000	Assessable	A	100.00	100.00	LOT 133 CALIFORNIA LEGEND UNIT 3 R-95
476-320-018-000	Assessable	A	100.00	100.00	LOT 134 CALIFORNIA LEGEND UNIT 3 R-95
476-320-019-000	Assessable	A	100.00	100.00	LOT 135 CALIFORNIA LEGEND UNIT 3 R-95
476-320-020-000	Assessable	A	100.00	100.00	LOT 136 CALIFORNIA LEGEND UNIT 3 R-95
476-320-021-000	Assessable	A	100.00	100.00	LOT 137 CALIFORNIA LEGEND UNIT 3 R-95
476-320-022-000	Assessable	A	100.00	100.00	LOT 138 CALIFORNIA LEGEND UNIT 3 R-95
476-320-023-000	Assessable	A	100.00	100.00	LOT 139 CALIFORNIA LEGEND UNIT 3 R-95
476-320-024-000	Assessable	A	100.00	100.00	LOT 140 CALIFORNIA LEGEND UNIT 3 R-95
476-320-025-000	Assessable	A	100.00	100.00	LOT 141 CALIFORNIA LEGEND UNIT 3 R-95
476-320-026-000	Assessable	A	100.00	100.00	LOT 142 CALIFORNIA LEGEND UNIT 3 R-95
476-320-027-000	Assessable	A	100.00	100.00	LOT 143 CALIFORNIA LEGEND UNIT 3 R-95
476-320-028-000	Assessable	A	100.00	100.00	LOT 144 CALIFORNIA LEGEND UNIT 3 R-95
476-320-029-000	Assessable	A	100.00	100.00	LOT 145 CALIFORNIA LEGEND UNIT 3 R-95
476-320-030-000	Assessable	A	100.00	100.00	LOT 146 CALIFORNIA LEGEND UNIT 3R-95
476-320-031-000	Assessable	A	100.00	100.00	LOT 147 CALIFORNIA LEGEND UNIT 3 R-95
476-320-032-000	Assessable	A	100.00	100.00	LOT 148 CALIFORNIA LEGEND UNIT 3 R-95
476-320-033-000	Assessable	A	100.00	100.00	LOT 149 CALIFORNIA LEGEND UNIT 3 R-95
476-320-034-000	Assessable	A	100.00	100.00	LOT 150 CALIFORNIA LEGEND UNIT 3 R-95
476-320-035-000	Assessable	A	100.00	100.00	LOT 151 CALIFORNIA LEGEND UNIT 3 R-95
476-320-036-000	Assessable	A	100.00	100.00	LOT 152 CALIFORNIA LEGEND UNIT 3 R-95
476-320-037-000	Assessable	A	100.00	100.00	LOT 153 CALIFORNIA LEGEND UNIT 3 R-95
476-320-038-000	Assessable	A	100.00	100.00	LOT 154 CALIFORNIA LEGEND UNIT 3 R-95
476-320-039-000	Assessable	A	100.00	100.00	LOT 155 CALIFORNIA LEGEND UNIT 3 R-95
476-320-040-000	Assessable	A	100.00	100.00	LOT 156 CALIFORNIA LEGEND UNIT 3 R-95
476-320-041-000	Assessable	A	100.00	100.00	LOT 157 CALIFORNIA LEGEND UNIT 3 R-95
476-320-042-000	Assessable	A	100.00	100.00	LOT 158 CALIFORNIA LEGEND UNIT 3R-95
476-320-043-000	Assessable	A	100.00	100.00	LOT 159 CALIFORNIA LEGEND UNIT 3 R-95
476-320-044-000	Assessable	A	100.00	100.00	LOT 160 CALIFORNIA LEGEND UNIT 3 R-95
476-320-045-000	Assessable	A	100.00	100.00	LOT 161 CALIFORNIA LEGEND UNIT 3 R-95
476-320-046-000	Assessable	A	100.00	100.00	LOT 162 CALIFORNIA LEGEND UNIT 3 R-95
476-320-047-000	Assessable	A	100.00	100.00	LOT 163 CALIFORNIA LEGEND UNIT 3 R-95
476-320-048-000	Assessable	A	100.00	100.00	LOT 164 CALIFORNIA LEGEND UNIT 3 R-95
476-320-049-000	Assessable	A	100.00	100.00	LOT 165 CALIFORNIA LEGEND UNIT 3 R-95
476-320-050-000	Assessable	A	100.00	100.00	LOT 166 CALIFORNIA LEGEND UNIT 3 R-95
476-320-051-000	Assessable	A	100.00	100.00	LOT 167 CALIFORNIA LEGEND UNIT 3 R-95
476-320-052-000	Assessable	A	100.00	100.00	LOT 168 CALIFORNIA LEGEND UNIT 3 R-95
476-320-053-000	Assessable	A	100.00	100.00	LOT 169 CALIFORNIA LEGEND UNIT 3 R-95
476-320-054-000	Assessable	A	100.00	100.00	LOT 170 CALIFORNIA LEGEND UNIT 3 R-95
476-320-055-000	Assessable	A	100.00	100.00	LOT 171 CALIFORNIA LEGEND UNIT 3 MOR R PG 95
476-320-056-000	Assessable	A	100.00	100.00	LOT 172 CALIFORNIA LEGEND UNIT 3 R-95
476-320-057-000	Assessable	A	100.00	100.00	LOT 173 CALIFORNIA LEGEND UNIT 3 R-95
476-320-058-000	Assessable	A	100.00	100.00	LOT 174 CALIFORNIA LEGEND UNIT 3 R-95
476-320-059-000	Assessable	A	100.00	100.00	LOT 175 CALIFORNIA LEGEND UNIT 3 R-95
476-320-060-000	Assessable	A	100.00	100.00	LOT 176 CALIFORNIA LEGEND UNIT 3 R-95

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-320-061-000	Assessable	A	100.00	100.00	LOT 177 CALIFORNIA LEGEND UNIT 3 R-95
476-320-062-000	Assessable	A	100.00	100.00	LOT 178 CALIFORNIA LEGEND UNIT 3 R-95
476-320-063-000	Assessable	A	100.00	100.00	LOT 179 CALIFORNIA LEGEND UNIT 3 R-95
476-320-064-000	Assessable	A	100.00	100.00	LOT 180 CALIFORNIA LEGEND UNIT 3 R-95
476-320-065-000	Assessable	A	100.00	100.00	LOT 181 CALIFORNIA LEGEND UNIT 3 R-95
476-320-066-000	Assessable	A	100.00	100.00	LOT 182 CALIFORNIA LEGEND UNIT 3 R-95
476-320-067-000	Assessable	A	100.00	100.00	LOT 183 CALIFORNIA LEGEND UNIT 3 R-95
476-320-068-000	Assessable	A	100.00	100.00	LOT 184 CALIFORNIA LEGEND UNIT 3 R-95
476-320-071-000	Assessable	A	100.00	100.00	LOT 185 CALIFORNIA LEGEND UNIT 4 R-96
476-320-072-000	Assessable	A	100.00	100.00	LOT 186 CALIFORNIA LEGEND UNIT 4 R-96
476-320-073-000	Assessable	A	100.00	100.00	LOT 187 CALIFORNIA LEGEND UNIT 4 R-96
476-320-074-000	Assessable	A	100.00	100.00	LOT 188 CALIFORNIA LEGEND UNIT 4 R-96
476-320-075-000	Assessable	A	100.00	100.00	LOT 189 CALIFORNIA LEGEND UNIT 4 R-96
476-320-076-000	Assessable	A	100.00	100.00	LOT 190 CALIFORNIA LEGEND UNIT 4 R-96
476-320-077-000	Assessable	A	100.00	100.00	LOT 225 CALIFORNIA LEGEND UNIT 4 R-96
476-320-078-000	Assessable	A	100.00	100.00	LOT 226 CALIFORNIA LEGEND UNIT 4 R-96
476-320-079-000	Assessable	A	100.00	100.00	LOT 227 CALIFORNIA LEGEND UNIT 4 R-96
476-320-080-000	Assessable	A	100.00	100.00	LOT 233 CALIFORNIA LEGEND UNIT 4 R-96
476-320-081-000	Assessable	A	100.00	100.00	LOT 234 CALIFORNIA LEGEND UNIT 4 MOR BK R PG 96
476-320-082-000	Assessable	A	100.00	100.00	LOT 235 CALIFORNIA LEGEND UNIT 4 R-96
476-320-083-000	Assessable	A	100.00	100.00	LOT 236 CALIFORNIA LEGEND UNIT 4 R-96
476-330-001-000	Assessable	A	100.00	100.00	LOT 191 CALIFORNIA LEGEND UNIT 4 R-96
476-330-002-000	Assessable	A	100.00	100.00	LOT 192 CALIFORNIA LEGEND UNIT 4 R-96
476-330-003-000	Assessable	A	100.00	100.00	LOT 193 CALIFORNIA LEGEND UNIT 4 R-96
476-330-004-000	Assessable	A	100.00	100.00	LOT 194 CALIFORNIA LEGEND UNIT 4 R-96
476-330-005-000	Assessable	A	100.00	100.00	LOT 195 CALIFORNIA LEGEND UNIT 4 R-96
476-330-006-000	Assessable	A	100.00	100.00	LOT 196 CALIFORNIA LEGEND UNIT 4 R-96
476-330-007-000	Assessable	A	100.00	100.00	LOT 197 CALIFORNIA LEGEND UNIT 4 R-96
476-330-008-000	Assessable	A	100.00	100.00	LOT 198 CALIFORNIA LEGEND UNIT 4 R-96
476-330-009-000	Assessable	A	100.00	100.00	LOT 199 CALIFORNIA LEGEND UNIT 4R-96
476-330-010-000	Assessable	A	100.00	100.00	LOT 200 CALIFORNIA LEGEND UNIT 4R-96
476-330-011-000	Assessable	A	100.00	100.00	LOT 201 CALIFORNIA LEGEND UNIT 4 MOR BK R PG 96
476-330-012-000	Assessable	A	100.00	100.00	LOT 202 CALIFORNIA LEGEND UNIT 4R-96
476-330-013-000	Assessable	A	100.00	100.00	LOT 203 CALIFORNIA LEGEND UNIT 4R-96
476-330-014-000	Assessable	A	100.00	100.00	LOT 204 CALIFORNIA LEGEND UNIT 4 R-96
476-330-015-000	Assessable	A	100.00	100.00	LOT 205 CALIFORNIA LEGEND UNIT 4 R-96
476-330-016-000	Assessable	A	100.00	100.00	LOT 206 CALIFORNIA LEGEND UNIT 4 MOR BK R PG 96
476-330-017-000	Assessable	A	100.00	100.00	LOT 207 CALIFORNIA LEGEND UNIT 4 MOR BK R PG 96
476-330-018-000	Assessable	A	100.00	100.00	LOT 208 CALIFORNIA LEGEND UNIT 4 R-96
476-330-019-000	Assessable	A	100.00	100.00	LOT 209 CALIFORNIA LEGEND UNIT 4 R-96
476-330-020-000	Assessable	A	100.00	100.00	LOT 210 CALIFORNIA LEGEND UNIT 4 MOR BK R PG 96
476-330-021-000	Assessable	A	100.00	100.00	LOT 211 CALIFORNIA LEGEND UNIT 4 R-96
476-330-022-000	Assessable	A	100.00	100.00	LOT 212 CALIFORNIA LEGEND UNIT 4 R-96
476-330-023-000	Assessable	A	100.00	100.00	LOT 213 CALIFORNIA LEGEND UNIT 4 R-96
476-330-024-000	Assessable	A	100.00	100.00	LOT 214 CALIFORNIA LEGEND UNIT 4 R-96
476-330-025-000	Assessable	A	100.00	100.00	LOT 215 CALIFORNIA LEGEND UNIT 4 R-96
476-330-026-000	Assessable	A	100.00	100.00	LOT 216 CALIFORNIA LEGEND UNIT 4 R-96
476-330-027-000	Assessable	A	100.00	100.00	LOT 217 CALIFORNIA LEGEND UNIT 4R-96
476-330-028-000	Assessable	A	100.00	100.00	LOT 218 CALIFORNIA LEGEND UNIT 4 R-96
476-330-029-000	Assessable	A	100.00	100.00	LOT 219 CALIFORNIA LEGEND UNIT 4 R-96
476-330-030-000	Assessable	A	100.00	100.00	LOT 220 CALIFORNIA LEGEND UNIT 4 R-96
476-330-031-000	Assessable	A	100.00	100.00	LOT 221 CALIFORNIA LEGEND UNIT 4 MOR BK R PG 96
476-330-032-000	Assessable	A	100.00	100.00	LOT 222 CALIFORNIA LEGEND UNIT 4 R-96
476-330-033-000	Assessable	A	100.00	100.00	LOT 223 CALIFORNIA LEGEND UNIT 4 R-96
476-330-034-000	Assessable	A	100.00	100.00	LOT 224 CALIFORNIA LEGEND UNIT 4 R-96
476-330-035-000	Assessable	A	100.00	100.00	LOT 228 CALIFORNIA LEGEND UNIT 4 R-96
476-330-036-000	Assessable	A	100.00	100.00	LOT 229 CALIFORNIA LEGEND UNIT 4 R-96

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-330-037-000	Assessable	A	100.00	100.00	LOT 230 CALIFORNIA LEGEND UNIT 4 R-96
476-330-038-000	Assessable	A	100.00	100.00	LOT 231 CALIFORNIA LEGEND UNIT 4 R-96
476-330-039-000	Assessable	A	100.00	100.00	LOT 232 CALIFORNIA LEGEND UNIT 4 R-96
476-330-043-000	Assessable	A	100.00	100.00	LOT 86 CALIFORNIA LEGEND UNIT 2 R-94
476-330-044-000	Assessable	A	100.00	100.00	LOT 101 CALIFORNIA LEGEND UNIT 2R-94
476-330-045-000	Assessable	A	100.00	100.00	LOT 102 CALIFORNIA LEGEND UNIT 2 R-94
476-330-046-000	Assessable	A	100.00	100.00	LOT 103 CALIFORNIA LEGEND UNIT 2 R-94
476-330-047-000	Assessable	A	100.00	100.00	LOT 104 CALIFORNIA LEGEND UNIT 2 R-94
476-330-048-000	Assessable	A	100.00	100.00	LOT 105 CALIFORNIA LEGEND UNIT 2R-94
476-340-001-000	Assessable	A	100.00	100.00	LOT 65 CALIFORNIA LEGEND UNIT 2 R-94
476-340-002-000	Assessable	A	100.00	100.00	LOT 66 CALIFORNIA LEGEND UNIT 2 R-94
476-340-003-000	Assessable	A	100.00	100.00	LOT 67 CALIFORNIA LEGEND UNIT 2 R-94
476-340-004-000	Assessable	A	100.00	100.00	LOT 68 CALIFORNIA LEGEND UNIT 2 R-94
476-340-005-000	Assessable	A	100.00	100.00	LOT 69 CALIFORNIA LEGEND UNIT 2 R-94
476-340-006-000	Assessable	A	100.00	100.00	LOT 70 CALIFORNIA LEGEND UNIT 2 R-94
476-340-007-000	Assessable	A	100.00	100.00	LOT 71 CALIFORNIA LEGEND UNIT 2 R-94
476-340-008-000	Assessable	A	100.00	100.00	LOT 72 CALIFORNIA LEGEND UNIT 2 R-94
476-340-009-000	Assessable	A	100.00	100.00	LOT 73 CALIFORNIA LEGEND UNIT 2 R-94
476-340-010-000	Assessable	A	100.00	100.00	LOT 74 CALIFORNIA LEGEND UNIT 2 R-94
476-340-011-000	Assessable	A	100.00	100.00	LOT 75 CALIFORNIA LEGEND UNIT 2 R-94
476-340-012-000	Assessable	A	100.00	100.00	LOT 76 CALIFORNIA LEGEND UNIT 2 R-94
476-340-013-000	Assessable	A	100.00	100.00	LOT 77 CALIFORNIA LEGEND UNIT 2 R-94
476-340-014-000	Assessable	A	100.00	100.00	LOT 78 CALIFORNIA LEGEND UNIT 2 R-94
476-340-015-000	Assessable	A	100.00	100.00	LOT 79 CALIFORNIA LEGEND UNIT 2 R-94
476-340-016-000	Assessable	A	100.00	100.00	LOT 80 CALIFORNIA LEGEND UNIT 2 R-94
476-340-017-000	Assessable	A	100.00	100.00	LOT 81 CALIFORNIA LEGEND UNIT 2 R-94
476-340-018-000	Assessable	A	100.00	100.00	LOT 82 CALIFORNIA LEGEND UNIT 2 R-94
476-340-019-000	Assessable	A	100.00	100.00	LOT 83 CALIFORNIA LEGEND UNIT 2 R-94
476-340-020-000	Assessable	A	100.00	100.00	LOT 84 CALIFORNIA LEGEND UNIT 2 R-94
476-340-021-000	Assessable	A	100.00	100.00	LOT 85 CALIFORNIA LEGEND UNIT 2 R-94
476-340-022-000	Assessable	A	100.00	100.00	LOT 87 CALIFORNIA LEGEND UNIT 2 R-94
476-340-023-000	Assessable	A	100.00	100.00	LOT 88 CALIFORNIA LEGEND UNIT 2 R-94
476-340-024-000	Assessable	A	100.00	100.00	LOT 89 CALIFORNIA LEGEND UNIT 2 R-94
476-340-025-000	Assessable	A	100.00	100.00	LOT 90 CALIFORNIA LEGEND UNIT 2 R-94
476-340-026-000	Assessable	A	100.00	100.00	LOT 91 CALIFORNIA LEGEND UNIT 2 R-94
476-340-027-000	Assessable	A	100.00	100.00	LOT 92 CALIFORNIA LEGEND UNIT 2 R-94
476-340-028-000	Assessable	A	100.00	100.00	LOT 93 CALIFORNIA LEGEND UNIT 2 R-94
476-340-029-000	Assessable	A	100.00	100.00	LOT 94 CALIFORNIA LEGEND UNIT 2 R-94
476-340-030-000	Assessable	A	100.00	100.00	LOT 95 CALIFORNIA LEGEND UNIT 2 R-94
476-340-031-000	Assessable	A	100.00	100.00	LOT 96 CALIFORNIA LEGEND UNIT 2 R-94
476-340-032-000	Assessable	A	100.00	100.00	LOT 97 CALIFORNIA LEGEND UNIT 2 R-94
476-340-033-000	Assessable	A	100.00	100.00	LOT 98 CALIFORNIA LEGEND UNIT 2 R-94
476-340-034-000	Assessable	A	100.00	100.00	LOT 99 CALIFORNIA LEGEND UNIT 2 R-94
476-340-035-000	Assessable	A	100.00	100.00	LOT 100 CALIFORNIA LEGEND UNIT 2R-94
476-340-036-000	Assessable	A	100.00	100.00	LOT 106 CALIFORNIA LEGEND UNIT 2R-94
476-340-037-000	Assessable	A	100.00	100.00	LOT 107 CALIFORNIA LEGEND UNIT 2R-94
476-340-038-000	Assessable	A	100.00	100.00	LOT 108 CALIFORNIA LEGEND UNIT 2R-94
476-340-039-000	Assessable	A	100.00	100.00	LOT 109 CALIFORNIA LEGEND UNIT 2R-94
476-340-040-000	Assessable	A	100.00	100.00	LOT 110 CALIFORNIA LEGEND UNIT 2 MOR BK R PG 94
476-340-041-000	Assessable	A	100.00	100.00	LOT 111 CALIFORNIA LEGEND UNIT 2 MOR BK R PG 94
476-340-042-000	Assessable	A	100.00	100.00	LOT 112 CALIFORNIA LEGEND UNIT 2R-94
476-340-043-000	Assessable	A	100.00	100.00	LOT 113 CALIFORNIA LEGEND UNIT 2R-94
476-340-044-000	Assessable	A	100.00	100.00	LOT 114 CALIFORNIA LEGEND UNIT 2 R-94
476-340-045-000	Assessable	A	100.00	100.00	LOT 115 CALIFORNIA LEGEND UNIT 2 R-94
476-340-046-000	Assessable	A	100.00	100.00	LOT 116 CALIFORNIA LEGEND UNIT 2 MOR R-94
476-350-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO OAKS UNIT 6 PHASE A S-9

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-350-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-015-000	Assessable	A	100.00	100.00	LOT 57 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-016-000	Assessable	A	100.00	100.00	LOT 58 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-017-000	Assessable	A	100.00	100.00	LOT 59 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-018-000	Assessable	A	100.00	100.00	LOT 60 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-019-000	Assessable	A	100.00	100.00	LOT 61 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-020-000	Assessable	A	100.00	100.00	LOT 62 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-021-000	Assessable	A	100.00	100.00	LOT 63 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-022-000	Assessable	A	100.00	100.00	LOT 64 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-023-000	Assessable	A	100.00	100.00	LOT 65 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-024-000	Assessable	A	100.00	100.00	LOT 66 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-025-000	Assessable	A	100.00	100.00	LOT 67 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-026-000	Assessable	A	100.00	100.00	LOT 68 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-027-000	Assessable	A	100.00	100.00	LOT 69 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-028-000	Assessable	A	100.00	100.00	LOT 70 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-029-000	Assessable	A	100.00	100.00	LOT 71 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-030-000	Assessable	A	100.00	100.00	LOT 72 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-031-000	Assessable	A	100.00	100.00	LOT 73 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-032-000	Assessable	A	100.00	100.00	LOT 74 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-033-000	Assessable	A	100.00	100.00	LOT 75 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-034-000	Assessable	A	100.00	100.00	LOT 76 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-035-000	Assessable	A	100.00	100.00	LOT 77 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-036-000	Assessable	A	100.00	100.00	LOT 78 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-037-000	Assessable	A	100.00	100.00	LOT 79 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-038-000	Assessable	A	100.00	100.00	LOT 80 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-039-000	Assessable	A	100.00	100.00	LOT 81 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-040-000	Assessable	A	100.00	100.00	LOT 82 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-041-000	Assessable	A	100.00	100.00	LOT 83 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-042-000	Assessable	A	100.00	100.00	LOT 84 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-043-000	Assessable	A	100.00	100.00	LOT 85 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-044-000	Assessable	A	100.00	100.00	LOT 86 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-045-000	Assessable	A	100.00	100.00	LOT 87 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-046-000	Assessable	A	100.00	100.00	LOT 88 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-047-000	Assessable	A	100.00	100.00	LOT 89 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-048-000	Assessable	A	100.00	100.00	LOT 90 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-049-000	Assessable	A	100.00	100.00	LOT 91 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-050-000	Assessable	A	100.00	100.00	LOT 92 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-051-000	Assessable	A	100.00	100.00	LOT 93 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-052-000	Assessable	A	100.00	100.00	LOT 94 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-053-000	Assessable	A	100.00	100.00	LOT 95 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-054-000	Assessable	A	100.00	100.00	LOT 96 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-055-000	Assessable	A	100.00	100.00	LOT 97 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-056-000	Assessable	A	100.00	100.00	LOT 98 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-057-000	Assessable	A	100.00	100.00	LOT 99 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-058-000	Assessable	A	100.00	100.00	LOT 100 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-059-000	Assessable	A	100.00	100.00	LOT 101 SILVERADO OAKS UNIT 6 PHASE A S-9

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-350-060-000	Assessable	A	100.00	100.00	LOT 102 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-061-000	Assessable	A	100.00	100.00	LOT 103 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-062-000	Assessable	A	100.00	100.00	LOT 104 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-063-000	Assessable	A	100.00	100.00	LOT 105 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-064-000	Assessable	A	100.00	100.00	LOT 106 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-065-000	Assessable	A	100.00	100.00	LOT 107 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-066-000	Assessable	A	100.00	100.00	LOT 108 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-067-000	Assessable	A	100.00	100.00	LOT 109 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-068-000	Assessable	A	100.00	100.00	LOT 110 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-069-000	Assessable	A	100.00	100.00	LOT 111 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-070-000	Assessable	A	100.00	100.00	LOT 112 SILVERADO OAKS UNIT 6 PHASE A S-9
476-350-071-000	Assessable	A	100.00	100.00	LOT 113 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-001-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-002-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-003-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-004-000	Assessable	A	100.00	100.00	LOT 18 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-005-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-006-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-007-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-008-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-009-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-010-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-011-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-012-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-013-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-014-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-015-000	Assessable	A	100.00	100.00	LOT 29 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-016-000	Assessable	A	100.00	100.00	LOT 30 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-017-000	Assessable	A	100.00	100.00	LOT 31 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-018-000	Assessable	A	100.00	100.00	LOT 32 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-019-000	Assessable	A	100.00	100.00	LOT 33 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-020-000	Assessable	A	100.00	100.00	LOT 34 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-021-000	Assessable	A	100.00	100.00	LOT 35 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-022-000	Assessable	A	100.00	100.00	LOT 36 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-023-000	Assessable	A	100.00	100.00	LOT 37 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-024-000	Assessable	A	100.00	100.00	LOT 38 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-025-000	Assessable	A	100.00	100.00	LOT 39 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-026-000	Assessable	A	100.00	100.00	LOT 40 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-027-000	Assessable	A	100.00	100.00	LOT 41 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-028-000	Assessable	A	100.00	100.00	LOT 42 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-029-000	Assessable	A	100.00	100.00	LOT 43 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-030-000	Assessable	A	100.00	100.00	LOT 44 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-031-000	Assessable	A	100.00	100.00	LOT 45 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-032-000	Assessable	A	100.00	100.00	LOT 46 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-033-000	Assessable	A	100.00	100.00	LOT 47 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-034-000	Assessable	A	100.00	100.00	LOT 48 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-035-000	Assessable	A	100.00	100.00	LOT 49 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-036-000	Assessable	A	100.00	100.00	LOT 50 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-037-000	Assessable	A	100.00	100.00	LOT 51 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-038-000	Assessable	A	100.00	100.00	LOT 52 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-039-000	Assessable	A	100.00	100.00	LOT 53 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-040-000	Assessable	A	100.00	100.00	LOT 54 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-041-000	Assessable	A	100.00	100.00	LOT 55 SILVERADO OAKS UNIT 6 PHASE A S-9
476-360-042-000	Assessable	A	100.00	100.00	LOT 56 SILVERADO OAKS UNIT 6 PHASE A S-9
476-370-001-000	Assessable	A	100.00	100.00	LOT 114 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-002-000	Assessable	A	100.00	100.00	LOT 115 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-003-000	Assessable	A	100.00	100.00	LOT 116 SILVERADO OAKS UNIT 6 PHASE B S-10

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-370-004-000	Assessable	A	100.00	100.00	LOT 117 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-005-000	Assessable	A	100.00	100.00	LOT 118 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-006-000	Assessable	A	100.00	100.00	LOT 119 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-007-000	Assessable	A	100.00	100.00	LOT 120 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-008-000	Assessable	A	100.00	100.00	LOT 121 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-009-000	Assessable	A	100.00	100.00	LOT 122 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-010-000	Assessable	A	100.00	100.00	LOT 123 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-011-000	Assessable	A	100.00	100.00	LOT 124 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-012-000	Assessable	A	100.00	100.00	LOT 125 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-013-000	Assessable	A	100.00	100.00	LOT 126 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-014-000	Assessable	A	100.00	100.00	LOT 127 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-015-000	Assessable	A	100.00	100.00	LOT 128 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-016-000	Assessable	A	100.00	100.00	LOT 129 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-017-000	Assessable	A	100.00	100.00	LOT 130 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-018-000	Assessable	A	100.00	100.00	LOT 131 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-019-000	Assessable	A	100.00	100.00	LOT 208 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-020-000	Assessable	A	100.00	100.00	LOT 209 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-021-000	Assessable	A	100.00	100.00	LOT 210 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-022-000	Assessable	A	100.00	100.00	LOT 211 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-023-000	Assessable	A	100.00	100.00	LOT 212 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-024-000	Assessable	A	100.00	100.00	LOT 213 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-025-000	Assessable	A	100.00	100.00	LOT 214 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-026-000	Assessable	A	100.00	100.00	LOT 215 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-027-000	Assessable	A	100.00	100.00	LOT 216 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-028-000	Assessable	A	100.00	100.00	LOT 217 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-029-000	Assessable	A	100.00	100.00	LOT 218 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-030-000	Assessable	A	100.00	100.00	LOT 219 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-031-000	Assessable	A	100.00	100.00	LOT 220 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-032-000	Assessable	A	100.00	100.00	LOT 221 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-033-000	Assessable	A	100.00	100.00	LOT 222 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-034-000	Assessable	A	100.00	100.00	LOT 223 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-035-000	Assessable	A	100.00	100.00	LOT 224 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-036-000	Assessable	A	100.00	100.00	LOT 225 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-037-000	Assessable	A	100.00	100.00	LOT 226 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-038-000	Assessable	A	100.00	100.00	LOT 227 SILVERADO OAKS UNIT 6 PHASE B S-10
476-370-039-000	Assessable	A	100.00	100.00	LOT 228 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-001-000	Assessable	A	100.00	100.00	LOT 132 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-002-000	Assessable	A	100.00	100.00	LOT 133 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-003-000	Assessable	A	100.00	100.00	LOT 134 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-004-000	Assessable	A	100.00	100.00	LOT 135 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-005-000	Assessable	A	100.00	100.00	LOT 136 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-006-000	Assessable	A	100.00	100.00	LOT 137 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-007-000	Assessable	A	100.00	100.00	LOT 138 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-008-000	Assessable	A	100.00	100.00	LOT 139 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-009-000	Assessable	A	100.00	100.00	LOT 140 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-010-000	Assessable	A	100.00	100.00	LOT 141 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-011-000	Assessable	A	100.00	100.00	LOT 142 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-012-000	Assessable	A	100.00	100.00	LOT 143 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-013-000	Assessable	A	100.00	100.00	LOT 144 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-014-000	Assessable	A	100.00	100.00	LOT 145 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-015-000	Assessable	A	100.00	100.00	LOT 146 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-016-000	Assessable	A	100.00	100.00	LOT 147 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-017-000	Assessable	A	100.00	100.00	LOT 148 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-018-000	Assessable	A	100.00	100.00	LOT 149 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-019-000	Assessable	A	100.00	100.00	LOT 150 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-020-000	Assessable	A	100.00	100.00	LOT 151 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-021-000	Assessable	A	100.00	100.00	LOT 152 SILVERADO OAKS UNIT 6 PHASE B S-10

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-380-022-000	Assessable	A	100.00	100.00	LOT 153 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-023-000	Assessable	A	100.00	100.00	LOT 154 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-024-000	Assessable	A	100.00	100.00	LOT 155 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-025-000	Assessable	A	100.00	100.00	LOT 156 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-026-000	Assessable	A	100.00	100.00	LOT 157 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-027-000	Assessable	A	100.00	100.00	LOT 158 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-028-000	Assessable	A	100.00	100.00	LOT 159 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-029-000	Assessable	A	100.00	100.00	LOT 160 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-030-000	Assessable	A	100.00	100.00	LOT 161 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-031-000	Assessable	A	100.00	100.00	LOT 162 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-032-000	Assessable	A	100.00	100.00	LOT 163 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-033-000	Assessable	A	100.00	100.00	LOT 164 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-034-000	Assessable	A	100.00	100.00	LOT 165 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-035-000	Assessable	A	100.00	100.00	LOT 166 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-036-000	Assessable	A	100.00	100.00	LOT 167 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-037-000	Assessable	A	100.00	100.00	LOT 168 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-038-000	Assessable	A	100.00	100.00	LOT 169 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-039-000	Assessable	A	100.00	100.00	LOT 170 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-040-000	Assessable	A	100.00	100.00	LOT 171 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-041-000	Assessable	A	100.00	100.00	LOT 172 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-042-000	Assessable	A	100.00	100.00	LOT 173 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-043-000	Assessable	A	100.00	100.00	LOT 174 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-044-000	Assessable	A	100.00	100.00	LOT 175 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-045-000	Assessable	A	100.00	100.00	LOT 176 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-046-000	Assessable	A	100.00	100.00	LOT 177 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-047-000	Assessable	A	100.00	100.00	LOT 178 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-048-000	Assessable	A	100.00	100.00	LOT 179 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-049-000	Assessable	A	100.00	100.00	LOT 180 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-050-000	Assessable	A	100.00	100.00	LOT 181 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-051-000	Assessable	A	100.00	100.00	LOT 182 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-052-000	Assessable	A	100.00	100.00	LOT 183 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-053-000	Assessable	A	100.00	100.00	LOT 184 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-054-000	Assessable	A	100.00	100.00	LOT 185 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-055-000	Assessable	A	100.00	100.00	LOT 186 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-056-000	Assessable	A	100.00	100.00	LOT 187 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-057-000	Assessable	A	100.00	100.00	LOT 188 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-058-000	Assessable	A	100.00	100.00	LOT 189 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-059-000	Assessable	A	100.00	100.00	LOT 190 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-060-000	Assessable	A	100.00	100.00	LOT 191 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-061-000	Assessable	A	100.00	100.00	LOT 192 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-062-000	Assessable	A	100.00	100.00	LOT 193 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-063-000	Assessable	A	100.00	100.00	LOT 194 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-064-000	Assessable	A	100.00	100.00	LOT 195 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-065-000	Assessable	A	100.00	100.00	LOT 196 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-066-000	Assessable	A	100.00	100.00	LOT 197 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-067-000	Assessable	A	100.00	100.00	LOT 198 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-068-000	Assessable	A	100.00	100.00	LOT 199 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-069-000	Assessable	A	100.00	100.00	LOT 200 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-070-000	Assessable	A	100.00	100.00	LOT 201 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-071-000	Assessable	A	100.00	100.00	LOT 202 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-072-000	Assessable	A	100.00	100.00	LOT 203 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-073-000	Assessable	A	100.00	100.00	LOT 204 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-074-000	Assessable	A	100.00	100.00	LOT 205 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-075-000	Assessable	A	100.00	100.00	LOT 206 SILVERADO OAKS UNIT 6 PHASE B S-10
476-380-076-000	Assessable	A	100.00	100.00	LOT 207 SILVERADO OAKS UNIT 6 PHASE B S-10
476-410-005-000	Assessable	A	100.00	100.00	LOT 81 KERRY DOWNS UNIT 2 S-69
476-410-006-000	Assessable	A	100.00	100.00	LOT 82 KERRY DOWNS UNIT 2 S-69

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-410-007-000	Assessable	A	100.00	100.00	LOT 83 KERRY DOWNS UNIT 2 S-69
476-410-008-000	Assessable	A	100.00	100.00	LOT 84 KERRY DOWNS UNIT 2 S-69
476-410-009-000	Assessable	A	100.00	100.00	LOT 85 KERRY DOWNS UNIT 2 S-69
476-410-010-000	Assessable	A	100.00	100.00	LOT 86 KERRY DOWNS UNIT 2 S-69
476-410-011-000	Assessable	A	100.00	100.00	LOT 87 KERRY DOWNS UNIT 2 S-69
476-410-012-000	Assessable	A	100.00	100.00	LOT 88 KERRY DOWNS UNIT 2 S-69
476-410-013-000	Assessable	A	100.00	100.00	LOT 89 KERRY DOWNS UNIT 2 S-69
476-410-014-000	Assessable	A	100.00	100.00	LOT 90 KERRY DOWNS UNIT 2 S-69
476-410-015-000	Assessable	A	100.00	100.00	LOT 91 KERRY DOWNS UNIT 2 S-69
476-410-016-000	Assessable	A	100.00	100.00	LOT 92 KERRY DOWNS UNIT 2 S-69
476-410-017-000	Assessable	A	100.00	100.00	LOT 93 KERRY DOWNS UNIT 2 S-69
476-410-018-000	Assessable	A	100.00	100.00	LOT 94 KERRY DOWNS UNIT 2 S-69
476-410-019-000	Assessable	A	100.00	100.00	LOT 95 KERRY DOWNS UNIT 2 S-69
476-410-020-000	Assessable	A	100.00	100.00	LOT 96 KERRY DOWNS UNIT 2 S-69
476-410-021-000	Assessable	A	100.00	100.00	LOT 97 KERRY DOWNS UNIT 2 S-69
476-410-022-000	Assessable	A	100.00	100.00	LOT 98 KERRY DOWNS UNIT 2 S-69
476-410-023-000	Assessable	A	100.00	100.00	LOT 99 KERRY DOWNS UNIT 2 S-69
476-410-024-000	Assessable	A	100.00	100.00	LOT 121 KERRY DOWNS UNIT 2 S-69
476-410-025-000	Assessable	A	100.00	100.00	LOT 122 KERRY DOWNS UNIT 2 S-69
476-410-026-000	Assessable	A	100.00	100.00	LOT 123 KERRY DOWNS UNIT 2 S-69
476-410-027-000	Assessable	A	100.00	100.00	LOT 124 KERRY DOWNS UNIT 2 S-69
476-410-028-000	Assessable	A	100.00	100.00	LOT 125 KERRY DOWNS UNIT 2 S-69
476-410-029-000	Assessable	A	100.00	100.00	LOT 126 KERRY DOWNS UNIT 2 S-69
476-410-030-000	Assessable	A	100.00	100.00	LOT 127 KERRY DOWNS UNIT 2 S-69
476-410-031-000	Assessable	A	100.00	100.00	LOT 128 KERRY DOWNS UNIT 2 S-69
476-410-033-000	Assessable	A	100.00	100.00	POR LOT 77 KERRY DOWNS UNIT 2 S-69
476-410-036-000	Assessable	A	100.00	100.00	POR LOT 78 KERRY DOWNS UNIT 2 S-69
476-410-039-000	Assessable	A	100.00	100.00	POR LOT 79 KERRY DOWN UNIT 2 S-69
476-410-042-000	Assessable	A	100.00	100.00	POR PCL 2 LOT 80 KERRY DOWNS UNIT #2 MOR S-69
476-420-001-000	Assessable	A	100.00	100.00	LOT 100 KERRY DOWNS UNIT 2 S-69
476-420-002-000	Assessable	A	100.00	100.00	LOT 101 KERRY DOWNS UNIT 2 S-69
476-420-003-000	Assessable	A	100.00	100.00	LOT 102 KERRY DOWNS UNIT 2 S-69
476-420-004-000	Assessable	A	100.00	100.00	LOT 103 KERRY DOWNS UNIT 2 S-69
476-420-005-000	Assessable	A	100.00	100.00	LOT 104 KERRY DOWNS UNIT 2 S-69
476-420-006-000	Assessable	A	100.00	100.00	LOT 105 KERRY DOWNS UNIT 2 S-69
476-420-007-000	Assessable	A	100.00	100.00	LOT 106 KERRY DOWNS UNIT 2 S-69
476-420-008-000	Assessable	A	100.00	100.00	LOT 107 KERRY DOWNS UNIT 2 S-69
476-420-009-000	Assessable	A	100.00	100.00	LOT 108 KERRY DOWNS UNIT 2 S-69
476-420-010-000	Assessable	A	100.00	100.00	LOT 109 KERRY DOWNS UNIT 2 S-69
476-420-011-000	Assessable	A	100.00	100.00	LOT 110 KERRY DOWNS UNIT 2 S-69
476-420-012-000	Assessable	A	100.00	100.00	LOT 111 KERRY DOWNS UNIT 2 S-69
476-420-013-000	Assessable	A	100.00	100.00	LOT 112 KERRY DOWNS UNIT 2 S-69
476-420-014-000	Assessable	A	100.00	100.00	LOT 113 KERRY DOWNS UNIT 2 S-69
476-420-015-000	Assessable	A	100.00	100.00	LOT 114 KERRY DOWNS UNIT 2 S-69
476-420-016-000	Assessable	A	100.00	100.00	LOT 115 KERRY DOWNS UNIT 2 S-69
476-420-017-000	Assessable	A	100.00	100.00	LOT 116 KERRY DOWNS UNIT 2 S-69
476-420-018-000	Assessable	A	100.00	100.00	LOT 117 KERRY DOWNS UNIT 2 S-69
476-420-019-000	Assessable	A	100.00	100.00	LOT 118 KERRY DOWNS UNIT 2 S-69
476-420-020-000	Assessable	A	100.00	100.00	LOT 119 KERRY DOWNS UNIT 2 S-69
476-420-021-000	Assessable	A	100.00	100.00	LOT 120 KERRY DOWNS UNIT 2 S-69
476-430-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO OAKS UNIT 6C T-43
476-430-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO OAKS UNIT 6C T-43
476-430-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO OAKS UNIT 6C T-43
476-430-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO OAKS UNIT 6C T-43
476-430-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO OAKS UNIT 6C T-43
476-430-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO OAKS UNIT 6C T-43
476-430-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO OAKS UNIT 6C T-43

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-430-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO OAKS UNIT 6C T-43
476-430-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO OAKS UNIT 6C T-43
476-430-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO OAKS UNIT 6C T-43
476-430-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO OAKS UNIT 6C T-43
476-430-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO OAKS UNIT 6C T-43
476-430-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO OAKS UNIT 6C T-43
476-430-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO OAKS UNIT 6C T-43
476-430-015-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO OAKS UNIT 6C T-43
476-430-016-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO OAKS UNIT 6C T-43
476-430-017-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO OAKS UNIT 6C T-43
476-430-018-000	Assessable	A	100.00	100.00	LOT 18 SILVERADO OAKS UNIT 6C T-43
476-430-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO OAKS UNIT 6C T-43
476-430-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS UNIT 6C T-43
476-430-021-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO OAKS UNIT 6C T-43
476-440-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO OAKS UNIT 9 V-1
476-440-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO OAKS UNIT 9 V-1
476-440-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO OAKS UNIT 9 V-1
476-440-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO OAKS UNIT 9 V-1
476-440-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO OAKS UNIT 9 V-1
476-440-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO OAKS UNIT 9 V-1
476-440-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO OAKS UNIT 9 V-1
476-440-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO OAKS UNIT 9 V-1
476-440-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO OAKS UNIT 9 V-1
476-440-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO OAKS UNIT 9 V-1
476-440-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO OAKS UNIT 9 V-1
476-440-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO OAKS UNIT 9 V-1
476-440-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO OAKS UNIT 9 V-1
476-440-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO OAKS UNIT 9 V-1
476-440-015-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO OAKS UNIT 9 V-1
476-440-016-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO OAKS UNIT 9 V-1
476-440-017-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO OAKS UNIT 9 V-1
476-440-018-000	Assessable	A	100.00	100.00	LOT 18 SILVERADO OAKS UNIT 9 V-1
476-440-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO OAKS UNIT 9 V-1
476-440-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS UNIT 9 V-1
476-440-021-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO OAKS UNIT 9 V-1
476-440-022-000	Assessable	A	100.00	100.00	LOT 70 SILVERADO OAKS UNIT 9 V-1
476-440-023-000	Assessable	A	100.00	100.00	LOT 71 SILVERADO OAKS UNIT 9 V-1
476-440-024-000	Assessable	A	100.00	100.00	LOT 72 SILVERADO OAKS UNIT 9 V-1
476-440-025-000	Assessable	A	100.00	100.00	LOT 73 SILVERADO OAKS UNIT 9 V-1
476-440-026-000	Assessable	A	100.00	100.00	LOT 74 SILVERADO OAKS UNIT 9 V-1
476-440-027-000	Assessable	A	100.00	100.00	LOT 75 SILVERADO OAKS UNIT 9 V-1
476-440-028-000	Assessable	A	100.00	100.00	LOT 76 SILVERADO OAKS UNIT 9 V-1
476-450-001-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO OAKS UNIT 9 V-1
476-450-002-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO OAKS UNIT 9 V-1
476-450-003-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO OAKS UNIT 9 V-1
476-450-004-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO OAKS UNIT 9 V-1
476-450-005-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO OAKS UNIT 9 V-1
476-450-006-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO OAKS UNIT 9 V-1
476-450-007-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO OAKS UNIT 9 V-1
476-450-008-000	Assessable	A	100.00	100.00	LOT 29 SILVERADO OAKS UNIT 9 V-1
476-450-009-000	Assessable	A	100.00	100.00	LOT 30 SILVERADO OAKS UNIT 9 V-1
476-450-010-000	Assessable	A	100.00	100.00	LOT 31 SILVERADO OAKS UNIT 9 V-1
476-450-011-000	Assessable	A	100.00	100.00	LOT 32 SILVERADO OAKS UNIT 9 V-1
476-450-012-000	Assessable	A	100.00	100.00	LOT 33 SILVERADO OAKS UNIT 9 V-1
476-450-013-000	Assessable	A	100.00	100.00	LOT 34 SILVERADO OAKS UNIT 9 V-1
476-450-014-000	Assessable	A	100.00	100.00	LOT 35 SILVERADO OAKS UNIT 9 V-1
476-450-015-000	Assessable	A	100.00	100.00	LOT 36 SILVERADO OAKS UNIT 9 V-1

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-450-016-000	Assessable	A	100.00	100.00	LOT 37 SILVERADO OAKS UNIT 9 V-1
476-450-017-000	Assessable	A	100.00	100.00	LOT 38 SILVERADO OAKS UNIT 9 V-1
476-450-018-000	Assessable	A	100.00	100.00	LOT 39 SILVERADO OAKS UNIT 9 V-1
476-450-019-000	Assessable	A	100.00	100.00	LOT 40 SILVERADO OAKS UNIT 9 V-1
476-450-020-000	Assessable	A	100.00	100.00	LOT 41 SILVERADO OAKS UNIT 9 V-1
476-450-021-000	Assessable	A	100.00	100.00	LOT 42 SILVERADO OAKS UNIT 9 V-1
476-450-022-000	Assessable	A	100.00	100.00	LOT 43 SILVERADO OAKS UNIT 9 V-1
476-450-023-000	Assessable	A	100.00	100.00	LOT 44 SILVERADO OAKS UNIT 9 V-1
476-450-024-000	Assessable	A	100.00	100.00	LOT 45 SILVERADO OAKS UNIT 9 V-1
476-450-025-000	Assessable	A	100.00	100.00	LOT 46 SILVERADO OAKS UNIT 9 V-1
476-450-026-000	Assessable	A	100.00	100.00	LOT 47 SILVERADO OAKS UNIT 9 V-1
476-450-027-000	Assessable	A	100.00	100.00	LOT 48 SILVERADO OAKS UNIT 9 V-1
476-450-028-000	Assessable	A	100.00	100.00	LOT 49 SILVERADO OAKS UNIT 9 V-1
476-450-029-000	Assessable	A	100.00	100.00	LOT 50 SILVERADO OAKS UNIT 9 V-1
476-450-030-000	Assessable	A	100.00	100.00	LOT 51 SILVERADO OAKS UNIT 9 V-1
476-450-031-000	Assessable	A	100.00	100.00	LOT 52 SILVERADO OAKS UNIT 9 V-1
476-450-032-000	Assessable	A	100.00	100.00	LOT 53 SILVERADO OAKS UNIT 9 V-1
476-450-033-000	Assessable	A	100.00	100.00	LOT 54 SILVERADO OAKS UNIT 9 V-1
476-450-034-000	Assessable	A	100.00	100.00	LOT 55 SILVERADO OAKS UNIT 9 V-1
476-450-035-000	Assessable	A	100.00	100.00	LOT 56 SILVERADO OAKS UNIT 9 V-1
476-450-036-000	Assessable	A	100.00	100.00	LOT 57 SILVERADO OAKS UNIT 9 V-1
476-450-037-000	Assessable	A	100.00	100.00	LOT 58 SILVERADO OAKS UNIT 9 V-1
476-450-038-000	Assessable	A	100.00	100.00	LOT 59 SILVERADO OAKS UNIT 9 V-1
476-450-039-000	Assessable	A	100.00	100.00	LOT 60 SILVERADO OAKS UNIT 9 V-1
476-450-040-000	Assessable	A	100.00	100.00	LOT 61 SILVERADO OAKS UNIT 9 V-1
476-450-041-000	Assessable	A	100.00	100.00	LOT 62 SILVERADO OAKS UNIT 9 V-1
476-450-042-000	Assessable	A	100.00	100.00	LOT 63 SILVERADO OAKS UNIT 9 V-1
476-450-043-000	Assessable	A	100.00	100.00	LOT 64 SILVERADO OAKS UNIT 9 V-1
476-450-044-000	Assessable	A	100.00	100.00	LOT 65 SILVERADO OAKS UNIT 9 V-1
476-450-045-000	Assessable	A	100.00	100.00	LOT 66 SILVERADO OAKS UNIT 9 V-1
476-450-046-000	Assessable	A	100.00	100.00	LOT 67 SILVERADO OAKS UNIT 9 V-1
476-450-047-000	Assessable	A	100.00	100.00	LOT 68 SILVERADO OAKS UNIT 9 V-1
476-450-048-000	Assessable	A	100.00	100.00	LOT 69 SILVERADO OAKS UNIT 9 V-1
476-460-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO OAKS UNIT NO 10 V-97
476-460-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-015-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-016-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-017-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-018-000	Assessable	A	100.00	100.00	LOT 18 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-021-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-022-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-023-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-024-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO OAKS UNIT NO 10 MOR V-97

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
476-460-025-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-026-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-027-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO OAKS UNIT NO 10 MOR V-97
476-460-028-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO OAKS UNIT NO 10 MOR V-97
477-010-039-000	Assessable	A	100.00	100.00	LOT 10 PLEASANT GROVE UNIT 3 Q82
477-010-040-000	Assessable	A	100.00	100.00	LOT 11 PLEASANT GROVE UNIT 3 Q82
477-010-041-000	Assessable	A	100.00	100.00	LOT 12 PLEASANT GROVE UNIT 3 Q82
477-010-042-000	Assessable	A	100.00	100.00	LOT 13 PLEASANT GROVE UNIT 3 Q82
477-010-043-000	Assessable	A	100.00	100.00	LOT 14 PLEASANT GROVE UNIT 3 Q82
477-010-044-000	Assessable	A	100.00	100.00	LOT15 PLEASANT GROVE UNIT 3 Q82
477-010-045-000	Assessable	A	100.00	100.00	LOT 16 PLEASANT GROVE UNIT 3 Q82
477-010-046-000	Assessable	A	100.00	100.00	LOT 17 PLEASANT GROVE UNIT 3 Q82
477-010-047-000	Assessable	A	100.00	100.00	LOT 18 PLEASANT GROVE UNIT 3 Q82
477-010-048-000	Assessable	A	100.00	100.00	LOT 19 PLEASANT GROVE UNIT 3 Q82
477-010-049-000	Assessable	A	100.00	100.00	LOT 20 PLEASANT GROVE UNIT 3 Q82
477-010-050-000	Assessable	A	100.00	100.00	LOT 21 PLEASANT GROVE UNIT 3 Q82
477-010-051-000	Assessable	A	100.00	100.00	LOT 22 PLEASANT GROVE UNIT #3 MOR Q-82
477-010-052-000	Assessable	A	100.00	100.00	LOT 23 PLEASANT GROVE UNIT 3 Q82
477-010-053-000	Assessable	A	100.00	100.00	LOT 24 PLEASANT GROVE UNIT 3 Q82
477-010-054-000	Assessable	A	100.00	100.00	LOT 25 PLEASANT GROVE UNIT 3 Q82
477-010-055-000	Assessable	A	100.00	100.00	LOT 26 PLEASANT GROVE UNIT 3 Q82
477-010-056-000	Assessable	A	100.00	100.00	LOT 27 PLEASANT GROVE UNIT 3 Q82
477-010-057-000	Assessable	A	100.00	100.00	LOT 28 PLEASANT GROVE UNIT 3 Q82
477-010-058-000	Assessable	A	100.00	100.00	LOT 29 PLEASANT GROVE UNIT 3 Q82
477-010-059-000	Assessable	A	100.00	100.00	LOT 30 PLEASANT GROVE UNIT 3 Q82
477-010-060-000	Assessable	A	100.00	100.00	LOT 31 PLEASANT GROVE UNIT 3 Q82
477-010-061-000	Assessable	A	100.00	100.00	LOT 32 PLEASANT GROVE UNIT 3 Q82
477-010-062-000	Assessable	A	100.00	100.00	LOT 33 PLEASANT GROVE UNIT 3 Q82
477-030-056-000	Assessable	A	100.00	100.00	LOT 1 PLEASANT GROVE UNIT 3 Q82
477-030-057-000	Assessable	A	100.00	100.00	LOT 2 PLEASANT GROVE UNIT 3 Q82
477-030-058-000	Assessable	A	100.00	100.00	LOT 3 PLEASANT GROVE UNIT 3 Q82
477-030-059-000	Assessable	A	100.00	100.00	LOT 4 PLEASANT GROVE UNIT 3 Q82
477-030-060-000	Assessable	A	100.00	100.00	LOT 5 PLEASANT GROVE UNIT 3 Q82
477-030-061-000	Assessable	A	100.00	100.00	LOT 6 PLEASANT GROVE UNIT 3 Q82
477-030-062-000	Assessable	A	100.00	100.00	LOT 7 PLEASANT GROVE UNIT 3 Q82
477-030-063-000	Assessable	A	100.00	100.00	LOT 8 PLEASANT GROVE UNIT 3 Q82
477-030-064-000	Assessable	A	100.00	100.00	LOT 9 PLEASANT GROVE UNIT 3 Q82
477-060-003-000	Assessable	A	100.00	100.00	13.8AC PAR 1 PMOR 34-125
477-120-001-000	Assessable	A	100.00	100.00	LOT 34 PLEASANT GROVE UNIT 3 Q82
477-120-002-000	Assessable	A	100.00	100.00	LOT 35 PLEASANT GROVE UNIT 3 Q82
477-120-003-000	Assessable	A	100.00	100.00	LOT 36 PLEASANT GROVE UNIT 3 Q-82
477-120-004-000	Assessable	A	100.00	100.00	LOT 37 PLEASANT GROVE UNIT 3 Q82
477-120-005-000	Assessable	A	100.00	100.00	LOT 38 PLEASANT GROVE UNIT 3 Q82
477-120-006-000	Assessable	A	100.00	100.00	LOT 39 PLEASANT GROVE UNIT 3 Q82
477-120-007-000	Assessable	A	100.00	100.00	LOT 40 PLEASANT GROVE UNIT 3 Q82
477-120-008-000	Assessable	A	100.00	100.00	LOT 41 PLEASANT GROVE UNIT 3 Q82
477-120-009-000	Assessable	A	100.00	100.00	LOT 42 PLEASANT GROVE UNIT 3 Q82
477-120-010-000	Assessable	A	100.00	100.00	LOT 43 PLEASANT GROVE UNIT 3 Q82
477-120-011-000	Assessable	A	100.00	100.00	LOT 44 PLEASANT GROVE UNIT 3 Q82
477-120-012-000	Assessable	A	100.00	100.00	LOT 45 PLEASANT GROVE UNIT 3 Q82
477-120-013-000	Assessable	A	100.00	100.00	LOT 46 PLEASANT GROVE UNIT 3 Q82
477-120-014-000	Assessable	A	100.00	100.00	LOT 47 PLEASANT GROVE UNIT 3 Q82
477-120-015-000	Assessable	A	100.00	100.00	LOT 117 PLEASANT GROVE UNIT 3 Q82
477-120-016-000	Assessable	A	100.00	100.00	LOT 118 PLEASANT GROVE UNIT 3 Q82
477-120-017-000	Assessable	A	100.00	100.00	LOT 119 PLEASANT GROVE UNIT 3 Q82
477-120-018-000	Assessable	A	100.00	100.00	LOT 120 PLEASANT GROVE UNIT 3 Q82
477-130-001-000	Assessable	A	100.00	100.00	LOT 48 PLEASANT GROVE UNIT 3 Q82

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-130-002-000	Assessable	A	100.00	100.00	LOT 49 PLEASANT GROVE UNIT 3 Q82
477-130-003-000	Assessable	A	100.00	100.00	LOT 50 PLEASANT GROVE UNIT 3 Q82
477-130-004-000	Assessable	A	100.00	100.00	LOT 51 PLEASANT GROVE UNIT 3 Q82
477-130-005-000	Assessable	A	100.00	100.00	LOT 52 PLEASANT GROVE UNIT 3 Q82
477-130-006-000	Assessable	A	100.00	100.00	LOT 53 PLEASANT GROVE UNIT 3 Q82
477-130-007-000	Assessable	A	100.00	100.00	LOT 54 PLEASANT GROVE UNIT 3 Q82
477-130-008-000	Assessable	A	100.00	100.00	LOT 55 PLEASANT GROVE UNIT 3 Q82
477-130-009-000	Assessable	A	100.00	100.00	LOT 56 PLEASANT GROVE UNIT 3 Q82
477-130-010-000	Assessable	A	100.00	100.00	LOT 57 PLEASANT GROVE UNIT 3 Q82
477-130-011-000	Assessable	A	100.00	100.00	LOT 58 PLEASANT GROVE UNIT 3 Q82
477-130-012-000	Assessable	A	100.00	100.00	LOT 59 PLEASANT GROVE UNIT 3 Q82
477-130-013-000	Assessable	A	100.00	100.00	LOT 60 PLEASANT GROVE UNIT 3 Q82
477-130-014-000	Assessable	A	100.00	100.00	LOT 61 PLEASANT GROVE UNIT 3 Q82
477-130-015-000	Assessable	A	100.00	100.00	LOT 62 PLEASANT GROVE UNIT 3 Q82
477-130-016-000	Assessable	A	100.00	100.00	LOT 63 PLEASANT GROVE UNIT 3 Q82
477-130-017-000	Assessable	A	100.00	100.00	LOT 64 PLEASANT GROVE UNIT 3 Q82
477-130-018-000	Assessable	A	100.00	100.00	LOT 65 PLEASANT GROVE UNIT 3 Q82
477-130-019-000	Assessable	A	100.00	100.00	LOT 66 PLEASANT GROVE UNIT 3 Q82
477-130-020-000	Assessable	A	100.00	100.00	LOT 67 PLEASANT GROVE UNIT 3 Q82
477-130-021-000	Assessable	A	100.00	100.00	LOT 68 PLEASANT GROVE UNIT 3 Q82
477-130-022-000	Assessable	A	100.00	100.00	LOT 69 PLEASANT GROVE UNIT 3 Q82
477-130-023-000	Assessable	A	100.00	100.00	LOT 70 PLEASANT GROVE UNIT 3 Q82
477-130-024-000	Assessable	A	100.00	100.00	LOT 71 PLEASANT GROVE UNIT 3 Q82
477-130-025-000	Assessable	A	100.00	100.00	LOT 72 PLEASANT GROVE UNIT 3 Q82
477-130-026-000	Assessable	A	100.00	100.00	LOT 73 PLEASANT GROVE UNIT 3 Q82
477-130-027-000	Assessable	A	100.00	100.00	LOT 74 PLEASANT GROVE UNIT 3 Q82
477-130-028-000	Assessable	A	100.00	100.00	LOT 75 PLEASANT GROVE UNIT 3 Q82
477-130-029-000	Assessable	A	100.00	100.00	LOT 76 PLEASANT GROVE UNIT 3 Q82
477-130-030-000	Assessable	A	100.00	100.00	LOT 77 PLEASANT GROVE UNIT 3 Q82
477-130-031-000	Assessable	A	100.00	100.00	LOT 78 PLEASANT GROVE UNIT 3 Q82
477-130-032-000	Assessable	A	100.00	100.00	LOT 79 PLEASANT GROVE UNIT 3 Q82
477-130-033-000	Assessable	A	100.00	100.00	LOT 80 PLEASANT GROVE UNIT 3 Q82
477-130-034-000	Assessable	A	100.00	100.00	LOT 81 PLEASANT GROVE UNIT 3 MOR BK Q PG 82
477-130-035-000	Assessable	A	100.00	100.00	LOT 82 PLEASANT GROVE UNIT 3 Q82
477-130-036-000	Assessable	A	100.00	100.00	LOT 83 PLEASANT GROVE UNIT 3 Q82
477-130-037-000	Assessable	A	100.00	100.00	LOT 84 PLEASANT GROVE UNIT 3 Q82
477-130-038-000	Assessable	A	100.00	100.00	LOT 85 PLEASANT GROVE UNIT 3 Q82
477-130-039-000	Assessable	A	100.00	100.00	LOT 86 PLEASANT GROVE UNIT 3 Q82
477-130-040-000	Assessable	A	100.00	100.00	LOT 87 PLEASANT GROVE UNIT 3 Q82
477-130-041-000	Assessable	A	100.00	100.00	LOT 88 PLEASANT GROVE UNIT 3 Q82
477-130-042-000	Assessable	A	100.00	100.00	LOT 89 PLEASANT GROVE UNIT 3 Q82
477-130-043-000	Assessable	A	100.00	100.00	LOT 90 PLEASANT GROVE UNIT 3 Q82
477-130-044-000	Assessable	A	100.00	100.00	LOT 91 PLEASANT GROVE UNIT 3 Q82
477-130-045-000	Assessable	A	100.00	100.00	LOT 92 PLEASANT GROVE UNIT 3 Q82
477-130-046-000	Assessable	A	100.00	100.00	LOT 93 PLEASANT GROVE UNIT 3 Q82
477-130-047-000	Assessable	A	100.00	100.00	LOT 94 PLEASANT GROVE UNIT 3 Q-82
477-130-048-000	Assessable	A	100.00	100.00	LOT 95 PLEASANT GROVE UNIT 3 Q82
477-130-049-000	Assessable	A	100.00	100.00	LOT 96 PLEASANT GROVE UNIT 3 Q82
477-130-050-000	Assessable	A	100.00	100.00	LOT 97 PLEASANT GROVE UNIT 3 Q82
477-130-051-000	Assessable	A	100.00	100.00	LOT 98 PLEASANT GROVE UNIT 3 Q82
477-130-052-000	Assessable	A	100.00	100.00	LOT 99 PLEASANT GROVE UNIT 3 Q82
477-130-053-000	Assessable	A	100.00	100.00	LOT 100 PLEASANT GROVE UNIT 3 Q82
477-130-054-000	Assessable	A	100.00	100.00	LOT 101 PLEASANT GROVE UNIT 3 Q82
477-130-055-000	Assessable	A	100.00	100.00	LOT 102 PLEASANT GROVE UNIT 3 Q82
477-130-056-000	Assessable	A	100.00	100.00	LOT 103 PLEASANT GROVE UNIT 3 Q82
477-130-057-000	Assessable	A	100.00	100.00	LOT 104 PLEASANT GROVE UNIT 3 Q82
477-130-058-000	Assessable	A	100.00	100.00	LOT 105 PLEASANT GROVE UNIT 3 Q82

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-130-059-000	Assessable	A	100.00	100.00	LOT 106 PLEASANT GROVE UNIT 3 Q82
477-130-060-000	Assessable	A	100.00	100.00	LOT 107 PLEASANT GROVE UNIT 3 Q82
477-130-061-000	Assessable	A	100.00	100.00	LOT 108 PLEASANT GROVE UNIT 3 Q82
477-130-062-000	Assessable	A	100.00	100.00	LOT 109 PLEASANT GROVE UNIT 3 Q82
477-130-063-000	Assessable	A	100.00	100.00	LOT 110 PLEASANT GROVE UNIT 3 MOR Q-82
477-130-064-000	Assessable	A	100.00	100.00	LOT 111 PLEASANT GROVE UNIT 3 Q82
477-130-065-000	Assessable	A	100.00	100.00	LOT 112 PLEASANT GROVE UNIT 3 Q82
477-130-066-000	Assessable	A	100.00	100.00	LOT 113 PLEASANT GROVE UNIT 3 Q82
477-130-067-000	Assessable	A	100.00	100.00	LOT 114 PLEASANT GROVE UNIT 3 Q82
477-130-068-000	Assessable	A	100.00	100.00	LOT 115 PLEASANT GROVE UNIT 3 Q82
477-130-069-000	Assessable	A	100.00	100.00	LOT 116 PLEASANT GROVE UNIT 3 Q82
477-141-001-000	Assessable	A	100.00	100.00	LOT 1 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-002-000	Assessable	A	100.00	100.00	LOT 2 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-003-000	Assessable	A	100.00	100.00	LOT 3 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-004-000	Assessable	A	100.00	100.00	LOT 4 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-005-000	Assessable	A	100.00	100.00	LOT 5 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-006-000	Assessable	A	100.00	100.00	LOT 6 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-007-000	Assessable	A	100.00	100.00	LOT 7 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-008-000	Assessable	A	100.00	100.00	LOT 8 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-009-000	Assessable	A	100.00	100.00	LOT 9 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-010-000	Assessable	A	100.00	100.00	LOT 10 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-011-000	Assessable	A	100.00	100.00	LOT 11 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-012-000	Assessable	A	100.00	100.00	LOT 12 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-013-000	Assessable	A	100.00	100.00	LOT 13 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-014-000	Assessable	A	100.00	100.00	LOT 14 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-015-000	Assessable	A	100.00	100.00	LOT 15 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-016-000	Assessable	A	100.00	100.00	LOT 16 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-017-000	Assessable	A	100.00	100.00	LOT 17 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-018-000	Assessable	A	100.00	100.00	LOT 83 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-019-000	Assessable	A	100.00	100.00	LOT 84 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-020-000	Assessable	A	100.00	100.00	LOT 85 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-021-000	Assessable	A	100.00	100.00	LOT 86 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-022-000	Assessable	A	100.00	100.00	LOT 87 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-023-000	Assessable	A	100.00	100.00	LOT 88 WOODCREEK OAKS UNIT #6 (AMENDED MAP) T-28
477-141-024-000	Assessable	A	100.00	100.00	LOT 89 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-025-000	Assessable	A	100.00	100.00	LOT 90 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-026-000	Assessable	A	100.00	100.00	LOT 91 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-027-000	Assessable	A	100.00	100.00	LOT 92 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-028-000	Assessable	A	100.00	100.00	LOT 93 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-029-000	Assessable	A	100.00	100.00	LOT 94 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-030-000	Assessable	A	100.00	100.00	LOT 95 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-031-000	Assessable	A	100.00	100.00	LOT 96 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-032-000	Assessable	A	100.00	100.00	LOT 97 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-033-000	Assessable	A	100.00	100.00	LOT 98 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-034-000	Assessable	A	100.00	100.00	LOT 99 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-141-035-000	Assessable	A	100.00	100.00	LOT 100 WOODCREEK OAKS UNIT #6 T-28 (AMENDED MAP)
477-151-001-000	Assessable	A	100.00	100.00	LOT 18 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-002-000	Assessable	A	100.00	100.00	LOT 19 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-003-000	Assessable	A	100.00	100.00	LOT 20 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-004-000	Assessable	A	100.00	100.00	LOT 21 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-005-000	Assessable	A	100.00	100.00	LOT 22 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-006-000	Assessable	A	100.00	100.00	LOT 23 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-007-000	Assessable	A	100.00	100.00	LOT 24 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-008-000	Assessable	A	100.00	100.00	LOT 25 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-009-000	Assessable	A	100.00	100.00	LOT 26 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-010-000	Assessable	A	100.00	100.00	LOT 27 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-011-000	Assessable	A	100.00	100.00	LOT 28 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-151-012-000	Assessable	A	100.00	100.00	LOT 29 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-013-000	Assessable	A	100.00	100.00	LOT 30 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-014-000	Assessable	A	100.00	100.00	LOT 31 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-015-000	Assessable	A	100.00	100.00	LOT 32 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-016-000	Assessable	A	100.00	100.00	LOT 33 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-017-000	Assessable	A	100.00	100.00	LOT 34 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-018-000	Assessable	A	100.00	100.00	LOT 35 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-019-000	Assessable	A	100.00	100.00	LOT 36 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-020-000	Assessable	A	100.00	100.00	LOT 37 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-021-000	Assessable	A	100.00	100.00	LOT 38 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-022-000	Assessable	A	100.00	100.00	LOT 39 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-023-000	Assessable	A	100.00	100.00	LOT 40 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-024-000	Assessable	A	100.00	100.00	LOT 41 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-025-000	Assessable	A	100.00	100.00	LOT 42 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-026-000	Assessable	A	100.00	100.00	LOT 43 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-027-000	Assessable	A	100.00	100.00	LOT 44 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-028-000	Assessable	A	100.00	100.00	LOT 45 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-029-000	Assessable	A	100.00	100.00	LOT 46 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-030-000	Assessable	A	100.00	100.00	LOT 47 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-031-000	Assessable	A	100.00	100.00	LOT 48 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-032-000	Assessable	A	100.00	100.00	LOT 49 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-033-000	Assessable	A	100.00	100.00	LOT 50 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-034-000	Assessable	A	100.00	100.00	LOT 51 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-035-000	Assessable	A	100.00	100.00	LOT 52 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-036-000	Assessable	A	100.00	100.00	LOT 53 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-037-000	Assessable	A	100.00	100.00	LOT 54 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-038-000	Assessable	A	100.00	100.00	LOT 55 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-039-000	Assessable	A	100.00	100.00	LOT 56 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-040-000	Assessable	A	100.00	100.00	LOT 57 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-041-000	Assessable	A	100.00	100.00	LOT 58 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-042-000	Assessable	A	100.00	100.00	LOT 59 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-043-000	Assessable	A	100.00	100.00	LOT 60 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-044-000	Assessable	A	100.00	100.00	LOT 61 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-045-000	Assessable	A	100.00	100.00	LOT 62 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-046-000	Assessable	A	100.00	100.00	LOT 63 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-047-000	Assessable	A	100.00	100.00	LOT 64 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-048-000	Assessable	A	100.00	100.00	LOT 65 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-049-000	Assessable	A	100.00	100.00	LOT 66 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-050-000	Assessable	A	100.00	100.00	LOT 67 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-051-000	Assessable	A	100.00	100.00	LOT 68 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-052-000	Assessable	A	100.00	100.00	LOT 69 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-053-000	Assessable	A	100.00	100.00	LOT 70 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-054-000	Assessable	A	100.00	100.00	LOT 71 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-055-000	Assessable	A	100.00	100.00	LOT 72 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-056-000	Assessable	A	100.00	100.00	LOT 73 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-057-000	Assessable	A	100.00	100.00	LOT 74 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-058-000	Assessable	A	100.00	100.00	LOT 75 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-059-000	Assessable	A	100.00	100.00	LOT 76 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-060-000	Assessable	A	100.00	100.00	LOT 77 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-061-000	Assessable	A	100.00	100.00	LOT 78 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-062-000	Assessable	A	100.00	100.00	LOT 79 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-063-000	Assessable	A	100.00	100.00	LOT 80 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-064-000	Assessable	A	100.00	100.00	LOT 81 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-151-065-000	Assessable	A	100.00	100.00	LOT 82 WOODCREEK OAKS UNIT NO 6 T-28 (AMENDED MAP)
477-160-001-000	Assessable	A	100.00	100.00	LOT 1 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-002-000	Assessable	A	100.00	100.00	LOT 2 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-003-000	Assessable	A	100.00	100.00	LOT 3 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-160-004-000	Assessable	A	100.00	100.00	LOT 4 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-005-000	Assessable	A	100.00	100.00	LOT 5 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-006-000	Assessable	A	100.00	100.00	LOT 6 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-007-000	Assessable	A	100.00	100.00	LOT 7 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-008-000	Assessable	A	100.00	100.00	LOT 8 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-009-000	Assessable	A	100.00	100.00	LOT 9 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-010-000	Assessable	A	100.00	100.00	LOT 10 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-011-000	Assessable	A	100.00	100.00	LOT 11 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-012-000	Assessable	A	100.00	100.00	LOT 12 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-013-000	Assessable	A	100.00	100.00	LOT 13 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-014-000	Assessable	A	100.00	100.00	LOT 14 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-015-000	Assessable	A	100.00	100.00	LOT 15 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-016-000	Assessable	A	100.00	100.00	LOT 16 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-017-000	Assessable	A	100.00	100.00	LOT 17 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-018-000	Assessable	A	100.00	100.00	LOT 18 WOODCREEK OAKS UNIT #7 PHASE A R-74
477-160-019-000	Assessable	A	100.00	100.00	LOT 19 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-020-000	Assessable	A	100.00	100.00	LOT 20 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-021-000	Assessable	A	100.00	100.00	LOT 21 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-022-000	Assessable	A	100.00	100.00	LOT 35 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-023-000	Assessable	A	100.00	100.00	LOT 36 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-024-000	Assessable	A	100.00	100.00	LOT 37 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-025-000	Assessable	A	100.00	100.00	LOT 38 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-026-000	Assessable	A	100.00	100.00	LOT 39 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-027-000	Assessable	A	100.00	100.00	LOT 40 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-028-000	Assessable	A	100.00	100.00	LOT 41 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-029-000	Assessable	A	100.00	100.00	LOT 42 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-030-000	Assessable	A	100.00	100.00	LOT 43 WOODCREEK OAKS UNIT#7 PHASE A MOR R 74
477-160-031-000	Assessable	A	100.00	100.00	LOT 44 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-032-000	Assessable	A	100.00	100.00	LOT 45 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-033-000	Assessable	A	100.00	100.00	LOT 46 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-034-000	Assessable	A	100.00	100.00	LOT 47 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-035-000	Assessable	A	100.00	100.00	LOT 48 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-036-000	Assessable	A	100.00	100.00	LOT 49 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-037-000	Assessable	A	100.00	100.00	LOT 50 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-038-000	Assessable	A	100.00	100.00	LOT 51 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-039-000	Assessable	A	100.00	100.00	LOT 52 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-040-000	Assessable	A	100.00	100.00	LOT 53 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-041-000	Assessable	A	100.00	100.00	LOT 54 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-042-000	Assessable	A	100.00	100.00	LOT 55 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-043-000	Assessable	A	100.00	100.00	LOT 56 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-044-000	Assessable	A	100.00	100.00	LOT 57 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-045-000	Assessable	A	100.00	100.00	LOT 58 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-046-000	Assessable	A	100.00	100.00	LOT 59 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-047-000	Assessable	A	100.00	100.00	LOT 60 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-048-000	Assessable	A	100.00	100.00	LOT 61 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-049-000	Assessable	A	100.00	100.00	LOT 62 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-050-000	Assessable	A	100.00	100.00	LOT 63 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-051-000	Assessable	A	100.00	100.00	LOT 64 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-052-000	Assessable	A	100.00	100.00	LOT 65 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-053-000	Assessable	A	100.00	100.00	LOT 66 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-054-000	Assessable	A	100.00	100.00	LOT 67 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-055-000	Assessable	A	100.00	100.00	LOT 68 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-056-000	Assessable	A	100.00	100.00	LOT 69 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-057-000	Assessable	A	100.00	100.00	LOT 70 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-058-000	Assessable	A	100.00	100.00	LOT 71 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-059-000	Assessable	A	100.00	100.00	LOT 72 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-060-000	Assessable	A	100.00	100.00	LOT 73 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-160-061-000	Assessable	A	100.00	100.00	LOT 74 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-062-000	Assessable	A	100.00	100.00	LOT 75 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-063-000	Assessable	A	100.00	100.00	LOT 76 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-064-000	Assessable	A	100.00	100.00	LOT 77 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-065-000	Assessable	A	100.00	100.00	LOT 78 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-066-000	Assessable	A	100.00	100.00	LOT 79 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-067-000	Assessable	A	100.00	100.00	LOT 80 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-068-000	Assessable	A	100.00	100.00	LOT 81 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-069-000	Assessable	A	100.00	100.00	LOT 82 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-160-070-000	Assessable	A	100.00	100.00	LOT 83 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-001-000	Assessable	A	100.00	100.00	LOT 22 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-002-000	Assessable	A	100.00	100.00	LOT 23 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-003-000	Assessable	A	100.00	100.00	LOT 24 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-004-000	Assessable	A	100.00	100.00	LOT 25 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-005-000	Assessable	A	100.00	100.00	LOT 26 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-006-000	Assessable	A	100.00	100.00	LOT 27 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-007-000	Assessable	A	100.00	100.00	LOT 28 WOODCREEK OAKS UNIT #7 PHASE A R-74
477-170-008-000	Assessable	A	100.00	100.00	LOT 29 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-009-000	Assessable	A	100.00	100.00	LOT 30 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-010-000	Assessable	A	100.00	100.00	LOT 31 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-011-000	Assessable	A	100.00	100.00	LOT 32 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-012-000	Assessable	A	100.00	100.00	LOT 33 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-170-013-000	Assessable	A	100.00	100.00	LOT 34 WOODCREEK OAKS UNIT #7 PHASE A MOR R-74
477-180-001-000	Assessable	A	100.00	100.00	LOT 1 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-002-000	Assessable	A	100.00	100.00	LOT 2 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-003-000	Assessable	A	100.00	100.00	LOT 3 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-004-000	Assessable	A	100.00	100.00	LOT 4 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-005-000	Assessable	A	100.00	100.00	LOT 5 WOODCREEK OAKS VILLAGE 8 UNIT A MOR S-3
477-180-006-000	Assessable	A	100.00	100.00	LOT 6 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-007-000	Assessable	A	100.00	100.00	LOT 7 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-008-000	Assessable	A	100.00	100.00	LOT 8 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-009-000	Assessable	A	100.00	100.00	LOT 9 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-010-000	Assessable	A	100.00	100.00	LOT 40 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-011-000	Assessable	A	100.00	100.00	LOT 41 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-012-000	Assessable	A	100.00	100.00	LOT 42 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-013-000	Assessable	A	100.00	100.00	LOT 43 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-014-000	Assessable	A	100.00	100.00	LOT 44 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-015-000	Assessable	A	100.00	100.00	LOT 45 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-016-000	Assessable	A	100.00	100.00	LOT 46 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-017-000	Assessable	A	100.00	100.00	LOT 47 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-018-000	Assessable	A	100.00	100.00	LOT 48 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-019-000	Assessable	A	100.00	100.00	LOT 49 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-020-000	Assessable	A	100.00	100.00	LOT 50 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-021-000	Assessable	A	100.00	100.00	LOT 51 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-022-000	Assessable	A	100.00	100.00	LOT 52 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-023-000	Assessable	A	100.00	100.00	LOT 53 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-024-000	Assessable	A	100.00	100.00	LOT 54 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-025-000	Assessable	A	100.00	100.00	LOT 55 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-026-000	Assessable	A	100.00	100.00	LOT 56 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-027-000	Assessable	A	100.00	100.00	LOT 57 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-028-000	Assessable	A	100.00	100.00	LOT 58 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-029-000	Assessable	A	100.00	100.00	LOT 59 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-030-000	Assessable	A	100.00	100.00	LOT 60 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-031-000	Assessable	A	100.00	100.00	LOT 61 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-032-000	Assessable	A	100.00	100.00	LOT 62 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-033-000	Assessable	A	100.00	100.00	LOT 63 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-034-000	Assessable	A	100.00	100.00	LOT 64 WOODCREEK OAKS VILLAGE 8 UNIT A S-3

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-180-035-000	Assessable	A	100.00	100.00	LOT 65 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-036-000	Assessable	A	100.00	100.00	LOT 66 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-037-000	Assessable	A	100.00	100.00	LOT 67 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-038-000	Assessable	A	100.00	100.00	LOT 68 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-039-000	Assessable	A	100.00	100.00	LOT 69 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-040-000	Assessable	A	100.00	100.00	LOT 70 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-041-000	Assessable	A	100.00	100.00	LOT 71 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-042-000	Assessable	A	100.00	100.00	LOT 72 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-043-000	Assessable	A	100.00	100.00	LOT 73 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-044-000	Assessable	A	100.00	100.00	LOT 74 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-045-000	Assessable	A	100.00	100.00	LOT 75 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-046-000	Assessable	A	100.00	100.00	LOT 76 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-047-000	Assessable	A	100.00	100.00	LOT 77 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-048-000	Assessable	A	100.00	100.00	LOT 78 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-049-000	Assessable	A	100.00	100.00	LOT 79 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-050-000	Assessable	A	100.00	100.00	LOT 80 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-051-000	Assessable	A	100.00	100.00	LOT 81 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-052-000	Assessable	A	100.00	100.00	LOT 82 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-053-000	Assessable	A	100.00	100.00	LOT 83 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-054-000	Assessable	A	100.00	100.00	LOT 91 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-055-000	Assessable	A	100.00	100.00	LOT 92 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-056-000	Assessable	A	100.00	100.00	LOT 93 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-057-000	Assessable	A	100.00	100.00	LOT 103 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-058-000	Assessable	A	100.00	100.00	LOT 104 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-059-000	Assessable	A	100.00	100.00	LOT 105 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-060-000	Assessable	A	100.00	100.00	LOT 106 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-061-000	Assessable	A	100.00	100.00	LOT 107 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-062-000	Assessable	A	100.00	100.00	LOT 108 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-063-000	Assessable	A	100.00	100.00	LOT 109 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-064-000	Assessable	A	100.00	100.00	LOT 110 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-065-000	Assessable	A	100.00	100.00	LOT 111 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-066-000	Assessable	A	100.00	100.00	LOT 112 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-067-000	Assessable	A	100.00	100.00	LOT 113 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-068-000	Assessable	A	100.00	100.00	LOT 114 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-069-000	Assessable	A	100.00	100.00	LOT 115 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-070-000	Assessable	A	100.00	100.00	LOT 116 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-071-000	Assessable	A	100.00	100.00	LOT 117 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-072-000	Assessable	A	100.00	100.00	LOT 118 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-073-000	Assessable	A	100.00	100.00	LOT 119 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-074-000	Assessable	A	100.00	100.00	LOT 120 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-075-000	Assessable	A	100.00	100.00	LOT 121 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-076-000	Assessable	A	100.00	100.00	LOT 122 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-078-000	Assessable	A	100.00	100.00	LOT 124 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-079-000	Assessable	A	100.00	100.00	LOT 125 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-080-000	Assessable	A	100.00	100.00	LOT 126 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-081-000	Assessable	A	100.00	100.00	LOT 127 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-082-000	Assessable	A	100.00	100.00	LOT 149 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-083-000	Assessable	A	100.00	100.00	LOT 150 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-180-085-000	Assessable	A	100.00	100.00	POR LOT 123 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-001-000	Assessable	A	100.00	100.00	LOT 10 WOODCREEK OAKS VILLAGE 8 UNIT A MOR S-3
477-190-002-000	Assessable	A	100.00	100.00	LOT 11 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-003-000	Assessable	A	100.00	100.00	LOT 12 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-004-000	Assessable	A	100.00	100.00	LOT 13 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-005-000	Assessable	A	100.00	100.00	LOT 14 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-006-000	Assessable	A	100.00	100.00	LOT 15 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-007-000	Assessable	A	100.00	100.00	LOT 16 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-008-000	Assessable	A	100.00	100.00	LOT 17 WOODCREEK OAKS VILLAGE 8 UNIT A S-3

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-190-009-000	Assessable	A	100.00	100.00	LOT 18 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-010-000	Assessable	A	100.00	100.00	LOT 19 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-011-000	Assessable	A	100.00	100.00	LOT 20 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-012-000	Assessable	A	100.00	100.00	LOT 21 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-013-000	Assessable	A	100.00	100.00	LOT 22 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-014-000	Assessable	A	100.00	100.00	LOT 23 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-015-000	Assessable	A	100.00	100.00	LOT 24 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-016-000	Assessable	A	100.00	100.00	LOT 25 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-017-000	Assessable	A	100.00	100.00	LOT 26 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-018-000	Assessable	A	100.00	100.00	LOT 27 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-019-000	Assessable	A	100.00	100.00	LOT 28 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-020-000	Assessable	A	100.00	100.00	LOT 29 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-021-000	Assessable	A	100.00	100.00	LOT 30 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-022-000	Assessable	A	100.00	100.00	LOT 31 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-023-000	Assessable	A	100.00	100.00	LOT 32 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-024-000	Assessable	A	100.00	100.00	LOT 33 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-025-000	Assessable	A	100.00	100.00	LOT 34 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-026-000	Assessable	A	100.00	100.00	LOT 35 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-027-000	Assessable	A	100.00	100.00	LOT 36 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-028-000	Assessable	A	100.00	100.00	LOT 37 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-029-000	Assessable	A	100.00	100.00	LOT 38 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-030-000	Assessable	A	100.00	100.00	LOT 39 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-031-000	Assessable	A	100.00	100.00	LOT 84 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-032-000	Assessable	A	100.00	100.00	LOT 85 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-033-000	Assessable	A	100.00	100.00	LOT 86 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-034-000	Assessable	A	100.00	100.00	LOT 87 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-035-000	Assessable	A	100.00	100.00	LOT 88 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-036-000	Assessable	A	100.00	100.00	LOT 89 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-037-000	Assessable	A	100.00	100.00	LOT 90 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-038-000	Assessable	A	100.00	100.00	LOT 94 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-039-000	Assessable	A	100.00	100.00	LOT 95 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-040-000	Assessable	A	100.00	100.00	LOT 96 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-041-000	Assessable	A	100.00	100.00	LOT 97 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-042-000	Assessable	A	100.00	100.00	LOT 98 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-043-000	Assessable	A	100.00	100.00	LOT 99 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-044-000	Assessable	A	100.00	100.00	LOT 100 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-045-000	Assessable	A	100.00	100.00	LOT 101 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-046-000	Assessable	A	100.00	100.00	LOT 102 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-047-000	Assessable	A	100.00	100.00	LOT 128 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-048-000	Assessable	A	100.00	100.00	LOT 129 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-049-000	Assessable	A	100.00	100.00	LOT 130 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-050-000	Assessable	A	100.00	100.00	LOT 131 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-051-000	Assessable	A	100.00	100.00	LOT 132 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-052-000	Assessable	A	100.00	100.00	LOT 133 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-053-000	Assessable	A	100.00	100.00	LOT 134 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-054-000	Assessable	A	100.00	100.00	LOT 135 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-055-000	Assessable	A	100.00	100.00	LOT 136 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-056-000	Assessable	A	100.00	100.00	LOT 137 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-057-000	Assessable	A	100.00	100.00	LOT 138 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-058-000	Assessable	A	100.00	100.00	LOT 139 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-059-000	Assessable	A	100.00	100.00	LOT 140 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-060-000	Assessable	A	100.00	100.00	LOT 141 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-061-000	Assessable	A	100.00	100.00	LOT 142 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-062-000	Assessable	A	100.00	100.00	LOT 143 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-063-000	Assessable	A	100.00	100.00	LOT 144 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-064-000	Assessable	A	100.00	100.00	LOT 145 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-065-000	Assessable	A	100.00	100.00	LOT 146 WOODCREEK OAKS VILLAGE 8 UNIT A S-3

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-190-066-000	Assessable	A	100.00	100.00	LOT 147 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-190-067-000	Assessable	A	100.00	100.00	LOT 148 WOODCREEK OAKS VILLAGE 8 UNIT A S-3
477-200-001-000	Assessable	A	100.00	100.00	LOT 1 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-002-000	Assessable	A	100.00	100.00	LOT 2 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-003-000	Assessable	A	100.00	100.00	LOT 3 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-004-000	Assessable	A	100.00	100.00	LOT 4 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-005-000	Assessable	A	100.00	100.00	LOT 5 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-006-000	Assessable	A	100.00	100.00	LOT 6 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-007-000	Assessable	A	100.00	100.00	LOT 7 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-008-000	Assessable	A	100.00	100.00	LOT 8 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-009-000	Assessable	A	100.00	100.00	LOT 9 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-010-000	Assessable	A	100.00	100.00	LOT 10 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-011-000	Assessable	A	100.00	100.00	LOT 11 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-012-000	Assessable	A	100.00	100.00	LOT 12 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-013-000	Assessable	A	100.00	100.00	LOT 13 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-014-000	Assessable	A	100.00	100.00	LOT 14 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-015-000	Assessable	A	100.00	100.00	LOT 15 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-016-000	Assessable	A	100.00	100.00	LOT 16 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-017-000	Assessable	A	100.00	100.00	LOT 17 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-018-000	Assessable	A	100.00	100.00	LOT 18 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-019-000	Assessable	A	100.00	100.00	LOT 19 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-020-000	Assessable	A	100.00	100.00	LOT 85 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-200-023-000	Assessable	A	100.00	100.00	LOT 166 RIDGEWOOD UNIT 3 MOR S-41
477-200-024-000	Assessable	A	100.00	100.00	LOT 167 RIDGEWOOD UNIT 3 MOR S-41
477-200-025-000	Assessable	A	100.00	100.00	LOT 168 RIDGEWOOD UNIT 3 MORS S-41
477-200-026-000	Assessable	A	100.00	100.00	LOT 169 RIDGEWOOD UNIT 3 MOR S-41
477-200-027-000	Assessable	A	100.00	100.00	LOT 170 RIDGEWOOD UNIT 3 MOR S-41
477-200-028-000	Assessable	A	100.00	100.00	LOT 171 RIDGEWOOD UNIT 3 MOR S-41
477-200-029-000	Assessable	A	100.00	100.00	LOT 172 RIDGEWOOD UNIT 3 MOR S-41
477-200-030-000	Assessable	A	100.00	100.00	LOT 173 RIDGEWOOD UNIT 3 MOR S-41
477-200-031-000	Assessable	A	100.00	100.00	LOT 174 RIDGEWOOD UNIT 3 MOR S-41
477-200-032-000	Assessable	A	100.00	100.00	LOT 175 RIDGEWOOD UNIT 3 MOR S-41
477-200-033-000	Assessable	A	100.00	100.00	LOT 176 RIDGEWOOD UNIT 3 MOR S-41
477-200-034-000	Assessable	A	100.00	100.00	LOT 177 RIDGEWOOD UNIT 3 MOR S-41
477-200-035-000	Assessable	A	100.00	100.00	LOT 178 RIDGEWOOD UNIT 3 MOR S-41
477-200-036-000	Assessable	A	100.00	100.00	LOT 179 RIDGEWOOD UNIT 3 MOR S-41
477-200-037-000	Assessable	A	100.00	100.00	LOT 180 RIDGEWOOD UNIT 3 MOR S-41
477-200-038-000	Assessable	A	100.00	100.00	LOT 181 RIDGEWOOD UNIT 3 MOR S-41
477-200-039-000	Assessable	A	100.00	100.00	LOT 182 RIDGEWOOD UNIT 3 MOR S-41
477-200-040-000	Assessable	A	100.00	100.00	LOT 183 RIDGEWOOD UNIT 3 MOR S-41
477-200-041-000	Assessable	A	100.00	100.00	LOT 184 RIDGEWOOD UNIT 3 MOR S-41
477-200-042-000	Assessable	A	100.00	100.00	LOT 185 RIDGEWOOD UNIT 3 MOR S-41
477-200-043-000	Assessable	A	100.00	100.00	LOT 186 RIDGEWOOD UNIT 3 MOR S-41
477-200-044-000	Assessable	A	100.00	100.00	LOT 187 RIDGEWOOD UNIT 3 MOR S-41
477-200-045-000	Assessable	A	100.00	100.00	LOT 188 RIDGEWOOD UNIT 3 MOR S-41
477-200-046-000	Assessable	A	100.00	100.00	LOT 189 RIDGEWOOD UNIT 3 MOR S-41
477-200-047-000	Assessable	A	100.00	100.00	LOT 190 RIDGEWOOD UNIT 3 MOR S-41
477-200-048-000	Assessable	A	100.00	100.00	LOT 191 RIDGEWOOD UNIT 3 MOR S-41
477-200-049-000	Assessable	A	100.00	100.00	LOT 192 RIDGEWOOD UNIT 3 MOR S-41
477-200-050-000	Assessable	A	100.00	100.00	LOT 193 RIDGEWOOD UNIT 3 MOR S-41
477-200-051-000	Assessable	A	100.00	100.00	LOT 194 RIDGEWOOD UNIT 3 MOR S-41
477-200-052-000	Assessable	A	100.00	100.00	LOT 195 RIDGEWOOD UNIT 3 MOR S-41
477-200-053-000	Assessable	A	100.00	100.00	LOT 196 RIDGEWOOD UNIT 3 MOR S-41
477-200-054-000	Assessable	A	100.00	100.00	LOT 197 RIDGEWOOD UNIT 3 MOR S-41
477-200-055-000	Assessable	A	100.00	100.00	LOT 198 RIDGEWOOD UNIT 3 MOR S-41
477-200-056-000	Assessable	A	100.00	100.00	LOT 199 RIDGEWOOD UNIT 3 MOR S-41
477-200-057-000	Assessable	A	100.00	100.00	LOT 200 RIDGEWOOD UNIT 3 MOR S-41

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Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-200-058-000	Assessable	A	100.00	100.00	LOT 201 RIDGEWOOD UNIT 3 MOR S-41
477-200-059-000	Assessable	A	100.00	100.00	LOT 202 RIDGEWOOD UNIT 3 MOR S-41
477-200-060-000	Assessable	A	100.00	100.00	LOT 203 RIDGEWOOD UNIT 3 MOR S-41
477-200-061-000	Assessable	A	100.00	100.00	LOT 204 RIDGEWOOD UNIT 3 MOR S-41
477-200-062-000	Assessable	A	100.00	100.00	LOT 205 RIDGEWOOD UNIT 3 MOR S-41
477-200-063-000	Assessable	A	100.00	100.00	LOT 206 RIDGEWOOD UNIT 3 MOR S-41
477-200-064-000	Assessable	A	100.00	100.00	LOT 207 RIDGEWOOD UNIT 3 MOR S-41
477-200-065-000	Assessable	A	100.00	100.00	LOT 208 RIDGEWOOD UNIT 3 MOR S-41
477-200-066-000	Assessable	A	100.00	100.00	LOT 209 RIDGEWOOD UNIT 3 MOR S-41
477-200-067-000	Assessable	A	100.00	100.00	LOT 210 RIDGEWOOD UNIT 3 MOR S-41
477-200-068-000	Assessable	A	100.00	100.00	LOT 211 RIDGEWOOD UNIT 3 MOR S-41
477-200-069-000	Assessable	A	100.00	100.00	LOT 212 RIDGEWOOD UNIT 3 MOR S-41
477-200-070-000	Assessable	A	100.00	100.00	LOT 213 RIDGEWOOD UNIT 3 MOR S-41
477-200-071-000	Assessable	A	100.00	100.00	LOT 214 RIDGEWOOD UNIT 3 MOR S-41
477-200-072-000	Assessable	A	100.00	100.00	LOT 215 RIDGEWOOD UNIT 3 MOR S-41
477-200-073-000	Assessable	A	100.00	100.00	LOT 216 RIDGEWOOD UNIT 3 MOR S-41
477-200-074-000	Assessable	A	100.00	100.00	LOT 217 RIDGEWOOD UNIT 3 MOR S-41
477-210-001-000	Assessable	A	100.00	100.00	LOT 39 RIDGEWOOD UNIT 1 MOR R-87
477-210-002-000	Assessable	A	100.00	100.00	LOT 40 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-003-000	Assessable	A	100.00	100.00	LOT 41 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-004-000	Assessable	A	100.00	100.00	LOT 42 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-005-000	Assessable	A	100.00	100.00	LOT 43 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-006-000	Assessable	A	100.00	100.00	LOT 44 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-007-000	Assessable	A	100.00	100.00	LOT 45 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-008-000	Assessable	A	100.00	100.00	LOT 46 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-009-000	Assessable	A	100.00	100.00	LOT 47 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-010-000	Assessable	A	100.00	100.00	LOT 48 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-011-000	Assessable	A	100.00	100.00	LOT 49 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-012-000	Assessable	A	100.00	100.00	LOT 50 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-013-000	Assessable	A	100.00	100.00	LOT 84 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-014-000	Assessable	A	100.00	100.00	LOT 86 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-015-000	Assessable	A	100.00	100.00	LOT 87 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-016-000	Assessable	A	100.00	100.00	LOT 88 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-017-000	Assessable	A	100.00	100.00	LOT 89 RIDGEWOOD UNIT 1 R-87
477-210-018-000	Assessable	A	100.00	100.00	LOT 90 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-019-000	Assessable	A	100.00	100.00	LOT 91 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-020-000	Assessable	A	100.00	100.00	LOT 92 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-210-027-000	Assessable	A	100.00	100.00	LOT 218 RIDGEWOOD UNIT 4 S-100
477-210-028-000	Assessable	A	100.00	100.00	LOT 219 RIDGEWOOD UNIT 4 S-100
477-210-029-000	Assessable	A	100.00	100.00	LOT 220 RIDGEWOOD UNIT 4 S-100
477-210-030-000	Assessable	A	100.00	100.00	LOT 221 RIDGEWOOD UNIT 4 S-100
477-210-031-000	Assessable	A	100.00	100.00	LOT 222 RIDGEWOOD UNIT 4 S-100
477-210-032-000	Assessable	A	100.00	100.00	LOT 223 RIDGEWOOD UNIT 4 S-100
477-210-033-000	Assessable	A	100.00	100.00	LOT 224 RIDGEWOOD UNIT 4 S-100
477-210-034-000	Assessable	A	100.00	100.00	LOT 225 RIDGEWOOD UNIT 4 S-100
477-210-035-000	Assessable	A	100.00	100.00	LOT 226 RIDGEWOOD UNIT 4 S-100
477-210-036-000	Assessable	A	100.00	100.00	LOT 227 RIDGEWOOD UNIT 4 S-100
477-210-037-000	Assessable	A	100.00	100.00	LOT 228 RIDGEWOOD UNIT 4 S-100
477-210-038-000	Assessable	A	100.00	100.00	LOT 229 RIDGEWOOD UNIT 4 S-100
477-210-039-000	Assessable	A	100.00	100.00	LOT 230 RIDGEWOOD UNIT 4 S-100
477-210-040-000	Assessable	A	100.00	100.00	LOT 231 RIDGEWOOD UNIT 4 S-100
477-210-041-000	Assessable	A	100.00	100.00	LOT 232 RIDGEWOOD UNIT 4 S-100
477-210-042-000	Assessable	A	100.00	100.00	LOT 233 RIDGEWOOD UNIT 4 S-100
477-210-043-000	Assessable	A	100.00	100.00	LOT 234 RIDGEWOOD UNIT 4 S-100
477-210-044-000	Assessable	A	100.00	100.00	LOT 235 RIDGEWOOD UNIT 4 S-100
477-210-045-000	Assessable	A	100.00	100.00	LOT 236 RIDGEWOOD UNIT 4 S-100
477-210-046-000	Assessable	A	100.00	100.00	LOT 237 RIDGEWOOD UNIT 4 S-100

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-210-047-000	Assessable	A	100.00	100.00	LOT 238 RIDGEWOOD UNIT 4 S-100
477-210-048-000	Assessable	A	100.00	100.00	LOT 239 RIDGEWOOD UNIT 4 S-100
477-210-049-000	Assessable	A	100.00	100.00	LOT 240 RIDGEWOOD UNIT 4 S-100
477-210-050-000	Assessable	A	100.00	100.00	LOT 241 RIDGEWOOD UNIT 4 S-100
477-210-051-000	Assessable	A	100.00	100.00	LOT 242 RIDGEWOOD UNIT 4 S-100
477-210-052-000	Assessable	A	100.00	100.00	LOT 243 RIDGEWOOD UNIT 4 S-100
477-210-053-000	Assessable	A	100.00	100.00	LOT 244 RIDGEWOOD UNIT 4 S-100
477-210-054-000	Assessable	A	100.00	100.00	LOT 245 RIDGEWOOD UNIT 4 S-100
477-210-055-000	Assessable	A	100.00	100.00	LOT 246 RIDGEWOOD UNIT 4 S-100
477-210-056-000	Assessable	A	100.00	100.00	LOT 247 RIDGEWOOD UNIT 4 S-100
477-210-057-000	Assessable	A	100.00	100.00	LOT 248 RIDGEWOOD UNIT 4 S-100
477-210-058-000	Assessable	A	100.00	100.00	LOT 249 RIDGEWOOD UNIT 4 S-100
477-210-059-000	Assessable	A	100.00	100.00	LOT 250 RIDGEWOOD UNIT 4 S-100
477-210-060-000	Assessable	A	100.00	100.00	LOT 251 RIDGEWOOD UNIT 4 S-100
477-210-061-000	Assessable	A	100.00	100.00	LOT 252 RIDGEWOOD UNIT 4 S-100
477-210-062-000	Assessable	A	100.00	100.00	LOT 253 RIDGEWOOD UNIT 4 S-100
477-210-063-000	Assessable	A	100.00	100.00	LOT 254 RIDGEWOOD UNIT 4 S-100
477-210-064-000	Assessable	A	100.00	100.00	LOT 255 RIDGEWOOD UNIT 4 S-100
477-210-065-000	Assessable	A	100.00	100.00	LOT 256 RIDGEWOOD UNIT 4 S-100
477-210-066-000	Assessable	A	100.00	100.00	LOT 257 RIDGEWOOD UNIT 4 S-100
477-210-067-000	Assessable	A	100.00	100.00	LOT 258 RIDGEWOOD UNIT 4 S-100
477-210-068-000	Assessable	A	100.00	100.00	LOT 259 RIDGEWOOD UNIT 4 S-100
477-210-069-000	Assessable	A	100.00	100.00	LOT 260 RIDGEWOOD UNIT 4 S-100
477-210-070-000	Assessable	A	100.00	100.00	LOT 261 RIDGEWOOD UNIT 4 S-100
477-220-001-000	Assessable	A	100.00	100.00	LOT 20 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-002-000	Assessable	A	100.00	100.00	LOT 21 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-003-000	Assessable	A	100.00	100.00	LOT 22 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-004-000	Assessable	A	100.00	100.00	LOT 61 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-005-000	Assessable	A	100.00	100.00	LOT 62 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-006-000	Assessable	A	100.00	100.00	LOT 63 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-007-000	Assessable	A	100.00	100.00	LOT 64 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-008-000	Assessable	A	100.00	100.00	LOT 65 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-009-000	Assessable	A	100.00	100.00	LOT 66 RIDGEWOOD UNIT 1 MOR R PG 87
477-220-010-000	Assessable	A	100.00	100.00	LOT 81 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-011-000	Assessable	A	100.00	100.00	LOT 82 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-220-012-000	Assessable	A	100.00	100.00	LOT 83 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-001-000	Assessable	A	100.00	100.00	LOT 23 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-002-000	Assessable	A	100.00	100.00	LOT 24 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-003-000	Assessable	A	100.00	100.00	LOT 25 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-004-000	Assessable	A	100.00	100.00	LOT 26 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-005-000	Assessable	A	100.00	100.00	LOT 27 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-006-000	Assessable	A	100.00	100.00	LOT 28 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-007-000	Assessable	A	100.00	100.00	LOT 29 RIDGEWOOD UNIT 1 MOR BK PG -87
477-230-008-000	Assessable	A	100.00	100.00	LOT 30 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-009-000	Assessable	A	100.00	100.00	LOT 31 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-010-000	Assessable	A	100.00	100.00	LOT 32 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-011-000	Assessable	A	100.00	100.00	LOT 33 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-012-000	Assessable	A	100.00	100.00	LOT 34 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-013-000	Assessable	A	100.00	100.00	LOT 35 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-014-000	Assessable	A	100.00	100.00	LOT 36 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-015-000	Assessable	A	100.00	100.00	LOT 37 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-016-000	Assessable	A	100.00	100.00	LOT 38 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-017-000	Assessable	A	100.00	100.00	LOT 51 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-018-000	Assessable	A	100.00	100.00	LOT 52 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-019-000	Assessable	A	100.00	100.00	LOT 53 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-020-000	Assessable	A	100.00	100.00	LOT 54 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-021-000	Assessable	A	100.00	100.00	LOT 55 RIDGEWOOD UNIT 1 MOR BK R PG 87

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-230-022-000	Assessable	A	100.00	100.00	LOT 56 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-023-000	Assessable	A	100.00	100.00	LOT 57 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-024-000	Assessable	A	100.00	100.00	LOT 58 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-025-000	Assessable	A	100.00	100.00	LOT 59 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-026-000	Assessable	A	100.00	100.00	LOT 60 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-027-000	Assessable	A	100.00	100.00	LOT 67 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-028-000	Assessable	A	100.00	100.00	LOT 68 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-029-000	Assessable	A	100.00	100.00	LOT 69 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-030-000	Assessable	A	100.00	100.00	LOT 70 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-031-000	Assessable	A	100.00	100.00	LOT 71 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-032-000	Assessable	A	100.00	100.00	LOT 72 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-033-000	Assessable	A	100.00	100.00	LOT 73 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-040-000	Assessable	A	100.00	100.00	LOT 80 RIDGEWOOD UNIT 1 MOR BK R PG 87
477-230-042-000	Assessable	A	100.00	100.00	LOT 74 & POR 75 RIDGEWOOD UNIT 1 R-87
477-230-043-000	Assessable	A	100.00	100.00	POR LOT 75 RIDGEWOOD UNIT 1 R-87
477-230-044-000	Assessable	A	100.00	100.00	POR LOT 76 RIDGEWOOD UNIT 1 R-87
477-230-045-000	Assessable	A	100.00	100.00	POR 77 & POR LOTS 76 & 78 RIDGEWOOD UNIT 1 R-87
477-230-046-000	Assessable	A	100.00	100.00	POR LOTS 78 & 79 RIDGEWOOD UNIT 1 R-87
477-230-047-000	Assessable	A	100.00	100.00	POR LOT 79 RIDGEWOOD UNIT 1 R-87
477-240-001-000	Assessable	A	100.00	100.00	LOT 19 WOODCREEK OAKS UNIT 9-A S-13
477-240-002-000	Assessable	A	100.00	100.00	LOT 20 WOODCREEK OAKS UNIT 9-A S-13
477-240-003-000	Assessable	A	100.00	100.00	LOT 31 WOODCREEK OAKS UNIT 9-A S-13
477-240-004-000	Assessable	A	100.00	100.00	LOT 32 WOODCREEK OAKS UNIT 9-A S-13
477-240-005-000	Assessable	A	100.00	100.00	LOT 33 WOODCREEK OAKS UNIT 9-A S-13
477-240-006-000	Assessable	A	100.00	100.00	LOT 34 WOODCREEK OAKS UNIT 9-A S-13
477-240-007-000	Assessable	A	100.00	100.00	LOT 35 WOODCREEK OAKS UNIT 9-A S-13
477-240-008-000	Assessable	A	100.00	100.00	LOT 36 WOODCREEK OAKS UNIT 9-A S-13
477-240-009-000	Assessable	A	100.00	100.00	LOT 37 WOODCREEK OAKS UNIT 9-A S-13
477-240-010-000	Assessable	A	100.00	100.00	LOT 160 WOODCREEK OAKS UNIT 9-A S-13
477-240-011-000	Assessable	A	100.00	100.00	LOT 161 WOODCREEK OAKS UNIT 9-A S-13
477-240-012-000	Assessable	A	100.00	100.00	LOT 162 WOODCREEK OAKS UNIT 9-A S-13
477-240-013-000	Assessable	A	100.00	100.00	LOT 163 WOODCREEK OAKS UNIT 9-A S-13
477-240-014-000	Assessable	A	100.00	100.00	LOT 164 WOODCREEK OAKS UNIT 9-A S-13
477-240-015-000	Assessable	A	100.00	100.00	LOT 165 WOODCREEK OAKS UNIT 9-A S-13
477-240-016-000	Assessable	A	100.00	100.00	LOT 166 WOODCREEK OAKS UNIT 9-A S-13
477-240-017-000	Assessable	A	100.00	100.00	LOT 167 WOODCREEK OAKS UNIT 9-A S-13
477-240-018-000	Assessable	A	100.00	100.00	LOT 168 WOODCREEK OAKS UNIT 9-A S-13
477-240-019-000	Assessable	A	100.00	100.00	LOT 169 WOODCREEK OAKS UNIT 9-A S-13
477-240-020-000	Assessable	A	100.00	100.00	LOT 170 WOODCREEK OAKS UNIT 9-A S-13
477-240-021-000	Assessable	A	100.00	100.00	LOT 171 WOODCREEK OAKS UNIT 9-A S-13
477-240-022-000	Assessable	A	100.00	100.00	LOT 172 WOODCREEK OAKS UNIT 9-A S-13
477-240-023-000	Assessable	A	100.00	100.00	LOT 173 WOODCREEK OAKS UNIT 9-A S-13
477-240-024-000	Assessable	A	100.00	100.00	LOT 174 WOODCREEK OAKS UNIT 9-A S-13
477-240-025-000	Assessable	A	100.00	100.00	LOT 175 WOODCREEK OAKS UNIT 9-A S-13
477-240-026-000	Assessable	A	100.00	100.00	LOT 176 WOODCREEK OAKS UNIT 9-A S-13
477-240-027-000	Assessable	A	100.00	100.00	LOT 177 WOODCREEK OAKS UNIT 9-A S-13
477-240-028-000	Assessable	A	100.00	100.00	LOT 178 WOODCREEK OAKS UNIT 9-A S-13
477-240-029-000	Assessable	A	100.00	100.00	LOT 179 WOODCREEK OAKS UNIT 9-A S-13
477-240-030-000	Assessable	A	100.00	100.00	LOT 180 WOODCREEK OAKS UNIT 9-A S-13
477-240-031-000	Assessable	A	100.00	100.00	LOT 181 WOODCREEK OAKS UNIT 9-A S-13
477-240-032-000	Assessable	A	100.00	100.00	LOT 182 WOODCREEK OAKS UNIT 9-A S-13
477-240-033-000	Assessable	A	100.00	100.00	LOT 183 WOODCREEK OAKS UNIT 9-A S-13
477-240-034-000	Assessable	A	100.00	100.00	LOT 184 WOODCREEK OAKS UNIT 9-A S-13
477-240-035-000	Assessable	A	100.00	100.00	LOT 185 WOODCREEK OAKS UNIT 9-4 S-13
477-240-036-000	Assessable	A	100.00	100.00	LOT 186 WOODCREEK OAKS UNIT 9-4 S-13
477-240-037-000	Assessable	A	100.00	100.00	LOT 187 WOODCREEK OAKS UNIT 9-4 S-13
477-240-038-000	Assessable	A	100.00	100.00	LOT 188 WOODCREEK OAKS UNIT 9-4 S-13

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-240-039-000	Assessable	A	100.00	100.00	LOT 189 WOODCREEK OAKS UNIT 9-4 S-13
477-250-001-000	Assessable	A	100.00	100.00	LOT 1 WOODCREEK OAKS UNIT 9-B S-14
477-250-002-000	Assessable	A	100.00	100.00	LOT 2 WOODCREEK OAKS UNIT 9-B S-14
477-250-003-000	Assessable	A	100.00	100.00	LOT 3 WOODCREEK OAKS UNIT 9-B S-14
477-250-004-000	Assessable	A	100.00	100.00	LOT 4 WOODCREEK OAKS UNIT 9-B S-14
477-250-005-000	Assessable	A	100.00	100.00	LOT 5 WOODCREEK OAKS UNIT 9-B S-14
477-250-006-000	Assessable	A	100.00	100.00	LOT 6 WOODCREEK OAKS UNIT 9-B S-14
477-250-007-000	Assessable	A	100.00	100.00	LOT 7 WOODCREEK OAKS UNIT 9-B S-14
477-250-008-000	Assessable	A	100.00	100.00	LOT 8 WOODCREEK OAKS UNIT 9-B S-14
477-250-009-000	Assessable	A	100.00	100.00	LOT 9 WOODCREEK OAKS UNIT 9-B S-14
477-250-010-000	Assessable	A	100.00	100.00	LOT 10 WOODCREEK OAKS UNIT 9-B S-14
477-250-011-000	Assessable	A	100.00	100.00	LOT 11 WOODCREEK OAKS UNIT 9-B S-14
477-250-012-000	Assessable	A	100.00	100.00	LOT 12 WOODCREEK OAKS UNIT 9-B S-14
477-250-013-000	Assessable	A	100.00	100.00	LOT 13 WOODCREEK OAKS UNIT 9-B S-14
477-250-014-000	Assessable	A	100.00	100.00	LOT 14 WOODCREEK OAKS UNIT 9-B S-14
477-250-015-000	Assessable	A	100.00	100.00	LOT 15 WOODCREEK OAKS UNIT 9-B S-14
477-250-016-000	Assessable	A	100.00	100.00	LOT 16 WOODCREEK OAKS UNIT 9-B S-14
477-250-017-000	Assessable	A	100.00	100.00	LOT 17 WOODCREEK OAKS UNIT 9-B S-14
477-250-018-000	Assessable	A	100.00	100.00	LOT 18 WOODCREEK OAKS UNIT 9-B S-14
477-250-019-000	Assessable	A	100.00	100.00	LOT 21 WOODCREEK OAKS UNIT 9-B S-14
477-250-020-000	Assessable	A	100.00	100.00	LOT 22 WOODCREEK OAKS UNIT 9-B S-14
477-250-021-000	Assessable	A	100.00	100.00	LOT 23 WOODCREEK OAKS UNIT 9-B S-14
477-250-022-000	Assessable	A	100.00	100.00	LOT 24 WOODCREEK OAKS UNIT 9-B S-14
477-250-023-000	Assessable	A	100.00	100.00	LOT 25 WOODCREEK OAKS UNIT 9-B S-14
477-250-024-000	Assessable	A	100.00	100.00	LOT 26 WOODCREEK OAKS UNIT 9-B S-14
477-250-025-000	Assessable	A	100.00	100.00	LOT 27 WOODCREEK OAKS UNIT 9-B S-14
477-250-026-000	Assessable	A	100.00	100.00	LOT 28 WOODCREEK OAKS UNIT 9-B S-14
477-250-027-000	Assessable	A	100.00	100.00	LOT 29 WOODCREEK OAKS UNIT 9-B S-14
477-250-028-000	Assessable	A	100.00	100.00	LOT 30 WOODCREEK OAKS UNIT 9-B S-14
477-260-001-000	Assessable	A	100.00	100.00	LOT 38 WOODCREEK OAKS UNIT 9-C S-15
477-260-002-000	Assessable	A	100.00	100.00	LOT 39 WOODCREEK OAKS UNIT 9-C S-15
477-260-003-000	Assessable	A	100.00	100.00	LOT 71 WOODCREEK OAKS UNIT 9-C S-15
477-260-004-000	Assessable	A	100.00	100.00	LOT 72 WOODCREEK OAKS UNIT 9-C S-15
477-260-005-000	Assessable	A	100.00	100.00	LOT 73 WOODCREEK OAKS UNIT 9-C S-15
477-260-006-000	Assessable	A	100.00	100.00	LOT 74 WOODCREEK OAKS UNIT 9-C S-15
477-260-007-000	Assessable	A	100.00	100.00	LOT 75 WOODCREEK OAKS UNIT 9-C S-15
477-260-008-000	Assessable	A	100.00	100.00	LOT 76 WOODCREEK OAKS UNIT 9-C S-15
477-260-009-000	Assessable	A	100.00	100.00	LOT 77 WOODCREEK OAKS UNIT 9-C S-15
477-260-010-000	Assessable	A	100.00	100.00	LOT 78 WOODCREEK OAKS UNIT 9-C S-15
477-260-011-000	Assessable	A	100.00	100.00	LOT 79 WOODCREEK OAKS UNIT 9-C S-15
477-260-012-000	Assessable	A	100.00	100.00	LOT 80 WOODCREEK OAKS UNIT 9-C S-15
477-260-013-000	Assessable	A	100.00	100.00	LOT 81 WOODCREEK OAKS UNIT 9-C S-15
477-260-014-000	Assessable	A	100.00	100.00	LOT 82 WOODCREEK OAKS UNIT 9-C S-15
477-260-015-000	Assessable	A	100.00	100.00	LOT 83 WOODCREEK OAKS UNIT 9-C S-15
477-260-016-000	Assessable	A	100.00	100.00	LOT 84 WOODCREEK OAKS UNIT 9-C S-15
477-260-017-000	Assessable	A	100.00	100.00	LOT 85 WOODCREEK OAKS UNIT 9-C S-15
477-260-018-000	Assessable	A	100.00	100.00	LOT 86 WOODCREEK OAKS UNIT 9-C S-15
477-260-019-000	Assessable	A	100.00	100.00	LOT 87 WOODCREEK OAKS UNIT 9-C S-15
477-260-020-000	Assessable	A	100.00	100.00	LOT 88 WOODCREEK OAKS UNIT 9-C S-15
477-260-021-000	Assessable	A	100.00	100.00	LOT 89 WOODCREEK OAKS UNIT 9-C S-15
477-260-022-000	Assessable	A	100.00	100.00	LOT 90 WOODCREEK OAKS UNIT 9-C S-15
477-260-023-000	Assessable	A	100.00	100.00	LOT 91 WOODCREEK OAKS UNIT 9-C S-15
477-260-024-000	Assessable	A	100.00	100.00	LOT 92 WOODCREEK OAKS UNIT 9-C S-15
477-260-025-000	Assessable	A	100.00	100.00	LOT 93 WOODCREEK OAKS UNIT 9-C S-15
477-260-026-000	Assessable	A	100.00	100.00	LOT 94 WOODCREEK OAKS UNIT 9-C S-15
477-260-027-000	Assessable	A	100.00	100.00	LOT 95 WOODCREEK OAKS UNIT 9-C S-15
477-260-028-000	Assessable	A	100.00	100.00	LOT 157 WOODCREEK OAKS UNIT 9-C S-15

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-260-029-000	Assessable	A	100.00	100.00	LOT 158 WOODCREEK OAKS UNIT 9-C S-15
477-260-030-000	Assessable	A	100.00	100.00	LOT 159 WOODCREEK OAKS UNIT 9-C S-15
477-270-002-000	Assessable	A	100.00	100.00	LOT 61 WOODCREEK OAKS UNIT 9-C S-15
477-270-003-000	Assessable	A	100.00	100.00	LOT 62 WOODCREEK OAKS UNIT 9-C S-15
477-270-004-000	Assessable	A	100.00	100.00	LOT 63 WOODCREEK OAKS UNIT 9-C S-15
477-270-005-000	Assessable	A	100.00	100.00	LOT 64 WOODCREEK OAKS UNIT 9-C S-15
477-270-006-000	Assessable	A	100.00	100.00	LOT 65 WOODCREEK OAKS UNIT 9-C S-15
477-270-007-000	Assessable	A	100.00	100.00	LOT 66 WOODCREEK OAKS UNIT 9-C S-15
477-270-008-000	Assessable	A	100.00	100.00	LOT 67 WOODCREEK OAKS UNIT 9-C S-15
477-270-009-000	Assessable	A	100.00	100.00	LOT 68 WOODCREEK OAKS UNIT 9-C S-15
477-270-010-000	Assessable	A	100.00	100.00	LOT 69 WOODCREEK OAKS UNIT 9-C S-15
477-270-011-000	Assessable	A	100.00	100.00	LOT 70 WOODCREEK OAKS UNIT 9-C S-15
477-270-012-000	Assessable	A	100.00	100.00	LOT 96 WOODCREEK OAKS UNIT 9-C S-15
477-270-013-000	Assessable	A	100.00	100.00	LOT 97 WOODCREEK OAKS UNIT 9-C S-15
477-270-014-000	Assessable	A	100.00	100.00	LOT 98 WOODCREEK OAKS UNIT 9-C S-15
477-270-015-000	Assessable	A	100.00	100.00	LOT 99 WOODCREEK OAKS UNIT 9-C S-15
477-270-016-000	Assessable	A	100.00	100.00	LOT 100 WOODCREEK OAKS UNIT 9-C S-15
477-270-017-000	Assessable	A	100.00	100.00	LOT 101 WOODCREEK OAKS UNIT 9-C S-15
477-270-018-000	Assessable	A	100.00	100.00	LOT 102 WOODCREEK OAKS UNIT 9-C S-15
477-270-019-000	Assessable	A	100.00	100.00	LOT 103 WOODCREEK OAKS UNIT 9-C S-15
477-270-020-000	Assessable	A	100.00	100.00	LOT 104 WOODCREEK OAKS UNIT 9-C S-15
477-270-021-000	Assessable	A	100.00	100.00	LOT 105 WOODCREEK OAKS UNIT 9-C S-15
477-270-022-000	Assessable	A	100.00	100.00	LOT 106 WOODCREEK OAKS UNIT 9-C S-15
477-270-023-000	Assessable	A	100.00	100.00	LOT 107 WOODCREEK OAKS UNIT 9-C S-15
477-270-024-000	Assessable	A	100.00	100.00	LOT 108 WOODCREEK OAKS UNIT 9-C S-15
477-270-025-000	Assessable	A	100.00	100.00	LOT 109 WOODCREEK OAKS UNIT 9-C S-15
477-270-026-000	Assessable	A	100.00	100.00	LOT 110 WOODCREEK OAKS UNIT 9-C S-15
477-270-027-000	Assessable	A	100.00	100.00	LOT 111 WOODCREEK OAKS UNIT 9-C S-15
477-270-028-000	Assessable	A	100.00	100.00	LOT 112 WOODCREEK OAKS UNIT 9-C S-15
477-270-029-000	Assessable	A	100.00	100.00	LOT 113 WOODCREEK OAKS UNIT 9-C S-15
477-270-030-000	Assessable	A	100.00	100.00	LOT 114 WOODCREEK OAKS UNIT 9-C S-15
477-270-031-000	Assessable	A	100.00	100.00	LOT 115 WOODCREEK OAKS UNIT 9-C S-15
477-270-032-000	Assessable	A	100.00	100.00	LOT 116 WOODCREEK OAKS UNIT 9-C S-15
477-270-033-000	Assessable	A	100.00	100.00	LOT 117 WOODCREEK OAKS UNIT 9-C S-15
477-270-034-000	Assessable	A	100.00	100.00	LOT 118 WOODCREEK OAKS UNIT 9-C S-15
477-270-035-000	Assessable	A	100.00	100.00	LOT 119 WOODCREEK OAKS UNIT 9-C S-15
477-270-036-000	Assessable	A	100.00	100.00	POR LOT 60 WOODCREEK OAKS UNIT 9 C S-15
477-280-001-000	Assessable	A	100.00	100.00	LOT 40 WOODCREEK OAKS UNIT 9-D S-16
477-280-002-000	Assessable	A	100.00	100.00	LOT 41 WOODCREEK OAKS UNIT 9-D S-16
477-280-003-000	Assessable	A	100.00	100.00	LOT 42 WOODCREEK OAKS UNIT 9-D S-16
477-280-004-000	Assessable	A	100.00	100.00	LOT 43 WOODCREEK OAKS UNIT 9-D S-16
477-280-005-000	Assessable	A	100.00	100.00	LOT 44 WOODCREEK OAKS UNIT 9-D S-16
477-280-006-000	Assessable	A	100.00	100.00	LOT 45 WOODCREEK OAKS UNIT 9-D S-16
477-280-007-000	Assessable	A	100.00	100.00	LOT 46 WOODCREEK OAKS UNIT 9-D S-16
477-280-008-000	Assessable	A	100.00	100.00	LOT 47 WOODCREEK OAKS UNIT 9-D S-16
477-280-009-000	Assessable	A	100.00	100.00	LOT 48 WOODCREEK OAKS UNIT 9-D S-16
477-280-010-000	Assessable	A	100.00	100.00	LOT 49 WOODCREEK OAKS UNIT 9-D S-16
477-280-011-000	Assessable	A	100.00	100.00	LOT 50 WOODCREEK OAKS UNIT 9-D S-16
477-280-012-000	Assessable	A	100.00	100.00	LOT 51 WOODCREEK OAKS UNIT 9-D S-16
477-280-013-000	Assessable	A	100.00	100.00	LOT 52 WOODCREEK OAKS UNIT 9-D S-16
477-280-014-000	Assessable	A	100.00	100.00	LOT 137 WOODCREEK OAKS UNIT 9-D S-16
477-280-015-000	Assessable	A	100.00	100.00	LOT 138 WOODCREEK OAKS UNIT 9-D S-16
477-280-016-000	Assessable	A	100.00	100.00	LOT 139 WOODCREEK OAKS UNIT 9-D S-16
477-280-017-000	Assessable	A	100.00	100.00	LOT 140 WOODCREEK OAKS UNIT 9-D S-16
477-280-018-000	Assessable	A	100.00	100.00	LOT 141 WOODCREEK OAKS UNIT 9-D S-16
477-280-019-000	Assessable	A	100.00	100.00	LOT 142 WOODCREEK OAKS UNIT 9-D S-16
477-280-020-000	Assessable	A	100.00	100.00	LOT 143 WOODCREEK OAKS UNIT 9-D S-16

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-280-021-000	Assessable	A	100.00	100.00	LOT 144 WOODCREEK OAKS UNIT 9-D S-16
477-280-022-000	Assessable	A	100.00	100.00	LOT 145 WOODCREEK OAKS UNIT 9-D S-16
477-280-023-000	Assessable	A	100.00	100.00	LOT 146 WOODCREEK OAKS UNIT 9-D S-16
477-280-024-000	Assessable	A	100.00	100.00	LOT 147 WOODCREEK OAKS UNIT 9-D S-16
477-280-025-000	Assessable	A	100.00	100.00	LOT 148 WOODCREEK OAKS UNIT 9-D S-16
477-280-026-000	Assessable	A	100.00	100.00	LOT 149 WOODCREEK OAKS UNIT 9-D S-16
477-280-027-000	Assessable	A	100.00	100.00	LOT 150 WOODCREEK OAKS UNIT 9-D S-16
477-280-028-000	Assessable	A	100.00	100.00	LOT 151 WOODCREEK OAKS UNIT 9-D S-16
477-280-029-000	Assessable	A	100.00	100.00	LOT 152 WOODCREEK OAKS UNIT 9-D S-16
477-280-030-000	Assessable	A	100.00	100.00	LOT 153 WOODCREEK OAKS UNIT 9-D S-16
477-280-031-000	Assessable	A	100.00	100.00	LOT 154 WOODCREEK OAKS UNIT 9-D S-16
477-280-032-000	Assessable	A	100.00	100.00	LOT 155 WOODCREEK OAKS UNIT 9-D S-16
477-280-033-000	Assessable	A	100.00	100.00	LOT 156 WOODCREEK OAKS UNIT 9-D S-16
477-290-001-000	Assessable	A	100.00	100.00	LOT 53 WOODCREEK OAKS UNIT 9-D S-16
477-290-002-000	Assessable	A	100.00	100.00	LOT 54 WOODCREEK OAKS UNIT 9-D S-16
477-290-003-000	Assessable	A	100.00	100.00	LOT 55 WOODCREEK OAKS UNIT 9-D S-16
477-290-004-000	Assessable	A	100.00	100.00	LOT 56 WOODCREEK OAKS UNIT 9-D S-16
477-290-005-000	Assessable	A	100.00	100.00	LOT 57 WOODCREEK OAKS UNIT 9-D S-16
477-290-008-000	Assessable	A	100.00	100.00	LOT 120 WOODCREEK OAKS UNIT 9-D S-16
477-290-009-000	Assessable	A	100.00	100.00	LOT 121 WOODCREEK OAKS UNIT 9-D S-16
477-290-010-000	Assessable	A	100.00	100.00	LOT 122 WOODCREEK OAKS UNIT 9-D S-16
477-290-011-000	Assessable	A	100.00	100.00	LOT 123 WOODCREEK OAKS UNIT 9-D S-16
477-290-012-000	Assessable	A	100.00	100.00	LOT 124 WOODCREEK OAKS UNIT 9-D S-16
477-290-013-000	Assessable	A	100.00	100.00	LOT 125 WOODCREEK OAKS UNIT 9-D S-16
477-290-014-000	Assessable	A	100.00	100.00	LOT 126 WOODCREEK OAKS UNIT 9-D S-16
477-290-015-000	Assessable	A	100.00	100.00	LOT 127 WOODCREEK OAKS UNIT 9-D S-16
477-290-016-000	Assessable	A	100.00	100.00	LOT 128 WOODCREEK OAKS UNIT 9-D S-16
477-290-017-000	Assessable	A	100.00	100.00	LOT 129 WOODCREEK OAKS UNIT 9-D S-16
477-290-018-000	Assessable	A	100.00	100.00	LOT 130 WOODCREEK OAKS UNIT 9-D S-16
477-290-019-000	Assessable	A	100.00	100.00	LOT 131 WOODCREEK OAKS UNIT 9-D S-16
477-290-020-000	Assessable	A	100.00	100.00	LOT 132 WOODCREEK OAKS UNIT 9-D S-16
477-290-021-000	Assessable	A	100.00	100.00	LOT 133 WOODCREEK OAKS UNIT 9-D S-16
477-290-022-000	Assessable	A	100.00	100.00	LOT 134 WOODCREEK OAKS UNIT 9-D S-16
477-290-023-000	Assessable	A	100.00	100.00	LOT 135 WOODCREEK OAKS UNIT 9-D S-16
477-290-024-000	Assessable	A	100.00	100.00	LOT 136 WOODCREEK OAKS UNIT 9-D S-16
477-290-027-000	Assessable	A	100.00	100.00	LOT 58 & POR 59 WOODCREEK OAKS UNIT 9 D S-16
477-290-028-000	Assessable	A	100.00	100.00	POR LOT 59 S-16 & POR LOT 60 S-15
477-300-001-000	Assessable	A	100.00	100.00	LOT 261 WOODCREEK OAKS UNIT 10 S-22
477-300-002-000	Assessable	A	100.00	100.00	LOT 262 WOODCREEK OAKS UNIT 10 S-22
477-300-003-000	Assessable	A	100.00	100.00	LOT 263 WOODCREEK OAKS UNIT 10 S-22
477-300-004-000	Assessable	A	100.00	100.00	LOT 264 WOODCREEK OAKS UNIT 10 S-22
477-300-005-000	Assessable	A	100.00	100.00	LOT 265 WOODCREEK OAKS UNIT 10 S-22
477-300-006-000	Assessable	A	100.00	100.00	LOT 266 WOODCREEK OAKS UNIT 10 S-22
477-300-007-000	Assessable	A	100.00	100.00	LOT 267 WOODCREEK OAKS UNIT 10 S-22
477-300-008-000	Assessable	A	100.00	100.00	LOT 268 WOODCREEK OAKS UNIT 10 S-22
477-300-009-000	Assessable	A	100.00	100.00	LOT 269 WOODCREEK OAKS UNIT 10 S-22
477-300-010-000	Assessable	A	100.00	100.00	LOT 270 WOODCREEK OAKS UNIT 10 S-22
477-300-011-000	Assessable	A	100.00	100.00	LOT 271 WOODCREEK OAKS UNIT 10 S-22
477-300-012-000	Assessable	A	100.00	100.00	LOT 272 WOODCREEK OAKS UNIT 10 S-22
477-300-013-000	Assessable	A	100.00	100.00	LOT 273 WOODCREEK OAKS UNIT 10 S-22
477-300-014-000	Assessable	A	100.00	100.00	LOT 274 WOODCREEK OAKS UNIT 10 S-22
477-300-015-000	Assessable	A	100.00	100.00	LOT 275 WOODCREEK OAKS UNIT 10 S-22
477-300-016-000	Assessable	A	100.00	100.00	LOT 276 WOODCREEK OAKS UNIT 10 S-22
477-300-017-000	Assessable	A	100.00	100.00	LOT 277 WOODCREEK OAKS UNIT 10 S-22
477-300-018-000	Assessable	A	100.00	100.00	LOT 278 WOODCREEK OAKS UNIT 10 S-22
477-300-019-000	Assessable	A	100.00	100.00	LOT 279 WOODCREEK OAKS UNIT 10 S-22
477-300-020-000	Assessable	A	100.00	100.00	LOT 280 WOODCREEK OAKS UNIT 10 S-22

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-300-021-000	Assessable	A	100.00	100.00	LOT 281 WOODCREEK OAKS UNIT 10 S-22
477-300-022-000	Assessable	A	100.00	100.00	LOT 282 WOODCREEK OAKS UNIT 10 S-22
477-300-023-000	Assessable	A	100.00	100.00	LOT 283 WOODCREEK OAKS UNIT 10 S-22
477-300-024-000	Assessable	A	100.00	100.00	LOT 284 WOODCREEK OAKS UNIT 10 S-22
477-300-025-000	Assessable	A	100.00	100.00	LOT 285 WOODCREEK OAKS UNIT 10 S-22
477-300-026-000	Assessable	A	100.00	100.00	LOT 286 WOODCREEK OAKS UNIT 10 S-22
477-300-027-000	Assessable	A	100.00	100.00	LOT 287 WOODCREEK OAKS UNIT 10 S-22
477-300-028-000	Assessable	A	100.00	100.00	LOT 288 WOODCREEK OAKS UNIT 10 S-22
477-300-029-000	Assessable	A	100.00	100.00	LOT 289 WOODCREEK OAKS UNIT 10 S-22
477-300-030-000	Assessable	A	100.00	100.00	LOT 298 WOODCREEK OAKS UNIT 10 S-22
477-300-031-000	Assessable	A	100.00	100.00	LOT 299 WOODCREEK OAKS UNIT 10 S-22
477-300-032-000	Assessable	A	100.00	100.00	LOT 300 WOODCREEK OAKS UNIT 10 S-22
477-300-033-000	Assessable	A	100.00	100.00	LOT 301 WOODCREEK OAKS UNIT 10 S-22
477-300-034-000	Assessable	A	100.00	100.00	LOT 302 WOODCREEK OAKS UNIT 10 S-22
477-300-035-000	Assessable	A	100.00	100.00	LOT 303 WOODCREEK OAKS UNIT 10 S-22
477-300-036-000	Assessable	A	100.00	100.00	LOT 304 WOODCREEK OAKS UNIT 10 S-22
477-300-037-000	Assessable	A	100.00	100.00	LOT 305 WOODCREEK OAKS UNIT 10 S-22
477-300-038-000	Assessable	A	100.00	100.00	LOT 306 WOODCREEK OAKS UNIT 10 S-22
477-300-039-000	Assessable	A	100.00	100.00	LOT 307 WOODCREEK OAKS UNIT 10 S-22
477-300-040-000	Assessable	A	100.00	100.00	LOT 308 WOODCREEK OAKS UNIT 10 S-22
477-300-041-000	Assessable	A	100.00	100.00	LOT 309 WOODCREEK OAKS UNIT 10 S-22
477-300-042-000	Assessable	A	100.00	100.00	LOT 310 WOODCREEK OAKS UNIT 10 S-22
477-300-043-000	Assessable	A	100.00	100.00	LOT 311 WOODCREEK OAKS UNIT 10 S-22
477-300-044-000	Assessable	A	100.00	100.00	LOT 312 WOODCREEK OAKS UNIT 10 S-22
477-300-045-000	Assessable	A	100.00	100.00	LOT 313 WOODCREEK OAKS UNIT 10 S-22
477-300-046-000	Assessable	A	100.00	100.00	LOT 314 WOODCREEK OAKS UNIT 10 S-22
477-300-047-000	Assessable	A	100.00	100.00	LOT 315 WOODCREEK OAKS UNIT 10 S-22
477-300-048-000	Assessable	A	100.00	100.00	LOT 316 WOODCREEK OAKS UNIT 10 S-22
477-300-049-000	Assessable	A	100.00	100.00	LOT 317 WOODCREEK OAKS UNIT 10 S-22
477-300-050-000	Assessable	A	100.00	100.00	LOT 318 WOODCREEK OAKS UNIT 10 S-22
477-300-051-000	Assessable	A	100.00	100.00	LOT 319 WOODCREEK OAKS UNIT 10 S-22
477-300-052-000	Assessable	A	100.00	100.00	LOT 320 WOODCREEK OAKS UNIT 10 S-22
477-300-053-000	Assessable	A	100.00	100.00	LOT 321 WOODCREEK OAKS UNIT 10 S-22
477-310-001-000	Assessable	A	100.00	100.00	LOT 190 WOODCREEK OAKS UNIT 10 S-22
477-310-002-000	Assessable	A	100.00	100.00	LOT 191 WOODCREEK OAKS UNIT 10 S-22
477-310-003-000	Assessable	A	100.00	100.00	LOT 192 WOODCREEK OAKS UNIT 10 S-22
477-310-004-000	Assessable	A	100.00	100.00	LOT 193 WOODCREEK OAKS UNIT 10 S-22
477-310-005-000	Assessable	A	100.00	100.00	LOT 194 WOODCREEK OAKS UNIT 10 S-22
477-310-006-000	Assessable	A	100.00	100.00	LOT 195 WOODCREEK OAKS UNIT 10 S-22
477-310-007-000	Assessable	A	100.00	100.00	LOT 196 WOODCREEK OAKS UNIT 10 S-22
477-310-008-000	Assessable	A	100.00	100.00	LOT 197 WOODCREEK OAKS UNIT 10 S-22
477-310-009-000	Assessable	A	100.00	100.00	LOT 198 WOODCREEK OAKS UNIT 10 S-22
477-310-010-000	Assessable	A	100.00	100.00	LOT 199 WOODCREEK OAKS UNIT 10 S-22
477-310-011-000	Assessable	A	100.00	100.00	LOT 200 WOODCREEK OAKS UNIT 10 S-22
477-310-012-000	Assessable	A	100.00	100.00	LOT 201 WOODCREEK OAKS UNIT 10 S-22
477-310-013-000	Assessable	A	100.00	100.00	LOT 202 WOODCREEK OAKS UNIT 10 S-22
477-310-014-000	Assessable	A	100.00	100.00	LOT 203 WOODCREEK OAKS UNIT 10 S-22
477-310-015-000	Assessable	A	100.00	100.00	LOT 204 WOODCREEK OAKS UNIT 10 S-22
477-310-016-000	Assessable	A	100.00	100.00	LOT 205 WOODCREEK OAKS UNIT 10 S-22
477-310-017-000	Assessable	A	100.00	100.00	LOT 206 WOODCREEK OAKS UNIT 10 S-22
477-310-018-000	Assessable	A	100.00	100.00	LOT 207 WOODCREEK OAKS UNIT 10 S-22
477-310-019-000	Assessable	A	100.00	100.00	LOT 208 WOODCREEK OAKS UNIT 10 S-22
477-310-020-000	Assessable	A	100.00	100.00	LOT 209 WOODCREEK OAKS UNIT 10 S-22
477-310-021-000	Assessable	A	100.00	100.00	LOT 210 WOODCREEK OAKS UNIT 10 S-22
477-310-022-000	Assessable	A	100.00	100.00	LOT 211 WOODCREEK OAKS UNIT 10 S-22
477-310-023-000	Assessable	A	100.00	100.00	LOT 212 WOODCREEK OAKS UNIT 10 S-22
477-310-024-000	Assessable	A	100.00	100.00	LOT 213 WOODCREEK OAKS UNIT 10 S-22

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-310-025-000	Assessable	A	100.00	100.00	LOT 214 WOODCREEK OAKS UNIT 10 S-22
477-310-026-000	Assessable	A	100.00	100.00	LOT 215 WOODCREEK OAKS UNIT 10 S-22
477-310-027-000	Assessable	A	100.00	100.00	LOT 216 WOODCREEK OAKS UNIT 10 S-22
477-310-028-000	Assessable	A	100.00	100.00	LOT 217 WOODCREEK OAKS UNIT 10 S-22
477-310-029-000	Assessable	A	100.00	100.00	LOT 218 WOODCREEK OAKS UNIT 10 S-22
477-310-030-000	Assessable	A	100.00	100.00	LOT 219 WOODCREEK OAKS UNIT 10 S-22
477-310-031-000	Assessable	A	100.00	100.00	LOT 220 WOODCREEK OAKS UNIT 10 S-22
477-310-032-000	Assessable	A	100.00	100.00	LOT 221 WOODCREEK OAKS UNIT 10 S-22
477-310-033-000	Assessable	A	100.00	100.00	LOT 222 WOODCREEK OAKS UNIT 10 S-22
477-310-034-000	Assessable	A	100.00	100.00	LOT 223 WOODCREEK OAKS UNIT 10 S-22
477-310-035-000	Assessable	A	100.00	100.00	LOT 224 WOODCREEK OAKS UNIT 10 S-22
477-310-036-000	Assessable	A	100.00	100.00	LOT 225 WOODCREEK OAKS UNIT 10 S-22
477-310-037-000	Assessable	A	100.00	100.00	LOT 226 WOODCREEK OAKS UNIT 10 S-22
477-310-038-000	Assessable	A	100.00	100.00	LOT 227 WOODCREEK OAKS UNIT 10 S-22
477-310-039-000	Assessable	A	100.00	100.00	LOT 228 WOODCREEK OAKS UNIT 10 S-22
477-310-040-000	Assessable	A	100.00	100.00	LOT 229 WOODCREEK OAKS UNIT 10 S-22
477-310-041-000	Assessable	A	100.00	100.00	LOT 230 WOODCREEK OAKS UNIT 10 S-22
477-310-042-000	Assessable	A	100.00	100.00	LOT 231 WOODCREEK OAKS UNIT 10 S-22
477-310-043-000	Assessable	A	100.00	100.00	LOT 232 WOODCREEK OAKS UNIT 10 S-22
477-310-044-000	Assessable	A	100.00	100.00	LOT 233 WOODCREEK OAKS UNIT 10 S-22
477-310-045-000	Assessable	A	100.00	100.00	LOT 234 WOODCREEK OAKS UNIT 10 S-22
477-310-046-000	Assessable	A	100.00	100.00	LOT 235 WOODCREEK OAKS UNIT 10 S-22
477-310-047-000	Assessable	A	100.00	100.00	LOT 236 WOODCREEK OAKS UNIT 10 S-22
477-310-048-000	Assessable	A	100.00	100.00	LOT 237 WOODCREEK OAKS UNIT 10 S-22
477-310-049-000	Assessable	A	100.00	100.00	LOT 238 WOODCREEK OAKS UNIT 10 S-22
477-310-050-000	Assessable	A	100.00	100.00	LOT 239 WOODCREEK OAKS UNIT 10 S-22
477-310-051-000	Assessable	A	100.00	100.00	LOT 240 WOODCREEK OAKS UNIT 10 S-22
477-310-052-000	Assessable	A	100.00	100.00	LOT 241 WOODCREEK OAKS UNIT 10 S-22
477-310-053-000	Assessable	A	100.00	100.00	LOT 242 WOODCREEK OAKS UNIT 10 S-22
477-310-054-000	Assessable	A	100.00	100.00	LOT 243 WOODCREEK OAKS UNIT 10 S-22
477-310-055-000	Assessable	A	100.00	100.00	LOT 244 WOODCREEK OAKS UNIT 10 S-22
477-310-056-000	Assessable	A	100.00	100.00	LOT 245 WOODCREEK OAKS UNIT 10 S-22
477-310-057-000	Assessable	A	100.00	100.00	LOT 246 WOODCREEK OAKS UNIT 10 S-22
477-310-058-000	Assessable	A	100.00	100.00	LOT 247 WOODCREEK OAKS UNIT 10 S-22
477-310-059-000	Assessable	A	100.00	100.00	LOT 248 WOODCREEK OAKS UNIT 10 S-22
477-310-060-000	Assessable	A	100.00	100.00	LOT 249 WOODCREEK OAKS UNIT 10 S-22
477-310-061-000	Assessable	A	100.00	100.00	LOT 250 WOODCREEK OAKS UNIT 10 S-22
477-310-062-000	Assessable	A	100.00	100.00	LOT 251 WOODCREEK OAKS UNIT 10 S-22
477-310-063-000	Assessable	A	100.00	100.00	LOT 252 WOODCREEK OAKS UNIT 10 S-22
477-310-064-000	Assessable	A	100.00	100.00	LOT 253 WOODCREEK OAKS UNIT 10 S-22
477-310-065-000	Assessable	A	100.00	100.00	LOT 254 WOODCREEK OAKS UNIT 10 S-22
477-310-066-000	Assessable	A	100.00	100.00	LOT 255 WOODCREEK OAKS UNIT 10 S-22
477-310-067-000	Assessable	A	100.00	100.00	LOT 256 WOODCREEK OAKS UNIT 10 S-22
477-310-068-000	Assessable	A	100.00	100.00	LOT 257 WOODCREEK OAKS UNIT 10 S-22
477-310-069-000	Assessable	A	100.00	100.00	LOT 258 WOODCREEK OAKS UNIT 10 S-22
477-310-070-000	Assessable	A	100.00	100.00	LOT 259 WOODCREEK OAKS UNIT 10 S-22
477-310-071-000	Assessable	A	100.00	100.00	LOT 260 WOODCREEK OAKS UNIT 10 S-22
477-310-072-000	Assessable	A	100.00	100.00	LOT 290 WOODCREEK OAKS UNIT 10 S-22
477-310-073-000	Assessable	A	100.00	100.00	LOT 291 WOODCREEK OAKS UNIT 10 S-22
477-310-074-000	Assessable	A	100.00	100.00	LOT 292 WOODCREEK OAKS UNIT 10 S-22
477-310-075-000	Assessable	A	100.00	100.00	LOT 293 WOODCREEK OAKS UNIT 10 S-22
477-310-076-000	Assessable	A	100.00	100.00	LOT 294 WOODCREEK OAKS UNIT 10 S-22
477-310-077-000	Assessable	A	100.00	100.00	LOT 295 WOODCREEK OAKS UNIT 10 S-22
477-310-078-000	Assessable	A	100.00	100.00	LOT 296 WOODCREEK OAKS UNIT 10 S-22
477-310-079-000	Assessable	A	100.00	100.00	LOT 297 WOODCREEK OAKS UNIT 10 S-22
477-320-001-000	Assessable	A	100.00	100.00	LOT 11 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-002-000	Assessable	A	100.00	100.00	LOT 12 WOODCREEK OAKS VILLAGE #12 PH A S-27

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-320-003-000	Assessable	A	100.00	100.00	LOT 13 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-004-000	Assessable	A	100.00	100.00	LOT 14 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-005-000	Assessable	A	100.00	100.00	LOT 15 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-006-000	Assessable	A	100.00	100.00	LOT 16 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-007-000	Assessable	A	100.00	100.00	LOT 17 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-008-000	Assessable	A	100.00	100.00	LOT 18 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-009-000	Assessable	A	100.00	100.00	LOT 19 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-010-000	Assessable	A	100.00	100.00	LOT 20 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-011-000	Assessable	A	100.00	100.00	LOT 21 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-014-000	Assessable	A	100.00	100.00	LOT 24 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-016-000	Assessable	A	100.00	100.00	LOT 26 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-017-000	Assessable	A	100.00	100.00	LOT 27 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-018-000	Assessable	A	100.00	100.00	LOT 28 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-019-000	Assessable	A	100.00	100.00	LOT 29 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-020-000	Assessable	A	100.00	100.00	LOT 30 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-021-000	Assessable	A	100.00	100.00	LOT 31 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-022-000	Assessable	A	100.00	100.00	LOT 32 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-023-000	Assessable	A	100.00	100.00	LOT 33 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-024-000	Assessable	A	100.00	100.00	LOT 34 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-025-000	Assessable	A	100.00	100.00	LOT 35 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-026-000	Assessable	A	100.00	100.00	LOT 36 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-027-000	Assessable	A	100.00	100.00	LOT 37 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-028-000	Assessable	A	100.00	100.00	LOT 38 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-029-000	Assessable	A	100.00	100.00	LOT 39 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-030-000	Assessable	A	100.00	100.00	LOT 40 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-031-000	Assessable	A	100.00	100.00	LOT 41 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-032-000	Assessable	A	100.00	100.00	LOT 42 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-033-000	Assessable	A	100.00	100.00	LOT 43 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-034-000	Assessable	A	100.00	100.00	LOT 44 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-035-000	Assessable	A	100.00	100.00	LOT 45 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-036-000	Assessable	A	100.00	100.00	LOT 46 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-037-000	Assessable	A	100.00	100.00	LOT 47 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-038-000	Assessable	A	100.00	100.00	LOT 48 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-039-000	Assessable	A	100.00	100.00	LOT 49 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-040-000	Assessable	A	100.00	100.00	LOT 50 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-041-000	Assessable	A	100.00	100.00	LOT 51 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-042-000	Assessable	A	100.00	100.00	LOT 52 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-043-000	Assessable	A	100.00	100.00	LOT 53 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-044-000	Assessable	A	100.00	100.00	LOT 54 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-045-000	Assessable	A	100.00	100.00	LOT 55 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-046-000	Assessable	A	100.00	100.00	LOT 56 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-047-000	Assessable	A	100.00	100.00	LOT 57 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-051-000	Assessable	A	100.00	100.00	POR LOT 23 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-320-052-000	Assessable	A	100.00	100.00	LOT 22 POR23,25WOODCREEK OAKS VILLAGE#12 PH A S-27
477-320-053-000	Assessable	A	100.00	100.00	POR LOT 25 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-001-000	Assessable	A	100.00	100.00	LOT 1 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-002-000	Assessable	A	100.00	100.00	LOT 2 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-003-000	Assessable	A	100.00	100.00	LOT 3 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-004-000	Assessable	A	100.00	100.00	LOT 4 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-005-000	Assessable	A	100.00	100.00	LOT 5 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-006-000	Assessable	A	100.00	100.00	LOT 6 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-007-000	Assessable	A	100.00	100.00	LOT 7 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-008-000	Assessable	A	100.00	100.00	LOT 8 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-009-000	Assessable	A	100.00	100.00	LOT 9 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-010-000	Assessable	A	100.00	100.00	LOT 10 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-014-000	Assessable	A	100.00	100.00	LOT 61 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-015-000	Assessable	A	100.00	100.00	LOT 62 WOODCREEK OAKS VILLAGE #12 PH A S-27

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-330-016-000	Assessable	A	100.00	100.00	LOT 63 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-017-000	Assessable	A	100.00	100.00	LOT 64 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-018-000	Assessable	A	100.00	100.00	LOT 65 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-019-000	Assessable	A	100.00	100.00	LOT 66 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-020-000	Assessable	A	100.00	100.00	LOT 67 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-021-000	Assessable	A	100.00	100.00	LOT 68 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-022-000	Assessable	A	100.00	100.00	LOT 69 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-023-000	Assessable	A	100.00	100.00	LOT 70 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-024-000	Assessable	A	100.00	100.00	LOT 71 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-025-000	Assessable	A	100.00	100.00	LOT 72 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-026-000	Assessable	A	100.00	100.00	LOT 73 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-027-000	Assessable	A	100.00	100.00	LOT 74 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-028-000	Assessable	A	100.00	100.00	LOT 75 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-029-000	Assessable	A	100.00	100.00	LOT 76 WOODCREEK OAKS VILLAGE #12 PH A S-27
477-330-032-000	Assessable	A	100.00	100.00	POR LOTS 59&60 WOODCREEK OAKS VILLAGE #12 PHA S-27
477-330-033-000	Assessable	A	100.00	100.00	PORLOTS58 59 60 121&122WOODCREEK OAKS VILL#12PHA&B
477-330-034-000	Assessable	A	100.00	100.00	POR LOTS 58 59 & 121 WOODCREEK OAKS VILL#12 PH A&B
477-340-001-000	Assessable	A	100.00	100.00	LOT 84 WOODCREEK OAKS VILLAGE 7B S-32
477-340-002-000	Assessable	A	100.00	100.00	LOT 85 WOODCREEK OAKS VILLAGE 7B S-32
477-340-003-000	Assessable	A	100.00	100.00	LOT 86 WOODCREEK OAKS VILLAGE 7B S-32
477-340-004-000	Assessable	A	100.00	100.00	LOT 87 WOODCREEK OAKS VILLAGE 7B S-32
477-340-005-000	Assessable	A	100.00	100.00	LOT 88 WOODCREEK OAKS VILLAGE 7B S-32
477-340-006-000	Assessable	A	100.00	100.00	LOT 89 WOODCREEK OAKS VILLAGE 7B S-32
477-340-007-000	Assessable	A	100.00	100.00	LOT 90 WOODCREEK OAKS VILLAGE 7B S-32
477-340-008-000	Assessable	A	100.00	100.00	LOT 91 WOODCREEK OAKS VILLAGE 7B S-32
477-340-009-000	Assessable	A	100.00	100.00	LOT 92 WOODCREEK OAKS VILLAGE 7B S-32
477-340-010-000	Assessable	A	100.00	100.00	LOT 93 WOODCREEK OAKS VILLAGE 7B S-32
477-340-011-000	Assessable	A	100.00	100.00	LOT 94 WOODCREEK OAKS VILLAGE 7B S-32
477-340-012-000	Assessable	A	100.00	100.00	LOT 95 WOODCREEK OAKS VILLAGE 7B S-32
477-340-013-000	Assessable	A	100.00	100.00	LOT 96 WOODCREEK OAKS VILLAGE 7B S-32
477-340-014-000	Assessable	A	100.00	100.00	LOT 97 WOODCREEK OAKS VILLAGE 7B S-32
477-340-015-000	Assessable	A	100.00	100.00	LOT 98 WOODCREEK OAKS VILLAGE 7B S-32
477-340-016-000	Assessable	A	100.00	100.00	LOT 99 WOODCREEK OAKS VILLAGE 7B S-32
477-340-017-000	Assessable	A	100.00	100.00	LOT 100 WOODCREEK OAKS VILLAGE 7B S-32
477-340-018-000	Assessable	A	100.00	100.00	LOT 101 WOODCREEK OAKS VILLAGE 7B S-32
477-340-019-000	Assessable	A	100.00	100.00	LOT 102 WOODCREEK OAKS VILLAGE 7B S-32
477-340-020-000	Assessable	A	100.00	100.00	LOT 103 WOODCREEK OAKS VILLAGE 7B S-32
477-340-021-000	Assessable	A	100.00	100.00	LOT 104 WOODCREEK OAKS VILLAGE 7B S-32
477-340-022-000	Assessable	A	100.00	100.00	LOT 105 WOODCREEK OAKS VILLAGE 7B S-32
477-340-023-000	Assessable	A	100.00	100.00	LOT 106 WOODCREEK OAKS VILLAGE 7B S-32
477-340-024-000	Assessable	A	100.00	100.00	LOT 107 WOODCREEK OAKS VILLAGE 7B S-32
477-340-025-000	Assessable	A	100.00	100.00	LOT 108 WOODCREEK OAKS VILLAGE 7B S-32
477-340-026-000	Assessable	A	100.00	100.00	LOT 109 WOODCREEK OAKS VILLAGE 7B S-32
477-340-027-000	Assessable	A	100.00	100.00	LOT 110 WOODCREEK OAKS VILLAGE 7B S-32
477-340-028-000	Assessable	A	100.00	100.00	LOT 111 WOODCREEK OAKS VILLAGE 7B S-32
477-340-029-000	Assessable	A	100.00	100.00	LOT 112 WOODCREEK OAKS VILLAGE 7B S-32
477-340-030-000	Assessable	A	100.00	100.00	LOT 113 WOODCREEK OAKS VILLAGE 7B S-32
477-340-031-000	Assessable	A	100.00	100.00	LOT 114 WOODCREEK OAKS VILLAGE 7B S-32
477-340-032-000	Assessable	A	100.00	100.00	LOT 115 WOODCREEK OAKS VILLAGE 7B S-32
477-340-033-000	Assessable	A	100.00	100.00	LOT 116 WOODCREEK OAKS VILLAGE 7B S-32
477-340-034-000	Assessable	A	100.00	100.00	LOT 117 WOODCREEK OAKS VILLAGE 7B S-32
477-340-035-000	Assessable	A	100.00	100.00	LOT 118 WOODCREEK OAKS VILLAGE 7B S-32
477-350-001-000	Assessable	A	100.00	100.00	LOT 119 WOODCREEK OAKS VILLAGE 7C S-33
477-350-002-000	Assessable	A	100.00	100.00	LOT 120 WOODCREEK OAKS VILLAGE 7C S-33
477-350-003-000	Assessable	A	100.00	100.00	LOT 121 WOODCREEK OAKS VILLAGE 7C S-33
477-350-004-000	Assessable	A	100.00	100.00	LOT 122 WOODCREEK OAKS VILLAGE 7C S-33
477-350-005-000	Assessable	A	100.00	100.00	LOT 123 WOODCREEK OAKS VILLAGE 7C S-33

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-350-006-000	Assessable	A	100.00	100.00	LOT 124 WOODCREEK OAKS VILLAGE 7C S-33
477-350-007-000	Assessable	A	100.00	100.00	LOT 125 WOODCREEK OAKS VILLAGE 7C S-33
477-350-008-000	Assessable	A	100.00	100.00	LOT 126 WOODCREEK OAKS VILLAGE 7C S-33
477-350-009-000	Assessable	A	100.00	100.00	LOT 127 WOODCREEK OAKS VILLAGE 7C S-33
477-350-010-000	Assessable	A	100.00	100.00	LOT 128 WOODCREEK OAKS VILLAGE 7C S-33
477-350-011-000	Assessable	A	100.00	100.00	LOT 129 WOODCREEK OAKS VILLAGE 7C S-33
477-350-012-000	Assessable	A	100.00	100.00	LOT 130 WOODCREEK OAKS VILLAGE 7C S-33
477-350-013-000	Assessable	A	100.00	100.00	LOT 131 WOODCREEK OAKS VILLAGE 7C S-33
477-350-014-000	Assessable	A	100.00	100.00	LOT 132 WOODCREEK OAKS VILLAGE 7C S-33
477-350-015-000	Assessable	A	100.00	100.00	LOT 133 WOODCREEK OAKS VILLAGE 7C S-33
477-350-016-000	Assessable	A	100.00	100.00	LOT 134 WOODCREEK OAKS VILLAGE 7C S-33
477-350-017-000	Assessable	A	100.00	100.00	LOT 135 WOODCREEK OAKS VILLAGE 7C S-33
477-350-018-000	Assessable	A	100.00	100.00	LOT 136 WOODCREEK OAKS VILLAGE 7C S-33
477-350-019-000	Assessable	A	100.00	100.00	LOT 137 WOODCREEK OAKS VILLAGE 7C S-33
477-350-020-000	Assessable	A	100.00	100.00	LOT 138 WOODCREEK OAKS VILLAGE 7C S-33
477-350-021-000	Assessable	A	100.00	100.00	LOT 139 WOODCREEK OAKS VILLAGE 7C S-33
477-350-022-000	Assessable	A	100.00	100.00	LOT 140 WOODCREEK OAKS VILLAGE 7C S-33
477-350-023-000	Assessable	A	100.00	100.00	LOT 141 WOODCREEK OAKS VILLAGE 7C S-33
477-350-024-000	Assessable	A	100.00	100.00	LOT 142 WOODCREEK OAKS VILLAGE 7C S-33
477-350-025-000	Assessable	A	100.00	100.00	LOT 143 WOODCREEK OAKS VILLAGE 7C S-33
477-350-026-000	Assessable	A	100.00	100.00	LOT 144 WOODCREEK OAKS VILLAGE 7C S-33
477-350-027-000	Assessable	A	100.00	100.00	LOT 145 WOODCREEK OAKS VILLAGE 7C S-33
477-350-028-000	Assessable	A	100.00	100.00	LOT 146 WOODCREEK OAKS VILLAGE 7C S-33
477-350-029-000	Assessable	A	100.00	100.00	LOT 147 WOODCREEK OAKS VILLAGE 7C S-33
477-350-030-000	Assessable	A	100.00	100.00	LOT 148 WOODCREEK OAKS VILLAGE 7C S-33
477-350-031-000	Assessable	A	100.00	100.00	LOT 149 WOODCREEK OAKS VILLAGE 7C S-33
477-350-032-000	Assessable	A	100.00	100.00	LOT 150 WOODCREEK OAKS VILLAGE 7C S-33
477-350-033-000	Assessable	A	100.00	100.00	LOT 151 WOODCREEK OAKS VILLAGE 7C S-33
477-350-034-000	Assessable	A	100.00	100.00	LOT 152 WOODCREEK OAKS VILLAGE 7C S-33
477-350-035-000	Assessable	A	100.00	100.00	LOT 153 WOODCREEK OAKS VILLAGE 7C S-33
477-350-036-000	Assessable	A	100.00	100.00	LOT 154 WOODCREEK OAKS VILLAGE 7C S-33
477-350-037-000	Assessable	A	100.00	100.00	LOT 155 WOODCREEK OAKS VILLAGE 7C S-33
477-350-038-000	Assessable	A	100.00	100.00	LOT 156 WOODCREEK OAKS VILLAGE 7C S-33
477-350-039-000	Assessable	A	100.00	100.00	LOT 157 WOODCREEK OAKS VILLAGE 7C S-33
477-350-040-000	Assessable	A	100.00	100.00	LOT 158 WOODCREEK OAKS VILLAGE 7C S-33
477-350-041-000	Assessable	A	100.00	100.00	LOT 159 WOODCREEK OAKS VILLAGE 7C S-33
477-350-042-000	Assessable	A	100.00	100.00	LOT 160 WOODCREEK OAKS VILLAGE 7C S-33
477-350-043-000	Assessable	A	100.00	100.00	LOT 161 WOODCREEK OAKS VILLAGE 7C S-33
477-350-044-000	Assessable	A	100.00	100.00	LOT 162 WOODCREEK OAKS VILLAGE 7C S-33
477-350-045-000	Assessable	A	100.00	100.00	LOT 163 WOODCREEK OAKS VILLAGE 7C S-33
477-350-046-000	Assessable	A	100.00	100.00	LOT 164 WOODCREEK OAKS VILLAGE 7C S-33
477-350-047-000	Assessable	A	100.00	100.00	LOT 165 WOODCREEK OAKS VILLAGE 7C S-33
477-360-001-000	Assessable	A	100.00	100.00	LOT 93 RIDGEWOOD UNIT 2 S-40
477-360-002-000	Assessable	A	100.00	100.00	LOT 94 RIDGEWOOD UNIT 2 S-40
477-360-003-000	Assessable	A	100.00	100.00	LOT 95 RIDGEWOOD UNIT 2 S-40
477-360-004-000	Assessable	A	100.00	100.00	LOT 96 RIDGEWOOD UNIT 2 S-40
477-360-005-000	Assessable	A	100.00	100.00	LOT 97 RIDGEWOOD UNIT 2 S-40
477-360-006-000	Assessable	A	100.00	100.00	LOT 98 RIDGEWOOD UNIT 2 S-40
477-360-007-000	Assessable	A	100.00	100.00	LOT 99 RIDGEWOOD UNIT 2 S-40
477-360-008-000	Assessable	A	100.00	100.00	LOT 100 RIDGEWOOD UNIT 2 S-40
477-360-009-000	Assessable	A	100.00	100.00	LOT 101 RIDGEWOOD UNIT 2 S-40
477-360-010-000	Assessable	A	100.00	100.00	LOT 102 RIDGEWOOD UNIT 2 S-40
477-360-011-000	Assessable	A	100.00	100.00	LOT 103 RIDGEWOOD UNIT 2 S-40
477-360-012-000	Assessable	A	100.00	100.00	LOT 104 RIDGEWOOD UNIT 2 S-40
477-360-013-000	Assessable	A	100.00	100.00	LOT 105 RIDGEWOOD UNIT 2 S-40
477-360-014-000	Assessable	A	100.00	100.00	LOT 106 RIDGEWOOD UNIT 2 S-40
477-360-015-000	Assessable	A	100.00	100.00	LOT 107 RIDGEWOOD UNIT 2 S-40

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-360-016-000	Assessable	A	100.00	100.00	LOT 108 RIDGEWOOD UNIT 2 S-40
477-360-017-000	Assessable	A	100.00	100.00	LOT 109 RIDGEWOOD UNIT 2 S-40
477-360-018-000	Assessable	A	100.00	100.00	LOT 110 RIDGEWOOD UNIT 2 S-40
477-360-019-000	Assessable	A	100.00	100.00	LOT 111 RIDGEWOOD UNIT 2 S-40
477-360-020-000	Assessable	A	100.00	100.00	LOT 112 RIDGEWOOD UNIT 2 S-40
477-360-021-000	Assessable	A	100.00	100.00	LOT 113 RIDGEWOOD UNIT 2 S-40
477-360-022-000	Assessable	A	100.00	100.00	LOT 114 RIDGEWOOD UNIT 2 S-40
477-360-023-000	Assessable	A	100.00	100.00	LOT 115 RIDGEWOOD UNIT 2 S-40
477-360-024-000	Assessable	A	100.00	100.00	LOT 116 RIDGEWOOD UNIT 2 S-40
477-360-025-000	Assessable	A	100.00	100.00	LOT 117 RIDGEWOOD UNIT 2 S-40
477-360-026-000	Assessable	A	100.00	100.00	LOT 118 RIDGEWOOD UNIT 2 S-40
477-360-027-000	Assessable	A	100.00	100.00	LOT 119 RIDGEWOOD UNIT 2 S-40
477-360-028-000	Assessable	A	100.00	100.00	LOT 120 RIDGEWOOD UNIT 2 S-40
477-360-029-000	Assessable	A	100.00	100.00	LOT 121 RIDGEWOOD UNIT 2 S-40
477-360-030-000	Assessable	A	100.00	100.00	LOT 122 RIDGEWOOD UNIT 2 S-40
477-360-031-000	Assessable	A	100.00	100.00	LOT 123 RIDGEWOOD UNIT 2 S-40
477-360-032-000	Assessable	A	100.00	100.00	LOT 124 RIDGEWOOD UNIT 2 S-40
477-360-033-000	Assessable	A	100.00	100.00	LOT 125 RIDGEWOOD UNIT 2 S-40
477-360-034-000	Assessable	A	100.00	100.00	LOT 126 RIDGEWOOD UNIT 2 S-40
477-360-035-000	Assessable	A	100.00	100.00	LOT 127 RIDGEWOOD UNIT 2 S-40
477-360-036-000	Assessable	A	100.00	100.00	LOT 128 RIDGEWOOD UNIT 2 S-40
477-360-037-000	Assessable	A	100.00	100.00	LOT 129 RIDGEWOOD UNIT 2 S-40
477-360-038-000	Assessable	A	100.00	100.00	LOT 130 RIDGEWOOD UNIT 2 S-40
477-360-039-000	Assessable	A	100.00	100.00	LOT 131 RIDGEWOOD UNIT 2 S-40
477-360-040-000	Assessable	A	100.00	100.00	LOT 132 RIDGEWOOD UNIT 2 S-40
477-360-041-000	Assessable	A	100.00	100.00	LOT 133 RIDGEWOOD UNIT 2 S-40
477-360-042-000	Assessable	A	100.00	100.00	LOT 134 RIDGEWOOD UNIT 2 S-40
477-360-043-000	Assessable	A	100.00	100.00	LOT 135 RIDGEWOOD UNIT 2 S-40
477-360-044-000	Assessable	A	100.00	100.00	LOT 136 RIDGEWOOD UNIT 2 S-40
477-360-045-000	Assessable	A	100.00	100.00	LOT 137 RIDGEWOOD UNIT 2 S-40
477-360-046-000	Assessable	A	100.00	100.00	LOT 138 RIDGEWOOD UNIT 2 S-40
477-360-047-000	Assessable	A	100.00	100.00	LOT 139 RIDGEWOOD UNIT 2 S-40
477-360-048-000	Assessable	A	100.00	100.00	LOT 140 RIDGEWOOD UNIT 2 S-40
477-360-049-000	Assessable	A	100.00	100.00	LOT 141 RIDGEWOOD UNIT 2 S-40
477-360-050-000	Assessable	A	100.00	100.00	LOT 142 RIDGEWOOD UNIT 2 S-40
477-360-051-000	Assessable	A	100.00	100.00	LOT 143 RIDGEWOOD UNIT 2 S-40
477-360-052-000	Assessable	A	100.00	100.00	LOT 144 RIDGEWOOD UNIT 2 S-40
477-360-053-000	Assessable	A	100.00	100.00	LOT 145 RIDGEWOOD UNIT 2 S-40
477-360-054-000	Assessable	A	100.00	100.00	LOT 146 RIDGEWOOD UNIT 2 S-40
477-360-055-000	Assessable	A	100.00	100.00	LOT 147 RIDGEWOOD UNIT 2 S-40
477-360-056-000	Assessable	A	100.00	100.00	LOT 148 RIDGEWOOD UNIT 2 S-40
477-360-057-000	Assessable	A	100.00	100.00	LOT 149 RIDGEWOOD UNIT 2 S-40
477-360-058-000	Assessable	A	100.00	100.00	LOT 150 RIDGEWOOD UNIT 2 S-40
477-360-059-000	Assessable	A	100.00	100.00	LOT 151 RIDGEWOOD UNIT 2 S-40
477-360-060-000	Assessable	A	100.00	100.00	LOT 152 RIDGEWOOD UNIT 2 S-40
477-360-061-000	Assessable	A	100.00	100.00	LOT 153 RIDGEWOOD UNIT 2 S-40
477-360-062-000	Assessable	A	100.00	100.00	LOT 154 RIDGEWOOD UNIT 2 S-40
477-360-063-000	Assessable	A	100.00	100.00	LOT 155 RIDGEWOOD UNIT 2 S-40
477-360-064-000	Assessable	A	100.00	100.00	LOT 156 RIDGEWOOD UNIT 2 S-40
477-360-065-000	Assessable	A	100.00	100.00	LOT 157 RIDGEWOOD UNIT 2 S-40
477-360-066-000	Assessable	A	100.00	100.00	LOT 158 RIDGEWOOD UNIT 2 S-40
477-360-067-000	Assessable	A	100.00	100.00	LOT 159 RIDGEWOOD UNIT 2 S-40
477-360-068-000	Assessable	A	100.00	100.00	LOT 160 RIDGEWOOD UNIT 2 S-40
477-360-069-000	Assessable	A	100.00	100.00	LOT 161 RIDGEWOOD UNIT 2 S-40
477-360-070-000	Assessable	A	100.00	100.00	LOT 162 RIDGEWOOD UNIT 2 S-40
477-360-071-000	Assessable	A	100.00	100.00	LOT 163 RIDGEWOOD UNIT 2 S-40
477-360-072-000	Assessable	A	100.00	100.00	LOT 164 RIDGEWOOD UNIT 2 S-40

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-360-073-000	Assessable	A	100.00	100.00	LOT 165 RIDGEWOOD UNIT 2 S-40
477-370-001-000	Assessable	A	100.00	100.00	LOT 77 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-002-000	Assessable	A	100.00	100.00	LOT 78 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-003-000	Assessable	A	100.00	100.00	LOT 79 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-004-000	Assessable	A	100.00	100.00	LOT 80 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-005-000	Assessable	A	100.00	100.00	LOT 81 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-006-000	Assessable	A	100.00	100.00	LOT 82 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-007-000	Assessable	A	100.00	100.00	LOT 83 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-008-000	Assessable	A	100.00	100.00	LOT 84 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-009-000	Assessable	A	100.00	100.00	LOT 85 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-010-000	Assessable	A	100.00	100.00	LOT 86 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-011-000	Assessable	A	100.00	100.00	LOT 87 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-012-000	Assessable	A	100.00	100.00	LOT 88 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-013-000	Assessable	A	100.00	100.00	LOT 89 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-014-000	Assessable	A	100.00	100.00	LOT 90 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-015-000	Assessable	A	100.00	100.00	LOT 91 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-016-000	Assessable	A	100.00	100.00	LOT 92 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-017-000	Assessable	A	100.00	100.00	LOT 93 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-018-000	Assessable	A	100.00	100.00	LOT 94 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-019-000	Assessable	A	100.00	100.00	LOT 95 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-020-000	Assessable	A	100.00	100.00	LOT 96 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-021-000	Assessable	A	100.00	100.00	LOT 97 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-022-000	Assessable	A	100.00	100.00	LOT 98 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-023-000	Assessable	A	100.00	100.00	LOT 99 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-024-000	Assessable	A	100.00	100.00	LOT 100 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-025-000	Assessable	A	100.00	100.00	LOT 101 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-026-000	Assessable	A	100.00	100.00	LOT 102 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-027-000	Assessable	A	100.00	100.00	LOT 103 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-028-000	Assessable	A	100.00	100.00	LOT 104 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-029-000	Assessable	A	100.00	100.00	LOT 105 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-030-000	Assessable	A	100.00	100.00	LOT 106 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-031-000	Assessable	A	100.00	100.00	LOT 107 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-032-000	Assessable	A	100.00	100.00	LOT 108 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-033-000	Assessable	A	100.00	100.00	LOT 109 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-034-000	Assessable	A	100.00	100.00	LOT 110 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-038-000	Assessable	A	100.00	100.00	LOT 114 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-039-000	Assessable	A	100.00	100.00	LOT 115 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-040-000	Assessable	A	100.00	100.00	LOT 116 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-041-000	Assessable	A	100.00	100.00	LOT 126 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-042-000	Assessable	A	100.00	100.00	LOT 127 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-043-000	Assessable	A	100.00	100.00	LOT 128 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-044-000	Assessable	A	100.00	100.00	LOT 129 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-045-000	Assessable	A	100.00	100.00	LOT 130 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-046-000	Assessable	A	100.00	100.00	LOT 131 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-047-000	Assessable	A	100.00	100.00	LOT 132 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-048-000	Assessable	A	100.00	100.00	LOT 133 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-052-000	Assessable	A	100.00	100.00	POR LOT 111 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-370-053-000	Assessable	A	100.00	100.00	POR LOTS111&112 WOODCREEK OAKS VILLAGE#12 PHB S-51
477-370-054-000	Assessable	A	100.00	100.00	LOT 113&POR112 WOODCREEK OAKS VILLAGE#12 PH B S-51
477-380-001-000	Assessable	A	100.00	100.00	LOT 134 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-002-000	Assessable	A	100.00	100.00	LOT 135 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-003-000	Assessable	A	100.00	100.00	LOT 136 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-004-000	Assessable	A	100.00	100.00	LOT 137 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-005-000	Assessable	A	100.00	100.00	LOT 138 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-006-000	Assessable	A	100.00	100.00	LOT 139 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-007-000	Assessable	A	100.00	100.00	LOT 140 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-008-000	Assessable	A	100.00	100.00	LOT 141 WOODCREEK OAKS VILLAGE #12 PH C S-52

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-380-009-000	Assessable	A	100.00	100.00	LOT 142 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-010-000	Assessable	A	100.00	100.00	LOT 143 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-011-000	Assessable	A	100.00	100.00	LOT 144 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-012-000	Assessable	A	100.00	100.00	LOT 145 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-013-000	Assessable	A	100.00	100.00	LOT 146 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-014-000	Assessable	A	100.00	100.00	LOT 147 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-015-000	Assessable	A	100.00	100.00	LOT 148 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-016-000	Assessable	A	100.00	100.00	LOT 149 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-017-000	Assessable	A	100.00	100.00	LOT 150 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-018-000	Assessable	A	100.00	100.00	LOT 151 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-019-000	Assessable	A	100.00	100.00	LOT 152 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-020-000	Assessable	A	100.00	100.00	LOT 153 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-021-000	Assessable	A	100.00	100.00	LOT 154 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-022-000	Assessable	A	100.00	100.00	LOT 155 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-023-000	Assessable	A	100.00	100.00	LOT 156 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-024-000	Assessable	A	100.00	100.00	LOT 157 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-025-000	Assessable	A	100.00	100.00	LOT 158 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-026-000	Assessable	A	100.00	100.00	LOT 159 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-027-000	Assessable	A	100.00	100.00	LOT 160 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-028-000	Assessable	A	100.00	100.00	LOT 161 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-029-000	Assessable	A	100.00	100.00	LOT 162 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-030-000	Assessable	A	100.00	100.00	LOT 163 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-031-000	Assessable	A	100.00	100.00	LOT 164 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-032-000	Assessable	A	100.00	100.00	LOT 165 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-033-000	Assessable	A	100.00	100.00	LOT 166 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-034-000	Assessable	A	100.00	100.00	LOT 167 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-035-000	Assessable	A	100.00	100.00	LOT 168 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-036-000	Assessable	A	100.00	100.00	LOT 169 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-037-000	Assessable	A	100.00	100.00	LOT 170 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-038-000	Assessable	A	100.00	100.00	LOT 171 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-039-000	Assessable	A	100.00	100.00	LOT 172 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-040-000	Assessable	A	100.00	100.00	LOT 173 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-041-000	Assessable	A	100.00	100.00	LOT 174 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-042-000	Assessable	A	100.00	100.00	LOT 175 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-043-000	Assessable	A	100.00	100.00	LOT 176 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-044-000	Assessable	A	100.00	100.00	LOT 177 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-045-000	Assessable	A	100.00	100.00	LOT 178 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-046-000	Assessable	A	100.00	100.00	LOT 179 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-047-000	Assessable	A	100.00	100.00	LOT 180 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-048-000	Assessable	A	100.00	100.00	LOT 181 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-049-000	Assessable	A	100.00	100.00	LOT 182 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-050-000	Assessable	A	100.00	100.00	LOT 183 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-051-000	Assessable	A	100.00	100.00	LOT 184 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-052-000	Assessable	A	100.00	100.00	LOT 185 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-053-000	Assessable	A	100.00	100.00	LOT 186 WOODCREEK OAKS VILLAGE #12 PH C S-52
477-380-054-000	Assessable	A	100.00	100.00	LOT 117 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-380-055-000	Assessable	A	100.00	100.00	LOT 118 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-380-056-000	Assessable	A	100.00	100.00	LOT 119 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-380-057-000	Assessable	A	100.00	100.00	LOT 120 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-380-060-000	Assessable	A	100.00	100.00	LOT 123 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-380-061-000	Assessable	A	100.00	100.00	LOT 124 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-380-062-000	Assessable	A	100.00	100.00	LOT 125 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-380-063-000	Assessable	A	100.00	100.00	POR LOT 122 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-380-064-000	Assessable	A	100.00	100.00	POR LOT 121 WOODCREEK OAKS VILLAGE #12 PH B S-51
477-390-001-000	Assessable	A	100.00	100.00	LOT 1 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-002-000	Assessable	A	100.00	100.00	LOT 2 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-003-000	Assessable	A	100.00	100.00	LOT 3 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-390-004-000	Assessable	A	100.00	100.00	LOT 4 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-005-000	Assessable	A	100.00	100.00	LOT 5 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-006-000	Assessable	A	100.00	100.00	LOT 6 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-007-000	Assessable	A	100.00	100.00	LOT 7 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-008-000	Assessable	A	100.00	100.00	LOT 8 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-009-000	Assessable	A	100.00	100.00	LOT 9 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-010-000	Assessable	A	100.00	100.00	LOT 10 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-011-000	Assessable	A	100.00	100.00	LOT 11 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-012-000	Assessable	A	100.00	100.00	LOT 12 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-013-000	Assessable	A	100.00	100.00	LOT 13 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-014-000	Assessable	A	100.00	100.00	LOT 14 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-015-000	Assessable	A	100.00	100.00	LOT 15 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-016-000	Assessable	A	100.00	100.00	LOT 40 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-017-000	Assessable	A	100.00	100.00	LOT 41 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-018-000	Assessable	A	100.00	100.00	LOT 42 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-019-000	Assessable	A	100.00	100.00	LOT 43 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-020-000	Assessable	A	100.00	100.00	LOT 44 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-021-000	Assessable	A	100.00	100.00	LOT 85 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-022-000	Assessable	A	100.00	100.00	LOT 86 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-023-000	Assessable	A	100.00	100.00	LOT 87 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-024-000	Assessable	A	100.00	100.00	LOT 88 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-025-000	Assessable	A	100.00	100.00	LOT 89 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-026-000	Assessable	A	100.00	100.00	LOT 90 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-027-000	Assessable	A	100.00	100.00	LOT 91 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-028-000	Assessable	A	100.00	100.00	LOT 92 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-029-000	Assessable	A	100.00	100.00	LOT 93 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-030-000	Assessable	A	100.00	100.00	LOT 94 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-031-000	Assessable	A	100.00	100.00	LOT 95 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-032-000	Assessable	A	100.00	100.00	LOT 96 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-033-000	Assessable	A	100.00	100.00	LOT 97 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-034-000	Assessable	A	100.00	100.00	LOT 98 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-035-000	Assessable	A	100.00	100.00	LOT 99 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-390-036-000	Assessable	A	100.00	100.00	LOT 100 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-001-000	Assessable	A	100.00	100.00	LOT 16 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-002-000	Assessable	A	100.00	100.00	LOT 17 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-003-000	Assessable	A	100.00	100.00	LOT 18 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-004-000	Assessable	A	100.00	100.00	LOT 19 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-005-000	Assessable	A	100.00	100.00	LOT 20 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-006-000	Assessable	A	100.00	100.00	LOT 21 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-007-000	Assessable	A	100.00	100.00	LOT 22 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-008-000	Assessable	A	100.00	100.00	LOT 23 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-009-000	Assessable	A	100.00	100.00	LOT 24 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-010-000	Assessable	A	100.00	100.00	LOT 25 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-011-000	Assessable	A	100.00	100.00	LOT 26 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-012-000	Assessable	A	100.00	100.00	LOT 27 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-013-000	Assessable	A	100.00	100.00	LOT 28 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-014-000	Assessable	A	100.00	100.00	LOT 29 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-015-000	Assessable	A	100.00	100.00	LOT 30 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-016-000	Assessable	A	100.00	100.00	LOT 31 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-017-000	Assessable	A	100.00	100.00	LOT 32 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-018-000	Assessable	A	100.00	100.00	LOT 33 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-019-000	Assessable	A	100.00	100.00	LOT 34 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-020-000	Assessable	A	100.00	100.00	LOT 35 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-021-000	Assessable	A	100.00	100.00	LOT 36 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-022-000	Assessable	A	100.00	100.00	LOT 37 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-023-000	Assessable	A	100.00	100.00	LOT 38 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-024-000	Assessable	A	100.00	100.00	LOT 39 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-400-025-000	Assessable	A	100.00	100.00	LOT 61 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-026-000	Assessable	A	100.00	100.00	LOT 62 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-027-000	Assessable	A	100.00	100.00	LOT 63 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-028-000	Assessable	A	100.00	100.00	LOT 64 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-400-029-000	Assessable	A	100.00	100.00	LOT 65 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-001-000	Assessable	A	100.00	100.00	LOT 45 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-002-000	Assessable	A	100.00	100.00	LOT 46 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-003-000	Assessable	A	100.00	100.00	LOT 47 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-004-000	Assessable	A	100.00	100.00	LOT 48 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-007-000	Assessable	A	100.00	100.00	LOT 51 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-008-000	Assessable	A	100.00	100.00	LOT 52 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-009-000	Assessable	A	100.00	100.00	LOT 53 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-010-000	Assessable	A	100.00	100.00	LOT 54 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-011-000	Assessable	A	100.00	100.00	LOT 55 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-012-000	Assessable	A	100.00	100.00	LOT 56 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-013-000	Assessable	A	100.00	100.00	LOT 57 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-014-000	Assessable	A	100.00	100.00	LOT 58 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-015-000	Assessable	A	100.00	100.00	LOT 59 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-016-000	Assessable	A	100.00	100.00	LOT 60 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-017-000	Assessable	A	100.00	100.00	LOT 66 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-018-000	Assessable	A	100.00	100.00	LOT 67 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-019-000	Assessable	A	100.00	100.00	LOT 68 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-020-000	Assessable	A	100.00	100.00	LOT 69 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-021-000	Assessable	A	100.00	100.00	LOT 70 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-022-000	Assessable	A	100.00	100.00	LOT 71 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-023-000	Assessable	A	100.00	100.00	LOT 72 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-024-000	Assessable	A	100.00	100.00	LOT 73 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-025-000	Assessable	A	100.00	100.00	LOT 74 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-026-000	Assessable	A	100.00	100.00	LOT 75 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-027-000	Assessable	A	100.00	100.00	LOT 76 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-028-000	Assessable	A	100.00	100.00	LOT 77 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-029-000	Assessable	A	100.00	100.00	LOT 78 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-030-000	Assessable	A	100.00	100.00	LOT 79 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-031-000	Assessable	A	100.00	100.00	LOT 80 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-032-000	Assessable	A	100.00	100.00	LOT 81 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-033-000	Assessable	A	100.00	100.00	LOT 82 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-034-000	Assessable	A	100.00	100.00	LOT 83 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-035-000	Assessable	A	100.00	100.00	LOT 84 WOODCREEK OAKS VILLAGE 8 UNIT B MOR S-74
477-410-036-000	Assessable	A	100.00	100.00	POR LOT 50 WOODCREEK OAKS VILLAGE 8 UNT B MOR S-74
477-410-038-000	Assessable	A	100.00	100.00	LOT 49 & POR LOT 50 WOODCREEK OAKS VILLAGE8UN B MO
477-420-001-000	Assessable	A	100.00	100.00	LOT 350 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-002-000	Assessable	A	100.00	100.00	LOT 351 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-003-000	Assessable	A	100.00	100.00	LOT 352 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-004-000	Assessable	A	100.00	100.00	LOT 353 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-005-000	Assessable	A	100.00	100.00	LOT 354 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-006-000	Assessable	A	100.00	100.00	LOT 355 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-007-000	Assessable	A	100.00	100.00	LOT 356 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-008-000	Assessable	A	100.00	100.00	LOT 357 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-009-000	Assessable	A	100.00	100.00	LOT 358 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-010-000	Assessable	A	100.00	100.00	LOT 359 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-011-000	Assessable	A	100.00	100.00	LOT 360 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-012-000	Assessable	A	100.00	100.00	LOT 361 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-013-000	Assessable	A	100.00	100.00	LOT 362 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-014-000	Assessable	A	100.00	100.00	LOT 363 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-015-000	Assessable	A	100.00	100.00	LOT 364 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-016-000	Assessable	A	100.00	100.00	LOT 365 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-017-000	Assessable	A	100.00	100.00	LOT 366 WOODCREEK OAKS VILLAGE II UNIT A T-7

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-420-018-000	Assessable	A	100.00	100.00	LOT 367 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-019-000	Assessable	A	100.00	100.00	LOT 368 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-020-000	Assessable	A	100.00	100.00	LOT 369 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-021-000	Assessable	A	100.00	100.00	LOT 370 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-022-000	Assessable	A	100.00	100.00	LOT 371 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-023-000	Assessable	A	100.00	100.00	LOT 372 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-024-000	Assessable	A	100.00	100.00	LOT 373 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-025-000	Assessable	A	100.00	100.00	LOT 374 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-026-000	Assessable	A	100.00	100.00	LOT 375 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-027-000	Assessable	A	100.00	100.00	LOT 376 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-028-000	Assessable	A	100.00	100.00	LOT 377 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-029-000	Assessable	A	100.00	100.00	LOT 378 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-030-000	Assessable	A	100.00	100.00	LOT 379 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-031-000	Assessable	A	100.00	100.00	LOT 380 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-032-000	Assessable	A	100.00	100.00	LOT 381 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-033-000	Assessable	A	100.00	100.00	LOT 382 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-034-000	Assessable	A	100.00	100.00	LOT 383 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-035-000	Assessable	A	100.00	100.00	LOT 384 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-036-000	Assessable	A	100.00	100.00	LOT 385 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-037-000	Assessable	A	100.00	100.00	LOT 386 WOODCREEK OAKS VILLAGE 11 UNIT A T-7
477-420-038-000	Assessable	A	100.00	100.00	LOT 387 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-039-000	Assessable	A	100.00	100.00	LOT 388 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-040-000	Assessable	A	100.00	100.00	LOT 389 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-041-000	Assessable	A	100.00	100.00	LOT 390 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-042-000	Assessable	A	100.00	100.00	LOT 391 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-043-000	Assessable	A	100.00	100.00	LOT 392 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-044-000	Assessable	A	100.00	100.00	LOT 393 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-045-000	Assessable	A	100.00	100.00	LOT 394 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-046-000	Assessable	A	100.00	100.00	LOT 395 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-047-000	Assessable	A	100.00	100.00	LOT 396 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-048-000	Assessable	A	100.00	100.00	LOT 397 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-049-000	Assessable	A	100.00	100.00	LOT 398 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-050-000	Assessable	A	100.00	100.00	LOT 399 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-051-000	Assessable	A	100.00	100.00	LOT 400 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-052-000	Assessable	A	100.00	100.00	LOT 401 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-053-000	Assessable	A	100.00	100.00	LOT 402 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-054-000	Assessable	A	100.00	100.00	LOT 403 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-055-000	Assessable	A	100.00	100.00	LOT 419 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-056-000	Assessable	A	100.00	100.00	LOT 420 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-057-000	Assessable	A	100.00	100.00	LOT 421 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-058-000	Assessable	A	100.00	100.00	LOT 422 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-059-000	Assessable	A	100.00	100.00	LOT 423 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-060-000	Assessable	A	100.00	100.00	LOT 424 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-061-000	Assessable	A	100.00	100.00	LOT 425 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-062-000	Assessable	A	100.00	100.00	LOT 426 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-063-000	Assessable	A	100.00	100.00	LOT 427 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-064-000	Assessable	A	100.00	100.00	LOT 428 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-065-000	Assessable	A	100.00	100.00	LOT 429 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-066-000	Assessable	A	100.00	100.00	LOT 430 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-067-000	Assessable	A	100.00	100.00	LOT 431 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-420-068-000	Assessable	A	100.00	100.00	LOT 432 WOODCREEK OAKS VILLAGE II UNIT A T-7
477-430-001-000	Assessable	A	100.00	100.00	LOT 346 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-002-000	Assessable	A	100.00	100.00	LOT 347 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-003-000	Assessable	A	100.00	100.00	LOT 348 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-004-000	Assessable	A	100.00	100.00	LOT 349 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-005-000	Assessable	A	100.00	100.00	LOT 404 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-006-000	Assessable	A	100.00	100.00	LOT 405 WOODCREEK OAKS VILLAGE 11 UNIT B T-8

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-430-007-000	Assessable	A	100.00	100.00	LOT 406 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-008-000	Assessable	A	100.00	100.00	LOT 407 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-009-000	Assessable	A	100.00	100.00	LOT 408 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-010-000	Assessable	A	100.00	100.00	LOT 409 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-011-000	Assessable	A	100.00	100.00	LOT 410 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-012-000	Assessable	A	100.00	100.00	LOT 411 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-013-000	Assessable	A	100.00	100.00	LOT 412 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-014-000	Assessable	A	100.00	100.00	LOT 413 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-015-000	Assessable	A	100.00	100.00	LOT 414 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-016-000	Assessable	A	100.00	100.00	LOT 415 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-017-000	Assessable	A	100.00	100.00	LOT 416 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-018-000	Assessable	A	100.00	100.00	LOT 417 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-019-000	Assessable	A	100.00	100.00	LOT 418 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-020-000	Assessable	A	100.00	100.00	LOT 433 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-021-000	Assessable	A	100.00	100.00	LOT 451 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-022-000	Assessable	A	100.00	100.00	LOT 452 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-023-000	Assessable	A	100.00	100.00	LOT 453 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-024-000	Assessable	A	100.00	100.00	LOT 454 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-025-000	Assessable	A	100.00	100.00	LOT 455 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-026-000	Assessable	A	100.00	100.00	LOT 456 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-027-000	Assessable	A	100.00	100.00	LOT 457 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-028-000	Assessable	A	100.00	100.00	LOT 458 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-029-000	Assessable	A	100.00	100.00	LOT 459 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-430-030-000	Assessable	A	100.00	100.00	LOT 460 WOODCREEK OAKS VILLAGE 11 UNIT B T-8
477-440-001-000	Assessable	A	100.00	100.00	LOT 1 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-002-000	Assessable	A	100.00	100.00	LOT 2 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-003-000	Assessable	A	100.00	100.00	LOT 3 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-004-000	Assessable	A	100.00	100.00	LOT 4 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-005-000	Assessable	A	100.00	100.00	LOT 5 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-006-000	Assessable	A	100.00	100.00	LOT 6 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-007-000	Assessable	A	100.00	100.00	LOT 7 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-008-000	Assessable	A	100.00	100.00	LOT 8 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-009-000	Assessable	A	100.00	100.00	LOT 9 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-010-000	Assessable	A	100.00	100.00	LOT 10 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-011-000	Assessable	A	100.00	100.00	LOT 11 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-012-000	Assessable	A	100.00	100.00	LOT 12 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-013-000	Assessable	A	100.00	100.00	LOT 13 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-014-000	Assessable	A	100.00	100.00	LOT 14 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-015-000	Assessable	A	100.00	100.00	LOT 15 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-016-000	Assessable	A	100.00	100.00	LOT 16 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-017-000	Assessable	A	100.00	100.00	LOT 17 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-018-000	Assessable	A	100.00	100.00	LOT 18 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-019-000	Assessable	A	100.00	100.00	LOT 19 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-020-000	Assessable	A	100.00	100.00	LOT 20 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-021-000	Assessable	A	100.00	100.00	LOT 21 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-022-000	Assessable	A	100.00	100.00	LOT 22 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-023-000	Assessable	A	100.00	100.00	LOT 23 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-024-000	Assessable	A	100.00	100.00	LOT 24 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-025-000	Assessable	A	100.00	100.00	LOT 25 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-026-000	Assessable	A	100.00	100.00	LOT 26 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-027-000	Assessable	A	100.00	100.00	LOT 27 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-028-000	Assessable	A	100.00	100.00	LOT 28 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-029-000	Assessable	A	100.00	100.00	LOT 29 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-030-000	Assessable	A	100.00	100.00	LOT 30 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-031-000	Assessable	A	100.00	100.00	LOT 31 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-032-000	Assessable	A	100.00	100.00	LOT 32 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-033-000	Assessable	A	100.00	100.00	LOT 33 RIDGEWOOD OAKS UNIT NO 5 T-59

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-440-034-000	Assessable	A	100.00	100.00	LOT 34 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-035-000	Assessable	A	100.00	100.00	LOT 35 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-036-000	Assessable	A	100.00	100.00	LOT 36 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-037-000	Assessable	A	100.00	100.00	LOT 37 RIDGEWOOD OAKS UNIT NO 5 T-59
477-440-038-000	Assessable	A	100.00	100.00	LOT 38 RIDGEWOOD OAKS UNIT NO 5 T-59
477-450-001-000	Assessable	A	100.00	100.00	LOT 1 WOODCREEK OAKS VILL 4-PH A T-65
477-450-002-000	Assessable	A	100.00	100.00	LOT 2 WOODCREEK OAKS VILL 4-PH A T-65
477-450-003-000	Assessable	A	100.00	100.00	LOT 3 WOODCREEK OAKS VILL 4-PH A T-65
477-450-004-000	Assessable	A	100.00	100.00	LOT 4 WOODCREEK OAKS VILL 4-PH A T-65
477-450-005-000	Assessable	A	100.00	100.00	LOT 5 WOODCREEK OAKS VILL 4-PH A T-65
477-450-006-000	Assessable	A	100.00	100.00	LOT 6 WOODCREEK OAKS VILL 4-PH A T-65
477-450-007-000	Assessable	A	100.00	100.00	LOT 7 WOODCREEK OAKS VILL 4-PH A T-65
477-450-008-000	Assessable	A	100.00	100.00	LOT 8 WOODCREEK OAKS VILL 4-PH A T-65
477-450-009-000	Assessable	A	100.00	100.00	LOT 9 WOODCREEK OAKS VILL 4-PH A T-65
477-450-010-000	Assessable	A	100.00	100.00	LOT 42 WOODCREEK OAKS VILL 4-PH A T-65
477-450-011-000	Assessable	A	100.00	100.00	LOT 43 WOODCREEK OAKS VILL 4-PH A T-65
477-450-012-000	Assessable	A	100.00	100.00	LOT 44 WOODCREEK OAKS VILL 4-PH A T-65
477-460-001-000	Assessable	A	100.00	100.00	LOT 10 WOODCREEK OAKS VILL 4-PH A T-65
477-460-002-000	Assessable	A	100.00	100.00	LOT 11 WOODCREEK OAKS VILL 4-PH A T-65
477-460-003-000	Assessable	A	100.00	100.00	LOT 12 WOODCREEK OAKS VILL 4-PH A T-65
477-460-004-000	Assessable	A	100.00	100.00	LOT 13 WOODCREEK OAKS VILL 4-PH A T-65
477-460-005-000	Assessable	A	100.00	100.00	LOT 14 WOODCREEK OAKS VILL 4-PH A T-65
477-460-006-000	Assessable	A	100.00	100.00	LOT 18 WOODCREEK OAKS VILL 4-PH A T-65
477-460-007-000	Assessable	A	100.00	100.00	LOT 19 WOODCREEK OAKS VILL 4-PH A T-65
477-460-008-000	Assessable	A	100.00	100.00	LOT 20 WOODCREEK OAKS VILL 4-PH A T-65
477-460-009-000	Assessable	A	100.00	100.00	LOT 21 WOODCREEK OAKS VILL 4-PH A T-65
477-460-010-000	Assessable	A	100.00	100.00	LOT 22 WOODCREEK OAKS VILL 4-PH A T-65
477-460-011-000	Assessable	A	100.00	100.00	LOT 23 WOODCREEK OAKS VILL 4-PH A T-65
477-460-012-000	Assessable	A	100.00	100.00	LOT 24 WOODCREEK OAKS VILL 4-PH A T-65
477-460-013-000	Assessable	A	100.00	100.00	LOT 25 WOODCREEK OAKS VILL 4-PH A T-65
477-460-014-000	Assessable	A	100.00	100.00	LOT 26 WOODCREEK OAKS VILL 4-PH A T-65
477-460-015-000	Assessable	A	100.00	100.00	LOT 37 WOODCREEK OAKS VILL 4-PH A T-65
477-460-016-000	Assessable	A	100.00	100.00	LOT 38 WOODCREEK OAKS VILL 4-PH A T-65
477-460-017-000	Assessable	A	100.00	100.00	LOT 39 WOODCREEK OAKS VILL 4-PH A T-65
477-460-018-000	Assessable	A	100.00	100.00	LOT 40 WOODCREEK OAKS VILL 4-PH A T-65
477-460-019-000	Assessable	A	100.00	100.00	LOT 41 WOODCREEK OAKS VILL 4-PH A T-65
477-470-001-000	Assessable	A	100.00	100.00	LOT 16 WOODCREEK OAKS VILL 4-PH A T-65
477-470-002-000	Assessable	A	100.00	100.00	LOT 15 WOODCREEK OAKS VILL 4-PH A T-65
477-470-003-000	Assessable	A	100.00	100.00	LOT 17 WOODCREEK OAKS VILL 4-PH A T-65
477-470-004-000	Assessable	A	100.00	100.00	LOT 27 WOODCREEK OAKS VILL 4-PH A T-65
477-470-005-000	Assessable	A	100.00	100.00	LOT 28 WOODCREEK OAKS VILL 4-PH A T-65
477-470-006-000	Assessable	A	100.00	100.00	LOT 29 WOODCREEK OAKS VILL 4-PH A T-65
477-470-007-000	Assessable	A	100.00	100.00	LOT 30 WOODCREEK OAKS VILL 4-PH A T-65
477-470-008-000	Assessable	A	100.00	100.00	LOT 31 WOODCREEK OAKS VILL 4-PH A T-65
477-470-009-000	Assessable	A	100.00	100.00	LOT 32 WOODCREEK OAKS VILL 4-PH A T-65
477-470-010-000	Assessable	A	100.00	100.00	LOT 33 WOODCREEK OAKS VILL 4-PH A T-65
477-470-011-000	Assessable	A	100.00	100.00	LOT 34 WOODCREEK OAKS VILL 4-PH A T-65
477-470-012-000	Assessable	A	100.00	100.00	LOT 35 WOODCREEK OAKS VILL 4-PH A T-65
477-470-013-000	Assessable	A	100.00	100.00	LOT 36 WOODCREEK OAKS VILL 4-PH A T-65
477-480-001-000	Assessable	A	100.00	100.00	LOT 45 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-002-000	Assessable	A	100.00	100.00	LOT 46 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-003-000	Assessable	A	100.00	100.00	LOT 47 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-004-000	Assessable	A	100.00	100.00	LOT 48 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-005-000	Assessable	A	100.00	100.00	LOT 49 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-006-000	Assessable	A	100.00	100.00	LOT 50 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-007-000	Assessable	A	100.00	100.00	LOT 51 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-008-000	Assessable	A	100.00	100.00	LOT 52 WOODCREEK OAKS VILL 4 PHASE B T-66

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-480-009-000	Assessable	A	100.00	100.00	LOT 53 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-010-000	Assessable	A	100.00	100.00	LOT 54 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-011-000	Assessable	A	100.00	100.00	LOT 87 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-012-000	Assessable	A	100.00	100.00	LOT 88 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-013-000	Assessable	A	100.00	100.00	LOT 89 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-014-000	Assessable	A	100.00	100.00	LOT 90 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-015-000	Assessable	A	100.00	100.00	LOT 98 WOODCREEK OAKS VILL 4 PHASE B T-66
477-480-016-000	Assessable	A	100.00	100.00	LOT 99 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-001-000	Assessable	A	100.00	100.00	LOT 55 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-002-000	Assessable	A	100.00	100.00	LOT 56 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-003-000	Assessable	A	100.00	100.00	LOT 57 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-004-000	Assessable	A	100.00	100.00	LOT 58 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-005-000	Assessable	A	100.00	100.00	LOT 59 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-006-000	Assessable	A	100.00	100.00	LOT 60 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-007-000	Assessable	A	100.00	100.00	LOT 77 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-008-000	Assessable	A	100.00	100.00	LOT 78 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-009-000	Assessable	A	100.00	100.00	LOT 79 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-010-000	Assessable	A	100.00	100.00	LOT 80 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-011-000	Assessable	A	100.00	100.00	LOT 81 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-012-000	Assessable	A	100.00	100.00	LOT 82 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-013-000	Assessable	A	100.00	100.00	LOT 83 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-014-000	Assessable	A	100.00	100.00	LOT 84 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-015-000	Assessable	A	100.00	100.00	LOT 85 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-016-000	Assessable	A	100.00	100.00	LOT 86 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-017-000	Assessable	A	100.00	100.00	LOT 91 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-018-000	Assessable	A	100.00	100.00	LOT 92 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-019-000	Assessable	A	100.00	100.00	LOT 93 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-020-000	Assessable	A	100.00	100.00	LOT 94 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-021-000	Assessable	A	100.00	100.00	LOT 95 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-022-000	Assessable	A	100.00	100.00	LOT 96 WOODCREEK OAKS VILL 4 PHASE B T-66
477-490-023-000	Assessable	A	100.00	100.00	LOT 97 WOODCREEK OAKS VILL 4 PHASE B T-66
477-500-001-000	Assessable	A	100.00	100.00	LOT 61 WOODCREEK OAKS VILL 4-PH B T-66
477-500-002-000	Assessable	A	100.00	100.00	LOT 62 WOODCREEK OAKS VILL 4-PH B T-66
477-500-003-000	Assessable	A	100.00	100.00	LOT 63 WOODCREEK OAKS VILL 4-PH B T-66
477-500-004-000	Assessable	A	100.00	100.00	LOT 64 WOODCREEK OAKS VILL 4-PH B T-66
477-500-005-000	Assessable	A	100.00	100.00	LOT 65 WOODCREEK OAKS VILL 4-PH B T-66
477-500-006-000	Assessable	A	100.00	100.00	LOT 66 WOODCREEK OAKS VILL 4-PH B T-66
477-500-007-000	Assessable	A	100.00	100.00	LOT 67 WOODCREEK OAKS VILL 4-PH B T-66
477-500-008-000	Assessable	A	100.00	100.00	LOT 68 WOODCREEK OAKS VILL 4-PH B T-66
477-500-009-000	Assessable	A	100.00	100.00	LOT 69 WOODCREEK OAKS VILL 4-PH B T-66
477-500-010-000	Assessable	A	100.00	100.00	LOT 70 WOODCREEK OAKS VILL 4-PH B T-66
477-500-011-000	Assessable	A	100.00	100.00	LOT 71 WOODCREEK OAKS VILL 4-PH B T-66
477-500-012-000	Assessable	A	100.00	100.00	LOT 72 WOODCREEK OAKS VILL 4-PH B T-66
477-500-013-000	Assessable	A	100.00	100.00	LOT 73 WOODCREEK OAKS VILL 4-PH B T-66
477-500-014-000	Assessable	A	100.00	100.00	LOT 74 WOODCREEK OAKS VILL 4-PH B T-66
477-500-015-000	Assessable	A	100.00	100.00	LOT 75 WOODCREEK OAKS VILL 4-PH B T-66
477-500-016-000	Assessable	A	100.00	100.00	LOT 76 WOODCREEK OAKS VILL 4-PH B T-66
477-510-001-000	Assessable	A	100.00	100.00	LOT 302 WOODCREEK OAKS VILL 3 T-67
477-510-002-000	Assessable	A	100.00	100.00	LOT 303 WOODCREEK OAKS VILL 3 T-67
477-510-003-000	Assessable	A	100.00	100.00	LOT 304 WOODCREEK OAKS VILL 3 T-67
477-510-004-000	Assessable	A	100.00	100.00	LOT 305 WOODCREEK OAKS VILL 3 T-67
477-510-005-000	Assessable	A	100.00	100.00	LOT 306 WOODCREEK OAKS VILL 3 T-67
477-510-006-000	Assessable	A	100.00	100.00	LOT 307 WOODCREEK OAKS VILL 3 T-67
477-510-007-000	Assessable	A	100.00	100.00	LOT 308 WOODCREEK OAKS VILL 3 T-67
477-510-008-000	Assessable	A	100.00	100.00	LOT 309 WOODCREEK OAKS VILL 3 T-67
477-510-009-000	Assessable	A	100.00	100.00	LOT 310 WOODCREEK OAKS VILL 3 MOR T-67
477-510-010-000	Assessable	A	100.00	100.00	LOT 311 WOODCREEK OAKS VILL 3 T-67

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-510-011-000	Assessable	A	100.00	100.00	LOT 312 WOODCREEK OAKS VILL 3 T-67
477-510-012-000	Assessable	A	100.00	100.00	LOT 313 WOODCREEK OAKS VILL 3 T-67
477-510-013-000	Assessable	A	100.00	100.00	LOT 314 WOODCREEK OAKS VILL 3 T-67
477-510-014-000	Assessable	A	100.00	100.00	LOT 315 WOODCREEK OAKS VILL 3 T-67
477-510-015-000	Assessable	A	100.00	100.00	LOT 316 WOODCREEK OAKS VILL 3 T-67
477-520-001-000	Assessable	A	100.00	100.00	LOT 274 WOODCREEK OAKS VILL 3 T-67
477-520-002-000	Assessable	A	100.00	100.00	LOT 275 WOODCREEK OAKS VILL 3 T-67
477-520-003-000	Assessable	A	100.00	100.00	LOT 276 WOODCREEK OAKS VILL 3 T-67
477-520-004-000	Assessable	A	100.00	100.00	LOT 277 WOODCREEK OAKS VILL 3 T-67
477-520-005-000	Assessable	A	100.00	100.00	LOT 278 WOODCREEK OAKS VILL 3 T-67
477-520-006-000	Assessable	A	100.00	100.00	LOT 279 WOODCREEK OAKS VILL 3 T-67
477-520-007-000	Assessable	A	100.00	100.00	LOT 292 WOODCREEK OAKS VILL 3 T-67
477-520-008-000	Assessable	A	100.00	100.00	LOT 293 WOODCREEK OAKS VILL 3 T-67
477-520-009-000	Assessable	A	100.00	100.00	LOT 294 WOODCREEK OAKS VILL 3 T-67
477-520-010-000	Assessable	A	100.00	100.00	LOT 295 WOODCREEK OAKS VILL 3 T-67
477-520-011-000	Assessable	A	100.00	100.00	LOT 296 WOODCREEK OAKS VILL 3 T-67
477-520-012-000	Assessable	A	100.00	100.00	LOT 297 WOODCREEK OAKS VILL 3 T-67
477-520-013-000	Assessable	A	100.00	100.00	LOT 298 WOODCREEK OAKS VILL 3 T-67
477-520-014-000	Assessable	A	100.00	100.00	LOT 299 WOODCREEK OAKS VILL 3 T-67
477-520-015-000	Assessable	A	100.00	100.00	LOT 300 WOODCREEK OAKS VILL 3 T-67
477-520-016-000	Assessable	A	100.00	100.00	LOT 301 WOODCREEK OAKS VILL 3 T-67
477-530-001-000	Assessable	A	100.00	100.00	LOT 234 WOODCREEK OAKS VILL 3 T-67
477-530-002-000	Assessable	A	100.00	100.00	LOT 235 WOODCREEK OAKS VILL 3 T-67
477-530-003-000	Assessable	A	100.00	100.00	LOT 236 WOODCREEK OAKS VILL 3 T-67
477-530-004-000	Assessable	A	100.00	100.00	LOT 237 WOODCREEK OAKS VILL 3 T-67
477-530-005-000	Assessable	A	100.00	100.00	LOT 250 WOODCREEK OAKS VILL 3 T-67
477-530-006-000	Assessable	A	100.00	100.00	LOT 251 WOODCREEK OAKS VILL 3 T-67
477-530-007-000	Assessable	A	100.00	100.00	LOT 252 WOODCREEK OAKS VILL 3 T-67
477-530-008-000	Assessable	A	100.00	100.00	LOT 253 WOODCREEK OAKS VILL 3 T-67
477-530-009-000	Assessable	A	100.00	100.00	LOT 261 WOODCREEK OAKS VILL 3 T-67
477-530-010-000	Assessable	A	100.00	100.00	LOT 262 WOODCREEK OAKS VILL 3 T-67
477-530-011-000	Assessable	A	100.00	100.00	LOT 263 WOODCREEK OAKS VILL 3 T-67
477-530-012-000	Assessable	A	100.00	100.00	LOT 264 WOODCREEK OAKS VILL 3 T-67
477-530-013-000	Assessable	A	100.00	100.00	LOT 265 WOODCREEK OAKS VILL 3 T-67
477-530-014-000	Assessable	A	100.00	100.00	LOT 266 WOODCREEK OAKS VILL 3 T-67
477-530-015-000	Assessable	A	100.00	100.00	LOT 267 WOODCREEK OAKS VILL 3 T-67
477-530-016-000	Assessable	A	100.00	100.00	LOT 268 WOODCREEK OAKS VILL 3 T-67
477-530-017-000	Assessable	A	100.00	100.00	LOT 269 WOODCREEK OAKS VILL 3 T-67
477-530-018-000	Assessable	A	100.00	100.00	LOT 270 WOODCREEK OAKS VILL 3 T-67
477-530-019-000	Assessable	A	100.00	100.00	LOT 271 WOODCREEK OAKS VILL 3 T-67
477-530-020-000	Assessable	A	100.00	100.00	LOT 272 WOODCREEK OAKS VILL 3 T-67
477-530-021-000	Assessable	A	100.00	100.00	LOT 273 WOODCREEK OAKS VILL 3 T-67
477-530-022-000	Assessable	A	100.00	100.00	LOT 280 WOODCREEK OAKS VILL 3 T-67
477-530-023-000	Assessable	A	100.00	100.00	LOT 281 WOODCREEK OAKS VILL 3 T-67
477-530-024-000	Assessable	A	100.00	100.00	LOT 282 WOODCREEK OAKS VILL 3 T-67
477-530-025-000	Assessable	A	100.00	100.00	LOT 283 WOODCREEK OAKS VILL 3 T-67
477-530-026-000	Assessable	A	100.00	100.00	LOT 284 WOODCREEK OAKS VILL 3 T-67
477-530-027-000	Assessable	A	100.00	100.00	LOT 285 WOODCREEK OAKS VILL 3 T-67
477-530-028-000	Assessable	A	100.00	100.00	LOT 286 WOODCREEK OAKS VILL 3 T-67
477-530-029-000	Assessable	A	100.00	100.00	LOT 287 WOODCREEK OAKS VILL 3 T-67
477-530-030-000	Assessable	A	100.00	100.00	LOT 288 WOODCREEK OAKS VILL 3 T-67
477-530-031-000	Assessable	A	100.00	100.00	LOT 289 WOODCREEK OAKS VILL 3 T-67
477-530-032-000	Assessable	A	100.00	100.00	LOT 290 WOODCREEK OAKS VILL 3 T-67
477-530-033-000	Assessable	A	100.00	100.00	LOT 291 WOODCREEK OAKS VILL 3 T-67
477-540-001-000	Assessable	A	100.00	100.00	LOT 238 WOODCREEK OAKS VILL 3 T-67
477-540-002-000	Assessable	A	100.00	100.00	LOT 239 WOODCREEK OAKS VILL 3 T-67
477-540-003-000	Assessable	A	100.00	100.00	LOT 240 WOODCREEK OAKS VILL 3 T-67

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-540-004-000	Assessable	A	100.00	100.00	LOT 241 WOODCREEK OAKS VILL 3 T-67
477-540-005-000	Assessable	A	100.00	100.00	LOT 242 WOODCREEK OAKS VILL 3 T-67
477-540-006-000	Assessable	A	100.00	100.00	LOT 243 WOODCREEK OAKS VILL 3 T-67
477-540-007-000	Assessable	A	100.00	100.00	LOT 244 WOODCREEK OAKS VILL 3 T-67
477-540-008-000	Assessable	A	100.00	100.00	LOT 245 WOODCREEK OAKS VILL 3 T-67
477-540-009-000	Assessable	A	100.00	100.00	LOT 246 WOODCREEK OAKS VILL 3 T-67
477-540-010-000	Assessable	A	100.00	100.00	LOT 247 WOODCREEK OAKS VILL 3 T-67
477-540-011-000	Assessable	A	100.00	100.00	LOT 248 WOODCREEK OAKS VILL 3 T-67
477-540-012-000	Assessable	A	100.00	100.00	LOT 249 WOODCREEK OAKS VILL 3 T-67
477-540-013-000	Assessable	A	100.00	100.00	LOT 254 WOODCREEK OAKS VILL 3 T-67
477-540-014-000	Assessable	A	100.00	100.00	LOT 255 WOODCREEK OAKS VILL 3 T-67
477-540-015-000	Assessable	A	100.00	100.00	LOT 256 WOODCREEK OAKS VILL 3 T-67
477-540-016-000	Assessable	A	100.00	100.00	LOT 257 WOODCREEK OAKS VILL 3 T-67
477-540-017-000	Assessable	A	100.00	100.00	LOT 258 WOODCREEK OAKS VILL 3 T-67
477-540-018-000	Assessable	A	100.00	100.00	LOT 259 WOODCREEK OAKS VILL 3 T-67
477-540-019-000	Assessable	A	100.00	100.00	LOT 260 WOODCREEK OAKS VILL 3 T-67
477-550-001-000	Assessable	A	100.00	100.00	LOT 34 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-002-000	Assessable	A	100.00	100.00	LOT 35 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-003-000	Assessable	A	100.00	100.00	LOT 36 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-004-000	Assessable	A	100.00	100.00	LOT 37 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-005-000	Assessable	A	100.00	100.00	LOT 38 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-006-000	Assessable	A	100.00	100.00	LOT 39 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-007-000	Assessable	A	100.00	100.00	LOT 40 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-008-000	Assessable	A	100.00	100.00	LOT 41 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-009-000	Assessable	A	100.00	100.00	LOT 42 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-010-000	Assessable	A	100.00	100.00	LOT 43 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-011-000	Assessable	A	100.00	100.00	LOT 46 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-012-000	Assessable	A	100.00	100.00	LOT 47 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-013-000	Assessable	A	100.00	100.00	LOT 48 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-014-000	Assessable	A	100.00	100.00	LOT 49 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-015-000	Assessable	A	100.00	100.00	LOT 50 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-016-000	Assessable	A	100.00	100.00	LOT 51 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-017-000	Assessable	A	100.00	100.00	LOT 52 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-018-000	Assessable	A	100.00	100.00	LOT 53 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-019-000	Assessable	A	100.00	100.00	LOT 54 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-020-000	Assessable	A	100.00	100.00	LOT 55 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-021-000	Assessable	A	100.00	100.00	LOT 56 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-022-000	Assessable	A	100.00	100.00	LOT 57 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-023-000	Assessable	A	100.00	100.00	LOT 58 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-024-000	Assessable	A	100.00	100.00	LOT 59 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-025-000	Assessable	A	100.00	100.00	LOT 60 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-026-000	Assessable	A	100.00	100.00	LOT 61 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-027-000	Assessable	A	100.00	100.00	LOT 62 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-028-000	Assessable	A	100.00	100.00	LOT 63 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-029-000	Assessable	A	100.00	100.00	LOT 64 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-030-000	Assessable	A	100.00	100.00	LOT 65 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-031-000	Assessable	A	100.00	100.00	LOT 66 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-550-032-000	Assessable	A	100.00	100.00	LOT 67 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-001-000	Assessable	A	100.00	100.00	LOT 1 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-002-000	Assessable	A	100.00	100.00	LOT 2 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-003-000	Assessable	A	100.00	100.00	LOT 3 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-004-000	Assessable	A	100.00	100.00	LOT 4 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-005-000	Assessable	A	100.00	100.00	LOT 5 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-006-000	Assessable	A	100.00	100.00	LOT 6 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-007-000	Assessable	A	100.00	100.00	LOT 7 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-008-000	Assessable	A	100.00	100.00	LOT 8 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-009-000	Assessable	A	100.00	100.00	LOT 9 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68

City of Roseville
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-560-010-000	Assessable	A	100.00	100.00	LOT 10 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-011-000	Assessable	A	100.00	100.00	LOT 11 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-012-000	Assessable	A	100.00	100.00	LOT 12 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-013-000	Assessable	A	100.00	100.00	LOT 13 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-014-000	Assessable	A	100.00	100.00	LOT 14 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-015-000	Assessable	A	100.00	100.00	LOT 15 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-016-000	Assessable	A	100.00	100.00	LOT 16 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-017-000	Assessable	A	100.00	100.00	LOT 17 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-018-000	Assessable	A	100.00	100.00	LOT 18 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-019-000	Assessable	A	100.00	100.00	LOT 19 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-020-000	Assessable	A	100.00	100.00	LOT 20 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-021-000	Assessable	A	100.00	100.00	LOT 21 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-022-000	Assessable	A	100.00	100.00	LOT 22 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-023-000	Assessable	A	100.00	100.00	LOT 23 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-024-000	Assessable	A	100.00	100.00	LOT 24 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-025-000	Assessable	A	100.00	100.00	LOT 25 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-026-000	Assessable	A	100.00	100.00	LOT 26 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-027-000	Assessable	A	100.00	100.00	LOT 27 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-028-000	Assessable	A	100.00	100.00	LOT 28 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-029-000	Assessable	A	100.00	100.00	LOT 29 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-030-000	Assessable	A	100.00	100.00	LOT 30 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-031-000	Assessable	A	100.00	100.00	LOT 31 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-032-000	Assessable	A	100.00	100.00	LOT 32 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-033-000	Assessable	A	100.00	100.00	LOT 33 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-034-000	Assessable	A	100.00	100.00	LOT 44 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-560-035-000	Assessable	A	100.00	100.00	LOT 45 WOODCREEK OAKS UNIT NO 1 PH A MOR T-68
477-570-001-000	Assessable	A	100.00	100.00	LOT 322 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-002-000	Assessable	A	100.00	100.00	LOT 323 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-003-000	Assessable	A	100.00	100.00	LOT 324 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-004-000	Assessable	A	100.00	100.00	LOT 325 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-005-000	Assessable	A	100.00	100.00	LOT 326 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-006-000	Assessable	A	100.00	100.00	LOT 327 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-007-000	Assessable	A	100.00	100.00	LOT 328 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-008-000	Assessable	A	100.00	100.00	LOT 329 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-009-000	Assessable	A	100.00	100.00	LOT 330 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-010-000	Assessable	A	100.00	100.00	LOT 331 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-011-000	Assessable	A	100.00	100.00	LOT 332 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-012-000	Assessable	A	100.00	100.00	LOT 333 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-013-000	Assessable	A	100.00	100.00	LOT 334 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-014-000	Assessable	A	100.00	100.00	LOT 335 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-015-000	Assessable	A	100.00	100.00	LOT 336 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-016-000	Assessable	A	100.00	100.00	LOT 337 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-017-000	Assessable	A	100.00	100.00	LOT 338 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-018-000	Assessable	A	100.00	100.00	LOT 339 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-019-000	Assessable	A	100.00	100.00	LOT 340 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-020-000	Assessable	A	100.00	100.00	LOT 341 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-021-000	Assessable	A	100.00	100.00	LOT 342 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-022-000	Assessable	A	100.00	100.00	LOT 343 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-023-000	Assessable	A	100.00	100.00	LOT 344 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-024-000	Assessable	A	100.00	100.00	LOT 345 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-025-000	Assessable	A	100.00	100.00	LOT 434 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-026-000	Assessable	A	100.00	100.00	LOT 435 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-027-000	Assessable	A	100.00	100.00	LOT 436 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-028-000	Assessable	A	100.00	100.00	LOT 437 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-029-000	Assessable	A	100.00	100.00	LOT 438 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-030-000	Assessable	A	100.00	100.00	LOT 439 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-031-000	Assessable	A	100.00	100.00	LOT 440 WOODCREEK OAKS VILLAGE 11 UNIT C T-80

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-570-032-000	Assessable	A	100.00	100.00	LOT 441 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-033-000	Assessable	A	100.00	100.00	LOT 442 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-034-000	Assessable	A	100.00	100.00	LOT 443 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-035-000	Assessable	A	100.00	100.00	LOT 444 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-036-000	Assessable	A	100.00	100.00	LOT 445 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-037-000	Assessable	A	100.00	100.00	LOT 446 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-038-000	Assessable	A	100.00	100.00	LOT 447 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-039-000	Assessable	A	100.00	100.00	LOT 448 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-040-000	Assessable	A	100.00	100.00	LOT 449 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-041-000	Assessable	A	100.00	100.00	LOT 450 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-570-042-000	Assessable	A	100.00	100.00	LOT 461 WOODCREEK OAKS VILLAGE 11 UNIT C T-80
477-580-001-000	Assessable	A	100.00	100.00	LOT 81 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-002-000	Assessable	A	100.00	100.00	LOT 82 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-003-000	Assessable	A	100.00	100.00	LOT 83 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-004-000	Assessable	A	100.00	100.00	LOT 84 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-005-000	Assessable	A	100.00	100.00	LOT 85 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-006-000	Assessable	A	100.00	100.00	LOT 86 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-007-000	Assessable	A	100.00	100.00	LOT 87 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-008-000	Assessable	A	100.00	100.00	LOT 88 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-009-000	Assessable	A	100.00	100.00	LOT 89 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-010-000	Assessable	A	100.00	100.00	LOT 90 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-011-000	Assessable	A	100.00	100.00	LOT 91 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-012-000	Assessable	A	100.00	100.00	LOT 92 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-013-000	Assessable	A	100.00	100.00	LOT 93 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-014-000	Assessable	A	100.00	100.00	LOT 94 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-015-000	Assessable	A	100.00	100.00	LOT 95 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-016-000	Assessable	A	100.00	100.00	LOT 96 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-017-000	Assessable	A	100.00	100.00	LOT 97 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-018-000	Assessable	A	100.00	100.00	LOT 98 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-019-000	Assessable	A	100.00	100.00	LOT 99 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-020-000	Assessable	A	100.00	100.00	LOT 100 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-021-000	Assessable	A	100.00	100.00	LOT 101 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-022-000	Assessable	A	100.00	100.00	LOT 102 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-023-000	Assessable	A	100.00	100.00	LOT 103 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-024-000	Assessable	A	100.00	100.00	LOT 104 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-025-000	Assessable	A	100.00	100.00	LOT 105 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-026-000	Assessable	A	100.00	100.00	LOT 106 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-027-000	Assessable	A	100.00	100.00	LOT 107 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-580-028-000	Assessable	A	100.00	100.00	LOT 108 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-001-000	Assessable	A	100.00	100.00	LOT 68 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-002-000	Assessable	A	100.00	100.00	LOT 69 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-003-000	Assessable	A	100.00	100.00	LOT 70 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-004-000	Assessable	A	100.00	100.00	LOT 71 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-005-000	Assessable	A	100.00	100.00	LOT 72 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-006-000	Assessable	A	100.00	100.00	LOT 73 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-007-000	Assessable	A	100.00	100.00	LOT 74 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-008-000	Assessable	A	100.00	100.00	LOT 75 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-009-000	Assessable	A	100.00	100.00	LOT 76 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-010-000	Assessable	A	100.00	100.00	LOT 77 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-011-000	Assessable	A	100.00	100.00	LOT 78 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-012-000	Assessable	A	100.00	100.00	LOT 79 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-013-000	Assessable	A	100.00	100.00	LOT 80 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-014-000	Assessable	A	100.00	100.00	LOT 109 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-015-000	Assessable	A	100.00	100.00	LOT 110 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-590-016-000	Assessable	A	100.00	100.00	LOT 111 WOODCREEK OAKS UNIT 1 PH B MOR U-4
477-600-001-000	Assessable	A	100.00	100.00	LOT 157 WOODCREEK OAKS VILL 2 U-20
477-600-002-000	Assessable	A	100.00	100.00	LOT 158 WOODCREEK OAKS VILL 2 U-20

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-600-003-000	Assessable	A	100.00	100.00	LOT 159 WOODCREEK OAKS VILL 2 U-20
477-600-004-000	Assessable	A	100.00	100.00	LOT 160 WOODCREEK OAKS VILL 2 U-20
477-600-005-000	Assessable	A	100.00	100.00	LOT 161 WOODCREEK OAKS VILL 2 U-20
477-600-006-000	Assessable	A	100.00	100.00	LOT 162 WOODCREEK OAKS VILL 2 U-20
477-600-007-000	Assessable	A	100.00	100.00	LOT 188 WOODCREEK OAKS VILL 2 U-20
477-600-008-000	Assessable	A	100.00	100.00	LOT 189 WOODCREEK OAKS VILL 2 U-20
477-600-009-000	Assessable	A	100.00	100.00	LOT 190 WOODCREEK OAKS VILL 2 U-20
477-600-010-000	Assessable	A	100.00	100.00	LOT 191 WOODCREEK OAKS VILL 2 U-20
477-600-011-000	Assessable	A	100.00	100.00	LOT 192 WOODCREEK OAKS VILL 2 U-20
477-600-012-000	Assessable	A	100.00	100.00	LOT 193 WOODCREEK OAKS VILL 2 U-20
477-600-013-000	Assessable	A	100.00	100.00	LOT 194 WOODCREEK OAKS VILL 2 U-20
477-600-014-000	Assessable	A	100.00	100.00	LOT 195 WOODCREEK OAKS VILL 2 U-20
477-600-015-000	Assessable	A	100.00	100.00	LOT 196 WOODCREEK OAKS VILL 2 U-20
477-600-016-000	Assessable	A	100.00	100.00	LOT 197 WOODCREEK OAKS VILL 2 U-20
477-600-017-000	Assessable	A	100.00	100.00	LOT 198 WOODCREEK OAKS VILL 2 U-20
477-600-018-000	Assessable	A	100.00	100.00	LOT 199 WOODCREEK OAKS VILL 2 U-20
477-600-019-000	Assessable	A	100.00	100.00	LOT 200 WOODCREEK OAKS VILL 2 U-20
477-600-020-000	Assessable	A	100.00	100.00	LOT 201 WOODCREEK OAKS VILL 2 U-20
477-610-001-000	Assessable	A	100.00	100.00	LOT 163 WOODCREEK OAKS VILL 2 U-20
477-610-002-000	Assessable	A	100.00	100.00	LOT 164 WOODCREEK OAKS VILL 2 U-20
477-610-003-000	Assessable	A	100.00	100.00	LOT 165 WOODCREEK OAKS VILL 2 U-20
477-610-004-000	Assessable	A	100.00	100.00	LOT 166 WOODCREEK OAKS VILL 2 U-20
477-610-005-000	Assessable	A	100.00	100.00	LOT 167 WOODCREEK OAKS VILL 2 U-20
477-610-006-000	Assessable	A	100.00	100.00	LOT 168 WOODCREEK OAKS VILL 2 U-20
477-610-007-000	Assessable	A	100.00	100.00	LOT 169 WOODCREEK OAKS VILL 2 U-20
477-610-008-000	Assessable	A	100.00	100.00	LOT 170 WOODCREEK OAKS VILL 2 U-20
477-610-009-000	Assessable	A	100.00	100.00	LOT 171 WOODCREEK OAKS VILL 2 U-20
477-610-010-000	Assessable	A	100.00	100.00	LOT 172 WOODCREEK OAKS VILL 2 U-20
477-610-011-000	Assessable	A	100.00	100.00	LOT 173 WOODCREEK OAKS VILL 2 U-20
477-610-012-000	Assessable	A	100.00	100.00	LOT 174 WOODCREEK OAKS VILL 2 U-20
477-610-013-000	Assessable	A	100.00	100.00	LOT 175 WOODCREEK OAKS VILL 2 U-20
477-610-014-000	Assessable	A	100.00	100.00	LOT 176 WOODCREEK OAKS VILL 2 U-20
477-610-015-000	Assessable	A	100.00	100.00	LOT 177 WOODCREEK OAKS VILL 2 U-20
477-610-016-000	Assessable	A	100.00	100.00	LOT 178 WOODCREEK OAKS VILL 2 U-20
477-610-017-000	Assessable	A	100.00	100.00	LOT 179 WOODCREEK OAKS VILL 2 U-20
477-610-018-000	Assessable	A	100.00	100.00	LOT 180 WOODCREEK OAKS VILL 2 U-20
477-610-019-000	Assessable	A	100.00	100.00	LOT 181 WOODCREEK OAKS VILL 2 U-20
477-610-020-000	Assessable	A	100.00	100.00	LOT 182 WOODCREEK OAKS VILL 2 U-20
477-610-021-000	Assessable	A	100.00	100.00	LOT 183 WOODCREEK OAKS VILL 2 U-20
477-610-022-000	Assessable	A	100.00	100.00	LOT 184 WOODCREEK OAKS VILL 2 U-20
477-610-023-000	Assessable	A	100.00	100.00	LOT 226 WOODCREEK OAKS VILL 2 U-20
477-610-024-000	Assessable	A	100.00	100.00	LOT 227 WOODCREEK OAKS VILL 2 U-20
477-610-025-000	Assessable	A	100.00	100.00	LOT 228 WOODCREEK OAKS VILL 2 U-20
477-610-026-000	Assessable	A	100.00	100.00	LOT 229 WOODCREEK OAKS VILL 2 U-20
477-610-027-000	Assessable	A	100.00	100.00	LOT 230 WOODCREEK OAKS VILL 2 U-20
477-610-028-000	Assessable	A	100.00	100.00	LOT 231 WOODCREEK OAKS VILL 2 U-20
477-610-029-000	Assessable	A	100.00	100.00	LOT 232 WOODCREEK OAKS VILL 2 U-20
477-610-030-000	Assessable	A	100.00	100.00	LOT 233 WOODCREEK OAKS VILL 2 U-20
477-620-001-000	Assessable	A	100.00	100.00	LOT 185 WOODCREEK OAKS VILL 2 U-20
477-620-002-000	Assessable	A	100.00	100.00	LOT 186 WOODCREEK OAKS VILL 2 U-20
477-620-003-000	Assessable	A	100.00	100.00	LOT 187 WOODCREEK OAKS VILL 2 U-20
477-620-004-000	Assessable	A	100.00	100.00	LOT 202 WOODCREEK OAKS VILL 2 U-20
477-620-005-000	Assessable	A	100.00	100.00	LOT 203 WOODCREEK OAKS VILL 2 U-20
477-620-006-000	Assessable	A	100.00	100.00	LOT 204 WOODCREEK OAKS VILL 2 U-20
477-620-007-000	Assessable	A	100.00	100.00	LOT 205 WOODCREEK OAKS VILL 2 U-20
477-620-008-000	Assessable	A	100.00	100.00	LOT 206 WOODCREEK OAKS VILL 2 U-20
477-620-009-000	Assessable	A	100.00	100.00	LOT 207 WOODCREEK OAKS VILL 2 U-20

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-620-010-000	Assessable	A	100.00	100.00	LOT 208 WOODCREEK OAKS VILL 2 U-20
477-620-011-000	Assessable	A	100.00	100.00	LOT 209 WOODCREEK OAKS VILL 2 U-20
477-620-012-000	Assessable	A	100.00	100.00	LOT 210 WOODCREEK OAKS VILL 2 U-20
477-620-013-000	Assessable	A	100.00	100.00	LOT 211 WOODCREEK OAKS VILL 2 U-20
477-620-014-000	Assessable	A	100.00	100.00	LOT 212 WOODCREEK OAKS VILL 2 U-20
477-620-015-000	Assessable	A	100.00	100.00	LOT 213 WOODCREEK OAKS VILL 2 U-20
477-620-016-000	Assessable	A	100.00	100.00	LOT 214 WOODCREEK OAKS VILL 2 U-20
477-620-017-000	Assessable	A	100.00	100.00	LOT 215 WOODCREEK OAKS VILL 2 U-20
477-620-018-000	Assessable	A	100.00	100.00	LOT 216 WOODCREEK OAKS VILL 2 U-20
477-620-019-000	Assessable	A	100.00	100.00	LOT 217 WOODCREEK OAKS VILL 2 U-20
477-620-020-000	Assessable	A	100.00	100.00	LOT 218 WOODCREEK OAKS VILL 2 U-20
477-620-021-000	Assessable	A	100.00	100.00	LOT 219 WOODCREEK OAKS VILL 2 U-20
477-620-022-000	Assessable	A	100.00	100.00	LOT 220 WOODCREEK OAKS VILL 2 U-20
477-620-023-000	Assessable	A	100.00	100.00	LOT 221 WOODCREEK OAKS VILL 2 U-20
477-620-024-000	Assessable	A	100.00	100.00	LOT 222 WOODCREEK OAKS VILL 2 U-20
477-620-025-000	Assessable	A	100.00	100.00	LOT 223 WOODCREEK OAKS VILL 2 U-20
477-620-026-000	Assessable	A	100.00	100.00	LOT 224 WOODCREEK OAKS VILL 2 U-20
477-620-027-000	Assessable	A	100.00	100.00	LOT 225 WOODCREEK OAKS VILL 2 U-20
477-630-001-000	Assessable	A	100.00	100.00	LOT 139 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-002-000	Assessable	A	100.00	100.00	LOT 140 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-003-000	Assessable	A	100.00	100.00	LOT 141 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-004-000	Assessable	A	100.00	100.00	LOT 142 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-005-000	Assessable	A	100.00	100.00	LOT 143 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-006-000	Assessable	A	100.00	100.00	LOT 144 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-007-000	Assessable	A	100.00	100.00	LOT 145 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-008-000	Assessable	A	100.00	100.00	LOT 146 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-009-000	Assessable	A	100.00	100.00	LOT 147 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-010-000	Assessable	A	100.00	100.00	LOT 148 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-011-000	Assessable	A	100.00	100.00	LOT 149 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-012-000	Assessable	A	100.00	100.00	LOT 150 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-013-000	Assessable	A	100.00	100.00	LOT 151 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-014-000	Assessable	A	100.00	100.00	LOT 152 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-015-000	Assessable	A	100.00	100.00	LOT 153 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-016-000	Assessable	A	100.00	100.00	LOT 154 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-017-000	Assessable	A	100.00	100.00	LOT 155 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-018-000	Assessable	A	100.00	100.00	LOT 156 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-019-000	Assessable	A	100.00	100.00	LOT 157 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-020-000	Assessable	A	100.00	100.00	LOT 158 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-630-021-000	Assessable	A	100.00	100.00	LOT 159 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-001-000	Assessable	A	100.00	100.00	LOT 100 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-002-000	Assessable	A	100.00	100.00	LOT 101 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-003-000	Assessable	A	100.00	100.00	LOT 102 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-004-000	Assessable	A	100.00	100.00	LOT 103 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-005-000	Assessable	A	100.00	100.00	LOT 132 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-006-000	Assessable	A	100.00	100.00	LOT 133 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-007-000	Assessable	A	100.00	100.00	LOT 134 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-008-000	Assessable	A	100.00	100.00	LOT 135 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-009-000	Assessable	A	100.00	100.00	LOT 136 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-010-000	Assessable	A	100.00	100.00	LOT 137 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-011-000	Assessable	A	100.00	100.00	LOT 138 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-012-000	Assessable	A	100.00	100.00	LOT 160 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-013-000	Assessable	A	100.00	100.00	LOT 161 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-014-000	Assessable	A	100.00	100.00	LOT 162 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-015-000	Assessable	A	100.00	100.00	LOT 163 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-016-000	Assessable	A	100.00	100.00	LOT 164 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-017-000	Assessable	A	100.00	100.00	LOT 189 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-018-000	Assessable	A	100.00	100.00	LOT 190 WOODCREEK OAKS VILLAGE 5A MOR U-56

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-640-019-000	Assessable	A	100.00	100.00	LOT 191 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-020-000	Assessable	A	100.00	100.00	LOT 192 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-021-000	Assessable	A	100.00	100.00	LOT 193 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-022-000	Assessable	A	100.00	100.00	LOT 194 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-640-023-000	Assessable	A	100.00	100.00	LOT 195 WOODCREEK OAKS VILLAGE 5A MOR U-56
477-650-001-000	Assessable	A	100.00	100.00	LOT 112 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-002-000	Assessable	A	100.00	100.00	LOT 113 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-003-000	Assessable	A	100.00	100.00	LOT 114 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-004-000	Assessable	A	100.00	100.00	LOT 115 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-005-000	Assessable	A	100.00	100.00	LOT 116 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-006-000	Assessable	A	100.00	100.00	LOT 117 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-007-000	Assessable	A	100.00	100.00	LOT 118 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-008-000	Assessable	A	100.00	100.00	LOT 119 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-009-000	Assessable	A	100.00	100.00	LOT 120 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-010-000	Assessable	A	100.00	100.00	LOT 121 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-011-000	Assessable	A	100.00	100.00	LOT 122 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-012-000	Assessable	A	100.00	100.00	LOT 123 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-013-000	Assessable	A	100.00	100.00	LOT 124 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-014-000	Assessable	A	100.00	100.00	LOT 125 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-015-000	Assessable	A	100.00	100.00	LOT 126 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-016-000	Assessable	A	100.00	100.00	LOT 127 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-017-000	Assessable	A	100.00	100.00	LOT 128 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-018-000	Assessable	A	100.00	100.00	LOT 129 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-019-000	Assessable	A	100.00	100.00	LOT 130 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-020-000	Assessable	A	100.00	100.00	LOT 131 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-021-000	Assessable	A	100.00	100.00	LOT 132 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-022-000	Assessable	A	100.00	100.00	LOT 133 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-023-000	Assessable	A	100.00	100.00	LOT 134 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-024-000	Assessable	A	100.00	100.00	LOT 135 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-025-000	Assessable	A	100.00	100.00	LOT 136 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-026-000	Assessable	A	100.00	100.00	LOT 137 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-027-000	Assessable	A	100.00	100.00	LOT 138 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-028-000	Assessable	A	100.00	100.00	LOT 139 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-029-000	Assessable	A	100.00	100.00	LOT 140 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-030-000	Assessable	A	100.00	100.00	LOT 141 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-031-000	Assessable	A	100.00	100.00	LOT 142 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-032-000	Assessable	A	100.00	100.00	LOT 143 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-033-000	Assessable	A	100.00	100.00	LOT 144 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-034-000	Assessable	A	100.00	100.00	LOT 145 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-035-000	Assessable	A	100.00	100.00	LOT 146 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-036-000	Assessable	A	100.00	100.00	LOT 147 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-037-000	Assessable	A	100.00	100.00	LOT 148 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-038-000	Assessable	A	100.00	100.00	LOT 149 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-039-000	Assessable	A	100.00	100.00	LOT 150 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-040-000	Assessable	A	100.00	100.00	LOT 151 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-041-000	Assessable	A	100.00	100.00	LOT 152 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-042-000	Assessable	A	100.00	100.00	LOT 153 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-043-000	Assessable	A	100.00	100.00	LOT 154 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-044-000	Assessable	A	100.00	100.00	LOT 155 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-650-045-000	Assessable	A	100.00	100.00	LOT 156 WOODCREEK OAKS UNIT #1 PH C MOR U-75
477-660-001-000	Assessable	A	100.00	100.00	LOT 104 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-002-000	Assessable	A	100.00	100.00	LOT 105 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-003-000	Assessable	A	100.00	100.00	LOT 106 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-004-000	Assessable	A	100.00	100.00	LOT 107 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-005-000	Assessable	A	100.00	100.00	LOT 108 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-006-000	Assessable	A	100.00	100.00	LOT 109 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-007-000	Assessable	A	100.00	100.00	LOT 110 WOODCREEK OAKS VILLAGE 5B MOR V-28

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
477-660-008-000	Assessable	A	100.00	100.00	LOT 111 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-009-000	Assessable	A	100.00	100.00	LOT 112 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-010-000	Assessable	A	100.00	100.00	LOT 113 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-011-000	Assessable	A	100.00	100.00	LOT 114 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-012-000	Assessable	A	100.00	100.00	LOT 115 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-013-000	Assessable	A	100.00	100.00	LOT 116 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-014-000	Assessable	A	100.00	100.00	LOT 117 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-015-000	Assessable	A	100.00	100.00	LOT 118 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-016-000	Assessable	A	100.00	100.00	LOT 119 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-017-000	Assessable	A	100.00	100.00	LOT 120 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-018-000	Assessable	A	100.00	100.00	LOT 121 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-019-000	Assessable	A	100.00	100.00	LOT 122 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-020-000	Assessable	A	100.00	100.00	LOT 123 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-021-000	Assessable	A	100.00	100.00	LOT 124 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-022-000	Assessable	A	100.00	100.00	LOT 125 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-023-000	Assessable	A	100.00	100.00	LOT 126 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-024-000	Assessable	A	100.00	100.00	LOT 127 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-025-000	Assessable	A	100.00	100.00	LOT 128 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-026-000	Assessable	A	100.00	100.00	LOT 129 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-027-000	Assessable	A	100.00	100.00	LOT 130 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-028-000	Assessable	A	100.00	100.00	LOT 131 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-029-000	Assessable	A	100.00	100.00	LOT 165 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-030-000	Assessable	A	100.00	100.00	LOT 166 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-031-000	Assessable	A	100.00	100.00	LOT 167 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-032-000	Assessable	A	100.00	100.00	LOT 168 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-033-000	Assessable	A	100.00	100.00	LOT 169 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-034-000	Assessable	A	100.00	100.00	LOT 170 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-035-000	Assessable	A	100.00	100.00	LOT 171 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-036-000	Assessable	A	100.00	100.00	LOT 172 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-037-000	Assessable	A	100.00	100.00	LOT 173 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-038-000	Assessable	A	100.00	100.00	LOT 174 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-039-000	Assessable	A	100.00	100.00	LOT 175 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-040-000	Assessable	A	100.00	100.00	LOT 176 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-041-000	Assessable	A	100.00	100.00	LOT 177 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-042-000	Assessable	A	100.00	100.00	LOT 178 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-043-000	Assessable	A	100.00	100.00	LOT 179 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-044-000	Assessable	A	100.00	100.00	LOT 180 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-045-000	Assessable	A	100.00	100.00	LOT 181 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-046-000	Assessable	A	100.00	100.00	LOT 182 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-047-000	Assessable	A	100.00	100.00	LOT 183 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-048-000	Assessable	A	100.00	100.00	LOT 184 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-049-000	Assessable	A	100.00	100.00	LOT 185 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-050-000	Assessable	A	100.00	100.00	LOT 186 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-051-000	Assessable	A	100.00	100.00	LOT 187 WOODCREEK OAKS VILLAGE 5B MOR V-28
477-660-052-000	Assessable	A	100.00	100.00	LOT 188 WOODCREEK OAKS VILLAGE 5B MOR V-28
480-010-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO VILLAGE UNIT 2 PHASE A S-38

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-010-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-015-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-016-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-017-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-018-000	Assessable	A	100.00	100.00	LOT 18 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-021-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-022-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-023-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-024-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-025-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-026-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-027-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-028-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-029-000	Assessable	A	100.00	100.00	LOT 29 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-030-000	Assessable	A	100.00	100.00	LOT 30 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-031-000	Assessable	A	100.00	100.00	LOT 31 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-032-000	Assessable	A	100.00	100.00	LOT 32 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-033-000	Assessable	A	100.00	100.00	LOT 33 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-034-000	Assessable	A	100.00	100.00	LOT 34 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-035-000	Assessable	A	100.00	100.00	LOT 35 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-036-000	Assessable	A	100.00	100.00	LOT 36 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-037-000	Assessable	A	100.00	100.00	LOT 37 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-038-000	Assessable	A	100.00	100.00	LOT 38 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-039-000	Assessable	A	100.00	100.00	LOT 39 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-040-000	Assessable	A	100.00	100.00	LOT 40 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-041-000	Assessable	A	100.00	100.00	LOT 41 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-042-000	Assessable	A	100.00	100.00	LOT 42 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-043-000	Assessable	A	100.00	100.00	LOT 43 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-044-000	Assessable	A	100.00	100.00	LOT 44 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-045-000	Assessable	A	100.00	100.00	LOT 45 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-046-000	Assessable	A	100.00	100.00	LOT 46 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-047-000	Assessable	A	100.00	100.00	LOT 47 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-048-000	Assessable	A	100.00	100.00	LOT 48 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-049-000	Assessable	A	100.00	100.00	LOT 49 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-050-000	Assessable	A	100.00	100.00	LOT 50 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-051-000	Assessable	A	100.00	100.00	LOT 51 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-052-000	Assessable	A	100.00	100.00	LOT 52 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-053-000	Assessable	A	100.00	100.00	LOT 53 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-054-000	Assessable	A	100.00	100.00	LOT 54 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-055-000	Assessable	A	100.00	100.00	LOT 55 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-056-000	Assessable	A	100.00	100.00	LOT 56 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-057-000	Assessable	A	100.00	100.00	LOT 57 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-058-000	Assessable	A	100.00	100.00	LOT 58 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-059-000	Assessable	A	100.00	100.00	LOT 59 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-060-000	Assessable	A	100.00	100.00	LOT 60 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-061-000	Assessable	A	100.00	100.00	LOT 61 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-062-000	Assessable	A	100.00	100.00	LOT 62 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-063-000	Assessable	A	100.00	100.00	LOT 63 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-064-000	Assessable	A	100.00	100.00	LOT 64 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-065-000	Assessable	A	100.00	100.00	LOT 65 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-066-000	Assessable	A	100.00	100.00	LOT 66 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-067-000	Assessable	A	100.00	100.00	LOT 67 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-068-000	Assessable	A	100.00	100.00	LOT 68 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-069-000	Assessable	A	100.00	100.00	LOT 69 SILVERADO VILLAGE UNIT 2 PHASE A S-38

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-010-070-000	Assessable	A	100.00	100.00	LOT 70 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-071-000	Assessable	A	100.00	100.00	LOT 71 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-072-000	Assessable	A	100.00	100.00	LOT 72 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-073-000	Assessable	A	100.00	100.00	LOT 73 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-074-000	Assessable	A	100.00	100.00	LOT 74 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-075-000	Assessable	A	100.00	100.00	LOT 75 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-076-000	Assessable	A	100.00	100.00	LOT 76 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-077-000	Assessable	A	100.00	100.00	LOT 77 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-078-000	Assessable	A	100.00	100.00	LOT 78 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-079-000	Assessable	A	100.00	100.00	LOT 79 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-010-080-000	Assessable	A	100.00	100.00	LOT 80 SILVERADO VILLAGE UNIT 2 PHASE A S-38
480-020-001-000	Assessable	A	100.00	100.00	LOT 81 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-002-000	Assessable	A	100.00	100.00	LOT 82 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-003-000	Assessable	A	100.00	100.00	LOT 83 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-004-000	Assessable	A	100.00	100.00	LOT 84 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-005-000	Assessable	A	100.00	100.00	LOT 85 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-006-000	Assessable	A	100.00	100.00	LOT 86 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-007-000	Assessable	A	100.00	100.00	LOT 87 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-008-000	Assessable	A	100.00	100.00	LOT 88 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-009-000	Assessable	A	100.00	100.00	LOT 89 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-010-000	Assessable	A	100.00	100.00	LOT 90 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-011-000	Assessable	A	100.00	100.00	LOT 91 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-012-000	Assessable	A	100.00	100.00	LOT 92 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-013-000	Assessable	A	100.00	100.00	LOT 93 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-014-000	Assessable	A	100.00	100.00	LOT 94 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-015-000	Assessable	A	100.00	100.00	LOT 95 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-016-000	Assessable	A	100.00	100.00	LOT 96 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-017-000	Assessable	A	100.00	100.00	LOT 97 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-018-000	Assessable	A	100.00	100.00	LOT 98 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-019-000	Assessable	A	100.00	100.00	LOT 99 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-020-000	Assessable	A	100.00	100.00	LOT 100 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-021-000	Assessable	A	100.00	100.00	LOT 101 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-022-000	Assessable	A	100.00	100.00	LOT 102 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-023-000	Assessable	A	100.00	100.00	LOT 103 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-024-000	Assessable	A	100.00	100.00	LOT 104 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-025-000	Assessable	A	100.00	100.00	LOT 105 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-026-000	Assessable	A	100.00	100.00	LOT 106 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-027-000	Assessable	A	100.00	100.00	LOT 107 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-028-000	Assessable	A	100.00	100.00	LOT 108 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-029-000	Assessable	A	100.00	100.00	LOT 109 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-030-000	Assessable	A	100.00	100.00	LOT 110 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-031-000	Assessable	A	100.00	100.00	LOT 111 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-032-000	Assessable	A	100.00	100.00	LOT 112 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-033-000	Assessable	A	100.00	100.00	LOT 113 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-034-000	Assessable	A	100.00	100.00	LOT 114 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-035-000	Assessable	A	100.00	100.00	LOT 115 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-036-000	Assessable	A	100.00	100.00	LOT 116 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-037-000	Assessable	A	100.00	100.00	LOT 117 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-038-000	Assessable	A	100.00	100.00	LOT 118 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-039-000	Assessable	A	100.00	100.00	LOT 119 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-040-000	Assessable	A	100.00	100.00	LOT 120 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-041-000	Assessable	A	100.00	100.00	LOT 121 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-042-000	Assessable	A	100.00	100.00	LOT 122 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-043-000	Assessable	A	100.00	100.00	LOT 123 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-044-000	Assessable	A	100.00	100.00	LOT 124 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-045-000	Assessable	A	100.00	100.00	LOT 125 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-046-000	Assessable	A	100.00	100.00	LOT 126 SILVERADO VILLAGE UNIT 2 PH B S-39

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-020-047-000	Assessable	A	100.00	100.00	LOT 127 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-048-000	Assessable	A	100.00	100.00	LOT 128 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-049-000	Assessable	A	100.00	100.00	LOT 129 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-050-000	Assessable	A	100.00	100.00	LOT 130 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-051-000	Assessable	A	100.00	100.00	LOT 131 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-052-000	Assessable	A	100.00	100.00	LOT 132 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-053-000	Assessable	A	100.00	100.00	LOT 133 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-054-000	Assessable	A	100.00	100.00	LOT 134 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-055-000	Assessable	A	100.00	100.00	LOT 135 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-056-000	Assessable	A	100.00	100.00	LOT 136 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-057-000	Assessable	A	100.00	100.00	LOT 137 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-058-000	Assessable	A	100.00	100.00	LOT 138 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-059-000	Assessable	A	100.00	100.00	LOT 139 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-060-000	Assessable	A	100.00	100.00	LOT 140 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-061-000	Assessable	A	100.00	100.00	LOT 141 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-062-000	Assessable	A	100.00	100.00	LOT 142 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-063-000	Assessable	A	100.00	100.00	LOT 143 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-064-000	Assessable	A	100.00	100.00	LOT 144 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-065-000	Assessable	A	100.00	100.00	LOT 145 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-066-000	Assessable	A	100.00	100.00	LOT 146 SILVERADO VILLAGE UNIT 2 PH B S-39
480-020-067-000	Assessable	A	100.00	100.00	LOT 147 SILVERADO VILLAGE UNIT 2 PH B S-39
480-030-001-000	Assessable	A	100.00	100.00	LOT 48 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-002-000	Assessable	A	100.00	100.00	LOT 49 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-003-000	Assessable	A	100.00	100.00	LOT 50 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-005-000	Assessable	A	100.00	100.00	LOT 52 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-006-000	Assessable	A	100.00	100.00	LOT 53 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-007-000	Assessable	A	100.00	100.00	LOT 54 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-008-000	Assessable	A	100.00	100.00	LOT 55 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-009-000	Assessable	A	100.00	100.00	LOT 56 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-010-000	Assessable	A	100.00	100.00	LOT 57 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-011-000	Assessable	A	100.00	100.00	LOT 58 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-012-000	Assessable	A	100.00	100.00	LOT 59 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-013-000	Assessable	A	100.00	100.00	LOT 94 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-014-000	Assessable	A	100.00	100.00	LOT 95 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-015-000	Assessable	A	100.00	100.00	LOT 96 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-016-000	Assessable	A	100.00	100.00	LOT 97 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-017-000	Assessable	A	100.00	100.00	LOT 98 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-018-000	Assessable	A	100.00	100.00	LOT 99 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-019-000	Assessable	A	100.00	100.00	LOT 100 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-020-000	Assessable	A	100.00	100.00	LOT 101 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-021-000	Assessable	A	100.00	100.00	LOT 102 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-022-000	Assessable	A	100.00	100.00	LOT 103 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-023-000	Assessable	A	100.00	100.00	LOT 104 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-024-000	Assessable	A	100.00	100.00	LOT 105 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-025-000	Assessable	A	100.00	100.00	LOT 106 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-026-000	Assessable	A	100.00	100.00	LOT 113 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-027-000	Assessable	A	100.00	100.00	LOT 114 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-028-000	Assessable	A	100.00	100.00	LOT 115 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-029-000	Assessable	A	100.00	100.00	LOT 116 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-030-000	Assessable	A	100.00	100.00	LOT 117 SILVERADO OAKS UNIT NO 7 PH A T-77
480-030-033-000	Assessable	A	100.00	100.00	LOT 51 & X SILVERADO OAKS UT #7 PH A T-77
480-040-001-000	Assessable	A	100.00	100.00	LOT 36 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-002-000	Assessable	A	100.00	100.00	LOT 37 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-003-000	Assessable	A	100.00	100.00	LOT 38 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-004-000	Assessable	A	100.00	100.00	LOT 39 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-005-000	Assessable	A	100.00	100.00	LOT 40 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-006-000	Assessable	A	100.00	100.00	LOT 41 SILVERADO OAKS UNIT NO 7 PH A T-77

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-040-007-000	Assessable	A	100.00	100.00	LOT 42 SILVERADO OAKS UNIT #7 PH A MOR BK T PG 77
480-040-008-000	Assessable	A	100.00	100.00	LOT 43 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-009-000	Assessable	A	100.00	100.00	LOT 44 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-010-000	Assessable	A	100.00	100.00	LOT 45 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-011-000	Assessable	A	100.00	100.00	LOT 46 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-012-000	Assessable	A	100.00	100.00	LOT 47 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-013-000	Assessable	A	100.00	100.00	LOT 107 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-014-000	Assessable	A	100.00	100.00	LOT 108 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-015-000	Assessable	A	100.00	100.00	LOT 109 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-016-000	Assessable	A	100.00	100.00	LOT 110 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-017-000	Assessable	A	100.00	100.00	LOT 111 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-018-000	Assessable	A	100.00	100.00	LOT 112 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-019-000	Assessable	A	100.00	100.00	LOT 118 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-020-000	Assessable	A	100.00	100.00	LOT 119 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-021-000	Assessable	A	100.00	100.00	LOT 120 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-022-000	Assessable	A	100.00	100.00	LOT 121 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-023-000	Assessable	A	100.00	100.00	LOT 122 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-024-000	Assessable	A	100.00	100.00	LOT 91 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-025-000	Assessable	A	100.00	100.00	LOT 92 SILVERADO OAKS UNIT NO 7 PH A T-77
480-040-026-000	Assessable	A	100.00	100.00	LOT 93 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-017-000	Assessable	A	100.00	100.00	LOT 17 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-018-000	Assessable	A	100.00	100.00	LOT 18 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-022-000	Assessable	A	100.00	100.00	POR LOT 13 SILVERADO OAKS UNIT NO 7 PH A T-77
480-050-023-000	Assessable	A	100.00	100.00	POR LTS 13 & 14 SILVERADO OAKSU NIT NO 7 PH A T-77
480-050-024-000	Assessable	A	100.00	100.00	LT15&PORLTS14&16SILVERADO OAKS UNIT NO 7 A T-77
480-050-025-000	Assessable	A	100.00	100.00	POR LOT 16 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-001-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-002-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-003-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-004-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-005-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-006-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-007-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-008-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-009-000	Assessable	A	100.00	100.00	LOT 29 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-010-000	Assessable	A	100.00	100.00	LOT 30 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-011-000	Assessable	A	100.00	100.00	LOT 31 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-012-000	Assessable	A	100.00	100.00	LOT 32 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-013-000	Assessable	A	100.00	100.00	LOT 33 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-014-000	Assessable	A	100.00	100.00	LOT 34 SILVERADO OAKS UNIT NO 7 PH A T-77
480-060-015-000	Assessable	A	100.00	100.00	LOT 35 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-001-000	Assessable	A	100.00	100.00	LOT 60 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-002-000	Assessable	A	100.00	100.00	LOT 61 SILVERADO OAKS UNIT NO 7 PH A T-77

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-070-003-000	Assessable	A	100.00	100.00	LOT 62 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-004-000	Assessable	A	100.00	100.00	LOT 63 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-005-000	Assessable	A	100.00	100.00	LOT 64 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-006-000	Assessable	A	100.00	100.00	LOT 65 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-007-000	Assessable	A	100.00	100.00	LOT 66 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-008-000	Assessable	A	100.00	100.00	LOT 67 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-009-000	Assessable	A	100.00	100.00	LOT 68 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-010-000	Assessable	A	100.00	100.00	LOT 69 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-011-000	Assessable	A	100.00	100.00	LOT 70 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-012-000	Assessable	A	100.00	100.00	LOT 71 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-013-000	Assessable	A	100.00	100.00	LOT 72 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-014-000	Assessable	A	100.00	100.00	LOT 73 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-015-000	Assessable	A	100.00	100.00	LOT 74 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-016-000	Assessable	A	100.00	100.00	LOT 75 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-017-000	Assessable	A	100.00	100.00	LOT 76 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-018-000	Assessable	A	100.00	100.00	LOT 77 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-019-000	Assessable	A	100.00	100.00	LOT 78 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-020-000	Assessable	A	100.00	100.00	LOT 79 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-021-000	Assessable	A	100.00	100.00	LOT 80 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-022-000	Assessable	A	100.00	100.00	LOT 81 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-023-000	Assessable	A	100.00	100.00	LOT 82 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-024-000	Assessable	A	100.00	100.00	LOT 83 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-025-000	Assessable	A	100.00	100.00	LOT 84 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-026-000	Assessable	A	100.00	100.00	LOT 85 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-027-000	Assessable	A	100.00	100.00	LOT 86 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-028-000	Assessable	A	100.00	100.00	LOT 87 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-029-000	Assessable	A	100.00	100.00	LOT 88 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-030-000	Assessable	A	100.00	100.00	LOT 89 SILVERADO OAKS UNIT NO 7 PH A T-77
480-070-031-000	Assessable	A	100.00	100.00	LOT 90 SILVERADO OAKS UNIT NO 7 PH A T-77
480-080-001-000	Assessable	A	100.00	100.00	LOT 353A SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-002-000	Assessable	A	100.00	100.00	LOT 353B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-003-000	Assessable	A	100.00	100.00	LOT 386A SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-006-000	Assessable	A	100.00	100.00	LOT 388 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-010-000	Assessable	A	100.00	100.00	LOT 404 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-011-000	Assessable	A	100.00	100.00	LOT 405 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-012-000	Assessable	A	100.00	100.00	LOT 406 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-013-000	Assessable	A	100.00	100.00	LOT 407 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-014-000	Assessable	A	100.00	100.00	LOT 408 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-015-000	Assessable	A	100.00	100.00	LOT 409 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-016-000	Assessable	A	100.00	100.00	LOT 410A SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-017-000	Assessable	A	100.00	100.00	LOT 410B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-020-000	Assessable	A	100.00	100.00	LOT 412 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-021-000	Assessable	A	100.00	100.00	LOT 413 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-022-000	Assessable	A	100.00	100.00	LOT 414 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-023-000	Assessable	A	100.00	100.00	LOT 415 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-024-000	Assessable	A	100.00	100.00	LOT 416 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-025-000	Assessable	A	100.00	100.00	LOT 417 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-026-000	Assessable	A	100.00	100.00	LOT 418 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-027-000	Assessable	A	100.00	100.00	LOT 419 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-028-000	Assessable	A	100.00	100.00	LOT 420 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-029-000	Assessable	A	100.00	100.00	LOT 421 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-030-000	Assessable	A	100.00	100.00	LOT 422 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-031-000	Assessable	A	100.00	100.00	LOT 423 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-032-000	Assessable	A	100.00	100.00	LOT 424 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-035-000	Assessable	A	100.00	100.00	LOT 426A SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-037-000	Assessable	A	100.00	100.00	LOT 427 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-042-000	Assessable	A	100.00	100.00	LOT 430 SILVERADO OAKS UNIT 7 PH F MOR T-82

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-080-047-000	Assessable	A	100.00	100.00	POR LOT 387 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-051-000	Assessable	A	100.00	100.00	POR LT 390 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-053-000	Assessable	A	100.00	100.00	POR LT 411B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-055-000	Assessable	A	100.00	100.00	POR LT 425B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-057-000	Assessable	A	100.00	100.00	POR LT 431B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-060-000	Assessable	A	100.00	100.00	POR LT 428B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-062-000	Assessable	A	100.00	100.00	POR LT 429A SILVERADO OAKS UNIT 7 PH F MOR T-82
480-080-064-000	Assessable	A	100.00	100.00	LOT 386 B & POR 387 SILVERADO OAKS U7 PH F T-82
480-080-065-000	Assessable	A	100.00	100.00	POR LTS 389B & 390 SILVERADO OAKS U7 PH F T-82
480-080-066-000	Assessable	A	100.00	100.00	LOT 389 A & POR 389 B SILVERADO OAKS U7 PH F T-82
480-080-067-000	Assessable	A	100.00	100.00	LOT 411 A & POR 411 B SILVERADO OAKS U7 PH F T-82
480-080-068-000	Assessable	A	100.00	100.00	LOT 425 A & POR 425 B SILVERADO OAKS U7 PH F T-82
480-080-069-000	Assessable	A	100.00	100.00	LOT 426 B & POR 431 B SILVERADO OAKS U7 PH F T-82
480-080-070-000	Assessable	A	100.00	100.00	LOT 431 A & POR 431 B SILVERADO OAKS U7 PH F T-82
480-080-071-000	Assessable	A	100.00	100.00	LOT 428 A & POR 428 B SILVERADO OAKS U7 PH F T-82
480-080-072-000	Assessable	A	100.00	100.00	LOT 429 B & POR 429 A SILVERADO OAKS U7 PH F T-82
480-090-001-000	Assessable	A	100.00	100.00	LOT 354 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-002-000	Assessable	A	100.00	100.00	LOT 355 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-003-000	Assessable	A	100.00	100.00	LOT 356 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-004-000	Assessable	A	100.00	100.00	LOT 357 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-005-000	Assessable	A	100.00	100.00	LOT 358 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-006-000	Assessable	A	100.00	100.00	LOT 359 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-007-000	Assessable	A	100.00	100.00	LOT 360 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-008-000	Assessable	A	100.00	100.00	LOT 361 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-009-000	Assessable	A	100.00	100.00	LOT 362 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-010-000	Assessable	A	100.00	100.00	LOT 363 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-011-000	Assessable	A	100.00	100.00	LOT 364 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-012-000	Assessable	A	100.00	100.00	LOT 365 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-013-000	Assessable	A	100.00	100.00	LOT 366 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-014-000	Assessable	A	100.00	100.00	LOT 367 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-015-000	Assessable	A	100.00	100.00	LOT 368 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-016-000	Assessable	A	100.00	100.00	LOT 369 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-017-000	Assessable	A	100.00	100.00	LOT 370 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-018-000	Assessable	A	100.00	100.00	LOT 371 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-019-000	Assessable	A	100.00	100.00	LOT 372A SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-020-000	Assessable	A	100.00	100.00	LOT 372B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-021-000	Assessable	A	100.00	100.00	LOT 373 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-022-000	Assessable	A	100.00	100.00	LOT 374 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-023-000	Assessable	A	100.00	100.00	LOT 375 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-024-000	Assessable	A	100.00	100.00	LOT 376 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-025-000	Assessable	A	100.00	100.00	LOT 377 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-030-000	Assessable	A	100.00	100.00	LOT 380 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-031-000	Assessable	A	100.00	100.00	LOT 381 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-032-000	Assessable	A	100.00	100.00	LOT 382 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-033-000	Assessable	A	100.00	100.00	LOT 383 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-034-000	Assessable	A	100.00	100.00	LOT 384 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-037-000	Assessable	A	100.00	100.00	LOT 391 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-038-000	Assessable	A	100.00	100.00	LOT 392 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-039-000	Assessable	A	100.00	100.00	LOT 393 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-040-000	Assessable	A	100.00	100.00	LOT 394 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-041-000	Assessable	A	100.00	100.00	LOT 395 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-042-000	Assessable	A	100.00	100.00	LOT 396 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-043-000	Assessable	A	100.00	100.00	LOT 397A SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-044-000	Assessable	A	100.00	100.00	LOT 397B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-045-000	Assessable	A	100.00	100.00	LOT 398 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-046-000	Assessable	A	100.00	100.00	LOT 399 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-047-000	Assessable	A	100.00	100.00	LOT 400 SILVERADO OAKS UNIT 7 PH F MOR T-82

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-090-048-000	Assessable	A	100.00	100.00	LOT 401 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-049-000	Assessable	A	100.00	100.00	LOT 402 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-050-000	Assessable	A	100.00	100.00	LOT 403 SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-051-000	Assessable	A	100.00	100.00	POR LOT 378B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-053-000	Assessable	A	100.00	100.00	POR LT 379A SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-055-000	Assessable	A	100.00	100.00	POR LT 385B SILVERADO OAKS UNIT 7 PH F MOR T-82
480-090-057-000	Assessable	A	100.00	100.00	LOT 378A POR 378B SILVERADO OAKS U7 PH F MOR T-82
480-090-058-000	Assessable	A	100.00	100.00	LOT 379 B & POR 379 A SILVERADO OAKS U7 PH F T-82
480-090-059-000	Assessable	A	100.00	100.00	LOT 385 A & POR 385 B SILVERADO OAKS U7 PH F T-82
480-100-001-000	Assessable	A	100.00	100.00	LOT 123A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-002-000	Assessable	A	100.00	100.00	LOT 123B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-003-000	Assessable	A	100.00	100.00	LOT 124 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-004-000	Assessable	A	100.00	100.00	LOT 125 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-005-000	Assessable	A	100.00	100.00	LOT 126 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-006-000	Assessable	A	100.00	100.00	LOT 127 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-007-000	Assessable	A	100.00	100.00	LOT 128 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-008-000	Assessable	A	100.00	100.00	LOT 129 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-009-000	Assessable	A	100.00	100.00	LOT 130 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-010-000	Assessable	A	100.00	100.00	LOT 131A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-011-000	Assessable	A	100.00	100.00	LOT 131B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-012-000	Assessable	A	100.00	100.00	LOT 132 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-013-000	Assessable	A	100.00	100.00	LOT 133 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-014-000	Assessable	A	100.00	100.00	LOT 134 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-015-000	Assessable	A	100.00	100.00	LOT 135 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-016-000	Assessable	A	100.00	100.00	LOT 136 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-017-000	Assessable	A	100.00	100.00	LOT 137 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-018-000	Assessable	A	100.00	100.00	LOT 138 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-019-000	Assessable	A	100.00	100.00	LOT 139 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-020-000	Assessable	A	100.00	100.00	LOT 140 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-021-000	Assessable	A	100.00	100.00	LOT 141 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-022-000	Assessable	A	100.00	100.00	LOT 142A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-023-000	Assessable	A	100.00	100.00	LOT 142B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-024-000	Assessable	A	100.00	100.00	LOT 143A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-025-000	Assessable	A	100.00	100.00	LOT 143B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-026-000	Assessable	A	100.00	100.00	LOT 144 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-027-000	Assessable	A	100.00	100.00	LOT 145 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-028-000	Assessable	A	100.00	100.00	LOT 146 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-029-000	Assessable	A	100.00	100.00	LOT 147 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-030-000	Assessable	A	100.00	100.00	LOT 148 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-031-000	Assessable	A	100.00	100.00	LOT 149 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-032-000	Assessable	A	100.00	100.00	LOT 150 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-033-000	Assessable	A	100.00	100.00	LOT 151A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-034-000	Assessable	A	100.00	100.00	LOT 151B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-035-000	Assessable	A	100.00	100.00	LOT 152 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-036-000	Assessable	A	100.00	100.00	LOT 153 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-037-000	Assessable	A	100.00	100.00	LOT 154A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-038-000	Assessable	A	100.00	100.00	LOT 154B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-039-000	Assessable	A	100.00	100.00	LOT 155 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-040-000	Assessable	A	100.00	100.00	LOT 156 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-041-000	Assessable	A	100.00	100.00	LOT 157 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-042-000	Assessable	A	100.00	100.00	LOT 158 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-043-000	Assessable	A	100.00	100.00	LOT 159 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-044-000	Assessable	A	100.00	100.00	LOT 160A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-045-000	Assessable	A	100.00	100.00	LOT 160B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-046-000	Assessable	A	100.00	100.00	LOT 161 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-047-000	Assessable	A	100.00	100.00	LOT 162A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-048-000	Assessable	A	100.00	100.00	LOT 162B SILVERADO OAKS UNIT NO 7 PH B U-16

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-100-049-000	Assessable	A	100.00	100.00	LOT 163 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-050-000	Assessable	A	100.00	100.00	LOT 164 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-051-000	Assessable	A	100.00	100.00	LOT 165 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-052-000	Assessable	A	100.00	100.00	LOT 166 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-053-000	Assessable	A	100.00	100.00	LOT 167A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-054-000	Assessable	A	100.00	100.00	LOT 167B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-055-000	Assessable	A	100.00	100.00	LOT 168 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-056-000	Assessable	A	100.00	100.00	LOT 169 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-057-000	Assessable	A	100.00	100.00	LOT 170 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-058-000	Assessable	A	100.00	100.00	LOT 171 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-059-000	Assessable	A	100.00	100.00	LOT 172 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-060-000	Assessable	A	100.00	100.00	LOT 173 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-061-000	Assessable	A	100.00	100.00	LOT 174 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-062-000	Assessable	A	100.00	100.00	LOT 175 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-063-000	Assessable	A	100.00	100.00	LOT 176A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-064-000	Assessable	A	100.00	100.00	LOT 176B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-065-000	Assessable	A	100.00	100.00	LOT 177A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-066-000	Assessable	A	100.00	100.00	LOT 177B SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-067-000	Assessable	A	100.00	100.00	LOT 178 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-068-000	Assessable	A	100.00	100.00	LOT 179 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-069-000	Assessable	A	100.00	100.00	LOT 180 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-070-000	Assessable	A	100.00	100.00	LOT 181 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-071-000	Assessable	A	100.00	100.00	LOT 182 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-072-000	Assessable	A	100.00	100.00	LOT 183 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-073-000	Assessable	A	100.00	100.00	LOT 184 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-074-000	Assessable	A	100.00	100.00	LOT 185 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-075-000	Assessable	A	100.00	100.00	LOT 186 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-076-000	Assessable	A	100.00	100.00	LOT 187 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-077-000	Assessable	A	100.00	100.00	LOT 188 SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-078-000	Assessable	A	100.00	100.00	LOT 189A SILVERADO OAKS UNIT NO 7 PH B U-16
480-100-079-000	Assessable	A	100.00	100.00	LOT 189B SILVERADO OAKS UNIT NO 7 PH B U-16
480-110-001-000	Assessable	A	100.00	100.00	LOT 190 SILVERADO OAKS #7 PH C MOR U-52
480-110-002-000	Assessable	A	100.00	100.00	LOT 191 SILVERADO OAKS #7 PH C MOR U-52
480-110-003-000	Assessable	A	100.00	100.00	LOT 192 SILVERADO OAKS #7 PH C MOR U-52
480-110-004-000	Assessable	A	100.00	100.00	LOT 193 SILVERADO OAKS #7 PH C MOR U-52
480-110-005-000	Assessable	A	100.00	100.00	LOT 194 SILVERADO OAKS #7 PH C MOR U-52
480-110-006-000	Assessable	A	100.00	100.00	LOT 195 SILVERADO OAKS #7 PH C MOR U-52
480-110-007-000	Assessable	A	100.00	100.00	LOT 196 SILVERADO OAKS #7 PH C MOR U-52
480-110-008-000	Assessable	A	100.00	100.00	LOT 197 SILVERADO OAKS #7 PH C MOR U-52
480-110-009-000	Assessable	A	100.00	100.00	LOT 198 SILVERADO OAKS #7 PH C MOR U-52
480-110-010-000	Assessable	A	100.00	100.00	LOT 199 SILVERADO OAKS #7 PH C MOR U-52
480-110-011-000	Assessable	A	100.00	100.00	LOT 200 SILVERADO OAKS #7 PH C MOR U-52
480-110-012-000	Assessable	A	100.00	100.00	LOT 201 SILVERADO OAKS #7 PH C MOR U-52
480-110-013-000	Assessable	A	100.00	100.00	LOT 202 SILVERADO OAKS #7 PH C MOR U-52
480-110-014-000	Assessable	A	100.00	100.00	LOT 203 SILVERADO OAKS #7 PH C MOR U-52
480-110-015-000	Assessable	A	100.00	100.00	LOT 204 SILVERADO OAKS #7 PH C MOR U-52
480-110-016-000	Assessable	A	100.00	100.00	LOT 205 SILVERADO OAKS #7 PH C MOR U-52
480-110-017-000	Assessable	A	100.00	100.00	LOT 206 SILVERADO OAKS #7 PH C MOR U-52
480-110-018-000	Assessable	A	100.00	100.00	LOT 207 SILVERADO OAKS #7 PH C MOR U-52
480-110-019-000	Assessable	A	100.00	100.00	LOT 208 SILVERADO OAKS #7 PH C MOR U-52
480-110-020-000	Assessable	A	100.00	100.00	LOT 209 SILVERADO OAKS #7 PH C MOR U-52
480-110-021-000	Assessable	A	100.00	100.00	LOT 210 SILVERADO OAKS #7 PH C MOR U-52
480-110-022-000	Assessable	A	100.00	100.00	LOT 211 SILVERADO OAKS #7 PH C MOR U-52
480-110-023-000	Assessable	A	100.00	100.00	LOT 212 SILVERADO OAKS #7 PH C MOR U-52
480-110-024-000	Assessable	A	100.00	100.00	LOT 213 SILVERADO OAKS #7 PH C MOR U-52
480-110-025-000	Assessable	A	100.00	100.00	LOT 214 SILVERADO OAKS #7 PH C MOR U-52
480-110-026-000	Assessable	A	100.00	100.00	LOT 215 SILVERADO OAKS #7 PH C MOR U-52

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-110-027-000	Assessable	A	100.00	100.00	LOT 216 SILVERADO OAKS #7 PH C MOR U-52
480-110-028-000	Assessable	A	100.00	100.00	LOT 217 SILVERADO OAKS #7 PH C MOR U-52
480-110-029-000	Assessable	A	100.00	100.00	LOT 218 SILVERADO OAKS #7 PH C MOR U-52
480-110-030-000	Assessable	A	100.00	100.00	LOT 219 SILVERADO OAKS #7 PH C MOR U-52
480-110-031-000	Assessable	A	100.00	100.00	LOT 220 SILVERADO OAKS #7 PH C MOR U-52
480-110-032-000	Assessable	A	100.00	100.00	LOT 221 SILVERADO OAKS #7 PH C MOR U-52
480-110-033-000	Assessable	A	100.00	100.00	LOT 222 SILVERADO OAKS #7 PH C MOR U-52
480-110-034-000	Assessable	A	100.00	100.00	LOT 223 SILVERADO OAKS #7 PH C MOR U-52
480-110-035-000	Assessable	A	100.00	100.00	LOT 224 SILVERADO OAKS #7 PH C MOR U-52
480-110-036-000	Assessable	A	100.00	100.00	LOT 225 SILVERADO OAKS #7 PH C MOR U-52
480-110-037-000	Assessable	A	100.00	100.00	LOT 226 SILVERADO OAKS #7 PH C MOR U-52
480-110-038-000	Assessable	A	100.00	100.00	LOT 227 SILVERADO OAKS #7 PH C MOR U-52
480-110-039-000	Assessable	A	100.00	100.00	LOT 235 SILVERADO OAKS #7 PH C MOR U-52
480-110-040-000	Assessable	A	100.00	100.00	LOT 236 SILVERADO OAKS #7 PH C MOR U-52
480-110-041-000	Assessable	A	100.00	100.00	LOT 237 SILVERADO OAKS #7 PH C MOR U-52
480-110-042-000	Assessable	A	100.00	100.00	LOT 238 SILVERADO OAKS #7 PH C MOR U-52
480-110-043-000	Assessable	A	100.00	100.00	LOT 239 SILVERADO OAKS #7 PH C MOR U-52
480-110-044-000	Assessable	A	100.00	100.00	LOT 240 SILVERADO OAKS #7 PH C MOR U-52
480-110-045-000	Assessable	A	100.00	100.00	LOT 241 SILVERADO OAKS #7 PH C MOR U-52
480-110-046-000	Assessable	A	100.00	100.00	LOT 242 SILVERADO OAKS #7 PH C MOR U-52
480-110-047-000	Assessable	A	100.00	100.00	LOT 243 SILVERADO OAKS #7 PH C MOR U-52
480-110-048-000	Assessable	A	100.00	100.00	LOT 244 SILVERADO OAKS #7 PH C MOR U-52
480-110-049-000	Assessable	A	100.00	100.00	LOT 245 SILVERADO OAKS #7 PH C MOR U-52
480-110-050-000	Assessable	A	100.00	100.00	LOT 246 SILVERADO OAKS #7 PH C MOR U-52
480-110-051-000	Assessable	A	100.00	100.00	LOT 247 SILVERADO OAKS #7 PH C MOR U-52
480-110-052-000	Assessable	A	100.00	100.00	LOT 248 SILVERADO OAKS #7 PH C MOR U-52
480-110-053-000	Assessable	A	100.00	100.00	LOT 249 SILVERADO OAKS #7 PH C MOR U-52
480-110-054-000	Assessable	A	100.00	100.00	LOT 250 SILVERADO OAKS #7 PH C MOR U-52
480-110-055-000	Assessable	A	100.00	100.00	LOT 251 SILVERADO OAKS #7 PH C MOR U-52
480-110-056-000	Assessable	A	100.00	100.00	LOT 252 SILVERADO OAKS #7 PH C MOR U-52
480-110-057-000	Assessable	A	100.00	100.00	LOT 253 SILVERADO OAKS #7 PH C MOR U-52
480-110-058-000	Assessable	A	100.00	100.00	LOT 254 SILVERADO OAKS #7 PH C MOR U-52
480-110-059-000	Assessable	A	100.00	100.00	LOT 255 SILVERADO OAKS #7 PH C MOR U-52
480-110-060-000	Assessable	A	100.00	100.00	LOT 256 SILVERADO OAKS #7 PH C MOR U-52
480-110-061-000	Assessable	A	100.00	100.00	LOT 257 SILVERADO OAKS #7 PH C MOR U-52
480-120-001-000	Assessable	A	100.00	100.00	LOT 228 SILVERADO OAKS #7 PH C MOR U-52
480-120-002-000	Assessable	A	100.00	100.00	LOT 229 SILVERADO OAKS #7 PH C MOR U-52
480-120-003-000	Assessable	A	100.00	100.00	LOT 230 SILVERADO OAKS #7 PH C MOR U-52
480-120-004-000	Assessable	A	100.00	100.00	LOT 231 SILVERADO OAKS #7 PH C MOR U-52
480-120-005-000	Assessable	A	100.00	100.00	LOT 232 SILVERADO OAKS #7 PH C MOR U-52
480-120-006-000	Assessable	A	100.00	100.00	LOT 233 SILVERADO OAKS #7 PH C MOR U-52
480-120-007-000	Assessable	A	100.00	100.00	LOT 234 SILVERADO OAKS #7 PH C MOR U-52
480-120-008-000	Assessable	A	100.00	100.00	LOT 258 SILVERADO OAKS #7 PH C MOR U-52
480-120-009-000	Assessable	A	100.00	100.00	LOT 259 SILVERADO OAKS #7 PH C MOR U-52
480-120-010-000	Assessable	A	100.00	100.00	LOT 260 SILVERADO OAKS #7 PH C MOR U-52
480-120-011-000	Assessable	A	100.00	100.00	LOT 261 SILVERADO OAKS #7 PH C MOR U-52
480-120-012-000	Assessable	A	100.00	100.00	LOT 262 SILVERADO OAKS #7 PH C MOR U-52
480-120-013-000	Assessable	A	100.00	100.00	LOT 263 SILVERADO OAKS #7 PH C MOR U-52
480-120-014-000	Assessable	A	100.00	100.00	LOT 264 SILVERADO OAKS #7 PH C MOR U-52
480-120-015-000	Assessable	A	100.00	100.00	LOT 265 SILVERADO OAKS #7 PH C MOR U-52
480-120-016-000	Assessable	A	100.00	100.00	LOT 266 SILVERADO OAKS #7 PH C MOR U-52
480-120-017-000	Assessable	A	100.00	100.00	LOT 267 SILVERADO OAKS #7 PH C MOR U-52
480-120-018-000	Assessable	A	100.00	100.00	LOT 268 SILVERADO OAKS #7 PH C MOR U-52
480-120-019-000	Assessable	A	100.00	100.00	LOT 269 SILVERADO OAKS #7 PH C MOR U-52
480-120-020-000	Assessable	A	100.00	100.00	LOT 270 SILVERADO OAKS #7 PH C MOR U-52
480-120-021-000	Assessable	A	100.00	100.00	LOT 271 SILVERADO OAKS #7 PH C MOR U-52
480-120-022-000	Assessable	A	100.00	100.00	LOT 272 SILVERADO OAKS #7 PH C MOR U-52

City of Roseville
Northwest Roseville Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-120-023-000	Assessable	A	100.00	100.00	LOT 273 SILVERADO OAKS #7 PH C MOR U-52
480-120-024-000	Assessable	A	100.00	100.00	LOT 274 SILVERADO OAKS #7 PH C MOR U-52
480-120-025-000	Assessable	A	100.00	100.00	LOT 275 SILVERADO OAKS #7 PH C MOR U-52
480-120-026-000	Assessable	A	100.00	100.00	LOT 276 SILVERADO OAKS #7 PH C MOR U-52
480-120-027-000	Assessable	A	100.00	100.00	LOT 277 SILVERADO OAKS #7 PH C MOR U-52
480-120-028-000	Assessable	A	100.00	100.00	LOT 278 SILVERADO OAKS #7 PH C MOR U-52
480-120-029-000	Assessable	A	100.00	100.00	LOT 279 SILVERADO OAKS #7 PH C MOR U-52
480-120-030-000	Assessable	A	100.00	100.00	LOT 280 SILVERADO OAKS #7 PH C MOR U-52
480-120-031-000	Assessable	A	100.00	100.00	LOT 281 SILVERADO OAKS #7 PH C MOR U-52
480-120-032-000	Assessable	A	100.00	100.00	LOT 282 SILVERADO OAKS #7 PH C MOR U-52
480-120-033-000	Assessable	A	100.00	100.00	LOT 283 SILVERADO OAKS #7 PH C MOR U-52
480-120-034-000	Assessable	A	100.00	100.00	LOT 284 SILVERADO OAKS #7 PH C MOR U-52
480-120-035-000	Assessable	A	100.00	100.00	LOT 285 SILVERADO OAKS #7 PH C MOR U-52
480-120-036-000	Assessable	A	100.00	100.00	LOT 286 SILVERADO OAKS #7 PH C MOR U-52
480-120-037-000	Assessable	A	100.00	100.00	LOT 287 SILVERADO OAKS #7 PH C MOR U-52
480-130-001-000	Assessable	A	100.00	100.00	LOT 288 SILVERADO OAKS #7 PH C MOR U-52
480-130-002-000	Assessable	A	100.00	100.00	LOT 289 SILVERADO OAKS #7 PH C MOR U-52
480-130-003-000	Assessable	A	100.00	100.00	LOT 290 SILVERADO OAKS #7 PH C MOR U-52
480-130-004-000	Assessable	A	100.00	100.00	LOT 291 SILVERADO OAKS #7 PH C MOR U-52
480-130-005-000	Assessable	A	100.00	100.00	LOT 292 SILVERADO OAKS #7 PH C MOR U-52
480-130-006-000	Assessable	A	100.00	100.00	LOT 293 SILVERADO OAKS #7 PH C MOR U-52
480-130-007-000	Assessable	A	100.00	100.00	LOT 294 SILVERADO OAKS #7 PH C MOR U-52
480-130-008-000	Assessable	A	100.00	100.00	LOT 295 SILVERADO OAKS #7 PH C MOR U-52
480-130-009-000	Assessable	A	100.00	100.00	LOT 296 SILVERADO OAKS #7 PH C MOR U-52
480-130-010-000	Assessable	A	100.00	100.00	LOT 297 SILVERADO OAKS #7 PH C MOR U-52
480-130-011-000	Assessable	A	100.00	100.00	LOT 298 SILVERADO OAKS #7 PH C MOR U-52
480-130-012-000	Assessable	A	100.00	100.00	LOT 299 SILVERADO OAKS #7 PH C MOR U-52
480-130-013-000	Assessable	A	100.00	100.00	LOT 300 SILVERADO OAKS #7 PH C MOR U-52
480-130-014-000	Assessable	A	100.00	100.00	LOT 301 SILVERADO OAKS #7 PH C MOR U-52
480-130-015-000	Assessable	A	100.00	100.00	LOT 302 SILVERADO OAKS #7 PH C MOR U-52
480-130-016-000	Assessable	A	100.00	100.00	LOT 309 SILVERADO OAKS #7 PH C MOR U-52
480-130-017-000	Assessable	A	100.00	100.00	LOT 310 SILVERADO OAKS #7 PH C MOR U-52
480-130-018-000	Assessable	A	100.00	100.00	LOT 311 SILVERADO OAKS #7 PH C MOR U-52
480-130-019-000	Assessable	A	100.00	100.00	LOT 312 SILVERADO OAKS #7 PH C MOR U-52
480-130-020-000	Assessable	A	100.00	100.00	LOT 313 SILVERADO OAKS #7 PH C MOR U-52
480-130-021-000	Assessable	A	100.00	100.00	LOT 314 SILVERADO OAKS #7 PH C MOR U-52
480-130-022-000	Assessable	A	100.00	100.00	LOT 315 SILVERADO OAKS #7 PH C MOR U-52
480-130-023-000	Assessable	A	100.00	100.00	LOT 316 SILVERADO OAKS #7 PH C MOR U-52
480-130-024-000	Assessable	A	100.00	100.00	LOT 317 SILVERADO OAKS #7 PH C MOR U-52
480-130-025-000	Assessable	A	100.00	100.00	LOT 318 SILVERADO OAKS #7 PH C MOR U-52
480-130-026-000	Assessable	A	100.00	100.00	LOT 319 SILVERADO OAKS #7 PH C MOR U-52
480-130-027-000	Assessable	A	100.00	100.00	LOT 320 SILVERADO OAKS #7 PH C MOR U-52
480-130-028-000	Assessable	A	100.00	100.00	LOT 321 SILVERADO OAKS #7 PH C MOR U-52
480-130-029-000	Assessable	A	100.00	100.00	LOT 322 SILVERADO OAKS #7 PH C MOR U-52
480-130-030-000	Assessable	A	100.00	100.00	LOT 323 SILVERADO OAKS #7 PH C MOR U-52
480-130-031-000	Assessable	A	100.00	100.00	LOT 324 SILVERADO OAKS #7 PH C MOR U-52
480-130-032-000	Assessable	A	100.00	100.00	LOT 325 SILVERADO OAKS #7 PH C MOR U-52
480-130-033-000	Assessable	A	100.00	100.00	LOT 326 SILVERADO OAKS #7 PH C MOR U-52
480-140-001-000	Assessable	A	100.00	100.00	LOT 303 SILVERADO OAKS #7 PH C MOR U-52
480-140-002-000	Assessable	A	100.00	100.00	LOT 304 SILVERADO OAKS #7 PH C MOR U-52
480-140-003-000	Assessable	A	100.00	100.00	LOT 305 SILVERADO OAKS #7 PH C MOR U-52
480-140-004-000	Assessable	A	100.00	100.00	LOT 306 SILVERADO OAKS #7 PH C MOR U-52
480-140-005-000	Assessable	A	100.00	100.00	LOT 307 SILVERADO OAKS #7 PH C MOR U-52
480-140-006-000	Assessable	A	100.00	100.00	LOT 308 SILVERADO OAKS #7 PH C MOR U-52
480-140-007-000	Assessable	A	100.00	100.00	LOT 327 SILVERADO OAKS #7 PH C MOR U-52
480-140-008-000	Assessable	A	100.00	100.00	LOT 328 SILVERADO OAKS #7 PH C MOR U-52
480-140-009-000	Assessable	A	100.00	100.00	LOT 329 SILVERADO OAKS #7 PH C MOR U-52

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-140-010-000	Assessable	A	100.00	100.00	LOT 330 SILVERADO OAKS #7 PH C MOR U-52
480-140-011-000	Assessable	A	100.00	100.00	LOT 331 SILVERADO OAKS #7 PH C MOR U-52
480-140-012-000	Assessable	A	100.00	100.00	LOT 332 SILVERADO OAKS #7 PH C MOR U-52
480-140-013-000	Assessable	A	100.00	100.00	LOT 333 SILVERADO OAKS #7 PH C MOR U-52
480-140-014-000	Assessable	A	100.00	100.00	LOT 334 SILVERADO OAKS #7 PH C MOR U-52
480-140-015-000	Assessable	A	100.00	100.00	LOT 335 SILVERADO OAKS #7 PH C MOR U-52
480-140-016-000	Assessable	A	100.00	100.00	LOT 336 SILVERADO OAKS #7 PH C MOR U-52
480-140-017-000	Assessable	A	100.00	100.00	LOT 337 SILVERADO OAKS #7 PH C MOR U-52
480-140-018-000	Assessable	A	100.00	100.00	LOT 338 SILVERADO OAKS #7 PH C MOR U-52
480-140-019-000	Assessable	A	100.00	100.00	LOT 339 SILVERADO OAKS #7 PH C MOR U-52
480-140-020-000	Assessable	A	100.00	100.00	LOT 340 SILVERADO OAKS #7 PH C MOR U-52
480-140-021-000	Assessable	A	100.00	100.00	LOT 341 SILVERADO OAKS #7 PH C MOR U-52
480-140-022-000	Assessable	A	100.00	100.00	LOT 342 SILVERADO OAKS #7 PH C MOR U-52
480-140-023-000	Assessable	A	100.00	100.00	LOT 343 SILVERADO OAKS #7 PH C MOR U-52
480-140-024-000	Assessable	A	100.00	100.00	LOT 344 SILVERADO OAKS #7 PH C MOR U-52
480-140-025-000	Assessable	A	100.00	100.00	LOT 345 SILVERADO OAKS #7 PH C MOR U-52
480-140-026-000	Assessable	A	100.00	100.00	LOT 346 SILVERADO OAKS #7 PH C MOR U-52
480-140-027-000	Assessable	A	100.00	100.00	LOT 347 SILVERADO OAKS #7 PH C MOR U-52
480-140-028-000	Assessable	A	100.00	100.00	LOT 348 SILVERADO OAKS #7 PH C MOR U-52
480-140-029-000	Assessable	A	100.00	100.00	LOT 349 SILVERADO OAKS #7 PH C MOR U-52
480-140-030-000	Assessable	A	100.00	100.00	LOT 350 SILVERADO OAKS #7 PH C MOR U-52
480-150-001-000	Assessable	A	100.00	100.00	LOT 450 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-002-000	Assessable	A	100.00	100.00	LOT 451 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-003-000	Assessable	A	100.00	100.00	LOT 452 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-004-000	Assessable	A	100.00	100.00	LOT 453 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-005-000	Assessable	A	100.00	100.00	LOT 454 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-006-000	Assessable	A	100.00	100.00	LOT 455 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-007-000	Assessable	A	100.00	100.00	LOT 456 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-008-000	Assessable	A	100.00	100.00	LOT 457 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-009-000	Assessable	A	100.00	100.00	LOT 458 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-010-000	Assessable	A	100.00	100.00	LOT 459 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-011-000	Assessable	A	100.00	100.00	LOT 460 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-012-000	Assessable	A	100.00	100.00	LOT 461 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-013-000	Assessable	A	100.00	100.00	LOT 462 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-014-000	Assessable	A	100.00	100.00	LOT 463 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-015-000	Assessable	A	100.00	100.00	LOT 464 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-016-000	Assessable	A	100.00	100.00	LOT 465 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-017-000	Assessable	A	100.00	100.00	LOT 466 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-018-000	Assessable	A	100.00	100.00	LOT 467 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-019-000	Assessable	A	100.00	100.00	LOT 468 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-020-000	Assessable	A	100.00	100.00	LOT 469 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-021-000	Assessable	A	100.00	100.00	LOT 470 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-022-000	Assessable	A	100.00	100.00	LOT 471 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-023-000	Assessable	A	100.00	100.00	LOT 472 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-024-000	Assessable	A	100.00	100.00	LOT 473 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-025-000	Assessable	A	100.00	100.00	LOT 474 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-026-000	Assessable	A	100.00	100.00	LOT 475 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-027-000	Assessable	A	100.00	100.00	LOT 476 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-028-000	Assessable	A	100.00	100.00	LOT 477 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-029-000	Assessable	A	100.00	100.00	LOT 478 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-030-000	Assessable	A	100.00	100.00	LOT 479 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-031-000	Assessable	A	100.00	100.00	LOT 480 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-032-000	Assessable	A	100.00	100.00	LOT 481 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-033-000	Assessable	A	100.00	100.00	LOT 482 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-034-000	Assessable	A	100.00	100.00	LOT 483 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-150-035-000	Assessable	A	100.00	100.00	LOT 484 SILVERADO OAKS UNIT NO 7 PHASE G BK V PG74
480-150-036-000	Assessable	A	100.00	100.00	LOT 485 SILVERADO OAKS UNIT NO 7 PHASE G V-74

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-160-001-000	Assessable	A	100.00	100.00	LOT 432 SILVERADO OAKS UNIT NO 7 PHASE G MOR V-74
480-160-002-000	Assessable	A	100.00	100.00	LOT 433 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-003-000	Assessable	A	100.00	100.00	LOT 434 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-004-000	Assessable	A	100.00	100.00	LOT 435 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-005-000	Assessable	A	100.00	100.00	LOT 436 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-006-000	Assessable	A	100.00	100.00	LOT 437 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-007-000	Assessable	A	100.00	100.00	LOT 438 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-008-000	Assessable	A	100.00	100.00	LOT 439 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-009-000	Assessable	A	100.00	100.00	LOT 440 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-010-000	Assessable	A	100.00	100.00	LOT 441 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-011-000	Assessable	A	100.00	100.00	LOT 442 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-012-000	Assessable	A	100.00	100.00	LOT 443 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-013-000	Assessable	A	100.00	100.00	LOT 444 SILVERADO OAKS UNIT #7 PHASE G MOR V-74
480-160-014-000	Assessable	A	100.00	100.00	LOT 445 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-015-000	Assessable	A	100.00	100.00	LOT 446 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-016-000	Assessable	A	100.00	100.00	LOT 447 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-017-000	Assessable	A	100.00	100.00	LOT 448 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-018-000	Assessable	A	100.00	100.00	LOT 449 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-019-000	Assessable	A	100.00	100.00	LOT 486 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-020-000	Assessable	A	100.00	100.00	LOT 487 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-021-000	Assessable	A	100.00	100.00	LOT 488 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-022-000	Assessable	A	100.00	100.00	LOT 489 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-023-000	Assessable	A	100.00	100.00	LOT 490 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-024-000	Assessable	A	100.00	100.00	LOT 491 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-025-000	Assessable	A	100.00	100.00	LOT 492 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-026-000	Assessable	A	100.00	100.00	LOT 493 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-027-000	Assessable	A	100.00	100.00	LOT 494 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-028-000	Assessable	A	100.00	100.00	LOT 495 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-029-000	Assessable	A	100.00	100.00	LOT 496 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-030-000	Assessable	A	100.00	100.00	LOT 497 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-031-000	Assessable	A	100.00	100.00	LOT 498 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-032-000	Assessable	A	100.00	100.00	LOT 499 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-033-000	Assessable	A	100.00	100.00	LOT 500 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-034-000	Assessable	A	100.00	100.00	LOT 501 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-035-000	Assessable	A	100.00	100.00	LOT 502 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-036-000	Assessable	A	100.00	100.00	LOT 503 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-160-037-000	Assessable	A	100.00	100.00	LOT 504 SILVERADO OAKS UNIT NO 7 PHASE G V-74
480-170-001-000	Assessable	A	100.00	100.00	LOT 21 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-002-000	Assessable	A	100.00	100.00	LOT 22 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-003-000	Assessable	A	100.00	100.00	LOT 23 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-004-000	Assessable	A	100.00	100.00	LOT 24 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-005-000	Assessable	A	100.00	100.00	LOT 25 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-006-000	Assessable	A	100.00	100.00	LOT 26 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-007-000	Assessable	A	100.00	100.00	LOT 27 SILVERADO OAKS UNIT NO 8 MOR V-75
480-170-008-000	Assessable	A	100.00	100.00	LOT 28 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-009-000	Assessable	A	100.00	100.00	LOT 29 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-010-000	Assessable	A	100.00	100.00	LOT 30 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-011-000	Assessable	A	100.00	100.00	LOT 31 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-012-000	Assessable	A	100.00	100.00	LOT 32 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-013-000	Assessable	A	100.00	100.00	LOT 33 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-014-000	Assessable	A	100.00	100.00	LOT 34 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-015-000	Assessable	A	100.00	100.00	LOT 35 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-016-000	Assessable	A	100.00	100.00	LOT 36 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-017-000	Assessable	A	100.00	100.00	LOT 37 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-018-000	Assessable	A	100.00	100.00	LOT 38 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-019-000	Assessable	A	100.00	100.00	LOT 39 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-020-000	Assessable	A	100.00	100.00	LOT 40 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-170-021-000	Assessable	A	100.00	100.00	LOT 41 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-022-000	Assessable	A	100.00	100.00	LOT 42 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-025-000	Assessable	A	100.00	100.00	LOT 45 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-026-000	Assessable	A	100.00	100.00	LOT 46 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-027-000	Assessable	A	100.00	100.00	LOT 47 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-028-000	Assessable	A	100.00	100.00	LOT 48 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-029-000	Assessable	A	100.00	100.00	LOT 49 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-030-000	Assessable	A	100.00	100.00	LOT 50 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-031-000	Assessable	A	100.00	100.00	LOT 51 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-032-000	Assessable	A	100.00	100.00	LOT 52 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-033-000	Assessable	A	100.00	100.00	LOT 53 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-034-000	Assessable	A	100.00	100.00	LOT 54 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-035-000	Assessable	A	100.00	100.00	LOT 55 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-036-000	Assessable	A	100.00	100.00	LOT 56 SILVERADO OAKS UNIT NO 8 MOR V-75
480-170-037-000	Assessable	A	100.00	100.00	LOT 57 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-038-000	Assessable	A	100.00	100.00	LOT 58 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-039-000	Assessable	A	100.00	100.00	LOT 59 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-040-000	Assessable	A	100.00	100.00	LOT 60 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-041-000	Assessable	A	100.00	100.00	LOT 61 SILVERADO OAKS UNIT NO 8 MOR BL V PG 75
480-170-042-000	Assessable	A	100.00	100.00	LOT 62 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-043-000	Assessable	A	100.00	100.00	LOT 63 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-044-000	Assessable	A	100.00	100.00	LOT 64 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-045-000	Assessable	A	100.00	100.00	LOT 65 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-046-000	Assessable	A	100.00	100.00	LOT 66 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-047-000	Assessable	A	100.00	100.00	LOT 67 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-048-000	Assessable	A	100.00	100.00	LOT 68 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-052-000	Assessable	A	100.00	100.00	POR LOT 43 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-170-053-000	Assessable	A	100.00	100.00	LOT 44 & POR 43 SILVERADO OAKS UNIT NO 8 MOR V-75
480-180-001-000	Assessable	A	100.00	100.00	LOT 69 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-002-000	Assessable	A	100.00	100.00	LOT 70 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-003-000	Assessable	A	100.00	100.00	LOT 71 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-004-000	Assessable	A	100.00	100.00	LOT 72 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-005-000	Assessable	A	100.00	100.00	LOT 73 SILVERADO OAKS UNIT #8 MOR V-75
480-180-006-000	Assessable	A	100.00	100.00	LOT 74 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-007-000	Assessable	A	100.00	100.00	LOT 75 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-008-000	Assessable	A	100.00	100.00	LOT 76 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-009-000	Assessable	A	100.00	100.00	LOT 77 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-010-000	Assessable	A	100.00	100.00	LOT 78 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-011-000	Assessable	A	100.00	100.00	LOT 79 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-012-000	Assessable	A	100.00	100.00	LOT 80 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-013-000	Assessable	A	100.00	100.00	LOT 81 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-014-000	Assessable	A	100.00	100.00	LOT 82 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-015-000	Assessable	A	100.00	100.00	LOT 90 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-016-000	Assessable	A	100.00	100.00	LOT 91 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-017-000	Assessable	A	100.00	100.00	LOT 92 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-018-000	Assessable	A	100.00	100.00	LOT 93 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-019-000	Assessable	A	100.00	100.00	LOT 94 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-020-000	Assessable	A	100.00	100.00	LOT 95 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-021-000	Assessable	A	100.00	100.00	LOT 96 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-022-000	Assessable	A	100.00	100.00	LOT 97 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-023-000	Assessable	A	100.00	100.00	LOT 98 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-024-000	Assessable	A	100.00	100.00	LOT 99 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-025-000	Assessable	A	100.00	100.00	LOT 100 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-026-000	Assessable	A	100.00	100.00	LOT 101 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-027-000	Assessable	A	100.00	100.00	LOT 102 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-028-000	Assessable	A	100.00	100.00	LOT 103 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-180-029-000	Assessable	A	100.00	100.00	LOT 104 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75

City of Roseville
Northwest Roseville Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	MAXIMUM ASMT	CHARGE	LEGAL DESCRIPTION
480-180-030-000	Assessable	A	100.00	100.00	LOT 105 SILVERADO OAKS UNIT NO 8 MOR BK VN PG 75
480-190-001-000	Assessable	A	100.00	100.00	LOT 1 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-002-000	Assessable	A	100.00	100.00	LOT 2 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-003-000	Assessable	A	100.00	100.00	LOT 3 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-004-000	Assessable	A	100.00	100.00	LOT 4 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-005-000	Assessable	A	100.00	100.00	LOT 5 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-006-000	Assessable	A	100.00	100.00	LOT 6 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-007-000	Assessable	A	100.00	100.00	LOT 7 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-008-000	Assessable	A	100.00	100.00	LOT 8 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-009-000	Assessable	A	100.00	100.00	LOT 9 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-010-000	Assessable	A	100.00	100.00	LOT 10 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-011-000	Assessable	A	100.00	100.00	LOT 11 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-012-000	Assessable	A	100.00	100.00	LOT 12 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-013-000	Assessable	A	100.00	100.00	LOT 13 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-014-000	Assessable	A	100.00	100.00	LOT 14 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-015-000	Assessable	A	100.00	100.00	LOT 15 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-016-000	Assessable	A	100.00	100.00	LOT 16 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-019-000	Assessable	A	100.00	100.00	LOT 19 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-020-000	Assessable	A	100.00	100.00	LOT 20 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-021-000	Assessable	A	100.00	100.00	LOT 83 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-022-000	Assessable	A	100.00	100.00	LOT 84 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-023-000	Assessable	A	100.00	100.00	LOT 85 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-024-000	Assessable	A	100.00	100.00	LOT 86 SILVERADO OAKS UNIT NO 8 MOR V-75
480-190-025-000	Assessable	A	100.00	100.00	LOT 87 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-026-000	Assessable	A	100.00	100.00	LOT 88 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-027-000	Assessable	A	100.00	100.00	LOT 89 SILVERADO OAKS UNIT NO 8 MOR BK V PG 75
480-190-030-000	Assessable	A	100.00	100.00	POR LOTS 17 & 18 SILVERADO OAKS UNIT NO 8 MOR V-75
480-190-031-000	Assessable	A	100.00	100.00	POR LOTS 17 & 18 SILVERADO OAKS UNIT NO 8 MOR V-75

Summary Fields	Zone A	Zone B	Total
ACTIVE PARCELS	4,623	136	4,759
LEVIED PARCELS	4,622	130	4,752
MAXIMUM ASMT	$462,200.00	$19,136.00	$481,336.00
CHARGE	$462,200.00	$19,136.00	$481,336.00

RESOLUTION NO. 25-121

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Olympus Pointe Landscaping and Lighting District (hereafter referred to as the "District") pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California, beginning with Section 22500* (hereafter referred to as the "Act"), that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance and services of street lighting, landscaping, and all appurtenant facilities and operations related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer") for the purpose of assisting with the establishment of the assessments, the annexation of territory, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act, and in accordance with the California Constitution, Articles XIIIC and XIIID;

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 Engineer's Report: The City Council hereby orders the Engineer to prepare and file with the City Clerk the Engineer's Report concerning the levy of assessments for the District in accordance with Chapter 3, Section 22622 of the Act.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials and/or improvements for landscape, lighting, park and hardscape areas, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

RESOLUTION NO. 25-121

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____was regularly adopted by the City Council of said City of Roseville at a regular meeting of said council held on the _____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-122

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Olympus Pointe Landscaping and Lighting District (hereafter referred to as the "District"), and initiated proceedings for Fiscal Year 2025/2026, pursuant to the provisions of the *Landscaping and Lighting Act of 1972*, *Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereafter referred to as the "Act") that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance, operation and servicing of all improvements and facilities related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services for the purpose of assisting with the Annual Levy of the District, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, PURSUANT TO *CHAPTER 3, SECTION 22624* OF THE ACT, AS FOLLOWS:

Section 1 Intention: The City Council hereby declares that it is its intention to seek the Annual Levy of the District pursuant to the Act, over and including the land within the District boundary, and to levy and collect assessments on all such land to pay for the annual costs of the improvements.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials or improvements for landscape, lighting, park and hardscape areas including turf, ground cover, shrubs and trees, irrigation systems, drainage systems, project identification signs, special street signs, special lighting for signage, granite entryways, sculptures and sculpture park, special paving materials, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

Section 3 Boundaries and Designation: The boundaries of the District are described as the boundaries previously defined in the formation documents of the original District and any annexations thereto. The District is known and designated as the:

"Olympus Pointe Landscaping and Lighting District"

Section 4 Proposed Assessment Amounts: The proposed assessments are outlined in the Engineer's Report. District Assessments are calculated in accordance with the method of apportionment established for the District and do not exceed the assessment rates and annual inflationary adjustment previously authorized by the City Council and approved by the property owners in accordance with the provisions of the California State Constitution, Article XIIID.

Section 5 Public Hearing(s): The City Council hereby declares its intention to conduct a Public Hearing annually concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22626* of the Act.

Section 6 Notice: The City Clerk shall give notice of the time and place of the Public Hearing by causing this Resolution to be published once in the local newspaper not less than ten (10) days before the date of the hearing and by posting a copy of this Resolution on the official bulletin board customarily used by the City Council for the posting of notices.

Section 7 Time and Place of Public Hearing: Notice is hereby given that a Public Hearing on these matters will be held by the City Council on **Wednesday, May 21, 2025 at 6:00 p.m.**, or as soon thereafter as feasible in the regular meeting chambers located at 311 Vernon Street, Roseville, California.

RESOLUTION NO. 25-122

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____was regularly adopted by the City Council of said City of Roseville at a regular meeting of said council held on the _____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-123

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, the City Council has, by previous Resolutions, ordered the preparation of an Engineer's Annual Levy Report (hereafter referred to as the "Engineer's Report") for the district known and designated as the Olympus Pointe Landscaping and Lighting District (hereafter referred to as the "District"), pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereinafter referred to as the "Act"); and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer"), for the purpose of assisting with the establishment of the assessments and to prepare and file an Engineer's Report with the City Clerk in accordance with the Act, and in accordance with the requirements of the California Constitution, Articles XIIIC and XIIID; and,

WHEREAS, there has now been presented to this City Council the Engineer's Report as required by *Chapter 1, Article 4, Section 22566* of said Act; and,

WHEREAS, this City Council has carefully examined and reviewed the Engineer's Report as presented, and is preliminarily satisfied with the District, each and all of the budget items and documents as set forth therein, and is satisfied that the assessments, on a preliminary basis, have been spread in accordance with the benefits received from the improvements, operation, maintenance and services to be performed within each Zone, as set forth in said Engineer's Report; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE OLYMPUS POINTE LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 That the above recitals are all true and correct.

Section 2 That the Engineer's Report as presented, consists of the following:

a. A Description of Improvements
b. The Annual Budget (Costs and Expenses of Maintenance, Services, Operations and District Administration)
c. The Assessment Roll containing the Fiscal Year 2025/2026 Levy for each Assessor Parcel within the District

Section 3 The Engineer's Report is hereby approved on a preliminary basis and ordered to be filed in the Office of the City Clerk as a permanent record and to remain open to public inspection.

Section 4 That the City Clerk shall certify to the passage and adoption of this Resolution, and the minutes of this meeting shall so reflect the presentation of the Engineer's Report.

RESOLUTION NO. 25-123

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____was regularly adopted by the City Council of said City of Roseville at a regular meeting of said council held on the _____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

City of Roseville

Olympus Pointe
Landscaping and Lighting District

FY 2025/26 Engineer's Annual Levy Report

Intent Meeting: April 16, 2025
Public Hearing: May 21, 2025

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Suite 200
Temecula, CA 92590
51.587.3500 | 800.755.6864
F 951.587.3510

www.willdan.com

ENGINEER'S REPORT AFFIDAVIT

Establishment of Annual Rates and Charges for the:

Olympus Pointe
Landscaping and Lighting District

City of Roseville

Placer County, State of California

This Report describes the District and any relevant zones therein, including the improvements, budgets, parcels and assessments to be levied for Fiscal Year 2025/26 as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Placer County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the City Council.

Dated this _____ day of _____, 2025

Willdan Financial Services
Assessment Engineer
On Behalf of the City of Roseville

By: _____

Mickey Ashley
Project Manager
District Administration Services

By: _____

Tyrone Peter
PE # C 81888

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I. OVERVIEW

A. INTRODUCTION

The City of Roseville ("City") annually levies and collects special assessments in order to maintain the certain public improvements within the Olympus Pointe Landscaping and Lighting District ("District") within the City. The District, which was formed in 1989, is levied annual assessments pursuant to the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code (the "1972 Act").

The Engineer's Report ("Report") describes the District boundaries, any new annexations, improvements maintained by the District and the proposed assessments for the period of July 1, 2025 through June 30, 2026.

The District consists of two (2) benefit Zones ("Zones"). The improvements that benefit properties within each Zone and the costs associated with those improvements are identified and budgeted separately. Each parcel within a Zone is assessed proportionately for only those improvements and services that are a direct and special benefit to the properties within the respective Zone. The assessments are based on the historical and estimated cost to maintain the improvements that provide a direct and special benefit to properties within the District.

The word "parcel," for the purposes of this Report, refers to an individual property assigned its own Assessor's Parcel Number ("APN") by the Placer County Assessor's Office.

Following approval of the Report, the City Council will by resolution, order the improvements to be made, if any, and confirm the levy and collection of assessments herein pursuant to the 1972 Act. The assessment rates and method of apportionment described in this Report as approved or modified by the City Council define the assessments to be applied to each parcel within the District and respective Zones for Fiscal Year ("FY") 2025/26. The assessments as approved will be submitted to the Placer County Auditor/Controller to be included on the property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current fiscal year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved by the City Council.

B. COMPLIANCE WITH CURRENT LEGISLATION

All assessments described in this Report and approved by the City Council are prepared in accordance with the 1972 Act and are in compliance with the substantive and procedural requirements of the California State Constitution Articles XIIIC and XIIID ("Article XIIIC" and "Article XIIID") and the provisions of the Proposition 218 Omnibus Implementation Act [Government Code Section 53750 and following] (the "Implementation Act"). Articles XIIIC and XIIID and the Implementation Act collectively are hereinafter referred to as "Proposition 218".

The District's Maximum Assessment Rates for all Zones and the Inflationary Adjustment Factor were previously approved and confirmed through property owner ballot proceedings and as such, comply with the provisions of Proposition 218.

Pursuant to the 1972 Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments, to review the Engineer's Annual Levy Report prior to approving the annual assessments to be levied on the County tax rolls.

C. CLARIFICATION OF ZONE DESIGNATIONS

In order to increase consistency with the City's other districts and to facilitate presentation within the Engineer's Report, the names of both Zones were redesignated, commencing with FY 2007/2008, as follows:

- The "Non-Residential/Multi-Family Residential Zone" was redesignated to "Zone A." (1)

- The "Residential Zone" was redesignated to "Zone D." (2)

(1) Prior to FY 2005/2006, this territory was known as "Zone A". In FY 2005/2006, Zone A was redesignated to the "Non-Residential/Multi-Family Residential Zone".

(2) Prior to FY 2005/2006, this territory was known as "Zones B & C". In FY 2005/2006, Zones B & C were combined and redesignated to the "Residential Zone".

D. GENERAL DESCRIPTION OF DISTRICT

The Olympus Pointe Landscaping and Lighting District is located in the City of Roseville at the southerly edge of Placer County, northeast of the intersection of Interstate 80 and Douglas Boulevard. The site is generally bounded by Interstate 80 on the west, East Roseville Parkway and Olympus Drive to the north, Douglas Boulevard to the south and Sierra College Boulevard to the east. See Appendix A for a rendering of the District boundary map.

The District consists of two zones as described below. These zones were established by the City through a District reengineering commencing with the FY 2005/2006 levy. Additional information regarding the reengineering is provided in Section III of the Report.

Zone A

Zone A includes land zoned for non-residential and multi-family residential uses. The Zone comprises the majority of the District and is primarily west and south of East Roseville Parkway, east of Interstate 80 and north of Douglas Boulevard. The territory that was originally designated as "Zone A" consisted of 581.78 assessable acres when it was redesignated as the "Non-Residential/Multi-Family Zone" commencing with the FY 2005/06 levy. It was then redesignated back to "Zone A" commencing with the FY 2007/08 levy.

Zone D

Zone D includes two single-family residential developments on the eastern side of the District. The Zone is bisected by Olympus Drive and Sierra College Boulevard on the District's eastern boundary and includes 468 developed single-family residences. Originally, each residential development was designated as separate zone (Zones B and C). The area was redesignated as the "Residential Zone" commencing with the FY 2005/2006 levy and then redesignated to the "Zone D" commencing with the FY 2007/2008 levy.

E. IMPROVEMENTS AUTHORIZED BY THE 1972 ACT

As applicable or may be applicable to a proposed District, the 1972 Act defines improvements to mean one or any combination of the following:

- The installation or planting of landscaping.
- The installation or construction of statuary, fountains, and other ornamental structures and facilities.
- The installation or construction of public lighting facilities.
- The installation or construction of any facilities which are appurtenant to any of the foregoing or which are necessary or convenient for the maintenance or

servicing thereof, including, but not limited to, grading, clearing, removal of debris, the installation or construction of curbs, gutters, walls, sidewalks, or paving, or water, irrigation, drainage, or electrical facilities.

- The maintenance or servicing, or both, of any of the foregoing.
- The acquisition of any existing improvement otherwise authorized pursuant to this section.

Incidental expenses associated with the improvements including, but not limited to:

- The cost of preparation of the report, including plans, specifications, estimates, diagram, and assessment;
- The costs of printing, advertising, and the publishing, posting, and mailing of notices;
- Compensation payable to the County for collection of assessments;
- Compensation of any engineer or attorney employed to render services;
- Any other expenses incidental to the construction, installation, or maintenance and servicing of the improvements;
- Any expenses incidental to the issuance of bonds or notes pursuant to Section 22662.5.
- Costs associated with any elections held for the approval of a new or increased assessment.

The 1972 Act defines "Maintain" or "maintenance" to mean furnishing of services and materials for the ordinary and usual maintenance, operation, and servicing of any improvement, including:

- Repair, removal, or replacement of all or any part of any improvement.
- Providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury.
- The removal of trimmings, rubbish, debris, and other solid waste.
- The cleaning, sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Furthermore, the 1972 Act specifies that where the cost of improvements (other than maintenance and operations) is greater than can be conveniently raised from a single annual assessment, an assessment to be levied and collected in annual installments. In that event, the governing body may choose to do any of the following:

- Provide for the accumulation of the moneys in an improvement fund until there are sufficient moneys to pay all or part of the cost of the improvements.
- Provide for a temporary advance to the improvement fund from any available and unencumbered funds of the local agency to pay all or part of the cost of the

improvements and collect those advanced moneys from the annual installments collected through the assessments.

- Borrow an amount necessary to finance the estimated cost of the proposed improvements. The amount borrowed, including amounts for bonds issued to finance the estimated cost of the proposed improvements.

F. DESCRIPTION AND LOCATION OF IMPROVEMENTS

This District, through the levy special assessments, provides funding for the maintenance and operation of the following improvements located within the public rights-of-way and dedicated easements: project identification signs, including surrounding landscape and hardscape; special street materials; sculptures and sculpture park; special street signs; special lighting for the project identification signs and special illuminated street signs; and landscaped street medians (the "Improvements"). The specific locations of the improvements within the district are described as follows:

1. Zone A

a. Landscaped Median Islands:

- Eureka Road from Douglas Boulevard to Taylor Road Connector
- Sunrise Avenue from southern boundary of the Northeast Roseville Specific Plan (the "NERSP") to East Roseville Parkway
- East Roseville Parkway from Douglas Boulevard to Rocky Ridge Drive
- Douglas Boulevard from eastern boundary of NERSP to Rocky Ridge Drive

b. Project identification signs (granite entryways) and special paving materials:

- Eureka Road at Douglas Boulevard
- East Roseville Parkway at Douglas Boulevard
- Eureka Road at Taylor Road

c. Sculpture and Sculpture Park:

- Aris Demetrio's original sculpture located on Parcel 14
- Sculpture park (0.85 acres located on Parcel 14)

d. Special street signs:

- Eureka Road at Sunrise Avenue, Rocky Ridge Drive, Lead Hill Drive and Douglas Boulevard
- Lead Hill Drive at Rocky Ridge Drive
- Sunrise Avenue at Auto Mall entrance
- East Roseville Parkway at Taylor Road, Lead Hill Drive, Olympus Drive and Douglas Boulevard

- Olympus Drive at Sierra College Boulevard:

2. Zone D

a. Landscaped Frontage:

- Southern side of Olympus Drive from East Roseville Parkway to Sierra College Boulevard, excluding any landscaping not within or adjacent to the Zone
- Northern side of Olympus Drive from the Zone boundary (the former Zone C boundary), which is 175 feet southwest of Corniche Lane, to Sierra College Boulevard, western side of Sierra College Boulevard from Olympus Drive to the Zone boundary (the former Zone C boundary), which is approximately 600 feet.

b. Project identification signs and special paving materials:

- Sierra College Boulevard at Olympus Drive

G. DESCRIPTION OF MAINTENANCE AND SERVICES

Maintenance means the furnishing of services and materials for the ordinary and usual maintenance, operation and servicing of the Improvements and appurtenant facilities, including repair, removal or replacement of all or part of any of Improvements or appurtenant facilities; providing for the life, growth, health and beauty of the Improvements including cultivation, irrigation, trimming, mowing, spraying, fertilizing and treating for disease or injury; the removal of trimmings, rubbish, debris and other solid waste.

Servicing means the furnishing of water and electricity for the Improvements including any decorative lighting and the furnishing of electric current or energy, gas, or other illuminating agent for the special street signs.

II. METHOD OF APPORTIONMENT

A. GENERAL

The Act permits the establishment of assessment districts by public agencies for the purpose of providing certain public improvements, which include the construction, maintenance, and servicing of streetlights, traffic signals and landscaping facilities. Streets and Highways Code Section 22573 requires that maintenance assessments be levied according to benefit rather than the assessed value.

> *"The net amount to be assessed upon lands within an assessment district may be apportioned by any formula or method which fairly distributes the net amount among all assessable lots or parcels in proportion to the estimated benefits to be received by each such lot or parcel from the improvements."*

In addition, Article XIIID and the Implementation Act require that a parcel's assessment may not exceed the reasonable cost for the proportional special benefit conferred to that parcel. Article XIIID and the Implementation Act further provide that only special benefits are assessable and the City must separate the general benefits from the special benefits. They also require that publicly owned properties, which specifically benefit from the improvements, be assessed.

B. BENEFIT ANALYSIS

In conjunction with the provisions of the 1972 Act, the California Constitution Article XIIID addresses several key criteria for the levy of assessments, notably:

Article XIIID Section 2d defines District as follows:

"District means an area determined by an agency to contain all parcels which will receive a special benefit from a proposed public improvement or property-related service;"

Article XIIID Section 2i defines Special Benefit as follows:

"Special benefit" means a particular and distinct benefit over and above general benefits conferred on real property located in the district or to the public at large. General enhancement of property value does not constitute "special benefit."

Article XIIID Section 4a defines proportional special benefit assessments as follows:

"An agency which proposes to levy an assessment shall identify all parcels which will have a special benefit conferred upon them and upon which an assessment will be imposed. The proportionate special benefit derived by each identified parcel

shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. No assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."

The City initiated and conducted property owner protest ballot proceedings in accordance with Article XIIID and the Implementation Act for both the Non-Residential/Multi-Family Zone (Zone A) and the Residential Zone (Zone D). Each Zone's Improvements, the associated costs and assessments had been reviewed, identified, and allocated based on special benefit pursuant to the provisions of the Constitution and Act.

All Improvements associated with these Zones have been identified as necessary, required and/or desired for the orderly development of the properties to their full potential. As such, these Improvements would be necessary and required of individual property owners for the development of such properties and the ongoing operation, servicing and maintenance of these Improvements would be the financial obligation of those properties. Therefore, the Improvements and the annual costs of ensuring the maintenance and operation of the Improvements are of direct and special benefit to the properties.

The method of apportionment (method of assessment) is based on the premise that each of the assessed parcels within these Zones receives special benefit from the Improvements maintained and financed by the assessments. Specifically, the assessments associated with the Zones are for the maintenance of the Improvements installed as part of the original development of the parcels within the Zones. The desirability and security of properties within each Zone is enhanced by the close proximity of these amenities to those properties.

The annual assessments outlined in this Report are proposed to cover the estimated costs to provide all necessary service, operation, administration, and maintenance required to keep the Zone Improvements in a healthy, vigorous, and satisfactory condition.

The special benefits associated with these improvements are specifically:

- Enhanced desirability of properties through association with the improvements.
- Improved aesthetic appeal of properties within the Zones providing a positive representation of the area.
- Enhanced adaptation of the urban environment within the natural environment from adequate green space and landscaping.
- Environmental enhancement through improved erosion resistance, and dust and debris control.

- Increased sense of pride in ownership of property within the District resulting from well-maintained improvements associated with the properties.
- Reduced criminal activity and property-related crimes (especially vandalism) against properties in the District through well-maintained surroundings and amenities including abatement of graffiti.
- Enhanced environmental quality of the parcels within the Zones by moderating temperatures, providing oxygenation, and attenuating noise.

All of the preceding special benefits allowed the property to be developed for the enjoyment of the property owners and contribute to an ongoing specific enhancement and desirability of each of the assessed parcels within the Zones.

The improvements are for the special benefit, enhancement, and use of properties within the Zones. Although the improvements include public easements, rights-of-way, streets, and other amenities available or visible to the public at large, the construction and installation of these Improvements were only necessary for the development of properties within the Zones and were not required nor necessarily desired by any properties or developments outside the Zone's boundaries. Therefore, any public access or use of the Improvements by others is incidental and there is no measurable general benefit to properties outside the Zones or to the public at large. In making this determination, it should be noted that all parkway and perimeter landscaping within the City is both funded and maintained by a special district, individual property owners or through some type of association.

C. ASSESSMENT METHODOLOGY

To establish the special benefit to the individual lots and parcels within the District an Equivalent Benefit Unit ("EBU") system is used. The EBU method of apportioning benefit is typically seen as the most appropriate and equitable assessment methodology for districts formed under the Act, as the benefit to each parcel from the Improvements are apportioned as a function of land use type, size, and development. Acreage of common area parcels shall be apportioned to the remaining assessable parcels of a subdivision and/or parcel split(s) related to the creation of the common area parcel(s).

EBU Application Table

Land Use	EBU per Unit/Acre
Single Family Residential	1.00 per Unit
Multi-Family Residential	1.00 per Acre
Non-Residential	1.00 per Acre
Exempt	0.00 per Acre

1. Definitions and Formulas Related to the Product Type EBU Method

Single-Family Residential — This land use is defined as a fully subdivided residential parcel that is part of a final tract map.

Multi-Family Residential — This land use is defined as a residential parcel anticipated to have or has more than one residential unit.

Non-Residential — Parcels that are not considered Single Family Residential, Multi- Family Residential or Exempt.

Exempt Parcels — This land use identifies properties that are not assessed and are assigned 0.0 EBU per acre. This land use classification may include, but is not limited, to lots or parcels identified as public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas, greenbelts, parkways, park properties and other publicly owned properties that are part of the District Improvements. These types of parcels are considered to receive little or no benefit from the Improvements and are therefore exempted from assessment.

2. Zone Benefit Formula

The benefit formula applied to parcels within each Zone is based on the preceding Equivalent Benefit Unit (EBU) Application Table. Each parcel's EBU correlates the parcel's special benefit received as compared to all other parcels benefiting from the Improvements.

The following formula is used to calculate the EBU for each parcel (proportional benefit).

Parcel Type EBU x Units/Acres = Parcel EBU

The total number of Equivalent Benefit Units (EBUs) is the sum of all individual EBUs applied to parcels within each Zone that receive a special benefit from the Improvements. An assessment amount per EBU (Assessment Rate) for each Zone is established by taking the total costs associated with the Zone's Improvements and dividing that amount by the total number of EBUs within each Zone of all parcels benefiting from those Improvements. This Rate is then applied back to each individual parcel based on their assigned EBUs to determine the parcel's proportionate special benefit and assessment obligation from those Improvements.

Zone Budget/ Total EBU = Assessment per EBU

Assessment per EBU x Parcel EBU = Maximum Parcel Assessment Amount

D. ASSESSMENT RANGE FORMULA

The purpose of establishing an Assessment Range Formula is to provide for reasonable increases and inflationary adjustment to annual assessments rather than initiating protest ballot proceedings to approve small increases in annual costs. This District provides for an annual adjustment to the Maximum Assessment Rate in an amount equal to three percent (3%).

The Maximum Assessment Rate is adjusted annually and is calculated independent of the District's annual budget and proposed annual assessment. Any proposed annual assessment rate (less than or equal to this Maximum Assessment Rate) is not considered an increased assessment, even if the proposed assessment is greater than the assessment applied in the prior fiscal year.

Although the Maximum Assessment Rate will increase each year, the actual assessment rate may go up and down as compared to the previous year(s). The Maximum Assessment Rate adjustment is designed to allow for the adjustment of the annual assessment for inflation in order to maintain the original purchasing power of the District budget. The Maximum Assessment Rate calculated each year does not require or facilitate an increase to the annual assessment and neither does it restrict assessments to the adjusted maximum amount. If the budget and assessment for the fiscal year do not require an increase, or the increase is less than the adjusted Maximum Assessment Rate, then the required budget and assessment may be applied without additional property owner balloting. If the budget and assessments calculated requires an increase greater than the adjusted Maximum Assessment Rate, then the assessment is considered an increased assessment and would be subject to Proposition 218 balloting requirements.

E. BASE MAXIMUM ASSESSMENT RATES

The base assessment rates and the annual inflationary adjustment to each Zone are listed in the table below:

Zone	Base Year	Base Year Maximum Assessment Rate per EBU	Annual Inflationary Adjustment [1]
Zone A	FY 2005/06	$296.65	3.00%
Zone D	FY 2005/06	$99.76	3.00%

(1) The Annual Inflationary Adjustment commences with the Fiscal Year 2006/2007 assessments.

III. DISTRICT BUDGET

A. FY 2025/26 BUDGET

DESCRIPTION	ZONE A Fund 2006	ZONE D Fund 2007
DIRECT COSTS		
Contract Maintenance - Landscaping	$27,468.00	$36,432.00
Contract Maintenance - Parks	4,104.00	0.00
Repair & Maintenance - Landscaping	25,000.00	11,000.00
Repair and Maintenance - Parks	500.00	0.00
Repair and Maintenance - Lighting	1,000.00	0.00
Repair & Maintenance - Tree Work	3,592.00	5,359.00
Utilities	46,168.10	25,410.00
Utilities – Telecom	0.00	200.00
Maintenance - Parks City Staff	15,295.00	0.00
Rehab Reserve Expenditures - Non-Routine Tree Work	5,275.00	2,110.00
Rehab Reserve Project Expenditures	53,000.00	15,300.00
Total Direct Costs	**$181,402.10**	**$95,811.00**
ADMINISTRATION COSTS		
City Administration	$3,911.00	$476.00
Contract Administration - Park's Dept	13,000.00	3,000.00
County Auditor Fees	1,663.30	702.82
Consulting & Professional Services	4,966.00	605.00
Public Hearing Publishing Costs	360.00	44.00
Total Administrative Costs	**$23,900.30**	**$4,827.82**
Total Direct and Administration Costs	**$205,302.40**	**$100,638.82**
BUDGET ADJUSTMENTS		
Replenishment/(Use) of Operating Reserve	$19,302.45	($23,075.50)
Contribution for /(Use of) Rehab Reserve	(58,275.00)	(7,280.00)
Rounding Adjustment	(0.27)	0.92
Total Adjustments	**($38,972.82)**	**($30,354.58)**
BALANCE TO LEVY	**$166,329.58**	**$70,284.24**

Fund balance information of each Zone is reported in Section C on the following page. The total balance to levy for the district is $236,613.82.

B. FY 2025/26 ASSESSMENT RATES

DESCRIPTION	ZONE A Fund 2006	ZONE D Fund 2007
FY 2025/26 ASSESSMENT DATA		
Total Assessable Parcels	358	468
Total Assessable Acreage	530.8045	n/a
Total Assessable Units	186	468
Total Equivalent Benefit Units (EBUs)	**716.8045**	**468.0000**
Assessment Rates per Equivalent Benefit Unit (EBU)		
Assessment Rates to be Applied per EBU	$232.04	$150.18
Maximum Assessment Rates per EBU	$535.78	$180.18
Potential Maximum Assessment Per Zone	**$384,051.59**	**$84,323.16**

C. FY 2025/26 FUND BALANCE INFORMATION

DESCRIPTION	ZONE A Fund 2006	ZONE D Fund 2007
OPERATING RESERVE		
Beginning Operating Reserve Balance 7-1-2025 (est.)	**$70,980.60**	**$70,981.00**
add: Replenishment from FY 2025/26 Levy	19,302.45	
less: Use for FY 2025/26 Expenses		(23,075.50)
Transfer from/(to) the Rehab Reserve	418.00	
Ending Operating Reserve Balance 6-30-2026 (est.)	**$90,701.05**	**$47,905.50**
REHABILITATION RESERVE		
Beginning Rehab Reserve Balance 7-1-2025 (est.)	**$285,779.40**	**$54,353.72**
add: Collect from FY 2025/26 Levy		10,130.00
less: Use for FY 2025/26 Rehab Projects	(58,275.00)	(17,410.00)
Transfer from/(to) the Operating Reserve	(418.00)	0.00
Ending Rehab Reserve Balance 6-30-2026 (est.)	**$227,086.40**	**$47,073.72**

D. DESCRIPTION OF BUDGET ITEMS

Description of the terms used in the preceding Budget, Assessment Rates and Fund Balance tables are listed below:

BUDGET:

DIRECT COSTS

Contract Maintenance - Landscaping – Includes all regularly scheduled contract labor, materials, supplies, and equipment required to properly maintain and ensure the satisfactory condition or maintenance of all landscaping improvements,

irrigation, and related drainage systems, as well as maintenance of appurtenant facilities (the “improvements”). The costs to maintain improvements within the District’s entryway areas are not included in this amount.

Contract Maintenance - Parks - Includes all regularly scheduled contract labor, materials, supplies, and equipment required to properly maintain and ensure the satisfactory condition or maintenance of park improvements, as well as maintenance of appurtenant facilities (the “improvements”).

Repair & Maintenance – Landscaping – Projected costs for repairs and/or maintenance of landscaping improvements. This would include work and materials not covered under contract maintenance.

Repair & Maintenance – Parks - Projected costs for repairs and/or maintenance of park improvements. This would include work and materials not covered under contract maintenance such as repair of damaged amenities due to vandalism, storms, etc.

Repair & Maintenance – Lighting - This line item includes bulb replacement together and general maintenance together with repairs that are generally unforeseen.

Repair & Maintenance – Tree Work - This line item includes annual costs for tree maintenance not included in the annual contract maintenance portion of the budget. If zero, this line item may not be shown in the budget.

Utilities - The furnishing of water and electricity required for the operation and maintenance of the improvements.

Utilities Telecom – connectivity services required for the operation of certain improvements.

Rehab Reserve Expenditures - **Non-Routine Tree Work** – Expected costs to maintain trees other than costs of annual repair and maintenance. If zero, this line item may not be shown in the budget.

Rehab Reserve Project Expenditures – Expected costs for installation, replacement, or planned upgrades of District improvements for the current year that were previously funded or accumulated in the Rehabilitation Reserve. The Rehabilitation Reserve is used to accumulate funds for costs associated with the future rehabilitation or replacement of District improvements that cannot be conveniently raised from a single year’s assessment. If zero, this line item may not be shown in the budget.

ADMINISTRATION COSTS

City Administration – Estimated costs incurred by the City Finance Department and other Departments in preparing the annual budget for the Engineer's Report, together with other financial information required to determine the annual assessment. These costs would also include the preparation, posting and publishing of public notices required for City Council action relating to the District, as well as costs to perform legal review of documents.

Contract Administration – Park's Dept – Estimated Costs of Park and Recreation Department staff to coordinate and oversee the maintenance contracts and overall repair and maintenance of the District. This amount also includes the cost of the Department's estimates and analysis of certain budget items, estimated costs and useful lives of certain District Improvements.

County Auditor Fees - A fee of 1% of the total levy amount that is charged to the District by the County for placing assessments on property tax bills.

Consulting and Professional Services – Includes the costs and expenses of contracting with various professionals to provide legal, engineering and district administration services directly related to the District, including the calculation of the annual assessment amounts and the preparation of the Engineer's' Report.

Public Hearing Publishing Costs –Includes the out-of-pocket costs to publish public notices required for City Council action relating to the District.

Total Direct and Administration Costs – The total expected costs of the District.

BUDGET ADJUSTMENTS

Replenishment/(Use) of Operating Reserve – A "Replenishment" increases the levy in order to replenish the Operating Reserve. On the other hand, a "Use" of the Operating Reserve decreases the levy by drawing funds from the Operating Reserve for current year expenditures. If zero, this line item may not be shown in the budget. Further information regarding the function of the Operating Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Contribution for / (Use of) Rehab Reserve — A "Contribution" increases the levy in order to generate funding for the Rehabilitation Reserve. This reserve allows for the accumulation of funds for possible rehabilitation projects or replacements in future years. On the other hand, a "Use of" of the Rehabilitation Reserve provides current year funding of rehabilitation projects or replacements from available funds within the Rehabilitation Reserve. If zero, this line item may not be shown in the budget. Further information regarding the function of the Rehabilitation Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Rounding Adjustment – The necessary rounding adjustment(s) due to limitations of the County property tax system that requires even penny levy amounts to be placed on the secured tax roll.

BALANCE TO LEVY - This is the total amount to be levied and collected through assessments for the current fiscal year for each zone. The Balance to Levy represents the sum of the total District costs together with any applicable adjustments to the budget as described above.

ASSESSMENT RATES:

Total Assessable Acreage - The total acreage within each zone expected to be assessed in the current fiscal year.

Total Assessable Units - The total number of assessable single-family units within each zone expected to be assessed in the current fiscal year.

Total Equivalent Benefit Units ("EBUs") - Total assessable EBUs within the District for the current fiscal year. Each assessable parcel is assigned EBUs as shown in Section II C of this Report.

Applied Assessment Rate per Equivalent Benefit Unit (EBU) - The assessment rate per EBU to be applied to the applicable Zone for the current fiscal year.

Maximum Assessment Rate per Equivalent Benefit Unit (EBU) - The maximum assessment rate per EBU that can be applied to the applicable Zone for the current fiscal year.

Potential Maximum Assessment Per Zone – The total amount that can be assessed to all parcels within each Zone for the current fiscal year based upon the expected number of assessable units and acres.

FUND BALANCE INFORMATION:

OPERATING RESERVE

Beginning Operating Reserve Balance 7-1-2025 (est.) - The anticipated beginning balance of cash and receivables net of any unpaid prior year obligations for each Zone. These beginning balances shall be used to fund each Zone's expenditures from July 1, 2025 to December 31, 2025, as the Operating Reserve is required to compensate for the approximate six-month delay between the start of the District's fiscal year and the receipt of the collections from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

Replenish from FY 2025/26 Levy – This amount is added to the FY 2025/26 levy in order to replenish the Operating Reserve. Due to the six-month delay from the District's receipt of assessment collections, the Operating Reserve balance shall be sufficiently funded to provide for expenditures from the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Expenses – The amount of the Operating Reserve to be used to fund FY 2025/26 expenses. Portions of the Operating Reserve may be slated for current year expenditures in order to reduce the Ending Operating Reserve Balance to an amount no greater than the expected District costs for the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Rehab Reserve — The amount of Operating Reserve monies to be transferred to or from the Rehabilitation Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Operating Reserve Balance 6-30-2026 (est.) - This amount represents the anticipated Operating Reserve balance/(deficit) for each Zone as of June 30, 2026. The size of each Zone's Operating Reserve is limited by Streets and Highways Code 22569 which states that an Operating Reserve shall not exceed the estimated costs of maintenance, service and incidental expenses from the first day of the fiscal year (July 1) to the date that the Agency expects to receive the first apportionment of collections from the County, which is estimated to be December 31. Therefore, each Zone may retain an Operating Reserve amounting to the District's first six-months of expenses in order to meet ongoing obligations until the first collections are received from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

REHABILITATION RESERVE

Beginning Rehab Reserve Balance 7-1-2025 (est.) — The projected balance of funds in the Rehabilitation Reserve as of July 1, 2025. Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

Collect from FY 2025/26 Levy — This amount is added to the FY 2025/26 levy to accumulate funding of future year rehabilitation projects, replacements,

restorations or upgrades of District improvements. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Rehab Projects – The amount of Rehabilitation Reserve monies expected to be transferred out of the Rehabilitation Reserve to fund the costs of installation, replacement, or planned upgrades of District improvements for the current year. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Operating Reserve — The amount of Rehabilitation Reserve monies to be transferred to or from the Operating Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Rehab Reserve Balance 6-30-2026 (est.) - The projected balance of funds in the Rehabilitation Reserve as of June 30, 2026. These funds shall be used to provide for future year rehabilitation projects, replacements, restorations, or upgrades of District improvements which cannot be conveniently raised from a single year's assessment.

Should the District have no Rehabilitation Reserve or related activity, the Rehabilitation Reserve information may not be presented in the Report.

E. REHABILITATION RESERVE – CAPITAL IMPROVEMENT PLAN

Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

The Report provides a five-year Capital Improvement Plan ("CIP") which shows projected expenditures by Zone related to the rehabilitation, restoration and/or replacement of District improvements, and other allowable costs. The Current Fiscal Year CIP is shown in the preceding Budget Section A. The projected CIP costs for the remaining four years are shown in the table below.

Zone A

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Stone wall repair and medians	$500	$5,000	$1,000	$1,000	$7,500
Rehabilitate Sculpture Park		2,000	1,550	19,000	22,550
Rehabilitate, renovate and/or replace median improvements	24,000	24,000	24,000	24,000	96,000
Non-routine tree work	5,000	5,000	5,000	5,275	20,275
Replace illuminated street signs				10,000	10,000
Replace irrigation controller(s)	10,000	10,000	10,000	17,000	47,000
Replace, repair, renovate and/or refurbish plants, landscapes & related mat'ls	1,000	2,500	261	20,000	23,761
Total Projected Expenditures	**$40,500**	**$48,500**	**$41,811**	**$96,275**	**$227,086**

Zone D

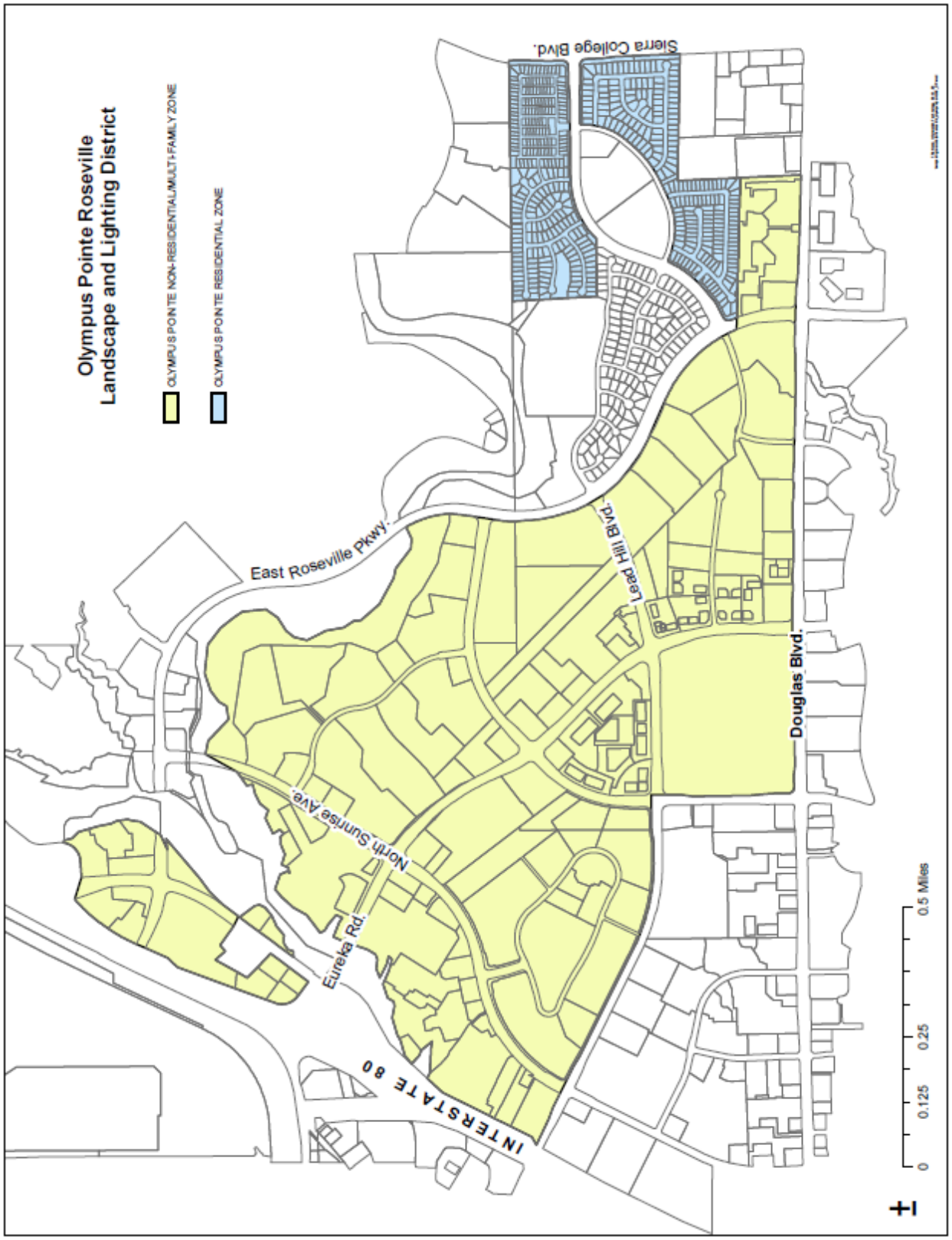
Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Rehabilitate, renovate and/or replace project entryway improvements	$3,000	$3,000	$2,074		$8,074
Non-routine tree work	4,000	4,000	4,000	2,000	14,000
Replace irrigation controller(s)	0	10,000		15,500	25,500
Total Projected Expenditures	**$7,000**	**$17,000**	**$6,074**	**$17,500**	**$47,574**

Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements.

APPENDIX A – DISTRICT BOUNDARY MAP

The boundary map for the District has previously been submitted to the Clerk of the City in the format required under the Act and is, by reference, hereby made part of this Report. These District Boundary Maps are available for inspection at the office of the City Clerk during normal business hours.

For general reference purposes, a rendering of the District's Boundaries is presented herein.


Olympus Pointe Roseville
Landscape and Lighting District
OLYMPUS POINTE NON-RESIDENTIAL/MULTI-FAMILY ZONE
OLYMPUS POINTE RESIDENTIAL ZONE
Sierra College Blvd.
East Roseville Pkwy.
Lead Hill Blvd.
Douglas Blvd.
North Sunrise Ave.
Eureka Rd.
INTERSTATE 80
0
0.125
0.25
0.5 Miles

APPENDIX B — FY 2025/26 ASSESSMENT ROLL

Parcel identification, for each lot or parcel within the District, shall be the parcel as shown on the Placer County Assessor's map for the year in which this Report is prepared.

A listing of parcels to be assessed within this District, along with the proposed assessment amounts, may be submitted to the City Clerk, under a separate cover, and by reference is made part of this Report.

Non-assessable lots or parcels may include areas of public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas and rights-of-way, including public greenbelts and parkways; utility rights-of-way; small parcels vacated by the County, bifurcated lots, and other property that cannot be developed, excepting common area parcels. These types of parcels are considered to receive little or no benefit from the improvements and are therefore exempt from assessment.

At the conclusion of the public hearing for the District and the proposed assessments, approval of the Report (as submitted or as modified) confirms the method of apportionment and the assessment rate to be levied against each eligible parcel and thereby constitutes the approved levy and collection of assessments for FY 2025/26. The listing of parcels and the amount of assessment to be levied shall be submitted to the County Auditor/Controller and included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the current fiscal year, a corrected parcel number and/or new parcel numbers will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved in this Report. Therefore, if a single parcel has changed to multiple parcels, the assessment amount applied to each of the new parcels shall be recalculated and applied according to the approved method of apportionment and assessment rate rather than a proportionate share of the original assessment.

City of Roseville
Olympus Pointe Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
015-450-014-000	Non Residential	A	252.68	583.47	0.0	1.089	1.09	1.1 AC PAR 1 PMOR 27-1
015-450-015-000	Non Residential	A	212.32	490.24	0.0	0.915	0.92	PAR 2 PMOR 27-1
015-450-024-000	Non Residential	A	250.14	577.57	0.0	1.078	1.08	POR LOT 9 NORTHEAST PLAN #2P-97
015-450-027-000	Non Residential	A	494.02	1,140.68	0.0	2.129	2.13	2.1 AC LOT 13 NORTHEAST PLAN#2P-97& FR
015-450-030-000	Non Residential	A	237.14	547.57	0.0	1.022	1.02	1 AC PAR 1 PMOR 27-131
015-450-031-000	Non Residential	A	437.40	1,009.95	0.0	1.885	1.89	1.9AC PAR 2 PMOR 27-131
015-450-042-000	Non Residential	A	1,449.52	3,346.88	0.0	6.2467	6.25	1.9 AC PAR 1 PMOR 28 89
015-450-044-000	Non Residential	A	281.86	650.82	0.0	1.2147	1.21	PAR 3 PMOR 28 89
015-450-057-000	Non Residential	A	370.46	855.38	0.0	1.5965	1.60	TAYLOR RD 1905 ROS 1.6 AC POR PAR 4 PMOR
015-450-058-000	Non Residential	A	463.06	1,069.21	0.0	1.9956	2.00	2.O AC POR PARS 1 2 & 4 PMOR 29-11
015-450-059-000	Non Residential	A	671.46	1,550.40	0.0	2.8937	2.89	2.9 AC PAR 3 & POR PARS 1 2 & 4 PMOR 29-11
015-450-063-000	Non Residential	A	423.38	977.59	0.0	1.8246	1.82	1.9 AC PAR 1 PMOR 29-106
015-450-064-000	Non Residential	A	557.08	1,286.31	0.0	2.4008	2.40	2.5 AC PAR 2 PMOR 29-106
015-450-065-000	Non Residential	A	445.66	1,029.02	0.0	1.9206	1.92	2.0 AC PAR 3 PMOR 29-106
015-450-066-000	Non Residential	A	623.94	1,440.67	0.0	2.6889	2.69	2.8 AC PAR 4 PMOR 29-106
015-450-079-000	Non Residential	A	2,288.90	5,284.96	0.0	9.864	9.86	11.5 AC PAR 3 & 4 PMOR 27-131 & SEC 36 11 6
015-450-080-000	Non Residential	A	387.92	895.72	0.0	1.6718	1.67	PAR A PMOR 32-133
015-450-083-000	Non Residential	A	310.36	716.61	0.0	1.3375	1.34	PAR E PMOR 32-133
015-450-085-000	Non Residential	A	1,008.66	2,328.94	0.0	4.3468	4.35	1.3AC PAR F PMOR 33-135
015-450-086-000	Common Area	A	-	-	0.0	0.0	-	16.1 AC POR PAR 2 PMOR 28 89
046-070-006-000	MF Residential	A	2,343.68	5,411.41	0.0	10.1	10.10	9.6 AC POR PAR 2 PMOR 32-28
048-012-001-000	Non Residential	A	11,485.18	26,518.57	0.0	49.495	49.50	53.2 AC PAR 4 PMOR 22-158 SBE# 2737-31-3
048-013-001-000	Non Residential	A	466.48	1,077.08	0.0	2.0103	2.01	2.1 AC PAR 1 PMOR 29-12
048-013-004-000	Non Residential	A	638.72	1,474.80	0.0	2.7526	2.75	2.6 AC PAR 3 PMOR 29-12
048-013-005-000	Non Residential	A	319.36	737.40	0.0	1.3763	1.38	1.3 AC PAR 4 PMOR 29-12
048-013-006-000	Non Residential	A	2,320.46	5,357.83	0.0	10.0	10.00	10.0AC POR PAR 2 & 3 PMOR 26-145
048-013-007-000	Non Residential	A	232.04	535.78	0.0	1.0	1.00	1 AC PAR 2 PMOR 29-20
048-013-008-000	Non Residential	A	301.66	696.52	0.0	1.3	1.30	1.3 AC PAR 3 PMOR 29-20
048-013-009-000	Non Residential	A	90.72	209.49	0.0	0.391	0.39	PAR 4 PMOR 29-20
048-013-010-000	Non Residential	A	232.04	535.78	0.0	1.0	1.00	1 AC PAR 1 PMOR 29-20
048-013-011-000	Non Residential	A	1,284.24	2,965.24	0.0	5.5344	5.53	6.2 AC POR PAR 1 PMOR 32-28
048-013-012-000	MF Residential	A	1,532.80	3,539.17	0.0	6.6056	6.61	7.4 AC POR PAR 2 PMOR 32-28
048-013-013-000	Non Residential	A	672.92	1,553.77	0.0	2.9	2.90	PAR 5 & POR 2 PMOR BK 29 PG 12
048-013-014-000	Non Residential	A	649.72	1,500.19	0.0	2.8	2.80	POR PCL 2 PMOR BK 29 PG 12
048-021-016-000	Non Residential	A	193.52	446.84	0.0	0.834	0.83	PAR A PMOR 27-157
048-021-017-000	Non Residential	A	578.72	1,336.24	0.0	2.494	2.49	2.5 AC PAR B PMOR 27-157
048-021-018-000	Non Residential	A	720.26	1,663.07	0.0	3.104	3.10	3.1 AC PAR C PMOR 27-157
048-021-019-000	Non Residential	A	643.92	1,486.80	0.0	2.775	2.78	2.8 AC PAR D PMOR 27-157
048-021-020-000	Non Residential	A	854.38	1,972.75	0.0	3.682	3.68	3.7 AC PAR E PMOR 27-157
048-021-021-000	Non Residential	A	917.04	2,117.41	0.0	3.952	3.95	4.0 AC PAR F PMOR 27-157

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048-021-022-000	Non Residential	A	497.26	1,148.18	0.0	2.143	2.14	2.1 AC PAR G PMOR 27-157
048-021-052-000	MF Residential	A	2,927.48	6,759.38	0.0	12.6159	12.62	11.9 AC POR PAR 2 PMOR 32-28
048-021-053-000	Non Residential	A	98.40	227.23	0.0	0.4241	0.42	POR PAR 1 PMOR 32-28
048-451-003-000	Non Residential	A	476.38	1,099.96	0.0	2.053	2.05	2.1 AC PAR 2 PMOR 27-36 SBE# 2748-31-31
048-451-004-000	Non Residential	A	79.82	184.31	0.0	0.344	0.34	PAR 1 PMOR 27-36
048-451-005-000	Non Residential	A	466.18	1,076.39	0.0	2.009	2.01	2 AC PAR 3 PMOR 27-36
048-451-006-000	Non Residential	A	2,255.96	5,208.88	0.0	9.722	9.72	9.7AC PAR 4 PMOR 27-36
048-451-007-000	Non Residential	A	140.38	324.15	0.0	0.605	0.61	PAR 18 PMOR 27-36
048-451-009-000	Park	A	-	-	0.0	0.0	-	PAR 5 PARK PMOR 27-36
048-451-010-000	Common Area	A	-	-	0.0	0.0	-	5.2AC PAR 6 COMMON AREA PMOR 27-36
048-451-011-000	Non Residential	A	226.24	522.39	0.0	0.975	0.98	POR PAR 8 & 9 PMOR 27-36
048-451-012-000	Non Residential	A	747.64	1,726.29	0.0	3.222	3.22	3.2 AC PAR 7 PMOR 27-36
048-451-013-000	Non Residential	A	154.30	356.30	0.0	0.665	0.67	PAR 17 PMOR 27-36
048-451-014-000	Non Residential	A	226.70	523.46	0.0	0.977	0.98	1AC PAR 16 PMOR 27-36
048-451-015-000	Non Residential	A	370.80	856.18	0.0	1.598	1.60	1.6 AC POR PAR 14 & 15 PMOR 27-36
048-451-016-000	Non Residential	A	997.80	2,303.87	0.0	4.3	4.30	4.3 AC POR PAR 8 & 9 PMOR 27-36
048-451-018-000	Non Residential	A	312.34	721.22	0.0	1.3461	1.35	1.4 AC PAR 1 PMOR 29-23
048-451-019-000	Non Residential	A	267.72	618.19	0.0	1.1538	1.15	1.2 AC PAR 2 PMOR 29-23
048-451-020-000	Non Residential	A	157.56	363.80	0.0	0.679	0.68	POR PAR 12 PMOR 27-36
048-451-022-000	Non Residential	A	2,669.70	6,164.18	0.0	11.505	11.51	11.5 AC POR PAR 10 PMOR 27-36
048-451-024-000	Non Residential	A	289.58	668.66	0.0	1.248	1.25	1.1 AC POR PAR 13 PMOR 27-36
048-451-026-000	Non Residential	A	208.58	481.62	0.0	0.8989	0.90	POR PARS 14 & 15 PMOR 27-36
048-452-004-000	Non Residential	A	2,513.52	5,803.60	0.0	10.832	10.83	10.8 AC L 6 AUTOMALL Q-74
048-452-005-000	Non Residential	A	1,439.84	3,324.53	0.0	6.205	6.21	5.6 AC POR L9 AUTOMALL Q-74
048-452-006-000	Non Residential	A	176.58	407.73	0.0	0.761	0.76	POR PAR 2 & 3 PMOR 28-73
048-452-007-000	Non Residential	A	445.52	1,028.70	0.0	1.92	1.92	1.9 AC PAR 1 PMOR 28-73
048-452-009-000	Non Residential	A	3,039.82	7,018.76	0.0	13.1	13.10	13.1 AC POR PAR 4 PMOR 28-73
048-452-010-000	Non Residential	A	974.58	2,250.29	0.0	4.2	4.20	4.2 AC POR PAR 4 PMOR 28-73
048-452-011-000	Non Residential	A	538.58	1,243.55	0.0	2.321	2.32	1.7ACPOR L 9 AUTOMALL Q-74
048-452-012-000	Non Residential	A	631.86	1,458.94	0.0	2.723	2.72	2.3 AC POR L 4 AUTOMALL Q-74
048-452-013-000	Non Residential	A	421.38	972.98	0.0	1.816	1.82	2.2 AC P L 4 AUTOMALL Q-74
048-452-014-000	Non Residential	A	812.16	1,875.24	0.0	3.5	3.50	3.5 AC L 5 AUTOMALL Q-74
048-452-015-000	Non Residential	A	557.14	1,286.41	0.0	2.401	2.40	2.4 AC POR PAR 2 PMOR 28-96
048-452-016-000	Non Residential	A	1,170.44	2,702.49	0.0	5.044	5.04	5 AC POR PAR 2 PMOR 28-96
048-452-017-000	Non Residential	A	802.42	1,852.74	0.0	3.458	3.46	3.5 AC PAR 1 PMOR 28-96
048-452-019-000	Non Residential	A	1,781.42	4,113.21	0.0	7.677	7.68	7.7 AC PAR 2 & 3 PMOR 27-100
048-452-020-000	Non Residential	A	617.70	1,426.25	0.0	2.662	2.66	2.7 AC PAR 1 PMOR 27-100
048-452-021-000	Non Residential	A	2,604.02	6,012.56	0.0	11.222	11.22	11.2 AC L 7 AUTOMALL Q-74
048-452-022-000	Non Residential	A	450.86	1,041.03	0.0	1.943	1.94	1.9 AC PAR 4 PMOR 28-74
048-452-023-000	Non Residential	A	619.32	1,430.00	0.0	2.669	2.67	2.7 AC PAR 1 PMOR 28-74

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048-452-024-000	Non Residential	A	268.70	620.44	0.0	1.158	1.16	1.2 AC PAR 2 PMOR 28-74
048-452-025-000	Non Residential	A	299.34	691.16	0.0	1.29	1.29	1.3 PAR 3 PMOR 28-74
048-452-026-000	Non Residential	A	1,415.48	3,268.28	0.0	6.1	6.10	6.1 AC PAR 1 PMOR 35-36
048-452-027-000	Non Residential	A	580.10	1,339.46	0.0	2.5	2.50	2.5 AC PAR 2 PMOR 35-36
048-452-028-000	Non Residential	A	371.26	857.25	0.0	1.6	1.60	1.6 AC PAR 3 PMOR 35-36
048-460-023-000	Park	A	-	-	0.0	0.0	-	1.9 AC LOT 15 STONE POINT SUBD NO 00-07
048-460-024-000	Non Residential	A	2,238.20	5,167.89	0.0	9.6455	9.65	7.3 AC LOT 16 STONE POINT SUBD NO 00-07
048-460-025-000	Non Residential	A	1,782.60	4,115.94	0.0	7.6821	7.68	5.8 AC LOT 17 STONE POINT SUBD NO 00-07
048-460-026-000	Non Residential	A	648.22	1,496.71	0.0	2.7935	2.79	2.1 AC LOT 18 STONE POINT SUBD NO 00-07
048-460-027-000	Open Space	A	-	-	0.0	0.0	-	25.9 AC L19 OPN SP FLD PLAIN ACCESS BIKE
048-460-030-000	Non Residential	A	1,406.20	3,246.84	0.0	6.06	6.06	4.6 AC P LOTS 2&3 STONE POINT SUBD 00-007
048-460-031-000	Non Residential	A	1,436.36	3,316.50	0.0	6.19	6.19	4.7 AC LOT5& P LOTS3&4 STONE POINT SUBD00
048-460-032-000	Non Residential	A	458.74	1,059.24	0.0	1.977	1.98	1.5 AC POR LOT 1 & 2 STONE POINT SUBD Y-64
048-460-034-000	MF Residential	A	686.28	1,584.58	0.0	2.9575	2.96	3.3 AC POR PAR 2 PMOR 32-28
048-460-035-000	Non Residential	A	415.94	960.39	0.0	1.7925	1.79	2.0 AC POR PAR 1 PMOR 32-28
048-460-036-000	Non Residential	A	1,821.08	4,204.77	0.0	7.8479	7.85	5.9 AC PAR 1 PMOR 32-70
048-460-037-000	Non Residential	A	274.68	634.26	0.0	1.1838	1.18	PAR 2 PMOR 32-70
048-460-038-000	Non Residential	A	274.68	634.26	0.0	1.1838	1.18	PAR 3 PMOR 32-70
048-460-039-000	Non Residential	A	1,728.46	3,990.94	0.0	7.4488	7.45	5.6 AC PAR 4 PMOR 32-70
048-460-058-000	Non Residential	A	6,172.46	14,251.83	0.0	26.6	26.60	POR LOT 6, 7, 8 & 9 STONE POINT II MOR BK AA
456-290-001-000	Non Residential	A	104.82	242.07	0.0	0.4518	0.45	UNT110-1ST FLR BLD E-N.SNRSE PROF CTR
456-290-002-000	Non Residential	A	34.92	80.64	0.0	0.1505	0.15	UNT115-1ST FLR BLD E-N.SNRSE PROF CTR
456-290-003-000	Non Residential	A	70.64	163.15	0.0	0.3045	0.30	UNT120-1ST FLR BLD E-N.SNRSE PROF CTR
456-290-004-000	Non Residential	A	80.38	185.60	0.0	0.3464	0.35	UNT130-1ST FLR BLD E-N.SNRSE PROF CTR
456-290-005-000	Non Residential	A	88.20	203.65	0.0	0.3801	0.38	UNT140-1ST FLR BLD E-N.SNRSE PROF CTR
456-290-006-000	Non Residential	A	92.50	213.62	0.0	0.3987	0.40	UNT210-2ND FLR BLD E-N.SNRSE PROF CTR
456-290-007-000	Non Residential	A	111.08	256.48	0.0	0.4787	0.48	UNT220-2ND FLR BLD E-N.SNRSE PROF CTR
456-290-009-000	Common Area	A	-	-	0.0	0.0	-	CMN ARA FLR 1 BLD E-N.SNRSE PROF CTR
456-290-010-000	Common Area	A	-	-	0.0	0.0	-	CMN ARA FLR 2 BLD E-N.SNRSE PROF CTR
456-290-011-000	Common Area	A	-	-	0.0	0.0	-	LT C BLDG E AMD CONDO PL NORTH SUNRISE
456-290-012-000	Non Residential	A	77.24	178.36	0.0	0.3329	0.33	UNT230-2ND FLR BLD E-N.SNRSE PROF CTR
456-290-013-000	Non Residential	A	73.38	169.47	0.0	0.3163	0.32	UNT240-2ND FLR BLD E-N.SNRSE PROF CTR
456-290-014-000	Non Residential	A	43.94	101.48	0.0	0.1894	0.19	UNT250-2ND FLR BLD E-N.SNRSE PROF CTR
456-300-007-000	Common Area	A	-	-	0.0	0.0	-	PAR B COMMON AREA N SUNRISE PROF CEN CONDC
456-300-015-000	Non Residential	A	53.10	122.64	0.0	0.2289	0.23	UNIT 390 1ST AMNDED BLG B N SUNRISE PROF CEN C
456-300-019-000	Non Residential	A	61.36	141.71	0.0	0.2645	0.26	UNIT 330 1ST AMNDED BLG B N SUNRISE PROF CEN C
456-300-020-000	Non Residential	A	62.80	145.04	0.0	0.2707	0.27	UNIT 300 1ST AMNDED BLG B N SUNRISE PROF CEN C
456-300-021-000	Common Area	A	-	-	0.0	0.0	-	LOBBY COMMON AREA N SUNRISE PROF CEN CONDC
456-300-022-000	Non Residential	A	158.58	366.15	0.0	0.6834	0.68	UNIT 110 1ST AMNDED BLG B N SUNRISE PROF CEN C
456-300-023-000	Non Residential	A	57.52	132.82	0.0	0.2479	0.25	UNIT 180 1ST AMNDED BLG B N SUNRISE PROF CEN C

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456-300-026-000	Non Residential	A	40.92	94.51	0.0	0.1764	0.18	UNIT 200 1ST AMNDED BLG B N SUNRISE PROF CEN C
456-300-027-000	Non Residential	A	180.56	416.95	0.0	0.7782	0.78	UNIT 270 BLG B 1ST AMNDED N SUNRISE PROF CEN C
456-300-028-000	Non Residential	A	59.98	138.50	0.0	0.2585	0.26	UNIT 290 BLG B 1ST AMNDED N SUNRISE PROF CEN C
456-300-029-000	Common Area	A	-	-	0.0	0.0	-	LOBBY COMMON AREA N SUNRISE PROF CEN CONDC
456-300-030-000	Common Area	A	-	-	0.0	0.0	-	LOBBY COMMON AREA 1ST AMDED SUNRISE PROF C
456-300-031-000	Common Area	A	-	-	0.0	0.0	-	UNIT 190 STORAGE AMNDED CONDO SUNRISE PROF
456-300-032-000	Non Residential	A	100.98	233.17	0.0	0.4352	0.44	UNIT350 AMENDED BLG B N SUNRISE PROF CEN CON
456-330-001-000	Non Residential	A	113.72	262.59	0.0	0.4901	0.49	POR PAR D PMOR 32-133
456-330-002-000	Non Residential	A	105.90	244.53	0.0	0.4564	0.46	POR PAR D PMOR 32-133
456-330-003-000	Non Residential	A	168.30	388.60	0.0	0.7253	0.73	POR PAR D PMOR 32-133
456-330-004-000	Non Residenital	A	-	-	0.0	0.0	-	POR PAR D PMOR 32-133
456-330-005-000	Non Residenital	A	-	-	0.0	0.0	-	POR PAR D PMOR 32-133
456-330-006-000	Non Residenital	A	-	-	0.0	0.0	-	POR PAR D PMOR 32-133
459-010-001-000	Non Residential	A	1,749.86	4,040.34	0.0	7.541	7.54	7.5 AC PAR A PMOR 25-64
459-010-002-000	Non Residential	A	1,728.74	3,991.58	0.0	7.45	7.45	7.5 AC PAR B PMOR 25-64
459-010-003-000	Non Residential	A	1,090.62	2,518.18	0.0	4.7	4.70	4.7 AC PAR 1 PMOR 28-43
459-010-007-000	Non Residential	A	603.54	1,393.57	0.0	2.601	2.60	2.6 AC PAR 2 PMOR 25-70
459-010-012-000	Non Residential	A	573.14	1,323.38	0.0	2.47	2.47	2.5 AC PAR 14 DOUGLAS CENTER PH 1 S-98
459-010-019-000	Non Residential	A	879.46	2,030.62	0.0	3.79	3.79	3.8 AC PAR 1 DOUGLAS CENTER PHASE 2 T-32
459-010-026-000	Non Residential	A	432.68	999.07	0.0	1.8647	1.86	1.9 AC POR PAR 4 & 5 DOUGLAS CENTER PHASE 2 T-3
459-010-028-000	Non Residential	A	614.86	1,419.72	0.0	2.6498	2.65	2.7 AC LT 9 T-32&POR LT 5 DOUGLAS CENTER PH 1 S-
459-010-030-000	Non Residential	A	175.66	405.59	0.0	0.757	0.76	PAR 1 PMOR T-94
459-010-031-000	Non Residential	A	186.30	430.18	0.0	0.8029	0.80	PAR 2 PMOR T-94
459-010-040-000	Non Residential	A	1,294.56	2,989.08	0.0	5.5789	5.58	5.5 AC PAR 13 DOUGLAS CENTER PH 3 U-89
459-010-041-000	Common Area	A	-	-	0.0	0.0	-	1.3 AC POR PAR A PMOR T-64 & PAR 8 DGLS CEN PHS
459-010-044-000	Non Residential	A	2,212.54	5,108.64	0.0	9.5349	9.53	9.3AC PAR10 - 12 DOUGLAS CEN P 3 & POR P2 - 4 PH 2
459-010-047-000	Non Residential	A	374.98	865.83	0.0	1.616	1.62	1.6 AC PAR A PMOR 30-17
459-010-048-000	Non Residential	A	656.22	1,515.19	0.0	2.828	2.83	2.8 AC PAR B PMOR 30-17
459-010-049-000	Non Residential	A	1,793.12	4,140.21	0.0	7.7274	7.73	7.7 AC PAR 1 PMOR 31-95
459-010-050-000	Non Residential	A	1,443.80	3,333.64	0.0	6.222	6.22	6.2 AC PAR 2 PMOR 31-95
459-010-051-000	Non Residential	A	1,630.10	3,763.82	0.0	7.0249	7.02	7.0AC PAR3 PM 31-95 SBE# 2745-31-11,SBE 135-31-122
459-010-052-000	Non Residential	A	1,676.68	3,871.35	0.0	7.2256	7.23	7.2 AC PAR 4 PMOR 31-95
459-010-053-000	Non Residential	A	398.84	920.90	0.0	1.71881	1.72	1.8 AC PAR 1 PMOR 35-17
459-010-054-000	Non Residential	A	421.00	972.07	0.0	1.81429	1.81	1.9 AC PAR 2 PMOR 35-17
459-020-001-000	Non Residential	A	178.78	412.82	0.0	0.7705	0.77	PAR 1 BLDG 1 LAVA RIDGE PROF CEN S-102
459-020-003-000	Non Residential	A	141.82	327.47	0.0	0.6112	0.61	PAR 3 BLDG 3 LAVA RIDGE PROF CEN S-102
459-020-006-000	Non Residential	A	62.82	145.09	0.0	0.2708	0.27	UNIT 1 LAVA RIDGE PROF CENTER CONDO BLD 2
459-020-007-000	Non Residential	A	74.06	171.02	0.0	0.3192	0.32	UNIT 2 LAVA RIDGE PROF CENTER CONDO BLD 2
459-020-008-000	Non Residential	A	33.56	77.53	0.0	0.1447	0.14	UNIT 3 LAVA RIDGE PROF CENTER CONDO BLD 2
459-020-009-000	Non Residential	A	26.32	60.81	0.0	0.1135	0.11	UNIT 4 LAVA RIDGE PROF CENTER CONDO BLD 2

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
459-020-010-000	Common Area	A	-	-	0.0	0.0	-	BUILDING COMMON AREA
459-030-001-000	Non Residential	A	145.48	335.94	0.0	0.627	0.63	PAR 4 LAVA RIDGE PROF CENTER PH 2 T-70
459-030-002-000	Non Residential	A	145.48	335.94	0.0	0.627	0.63	PAR 5 LAVA RIDGE PROF CENTER PH 2 T-70
459-030-003-000	Non Residential	A	231.58	534.71	0.0	0.998	1.00	PAR 6 LAVA RIDGE PROF CENTER PH 2 T-70
459-030-004-000	Non Residential	A	152.68	352.55	0.0	0.658	0.66	PAR 7 LAVA RIDGE PROF CENTER PH 2 T-70
459-030-006-000	Non Residential	A	198.40	458.09	0.0	0.855	0.86	PAR 1 PMOR 29-147
459-030-007-000	Non Residential	A	215.80	498.28	0.0	0.93	0.93	PAR 2 PMOR 29-147
459-030-008-000	Non Residential	A	198.40	458.09	0.0	0.855	0.86	PAR 3 PMOR 29-147
459-040-001-000	Non Residential	A	187.16	432.16	0.0	0.8066	0.81	PAR 1 PMOR 29-054
459-040-002-000	Non Residential	A	157.50	363.69	0.0	0.6788	0.68	PAR 2 PMOR 29-054
459-040-003-000	Non Residential	A	212.18	489.92	0.0	0.9144	0.91	PAR 3 PMOR 29-054
459-040-004-000	Common Area	A	-	-	0.0	0.0	-	1.8 AC PAR A COMMON AREA PMOR 29-054
459-040-005-000	Non Residential	A	171.70	396.48	0.0	0.74	0.74	PAR 1 POR 29-77
459-040-006-000	Non Residential	A	171.70	396.48	0.0	0.74	0.74	PAR 2 POR 29-77
459-040-007-000	Common Area	A	-	-	0.0	0.0	-	1.1 AC PAR 3 PMOR 29-77 COMMON AREA
459-040-008-000	Non Residential	A	117.40	271.11	0.0	0.506	0.51	PAR 1 PMOR 29-146
459-040-009-000	Non Residential	A	128.08	295.75	0.0	0.552	0.55	PAR 2 PMOR 29-146
459-040-010-000	Non Residential	A	141.54	326.83	0.0	0.61	0.61	PAR 3 PMOR 29-146
459-040-011-000	Common Area	A	-	-	0.0	0.0	-	1.0 AC PARCEL A COMMON AREA PMOR 29-146
459-050-001-000	Non Residential	A	281.26	649.42	0.0	1.2121	1.21	1.2 AC PAR 2 PMOR 29-87
459-050-002-000	Non Residential	A	304.70	703.54	0.0	1.3131	1.31	1.3 AC PAR 4 PMOR 29-87
459-050-003-000	Non Residential	A	295.50	682.32	0.0	1.2735	1.27	PAR A1 PMOR 29-122
459-050-004-000	Non Residential	A	123.36	284.88	0.0	0.5317	0.53	PAR A2 PMOR 29-122
459-050-005-000	Non Residential	A	295.50	682.32	0.0	1.2735	1.27	PAR A3 PMOR 29-122
459-050-007-000	Non Residential	A	189.66	437.95	0.0	0.8174	0.82	PAR B1 PMOR 29-122
459-050-008-000	Non Residential	A	94.04	217.15	0.0	0.4053	0.41	PAR B2 PMOR 29-122
459-050-009-000	Non Residential	A	119.80	276.62	0.0	0.5163	0.52	PAR B3 PMOR 29-122
459-050-011-000	Non Residential	A	282.10	651.35	0.0	1.2157	1.22	PAR C1 PMOR 29-122
459-050-012-000	Non Residential	A	282.06	651.30	0.0	1.2156	1.22	PAR C2 PMOR 29-122
459-050-014-000	Non Residential	A	614.90	1,419.77	0.0	2.6499	2.65	EUREKA RD 1544 STE 140 ROS PAR D1 PMOR 29-122
459-050-016-000	Non Residential	A	705.14	1,628.14	0.0	3.0388	3.04	PAR 'A1' PMOR 29-142
459-050-018-000	Non Residential	A	705.14	1,628.14	0.0	3.0388	3.04	PAR 'B1' PMOR 29-142
459-050-020-000	Non Residential	A	816.44	1,885.15	0.0	3.5185	3.52	PAR 'C1' PMOR 29-142
459-070-001-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 1 STONE POINT VIL 11 12
459-070-002-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 2 STONE POINT VIL 11 12
459-070-003-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 3 STONE POINT VIL 11 12
459-070-004-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 4 STONE POINT VIL 11 12
459-070-005-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 5 STONE POINT VIL 11 12
459-070-006-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 6 STONE POINT VIL 11 12
459-070-007-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 7 STONE POINT VIL 11 12

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459-070-008-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 8 STONE POINT VIL 11 12
459-070-009-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 9 STONE POINT VIL 11 12
459-070-010-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 10 STONE POINT VIL 11 12
459-070-011-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 11 STONE POINT VIL 11 12
459-070-012-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 12 STONE POINT VIL 11 12
459-070-013-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 13 STONE POINT VIL 11 12
459-070-014-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 14 STONE POINT VIL 11 12
459-070-015-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 15 STONE POINT VIL 11 12
459-070-016-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 16 STONE POINT VIL 11 12
459-070-017-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 17 STONE POINT VIL 11 12
459-070-018-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 18 STONE POINT VIL 11 12
459-070-019-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 19 STONE POINT VIL 11 12
459-070-020-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 20 STONE POINT VIL 11 12
459-070-021-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 21 STONE POINT VIL 11 12
459-070-022-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 22 STONE POINT VIL 11 12
459-070-023-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 23 STONE POINT VIL 11 12
459-070-024-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 24 STONE POINT VIL 11 12
459-070-025-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 25 STONE POINT VIL 11 12
459-070-026-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 26 STONE POINT VIL 11 12
459-070-027-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 27 STONE POINT VIL 11 12
459-070-028-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 28 STONE POINT VIL 11 12
459-070-029-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 29 STONE POINT VIL 11 12
459-070-030-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 30 STONE POINT VIL 11 12
459-070-031-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 31 STONE POINT VIL 11 12
459-070-032-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 32 STONE POINT VIL 11 12
459-070-033-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 33 STONE POINT VIL 11 12
459-070-034-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 34 STONE POINT VIL 11 12
459-070-035-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 35 STONE POINT VIL 11 12
459-070-036-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 36 STONE POINT VIL 11 12
459-070-037-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 37 STONE POINT VIL 11 12
459-070-038-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 38 STONE POINT VIL 11 12
459-070-039-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 39 STONE POINT VIL 11 12
459-070-040-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 40 STONE POINT VIL 11 12
459-070-041-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 41 STONE POINT VIL 11 12
459-070-042-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 42 STONE POINT VIL 11 12
459-070-043-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 43 STONE POINT VIL 11 12
459-070-044-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 44 STONE POINT VIL 11 12
459-070-045-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 45 STONE POINT VIL 11 12
459-070-046-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 46 STONE POINT VIL 11 12
459-070-047-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 47 STONE POINT VIL 11 12

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459-070-048-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 48 STONE POINT VIL 11 12
459-070-049-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 49 STONE POINT VIL 11 12
459-070-050-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 50 STONE POINT VIL 11 12
459-070-051-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 51 STONE POINT VIL 11 12
459-070-052-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 52 STONE POINT VIL 11 12
459-070-053-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 53 STONE POINT VIL 11 12
459-070-054-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 54 STONE POINT VIL 11 12
459-070-055-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 55 STONE POINT VIL 11 12
459-070-056-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 56 STONE POINT VIL 11 12
459-070-057-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 57 STONE POINT VIL 11 12
459-070-058-000	Common Area	A	-	-	0.0	0.0	-	LOT C COMMON AREA STONE POINT VIL 11
459-070-059-000	Common Area	A	-	-	0.0	0.0	-	LOT D COMMON AREA STONE POINT VIL 11 12
459-070-060-000	Common Area	A	-	-	0.0	0.0	-	LOT E COMMON AREA STONE POINT VIL 11 12
459-070-061-000	Common Area	A	-	-	0.0	0.0	-	LOT F COMMON AREA STONE POINT VIL 11 12
459-070-062-000	Common Area	A	-	-	0.0	0.0	-	LOT G COMMON AREA STONE POINT VIL 11 12
459-070-063-000	Common Area	A	-	-	0.0	0.0	-	LOT H COMMON AREA STONE POINT VIL 11 12
459-070-064-000	Common Area	A	-	-	0.0	0.0	-	LOT M COMMON AREA STONE POINT VIL 11 12
459-070-065-000	Common Area	A	-	-	0.0	0.0	-	LOT O COMMON AREA STONE POINT VIL 11 12
459-070-066-000	Common Area	A	-	-	0.0	0.0	-	LOT P COMMON AREA STONE POINT VIL 11 12
459-080-001-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 58 STONE POINT VIL 11 12
459-080-002-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 59 STONE POINT VIL 11 12
459-080-003-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 60 STONE POINT VIL 11 12
459-080-004-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 61 STONE POINT VIL 11 12
459-080-005-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 62 STONE POINT VIL 11 12
459-080-006-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 63 STONE POINT VIL 11 12
459-080-007-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 64 STONE POINT VIL 11 12
459-080-008-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 65 STONE POINT VIL 11 12
459-080-009-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 66 STONE POINT VIL 11 12
459-080-010-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 67 STONE POINT VIL 11 12
459-080-011-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 68 STONE POINT VIL 11 12
459-080-012-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 69 STONE POINT VIL 11 12
459-080-013-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 70 STONE POINT VIL 11 12
459-080-014-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 71 STONE POINT VIL 11 12
459-080-015-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 72 STONE POINT VIL 11 12
459-080-016-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 73 STONE POINT VIL 11 12
459-080-017-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 74 STONE POINT VIL 11 12
459-080-018-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 75 STONE POINT VIL 11 12
459-080-019-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 76 STONE POINT VIL 11 12
459-080-020-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 77 STONE POINT VIL 11 12
459-080-021-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 78 STONE POINT VIL 11 12

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459-080-022-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 79 STONE POINT VIL 11 12
459-080-023-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 80 STONE POINT VIL 11 12
459-080-024-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 81 STONE POINT VIL 11 12
459-080-025-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 82 STONE POINT VIL 11 12
459-080-026-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 83 STONE POINT VIL 11 12
459-080-027-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 84 STONE POINT VIL 11 12
459-080-028-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 85 STONE POINT VIL 11 12
459-080-029-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 86 STONE POINT VIL 11 12
459-080-030-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 89 STONE POINT VIL 11 12
459-080-031-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 90 STONE POINT VIL 11 12
459-080-032-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 91 STONE POINT VIL 11 12
459-080-033-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 92 STONE POINT VIL 11 12
459-080-034-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 93 STONE POINT VIL 11 12
459-080-035-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 94 STONE POINT VIL 11 12
459-080-036-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 95 STONE POINT VIL 11 12
459-080-037-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 96 STONE POINT VIL 11 12
459-080-038-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 97 STONE POINT VIL 11 12
459-080-039-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 98 STONE POINT VIL 11 12
459-080-040-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 99 STONE POINT VIL 11 12
459-080-041-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 100 STONE POINT VIL 11 12
459-080-042-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 101 STONE POINT VIL 11 12
459-080-043-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 102 STONE POINT VIL 11 12
459-080-044-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 103 STONE POINT VIL 11 12
459-080-045-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 104 STONE POINT VIL 11 12
459-080-046-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 105 STONE POINT VIL 11 12
459-080-047-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 106 STONE POINT VIL 11 12
459-080-048-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 107 STONE POINT VIL 11 12
459-080-049-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 108 STONE POINT VIL 11 12
459-080-050-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 109 STONE POINT VIL 11 12
459-080-051-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 110 STONE POINT VIL 11 12
459-080-052-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 111 STONE POINT VIL 11 12
459-080-053-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 112 STONE POINT VIL 11 12
459-080-054-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 113 STONE POINT VIL 11 12
459-080-055-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 114 STONE POINT VIL 11 12
459-080-056-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 115 STONE POINT VIL 11 12
459-080-057-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 116 STONE POINT VIL 11 12
459-080-058-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 117 STONE POINT VIL 11 12
459-080-059-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 118 STONE POINT VIL 11 12
459-080-060-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 119 STONE POINT VIL 11 12
459-080-061-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 120 STONE POINT VIL 11 12

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459-080-062-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 121 STONE POINT VIL 11 12
459-080-063-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 122 STONE POINT VIL 11 12
459-080-064-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 123 STONE POINT VIL 11 12
459-080-065-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 124 STONE POINT VIL 11 12
459-080-066-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 125 STONE POINT VIL 11 12
459-080-067-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 126 STONE POINT VIL 11 12
459-080-068-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 127 STONE POINT VIL 11 12
459-080-069-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 128 STONE POINT VIL 11 12
459-080-070-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 129 STONE POINT VIL 11 12
459-080-071-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 130 STONE POINT VIL 11 12
459-080-072-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 131 STONE POINT VIL 11 12
459-080-073-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 132 STONE POINT VIL 11 12
459-080-074-000	Common Area	A	-	-	0.0	0.0	-	LOT I COMMON AREA STONE POINT VIL 11 12
459-080-075-000	Common Area	A	-	-	0.0	0.0	-	LOT J COMMON AREA STONE POINT VIL 11 12
459-080-076-000	Common Area	A	-	-	0.0	0.0	-	LOT K COMMON AREA STONE POINT VIL 11 12
459-080-077-000	Common Area	A	-	-	0.0	0.0	-	LOT L COMMON AREA STONE POINT VIL 11 12
459-080-078-000	Common Area	A	-	-	0.0	0.0	-	POR LOT N COM AREA STONE POINT VIL 11 12
459-090-001-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 1 STONE POINT VIL 14 MOR DD-4
459-090-002-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 2 STONE POINT VIL 14 MOR DD-4
459-090-003-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 3 STONE POINT VIL 14 MOR DD-4
459-090-004-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 4 STONE POINT VIL 14 MOR DD-4
459-090-005-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 5 STONE POINT VIL 14 MOR DD-4
459-090-006-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 6 STONE POINT VIL 14 MOR DD-4
459-090-007-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 7 STONE POINT VIL 14 MOR DD-4
459-090-008-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 8 STONE POINT VIL 14 MOR DD-4
459-090-009-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 9 STONE POINT VIL 14 MOR DD-4
459-090-010-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 10 STONE POINT VIL 14 MOR DD-4
459-090-011-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 11 STONE POINT VIL 14 MOR DD-4
459-090-012-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 12 STONE POINT VIL 14 MOR DD-4
459-090-013-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 13 STONE POINT VIL 14 MOR DD-4
459-090-014-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 14 STONE POINT VIL 14 MOR DD-4
459-090-015-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 15 STONE POINT VIL 14 MOR DD-4
459-090-016-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 16 STONE POINT VIL 14 MOR DD-4
459-090-017-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 17 STONE POINT VIL 14 MOR DD-4
459-090-018-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 18 STONE POINT VIL 14 MOR DD-4
459-090-019-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 19 STONE POINT VIL 14 MOR DD-4
459-090-020-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 20 STONE POINT VIL 14 MOR DD-4
459-090-021-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 21 STONE POINT VIL 14 MOR DD-4
459-090-022-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 22 STONE POINT VIL 14 MOR DD-4
459-090-023-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 23 STONE POINT VIL 14 MOR DD-4

City of Roseville
Olympus Pointe Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
459-090-024-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 24 STONE POINT VIL 14 MOR DD-4
459-090-025-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 25 STONE POINT VIL 14 MOR DD-4
459-090-026-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 26 STONE POINT VIL 14 MOR DD-4
459-090-027-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 27 STONE POINT VIL 14 MOR DD-4
459-090-028-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 28 STONE POINT VIL 14 MOR DD-4
459-090-029-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 29 STONE POINT VIL 14 MOR DD-4
459-090-030-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 30 STONE POINT VIL 14 MOR DD-4
459-090-031-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 31 STONE POINT VIL 14 MOR DD-4
459-090-032-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 32 STONE POINT VIL 14 MOR DD-4
459-090-033-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 33 STONE POINT VIL 14 MOR DD-4
459-090-034-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 34 STONE POINT VIL 14 MOR DD-4
459-090-035-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 35 STONE POINT VIL 14 MOR DD-4
459-090-036-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 36 STONE POINT VIL 14 MOR DD-4
459-090-037-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 37 STONE POINT VIL 14 MOR DD-4
459-090-038-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 38 STONE POINT VIL 14 MOR DD-4
459-090-039-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 39 STONE POINT VIL 14 MOR DD-4
459-090-040-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 40 STONE POINT VIL 14 MOR DD-4
459-090-041-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 41 STONE POINT VIL 14 MOR DD-4
459-090-042-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 42 STONE POINT VIL 14 MOR DD-4
459-090-043-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 43 STONE POINT VIL 14 MOR DD-4
459-090-044-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 44 STONE POINT VIL 14 MOR DD-4
459-090-045-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 45 STONE POINT VIL 14 MOR DD-4
459-090-046-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 46 STONE POINT VIL 14 MOR DD-4
459-090-047-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 47 STONE POINT VIL 14 MOR DD-4
459-090-048-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 48 STONE POINT VIL 14 MOR DD-4
459-090-049-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 49 STONE POINT VIL 14 MOR DD-4
459-090-050-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 50 STONE POINT VIL 14 MOR DD-4
459-090-051-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 51 STONE POINT VIL 14 MOR DD-4
459-090-052-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 52 STONE POINT VIL 14 MOR DD-4
459-090-053-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 53 STONE POINT VIL 14 MOR DD-4
459-090-054-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 54 STONE POINT VIL 14 MOR DD-4
459-090-055-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 87 STONE POINT VIL 11 12
459-090-056-000	SF	A	232.04	535.78	1.0	0.0	1.00	LOT 88 STONE POINT VIL 11 12
459-090-057-000	Common Area	A	-	-	0.0	0.0	-	LOT B COMMON AREA STONE POINT VIL 14 MOR DD-4
459-090-058-000	Common Area	A	-	-	0.0	0.0	-	LOT C COMMON AREA STONE POINT VIL 14 MOR DD-4
459-090-059-000	Common Area	A	-	-	0.0	0.0	-	LOT D COMMON AREA STONE POINT VIL 14 MOR DD-4
459-090-060-000	Common Area	A	-	-	0.0	0.0	-	LOT E COMMON AREA STONE POINT VIL 14 MOR DD-4
459-090-061-000	Common Area	A	-	-	0.0	0.0	-	POR LOT N COM AREA STONE POINT VIL 11 12
459-090-062-000	Exempt	A	-	-	0.0	0.0	-	LOT 10A PARK STONE POINT LARGE LOT SUBD MOR
459-090-063-000	Exempt	A	-	-	0.0	0.0	-	LOT 10B PARK STONE POINT LARGE LOT SUBD MOR

City of Roseville
Olympus Pointe Landscaping & Lighting District
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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
460-160-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 7 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 8 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 9 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 10 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 11 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 12 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 13 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 14 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 15 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 16 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 17 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 18 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 19 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 20 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 21 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 22 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 23 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 24 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-019-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 25 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-020-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 26 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-021-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 27 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-022-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 28 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-023-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 29 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-024-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 30 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-025-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 31 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-026-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 32 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-027-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 33 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-028-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 34 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-029-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 35 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-030-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 44 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-031-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 45 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-032-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 46 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-033-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 47 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-034-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 48 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-035-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 49 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-036-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 50 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-037-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 51 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-038-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 52 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-039-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 53 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-040-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 54 OLYMPUS HEIGHTS UNIT 1 S-11

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
460-160-041-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 55 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-042-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 56 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-043-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 57 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-044-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 58 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-045-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 59 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-046-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 60 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-047-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 61 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-048-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 62 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-049-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 63 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-050-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 64 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-051-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 65 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-052-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 66 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-053-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 67 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-054-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 68 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-055-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 69 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-056-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 70 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-057-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 71 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-058-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 72 OLYMPUS HEIGHTS UNIT 1 S-11
460-160-059-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 73 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 1 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 2 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 3 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 4 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 5 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 6 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 36 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 37 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 38 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 39 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 40 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 41 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 42 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 43 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 74 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 75 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 76 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 77 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-019-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 78 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-020-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 79 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-021-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 80 OLYMPUS HEIGHTS UNIT 1 S-11

City of Roseville
Olympus Pointe Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
460-170-022-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 81 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-023-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 82 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-024-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 83 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-025-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 84 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-026-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 85 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-027-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 86 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-028-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 87 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-029-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 88 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-030-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 89 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-031-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 90 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-032-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 91 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-033-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 92 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-034-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 93 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-035-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 94 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-036-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 95 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-037-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 96 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-038-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 97 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-039-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 98 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-040-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 99 OLYMPUS HEIGHTS UNIT 1 S-11
460-170-041-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 100 OLYMPUS HEIGHTS UNIT 1 S-11
460-180-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 1 OLYMPUS HEIGHTS PHASE 2A
460-180-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 2 OLYMPUS HEIGHTS PHASE 2A
460-180-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 3 OLYMPUS HEIGHTS PHASE 2A
460-180-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 4 OLYMPUS HEIGHTS PHASE 2A
460-180-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 5 OLYMPUS HEIGHTS PHASE 2A
460-180-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 6 OLYMPUS HEIGHTS PHASE 2A
460-180-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 7 OLYMPUS HEIGHTS PHASE 2A
460-180-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 8 OLYMPUS HEIGHTS PHASE 2A
460-180-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 9 OLYMPUS HEIGHTS PHASE 2A
460-180-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 10 OLYMPUS HEIGHTS PHASE 2A
460-180-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 11 OLYMPUS HEIGHTS PHASE 2A
460-180-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 12 OLYMPUS HEIGHTS PHASE 2A
460-180-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 13 OLYMPUS HEIGHTS PHASE 2A
460-180-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 14 OLYMPUS HEIGHTS PHASE 2A
460-180-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 15 OLYMPUS HEIGHTS PHASE 2A
460-180-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 16 OLYMPUS HEIGHTS PHASE 2A
460-180-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 17 OLYMPUS HEIGHTS PHASE 2A
460-180-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 18 OLYMPUS HEIGHTS PHASE 2A
460-180-019-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 19 OLYMPUS HEIGHTS PHASE 2A
460-180-020-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 20 OLYMPUS HEIGHTS PHASE 2A

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
460-180-021-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 21 OLYMPUS HEIGHTS PHASE 2A
460-180-022-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 22 OLYMPUS HEIGHTS PHASE 2A
460-180-023-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 23 OLYMPUS HEIGHTS PHASE 2A
460-180-024-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 24 OLYMPUS HEIGHTS PHASE 2A
460-180-025-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 25 OLYMPUS HEIGHTS PHASE 2A
460-180-026-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 26 OLYMPUS HEIGHTS PHASE 2A
460-180-027-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 27 OLYMPUS HEIGHTS PHASE 2A
460-180-028-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 28 OLYMPUS HEIGHTS PHASE 2A
460-180-029-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 29 OLYMPUS HEIGHTS PHASE 2A
460-180-030-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 30 OLYMPUS HEIGHTS PHASE 2A
460-180-031-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 31 OLYMPUS HEIGHTS PHASE 2A
460-180-032-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 32 OLYMPUS HEIGHTS PHASE 2A
460-180-033-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 33 OLYMPUS HEIGHTS PHASE 2A
460-180-034-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 34 OLYMPUS HEIGHTS PHASE 2A
460-180-035-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 35 OLYMPUS HEIGHTS PHASE 2A
460-180-036-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 36 OLYMPUS HEIGHTS PHASE 2A
460-180-037-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 37 OLYMPUS HEIGHTS PHASE 2A
460-180-038-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 38 OLYMPUS HEIGHTS PHASE 2A
460-180-039-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 39 OLYMPUS HEIGHTS PHASE 2A
460-180-040-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 40 OLYMPUS HEIGHTS PHASE 2A
460-180-041-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 41 OLYMPUS HEIGHTS PHASE 2A
460-180-042-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 42 OLYMPUS HEIGHTS PHASE 2A
460-180-043-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 43 OLYMPUS HEIGHTS PHASE 2A
460-180-044-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 44 OLYMPUS HEIGHTS PHASE 2A
460-180-045-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 45 OLYMPUS HEIGHTS PHASE 2A
460-180-046-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 46 OLYMPUS HEIGHTS PHASE 2A
460-180-047-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 47 OLYMPUS HEIGHTS PHASE 2A
460-180-048-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 48 OLYMPUS HEIGHTS PHASE 2A
460-180-049-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 49 OLYMPUS HEIGHTS PHASE 2A
460-180-050-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 50 OLYMPUS HEIGHTS PHASE 2A
460-180-051-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 51 OLYMPUS HEIGHTS PHASE 2A
460-180-052-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 52 OLYMPUS HEIGHTS PHASE 2A
460-180-053-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 53 OLYMPUS HEIGHTS PHASE 2A
460-180-054-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 54 OLYMPUS HEIGHTS PHASE 2A
460-180-055-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 55 OLYMPUS HEIGHTS PHASE 2A
460-180-056-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 56 OLYMPUS HEIGHTS PHASE 2A
460-190-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 57 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 58 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 59 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 60 OLYMPUS HEIGHTS PHASE 2B S-54

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
460-190-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 61 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 62 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 63 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 64 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 65 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 66 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 67 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 68 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 69 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 70 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 71 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 72 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 73 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 74 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-019-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 75 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-020-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 76 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-021-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 77 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-022-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 78 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-023-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 79 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-024-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 80 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-025-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 81 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-026-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 82 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-027-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 83 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-028-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 84 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-029-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 85 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-030-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 86 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-031-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 87 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-032-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 88 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-033-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 89 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-034-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 90 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-035-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 91 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-036-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 92 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-037-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 93 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-038-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 94 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-039-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 95 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-040-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 96 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-041-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 97 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-042-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 98 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-043-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 99 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-044-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 100 OLYMPUS HEIGHTS PHASE 2B S-54

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
460-190-045-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 101 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-046-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 102 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-047-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 103 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-048-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 104 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-049-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 105 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-050-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 106 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-051-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 107 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-052-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 108 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-053-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 109 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-054-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 110 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-055-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 111 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-056-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 112 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-057-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 113 OLYMPUS HEIGHTS PHASE 2B S-54
460-190-058-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 114 OLYMPUS HEIGHTS PHASE 2B S-54
461-011-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 1 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-011-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 2 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-011-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 3 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-011-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 4 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-011-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 5 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 6 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 7 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 8 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 9 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 12 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 13 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 14 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 15 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 16 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 17 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 18 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 19 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 21 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 22 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 23 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-019-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 24 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-020-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 25 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-021-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 26 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-022-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 27 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-023-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 28 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-024-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 29 OLYMPUS HEIGHTS #4 PH 2 MOR T-39

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
461-012-025-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 30 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-026-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 31 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-027-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 32 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-028-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 33 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-029-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 34 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-030-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 35 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-031-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 36 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-032-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 37 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-033-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 38 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-034-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 39 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-035-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 40 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-036-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 41 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-037-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 42 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-038-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 43 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-039-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 44 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-040-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 45 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-041-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 46 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-042-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 47 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-043-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 48 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-044-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 49 OLYMPUS HEIGHTS #4 PH 1 (AMEDNED) T-38
461-012-045-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 50 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-046-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 51 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-047-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 52 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-048-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 53 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-049-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 54 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-050-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 55 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-051-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 56 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-052-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 57 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-053-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 58 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-054-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 59 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-055-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 60 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-056-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 61 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-057-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 62 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-058-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 63 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-059-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 64 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-060-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 65 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-061-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 66 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-062-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 67 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-063-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 68 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-064-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 69 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
461-012-065-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 70 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-066-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 71 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-067-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 72 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-068-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 73 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-069-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 74 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-070-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 75 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-071-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 76 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-072-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 77 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-073-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 78 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-074-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 79 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-075-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 80 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-076-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 81 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-077-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 82 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-078-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 83 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-012-081-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOTS 10 & 11 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-012-082-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	POR LOT 20 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 84 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-013-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 85 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-013-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 86 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-013-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 87 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-013-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 88 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-013-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 89 OLYMPUS HEIGHTS # 4 PH 1 (AMENDED) T-38
461-013-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 90 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-013-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 91 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-013-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 92 OLYMPUS HEIGHTS #4 PH 1 (AMENDED) T-38
461-013-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 93 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 94 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 95 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 96 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 97 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 98 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 99 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 100 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 101 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-019-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 102 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-020-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 103 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-021-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 104 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-022-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 105 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-023-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 106 OLYMPUS HEIGHTS #4 PH 3 MOR T-39
461-013-024-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 107 OLYMPUS HEIGHTS #4 PH 2 MOR T-39

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
461-013-025-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 108 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-026-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 109 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-027-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 110 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-028-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 111 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-029-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 112 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-030-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 113 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-031-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 114 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-032-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 115 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-033-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 116 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-034-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 117 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-035-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 118 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-036-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 119 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-013-037-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 120 OLYMPUS HEIGHTS UNIT 4 T-12
461-013-038-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 121 OLYMPUS HEIGHTS #4 PH 2 MOR T-39
461-021-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 64 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 65 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 66 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 67 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 68 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 69 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 70 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 71 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 72 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 73 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 74 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 75 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 76 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 77 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 78 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 79 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 80 OLYMPUS HEIGHTS UNIT #3 T-25
461-021-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 81 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 82 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 83 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 84 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 85 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 86 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 87 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 88 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 89 OLYMPUS HEIGHTS UNIT #3 T-25

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ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
461-022-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 90 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 91 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 92 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 93 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 94 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 95 OLYMPUS HEIGHTS UNIT #3 T-25
461-022-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 96 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 97 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 98 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 99 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 100 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 101 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 102 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 103 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 104 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 105 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 106 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 107 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 108 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 109 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 110 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 111 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 112 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 113 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 114 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-019-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 115 OLYMPUS HEIGHTS UNIT #3 T-25
461-023-020-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 116 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 117 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 118 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 119 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 120 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 121 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 122 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 123 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 124 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 125 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 126 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 127 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 128 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 129 OLYMPUS HEIGHTS UNIT #3 T-25

City of Roseville
Olympus Pointe Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
461-024-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 130 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 131 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 132 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 133 OLYMPUS HEIGHTS UNIT #3 T-25
461-024-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 134 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-001-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 1 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-002-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 2 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-003-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 3 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-004-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 4 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-005-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 5 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-006-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 6 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-007-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 7 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-008-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 8 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-009-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 9 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-010-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 10 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-011-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 11 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-012-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 12 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-013-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 13 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-014-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 14 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-015-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 15 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-016-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 16 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-017-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 17 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-018-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 18 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-019-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 19 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-020-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 20 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-021-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 21 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-022-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 22 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-023-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 23 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-024-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 24 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-025-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 25 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-026-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 26 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-027-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 27 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-028-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 28 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-029-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 29 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-030-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 30 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-031-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 31 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-032-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 32 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-033-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 33 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-034-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 34 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-035-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 35 OLYMPUS HEIGHTS UNIT #3 T-25

City of Roseville
Olympus Pointe Landscaping & Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	ZONE	CHARGE	MAXIMUM ASMT	SF UNITS	NON-RES ACREAGE	EBU	LEGAL DESCRIPTION
461-025-036-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 36 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-037-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 37 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-038-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 38 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-039-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 39 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-040-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 40 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-041-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 41 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-042-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 42 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-043-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 43 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-044-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 44 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-045-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 45 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-046-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 46 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-047-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 47 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-048-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 48 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-049-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 49 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-050-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 50 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-051-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 51 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-052-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 52 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-053-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 53 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-054-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 54 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-055-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 55 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-056-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 56 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-057-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 57 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-058-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 58 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-059-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 59 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-060-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 60 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-061-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 61 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-062-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 62 OLYMPUS HEIGHTS UNIT #3 T-25
461-025-063-000	SF Residential	D	150.18	180.18	1.0	0.0	1.00	LOT 63 OLYMPUS HEIGHTS UNIT #3 T-25

Summary Fields	Zone A	Zone D	Total
ACTIVE PARCELS	400	468	868
LEVIED PARCELS	358	468	826
CHARGE	$166,329.58	$70,284.24	$236,613.82
MAXIMUM ASMT	$384,051.59	$84,323.16	$468,374.76
SF UNITS	186	468	654
NON-RES ACREAGE	530.8045	0.0000	530.8045
EBU	716.8045	468.0000	1,184.8045

RESOLUTION NO. 25-124

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, FOR FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Riverside Avenue Landscaping and Lighting District (hereafter referred to as the "District") pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California, beginning with Section 22500* (hereafter referred to as the "Act"), that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance and services of street lighting, landscaping, and all appurtenant facilities and operations related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer") for the purpose of assisting with the establishment of the assessments, the annexation of territory, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act, and in accordance with the California Constitution, Articles XIIIC and XIIID;

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 Engineer's Report: The City Council hereby orders the Engineer to prepare and file with the City Clerk the Engineer's Report concerning the levy of assessments for the District in accordance with Chapter 3, Section 22622 of the Act.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance, operation of and the furnishing of services, materials and/or improvements for landscape, lighting, streetscape and hardscape areas, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

RESOLUTION NO. 25-124

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-125

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Riverside Avenue Landscaping and Lighting District (hereafter referred to as the "District"), and initiated proceedings for Fiscal Year 2025/2026, pursuant to the provisions of the *Landscaping and Lighting Act of 1972*, *Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereafter referred to as the "Act") that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance, operation and servicing of all improvements and facilities related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services for the purpose of assisting with the Annual Levy of the District, and to prepare and file a report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, PURSUANT TO *CHAPTER 3, SECTION 22624* OF THE ACT, AS FOLLOWS:

Section 1 Intention: The City Council hereby declares that it is its intention to seek the Annual Levy of the District pursuant to the Act, over and including the land within the District boundary, and to levy and collect assessments on all such land to pay for the annual costs of the improvements.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance, operation of and the furnishing of services, materials or improvements for landscape, lighting, streetscape and hardscape areas, including monuments, landmark and gateway features, bulb-outs, walls, fencing, signage, special lighting, paving, transit facilities, ground cover, shrubs, plants, trees, irrigation and drainage systems, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

Section 3 Boundaries and Designation: The boundaries of the District are described as the boundaries previously defined in the formation documents of the original District. The District is known and designated as:

"Riverside Avenue Landscaping and Lighting District"

Section 4 Proposed Assessment Amounts: The proposed assessments are outlined in the Engineer's Report. District Assessments are calculated in accordance with the method of apportionment established for the District and do not exceed the assessment rates and annual inflationary adjustment previously authorized by the City Council and approved by the property owners in accordance with the provisions of the California State Constitution, Article XIIID.

Section 5 Public Hearing(s): The City Council hereby declares its intention to conduct a Public Hearing annually concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22626* of the Act.

Section 6 Notice: The City Clerk shall give notice of the time and place of the Public Hearing by causing this Resolution to be published once in the local newspaper not less than ten (10) days before the date of the hearing and by posting a copy of this Resolution on the official bulletin board customarily used by the City Council for the posting of notices.

Section 7 Time and Place of Public Hearing: Notice is hereby given that a Public Hearing on these matters will be held by the City Council on **Wednesday, May 21, 2025 at 6:00 p.m.**, or as soon thereafter as feasible in the regular meeting chambers located at 311 Vernon Street, Roseville, California.

RESOLUTION NO. 25-125

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-126

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, the City Council has, by previous Resolutions, ordered the preparation of an Annual Levy Report (hereafter referred to as the "Engineer's Report") for the district known and designated as the Riverside Avenue Landscaping and Lighting District (hereafter referred to as the "District"), pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereinafter referred to as the "Act"); and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer"), for the purpose of assisting with the establishment of the assessments and to prepare and file an Engineer's Report with the City Clerk in accordance with the Act, and in accordance with the requirements of the California Constitution, Articles XIIIC and XIIID; and,

WHEREAS, there has now been presented to this City Council the Engineer's Report as required by *Chapter 1, Article 4, Section 22566* of said Act; and,

WHEREAS, this City Council has carefully examined and reviewed the Engineer's Report as presented, and is preliminarily satisfied with the District, each and all of the budget items and documents as set forth therein, and is satisfied that the assessments, on a preliminary basis, have been spread in accordance with the benefits received from the improvements, operation, maintenance and services to be performed within the District, as set forth in said Engineer's Report; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 That the above recitals are all true and correct.

Section 2 That the Engineer's Report, as presented, consists of the following:

a. A Description of Improvements
b. The Annual Budget (Costs and Expenses of Maintenance, Services, Operations and District Administration)
c. The Assessment Roll containing the Fiscal Year 2025/2026 Levy for each Assessor Parcel within the District

Section 3 The Engineer's Report is hereby approved on a preliminary basis and ordered to be filed in the Office of the City Clerk as a permanent record and to remain open to public inspection.

Section 4 That the City Clerk shall certify to the passage and adoption of this Resolution, and the minutes of this meeting shall so reflect the presentation of the Engineer's Report.

RESOLUTION NO. 25-126

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

City of Roseville

Riverside Avenue Landscaping and Lighting District

FY 2025/26 Engineer's Annual Levy Report

Intent Meeting: April 16, 2025
Public Hearing: May 21, 2025

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ENGINEER'S REPORT AFFIDAVIT

Establishment of Annual Rates and Charges for the:

Riverside Avenue
Landscaping and Lighting District

City of Roseville

Placer County, State of California

This Report describes the District and any relevant zones therein, including the improvements, budgets, parcels and assessments to be levied for Fiscal Year 2025/26 as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Placer County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the City Council.

Dated this _____ day of _____, 2025

Willdan Financial Services
Assessment Engineer
On Behalf of the City of Roseville

By: _____

Mickey Ashley
Project Manager
District Administration Services

By: _____

Tyrone Peter
PE # C 81888

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I. OVERVIEW

A. INTRODUCTION

The City of Roseville ("City") annually levies and collects special assessments in order to maintain the improvements within the Riverside Avenue Landscaping and Lighting District ("District"). The District was formed in January of 2007 and is levied annual assessments pursuant to *the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code* ("1972 Act").

The Engineer's Report ("Report") describes the District, any new annexations, changes to the District, and the proposed assessments for the period of July 1, 2025 through June 30, 2026. The special benefit assessments are based on historical and estimated costs to maintain the District improvements. These assessments, which provide a direct and special benefit to properties within the District, will provide funding for the operation and maintenance of District improvements.

The word "parcel," for the purposes of this Report, refers to an individual property assigned its own Assessor's Parcel Number ("APN") by the Placer County Assessor's Office. The Placer County Auditor/Controller uses Assessor's Parcel Numbers and specific Tax Code Accounts, to identify on the County's tax roll, properties assessed for special district benefit assessments.

Following approval of the Report, the City Council will, by resolution, order the improvements to be made and confirm the levy and collection of assessments herein pursuant to the 1972 Act. The assessment rates and method of apportionment described in this Report as approved or modified by the City Council define the assessments to be applied to each parcel within the District for Fiscal Year ("FY") 2025/26. The assessments as approved will be submitted to the Placer County Auditor/Controller to be included on the property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the Current Fiscal Year, a corrected parcel number and/or new parcel number will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved by the City Council.

B. COMPLIANCE WITH CURRENT LEGISLATION

The City Council, pursuant to the provisions of the "Landscaping and Lighting Act of 1972", being Division 15, Part 2 of the Streets and Highways Code of the State of California, beginning with Section 22500 (the "1972 Act"); Article XIIID of the Constitution of the State of California ("Article XIIID"); and the Proposition 218 Omnibus Implementation Act, beginning with Government Code Section 53750 (the "Implementation Act") (the 1972 Act, Article XIIID and the Implementation Act are referred to collectively as the "Assessment Law") initiated proceedings for the

formation of the District on November 15, 2006 and to levy and collect annual assessments against lots and parcels within the District for FY 2007/08. On January 17, 2007, pursuant to Assessment Law, the City conducted a Public Hearing and tabulated the returned ballots. The City determined that a majority protest did not exist and approved the District's maximum assessment rate and annual inflationary adjustment factor.

Pursuant to the 1972 Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments, to review the Engineer's Annual Levy Report prior to approving the annual assessments to be levied on the County tax rolls. The assessments described in this Report have been prepared in accordance with the 1972 Act and Assessment Law.

C. DESCRIPTION OF DISTRICT BOUNDARIES

The proposed territory within the District consists of all lots, parcels and subdivisions of land as shown on the Boundary Map titled "Boundary Map of Riverside Avenue Landscaping and Lighting District" contained within this report in Appendix A-1.

The District is bounded by Douglas Boulevard to the north, Darling Way to the south and includes parcels that front Riverside Avenue. It is centrally located between Interstate 80 and Downtown Roseville and is east of the Union Pacific Railroad.

The District currently has a mix of different types of land uses including automotive related retail and car lots, community/neighborhood retail, offices, services, and residential units.

D. IMPROVEMENTS AUTHORIZED BY THE 1972 ACT

As applicable or may be applicable to a proposed District, the 1972 Act defines improvements to mean one or any combination of the following:

- The installation or planting of landscaping.
- The installation or construction of statuary, fountains, and other ornamental structures and facilities.
- The installation or construction of public lighting facilities.
- The installation or construction of any facilities which are appurtenant to any of the foregoing, or which are necessary or convenient for the maintenance or servicing thereof, including, but not limited to, grading, clearing, removal of debris, the installation or construction of curbs, gutters, walls, sidewalks, or paving, or water, irrigation, drainage, or electrical facilities.
- The maintenance or servicing, or both, of any of the foregoing.
- The acquisition of any existing improvement otherwise authorized pursuant to this section.

Incidental expenses associated with the improvements including, but not limited to:

- The cost of preparation of the report, including plans, specifications, estimates, diagram, and assessment;
- The costs of printing, advertising, and the publishing, posting, and mailing of notices;
- Compensation payable to the County for collection of assessments;
- Compensation of any engineer or attorney employed to render services;
- Any other expenses incidental to the construction, installation, or maintenance and servicing of the improvements;
- Any expenses incidental to the issuance of bonds or notes pursuant to Section 22662.5.
- Costs associated with any elections held for the approval of a new or increased assessment.

The 1972 Act defines "Maintain" or "maintenance" to mean furnishing of services and materials for the ordinary and usual maintenance, operation, and servicing of any improvement, including:

- Repair, removal, or replacement of all or any part of any improvement.
- Providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury.
- The removal of trimmings, rubbish, debris, and other solid waste.
- The cleaning, sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Furthermore, the 1972 Act specifies that where the cost of improvements (other than maintenance and operations) is greater than can be conveniently raised from a single annual assessment, an assessment to be levied and collected in annual installments. In that event, the governing body may choose to do any of the following:

- Provide for the accumulation of the moneys in an improvement fund until there are sufficient moneys to pay all or part of the cost of the improvements.
- Provide for a temporary advance to the improvement fund from any available and unencumbered funds of the local agency to pay all or part of the cost of the improvements and collect those advanced moneys from the annual installments collected through the assessments.
- Borrow an amount necessary to finance the estimated cost of the proposed improvements. The amount borrowed, including amounts for bonds issued to finance the estimated cost of the proposed improvements.

E. DESCRIPTION OF THE IMPROVEMENTS AND MAINTENANCE

The District, through the levy of special assessments, is to provide funding for ongoing maintenance, operation and servicing of landscaping and lighting improvements located within the public rights-of-ways and dedicated easements located within the District. These improvements may include, but are not limited to, all materials, equipment, utilities, labor, and appurtenant facilities related to the ongoing maintenance of the improvements. The improvements to be maintained and services are generally described as follows:

Landscaping Improvements

The general landscaping improvements in the District are to be consistent with the improvements on Vernon Street located north of the District, which intersects Riverside Avenue. As a gateway to downtown Roseville, Riverside Avenue's compatibility with Vernon Street links the downtown area and Riverside Gateway area together.

The landscaping improvements have been designed to enhance the area within the District and may include, but are not limited to ground cover, shrubs and plants, trees, irrigation and drainage systems, ornamental lighting, masonry walls or other fencing, hardscape improvements, monuments and landmarks, mid-block bulbs, bulb-outs, and associated appurtenant located within the street rights-of-way and public areas within the District. Specifically, the proposed landscape improvement areas for this District are:

- Landscaping and hardscape improvements within the public rights-of-way of the streets within the District including, but not limited to, Riverside Avenue including the corners of Riverside Avenue and Second Street, Third Street, Fourth Street, Fifth Street, Sixth Street, Darling Way, Fern Street, Cherry Street, and Bonita Street.
- Decorative banners along Riverside Avenue.
- Transit facilities include bus stop seating and decorative shelters.
- Roundabout improvements including plantings, paving, and landmark feature located at the intersection of Vernon St., Douglas Blvd., and Riverside Ave.
- A Gateway feature located at the intersection of Darling Way and Riverside Avenue.
- Various amenities associated with the landscape improvements and public areas within the District, including, but not limited to, trash receptacles, street furniture, bike racks, entry signs, sidewalks, fencing, and retaining walls.

Specifically, not included as District improvements are those improvements located on private property, improvements and facilities that are outside the boundaries of the District and/or area funded by other sources available to the City.

Public Lighting Improvements

The lighting improvements may include, but are not limited to, the cost of providing, maintaining, and servicing of lighting fixtures, poles, meters, conduits, electrical cable, and associated appurtenant facilities associated with:

- Lighting facilities within the landscaped areas and public areas including safety lights, security lights or ornamental lights installed as part of the District improvements; and
- Public street light improvements located on the streets within the District. Specifically excluded from the assessment are the street light energy costs. These costs are to be paid for by the City from other revenue sources.

Detailed maps and descriptions of the location and extent of the specific improvements to be maintained by the District are on file in the Office of Public Works and by reference are made part of this Report.

Description of Maintenance and Services

Maintenance means the furnishing of services and materials for the ordinary and usual maintenance, operation and servicing of landscaping and street lighting improvements facilities and appurtenant facilities, including repair, removal or replacement of all or part of any of the landscaping and street lighting improvements, or appurtenant facilities; providing for the life, growth, health and beauty of landscaping improvements including cultivation, irrigation, trimming, mowing, spraying, fertilizing and treating for disease or injury; the removal of trimmings, rubbish, debris and other solid waste; and the cleaning sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Servicing means the furnishing of water and electricity for the irrigation of the landscape improvements or appurtenant facilities and the furnishing of electric current or energy for the operation of the landscaping improvements or appurtenant facilities. The street lighting improvements shall be maintained to provide adequate illumination; however, the City will be paying the actual energy costs of the streetlights.

II. METHOD OF APPORTIONMENT

A. GENERAL

The Implementation Act permits the establishment of assessment districts by agencies for the purpose of providing certain public improvements, which include the construction, maintenance, and servicing of landscaping improvements, streetlights, and traffic signals.

Streets and Highways Code Section 22573 requires that maintenance assessments be levied according to benefit rather than the assessed value.

> *"The net amount to be assessed upon lands within an assessment district may be apportioned by any formula or method which fairly distributes the net amount among all assessable lots or parcels in proportion to the estimated benefits to be received by each such lot or parcel from the improvements."*

In addition, Article XIIID and the Implementation Act require that a parcel's assessment may not exceed the reasonable cost for the proportional special benefit conferred to that parcel. Article XIIID and the Implementation Act further provides that only special benefits are assessable, and the City must separate the general benefits from the special benefits. They also require that publicly owned properties that specifically benefit from the improvements be assessed.

B. SPECIAL BENEFIT ANALYSIS

In conjunction with the provisions of the 1972 Act, the California Constitution Article XIIID addresses several key criteria for the levy of assessments, notably:

Article XIIID Section 2d defines District as follows:

"District means an area determined by an agency to contain all parcels which will receive a special benefit from a proposed public improvement or property-related service;"

Article XIIID Section 2i defines Special Benefit as follows:

"Special benefit" means a particular and distinct benefit over, and above general benefits conferred on real property located in the district or to the public at large. General enhancement of property value does not constitute "special benefit."

Article XIIID Section 4a defines proportional special benefit assessments as follows:

"An agency which proposes to levy an assessment shall identify all parcels which will have a special benefit conferred upon them and upon which an assessment will be imposed. The proportionate special benefit derived by each identified

parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. No assessment shall be imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."

This District was formed to establish and provide for the improvements that enhance the presentation of the surrounding properties and developments. These improvements will directly benefit the parcels to be assessed within the District. The assessments and method of apportionment is based on the premise that the assessments will be used to construct and install landscape and lighting improvements within the District as well as provide for the annual maintenance of those improvements, and the assessment revenues generated by District will be used solely for such purposes.

The costs of the proposed improvements have been identified and allocated to properties within the District based on special benefit. The improvements to be provided by this District and for which properties will be assessed have been identified as an essential component and local amenity that provides a direct reflection and extension of the properties within the District which the property owners and residents have expressed a high level of support.

The method of apportionment (method of assessment) set forth in the Report is based on the premise that each assessed property receives special benefits from the landscape and lighting improvements within the District, and the assessment obligation for each parcel reflects that parcel's proportional special benefits as compared to other properties that receive special benefits.

To identify and determine the proportional special benefit to each parcel within the District, it is necessary to consider the entire scope of the improvements provided as well as the properties that benefit from those improvements. The improvements and the associated costs described in this Report, have been carefully reviewed and have been identified and allocated based on a benefit rationale and calculations that proportionally allocate the net cost of only those improvements determined to be of special benefit to properties within the District. The various public improvements and the associated costs have been identified as either "general benefit" (not assessed) or "special benefit."

Proper maintenance and operation of parkway landscaping and streetlights provides special benefit to adjacent properties by providing community character, security, safety, and vitality. In addition, these improvements will enhance the ability of property owners to attract and maintain customers as well as increase the viability of commercial development.

Landscaping Special Benefit

Landscaping and appurtenant facilities, if well maintained, provide beautification, shade, and enhancement of the desirability of the surroundings, and therefore increase property value. Specifically, they provide a sense of ownership and a common theme in the community providing aesthetic appeal and increased desirability of properties.

Landscaping provides special benefit to those developments that are directly adjacent to the public streets.

Landscaping General Benefit

The Improvements were installed to directly benefit the property owners in the District to enhance business and development opportunities. Therefore, it has been determined that there are no general benefits associated with the landscaping improvements.

Lighting Special Benefit

The operation, maintenance and servicing of lighting along local streets and arterial streets of a development provide the following special benefits:

- Improved security of lots and parcels along the perimeter of the development;
- Improved nighttime visibility for the local access of emergency vehicles; and
- Improved safety and traffic circulation to and from parcels.

Street Lights General Benefit

Similar to the landscaping improvements described above, the Improvements were installed to directly benefit the property owners in the District to enhance business and development opportunities. Therefore, it has been determined that there are no general benefits associated with lighting improvements.

C. ASSESSMENT METHODOLOGY

To establish the special benefit to the individual parcels within the District, a formula that spreads the costs of the maintenance based on the special benefit must be established. The improvements have been reviewed and a formula has been established to apportion the maintenance costs based on benefit.

The method of assessment is based on the front footage of each parcel located within the District. The parcel's Front Footage was determined based on Assessor Parcel maps or other sources. Only Front Footage on Riverside Avenue was used.

Based on the above formula, the FY 2007/08 maximum assessment rate approved on January 17, 2007 through a property owner balloting (the "Initial

Assessment Rate" or the "Base Year Maximum Assessment Rate") is $6.45 per each foot of frontage.

The following formulas were used to first calculate the District's Initial Assessment Rate and then each parcel's FY 2007/08 assessment (proportional benefit):

Step 1:

Balance to Levy ÷ Total Front Footage =
Maximum Front Footage Rate

Step 2:

Parcel Front Footage x Maximum Front Footage Rate =
Maximum Assessment

The Total Front Footage was the sum of all the Front Feet within the District. The Initial Assessment Rate per Front Foot was established by taking the total cost of improvements (Balance to Levy) and dividing that amount by the Total Front Footage within the District. The Initial Assessment Rate per Front Foot, which is also the FY 2007/08 Maximum Front Footage Rate, is then applied back to each individual parcel's Front Footage to determine the parcel's proportionate special benefit and assessment obligation (The FY 2007/08 Maximum Assessment).

D. ASSESSMENT RANGE FORMULA

The purpose of establishing an Assessment Range Formula is to provide for reasonable increases and inflationary adjustment to annual assessment rates without requiring the District to go through the requirements of Proposition 218 in order to get a small increase in assessments. This District provides for an annual adjustment to the Maximum Assessment Rate of the lesser of the percentage change in the area's Local Consumer Price Index for All Urban Consumers, which is currently the San Francisco-Oakland-Hayward Consumer Price Index for All Urban Consumers (the "CPI") or three percent (3%) (the "Escalation Percentage"). The CPI in this adjustment shall be determined through CPI data from the Bureau of Labor Statistics from December to December, beginning with the period from December 2006 to December 2007.

In applying this year's inflationary adjustment, the Escalation Percentage will increase the FY 2025/26 maximum assessment rate by 2.38% over that of the prior year.

The Assessment Range Formula shall be applied to all future assessments within the District beginning in fiscal year 2008/09. Generally, if the proposed annual assessment rate for the current fiscal year is less than or equal to the calculated Maximum Assessment Rate, then the proposed annual assessment is not considered an increased assessment. The Maximum Assessment Rate is equal to the FY 2007/08 Maximum Assessment Rate, which was approved on January 17, 2007 through a property owner balloting (the “Initial Assessment Rate” or “Base Year Assessment Rate”) and adjusted annually by the Escalation Percentage.

Beginning in the second fiscal year (Fiscal Year 2008/09) and each fiscal year thereafter, the Maximum Assessment Rate would be recalculated, and a new Maximum Assessment Rate established within the District.

The Maximum Assessment Rate is adjusted annually and is calculated independent of the District’s annual budget and proposed annual assessment. Any proposed annual assessment is not considered an increased assessment, even if the proposed assessment is greater than the assessment applied in the prior fiscal year.

Although the Maximum Assessment Rate will increase each year, the actual assessment rate may remain unchanged. The Maximum Assessment Rate adjustment is designed to establish a reasonable limit on assessments. The Maximum Assessment Rate calculated each year does not require or facilitate an increase in the annual assessment rate and neither does it restrict assessments to the adjusted maximum amount. If the budget and assessment for the fiscal year do not require an increase, or the increase is less than the adjusted Maximum Assessment Rate, then the required budget and assessment may be applied without additional property owner balloting. If the budget and assessments calculated requires an increase greater than the adjusted Maximum Assessment, then the assessment is considered an increased assessment and would be subject to balloting.

III. DISTRICT BUDGET

A. FY 2025/26 BUDGET

DESCRIPTION	AMOUNT (FUND 2023)
DIRECT COSTS	
Contract Maintenance - Landscaping	$8,652.00
Repair & Maintenance - Landscaping	9,000.00
Repair & Maintenance - Lighting	1,500.00
Repair and Maintenance - Streetscape and Signage	3,200.00
Repair and Maintenance - Tree Work	1,824.00
Utilities	11,814.00
Rehab Reserve Expenditures - Non-Routine Tree Work	4,748.00
Rehab Reserve Expenditures	25,000.00
Total Direct Costs	**$65,738.00**
ADMINISTRATION COSTS	
City Administration	$978.00
Contract Administration - Park's Dept	1,738.00
County Auditor Fees	500.49
Consulting & Professional Services	4,255.00
Public Hearing Publishing Costs	384.00
Total Administrative Costs	**$7,855.49**
Total Direct and Administration Costs	**$73,593.49**
BUDGET ADJUSTMENTS	
Replenishment/(Use) of Operating Reserve	$6,203.68
Contribution for /(Use of) Rehab Reserve	(29,748.00)
Rounding Adjustment	(0.63)
Total Adjustments	**($23,544.95)**
BALANCE TO LEVY	**$50,048.54**

Fund balance information is reported in Section C on the following page.

B. FY 2025/26 ASSESSMENT RATES

DESCRIPTION	AMOUNT (FUND 2023)
FY 2025/26 ASSESSMENT DATA	
Number of Assessable Parcels	76
Total Assessable Front Footage	4,979.76
Assessment Rates	
Applied Assessment Rate per each Foot of Frontage	10.05039
Maximum Assessment Rate per each Foot of Frontage	10.05052
Potential Maximum Assessment	**$50,049.17**

C. FY 2025/26 FUND BALANCE INFORMATION

DESCRIPTION	AMOUNT (FUND 2023)
OPERATING RESERVE	
Beginning Operating Reserve Balance 7-1-2025 (est.)	**$38,269.29**
add: Replenishment from FY 2025/26 Levy	6,203.68
less: Use for FY 2025/26 Expenses	
Transfer from/(to) the Rehab Reserve	(11,603.97)
Ending Operating Reserve Balance 6-30-2026 (est.)	**$32,869.00**
REHABILITATION RESERVE	
Beginning Rehab Reserve Balance 7-1-2025 (est.)	**$108,978.71**
add: Collect from FY 2025/26 Levy	
less: Use for FY 2025/26 Rehab Projects	(29,748.00)
Transfer from/(to) the Operating Reserve	11,603.97
Ending Rehab Reserve Balance 6-30-2026 (est.)	**$90,834.68**

D. DESCRIPTION OF BUDGET ITEMS

Description of the terms used in the preceding Budget, Assessment Rates and Fund Balance tables are listed below:

BUDGET:

DIRECT COSTS

Contract Maintenance - Landscaping - Includes all regularly scheduled contract labor, materials, supplies, and equipment required to properly maintain and ensure the satisfactory condition or maintenance of all landscaping improvements, irrigation, and related drainage systems, as well as maintenance of appurtenant facilities (the “improvements”).

Repair & Maintenance - Landscaping - This line item includes repairs that are generally unforeseen and not normally included in the annual maintenance contract costs. This may include repair of damaged amenities due to vandalism, storms, etc.

Repair & Maintenance – Lighting - This line item includes bulb replacement and repairs that are generally unforeseen. This may include repair of damaged amenities due to vandalism, storms, etc.

Repair & Maintenance - Streetscape/Signage - This line item includes repairs that are generally unforeseen and not normally included in the annual maintenance contract costs. This may include repair of damaged amenities due to vandalism, storms, etc.

Repair & Maintenance – Tree Work - This line item includes annual costs for tree maintenance not included in the annual contract maintenance portion of the budget. If zero, this line item may not be shown in the budget.

Utilities - The furnishing of water and electricity required for the operation and maintenance of the improvements.

Rehab Reserve Expenditures - Non-Routine Tree Work – Expected costs to maintain trees other than costs of annual repair and maintenance. If zero, this line item may not be shown in the budget.

Rehab Reserve Project Expenditures – Expected costs for installation, replacement, or planned upgrades of District improvements for the current year that were previously funded or accumulated in the Rehabilitation Reserve. The Rehabilitation Reserve is used to accumulate funds for costs associated with the future rehabilitation or replacement of District improvements that cannot be conveniently raised from a single year's assessment. If zero, this line item may not be shown in the budget.

ADMINISTRATION COSTS

City Administration – Estimated costs incurred by the City Finance Department and other Departments in preparing the annual budget for the Engineer's Report, together with other financial information required to determine the annual assessment. These costs would also include the preparation, posting and publishing of public notices required for City Council action relating to the District, as well as costs to perform legal review of documents.

Contract Administration – Park's Dept – Estimated Costs of Park and Recreation Department staff to coordinate and oversee the maintenance contracts and overall repair and maintenance of the District. This amount also includes the

cost of the Department's estimates and analysis of certain budget items, estimated costs and useful lives of certain District Improvements.

County Auditor Fees - A fee of 1% of the total levy amount that is charged to the District by the County for placing assessments on property tax bills.

Consulting and Professional Services – Includes the costs and expenses of contracting with various professionals to provide legal, engineering and district administration services directly related to the District, including the calculation of the annual assessment amounts and the preparation of the Engineer's' Report.

Public Hearing Publishing Costs –Includes the out of pocket costs to publish public notices required for City Council action relating to the District.

Total Direct and Administration Costs – The total expected costs of the District.

BUDGET ADJUSTMENTS

Replenishment/(Use) of Operating Reserve – A "Replenishment" increases the levy in order to replenish the Operating Reserve. On the other hand, a "Use" of the Operating Reserve decreases the levy by drawing funds from the Operating Reserve for current year expenditures. If zero, this line item may not be shown in the budget. Further information regarding the function of the Operating Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Contribution for /(Use of) Rehab Reserve — A "Contribution" increases the levy in order to generate funding for the Rehabilitation Reserve. This reserve allows for the accumulation of funds for possible rehabilitation projects or replacements in future years. On the other hand, a "Use of" of the Rehabilitation Reserve provides current year funding of rehabilitation projects or replacements from available funds within the Rehabilitation Reserve. If zero, this line item may not be shown in the budget. Further information regarding the function of the Rehabilitation Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Rounding Adjustment – The necessary rounding adjustment(s) due to limitations of the County property tax system that requires even penny levy amounts to be placed on the secured tax roll.

BALANCE TO LEVY - This is the total amount to be levied and collected through assessments for the current fiscal year for each zone. The Balance to Levy represents the sum of the total District costs together with any applicable adjustments to the budget as described above.

ASSESSMENT RATES:

Number of Assessable Parcels - The total number of parcels that are expected to be assessed. Non-assessable lots or parcels include government-owned land, public utility-owned property, land principally encumbered by public rights-of-way or easements, common areas, and/or parcels within the boundaries of the District currently do not benefit from the improvements and are therefore not assessed.

Total Assessable Front Footage - The total amount of assessable Front Footage within the District in accordance with the Method of Assessment Section of this Report.

Applied Assessment Rate - The assessment rate to be applied to the front footage of each non-exempt parcel within the District for the current fiscal year.

Maximum Assessment Rate - The Maximum Assessment Rate per front foot for the current fiscal year.

Potential Maximum Assessment – The total amount that can be assessed against all non-exempt District parcels for the current fiscal year based upon the expected assessable front footage within the District.

FUND BALANCE INFORMATION:

OPERATING RESERVE

Beginning Operating Reserve Balance 7-1-2025 (est.) - The anticipated beginning balance of cash and receivables net of any unpaid prior year obligations for each Zone. These beginning balances shall be used to fund each Zone's expenditures from July 1, 2025 to December 31, 2025, as the Operating Reserve is required to compensate for the approximate six-month delay between the start of the District's fiscal year and the receipt of the collections from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

Replenish from FY 2025/26 Levy – This amount is added to the FY 2025/26 levy in order to replenish the Operating Reserve. Due to the six-month delay from the District's receipt of assessment collections, the Operating Reserve balance shall be sufficiently funded to provide for expenditures from the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Expenses – The amount of the Operating Reserve to be used to fund FY 2025/26 expenses. Portions of the Operating Reserve may be slated for current year expenditures in order to reduce the Ending Operating Reserve Balance to an amount no greater than the expected District costs for the period of

July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Rehab Reserve — The amount of Operating Reserve monies to be transferred to or from the Rehabilitation Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Operating Reserve Balance 6-30-2026 (est.) - This amount represents the anticipated Operating Reserve balance/(deficit) for each Zone as of June 30, 2026. The size of each Zone's Operating Reserve is limited by Streets and Highways Code 22569 which states that an Operating Reserve shall not exceed the estimated costs of maintenance, service and incidental expenses from the first day of the fiscal year (July 1) to the date that the Agency expects to receive the first apportionment of collections from the County, which is estimated to be December 31. Therefore, each Zone may retain an Operating Reserve amounting to the District's first six-months of expenses in order to meet ongoing obligations until the first collections are received from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

REHABILITATION RESERVE

Beginning Rehab Reserve Balance 7-1-2025 (est.) — The projected balance of funds in the Rehabilitation Reserve as of July 1, 2025. Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

Collect from FY 2025/26 Levy — This amount is added to the levy to accumulate funding of future year rehabilitation projects, replacements, restorations, or upgrades of District improvements. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Rehab Projects – The amount of Rehabilitation Reserve monies expected to be transferred out of the Rehabilitation Reserve to fund the costs of installation, replacement, or planned upgrades of District improvements for the current year. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Operating Reserve — The amount of Rehabilitation Reserve monies to be transferred to or from the Operating Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all

funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Rehab Reserve Balance 6-30-2026 (est.) - The projected balance of funds in the Rehabilitation Reserve as of June 30, 2026. These funds shall be used to provide for future year rehabilitation projects, replacements, restorations, or upgrades of District improvements which cannot be conveniently raised from a single year's assessment.

E. REHABILITATION RESERVE – CAPITAL IMPROVEMENT PLAN

Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

The Report provides a five-year Capital Improvement Plan ("CIP") which shows projected expenditures related to the rehabilitation, restoration and/or replacement of District improvements, and other allowable costs. The Current Fiscal Year CIP is shown in the preceding Budget Section A. The projected CIP costs for the remaining four years are shown in the table below.

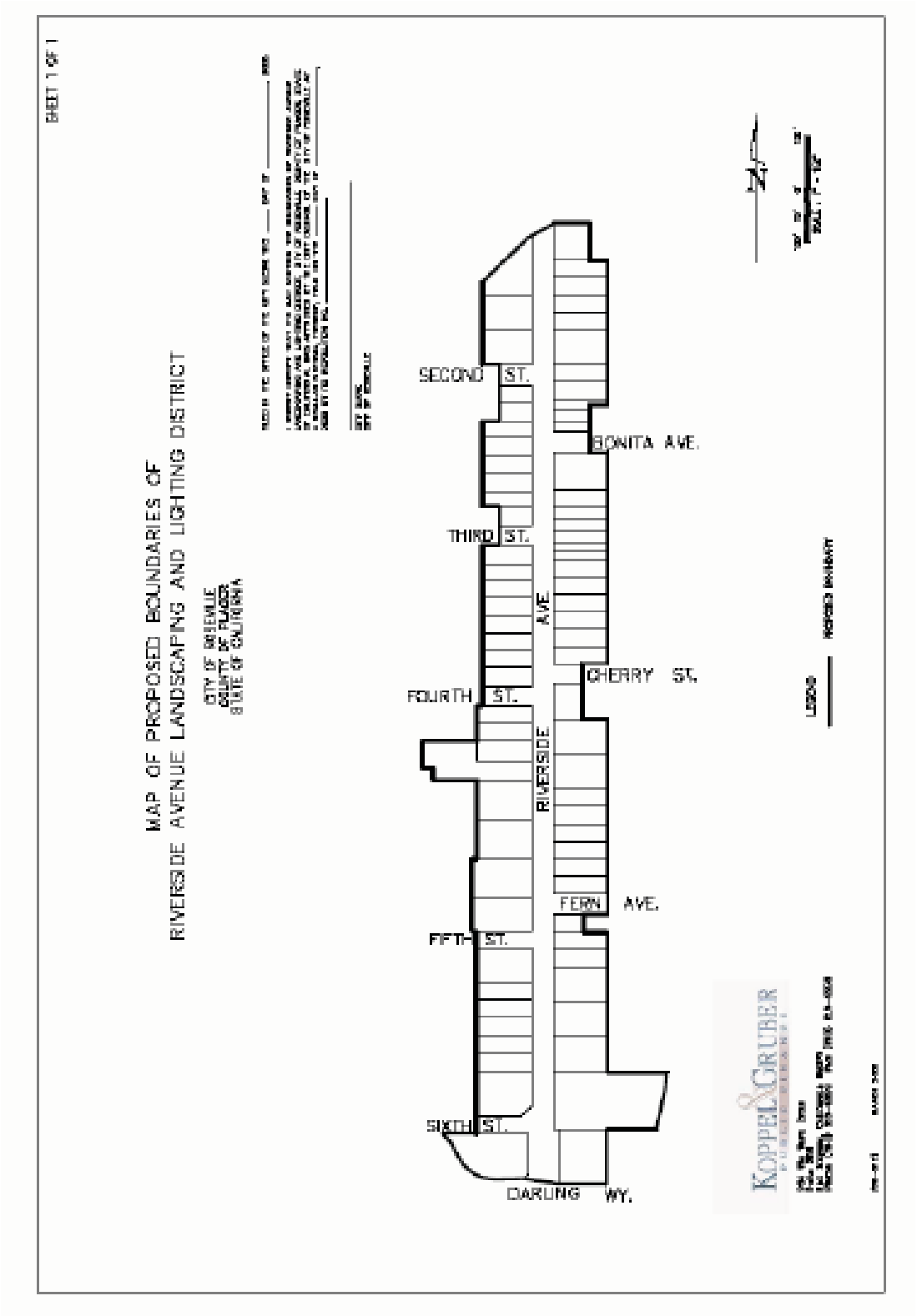
Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Improve hardscapes, monuments, landmarks, gateway features	$2,500	$2,500	$2,500	$10,000	$17,500
Non-routine tree work	2,000	2,000	2,000	2,000	8,000
Improve street furniture, trash receptacles, bike racks, bus stop shelters	3,000	4,000	3,394	5,394	15,788
Replace plants, landscaping, irrigation and/or drainage systems	6,000	6,000	6,000	8,000	26,000
Replace public street lights, lighting fixtures, poles/meters, safety, security, ornamental lights	2,500	2,500	2,500	5,000	12,500
Replace entry signs and decorative banners and hardware	2,763	2,763	2,763	2,761	11,050
Total Projected Expenditures	**$18,763**	**$19,763**	**$19,157**	**$33,155**	**$90,838**

From time to time, funds held in a Rehabilitation Reserve may be needed to respond to changing needs due to the condition of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the District's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and/or operation of the improvements.

APPENDIX A – DISTRICT BOUNDARY MAP

The boundary map for the District has previously been submitted to the Clerk of the City in the format required under the Act and is, by reference, hereby made part of this Report. These District Boundary Maps are available for inspection at the office of the City Clerk during normal business hours.

For general reference purposes, a summary of the District's Boundaries is presented herein.


SHEET 1 OF 1
MAP OF PROPOSED BOUNDARIES OF
RIVERSIDE AVENUE LANDSCAPING AND LIGHTING DISTRICT
CITY OF ROSEVILLE
COUNTY OF PLACER
STATE OF CALIFORNIA
SECOND ST.
BONITA AVE.
THIRD ST.
CHERRY ST.
FOURTH ST.
RIVERSIDE AVE
FERN AVE.
FIFTH ST.
SIXTH ST.
DARLING WY.
KOPPEL & GRUBER

APPENDIX B — FY 2025/26 ASSESSMENT ROLL

Parcel identification, for each lot or parcel within the District, shall be the parcel as shown on the Placer County Assessor's map for the year in which this Report is prepared.

A listing of parcels to be assessed within this District, along with the proposed assessment amounts, shall be submitted to the City Clerk, under separate cover, and by reference is made part of this Report.

Non-assessable lots or parcels may include areas of public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas and rights-of-ways including public greenbelts and parkways; utility rights-of-ways; common areas; landlocked parcels, small parcels vacated by the County, bifurcated lots, and any other property that cannot be developed. These types of parcels are considered to receive little or no benefit from the improvements and are therefore exempt from assessment.

At the conclusion of the public hearing for the District and the proposed assessments, approval of the Report (as submitted or as modified) confirms the method of apportionment and the assessment rate to be levied against each eligible parcel and thereby constitutes the approved levy and collection of assessments for FY 2025/26. The listing of parcels and the amount of assessment to be levied shall be submitted to the County Auditor/Controller and included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the Current Fiscal Year, a corrected parcel number and/or new parcel number will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved in this Report. Therefore, if a single parcel has changed to multiple parcels, the assessment amount applied to each of the new parcels shall be recalculated and applied according to the approved method of apportionment and assessment rate rather than a proportionate share of the original assessment.

City of Roseville
Riverside Avenue Landscaping and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	CHARGE	MAXIMUM ASMT	FRONT FOOTAGE	LEGAL DESCRIPTION
014-011-004-000	Assessable	1,005.04	1,005.05	100.0	L 7 8 THEILE SUB
014-011-008-000	Assessable	1,658.32	1,658.34	165.0	LOTS 2 3 4 FR 1 THEILE SUB
014-011-009-000	Assessable	1,005.04	1,005.05	100.0	LOTS 5 6 THEILE SUBD
014-013-003-000	Assessable	502.52	502.53	50.0	FR LOT 1 THEILE SUB
014-013-004-000	Assessable	502.52	502.53	50.0	FR LOT 2 THEILE SUB
014-013-005-000	Assessable	502.52	502.53	50.0	LOT 3 THEILE SUB
014-013-006-000	Assessable	502.52	502.53	50.0	LOT 4 THEILE SUB
014-013-007-000	Assessable	502.52	502.53	50.0	L 5 THEILE SUB
014-013-008-000	Assessable	502.52	502.53	50.0	L 6 THEILE SUBD
014-013-009-000	Assessable	502.52	502.53	50.0	L 7 THEILE SUBD
014-013-010-000	Assessable	502.52	502.53	50.0	FR L 8 THEILE SUBD
014-024-003-000	Assessable	502.52	502.53	50.0	L 1 THEILE SUB
014-024-004-000	Assessable	502.52	502.53	50.0	LOT 2 THEILE SUB
014-024-005-000	Assessable	502.52	502.53	50.0	LOT 3 THEILE SUBD
014-024-006-000	Assessable	502.52	502.53	50.0	LOT 4 THEILE SUB
014-024-007-000	Assessable	502.52	502.53	50.0	LOT 5 THEILE SUB
014-024-008-000	Assessable	502.52	502.53	50.0	LOT 6 THEILE SUB
014-024-009-000	Assessable	502.52	502.53	50.0	LOT 7 THEILE SUB
014-024-010-000	Assessable	502.52	502.53	50.0	LOT 8 THEILE SUB
014-033-005-000	Assessable	572.86	572.88	57.0	FR LOT 2 THEILE 2 SUB
014-033-007-000	Assessable	1,145.74	1,145.76	114.0	POR LOT 4 THEILE #2 SUB MOR C-34
014-033-008-000	Assessable	1,145.74	1,145.76	114.0	FR LOT 5 THEILE 2 SUB
014-033-009-000	Assessable	1,005.04	1,005.05	100.0	FR LOT 6 THEILE 2 SUB
014-033-014-000	Assessable	1,145.74	1,145.76	114.0	FR L 3 THEILE #2 SUBD
014-033-025-000	Assessable	572.86	572.88	57.0	PAR A PMOR 22 132
014-033-028-000	Assessable	502.52	502.53	50.0	FR L 1 THEILE 2 SUBD
014-033-029-000	Assessable	502.52	502.53	50.0	FR L 1 THEILE 2 SUBD
014-053-003-000	Assessable	1,005.04	1,005.05	100.0	LOTS 1 2 THEILE 3 SUB
014-053-004-000	Assessable	502.52	502.53	50.0	LOT 3 THEILE 3 SUB
014-053-005-000	Assessable	502.52	502.53	50.0	LOT 4 THEILE 3 SUB
014-053-006-000	Assessable	502.52	502.53	50.0	LOT 5 THEILE 3 SUB
014-053-007-000	Assessable	502.52	502.53	50.0	L 6 THEILE 3 SUB
014-053-008-000	Assessable	502.52	502.53	50.0	L 7 THEILE #3
014-053-023-000	Assessable	1,452.90	1,452.90	144.56	L 8 THEILES SUBD
014-084-034-000	Assessable	1,141.92	1,141.94	113.62	FR SEC 11 10 6
014-091-014-000	Assessable	341.70	341.72	34.0	FR LOT 12 CHERRY GLEN TR
014-091-015-000	Assessable	331.66	331.67	33.0	FR LOTS 11 12 CHERRY GLEN
014-091-016-000	Assessable	331.66	331.67	33.0	FR LOT 11 CHERRY GLEN TR
014-091-017-000	Assessable	502.52	502.53	50.0	L 10 CHERRY GLEN TR
014-091-018-000	Assessable	502.52	502.53	50.0	LOT 9 CHERRY GLEN TR
014-091-019-000	Assessable	1,005.04	1,005.05	100.0	LOTS 7 8 CHERRY GLEN TR
014-091-020-000	Assessable	502.52	502.53	50.0	LOT 6 CHERRY GLEN TR
014-091-021-000	Assessable	502.52	502.53	50.0	LOT 5 CHERRY GLEN TR
014-091-022-000	Assessable	502.52	502.53	50.0	LOT 4 CHERRY GLEN TR
014-091-023-000	Assessable	502.52	502.53	50.0	FR LOTS 1 2 3 CHERRY GLEN TR
014-091-024-000	Assessable	1,005.04	1,005.05	100.0	FR LOTS 1 2 CHERRY GLEN TR
014-141-012-000	Assessable	502.52	502.53	50.0	LOT 12 CHERRY GL TR
014-141-013-000	Assessable	502.52	502.53	50.0	LOT 11 CHERRY GL TR
014-141-014-000	Assessable	502.52	502.53	50.0	LOT 10 CHERRY GL TR
014-141-015-000	Assessable	502.52	502.53	50.0	LOT 9 CHERRY GL TR
014-141-016-000	Assessable	502.52	502.53	50.0	LOT 8 CHERRY GL TR
014-141-017-000	Assessable	502.52	502.53	50.0	LOT 7 CHERRY GL TR
014-141-019-000	Assessable	334.68	334.68	33.3	FR LOT 5 CHERRY GL TR
014-141-020-000	Assessable	334.68	334.68	33.3	FR LOTS 4 5 CHERRY GL TR
014-141-021-000	Assessable	334.68	334.68	33.3	FR LOT 4 CHERRY GL TR
014-141-022-000	Assessable	502.52	502.53	50.0	LOT 3 CHERRY GL TR
014-141-023-000	Assessable	1,005.04	1,005.05	100.0	LOTS 1 2 CHERRY GL TR

City of Roseville
Riverside Avenue Landscaping and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	CHARGE	MAXIMUM ASMT	FRONT FOOTAGE	LEGAL DESCRIPTION
014-141-026-000	Assessable	251.26	251.26	25.0	FR LOT 6 BLK B CHERRY GLEN
014-141-027-000	Assessable	251.26	251.26	25.0	FR LOT 6 BLK B CHERRY GLEN
014-191-016-000	Assessable	502.52	502.53	50.0	LOT 11 CHERRY GL TR
014-191-017-000	Assessable	502.52	502.53	50.0	LOT 10 CHERRY GL TR
014-191-018-000	Assessable	502.52	502.53	50.0	LOT 9 CHERRY GL TR
014-191-019-000	Assessable	502.52	502.53	50.0	LOT 8 CHERRY GL TR
014-191-020-000	Assessable	502.52	502.53	50.0	LOT 7 CHERRY GL TR
014-191-021-000	Assessable	1,005.04	1,005.05	100.0	LOTS 5 6 CHERRY GL TR
014-191-022-000	Assessable	1,005.04	1,005.05	100.0	LOTS 3 4 CHERRY GL TR
014-191-023-000	Assessable	1,005.04	1,005.05	100.0	FR LOTS 1 2 CHERRY GL TR
014-191-025-000	Assessable	502.52	502.53	50.0	LOT 12 CHERRY GL TR
014-251-011-000	Assessable	1,005.04	1,005.05	100.0	L 6 7 CHERRY GL TR
014-251-012-000	Assessable	1,005.04	1,005.05	100.0	L 4 5 CHERRY GL TR
014-251-013-000	Assessable	502.52	502.53	50.0	LOT 3 CHERRY GL TR
014-251-014-000	Assessable	502.52	502.53	50.0	LOT 2 CHERRY GL TR
014-251-015-000	Assessable	502.52	502.53	50.0	FR LOT 1 CHERRY GLEN TR
014-251-021-000	Assessable	1,005.04	1,005.05	100.0	LOTS 8 9 CHERRY GL TR
014-251-027-000	Assessable	1,507.56	1,507.58	150.0	1.2 AC SEC 11 10 6
472-180-009-000	Assessable	1,514.40	1,514.41	150.68	PARCEL A PARCEL MOR 1 11

Summary Fields	Value
ACTIVE PARCELS	76
LEVIED PARCELS	76
CHARGE	$50,048.54
MAXIMUM ASMT	$50,049.17
FRONT FOOTAGE	4,979.76

RESOLUTION NO. 25-127

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, INITIATING PROCEEDINGS FOR THE ANNUAL LEVY OF ASSESSMENTS FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, FOR FISCAL YEAR 2025/2026, PURSUANT TO THE PROVISIONS OF PART 2 OF DIVISION 15 OF THE CALIFORNIA STREETS AND HIGHWAYS CODE

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Vernon Street Landscaping and Lighting District (hereafter referred to as the "District") pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California, beginning with Section 22500* (hereafter referred to as the "Act"), that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance and services of street lighting, landscaping, and all appurtenant facilities and operations related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer") for the purpose of assisting with the establishment of the assessments, the annexation of territory, and to prepare and file an Engineer's Annual Levy Report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act, and in accordance with the California Constitution, Articles XIIIC and XIIID;

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 Engineer's Report: The City Council hereby orders the Engineer to prepare and file with the City Clerk the Engineer's Report concerning the levy of assessments for the District in accordance with Chapter 3, Section 22622 of the Act.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials and/or improvements for landscape, lighting, hardscape and streetscape areas, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

RESOLUTION NO. 25-127

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-128

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, DECLARING ITS INTENTION TO LEVY ANNUAL ASSESSMENTS FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, The City Council has, by previous Resolutions, formed the Vernon Street Landscaping and Lighting District (hereafter referred to as the "District"), and initiated proceedings for Fiscal Year 2025/2026, pursuant to the provisions of the *Landscaping and Lighting Act of 1972*, *Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereafter referred to as the "Act") that provides for the levy and collection of assessments by the County of Placer for the City of Roseville to pay for the maintenance, operation and servicing of all improvements and facilities related thereto; and,

WHEREAS, the City Council has retained Willdan Financial Services for the purpose of assisting with the Annual Levy of the District, and to prepare and file a report (hereinafter referred to as the "Engineer's Report") with the City Clerk in accordance with the Act; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, PURSUANT TO *CHAPTER 3, SECTION 22624* OF THE ACT, AS FOLLOWS:

Section 1 Intention: The City Council hereby declares that it is its intention to seek the Annual Levy of the District pursuant to the Act, over and including the land within the District boundary, and to levy and collect assessments on all such land to pay for the annual costs of the improvements.

Section 2 Proposed improvements and any substantial changes in existing improvements: The District improvements include: the maintenance and operation of and the furnishing of services, materials or improvements for landscape, lighting, hardscape and streetscape areas within the District including, gateways, signage, street trees, sidewalks, curbs, gutters, parking stripes, pavers, planters, turf, trees, irrigation systems, drainage systems, and other public improvements within the street right-of-way areas and all appurtenant facilities related thereto as further described in the Engineer's Report. The Engineer's Report also describes all new improvements or substantial changes in existing improvements.

Section 3 Boundaries and Designation: The boundaries of the District are described as the boundaries previously defined in the formation documents of the original District. The District is known and designated as:

"Vernon Street Landscaping and Lighting District"

Section 4 Proposed Assessment Amounts: The proposed assessments are outlined in the Engineer's Report. District Assessments are calculated in accordance with the method of apportionment established for the District and do not exceed the assessment rates and annual inflationary adjustment previously authorized by the City Council and approved by the property owners in accordance with the provisions of the California State Constitution, Article XIIID.

Section 5 Public Hearing(s): The City Council hereby declares its intention to conduct a Public Hearing annually concerning the levy of assessments for the District in accordance with *Chapter 3, Section 22626* of the Act.

Section 6 Notice: The City Clerk shall give notice of the time and place of the Public Hearing by causing this Resolution to be published once in the local newspaper not less than ten (10) days before the date of the hearing and by posting a copy of this Resolution on the official bulletin board customarily used by the City Council for the posting of notices.

Section 7 Time and Place of Public Hearing: Notice is hereby given that a Public Hearing on these matters will be held by the City Council on **Wednesday, May 21, 2025 at 6:00 p.m.**, or as soon thereafter as feasible in the regular meeting chambers located at 311 Vernon Street, Roseville, California.

RESOLUTION NO. 25-128

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

RESOLUTION NO. 25-129

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE, CALIFORNIA, FOR PRELIMINARY APPROVAL OF THE ENGINEER'S ANNUAL LEVY REPORT FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, FISCAL YEAR 2025/2026

The City Council of the City of Roseville, California (hereafter referred to as the "City Council") does resolve as follows:

WHEREAS, the City Council has, by previous Resolutions, ordered the preparation of an Annual Levy Report (hereafter referred to as the "Engineer's Report") for the district known and designated as the Vernon Street Landscaping and Lighting District (hereafter referred to as the "District"), pursuant to the provisions of the *Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the Streets and Highways Code of California*, *beginning with Section 22500* (hereinafter referred to as the "Act"); and,

WHEREAS, the City Council has retained Willdan Financial Services (hereinafter "Engineer"), for the purpose of assisting with the establishment of the assessments and to prepare and file an Engineer's Report with the City Clerk in accordance with the Act, and in accordance with the requirements of the California Constitution, Articles XIIIC and XIIID; and,

WHEREAS, there has now been presented to this City Council the Engineer's Report as required by *Chapter 1, Article 4, Section 22566* of said Act; and,

WHEREAS, this City Council has carefully examined and reviewed the Engineer's Report as presented, and is preliminarily satisfied with the District, each and all of the budget items and documents as set forth therein, and is satisfied that the assessments, on a preliminary basis, have been spread in accordance with the benefits received from the improvements, operation, maintenance and services to be performed within the District, as set forth in said Engineer's Report; and,

NOW, THEREFORE, BE IT RESOLVED, DETERMINED, AND ORDERED BY THE CITY COUNCIL FOR THE VERNON STREET LANDSCAPING AND LIGHTING DISTRICT, AS FOLLOWS:

Section 1 That the above recitals are all true and correct.

Section 2 That the Engineer's Report, as presented, consists of the following:

a. A Description of Improvements
b. The Annual Budget (Costs and Expenses of Maintenance, Services, Operations and District Administration)
c. The Assessment Roll containing the Fiscal Year 2025/2026 Levy for each Assessor Parcel within the District

Section 3 The Engineer's Report is hereby approved on a preliminary basis, and ordered to be filed in the Office of the City Clerk as a permanent record and to remain open to public inspection.

Section 4 That the City Clerk shall certify to the passage and adoption of this Resolution, and the minutes of this meeting shall so reflect the presentation of the Engineer's Report.

RESOLUTION NO. 25-129

PASSED, APPROVED, AND ADOPTED THIS_____day of_____, 2025.

_____,
Mayor
City of Roseville

_____,
City Clerk
City of Roseville

STATE OF CALIFORNIA)

COUNTY OF PLACER) ss.

CITY OF ROSEVILLE)

I,_____, City Clerk of the City of Roseville, County of Placer, State of California do hereby certify that the foregoing Resolution No._____ was adopted by the City Council of said City of Roseville at a regular meeting of said council held on the_____day of_____, 2025, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____,
City Clerk
City of Roseville

City of Roseville

Vernon Street Landscaping and Lighting District

FY 2025/26 Engineer's Annual Levy Report

Intent Meeting: April 16, 2025
Public Hearing: May 21, 2025

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Suite 200
Temecula, CA 92590
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F 951.587.3510

www.willdan.com

WILLDAN

ENGINEER'S REPORT AFFIDAVIT

Establishment of Annual Rates and Charges for the:

Vernon Street
Landscaping and Lighting District

City of Roseville

Placer County, State of California

This Report describes the District and any relevant zones therein, including the improvements, budgets, parcels and assessments to be levied for Fiscal Year 2025/26 as they existed at the time of the passage of the Resolution of Intention. Reference is hereby made to the Placer County Assessor's maps for a detailed description of the lines and dimensions of parcels within the District. The undersigned respectfully submits the enclosed Report as directed by the City Council.

Dated this _____ day of _____, 2025

Willdan Financial Services
Assessment Engineer
On Behalf of the City of Roseville

By: _____

Mickey Ashley
Project Manager
District Administration Services

By: _____

Tyrone Peter
PE # C 81888

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I. OVERVIEW

A. INTRODUCTION

The City of Roseville ("City") annually levies and collects special assessments in order to maintain the improvements within the Vernon Street Landscaping and Lighting District ("District"). The District was formed in January of 2001 and is levied annual assessments pursuant to *the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code* ("1972 Act").

The Engineer's Report ("Report") describes the District, any new annexations, changes to the District, and the proposed assessments for the period of July 1, 2025 through June 30, 2026. The special benefit assessments are based on historical and estimated costs to maintain the District improvements. These assessments, which provide a direct and special benefit to properties within the District, will provide funding for the operation and maintenance of District improvements.

The word "parcel," for the purposes of this Report, refers to an individual property assigned its own Assessor's Parcel Number ("APN") by the Placer County Assessor's Office. The Placer County Auditor/Controller uses Assessor's Parcel Numbers and specific Tax Code Accounts, to identify on the County's tax roll, properties assessed for special district benefit assessments.

Following approval of the Report, the City Council will by resolution, order the improvements to be made and confirm the levy and collection of assessments herein pursuant to the Act. The assessment rates and method of apportionment described in this Report as approved or modified by the City Council define the assessments to be applied to each parcel within the District for Fiscal Year ("FY") 2025/26. The assessments as approved will be submitted to the Placer County Auditor/Controller to be included on the property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the Current Fiscal Year, a corrected parcel number and/or new parcel number will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved by the City Council.

B. COMPLIANCE WITH THE CURRENT LEGISLATION

All assessments described in this Report and approved by the City Council are prepared in accordance with the 1972 Act and are in compliance with the provisions of the California Constitution Article XIIID (Proposition 218).

The District has been formed pursuant to the Landscaping and Lighting Act of 1972, Part 2 of Division 15 of the California Streets and Highways Code. Pursuant

to the Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments, to review the Engineer's Annual Levy Report prior to approving the annual assessments to be levied on the County tax rolls. The assessments described in this Report have been prepared in accordance with the Act.

Prior to FY 2001/02, the City initiated (Resolution 00-523) and conducted property owner protest ballot proceedings (Resolution 01-22) in accordance with Article XIIID of the California Constitution ("Article XIIID") for the parcels within the District. An annual rate escalator was also included in the ballot that allows for an annual inflationary increase equal to the percentage change in the Consumer Price Index of the San Francisco-Oakland-Hayward Area (the "CPI") of each succeeding year (the "Escalation Percentage"). At the conclusion of the Public Hearing held on January 17, 2001, all property owner ballots returned were tabulated to determine if majority protest existed. The result of the protest proceeding was an approval of the assessment rate and the annual inflationary increase for maintaining the improvements within the District.

Pursuant to the Act, an annual Public Hearing is conducted by the City Council to accept property owner and public comments, to review the Engineer's Annual Levy Report prior to approving the annual assessments to be levied on the County tax rolls.

C. DESCRIPTION OF DISTRICT BOUNDARIES

The District is located in downtown Roseville and includes all parcels that front along Vernon Street between Folsom Road and the Riverside/Douglas Boulevard. See Appendix A for District boundary map.

D. IMPROVEMENTS AUTHORIZED BY THE 1972 ACT

As applicable or may be applicable to a proposed District, the 1972 Act defines improvements to mean one or any combination of the following:

- The installation or planting of landscaping.
- The installation or construction of statuary, fountains, and other ornamental structures and facilities.
- The installation or construction of public lighting facilities.
- The installation or construction of any facilities which are appurtenant to any of the foregoing or which are necessary or convenient for the maintenance or servicing thereof, including, but not limited to, grading, clearing, removal of debris, the installation or construction of curbs, gutters, walls, sidewalks, or paving, or water, irrigation, drainage, or electrical facilities.
- The maintenance or servicing, or both, of any of the foregoing.
- The acquisition of any existing improvement otherwise authorized pursuant to this section.

Incidental expenses associated with the improvements including, but not limited to:

- The cost of preparation of the report, including plans, specifications, estimates, diagram, and assessment;
- The costs of printing, advertising, and the publishing, posting, and mailing of notices;
- Compensation payable to the County for collection of assessments;
- Compensation of any engineer or attorney employed to render services;
- Any other expenses incidental to the construction, installation, or maintenance and servicing of the improvements;
- Any expenses incidental to the issuance of bonds or notes pursuant to Section 22662.5.
- Costs associated with any elections held for the approval of a new or increased assessment.

The 1972 Act defines "Maintain" or "maintenance" to mean furnishing of services and materials for the ordinary and usual maintenance, operation, and servicing of any improvement, including:

- Repair, removal, or replacement of all or any part of any improvement.
- Providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury.
- The removal of trimmings, rubbish, debris, and other solid waste.
- The cleaning, sandblasting, and painting of walls and other improvements to remove or cover graffiti.

Furthermore, the 1972 Act specifies that where the cost of improvements (other than maintenance and operations) is greater than can be conveniently raised from a single annual assessment, an assessment to be levied and collected in annual installments. In that event, the governing body may choose to do any of the following:

- Provide for the accumulation of the moneys in an improvement fund until there are sufficient moneys to pay all or part of the cost of the improvements.
- Provide for a temporary advance to the improvement fund from any available and unencumbered funds of the local agency to pay all or part of the cost of the improvements and collect those advanced moneys from the annual installments collected through the assessments.
- Borrow an amount necessary to finance the estimated cost of the proposed improvements. The amount borrowed, including amounts for bonds issued to finance the estimated cost of the proposed improvements.

E. DESCRIPTION OF THE IMPROVEMENTS AND MAINTENANCE

The District ensures the continued maintenance, servicing, administration and operation of various landscape, lighting and streetscape improvements and associated appurtenances that are required to keep the improvements in a healthy, vigorous, and satisfactory condition. The assessable parcels receive benefit from the above improvements within the District.

Specific improvements include installation, maintenance and servicing of public facilities, including, but not limited to street trees, sidewalks, curbs, gutters, parking stripes, turf, brick pavers, planters, gateways, benches, bike racks, signage, trash receptacles, and lighting throughout the boundaries of the District (the "Improvements').

As applied herein, "installation" means the construction of public Improvements, including, but not limited to, land preparation, such as grading, leveling, cutting, and filling, sod, landscaping, irrigation systems, sidewalks and drainage, lights, equipment, turf, brick pavers, planters, gateways, benches, bike racks and signage.

"Maintenance" means the furnishing of services and materials for the ordinary and usual maintenance, operation and servicing of any Improvement, including repair, removal or replacement of all or any part of any Improvement; providing for the life, growth, health, and beauty of landscaping, including cultivation, irrigation, trimming, spraying, fertilizing, or treating for disease or injury; the removal of trimmings, rubbish, debris, and other solid waste, and the cleaning, sandblasting, and painting of Improvements to remove or cover graffiti.

"Servicing" means the furnishing of electric current, or energy, gas, or other illuminating agent for any public lighting facilities or for the lighting or operation of any other Improvements; or water for the irrigation of any landscaping, the operation of any fountains, or the maintenance of any other Improvements.

Plans and specification for the Improvements to be maintained are on file in the office of the Economic and Community Services Director at 311 Vernon Street, Roseville, CA 95678.

All assessable parcels identified as being within the District share in both the cost and the benefits of the improvements. The costs associated with the Improvements are equitably spread among all benefiting parcels within the District. Only parcels that receive direct benefit from the Improvements are assessed, and each parcel is assessed in proportion to the estimated benefit received. The funds collected are dispersed and used for only the services and operation provided to the District.

II. METHOD OF APPORTIONMENT

A. GENERAL

The 1972 Act permits the establishment of assessment districts by agencies for the purpose of providing certain public improvements which include the construction, maintenance and servicing of public lights, landscaping, and appurtenant facilities. The 1972 Act further requires that the cost of these improvements be levied according to benefit rather than assessed value:

> *"The net amount to be assessed upon lands within an assessment district may be apportioned by any formula or method which fairly distributes the net amount among all assessable lots or parcels in proportion to the estimated benefits to be received by each such lot or parcel from the improvements."*

The formula used for calculating assessments in the District therefore reflects the composition of the parcels, and the Improvements and services provided, to fairly apportion the costs based on estimated benefit to each parcel.

B. BENEFIT ANALYSIS

In conjunction with the provisions of the 1972 Act, the California Constitution Article XIIID addresses several key criteria for the levy of assessments, notably:

Article XIIID Section 2d defines District as follows:

"District means an area determined by an agency to contain all parcels which will receive a special benefit from a proposed public improvement or property-related service";

Article XIIID Section 2i defines Special Benefit as follows:

"Special benefit" means a particular and distinct benefit over, and above general benefits conferred on real property located in the district or to the public at large. General enhancement of property value does not constitute "special benefit."

Article XIIID Section 4a defines proportional special benefit assessments as follows:

"An agency which proposes to levy an assessment shall identify all parcels which will have a special benefit conferred upon them and upon which an assessment will be imposed. The proportionate special benefit derived by each identified parcel shall be determined in relationship to the entirety of the capital cost of a public improvement, the maintenance and operation expenses of a public improvement, or the cost of the property related service being provided. No assessment shall be

imposed on any parcel which exceeds the reasonable cost of the proportional special benefit conferred on that parcel."

This District was formed to establish and provide for the improvements that enhance the presentation of the surrounding properties and developments. These improvements will directly benefit the parcels to be assessed within the District. The assessments and method of apportionment is based on the premise that the assessments will be used to construct and install landscape and lighting improvements within the District as well as provide for the annual maintenance of those improvements, and the assessment revenues generated by District will be used solely for such purposes.

The costs of the proposed improvements have been identified and allocated to properties within the District based on special benefit. The improvements to be provided by this District and for which properties will be assessed have been identified as an essential component and local amenity that provides a direct reflection and extension of the properties within the District which the property owners and residents have expressed a high level of support.

The method of apportionment (method of assessment) set forth in the Report is based on the premise that each assessed property receives special benefits from the landscape and lighting improvements within the District, and the assessment obligation for each parcel reflects that parcel's proportional special benefits as compared to other properties that receive special benefits.

To identify and determine the proportional special benefit to each parcel within the District, it is necessary to consider the entire scope of the improvements provided as well as the properties that benefit from those improvements. The improvements and the associated costs described in this Report, have been carefully reviewed and have been identified and allocated based on a benefit rationale and calculations that proportionally allocate the net cost of only those improvements determined to be of special benefit to properties within the District. The various public improvements and the associated costs have been identified as either "general benefit" (not assessed) or "special benefit". The City initiated and conducted property owner protest ballot proceedings in accordance with Article XIIID. Each of the proposed Improvements, the associated costs and assessments were identified and allocated based on special benefit pursuant to the provisions of Article XIIID and 1972 Act. Additionally, the Improvements and the annual costs of ensuring the maintenance and operation of the Improvements are of direct and special benefit to the properties.

The City annually levies and collects special benefit assessments in order to maintain and service the District Improvements. The District provides for specific Improvements and services that include the maintenance and operation of landscaping and lighting Improvements and associated appurtenances located within the District's public rights-of-way and dedicated easements. The annual assessment is based on the historical and estimated cost to maintain the Improvements that provide a benefit to properties within these Districts. The

Improvements within the District and the costs of those Improvements are identified and budgeted separately, including all expenditures, deficits, surpluses, revenues, and reserves.

All Improvements within the District and the properties associated with those Improvements were reviewed for benefit prior to the formation of the District. Because the Improvements affront the benefited parcels, it has been determined that there is no measurable general benefit to properties outside the District or to the public at large. In making this determination it should be noted that similar improvements within California are typically maintained by individual property owners, through some type of association or a special district as allowed by State Law since the on-going maintenance of these improvements are a special benefit to the properties associated with those improvements.

The method of apportionment (method of assessment) for the District is based on the premise that each of the assessed parcels within the District receives special benefit from the Improvements maintained and financed by District assessments. The presence of these Improvements and the close proximity of the Improvements to the properties within the District enhance the desirability and security of properties within the District.

The landscape Improvements provided by the District may include landscaped parkways, perimeters, entryways, local medians, slopes, internal amenities, and appurtenant facilities. Street lighting Improvements may include all energy costs and necessary maintenance to the facilities related thereto. The annual assessments outlined in this Report are proposed to cover the estimated costs to provide all necessary service, operation, administration, and maintenance required to keep these Improvements in a healthy, vigorous, and satisfactory condition. The special benefits associated with the local landscaping Improvements are specifically:

The special benefits associated with all landscaping Improvements are specifically:

- Enhanced desirability of properties through association with the Improvements.
- Improved aesthetic appeal of properties providing a positive representation of the area and properties.
- Enhanced adaptation of the urban environment within the natural environment from adequate landscaping.
- Environmental enhancement through improved dust and debris control, and fire prevention.
- Increased sense of pride in ownership of property within the District resulting from well-maintained Improvements associated with the properties.
- Enhanced quality of life through well-maintained landscaped areas.

- Reduced criminal activity and property-related crimes (especially vandalism) against properties in the District through well-maintained surroundings and amenities including abatement of graffiti.
- Enhanced environmental quality of the parcels by moderating temperatures, providing oxygenation, and attenuating noise.

The special benefits of street lighting are the convenience, safety, and security of property, improvements, and goods. Specifically:

- Enhanced deterrence of crime and the aid to police protection.
- Increased nighttime safety on streets and roads within the Districts.
- Improved ability of pedestrians and motorists to see.
- Improved ingress and egress to property.
- Reduced vandalism and other criminal acts and damage to Improvements or property.
- Improved traffic circulation and reduced nighttime accidents and personal property loss.
- Increased promotion of business during nighttime hours in the case of commercial properties.

All of the preceding special benefits contribute to a specific enhancement and desirability of each of the assessed parcels within the District.

C. DESCRIPTION OF THE METHOD OF APPORTIONMENT

Pursuant to the 1972 Act, the costs of the District may be apportioned by any formula or method that fairly distributes the net amount to be assessed, among all assessable parcels within the District in proportion to the estimated special benefits to be received by each such parcel from the Improvements. The special benefit formula used should reflect the composition of the parcels, the Improvements and services provided to fairly proportion the costs based on estimated special benefit to each parcel within the District. All assessable parcels within the District shall receive a direct special benefit from the services and Improvements provided by the District.

Article XIIID of the California Constitution specifies that only special benefits are assessable, and that the City must separate the general benefits from the special benefits conferred on any parcel. Since the District is a downtown business area and the Improvements that affront each District parcel primarily attract and retain an increased customer base, these benefits enhance the District parcels and there is no measurable benefit to the public at large. Therefore, 100% of the Improvements are considered special benefit to the District parcels. The cost of

maintaining the Improvements is therefore identified as special benefit and has been allocated to the special assessments.

It was determined that a uniform assessment rate per foot of frontage upon Vernon Street would fairly distribute the net amount to be assessed due to the following reasons:

1. The assessments are based upon a specific property owner's special benefit received from the Improvements.
2. The special benefits should be directly related to the extent at which a property fronts the improvements, relative to other properties in the District.

The base assessment rate for the District was $4.59 per linear foot in FY 2001/02 and was determined using the formula below.

$$\textbf{\textit{Assessment Rate Per Foot}} = \frac{\textbf{\textit{Balance to Levy}}}{\textbf{\textit{Total Feet of Frontage}}}$$

The annual assessment amount for each parcel was then determined using the formula below:

Parcel Front Footage x Rate per Linear Foot = Parcel Assessment Amount

D. ANNUAL INFLATIONARY ADJUSTMENT

Commencing with FY 2002/03, the maximum assessment rate is to increase annually by the percentage change in the Consumer Price Index of the San Francisco-Oakland-Hayward ("CPI") as of January of each succeeding year (the "Escalation Percentage"). Since the Department of Labor, Bureau of Labor Statistics does not publish a CPI for January; the CPI for preceding month shall be used since this is the CPI *available* in the month of January. The District's starting CPI Index of 184.1, December of 2000, is hereby established as the base CPI (the "Base Year CPI Index").

In applying this year's CPI increase, the Escalation Percentage will increase the FY 2025/26 maximum assessment rate by 2.38% over that of the prior year.

If the proposed assessment increases over the prior fiscal year by a percentage no greater than the Escalation Percentage as defined above, then the proposed assessment is not considered an increase. This assessment range formula shall be applied to all future assessments within the District. Generally, if the proposed annual assessment rate for the Current Fiscal Year is less than or equal to the calculated maximum assessment rate, then the proposed annual assessment is not considered an increased assessment.

E. APPEALS AND INTERPRETATION

Any property owner, who believes that the assessment levied on the subject property is in error as a result of incorrect information being used to apply the foregoing method of assessment, may file a written appeal with the Finance Director of the City of Roseville or his or her designee. Any such appeal is limited to correction of an assessment during the then current Fiscal Year. Upon the filing of any such appeal, the Director of Housing and Redevelopment or his or her designee will promptly review the appeal and any information provided by the property owner. If the Director of Housing and Redevelopment or his or her designee finds that the assessment should be modified, the appropriate changes shall be made to the assessment roll. However, if any such changes are approved after the County of Placer's deadline for adjustments to the tax roll, the Director of Housing and Redevelopment or his or her designee is authorized to approve a refund of the reduction amount to the property owner. Any dispute over the decision of the Director of Housing and Redevelopment or his or her designee, shall be referred to the City Council of the City of Roseville and the decision of the City Council of the City of Roseville shall be final.

F. DETERMINATION OF FRONT FOOTAGE

The front footage of each assessable parcel is subject to revision and/or correction using measurements of front footage found on the then current Placer County Assessor's Parcel Maps or through direct measurement by City personnel. Any such correction that increases a Parcel Assessment shall not be considered an increased assessment subject to the procedural provisions of Article XIIID.

III. DISTRICT BUDGET

A. FY 2025/26 BUDGET

DESCRIPTION	AMOUNT (FUND 2019)
DIRECT COSTS	
Contract Maintenance - Landscaping	$5,172.00
Repair & Maintenance - Landscaping	8,400.00
Repair & Maintenance - Lighting	7,000.00
Repair and Maintenance - Streetscape and Signage	0.00
Repair and Maintenance - Tree Work	3,693.00
Utilities	14,689.00
Rehab Reserve Expenditures - Non-Routine Tree Work	2,110.00
Rehab Reserve Project Expenditures	0.00
Total Direct Costs	**$41,064.00**
ADMINISTRATION COSTS	
City Administration	$911.00
Contract Administration - Park's Dept	2,434.00
County Auditor Fees	465.94
Consulting & Professional Services	4,251.00
Public Hearing Publishing Costs	381.00
Total Administrative Costs	**$8,442.94**
Total Direct and Administration Costs	**$49,506.94**
BUDGET ADJUSTMENTS	
Replenishment/(Use) of Operating Reserve	($803.28)
Contribution for /(Use of) Rehab Reserve	(2,110.00)
Rounding Adjustment	(0.58)
Total Adjustments	**($2,913.86)**
BALANCE TO LEVY	**$46,593.08**

Fund balance information is reported in Section C on the following page.

B. FY 2025/26 ASSESSMENT RATES

DESCRIPTION	AMOUNT (FUND 2019)
FY 2025/26 ASSESSMENT DATA	
Number of Assessable Parcels	60
Total Assessable Front Footage	5,370.76
Assessment Rates	
Applied Assessment Rates per each Foot of Frontage	$8.6753
Maximum Assessment Rates per each Foot of Frontage	$8.6754
Potential Maximum Assessment	**$46,593.66**

C. FY 2025/26 FUND BALANCE INFORMATION

DESCRIPTION	AMOUNT (FUND 2019)
OPERATING RESERVE	
Beginning Operating Reserve Balance 7-1-2025 (est.)	**$25,751.96**
add: Replenishment from FY 2025/26 Levy	
less: Use for FY 2025/26 Expenses	(803.28)
Transfer from/(to) the Rehab Reserve	(4,416.68)
Ending Operating Reserve Balance 6-30-2026 (est.)	**$20,532.00**
REHABILITATION RESERVE	
Beginning Rehab Reserve Balance 7-1-2025 (est.)	**$1,102.04**
add: Collect from FY 2025/26 Levy	
less: Use for FY 2025/26 Rehab Projects	(2,110.00)
Transfer from/(to) the Operating Reserve	4,416.68
Ending Rehab Reserve Balance 6-30-2026 (est.)	**$3,408.72**

D. DESCRIPTION OF BUDGET ITEMS

Description of the terms used in the preceding Budget, Assessment Rates and Fund Balance tables are listed below:

BUDGET

DIRECT COSTS

Contract Maintenance - Landscaping - Includes all regularly scheduled contract labor, materials, supplies, and equipment required to properly maintain and ensure the satisfactory condition or maintenance of all landscaping corridors, street medians, entryways, irrigation, and related drainage systems as well as maintenance of appurtenant facilities (the “improvements”).

Repair & Maintenance – Landscaping - This line item includes repairs that are generally unforeseen and not normally included in the annual maintenance contract costs. This may include repair of damaged amenities due to vandalism, storms, etc. If zero, this line item may not be shown in the budget.

Repair & Maintenance – Lighting - This line item includes bulb replacement and repairs that are generally unforeseen. This may include repair of damaged amenities due to vandalism, storms, etc.

Repair & Maintenance - Streetscape/Signage - This line item includes repairs that are generally unforeseen and not normally included in the annual maintenance contract costs. This may include repair of damaged amenities due to vandalism, storms, etc.

Repair & Maintenance – Tree Work - This line item includes annual costs for tree maintenance not included in the annual contract maintenance portion of the budget. If zero, this line item may not be shown in the budget.

Utilities - The furnishing of water and electricity required for the operation and maintenance of the improvements.

Rehab Reserve Expenditures – **Non-Routine Tree Work** – Expected costs to maintain trees other than costs of annual repair and maintenance. If zero, this line item may not be shown in the budget.

Rehab Reserve Project Expenditures – Expected costs for installation, replacement, or planned upgrades of District improvements for the current year that were previously funded or accumulated in the Rehabilitation Reserve. The Rehabilitation Reserve is used to accumulate funds for costs associated with the future rehabilitation or replacement of District improvements that cannot be conveniently raised from a single year's assessment. If zero, this line item may not be shown in the budget.

ADMINISTRATION COSTS

City Administration – Estimated costs incurred by the City Finance Department and other Departments in preparing the annual budget for the Engineer's Report, together with other financial information required to determine the annual assessment. These costs would also include the preparation, posting and publishing of public notices required for City Council action relating to the District, as well as costs to perform legal review of documents.

Contract Administration – Park's Dept – Estimated Costs of Park and Recreation Department staff to coordinate and oversee the maintenance contracts and overall repair and maintenance of the District. This amount also includes the cost of the Department's estimates and analysis of certain budget items, estimated costs and useful lives of certain District Improvements.

County Auditor Fees - A fee of 1% of the total levy amount that is charged to the District by the County for placing assessments on property tax bills.

Consulting and Professional Services – Includes the costs and expenses of contracting with various professionals to provide legal, engineering and district administration services directly related to the District, including the calculation of the annual assessment amounts and the preparation of the Engineer's' Report.

Public Hearing Publishing Costs –Includes the out-of-pocket costs to publish public notices required for City Council action relating to the District.

Total Direct and Administration Costs – The total expected costs of the District.

BUDGET ADJUSTMENTS

Replenishment/(Use) of Operating Reserve – A "Replenishment" increases the levy in order to replenish the Operating Reserve. On the other hand, a "Use" of the Operating Reserve decreases the levy by drawing funds from the Operating Reserve for current year expenditures. If zero, this line item may not be shown in the budget. Further information regarding the function of the Operating Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Contribution for / (Use of) Rehab Reserve — A "Contribution" increases the levy in order to generate funding for the Rehabilitation Reserve. This reserve allows for the accumulation of funds for possible rehabilitation projects or replacements in future years. On the other hand, a "Use of" of the Rehabilitation Reserve provides current year funding of rehabilitation projects or replacements from available funds within the Rehabilitation Reserve. If zero, this line item may not be shown in the budget. Further information regarding the function of the Rehabilitation Reserve is provided under "FUND BALANCE INFORMATION" in the following pages of this Section.

Rounding Adjustment – The necessary rounding adjustment(s) due to limitations of the County property tax system that requires even penny levy amounts to be placed on the secured tax roll.

BALANCE TO LEVY - This is the total amount to be levied and collected through assessments for the current fiscal year for each zone. The Balance to Levy represents the sum of the total District costs together with any applicable adjustments to the budget as described above.

ASSESSMENT RATES:

Number of Assessable Parcels - The total number of parcels that are expected to be assessed. Non-assessable lots or parcels include government-owned land,

public utility-owned property, land principally encumbered by public rights-of-way or easements, common areas, and/or parcels within the boundaries of the District currently do not benefit from the improvements and are therefore not assessed.

Total Assessable Front Footage - The total linear footage of that portion of each assessable parcel's boundary that is contiguous with Vernon Street.

Applied Assessment Rate per Front Foot - This amount represents the rate being applied to the front footage of each parcel for the Current Fiscal Year.

Maximum Assessment Rate per Front Foot - This amount represents the maximum rate that can be applied to the front footage of each parcel for the Current Fiscal Year.

Maximum Potential Assessment – The total amount that is expected to be assessed against all parcels within the District for the Current Fiscal Year.

FUND BALANCE INFORMATION:

OPERATING RESERVE

Beginning Operating Reserve Balance 7-1-2025 (est.) - The anticipated beginning balance of cash and receivables net of any unpaid prior year obligations for each Zone. These beginning balances shall be used to fund each Zone's expenditures from July 1, 2025 to December 31, 2025, as the Operating Reserve is required to compensate for the approximate six-month delay between the start of the District's fiscal year and the receipt of the collections from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

Replenish from FY 2025/26 Levy – This amount is added to the FY 2025/26 levy in order to replenish the Operating Reserve. Due to the six-month delay from the District's receipt of assessment collections, the Operating Reserve balance shall be sufficiently funded to provide for expenditures from the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Expenses – The amount of the Operating Reserve to be used to fund FY 2025/26 expenses. Portions of the Operating Reserve may be slated for current year expenditures in order to reduce the Ending Operating Reserve Balance to an amount no greater than the expected District costs for the period of July 1, 2025 (the beginning of the Fiscal Year) through December 31, 2025. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Rehab Reserve — The amount of Operating Reserve monies to be transferred to or from the Rehabilitation Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing

maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Operating Reserve Balance 6-30-2026 (est.) - This amount represents the anticipated Operating Reserve balance/(deficit) for each Zone as of June 30, 2026. The size of each Zone's Operating Reserve is limited by Streets and Highways Code 22569 which states that an Operating Reserve shall not exceed the estimated costs of maintenance, service and incidental expenses from the first day of the fiscal year (July 1) to the date that the Agency expects to receive the first apportionment of collections from the County, which is estimated to be December 31. Therefore, each Zone may retain an Operating Reserve amounting to the District's first six-months of expenses in order to meet ongoing obligations until the first collections are received from the County. All Rehabilitation Reserve balances, if any, are excluded from the Operating Reserve balances and shall be shown separately in the Report.

REHABILITATION RESERVE

Beginning Rehab Reserve Balance 7-1-2025 (est.) — The projected balance of funds in the Rehabilitation Reserve as of July 1, 2025. Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

Collect from FY 2025/26 Levy — This amount is added to the levy to accumulate funding of future year rehabilitation projects, replacements, restorations, or upgrades of District improvements. If zero, this line item may not be shown in the budget.

Use for FY 2025/26 Rehab Projects – The amount of Rehabilitation Reserve monies expected to be transferred out of the Rehabilitation Reserve to fund the costs of installation, replacement, or planned upgrades of District improvements for the current year. If zero, this line item may not be shown in the budget.

Transfer from/(to) the Operating Reserve — The amount of Rehabilitation Reserve monies to be transferred to or from the Operating Reserve. Periodically, funds held in a Rehabilitation Reserve may be needed to respond to changing maintenance needs of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the same zone's Operating Reserve, at the discretion of the Parks and Recreation Department, in order to provide for the maintenance and operation of the improvements. If zero, this line item may not be shown in the budget.

Ending Rehab Reserve Balance 6-30-2026 (est.) - The projected balance of funds in the Rehabilitation Reserve as of June 30, 2026. These funds shall be used to provide for future year rehabilitation projects, replacements, restorations, or upgrades of District improvements which cannot be conveniently raised from a single year's assessment. Should the District have no Rehabilitation Reserve balances or related activity, no Rehabilitation Reserve information shall be presented in the Report.

E. REHABILITATION RESERVE – CAPITAL IMPROVEMENT PLAN

Streets and Highways Code 22660 allows the District to generate and accumulate funds over several years to fund District improvements that cannot be conveniently raised from a single year's assessment.

The Report provides a five-year Capital Improvement Plan ("CIP") which shows projected expenditures related to the rehabilitation, restoration and/or replacement of District improvements, and other allowable costs. The Current Fiscal Year CIP is shown in the preceding Budget Section A. The projected CIP costs for the remaining four years are shown in the table below.

Description	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	4 Year Total
Non-routine tree work	$500	$202	$250	$250	$1,202
Replace, repair, and/or refurbish light standard			604	604	1,208
Replace, repair electrical outlets			500	500	1,000
Total Projected Expenditures	**$500**	**$202**	**$1,354**	**$1,354**	**$3,410**

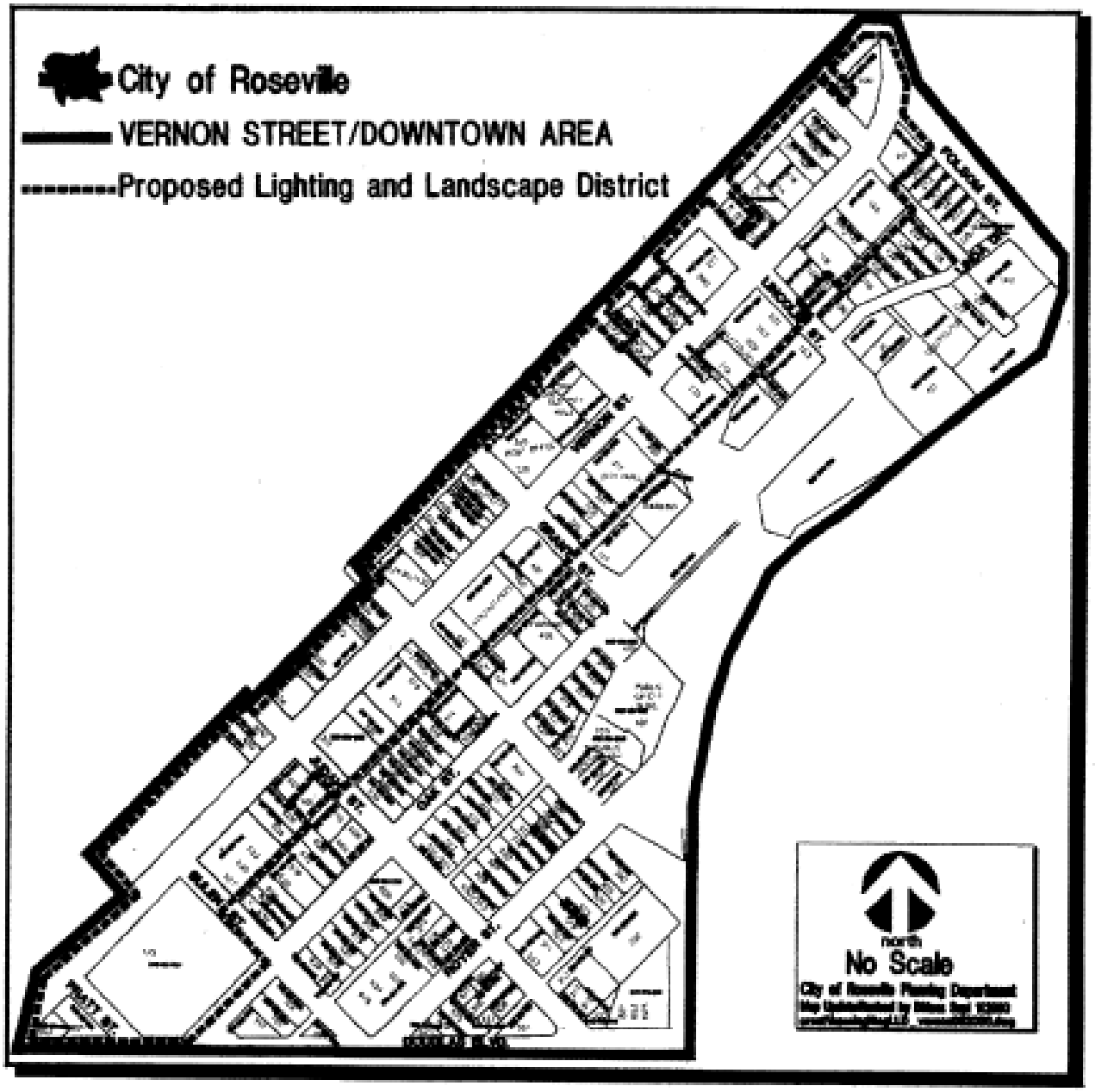
From time to time, funds held in a Rehabilitation Reserve may be needed to respond to changing needs due to the condition of the improvements or other factors. Accordingly, any or all funds held in a Rehabilitation Reserve are subject to transfer into the Districts' Operating Reserve, at the discretion of the Parks and Recreation Department or equivalent, in order to provide for the maintenance and/or operation of the improvements.

APPENDIX A – DISTRICT BOUNDARY MAP

The boundary map for the District has previously been submitted to the Clerk of the City in the format required under the 1972 Act and is, by reference, hereby made part of this Report. These District Boundary Maps are available for inspection at the office of the City Clerk during normal business hours.

For general reference purposes, a summary of the District's Boundaries is presented herein.

Assessment diagram



APPENDIX B — FY 2025/26 ASSESSMENT ROLL

Parcel identification, for each lot or parcel within the District, shall be the parcel as shown on the Placer County Assessor's map for the year in which this Report is prepared.

A listing of parcels to be assessed within this District, along with the proposed assessment amounts, shall be submitted to the City Clerk, under separate cover, and by reference is made part of this Report.

Non-assessable lots or parcels may include areas of public streets and other roadways (typically not assigned an APN by the County); dedicated public easements, open space areas and rights-of-ways including public greenbelts and parkways; utility rights-of-ways; common areas; landlocked parcels, small parcels vacated by the County, bifurcated lots, and any other property that cannot be developed. These types of parcels are considered to receive little or no benefit from the improvements and are therefore exempted from assessment.

At the conclusion of the public hearing for the District and the proposed assessments, approval of the Report (as submitted or as modified) confirms the method of apportionment and the assessment rate to be levied against each eligible parcel and thereby constitutes the approved levy and collection of assessments for FY 2025/26. The listing of parcels and the amount of assessment to be levied shall be submitted to the County Auditor/Controller and included on the FY 2025/26 property tax roll for each parcel.

If any parcel submitted for collection is identified by the County Auditor/Controller to be an invalid parcel number for the Current Fiscal Year, a corrected parcel number and/or new parcel number will be identified and resubmitted to the County Auditor/Controller. The assessment amount to be levied and collected for the resubmitted parcel or parcels shall be based on the method of apportionment and assessment rate approved in this Report. Therefore, if a single parcel has changed to multiple parcels, the assessment amount applied to each of the new parcels shall be recalculated and applied according to the approved method of apportionment and assessment rate rather than a proportionate share of the original assessment.

City of Roseville
Vernon Street Landscaping and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	CHARGE	MAXIMUM ASMT	FRONT FOOTAGE	LEGAL DESCRIPTION
013-070-004-000	Assessable	2,044.00	2,044.02	235.61	FR SEC 2 10 6
013-071-001-000	Assessable	433.76	433.77	50.0	LOT 8 BLK 1 RSVL RESVY C-33 SBE#294-31-15 PAR 1
013-071-002-000	Assessable	433.76	433.77	50.0	LOT 7 BLK 1 RSVL RESVY C-33 SBE#294-31-16 PAR 1
013-071-003-000	Assessable	433.76	433.77	50.0	LOT 6 BLK 1 RSVL RESVY C-33 SBE#294-31-16 PAR 1
013-071-004-000	Assessable	867.54	867.54	100.0	LOT 4,5 BLK 1 RSVL RESVY C-33 SBE#294-31-12 PAR 1
013-071-006-000	Assessable	867.54	867.54	100.0	FR LOTS 1 2 BLK 1
013-071-009-000	Assessable	433.76	433.77	50.0	3 POR 2 BLK 1 RSVL RSVY C-33 SBE#294-31-12 PAR 1
013-072-008-000	Assessable	867.54	867.54	100.0	POR LOTS 15 & 16 BLK 15 ROSEVILLE TOWNSITE
013-072-010-000	Assessable	867.54	867.54	100.0	LOTS 13 14 BLK 15
013-072-011-000	Assessable	433.76	433.77	50.0	LOT 12 BLK 15
013-072-012-000	Assessable	1,301.30	1,301.31	150.0	L 9 10 11 BLK 15
013-073-011-000	Assessable	1,127.80	1,127.81	130.0	LOTS 1 2 BUTLER SUBD
013-091-003-000	Assessable	1,301.30	1,301.31	150.0	L 1 2 3 BL 3
013-091-010-000	Assessable	1,891.24	1,891.24	218.0	LOTS 4, 5 , 6&7&POR 8 & CITY ST BLK3 TOWN OF RSVL
013-092-005-510	Assessable	216.88	216.89	25.0	FR L 5 BLK 2
013-092-005-520	Assessable	216.88	216.89	25.0	FR L 5 BLK 2
013-092-006-000	Assessable	433.76	433.77	50.0	FR LOT 4 BLK 2
013-092-007-000	Assessable	433.76	433.77	50.0	LOT 3 BLK 2
013-092-008-000	Assessable	349.18	349.19	40.25	FR LOT 2 BLK 2
013-092-009-000	Assessable	520.26	520.27	59.97	FR LOTS 1 2 BLK 2
013-092-014-000	Assessable	1,301.30	1,301.31	150.0	FR SEC 2 10 6
013-093-003-000	Assessable	867.54	867.54	100.0	FR LOTS 14 LOTS 15 16 BLK 14
013-093-004-000	Assessable	251.58	251.59	29.0	FR LOT 14 BLK 14
013-093-005-000	Assessable	182.18	182.18	21.0	FR L 14 BLK 14 RSVLLE
013-093-006-000	Assessable	659.32	659.33	76.0	FR LOT 12 LOT 13 BLK 14
013-093-007-000	Assessable	1,509.52	1,509.53	174.0	LOTS 9 10 11 FR LOT 12 BLK 14
013-121-002-000	Assessable	1,301.30	1,301.31	150.0	L 4 5 6 BLK 5
013-121-003-000	Assessable	433.76	433.77	50.0	LOT 3 BLK 5
013-121-004-000	Assessable	868.58	868.58	100.12	PAR A PMOR 18 117
013-121-005-000	Assessable	433.76	433.77	50.0	L 7 BLK 5 RSVLE
013-121-006-000	Assessable	434.28	434.29	50.06	L 8 BLK 5 RSVLLE
013-122-001-000	Assessable	435.06	435.07	50.15	FR L 7 8 BLK 4
013-122-002-000	Assessable	203.86	203.87	23.5	FR LOT 7 BLK 4
013-122-003-000	Assessable	228.58	228.60	26.35	FR L 7 BLK 4
013-122-004-000	Assessable	433.76	433.77	50.0	L 6 BLK 4
013-122-005-000	Assessable	433.76	433.77	50.0	LOT 5 BLK 4
013-122-009-000	Assessable	782.42	782.44	90.19	L 1 FR L 2 BLK 4
013-122-010-000	Assessable	520.52	520.53	60.0	L 3 FR 2 BLK 4 RSVLLE
013-122-011-000	Assessable	173.50	173.51	20.0	FR L 4 BLK 4 RSVLLE
013-122-012-000	Assessable	260.26	260.26	30.0	FR L 4 BLK 4 RSVL
013-123-017-000	Assessable	955.68	955.69	110.16	PAR 1 PMOR 18 155
013-123-021-000	Assessable	631.12	631.14	72.75	PAR 1 PMOR 32-99
013-123-024-000	Assessable	1,263.92	1,263.92	145.69	1.1 AC PAR 3 PMOR 32-99
013-123-026-000	Assessable	618.20	618.21	71.26	PAR 2 PMOR 32-99
013-124-006-000	Assessable	433.76	433.77	50.0	LOT 16 BLK 13
013-124-007-000	Assessable	433.76	433.77	50.0	L 15 BLK 13
013-124-008-000	Assessable	433.76	433.77	50.0	LOT 14 BLK 13
013-124-017-000	Assessable	1,301.30	1,301.31	150.0	LOTS 11 12 13 BLK 13 & POR ALLEY WAY
013-124-018-000	Assessable	674.08	674.08	77.7	LOT 10 BLK 13 & POR CITY STREET & ALLEY WAY
013-151-004-000	Assessable	867.54	867.54	100.0	POR L 7 & 8 BLK 6
013-152-012-000	Assessable	433.76	433.77	50.0	L 11 BLK 10
013-152-017-000	Assessable	867.54	867.54	100.0	PAR A PMOR 21 141
013-152-021-000	Assessable	2,168.84	2,168.86	250.0	LOTS 12-16 BLK 10 ROSEVILLE ORIGINAL TOWN
013-153-013-000	Assessable	1,257.92	1,257.94	145.0	FR L 10 L 11 12 BLK 11
013-153-014-000	Assessable	511.84	511.85	59.0	LOT 9 FR 10 BLK 11
013-153-019-000	Assessable	648.82	648.84	74.79	LOT 13 FR LOT 14 BLK 11
013-153-023-000	Assessable	1,086.24	1,086.25	125.21	PAR A & B PMOR 1 1

City of Roseville
Vernon Street Landscaping and Lighting District
Fiscal Year 2025/26 Preliminary Assessment Roll

ASSESSOR PARCEL NUMBER	ASMT CATEGORY	CHARGE	MAXIMUM ASMT	FRONT FOOTAGE	LEGAL DESCRIPTION
013-161-001-000	Assessable	563.90	563.90	65.0	FR L 9 10 BLK 8
013-161-002-000	Assessable	780.78	780.79	90.0	FR LOT 10 11 BLK 8
013-162-001-000	Assessable	3,470.16	3,470.17	400.0	BLK 9 ROSEVILLE
013-250-032-000	Not Balloted	-	-	0.0	FR SEC 2 10 6
013-250-033-000	Not Balloted	-	-	0.0	53.6 AC FR SEC 2 10 6 SBE # 872-31-2Y PAR 57
013-250-034-000	Not Balloted	-	-	0.0	FR SEC 2 10 6 SBE # 872-31-2Y PAR 58 MRO

Summary Fields	Value
ACTIVE PARCELS	63
LEVIED PARCELS	60
CHARGE	$46,593.08
MAXIMUM ASMT	$46,593.66
FRONT FOOTAGE	5,370.76

COUNCIL COMMUNICATION

CC #: 3840
File #: 0210

Title:	Sales Tax Revenue Consulting Services - Professional Services Agreement Amendment
Contact:	N. Rothlisberger 916-774-5314 nrothlisberger@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.10.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution authorizing the City Manager to execute a fourth amendment to a professional services agreement with MuniServices, LLC to provide sales tax and transactions and use tax auditing, projection, recovery, and consultant services.

BACKGROUND

On April 7, 2021, the City Council authorized the City Manager to enter into a professional services agreement with MuniServices, LLC, to provide sales tax and transactions and use tax auditing, projection, recovery, and consultant services. The agreement terms included an initial two-year term and an annual not-to-exceed amount of $150,000 per year, or $300,000 over the total agreement term. MuniServices, LLC's compensation is based on a portion of quarterly revenues received by the City due to their audit and recovery services.

On June 15, 2022, the City Council authorized the City Manager to amend this agreement to increase the not-to-exceed amount to $250,000 per year because MuniServices identified a higher than anticipated amount of misallocated sales tax and transaction and use tax from their audit and recover services.

The initial two-year term of the agreement expired on April 7, 2023. The City Council authorized staff to exercise an agreement option to extend the agreement for an additional one-year period commencing on April 8, 2023, and ending on April 7, 2024. The next year, the second additional one-year extension was approved.

Staff now recommends exercising the option to extend the agreement for a final additional one-year period through April 16, 2026.

FISCAL IMPACT

This agreement is structured to only compensate MuniServices, LLC based on the amount of

additional revenues received by the City due to their audit and recovery services. The additional one-year extension will increase the total not-to-exceed amount from $1 million to $1.25 million. The additional sales and use tax revenues that the City receives for the General Fund from these services more than offsets the cost.

Adequate appropriations are available in the FY2024-25 approved budget to fund this amendment. Staff will incorporate the cost of this agreement into the proposed FY2025-26 budget.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) only applies to projects which have the potential to cause a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. (CEQA Guidelines §15061 {b)(3)).

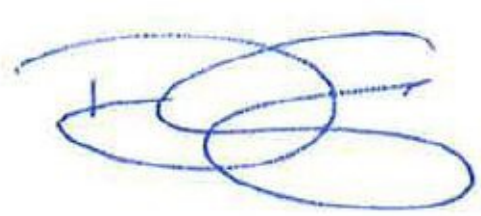
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Remain fiscally responsible in a changing world

Respectfully Submitted,

Nancy Rothlisberger, Budget Manager

Scott Pettingell, Finance Director



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-096

MuniServices (Sales Tax Consulting) - Fourth Amendment to PSA

RESOLUTION NO. 25-096

APPROVING A FOURTH AMENDMENT TO PROFESSIONAL SERVICES AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND MUNISERVICES, LLC, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a Fourth Amendment to Professional Services Agreement for tax revenue consulting services, by and between the City of Roseville and MuniServices, LLC, has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said Fourth amendment is hereby approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

FOURTH AMENDMENT TO

PROFESSIONAL SERVICES AGREEMENT

Tax Revenue Consulting Services

THIS FOURTH AMENDMENT TO AGREEMENT is made and entered into this ___ day of _____, 20__, by and between the City of Roseville, a municipal corporation ("CITY"), and MuniServices, LLC, a Delaware limited liability company("CONSULTANT"); and

W I T N E S S E T H:

WHEREAS, CITY and CONSULTANT previously entered into a Professional Services Agreement dated April 7, 2021 and amended on June 15, 2022, April 5, 2023, and April 3, 2024 ("Agreement") regarding tax revenue consulting services ("Project"); and

WHEREAS, CITY is exercising its option to extend the term of the Agreement for an additional one (1) year period; and

WHEREAS, CONSULTANT is willing and able to provide such additional services.

NOW, THEREFORE, the parties agree as follows:

1. Section 2 of the Agreement is amended by adding an additional paragraph to read as follows:

"CITY is exercising its option to extend the term of this Agreement for an additional (1) year commencing on April 8, 2025 and ending on April 7, 2026."

2. Section 3 of the Agreement is amended by adding an additional paragraph to read as follows:

"CITY shall pay two hundred fifty thousand dollars ($250,000), in consideration of the additional services to the Fourth Amendment to Agreement. This brings the total not to exceed contract amount to one million two hundred fifty thousand dollars ($1,250,000)."

3. The Agreement is amended by adding an additional paragraph regarding compliance with the Levine Act:

"24. The Levine Act Disclosure. The Levine Act (Govt. Code, Section 84308) requires a Party (and its agent(s), if any) to a Proceeding before the City of Roseville that involves any action or consideration related to their contract, license, permit, or other entitlement for use, to disclose any campaign contributions made to CITY elected or appointed officers totaling more than $250 within the twelve (12) months prior to the CITY decision and while a proceeding is pending, and includes certain prohibitions on contribution activity thereafter. If applicable campaign contributions have been made by CONSULTANT and/or its agent(s), CONSULTANT is responsible for compliance, including for its disclosure obligations, if any, as further described at https://www.roseville.ca.us/government/departments/city_clerk/transparency/levine_act."

4. All other provisions of the Agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Fourth Amendment to Agreement in duplicate by its City Manager and attested to by its City Clerk under the authority of Resolution No. _____, adopted by the

Council of the City of Roseville on the ___ day of _____, 20__, and CONSULTANT has caused this Fourth Amendment to Agreement to be executed.

CITY OF ROSEVILLE, a municipal corporation

BY: _____
DOMINICK CASEY
City Manager

ATTEST:

BY: _____
CARMEN AVALOS
City Clerk

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE:

BY: Scott Pettingell Digitally signed by Scott Pettingell Date: 2025.03.21 09:14:19 -07'00'
SCOTT PETTINGELL
Finance Director

MUNISERVICES, LLC, a Delaware limited liability company

BY: Paul Colangelo
its: ceo

and

BY: Mike Melka
its: CFO

COUNCIL COMMUNICATION

CC #: 3834
File #: 0200

Title: Municipal Advisor Services - Professional Services Agreements
Contact: Jeannine Thrash 916-774-5473 jthrash@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.11.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt two resolutions authorizing the City Manager to execute professional services agreements with Fieldman, Rolapp & Associates, Inc. and PFM Financial Advisors LLC for Municipal Advisor Services.

BACKGROUND

As needed, the City requires municipal advisor services related to issuing bonds, which are highly technical and demand specialized expertise. Each bond transaction can be complex and requires a unique skill set to help the City mitigate risk, make informed decisions, and achieve the lowest overall cost of capital. As a full-service city, there is a need for a wide range of municipal advisory services across various financial functions that the City manages daily. Historically, the City has retained a single Municipal Advisor; however, it sought to broaden its perspective, particularly for situations involving utilities and special tax bonds related to Community Facilities Districts. In December 2024, the City issued a Request for Proposals (RFP) for Municipal Advisor Services and received several responses. After reviewing the proposals and interviewing the top-ranked firms, City staff recommends contracting with PFM Financial Advisors, LLC (PFM) and Fieldman, Rolapp & Associates, Inc. (Fieldman) to meet the City's diverse financial needs.

PFM has been a national leader in providing independent financial advice to local, state, and regional government clients for over 48 years. PFM serves over half of the 50 largest municipal utilities in the country and has extensive experience with Community Facilities Districts, General Fund, utility, electric, water, and sewer transactions.

Fieldman brings nearly six decades of experience and has worked with over 140 cities. Additionally, Fieldman has served as the City's consultant for continuing disclosure related to non-land secured debt compliance for over a decade, providing them with an in-depth understanding of the City's debt.

FISCAL IMPACT

The recommended professional services agreement with Fieldman, Rolapp & Associates, Inc. has a not-to-exceed amount of $500,000 through June 30, 2028. This fee covers financial advisory services related to bond issuances and is structured based on the amount and type of bonds issued. These expenses are categorized as bond issuance costs, with the total amount dependent on the number of bond issuances each year.

The recommended professional services agreement with PFM has a not-to-exceed amount of $350,000 through June 30, 2028, and consists of two components:

1. Annual Retainer – A $25,000 annual fee for general financial advisory services, split between the General Fund ($10,000) and Electric Fund ($15,000). An adequate budget is available to cover the General Fund and Electric portion for the remainder of FY2024-25.
2. Bond Issuance Costs – Fees for financial advisory services related to bond issuances, with total costs dependent on the number of bond issuances each year.

Bond issuance costs are typically contingent upon bond issuance and are paid from bond proceeds. A large portion of the work the Municipal Advisors provide will be related to public improvements within a Community Facilities District and, therefore, funded by property owners within the CFD. Any additional municipal advisory services will be budgeted based on the specific type of work provided.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) only applies to projects which have the potential to cause a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. (CEQA Guidelines §15061(b)(3)).

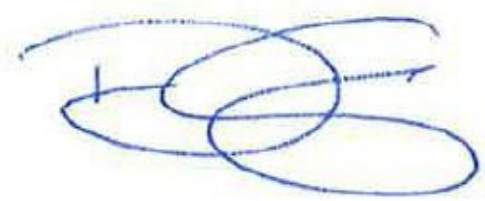
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Remain fiscally responsible in a changing world

Respectfully Submitted,

Jeannine Thrash, Management Analyst

Scott Pettingell, Finance Director



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-091

Signed Fieldman contract

Resolution 25-092

Signed PFM contract

RESOLUTION NO. 25-091

APPROVING A PROFESSIONAL SERVICES AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND FIELDMAN, ROLAPP & ASSOCIATES, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a professional services agreement for municipal advisor services, by and between the City of Roseville and Fieldman, Rolapp & Associates, Inc., has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said professional services agreement is hereby approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

PROFESSIONAL SERVICES AGREEMENT

Municipal Advisor Services

THIS AGREEMENT is made and entered into this ___ day of _____, 20__, by and between the City of Roseville, a municipal corporation ("CITY"), and Fieldman, Rolapp & Associates, Inc., a California corporation ("CONSULTANT"); and

W I T N E S S E T H:

WHEREAS, CITY desires professional services consisting of municipal advisor services; and

WHEREAS, CONSULTANT has prepared a proposal dated January 16, 2025, which describes the scope of work to be performed by CONSULTANT, the budget for the work, and the schedule for performance of the work; and

WHEREAS, CONSULTANT is qualified and experienced to provide such professional services.

NOW, THEREFORE, the parties agree as follows:

1. Term. The term of this Agreement shall commence upon execution and expire on June 30, 2028. The City Manager may, in his or her discretion, elect to extend the Agreement in one (1) year increments for up to an additional two (2) years by giving CONSULTANT thirty (30) days advance written notice of each optional one (1) year renewal. Such extensions shall be memorialized by a written amendment to this Agreement.

2. Services. CONSULTANT shall perform, at the direction of CITY, the scope of services as described in EXHIBIT "A," attached hereto and incorporated herein by this reference.

3. Compensation. For its services provided hereunder, CONSULTANT shall be compensated on a time and expense basis in accordance with the budget estimate and rates (rates subject to annual inflationary increases on the annual anniversary of contract execution date) as described in EXHIBIT "B," attached hereto and incorporated herein by this reference. Total compensation shall not exceed five hundred thousand dollars ($500,000).

CONSULTANT shall submit one monthly invoice for its services. Such invoices shall be delineated by task, the person performing the services, and the hourly rate, which shall be stated in time increments of not greater than one tenth (1/10) hours. CITY shall pay invoices within thirty (30) days after receipt, if the services specified in the invoice have been satisfactorily completed.

4. Indemnification. To the fullest extent allowed by law, CONSULTANT shall defend, indemnify, and save and hold harmless CITY, its officers, agents, employees and volunteers from any claims, suits or actions of every name, kind and description brought forth, or on account of, injuries to or death of any person (including but not limited to workers and the public), or damage to property, resulting from or arising out of CONSULTANT's willful misconduct or negligent act or omission while engaged in the performance of obligations or exercise of rights created by this Agreement, except those matters arising from CITY's sole negligence or willful misconduct. The parties intend that this provision shall be broadly construed.

CONSULTANT agrees to defend and indemnify CITY if, despite the parties intent and practice, any venue, agency, or court with competent jurisdiction determines that CONSULTANT and/or any of its agents, officers, employees, volunteers, independent contractors, or subcontractors, are characterized as employee(s) of CITY.

CONSULTANT's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Agreement for the full period of time allowed by law. The defense and indemnity obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Agreement.

5. Insurance. CONSULTANT agrees to continuously maintain, in full force and effect, the following minimum policies of insurance during the term of this Agreement.

COVERAGE	LIMITS OF LIABILITY
Workers' Compensation	Statutory
Commercial General Liability	$1,000,000 each occurrence $2,000,000 aggregate Personal Injury: $1,000,000 each occurrence $2,000,000 aggregate
Automobile Liability	$1,000,000 combined single limit
Professional Liability (errors and omissions)	$1,000,000 per claim $2,000,000 aggregate

a. Form. CONSULTANT shall submit a certificate evidencing such coverage for the period covered by this Agreement in a form satisfactory to Risk Management and the City Attorney, prior to undertaking any work hereunder. Any insurance written on a claims made basis is subject to the approval of Risk Management and the City Attorney.

b. Additional Insureds. CONSULTANT shall also provide a separate endorsement form or section of the policy showing CITY, its officers, agents, employees and volunteers as additional insureds for each type of coverage, except for Workers' Compensation and Professional Liability. Such insurance shall specifically cover the contractual liability of CONSULTANT. The additional insured coverage under the CONSULTANT's policy shall be

primary and noncontributory, as evidenced by a separate endorsement or section of the policy, and shall not seek contribution from CITY's insurance or self-insurance. In addition, the additional insured coverage shall be at least as broad as the Insurance Services Office ("ISO") CG 20 01 Endorsement. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (1) the minimum coverage and limits specified in this Agreement; or (2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

c. Cancellation/Modification. CONSULTANT shall provide ten (10) days written notice to CITY prior to cancellation or modification of any insurance required by this Agreement.

d. Umbrella/Excess Insurance. The limits of insurance required in this Agreement may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of CITY (if agreed to in a written contract) before CITY's own insurance shall be called upon to protect it as a named insured.

e. Subcontractors. CONSULTANT agrees to include in its contracts with all subcontractors the same requirements and provisions of this Agreement, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, CONSULTANT shall require its subcontractors to agree to be bound to CONSULTANT and CITY in the same manner and to the same extent as CONSULTANT is bound to CITY under this Agreement. Additionally, CONSULTANT shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor,

regardless of tier. A copy of CITY's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request.

f. Self-Insured Retentions. All self-insured retentions ("SIR") must be disclosed to Risk Management for approval and shall not reduce the limits of liability. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or CITY. CITY reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

g. Waiver of Subrogation. CONSULTANT hereby agrees to waive subrogation which any insurer of CONSULTANT may acquire from CONSULTANT by virtue of the payment of any loss under a Workers Compensation, Commercial General Liability or Automobile Liability policy. All Workers Compensation, Commercial General Liability and Automobile Liability policies shall be endorsed with a waiver of subrogation in favor of CITY, its officers, agents, employees and volunteers for all worked performed by CONSULTANT, its employees, agents and subcontractors.

h. Liability/Remedies. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve CONSULTANT of liability in excess of such coverage, nor shall it preclude CITY from taking such other actions as are available to it under any other provisions of this Agreement or law.

6. Records. CONSULTANT and its subcontractors shall maintain all files and records relating to the services performed hereunder during the term of this Agreement and for a period of not less than one (1) year after the date of termination or expiration. Provided, however, that in the event of litigation or settlement of claims arising from the performance of

this Agreement, CONSULTANT and its subcontractors shall maintain all files and records until such litigation, appeals or claims are resolved. Duly authorized representatives of CITY shall have right of access during normal business hours and after reasonable notice to CONSULTANT's and subcontractors' files and records relating to the services performed hereunder and may review and copy the files and records at appropriate stages during performance of the services and during the one (1) year period following termination or expiration of this Agreement. CONSULTANT shall include this provision in its contracts with all subcontractors.

7. Time is of the Essence. Time is of the essence of this Agreement.

8. Reserved.

9. Compliance with Laws. CONSULTANT shall comply with all federal, state and local laws, ordinances and policies as may be applicable to the performance of services under this Agreement.

10. Ability to Perform. CONSULTANT agrees and represents that it has the time, ability and professional expertise to perform the services required under this Agreement.

11. Public Contracts: Conflicts of Interest. CONSULTANT's duties and services under this Agreement shall not include preparing or assisting CITY with any portion of the CITY's preparation of a request for proposals, request for qualifications, or any other solicitation regarding a subsequent or additional contract with CITY. CITY shall at all times retain responsibility for public contracting, including with respect to any subsequent phase of this project. CONSULTANT's participation in the planning, discussions, or drawing of project plans or specifications shall be limited to conceptual, preliminary, or initial plans or specifications. CONSULTANT shall cooperate with CITY to ensure that all bidders for a subsequent contract

on any subsequent phase of this project have access to the same information, including all conceptual, preliminary, or initial plans or specifications prepared by CONSULTANT pursuant to this Agreement.

12. Governing Agreement. In the event of any conflict between this Agreement and its EXHIBITS, the provisions of this Agreement shall govern. In the event of any conflict between any of the EXHIBITS, the provisions of the first in order of attachment shall govern.

13. The Levine Act Disclosure. The Levine Act (Govt. Code, Section 84308) requires a Party (and its agent(s), if any) to a Proceeding before the City of Roseville that involves any action or consideration related to their contract, license, permit, or other entitlement for use, to disclose any campaign contributions made to CITY elected or appointed officers totaling more than $250 within the twelve (12) months prior to the CITY decision and while a proceeding is pending, and includes certain prohibitions on contribution activity thereafter. If applicable campaign contributions have been made by CONSULTANT and/or its agent(s), CONSULTANT is responsible for compliance, including for its disclosure obligations, if any, as further described at:

https://www.roseville.ca.us/government/departments/city_clerk/transparency/levine_act.

14. Assignment. CONSULTANT is employed to perform unique personal services. CONSULTANT shall not assign this Agreement without the prior written consent of CITY. CONSULTANT shall not employ or otherwise incur any obligation to pay other specialists or experts for services in connection with this Agreement, without prior written consent of CITY.

15. Independent Contractor. CONSULTANT, inclusive of its agents, officers, employees, volunteers, independent contractors, and subcontractors, shall act as an independent contractor, and covenants and agrees that it will conduct itself consistent with such status, that it

will neither hold itself out as, nor claim to be, an officer or employee of CITY by reason of this Agreement.

CONSULTANT and CITY agree that: (a) CONSULTANT is free from the control and direction of CITY in connection with the performance of the work; (b) CONSULTANT is providing services directly to CITY; (c) CONSULTANT has and will maintain at all relevant times a business license; (d) CONSULTANT maintains a business location that is separate from CITY; (e) CONSULTANT is customarily engaged in an independently established business of the same nature as that involved in the work performed hereunder; (f) CONSULTANT actually contracts with other businesses to provide the same or similar services and maintains a clientele without restrictions from CITY; (g) CONSULTANT advertises and holds itself out to the public as available to provide the same or similar services; (h) CONSULTANT provides its own tools, vehicles, and equipment to perform the services; (i) CONSULTANT has negotiated its own rates; (j) CONSULTANT set its own hours and location of work in accomplishing CITY's on-call needs; and (k) CONSULTANT has the right to control the manner and means of accomplishing the result desired and exercises its own expert independent judgement.

16. Representations and Warranties. CONSULTANT warrants that it has not employed or retained any company or person, other than a bona fide employee working for CONSULTANT, to solicit or secure this Agreement, and that it has not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift or any other consideration, contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, CITY shall have the right to terminate as void this Agreement, without liability, or, in its discretion, to deduct from the

Agreement price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.

17. Successors in Interest. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

18. Copyright, Ownership and Use of Materials. All tangible material ("Material") created or delivered pursuant to this Agreement is considered a work made for hire under the Copyright Act. To the extent such Material does not qualify as a work made for hire, CONSULTANT hereby assigns to CITY all right, title, and interest, including but not limited to all copyrights, in all Material created by CONSULTANT in its performance under this Agreement. Material constitutes the scope of work outlined in Exhibit A and attached hereto, and all written and other tangible expressions, including but not limited to, drawings (including computer aided drawings), papers, documents, reports, surveys, renderings, exhibits, sketches, maps, models, prints, paintings or photographs, in any and all media or formats in which such materials have been created or are maintained. All Material furnished by CONSULTANT is, and shall remain, the property of CITY.

CONSULTANT shall execute any documents necessary to effectuate such assignment. In the event that CONSULTANT uses, employs, designates, or retains any person or entity who is not an employee of CONSULTANT, to perform any work required of it pursuant to this Agreement, CONSULTANT shall require said person or entity to execute an agreement containing the preceding paragraph.

19. Termination of Agreement. The City may terminate this Agreement without cause by giving CONSULTANT ten (10) days advance written notice from the City Manager. CONSULTANT may terminate this Agreement without cause by giving CITY thirty (30) days

advance written notice. In the event of termination through no fault of CONSULTANT, CITY shall compensate CONSULTANT for services performed as of the date of termination, upon the release to CITY of all Material hereunder, in any and all media or formats in which such materials have been created or are maintained. CITY retains the right to receive and use any Material, notwithstanding any termination or any dispute regarding the amount to be paid.

20. Attorney's Fees; Venue; Governing Law. If either party commences any legal action against the other party arising out of this Agreement or the performance hereof, the prevailing party in such action shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorney's fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

21. Modification. This Agreement and each provision contained herein may be waived, amended, supplemented or eliminated only by mutual written agreement of the parties.

22. Severability. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

23. Notices. Any notices to parties required by this Agreement shall be delivered personally or mailed, U.S. first class postage prepaid, addressed as follows:

CITY OF ROSEVILLE	CONSULTANT
Jeannine Thrash City of Roseville 311 Vernon Street Roseville, CA 95678	Anna Sarabian Fieldman, Rolapp & Associates, Inc. 19900 MacArthur Blvd. #1100 Irvine, CA 92612

Either party may amend its address for notice by giving notice to the other party in writing.

24. Integrated Agreement. This is an integrated agreement and contains all of the terms, considerations, understanding and promises of the parties. It shall be read as a whole.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attested to by its City Clerk under the authority of Resolution No. _____, adopted by the Council of the City of Roseville on the ___ day of _____, 20__, and CONSULTANT has caused this Agreement to be executed.

CITY OF ROSEVILLE, a municipal corporation

BY: _____
DOMINICK CASEY
City Manager

ATTEST:

BY: _____
CARMEN AVALOS
City Clerk

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

FIELDMAN, ROLAPP & ASSOCIATES, INC., a California corporation

BY: _____
its: Anna Sarabian, Vice Chairperson/Sr. Vice President

and

BY: _____
its: James Fabian, Sr. Vice President/Secretary

APPROVED AS TO SUBSTANCE:

BY: Scott Pettingell Digitally signed by Scott Pettingell Date: 2025.03.27 18:15:36 -07'00'

SCOTT PETTINGELL
Finance Director

Integrity: Fieldman stands out for its commitment to transparency and principled advice. We don't just say yes; we say what's best. That means delivering honest, conservative recommendations, even advising when it may be wise to hold off on a project. Clear communication and transparency are at the core of our advisory process, ensuring that the City's interests are always our top priority.

Service: We pride ourselves on the hands-on, proactive approach we bring to our clients, becoming an extension of staff, working together every step of the way. Our 80/20 approach to transaction management anticipates challenges and ensures that unforeseen events do not disrupt the bond issuance process. This proactive approach allows us to deliver creative solutions and excellent service throughout every project.



TAB E: PROJECT PLAN

PLAN OF FINANCE

Our approach is designed to comprehensively address the City's Scope of Services, providing proactive and innovative solutions to meet its financial planning, debt management, and financial implementation needs. Each component of our methodology reflects our commitment to excellence, deep industry expertise, and a collaborative partnership with City staff.

FINANCIAL PLANNING

1. Survey of Financial Resources

We will thoroughly assess the City's financial resources, evaluating existing revenue streams, debt capacity, and financial obligations to ensure a clear understanding of its ability to authorize, issue, and service contemplated debt instruments.

2. Future Financing Needs Analysis

By working closely with City staff and consultants, we will project future financing needs and identify optimal funding solutions that align with the City's long-term goals and economic forecasts.

3. Recommendations for Debt Instruments

Our team will evaluate various debt structures, considering factors like issuance timing, debt service payment schedules, security provisions, and call options. These recommendations will be crafted to attract investors.

4. Market Timing and Conditions Analysis

We provide real-time market intelligence on bond market trends, economic indicators, and comparable issuances to ensure debt instruments are sold at the most favorable time and on the best terms.

5. Outstanding Debt Review

We will continually monitor the City's outstanding long-term debt obligations, identifying potential refunding opportunities to generate cost savings or improve financial flexibility.

6. Capital Improvement Project Balancing

Our advisors will assist in optimizing the mix of bonds, cash, and loans to finance ongoing Capital Improvement Projects, ensuring cost efficiency and alignment with the City's priorities

7. Development Project Advisory

We will provide ongoing advice regarding development projects, including the review of long-term contracts with external development partners to maximize the City's financial and operational benefits.

8. Enhancing Bond Ratings and Investor Visibility

Our team will develop strategies to strengthen the City's bond ratings and increase visibility with institutional investors. This includes crafting presentations and narratives that highlight the City's fiscal strengths and creditworthiness.

DEBT MANAGEMENT AND FINANCIAL IMPLEMENTATION

1. Evaluation of Financing Methods

We will assess each financing opportunity's complexity, marketability, and structure to recommend the most effective method of sale, whether competitive, negotiated, or private placement.

2. Document Preparation Coordination

Our team will draft and review notices of sale, bidding instructions, official statements, and other required documents. We ensure these materials are comprehensive, accurate, and aligned with the City's objectives.

3. Credit Rating Advisory

If obtaining or enhancing credit ratings is advisable, we will coordinate the preparation of detailed presentations to rating agencies and facilitate meetings to present the City's case.

4. Trustee and Paying Agent Selection

We will assist in identifying and negotiating agreements with Trustees and Paying Agents, ensuring optimal service and cost-effectiveness.

5. Consultant Reports and Opinions

In consultation with the City, we will arrange for independent consultant reports (such as Appraisers, Market Absorption Consultants, etc.) and opinions necessary to support the successful marketing of debt instruments.

6. Meeting Attendance and Support

Our advisors will attend City meetings, providing expert input on financing strategies and ensuring clear communication with staff throughout the process.

7.Coordination of Printing and Delivery

We will oversee the printing of offering documents and debt instruments, ensuring accurate and timely delivery to all relevant parties.

8. Liaison with Bond Counsel

Our team will collaborate with Bond Counsel to ensure all legal documents comply with applicable laws and regulations and align with the City's objectives.

9. Transaction Closing Coordination

After pricing, we will manage all closing activities, including verifying final figures, coordinating efforts among all parties, and ensuring smooth delivery of the debt instruments.

10. Document Delivery

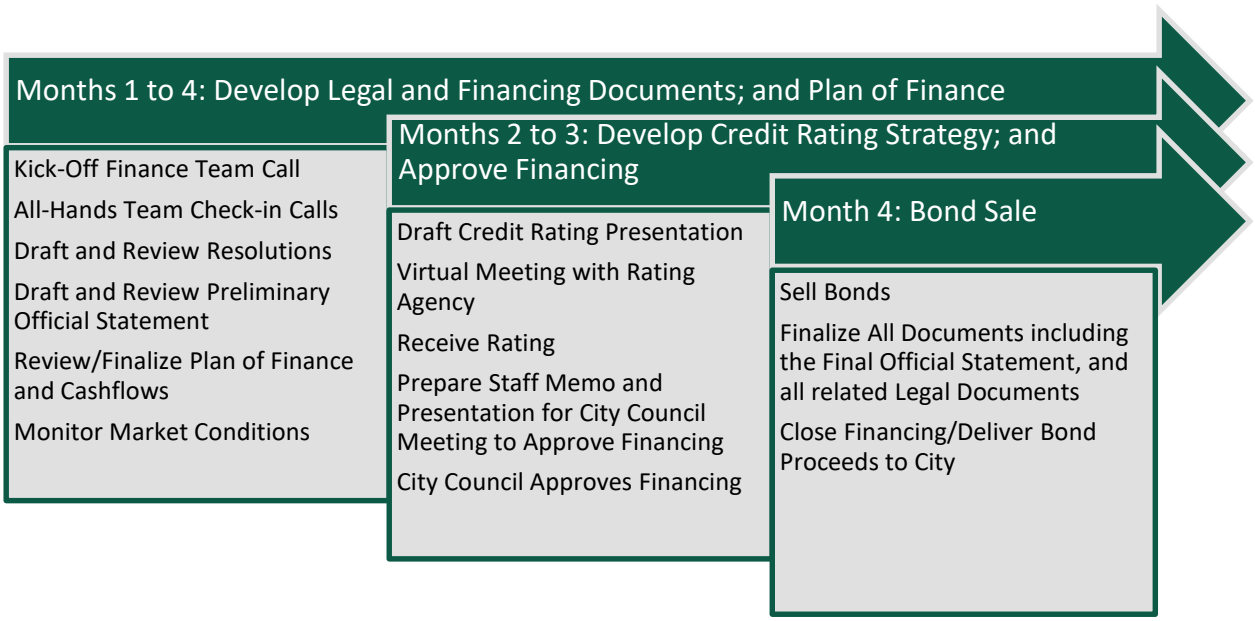
After closing, we can ensure all parties received all necessary documentation.

11. Post-Issuance Support

We will provide a detailed schedule of annual debt service requirements and ensure that Trustees and Paying Agents have all necessary documentation. Additionally, we will assist with audits, inquiries, and legal reviews related to the transaction

PROPOSED WORK SCHEDULE

A typical financing timeline spans approximately four months from the initial kick-off conference call to the bond closing date.



We reviewed the City's recent CFD bond sales and observed that many have indicated that future parity bonds are expected to be issued only to fund deferred impact fees and the remaining authorization will be available to be utilized by the City thereafter. However, we noted the Creekview CFD phase 5 development, planned for an additional 285 single-family residential units, will be annexed into the CFD as a separate Improvement Area, with bonds issued subsequently.

As there are possible refunding opportunities expected in the near term, we believe the next likely financing will be either a new money CFD issuance or refunding. To assist with planning, we have attached sample new money and refunding CFD schedules for your reference as **Appendix F**.

STAFF AND EQUIPMENT

All work is done in-house, not by any sub-consultants or sub-contractors. Mr. Porr and Mrs. Nichols will advise solely on any utility financings and Dr. Sarabian, Ms. Redmon and Mr. Jasper will be the core team on all financings. No additional equipment, training or installation services are required.

TAB: F: COST PROPOSAL

Our goal is always to provide value in the services that we provide to our clients, far in excess of our fees. Our fee is premised on the concept that assignments, per the RFP, could involve:

1. Fixed fees and expenses for transaction services
2. Hourly fees for as-needed services
3. Continuing disclosure services

Fee for Transaction Services

Based on the Scope of Services outlined in the RFP, we propose the following tentative fees, subject to negotiation with the City.

Debt Transaction Size			CFD Bonds	Non-CFD Bonds (Excluding Utility Financings)	Utility Financings
up	to	$10,000,000	$40,000	$48,000	$48,000
$10,000,001	to	$25,000,000	$52,000	$60,000	$60,000
$25,000,001	to	$50,000,000	$60,000	$68,000	$75,000
$50,000,001	to	$100,000,000	$65,000	$75,000	$90,000
$100,000,001	to	$200,000,000	$80,000	$90,000	$125,000
Greater than $200,000,000			To be negotiated		

For transactions that include multiple series of bonds, the full transaction fee will not be charged for each additional series of bonds. For any series in excess of one a fee of not to exceed $20,000 per each additional series will be added to the transaction fee above. For any pooled refundings with multiple underlying CFDs or improvement areas, we will negotiate an additional fee to be added to the base transaction fee that will depend on the number of underlying districts and the complexity of the transaction. Typically, the all-in pooled refunding transaction fees range between $65,000 and $125,000.

Payment of fees pursuant to debt issuance shall be contingent on, and payable, at the closing of the debt issue(s) undertaken to finance the City's financings. The fees listed above shall increase each January 1st beginning January 1, 2026 by three percent (3.00%).

Expenses will be billed for separately and will cover, among other things, travel, lodging, conference calls, internet posting, subsistence, overnight courier, computer, and fax transmission charges. Advances made on behalf of the City for costs of preparing, printing or distributing disclosure materials or related matter whether by postal services or electronic means, may also be billed to the City upon prior authorization. Additionally, a surcharge of six percent (6.00%) of the compensation amount is added to verifiable out-of-pocket costs for recovery of costs such as telephone, postage, document reproduction and the like.

Fee for As-Needed Financial Advisory Services

CFD formation services and other ad-hoc financial advisory services performed will be billed at the then current hourly rates. The table below reflects the rates in effect as of the date of this RFP submission. If needed, we will be happy to negotiate a not-to-exceed amount for each project, depending on the specific scope of work at the time. Typically, CFD formation services are in the range of $35,000-$40,000, sometimes less if the formation is straightforward and completed expeditiously.

SCHEDULE OF HOURLY RATES Effective January 1, 2025	
Executive Officer	$427
Principal	$417
Executive/Senior Vice President	$406
Vice President	$346
Assistant Vice President	$319
Senior Associate	$287
Associate	$254
Analyst	$141
Administrative Assistant	$103

Hourly compensation will be billed on a monthly basis and will be due thirty (30) days from invoice date. Invoices not paid within sixty (60) days are subject to a two percent (2.00%) late fee for every month payment is late. The hourly rates listed above shall increase each January 1st beginning January 1, 2026 by three percent (3.00%).

Fee for Continuing Disclosure Consulting Services

For services on Annual Reporting and CDIAC Annual Reporting, the Consultant will be compensated $6,500 for Federal and State Filings per year. Such amount shall increase by the Annual Inflation Adjustment.

For services on Reporting of Significant Event Notices (Rating Changes) and Termination of Reporting Obligation, the Consultant will be compensated at $500 per notice.

For services on Continuing Disclosure Compliance Review, the Consultant will be compensated at $5,000 per year.

For Additional Services, the Consultant will be compensated at hourly rates.

TAB G: REQUIRED STATEMENTS/DOCUMENTS

Non-substitution for the designated members of the team without approval by City staff(Section 4.0)
We commit to the City that the designated project team will be used for this project if Fieldman is selected. Departure or reassignment of, or substitution for, any member of the designated project team shall not be made without the prior written approval of the City.

The absence of a conflict of interest (Section 9.4)
We confirm that there is not any actual, apparent, direct, indirect, or potential conflicts of interest that may exist with respect to the Firm relative to the services to be provided to the City.

Indicate your ability and agreement to fulfill the indemnification and insurance requirements contained in the sample contract (Section 9.7).
If selected, the Firm will fulfill the indemnification and insurance requirements contained in the sample contract within the time frame required.

RESOLUTION NO. 25-092

APPROVING A PROFESSIONAL SERVICES AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND PFM FINANCIAL ADVISORS LLC, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a professional services agreement for municipal advisor services, by and between the City of Roseville and PFM Financial Advisors LLC, has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said professional services agreement is hereby approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

PROFESSIONAL SERVICES AGREEMENT

Municipal Advisor Services

THIS AGREEMENT is made and entered into this ___ day of _____, 20__, by and between the City of Roseville, a municipal corporation ("CITY"), and PFM Financial Advisors LLC, a Delaware limited liability company ("CONSULTANT"); and

W I T N E S S E T H:

WHEREAS, CITY desires professional services consisting of municipal advisor services; and

WHEREAS, CONSULTANT has prepared a proposal dated January 16, 2025, which describes the scope of work to be performed by CONSULTANT, the budget for the work, and the schedule for performance of the work; and

WHEREAS, CONSULTANT is qualified and experienced to provide such professional services.

NOW, THEREFORE, the parties agree as follows:

1. Term. The term of this Agreement shall commence upon execution and expire on June 30, 2028. The City Manager may, in his or her discretion, elect to extend the Agreement in one (1) year increments for up to an additional two (2) years by giving CONSULTANT thirty (30) days advance written notice of each optional one (1) year renewal. Such extensions shall be memorialized by a written amendment to this Agreement.

2. Services. CONSULTANT shall perform, at the direction of CITY, the scope of services as described in EXHIBIT "A," attached hereto and incorporated herein by this reference.

3. Compensation. For its services provided hereunder, CONSULTANT shall be compensated on a time and expense basis in accordance with the budget estimate and rates (rates set forth in this Agreement are guaranteed by Consultant for a period of twelve (12) months from the date of execution of this Agreement and to be adjusted by the Consumer Price Index for Sacramento-Arden-Arcade-Roseville, CA (CPI) once the CPI information is available in the month subsequent to the anniversary date of the Agreement), as described in EXHIBIT "B," attached hereto and incorporated herein by this reference. Total compensation shall not exceed three hundred fifty thousand dollars ($350,000), which includes a fixed fee annual retainer in the amount of twenty-five thousand dollars ($25,000) per year, plus additional costs per services as described in EXHIBIT "B".

CONSULTANT shall submit one monthly invoice for its services. Such invoices shall be delineated by task, the person performing the services, and the hourly rate, which shall be stated in time increments of not greater than one tenth (1/10) hours. CITY shall pay invoices within thirty (30) days after receipt, if the services specified in the invoice have been satisfactorily completed.

4. Indemnification. To the fullest extent allowed by law, CONSULTANT shall defend, indemnify, and save and hold harmless CITY, its officers, agents, employees and volunteers from any claims, suits or actions of every name, kind and description brought forth, or on account of, injuries to or death of any person (including but not limited to workers and the public), or damage to property, resulting from or arising out of CONSULTANT's willful misconduct or negligent act or omission while engaged in the performance of obligations or exercise of rights created by this Agreement, except those matters arising from CITY's sole

negligence or willful misconduct. The parties intend that this provision shall be broadly construed.

CONSULTANT agrees to defend and indemnify CITY if, despite the parties intent and practice, any venue, agency, or court with competent jurisdiction determines that CONSULTANT and/or any of its agents, officers, employees, volunteers, independent contractors, or subcontractors, are characterized as employee(s) of CITY.

CONSULTANT's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Agreement for the full period of time allowed by law. The defense and indemnity obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Agreement.

5. Insurance. CONSULTANT agrees to continuously maintain, in full force and effect, the following minimum policies of insurance during the term of this Agreement.

COVERAGE	LIMITS OF LIABILITY
Workers' Compensation	Statutory
Commercial General Liability	$1,000,000 each occurrence $2,000,000 aggregate Personal Injury: $1,000,000 each occurrence $2,000,000 aggregate
Automobile Liability	$1,000,000 combined single limit
Professional Liability (errors and omissions)	$1,000,000 per claim $2,000,000 aggregate

a. Form. CONSULTANT shall submit a certificate evidencing such coverage for the period covered by this Agreement in a form satisfactory to Risk Management and the City Attorney, prior to undertaking any work hereunder. Any insurance written on a

claims made basis is subject to the approval of Risk Management and the City Attorney.

b. Additional Insureds. CONSULTANT shall also provide a separate endorsement form or section of the policy showing CITY, its officers, agents, employees and volunteers as additional insureds for each type of coverage, except for Workers' Compensation and Professional Liability. Such insurance shall specifically cover the contractual liability of CONSULTANT. The additional insured coverage under the CONSULTANT's policy shall be primary and noncontributory, as evidenced by a separate endorsement or section of the policy, and shall not seek contribution from CITY's insurance or self-insurance. In addition, the additional insured coverage shall be at least as broad as the Insurance Services Office ("ISO") CG 20 01 Endorsement. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (1) the minimum coverage and limits specified in this Agreement; or (2) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

c. Cancellation/Modification. CONSULTANT shall provide ten (10) days written notice to CITY prior to cancellation or modification of any insurance required by this Agreement.

d. Umbrella/Excess Insurance. The limits of insurance required in this Agreement may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of CITY (if agreed to in a written contract) before CITY's own insurance shall be called upon to protect it as a named insured.

e. Subcontractors. CONSULTANT agrees to include in its contracts with all subcontractors the same requirements and provisions of this Agreement, including the indemnity and insurance requirements, to the extent they apply to the scope of the subcontractor's work. Furthermore, CONSULTANT shall require its subcontractors to agree to be bound to CONSULTANT and CITY in the same manner and to the same extent as CONSULTANT is bound to CITY under this Agreement. Additionally, CONSULTANT shall obligate its subcontractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of CITY's indemnity and insurance provisions will be furnished to the subcontractor or tertiary subcontractor upon request.

f. Self-Insured Retentions. All self-insured retentions ("SIR") must be disclosed to Risk Management for approval and shall not reduce the limits of liability. Policies containing any SIR provision shall provide that the SIR may be satisfied by either the named insured or CITY. CITY reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

g. Waiver of Subrogation. CONSULTANT hereby agrees to waive subrogation which any insurer of CONSULTANT may acquire from CONSULTANT by virtue of the payment of any loss under a Workers Compensation, Commercial General Liability or Automobile Liability policy. All Workers Compensation, Commercial General Liability and Automobile Liability policies shall be endorsed with a waiver of subrogation in favor of CITY, its officers, agents, employees and volunteers for all worked performed by CONSULTANT, its employees, and agents.

h. Liability/Remedies. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve CONSULTANT of liability in excess of such coverage, nor shall it preclude CITY from taking such other actions as are available to it under any other provisions of this Agreement or law.

6. Records. CONSULTANT and its subcontractors shall maintain all files and records relating to the services performed hereunder during the term of this Agreement and for a period of not less than one (1) year after the date of termination or expiration. Provided, however, that in the event of litigation or settlement of claims arising from the performance of this Agreement, CONSULTANT and its subcontractors shall maintain all files and records until such litigation, appeals or claims are resolved. Duly authorized representatives of CITY shall have right of access during normal business hours and after reasonable notice to CONSULTANT's and subcontractors' files and records relating to the services performed hereunder and may review and copy the files and records at appropriate stages during performance of the services and during the one (1) year period following termination or expiration of this Agreement. CONSULTANT shall include this provision in its contracts with all subcontractors.

7. Time is of the Essence. Time is of the essence of this Agreement.

8. Reserved.

9. Compliance with Laws. CONSULTANT shall comply with all federal, state and local laws, ordinances and policies as may be applicable to the performance of services under this Agreement.

10. Ability to Perform. CONSULTANT agrees and represents that it has the time, ability and professional expertise to perform the services required under this Agreement.

11. Public Contracts: Conflicts of Interest. CONSULTANT's duties and services under this Agreement shall not include preparing or assisting CITY with any portion of the CITY's preparation of a request for proposals, request for qualifications, or any other solicitation regarding a subsequent or additional contract with CITY. CITY shall at all times retain responsibility for public contracting, including with respect to any subsequent phase of this project. CONSULTANT's participation in the planning, discussions, or drawing of project plans or specifications shall be limited to conceptual, preliminary, or initial plans or specifications. CONSULTANT shall cooperate with CITY to ensure that all bidders for a subsequent contract on any subsequent phase of this project have access to the same information, including all conceptual, preliminary, or initial plans or specifications prepared by CONSULTANT pursuant to this Agreement.

12. Governing Agreement. In the event of any conflict between this Agreement and its EXHIBITS, the provisions of this Agreement shall govern. In the event of any conflict between any of the EXHIBITS, the provisions of the first in order of attachment shall govern.

13. The Levine Act Disclosure. The Levine Act (Govt. Code, Section 84308) requires a Party (and its agent(s), if any) to a Proceeding before the City of Roseville that involves any action or consideration related to their contract, license, permit, or other entitlement for use, to disclose any campaign contributions made to CITY elected or appointed officers totaling more than $250 within the twelve (12) months prior to the CITY decision and while a proceeding is pending, and includes certain prohibitions on contribution activity thereafter. If applicable campaign contributions have been made by CONSULTANT and/or its agent(s), CONSULTANT is responsible for compliance, including for its disclosure obligations, if any, as

further described at:

https://www.roseville.ca.us/government/departments/city_clerk/transparency/levine_act.

14. Assignment. CONSULTANT is employed to perform unique personal services. CONSULTANT shall not assign this Agreement without the prior written consent of CITY. CONSULTANT shall not employ or otherwise incur any obligation to pay other specialists or experts for services in connection with this Agreement, without prior written consent of CITY.

15. Independent Contractor. CONSULTANT, inclusive of its agents, officers, employees, volunteers, independent contractors, and subcontractors, shall act as an independent contractor, and covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as, nor claim to be, an officer or employee of CITY by reason of this Agreement.

CONSULTANT and CITY agree that: (a) CONSULTANT is free from the control and direction of CITY in connection with the performance of the work; (b) CONSULTANT is providing services directly to CITY; (c) CONSULTANT has and will maintain at all relevant times a business license; (d) CONSULTANT maintains a business location that is separate from CITY; (e) CONSULTANT is customarily engaged in an independently established business of the same nature as that involved in the work performed hereunder; (f) CONSULTANT actually contracts with other businesses to provide the same or similar services and maintains a clientele without restrictions from CITY; (g) CONSULTANT advertises and holds itself out to the public as available to provide the same or similar services; (h) CONSULTANT provides its own tools, vehicles, and equipment to perform the services; (i) CONSULTANT has negotiated its own rates; (j) CONSULTANT set its own hours and location of work in accomplishing CITY's on-

call needs; and (k) CONSULTANT has the right to control the manner and means of accomplishing the result desired and exercises its own expert independent judgement.

16. Representations and Warranties. CONSULTANT warrants that it has not employed or retained any company or person, other than a bona fide employee working for CONSULTANT, to solicit or secure this Agreement, and that it has not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift or any other consideration, contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, CITY shall have the right to terminate as void this Agreement, without liability, or, in its discretion, to deduct from the Agreement price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.

17. Successors in Interest. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

18. Copyright, Ownership and Use of Materials. All tangible material ("Material") created or delivered pursuant to this Agreement is considered a work made for hire under the Copyright Act. To the extent such Material does not qualify as a work made for hire, CONSULTANT hereby assigns to CITY all right, title, and interest, including but not limited to all copyrights, in all Material created by CONSULTANT in its performance under this Agreement. Material constitutes the scope of work outlined in Exhibit A and attached hereto, and all written and other tangible expressions, including but not limited to, drawings (including computer aided drawings), papers, documents, reports, surveys, renderings, exhibits, sketches, maps, models, prints, paintings or photographs, in any and all media or formats in which such

materials have been created or are maintained. All Material furnished by CONSULTANT is, and shall remain, the property of CITY.

CONSULTANT shall execute any documents necessary to effectuate such assignment. In the event that CONSULTANT uses, employs, designates, or retains any person or entity who is not an employee of CONSULTANT, to perform any work required of it pursuant to this Agreement, CONSULTANT shall require said person or entity to execute an agreement containing the preceding paragraph.

19. Termination of Agreement. The City may terminate this Agreement without cause by giving CONSULTANT ten (10) days advance written notice from the City Manager. CONSULTANT may terminate this Agreement without cause by giving CITY thirty (30) days advance written notice. In the event of termination through no fault of CONSULTANT, CITY shall compensate CONSULTANT for services performed as of the date of termination, upon the release to CITY of all Material hereunder, in any and all media or formats in which such materials have been created or are maintained. CITY retains the right to receive and use any Material, notwithstanding any termination or any dispute regarding the amount to be paid.

20. Attorney's Fees; Venue; Governing Law. If either party commences any legal action against the other party arising out of this Agreement or the performance hereof, the prevailing party in such action shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorney's fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

21. Modification. This Agreement and each provision contained herein may be waived, amended, supplemented or eliminated only by mutual written agreement of the parties.

22. Severability. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

23. Notices. Any notices to parties required by this Agreement shall be delivered personally or mailed, U.S. first class postage prepaid, addressed as follows:

CITY OF ROSEVILLE	CONSULTANT
Jeannine Thrash City of Roseville 311 Vernon Street Roseville, CA 95678	Michael Berwanger PFM Financial Advisors LLC 222 N. Pacific Coast Hwy, 10th Floor El Segundo, CA 90245

Either party may amend its address for notice by giving notice to the other party in writing.

24. Integrated Agreement. This is an integrated agreement and contains all of the terms, considerations, understanding and promises of the parties. It shall be read as a whole.

25. Registered Municipal Advisor; Required Disclosures. CONSULTANT is a registered municipal advisor with the Securities and Exchange Commission (the "SEC") and the Municipal Securities Rulemaking Board (the "MSRB"), pursuant to the Securities Exchange Act of 1934 Rule 15Ba1-2. The parties agree that if CITY has designated CONSULTANT as its independent registered municipal advisor ("IRMA") for purposes of SEC Rule 15Ba1-1(d)(3)(vi) (the "IRMA exemption"), the services provided pursuant to such designation shall be the services described in Exhibit A hereto, subject to any agreed upon limitations. Verification of independence (as is required under the IRMA exemption) shall be the responsibility of such third party seeking to rely on such IRMA exemption. CONSULTANT shall have the right to review and approve in advance any representation of

CONSULTANT's role as IRMA to CITY.

MSRB Rules require that municipal advisors make written disclosures to their clients of all material conflicts of interest, certain legal or disciplinary events and certain regulatory requirements, which are provided in CONSULTANT's Disclosure Statement delivered to CITY prior to or together with this Agreement.

26. Additional Services. Upon request of CITY, an affiliate of CONSULTANT or a third party referred or otherwise introduced by CONSULTANT and/or designated by CITY may agree to additional services to be provided by such affiliate or third party under a separate writing, including separate scope and compensation, between CITY and such affiliate or third party. For the sake of clarity, any separate agreement between CITY and an affiliate of CONSULTANT or third party shall not in any way be deemed an amendment or modification of this Agreement.

27. Information to be Furnished to CONSULTANT. All information, data, reports, and records in the possession of CITY or any third party necessary for carrying out any services to be performed under this Agreement ("Data") shall be furnished to CONSULTANT. CONSULTANT may rely on the Data in connection with its provision of the services under this Agreement and the provider thereof shall remain solely responsible for the adequacy, accuracy or completeness of such Data.

[INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attested to by its City Clerk under the authority of Resolution No. _____, adopted by the Council of the City of Roseville on the ___ day of _____, 20__, and CONSULTANT has caused this Agreement to be executed.

CITY OF ROSEVILLE, a
municipal corporation

BY: _____
DOMINICK CASEY
City Manager

ATTEST:

BY: _____
CARMEN AVALOS
City Clerk

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE:

BY: Scott Pettingell Digitally signed by Scott Pettingell Date: 2025.03.25 14:22:31 -07'00'
SCOTT PETTINGELL
Finance Director

PFM FINANCIAL ADVISORS LLC, a
Delaware limited liability company

BY: _____
its: Michael Berwanger, Managing Director

and

BY: _____
its: _____

EXHIBIT “A”

E. Project Plan

Provide a detailed discussion of your firm's approach to the successful implementation of this project. Include thorough discussions of methodologies you believe are essential to accomplishing this project. Include a proposed work schedule to accomplish all of the required tasks within the desired timeline. Identify the staff who would be assigned to each task, including sub-consultants and sub-contractors. List any necessary equipment, training or installation services required.

DEBT ISSUANCE SERVICES: TIMELINE AND IMPLEMENTATION



When working on a transaction, PFM takes responsibility for coordinating between members of the financing team and scheduling the events necessary to keep the project on track. By identifying and ensuring the project meets key dates and closing processes, as well as preparing for common and potential issues which must be overcome, PFM assures that the financing is initiated, implemented and closed smoothly. Our depth of experience on a wide array of transactions requiring tailored yet flexible approaches and schedules gives us the organizational capacity, proficiency and foresight to manage a deal of any size or complexity.

The bond issuance process is one which contains a number of distinct, but inter-related steps. Our goal at PFM is to lead our clients' borrowings through these steps to allow for a seamless and successful execution. Our philosophy is to ensure that the City is kept involved (to any degree which you desire), informed and educated on each step in the process to ensure you understand and are informed for the decisions to be made.

We have grouped the tasks within a transaction into six steps and included estimated timing for each:

Step 1: Developing a plan of finance

Team: Mike, Christine, Brian — Timeline: 2-4 weeks

Unless not already determined by a specific recommendation, the first step within the transaction process is development of the plan of finance. At the outset, we will work with Roseville to (i) determine the amount of borrowing necessary, and (ii) analyze debt structuring alternatives and determine the most appropriate method of sale (negotiated, competitive or private placement). PFM will convene an all-hands meeting as soon as practical after the selection process is completed and will lead a thorough and organized discussion focused on the City's specific goals and objectives for the financing and on the long-term sustainability of the City's bond program.

Step 2: Assembling of the financing team and managing the schedule

Team: Mike, Christine, Brian, Jaime, Louise, Connor — Timeline: 4-6 weeks

In our role as financial advisor, PFM has assisted our clients in selecting financial services professionals to the extent needed. These professionals may include underwriters, bond counsel, placement agents, verification consultants, trustees, printing firms, bond insurance companies and other debt issuance related providers. As the largest financial advisor in the nation, we have significant experience working with the major market participants including many of the team members Roseville has worked with in the past. With our understanding of market rates for fees, we are happy to assist as needed to negotiate fees with any existing team members or to assist the City in reevaluating its strategy. We will also create a schedule and efficiently manage the team to meet milestones.

Step 3: Preparation and review of authorizing documents and disclosure document

Team: Mike, Christine, Brian, Jaime, Louise, Connor — Timeline: 5-6 weeks

We will make sure that the financing plan is properly developed and well-defined in advance of the drafting of documents, that the authorizing resolution accurately reflects the financing plan, and that the content of the financing plan is well communicated to City staff and to City Council. PFM will assist the City and its disclosure counsel in the preparation and distribution of the preliminary and final official statements to provide the market with timely and accurate information about the City and any bond-related issues. The basic role of the financial advisor is to review and comment on the document before posting. At PFM, we play a larger role than that. Our standard practice is to help the City review and refine information for the sections of the document that address the financial operations of the City. Over time, we have been streamlining this process to make the development of preliminary official statements less burdensome on City staff.

Step 4: Development and implementation of credit and investor relations strategy

Team: Mike, Christine, Brian, Jaime, Louise, Connor — Timeline: 4-5 weeks

With PFM's national reach and our California-focused team for the City's engagement, we have a strong understanding of the rating agency methodologies which drive bond ratings as well as the issues, concerns, and points of emphasis consistent with the City's peers. We have developed specialized models to evaluate our local government clients' credit based on the most recent rating criteria published by Standard & Poor's and Moody's, enabling us to assist in assessing the likely outcome of a rating process, as well as to evaluate the potential impact of financial and policy decisions on our clients' credit ratings. PFM frequently discusses potential rating calibration changes with the rating agencies. This provides us additional insight into the evolution of their views and how current ratings may be affected.

PFM is a strong proponent of a well thought-out, comprehensive investor relations program designed to stimulate investor demand and enable an issuer to achieve lower costs of borrowing. In order to maximize the benefits of an investor relations program, outreach must encompass both institutional and retail investors, and the tools and techniques used should be targeted to the specific — and sometimes markedly different — investment decision making processes and drivers of both groups. The strongest factors impacting investor demand are (i) level of investor awareness of the sale, and (ii) understanding of the issuers' credit and bond structure. Both of these factors benefit from proactive, strategic issuer outreach, both ongoing and transaction specific. PFM would be available to assist the City and its Underwriter(s) in the preparation of investor presentations with the goal of providing relevant information needed in order to maximize investor participation in the City's financings.

Step 5: Management of the bond sale process and the establishment of interest rates

Team: Mike, Christine, Brian, Jaime, Louise, Connor, Todd — Timeline: 2 weeks

PFM's Pricing Group provides pricing resources and negotiation support for PFM's clients nationwide – continually enhancing, expanding and centralizing the firm's bond pricing expertise. The Pricing Group is in the market more than any financial advisor or underwriting firm, ***pricing on average 15-19 transactions each week.***

We use high-level quantitative analysis to develop our own price views, independent of the underwriters. We analyze historical and comparable transactions on a maturity-by-maturity basis using a variety of analytical methods including our proprietary Option Adjusted Spread model. Beyond developing an interest-rate scale, we analyze different couponing structures, bond amortizations, and call features.

We communicate early and often with the underwriting team, to specifically discuss pre-sale marketing efforts and strategies to reach target investors, offer our own separate retail and institutional coupon and re-offering yield targets, and ensure that all parties are on the same page.

During the order period, we actively monitor the sale of the debt, discuss the orders and pricing strategy with the underwriting team, and provide constant feedback to the issuer. When negotiating with underwriters, our suggested levels are based on real data and real market information to ensure that we are not "chasing" the market later. Because the PFM Pricing Group often has several transactions in the market, we are receiving up to the minute market feedback and are communicating with multiple investment banks. Therefore, the issuer is not relying solely upon its senior manager. We also know which firms are putting their capital to work, what strategies they prefer, and how to ensure they will effectively price the City's bonds.



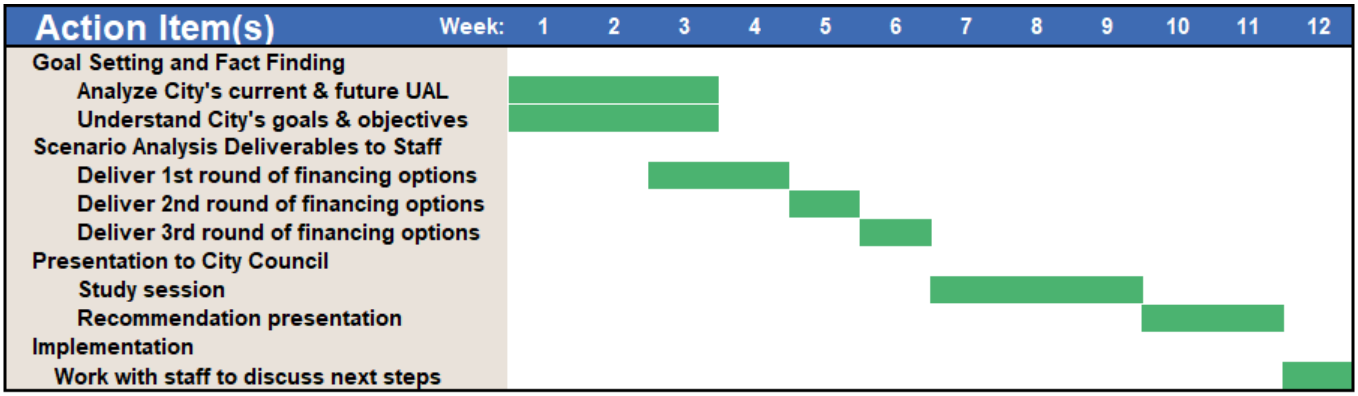
Step 6: Assist with closing

Team: Mike, Christine, Brian, Jaime, Louise, Connor — Timeline: 2-4 weeks

We will assist with all aspects of closing including reviewing all closing documents and preparing a closing wire memorandum. We will manage the team to support a smooth pre-closing and closing process.

Sample Financing Schedule

To further illustrate the process described above, we have drafted a sample schedule below with a detailed financing schedule in **Appendix B**. Please note, the exact timing, steps, and working group participants will be customized depending on the transaction.



With PFM's experienced team, no additional training is needed to provide the scope of services.

EXHIBIT “B”

F. Cost Proposal

Provide a total cost proposal for all products and services to be delivered, and a breakdown of costs delineated by tasks as described in your project plan. Include a schedule of hourly rates for all proposed staff and the amount of time each person will be devoted to this project. Define any reimbursable expenses requested to be paid by the City and identify which fees will be based on a not-to-exceed basis. (Any MSRB fees imposed upon municipal advisors should not be passed through to the issuer.)

We greatly value the opportunity to work the City. We hope our commitment is reflected in the proposed rates below. As discussed in Section C., we have a deep bench of team members who will devote all time necessary to support the City with its projects.

Annual Retainer

$25,000 ($6,250/quarter)

Transaction-Based Fees

PFM's proposed fees for all bond or similar debt instrument related transactions are as follows:

PFM Transaction Fees (Utilities and General Fund)	
Par Amount	**Fixed Fee**
< $25 million	$45,000
$25 million - $50 million	$55,000
> $50 million	$80,000

PFM Transaction Fees (CFDs)	
Par Amount	**Fixed Fee**
< $50 million	$38,000

Credit Facility Replacement. Transaction-based fee would apply.

Complex Transactions. For complex transactions, such as POBs, gas prepayments or energy prepayments with the use of tax credit structures, PFM would negotiate a mutually agreed upon fee, which may exceed the range above based on the amount and complexity of work involved.

Structured Products. PFM Swap Advisors LLC professionals would oversee all elements of any swap transaction, and Roseville would have a separate engagement for those services. Such fee arrangements would be negotiated with Roseville and be fully transparent to all parties. Fees are usually set as 2/3 of one basis point per annum times the notional amount or invested balance outstanding over time, plus $10,000 per transaction.

Rate Adjustment: Fees will be subject to annual inflationary increases based on CPI on the annual anniversary of the contract execution.

Special Projects Fees (As-Needed)

Hourly rates to be used for special projects not covered under the fees outlined above, such as the development of a specific financial model, would continue to be billed based upon PFM's hourly rates or based upon mutually agreeable fixed fees. PFM's proposed hourly rates are presented in the table below.

PFM Hourly Rates	
Title	**Rate**
Managing Director	$400
Director	$375
Senior Managing Consultant	$350
Senior Analyst / Analyst	$325

Rate Adjustment: All hourly rates will be subject to annual inflationary increases based on CPI on the annual anniversary of the contract execution.

Reimbursable Expenses

In addition to our fees, we would expect to be reimbursed for our data fees and out-of-pocket expenses, including travel, mileage, parking, meals, etc. Appropriate expense documentation and third-party receipts would be provided upon request with each invoice. We estimate travel expenses would be approximately $1,000 with local-only travel or $5,000 with out-of-state travel.

We do not want fees to be an obstacle to PFM being retained as Roseville's financial advisor. We are willing to negotiate agreed-to fees that could better reflect the workload and complexity of particular transactions or set of transactions, and we are happy to discuss this proposal in greater detail with you and to provide any additional information.

COUNCIL COMMUNICATION

CC #: 3848
File #: 0800-02

Title:	Five Star Intertie Improvement Project – Agreements
Contact:	William Montz 916-774-5545 wlmontz@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.12.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council:
1) Adopt a resolution authorizing the City Manager to execute an Agreement with Placer County Water Agency (PCWA) for construction, operation and maintenance of the Five Star Intertie Improvements Project;
2) Adopt a resolution to approve a Construction Agreement for the Project with Sierra National Construction, Inc. in the amount of $698,640 and authorize the City Manager to execute it; and
3) Authorize the City Manager or his designee to approve and pay for contract change orders for this project that could increase the contract amount by no more than 10% ($69,864), for a not-to-exceed total contract amount of $768,504.

BACKGROUND

1. MOU: In September 2010, the City of Roseville (City) entered into an agreement with PCWA, as a Memorandum of Understanding (MOU) for Exploration into a Water Capacity Partnership. As part of the MOU, it was recognized that construction of additional water facilities for the benefit of sharing capacity, would provide redundancy and operational flexibility within each Party's water system. The Parties anticipated that any future development or implementation of the partnership would be governed by future agreements(s), and approval of any such agreements will be subject to compliance with the California Environmental Quality Act and all other applicable environmental laws or regulations.

Rehabilitation of the Five Star intertie between the City's and PCWA's water distribution systems was identified as a mutually beneficial project under the existing MOU. This MOU provides additional obligations to the Parties as it relates to this Construction Project and the subsequent maintenance obligations.

Under the proposed agreement, the City will retain and compensate the contractor and Construction Management (CM) services for the Project. Both PCWA and the City will perform their own programming for the Project, with programming equipment furnished by the contractor.

2. Construction Contract. To increase water supply resiliency and improve operational functionality, the City and PCWA desire to energize and automate the Intertie, which includes the replacement of the flow measurement instrument for automation compatibility. With improvements complete, the Intertie will be capable of remote monitoring and operation via PCWA's Supervisory Control and Data Acquisition (SCADA) system and remote monitoring through the City's SCADA system. The communication link between the Intertie and the City's SCADA system will be through a fiber pathway, whereas the communication link between the Intertie and PCWA's SCADA system will be via cellular wireless technology.

To energize the Intertie, an electric transformer, meter pedestal, and power distribution panel will be installed. Two process logic controllers (PLC) panels are required to communicate the signals from the Intertie to the City and PCWA SCADA systems.

On November 20, 2024, the plans and specifications for the project were approved by City Council and a Request for Bids for construction services was published on November 21, 2024. On January 8, 2025, five contractors submitted proposals to the City Clerk's office and a public bid opening identified Design-Build Inc. as the apparent lowest bidder. However, Design-Build Inc.'s proposal was disqualified due to unresponsiveness and Sierra National Construction Inc.'s proposal was identified and verified as the next lowest bidder.

FISCAL IMPACT

Under the proposed Agreement with PCWA, the Construction Agreement with Sierra National Construction, Inc. is $698,640, and the not-to-exceed change order authority request is for 10% ($69,864), making the total not-to-exceed contract value $768,504. Project funding is from available resources in the Water Construction Fund. The Water Construction Fund is funded by water connection fees paid for by developers.

ENVIRONMENTAL REVIEW

The proposed Agreement with PCWA is not a "project" as defined by the California Environmental Quality Act (CEQA) (CEQA Guideline Section 15378). The execution of this Agreement will not result in approval or authorization of any physical projects. Consequently, no CEQA action is required for the Agreement.

For the Construction Agreement, this project qualifies for a Class 1 Exemption as described in Section 15301 of the California Environmental Quality Act (CEQA) guidelines. The project involves modification of existing facilities to increase water distribution system operational flexibility. The improvements do not result in expansion of use. No sensitive resources are present on the project site. Therefore, the Class 1 Exemption is applicable to the proposed project.

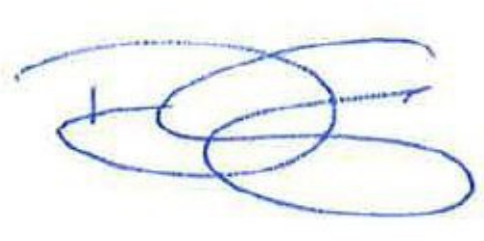
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal F – Invest in well-planned infrastructure and growth

Respectfully Submitted,

William Montz, Assistant Engineer

Sean Bigley, Environmental Utilities Director



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-103

PCWA Agreement

Resolution 25-104

Agreement with Sierra National

Bid Summary Sheet

CEQA

RESOLUTION NO. 25-103

APPROVING AN AGREEMENT, BY AND BETWEEN PLACER COUNTY WATER AGENCY AND THE CITY OF ROSEVILLE, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, an Agreement for Construction, Operation and Maintenance of the Five Star Intertie Improvements, by and between Placer County Water Agency and the City of Roseville, has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said Agreement is hereby approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this____day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

AGREEMENT BETWEEN PLACER COUNTY WATER AGENCY AND CITY OF ROSEVILLE FOR CONSTRUCTION, OPERATION AND MAINTENANCE OF THE FIVE STAR INTERTIE IMPROVEMENTS

THIS AGREEMENT, by and between PLACER COUNTY WATER AGENCY, hereinafter called "Agency" and the CITY OF ROSEVILLE, hereinafter called “City,” (collectively referred to as “Parties” or individually as “Party”) shall be effective on the date executed by the Agency and City.

W I T N E S S E T H:

WHEREAS, the Agency and City entered into an agreement titled Contract Between the Placer County Water Agency and the City of Roseville Relating to Water Supplies and Exchanges dated September 1, 2010, and amended on May 23, 2023 (hereafter “Water Supply Contract”); and

WHEREAS, the Water Supply Contract specifies the provisions and conditions of the annual water entitlement amounts, supply reliability exchanges, emergency deliveries, and capacity sharing between the two Parties. The Water Supply Contract dictates the times and quantities of its annual water entitlements, the semiannual payment structure, and required maintenance fees; and

WHEREAS, the 2023 amendment to Water Supply Contract provides for the City’s annual entitlement of up to 30,000 acre-feet of untreated water in drier years and up to 44,000 acre-feet in most years from the Agency's Middle Fork Project (based upon an incremental "build up" schedule), with delivery of the untreated water from the Agency to the City at Folsom Reservoir; and

WHEREAS, delivery of water from Folsom Reservoir is subject to United States Bureau of Reclamation ("USBR") operations of its Central Valley Project ("CVP") and is vulnerable to drought when reservoir levels can become extraordinarily low and fall below the intake serving the City and halt delivery of water provided under the Water Supply Contract, as well as the City's CVP supply from the USBR; and

WHEREAS, the Agency and City recognize that in the aforementioned drought and low reservoir level times, there may be a need for the City to purchase water from the Agency, necessitating improvements to accomplish this; and

WHEREAS, the Agency and City jointly agreed to explore leveraging their existing water capacity by strategically sharing reasonable portions of existing capacity and exploring new water delivery options to the City through the Agency's pump stations and existing infrastructure through a Memorandum of Understanding (MOU) entered by the Parties on May 6, 2020 (hereinafter referred to as "2020 MOU"). The Parties agreed to split equally the costs of any outside services undertaken pursuant to the 2020 MOU and individually bear the cost of each Parties' respective staff time, overhead, and other internal costs among other responsibilities set forth in the 2020 MOU; and

WHEREAS, the initial explorations provided through the 2020 MOU, found that improvements to the manually operated intertie between the Parties at Five Star Boulevard would be the first mutually beneficial project to entertain; and

WHEREAS, other additional projects may be pursued as future explorations continue through the 2020 MOU; and

WHEREAS, the Five Star Boulevard Intertie connects the City's treated water to the Agency's 12-inch treated water pipelines and is estimated to convey up to 4 MGD to the City for additional reliability; and

WHEREAS, the Agency and City jointly agree that improvements to the existing Five Star Intertie located on or about 6710 Stanford Ranch Road, Roseville CA 95678 (APN: 017-123-043-000) (hereinafter referred to as "Five Star Facility",) are required to improve operational functionality, redundancy, and water supply resiliency for the benefit of the City. Therefore, the Parties are working jointly to design and install improvements at the Five Star Intertie; reference and incorporated herein by a set of plans and specifications entitled "Five Star Intertie Improvement Project" (herein referred to as "Plans") prepared by GHD Inc., at 943 Reserve Drive, Roseville, CA 95678; and that will include the installation of equipment to automate and provide remote capabilities for monitoring and operating the Five Star Intertie, as well as upgrading flow measurement equipment for compatibility; and

WHEREAS, the Agency is willing to accept ownership of the Five Star Facility in accordance with the Plans; and

WHEREAS, the Five Star Facility was designed by GHD Inc., a consultant, hired by the City on July 21, 2021 (hereinafter "Consultant"); and

WHEREAS, the City intends to engage a qualified construction contractor (hereinafter "Contractor"). The costs for the Consultant's services and the Contractor will be borne as outlined in Section 5 of this Agreement; and

WHEREAS it is the Parties' intention that by signing this Agreement, the Agency hereby, grants the Contractor permission to access the Agency's service area to install all the

work, as outlined in this Agreement and in the Plans**.**

NOW, THEREFORE, IT IS AGREED as follows:

1. Incorporation of Recitals: The foregoing recitals are hereby incorporated by reference.

2. Purpose: The purpose of this Agreement is to memorialize the Parties' agreement with respect to the design and construction of the Five Star Facility which is intended to increase water supply resiliency between the Agency and City.

3. No Transfer of Authority: Except as otherwise set forth herein, nothing in this Agreement grants the Parties any power or authority to alter any water right, contract right, or any similar right of any Party, or to direct the water-delivery practices of any Party without the prior written consent of the other Party and receipt of all required approvals.

4. Proposed Facility: The Five Star Facility to be installed modifies an existing facility with system automation, flow monitoring equipment, and associated telemetry.

5. Timing and Terms for Designing and Constructing Facilities: The Parties agree to the following conditions for the proposed installation of the Five Star Facility:

a) Design and Construction

i. The City shall be responsible for retaining and compensating the Consultant for the design portion of the work called for under this Agreement.

ii. The City shall be responsible for paying all costs incurred by PCWA for services under this Agreement, including but not limited to inspections, plans review, submittals review, and coordination.

iii. Plans for the proposed Five Star facility shall be developed by Consultant and approved by the City and the Agency (which such approval shall not be unreasonably withheld).

iv. The City shall be responsible for retaining the Contractor to perform the work called for under this Agreement and all costs under this Agreement and the City's agreement with the Contractor.

v. The Agency and City shall mutually agree on a method to coordinate construction administration, construction engineering and design, construction surveying, shop drawing review, communications and meetings, traffic control, scheduling, inspection and testing of the work that pertain to design, construction, and installation of the Agency Facilities.

vi. The City shall be responsible for retaining and paying all costs associated with managing the construction contract, including construction management, testing, and inspection services under this Agreement.

vii. The Agency shall perform all programming of their Programmable Logic Controller (PLC) and configure their switch and radio for their telemetry setup. The Contractor will furnish the PLC, switch, and radio and provide to the Agency. Costs incurred by the Agency for all programming shall be reimbursed by the City.

viii. The City shall submit to the Agency for review and approval all change orders affecting the Agency Facilities prior to the City's approval and

execution of such change orders. The City will be responsible for all other Project-related change orders, delays, and extra work incurred by the contractor. The Agency and City will jointly work to negotiate change order requests and claims by the contractor to resolve any claims directly related to the Agency Facilities in a timely manner, provided that neither the City nor the Agency shall agree to the resolution of any such change order request or claim without the other's approval. In the event agreement cannot be reached related to active ongoing work within three (3) working days of presentation of a critical request for change order or claim, the City shall have the right to direct the contractor to proceed on a force account basis.

b) Delineation of Ownership

i. PCWA shall own all facilities north of the existing MJxFL adapter, downstream of the flow meter, within the flow meter vault. As denoted on the Five Star Intertie Improvement Project Plans.

ii. The City shall own all facilities south of the existing MJxFL adapter, downstream of the flow meter, within the flow meter vault. As denoted on the Five Star Intertie Improvement Project Plans.

iii. The City shall own certain telemetry facilities and all electronic connections designated to send electronic data to the City at the Five Star Facility, whenever such facilities are installed.

iv. The Agency shall own the system automation, flow monitoring and associated telemetry (that provide data to the Agency) at the Five Star Facility, whenever such facilities are installed.

6. Termination: This Agreement may be terminated by either Party upon ninety (90) days advance written notice.

7. Time: This Agreement shall become effective upon execution by all Parties. The City and Agency commit to working together expeditiously to have the Five Star Facility installed no later than Fall 2025, barring any reasonably unforeseen circumstances outside of the control of either Party.

8. Plans: It shall be the responsibility of the Consultant to prepare plans and specifications for installing the Five Star Facility and submit them to the City and the Agency for acceptance, pursuant to Section 5 of this Agreement. All materials to be furnished and all construction shall be in accordance with the plans and specifications. The plans and specifications, when approved in writing by the City and the Agency, shall become a part of this Agreement.

9. Installation of Facilities: The Contractor will install the Five Star Facility described in the plans and specifications accepted by the City and the Agency in accordance with the provisions of this Agreement, including but not limited to Section 5, and the Improvement Standards.

10. Property and Right of Entry: The Agency agrees to allow the City, Consultant, and Contractor, access and a right of entry upon the Five Star Facility, for the limited purpose of performing the work called for under this Agreement and for ongoing access required for the

operation and maintenance of the City's telemetry facilities. Agency acknowledges it is not conveying any other property interest in the Five Star Facility, other than those delineated in this Agreement, specifically this Section 10 and Section 5 above.

The Parties agree and acknowledge that they will endeavor to have the Five Star Facility called for under this Agreement installed in existing Public Utility Easements (hereinafter "PUE") or other public rights of way (hereinafter "ROW"). If the Five Star Facility called for under this Agreement cannot be installed in existing PUE or ROW, City, at the City's sole cost and expense, shall be responsible for determining whether any private property rights need to be acquired for installation of the Five Star Facility and whether such acquisition is feasible. Should the City determine the acquisition is not feasible, then that portion of the work will not proceed. Should the City determine that the acquisition of private property rights is feasible, the City will be solely responsible for providing to the Agency any real property rights necessary for the Five Star Facility to be installed, and for the ongoing operation and maintenance thereof. Any such real property rights shall include any consent or endorsement of all lienholders, lessees, or other parties with any interest in the real property being conveyed. The City shall provide the Agency with exhibits identifying all locations requiring the acquisition of real property rights and the Agency shall provide the City with the appropriate document for the associated real property rights to be acquired by the City. The City shall provide to the Agency a copy or copies of the recorded document or documents conveying the real property rights.

11. Grade Established: No work shall be performed or installation made until street subgrades have been established to the satisfaction of the City and the Agency.

12. Environmental Permitting Services: The Agency will coordinate with the City, and provide support for these services. The City shall be responsible for serving as the lead agency, providing any environmental permitting services.

13. Acceptance: The City and Agency shall accept the complete Five Star Facility, when

a) the facilities are satisfactorily installed in accordance with the City and the Agency's approved plans and specifications;

b) all grading and paving is completed;

c) any required easements are received, accepted and recorded by the City and the Agency; and

d) two (2) copies of any recorded final map with addresses marked for each lot or parcel are provided.

Immediately upon acceptance, all rights, titles, and interest in the Five Star Facility shall be vested in the Parties as set forth in this Agreement. Within 30 days from acceptance, the Agency shall invoice the City for the costs of work performed pursuant to Section 5. The City shall make such payment in full within 30 days of receipt. The City and Agency, if mutually agreed upon in writing, may operate the Five Star Facility in advance of acceptance.

14. Long-Term Operation and Maintenance: The Water Supply Contract specifies the provisions and conditions of the annual water entitlement amounts, supply reliability exchanges, emergency deliveries, and capacity sharing between the two Parties. The Water Supply Contract dictates the times and quantities of its annual water entitlements, the semiannual payment structure, and required maintenance fees.

a) Operations

i. The City shall request written notification (at least 48 hours in advance) of needing water through the Five Star Facility. Such requests shall contain an estimated maximum daily quantity of water to be delivered and an estimated length of time that water is to be delivered.

ii. The City designated contact will be the Operations Manager and the Agency's designated contact will be the Director of Technical Services.

iii. In the event of an emergency, the City may request an immediate delivery of water. City operators shall contact and coordinate directly with the Agency's distribution operators. The Agency's distribution operators shall have the discretion to furnish up to 4 MGD to the City through the Five Star Facility. A list of emergency contacts for each Party is provided in Exhibit A attached to and made a part of this MOU.

iv. The Five Star Facility is not intended for intermittent peaking.

v. The PRV intertie is designed to be operated on a flow control mode (primary) and Pressure Control Mode (secondary).

b) Maintenance

i. Each Party is responsible for the maintenance, repairs, and capital replacements of the portion of the Five Star Facility they own. The

Parties agree that they will always maintain their portion of the Five Star Facility in good and usable condition.

ii. The City is responsible for all utility expenses at this facility, including electricity and fiber communications.

iii. The Agency is responsible for any expenses associated with telemetry facilities and all electronic connections designated to send electronic data to the Agency.

iv. The Agency will provide ongoing access required for the operation and maintenance of the City's telemetry facilities.

v. The Agency will provide ongoing access required for the operation and maintenance of the City's telemetry facilities.

15. Inspection of Books: The proper officers or agents of any Party shall have reasonably full and free access at all reasonable times to the account books and official records of the other Party, insofar as they pertain to matters and things provided for in this Agreement.

16. Indemnification:

a) The Agency and City agree that each shall mutually defend, indemnify and hold harmless the other, and their directors, officers, employees, agents and volunteers, from all claims, costs, losses, damages and expenses (including attorney's fees of any kind) arising from their respective negligence (including claims for personal injury or death, damage to property, damages due to runoff onto other properties, and loss of business), arising from the 1) design of the Five Star Facility, 2) performance of work under this Agreement, 3)

performance of construction at the Five Star Facility, 4) or challenges to the adequacy of the environmental review for such work.

b) The Agency and City also agree that the construction agreement with Contractor for the performance of work under this Agreement (and any subcontract entered into by Contractor for the performance of work called for under this Agreement) shall require that the Contractor and subcontractor defend, indemnify and save harmless the City and the Agency and their directors, officers, employees, agents and volunteers, from all claims, costs, losses, damages and expenses (including attorney's fees of any kind) arising from the Contractor's performance of the work called for under this Agreement, including claims for personal injury or death, damage to property, damages due to runoff onto other properties, and loss of business. Contractor and subcontractor's indemnity, defense and hold harmless obligations will be limited only to the extent any such damages, losses and/or injuries directly result from the negligent acts or omissions, breach of contract or willful misconduct of the Contractor or its subcontractors.

17. Insurance: The Parties agree to maintain insurance, or hereby certify that they are self-insured, at the minimum insurance limits discussed below:

a) General Liability: $1 Million per occurrence /$2 million aggregate

b) Automobile Liability: $1 Million combined single limit

c) Workers' Compensation: Statutory

d) Policies must be primary and non-contributory

The Parties further agree that the City shall require the Contractor to furnish the Agency with a certificate(s) of insurance and Additional Insured Endorsement (ISO CG 2010) or equivalent as satisfactory proof that Contractor (and any of its subcontractors) carries the minimum insurance required by this Agreement. Additionally, the City shall require the Contractor to include Placer County Water Agency as a named insured on those required insurance policies.

18. Performance and Payment Bonds: Prior to construction of any of the Five Star Facility and during all such construction, the City shall require Contractor to provide and maintain a Performance Bond and a Public Works Payment Bond each with a penal sum of one hundred percent (100%) of the estimated cost of the Five Star Facility. The Performance Bond and Public Works Payment Bond shall be in a form acceptable to the City. Contractor shall be required to maintain the Performance Bond and Payment Bond at all times during the life of this Agreement and until the completion and acceptance of the Five Star Facility by the City and the Agency and any applicable warranty/maintenance period. All bonds shall be issued by California admitted surety insurers.

19. Assignment of Agreement: The provisions of this Agreement shall apply to and bind the successors and assigns of the respective parties, but no assignment or transfer of this Agreement, or any part hereof, or interest herein, shall be valid until and unless approved by the City and the Agency. Such approval will not be unreasonably denied.

20. Notices: All notices that are required either expressly or by implication to be given by any party to the other under this Agreement shall only be signed by authorized officers of the notifying party. All notices to Parties required by this Agreement shall be hand-delivered or mailed, U.S. first class postage prepaid, to the following addresses:

City of Roseville
Environmental Utilities Director
2005 Hilltop Circle,
Roseville, CA 95747

Placer County Water Agency
Director of Technical Services
P.O. Box 6570
Auburn, CA 95604

21. Miscellaneous Terms:

a) Remedies. The use by any Party of any remedy specified for the enforcement of this Agreement is not exclusive and shall not deprive the Party using such remedy of, or limit the application of, any other remedy provided by law.

b) Choice of Law. This Agreement shall be governed by the laws of the State of California. Venue for any action to enforce the terms of this Agreement shall be in Placer County, California. The Parties each waive any federal court removal and/or jurisdictional rights they may have.

c) Severability. If one or more clauses, sentences, paragraphs or provisions of this Agreement is held by a court of competent jurisdiction to be unlawful, invalid or unenforceable, it is hereby agreed by the Parties that the remainder of the Agreement shall not be affected thereby and will continue in full force and effect, but only to the extent that the intent of the Parties can be effectuated without the provision(s) held unlawful, invalid or unenforceable. Such clauses, sentences, paragraphs or provisions shall be deemed reformed so as to be lawful, valid and enforced to the maximum extent possible.

d) Prevailing Wage. The Parties acknowledge that the construction work called for under this Agreement by Contractor requires the paying of

prevailing wages.

e) Entire Agreement. This Agreement constitutes the entire agreement between the Parties, and previous communications or agreements pertaining to the subject matter of this Agreement are hereby superseded. Any revisions may be made only by a written amendment to this Agreement, signed by all Parties to this Agreement.

f) Dispute Resolution. In recognition of the negative consequences associated with disputes both in terms of lost time and expense to all Parties, the Parties agree to attempt to settle their disputes by good-faith, non-binding mediation as a condition precedent to the institution of legal proceedings by any Party. Request for mediation shall be filed in writing with the other Parties to this Agreement. If mediation would jeopardize the substantive rights of any Party including, but not limited to, the application of any applicable statute of limitations or other timing requirement, then such Party may proceed to enforce such rights notwithstanding this mediation requirement and mediation will be required during the dispute resolution process to the extent it may be used without jeopardizing the substantive rights of any Party. The Parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in Placer County, California unless another location is mutually agreed upon.

g) Headings. The paragraph headings used in this Agreement are intended for

convenience only and shall not be used in interpreting this Agreement or in determining any of the rights or obligations of the Parties to this Agreement.

h) No Third Party Beneficiaries. The Parties understand and agree that this Agreement creates rights and obligations solely between the Parties and is not intended to benefit any other party. No provision of this Agreement shall in any way inure to the benefit of any third person so as to constitute any such third person as a third party beneficiary of this Agreement or any of its items of conditions, or otherwise give rise to any cause of action in any person not a party hereto.

i) Reasonable Cooperation; No Agency. The Parties will reasonably cooperate with each other, including the execution of all necessary documents required to perform the obligations under this Agreement, and to carry out the purpose and intent of this Agreement; provided that each Party understands and agrees that there is no agency or joint venture relationship between the Parties, and no Party is authorized to act for or on behalf of any other Party except as expressly authorized under this Agreement.

j) Construction and Interpretation. This Agreement is entered into freely and voluntarily. This Agreement has been arrived at through negotiation, and each Party has had a full and fair opportunity to revise the terms of this Agreement. Consequently, the normal rule of construction that any

ambiguities are to be resolved against the drafting party will not apply in construing or interpreting this Agreement.

k) Waiver. The waiver at any time by a Party of its rights with respect to a default or other matter arising in connection with this Agreement will not be deemed a waiver with respect to any other default or matter.

l) Allocation of Liabilities. The Parties expressly agree that the debts, liabilities and obligations of each Party shall remain the debts, liabilities and obligations of that Party and shall not be the debts, liabilities and obligations of the other Parties.

m) Attorney's Fees. In any action brought by either Party to enforce the terms of this Agreement, the prevailing Party shall be entitled to recover its reasonable attorney's fees.

n) Privileges and Immunities. All of the privileges and immunities from liability; exemptions from laws, ordinances and rules; and all pension, relief, disability, worker's compensation and other benefits that apply to the activity of officers, agents or employees of the Parties when performing their respective functions for those Parties will, to the extent permitted by law, apply to them to the same degree and extent while engaged in the performance of any of the functions and other duties under this Agreement. It is further understood and agreed by the Parties that, notwithstanding anything contained herein, the employees of each Party shall continue to be entirely and exclusively under the direction,

supervision, and control of the employing Party.

o) Counterparts. The Parties hereto agree that this Agreement may be executed and delivered in counterparts which, when taken together, shall constitute a fully executed Agreement. In addition, this Agreement may be executed via electronic pdf transmission and any such pdf signature shall be deemed to be an original signature.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement on the date written below.

PLACER COUNTY WATER AGENCY	CITY OF ROSEVILLE
BY:_____	BY:_____
Date:_____	Date:_____
ATTEST:	ATTEST:
_____	_____
Clerk, Board of Directors	City Clerk

RESOLUTION NO. 25-104

APPROVING AN AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND SIERRA NATIONAL CONSTRUCTION, INC., AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, an Agreement for the Five Star Intertie Improvement project, by and between the City of Roseville and Sierra National Construction, Inc., has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said Agreement is hereby approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

BE IT FURTHER RESOLVED that the City Manager or his designee is authorized to approve change orders for the project, consistent with the contract terms, provided that the net cost of all change orders shall not exceed ten percent (10%) of the contract price.

PASSED AND ADOPTED by the Council of the City of Roseville this____day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

AGREEMENT

THIS AGREEMENT, is made and entered into this _____day of _____, 20_____, by and between the City of Roseville, a municipal corporation, ("CITY"), and Sierra National Construction, Inc. , a Corporation , ("CONTRACTOR"); and

WITNESSETH:

WHEREAS, the City Council of the CITY, at a meeting held on the 20 day of November , 2024 , approved plans and specifications for the Five Star Intertie Improvement Project and directed the City Clerk to advertise for sealed proposals for doing said work and providing that bids be submitted on the 8 day of January , 2025 ; and

WHEREAS, the City Clerk, thereafter duly and regularly caused a notice to be published in the manner and for the time prescribed by law; and

WHEREAS, CONTRACTOR, pursuant to the provisions of said notice duly filed a bid with the City Clerk, a true copy of which bid is now on file in the office of the City Clerk, and is hereby referred to and by this reference made a part hereof as fully as if set forth at length herein; and

WHEREAS, all bids received pursuant to said notice were opened and examined and publicly declared at the time specified in said advertisement for bids and at a meeting of the City Council held on the _____ day of _____, 20_____, the Council found and

declared the bid of CONTRACTOR to be the lowest responsible bid and thereupon awarded a contract to CONTRACTOR to do the work referred to in the aforementioned specifications.

NOW, THEREFORE, the parties agree as follows:

1. THE WORK. CONTRACTOR agrees:

a. To do the work and furnish all the labor, materials, tools, supplies, equipment, superintendence, insurance, and bonds required for the Five Star Intertie Improvement Project in accordance with the Contract Documents (the Work).

b. To do and perform the Work contemplated hereby in a good and workmanlike manner under the direction of and to the satisfaction of the Director of Public Works of the City of Roseville.

2. PAYMENT. CITY shall pay CONTRACTOR Six hundred ninety-eight thousand and six hundred forty dollars ($698,640) for the Work to be done under this Agreement in accordance with the Contract Documents.

3. CONTRACT DOCUMENTS. The complete Agreement between the parties hereto consists of the following documents:

a. The advertisement for bids (including the notice to bidders, instructions to bidders and proposals);

b. The accepted bid;

c. Plans and specifications (including standard construction specifications, special provisions and construction details);

d. Bonds and insurance required by the specifications; and

e. This contract, including Exhibit "A" attached hereto.

All documents specified above are intended to operate so that any work called for in any one and not mentioned in the other, or vice versa, is to be executed the same as if mentioned in all said documents.

4. LIQUIDATED DAMAGES. In the event CONTRACTOR does not complete the Work within the time specified, CONTRACTOR agrees that CITY will suffer damages. Inasmuch as the actual damages which would result from such breach by CONTRACTOR under this Agreement are uncertain, and would be impractical or extremely difficult to fix, CONTRACTOR agrees that it shall pay, or CITY shall deduct from CONTRACTOR's fee, the amount of $ 1,500 per day as liquidated damages, in the event of such delay.

5. TIME OF COMPLETION. Time is of the essence of this Agreement. CONTRACTOR shall complete all Work under the Contract Documents within 181 Days of the date of this Contract. CONTRACTOR shall begin work by the date specified in the "Notice to Proceed" letter and shall diligently prosecute all of the Work under this Contract in all parts and requirements as defined in the Contract Documents.

6. SERVICE OF NOTICE. Any notice required or permitted to be given under this Agreement shall be deemed given when (a) personally delivered to the recipient identified below; (b) mailed by registered or certified mail, return receipt requested, postage pre-paid, to the address specified below; or (c) sent by facsimile, with confirmation of receipt, to the facsimile number identified below.

CITY OF ROSEVILLE	CONTRACTOR
William Montz	Kip Skidmore
Environmental Utilities	President
2005 Hilltop Circle	5433 El Camino Ave. Suite 4
Roseville, CA 95747	Carmichael, CA 95608

CITY may also act through either its architect or construction manager if CITY expressly gives notice to CONTRACTOR, in writing, that CITY's designee has authority to act for CITY in a specific capacity.

7. DISPUTES. Disputes arising from this Agreement will be determined in accordance with the Contract Documents and Public Contract Code Sections 10240-10240.13.

8. GOVERNING LAW. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

9. INDEPENDENT CONTRACTOR. CONTRACTOR shall act as an independent contractor, and covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as, nor claim to be, an officer or employee of CITY by reason of this Agreement.

10. SUCCESSORS IN INTEREST. This Agreement shall be binding upon the heirs, successors, executors, administrators and assigns of the respective parties hereto.

11. MODIFICATION. This Agreement and each provision contained herein may be waived, amended, supplemented or eliminated only by mutual written agreement of the parties.

12. SEVERABILITY. If any of the provisions contained in this Agreement are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Agreement as a whole.

13. INTEGRATED AGREEMENT. This is an integrated agreement and contains all of the terms, considerations, understanding and promises of the parties. It shall be read as a whole.

14. CONTRACTORS LICENSE LAW. CONTRACTORS ARE REQUIRED BY LAW TO BE LICENSED AND REGULATED BY THE CONTRACTORS' STATE LICENSE BOARD WHICH HAS JURISDICTION TO INVESTIGATE COMPLAINTS AGAINST CONTRACTORS IF A COMPLAINT REGARDING A PATENT ACT OR OMISSION IS FILED WITHIN FOUR (4) YEARS OF THE DATE OF THE ALLEGED VIOLATION. A COMPLAINT REGARDING A LATENT ACT OR OMISISON PERTAINING TO STRUCUTRAL DEFECTS MUST BE FILED WITHIN TEN (10) YEARS OF THE DATE OF THE ALLEGED VIOLATION. ANY QUESTIONS CONCERNING A CONTRACTOR MAY BE REFERRED TO THE REGISTRAR, CONTRACTORS' STATE LICENSE BOARD, P.O. BOX 26000, SACRAMENTO, CALIFORNIA 95826.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attestation by its City Clerk under authority of Resolution No. _____, adopted by the Council of the City of Roseville on the ____day of _____, 20_____, and CONTRACTOR has caused this Agreement to be duly executed.

CITY OF ROSEVILLE, a municipal corporation

BY: _____
DOMINICK CASEY
City Manager

Sierra National Construction, Inc., a Corporation

BY: _____
its: President
and

ATTEST:

BY: _____
its: _____

BY: _____
CARMEN AVALOS
City Clerk

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE:

BY: _____ Dawn Whittington on behalf of Sean Bigley

Print Name: Sean Bigley

Title: Environmental Utilities Director

Exhibit "A"

Additional Terms

Sierra National Construction, Inc., (hereinafter "Contractor") agrees that the same insurance and indemnity requirements it owes to the City of Roseville and contained in the Agreement, including specifically the provisions of the general conditions identified in section 3 "Contract Documents", shall apply to Placer County Water Agency.

RFP # 08-117

DATE: January 8, 2025

TIME: 3:00 PM

BID BOND REQUIRED: Yes

BID SUMMARY SHEET

BID OPENING FOR:

Five Star Intertie Improvement Project

CITY OF ROSEVILLE CALIFORNIA

Bidders Name City, State	Addendum 1	Addendum 2	Bid Bond	Grand Total
Sierra National Construction Carmichael, CA	✓	✓	✓	$698,640
BWD Construction Inc dba BWD General Engineering Lincoln, CA	✓	✓	✓	$740,000
Myers & Sons Construction LLC Sacramento, CA	✓	✓	✓	$918,508
Design-Build Inc. Sacramento, CA	✓	✓	✓	$557,786
TNT Industrial Contractors Inc. Sacramento, CA	✓	✓	✓	$872,200

Please Sign-In

Staff	*~~Visitors~~ (Name & Company)*	*Visitors (Name & Company)*
Melissa Lipp	Erika De Ledze	
Katrina Six		
Joe Speaker		
Carmen Avalos		
William Montez		

Notice of Exemption

To: Placer County Clerk
Recorder's Office
2954 Richardson Drive
Auburn, CA 95603

From: City of Roseville
Development Services Dept.
311 Vernon Street
Roseville, CA 95678

Project Title: Five Star Intertie Improvements Project

Project Location: The Intertie improvements would be constructed within an existing intertie station, and within public right of way, located at the northwest corner of Five Star Boulevard and Stanford Ranch Rad at 6710 Stanford Ranch Road in the City of Roseville, Placer County, CA (APN: 017-123-043-000).

Project Description: The Roseville Environmental Utilities Department proposes construction of improvements as follows: The Five Star Intertie is a manually operated intertie between the City and the Placer County Water Agency (PCWA). To improve operational functionality, this project would entail installation of equipment to automate and provide remote capabilities via cellular wireless technology for monitoring and operation of the intertie via a Supervisory Control and Data Acquisition (SCADA) system. Since the location does not have power service, a new transformer is required, which will be tied into the existing junction box. The project will also include replacement of any flow measurement instruments for automation compatibility. The project does not include any new long-term water supply; it only allows for more efficient distribution of existing surface and ground water supplies.

Public Agency Approving Project: Roseville City Council

Agency Carrying Out Project: Roseville Environmental Utilities Department

Reason why this Project is Exempt: This project qualifies for a Class 1 Exemption as described in Section 15301 of the California Environmental Quality Act (CEQA) guidelines which states:

> "Class 1 consists of …. minor alteration of existing public …. facilities….involving negligible or no expansion of use beyond that previously existing…. examples include but are not limited to: (b) Existing facilities of both investor and publicly-owned utilities used to provide electric power, natural gas, sewerage, or other public utility services;"

The project involves modification of existing facilities to increase water distribution system operational flexibility. The improvements do not result in expansion of use. No sensitive resources are present on the project site. Therefore the Class 1 Exemption is applicable to the proposed project.

Lead Agency Contact Person: William Montz, Roseville Environmental Utilities Department, 2005 Hilltop Circle, Roseville, CA 95747 (916) 774-5545.

Signature: Jessica Lynch **Date:** 5-24-2023

Jessica Lynch, Environmental Coordinator
City of Roseville

COUNCIL COMMUNICATION

CC #: 3841
File #: 0800-02

Title:	Sewer System Management Plan Recertification
Contact:	Tracie Mueller 916-746-1812 trmueller@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.13.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution to recertify the City of Roseville's Sewer System Management Plan (SSMP).

BACKGROUND

The California State Water Resources Control Board (SWRCB) issued a Statewide General Waste Discharge Requirement (WDR) Order No. 2006-0003-DWQ in May 2006. Under this WDR, all public entities that own or operate a sanitary sewer system greater than one mile in length that collects or conveys wastewater must prepare a Sewer System Management Plan (SSMP). The intent of the SSMP is to facilitate proper funding, operation and management of the sanitary sewer system to reduce sanitary sewer spills, their impacts to the State's water bodies, and to protect public health. The City's SSMP must be certified by the Roseville City Council and recertified when major updates are made to the plan.

The Roseville City Council adopted and certified the original SSMP in 2007. In October 2022, the Roseville City Council recertified the City's SSMP based on recommended changes proposed during an audit by an outside consultant.

On June 6, 2023, the SWRCB issued an updated WDR, Order No. 2022-0103-DWQ. This order replaced the old order and provided updated guidance and regulations related to owning and operating a sanitary sewer system designed to convey sewage. This updated guidance and regulation required an update to the City's SSMP. In addition, the Wastewater Collection System underwent a required periodic audit by an outside consultant using the current SSMP. Recommendations were made as to edits and additions needed for compliance with the new WDR and audit findings. These recommendations have been incorporated into an updated SSMP which includes terminology changes, changes to the City's sewer emergency response plan, naming and classification of spills for reporting purposes, as well as other minor edits and clean up items.

The certified 2022 edition SSMP, the proposed updated SSMP and associated documents, and the new updated WDR are provided for background. Proposed changes to the 2022 certified

SSMP were not provided due to the number of formatting changes made. Following is a summary of changes made in the proposed SSMP:

- The term SSO (Sanitary Sewer Overflow) changed to Spill throughout the document per the new updated WDR.
- A change in terminology and classification of spills on Pages 16-17 of the proposed SSMP. There are 4 categories of spills, all of which changed when compared to the previous SSMP. This is due to changes in the new updated WDR from the SWRCB.
- Attachment D of the new updated WDR is the guidance document for the requirements of the SSMP. Excerpts from this Attachment have been added and updated throughout the proposed SSMP to provide clarity on the intent of most sections for reference purposes.
- Appendix 10.6 – SSMP Performance Audit has been added to provide a required updated audit report.
- Appendix 9.3 – Spill History has been updated to provide up to date spill information.
- Appendix 6 – the Spill Emergency Response Plan has been updated per the new updated WDR.

FISCAL IMPACT

The recommended action of recertification of the City of Roseville Sewer System Management Plan does not have a direct fiscal impact. The costs for compliance for all elements of the SSMP are funded annually through the Wastewater Operations Fund budget.

ENVIRONMENTAL REVIEW

The proposed project involves an action taken by the City of Roseville to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves protection of the environment. This activity is categorically exempt from CEQA as a Class 8 Exemption (State CEQA Guidelines Section 15308). The Exemption has been prepared and no further CEQA action is required.

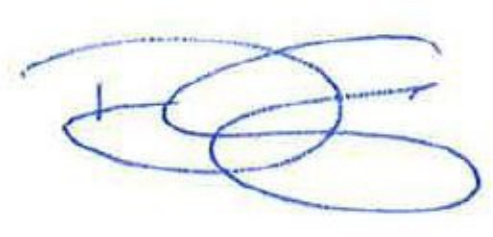
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Tracie Mueller, Wastewater Utility Manager

Sean Bigley, Environmental Utilities Director



Dominick Casey, City Manager

ATTACHMENTS:

Description

Sewer System Management Plan 2025

Resolution 25-097

Updated Order - WDR Sanitary Sewer

Sewer System Management Plan 2022

Notice of Exemption



Sewer System Management Plan
For
City of Roseville

WDID 5SSO10935

Revised 12 MAR 2025

CITY OF ROSEVILLE CALIFORNIA
Environmental Utilities

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SSMP CHANGE LOG

Order WQ 2022-0103-DWG Specification Section 5.5

During the time period in between SSMP updates, the Enrollee shall continuously document changes to its SSMP in a change log attached to the SSMP. These records will demonstrate when a subsection(s) was changed or updated and who authorized the change.

City of Roseville-SSMP Change Log			
Date	Section	Comments	Approval
12/11/13	A complete update of SSMP, both intranet version, and city website version		Chris Bracco
1/9/14	Supporting Documents for SSMP Audit\SSMP Resoultion_14.pdf	Council resolution for SSMP adoption	Chris Bracco
4/7/14	Supporting Documents for SSMP Audit\Roseville SSMP Audit FY13 - FINAL.pdf	Final SSMP Audit- Waterworks Engineering	Chris Bracco
4/7/14	Supporting Documents for SSMP Audit\SSMP Resoultion_14.pdf	SSMP Resolution 2014	Chris Bracco
3/24/15	Appendix B\APPENDIX B-1_Contact List.doc	Updated Rich Plecker as Utility Director	Chris Bracco
3/24/15	Appendix B\APPENDIX B-2_Contact List.doc	Updated Dave Rawe as claims administrator	Chris Bracco
4/30/15	Master_Roseville_SSMP.doc	Added Goal re: design and construction standards	Chris Bracco
9/8/16	Appendix B\APPENDIX B-1_Contact List.doc	Updated City Council/PUC members per 14/15 Audit Rec.	Chris Bracco
10/31/16	Appendix B\APPENDIX B-2_Contact List.doc	Updated RWQCB Contact Information	Chris Bracco
10/31/16	Appendix C\Appendix C-7 Contract and Operations Agreement SASD_SRCSD.pdf	Contract with SASD & Sac Regional	Chris Bracco
10/31/16	Appendix G\Appendix G-4 FOG Inspection Form.pdf	Addition of FOG Inspection Form	Chris Bracco
9/22/16	Appendix I\Appendix I-4 - Key Performance Indicators Benchmarking.xlsx	Addition of Key Performance Indicator Sheet	Chris Bracco
10/31/16	Appendix J\Appendix J-1_Rsvl WWC SSMP Audit Procedure.doc	SSMP Audit procedures	Chris Bracco
9/25/19	Appendix B\APPENDIX B-1_Contact List.doc	Updated council and PUC	Chris Bracco
9/25/19	Appendix B\APPENDIX B-2_Contact List.doc	Update contact information	Chris Bracco

City of Roseville-SSMP Change Log			
9/25/19	Appendix C\APPENDIX C-3 Sanitary Sewer Design.doc	Update Link	Chris Bracco
9/25/19	Appendix D\Appendix D-5 CWEA Certification.docx		Chris Bracco
9/25/19	Appendix F\Appendix F-1\4_SSO Field Report.pdf	Updated SSO overflow charts in field report	Chris Bracco
9/25/19	Appendix F\Appendix F-1\2_SSO Emergency Response Procedures.pdf	Added updated field report	Chris Bracco
9/25/19	Appendix F\Appendix F-1\1_SSO Flowchart.pdf		Chris Bracco
9/25/19	Appendix I\APPENDIX I-4 Key Performance Indicators Benchmarking.pdf		Chris Bracco
9/25/19	SSMP Audit_ Update Data\SSMP Audit Update FY 15_18\Roseville_SSMP_Audit_FY15-18 - FINAL-stamped.pdf		Chris Bracco
10/14/19	Completed Update of SSMP both intranet and City Website version		Chris Bracco
5/13/20	Appendix B\APPENDIX B-1_Contact List.pdf	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix B\APPENDIX B-2_Contact List.pdf	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix F\Appendix F-1\3_SSO Notification Guide .doc	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix I\Appendix I-4 Key Performance Indicators Benchmarking.pdf	KPI sheet with updated numbers	Chris Bracco
2/05/22	Update and re-write the entire SSMP	SSMP was re-formatted and subsequent changes to operation and maintenance have been included.	Daniel Pruden
10/05/22	SSMP Certification	City Council Resolution 22-382	Daniel Pruden
06/11/24	SSMP Internal Audit	SSMP Audit conducted by Fischer Compliance using the re-issued order 2022-103-DWQ	Daniel Pruden

City of Roseville-SSMP Change Log			
10/30/24	SSMP Internal Audit Certification	Certified audit was complete on CIWQS	Daniel Pruden
3/12/25	SSMP Update	Updated SSMP per the internal audit and the re-issued order 2022-0103-DWQ	Daniel Pruden
4/16/25	SSMP Certification	SSMP Approved by City Council	Daniel Pruden

City of Roseville-SSMP Change Log			

City Council Resolution

RESOLUTION NO. 22-382

RECERTIFICATION OF THE CITY OF ROSEVILLE
SEWER SYSTEM MANAGEMENT PLAN

WHEREAS, in May 2006 the State Water Resources Control Board issued a state-wide General Waste Discharge Requirement (WDR) Order requiring all public entities that own or operate sanitary sewer systems greater than one mile in length that collect or convey wastewater to prepare a certified Sewer System Management Plan (SSMP); and

WHEREAS, on August 30, 2019, the City Council certified the City's SSMP; and

WHEREAS, provisions in the WDR require recertification of the SSMP every five years or if significant changes to the SSMP have been made; and

WHEREAS, the City Council has reviewed the revised Sewer System Management Plan.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that it hereby recertifies the City of Roseville Sewer System Management Plan.

PASSED AND ADOPTED by the Council of the City of Roseville this 5th day of October, 2022, by the following vote on roll call:

AYES COUNCILMEMBERS: Houdesheldt, Alvord, Roccucci, Mendonsa, Bernasconi

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: None

MAYOR

ATTEST:

City Clerk

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LIST OF ACRONYMS

BMP	Best Management Practice
CASA	California Association of Sanitation Agencies
CCTV	Closed-Circuit Television
CFR	Code of Federal Regulations
CDFW	California Department of Fish and Wildlife
CIP	Capital Improvement Plan or Capital Improvement Project
City	City of Roseville
CIWQS	California Integrated Water Quality System
CM	Corrective Maintenance
CMMS	Computerized Maintenance Management System
CBT	Computer Based Training
CWEA	California Water Environment Association
CVCWA	Central Valley Clean Water Association
EDU	Equivalent Dwelling Unit
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
EUD	Environmental Utilities Department
FOG	Fats, Oils, and Grease
FSE	Food Service Establishments
GIS	Geographical Information System
GPS	Global Positioning System
GRD	Grease Removal Device
GWDR	General Waste Discharge Requirements or Waste Discharge Requirements (WDR)
I/I	Inflow / Infiltration
ICS	Incident Command System
IERP	Integrated Emergency Response Plan
IWD	Industrial Waste Division
LRO	Legally Responsible Official
MGD	million gallons per day
MRP	Monitoring and Reporting Program
NASSCO	National Association of Sewer System Companies
NPDES	National Pollution Discharge Elimination System
O&M	Operation and Maintenance
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services
Order	SWRCB Order No. 2006-0003-DWQ adopted May 2, 2006
PACP	Pipeline Assessment and Certification Program
PdM	Predictive Maintenance
PM	Preventative Maintenance
PMP	Preventative Maintenance Program
POTWs	Publicly Owned Treatment Works
R&R	Rehabilitation and Replacement
RWQCB	Regional Water Quality Control Board
SDS	Safety Data Sheets
SERP	Spill Emergency Response Plan
SIUs	Significant Industrial Users

SOP	Standard Operating Procedure
SPW	Safety Plus Web
SPWA	South Placer Wastewater Authority
SSMP	Sewer System Management Plan
SPILL	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
USA	Underground Service Alert
WDP	Waste Discharge Permit
WW	Wastewater
WWC	Wastewater Collection
WWTP	Wastewater Treatment Plant

LIST OF TERMS

Authorized Representative – The person designated, for a municipality, state, federal, or other public agency, as either a principal executive officer or ranking elected official or a duly authorized representative of that person.

Blockage – Something that partially or fully blocks the wastewater from flowing through a sewer pipeline. The blockage can be caused by debris in the sewer, grease buildup, root intrusion, or a partial or complete pipeline collapse. If not caught in time, the blockage may cause an overflow.

California Association of Sanitation Agencies (CASA) - CASA is a non-profit, statewide trade association representing public agencies that provide wastewater collection, treatment, disposal, and/or water reclamation services to about 90 percent of the sewered population in California.
Website: http://www.casaweb.org/

California Water Environment Association (CWEA) – CWEA is an association of 8,000-plus professionals in the wastewater industry. CWEA is committed to keeping California's water clean. CWEA trains and certifies wastewater professionals, disseminates technical information, and promotes sound policies to benefit society by protecting and enhancing the water environment. CWEA offers services at the state level and locally through 17 local geographical sections. In addition, through their on-line bookstore, CWEA offers technical references for sewer system operation and maintenance.
Website: http://www.cwea.org/ .

Central Valley Clean Water Association (CVCWA) – CVCWA is an association comprised of over 50 wastewater treatment and collection system agencies. CVCWA's mission is to effectively represent the interests of public wastewater agencies in the Central Valley in regulatory matters and to support the exchange of information so members can best meet their business challenges.
Website: http://www.cvcwa.org/ .

Central Valley Regional Water Quality Control Board – Also known as Regional Water Board or RWQCB. The mission of this state regulatory agency is to: preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. Website: http://www.waterboards.ca.gov/centralvalley/ .

Dynamic Model – Computer hydraulic model simulation which solves the complete dynamic flow routing equations (St. Venant's equations) for accurate simulation of backwater, looped connections, surcharging, and pressure flow in a collection system.

Enrollee – The legal public entity that owns a sanitary sewer system, as defined by the GWDR, which has submitted a complete and approved application for coverage under the GWDR. This is also called a sewer system agency or wastewater collection system agency.

Fats, Oils and Grease (FOG) - Fats, oils, and grease that are discharged into the sanitary sewer collection system by Food Service Establishments (FSE), homes, apartments, and other sources. FOG is a major cause of blockages leading to increased maintenance and sometimes spills.

FOG Control Program – To be implemented at the Enrollee's discretion. May include public education program; plan and schedule for the disposal of FOG; legal authority to prohibit FOG related discharges; requirement to install grease removal devices; authority to inspect grease producing facilities; identification of sanitary sewer system sections subject to FOG blockages and the establishment of a cleaning schedule for each section; development and implementation of source control measures for all sources of FOG.

Geographical Information System (GIS) – A database linked with mapping, which includes various layers of information used by government officials. Examples of information found on a GIS can include a sewer map; sewer features such as pipe location, diameter, material, condition, last date cleaned or repaired. The GIS also typically contains base information such as streets and parcels.

Governing Board – This is the governing board of the sewer entity developing the SSMP. Examples would be the Board of Directors, the City Council, or the County Board of Supervisors.

GWDR – General Waste Discharge Requirements – A GWDR is an authorization to discharge waste with certain conditions, which can be issued on an individual basis or to a group of dischargers. The Statewide General WDR for Sanitary Sewer Systems was adopted by the SWCRB and will be implemented by the Regional Water Boards and SWRCB.

Infiltration – The seepage of groundwater into a sewer system, including service connections. Seepage frequently occurs through defective or cracked pipes, pipe joints, connections or manhole walls and joints.

Inflow – Water discharged into a sewer system and service connections from such sources as, but not limited to, roof leaders, cellars, yard and area drains, foundation drains, cooling water discharges, drains from springs and swampy areas, around manhole covers or through holes in the covers, cross connections from storm and combined sewer system, catch basins, storm waters, surface runoff, street wash waters or drainage. Inflow differs from infiltration in that it is a direct discharge into the sewer rather than a leak into the sewer itself.

Lateral – The portion of sewer that connects a home or business with the main line in the street. Sometimes sewer system agencies own or maintain a portion of the lateral.

> *Upper Lateral*: Portion of lateral from building to property line (or easement line), usually privately owned and maintained.
>
> *Lower Lateral*: Portion of lateral from property line (or easement line) to sewer mainline in the street or easement. This portion of the lateral is sometimes privately owned and maintained and sometimes publicly owned and maintained.

Monitoring and Reporting Program - The Monitoring and Reporting Program established in the WDR that establishes monitoring, record keeping, reporting and public notification requirements for the GWDR.

Private Lateral: That portion of the Lateral that is owned and maintained by the private property owner that it serves. Based on an individual agency's ordinance, this may just be the Upper Lateral or can include the Lower Lateral.

Preventative Maintenance (PM) – Regularly scheduled servicing of machinery, infrastructure or other equipment using appropriate tools, tests, and lubricants. This type of maintenance can prolong the useful life of equipment, infrastructure, and machinery and increase its efficiency by detecting and correcting problems before they cause a breakdown of the equipment, or failure of the infrastructure.

R-Value – Is the amount of rainfall that reaches the collection system via infiltration and inflow. This value is typically expressed as a percentage of total rainfall volume that reaches the collection system.

Regional Water Board – Is a short name for any of the nine regional boards including the San Francisco Bay Area Regional Water Quality Control Board and the Central Valley Regional Water Quality Control Board.

Rehabilitation and Replacement Plan (also referred to as a Capital Improvement Plan) – Identifies and prioritizes system deficiencies and implements short-term and long-term rehabilitation actions to address each deficiency.

Sanitary Sewer Systems – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant head works used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities are part of the sanitary sewer system and discharges into these temporary storage facilities are not to be considered spills.

Satellite Collection System – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.

Sewer System Management Plan-SSMP – A series of written site-specific programs that address how a collection system owner/operator conducts their daily business as is outlined in the WDR. Each SSMP is unique for an individual discharger. The plan includes provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Also, must contain a spill response plan. Certification is offered by technically qualified and experienced persons and provides a useful cost-effective means for ensuring that SSMPs are developed and implemented appropriately.

Spill – A spill is a discharge of sewage from any portion of a sanitary sewer system due to a sanitary sewer system overflow, operational failure, and/or infrastructure failure. Exfiltration of sewage is not considered to be a spill under this General Order if the exfiltrated sewage remains in the subsurface and does not reach a surface water of the State.

Spill Emergency Response Plan – Identifies measures to protect public health and the environment. A plan must include the following: notification procedure, appropriate response plan, regulatory notification procedures, employee training plan, procedures to address emergency operations, a program that ensures all reasonable steps are taken to contain and prevent discharges.

Spill Categories- **Category 1** - any volume of sewage from or caused by a sanitary sewer system regulated under this General Order that results in a discharge to:

- A surface water, including a surface water body that contains no flow or volume of water.
- A drainage conveyance system that discharges to surface waters when the sewage is not fully captured and returned to the sewer system or disposed of properly.

- Any spill volume not recovered from a drainage conveyance system is considered a discharge to surface water unless the drainage conveyance system discharges to a dedicated stormwater infiltration basin or facility

Category 2 - is a spill of 1,000 gallons or greater from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.

Category 3- is a spill of equal to or greater than 50 gallons and less than 1,000 gallons from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.

Category 4 - is a spill of less than 50 gallons from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.

Stakeholder - A person or organization that has a vested interest in the development and outcome of the SWRCB Order No. 2022-0103-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

State Water Resources Control Board: Also called the State Board. This is the State agency that developed and passed the GWDR for collection systems and the agency that maintains the spill reporting web site.

Static Model – A computer hydraulic model that uses the Manning's Equation to determine hydraulic capacity of the gravity pipelines and either the Manning's or Hazen-Williams Equations to determine the hydraulic capacity of the pressure pipeline system. The capacity is compared to the peak hydraulic flow in the system to determine potential deficiencies. The static model assumes the peak hydraulic flow occurs at all locations within the collection system at the same time.

Stoppage – Something that partially or fully blocks the wastewater from flowing through a sewer pipeline. A stoppage can be caused by debris in the sewer, grease buildup, root intrusion, or a partial or full collapse of the pipeline. If not caught in time, a stoppage may cause an overflow. This is also called a blockage.

System Evaluation and Capacity Assurance Plan – A required component of an agency's SSMP and is an important part of any agency's overall Capital Improvement Plan that provides hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event.

Wastewater Collection System: See Sanitary Sewer System.

EXECUTIVE SUMMARY

BACKGROUND

The City of Roseville (City) is a Council-Manager form of government in which responsibilities are vested in the City Council and City Manager. In this form of government, the City Council's role is that of a legislative policy-making body which determines not only local laws that regulate community life, but also determines public policy and gives direction to the City Manager. The City Manager administers the affairs of the city government in a business-like prudent manner.

The City's Public Utilities Commission studies and advises the City Council on all utility issues related to city-owned utilities (electric, water, sewer, and solid waste).

The City's Wastewater Utility is one of five utilities operated in the Environmental Utilities Department (EUD). The Wastewater Utility is responsible for operation and maintenance of all wastewater facilities owned by the City including the Publicly Owned Treatment Works (POTWs), the wastewater collection system, the water quality lab and the recycled water utility.

The City's Wastewater Collection (WWC) Division is a division of Environmental Utilities Department (EUD). The WWC Division is responsible for management, operation, maintenance, and capacity assurance of the City's sanitary sewer collection system, including inspecting, cleaning, repairing, and monitoring the gravity sewer lines, force mains, and lift station.

The City initiated a Sewer System Management Plan (SSMP) assessment in 2005 to evaluate how well the Wastewater Collection (WWC) Division would comply with the anticipated State Water Resources Control Board (SWRCB) Statewide General Waste Discharge Requirements (WDR) order No. 2006-0003 for Sanitary Sewer Systems. That SSMP assessment indicated that the City was positioned fairly well to comply with the SWRCB's SSMP requirements.

In March of 2007, the WWC division along with consultant assistance, began writing the SSMP and reviewing all remaining policies, procedures, and programs to comply with the SWRCB's WDR. The plan described how the City would address each element of the SSMP contained in the SWRCB's WDR to eliminate preventable Sanitary Sewer Overflows (SSOs). The WWC staff completed the development of the SSMP, which the City Council approved on 21 JAN 09.

On June 11, 2024, the City successfully completed its latest SSMP Audit, adhering to Attachment 10 of the Reissued Waste Discharge Requirement (WDR) State Water Board Order No. 2022-0103-DWQ. The results of the audit demonstrate the City's full compliance with the Reissued WDR and emphasize the effectiveness of several successful work programs that are currently being implemented. This commitment to maintaining high standards underscores the City's dedication to environmental responsibility and public health

The city continues to monitor, measure, and modify the existing SSMP as changes and program improvements are identified. The city has developed a Key Performance Indicator worksheet, which is used to monitor and measure the effectiveness of the various elements of the SSMP. Roseville's SSMP has been audited six times since being certified by the SWRCB

SEWER SYSTEM MANAGEMENT PLAN REQUIREMENTS

The City's Sanitary Sewer Management Plan (SSMP) developed in 2009 as a practical and essential resource, set a strong foundation for effective sewer management. This revised SSMP not only retains vital information from the original document but also integrates valuable insights from recent audits and best practices, ensuring the city takes its efforts to the next level. It is designed to address the specific size, scale, and complexity of the City's sanitary sewer system, fully complying with the requirements stated in the Reissued WDR, particularly in Specifications 5.2 and Attachment D.

CITY HISTORICAL SPILL PERFORMANCE

The statistical records from the City's Wastewater Collection Division (WWC) reveal that, prior to implementation of the SSMP, the City faced a moderate rate of sewer spills compared to similarly sized agencies in California. However as demonstrated in Table 1, since adopting the SSMP, the City's spill performance metrics have consistently outperformed State and Regional averages in both number and volume associated with spills. This consistent improvement highlights the City's commitment to effective wastewater management. Additionally, when spills do occur, they are swiftly addressed, ensuring that public health and the environment remain protected from any adverse effects.

Figure 1-System Spill



0 SSMP Overview

The City of Roseville (City) is required to comply with the State Water Resources Control Board Order No. 2022-0103-DWQ adopted December 6, 2022, entitled Statewide Waste Discharge Requirements General Order for Sanitary Sewer Systems (General Order).

In response to this General Order, the City has thoroughly revised its previous SSMP to align with the requirements outlined in the Statewide Waste Discharge Requirements (WDR) for Sanitary Sewer Systems. The SSMP serves as a "living document," showcasing the City's ongoing management activities, procedures, and decision-making processes for operating and maintaining the system.

The City developed an SSMP specific to the wastewater collection system operated and maintained by wastewater collection personnel in the City of Roseville. This SSMP documents the activities the city will utilize to manage, operate, and maintain its wastewater collection system. The city shall take all steps feasible to eliminate spill, but in the event an spill does occur, will take all steps necessary to contain and mitigate the negative impacts of an spill

1 Goals and Introduction

Att. D-1	The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the City's sanitary sewer system, reduce and prevent spills and contain and mitigate spills that do occur. The plan must include a narrative Introduction section that discusses the following items: (1) A general description of the Enrollee's SSMP, and discuss plan implementation and updates, (2) A schedule for updating the SSMP and scheduling internal audits. The schedule must include milestones for incorporating activities addressing spill prevention, and (3) A description of the Enrollee owned assets and service area.

1.1 SSMP Goals

The City's WWC Division has established eight goals to guide the implementation, and success of Roseville's SSMP. These goals are designed to facilitate and target the management, operation, and maintenance of the sanitary sewer collection system in a manner that will sustain the infrastructure, protect public health and the environment, and achieve compliance with State Water Resources Control Board's WDR for Sanitary Sewer Systems. These goals include:

1. Properly manage, operate, and maintain all portions of the City's wastewater collection system.
2. Provide adequate capacity to convey peak wastewater flows.
3. No repeat overflows from the same location.
4. Maintain a rate of Spills/100 miles of pipe, that is lower than the state and regional average.
5. Maintain a recovery rate for Spills/100 miles of pipe, that is higher than the state and regional average.
6. Mitigate the impacts that are associated with any Spills that may occur.
7. Comply with all applicable regulatory notification and reporting requirements.
8. Maintain high design and construction standards for new and rehabilitated infrastructure.

To achieve the goals outlined in the City's SSMP, the City is committed to implementing various programs that address issues related to its wastewater system. The City takes pride in maintaining strict design and construction standards, along with a robust operations and maintenance program. This program includes chemical root control, closed circuit television (CCTV) inspections, and skilled construction crews capable of performing both simple and complex repairs to the system.

The City emphasizes proactive maintenance and inspection and is well-equipped to handle the challenges of operating its wastewater collection system while ensuring the highest standards of service delivery.

Although the City is proactive in preventing spills, it has also established an effective Spill Emergency Response Plan to respond quickly if a spill occurs. The City will take all necessary actions to contain the spill and mitigate its negative impacts. Additionally, the City utilizes Key Performance Indicators (KPIs) to evaluate the effectiveness of its spill management efforts.

1.2 SSMP Plan Update

The City of Roseville completed a comprehensive SSMP audit conducted by Fischer Compliance on June 11, 2024. This audit confirmed that the City's long-standing SSMP has been effective in meeting the required elements through its various programs and the adoption of new technology.

Since most sewer spills originate from lower laterals, the City invested in a lateral lining trailer and set an annual KPI target for lateral lining to address issues identified during CCTV inspections. The City consistently increases its KPI goals and has achieved significant milestones in cleaning, televising, responding to service requests, and making main and lateral repairs. These efforts demonstrate its commitment to proactive infrastructure management and reducing spills from the sewer system.

Additionally, the City has utilized the look-up tool on the CIWQS website to identify the date of the next scheduled audit and the subsequent update of its SSMP, as shown in Table 1.

Table 1 – SSMP Update Schedule

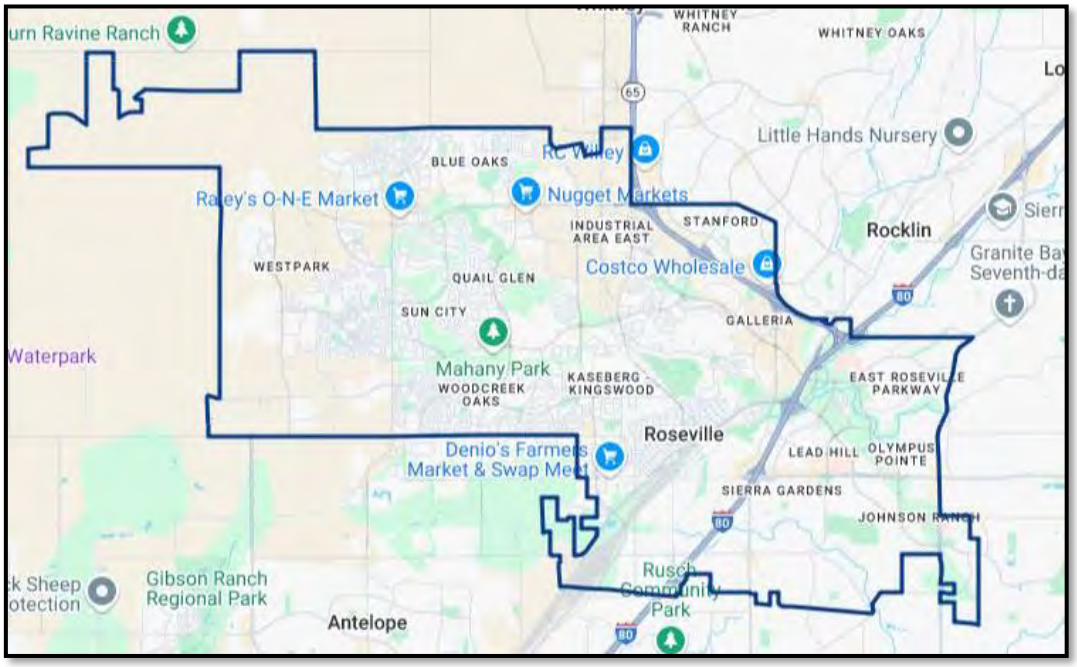
Sewer System Management Plan & Subsequent Update Due Dates					
System Name	**WDID Number**	**Original Plan Required Due Date**	**Required Plan Update Due Date**	**Required Plan Update Due Date**	**Required Plan Update Due Date***
Dry Creek CS	5SSO10935	5/2/2009	5/2/2014	5/2/2019	5/2/2025

Audit Due Dates								
System Name	**WDID Number**	**Original Required Plan Audit Due Date**	**Required Plan Audit Due Date**	**Required Plan Audit Due Date**	**Required Plan Audit Due Date**	**Required Plan Audit Due Date**	**Required Plan Audit Due Date**	**End of Required 3-Year Audit Period****
Dry Creek CS	5SSO10935	5/2/2011	5/2/2013	5/2/2015	5/2/2017	5/2/2019	5/2/2021	5/2/2024

1.3 Sewer System Asset Overview

Figure – 2 outlines the City of Roseville's geographical service area. The information provided in this SSMP was gathered from the City's Economic Development website located here: City of Roseville Demographics

Figure 2 – City of Roseville Service Area



The city's service area covers approximately 44.20 square miles and includes 54,622 residential connections, 1,932 commercial connections, and 600 industrial connections, as well as two regional wastewater treatment plants. The Wastewater Collection Division serves approximately 166,000 sewer customers. The wastewater collection and conveyance system is comprised of 885 miles of sewer pipe, with diameters ranging from 4 inches to 84 inches. It includes 12,538 manholes and 17 neighborhood lift stations, which together convey an average dry weather flow of about 18.5 million gallons per day (MGD). Sanitary sewage is transported from the City's eastern boundaries to the Dry Creek Wastewater Treatment Plant and from its northern and western boundaries to the Pleasant Grove Wastewater Treatment Plant.

1.4 Updated Sewer System Map

The WWC Division maintains an up-to-date electronic map of the wastewater collection system as required by Att. D-1.3 of the Re-issued Order. The City uses ESRI GIS software to map all utility-related data. The GIS map platform, referred to as Roseville GeoViewer, shows all gravity main segments with the direction of flow, manhole information, pumping facilities, pressure pipes, and valves. In addition, the GeoViewer allows users to turn on/off different layers and base maps to display the information they need.

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2 Organization

Att. D-2	The Plan must identify organizational staffing responsible and integral for implementing the local SSMP through an Organizational chart or similar document that includes, the name of the Legally Responsible official as required in section 5.1;The position, titles, telephone numbers and email addresses for management, administrative and maintenance positions responsible for implementing specific SSMP elements; Organizational lines of authority; and Chain of communication for reporting spills from receipt of complaint or other information, including the person responsible for reporting spills to the State and Regional Water Boards and other agencies as applicable.

2.1 Legally Responsible Official (LRO)

The City of Roseville has identified the Wastewater Utility Manager and the Wastewater Collection Superintendent as the LRO's or authorized representatives for the wastewater collection division. Historically, the Wastewater Collection Superintendent is responsible for the certification of spill reports involving Roseville's wastewater collection system.

2.2 SSMP Responsibility Chart

The City of Roseville operates under a Council-Manager form of government, where responsibilities are shared between the City Council and the City Manager. The City Council serves as the legislative and policy-making body, establishing local laws, shaping public policy, and providing guidance to the City Manager. The City Manager oversees the administration of city operations in a professional and efficient manner, delegating authority to each Environmental Utilities (EU) management group to ensure the effective operation of their respective utilities. The following chart provides a detailed overview of position descriptions and responsibilities related to SSMP implementation.

SSMP Element	Responsible Position
I. Goals	Responsibility for the divisions goals resides with the WWC Superintendent, Mr. Dan Pruden. However, goals for the wastewater collection division are developed through collaboration between the WWC Superintendent, the WWC Supervisor and field crews. Mr. Pruden can be reached at (916)746-1891
II. Organization	The Environmental Utilities (EU) Director, Mr. Sean Bigley, recommends any updates to the City Manager for organizational structure within the Wastewater Collection Division. Mr. Bigley can be reached at (916)774-5770.

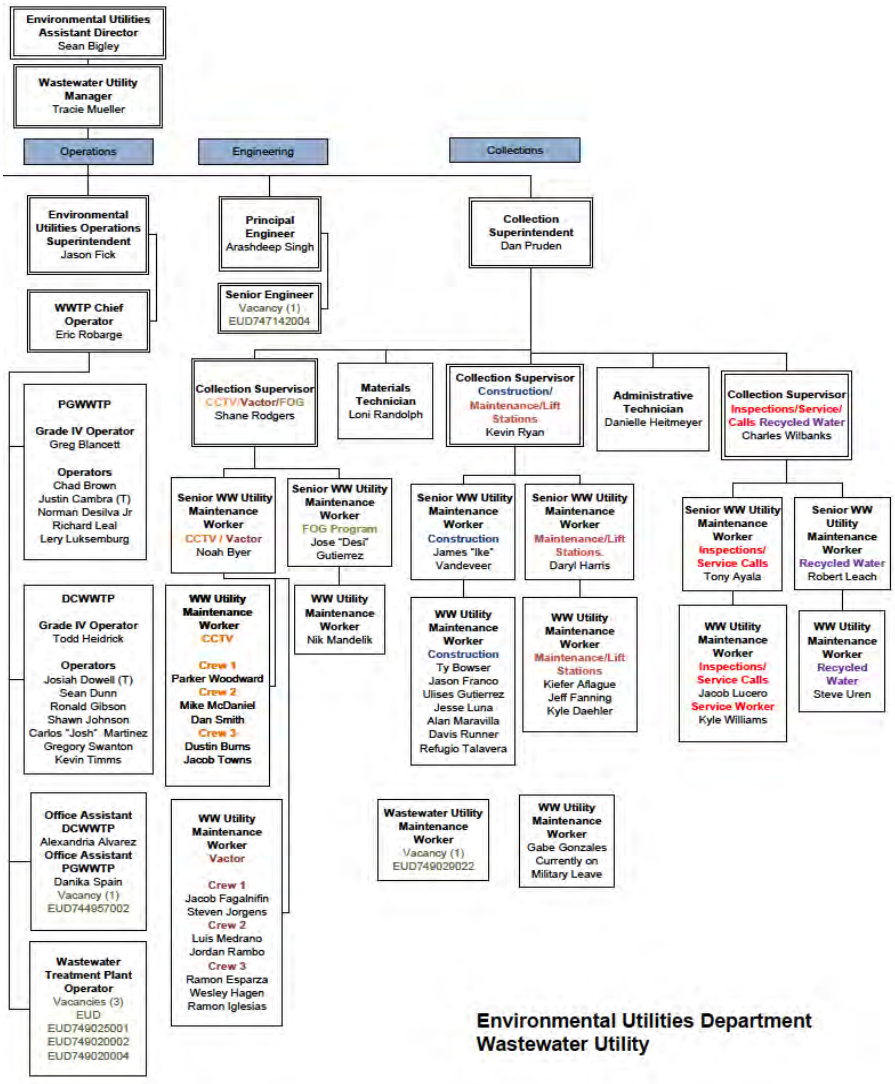
III.	Legal Authority	The City Manager, City Attorney and Roseville City Council ultimately uphold city ordinances within the Roseville Municipal Code.
IV.	Operations & Maintenance	The Wastewater Collection Superintendent has overall responsibility for the operation and maintenance of the collection system. The Asst. EU Director, (TBD), oversees, recommends, and administers the O&M budget. EU Engineering provides support through the GIS Division for up-to-date mapping of the system.
V.	Design and Construction Standards	The Development Services Division and EU Engineering collaborate to identify and maintain the design and construction standards. Development Services Division manages the inspection of all new development, CIP and infill projects to ensure all standards are met. All projects receive EU Director approval related to Utility work.
VI.	Spill Emergency Response Plan	The Wastewater Collection Superintendent and Supervisors Mr. Shane Rodgers, Mr. Kevin Ryan and Mr. Cody Wilbanks, maintain the spill emergency response plan. The plan is implemented as an annual training, where revisions to the plan may be made based on field crew feedback. Mr. Rodgers can be reached at (916)746-1894, Mr. Ryan at (916)746-1893 and Mr. Wilbanks at (916)746-1889
VII.	FOG Control Program	The Wastewater Collection Superintendent and Supervisor identify hot spots from Food Service Establishments (FSE) and maintain an effective cleaning PM schedule to eliminate spills. The FOG Control Program including permitting of FSEs, inspection of facilities and monitoring pump out records is administered by the Wastewater Collection Superintendent.
VIII.	System Evaluation and Capacity Assurance Plan	EU Engineering Principal Engineer, Mr. Arashdeep Singh, administers the SECAP program to ensure the hydraulic model is up to date, and to assure capacity for current and future development. Mr. Singh can be reached at (916)746-1854
IX.	Monitoring, Measurement and Program Modifications	The Wastewater Collection Superintendent with assistance from the Wastewater Collection Supervisors monitors the implementation and assesses the success of the overall SSMP elements. The superintendent tracks Key Performance Indicators and adjusts programs as needed.

X.	SSMP Audits	The Asst EU Director is responsible for SSMP program audits, with assistance from the Wastewater Collection Superintendent and Principal Engineer for Wastewater Division
XI.	Communication Plan	The EU Public Information Officer, Mr. Maurice Chaney, communicates with the EU Director, City Manager, City Council, nearby agencies, and the public on the City's SSMP monitoring and modifications. Mr. Chaney can be reached at (916)774-5539.

2.3 Organizational Lines of Authority

The Wastewater Collection Division is one of five utilities operated in the Environmental Utilities Department (EUD). The Environmental Utilities Department has defined its lines of authority in the attached Figure 3.

Figure 3 – EUD Wastewater Utility

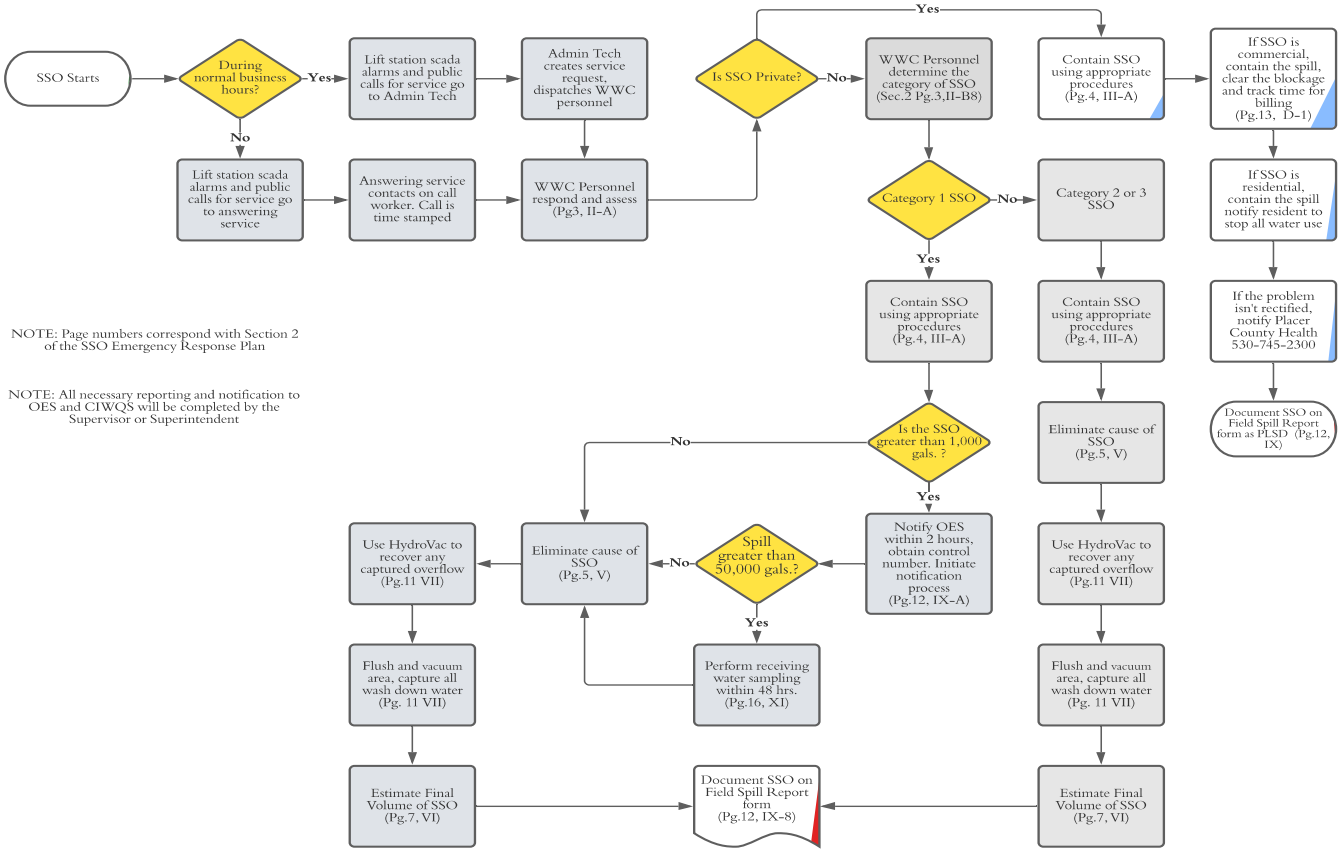


2.4 Chain of Communication Reporting Chart

Office hours for the WWC Division are Monday through Friday from 0630 to 1600, except for holidays. The Administration Technician or service call worker receives all service calls during regular business hours. If received in the office, a service request is created with the caller information, the problem, and contact information. This information is transferred to the service call worker, in which they respond, access the problem, and provide a solution. An answering service, contracted by WWC Division, receives all after-hours calls to gather information and dispatch to the on-call service worker via an assigned mobile phone. The on-call service worker is available 24 hours per day and is furnished with a service van and equipment to facilitate a timely response. A response time goal is 20 minutes during business hours and 40 minutes for after-hour service calls. The van is equipped with containment devices to manage lower lateral blockages and spills, and to prevent spills from entering a storm drain inlet or channel. Should the situation require additional resources, the on-call worker would contact crew members from the call-out sheet for assistance.

Figure 4, included in the division's SERP, summarizes the chain of communication when receiving calls for service.

Figure 4 – Spill Chain of Communication



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3 Legal Authority

Att. D-3 The plan must include copies or an electronic link to the Enrollee's current sewer system use ordinances, service agreements and/or other legally binding procedures to demonstrate the Enrollee possesses the necessary legal authority to: (1).Prevent illicit discharges into its sanitary sewer system from inflow and infiltration (I&I); unauthorized stormwater; chemical dumping; unauthorized debris; roots; fats, oils, and grease; and trash, including rags and other debris that may cause blockages; (2). Collaborate with storm sewer agencies to coordinate emergency spill responses, ensure access to storm sewer systems during spill events, and prevent unintentional cross-connections of sanitary sewer infrastructure to storm sewer infrastructure; (3). Require that sewer system components and connections be properly designed and constructed; (4).Ensure access for maintenance, inspection, and/or repairs for portions of the service lateral owned and/or operated by the Enrollee; (5). Enforce any violation of its sewer ordinances, service agreements, or other legally binding procedures; and (6). Obtain easement accessibility agreements for locations requiring sewer system operations and maintenance, as applicable.

The Roseville Municipal Code (RMC) found here, Roseville Municipal Code, provides specific legal authority for the WWC division to operate and manage the wastewater collection system. The City's current legal authority is established through existing codes, regulations, ordinances, and permitting procedures that allows the City to require and enforce various measures for ensuring the proper and efficient operation, management, and maintenance of the City's wastewater collection system. Table 2 indicates the code section for the legal authority required.

Table 2 – RMC Codes for Legal Authority

Ability to prevent illicit discharges into the wastewater system	14.20.040	Definition of illicit discharge
	14.26.010	Purpose and policy of industrial wastewater
Ability to require all sewers and connections are properly designed and constructed	14.12.040	Building and sewer connection requirements
	14.14.030	FOG discharge permit required
	14.14.070	Prohibitions for FSE construction
Ensure proper access to portions of the lateral owned by the city	Charter Article X Sec 10.01	General powers respecting utilities
	14.14.290	Right of entry
Ability to limit the discharge of FOG	14.12.050	Use of public sewers
	14.14.010	Purpose
	14.14.030	FOG discharge permit required
	14.14.040	Fog discharge limitation

	14.14.070	Prohibitions
	14.14.120	Interceptor maintenance requirements
Ability to enforce all sewer ordinances	14.12.060	Sewer use- enforcement authority
	14.14.330	FOG – determination of non-compliance
	14.14.350	FOG- Permit suspension or revocation
	14.14.360	FOG- penalties and violations

3.1 Industrial Pretreatment Program

In addition to the RMC, the City of Roseville Industrial Waste Division (IWD) oversees and administers the Pretreatment Program Enforcement Response Plan (ERP). This plan outlines operational procedures intended to ensure that the Significant Industrial Users (SIUs), and the small Commercial/Industrial dischargers to the sanitary sewer system are appropriately permitted and monitored. To assure compliance by these dischargers, the IWD implements enforcement procedures specified by the U.S. Environmental Protection Agency (EPA) in accordance with 40CFR 403.5 (f) (5). The ERP specifies criteria by which IWD personnel determine the enforcement action most appropriate to the nature of the violation. The Pretreatment Enforcement Response Plan is attached to the SSMP as Appendix 3-1.

3.2 Design and Construction Standards

The City of Roseville's design and construction standards regulate and guide the design and preparation of plans and construction of the City of Roseville's sanitary sewer systems and related public improvements, and set guidelines for all private works, which involve related improvements. The City's Design and Construction standards are located on their website at: Roseville Design and Construction Standards

3.3 Sewer Access Authority

The RMC section 10.01 states the City shall possess all powers granted to cities by state law to construct, condemn, purchase, acquire, add to, maintain, and operate, either within or outside its corporate limits, including, but not by way of limitation, public utilities for supplying water, light, heat, power, gas, transportation, sewage and refuse collections, treatment and disposal services, or any of them, to the municipality and the inhabitants thereof; Each city-owned utility shall be financially self-sufficient, and shall fully compensate the city general fund for all goods, services, real property and rights to use or operate on or in city-owned real property.

3.4 Fats Oils and Grease

The City of Roseville limits the discharge of Fats, Oils and Grease from Food Service Establishments through Section 14.14 of the RMC. Section 14.14 was adopted to facilitate the maximum beneficial use of the city's sewer services and facilities while preventing blockages of the sewer lines resulting from discharges of fats, oils, and grease (FOG) into the public sewer, and to specify appropriate FOG discharge requirements for food service establishments (FSEs). Section 14.14 establishes conditions for permitting, inspection, pumping and recordkeeping, and right of entry for inspection. The City's FOG ordinance is located at FOG Ordinance

3.5 Regulation of Sewer Use – Enforcement

Sections 14.12.060 and 14.14.360 (FOG Ordinance) of the RMC prescribes the enforcement actions available to the city when violations of the code are discovered. Violation of the RMC may be charged as either an infraction or misdemeanor upon discretion of the City Attorney.

3.6 Inter-Agency and Satellite Agreements

The City of Roseville operates two Regional Wastewater Treatment Facilities where sewer from satellite systems flow into City wastewater mains. As such, the Environmental Utilities Department maintains the following agreements to address regional and satellite systems.

3.6.1 Joint Exercise of Powers Agreement South Placer Wastewater Authority

The purpose for this agreement is to provide for planning, acquisition, financing, ownership, construction, and operation of Regional Wastewater Facilities. The participants in the SPWA create a public entity which is separate from the City, the District, and the County. The SPWA services the areas the City of Roseville, Placer County and South Placer Municipal Utility District. The agreement is attached to the SSMP as Appendix 3-2.

3.6.2 South Placer Wastewater Facilities Operation and Use Agreement

The agreement known as the Joint Powers Agreement, supersedes all other previous agreements. The new agreement indicates the City of Roseville shall operate and maintain Regional Wastewater Facilities for the mutual benefit of and provide wastewater treatment services to the areas depicted on Exhibit A, areas which are within the jurisdictional boundaries of the City, District and County, so long as the District and County pay the City their proportionate shares. This agreement is attached to the SSMP as Appendix 3-3

3.6.3 Contract and Operating Agreement between SRCSD and SASD

This agreement between the City of Roseville, Sacramento Area Sewer District and Sacramento Regional County Sanitation District defines points where flows enter and exit each other's area of service and points of demarcation for City and County assets. In addition, the agreement is to meet regulatory requirements and provide a basis for SASD, SRCSD and the City of Roseville to work together to provide service to users, establish operation and maintenance responsibilities and outline rates and fees. This agreement is attached to the SSMP as Appendix 3-4

3.7 Legal Authority Documents

Refer to Appendices 3-1 through 3-4 for Legal Authority Documents:

Appendix 3-1 Pretreatment Program Enforcement Response Plan – TOC
Appendix 3-2 Joint Exercise of Powers Agreement for the South Placer Wastewater Authority
Appendix 3-3 Agreement Regarding the Operation and Use of the South Placer Regional WW Facilities
Appendix 3-4 Wastewater Service Agreement by Contract & Operating Agreement Between SASD, SRCSD and City of Roseville.

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4 Operation and Maintenance

Att. D - 4	The plan must include the items listed below that are appropriate and applicable to the Enrollee's system.(1). An up to date map(s) of the sanitary sewer system, and procedures for maintaining and providing State and regional Board staff access to the maps. The maps must show gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities within the sewer system service area boundaries. (2). A scheduling system and data collection system for preventative operation and maintenance activities conducted by staff and contractors. The scheduling system must include: Inspection and maintenance activities; Higher frequency inspections and maintenance of known problem areas, including areas with tree root problems; Regular visual and closed circuit television (CCTV) inspections of manholes and sewer pipes. The data collection system must document data from system inspection and maintenance activities, including system areas/components prone to root intrusion potentially resulting in system backup and/or failure. (3). In house and external training provided on a regular basis for sanitary sewer system operations and maintenance staff and contractors. The training must cover: The requirements of this order; The enrollee's Spill Emergency Response Plan procedures and practice drills; Skilled estimation of spill volume for field operators; and Electronic CIWQS reporting procedures for staff submitting data. (4). An inventory of sewer system equipment, including the identification of critical replacement and spare parts.

The Operation and Maintenance (O&M) Program is essential to fulfill the city's duty to serve the residents and businesses of the City of Roseville. It is also the most significant part of the city's effort to eliminate the occurrence of SSOs and stay compliant with the general order.
The city's O&M program is comprised of these elements:

1. Collection System Mapping
2. Preventive Maintenance
3. Rehabilitation and Replacement
4. Staff Training and Certification
5. Equipment And Replacement Parts Inventories, Including Critical Replacement Parts

4.1 Collection System Maps and Information

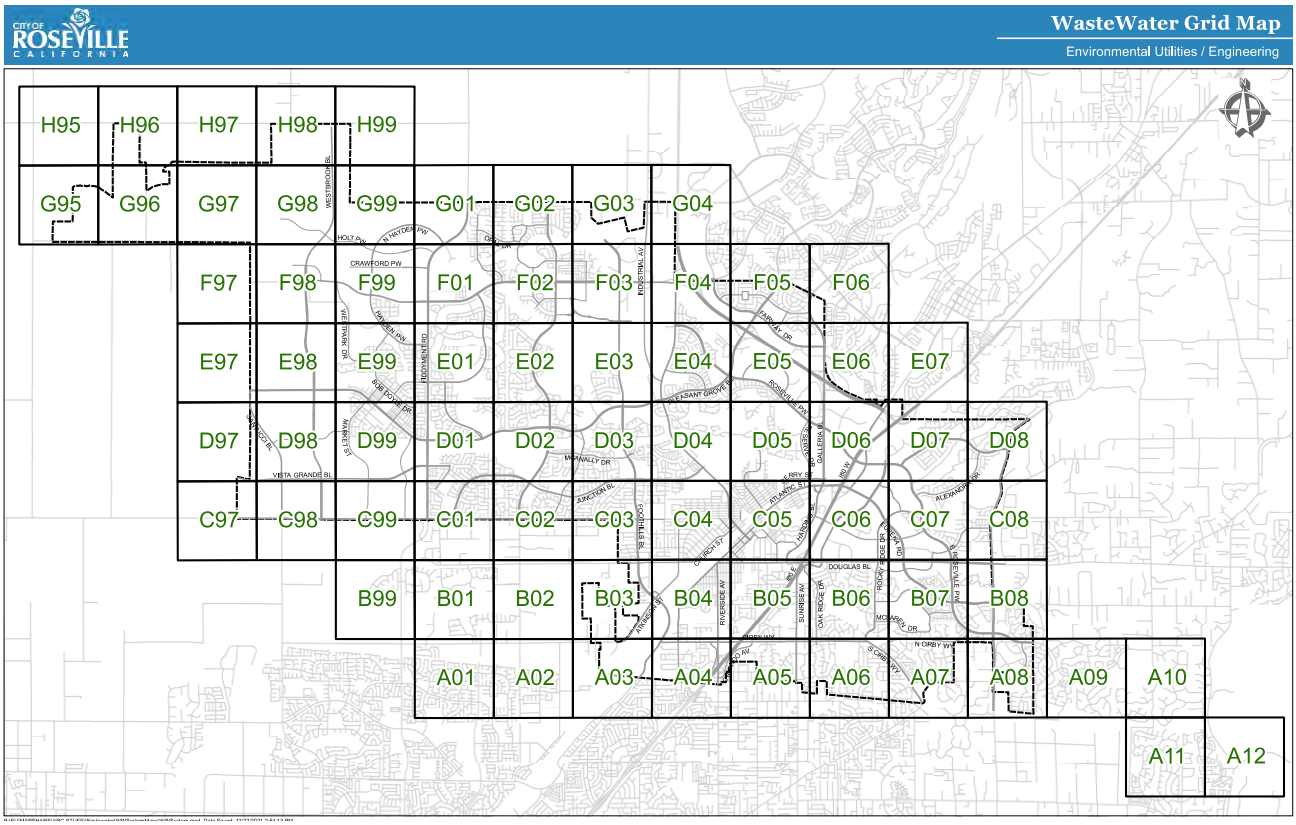
The WWC Division maintains an up-to-date electronic map of the wastewater collection system as required by Section D.13(iv)(a) of the Order. The City uses ESRI GIS software to map all utility-related data. The GIS map platform, referred to as Roseville GeoViewer, shows all gravity main segments with the direction of flow, manhole information, pumping facilities, pressure pipes, and valves. In addition, the GeoViewer allows users to turn on/off different layers and base maps to display the information they need. Additional map layers available in GeoViewer include:

- Hot Spot Locations
- CIPP Lined Mainline Segments
- Food Service Establishments and Grease Removal Devices
- Waterways
- Roadways

- City Boundaries
- Stormwater System

Figure 5 shows the GIS map system, and how it incorporates each of the sewer shed basins within the City of Roseville's jurisdictional boundaries.

Figure 5 – Wastewater Grid Map



4.1.1 Map Update Policy

This policy aims to provide uniformity in identifying, verifying, documenting, and tracking the changes to the sewer mapping system. In addition, this document will describe the process in which the mapping system shall be updated.

A significant effort is placed upon maintaining a very complete, accurate, and up-to-date wastewater collection map which is an essential component for the proper operation and maintenance of a wastewater collection system. Maps are updated as new sub-divisions are accepted or when field crews repair, rehabilitate or replace components of the system that require updating the maps. A mapping update policy has been developed to address procedures that ensure mapping updates or revisions are correct and completed in GIS.

CCTV crews identify discrepancies between existing system maps and real time field data. The operator shall note the discrepancies and submit changes to the WWC Supervisor when differences are identified.
Construction and Maintenance crews identify any new infrastructure added to the system. Information required for CMMS Map Change will be directed to the WWC Supervisor. The information required for Mains, Laterals, and SMH's are:

- Mains - Grid map area, the distance between SMH's and pipe size, pipe material
- Laterals –Grid map area, C/O location, length, depth, pipe size, material, and depth.
- SMH – Grid map area, depth, barrel diameter, access cover size and material, number of and pipe size of inlets and outlets, barrel lining/coating, drops Y/N.

The Supervisor will create a work order in Maximo listing the Classification as "Map Change." Then select "Log" and "Add Row" to add a description of the asset that needs to be added/changed. In the Log section of the work order, the Supervisor will list all the details gathered from the field and attach a map if required. Do not change the status of the work order in Maximo CMMS.
The GIS group automatically receives all map change requests. Once all map changes are updated, the Supervisor will receive an email informing them of the completed work order, at which time the GIS group closes the work order.

4.2 Operation and Maintenance

The WWC Division's O&M program focuses on eliminating sewer backups and overflows, increasing the lifespan of the infrastructure, and bringing uninterrupted service to the residents of Roseville. WWC division provides service to 146,875 customers. Within the 43.05 square miles of Roseville, the City inspects and maintains 17 lift stations, approximately 578 miles of sewer mains ranging from 6- to 84- inch diameter, and 293 miles of lower laterals. **Table 3** below represents a few performance indicators the WWC division tracks and measures their performance against.

Table 3 – Operation and Maintenance Activities

	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24
Total Miles of Pipe Cleaned	**283.12**	**226.1**	**235.9**	**296.14**	**288.73**	**301.36**	**295.57**
Total Miles of Pipe CCTV Inspected	**64.1**	**119.9**	**94.65**	**94.65**	**50.05**	**51.59**	**53.53**
Number of SSOs Caused by Hot Spots	**0**	**0**	**0**	**0**	**0**	**1**	**1**
Miles of Pipe Rehabilitated or Repaired	**1.49**	**.5**	**.54**	**3.4**	**3.83**	**.29**	**4.43**
Total Number of Spills Main and Lateral	**25**	**31**	**32**	**51**	**32**	**30**	**27**

4.2.1 Preventative Maintenance Program

The WWC Division of the Environmental Utilities Department is responsible for the City's sewer system and implements preventative and corrective maintenance approaches to operate and maintain the system efficiently. The division's PM program involves cleaning sewers on a recurring schedule, including regular CCTV inspection to determine the efficiency of those PM activities. The GIS system divides the city into grids, enabling targeted PM scheduling for an individual grid based on history, CCTV inspection, and infrastructure's age. The WWC division schedules cleaning as often as every three months or up to ten years, with the age and condition of the pipe being key factors. The scheduled maintenance projects that are identified in Maximo are included in ***Appendix 4-1.***

Corrective maintenance projects and work orders are a concerted effort utilizing the PM and CCTV inspection programs. Information gathered during routine cleaning, repair work and inspection, generates the development of repair and replacement work orders. The following paragraphs describe the City's current operation and maintenance procedures for maintaining the wastewater collection system.

4.2.1.1 PM Cleaning Program

The WWC Division is equipped with three combination sewer cleaners to keep the sewer system operating efficiently and minimize line stoppages and calls for service. Sewer cleaning using hydraulic or mechanical methods performed on a routine basis helps remove accumulated debris in the pipe such as sand, silt, grease, roots, and rocks. Scheduled maintenance projects have been developed for each map grid based on historical data and field crew input.

4.2.1.2 Hot Spot Cleaning

In addition to scheduled maintenance, the WWC division aggressively cleans identified problem areas, known as hot spots. This list of hot spots has been compiled based on historical data, field crew observations, and CCTV condition assessments. These mainline segments tend to have more frequent backups due to sluggish flows, poor grade, and sags, The frequency of Hot Spot cleaning ranges from 1-6 months, depending on history and CCTV inspection data. The WWC division strives to reduce and eliminate these hot spot areas during CIP projects or rehabilitation projects performed by City crews. Currently, the WWC division has 276 segments identified as Hot Spots.

4.2.1.3 Electroscan Inspection

To identify and quantify locations of I&I entering the sewer system, the WWC division invested in Electroscan Technology, adding the equipment to a newer CCTV inspection truck. Using Electroscan, a probe is pulled through the mainline, and electricity is measured and used to identify any defect where the pipe may leak. This enables crews to pinpoint CCTV inspection of the pipe section before scheduling repair work to correct the deficiency. Electroscan has also proved valuable as a QA/QC tool for accepting Cured-In Place-Pipe rehabilitation projects. The city performed pre-post Electroscan inspections on sewer mains rehabilitated with CIPP technology. This pilot study proved the effectiveness of the Electroscan Technology in locating defects CCTV inspection didn't identify.

4.2.1.4 CCTV Inspection Program

The WWC Division operates three CCTV vans to inspect the wastewater collection system. CCTV operators utilize NASSCO's PACP coding format when inspecting sewer mains and laterals. All observations are coded and captured in the Granite Net Software system and are archived in a database for access. CCTV inspection crews also perform continual condition assessment inspections on existing infrastructure. For example, CCTV crews inspect mainline segments and lower laterals, looking for deficiencies to minimize problems within the collection system. In addition, sewer inspections identify unwanted connections and sources of I&I into the wastewater system. Finally, CCTV crews inspect new subdivisions or commercial projects before being accepted into the city and the time of warranty acceptance. These inspections are crucial to receiving infrastructure installed to City design and construction standards. **Figure 6** includes a sample CCTV report from GraniteNet inspection software.

Figure 6 – CCTV Inspection

GraniteNet
ASSET INSPECTION / DECISION SUPPORT SOFTWARE

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Main Inspections and Map

Mainline ID:	City:	Address:	Project name:
SND-C05-389/SMH-C05-163	**ROSEVILLE**	**JEFFERSON ST.**	**Maintenance**
Upstream node:	Downstream node:	Start date/time:	End date/time:
SND-C05-389	**SMH-C05-163**	**9/22/2020 7:34 AM**	**9/22/2020 7:55 AM**
Pipe shape:	Pipe material:	Pipe height:	Pipe width:
Circular	**Clay**	**6.0 in.**	
Asset length:	Surveyed distance:	Reason:	Work order no.:
60.4 ft.	**72.9 ft.**	**Problem**	**1072619**
Operator:	Weather:	Status:	
E05488	**Dry**	**Completed**	
Comments:			

Observations

Distance	Dir.	Length	From/To	Code	Modifier/Severity	Rating
0.0 ft.	U	18.0 ft.	/	Sag	Medium	10
4.1 ft.	U		11 / 1	Broken	Soil Visible - Large	75
4.1 ft.	U		/	Vermin	Cockroach	
19.9 ft.	U		12 /	Broken	Hole	5
26.5 ft.	U		12 / 5	Root-in-Joint	Light	5
40.0 ft.	U		11 /	Lateral	Capped	
46.6 ft.	U		6 / 12	Joint Offset	Small	5
47.1 ft.	U	25.8 ft.	/	Sag	Light	5
50.8 ft.	U		7 / 1	Joint Offset	Small	5
58.1 ft.	U		12 /	Lateral Connection Problem	Connection Protruding	25
66.9 ft.	U		11 / 1	Crack	Multiple - Wider	15
68.6 ft.	U		2 /	Lateral	Capped	0
70.6 ft.	U		11 /	Lateral	Capped	0
72.8 ft.	U		12 /	Cleanout		5
72.9 ft.	U		/	End of Pipe		5

4.2.1.5 Root Control Program

The WWC Division has an effective chemical root control program, using Vaporooter products to limit or eliminate root growth in the City-owned portion of the lower lateral. In addition, the WWC division has two qualified applicators licenses (QAL) that allow the division to chemically treat laterals for a more effective root control program rather than contracting out for this service. This program has dramatically reduced the division's exposure to back injuries resulting from loading and unloading a gas-powered eel from the truck each time. It also lessens the element of crush injuries and trip and fall hazards from eel rods across the ground. In addition, chemical root control has successfully reduced the maintenance time per lateral, which is evident in the reduction of lower lateral backups and overflows.

4.2.1.6 Lift Station Inspection and Maintenance

The city currently has 17 neighborhood lift stations throughout its service area. All 17 stations are equipped with a duplex or triplex pumping system, with the lead/lag pump cycled based on pumping hours. Power outages happen very infrequently. However, all new lift stations and four of the currently active seventeen lift stations are equipped with a 4-hour emergency overflow storage basin. WWC crews inspect the stations monthly, cycle pumps through a pull-down sequence, test floats for operation, and record the condition and any deficiencies at the station. In addition, all Lift Stations are equipped with a SCADA system, which the WWTP operators monitor 24 hours per day. Besides inspections, City crews perform wet-well cleaning and de-ragging of pumps every six months to eliminate pump failures and potential odor complaints.

4.2.1.7 Easement Maintenance Program

To enhance access to hard-to-reach areas while permanent easement access solutions are developed, the City has acquired a sewer easement machine, which extends the capabilities of its current hydro-vac equipment. Additionally, the City owns and operates essential equipment, including a flail mower and box scraper attachments for its skip loader, to support easement maintenance. Once fully developed, the Easement Maintenance Program will include scheduled inspections and maintenance, vegetation management, including the use of chemical weed control to ensure unobstructed access and debris removal to ensure clear paths for crews and equipment. Regular inspections will help identify issues such as encroachments, erosion, or obstructions that could impact sewer lines or manholes, while vegetation management will focus on trimming or removing trees and plants that may damage infrastructure or hinder maintenance activities.

4.2.2 Corrective Maintenance Program

WWC construction crews perform all repair work to the existing infrastructure. Work orders and projects are developed from information found during maintenance activities, inspections based on calls for service and condition assessment inspection findings. The Corrective Maintenance programs are defined below.

4.2.3 Infrastructure Repair

The WWC Division performs routine, emergency, and complex repairs, and replacements to its existing infrastructure. This work includes sewer main installation and repair, sewer manhole installation, and lateral repair and replacements. As a result, city crews have undertaken large projects, installing new mainline segments that have eliminated hot spots, replaced aging infrastructure, and upsized mains to provide additional system capacity. In addition, the WWC Construction crew has performed contractor caliber work at the City's Regional Wastewater Treatment Plant at significant cost savings for the city.

4.2.3.1 Infill Projects

Depending on their schedule and workload, the WWC division construction crew holds the first choice for any proposed connection to existing infrastructure. If city crews are busy, contractors will be allowed to perform the work under the direction of a city inspector. However, if city crews complete the work, the contractor will schedule the work through the WWC Supervisor. City crews will complete the work on a time and material basis for the contractor.

4.2.3.2 CIPP Lateral Lining

The vast majority of the city's spills have occurred in the lower lateral, caused by breaks in the VCP and root intrusion. As a result, the city invested in the trenchless technology Cured in Place Pipe (CIPP), purchasing an LMK lateral lining trailer. Lateral lining through an existing cleanout makes it possible to repair and reinstate the pipe integrity without disturbing landscape, sidewalks, roadways and with minimal disruption of service to the resident. CIPP essentially creates a pipe
within a pipe and eliminates further root intrusion and sewer overflows. During condition assessment, lower laterals are CCTV inspected, and work orders are created for those identified as viable for CIPP lining. These work orders are then prioritized based on history and the number of calls for service.

4.2.3.3 Cleanout Installation Program

The WWC Division invests many resources in preventing backups that potentially become spills. Since the City owns the lower portion of the lateral, access to the lateral through a cleanout is imperative in assessing its condition. The WWC Division has identified homes and businesses without a city cleanout and developed projects to install cleanouts at each service location. One installed, the lower lateral is inspected and if necessary, additional work orders for maintenance or repair are created. Currently, the city installs over 100 cleanouts per year on this project.

4.2.3.4 Wet Weather Protocol

The City of Roseville Wastewater Division has prepared the sewer infrastructure in off-site areas and creek crossings to withstand flooding during severe rain events. The division has identified and grouped all sewer manholes along creeks into an Off-Site Sewer Manhole Inspection project. All manholes within the project have concrete collars poured to deflect any floating debris should creek levels leave their banks. In addition, wastewater crews have secured the manholes with either bolt-down covers or drilled and bolted tabs to ensure the covers from moving. Additionally, the division has installed all creek crossings per the City standard detail SS-9, installed on 8" I-beams driven a minimum of 30' into bedrock. Ductile iron pipe crossings are then attached with ½" x 3" wide straps welded to ½" thick plate.

Due to the extensive preparation of the system, the wastewater division is confident during a significant rain event, the system will be undamaged. However, after creek levels recede, the wastewater division visually inspects all infrastructure to ensure no damage has occurred. If Wastewater crews identify any areas of concern, repairs are made quickly (Given a higher priority) to prepare for future rain and flooding events.

Before every significant rain event, the management staff identifies any areas of concern within the system and will establish a schedule for additional inspection should the need arise. In an emergency, equipment and personnel are readily available to assist the on-call service worker should the need arise.

4.2.3.5 Rehabilitation and Replacement

Over the past fifteen years, experience has shown that identifying and prioritizing areas and sewer segments for assessment and rehabilitation is complex. It requires the availability of tremendous amounts of data, expertise in applying PACP coding, and professional judgment. During this time, the WWC Division has significantly advanced its knowledge of the collection system and its sewer assessment and rehabilitation approach. The City has recognized that CCTV inspection is the best method for identifying and prioritizing problematic areas. As such, the City continuously inspects pipelines and utilizes NASSCO's PACP coding standard to develop a list of assets that need rehabilitation. When defects are identified, the City evaluates the risk of failure and assigns a priority ranking to each asset.

Prioritizing those assets relies on several factors, including:

- Severity and extent of the defects (PACP Score).
- Maintenance records and SSO occurrences.
- Hydraulic capacity needs and projection.
- The estimated remaining useful life of the infrastructure.

This detail-oriented condition assessment approach enables the division to plan and design CIP projects to rehabilitate sewer infrastructure in a planned and organized manner. The supervisor will review the maintenance history of the main, any spill history and determine if the segment should be rehabilitated or continue established preventative maintenance. The main will be added an asset group already created in Maximo CMMS if conditions warrant rehabilitation. Based on current condition, history of calls, and field crew observations, the assets are then prioritized for rehabilitation.

Once the asset group is established, the WWC Superintendent will meet with EU Engineering to review the data and create a CIP project for the upcoming fiscal year, based on priorities and estimated cost. This process ensures the projects will be completed timely, reducing the potential occurrence of an SSO.

4.3 Training and Certification

One challenge when defining a training program is an influx of new employees. Entry-level employees with no training are a potential safety liability in the wastewater field. Training for new hires is predominantly on-the-job training, with classroom and online training finishing the remaining required training. As soon as available, new employees are scheduled for Confined Space Entry, Traffic Control &Flagging, and Excavation and Trench Shoring training, the division's most significant safety liabilities.

4.3.1 New Hires

On their first day, a new employee will be issued a task booklet, which defines the necessary skills and training for their position. The new hire and Supervisor will go through the book, discuss how the employee will receive training, and receive sign-off on the tasks. The booklet covers all areas involving the wastewater collection system and is an aid in developing qualified, knowledgeable, and capable employees. When the employee becomes proficient in a task, the SR Utility Maintenance Worker or the crew leader signs and dates the book, verifying they have observed the employee satisfactorily complete the task. The training defined in the task booklet is provided through various methods, mainly on-the-job training, and begins the first day on the job. Finally, at the end of the probationary period, new hires are put through a series of activities to demonstrate their proficiency in all skills learned.

4.3.2 Training and Tracking

Safety training constitutes a significant portion of the training received each year and tracking individual completion of training can be insurmountable. The WWC Division utilizes a computer-based software, Safety Plus Web (SPW), to monitor and track each employee's level of completion. Supervisors can query individual employee training records or the entire division, to see which courses need completion. In addition, SPW provides Competency-Based Training (CBT), requiring employees to pass a test at the end of each presentation, demonstrating their understanding of the training material.

Standard Operating Procedures (SOPs) have been developed for all equipment and procedures within the division to train new employees and provide a refresher for veteran employees. These SOPs are reviewed annually during a safety meeting and revised should there be a process change. Therefore, SOP development and training is an ongoing process.

The WWC division holds weekly safety meetings where supervisors or subject matter experts present safety topics specific to the wastewater collection field. These meetings are interactive with the crews and presenters and are great learning opportunities. In addition, the training course is added to SPW, allowing employees to fulfill the training online if they are absent.

Finally, as new training requirements are developed, they are implemented into SPW to ensure all employees receive the required training throughout the year. **Table 4** lists the required training specific for the WWC division.

Table 4 – Wastewater Collection Required Training

Training Title	Frequency	Delivery
Asbestos Cement Pipe Training Initial and Refresher	Initial – 1X Refresher – Annual	Outside Trainer
Back Safety	Annual	CBT or Tailgate
Backhoe Operator Certification	Refresher – 3 Yrs.	CBT, Classroom, Hands-On
Bloodborne Pathogens Training	Annual	CBT, Classroom
Confined Space Entry-Permit Required	Annual	Outside Trainer CBT, Classroom, Hands-On
Crystalline Silica Standard	Annual	CBT, Classroom
Defensive Driving	Annual	CBT, Classroom
Dry Creek Emergency Action Plan	Annual	CBT, Classroom
Excavation, Trenching and Shoring	Initial Refresher – Annual	Outside Trainer-Initial, CBT, Classroom
Fall Protection Plan Initial and Refresher	Initial – 1X Refresher – 3 Yrs.	CBT, Classroom
Fire Extinguisher Training	Initial – 1X Refresher- Annual	CBT, Classroom
First Aid, AED and CPR Training	Initial Renewal -Annual	Outside Trainer, Classroom
Gas Detector Training	Annual	Outside Trainer, CBT, Classroom
Hazard Communication	Initial Annual Refresher	CBT, Classroom
Hearing Conservation	Annual	CBT, Classroom
Heat Illness Prevention	Annual	CBT, Classroom
Injury and Illness Prevention Plan	Annual	CBT, Classroom
Lock Out Tag Out	Initial	CBT, Classroom
Personal Protective Equipment	Initial	CBT, Classroom
Respiratory Protection Plan	Annual	CBT, Classroom
Spill Emergency Response (SERP)	Annual	CBT, Classroom
Sewer System Management Plan and CIWQS Requirements	Annual	CBT, Classroom
Traffic Control and Flagging	1X Refresher – 3 Yrs.	Outside Trainer
Underground Utility Locating	Annual	CBT, Classroom, Outside Trainer
Violence in the Workplace	Annual	CBT, Classroom

4.3.3 Certification

The CWEA Technical Certification Program provides certification in various wastewater disciplines to promote the knowledge and skills of wastewater professionals. The City requires employees to take and pass the Collection System Operator Grade I test to be eligible for promotion to the Journey Level. The test for the required CWEA certification ensures that employees who hold this certification possess the knowledge, skills, and abilities to perform the collection system operator duties skillfully. In addition, to renew the certificate, the employee must complete 12 hours of continuing education training every two years. Information on CWEA certification can be found on the CWEA Homepage

4.4 Equipment and Critical Spare Parts Inventory

The WWC division owns an assortment of maintenance equipment and vehicles equipped both for routine maintenance and emergency response. This equipment is maintained by the Vehicle Maintenance Division of Central Services. **Table 5** lists the maintenance equipment the WWC division currently owns.

Table 5 – WWC Equipment List

Qty	Equipment	Purpose
3	Mainline and Lateral CCTV Inspection Vans	Inspection
3	Combination Hydro-Jetters	PM, Emergency Response
1	Chain Flail Cutter 8″-20″ diameter cleaning	PM, Emergency Response
1	LMK Lateral Lining Trailer	Repair
2	3 Axle Dump Truck	Emergency Response, Repair
2	Caterpillar 430 Backhoe Loader	Emergency Response, Repair
1	John Deere 210 Skip Loader	PM, Emergency Response, Repair
1	Caterpillar 304 Excavator	Emergency Response, Repair
6	Ford F-550 Crew Truck w/ Service Body; Fully equipped	PM, Emergency Response, Repair
1	Emergency Response Trailer - Trailer includes 1ea. - 2″ centrifugal pump, 1 ea.- 2″ submersible pump, 20′ of suction hose and 200′ of discharge hose. Equipped with pipe plugs 4″-15″, dry sweep, air compressor, generator, spill berms and required PPE.	Emergency Response, Repair
1	8-inch Trailer mounted solids handling pump, cam lock	Emergency Response, Repair
1	6-inch Trailer mounted trash pump, cam lock fittings	Emergency Response, Repair
1	4-inch Trailer mounted trash pump, cam lock fittings	Emergency Response, Repair
60′	8-inch suction hose, cam lock fittings	Emergency Response, Repair
500′	8-inch discharge hose, cam lock fittings	Emergency Response, Repair
165′	6-inch suction hose, cam lock fittings	Emergency Response, Repair
400′	6-inch discharge hose, cam lock fittings	Emergency Response, Repair
40′	4-inch suction hose, cam lock fittings	Emergency Response, Repair
200′	4-inch discharge hose, cam lock fittings	Emergency Response, Repair
3	6′-10″ pass through air plug, cam lock fitting	Emergency Response, Repair
1	Lansas pipe plug, 24′ – 48″	Emergency Response, Repair

1	Lansas pipe plug, 26″ – 60″	Emergency Response, Repair
1	Lansas pipe plug, 42″ – 78″	Emergency Response, Repair
3	10″-16″ pass through air plug, cam lock fitting	Emergency Response, Repair
3	15″-21″ pas through air plug, cam lock fitting	Emergency Response, Repair
2	10″ pass through plug, threaded end	Emergency Response, Repair
1	10′ x 9′ aluminum shore box	Emergency Response, Repair
2	10′ x 4′ aluminum shore box	Emergency Response, Repair
2	End Shores 24″ to 42″	Emergency Response, Repair
5	22″-36″ Speed Shore 5′ length	Emergency Response, Repair
4	28″-45″ Speed Shore 7′ length	Emergency Response, Repair
6	22″-36″ Speed Shore 7′ length	Emergency Response, Repair
6	48″ x 96″ Fin-form Plywood	Emergency Response, Repair

4.5 Critical Spare Parts

Wastewater Collection is a division of the Environmental Utilities Department, which encompasses Regional Wastewater Treatment Plants, Mechanical Maintenance, Water Distribution, Technical Services Engineering, and Solid Waste Division. The WWC Division operates, inspects and maintains the lift stations within the boundaries of the City of Roseville, however, all electrical and mechanical maintenance tasks are performed by the PM Technicians from Mechanical Maintenance Division. The Materials Technician maintains the WWC Division's inventory list and re-order levels at Dry Creek WWTP. The list of critical spare parts is in **Table 6.**

Table 6 – WWC Critical Spare Parts

EU Name	PLC Model	Pumps	Fuses	Level Control	Comm Connection	HMI	Heater/Overloads
WC06	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	Fiber PA-200	Optimate OP-620	Installed/Warehouse
WC07	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	Optimate OP-620	Installed/Warehouse
WC08	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC09	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC11	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC13	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC14	Modicon M340	N/A	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	SE Maguells HMISTU855	N/A

WC15	Modicon M340	N/A	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	SE Maguells HMISTU855	N/A
WC16	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC17	Koyo D2-250-1	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC19	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC22	Koyo D2-250-1	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC23	Modicon M340	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	Proxim Radio to PG. Future Fiber PA-220r	SE Maguells HMISTU855	Installed/Warehouse
WC24	Koyo D2-250	2 + 1-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC25	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	Optimate OP-620	Installed/Warehouse
WC26	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC28	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse

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5 Design and Performance Provisions

Att. D-5	Updated design criteria and construction standards and specifications, for the construction, installation, repair, and rehabilitation of existing and proposed system infrastructure components, including but not limited to pipelines, pump stations, and other system appurtenances.(b) Procedures and standards for inspection and testing of newly constructed, newly installed, repaired, and rehabilitated system pipelines, pumps, and other equipment and appurtenances.

5.1 Sanitary Sewer Design Standards

The purpose of the City Design Standards is to provide direction in the application of improvements that are to be dedicated to the public and accepted by the City for maintenance or operation and to provide for joint development of those facilities to be used by and for the protection of the public. This includes certain private works and improvements to be installed within existing City rights-of-way and easements. Whereas these Standards intend to govern all new construction, City staff shall interpret and apply the Standards in a manner that achieves their intent while encouraging and enabling the redevelopment of infill and vacant parcels, especially within the City's Redevelopment Project Area. These Standards shall apply to, regulate, and guide the preparation of traffic impact studies and the design and preparation of plans for construction of streets, highways, alleys, drainage, sewerage, traffic signals, site access, water supply facilities and related public improvements, and shall set guidelines for all private works which involve drainage, grading, trees, and related improvements. The City's sewer Design Standards are located on the City's website at Sewer Design Standards

5.1.1 Sanitary Sewer Construction Standards

The purpose of the City Construction Standards is to provide minimum standards to be applied to improvements which are to be dedicated to the public and accepted by the city for maintenance or operation and certain private works, as well as improvements to be installed within existing rights-of-way and easements. This is necessary to provide for coordinated development of required facilities to be used by and for the protection of the public. These Construction Standards shall apply to, regulate, and guide construction of streets, highways, alleys, drainage, sewerage, traffic signals, site access, water supply facilities and related public improvements, and shall set guidelines for all private works which involve drainage, grading, trees and related improvements. The City's sewer Construction Standards are located on the City's website at Sewer Construction Standards

All improvements within the City rights-of-way shall be installed in accordance with the approved improvement plans and specifications, the City of Roseville Design Standards, the City of Roseville Construction Standards, and the State of California Department of Transportation Specifications.

5.1.2 Comprehensive Response to Climate Impact

In response to the State Water Board adopted Resolution 2017-0012, titled Comprehensive Response to Climate Change, the City of Roseville Wastewater Collection Division has taken the steps to reduce its carbon footprint by requiring the use of vitrified clay pipe over PVC pipe in all sewer infrastructure projects. The natural materials, minimal processing, and durability of vitrified clay pipes make them have a lower carbon footprint compared to other types of pipes. Vitrified clay pipe, made from natural and abundant materials like clay and water, emit significantly fewer greenhouse gases during production compared to PVC, which relies on fossil fuel-based materials and energy-intensive chemical processes. The production of vitrified clay pipe, on average, results in the emission of around 250 kg of CO_2 per ton. In contrast, manufacturing the same amount of PVC pipe can produce over 1,900 kg of CO_2, which is nearly 8 times higher in emissions. Thus, the City of Roseville makes an environmentally conscious decision to require vitrified clay pipe. This choice not only decreases greenhouse gas emissions but also offers many advantages, such as remarkable durability, recyclability, and minimal environmental impact when the pipe reaches the end of its lifecycle. The City of Roseville has showed its dedication to sustainable development and climate-conscious planning by requiring the use of Vitrified Clay Pipe instead of PVC.

The City has developed a project for easement mainline condition assessment to evaluate system accessibility and identify critical areas based on condition and environmental impact in case of a blockage or spill. These areas are offsite and are subject to flooding and bank erosion, therefore the city's efforts here will prevent environmental impacts from spills should they occur. The project will provide a comprehensive understanding of the system's condition, recommend improvements for access to the offsite segments, and prioritize areas for action with a ranking system from 1 to 10, guiding the City's efforts to address the most critical issues.

5.2 Sewer System Construction and Performance Testing

Section 91-12 of the City's Sanitary Sewer Construction standards defines the criteria for testing of installed sewer improvements. Sewer mains, services, manholes and appurtenances shall be tested by the following procedures.

5.2.1 Testing Of Installed Improvements

A. Sewer Mains and Services – Public and private sewer mains and services shall be air-tested per ASTM C828 by the Contractor and the Environmental Utilities Department shall provide closed circuit TV inspection, after installation of the joint trench utility crossings and subgrade elevations have been met. Additionally, pipeline segments beneath road bases to be lime- treated shall be tested before and after the lime treatment process.
B. Air Pressure Test – Sewer mains and laterals shall be pressure tested in accordance with the National Clay Pipe Institute recommended guidelines with the following amendment:

1. The minimum test time shall be 60 seconds. The section of a sewer being tested must be pressurized to 3.5 psi, and during the test time must hold 2.5 psi or greater, or the section has failed.
2. For mains installed in an area where the water table is higher than the pipe, the test pressure shall be increased 0.5 PSI per foot of water over the pipe.
3. The test gauge shall be liquid-filled, capable of testing up to 15 PSI, and graduated to 1/10 PSI.

C. TV Inspection – TV inspection of sewer mains and services shall be performed by the Environmental Utilities Department, Wastewater Division. Costs for said inspection shall be borne by the Contractor. Preliminary inspections may be performed by outside contractors but shall not be accepted by the Environmental Utilities Department as an official record.

1. The sewer system shall be completely cleaned by an approved method prior to TV inspection. The sewer system shall be rejected if any of the following conditions exist:
    a. For main lines 12 inches and smaller - standing water or sags greater than 1⁄2 inch in depth at acceptance or greater than 1 inch at warranty.
    b. For main lines exceeding 12 inches - standing water or sags greater than 3⁄4 of an inch in depth at acceptance and greater than 1 1⁄2 inches at warranty.
    c. Standing water in services.
    d. Offset joints.
    e. Joint separations greater than 1⁄2 inch wide.
    f. Damaged pipe.

D. Inspection Criteria for Coated Ductile Iron Pipe – All ductile iron sewer will have the following additional inspection requirements:

1. The condition of the barrel section of pipe as well as 360◦ at each joint shall be recorded to a DVD or portable drive. Once completed, and the inspection demonstrates the pipe meets the City's construction standards, the contractor may proceed with the backfill of the trench. The Contractor shall provide the DVD and a map of the section inspected, to the Wastewater Collection Division for review prior to the City's acceptance inspection.
2. Upon finding any deficiency in the pipe which does not meet the design and construction standards of the City of Roseville, it is strongly encouraged that the contractor makes the necessary corrections at that time. If deficiencies aren't corrected City forces at time of acceptance CCTV will identify these deficiencies and require the contractor to dig and replace the pipe sections; there will be no exceptions.
3. The observation data on the DVD provided to the City shall include the following:
    a. City wide job number.
    b. Encroachment permit number.
    c. Project name.
    d. Location (street name)
    e. Manhole numbers (based on approved plan set or city asset numbers if applicable).
    f. Direction of inspection (upstream or downstream).
    g. Date of inspection.

4. The speed of travel shall be slow enough to inspect each pipe joint, wye connection, coating integrity, and potential sags. Camera speed should travel at a rate of no more than 30 feet per minute. The camera speed shall be steady and slow enough to record features and defects.

E. Manholes – Sewer manholes shall pass a vacuum test consisting of the following criteria and procedures:

1. The test shall be performed after assembly of the manhole and installation of the pipe entering or exiting the manhole, but prior to backfilling. The Contractor shall perform the test and supply all test equipment. The Development Services Inspector shall witness the test results.
2. Lift holes shall be filled with non-shrink grout prior to testing.
3. Pipe entering and exiting the manhole shall be plugged. The plug shall be places on the flex joint outside of the manhole base. Securely brace the plugs to prevent them from being drawn into the manhole. Unused channels shall be permanently plugged with a plastic or clay stopper.
4. A vacuum of 10 inches of mercury shall be drawn to start the test. The amount of time required for the vacuum to drop to 9 inches shall be measured. The manhole will pass the test if the amount of elapsed time is greater than 60 seconds for a 48-inch manhole, 75 seconds for a 60-inch manhole, 90 seconds for a 72-inch manhole and 120 seconds for an 84-inch manhole. A liquid-filled vacuum gauge shall be used for testing. All detectable leaks shall be repaired with non- shrink grout while the vacuum is drawn. No mortar shall be applied to the inside of the manhole until the vacuum test has passed.
5. If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout while the vacuum is still being drawn. Retesting shall proceed until elapsed times are satisfactory.
6. After passing the vacuum test, all joints shall then be mortared, inside and out. Outside mortared joints shall be allowed to dry 24 hours or as approved by the Development Services Inspector before backfilling.
7. If damage to the manhole is evident any time during the construction, the Development Services Inspector may require repairs to be made on the manhole which will require a new vacuum test prior to acceptance.
8. Topside Improvements – When all water, recycled water and sewer infrastructures have passed air, vacuum, pressure, and continuity test as well as CCTV inspection the Development Services Inspector will email a notification to internal departments indicating that the project is ready for road bases and top side improvements only. This does not constitute approval for use of the infrastructure.
9. Tying Into the City System – A tie-in procedure shall be submitted and approved by the Environmental Utilities Department prior to the proposed work. The contractor shall allow for up to 7 days for review of the procedures by the Environmental Utilities Department. The sewer system shall be tied into the City system within 10 working days upon completing and passing all the testing procedures. Tie-ins shall be conducted as specified in Section 91- 2 of the Construction Standards.

5.2.2 Punchlist Process

After the sewer manholes have been raised and finished to grade, the sewer system shall have a final ball and flush in the presence of the Development Services Inspector. The system shall then have a final TV inspection to ensure the entire sewer system is intact for warranty. Final ball and flush can be done by city forces on a time and material basis at the request of the contractor. When all improvements are complete, the contractor shall provide a written request for a punch list inspection of the improvements. With the assistance and presence of the Contractor, the wastewater facilities punch list shall be generated by the Development Services Inspector and Wastewater Collection Division.

5.2.3 Repairing Installed Improvements

Sewer mains, services, manholes and appurtenances shall be repaired per these Construction Standards and by the following procedures.

A. Repairing Vitrified Clay Pipe

1. Damaged pipe shall be exposed and replaced in-kind by "bridging" the new pipe into place. Coupling devices shall not be used.
2. Sagging or misaligned pipe shall be exposed and corrected in place if possible. If the pipe is defective, then a new pipe shall be bridged in place.
3. After the correction has been completed, the excavation shall be backfilled and compacted to grade as specified. The repairs shall then be retested per section 91-12 of these Construction Standards.

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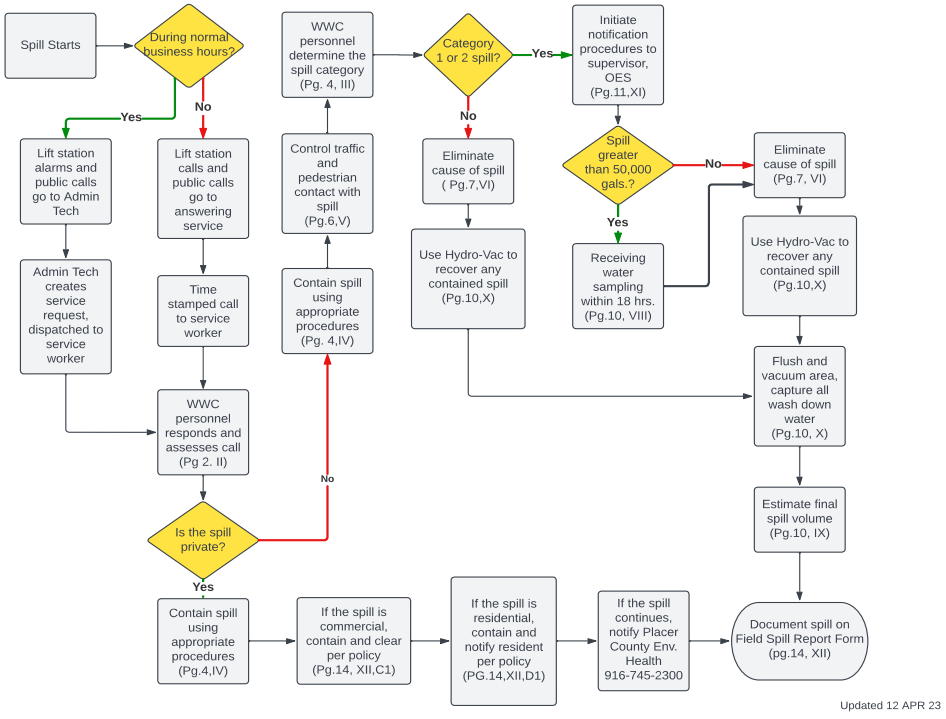
6 Spill Emergency Response Plan

Att. D-6 The Plan must include an up to date Spill Emergency Response Plan to ensure prompt detection and response to spills to reduce spill volumes and collect information for prevention of future spills. The Spill Emergency Response Plan must include procedures to: (1) Notify primary responders, appropriate local officials, and appropriate regulatory agencies of a spill in a timely manner; (2) Notify other potentially affected entities (for example, health agencies, water suppliers, etc.) of spills that potentially affect public health or reach waters of the State; (3) Comply with the notification, monitoring and reporting requirements of this General Order, State law and regulations, and applicable Regional Water Board Orders; (4) Ensure that appropriate staff and contractors implement the Spill Emergency Response Plan and are appropriately trained; (5) Address emergency system operations, traffic control and other necessary response activities; (6) Contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system; (7) Minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State; (8) Remove sewage from the drainage conveyance system; (9) Clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters; (10) Implement technologies, practices, equipment, and interagency coordination to expedite spill containment and recovery; (11) Implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event; (12) Conduct post-spill assessments of spill response activities; (13) Document and report spill events as required in this General Order; and (14) Annually, review and assess effectiveness of the Spill Emergency Response Plan, and update the Plan as needed.

6.1 Notification Procedures

The WWC division maintains an Overflow Emergency Response Plan that covers the wastewater system and Lift Station response and procedures. Page numbers included in the flowchart reference the Spill Emergency Response Plan, not the SSMP. **Figure 7** summarizes the response procedures. Refer to Appendix 6 for the complete *Spill Emergency Response Plan*.

Figure 7 – SERP Flowchart



The WWC division strives to operate, manage, and maintain all parts of the sanitary sewer system to prevent spills and mitigate the impacts quickly and efficiently should an spill occur. The On-Call emergency vehicle contains a three-ring binder that includes the division's spill emergency response manual, the response plan, chain of communication, and notification procedures. In addition, the truck is equipped with the necessary tools and equipment to control and contain overflows and clear lower lateral blockages. The truck is outfitted with pneumatic plugs, rubber berms, and dry sweep, all of which are effective means of containment. **Table 7** summarizes the division's notification procedures.

Table 7 – Notification Guide

If a Spill	And Affects	Notify
..that discharges in or on waters of the State or discharges to a location where it will probably be discharged to waters of the State, the enrollee shall notify the Office of Emergency Services (OES) and obtain a control number as soon as possible, but no later than 2 hours after becoming aware of the discharge; and notification can be provided without substantially impeding cleanup or emergency measures	Sacramento River A structure that requires cleanup	• WWC Supervisor- Cody Wilbanks Office 916-746-1889 Cell 916-472-1488 • WWC Supervisor- Shane Rodgers Office 916-746-1894 Cell 916-223-7711 • WWC Supervisor – Kevin Ryan Office 916-746-1895 Cell 916-223-7537 • WWC Superintendent – Dan Pruden Office 916-746-1891 Cell 916-580-5600 **The individuals above are responsible for notifying** • OES 1-800-852-7550; Obtain a control number for spill report form **Water Quality Sampling- Frank Dittrich 916-746-1882** **During normal business hours only; after hours, call** ▪ **Cal Test 707-258-4000** ▪ **California Lab Services 1-800-638-7301** ▪ **Excel Chem 916-938-0519** **Additional Numbers for Reference** ▪ **Placer County Environmental Health** 1-530-745-2300 Main Line 1-530-745-2306 After Hours Supervisor • **California Department of Fish and Wildlife** 916-445-0045 Option #2 • **Sacramento River Water Treatment Plant** 916-808-4961 916-264-5011 • **City of Roseville-Risk Management** 916-774-5420 or 916-774-5202 ○ After hours, Contact Risk Manager, Virginia Bolmsn at 916-501-2073 ○ If no answer, first responder can authorize clean-up only from the restoration companies listed in the SERP

6.2 Emergency Response Procedures

The City of Roseville developed this Spill Emergency Response. This plan ensures that all spill responses are conducted efficiently and effectively while meeting all regulatory requirements of the General Order.
The Division has provided all employees with a binder containing the SERP, estimation tables and strategies for notifying primary responders, local officials and regulatory agencies.

6.2.1 Goals of SERP

This SERP aims to ensure that all wastewater collection personnel follow the established guidelines in cleaning up and decontaminating spills within the City's collection system service area. The City's goals concerning spill response are:

A. Respond quickly to minimize the extent of the spill;
    1. The division's goal is a 20-minute response time during business hours and 40 minutes after hours.
B. Contain the spill to the extent feasible;
C. Eliminate the cause of the spill;
D. Eliminate public contact with the spill;
E. Mitigate the impact of the spill; and
F. Comply with the RWQCB Monitoring and Reporting requirements

6.2.2 Respond and Assess

Calls for service come through either the office landline or a 24-hour answering service. Calls for service to the Administrative Technician are documented in a service request in the City's CMMS. In turn, the Technician will dispatch the call with all information to the on-call service worker via cellular phone. After business hours, the City's contracted answering service is provided a script of questions used to collect information from the caller. Once gathered, they also dispatch the call information via cellular phone to the on-call service worker. After the call, the answering service time stamps the call, and an email is sent to the division management and service call address with all pertinent information regarding the call. Additionally, the wastewater treatment plant staff monitors lift station SCADA alarms. Operators notify the on-call service worker via cellular phone if they receive an alarm at any of the City's lift stations.
Assessment starts with the phone call to the customer. Upon contact with the resident, request that the resident stop all water use, then begin gathering as much relevant information as possible such as:

A. Description of problem
B. Specific location if a spill has occurred (e.g.,. manhole in the street, front or back of the property, cleanout box)
C. The approximate time the spill was noticed helps tremendously in determining the start time of the spill.

D. Any other observations from the caller (e.g., currently spilling, odor, duration of the spill, slow drains, currently spilling, water use in home)
E. If the service worker believes an active spill is occurring, they will mobilize a hydro-vac immediately to the location.
F. The wastewater crewmember arriving first at the scene is the ***First Responder***. Upon arrival, the first Responder will quickly assess the spill to determine the extent, spill category, and resources needed to address the spill. The ***First Responder*** is responsible for the following:
    1. Location of the spill by the address and cross street the spill appearance point (i.e., manhole, cleanout, lift station, etc.)
    2. Documenting the time the call was received, time of arrival, and determining the start and stop times of the spill. *The SSO Start Time Policy* in will aid in establishing the start and stop time for the spill.
    3. Determine the extent and the category of the spill;
        i. If the spill is a Category 1 or 2, notify the Superintendent or Supervisor immediately. Cal OES notification is required within 2 hours of becoming aware of the spill.
        ii. Did the spill cause a backup in a structure? – *The Flooded Structures Procedures* in Section 6.4 addresses the process
        iii. Did the spill enter into a drainage conveyance system?
        iv. If a potential for public exposure is present, control foot and auto traffic through the area
        v. Other concerns due to the spill
            a. Is the spill related to a street collapse?
            b. Is the spill related to recent construction work?
            c. Has the spill displaced a manhole cover creating a traffic hazard
    4. Requesting additional wastewater crews or personnel as needed;
    5. All field documentation, including photographs of the spill and completion of the Field Spill Report Form
G. If the spill is a Category 1, follow directions from RWQCB, Placer County Environmental Health, or the Department of Fish and Wildlife for posting warning signs around the contaminated area.

6.2.3 Spill Categories

Individual spill notification, monitoring and reporting must be in accordance with the following spill categories:

A. **Category 1** - any volume of sewage from or caused by a sanitary sewer system regulated under this General Order that results in a discharge to:
    1. A surface water, including a surface water body that contains no flow or volume of water.
        i. A drainage conveyance system that discharges to surface waters when the sewage is not fully captured and returned to the sewer system or disposed of properly.

ii. Any spill volume not recovered from a drainage conveyance system is considered a discharge to surface water unless the drainage conveyance system discharges to a dedicated stormwater infiltration basin or facility.

2. **Category 2** - is a spill of 1,000 gallons or greater from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.
3. **Category 3**- is a spill of equal to or greater than 50 gallons and less than 1,000 gallons from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.
4. **Category 4** - is a spill of less than 50 gallons from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.

6.2.4 Spill Containment

Containment of a spill becomes increasingly difficult once the overflow reaches a drainage conveyance system or a waterway. The quicker the spill's source and extent can be identified, contained, or controlled significantly reduces the spill's impact. Upon arrival, survey the scene to determine the potential spill appearance point. There are times when responding to a spill, the source of the spill is potable water, a backyard drain, or a storm issue. Once confirmed that the spill is the sewer, mobilize the necessary personnel and equipment for assistance. During dry weather, the drainage conveyance system can store the spill, if plugged at a point downstream of the spill. Multiple techniques are identified to contain the spill depending on the circumstances, spill category, and material available. In no particular order, the list below includes possible containment options for field crews

Location	Options for Containment
Curb and Gutter	Create berm with rubber berm, dry sweep, dirt or sandbags: Utilize natural low spots or grade deviations
Lift Station	• Use Hydro-Vac to contain • Setup bypass pumping • Setup backup generation
Open Space	• Dig a trench to contain • Sandbag berm • Dirt berm
Creek	• Plug storm drain inlets and outlet pipes to creek
Storm Drain Conveyance System (Dry)	• Plug all affected storm drain inlets; plug outfall if necessary • Contain using the hydro-vac • Request additional hydro-vac support if necessary
Storm Drain Conveyance System (Wet Weather)	• Plug all affected storm drain inlets • Emergency bypass pumping • Turn off stormwater pump station if applicable
Backup in Structure	• Evacuate residents if needed • Pop cleanout cap off; If no city cleanout, attempt to locate • Pop private cleanout if available • Contain outside if overflow is relieved by finding/removing cleanout cap.

1. Containment with Hydro-Vac
   Determine a location downstream of the spill appearance point where the hydro-vac unit can be set up to capture all spilled water. Ensure no storm drain inlets are between the containment and spill appearance points. Continue vacuuming overflow until the blockage has been cleared, then proceed with the spill's cleanup. Wash all debris and spill evidence into the vacuum tube for removal and disposal at the DCWWTP.
2. Containment Using Berms and Mats

   Utilize dirt, dry sweep, a rubber berm, sandbags, or other obstructing material that is readily available to block drain inlets and ponds the spill to a naturally low area to contain and minimize the spill's impact. If possible, divert the spill to a downstream manhole unaffected by the blockage. Attempt containment by covering any affected storm drain inlets with rubber mats and securing them with sandbags, dirt, or other heavy objects to keep them in place.
3. Containment Using Pneumatic Plugs

   Plugging the affected drain inlet or multiple drain inlets with a pneumatic plug can be effective. For example, a pneumatic plug in the storm drain outfall would prevent the overflow from reaching the waterway. However, depending on the location within the City, drain inlets will vary in size, so utilizing plugs may not be the best option.

H. Backup in Structure

Advise the customer to keep family members and pets out of the spill areas to not track any contamination into non-affected areas. If necessary, evacuate affected people and pets.

1. During regular business hours, notify Risk Management at 916-774-5420 or 916-774-5202. After hours or if there is no answer at the above numbers, contact Risk Manager Virginia Bolmsn at 916-501-2073.
2. If Risk Manager or their staff cannot be reached, contact one of the approved restoration companies in the order below and authorize cleanup services only:
   i. Serv-Pro 916-632-2250
   ii. Restoration Management 800-400-5058
3. Before the restoration company or the Risk Manager arrives, hand the resident our camera and ask them to photograph the affected area. Do not enter the house, even if invited.
4. If the resident declines the cleaning services, request that they sign and date the Declination of Clean Up Services Form.

I. Overflow into Storm Drain Conveyance System (DCS)

1. Trace overflow in the DCS to the downstream endpoint using the Stormwater Map on the GIS. Plug all affected storm drain outfalls or block the creek and channels to contain the spill.

2. While tracing the system, if you determine that the spill is contained within a mainline section, plug the downstream end at a manhole to contain the spill. Many storm drain manholes are built with sumps in the base, and depending on the spill volume, these sumps may prevent the spill from continuing downstream. Note all the storm drain assets cleaned on the Field Spill Report Form.
3. If a stormwater pump station is near the spill and may be affected, contact Streets Division to turn off the pumps.

J. If the spill is a Category 1 spill, follow directions from RWQCB, Placer County Environmental Health, or the Department of Fish and Wildlife for posting warning signs around the containment area.

6.2.5 Traffic Control (WWC Personnel)

Traffic control may be needed immediately to protect the health and safety of the public and responding wastewater crews. Typically, immediate traffic control is necessary if there is a street collapse or significant undermining of the pavement section related to the blockage and sewer spill, if the manhole cover is ajar, or if the spill causes street flooding. In addition, temporary traffic control may be needed to allow responding crews to contain and clear the blockage and prevent sewer from being further dispersed by vehicular traffic.

K. Provide traffic control per Cal Trans Work Area Traffic Control Handbook (WATCH)

B. Control public contact with the spill by isolating the area with barricades, signs or traffic cones.

C. If necessary, use other departments (i.e. Police, Public Works) to ensure adequate traffic control. Contact Roseville Police/Fire Dispatch at 916-774-5123 to coordinate.

6.2.6 Correct Cause

The cause of the overflow may be located a considerable distance downstream of the spill in areas with flat terrain. During significant rain events, overflows can be caused by excessive I&I in the collection system. I&I can significantly increase the flow in a collection system and cause overflows from pipes that are only partially blocked. I&I can also directly affect the hydraulic capacity of mainlines and lift stations. Under these conditions, stopping the overflow may not be possible until the flows recede.

L. Locate the cause of the overflow

1. Sewer Main
    i. Check flow in manholes
    ii. Blockage should be between a manhole with sluggish flow or surcharging and a manhole with very little flow or completely dry
    iii. Clear the mainline blockage using a hydro-vac unit from the dry manhole. Refer to SOP WWC-002 for hydro-vac procedures. Observe the material that flows downstream after clearing the obstruction to determine the possible cause of the blockage and note it on the spill report form.
    iv. Continue to monitor manholes in the area until the surcharged manhole empties.

v. If the blockage cannot be cleared. Increase containment and request additional crews for assistance.
    a. Perform a CCTV inspection to determine the blockage
    b. Request additional hydro-vacs to contain, or initiate by-pass pumping
    c. Dig and repair the sewer main to correct pipe defect

2. Sewer Service
    i. Check flow in the city cleanout. If the riser is full of water, wait until a hydro-vac is onsite to remove or contain the water before eeling. If the cleanout is holding but not full, carefully insert the gas powered ell rod and cutting head into the service until you contact the obstruction. Inserting the eel rod quickly, can cause the service to spill. Proceed with the eeling process until the service drains, then CCTV inspect to identify the blockage details.
    ii. If the City cleanout is dry and the resident is still plugged, the stoppage is likely on the private side and is not the City's responsibility. However, it is good customer service to CCTV the service to ensure the City line is clear.
    iii. If no city cleanout exists, but the resident has a 4" private cleanout, run this private cleanout to clear the blockage. Once removed, CCTV to determine the location of the problem. Refer to Appendix D to determine if the private cleanout meets the criteria before using city equipment.
    iv. Check the upstream and downstream mains if a city or private cleanout cannot be located. If the main is running clear, notify the resident that the problem is on their side, and explain the city cleanout installation policy.
    v. If the service line ties into a dead-end run, regardless if the City cleanout is clear, clean the mainline segment with a hydro-vac.

3. Lift Station
    i. Check the alarm status inside the control panel for indication of a problem.
    ii. If no power is present:
        a. Contact Roseville Electric to verify the outage and an estimated time the power will be restored.
        b. Determine the wet well level and remaining downtime left at the station.
        c. If downtime exceeds the max allowable retention, mobilize additional wastewater crews and a hydro-vac to the station. If the power outage is extensive, request multiple hydro-vacs for assistance.
        d. Continue vacuuming the wet well until power is restored and the lift station operates in auto mode. Watch the station for an entire pump cycle before leaving.
    iii. If power is present, but the pumps aren't operating in auto, switch the controls to the hand position. If the pumps are operational in hand mode, contact the on-call EU electrician and continue running and monitoring the station in hand mode.

iv. If portable generation is required to power the station, the on-call EU Electrician must be onsite to make the connections. All control panels have an exterior plug and disconnects for portable generation connection, with each station having a specific cable. All cables are labeled and located in the EU Maintenance shop.

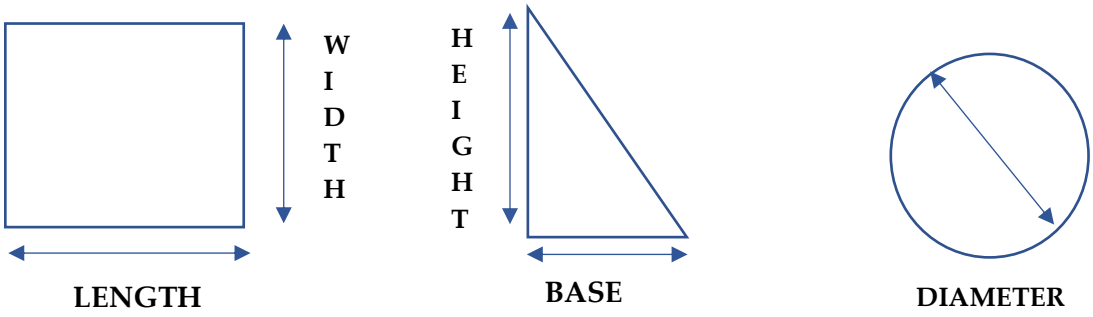
4. Force Main
   i. If the spill is from a ruptured force main, control the power using the written Energy Control Procedures (ECP), located in the door panel at the station. A qualified electrician shall perform the switching of any panel breakers.
   ii. Contain the spill from the pipe break using the containment procedures in Section IV.
   iii. Monitor and control the wet well levels using bypass pumping or hydro-vac units until the repair is completed.
   iv. If the station is equipped with dual force mains, transfer flows to the additional force main to continue normal lift station operation.

6.2.7 Final Volume Estimate (WWC Personnel)

The final overflow volume is estimated to determine if additional reporting to regulatory agencies is required and for the City of Roseville's records when reporting to CIWQS. A minimum of five (5) pictures are required for every spill response, and locations are noted on the field spill report. Place an object in the photo for contrast. The following methods are approved for determining the gallons spilled during an overflow event.

Eyeball Estimation- Estimate the overflow rate out of a clean out by estimating the time needed to fill up a known volume, such as a five-gallon bucket. Imagine the amount of water that would spill from this bucket. This method is useful on spills that occur on hard surfaces such as concrete or asphalt

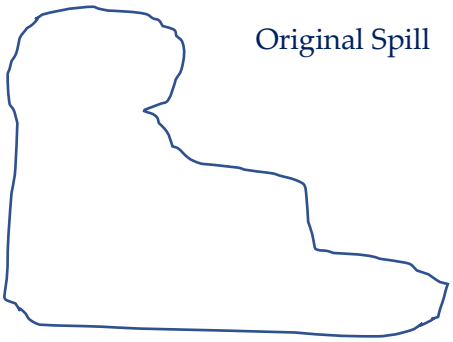
Measured Volume- The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions and depth of the contained wastewater are needed. This information is used to calculate area and volume of the spills.

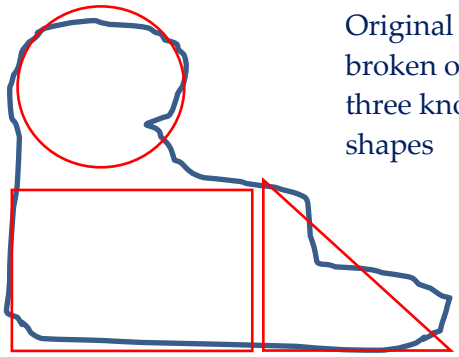


1. Determine the shape of the spill
2. Measure or pace off the dimensions. Measure the depth at several locations and calculate the average. Convert all dimensions to feet.
3. To calculate the area square footage, use the following:
   a. Rectangle: Length (ft.) x Width (ft.)

b. Triangle: Height (ft.) x Base (ft.) x .5
c. Circle: Diameter (ft.) x Diameter (ft.) x .785
d. Multiply the area (sq. ft.) by the depth (feet), to get the volume in cubic feet. Multiply your volume by 7.48 to convert to gallons.

Not all SSO's will conform to the shapes above. If this occurs, break the area up as much as possible into known shapes and calculate the volume in each.

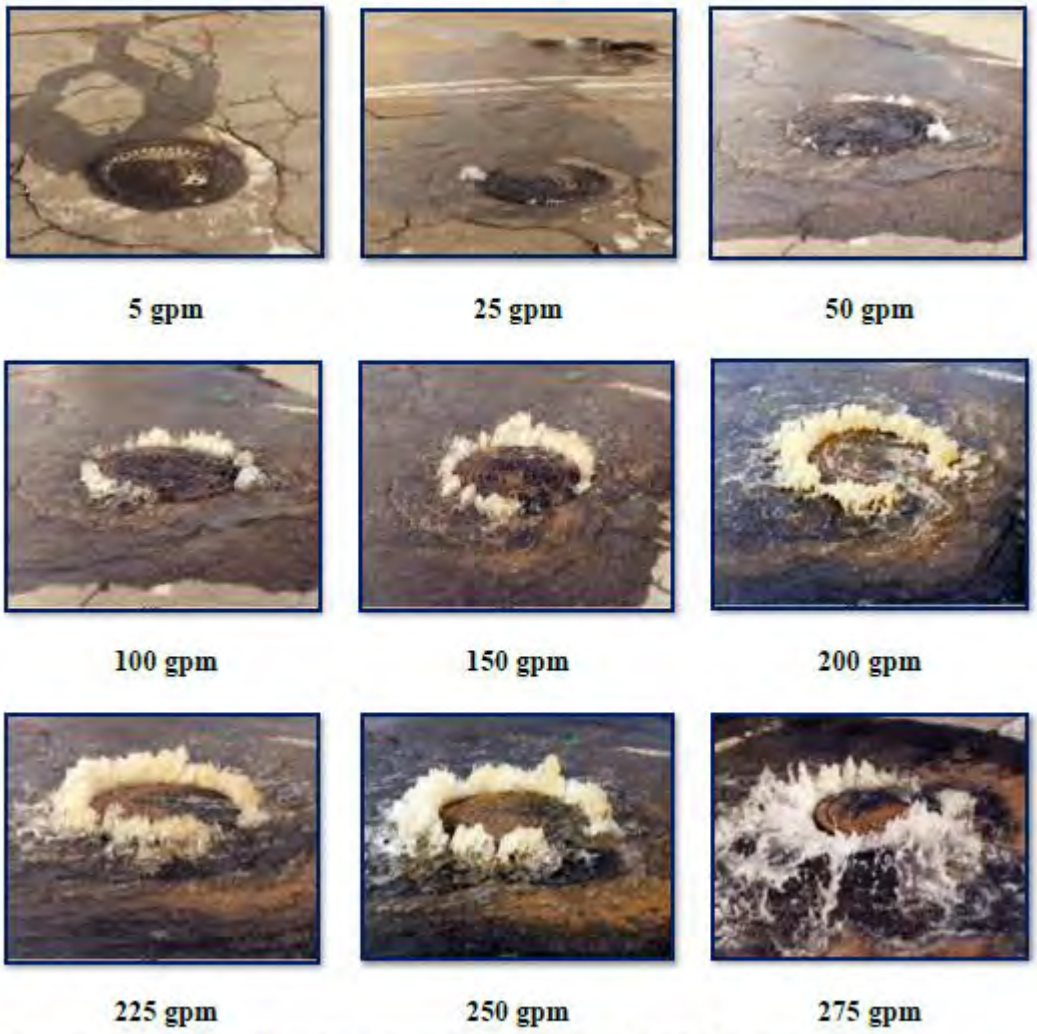




Calculating large volume spills is challenging because the area and depth are difficult to measure, and chances are these spills are not fully contained. Several methods are available to determine the volume.

Flow Estimation Chart- The table below (Section 5 of the SSOERP binder) presents pictures with varying flowrates of sewage overflowing from a manhole. Estimate the overflow rate by comparing the overflowing manhole with the pictures shown below.

Estimating Sewer Flow Rates from Overflowing Sewer Manholes[1]



5 gpm | 25 gpm | 50 gpm

100 gpm | 150 gpm | 200 gpm

225 gpm | 250 gpm | 275 gpm

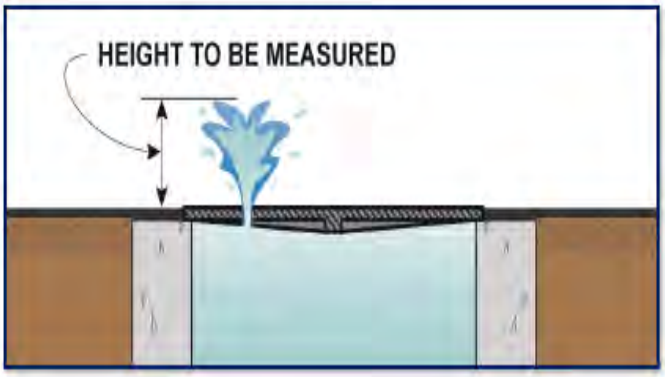
[1] Sourced from City of San Diego Metropolitan Wastewater Department "Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes" (April 1999).

Flow Rate and Duration- Overflow volume can be estimated by multiplying the overflow duration by the overflow rate. The overflow rate can be determined by pick hole or vent hole spill height (section 5, SSOERP binder), flow meter data, SCADA information and pump data from lift stations.

The overflow volume can be estimated with the following formula:

Volume (gal)= estimated flow rate (gpm) x duration of overflow (minutes)

The charts below represent measurement point and flow rates based off height of water column measured.



Height of Spout Above Manhole Frame, H (inches)	SSO Flow Rate, Q (gpm)	Height of Spout Above Manhole Frame, H (inches)	SSO Flow Rate, Q (gpm)
1/8	1.0	5 1/8	6.2
1/4	1.4	5 1/4	6.3
3/8	1.7	5 3/8	6.3
1/2	1.9	5 1/2	6.4
5/8	2.2	5 5/8	6.5
3/4	2.4	5 3/4	6.6
7/8	2.6	5 7/8	6.6
1	2.7	6	6.7
1 1/8	2.9	6 1/8	6.8
1 1/4	3.1	6 1/4	6.8
1 3/8	3.2	6 3/8	6.9
1 1/2	3.4	6 1/2	7.0
1 5/8	3.5	6 5/8	7.0
1 3/4	3.6	6 3/4	7.1
1 7/8	3.7	6 7/8	7.2
2	3.9	7	7.2
2 1/8	4.0	7 1/8	7.3
2 1/4	4.1	7 1/4	7.4
2 3/8	4.2	7 3/8	7.4
2 1/2	4.3	7 1/2	7.5
2 5/8	4.4	7 5/8	7.6
2 3/4	4.5	7 3/4	7.6
2 7/8	4.6	7 7/8	7.7
3	4.7	8	7.7
3 1/8	4.8	8 1/8	7.8
3 1/4	4.9	8 1/4	7.9
3 3/8	5.0	8 3/8	7.9
3 1/2	5.1	8 1/2	8.0
3 5/8	5.2	8 5/8	8.0
3 3/4	5.3	8 3/4	8.1
3 7/8	5.4	8 7/8	8.1
4	5.5	9	8.2
4 1/8	5.6	9 1/8	8.3
4 1/4	5.6	9 1/4	8.3
4 3/8	5.7	9 3/8	8.4
4 1/2	5.8	9 1/2	8.4
4 5/8	5.9	9 5/8	8.5
4 3/4	6.0	9 3/4	8.5
4 7/8	6.0	9 7/8	8.6
5	6.1	10	8.7

Unrestrained manhole cover will start to lift

Figure 1- Flow Rate Exiting MH Pick Hole

Estimated Flow EDU Chart – This method can be used for overflows from residential properties when enough information has been gathered through interviewing the resident. Be clear with your questions and explanation for the interview. Only interview residents from the household contributing to the SSO. The table below is based off our design criteria of 190 gpd and is included on the Field Spill report. It is a quick way to estimate volume from small overflows.

Figure 8 – EDU Flow Chart

Time Period	Estimated City Flow Rate Per EDU (190 gpd)				Spill	
	A	B	C	D	E	F
	Gallons Per Period	Hours Per Period	A÷B = Gallons Per Hour	C÷60 = Gallons Per Minute	Minutes Spill Was Active	D x E= Gallons Spilled Per Period
6am -Noon	75	6	12.5	.21		
Noon – 6pm	55	6	9.16	.15		
6pm - Midnight	50	6	8.33	.14		
Midnight - 6am	10	6	1.67	.03		
					Total Estimated Spill Volume	

However, if a large spill occurs with multiple homes, commercial or mixed-use involved, and there isn't sufficient information to calculate an estimate, use the City of Roseville Design Standard 9-2, Average Dry Weather Unit Flow Factors chart below. Count the units that are affecting the overflow and multiply by the flow factors on the chart below based on the land use designation.

Table 1 – Average Dry Weather Unit Flow Factors

Land Use Designation	Units	Flow Factor (gpd/unit)[1,3]
Commercial	gpd per acre	850
Heavy Industrial	gpd per acre	850
Light Industrial	gpd per acre	850
Mixed Use	gpd per acre	2,300
Public/Quasi-Public	gpd per acre	660
Schools	gpd per acre	170
Residential 1 DU	gpd per DU	190
Residential 2 DU	gpd per DU	190
Residential 3 DU	gpd per DU	190
Residential Multiple DU[2]	gpd per acre Or gpd per DU	2,040 Or 130
Open Space	gpd per acre	0
Parks> 10 Acres	gpd per acre	10
Vacant	gpd per acre	0

6.2.8 Initiate Cleanup (WWC Personnel)

Disinfection of contaminated soil or drainage ways is only performed when directed by appropriate agencies such as Placer County Environmental Health and CA Dept of Fish and Wildlife

A. Flooded building or structure

1. If building or structure is flooded due to a failure in the city's collection system, contact Risk Management or Dave Rawe after hours. Risk Management will respond and assess and notify restoration companies on contract with the city.
2. Storm Drain or Drainage Way
    i. Pump out or vacuum any ponded water present
    ii. Remove debris
    iii. Wash concrete and contain all wash water and remove
    iv. Remove contaminated soil and plants
    v. High pressure clean affected storm drains and vacuum all water
    vi. Remove all containment and finish flushing and vacuuming area
3. Street, Curb or Gutter
    i. Remove debris with Vactor
    ii. Wash pavement, curb and gutter area , and vacuum all water with Vactor
    iii. If Vactor decant pump is used, utilize decant apparatus to alleviate possibility of secondary spill and provide fall protection at open manhole.

6.2.9 Receiving Water Sampling (Industrial Waste Section)

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

I. Contain protocols for water quality monitoring
II. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions)
III. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
IV. Require instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration to ensure their continued accuracy.
V. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents
    a. Ammonia
    b. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e- coli.

6.2.10 Notification Requirements (Superintendent/Supervisor)

All overflows are required by law, to be promptly reported to regulatory agencies. The Legal Responsible Official (s) or their designee will make all notifications to regulatory agencies regarding reportable SSOs. All SSOs are tracked in the City of Roseville's CMMS.

- **A.** Prompt notification to regulatory agencies will be achieved by using the SSO Notification Guide (Tab 4)
- **B.** All information regarding the spill will be documented on the SSO Field Report Form
- **C.** Documentation and Data Tracking
    1. All SSOs are tracked with a service request module in the City of Roseville's CMMS. Completed service requests, work order requests and any overtime tags are turned into Superintendent/Supervisor for QA/QC. These are all resolved in the CMMS. Service requests for after-hours call will be generated the following business day.
    2. Follow up PM work orders are generated to CCTV inspect affected lines and recommendations from CCTV crew are reviewed by Superintendent or Supervisor. Further recommendations regarding repair, replacement, or preventative maintenance schedule adjustment are made on the System Failure Analysis Form.
    3. Field report forms are turned into Supervisor or Superintendent, who enters data into the CIWQS website. A minimum of 5 pictures is required for every SSO
- **D.** Ensure that all appropriate documentation has been completed in the CMMS.
    1. Private commercial spills, crew will provide a work order request to Supervisor documenting hours worked, equipment used and actions taken for billing purposes.
    2. Private residential spills, crew will provide a work order request to Supervisor documenting hours worked, equipment used and actions taken.

6.3 Staff and Contractor Training

To train WWC Employees on the importance of the SSOERP, Supervisors created a Powerpoint Presentation as a training resource. The interactive presentation covers the written SSOERP in a classroom setting. This setting allows employees to clarify any elements within the procedure. The annual training is followed by a competency test and classroom spill simulation. In addition, WWC employees built a spill simulator in the training yard at the DCWWTP to test employees' skills in estimating spills. If desired, supervisors can create spills from either a manhole, cleanout, or both. The water is metered and creates an accurate simulation within the confines of the WWTP.

Contractors are provided with the City's wastewater collection system policies and procedures. Per the contract, they are required to train all their employees on the City's wastewater collection system policies and procedures before performing work on the City's wastewater collection and conveyance system.

6.4 Spill Mitigation and Containment

The WWC Division has written the attached SOP for spill mitigation and containment. The plan is described throughout the SSOERP and in the Table 6-1 flowchart. Whenever a Sanitary Sewer Overflow (SSO) occurs, the highest priority is to contain the overflow and minimize the exposure to the public or the environment. This procedure will address the specific processes available to contain an SSO. Containment of an SSO becomes more difficult once the overflow reaches storm drain systems or a waterway. The quicker the source and the extent of the overflow can be identified, contained, or controlled, reduces the SSO's impact exponentially. Following the Sewer System Management Plan (SSMP) goals, quick response and containment will protect public health and safety while minimizing the environment's negative impacts.

The assessed hazards that may exist when responding to an SSO are:

- Traffic control
- Bloodborne pathogens
- Slips, trips, and falls
- Atmospheric conditions
- Pneumatic plugs
- Sprains and back injuries

Upon arrival to the location, survey the scene to determine the potential overflow location and source. There are times when called for a sewer overflow, and the source is potable water or storm drainage. Once determined, the water source is the sewer, mobilize the necessary wastewater collection personnel and equipment needed for assistance. Determine the category of the overflow, discharge points, and whether the SSO can reach Water of the State. Immediate notification to the Office of Emergency Services is required, should the overflow reach waters of the state. If the spill cannot be eliminated by controlling water flow from a residential or commercial building, more than likely, this spill is either a plugged main, structural deficiency, or an inoperable lift station. The area impacted by the spill and the potential work area shall be secured to divert vehicle traffic and pedestrians away from the area by using any combination of signs, cones, delineators, barricades, arrow boards, or caution tape. Multiple techniques are identified to contain the spill depending on the circumstances, spill category, and material available. In no order, the list below is possible containment options.

Containment Situation	Options for Containment
Curb and Gutter	• Create berm with rubber berm, dry sweep, dirt, or sandbags; Utilize natural low spots or grade deviations • Use hydro-vac to control overflow
Lift Station Failure	• Use hydro-vac to contain • Backup generator • Bypass pumping
Open Space	• Dig a trench for containment • Sandbag berm • Dirt berm
Creek	• Plug all affected storm drain inlets
Storm Drain System (Dry)	• Plug all affected storm drain inlets; plug outfall if necessary • Contain using the hydro-vac • Request additional hydro-vac support if necessary
Storm Drain System (Storm Event)	• Plug all affected storm drain inlets • Emergency bypass pumping • Turn off stormwater pump station if applicable
Building	▪ Evacuate residents if needed ▪ Pop cleanout cap off; If no city cleanout, attempt to locate ▪ Pop private cleanout if available ▪ Contain outside if overflow is relieved by locating/removing cleanout cap

Containment with Hydro-Vac

Determine a location downstream of the spill appearance point where the hydro-vac unit can be set up and capture all water, including wash down water. Ensure no storm drain inlets are between the containment point you choose and the overflow point. Continue vacuuming overflow until the blockage has been cleared. Once cleared, wash remaining spill water to the vac tube to be vacuumed up.

Containment Using Berms and Mats

Utilize dirt, rubber berm, dry sweep, or other obstructing material to block drain inlets and pond the spill to a low natural area to contain and minimize the spill's effects. If possible, divert the spill to a downstream manhole that is not affected by the blockage.

Attempt containment by covering the affected storm drain inlet with rubber mats. Secure the mat in place with sandbags, dirt, or other heavy objects to keep in place.

Containment Using Pneumatic Plugs

Plugging the affected drain inlet or multiple drain inlets with a pneumatic plug can be effective. A pneumatic plug in the storm drain outfall would prevent the overflow from reaching the waterway. However, depending on the location within the City, drain inlets will vary in size, so utilizing plugs may not be the best option.

SSOERP SSO Start Time Policy

Upon receiving call, note exact time that call received from answering service or administrative staff. This time will be used as a **base** for when the SSO started. Notify resident or business to stop using all water if possible.

A. Upon arrival, note if spill location point is or is not actively spilling. If not spilling from spill location point, but there is clear evidence of spill that requires a Vactor for cleanup effort, then document occurrence as a spill.
B. Initiate SSOERP to ensure that the SSO is contained, and the cause is corrected.
C. Photograph all affected areas, during the SSO, demonstrating containment and after cleanup. Use something in picture to gauge size of area features (i.e. tape measure, 5 gal bucket, etc) Email pictures to the Superintendent after completing necessary paperwork.
D. Provide detailed description of the SSO event, including exact times of arrival, SSO stop time, containment procedures, and names of collection personnel assisting you in the overflow.
E. The following questions should be asked of the resident or the individual reporting the potential SSO:
    1. Did you notice water coming from the cleanout at the property line or manhole in the street? If so, what was the approximate time?
    2. Were your drains running slowly at any time prior to you calling? If so, what was the approximate time?
    3. If there were neighbors outside, close to the area of the SSO, did they notice water spilling? If so, what was the approximate time?
    4. Be prepared to provide a brief summary of how you determined the start time, describing the steps you took while coming to your decision.
F. If the above questions do not produce an accurate account for the SSO start time, use the time the call was received by either the office personnel or the after-hours answering service, and subtract 15 minutes. Record this time as actual start time on the SSO Field Report Form.
G. If the evidence of the spill travels a farther distance than the logic of the 15 minutes, the field crew/responders shall try to recreate the spill the following day, using clean water.
H. In the event of an SSO from a sewer lift station, the start time will be determined using information gathered from the SCADA system.
I. SSO Stop time will be determined by either:
    1. The arrival time of the service worker if the overflow had stopped prior to their arrival.
    2. Clearing the blockage.
    3. Interview of resident or witnesses

SSOERP Flooded Structure Procedures

In the event a failure in the City's wastewater collection system causes a Sanitary Sewer Overflow in a resident's home or business, instruct them to:

1. Keep people and pets away from the affected area(s), and do not track contamination throughout non-affected areas.
2. Don't attempt to clean up the overflow. Instruct them the city has restoration companies available and will respond.
3. Turn off all central heat and air-conditioning systems and prevent flow from reaching any floor vents with towels or blankets.
4. Leave these items in the affected areas for restoration companies to cleanup.

Contact Risk Management at (916)774-5420 or (916)774-5202 during normal business hours. After hours, of if no answer, contact Virginia Bolmsn, Risk Manager at (916)501-2073. They will assess and notify restoration companies on contract with the city to respond. If the resident refuses the offered clean-up services, ask them to sign the declination letter, refusing the service.
If the resident chooses to file a claim for damages, instruct them they must fill out a Government Claim Form.

A claim form can be obtained in the following ways:

- In person at the Roseville Civic Center, City Clerks Department and Risk Management Division, 311 Vernon St., Roseville, CA .
- By mail, by contacting the Risk Management Division at (916)774-5202 or e-mailing the request to riskmanagement@roseville.ca.us
- Electronically by following this link: http://www.roseville.ca.us/hr/risk_management/how_to_file_a_claim.asp
- Completed forms must be returned by mail or in person to the City Clerk's office at the Roseville Civic Center.

SSOERP Water Quality Sampling

This water quality sampling procedure describes the process and the sampling methodology to be used in the event of a sanitary sewer overflow exceeding 50,000 gallons. The water quality sampling results will enable the division to prioritize areas of concern regarding water quality impacts. Surface water samples will be collected using a grab sample technique. Employees are required to wear new sterile powder free surgical gloves when collecting all samples.

Trigger for Sampling -Water quality sampling is required within 48 hours of initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.

Safety and Access- Water quality sampling should only be performed if it is safe to do so, and access is not restricted or unsafe. Unsafe conditions include traffic, heavy rains, slippery or steep creek banks, visibility issues, high flowing creeks and limited access due to soil conditions or poor terrain.

Where to Sample-

1. Source of SSO - Determine the entry point (source) of the SSO into the creek, and move downstream approximately 10 feet downstream.
2. Upstream Sample – Sample at a point 100 feet upstream from the source.
3. Downstream Sample – Sample at a point 100 feet downstream from the source. Determine the water velocity present in the creek or body of water during the SSO. Dropping debris in the creek, and timing how long the debris takes to travel a known distance is a good indicator of the water velocity present. Use this information to determine the next downstream sampling point. Multiply the water velocity by the spill duration to figure the furthest point downstream to sample.

Sampling Procedure-

1. Put on required PPE (safety glasses and latex gloves)
2. ***Collect Upstream Sample*** - Move approximately 100 feet upstream of the source.
    - **a.** Label the bottle accordingly and take a picture of the location you are sampling.
    - **b.** Sample away from the bank and avoid any debris or scum layer from the surface.
    - **c.** Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
    - **d.** Use a thermometer to measure the temperature of the upstream sample location and record the results.
3. ***Collect Source Sample-*** Move approximately 10 feet downstream of the source location.
    - **a.** Label the bottle accordingly and take a picture of the location you are sampling.
    - **b.** Sample away from the bank and avoid any debris or scum layer from the surface.

c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
d. Use a thermometer to measure the temperature of the source sample location and record the results.

4. ***Collect Downstream Sample*** – Move approximately 100 feet downstream of the source.
   a. Label this sample "Downstream 1" and take a picture of the location you are sampling.
   b. Sample away from the bank and avoid any debris or scum layer from the surface.
   c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
   d. Use a thermometer to measure the temperature of the downstream sample 1, and record the results
5. ***Collect Downstream Final Sample*** – After using the velocity and distance to determine the furthest downstream sample point, move to that location.
   a. Label this sample "Downstream Final" and take a picture of the location you are sampling.
   b. Sample away from the bank and avoid any debris or scum layer from the surface.
   c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
   d. Use a thermometer to measure the temperature of the sample, and record the results

Required Water Quality Analyses – As detailed in section C-5 of Monitoring and Reporting Program (MRP), Order WQ- 2013-0058, a Technical Report shall be submitted in CIWQS online database with 45 calendar days. All samples will be immediately transported to the nearest certified water quality laboratory for analysis (DCWWTP or PGWWTP labs). The sample analysis, at a minimum will include the following:

1. Ammonia
2. pH
3. Electrical Conductivity
4. Bacterial indicators, such as total and fecal coliform enterococcus and e-coli, per the regional Basin Plan or as directed by SWRCB
5. Temperature

Equipment and Supplies – The following items and PPE are required for sampling:

1. Cooler with Blue Ice
2. Sterile sampling bottles
3. Powder free latex gloves
4. Safety glasses
5. Marking pen
6. Field log forms

SSOERP Sewer Call For Service

When dispatched to a home experiencing sewer problem, the following procedures should be adhered to provide the resident with the best possible customer service and quickly correct the problem causing the SSO.

Residential

1. Contact the homeowner or resident upon arrival. Explain the process you will use to determine the problem. Resident should have already been instructed to stop all water use, so if water is still spilling from cleanout, check the nearest upstream manhole on the mainline for a blockage.
2. If no cleanout is visible, look in CMMS for cleanout location, look for an "S" marked in the curb, or other information that might indicate a cleanout.
3. If a city cleanout is found, clear the lateral blockage using the eel and a root cutting head, do not use a hand tape. CCTV to ensure line is clear, and all blockages have been removed. Record all time and pertinent information you have found on a work order, service request, or for after-hours calls, your overtime tag.
4. If no cleanout is found, locate the closest downstream manhole, and call for Vactor assistance, and run the main.
5. If the residence does not have a city cleanout, and the above procedures did not alleviate the blockage, we will use our equipment to run a "Viable" cleanout that belongs to the resident. This "viable" cleanout should be a factory fitting 4" cleanout, either a wye or combo wye, that we can easily get our equipment into and service the line. Once the line has been cleared, we will CCTV through this same cleanout, and determine where the blockage was located.
6. If the blockage was located below the location a city cleanout should be installed, we will schedule a cleanout installation during normal business hours.
7. If the blockage is located within the customer's service line, notify them that the problem is in their portion of the lateral, the location and severity of the problem. Advise the resident of the City's policy for cleanout installation, and let them know this is a one-time service, and the city will not clear future blockages from the homeowner's cleanout.
   Document all information in the CMMS under activity code- SPHCC, (Sewer Plug Homeowner City Cleared) on a service request.

Private Commercial *– When dispatched to a commercial property experiencing an SSO, start containment of the spill immediately. Notify the manager to stop using water and to call a plumber. Make sure the manager understands City staff will be containing the spill until their plumber responds, and they will be billed for staff and equipment. If after 60 minutes, the plumber doesn't show, notify Placer County Health Department. Notify your supervisor that the health department has been called and to discuss possibly clearing the main or service.*

SSOERP Sewer Lift Station Failure Response

The purpose of this procedure is to define strategies necessary to prevent an SSO from a lift station, in the event of a power or component failure within a lift station. The City of Roseville operates and maintains 17 neighborhood lift stations. Each station is equipped with SCADA, monitored 24 hours per day by wastewater treatment plant personnel. Each station has the maximum allowable downtime posted inside the door of each control panel. This identifies the retention time and the storage capacity in the collection system assets, before an SSO will occur. The lowest identified manhole is also identified to assist on call personnel in determining the remaining downtime. In the event of a lift station failure, the plant operator will notify the answering service that an alarm has been activated at a station, and the on-call service worker will respond and assess the alarm.

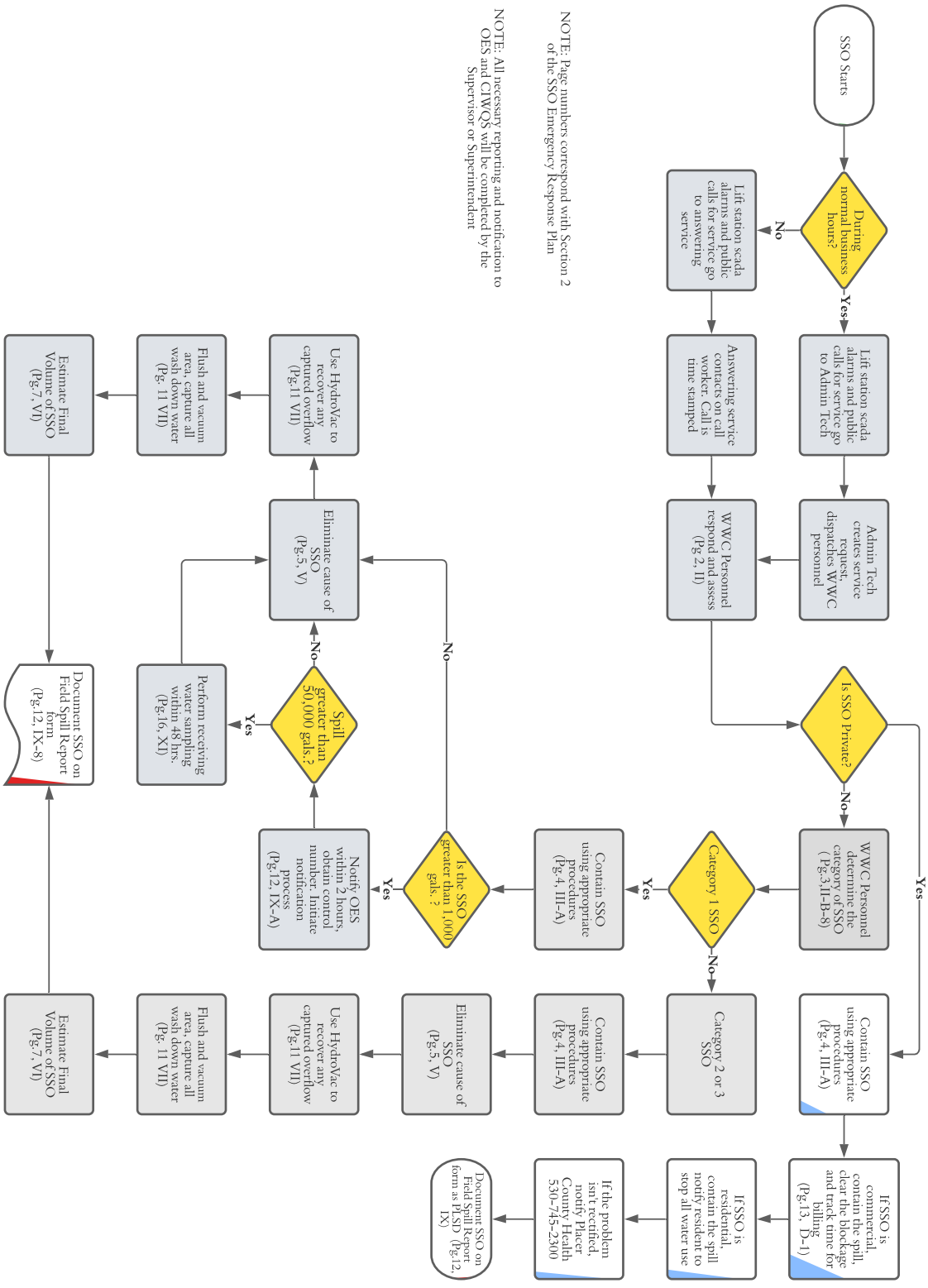
If no power is present in the panel, the service worker will:

1. Contact Roseville Electric at (916)774-5620, to verify they are aware of the outage.
2. Determine the level, and remaining downtime left in the station.
3. If downtime will be more than the maximum allowable retention, the on call service worker will call collection system personnel off the standby list, to get a Vactor in route. The Vactor will decant water at an identified point in the system, which won't affect the left station levels. If it appears that one Vactor won't keep up with flows, the on call service worker will call in additional personnel with Vactor to maintain levels in the station.
4. If outage appears to be a lengthy process, contact supervisor. Portable generator may be needed. In this event, an electrician will be needed.
5. Once flows are maintained, contact Supervisor to make them aware of the situation.

If Power is present in station, but pumps are not operating, the service worker will:

1. Attempt to operate the pumps in "hand" mode to eliminate the possibility of an SSO
2. If the pump operates in "hand", continue operating and monitor the levels in the wet well. Contact the On Call Electrician (916)532-0612 and continue to monitor.
3. If station will not operate in hand mode, call additional personnel in with Vactor to monitor wetwell levels. Vacuum and decant accordingly, until the problem is rectified.
4. If it appears that one Vactor won't keep up with the amount of flow into the wet well, the service worker will call in a second Vactor to maintain the levels in the station.
5. Standby and assist on call electrician, until the station is operational.

SSOERP SSO Chain of Communication



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7 Sewer Pipe Blockage Control Program

Att. D-7	The SSMP must include procedures for the evaluation of the Enrollee's service area to determine whether a sewer pipe blockage control program is needed to control fats, oils, grease, rags and debris. If the Enrollee determines that a program is not needed, the Enrollee shall provide justification in its Plan for why a program is not needed. The procedures must include, at minimum: An implementation plan and schedule for a public education and outreach program that promotes proper disposal of pipe-blocking substances; A plan and schedule for the disposal of pipe-blocking substances generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of substances generated within a sanitary sewer system service area; The legal authority to prohibit discharges to the system and identify measures to prevent spills and blockages; Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, best management practices requirements, recordkeeping and reporting requirements; Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the fats, oils, and grease ordinance; An identification of sanitary sewer system sections subject to fats, oils, and grease blockages and establishment of a cleaning schedule for each section; and Implementation of source control measures for all sources of fats, oils, and grease reaching the sanitary sewer system for each section identified above.

The City of Roseville's Pipe Blockage Control Program focuses on public outreach, proper disposal practices, and preventive maintenance to manage and reduce blockages caused by FOG, roots, non-dispersible wipes and other pipe-blocking materials. The City uses social media, newsletters, and public events to educate residents and businesses on the correct disposal of FOG, offering free collection and disposal services for residents.

The City relies on two major components to control or eliminate the amount of these pipe blocking materials entering the wastewater system, 1) cleaning and inspection of the collection system on a prescribed maintenance schedule and 2) inspection, enforcement, and education for FSEs and controlling Fats, Oils and Grease (FOG) from entering its system.

In addition to a strong focus on eliminating FOG in its system, the City's Wastewater Collection Division implements an effective chemical root control program. Vaporooter products are used to restrict or eliminate root growth in the City-owned portion of the lower lateral. The division holds two Qualified Applicators' Licenses (QAL), enabling the City to chemically treat laterals and allowing for a more efficient root control program without outsourcing.

The City operates two wastewater treatment plants with FOG receiving stations to handle materials collected from the public. The City has legal authority within the Roseville Municipal Code (RMC) to regulate and restrict harmful discharges, mainly targeting food service establishments (FSEs), through an established FOG program to prevent sewer blockages and ensure efficient sewer system operation. The City addresses areas prone to blockages by maintaining a "Hot Spot List" of sewer mains identified through historical data, field observations, and CCTV inspections.

These areas are tracked using GIS tools, and the cleaning frequencies range from 1 to 6 months based on need. Reducing hot spots through capital improvement and rehabilitation projects is a top priority for the City.

7.1 Public Education Outreach

The City, in partnership with neighboring agencies developed the website, Live Sewer Smart. The website provides links to valuable information to educate and encourage proper ways to reduce impacts on the sewer system from FOG, roots and flushable wipes. The website is located at Live Sewer Smart. The Wastewater Collection Division actively participates in Earth Night events, Big Trucks Day Big Trucks Day, and other community activities to educate residents on proper sewer system use and promote practices that minimize the impacts of FOG and flushable wipes on the system. In addition, the City of Roseville's Utility Exploration Center (UEC) offers insight to the City's utility systems. The recently remodeled center, holds special events, hosts school programs and provides workshops to help the community learn how to live Sewer Smart. The webpage can be found at Utility Exploration Center

WWC and Industrial Waste Division personnel developed public outreach materials and handouts that are distributed to all food service facilities managers during the facility inspection. In addition, all FSEs are required by RMC Section 14.14 to apply for a FOG Discharge Permit. The permit application includes references to RMC 14.14, which provides Frequently Asked Questions, Maintenance and Pumping Requirements, and Best Management Practices (BMPs) for the managers to follow. Finally, the City's website offers links for public outreach at FSE Public Outreach

7.2 FOG Disposal Plan

Food Service Establishments and FOG generators are responsible for hiring private service providers to pump and haul FOG from their grease removal device at scheduled intervals. The requirement of the permittee is to keep all records, manifests, receipts and invoices for the cleaning and maintenance of the device, which includes final disposal location. These records shall be provided to any City of Roseville inspector or enforcement officer upon request. Although City does not endorse or recommend services provided by any one service provider, the City will provide a list of service providers that are commonly used by businesses in the area.

7.3 Legal Authority

The WWC Division of Environmental Utilities manages the FOG control program, issuance of permits and performs inspection of all FSEs within its service area. In addition, RMC Chapter 14.14 includes all legal authority necessary to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG. All FSEs are required to provide wastewater that is acceptable to the city, before discharging to the public sewer. A summary of the legal authority is included in Table 8.

Table 8 – FOG Legal Authority

RMC Chapter Number	RMC Chapter Title
14.14.010 (A)	General Provisions- Purpose
14.14.030	FOG-Waste Discharge Permit Required
14.14.040	FOG-Discharge Limitation
14.14.050	Public Sewer Overflow; Nuisance abatement
14.14.070(F)	Prohibitions
14.14.190	FOG Discharge Permit Conditions
14.14.320	Harmful Discharge
14.14.360	Violation-Penalty

7.4 GRD, Design Standards, BMPs, Recordkeeping and Reporting

7.4.1 Requirement to Install GRD

Every FSE at the time of construction, remodel or change in operation is required to install and maintain an approved and adequately sized grease removal device. In addition, at the EU Directors' discretion, may require an FSE that has caused or contributed to a grease-related blockage, install a grease removal device. Depending on the type of facility, certain FSEs may require a grease interceptor, grease trap(s), or may not require a grease removal device (GRD). If during the plan review process, an FSE enrollee does not believe that their operation needs the designated GRD, they can request a variance from the ordinance. The final determination of the variance request is at the sole discretion of the EU Director.

7.4.2 Design Standards

The City Design Standard section 9-10. (G) indicates grease removal device sizing and installation shall conform to the current edition of the California Uniform Plumbing Code. Grease interceptors shall be constructed following the design approved by the director and shall have a minimum of two compartments with fittings designed for grease retention. A 24" access manhole shall be installed over each interceptor chamber. The frame and cover shall be watertight and set to finish grade, making inspection, sampling, and grease removal activities available.

In addition, the grease interceptor shall be installed at a location where it shall always be easily accessible for inspection, cleaning, and removal of accumulated grease. The minimum size of a grease interceptor for a new FSE is 1,000 gallons.

7.4.3 Best Management Practices

Every FSE shall implement BMPs in its operations to minimize the discharge of FOG to the grease control device and/or the public sewer. Detailed requirements for BMPs shall be specified in the FOG WDP and all FSEs are required, at a minimum, to comply with the permit BMPs as well as any additional BMPs established by the director. BMPs may include, but are not limited to, kitchen practices and employee training procedures that are essential in minimizing FOG discharge to the public sewer. Additional BMP practices are available on the City's website at FOG BMP's

7.4.4 Records and Reporting Requirements

The permittee shall be required to keep all manifests, receipts, and invoices of all cleaning, maintenance, grease removal of/from the grease control device, disposal carrier, and disposal site location for no less than three years. In addition, the permittee shall, upon request, make the manifests, receipts, and invoices available to the director, any inspector, or an enforcement officer. These records may include an on-site logbook of grease interceptor, grease trap or grease control device cleaning and maintenance practices, a description of BMPs being implemented, including employee training, and copies of records and manifest of waste hauling interceptor contents.

7.5 Authority to Inspect

RMC section 14.14.290 grants the Director, an inspector, or an enforcement officer access to all parts of a wastewater generating and disposal facilities for purposes of inspection and sampling during all times the FSE is open and operating. No person shall interfere, resist or refuse entrance to the Director, an inspector, or enforcement officer attempting to inspect the facility. Any violation of this chapter, or the orders, rules, regulations, and permits issued under this chapter, is unlawful and shall be an infraction or misdemeanor as determined by the city attorney

7.6 Hot Spot Identification and PM Schedule

The WWC Division's CMMS maintains all records for maintenance, inspection, and construction work orders for the collection system. Sewer mains subject to blockages from FOG or mains that require higher cleaning frequency are added to the division's Hot Spot List. These mainline segments tend to have more frequent backups due to sluggish flows, poor grades, and sags, which allow solids to settle and FOG to form. The hot spot list has been compiled based on historical data, field crew observations, and CCTV condition assessments. These mainlines are also identified in a GIS layer in the Roseville GeoViewer, so field crews can access them while performing maintenance in the field. The frequency of Hot Spot cleaning ranges from 1-6 months, depending on history and CCTV inspection data. The WWC division strives to reduce and eliminate these hot spot areas during CIP projects or rehabilitation projects performed by City crews.

Mainline segments get added to the Hot Spot list based on conditions noted during CCTV inspection and the current frequency of cleaning. Currently, 276 mainline segments are identified as Hot Spots.

7.7 FOG Source Control Measures

One of the more significant additions to the WWC FOG program was the requirement of a FOG Waste Discharge Permit (WDP). Ordinances in the RMC require that before discharging any wastewater from an FSE into the wastewater system, the enrollee must obtain a WDP. The WWC division performs facility inspections before the FSE can discharge. The terms and condition of the WDP are as follows.

- Grease interceptors/traps are required for food handling facilities unless the Environmental Utilities Director has issued a waiver or variance (RMC 14.14.130).
- An FSE with a waiver or variance that has caused or contributed to a grease-related Sanitary Sewer Overflow (SSO) will be required to install a grease removal device. In the event it is not practical or feasible to install a grease removal device, the FSE will be subjected to an Annual Grease Mitigation Fee
- Grease removal devices shall be designed, constructed, and installed following California Plumbing Code Title 24, Part 5 and the City of Roseville Design and Construction Standards.
- Grease removal devices shall be maintained by pumping the entire contents when grease and sludge have exceeded 25% of the capacity of the interceptor, including removal of entire contents each time the interceptor is pumped. The interceptor shall be pumped out at a minimum of 6-month intervals or more frequently, depending on grease load from FSE. The grease hauler shall be licensed with the California Department of Food and Agriculture.
- The permittee shall retain pumping and maintenance records for a minimum of 3 years. These records shall be submitted quarterly to the City of Roseville and shall be readily available to City personnel inspecting the facility. At a minimum, the following information is required for the reporting records:
    - Date of Service
    - Volume removed
    - Grease Hauler Permit number
    - FOG disposal destination records
- The permittee shall implement Best Management Practices (BMPs) in its operation to minimize the discharge of FOG to the sewer system under RMC 14.14.060
- The permittee shall notify the City of Roseville Wastewater Collection Division at 916-746-1890 of any of the following:
    - Sale, lease, or transfer of the operation for which the permit was issued.
    - Change of facility name
    - Changes to grease removal device or remodels, additions, or alterations to FSE greater than $20,000
    - Any SSO or blockage that would contribute to an SSO

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8 System Evaluation and Capacity Assurance Plan and Capital Improvements

Att. D - 8	The plan must include procedures and activities for: (1) Routine evaluation and assessment of system conditions; (2) Capacity assessment and design criteria; (3) Prioritization of corrective actions; and (4) A Capital Improvement Plan.

8.1 System Evaluation and Condition Assessment

Two hydraulic models were developed and used by the WWC Division (Roseville Model Project and South Placer Wastewater Authority (SPWA) Wastewater Systems Evaluation Project) to identify peak flows in each collection system component (pipe and pump station). In 2007, a hydraulic model of the City's sewer collection system was developed using the H2OMap Sewer modeling platform (2007 Model Development Project), parallel with a trunk sewer model for the combined Roseville, SPMUD, and Placer County systems. However, the City's sewer model was updated in 2017 to reflect existing and future demands within the City and upgrade the modeling platform to the fully dynamic InfoWorks ICM software. In addition, for the current Systems Evaluation Update, the City's model was updated in December 2020 to reflect existing, and future projected flows from Placer County and SPMUD.
EU Engineering staff will periodically run the hydraulic model for development, the Wastewater Principal Engineer will review and update the system evaluation and capacity assurance plan every ten years, looking for deficiencies and opportunities for improvement.

The City developed a project for easement mainline condition assessment to evaluate system accessibility and identify critical areas based on condition and environmental impact in case of a blockage or spill. The project will provide a comprehensive understanding of the system's condition, recommend improvements for access to the offsite segments, and prioritize areas for action with a ranking system from 1 to 10, guiding the City's efforts to address the most critical issues.

The City began its condition assessment of the collection system in 2006. At that time, the collection system was divided into 24 groups based on the age of the sewer main installation. The first group of pipes and manholes were inspected and included in the Rehabilitation and Replacement plan developed shortly after. To date, City crews have completed inspections in 18 of those 24 groups, which has led to the development of numerous CIPP and replacement projects.

The City inspects the wastewater collection system using three CCTV vans, with operators using NASSCO's PACP coding system to document and rank the condition of sewer mains and laterals. This inspection data is archived in the Granite Net Software system for easy access. To improve system reliability, the division has added Electroscan technology into a CCTV inspection truck, enabling the detection and measurement of infiltration and inflow (I&I) by identifying pipe leaks through electrical measurements. This technology helps prioritize targeted CCTV inspections, plan repairs, and evaluate the quality of CIPP rehabilitation projects.

8.2 Capacity Assessment and Design Criteria

The WWC Division established 10-year 24-hour peak wet weather storm design criteria for the evaluation of existing collection system components and sizing of new collection system in the Roseville Model Project and the SPWA Wastewater Systems Evaluation Project. This included the development of wastewater flow generation factors based on water use records and flow monitoring data in the City of Roseville.

The SPWA Wastewater Systems Evaluation included the identification of short and long-term Capital Improvement Projects (CIP) to meet current and future build-out flow projections for trunk sewers larger than 15 inches. Several deficiencies were identified in non-regional facilities which resulted in model-predicted overflows for one or more of the scenarios. Within the regional system, seven areas have been identified that either have deficiencies or could be impacted when upstream deficiencies are relieved. The System Evaluation and Capacity Assurance Report developed by the South Placer Wastewater Authority, in conjunction with Regional Partners Placer County and South Placer Municipal Utility District is located on the City's webpage at System Evaluation Report

8.3 Prioritization of Corrective Action

The WWC Division Condition Assessment CIP divided the collection system manholes and pipes into 24 groups. The first group of pipes and manholes was inspected starting in 2006 and was included in the Rehabilitation and Replacement plan developed shortly after. The city continuously inspects pipelines using NASSCO's PACP coding standard to develop a list of assets that need rehabilitation. When defects are identified, the city evaluates the risk of failure and assigns a priority ranking to each asset. Prioritizing those assets relies on several factors, including:

- Severity and extent of the defects (PACP Score).
- Maintenance records and SSO occurrences
- Hydraulic capacity needs and projection.
- The estimated remaining useful life of the infrastructure

The goal of the CIP is to develop annual project bundles of approximately $1.5 million. Using the priority rank of the pipe segment, the CIP prioritization includes one additional factor, street repairs. To minimize disruption to newly paved streets, those streets that the City anticipates repairing in the upcoming fiscal year are highest priority.

Condition assessments will be continually performed, and the CIP will be adjusted after each evaluation as follows:

- Emergency repairs will be done immediately and not be included in the CIP.
- Priority will be given to those assets which lie in the street to be paved such that the repair is done before street repaving
- Pipe segments will continue to be rated on the 1 to 5 scale, with 5 being the highest priority and 1s being the lowest. So, a 5 from the previous year's assessment would be prioritized over a 4 from the current assessment.

In addition to condition assessment, the WWC division schedules with Public Works to inspect wastewater infrastructure ahead of residential and arterial street paving projects. This process enables the WWC division to perform necessary system improvements before completing the overlay project. The City maintains a 5-year list of planned R&R CIP projects

8.4 Capital Improvement Plan

Proposed improvement projects have been developed, and verified using the hydraulic model, to alleviate surcharging. Each proposed project was reviewed on aerial mapping to identify potential design and constructability issues. These improvement projects were developed to sequentially decrease surcharging in downstream sewers. Capital Improvement Projects identified for the wastewater collection system in FY 2024-2025 are summarized in Table 9.

Table 9 – Capital Improvement Projects

CW Project Number	Project Name	Project Budget
400078	Sewer Collection System Cured in Place Rehabilitation	$3,967,428
500191	63-inch and 66-inch Interceptor Rehabilitation	$2,500,000
500341	Church Street Wet Weather Upgrades	$4,950,000
	Pump Station #26	$926,000
	Critical Sewer Manhole Access Study	$45,000

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9 Monitoring, Measurement and Program Modification

Att. D-9	The SSMP must include an Adaptive Management section that addresses Plan implementation effectiveness and the steps for necessary Plan improvement, including: (1) Maintaining relevant information, including audit findings, to establish and prioritize appropriate Plan activities; 2) Monitoring the implementation and measuring the effectiveness of each Plan Element; (3) Assessing the success of the preventive operation and maintenance activities; (4) Updating Plan procedures and activities, as appropriate, based on results of monitoring and performance evaluations; and (5) Identifying and illustrating spill trends, including spill frequency, locations and estimated volumes.

9.1 Metrics to Prioritize SSMP Activities

The WWC Division has developed Key Performance Indicators to assess their progress in maintenance, operations, and sanitary sewer collection system management. The entire KPI worksheet is included as Appendix 9-1. The metrics were developed to identify successes and challenges in reducing SSO frequency and impacts, improving collection system reliability, and providing capacity in the system to convey peak flows. Establishing specific KPIs for each element allows the WWC Management team to determine the degree of success of each component. Measurable performance indicators, e.g., number of SSO occurrences, length of lines cleaned, spill response times, number of capital projects completed, etc., are used. Additionally, the KPI benchmarking metrics worksheet includes the following categories of metric information:

- System Information
- Financial Information
- Sewer Maintenance
- Performance Measures

The City tracks detailed information about spills. While the number of spills has fluctuated up and down over the past four years, the average volume per spill has decreased. This metric demonstrates the City's proactive efforts to contain and control spills and mitigate them efficiently. In addition, the City consistently shows a significantly lower spill rate per 100 miles of pipe versus the State and Regional averages. These measurements indicate a successful sewer management program, employee training, emergency response, and a dedication to mitigating the effects of spills.

9.2 Monitor and Measure Element Effectiveness

The WWC Division implements all elements of this SSMP and has been effective in minimizing spills and controlling the volume of those spills when they occur. The WWC Division evaluates the performance of its wastewater collection system at least annually using the developed KPIs. The City will then initiate changes to this SSMP and the related programs based on the results of the KPI evaluation. In addition, the Review of the SSMP and its elements is an assigned annual training for all WWC employees. A summary of the tracked KPIs and the relation to the SSMP elements are in Table 10.

Table 10 – KPI Summarization

SSMP Element	Purpose	Performance Indicator
Goals	Sets Priorities for Division	Goals are listed in Chapter 1 of SSMP
Organization	Documentation of Chain of Command	Continually update Chain of Command Org. chart as changes occur
Legal Authority	Ensures Ordinances Are Upheld Protecting Integrity of the System	Roseville Municipal Code
Operations and Maintenance	Reduce & Eliminate SSOs through PM, CM and Emergency Response	▪ Manhole inspections performed ▪ Miles of sewer mains flushed per year ▪ Average cost of hydro cleaning ▪ Miles of sewer main and laterals CCTV per year ▪ Sewer cleanouts installed ▪ Sewer laterals rehabilitated ▪ Total miles rehabbed or replaced- mains and laterals
Design and Construction Standards	Ensures Infrastructure Is Designed, Installed and Tested Properly	▪ %Of new sewer main inspected vs. accepted ▪ % of new lateral inspected vs. accepted
Overflow Emergency Response	Provide Swift Response, Minimize Effects of an SSO, And to Meet Regulatory Requirements	▪ Average response time to SSO ▪ Average SSO duration mains and laterals
Pipe Blockage Control Program	Ensure Illicit Discharges of FOG Aren't Entering the Wastewater System, Reduces FOG Blockages And Overflows	▪ Public outreach events per year ▪ Gallons of FOG curbside pickup ▪ % of FSEs with grease removal device ▪ FSE FOG inspections per year ▪ Number of spills & volume spilled from hot spots ▪ Number of sewer laterals CIPP lined
System Evaluation & Capacity Assurance	Evaluate and Ensure System Capacity is Sufficient.	Hydraulic Model developed and run for new development and special projects,
Monitoring, Measurement & Program Modifications	Evaluate The Effectiveness of The SSMP and the Maintenance Activities Necessary to be Compliant	▪ Total SSOs and volume spilled (mains and laterals) ▪ % Of total volume recovered ▪ Total number of wet-weather spills ▪ Repeat spills within two years ▪ Spills per 100 miles of pipe/year ▪ Number of Category 1 spills ▪ % of spills caused by rags, roots, debris and FOG ▪ # of Lift station failures
Program Audits	Measures SSMP Effectiveness and Necessary Changes	Audits are performed on schedule, by an outside independent Engineering Firm
Communication Plan	Communication With the Public and Satellite Agencies on SSMP Performance	Regional partner meetings, City Website.

9.3 SSMP Performance Monitoring and Update Process

The WWC Division will monitor sewer performance metrics monthly and review the status of each SSMP element annually, with formal audits conducted every three years. As a "living document," the SSMP allows the Wastewater Superintendent to initiate corrective actions whenever deficiencies are identified between audits. Proposed modifications to the SSMP will primarily come from WWC Supervisors or input from field crews, while the review and approval of amendments, whether major or minor, will be the responsibility of the WWC Superintendent. The field crews and supervisors regularly communicate regarding field issues found in the field. Management uses this information to evaluate the success of the preventative maintenance programs and the frequency they are performed. This strategy fosters buy-in from the field crews as they continually check their effectiveness and identify potential areas for improvement in their performance. Open communication and feedback is essential for the City's success and meeting the SSMP goals.

9.4 Spill Trends

The KPI Benchmarking worksheet includes sixty-three data points to track preventative maintenance activities, enabling management staff to develop spill trends. Based on these trends, Supervisors will adjust the preventative maintenance programs to address trends that aren't in alignment with the SSMP goals. The KPI worksheet is populated using data from completed work orders stored in the City's CMMS, Maximo. Assigned personnel complete data entry on a semi-annual basis minimum to keep the KPI sheet updated.

9.5 Monitoring, Measurement & Modification

Refer to Appendices 9-1 and 9-2 that include the following documents:

Appendix 9-1 KPI Benchmarking Metrics Sheet
Appendix 9-3 Spill Historical Summary

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10 Program Audit and Annual Report

Att. D-10	The SSMP shall include internal audit procedures, appropriate to the size and performance of the system, for enrollees to comply with section 5.4 (SSMP Audits) of this General Order

10.1 Audit Process Summary

The City audits and updates its SSMP every three years based on the General Order. Updates may occur more frequently if the Superintendent discovers modifications or regulations changes between audits. The purpose of the audit is to evaluate the effectiveness of the SSMP, primarily through evaluating system metrics and performance measures. In addition, the audit evaluates the City's compliance with the SSMP requirements.

The City has invested in the resources of a local engineering firms and private consultants to perform the biennial audit for the last three audit cycles. The consultants administer the audit much like an RWQCB audit would be. The process starts with gathering information utilizing the Water Boards Pre-Inspection Questionnaire. This Audit Process has proven successful for the City, as significant changes have been made based on audit findings. The City will continue with this process for future audits.

10.2 SSMP Audit Documents

Refer to Appendices 10-1 through 10-6 that include the following audit forms and reports for the previous six audits:

Appendix 10-1 SSMP Internal Audit FY 10-11
Appendix 10-2 SSMP Audit FY 11/12-FY 12/13
Appendix 10-3 SSMP Audit FY 13/14-FY 14/15
Appendix 10-4 SSMP Audit FY 15/16-FY 17/18
Appendix 10-5 SSMP Audit FY 18/19-FY 20/21
Appendix 10-6 SSMP Audit FY 21/22-FY 23-24

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11 Communication Program

Att. D-11	The SSMP must include procedures for the Enrollee to communicate with the Public for: (1) spills and discharges resulting in closures of public areas; (2) The development, implementation and update of the SSMP, including opportunities for public input to SSMP implementation and updates. Owners/operators of systems in the enrollee's system, including satellite systems for system operation, maintenance and capital improvement related activities.

11.1 Purpose of the Communication Program

The purpose of the Communication Program is to describe how the City will inform, educate and engage with its stakeholders, regional partners, and the public on the development, implementation, and performance of the SSMP. Another aspect of this program is to increase public awareness of services provided by the City. Raising awareness of the significance of the sewer system and the impacts businesses and residents can make on the system is of utmost importance.

11.2 SSMP Development and Implementation

There were several opportunities for public comment during the development and implementation process at City Council meetings. In addition, the SSMP has been certified by the City Council on three occasions, 2009, 2014, and again in 2019. Since certification by the City Council, the division's SSMP has been audited on five occasions. This effort on re-writing the SSMP in its entirety will be on the City Council agenda for approval. Once approved, the document is available for download and review on the City's website at: City of Roseville Sewer

11.3 Public Outreach

The City's website is the central hub of communication for the businesses and residents of Roseville. The division's website offers many links to assist the public with any sewer issues, explain the importance of the City's wastewater collection system and summarize all the provided services. The division's motto is to "Call us First" with all sewer problems. Our emergency response service van is wrapped with the Call Us First motto. Since the City owns and maintains the lower lateral from the property line to the City main, calling us first to investigate a potential blockage may save residents from an unnecessary plumbing bill. Environmental Utilities in partnership with Roseville electric publishes a monthly print newsletter, Utility News, which goes out monthly to all customers who receive a printed bill. This newsletter includes information about all aspects of utilities and how customers can reduce impacts to infrastructure. Additionally, customers get an electronic version of similar stories sent to their emails, adding to the number of messaging opportunities the city provides.

The WWC Division is expanding the use of the website and social media to deliver proactive and deliberate messaging on WDR/SSMP requirements and program status to residential, commercial, industrial, and public stakeholders.

11.3.1 Utility Exploration Center

The Wastewater Division in partnership with the Utility Exploration Center, hosts high school students from surrounding areas at locations within the city. These events provide students with the opportunity to explore a wide range of careers within the utility industry. Stations are staffed by utility workers, specialists, and supervisors who conduct demonstrations showcasing typical and challenging field scenarios. Crews highlight the tools and equipment used in their specialties and explain how they collaborate as a team to deliver effective service to Roseville's Wastewater Utility customers.

11.3.2 Live Sewer Smart

The City belongs to a multi-jurisdictional group named Live Sewer Smart. The Live Sewer Smart website contains information for residents of Roseville and the surrounding communities to educate and encourage proper ways to reduce impacts on the sewer system. For example, the website provides residents with timely information regarding wipes in the pipes, how to properly dispose of FOG, and contact information for all agencies belonging to the program, should they have questions. In addition, there are several links to videos presenting more details that affect residential and commercial sewer systems. Live Sewer Smart can be located at: Live Sewer Smart

11.4 Tributary/Satellite Communication

The WWC Division routinely communicates with their satellite partners and often supports them with mutual aid sharing in terms of equipment and resources. The City has three formal agreements with tributary and satellite systems in place and currently working on a mutual aide agreement with the County of Placer Wastewater Division. The listed agreements below are included as appendices in Chapter 3:

- The Joint Exercise of Powers Agreement for the SPWA – Appendix 3-2
- The agreement regarding the operation of and use of the South Placer Regional Wastewater Facilities – Appendix 3-3.
- The Contract and Operating Agreement with Sacramento Area Sewer District and Sacramento Regional County Sanitation District – Appendix 3-4

Appendix 3-1

Pretreatment Enforcement Response Plan

CITY OF ROSEVILLE
TRADITION • PRIDE • PROGRESS

Environmental Utilities
Laboratory / Industrial Waste
1800 Booth Road
Roseville, California 95747-9708

RECEIVED
SACRAMENTO
CVRWQCB
05 OCT 31 PM 12:41

October 31, 2005

Regional Water Quality Control Board
Attn: Richard McHenry
11020 Sun Center Dr., #200
Rancho Cordova, CA 95670-6114

Re: CITY OF ROSEVILLE ENFORCEMENT RESPONSE PLAN

Dear Richard,

As per our September 9, 2005 response to the Report of Recent Inspection, Industrial Pretreatment Program, Wastewater Treatment Plants, City of Roseville, Placer County, enclosed is the City of Roseville's revised Enforcement Response Plan (ERP).

If you have any questions, please call me at (916) 746-1876.

Sincerely,

Kim Spear
Lab/IW Manager

cc: A. O'Brien, City of Roseville

CITY OF ROSEVILLE

PRETREATMENT PROGRAM

ENFORCEMENT RESPONSE PLAN

October 27, 2005
Prepared by,

Kim Spear
Lab/IW Supervisor

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Forms: City of Roseville Water Quality Laboratory Chain of Custody
Caltest Analytical Laboratory Chain of Custody
Application for Non-Domestic Wastewater Discharge
Wastewater Discharge Permit
Industrial User Inspection Report Form
Warning Notice of Violation
Notice of Violation

1. INTRODUCTION

The City of Roseville's Pretreatment Program Enforcement Response Plan (ERP) outlines operational procedures intended to ensure that the Significant Industrial Users (SIUs), and the small Commercial/Industrial dischargers to the sanitary sewer system are appropriately permitted and monitored. The Industrial Waste Division of the Environmental Utilities Department administers the ERP. To assure compliance by these dischargers, the Industrial Waste Division implements enforcement procedures specified by the U.S. Environmental Protection Agency in accordance with 40CFR 403.5 (f) (5). The ERP specifies criteria by which Industrial Waste personnel determine the enforcement action most appropriate to the nature of the violation. The Industrial Waste Division consists of the following personnel:

Industrial Waste / Laboratory Supervisor (1)
Laboratory/Industrial Waste Technician (1)
Data Management Specialist (0.2)

Dry Creek Wastewater Treatment Plant (DCWWTP) and Pleasant Grove Wastewater Treatment Plant (PGWWTP) are Regional facilities that not only service the City of Roseville but also service the South Placer Municipal Utility District and parts of the unincorporated areas of south Placer County. As a result, the City of Roseville also administers the Pretreatment Program on behalf of these Regional partners.

2. INDUSTRIAL USER INVENTORY

The development of the Industrial User Inventory (IUI) was originally developed at the time of Pretreatment Program approval in 1983. This is divided between Significant Industrial Users (SIUs) and small Commercial/Industrial Users.

A. Significant Industrial Users are defined as:

1. All categorical industrial users.

2. Any non-categorical industrial user that:

   - Discharges 25,000 gallons per day or more of process wastewater (process wastewater excludes sanitary, non-contact cooling and blowdown wastewater).

   - Contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic (BOD, TSS, etc.) capacity of the treatment plant.

   - Has a reasonable potential, in the opinion of the City or Approval Authority, to adversely affect the treatment plant (inhibition, pass-through of pollutants, sludge contamination, or endangerment of POTW and collection system workers).

B. Small Commercial/Industrial Users are non-domestic dischargers, small businesses such as auto repair, radiator repair, restaurants, dentist, etc. The list is continually updated using the following means:

1. City of Roseville Business License Department and Regional Partners forward business license applications list to the Industrial Waste Division (IW) on a monthly basis.

2. Periodic review of the City of Roseville and Regional Partners phone books.

3.Inspection of new and existing commercial areas is performed.

4. All users identified as "small Commercial/ Industrial" and most users identified as "Non Residential" inspected a minimum of one time per year to assure dry processes remain dry and to ascertain whether new processes have been added.

5. Annual inspection of commercial and industrial areas by IW inspectors for new business operations.

6. Periodic review of legal notices/ DBA's in the local newspaper.

3. COMPLIANCE MONITORING

The City personnel perform compliance monitoring for all SIU's and the small Commercial/Industrial Users. Compliance monitoring is performed as follows:

1. All SIUs are inspected at least 1 per year and sampled one (1) to four (4) times per year as required in their discharge permits. All Commercial/Industrial Users are inspected at least 1 per year and sampled as needed.
2. Samples area transported to laboratory in 4^0C ice chests along with appropriate documentation (date, time, location of sample, sampler, type of sample, i.e. grab or composite, chain of custody form, type of preservation and analyses requested.)
3. Analyses not performed by City personnel are sent out to the analytical labs with proper chain of custody and on ice.
4. Upon completion of analyses, results are entered into the IU's computer file and hard file.
5. The following compliance schedule is followed for sampling all Industrial Users:

    a) 1 week after results are received –
    - In compliance – no further action.
    - Noncompliance – a Warning Notice of Violation (WNOV) is issued

    b) 2 weeks after WOV is issued, the IU is resampled and inspected –

c) 1 week after results are received –
- In compliance – no further action
- Noncompliance – Notice of Violation (NOV) issued and letter of request for proposed compliance time schedule

d) 3 weeks after NOV and compliance schedule, IU is resampled and inspected

e) 1 week after results are received –
- In compliance – no further action
- Noncompliance – Final NOV issued and Mandatory meeting with the City of Roseville Wastewater Utility Manager, Lab/IW Supervisor and City Staff

f) Final Date of Compliance Schedule is issued and IU is resampled and inspected.

g) 1 week after report and sample results are received –
- In compliance – no further action
- Noncompliance–the Environmental Utilities Director issues Notice of Enforcement hearing to the IU, City Attorney, Wastewater Utility Manager and the Lab/IW Supervisor

h) 3 weeks – the following actions will be taken: Civil Action, Criminal Action, Impose Fines, Terminate Service

4. ENFORCEMENT RESPONSE GUIDE

Sampling, Monitoring or Reporting Violations

Noncompliance	Circumstances	Range of Response	City Personnel
Failure to sample, monitor or report (routine reports and BMR's)	Isolated or infrequent	Phone call or Notice of Violation (NOV) requiring report within 10 days.	Lab/IW Supervisor
Failures to sample, monitor, report or notify.	IU does not respond to letters, doesn't follow through on verbal or written agreement or frequent violation	NOV, follow Compliance Monitoring -Section 3	Lab/IW Supervisor, Wastewater Utility Manager
Failure to notify of effluent limit violation or slug discharge.	Isolated or infrequent. No known effects	Phone call, WNOV	Lab/IW Supervisor
Failure to notify of effluent limit violation or slug discharge.	Frequent or continue violation – Significant Non-Compliance (SNC)	NOV. Follow Compliance Monitoring (Section 3)	Lab/IW Supervisor, Wastewater Utility Manager
Failure to notify of effluent limit violation or slug discharge	Known environmental or POTW damage results – (SNC)	NOV, Notice of Enforcement, hearing issued, Civil/Criminal actions, Fined, Terminate Service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Minor sampling, monitoring, reporting deficiencies, (computational or typographical errors).	Isolated or infrequent	Phone call or WNOV. Corrections to made and forward to IW Division	Lab/IW Supervisor
Major or gross sampling, monitoring, or reporting deficiencies, (missing or falsified data)	Isolated or infrequent	NOV. Corrections forwarded to IW Division	Lab/IW Supervisor

Major or gross reporting deficiencies	Continued. Remains uncorrected 30 days or more - SNC	Notice of Enforcement, judicial action	Wastewater Utility Manager, EU Director, City Attorney

Compliance Schedules

Noncompliance	Circumstances	Range of Response	City Personnel
Reporting false information	Any instance – SNC	Request for investigation, jurisdictional action, fines, terminate service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Missed interim date	Will not cause late final date or other Interim dates	NOV	Lab/IW Spervisor
Missed interim date	Will result in other missed interim dates. Violation fro good or valid cause	NOV	Lab/IW Supervisor, Wastewater Utility Manager
Missed final date	90 days or more outstanding. Failure or refusal to comply without good or valid cause	Judicial action, fines	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Missed final date	Less than 30-day delay	NOV	Lab/IW Supervisor
Failure to install monitoring equipment	Less than 30-day delay	NOV	Lab/IW Supervisor
Failure to install monitoring equipment	30 days or more delay	Judicial action to begin monitoring, fines, terminated service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney

Effluent Limits

Noncompliance	Circumstances	Range of Response	City Personnel
Exceeding final limits (categorical, local or prohibited)	Infrequent or isolated minor violations	WNOV, Compliance Monitoring-section 3	Lab/IW Supervisor
Exceeding final limits (categorical, local or prohibited)	Infrequent or isolated significant (no harm)	NOV, Compliance Monitoring-section 3	Lab/IW Supervisor
Exceeding final limits (categorical, local or prohibited)	Frequent resulting in harm to collection system, POTW receiving waters	Notice of enforcement, judicial action, fines, terminate service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Exceeding interim limit (categorical or local)	Without known damages	NOV	Lab/IW Supervisor
Reported slug load	Isolated without known damage	Show cause, WNOV	Lab/IW Supervisor
Reporting slug load	Recurring – SNC	Notice of Enforcement, judicial action, fines, terminate service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Discharge without permit or approval	One time without known environmental impact or POTW damage	Phone call, NOV, send application for non-domestic discharge	Lab/IW Supervisor
Discharge without permit or approval	One time that results in environmental damage or continuing violation. IU unaware of requirement - SNC	Notice of Enforcement, judicial action, fines	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Discharge without permit or approval	Continuing violation with known environmental or POTW damage – SNC	Judicial action, fine, terminate service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Discharge without permit or approval	IU does not submit application with 90 days	Phone call, WNOV	Lab/IW Supervisor

Inspections and Field Investigations

Noncompliance	Circumstances	Range of Response	City Personnel
Entry denial	Entry denied, copies of records denied	NOV, judicial action, fine, terminate service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney, Police
Minor violation of analytical procedures	Any instance	WNOV	Lab/IW Supervisor
Major violation of analytical procedures	No evidence of intent	NOV	Lab/IW Supervisor
Major violation of analytical procedures	Evidence of negligence or intent - SNC	Notice of Enforcement, judicial action, fines, terminate service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Minor violation of permit condition	No evidence of negligence or intent	NOV. Immediate correction	Lab/IW Supervisor
Minor violation of permit condition	Evidence of negligence or intent – SNC	NOV, judicial action, fines, terminate service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Major violation or permit condition	Evidence of negligence or intent – intent	NOV, judicial action, fines, terminate service	Lab/IW Supervisor, Wastewater Utility Manager, EU Director, City Attorney
Failure to report additional monitoring	Inspection finds additional files	NOV	Lab/IW Supervisor

5. LEGAL AUTHORITY

Legal authority for the actions in the ERP is outlined in the City of Roseville Municipal Code Industrial Wastewater section 14.26:

Section 14.26.010 Purpose and policy.

A. This chapter sets forth uniform requirements for direct and indirect contributors into the wastewater collection and treatment system for the city and enables the city to comply with all applicable state and federal laws required by the Clean Water Act of 1977 and the General Pretreatment Regulations (40 CFR, Part 403.)

B. The objectives of this chapter are:

1. To prevent the introduction of pollutants into the municipal wastewater system which will interfere with the operation of the system or contaminate the resulting sludge;
2. To prevent the introduction of pollutants into the municipal wastewater system which will pass through the system, inadequately treated, into receiving waters or the atmosphere or otherwise be incompatible with the system;
3. To improve the opportunity to recycle and reclaim wastewaters and sludges from the system; and
4. To provide for equitable distribution of the cost of the municipal wastewater system.

C. This chapter provides for the regulation of direct and indirect contributors to the municipal wastewater system through the issuance of permits to certain nondomestic users and through enforcement of general requirements for the other users, authorizes monitoring and enforcement activities, requires user reporting, assumes that existing customers' capacity will not be preempted, and provides for the setting of fees for the equitable distribution of costs resulting from the program established in this chapter.

D. This chapter shall apply to persons in the city and to persons outside the city who are users of the city Publicly-Owned Treatment Works.

(Ord. 1718 § 1 (part), 1983.)

Section 14.26.020 Administration.

Except as otherwise provided, the Environmental Utilities Director shall administer, implement and enforce the provisions of this chapter. (Ord. 3798 § 7, 2002: Ord. 1718 § 1 (part), 1983.)

Section 14.26.030 Definitions.

Unless the context specifically indicates otherwise, the following terms and phrases, as used in this chapter, shall have the meanings designated in this section:

1. "Act" or "the act" means the Federal Water Pollution Control Act (also known as the Clean Water Act), as amended, 33 U.S.C. 1251, et seq.
2. "Approval Authority" means the Director of Region 9, United States Environmental Protection Agency.
3. "Authorized Representative of Industrial User" means an authorized representative of an Industrial User, who may be:

a. A principal or officer if the Industrial User is a corporation;
b. A general partner or proprietor if the Industrial User is a partnership or proprietorship respectively;
c. A duly authorized representative of the individuals designated above if such representative is responsible for the overall operation of the facilities from which the indirect discharge originates.

4. "Biochemical Oxygen Demand (BOD)" means the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure, five (5) days at twenty (20) degrees centigrade expressed in terms of weight and concentration (milligrams per liter (mg/l)).

5. "Building Drain" means that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste and other drainage pipes inside the walls of the building and conveys it to the building sewer, beginning two (2') feet outside the inner face of the building wall.
6. "Building Sewer" means the extension from the building drain to the public sewer or other place of disposal.
7. "City" means the City of Roseville.
8. "Cleanout" means a small vertical pipe or shaft extending from the surface of the ground to the sewer provided for the purpose of permitting cleaning of the sewer in any direction.
9. "Combined Sewer" means a sewer receiving both surface runoff and sewage.
10. "Cooling Water" means the water discharged from any use such as air conditioning, cooling or refrigeration, or to which the only pollutant added is heat.
11. "Control Authority" means the "Approval Authority", or the California Regional Water Quality Control Board (the "CRWQCB").
12. "Direct Discharge" means the discharge of treated or untreated wastewater directly to the waters of the State of California.
13. "Director" means the Environmental Utilities Director or the Director's authorized representative.
14. "Environmental Protection Agency" or "EPA" means the U.S. Environmental Protection Agency. Where appropriate, the term may also be used as a designation for the Administrator or other duly authorized official of the EPA.
15. "Garbage" means solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage and sale of produce.
16. "Grab Sample" means a sample which is taken from a waste stream on a one-time basis with no regard to the flow in the waste stream and without consideration of time.
17. "Grit" means the heavy suspended mineral matter present in water or wastewater such as sand, gravel, or cinders.
18. "Health Officer" means the Placer County Health Officer.
19. "Holding Tank Waste" means any waste from bolding tanks such as vessels, chemical toilets, campers, trailers, septic tanks, and vacuum-pump tank trucks.
20. "Indirect Discharge" means the discharge or the introduction of nondomestic pollutants from any source regulated under Section 307(b) or (c) of the Act (33 U.S.C. 1317), into the POTW (including Holding Tank Waste discharged into the POTW).
21. "Industrial User" means a source of Indirect Discharge which does not constitute a discharge of Pollutants under regulations issued pursuant to Section 402 of the Act, (33 U.S.C. 1342).
22. "Industrial Wastes means the liquid wastes from industrial manufacturing processes, trade, or business.
23. "Interference" means the inhibition or disruption of the POTW treatment processes or operations which contribute to a violation of any requirements of the city's NPDES Permit. The term includes prevention of sewage sludge use or disposal by the POTW in accordance with Section 405 of the Act (33 U.S.C. 1345), or any criteria, guidelines, or regulations developed pursuant to the Solid Waste Disposal Act (SWDA), the Clean Air Act, the Toxic Substances Control Act, or more stringent state criteria (including those contained in any State sludge management plan prepared pursuant to Title IV of SWDA) applicable to the method of disposal or use employed by the POTW.
24. "National Categorical Pretreatment Standard" or "Categorical Pretreatment Standard" means any regulation containing Pollutant discharge limits promulgated by the EPA in accordance with Section 307 (b) and (c) of the Act (33 U.S.C. 1317), which applies to a specific category of Industrial Users.
25. "National Prohibitive Discharge Standard" or "Prohibitive Discharge Standard" means any regulation developed under the authority of Section 307 (b) of the Act or 40 CFR, Section 403.5.
26. "Natural Outlet" means any outlet into a watercourse, pond, ditch, lake or other body of surface or groundwater.
27. "New source" means a facility from which there is, or may be, a discharge of pollutants, construction of which facility began after the publication of the proposed pretreatment standards pursuant to Section 307(c) of the Clean Water Act.
28. "National Pollution Discharge Elimination System Permit" or "NPDES permit" means a permit issued pursuant to Section 402 of the Act (33 U.S.C. 1342).
29. "Pass through" means a discharge which exits the POTW into waters of the United States in quantities which may serve to cause a violation of the POTW's NPDES Permit.
30. "Permit" means a Wastewater Contribution Permit.

31. "Person" means any individual, partnership, copartnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity or any other legal entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine and the singular shall include the plural where indicated by the context.
32. "pH" means the logarithm (base 10) of the reciprocal of the concentration of hydrogen ions expressed in grams per liter of solution.
33. "Pollution" means the manmade or man induced alteration of the chemical, physical, biological, and radiological integrity of water.
34. "Pollutant" means any dredged spoil, solid waste, incinerator residue, Sewage, Garbage, petroleum products or by products, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discharged equipment, rock, sand, cellar dirt and industrial, municipal, or agricultural waste discharged into water.
35. "Pretreatment" or "Treatment" means the reduction of the amount of Pollutants, the elimination of Pollutants, or the alteration of the nature of Pollutant properties in Wastewater to a less harmful state prior to or in lieu of discharging or otherwise introducing such Pollutants into the POTW. The reduction or alteration can be obtained by physical, chemical or biological processes, or process changes by other means, except as prohibited by 40 CFR Section 403.6 (d).
36. "Pretreatment Requirements" means any substantive or procedural requirement related to Pretreatment, other than a National Categorical Pretreatment Standard imposed on an Industrial User.
37. "Pretreatment Standard" or "National Pretreatment Standard" means any regulation containing pollutant discharge limits promulgated by the EPA in accordance with Section 307(b) and (c) of the Act, which applies to any user, including prohibited discharge and local limitations established pursuant to 40 CFR 403.5.
38. "Properly Shredded Garbage" means the wastes from the preparation, cooking, and dispensing of food that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half inch (1.27 centimeters) in any dimension.
39. "Publicly-owned Treatment Works (POTW)" means a wastewater treatment plant as defined by Section 212 of the Act (33 U.S.C. 1291), which is owned in this instance by the City. This definition includes any sewers, pipes, ponds, pumps or other devices that connect to, or convey Wastewater to the wastewater treatment plant. POTW also includes any sewers, pipes, ponds, pumps or other devices that convey Wastewaters to the POTW from persons outside the corporate limits of the City who are users of the City's POTW.
40. "Public sewer" means a Sewer which is controlled by public authority.
41. "POTW Treatment Plant" or "Wastewater Treatment Plant" means that portion of the POTW designed to provide treatment to Wastewater.
42. "Rate-of-flow Controller" means an automatic device that controls the rate of flow of a fluid.
43. "Sanitary Sewer" means a sewer which carries Sewage and to which storm, surface and groundwaters are not intentionally admitted.
44. "Sewage" means a combination of the water-carried waste from residences, business buildings, institutions, and industrial establishments, together with such ground, surface, and storm waters as may be present.
45. "Sewage Treatment Plant" means any arrangement of devices and structures used for treating sewage.
46. "Sewage Works" means all facilities for collection, pumping, treating and disposing of sewage.
47. "Sewer" means a pipe or conduit for carrying Sewage.
48. "Shall" is mandatory; "may" is permissive.
49. "Significant Commercial User" means any Commercial User of the POTW, which discharges nondomestic and nonindustrial wastewater containing waste chemicals, solvents, oils, or other Pollutants capable of adversely impacting the sewer system or POTW if left unregulated.
50. "Significant Industrial User" means any Industrial User of the POTW who:
a. Discharges twenty five thousand (25,000) gallons or more of process wastewater per day; or
b. Contributes a process wastewater which makes up five (5%) percent or more of the dry weather average hydraulic or organic capacity of the POTW; or
c. Is subject to a National Categorical Pretreatment Standard; or

d. Is designated as such by the City, the CRWQCB, or the EPA on the basis that it has a reasonable potential, either alone or in combination with other users, to affect the POTW's operation adversely or to violate a pretreatment standard or requirement.

51. "Slug" means any discharge of water, Sewage, or industrial waste which, in concentration of any given constituent or in quantity of flow, exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation.

52. "Standard Industrial Classification (SIC)" means a classification pursuant to the Standard Industrial Classification Manual issued by the Executive Office of the President, Office of Management and Budget, 1972.

53. "State" means the State of California.

54. "Storm Drain" or "Storm Sewer" means a Sewer which carries storm and surface waters and drainage, but excludes Sewage and industrial wastes, other than unpolluted cooling water.

55. "Stormwater" means any flow occurring during or following any form of natural precipitation and resulting therefrom.

56. "Suspended Solids" means the total suspended matter that floats on the surface of, or is suspended in, water, wastewater or other liquids, and which is removable by laboratory filtering.

57. "Toxic Pollutant" means any Pollutant or combination of Pollutants listed as toxic in regulations promulgated by the EPA or identified in section 307(a) of the Act.

58. "User" means any Person who contributes, causes or permits the contribution of Wastewater into the city's POTW.

59. "Wastewater" means the liquid and water carried industrial or domestic wastes from dwellings, commercial buildings, industrial facilities, and institutions, whether treated or untreated, which is contributed into or permitted to enter the POTW.

60. "Watercourse" means a channel or depression in which a flow of water occurs, either continuously or intermittently.

61. "Waters of the State" means all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, reservoirs, aquifers, irrigation systems, drainage systems and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, which are contained within, flow through, or border upon the State of California or any portion thereof.

62. "Wastewater Contribution Permit" means that permit that must be obtained from the City before a Significant Industrial User may connect to or contribute to the POTW.

(Ord. 2707 § 1, 1993: Ord. 2360 § 2, 1990: Ord. 2280 § I, 1989: Ord. 1718 § 1 (part), 1983.)

Section 14.26.040 Abbreviations.

The following abbreviations shall have the designated meanings:

A. "BOD" means biochemical oxygen demand.
B. "CFR" means Code of Federal Regulations.
C. "COD" means chemical oxygen demand.
D. "CWA" means Clean Water act, 33 USC 1251 et seq.
E. "EPA" means Environmental Protection Agency.
F. "l" means liter.
G. "mg" means milligrams.
H. "mg/l" means milligrams per liter.
I. "NPDES" means National Pollutant Discharge Elimination System.
J. "O & M" means Operation and Maintenance.
K. "POTW" means Publicly-Owned Treatment Works.
L. "SIC" means Standard Industrial Classification.
M. "SWDA" means Solid Waste Disposal Act, 42 U.S.C. 6901, et seq.
N. "USC" means United States Code.
O. "SS" means suspended solids.

(Ord. 1718 § 1 (part), 1983.)

Section 14.26.110 General Discharge Prohibitions.

A. It is unlawful for any user to contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater which will interfere with the operation of performance of the POTW. These general prohibitions apply to all such users of the POTW, whether or not the user is subject to National Categorical Pretreatment Standards or any other national, state, or local pretreatment standards or requirements.

B. It is unlawful for any user to contribute the following substances to the POTW:

1. Any liquids, solids or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fire or explosion or be injurious in any other way to the POTW or to the operation of the POTW. At no time shall two successive readings on an explosion hazard meter (or at any point in the system) be more than five (5%) percent nor any single reading over ten (10%) percent of the Lower Explosive Limit (LEL) of the meter. Prohibited materials include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, sulfides, or any other wastestream with a closed cup flashpoint of less than one hundred and forty (140 °) degrees Fahrenheit or sixty (60 °) degrees Centigrade using the test methods specified in 40 CFR 261.21;
2. Solid or viscous substances which may cause obstruction to the flow in a sewer or other interference with the operation of the POTW such as, but not limited to: grease, garbage, (except properly shredded garbage), animal guts or tissues, paunch manure, bones, hair, hides, fleshings, entrails, whole blood, feathers, ashes, cinders, sand, spent lime, stone or marble dust, metal, glass, straw, shavings, grass clippings, rags, spent grains, spent hops, waste paper, wood, plastics, gas, tar, asphalt residues, residues from refining, or processing of fuel or lubricating oil, mud, or glass grinding or polishing wastes;
3. Any wastewater having a pH less than 5.0, or wastewater having any other corrosive property cable of causing damage or hazard to structures, equipment and/or personnel of the POTW;
4. Any wastewater containing toxic pollutants in sufficient quantity, either singly or by interaction with other pollutants, to injure or interfere with any wastewater treatment process, constitute a hazard to humans or animals, create a toxic effect in the receiving waters of the POTW, or to exceed the limitation set forth in a Categorical Pretreatment Standard;
5. Any noxious or malodorous liquids, gases, or solids which either singly or by interaction with other wastes are sufficient to create a public nuisance or hazard to life or are sufficient to prevent entry into the sewers for maintenance and repair;
6. Any substance which may cause the POTW's effluent or any other product of the POTW such as residues, sludges, or scums, to be unsuitable for reclamation and reuse or to interfere with the reclamation process. In no case shall a substance discharged to the POTW cause the POTW to be in noncompliance with sludge use or disposal criteria, guidelines or regulations developed under section 405 of the Act, the Clean Air Act, the Toxic Substances Control Act or state criteria applicable to the sludge management method being used;
7. Any substance which will cause the POTW to violate its NPDES permit and/or state disposal system permit or the receiving quality standards;
8. Any wastewater with objectionable color not removed in the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions;
9. Any wastewater having a temperature which will inhibit biological activity in the POTW treatment plant resulting in interference, but in no case wastewater with a temperature at the introduction into the POTW which exceeds forty (40 °) degrees centigrade or one hundred and four (104 °) degrees Fahrenheit;
10. Any pollutants, including, oxygen demanding pollutants (BOD, etc.), released at a flow rate and/or pollutant concentration which will cause interference to the POTW. In no case shall a slug load have a flow rate or contain concentration or qualities of pollutants that exceed for any time period longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration, quantities, or flow during normal operation;
11. Any wastewater containing any radioactive wastes or isotopes of such halflife or concentration as may exceed limits established by the director in compliance with applicable state or federal regulations;
12. Any wastewater which causes a hazard to human life or creates a public nuisance;
13. Any other substance with the potential to create a hazardous condition in the POTW.
14. Any trucked or hauled wastes, except at discharge points designated by the Director.

(Ord. 2707 § 2 (part), 1993: Ord. 2280 § 2, 1989: Ord. 1718 § 1 (part), 1983.)

Section 14.26.120 Federal Categorical Pretreatment Standards.

Upon the promulgation of the Federal Categorical Pretreatment Standards for a particular industrial subcategory, the Federal Standard, if more stringent than limitations imposed under this chapter for sources in that subcategory, shall immediately supersede the limitations imposed under this chapter. The National categorical standards found in 40 CFR Chapter 1, Subchapter N, Parts 405-471, are hereby incorporated into this chapter and made part hereof. The director shall notify all affected users of the applicable reporting requirements under 40 CFR, Section 403.12. (Ord. 2707 § 2 (part), 1993: Ord. 2280 § 3, 1989: Ord. 1718 § 1 (part), 1983.)

Section 14.26.130 Modification of Federal Categorical Pretreatment Standards.

Where the city's wastewater treatment system achieves consistent removal of pollutants limited by Federal Pretreatment Standards, the city may apply to the approval authority for modification for specific limits in the Federal Pretreatment Standards. "Consistent removal" shall mean reduction in the amount of a pollutant or alteration of the nature of the pollutant by the wastewater treatment system to a less toxic or harmless state in the effluent which is achieved by the system in ninety-five percent of the samples taken when measured according to the procedures set forth in Section 403.7 (c) (2) of Title 40 of the Code of Federal Regulations, Part 403 "General Pretreatment Regulations for Existing and New Sources of Pollution" promulgates pursuant to the Act. The city may then modify pollutant discharge limits in the Federal Pretreatment Standards of the requirements contained in 40 CFR, Part 403, Section 403.7 are fulfilled and prior approval from the approval authority is obtained. (Ord. 1718 § 1 (part), 1983.)

ection 14.26.140 Specific Pollutant Limitations.

A. Unless otherwise authorized under a wastewater contribution permit, no person or user shall discharge wastewater containing in excess of:

20.0 mg/l Ammonia
0.19 mg/l Arsenic
0.01 mg/l Beryllium
0.025 mg/l Cadmium
0.56 mg/l Chromium
0.25 mg/l Copper
0.13 mg/l Cyanide
32.0 mg/l Fluoride
50.0 mg/l Hydrocarbon solvents (as detected by State Water Resources Control Board (SWRCB) method M8015)
0.06 mg/l Lead
0.002 mg/l Mercury
1.3 mg/l Nickel
100.0 mg/l Oil and grease
500.0 mg/l Phenol
0.04 mg/l Silver
0.006 mg/l Selenium
2.0 mg/l TTO (Total Toxic Organics, defined as sum of all compounds detected by EPA method 624 and 625, excluding phenol)
2.4 mg/l Zinc

B. Where, in the opinion of the Director, and in conformance with the City's RWQCB approved local limits allocation program, users may discharge at levels above those specified in Section 14.26.140A if sufficient excess capacity exists at the POTW, and the discharge is covered under a wastewater contribution permit.
(Ord. 2707 § 2 (part), 1993: Ord. 2360 § 4, 1990: Ord. 2278 § 1, 1989: Ord. 1718 § 1 (part), 1983.)

Section 14.26.150 State requirements.

State requirements and limitation on discharges shall apply in any case where they are more stringent than federal requirements and limitations or those in this chapter. (Ord. 1718 § 1 (part), 1983.)

Section 14.26.160 City's right of revision.

The city reserves the right to amend this chapter in order to establish more stringent limitations or requirements on discharges to the wastewater disposal system if deemed necessary to comply with the objectives of this chapter. (Ord. 1718 § 1 (part), 1983.)

Section 14.26.170 Excessive discharge.

No user shall increase the use of process water or in any way attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in the Federal Categorical Pretreatment Standards, or in any other pollutant-specific limitation developed by the city or state. (Ord. 1718 § 1 (part), 1983.)

Section 14.26.180 Accidental discharges.

A. Each user shall provide protection from acci-dental discharge of prohibited materials or other substances regulated by this chapter. Facilities to prevent accidental discharge of prohibited materials shall be provided and maintained at the owner or user's own cost and expense. Detailed plans showing facilities and operating procedures to provide this protection shall be submitted to the city for review, and shall be approved by the city before construction of the facility. All existing users shall complete such a plan within one year of the effective date of this chapter.

No user who commences contribution to the POTW after July 1, 1983 shall be permit-ted to introduce pollutants into the system until accidental discharge procedures have been ap-proved by the city. Review and approval of such plans and operating procedures shall not relieve the industrial user from the respon-sibility to modify the user's facility as necessary to meet the requirements of this chapter.

B. In the case of an accidental discharge, it is the responsibility of the user to immediately tele-phone and notify the POTW of the incident. The notification shall include location of discharge, type of waste, concentration and volume, and corrective actions.

1. Written Notice. Within five days following an accidental discharge the user shall submit to the director a detailed written report describing the cause of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liabil-ity which may be incurred as a result of damage to the POTW, fish kills, or any other damage to person or property nor shall such notification relieve the user of any fines, civil penalties, or other liability which may be imposed by this article or other applicable law.

2. Notice to Employees. A notice shall be permanently posted on the user's bulletin board or other prominent place advising employees whom to call in the event of a dangerous discharge. Employers shall insure that all employees who may cause or suffer such a dangerous discharge to occur are advised of the emergency notification procedures.

(Ord. 1718 § 1 (part), 1983.)

Section 14.26.190 Hazardous waste discharge.

Pursuant to 40 CFR 403.12(-), the user shall notify, in writing, the POTW, Cal-EPA, and EPA of any discharge into the POTW of a substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR 261. (Ord. 2707 § 5, 1993.)

Section 14.26.210 Purpose.

It is the purpose of this article to provide for the recovery of costs from users of the city's waste-water disposal system for the implementation of the program established in this chapter. (Ord. 1718 § 1 (part), 1983.)

Section 14.26.220 Charges and fees.

A. The city may adopt charges and fees by resolution which may include:
1. Fees for reimbursement of costs of setting up and operating the city's pretreatment program;
2. Fees for consistent removal by the city of pollutants otherwise subject to Federal Pretreatment Standards;
3. Other fees as the city may deem necessary to carry out the requirements contained in this chapter.
B. Costs incurred by the city as a result of required on-site sampling and analysis shall be reimbursed to the city by the user.
C. Total program costs, including administrative overhead, shall be recovered by the city via a 20 percent industrial wastewater surcharge on the monthly sewer bill for significant industrial users, and a 10 percent non-domestic waste-water surcharge on the monthly sewer bill for significant commercial users. The surcharge will be applied to a maximum of 15,000 sewer units per user per year, subject to annual evaluation by the Environmental Utilities Director.
(Ord. 2714 § 1, 1993: Ord. 2360 § 5, 1990: Ord. 2134 § 1, 1988: Ord. 1718 § 1 (part), 1983.)

Section 14.26.310 Wastewater dischargers.

It is unlawful for any significant industrial use to discharge any wastewater without a city waste-water contribution permit to any natural outlet within the City, or in any area under the jurisdiction of the City, and/or to the POTW except as authorized by the director in accordance with the provisions of this chapter. The user is required to notify the City prior to any substantial change in the discharge or the introduction of any new pollutant. The City may deny or condition new or increased discharges, or contributions of pollutants, or changes in the nature of pollutants, to the POTW by a user where such contributions do not meet applicable pretreatment standards or requirements or where such contributions would cause the POTW to violate its NPDES permit. (Ord. 2707 § 3 (part), 1993: Ord. 1718 § 1 (part), 1983.)

Section 14.26.320 Wastewater contribution permit in general.

All significant industrial users proposing to connect to or to contribute to the POTW shall obtain a wastewater contribution permit before connecting to or contributing to the POTW. All existing significant users connected to or contributing to the POTW shall obtain a wastewater contribution permit within one hundred eighty days after the effective date of this chapter. (Ord. 1718 § 1 (part), 1983.)

Section 14.26.330 Permit application.

A. Users required to obtain a wastewater contribution permit shall complete and file with the city an application in the form prescribed by the director. In support of the application the user shall submit, in units and terms appropriate for evaluation, the following information:

1. Name, address, and location (if different from the address);
2. SIC number according to the Standard Industrial Classification Manual, Bureau of the Budget, 1972, as amended;
3. Wastewater constituents and characteristics including but not limited to those mentioned in Article II of this chapter, as determined by a reliable analytical laboratory. Sampling and analysis shall be performed in accordance with procedures established by the EPA pursuant to Section 304 (g) of the Act and contained in 40 CFR, Part 136, as amended;
4. Time and duration of contribution;
5. Average daily and three minutes peak wastewater flow rates, including daily, monthly and seasonal variations if any;
6. Site plans, floor plans, mechanical and plumbing plans and details to show all sewers, sewer connections, and appurtenances by the size, location and elevation;
7. Description of activities, facilities and plant processes on the premises including all materials which are or could be discharged;
8. Where known, the nature and concentration of any pollutants in the discharge which are limited by any city, state, or federal pretreatment standards, and a statement regarding whether or not the pretreatment standards are being met on a consistent basis and if not, whether and what additional actions and/or additional pretreatment is required for the user to meet applicable pretreatment standards. New users who have not commenced discharge shall provide estimates of the nature and concentration of pollutants in the discharge;
9. If additional pretreatment or actions will be required to meet the pretreatment standards, the shortest schedule by which the user will provide such additional pretreatment or actions. The completion date in this schedule shall not be later than the compliance date established for the applicable pretreatment standard. The following conditions shall apply to this schedule:

a. The schedule shall contain increments of progress in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment or actions required for the user to meet the applicable pretreatment standards (e.g., hiring an engineer, completing preliminary plans, completing final plans, executing contract for major components, commencing construction, completing construction, etc.).

b. No increment referred to in this subsection (A)(9)(a) of this section shall exceed nine months.

c. Not later than fourteen calendar days following each date in the schedule and the final date or compliance, the user shall submit a progress report to the director including, as a minimum, whether or not it complied with the increment progress to be met on such date and, if not, the date on which it expects to comply with this increment of progress, the reason for delay, and the steps being taken by the user to return the construction to the schedule established. In no event shall more than nine months elapse between such progress reports to the director;

10. Each product produced by type, amount, process or processes and rate of production;
11. Type and amount of raw materials processed (average and maximum per day);
12. Number and type of employees, and hours of operation of plant and proposed or actual hours of operation of pretreatment system;
13. Any other information as may be deemed necessary by the city to evaluate the application.

B. The city may evaluate the data furnished by the user and may require additional information. After evaluation and acceptance of the data furnished, the city may issue a wastewater contribution permit subject to terms and conditions provided in this chapter.

C. Wastewater contribution permit applications shall be accompanied by a nonrefundable fee of twenty-five dollars.

D. If a permit application is denied, the applicant may within twenty calendar days of the decision appeal the decision to the city council. An ap-peal shall be accompanied by a nonrefundable fee of seventy-five dollars.

(Ord. 2280 § 4, 1989: Ord. 2134 § 2, 1988: Ord. 1718 § 1 (part), 1983.)

Section 14.26.335 Baseline monitoring.

Within one hundred and eighty days after the effective date of a categorical pretreatment standard, or one hundred and eighty calendar days after the final administrative decision made upon a category determination submission under 40 CFR 403.6(a)(4), whichever is later, existing industrial users subject to such categorical treatment standards and currently discharging to or scheduled to discharge to the POTW shall submit to the city a baseline monitoring report which contains the information listed in paragraphs (b)(1) through (7) of 40 CFR 403.12., and Section 14.26.330(A) of this code. This report shall be signed and certified by an authorized representative of the industrial user, as required by 40 CFR 403.12(1) and 40 CFR 403.6(a)(2)(ii) respectively. (Ord. 2280 § 5, 1989.)

Section 14.26.340 Permit Modifications.

Upon promulgation of a National Categorical Pretreatment Standard, the wastewater contribution permit of users subject to such standards shall be revised as soon as possible to require compliance with such pretreatment standard within the time frame prescribed by such pretreatment standard. Where a user subject to a categorical pretreatment standard has not previously submitted an application for a wastewater contribution permit as required by Section 14.26.320, the user shall apply for a wastewater contribution permit within one hundred eighty (180) calendar days after the promulgation of the applicable National Categorical Pretreatment Standard. In addition, the user with an existing wastewater contribution permit shall submit to the director within one hundred eighty (180) calendar days after the promulgation of an applicable categorical pretreatment standard, the information required by Section 14.26.330(A)(8) and (9). (Ord. 2707 § 3 (part), 1993: Ord. 2280 § 6, 1989: Ord. 1718 § 1 (part), 1983.)

Section 14.26.350 Permit conditions.

Wastewater contribution permits shall be expressly subject to all provisions of this chapter and all other applicable regulations, user charges and fees established by the city. Wastewater contribution permits may contain the following:

A. The unit charge or schedule of user charges and fees for the wastewater to be discharged to the POTW;
B. Limits on the average and maximum wastewater constituents and characteristics;
C. Limits on average and maximum rate and time of discharge or requirements for flow regulations and equalization;
D. Requirements for installation and maintenance of inspection and sampling facilities;
E. Specifications for monitoring programs which may include sampling locations, frequency of sampling, number, types, and standards for tests and reporting schedule;
F. Compliance schedules;
G. Requirements for submission of technical reports or discharge reports pursuant to Section 14.26.380;
H. Requirements for maintaining and retaining records relating to wastewater discharge as specified by the city, and affording city access to such records;
I. Requirements that the city be notified and that the user receive city approval before any new introduction of wastewater constituents or any substantial change in the volume or character of the wastewater constituents are introduced into the POTW;
J. Notification of slug discharges;
K. Other conditions as deemed appropriate by the city to ensure compliance with this chapter.
(Ord. 2280 § 7, 1989: Ord. 1718 § 1 (part), 1983.)

Section 14.26.360 Permits duration.

Permits shall be issued for a specified time period, not to exceed five years. The user shall apply for permit reissuance a minimum of one hundred eighty days prior to the expiration of the user's existing permit. The terms and conditions of the permit may be subject to modification by the city during the term of the permit as limitations or requirements as identified in Article II are modified or other just cause exists. The user shall be informed of any proposed changes in his permit at least thirty days prior to the effective date of change. Any changes or new conditions in the permit shall include a reasonable time schedule for compliance. (Ord. 1718 § 1 (part), 1983.)

Section 14.26.370 Permit transfer.

Wastewater contribution permits are issued to a specific user for a specific operation. A wastewater discharge permit shall not be reassigned or transferred or sold to a new owner, new user, different premises, or a new or changed operation without the approval of the city. Any succeeding owner or user shall also comply with the terms and conditions of the existing permit. (Ord. 1718 § 1 (part), 1983.)

Section 14.26.380 Reporting Requirements for Permittee.

Within ninety (90) calendar days following the date for final compliance with applicable pretreatment standards or, in the case of new source, following commencement of the introduction of wastewater into the POTW, any user subject to pretreatment standards shall submit to the director a report indicating the nature and concentration of all pollutants in the discharge from the regulated process which are limited by such pretreatment standards or requirements. The report shall state whether the applicable pretreatment standards are being met on a consistent basis and, if not, what additional pretreatment or action is necessary to bring the user into compliance with the applicable pretreatment standards. This report shall be signed and certified by an authorized representative of the industrial user, as required by 40 CFR 403.12(1) and 40 CFR 403.6(a)(2)(ii) respectively. If sampling performed by a user indicates a violation, the user shall notify the POTW within twenty-four (24) hours of becoming aware of the violation. The user shall repeat the sampling and analysis and submit the results of the repeat analysis to the POTW within thirty (30) days after becoming aware of the violation. (Ord. 2707 § 3 (part), 1993: Ord. 2280 § 8, 1989: Ord. 1718 § 1 (part), 1983.)

Section 14.26.390 Periodic compliance reports.

A. Any user subject to a pretreatment standard, after compliance date of such pretreatment standard, or in the case of a new source, after commencement of the discharge into the POTW, shall submit to the director during the months of June and December, unless required more frequently in the pretreatment standard or by the director, a report indicating the nature and concentration of pollutants in the effluent which are limited by such pretreatment standards. In addition, this report shall include a record of all daily flows which during the reporting period exceeded the average daily flow reported in Section 14.26.350(B).

At the discretion of the director and in consideration of such factors as local high or low flow rates, holidays, budget cycles, etc., the director may agree to alter the months during which the above reports are to be submitted.

B. The director may impose mass limitations on users which are using dilution to meet applicable pretreatments standards, or in other cases where the imposition of mass limitations are appropriate. In such cases, the report required by subsection (A) of this section shall indicate the mass of pollutants regulated by pretreatment standards in the effluent of the user. These reports shall contain the results of sampling and analysis of the discharge, including the flow and the nature and concentration, or production and mass where requested by the director, of pollutants contained therein which are limited by the applicable pretreatment standard. The frequency of monitoring shall not be less than prescribed in the pretreatment standard. All periodic compliance reports shall be signed and certified by an authorized representative of the industrial user, as required by 40 CFR 403.12(1) and 40 CFR 403.6(a)(2)(ii) respectively.

(Ord. 2280 § 9, 1989: Ord. 1718 § 1 (part), 1983.)

Section 14.26.410 Harmful Contributions.

A. The City may suspend the wastewater treatment service or revoke a wastewater contribution permit when such suspension or revocation is necessary, in the opinion of the director, in order to stop an actual or threatened discharge which presents or may present an imminent or substantial endangerment to the health or welfare of persons, to the environment, causes interference to the POTW or causes the city to violate any condition of its NPDES permit.

B. Any person notified of a suspension of the wastewater treatment service and/or revocation of a wastewater contribution permit shall immediately stop or eliminate the contribution. In the event of a failure of the person to comply voluntarily with the suspension order, the director shall take such steps as deemed necessary including immediate severance of the sewer connection, to prevent or minimize damage to the POTW system or endangerment to any individuals. The director shall reinstate the wastewater contribution permit and/or the wastewater treatment service only upon proof of the elimination of the nonconforming discharge. A detailed written statement submitted by the user describing the causes of the harmful contribution and the measures taken to prevent any future occurrence shall be submitted to the director within fifteen (15) days of the date of occurrence.

(Ord. 2707 § 4, 1993: Ord. 1718 § 1 (part), 1983.)

Section 14.26.420 Revocation of permit.

Any user who violates the following conditions of this chapter or applicable state and federal regulations is subject to having his permit revoked:

A. Failure of a user to factually and accurately report the wastewater constituents and characteristics of his discharge;

B. Failure of the user to report significant changes in operations, or wastewater constituents and characteristics;

C. Refusal of reasonable access to the user's premises for the purpose of inspection or monitoring; or

D. Violation of conditions of the permit.

(Ord. 1718 § 1 (part), 1983.)

Section 14.26.430 Violation--Penalty.

A. Any violation of this chapter, or the orders, rules, regulations and permits issued under this chapter, is unlawful and shall be an infraction or misdemeanor as determined by the city attorney.

B. Any user in violation of this chapter, or the orders, rules, regulations and permits issued under this chapter, may be ordered by the director to cease and desist operations until the violation is cured. Continuance of operations after notice to cease and desist has been furnished to user shall be unlawful and an infraction or misdemeanor as determined by the city attorney. Each day in which any such violation shall continue shall be deemed a separate offense.

C. The violation of any of the provisions of this chapter, or the orders, rules, regulations and permits issued under this chapter, or the doing of any act prohibited or the failure or omission to do any act required by this chapter, or the orders, rules, and regulations and permits issued under this chapter, is a public nuisance and may be enjoined by the city attorney.

D. If any violation of this chapter, or the orders, rules, regulations and permits issued under this chapter, causes damage to the POTW, the director may seek to recover civil damages from the user causing such damage.

E. The director is authorized to levy against any person administrative fines of up to ten thousand dollars per day for each violation of the rules, regulations, and permits issued under this chapter. The notice shall provide information as to the reason for the administrative fine and the authority. And the notice shall also specify the person's right to appeal.

1. The director shall provide written notice of such levy to the person by certified mail, user has the right to appeal the administrative action to the Roseville Public Utilities Commission by filing an appeal with the city clerk.
2. The appeal shall be submitted within twenty days of receipt of the notice and shall be accompanied by a nonrefundable fee of seventy-five dollars.
3. The user has the right to appeal the decision of the Roseville Public Utilities Commission to the city council. The appeal shall be submitted to the city clerk within twenty days of the decision of the Roseville Public Utilities Commission and shall be accompanied by a nonrefundable fee of seventy-five dollars.
F. The remedies and provisions of this section are cumulative, and are in addition to any other remedy or provision of law.
(Ord. 2280 § 13, 1989: Ord. 2134 § 3, 1988: Ord. 1718 § 1 (part), 1983.)

Section 14.26.440 Falsifying information.

Any person who knowingly makes any false statements, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to this chapter or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this chapter, shall, upon conviction, be guilty of a misdemeanor. (Ord. 1718 § 1 (part), 1983.)

CITY OF ROSEVILLE
WATER/WASTEWATER LABORATORY

PROGRAM: _____ DATE RECEIVED: _____

REMARKS: _____ DATE SAMPLED: _____

SAMPLED BY: _____ TIME: _____ ANALYST: _____ TIME: _____

LAB NUMBER

SAMPLE						
pH						
cruc - vol.						
dry wt.						
tare wt.						
diff.						
TOTAL SUSPENDED SOLIDS mg/l						
Dilution						
abs.						
Factor						
mg/l						
flsk# - vol.						
dry wt.						
tare wt.						
diff.						
OIL & GREASE mg/l						
Dilution						
abs.						
Factor						
mg/l						

Sample vol.	12	6	3	12	6	3	12	6	3										
w/o X	25	50	100	25	50	100	25	50	100										
w/ DO_i																			
w/ DO_{i-s}																			
DO_s																			
factor _____ Diff																			
result																			
BOD mg/l																			

Relinquished by: _____ Received by: _____

Date: _____ Time: _____ Date: _____ Time: _____

Caltest ANALYTICAL LABORATORY

1885 N. KELLY ROAD • NAPA, CA 94558 • (707) 258-4000 • Fax (707) 226-1001 • www.caltestlab.com

SAMPLE CHAIN OF CUSTODY

PAGE _____ OF _____

LAB # _____

PROJECT #/ PROJECT NAME

P.O. #

CLIENT:

REPORT TO:

ADDRESS: CITY: STATE: ZIP:

BILLING ADDRESS:

PHONE #: FAX PHONE: SAMPLER (PRINT & SIGN NAME):

ANALYSES REQUESTED

TURN-AROUND TIME
☐ STANDARD
☐ RUSH
DUE DATE: _____

CALTEST #	DATE SAMPLED	TIME SAMPLED	MATRIX	CONTAINER AMOUNT/TYPE	PRESERVATIVE	SAMPLE IDENTIFICATION SITE	CLIENT LAB #	COMP. or GRAB	REMARKS

By submittal of sample(s), client agrees to abide by the Terms and Conditions set forth on the reverse of this document.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY

FOR LAB USE ONLY

Samples: WC_____ MICRO_____ BIO_____ AA_____ SV_____ VOA_____ TEMP:_____ SEALED: Y___ / N___ INTACT: Y___ / N___

BD: BIO_____ WC_____ AA_____

CC: AA_____ SV_____ VOA_____

SIL: HP_____ PT_____ QT_____ VOA_____

W/HNO_3_____ H_2SO_4_____ NaOH_____

PIL: HNO_3_____ H_2SO_4_____ NaOH_____ HCL_____

COMMENTS

MATRIX: AQ = Aqueous Nondrinking Water, Digested Metals; FE = Low R.L.s, Aqueous Nondrinking Water, Digested Metals; DW = Drinking Water; SL = Soil, Sludge, Solid; FP = Free Product

CONTAINER TYPES: AL = Amber Liter; AHL = 500 ml Amber; PT = Pint (Plastic); QT=Quart (Plastic); HG = Half Gallon (Plastic); SJ = Soil Jar; B4 = 4 oz. BACT; BT = Brass Tube; VOA = 40 mL.VOA; OTC = Other Type Container

R_____ PR_____ M_____ F_____

WHITE - LABORATORY YELLOW - CLIENT COPY TO ACCOMPANY FINAL REPORT PINK - CLIENT COPY AS RECEIPT REV. 11/93

CITY OF ROSEVILLE
TRADITION • PRIDE • PROGRESS

APPLICATION FOR NON-DOMESTIC WASTEWATER DISCHARGE

Environmental Utilities
Laboratory / Industrial Waste
1800 Booth Road
Roseville, California 95747-9708

SECTION A – GENERAL INFORMATION

1. Company: Name _____
   Address _____
   _____
   Telephone _____

2. Facility: Name _____
   Address _____
   _____
   Telephone _____

3. Person authorized to represent this firm in official dealings with the City of Roseville:
   Name _____
   Title _____
   Telephone _____

4. Alternative contact person:
   Name _____
   Title _____
   Telephone _____

5. Identify the type of business (auto repair, machine shop, painting, printing, etc.):
   _____

Note to signing official: In accordance with Title 40 of the Code of Federal Regulations Part 403 Section 403.14, information and data provided in this questionnaire which identifies the nature and frequency of discharge shall be available to the public without restriction. Requests for confidential treatment of other information shall be governed by procedures specified in 40 CFR Part 2. The information in this questionnaire will be used to issue the permit.

This is to be signed by an authorized official of your firm after adequate completion of this form and review of the information by the signing official.

I have personally examined and am familiar with the information submitted in this document and attachments. Based upon my inquiry of those individuals immediately responsible for obtaining the information reported herein, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and/or imprisonment.

_____ _____
Signature of Official/ Title Date

SECTION A -- GENERAL INFORMATION

6. Describe the manufacturing, production, or service activities your firm conducts:

_____

_____

_____

_____

7. Standard Industrial Classification Number (s) (SIC) for your facility:

_____ _____ _____ _____ _____

8. This facility generates the following types of wastes (check all that apply):

	Average gallons/day		
☐ Domestic wastes (restrooms, etc.)	_____	☐ estimate	☐ measured
☐ Cooling water, non-contact	_____	☐ estimate	☐ measured
☐ Cooling water, contact	_____	☐ estimate	☐ measured
☐ Boiler/Tower blow down	_____	☐ estimate	☐ measured
☐ Process	_____	☐ estimate	☐ measured
☐ Equipment/ Facility Wash down	_____	☐ estimate	☐ measured
☐ Air Pollution Control Unit	_____	☐ estimate	☐ measured
☐ Stormwater runoff to sewer	_____	☐ estimate	☐ measured
☐ Other (specify) _____	_____	☐ estimate	☐ measured
Total	_____		

9. Wastes are discharged to (check all that apply):

	Average gallons/day		
☐ Sanitary sewer	_____	☐ estimate	☐ measured
☐ Storm sewer	_____	☐ estimate	☐ measured
☐ Surface water	_____	☐ estimate	☐ measured
☐ Ground waters	_____	☐ estimate	☐ measured
☐ Waste haulers	_____	☐ estimate	☐ measured
☐ Evaporation	_____	☐ estimate	☐ measured
☐ Other (specify) _____	_____	☐ estimate	☐ measured

Provide name and address of waste hauler (s):

_____

_____

10. Is a Spill Prevention Control and Countermeasure Plan prepared for facility?

☐ Yes ☐ No

SECTION B – FACILITY OPERATION CHARACTERISTICS

1. Number of employee shifts worked per 24-hour day _____
   Average number of employees per shift _____
   Starting times of shift (s) 1st _____ am/pm 2nd _____ am/pm 3rd _____ am/pm

SECTION B – FACILITY OPERATION CHARACTERISTICS

Note: The following information in this section must be completed for each product line.

2. Principal product produced: _____
3. Raw materials and process additives used:
   _____
   _____

4. Production process is: ☐Batch ☐Continuous ☐Both: _____% Batch ____% Continuous
   Average number of batches per 24-hour day: _____

5. Hours of Operation: _____am to _____pm ☐continuous

6. Is production subject to seasonal variation? ☐yes ☐no
   If yes, briefly describe the seasonal production cycle: _____
   _____

7. Are any process changes or expansions planned during the next three years? ☐yes ☐no
   If yes, attach a separate sheet to this form describing the nature of the planned changes and or expansion.

SECTION C – WASTEWATER INFORMATION

1. If your facility employs processes in any of the 34 industrial categories or business activities listed below and any of these processes generate wastewater or waste sludge, place a check mark beside the category or business activity (check all that apply):
   a. 34 Industrial Categories:

1. ☐Adhesives	18. ☐Ore Mining
2. ☐Aluminum Forming	19. ☐Organic Chemicals
3. ☐Auto/Other Laundries	20. ☐Paint & Ink
4. ☐Battery Manufacturing	21. ☐Pesticides
5. ☐Coal Mining	22. ☐Petroleum Refining
6. ☐Coil Coating	23. ☐Pharmaceuticals
7. ☐Copper Forming	24. ☐Photographic Supplies
8. ☐Electric/Electronic Components	25. ☐Plastic/Synthetic Materials
9. ☐Electroplating	26. ☐Plastics Processing
10. ☐Explosives Manufacturing	27. ☐Porcelain Enamel
11. ☐Foundries	28. ☐Printing & Publishing
12. ☐Gum & Wood Chemicals	29. ☐Pump & Paper
13. ☐Inorganic Chemicals	30. ☐Rubber
14. ☐Iron & Steel	31. ☐Soaps & Detergents
15. ☐Leather Tanning & Finishing	32. ☐Steam Electric
16. ☐Mechanical Products	33. ☐Textile Mills
17. ☐Nonferrous Metals	34. ☐Timber

   b. Other Business Activity
   ☐Dairy Products
   ☐Slaughter/Meat Packing/ Rendering
   ☐Food/Edible Products Processor
   ☐Beverage Bottler

SECTION C – WASTEWATER INFORMATION

2. Pretreatment devices or processes used for treating wastewater or sludge (check all that apply):

☐ Air Flotation	☐ Neutralization, pH correction
☐ Centrifuge	☐ Ozonation
☐ Chemical Precipitation	☐ Reverse Osmosis
☐ Chlorination	☐ Screen
☐ Cyclone	☐ Sedimentation
☐ Filtration	☐ Septic Tank
☐ Flow Equalization	☐ Solvent Separation
☐ Grease Interceptor	☐ Spill Protection
☐ Ion Exchange	☐ Sump

☐ Grease or oil separation, type _____
☐ Biological Treatment, type _____
☐ Rainwater diversion or storage _____
☐ Other chemical treatment, type _____
☐ Other physical treatment, type _____
☐ Other, type _____
☐ No pretreatment provided

3. If any wastewater analyses have been performed on the wastewater discharge (s) from your facilities, attach a copy of the most recent data to this questionnaire. Be sure to include the data of the analysis, name of laboratory performing the analysis, and location(s) from which sample(s) were taken. (Attach sketches, plans, etc. as necessary).

SECTION D – OTHER WASTES

1. Are any liquid wastes or sludges from this firm disposed of by means other than discharge to the sewer system?
☐ Yes ☐ No

If "no" skip remainder of Section D.
If "yes", complete items 2 and 3.

2. These wastes may best be described as:

	Estimated gallons or pounds per year
☐ Acids and Alkalies	_____
☐ Heavy Metal Sludges	_____
☐ Inks/Dyes	_____
☐ Oil and/or Grease	_____
☐ Organic Compounds	_____
☐ Paints	_____
☐ Pesticides	_____
☐ Plating Wastes	_____
☐ Pretreatment Sludges	_____
☐ Solvents/Thinners	_____
☐ Other Hazardous Wastes (specify) _____	_____
☐ Other Wastes (specify) _____	_____

SECTION D – OTHER WASTES

3. For the above checked wastes, does your company practice:
   - ☐ on-site storage
   - ☐ off-site storage
   - ☐ on-site disposal
   - ☐ off-site disposal

   Briefly describe the methods of storage or disposal utilized:

   _____
   _____
   _____
   _____
   _____

If you have any questions concerning this application, please contact the City of Roseville Industrial Waste Division at 774-5676.

PRIORITY POLLUTANT INFORMANTION

Mark all the chemicals that are "known or suspected to be present" or "known or suspected to be absent" in your manufacturing or service activity, or generated as a by-product:

Chemical Compound	Known Present	Suspect Present	Known Absent	Suspect Absent	Known/Suspected Concentration/day
I. METAL AND INORGANICS					
1. Antimony					
2. Arsenic					
3. Asbestos					
4. Beryllium					
5. Cadmium					
6. Chromium					
7. Copper					
8. Cyanide					
9. Lead					
10. Mercury					
11. Nickel					
12. Selenium					
13. Silver					
14. Thallium					
15. Zinc					
PHENOLS & CRESOLS					
16. Phenol (s)					
17. Phenol, 2-chloro					
18. Phenol, 2,4-dichloro					
19. Phenol, 2,4,6-trichloro					
20. Phenol, pentachloro					
21. Phenol, 2-nitro					
22. Phenol, 4-nitro					
23. Phenol, 2,4-dinitro					
24. Phenol, 2,4-dimethyl					
25. m-Cresol, p-chloro					
26. O-Cresol, 4,6-dinitro					
III. MONOCYCLIC AROMATICS (EXCLUDING PHENOLS, CRESOL, PHTHALATES)					
27. Benzene					
28. Benzene, chloro					
29. Benzene, 1,2-dichloro					
30. Benzene, 1,3-dichloro					
31. Benzene, 1,4-dichloro					

Chemical Compound	Known Present	Suspect Present	Known Absent	Suspect Absent	Known/Suspected Concentration/day
32. Benzene, 1,2,4-trichlor					
33. Benzene, hexachloro					
34. Benzene, ethyl					
35. Benzene, nitro					
36. Toluene					
37. Toluene, 2,4-dinitro					
38. Toluene, 2,6-dinitro					
IV. PCB's & RELATED COMPOUNDS					
39. PCB - 1016					
40. PCB - 1221					
41. PCB - 1232					
42. PCB - 1242					
43. PCB - 1248					
44. PCB - 1254					
45. PCB - 1260					
46. 2 - Chloronaphthalene					
V. ETHERS					
47. Ether, bis(chloromethyl)					
48. Ether, bis(2-chloroethyl)					
49. Ether, bis(2-chloroisopropyl)					
50. Ehter, 2-chloroethyl vinyl					
51. Ether, 4-bromophenyl phenyl					
52. Ether, 4-chlorophenyl phenyl					
53. Bis (2-chlorethoxy) methane					
VI. NITROSAMINES & OTHER NITROGEN-CONTAINING COMPOUNDS					
54. Nitrosamine, dimethyl					
55. Nitrosamine, diphenyl					
56. Nitrosamine, di-n-propyl					
57. Benzidine					
58. Benzidine, 3,3'-dichloro					
59. Hydrazine, 1,2-diphenyl					
60. Acrylonitrile					

CITY OF ROSEVILLE
TRADITION · PRIDE · PROGRESS

Environmental Utilities
Laboratory / Industrial Waste
1800 Booth Road
Roseville, California 95747-9708

INDUSTRIAL WASTE PROGRAM -- SIGNIFICANT INDUSTRIAL USER INSPECTION REPORT

1) Inspector(s)/Date/Time: _____

Inspector(s) _____ Signature(s): _____

2) Company Name: _____

3) Address: _____

4) Contact Person: _____
Title/Phone: _____

5) City Permit No. _____ IW Flow _____
Category _____

6) Inspection/Type/Purpose: Unannounced _____ Scheduled _____
New Company _____ Complaint _____ Spill _____
Violation _____ Other _____

Purpose of Inspection:
_____
_____
_____

7) Last City Actions (Type/Date): Inspection:
Sample: _____
Violation: _____
Enforcement: _____

8) Nature of Operation: _____
_____

Number of Employees: _____

9) Wastestreams to POTW:

_____
_____
_____

10) Pretreatment System: Flow-Through _____ Batch
Condition/Operation = Good_____ Fair _____ Poor

Description of pretreatment system:

_____
_____
_____
_____
_____

Inspection notes/comments/observations:

_____
_____
_____

11) Process Areas Inspected:

_____
_____
_____
_____

Condition/Operation = Good _____ Fair _____ Poor
General Housekeeping = Good _____ Fair _____ Poor

Inspection notes/comments/observations:

_____
_____
_____
_____
_____

12) Wastestreams to Surface/Groundwater: _____

13) Chemical/Waste Storage Areas:

_____
_____
_____
_____

Condition = Good _____ Fair _____ Poor

Inspection notes/comments/observations:

14) Hazardous Waste Drums/Labels/Manifests:

All drums/containers clearly labeled? : Yes _____ No _____

Do manifests indicate balance between chemicals in/waste out?
Yes _____ No _____ If not, why not?: Evaporation
Incomplete records ____ Possible prohibited discharge?

Inspection notes/comments/observations:

15) Description of samples collected:

Sampling notes/comments/observations (sample appearance):

****

INSPECTION RESULTS (complete after lab results are in):

Complied with City Permit? Yes _____ No _____ N/A
Comments:

Recommended Action By: City _____ RWQCB _____ EPA
Priority: ASAP _____ High _____ Medium _____ Low

Comments:

_____
_____
_____
_____
_____

CITY OF ROSEVILLE
TRADITION · PRIDE · PROGRESS

Environmental Utilities
Laboratory / Industrial Waste
1800 Booth Road
Roseville, California 95747-9708

Permit Number: _____

CITY OF ROSEVILLE
WASTEWATER DISCHARGE PERMIT

Company Name: _____

Division Name (If Applicable): _____

Mailing Address: _____
Street or P.O. Box

_____
City, State and Zip Code

Facility Address: _____
Street Address

_____
City, State and Zip Code

The above Industrial User is authorized to discharge industrial wastewater to the City of Roseville's sewer system in compliance with the City of Roseville Municipal Code Chapter 14.26, any applicable provisions of Federal or State law or regulation, and in accordance with discharge point(s), effluent limitations, monitoring requirements, and other conditions set forth herein.

This permit is granted in accordance with the application filed on,_____,_ with the City of Roseville Utility Engineering Division, and in conformity with plans, specifications, and other data submitted to the City in support of the above application.

Effective Date: _____

Expiration Date: _____

_____
City of Roseville Representative

WASTEWATER PERMIT FOR NON-DOMESTIC DISCHARGE

PART I - Wastewater Discharge Limitations and Monitoring Requirements

1. The Industrial User under this permit is subject to the discharge requirements stated in the City of Roseville Municipal Code Chapter 14.26 regarding industrial wastewater and Federal Categorical Standards Section(s) _____.

a. Flow Rate _____

b. Authorized Discharge. All other waste streams are unauthorized and strictly prohibited:

c. Local limits: (see Attachment C for applicable limits).

d. Categorical Limits. See Attachment A, if applicable.

e. Compliance Schedule. See Attachment B, if applicable.

f. Effluent Monitoring Program. See Attachment C.

WASTEWATER PERMIT FOR NON-DOMESTIC DISCHARGE

PART II - Reporting Requirements

1. The Industrial User shall notify the City immediately upon any accidental or slug discharge to the sanitary sewer as outlined in the City of Roseville Municipal Code Chapter 14.26. Formal written notification discussing circumstances and mitigation shall be submitted to the City within five (5) days of the occurrence.

2. The Industrial User shall notify the City prior to the introduction of new wastewater or pollutants or any substantial change in the volume or characteristics of the wastewater being introduced into the POTW from the User's industrial processes. Formal written notification shall follow within thirty(30)days of such introduction.

3. Any upset experienced by the Industrial User of its treatment that places it in a temporary state of noncompliance with wastewater discharge limitations contained in this permit or other limitations specified in the City's Ordinance shall be reported to the City within twenty-four (24) hours of first awareness of the commencement of the upset. A detailed report shall be filed within five (5) days.

4. The Industrial User is required to submit to the City _____ reports per year____ on results of its sampling of pollutants specified in Part I of this permit. This report shall also contain the required flow measurement data. Pursuant to 1989 amendments to the federal pretreatment regulations, the City has the option of conducting required self-monitoring for the industrial user. See Effluent Monitoring Program Attachment.

5. If the Industrial User has submitted an approved Compliance Time Schedule with the City, the Industrial User shall submit a progress report to the City no later than fourteen (14) days following each date in the compliance schedule. This report must indicate whether or not the increment of progress was met on the date, the reason(s) for any delay, and what steps are being taken by the User to return to the schedule established. In no event shall more than twelve (12) months elapse between such progress reports to the City.

6. Within ninety(90)days following the final compliance date specified in Section I of this permit, the Industrial User shall submit a final compliance report. The Industrial User will be required to sample its wastewater for the pollutants specified in Section I, and report compliance. Any reasons for not complying and any steps being taken by the User to comply shall be part of the report.

7. An Annual Report will be submitted to the City, on the second Monday in January. This report will summarize violations, problems, treatment changes, and any other pertinent information from the previous calendar year.

8. Attached to this permit is a map showing the 1 locations from which samples will be taken. Protocol for these samples are stated in Section III.5.

9. All reports shall be submitted to the following address:

City of Roseville
Attn: Industrial Waste Division
1800 Booth Rd.
Roseville, CA 95747

PART III - Standard Conditions

1. The Industrial User shall comply with all the general prohibitive discharge standards in City of Roseville Municipal Code Chapter 14.26.

2. **RIGHT OF ENTRY**

The Industrial User shall, with or without prior notification by the City, allow the City or its representative to enter upon the premises of the User, at all reasonable hours, for the purposes of inspection, sampling, or records inspection. Reasonable hours in the context of inspection and sampling includes any time the Industrial User is operating any process which results in a process wastewater discharge to the City's sewage system.

3. **RECORDS RETENTION**

The Industrial User shall retain and preserve for no less than three (3) years, any records, books, documents, memoranda, reports, correspondence and any and all summaries thereof, relating to monitoring, sampling and chemical analyses made by or in behalf of the User in connection with its discharge.

All records that pertain to matters that are the subject of special orders or any other enforcement or litigation activities brought by the City shall be retained and preserved by the Industrial User until all enforcement activities have concluded, and all periods of limitation with respect to any and all appeals have expired.

4. **CONFIDENTIAL INFORMATION**

Except for data determined to be confidential under City of Roseville Municipal Code Section 14.26.390.4, all reports required by this permit shall be available for public inspection.

5. **RECORDING OF RESULTS (Chain of Custody)**

For each measurement of sample taken pursuant to the requirements of this permit, the User shall record the following information:

a) The exact place, date, and time of sampling;

b) The dates the analyses were performed;

c) The person(s) who performed the analyses;

d) The analytical techniques or methods used; and

e) The results of all required analyses.

6. **DILUTION**

No Industrial User shall increase the use of potable or process water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit.

7. **PROPER DISPOSAL OR PRETREATMENT SLUDGE AND SPENT CHEMICALS**

The disposal of sludge and spent chemicals generated shall be done in accordance with Section 405 of the Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act. Industrial User shall maintain records and manifests of all disposals for a period of three (3) years.

8. **SIGNATORY REQUIREMENTS**

All reports required by this permit shall be signed by a principal executive officer of the User, or his designee.

9. **REVOCATION OF PERMIT**

The permit issued to the Industrial User by the City may be revoked when, after inspection, monitoring or analysis it is determined that the discharge of wastewater to the sanitary sewer is in violation of Federal, State, or local laws, ordinances, or regulations. Additionally, falsification or intentional misrepresentation of data or statements pertaining to the permit application or any other required reporting form, shall be cause for permit revocation.

10. **LIMITATION ON PERMIT TRANSFER**

Wastewater discharge permits are issued to a specific User or a specific operation and are not assignable to another User nor are they transferable to any other location without prior approval from the City. If the Industrial Discharger changes ownership, the new owner must apply for a new discharge permit.

11. **FALSIFYING INFORMATION OR TAMPERING WITH MONITORING EQUIPMENT**

Knowingly making any false statement on any report or other document required by this permit or knowingly rendering any monitoring device or method inaccurate may result in punishment under criminal laws of the City, as well as being subjected to civil penalties and relief.

12. **MODIFICATION OR REVISION OF THE PERMIT**

a) The terms and conditions of this permit are subject to modification by the City at any time as limitations or requirements are identified by City Staff or pursuant to City of Roseville Municipal Code Section 14.26.340.

b) This permit may also be modified to incorporate special conditions resulting from the issuance of a special order.

c) The terms and conditions may be modified as a result of EPA promulgating new federal pretreatment standards.

d) Any permit modification which result in new conditions in the permit shall include a reasonable time schedule for compliance, if necessary.

13. **DUTY TO REAPPLY**

The City shall notify a User one hundred and eighty (180) days prior to the expiration of the User's Permit. Within ninety(90)days of the notification, the User shall reapply for re-issuance of the permit on a form provided by the City.

14. **SEVERABILITY**

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

15. **PROPERTY RIGHTS**

The issuance of this permit does not convey any of its property rights in either real or personal property, or any exclusive privileges, nor does it authorize any invasion of personal rights, nor any infringement of Federal, State or Local regulations.

16. **OPERATION AND MAINTENANCE**

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used to achieve compliance with the conditions of this permit. Proper operation and maintenance includes, but is not limited to, effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls. This provision requires the operation of back-up or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit.

17. **PENALTY PROVISION**

Any violation of this permit or City of Roseville Municipal Code Chapter 14.26, may subject the permittee to revocation of this permit, civil penalties of not less than $500 per day per violation, and/or administrative penalties not to exceed $10,000 per day of violation. In addition, since both EPA and RWQCB have the authority to enforce any portion of the City's pretreatment program, any violation may subject the permittee to Federal or State civil penalties not to exceed $25,000 per day of violation or administrative penalties not to exceed $10,000 per day per violation up to $125,000 per day.

18. **BYPASS PROHIBITION**

Bypass of any portion of the pretreatment plant is prohibited, and the City may take enforcement action for bypass, unless: (1) the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage, (2) there were no feasible alternatives to the bypass such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime, or (3) upon notice submitted by the permittee.

19. **BACK CHARGE FOR EXPENSES**

Any expenses relating to the Industrial User incurred by the City for operating the Industrial Pretreatment Program will be back charged to the User.

20. **SPCC SUBMITTAL**

As required by City of Roseville Municipal Code Section 14.26.180, the Industrial User is required to provide adequate spill prevention for any above-ground hazardous waste or oil tanks. A minimum being a berm surrounding the area which will hold the entire volume of the tank(s).

ATTACHMENT A

CATEGORICAL LIMITS

ATTACHMENT B

COMPLIANCE SCHEDULE

ATTACHMENT C

EFFLUENT MONITORING PROGRAM

The sampling frequencies listed below refer to the frequency of monitoring to be performed by the City. Effluent samples to be analyzed for pollutants specified in the local limits section shall be collected downstream from the last connection through which wastes can be admitted to the City's collection system. Samples to be analyzed for pollutants specified in the Categorical limits section shall also be collected at this point if the Combined Wastestream Formula has been applied. If the Combined Wastestream Formula has not been applied, these samples shall be taken from the undiluted effluent of the regulated process.

Time of collection of grab samples shall be recorded. Composite samples shall be flow-proportional and shall be collected over at least an 8hour period.

If the discharge is intermittent rather than continuous, samples shall be taken during the discharge. The following shall constitute the effluent monitoring program:

TO MAINTAIN COMPLIANCE WITH LOCAL STANDARDS:

Constituents	Limit	Sample Type	Frequency
Ammonia	20.0 mg/l	composite	
Arsenic	0.19 mg/l	"	
Beryllium	0.01 mg/l	"	
Cadmium	0.025 mg/l	"	
Chromium, total	0.56 mg/l	composite	
Chemical Oxygen Demand	600.0 mg/l	"	
Copper	0.25 mg/l	composite	
Cyanide, total	0.13 mg/l	grab	
Fluoride	32.0 mg/l	composite	
Lead	0.06 mg/l	"	
Mercury	0.02 mg/l	"	
Nickel	1.3 mg/l	"	
Oil and Grease	100.0 mg/l	grab	
Silver	0.04 mg/l	composite	
Suspended Solids	200.0 mg/l	"	
TTO (note 1)	2.0 mg/l	624/625	
Zinc	2.4 mg/l	"	
pH within the range of 5.5 to 12.5		grab	

EFFLUENT MONITORING PROGRAM

NOTE 1 -- Total Toxic Organics (TTO) which is the summation of all quantifiable values greater than 0.01 milligrams per liter (0.01mg/l) for the following constituents:

Acenaphthene
Acrolein
Acrylonitrile
Benzene
Benzidine
Carbon tetrachloride
Chlorobenzene
1,2,4-trichlorobenzene
Hexachlorobenzene
1,2-dichloroethane
1,1,1-trichloreothane
Hexachloroethane
1,1-dichloroethane
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane
Chloroethane
Bis(2-chloroethyl) ether
2-chloroethyl vinyl ethers
2-chloronaphthalene
2,4,6-trichlorophenol
4-Chloro-3-methylphenol
Chloroform
2-chlorophenol
1,2-dichlorobenzene
1,3-dichlorobenzene
1,4-dichlorobenzene
3,3-dichlorobenzidine
1,1-dichloroethene
1,2-trans-dichloroethene
2,4-dichlorophenol
1,2-dichloropropane
1,2-dichloropropylene
2,4-dimethylphenol
2,4-dinitrotuluene
2,6-dinitrotoluene
1,2-diphenylhydrazine
Ethylbenzene
Fluoranthene
4-chlorophenyl phenyl ether
4-bromophenyl phenyl ether
Bis(2-chloroisopropyl) ether
Bis(2-chloroethoxy) methane
Methylene chloride
Methyl chloride
Methyl bromide
Bromoform
Dichlorobromomethane
Chlorodibromomethane
Hexachlorobutadiene
Hexachlorocyclopentadiene
Isophorone
Naphthalene
Nitrobenzene
2-nitrophenol
4-nitrophenol
2,4-dinitrophenol
4,6-dinitro-o-cresol
N-nitrosodimethylamine
N-nitrosodiphenylamine
N-nitrosodi-n-propylamine
Pentachlorophenol
Phenol
Bis(2-ethylhexyl) phthalate
Butyl benzyl phthalate
Di-N-Butyl Phthalate
Di-n-octyl phthlate
Diethly Phthlate
Dimethly phthalate
benzo(a) anthracene
Benzo(a)pyrene
Benzo(b) fluoranthene
Benzo(b) fluoranthene
Chrysene
Acenaphthylene
Anthracene
Benzo(ghi) perylene
Fluorene
Phenanthrene
Dibenzo(,h) anthracene
Indeno (1,2,3-cd) pyrene
Pyrene
Tetrachloroethene
Toluene
Trichloroethene
Vinyl chloride
Aldrin
Dieldrin
Chlordane
4,4-DDT
4,4-DDE
4,4-DDD
Alpha-endosulfan
Beta-endosulfan
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide
Alpha-BHC
Beta-BHC
Gamma-BHC
Delta-BHC
PCB-1242
PCB-1254
PCB-1221
PCB-1232
PCB-1248
PCB-1260
PCB-1016

ATTACHMENT C (continued)

EFFLUENT MONITORING PROGRAM

TO MAINTAIN COMPLIANCE WITH CATEGORICAL STANDARDS:

CITY OF ROSEVILLE
TRADITION • PRIDE • PROGRESS

Environmental Utilities
Laboratory / Industrial Waste
1800 Booth Road
Roseville, California 95747-9708

****

WARNING NOTICE OF VIOLATION

****

1. DISCHARGER _____

2. ADDRESS OF WASTEWATER DISCHARGE _____
_____

3. TIME OF VIOLATION (Date, Hour) _____

4. PERMIT NO. _____

5. VIOLATION OF ROSEVILLE MUNICIPAL CODE, SECTION _____

6. DESCRIPTION OF VIOLATION _____
_____
_____
_____

7. IMPORTANT: VIOLATION MUST CEASE AND DESIST PRIOR TO: _____
_____

8. RECEIPT OF NOTICE ACKNOWLEDGED BY DISCHARGER

_____ _____
PRINTED NAME DATE

_____ _____
TITLE SIGNATURE

9. NOTICE ISSUED BY:

_____ _____
PRINTED NAME DATE

_____ _____
TITLE SIGNATURE

CITY OF ROSEVILLE
TRADITION • PRIDE • PROGRESS

Environmental Utilities
Laboratory / Industrial Waste
1800 Booth Road
Roseville, California 95747-9708

***** NOTICE OF VIOLATION *****

1. DISCHARGER:

2. ADDRESS OF WASTEWATER DISCHARGE:

3. DATE OF VIOLATION:

4. PERMIT NO.:

5. VIOLAITON OF ROSEVILLE MUNICIPLE CODE:

6. DESCRIPTION OF VIOLATION:

7. IMPORTANT: *VIOLATION MUST CEASE AND DESIST IMMEDIATELY*

8. RECEIPT OF NOTICE ACKNOWLEDGED BY DISCHARGER:

PRINTED NAME	DATE
TITLE	SIGNATURE

9. NOTICE ISSUED BY:

NAME	DATE
TITLE	SIGNATURE

Appendix 3-2

Joint Exercise of Power Agreement for the South Placer Wastewater Authority

JOINT EXERCISE OF POWERS AGREEMENT
FOR THE
SOUTH PLACER WASTEWATER AUTHORITY

THIS JOINT EXERCISE OF POWERS AGREEMENT (the "Agreement") is made effective as of the 1st day of October, 2000, by and among the **CITY OF ROSEVILLE**, a charter city duly organized and existing under the laws of the State of California (the "City"), the **SOUTH PLACER MUNICIPAL UTILITY DISTRICT**, a municipal utility district duly organized and existing under the laws of the State of California (the "District"), and the **COUNTY OF PLACER**, a political subdivision duly organized and existing under the laws of the State of California (the "County")

RECITALS

A. WHEREAS, the City, the District, and the County have the common powers to acquire real property and to plan, finance, acquire, construct, own, and operate wastewater facilities; and

B. WHEREAS, the City, the District, and the County have determined that the public interest will be served by the joint exercise of these powers through this Agreement and the creation of a joint powers authority with the power to plan for, finance, acquire, construct, own and operate Regional Wastewater Facilities; and

C. WHEREAS, as soon as practicable after the date first above written, the City, the District, the County, and the Authority will enter into the Funding Agreement and the Operations Agreement (defined hereinafter), to provide for the funding and operation of the Regional Wastewater Facilities.

NOW THEREFORE, the parties hereto agree as follows:

AGREEMENT

1 Definitions. Words and phrases used in this Agreement shall have the following meanings:

Authority is defined in Section 3

Board is defined in Subsection 7 a.

City is defined in the preamble

County is defined in the preamble

District is defined in the preamble

Dry Creek Plant means the regional wastewater treatment plant owned and operated by the City for the mutual benefit of the Participants and known as the "Dry Creek Wastewater Treatment Plant "

Funding Agreement means an agreement among the Authority and the Participants relating to the funding of Regional Wastewater Facilities The Funding Agreement shall be in the form of Exhibit A, attached hereto, subject to such changes as may be (a) necessary to facilitate the issuance of bonds for the planning, design, acquisition, and construction of Regional Wastewater Facilities, or (b) otherwise agreed upon by the Participants

Law is defined in Section 2 hereof

Operations Agreement means an agreement among the Authority and the Participants relating to the operation of Regional Wastewater Facilities The Operations Agreement shall be in the form of Exhibit B, attached hereto, subject to such changes as may be (a) necessary to facilitate the issuance of bonds for the planning, design, acquisition, and construction of Regional Wastewater Facilities, or (b) otherwise agreed upon by the Participants

Participant means, individually, the City, the County, or the District Participants means, collectively, the City, the County and the District

Pleasant Grove Plant means the regional wastewater treatment plant to be owned and operated by the City for the mutual benefit of the Participants and to be known as the Pleasant Grove Wastewater Treatment Plant

Regional Connection Fees means the connection fees imposed and collected by the Participants pursuant to the applicable provisions of the Roseville Municipal Code, District ordinances, and County ordinances, for the purpose of funding expansions or modifications of, and/or improvements to, Regional Wastewater Facilities

Regional Wastewater Facilities means the Pleasant Grove Plant, the Dry Creek Plant, any other regional treatment plants constructed by the Authority or any of the Participants in the future to facilitate wastewater treatment, collection, conveyance, recycling, discharge, and disposal services collectively to all of the Participants, and all Related Regional Infrastructure

Related Regional Infrastructure means trunk sewers, interceptor lines, force mains, pump stations, reclaimed/recycled water infrastructure, and all other wastewater infrastructure, constructed in conjunction with the Pleasant Grove Plant, the Dry Creek Plant, and/or other

regional wastewater treatment plants constructed in the future, as appropriate and necessary to facilitate wastewater collection, conveyance, treatment, recycling, discharge, and disposal services collectively to all of the Participants. "Related Regional Infrastructure" shall not include trunk sewers, interceptor lines, force mains, pump stations, reclaimed/recycled water infrastructure, or any other wastewater infrastructure that (a) facilitate such services to only one or two of the Participants, or (b) are otherwise covered by other agreements providing for the apportionment of construction, operation and maintenance costs therefor, except for the agreements that are expressly superceded by the Funding Agreement and the Operations Agreement.

2. Authority and Purpose. This Agreement is made pursuant to Chapter 5 of Division 7 of Title 1 of the California Government Code (commencing with section 6500) (the "Law") relative to the joint exercise of powers common to the Participants. The purpose of this Agreement is to provide for the planning, financing, acquisition, ownership, construction, and operation of Regional Wastewater Facilities.

3. Creation of Authority and Jurisdiction. The Participants hereby create the South Placer Wastewater Authority ("Authority"), a public entity separate from the City, the District, and the County. The jurisdiction of the Authority shall be the service areas served by Regional Wastewater Facilities, as those areas may be modified from time to time.

4. Term and Termination. This Agreement shall be effective as of the date first above written. It shall remain in effect until terminated in accordance with the Law by two (2) or more of the Participants; provided, however, that this Agreement may not be terminated, and no Participant may withdraw its membership, until all bonds or other instruments of indebtedness issued by the Authority, if any, have been paid in full.

5. Powers. The Authority shall have all powers necessary or reasonably convenient to carry out the purposes stated in Section 2, including, but not limited to, the following:

a. to secure administrative office space and furnishings;

b. to make and enter into contracts;

c. to contract for, or employ, administrative, technical and support staff, and consultants and contractors of any kind;

d. to acquire and maintain insurance of all types;

e. to lease, acquire, hold, or dispose of real property by negotiation, dedication, or eminent domain;

f. to lease, acquire, operate, maintain and dispose of materials, supplies, and equipment of all types;

g. to construct and operate buildings and facilities of any kind, including, without limitation, Regional Wastewater Facilities;

h. to accept, hold, invest (pursuant to the Law, including, without limitation, section 6509 5 thereof), manage, and expend monies;

i. to levy fees and taxes, to enter into lease purchase agreements, and to issue bonds and incur other forms of indebtedness, as provided for in the Law, including, without limitation, sections 6547, 6547 1, 6547 5, and 6547 6 thereof, or any other applicable law;

j. to form a special assessment district under any legal authority that exists now or in the future, including, without limitation, the Improvement Act of 1911 (Streets & Highways Code section 5000 *et seq.*), the Municipal Improvement Act of 1913 (Streets & Highways Code section 10000 *et seq.*), the Improvement Bond act of 1915 (Streets & Highways Code section 8500 *et seq.*), or any other authority that exists now or in the future;

k. to form a special tax district under the Mello-Roos Community Facilities District Act or any other authority that may exist now or in the future;

l. to negotiate and enter into reimbursement agreements when monies to construct Regional Wastewater Facilities are available;

m. to sue and be sued; and

n. to exercise all powers incidental to the foregoing.

6. Duties. The Authority shall have the duty to do the following within the times specified or, if no time is specified, within a reasonable time:

a. to retain legal counsel for all Authority business, including litigation;

b. to evaluate the need for, and acquire and maintain if necessary, liability, errors and omissions, or other insurance;

c. to finance Regional Wastewater Facilities; and

d. to conduct an annual audit as required by the provisions of Subsection 7 d(3)

7 Administration

a Governing Board -- Membership The Authority shall be administered by a board of directors ("Board") consisting of five directors Two directors shall be appointed by the City, one director shall be appointed by the District, and two directors shall be appointed by the County One County-appointed director shall be a member of the County Board of Supervisors and must represent a supervisorial district which includes all or a portion of the City of Roseville; such County-appointed director shall be selected annually by the County Board of Supervisors, and shall be subject to confirmation by the Roseville City Council

b Meetings

(1) Regular Meetings The Board shall by resolution establish the number of regular meetings to be held each year and the date, hour and location at which such regular meetings shall be held; provided, that the Board shall meet at least once every six (6) months

(2) Special Meetings Special meetings of the Board may be called in accordance with the provisions of the Ralph M Brown Act (California Government Code section 54950 *et seq.*).

(3) Conduct of Meetings All meetings of the Board shall be held in accordance with the Ralph M Brown Act (California Government Code section 54950 *et seq.*)

(4) Minutes The Secretary of the Authority shall cause minutes of all meetings of the Board to be kept and shall, as soon as possible after each meeting, cause a copy of the minutes to be forwarded to each member of the Board, and to the City, District, and County

(5) Quorum Three (3) directors of the Board shall constitute a quorum for the transaction of business Except as provided in Section 8, actions of the Board shall require the affirmative vote of a majority of the entire Board (i e , three (3) affirmative votes)

c Procedures

(1) The Board shall elect a chair from among its membership to preside at meetings and shall select a secretary who may, but need not, be a member of the Board The Board may, from time to time, elect such other officers as the Board shall deem necessary or convenient to conduct the affairs of the Authority

(2) The Board may adopt by resolution rules of procedure, not inconsistent with the provisions of this Agreement, to govern the conduct of its meetings

(3) Members of the Board shall comply with Title 9 of the California Government Code, commencing with section 81000 (Political Reform Act of 1974).

d. Fiscal Matters.

(1) Treasurer and Auditor.

(A) Except as provided in Subsection (B), below, the treasurer and finance director of the City, respectively, are designated the treasurer and auditor of the Authority with the powers, duties, and responsibilities specified in the Law, including, without limitation, sections 6505 and 6505 5 thereof.

(B) In lieu of the designations in Subsection (A)., above, the Board may appoint one or more of its employees to either or both of the positions of treasurer or auditor as provided in the Law, including, without limitation, section 6505.6 thereof.

(2) Custodian of Property. The treasurer and auditor of the Authority shall be the public officers who have charge of, handle, and have access to, the Authority's property and shall file with the Authority an official bond in the amount set by the Board.

(3) Accounts and Reports. The Board shall establish and maintain such funds and accounts as may be required by good accounting practice. The books and records of the Authority shall be open to inspection at all reasonable times to the County, the City and the District, and their respective representatives. The accounts shall be prepared and maintained by the treasurer and auditor of the Authority. The Authority, within one hundred twenty (120) days after the close of each fiscal year, shall cause an independent audit of all financial activities for such fiscal year to be prepared by an independent certified public accountant employed by the Authority. The Authority shall promptly deliver copies of the audit report to the Participants.

(4) Budgets. The Board shall adopt a budget no later than ninety (90) days after the effective date of this Agreement and no later than June 30th of each year thereafter.

(5) Contributions. The Participants shall pay to the Authority the contributions to be specified in the Funding Agreement.

8 Voting. Notwithstanding Subsection 7 b, the following actions may only be taken as set forth below:

a. The affirmative vote of at least four (4) Board members is required to set reserves, or authorize expenditures, for future expansions of Regional Wastewater Facilities.

b The affirmative vote of at least five (5) Board members is required:

(1) to authorize the issuance and sale, refinancing, or early redemption, of bonds; or

(2) to impose fees or assessments (other than the Regional Connection Fee), levy taxes, or order the formation of an assessment or special district.

9. Exercise of Powers. The powers and duties which (a) are common to the Participants, and (b) are vested in the Authority only by virtue of this Agreement, and are not independent powers and duties which arise by virtue of the Law, shall be exercised and carried out subject only to such restrictions upon the manner of exercising such powers or carrying out such duties as are imposed upon the City of Roseville in the exercise of similar powers or in carrying out similar duties, as provided in section 6509 of the Law.

10. Fiscal Year. The fiscal year of the Authority shall be the period from July 1st of each year to and including the following June 30th.

11 Debts, Liabilities and Obligations. The debts, liabilities, and obligations of the Authority shall not constitute debts, liabilities, or obligations of the County, the City, or the District, either jointly or severally.

12. Liability of Board, Officers and Employees.

a The members of the Board, officers, and employees of the Authority shall use ordinary care and reasonable diligence in the exercise of their powers, and in the performance of their duties pursuant to this Agreement. They shall not be liable to the Participants for any mistake of judgment or other action made, taken, or omitted by them in good faith, nor for any action made, taken, or omitted by any agent, employee, or independent contractor selected with reasonable care, nor for loss incurred through the investment of the Authority's funds, or failure to invest the same.

b To the extent authorized by California law, no member of the Board, officer, or employee of the Authority shall be responsible for any action made, taken, or omitted, by any other member of the Board, officer, or employee. No member of the Board, officer, or employee of the Authority shall be required to give a bond or other security to guarantee the faithful performance of his or her duties pursuant to this Agreement, except as provided in Subsection 7.d(2).

c. The funds of the Authority shall be used to defend, indemnify, and hold harmless the Authority and any member of the Board, officer, or employee of the Authority for actions taken in good faith and within the scope of his or her authority. Nothing herein shall limit the right of the Authority to purchase insurance to provide coverage for the foregoing indemnity.

13. Liberal Construction. The provisions of this Agreement shall be liberally construed as necessary or reasonably convenient to achieve the purposes of the Authority.

14. Disposition of Property. Upon termination of this Agreement, the Authority shall convey all assets of the Authority to the City. Thereafter, the City shall use such assets of the Authority for the benefit of the City, District and County, as set forth in the Operations Agreement and the Funding Agreement.

15. Severability. Should any part, term, or provision of this Agreement be decided by the courts to be illegal or in conflict with any law of the State of California, or otherwise be rendered unenforceable or ineffectual, the validity of the remaining portions or provisions shall not be affected thereby.

16. Successors; Assignment. This Agreement shall be binding upon and shall inure to the benefit of the successors of the Participants. No Participant may assign any rights or obligations hereunder without the consent of the other Participants; provided, further, that no such assignment may be made if it would materially and adversely affect (a) the rating of bonds issued by the Authority, or (b) bondholders holding such bonds.

17. Amendments. This Agreement may be amended only by the unanimous written agreement of the Participants. So long as any bonds of the Authority are outstanding and unpaid, or funds are not otherwise set aside for the payment or redemption thereof in accordance with the terms of the bonds and the documentation relating thereto, this Agreement shall not be amended, modified or otherwise revised, changed or rescinded, if such action would (a) materially and adversely affect (1) the rating of bonds issued by the Authority, or (2) bondholders holding such bonds, or (b) limit or reduce the obligations of the Participants to make, in the aggregate, the payments under the Funding Agreement which are for the benefit of the owners of the bonds.

18. Notices. Any notices to Participants required by this Agreement shall be delivered or mailed, U.S. first class, postage prepaid, addressed as follows:

SOUTH PLACER
WASTEWATER AUTHORITY
2005 Hilltop Circle
Roseville, CA 95747

Attention: Art O'Brien

with a copy to:
Authority's General Counsel
Hyde, Miller, Owen & Trost
428 J Street, Suite 400
Sacramento, CA 95814
Attention: Kirk E. Trost

CITY OF ROSEVILLE
Environmental Utilities Dept.
2005 Hilltop Circle
Roseville, CA 95747

Attention: Derrick Whitehead
Environmental Utilities Director

with a copy to:
Roseville City Attorney
311 Vernon Street, Suite 202
Roseville, CA 95678
Attention: Mark Doane

SOUTH PLACER MUNICIPAL
UTILITY DISTRICT
P O. Box 45
3671 Taylor Road
Loomis, CA 95650

Attention: Jerry Loscalzo
General Manager

with a copy to:
District's General Counsel
O'Brien & Brown LLP
2339 Gold Meadow Way, Suite 230
Gold River, CA 95670
Attention: Adam Brown

COUNTY OF PLACER
Department of Facilities Services
Special Districts Divisions
11476 "C" Avenue
Auburn, CA 95603
Attention: Tom Miller,
Director

with a copy to:
Placer County Counsel
175 Fulweiler Avenue
Auburn, CA 95603
Attention: Scott Finley

Notices under this Agreement shall be deemed given and received at the earlier of actual receipt, or the second business day following deposit in the United States mail, as required above. Any Participant may amend its address for notice by notifying the other Participants

19 Counterparts. This Agreement may be executed in any number of counterparts, and by different parties in separate counterparts, each of which, when executed and delivered, shall be deemed to be an original and all of which counterparts taken together shall constitute but one and the same instrument

IN WITNESS WHEREOF, the Participants have entered into this Agreement effective as of the date first above written.

CITY OF ROSEVILLE

BY: _____
Allen E. Johnson
City Manager

ATTEST:

BY: _____
Carolyn Parkinson
City Clerk

APPROVED AS TO FORM:

BY: _____
Mark J. Doane
City Attorney

RECD OCT 27 2000

APPROVED AS TO SUBSTANCE:

BY: _____
Derrick Whitehead
Environmental Utilities Director

SOUTH PLACER MUNICIPAL UTILITY DISTRICT

BY: _____
Frances E. Scheible
President, Board of Directors

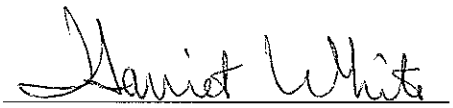
APPROVED AS TO FORM:

BY: _____
William T. Sweigert
District Counsel

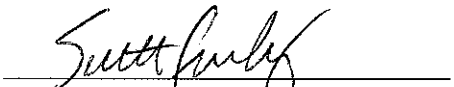
ATTEST:

BY: _____
Carol Bean
Secretary to the Board of Directors

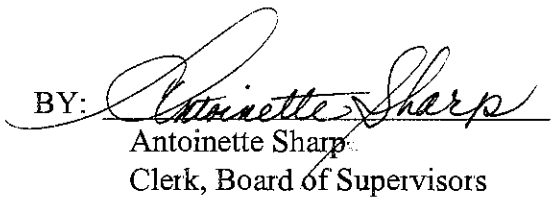
COUNTY OF PLACER

BY: 
Harriet White
Chairman, Board of Supervisors

APPROVED AS TO FORM:

BY: 
for Anthony J. LaBouff
County Counsel

ATTEST:

BY: 
Antoinette Sharp
Clerk, Board of Supervisors

Appendix 3-3

South Placer Wastewater Authority Operations Agreement

AGREEMENT REGARDING THE OPERATION AND USE OF THE SOUTH PLACER REGIONAL WASTEWATER FACILITIES

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AGREEMENT REGARDING THE OPERATION AND USE OF THE SOUTH PLACER REGIONAL WASTEWATER FACILITIES

THIS AGREEMENT REGARDING THE OPERATION AND USE OF THE SOUTH PLACER REGIONAL WASTEWATER FACILITIES (the "Agreement") is made effective as of the 1st day of October, 2000, by and among the **SOUTH PLACER WASTEWATER AUTHORITY**, a joint powers agency ("Authority"), the **CITY OF ROSEVILLE**, a charter city duly organized and existing under the laws of the State of California (the "City"), the **SOUTH PLACER MUNICIPAL UTILITY DISTRICT**, a municipal utility district duly organized and existing under the laws of the State of California (the "District"), and the **COUNTY OF PLACER**, a political subdivision duly organized and existing under the laws of the State of California (the "County")

RECITALS

A. WHEREAS, effective October 1, 2000, the Participants entered into that certain "Joint Exercise of Powers Agreement for the South Placer Wastewater Authority" (the "JPA Agreement"), which JPA Agreement created the Authority; and

B WHEREAS, concurrently herewith, the Participants and the Authority entered into that certain Funding Agreement Relating to the South Placer Regional Wastewater Facilities (the "Funding Agreement"); and

C. WHEREAS, the Participants have previously entered into certain agreements referred to in the Funding Agreement as the Dry Creek Agreements, the Roseville/Placer County Agreement, the Preliminary Agreement, and the Settlement Agreement; and

D. WHEREAS, the Participants desire that this Agreement, the Funding Agreement, and the JPA Agreement, shall supersede the Dry Creek Agreements, the Roseville/Placer County Agreement, the Preliminary Agreement, and the Settlement Agreement (except for sections 5 through 13 thereof), and that the foregoing superseded agreements shall be of no further force or effect; and

E. WHEREAS, by entering into this Agreement the parties hereto desire to provide for (1) the operation and maintenance of Regional Wastewater Facilities, and (2) the ongoing funding necessary for the foregoing

AGREEMENT

NOW THEREFORE, the parties hereto agree as follows:

1. **Definitions.** Words and phrases used in this Agreement shall have the following meanings:

Average Dry Weather Flow means the average daily wastewater flow into the Regional Wastewater Facilities, measured from July 1st through September 30th of each year.

Bonds means, collectively, the Series A&B Bonds and any Parity Bonds, issued and at any time outstanding under the Indenture or any Parity Bonds Instrument, respectively.

Community Plan Area means the Dry Creek - West Placer Community Plan Area depicted on Exhibit "B," attached hereto and incorporated herein.

Discharge Permits means, collectively, the National Pollutant Discharge Elimination System Waste Discharge Requirements for the City of Roseville, issued by the Regional Water Quality Board, (a) on March 17, 2000, for the Pleasant Grove Plant (Order No. CA0084573), and (b) on June 16, 2000, for the Dry Creek Plant (Order No. CA0079502), and any amendments thereto.

Dry Creek Plant means the regional wastewater treatment plant owned and operated by the City for the mutual benefit of the Participants and known as the "Dry Creek Wastewater Treatment Plant."

Event of Default means:

(a) Default in the due and punctual payment of any amounts required to be paid hereunder by a party hereto, when and as the same shall become due and payable, and such default shall have continued for a period of ten (10) days after that party shall have been given notice in writing of such default by the Trustee, or any other party hereto; or

(b) Default by a party in the observance of any other covenants, agreements or conditions on its part in this Agreement, and such default shall have continued for a period of thirty (30) days after that party shall have been given notice in writing of such default by the Trustee, or any other party hereto; provided, however, that if any such default is not reasonably curable within such thirty (30) day period, the applicable party shall not be deemed to be in default if such party commences to cure the default within such thirty (30) day period and diligently pursues such cure to completion.

Fiscal Year means the period of time beginning on July 1st of any year and ending on June 30th of the following year, or any other twelve (12) month period agreed to in writing by all of

the Participants.

Funding Agreement is defined in Recital B

Indenture means that certain Indenture of Trust, dated as of October 1, 2000, between the Authority and the Trustee, under which the Series A&B Bonds are issued.

Inflow and Infiltration, or I&I, means direct and indirect discharges (other than normal authorized wastewater discharges) to the collection system serving Regional Wastewater Facilities. Such discharges include, without limitation, leaky joints and manholes, illegal storm drain connections, service laterals in need of repair, or wastewater lines located in the flood plain that are not watertight.

Parity Bonds means all bonds, notes or other obligations (including without limitation long-term contracts, loans, sub-leases or other legal financing arrangements) of the Authority, the proceeds of which are applied to the acquisition and construction of Regional Wastewater Facilities, payable from and secured by a pledge of and lien upon any of the Participant Net Revenues, and issued or incurred pursuant to Section 3 06 of the Indenture

Parity Bonds Instrument means the resolution, trust indenture or installment sale agreement adopted, entered into or executed and delivered by the Authority, and under which Parity Bonds are issued

Participant means, individually, the City, the County, or the District. Participants means, collectively, the City, the County and the District

Participant System or Participant's System means, as to each Participant, the facilities of such Participant (excluding Regional Wastewater Facilities, if any, owned by such Participant) for the collection, transmission and disposal of wastewater to or through the Regional Wastewater Facilities, together with necessary pipes, pumps, valves and machinery and lands, easements and rights of way therefor; and other works, properties or structures necessary or convenient for the collection, transmission and disposal of wastewater, including all additions, betterments, extensions and improvements to such facilities or any part thereof.

Pleasant Grove Plant means the regional wastewater treatment plant to be owned and operated by the City for the mutual benefit of the Participants and to be known as the "Pleasant Grove Wastewater Treatment Plant."

Proportional Volumetric Share means the proportion of total yearly wastewater volume entering the Regional Wastewater Facilities that is attributable to the City, the District or the County, as applicable. The City shall determine, using information supplied by all Participants, the total yearly wastewater volume and each Participant's Proportional Volumetric Share on a Fiscal Year basis

Regional Connection Fees means the connection fees imposed and collected by the Participants, pursuant to the applicable provisions of the Roseville Municipal Code, District ordinances, and County ordinances, for the purpose of funding expansions or modifications of, and/or improvements to, Regional Wastewater Facilities.

Regional Operation and Maintenance Costs means, for any given period, the reasonable and necessary costs (both direct and incidental) of operating and maintaining Regional Wastewater Facilities during such period, calculated on sound accounting principles, including (among other things) the reasonable expenses of management and repair and other expenses necessary to maintain and preserve Regional Wastewater Facilities in good repair and working order, and reasonable amounts for administration (including, without limitation, costs of administration of the Participants' industrial pretreatment programs by the City, but only to the extent such costs are not chargeable to significant industrial users pursuant to Roseville Municipal Code Chapter 14 26), overhead, insurance, taxes (if any), labor, materials, water, electricity, natural gas, chemicals, employee bonds, vehicles, communications equipment, improvements, replacements and rehabilitations, preventive maintenance, sludge disposal, environmental remediation, engineering services, analytical testing services, rents, right-of-way charges, recycled water operations costs, legal judgments and assessments (including, without limitation, enforcement actions of the Regional Water Quality Board), and other similar costs. Credit items, such as all salvage value of Regional Wastewater Facilities, and revenue from the sale of sludge or other products, including, without limitation, reclaimed and recycled water, shall be credited first to Regional Operation and Maintenance Costs and then to each of the Participants based on their Proportional Volumetric Share.

Regional Wastewater Facilities means the Pleasant Grove Plant, the Dry Creek Plant, any other regional treatment plants constructed by the Authority or any of the Participants in the future to facilitate wastewater collection, conveyance, treatment, recycling, discharge, and disposal services collectively to all of the Participants, and all Related Regional Infrastructure.

Related Regional Infrastructure shall mean trunk sewers, interceptor lines, force mains, pump stations, reclaimed/recycled water infrastructure, and all other wastewater infrastructure, constructed in conjunction with the Pleasant Grove Plant, the Dry Creek Plant, and/or other regional wastewater treatment plants constructed in the future, as appropriate and necessary to facilitate wastewater collection, conveyance, treatment, recycling, discharge, and disposal services collectively to all of the Participants. "Related Regional Infrastructure" shall not include trunk sewers, interceptor lines, force mains, pump stations, reclaimed/recycled water infrastructure, or any other wastewater infrastructure that (a) facilitate such services to only one or two of the Participants, or (b) are otherwise covered by other agreements providing for the apportionment of construction, operation and maintenance costs therefor, except for the agreements that are expressly superceded by this Agreement and the Funding Agreement.

Regional Water Quality Board means the California Regional Water Quality Control Board, Central Valley Region

Series A&B Bonds means the bonds of the Authority to be issued under the Indenture.

Trustee means the Trustee appointed under the Indenture, and any successor thereto. The term "Trustee" shall also mean trustee(s) under any Parity Bonds Instrument(s), as applicable.

User means any person or entity that discharges water or waste into a Participant System and/or the Regional Wastewater Facilities, and is subject to regulation under the provisions of Roseville Municipal Code Chapter 14 26 (entitled "Industrial Wastewater"), or similar ordinances enacted by the District and the County.

2. Operation and Maintenance of Regional Wastewater Facilities.

a. The City shall operate and maintain the Regional Wastewater Facilities for the mutual benefit of, and provide wastewater treatment services to, those areas depicted on Exhibit "A," attached hereto and incorporated herein, which areas are within the jurisdictional boundaries of the City, District, and County, so long as the District and County pay to the City their proportionate shares of the amounts required to be paid under this Agreement and the Funding Agreement.

b. Additional portions of the County Service Area No. 28, Zone No. 55 (Livoti Track), may be added to the areas served by Regional Wastewater Facilities upon County's compliance with all legal and administrative requirements therefor.

c. The City shall perform, and operate and maintain the Regional Wastewater Facilities in compliance with, all of the covenants of the Authority relating to the "Enterprise," set forth in Article V of the Indenture.

d. Each Participant shall have the right to (1) maintain connections between such Participant's System and the Regional Wastewater Facilities at all locations existing as of the date first above written, and (2) establish new connections to the Regional Wastewater Facilities as needed, subject to the City's prior written approval of the location of such connection, which approval shall not be unreasonably withheld.

3. Charges for Regional Operation and Maintenance Costs.

a. Each Participant's responsibility for Regional Operation and Maintenance Costs shall be based upon its Proportional Volumetric Share. The apportionment of the costs of administration of the Industrial Pretreatment Program for non-permitted Users shall be equitably allocated by future agreement among the Participants

b. During the month of June of each year, the City shall provide each Participant with an estimate of the Regional Operation and Maintenance Costs for the following Fiscal Year. Thereafter, the City shall bill the District and the County quarterly, in advance, for their respective

shares of the estimated Regional Operation and Maintenance Costs, which shares shall be in proportion to the Proportional Volumetric Share of each, as measured during the immediately preceding Fiscal Year.

c. (1) Within one hundred eighty (180) days after the close of each Fiscal Year, the City shall submit to each Participant a detailed statement of actual Regional Operation and Maintenance Costs, and the actual Proportional Volumetric Share of each Participant, for the Fiscal Year then ended. If the amount advanced for estimated Regional Operation and Maintenance Costs by any Participant is less than that Participant's share of actual Regional Operation and Maintenance Costs (based on that Participant's actual Proportional Volumetric Share), the City shall include the difference in a subsequent quarterly invoice for payment by that Participant. If the amount advanced for estimated Regional Operation and Maintenance Costs by any Participant is more than that Participant's share of actual Regional Operation and Maintenance Costs (based on that Participant's actual Proportional Volumetric Share), the City shall remit such excess amounts to that Participant, or credit that Participant's account, at the City's election.

(2) Each Participant may, at its sole cost and expense, inspect and/or audit the City's books and records concerning Regional Operation and Maintenance Costs, and the City shall cooperate reasonably with any such inspection and/or audit.

d. Each Participant shall pay Regional Operation and Maintenance Costs within sixty (60) days after receipt of City's invoice therefor. Interest shall accrue on any delinquent amounts at the rate of return paid by the Local Agency Investment Fund plus one percent (1%), commencing one hundred eighty (180) days after receipt of the City's invoice.

4. Inflow and Infiltration; Maintenance of Participant Systems.

a. Inflow and Infiltration Requirement. The maximum allowable amount of I&I on any given day for any Participant shall be 2.5 times the Average Dry Weather Flow of that Participant.

b. Participant System Evaluation. The Participants shall evaluate their respective Participant Systems periodically for I&I to determine those areas that need specific attention or repair. Participant System analysis may be accomplished by any reasonably effective method, including, without limitation, smoke testing, system flow monitoring and videotaping.

c. Long Term Participant System Rehabilitation and Maintenance. Once the Participant Systems have been evaluated, and areas needing improvement have been identified, each Participant shall develop a Participant System rehabilitation program that will lower the amount of maximum daily I&I for that Participant to below 2.5 times that Participant's Average Dry Weather Flow.

d. Construction Specifications. The Participants shall meet and develop region-wide wastewater construction specifications to ensure that all new wastewater infrastructure is constructed to stringent standards that will reduce I&I, as required herein. Pressure testing of transmission mains and vacuum testing of manholes are a minimum requirement that must be contained in the specifications of any construction contracts let by the Participants with respect to Participant Systems and/or Regional Wastewater Facilities.

5. **Backup Power and Wet Well Capacity.** Each Participant shall install and maintain adequate backup power sources, and/or wet well capacity, at all pump stations to prevent overflow during power outages and pump failures

6. **High Water Alarms.** Each Participant shall install and maintain functional high water alarm and notification systems at each pump station.

7. **Unauthorized Wastewater Discharges.** Each Participant shall report any unauthorized discharges of wastewater to the Regional Water Quality Board within one (1) business day after the discovery of such discharge

8. **Flow Monitoring Equipment.** Each Participant shall, at its sole cost, maintain flow monitoring equipment at each major connection point between such Participant's System and the Regional Wastewater Facilities. Such equipment shall be capable of measuring peak wet weather flows as well as dry weather flows, and ultimate as well as interim flows, and data therefrom shall be telemetered to the Dry Creek Plant. Flow estimates may be used for smaller connection points, provided all Participants agree on the methodology used to estimate the flow. Otherwise, the applicable Participant shall install portable flow monitoring equipment semi-annually for two one-week periods, once during the wet season (January 1st through March 31st) and once during the dry season (July 1st through September 30th).

9. **Ordinance Modification; Compliance with Discharge Permits.**

a. The Participants shall adopt all applicable provisions of ordinances, statutes, rules and regulations, established by the City, regulating the use of, and discharge of waters and wastes into, the Regional Wastewater Facilities, including all applicable provisions of Roseville Municipal Code Chapters 14.12, 14.16, 14.26, and all later applicable amendments thereto, within ninety (90) days after receipt of the City's written request therefor. The Participants shall, on or before December 1, 2000, meet and determine the applicability of provisions of the foregoing City ordinances, statutes, rules and regulations, and shall thereafter adopt the same in accordance with this Agreement. The City will notify the other Participants of any proposed changes to such ordinances, statutes, rules and regulations, and invite the other Participants to participate in the formulation and drafting of any such changes to be adopted by the City which are applicable to the use of, and discharge of waters and wastes into, the Regional Wastewater Facilities, and are to be adopted by the Participants. In addition, the Participants shall meet and evaluate existing

ordinances to (1) incorporate provisions enforcing I&I reductions, and (2) ensure uniform methods of categorizing and calculating the Regional Connection Fee

b. Each Participant shall operate and maintain its Participant System in compliance with the requirements of the Discharge Permits and other applicable laws and regulations, and shall reasonably agree to amend this Agreement from time to time as necessary to comply with the requirements of the Discharge Permits or other applicable laws and regulations Each Participant shall cooperate with, and assist, the other Participants, as reasonably necessary to comply with the Discharge Permits, including, without limitation, making its Participant System available for any studies and inspections required by the Discharge Permits.

10. Industrial Pretreatment Program. The Agreement for Industrial Waste Pretreatment Program, made by and among the Participants effective August 19, 1988, a copy of which is attached hereto as Exhibit D, is hereby incorporated into this Agreement as if set forth in full

11. Tax Exemption. No Participant shall levy any tax or assessment, or any similar charge, on any real or personal property, or interest therein, that lies within such Participant's jurisdictional boundaries and is part of the Regional Wastewater Facilities, or another Participant's System.

12. Major Dischargers. For the purpose of assuring the availability of adequate regional wastewater treatment capacity, when the Regional Wastewater Facilities have reached seventy-five percent (75%) of their treatment capacity, no Participant shall permit, or agree to permit, any commercial or industrial applicant or entity whose Average Dry Weather Flow discharge during the useful life of the applicant's project is estimated to be Four Hundred Thousand (400,000) gallons per day or greater, to connect to that Participant's System, or otherwise provide wastewater treatment service, without first obtaining the written consent of the Authority and a majority of the Participants Such consent shall not unreasonably be withheld. Permission to connect is deemed to occur at the time a Participant gives an applicant a notice of willingness to serve, or otherwise authorizes an applicant to connect to that Participant's System, whether this occurs at the issuance of a construction permit, or the collection of the Regional Connection Fee, or prior thereto. The City shall promptly provide written notification to the Authority, the District, and the County, when the Regional Wastewater Facilities have reached seventy-five percent (75%) of capacity

13. Moratorium. At such time as insufficient capacity remains in the Regional Wastewater Facilities to treat additional flows, the Authority shall impose a moratorium on additional connections, pending the expansion of treatment capacity. Any moratorium necessitated by an exhaustion of treatment capacity shall apply equally and simultaneously to all Participants

14. City/County Provisions. The following provisions bind, and inure to the benefit of, the City and the County only:

a. Linda Creek Raw Water Bypass. The City shall provide a maximum of 0.8 cfs of supplemental flow to Linda Creek to replace discharge from the abandoned County SMD #2 wastewater treatment plant, provided that the County shall reimburse the City for the cost of such water, including wheeling, metering, and maintenance costs. Supplemental flow shall consist of a raw water bypass at the City's water treatment plant on Barton Road. The City reserves the right to temporarily discontinue the raw water bypass during any period that stage three (or higher) drought restrictions are in effect pursuant to Roseville Municipal Code Chapter 14.09. The City shall bill the County quarterly for supplemental water costs, with payment due within sixty (60) days after any billing.

b. Dry Creek - West Placer Community Plan Area Wastewater Facilities.

(1) The County shall cause to be constructed within the Community Plan Area such Participant System facilities as are appropriate to provide wastewater service, and shall operate and maintain said facilities.

(2) Wastewater shall be received at the Dry Creek Plant by force main. The County's Participant System for the Community Plan Area shall connect to the Dry Creek Plant at the headworks facility located at the northeast portion of the Dry Creek Plant site. Prior to the connection of Sabre City to the Regional Wastewater Facilities, all Regional Connection Fees shall be paid for Sabre City units. Cost of any modifications to the treatment facilities shall be borne by the County. Design of these facilities will require approval by the City prior to bid of the project.

c. Reclaimed Water.

(1) The use of reclaimed water is encouraged in all areas and is subject to the availability of the reclaimed water distribution system. The County shall prepare, or cause to be prepared, the engineer's report required for areas utilizing reclaimed water. The engineer's report shall be submitted to the City concurrently with its submission to the California Department of Health Services and the Regional Water Quality Board for review and approval by the City and the Regional Water Quality Board. No reclaimed water will be supplied until said engineer's report has been so approved and a reclamation use permit has been issued by the City.

(2) The County agrees to participate in paying connection fees, if any, and monthly user or use charges for reclaimed water which may be established by the City in the future, and to install such meters as may be necessary for this purpose.

(3) The County shall adopt the City's design criteria and construction standards for reclaimed water facilities, as the same may be amended from time to time. The

County shall adopt the City's rules and regulations (operational requirements) for reclaimed water use, as the same may be amended from time to time.

(4) The County shall not sell any excess reclaimed water.

(5) Reclaimed water will not be delivered to the County on demand, but will be delivered continuously over periods of not less than twenty-four (24) hours. The County shall receive the reclaimed water on an as-used basis. Discharge of Dry Creek Plant effluent to Dry Creek is the City's sole responsibility and shall be covered under its Discharge Permits.

(6) The County shall cause a reclaimed water line to be constructed from the Dry Creek Plant along Dry Creek to Watt Avenue within the Community Plan Area. Said line shall be a twenty-four inch (24") line constructed in two phases. Phase one shall be constructed as part of Placer County Community Facilities District No. 93-1 ("CFD #93-1"), and phase two shall be constructed by future development west of Wallerga Road. The reclaimed water line shall supply reclaimed water to users initially in CFD #93-1, as shown on Exhibit "C," and, ultimately, to all users within the Community Plan Area east of Watt Avenue, as permitted and/or approved by the City and County. The City shall own, operate and maintain said line. Plans for construction shall be reviewed and approved by the City and must meet City's reclaim design specifications. Individual projects inside the Community Plan Area shall own, operate and maintain their own systems starting at their connection to the City's line. The County shall be responsible for compliance with all federal, state, and local, requirements pertaining to reclaimed water distribution and use.

(7) The County and the City shall negotiate and execute a detailed reclaimed water operations agreement covering various topics, including, without limitation, quality of water, cost, operational criteria, and rights and responsibilities prior to the provision of reclaimed water. In addition to the foregoing, the agreement shall provide that (A) the City shall perform construction inspections of all reclaimed water facilities, (B) the City shall perform quarterly operations inspections for all reclaimed water facilities, and (C) the City shall perform cross-connection testing on an annual basis. The cost of such inspections and testing shall be paid for by the County, as determined by such agreement.

(8) The Dry Creek Plant connection will provide for the delivery of chlorinated or de-chlorinated water to said reclaim line. The delivery facilities shall have the associated valves and metering equipment necessary to monitor and control the discharge.

(9) If reclaimed water users outside CFD #93-1 of the Community Plan Area connect to said line, the City shall use its best efforts to require the users to reimburse the County. The County requires a 12-inch line for reclaimed water usage in the Community Plan Area. The remaining line capacity cost shall be based on associated costs (construction costs and engineering costs) attributable to the excess capacity and distributed on a pro-rata basis.

(10) The County shall be responsible for obtaining State and/or County permits to use the reclaimed water within the Community Plan Area.

d. Sabre City Plant.

(1) The County may cause the existing Sabre City Wastewater Treatment Plant (the "Sabre City Plant") within the Community Plan Area to be connected to the County's Participant System. If the Sabre City Plant is so connected, new connections to the Sabre City wastewater system will be limited to those within the County, unless otherwise agreed to by the City. The County shall pay the Regional Connection Fee for each unit connected.

(2) The County shall obtain all permits required for removing the Sabre City Plant from service.

(3) The County shall deed to the City a site on the grounds of the Sabre City Plant for the construction and operation of de-chlorination facilities. The specific location and dimensions of said site shall be subject to the reasonable agreement of the County and the City.

15. Indemnity. Each Participant (the "Indemnitor") agrees to hold harmless, defend and indemnify the other Participants, their officers, agents and employees, from and against any and all liabilities, claims, or damages of any nature, including, without limitation, personal injury, including death, or property damage, resulting from the negligent actions or inaction of the Indemnitor, its officers, agents, or employees, under the terms of this Agreement, including, without limitation, accidental wastewater discharges.

16. Term and Termination. This Agreement shall be effective as of the date first above written and shall remain in effect (a) for the full useful life of any and all Regional Wastewater Facilities, or (b) until such time as no Bonds remain outstanding, whichever is later. The expiration or sooner termination of the JPA Agreement shall not cause this Agreement to expire or terminate.

17. Amendments. This Agreement may be amended only by the unanimous written agreement of the Participants. So long as any Bonds are outstanding and unpaid, or funds are not otherwise set aside for the payment or redemption thereof in accordance with the terms of said Bonds and the documentation relating thereto, this Agreement shall not be amended, modified or otherwise revised, changed or rescinded (1) in any manner that will have a material adverse effect on the payment of Debt Service, or (2) in any manner that would result in a reduction in the credit ratings on any and all Bonds, or (3) in any manner that would limit or reduce the obligations of the Participants to make, in the aggregate, the payments hereunder which are for the benefit of the owners of Bonds.

18. Rights of Participants and Third Parties. The Trustee, and Authority's credit enhancement provider, if any, shall have the right, as third-party beneficiaries of this Agreement,

to initiate and maintain legal proceedings to enforce this Agreement to the extent provided for in the applicable Bond Documents. Except as provided in the foregoing sentence, nothing in this Agreement, express or implied, is intended to confer any rights or remedies under, or by reason of, this Agreement on any person other than the parties hereto and their respective permitted successors and assigns. If an Event of Default occurs hereunder, the parties hereto, the Trustee, and Authority's credit enhancement provider, if any, shall have the right to take whatever action it, or they, deem(s) necessary or advisable to ensure that such defaulting party complies with the provisions hereof, including, without limitation, bringing an action in law or in equity. In any action brought by any party to enforce the terms of this Agreement, the prevailing party shall be entitled to recover its reasonable attorney's fees. Any action arising out of this Agreement shall be brought in Placer County, California, regardless of where else venue may lie.

19. **Notices.** Any notices to parties required by this Agreement shall be delivered or mailed, U.S. first class, postage prepaid, addressed as follows:

SOUTH PLACER WASTEWATER AUTHORITY
2005 Hilltop Circle
Roseville, CA 95747

Attention: Art O'Brien

with a copy to:
Authority's General Counsel
Hyde, Miller, Owen & Trost
428 J Street, Suite 400
Sacramento, CA 95814
Attention: Kirk E. Trost

CITY OF ROSEVILLE
Environmental Utilities Dept
2005 Hilltop Circle
Roseville, CA 95747
Attention: Derrick Whitehead
Environmental Utilities Director

with a copy to:
Roseville City Attorney
311 Vernon Street, Suite 202
Roseville, CA 95678
Attention: Mark Doane

Finance Department
311 Vernon Street, Room 206
Roseville, CA 95678
Attention: Russ Branson,
Finance Director

SOUTH PLACER MUNICIPAL
UTILITY DISTRICT
P.O. Box 45
3671 Taylor Road
Loomis, CA 95650

Attention: Jerry Loscalzo
General Manager

with a copy to:
District's General Counsel
O'Brien & Brown LLP
2339 Gold Meadow Way, Suite 230
Gold River, CA 95670
Attention: Adam Brown

COUNTY OF PLACER
Department of Facilities Services
Special Districts Divisions
11476 "C" Avenue
Auburn, CA 95603
Attention: Tom Miller,
Director

with a copy to:
Placer County Counsel
175 Fulweiler Avenue
Auburn, CA 95603
Attention: Scott Finley

Notices under this Agreement shall be deemed given and received at the earlier of actual receipt, or the second business day following deposit in the United States mail, as required above Any party may amend its address for notice by notifying the other parties

20. Counterparts. This Agreement may be executed in any number of counterparts, and by different parties in separate counterparts, each of which, when executed and delivered, shall be deemed to be an original and all of which counterparts taken together shall constitute but one and the same instrument

IN WITNESS WHEREOF, the South Placer Wastewater Authority, the City of Roseville, the South Placer Municipal Utility District and the County of Placer have each caused their duly

authorized officers to execute this Agreement effective as of the date first written above.

SOUTH PLACER WASTEWATER AUTHORITY

BY: _____
Derrick Whitehead
Executive Director

ATTEST:

BY: _____
Carrie Kolmer
Secretary,
Board of Directors

APPROVED AS TO LEGAL FORM:

BY: _____
Kirk E. Trost
Authority's General Counsel

CITY OF ROSEVILLE

BY: _____
Allen E. Johnson
City Manager

ATTEST:

BY: _____
Carolyn Parkinson
City Clerk

APPROVED AS TO FORM:

BY: _____
Mark J. Doane
City Attorney

APPROVED AS TO SUBSTANCE:

BY: _____
Derrick Whitehead
Environmental Utilities Director

SOUTH PLACER MUNICIPAL UTILITY DISTRICT

BY: _____
Gerald T. Loscalzo
General Manager

APPROVED AS TO FORM:

BY: _____
William T. Sweigert
District Counsel

ATTEST:

BY: _____
Carol J. Bean
Secretary to the Board of Directors

COUNTY OF PLACER

BY: _____
Harriet White
Chair, Board of Supervisors

APPROVED AS TO FORM:

BY: _____
Anthony J. LaBouff
County Counsel

ATTEST:

BY: _____
Antoinette Sharp
Clerk, Board of Supervisors

EXHIBIT A

Service Area

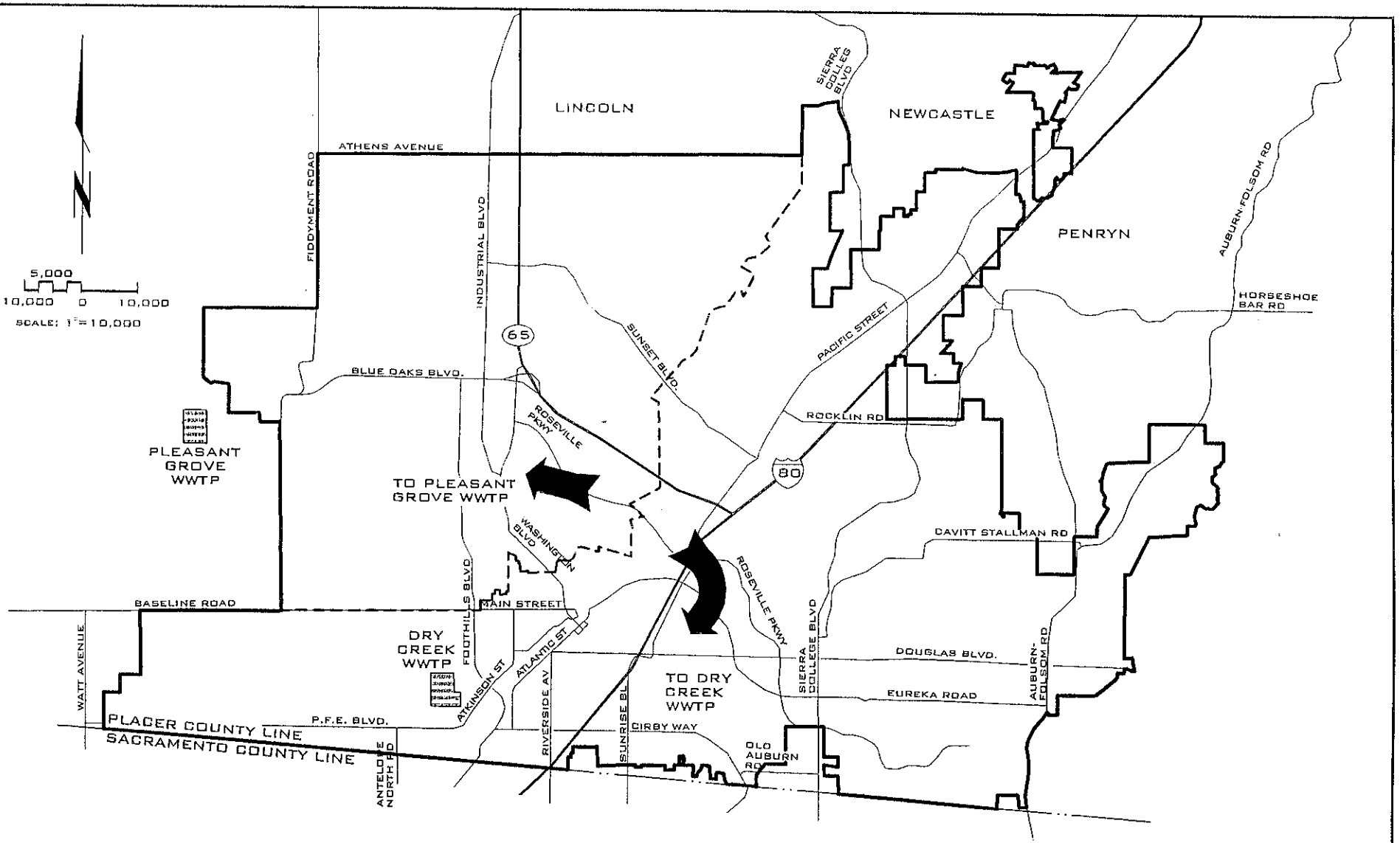


EXHIBIT A

SOUTH PLACER WASTEWATER AUTHORITY SERVICE AREA

BROWN AND CALDWELL	DATE 11-21-00 PROJECT 18218	FIGURE 1-1

EXHIBIT B

Dry Creek - West Placer Community Plan Area

EXHIBIT B

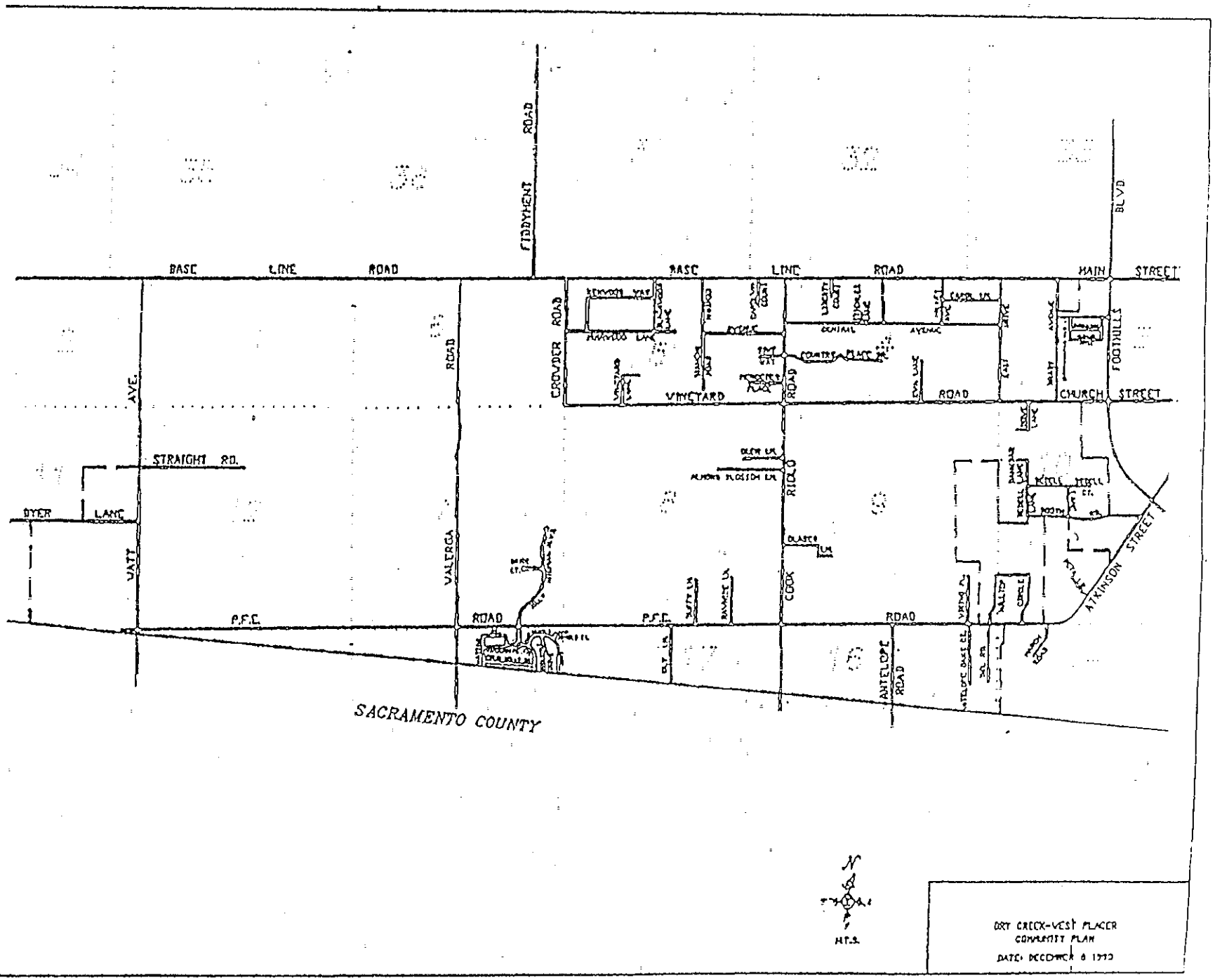
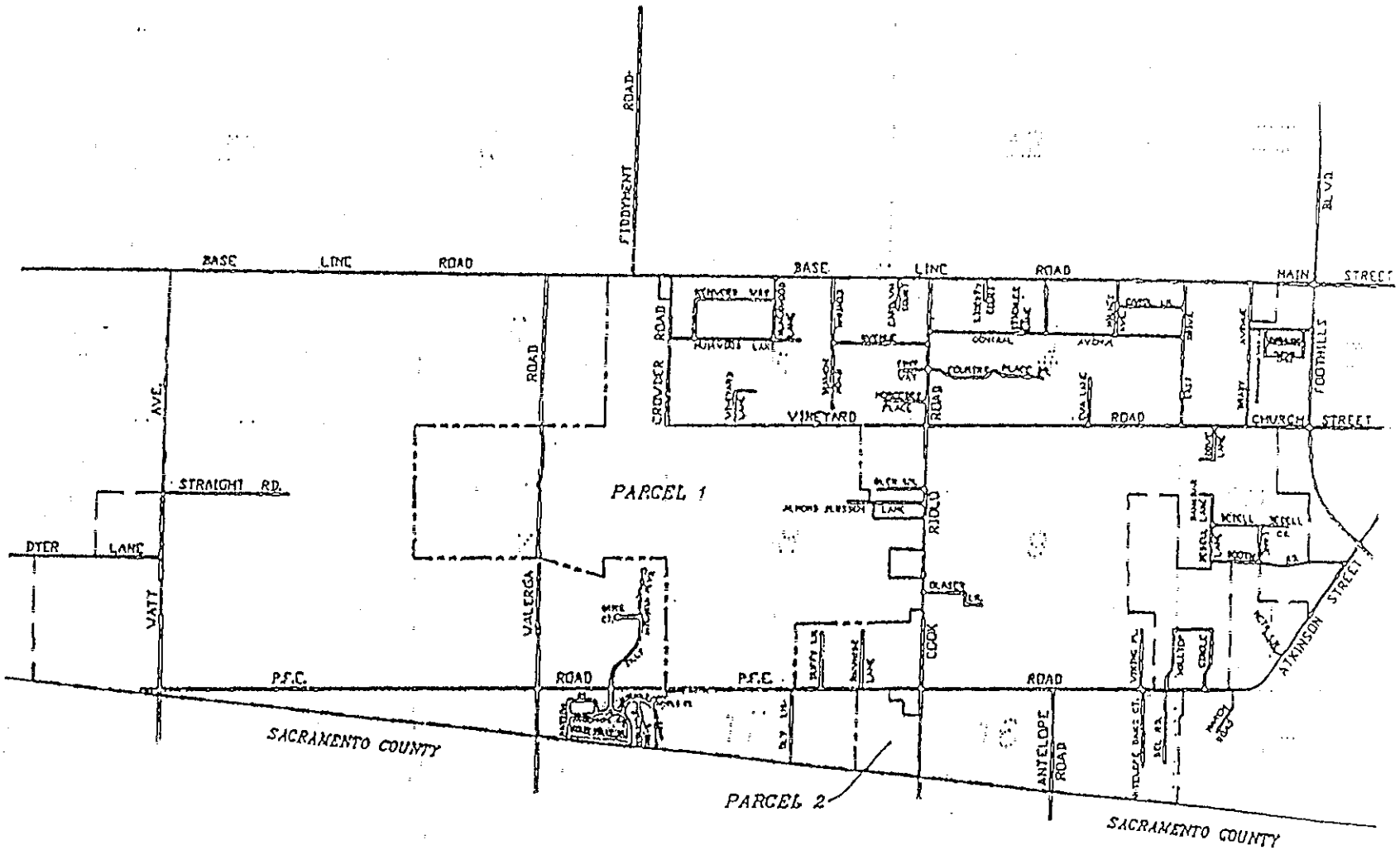

BASE LINE ROAD
FIDDYMENT ROAD
BASE LINE ROAD
MAIN STREET
BLVD
FOOTHILLS
CROVER ROAD
VINEYARD ROAD
CHURCH STREET
EAST
AVENUE
CENTRAL
COUNTRY CLUB
AVE.
STRAIGHT RD.
DYER LANE
VATT
VALERGA ROAD
RIDLO
COOK
P.F.E.
ROAD
ATKINSON STREET
ANTELOPE ROAD
SACRAMENTO COUNTY
N
NTS
DRY CREEK-WEST PLACER
COMMUNITY PLAN
DATE: DECEMBER 8 1993

EXHIBIT C

CFD #93-1

EXHIBIT C



LEGEND

COMMUNITY FACILITIES DISTRICT NO.1993-1 (DRY CREEK - WEST PLACER)

DRY CREEK - WEST PLACER COMMUNITY PLAN BOUNDARY

N

N.T.S.

COMMUNITY FACILITIES DISTRICT NO.1993-1
(DRY CREEK - WEST PLACER)
DATE: DECEMBER 9 1993

EXHIBIT D

Agreement for Industrial Waste Pretreatment Program

EXHIBIT D

RECEIVED
OCT 21 1988
S.P.M.U.D.

FILED
AUG 26 1988
CITY OF ROSEVILLE
BY dlm

AGREEMENT FOR INDUSTRIAL WASTE PRETREATMENT PROGRAM

This Agreement is made this 19th day of August, 1988, by and between the City of Roseville, a municipal corporation ("CITY"), Placer County ("COUNTY"), and South Placer Municipal Utility District ("DISTRICT"), and

W I T N E S S E T H:

WHEREAS, the City is responsible for operation and maintenance of a Regional Wastewater Treatment Plant, and

WHEREAS, domestic and industrial waste waters from outside the jurisdiction of the City are treated in the Regional Wastewater Treatment Plant, and

WHEREAS, an Industrial Wastewater Pretreatment Program in compliance with Title 40, Code of Federal Regulations, Part 403, is required to monitor and control industrial wastewater at the point of waste generation, and

WHEREAS, the City has developed and implemented an Industrial Wastewater Program, and

WHEREAS, the County and District desire to adopt and participate in the City's Industrial Wastewater Program, and

WHEREAS, the County and District desire to delegate administration and enforcement of the Industrial Wastewater Program to the City.

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NOW, THEREFORE, the Parties agree as follows:

Article I: Industrial Waste Ordinance

The Parties agree that the City's Industrial Wastewater Ordinance, Roseville Municipal Code Chapter 14.26 (hereinafter referred to as the Ordinance), and any and all future amendments, shall apply to all generators of industrial wastewater that discharge such waste to the Roseville Regional Wastewater Treatment Plant. The County and the District shall within sixty (60) days from the date of this agreement amend their ordinances and regulations to adopt the Ordinance.

Article II. Enforcement

The Parties agree that the City of Roseville shall have enforcement authority over any and all users, as defined in the Ordinance, that discharge waste to the Roseville Regional Wastewater Treatment Plant (RWWTP) and that the County and District shall amend their ordinances and regulations to expressly grant the City such enforcement authority.

Article III: Administration

The Parties agree that the City shall administer the Industrial Wastewater Program in accordance with the Ordinance.

Article IV: Funding

The Parties agree that the City shall have the authority to collect fees, charges, and all costs of implementing and enforcing the program from users in accordance with the Ordinance.

Article V: Notification

The Parties agree that the City shall be notified of any potential industrial waste generator whose industrial waste will be discharged to the Roseville Regional Wastewater Treatment Plant as a result of new development or expansion of existing facilities, at the earliest possible time. In the case of County, such notification shall be made prior to the granting of a tentative map, parcel map, or use permit whichever is sooner. In the case of District, such notification shall be made immediately after District receives a request for service from a potential industrial waste generator or a request for expansion of existing facilities by a potential industrial waste generator.

Article VI: Hold Harmless

County and/or District shall defend, indemnify and hold harmless City, its officers, agents, and employees from liability of claims for damage of any nature, including but not limited to personal injury, including death, or property damage, which may arise from or be connected with the direct or indirect operations, inaction or action of the City or its contractors, subcontractors,

agents or employees arising out of or connected with this Agreement.

Article VII: Integration

This instrument constitutes the sole and only agreement of the parties hereto relating to the industrial waste pretreatment program and correctly sets forth the rights, duties and obligations of each to the other as of its date.

Article VIII: Attorney's Fees

If legal action by any party is brought against another for breach of this Agreement or to compel performance of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees and costs.

IN WITNESS WHEREOF, the City of Roseville a municipal corporation, has authorized the execution of this Agreement in duplicate by its City Manager and attested to by its City Clerk under the authority of Resolution No. 88-201 adopted by the Council of the City of Roseville on the 17th day of August, 1988, and COUNTY and DISTRICT have caused this agreement to be executed.

CITY OF ROSEVILLE, a
municipal corporation

By: _____
ROBERT G. HUTCHISON,

PLACER COUNTY

By: _____
ROBERT P. MAHAN, CHAIRMAN

City Manager

SOUTH PLACER MUNICIPAL

UTILITY DISTRICT

ATTEST:

By:

HELEN FLORANCE, City Clerk

APPROVED AS TO FORM:

MICHAEL F. DEAN, City Attorney

The foregoing instrument is a correct copy of the original on file in this office.

ATTEST:
City Clerk of the City of Lincoln, California

DEPUTY CLERK

Appendix 3-4

Contract and Operating Agreement with Sacramento Area Sewer District and Sacramento Regional County Sanitation District

CITY OF ROSEVILLE CALIFORNIA

City Clerk
311 Vernon Street
Roseville, California 95678-2649

August 4, 2016

Katherine Manne, Contract Services
Sanitation Districts Agency
10060 Goethe Road
Sacramento, CA 95827

RE: WASTEWATER SERVICE BY CONTRACT AND OPERATING AGREEMENT (CONTRACT NO. 50000099)

At the meeting of August 3, 2016 the City Council adopted a resolution authorizing the City Manager to execute the agreement referenced above. The fully executed agreement is enclosed along with a certified copy of authorizing Resolution No. 16-328.

If you have any questions, please contact Wastewater Collection Superintendent Chris Bracco at (916) 746-1892.

SONIA OROZCO, CMC
CITY CLERK

By:

Judy Moore
City Clerk Technician

Cc: Attorney
Chris Bracco/Environmental Utilities

Contract No. 50000099

CITY OF ROSEVILLE
CALIFORNIA

Wastewater Service by Contract and Operating Agreement between Sacramento Regional County Sanitation District, Sacramento Area Sewer District, and City of Roseville

SASD Dispatch	(916) 875-6730
Regional San PCC	(916) 875-9400 or (916) 875-9406
City of Roseville	(916) 774-5750 or (916) 746-1890

REGIONALSAN
TAKING THE WASTE OUT OF WATER

SACRAMENTO AREA
SEWER DISTRICT

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INTRODUCTION

This WASTEWATER SERVICE BY CONTRACT AND OPERATING AGREEMENT AMONG THE SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT, THE SACRAMENTO AREA SEWER DISTRICT AND THE CITY OF ROSEVILLE is made this 3rd day of August, 2016, by and between SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT, a sanitation district formed pursuant to and operating under the authority of the County Sanitation District Act commencing at Health and Safety Code Section 4700, hereinafter referred to as "Regional San," SACRAMENTO AREA SEWER DISTRICT, a sanitation district formed pursuant to, and operating under the authority of the County Sanitation District Act commencing at Health and Safety Code Section 4700, hereinafter referred to as "SASD," and CITY OF ROSEVILLE, a municipal corporation, hereinafter referred to as "CITY."

RECITALS

WHEREAS, wastewater from some sewers within the CITY, as shown in Exhibits A through F, flows into the SASD sewer system, then through the Regional San sewer system, and is then treated at Regional San's Sacramento Regional Wastewater Treatment Plant (SRWTP); and

WHEREAS, wastewater from some sewers within the SASD service area, as shown in Exhibit G, flows into the CITY sewer system and is then treated at the CITY's Dry Creek Wastewater Treatment Plant; and

WHEREAS, the intent of this Agreement is to meet regulatory requirements and to provide a basis for Regional San, SASD, and the CITY to work together to provide sewer service to users, establish operation and maintenance responsibilities, determine financial billing responsibilities, define system ownership, ensure ordinance compliance, outline rates and fees; and

WHEREAS, Section 56133 (a) of the Cortese-Knox-Hertzberg Act which establishes procedures for local government changes of organization, and Section 56133 (e) allows for contracts or agreements solely involving two or more public agencies are exempt from requiring approval from Local Agency Formation Commission approval; and

WHEREAS, the CITY collects rates and fees for services provided to the Vernon Oaks area, which resides inside the SASD and Regional San Service Areas; and

WHEREAS, the CITY collects rates and fees for services provided to customers inside the CITY's Service Area that are connected to SASD and Regional San; and

WHEREAS, this Agreement creates a service by contract between Regional San, SASD, and the CITY.

NOW, THEREFORE, in consideration of the mutual promises hereinafter set forth and acting pursuant to Section 4760 of the Health and Safety Code of the State of California and the Joint Exercise of Powers Act of said State, Regional San, SASD and the CITY agree as follows:

SECTION 1: DEFINITIONS

Within this Agreement, the following words shall have the meanings specified below.

CITY: The City of Roseville

CITY ENVIRONMENTAL UTILITIES DIRECTOR: The Director of Wastewater, Water, and Solid Waste Utilities for the City of Roseville, or successor.

COLLECTION SYSTEM OPERATIONS NOTICE (CSON) PROGRAM: A program implemented by the Regional San Wastewater Source Control Section (WSCS) to provide notification and effective communication of pertinent information for planned sewer system events such as chemical additions, large scale cleaning, construction plugs, and various routine operational, maintenance, and construction activities that may have significant impacts on downstream sewer systems and the Sacramento Regional Wastewater Treatment Plant. These "significant impacts" are further described within the CSON program.

CUSTOMER: The person, agency, or entity paying for sewer service.

DISTRICT ENGINEER: The District Engineer for Regional San and SASD.

DISTRICT SEWER SYSTEM: The facilities owned by Regional San or SASD used for collecting, conveying, pumping, treating, and disposing of wastewater and residuals.

EFFECTIVE DATE: The date that this Agreement is approved by the governing bodies of Regional San, SASD and the CITY and executed by all parties.

EQUIVALENT SINGLE-FAMILY DWELLING (ESD) or EQUIVALENT DWELLING UNIT (EDU): A parameter used to identify the sewage discharge from a single-family detached residential dwelling.

INCIDENT RESPONDER: An individual within SASD, Regional San or the CITY who is in charge of an SSO at any given time.

NPDES: National Pollutant Discharge Elimination System

O&M (M&O): Operations and Maintenance

OWNERSHIP RESPONSIBILTIES: Includes all the responsibilities of ownership without actually owning the property or facility including but not limited to operation, maintenance, replacement, repair, rate and fee collection, and Proposition 218 notification.

POINT OF DEMARCATION: The point in the sanitary sewer where ownership, operation, and maintenance transitions from one agency to another.

RATE: Monthly rate that all users of the sewer collection system must pay to use the sewer collection system.

REGIONAL SAN: Sacramento Regional County Sanitation District

REGIONAL SAN CONSOLIDATED ORDINANCE: An ordinance, adopted on March 23, 2016, and as subsequently amended, that relates to the operation and regulatory powers of Regional San.

RESPONSIBLE AGENCY: With respect to Sanitary Sewer Overflow (SSO), the agency ultimately responsible for responding, cleanup, mitigation, and reporting of the SSO.

SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT (SRWTP): Regional San's treatment facility located at 8521 Laguna Station Road, Elk Grove, CA 95758.

SANITARY SEWER or SEWER: A pipe or conduit (including pumping facilities and in-line treatment and control facilities) that receives and carries wastewater. This definition does not include Regional San treatment facilities.

SANITARY SEWER OVERFLOW (SSO): An unplanned overflow, spill, release, or discharge of untreated or partially treated wastewater from a sewer collection system, as defined in the most current WDR.

SASD: Sacramento Area Sewer District

SASD SEWER ORDINANCE: An ordinance, adopted October 25, 2013, and as subsequently amended, that relates to the operation and regulatory powers of SASD.

SEWER IMPACT FEE (FEE): Fee to pay for user's proportionate share of sewer capacity and associated costs.

SEWER SYSTEM MANAGEMENT PLAN (SSMP): Document that provides SASD, Regional San, or the City a system-wide living management plan for the operation, maintenance, expansion, repair and replacement of the sewer collection system. The intent of this document is to be the day-to-day working management plan that also meets the requirements of addressing the mandatory elements defined by the State Water Resources Control Board, Waste Discharge Requirements for sanitary sewer systems, most current edition.

SPWA: South Placer Wastewater Authority

STANDARD OPERATING PROCEDURE (SOP): The published or prescribed typical methodology for completing a task.

USER: Any person or entity that discharges waste directly or indirectly to the sewer collection system, causes, or allows such discharge.

WASTEWATER: The liquid and water-carried wastes from dwellings, commercial buildings, industrial facilities, institutions, and other sources, whether treated or untreated, which enter or are permitted to enter the sanitary sewer. This term also includes ground, surface, and storm waters comingled with liquid and water-carried wastes as may be present in the sewer system.

WASTEWATER SOURCE CONTROL SECTION (WSCS): A section within Regional San that protects the sewage collection and treatment facilities of the Sacramento region by controlling pollutant discharges to the sewer system. WSCS works to reduce the discharge of pollutants to the sewer by educating businesses and the general public on the waste reduction, management, and appropriate disposal.

WDR: Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Order No. 2006-0003-DWQ, promulgated by the State Water Resources Control Board (SWRCB), and subsequent revisions.

SECTION 2: FACILITIES

A. POINTS OF DEMARCATION

Exhibits A through F identify 6 locations where wastewater flows from the City to SASD sewers. The service area defines which agency (SASD or the CITY) is responsible for operation and maintenance of the manhole ("owner" in Table 2.1) at the point of demarcation. Table 2.1 shows the manholes that establish the point of demarcation for the sewers that flow from the City to SASD:

Table 2.1 – Points of Demarcation (By MH)

Area	Roseville MH # (SASD MH #)	Owner
1	A06-282	Roseville
2	A06-281	Roseville
3	A05-145 (216-003-007)	Roseville
4	A04-154 (204-001-002)	SASD
5	A06-245	Roseville
6	A04-155 (204-001-001)	SASD

Exhibit G identifies an area, known as Vernon Oaks, where wastewater flows from the SASD and Regional San service area into the CITY service area then to the Dry Creek Wastewater Treatment Plant. Table 2.2 identifies parcels within the SASD and Regional San service area that are customers and users of the CITY sewer system and Dry Creek Wastewater Treatment Plant.

Table 2.2 – Parcel Numbers for Vernon Oaks

209-0730-001 (#647)	209-0730-009 (#631)
209-0730-002 (#645)	209-0730-010 (#629)
209-0730-003 (#643)	209-0730-011(#627)
209-0730-004 (#641)	209-0730-012 (#625)
209-0730-005 (#639)	209-0730-013 (#623)
209-0730-006 (#637)	209-0730-014 (#621) Lateral located in City of Roseville
209-0730-007 (#635)	209-0730-015 (#619) Lateral located in City of Roseville
209-0730-008 (#633)	209-0730-016 (#615) Lateral located in City of Roseville
209-0047-012 (#7241)	

For properties listed in Table 2.2 and shown on Exhibit G, the CITY maintains the mainline and laterals for this area. The CITY is responsible for operation and maintenance, and all associated responsibilities of ownership for sewer service and the sewer pipelines that serve these parcels.

B. TRANSFER OF FACILITIES

If a facility is to be transferred by mutual agreement from one agency to the other, a transfer agreement will be prepared, including a description of the facilities and real property rights to be transferred, a description of transferred operation and maintenance responsibilities, and a clear description of financial obligations.

C. EASEMENTS AND RIGHTS OF WAY

For access to properties and the sanitary sewer system considered by this agreement, Regional San, SASD, and the CITY agree that each agency, as an agent of the other, is authorized to use each other's existing easements or rights of way as reasonably necessary to carry out provisions of this Agreement, unless precluded by law or contract. If an easement or right of way is situated in a public street or highway, the laws of the State of California will govern its joint usage in the absence of a specific agreement. All agencies agree to follow each other's SOP for notification.

D. FACILITY MODIFICATIONS

Any physical modifications to Regional San, SASD, or CITY sanitary sewer systems that could affect compliance with the current waste discharge requirements, NPDES permits, or other applicable standards; significantly change the rate of flow; or materially affect the operation of any other Regional San, SASD, or CITY sanitary sewer systems must be coordinated between all parties to this agreement.

SECTION 3: OPERATION AND MAINTENANCE

The boundaries of ownership, operation, and maintenance responsibility of sewer facilities is at the point of demarcation as described in Section 2 and shown in Exhibits A through F. Ownership, operation and maintenance responsibilities for sanitary sewer systems and service to parcels located within the Vernon Oaks area (Exhibit G) will be the responsibility of the CITY.

A. OPERATION AND MAINTENANCE ACTIVITIES

There is a potential for maintenance activities conducted by Regional San, SASD, or the CITY to cause temporary operational impacts within each other's sanitary sewer systems. Regional San, SASD, and the CITY will work together to implement measures that mitigate or minimize operational impacts.

B. ACCESS TO FACILITIES

SASD and the CITY will allow reasonable access to each other's sanitary sewer systems, subject to the operational limitations of the facility owner. The CITY will request access to SASD facilities through the SASD access permit process, as described in Section 3.4 of the SASD Ordinance. SASD will coordinate access to the CITY sanitary sewer facilities with the Environmental Utilities Collections Maintenance Division. See Section G for contact information.

C. ODOR AND CORROSION CONTROL

1. RESPONSIBILITY

Each agency is responsible for odor and corrosion control in their sewer system.

2. AGENCY COORDINATION FOR ODOR RESPONSE

SASD and the CITY will coordinate responses to odor complaints near the points of demarcation.

When an agency receives an odor complaint, it will:

1. Investigate to identify possible sources of the odor complaint within a response time consistent with their standard operating procedures.
2. If it is determined that the agency receiving the complaint is the responsible agency, it will mitigate the odor issue as necessary to remedy the issue.
3. If it is suspected that the other agency may be responsible for the odor complaint, the agency receiving the complaint will immediately contact the other agency.
4. Until SASD and the CITY agree which agency is the responsible agency, all agencies will remain engaged in finding a solution and work collaboratively to resolve any odor issues.

D. DATA ACQUISITION

Regional San, SASD, and the CITY, may request existing data and information for planning, monitoring, and/or operational purposes from each other. This data and information (excluding any privileged data or information) will be made available within a reasonable timeframe.

E. PROHIBITED DISCHARGE

SASD and the CITY will be responsible for controlling waste discharges into their system that significantly differ from each other's ordinances or that may cause harm to each other's sanitary sewer systems. More information on prohibited discharges can be found in *Section 2.4, Sewer Use, Prohibited Discharges* of the SASD Ordinance, *Chapter 14.12, Regulation of Sewer Use, Section 14.12.050 Use of Public Sewers* in the City of Roseville Municipal Code, and *Section 2.5 Sewer Use, Regulations* of the Regional San Consolidated Ordinance.

F. NOTIFICATION

SASD and the CITY shall notify each other as soon as either agency becomes aware of any serious ordinance or municipal code violation or an un-remedied violation that could cause harm or otherwise negatively affect the sanitary sewer system. Ordinance and municipal code enforcement will be coordinated between Regional San, SASD, and the CITY.

Each agency will notify the other through proper notification processes of any planned operational issues or any future operation or maintenance activities that may be detrimental to safe operations of each other's sanitary sewer system (see Section G for contact information).

The CITY will provide a minimum 48 hours notice to SASD and follow requirements of the Regional San Collection System Operations Notice (CSON) program for planned activities conducted in the CITY sanitary sewer system that could impact the District sewer system. SASD agrees to provide a minimum of 48 hours notice to the CITY and follow CITY requirements for any planned activity that could impact the CITY or SPWA infrastructure or CITY treatment plant operations.

As a condition of authorizing any temporary discharge of nondomestic wastewater to the sanitary sewer system, the Regional San, SASD, and the CITY will require the discharger to obtain approval from the Regional San Wastewater Source Control Section and the CITY's Industrial Waste Program respectively.

Notifications of any SSO's will be in accordance with Section 6 of this Agreement and all regulatory requirements.

G. CONTACT LIST

The point of contact for each agency will be the following:

Table 3.1 – Contact Numbers

SASD Dispatch	(916) 875-6730 10060 Goethe Road Sacramento, CA 95827
Regional San Plant Control Center	(916) 875-9400 or (916) 875-9406 8521 Laguna Station Road, Elk Grove, CA 95758
City of Roseville	(916) 746-1890 During normal business hours (916) 774-5750 after hours 1530-0700 1800 Booth Road Roseville, CA 95747

SECTION 4: PLANNING COORDINATION

A. CAPACITY PLANNING

Capacity demands may change depending on future development needs. Each agency will coordinate pertinent planning changes to ensure that sewer service needs are met.

B. NEW CONNECTIONS

This agreement addresses only areas identified in exhibits A through G. New connections planned within areas identified in exhibits A through G shall be coordinated between all affected agencies. New connections will be permitted only when adequate capacity is available in the receiving sanitary sewer system. Neither Regional San, SASD, nor the CITY is responsible for increasing capacity within its sewer system to accommodate flow from new connections outside its service area. Any new connections planned from areas outside those identified in exhibits A through G, or new connections that require the other agency to increase sewer capacity, will require a separate agreement or an amendment to this agreement.

C. PLANNING UPDATES

Regional San, SASD, and the CITY will coordinate with each other prior to creating or making changes to facilities that impact the connections to each other's sanitary sewer

systems. Increase in sanitary sewer system flow that affects capacity requires approval from the receiving agency.

SECTION 5: FINANCIAL CONSIDERATIONS

A. ACCOUNTING AND BILLING

Regional San, SASD, and the CITY agree to maintain records that confirm billing and transfers of billed amounts representative of the number of users being provided service and to make records available when requested.

Regional San, SASD, and the CITY will remit monthly service charge payments to each other on a semiannual basis (twice a year) as follows:

Table 5.1 – Payment Schedule

Period Covered	Payment due no later than
July 1 through December 31	February 28
January 1 through June 30	August 31

SASD and the CITY will absorb the following costs incurred providing service to customers for which collection and treatment service is provided by the other party:

1. Costs incidental to collection and transmittal of service charge payments; and
2. Costs attributable to uncollectable debts or service billings

B. RATES AND FEES

Properties located in the CITY service area, shown in Exhibits A through F, which have sewers connected to the Regional San and SASD sewer system will be subject to prescribed rates and fees for use and connection to the Regional San and SASD sewer systems. These rates and fees are governed by the Regional San and SASD ordinances and adopted by their respective Boards.

The CITY will pay 50% of SASD's and 100% of Regional San's rates for their customers using the SASD and Regional San sewer systems. The CITY will pay 100% of both SASD and Regional San's sewer impact fees for their customers that will connect to District sewer system. As applicable, Regional San or SASD will notify the CITY as required by Proposition 218, of any proposed rate or fee changes. The CITY will be responsible for notifying the CITY customers that use the District sewer system for any CITY proposed rate or fee changes.

For the Vernon Oaks area (Exhibit G), the CITY will assume all ownership responsibilities for the collection of rates and fees associated with providing sewer collection and treatment for the properties in the Regional San and SASD Service Area with sanitary sewer systems connected to and served by the CITY sanitary sewer system. The City will comply with Proposition 218 requirements for changes to these properties.

C. AUDITS

Regional San, SASD, and the CITY have the authority to audit, or appoint auditors, as necessary to examine the financial records of the other agencies to determine if rates and fees have been correctly and timely collected and appropriate amount has been remitted by the other agency in accordance with the terms of this agreement. Regional San, SASD, and the CITY will make available all requested records and will assist the auditors in their efforts.

D. REPLACEMENTS AND REPAIRS

The cost and performance of all replacement, betterments, and repairs, and any other costs for items not specifically defined in this Agreement will be the responsibility of the facility owner.

E. WASTEWATER SOURCE CONTROL PROGRAMS

Currently, Regional San and the CITY each administer separate mandated Federal Pretreatment Programs and local source control programs. Subject to applicable approval requirements of each agency, the District Engineer and the City Environmental Utilities Director may enter into agreements covering the reimbursement to the City or Regional San for the CITY's or Regional San's fair and reasonable share of their respective staff time and resources dedicated to the administration of their respective source control programs as related to this agreement.

F. OTHER COSTS

Subject to each agency's approval requirements, Regional San, SASD, or the CITY may enter into future agreements to reimburse costs for other services provided. Expenses chargeable for services provided will be fixed in nature and will provide full reimbursement for all costs, whatever the nature incurred in providing such services. The agency providing the services will be entitled to recover actual loaded rate costs.

SECTION 6: SSO COORDINATION

A. INCIDENT OWNERSHIP

When an SSO is reported, the agency receiving the notification will follow their own SSO Emergency Response Plan included in their Sewer System Management Plan (SSMP). The Responder will investigate the SSO and take all appropriate steps to respond in accordance with that agency's SSO Standard Operating Procedures (SOP). If it is determined that the other agency is the responsible party, a transfer of the incident will be made by calling the other agency's point of contact (Section 3-G). The responsible agency will assume responsibility as soon as they are contacted. Date and time of changes in Incident Responder will be communicated verbally and documented by both initial and relieving Incident Responder.

As the initial responder, both CITY and SASD agree to take all measures possible to contain and minimize a spill. As appropriate, the initial incident responder will remain onsite until responsibility can be determined and transfer of incident ownership can occur. To the extent that staff in one agency can help the other agency without jeopardizing the functioning of their own systems, these efforts will continue until, in the judgment of the Responsible Agency, the Responsible Agency has mobilized to the site with all necessary equipment and personnel to continue SSO abatement.

Once notified the Responsible Agency agrees to mobilize all necessary equipment and personnel in a timely manner.

Costs incurred by the initial Incident Responder when providing this service for the Responsible Agency will be reimbursed as outlined in Section 5.

B. SSO RESPONSIBILITY

The agency that is responsible for operation and maintenance of the sanitary sewer system is also responsible for controlling and correcting SSO's originating in that sanitary sewer system. An agency's assumption of the role of Responder, with respect to an SSO, will not alone make the agency responsible for the SSO. Responsibility will be determined based upon OWNERSHIP of the location of the blockage or failure in the pipe, not the SSO appearance point. Following response activities, Regional San, SASD, and the CITY agree to investigate and share information resulting from the incident investigation until the cause and location of the blockage or failure causing the SSO is determined.

C. SSO REPORTING

The Responsible Agency will report their SSO in accordance with the most current regulations.

SECTION 7: MUTUAL AID

A. EMERGENCY MUTUAL AID

Agencies may provide emergency mutual aid to each other. To the extent that staff in one agency can help the other agency without jeopardizing the functioning of their own systems, both agencies will share staff and resources for the benefit of the Sacramento Area and South Placer County regions. The recipient of the services will reimburse the other party pursuant to Section 5 of this Agreement.

B. RESOURCES

When one agency loans resources to another, the provider will keep records for the labor hours, equipment, and expenses incurred. Costs incurred will be reimbursed as outlined in Section 5.

SECTION 8: ADHERENCE TO REGULATIONS

A. APPLICABLE LAWS AND REGULATIONS

Regional San, SASD, and the CITY agree to operate all sanitary sewer systems in conformance with all pertinent laws and regulations.

B. SEWER ORDINANCES

1. SASD AND REGIONAL SAN ORDINANCES

SASD and Regional San's ordinances may be amended periodically, including changes that regulate the use of public sewers. The CITY code will ensure that all discharges to the public sewer system are in general compliance or do not result in a significant violation of the applicable SASD and Regional San ordinances and prohibit the discharge of any substance prohibited by the SASD and Regional San ordinances. The CITY code will also enforce the provisions in the SASD and Regional San ordinances that relate to pretreatment of industrial wastes.

2. CITY MUNICIPAL CODE

The CITY Municipal Code may be amended periodically, including changes that regulate the use of public sewers. The SASD and Regional San Ordinances will ensure that all discharges to the public sewer system are in general compliance or do not result in a significant violation of the applicable Municipal Code and prohibit the discharge of any substance prohibited by the CITY Municipal Code. The SASD

and Regional San Ordinances will also enforce the provisions in the CITY Municipal Code that relate to pretreatment of industrial wastes.

C. WASTEWATER DISCHARGE PRETREATMENT PROGRAM

The Regional San Wastewater Source Control Section will issue wastewater discharge permits under the Regional San Pretreatment Program to the CITY for users of the District sewer system within the City of Roseville. The CITY grants Regional San the authority to administer its pretreatment program to ensure users connected to the SASD and Regional San systems maintain compliance with the Regional San Pretreatment Program.

The CITY Industrial Waste Section will issue wastewater discharge permits under the CITY Pretreatment Program to Regional San for users of the CITY sanitary sewer system users in the Regional San service area. Regional San grants the CITY the authority to administer its pretreatment program to ensure that users connected to the CITY systems maintain compliance with the CITY Pretreatment Program.

SECTION 9: NOTICE

Unless indicated otherwise herein, all notices, invoices, payments, statements, or other writing authorized or required by this Agreement may be delivered personally, or sent in the United States mail, postage prepaid, or sent by electronic mail if the recipient confirms receipt, and addressed to the respective parties as follows:

To CITY:
Wastewater Utilities Manager
City of Roseville
2005 Hilltop Circle
Roseville, CA 95747

To Regional San and SASD:
District Engineer
Sanitation Districts Agency
10060 Goethe Road
Sacramento, CA 95827

SECTION 10: MUTUAL INDEMNIFICATION

The CITY shall defend, indemnify and hold harmless Regional San, its Board of Directors, officers, directors, agents, employees, volunteers, and assigns from and against all demands, claims, actions, liabilities, losses, damages, injuries to or death of persons, regulatory fines and/or penalties imposed by any local, state, or federal authority for breaches of such authority's regulations, and costs, including reasonable attorneys' fees, to the extent arising out of or resulting from the negligent or intentional acts or omissions of the CITY, it's City Council,

officers, directors, agents, employees, assigns, contractors, or volunteers in connection with this Agreement.

The CITY shall defend, indemnify and hold harmless SASD, its Board of Directors, officers, directors, agents, employees, volunteers, and assigns from and against all demands, claims, actions, liabilities, losses, damages, injuries to or death of persons, regulatory fines and/or penalties imposed by any local, state, or federal authority for breaches of such authority's regulations, and costs, including reasonable attorneys' fees, to the extent arising out of or resulting from the negligent or intentional acts or omissions of the CITY, it's City Council, officers, directors, agents, employees, assigns, contractors, or volunteers in connection with this Agreement.

SASD shall defend, indemnify, and hold harmless the CITY, its City Council, officers, directors, agents, employees, volunteers, and assigns from and against all demands, claims, actions, liabilities, losses, damages, injuries to or death of persons, regulatory fines and/or penalties imposed by any local, state, or federal authority for breaches of such authority's regulations, and costs, including reasonable attorney's fees, to the extend arising out of or resulting from the negligent or intentional acts or omissions of the SASD Board of Directors, officers, directors, agents, employees, assigns, contractors, or volunteers in connection with this Agreement.

Regional San shall defend, indemnify, and hold harmless the CITY, its City Council, officers, directors, agents, employees, volunteers, and assigns from and against all demands, claims, actions, liabilities, losses, damages, injuries to or death of persons, regulatory fines and/or penalties imposed by any local, state, or federal authority for breaches of such authority's regulations, and costs, including reasonable attorney's fees, to the extend arising out of or resulting from the negligent or intentional acts or omissions of the Regional San Board of Directors, officers, directors, agents, employees, assigns, contractors, or volunteers in connection with this Agreement.

It is the intention of Regional San, SASD and the CITY that, where comparative fault is determined to have been contributory, principles of comparative fault will be followed and to the extent permitted by law each party shall bear the proportionate cost of any damage attributable to the fault of that party, its officers, directors, agents, employees, assigns, contractors and volunteers.

This indemnity shall not be limited by the types and amounts of insurance or self-insurance maintained by the Parties.

Nothing in this Indemnity shall be construed to create any duty to, any standard of care with reference to, or any liability or obligation, contractual or otherwise, to any third party.

The provisions of this Indemnity shall survive the expiration or termination of the Agreement.

SECTION 11: INSURANCE

Each party, at its sole cost and expense shall carry insurance or shall self-insure its activities in connection with this Agreement and obtain, keep in force, and maintain insurance or equivalent programs or self-insurance for general liability, worker's compensation, property, professional liability, environmental liability, and business automobile liability adequate to cover its potential liabilities hereunder. Each party agrees to provide the other party thirty (30) days advance written notice of any cancellation, termination, or lapse of any of the insurance of self-insurance coverage. Failure to maintain insurance as required in this Agreement is a material breach of contract and may be grounds for termination of this Agreement.

SECTION 12: AMENDMENTS

Modifications or amendments affecting this Agreement shall be in writing and executed by all parties.

SECTION 13: ENTIRE AGREEMENT

This instrument constitutes the entire Agreement between Regional San, SASD, and the CITY concerning the subject matter hereof.

SECTION 14: AGREEMENT TERM

This Agreement shall become effective on the date hereof and will continue in full force and effect until terminated or amended upon mutual consent of both Regional San, SASD, and the CITY.

SECTION 15: NO AGENCY

Except as otherwise expressly provided in this Agreement, neither party, nor any of its officers, agents, or employees, volunteers or contractors, shall for any reason be considered agents, nor authorized to act as agents of the other party, with respect to the performance of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the day and year hereinabove first written.

SACRAMENTO AREA SEWER DISTRICT and SACRAMENTO REGIONAL SANITATION DISTRICT sanitation districts formed pursuant to and operating under the authority of the County Sanitation District Act commencing at Health and Safety Code Section 4700

RECOMMENDED FOR APPROVAL:
By: Prabhaka Somavarapu
District Engineer

APPROVED AS TO FORM:
By: SEE ATTACHED COUNTERPART(S)
District Counsel

ATTEST:
By: SEE ATTACHED COUNTERPART(S)
Clerk of the Board of Supervisors of Sacramento County, California, and Ex-Officio Secretary of the Board of Directors

By: SEE ATTACHED COUNTERPART(S)
Chair, Board of Directors

CITY OF ROSEVILLE, a municipal corporation

RECOMMENDED FOR APPROVAL:
By: see attached counterpart
Environmental Utilities Director

APPROVED AS TO FORM:
By: see attached counterpart
City Attorney

ATTEST:
By: see attached counterpart
City Clerk

By: see attached counterpart
City Manager

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the day and year hereinabove first written.

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RECOMMENDED FOR APPROVAL:
By: SEE ATTACHED COUNTERPART(S)

District Engineer

APPROVED AS TO FORM:
By:

District Counsel

ATTEST:
By: SEE ATTACHED COUNTERPART(S)

Clerk of the Board of Supervisors of Sacramento County, California, and Ex-Officio Secretary of the Board of Directors

By: SEE ATTACHED COUNTERPART(S)

Chair, Board of Directors

CITY OF ROSEVILLE, a municipal corporation

RECOMMENDED FOR APPROVAL:
By:

Environmental Utilities Director

APPROVED AS TO FORM:
By: Robert R Schmitt

City Attorney

ATTEST:
By: Sonia Orozco

City Clerk

By:

City Manager

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the day and year hereinabove first written.

SACRAMENTO AREA SEWER DISTRICT and SACRAMENTO REGIONAL SANITATION DISTRICT sanitation districts formed pursuant to and operating under the authority of the County Sanitation District Act commencing at Health and Safety Code Section 4700

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District Engineer

APPROVED AS TO FORM:
By: SEE ATTACHED COUNTERPART(S)

District Counsel

ATTEST:
By:

Clerk of the Board of Supervisors of Sacramento County, California, and Ex-Officio Secretary of the Board of Directors

By:

Chair, Board of Directors

CITY OF ROSEVILLE, a municipal corporation

RECOMMENDED FOR APPROVAL:
By:

see attached counterpart
Environmental Utilities Director

APPROVED AS TO FORM:
By:

see attached counterpart
City Attorney

ATTEST:
By:

see attached counterpart
City Clerk

By:

see attached counterpart
City Manager

ATTACHMENT C

EXHIBIT A – ROSEVILLE TO SASD FLOW (AREA 1)

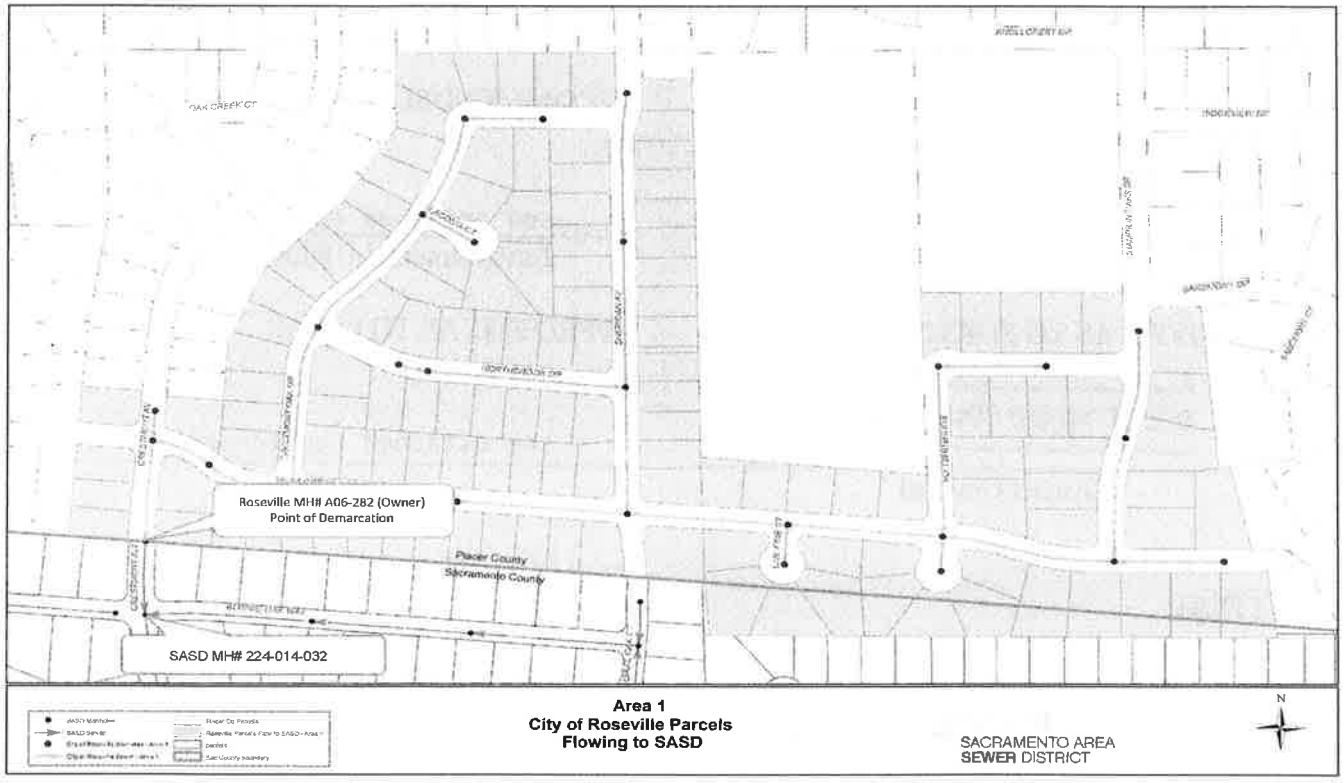


EXHIBIT B – ROSEVILLE TO SASD FLOW (AREA 2)

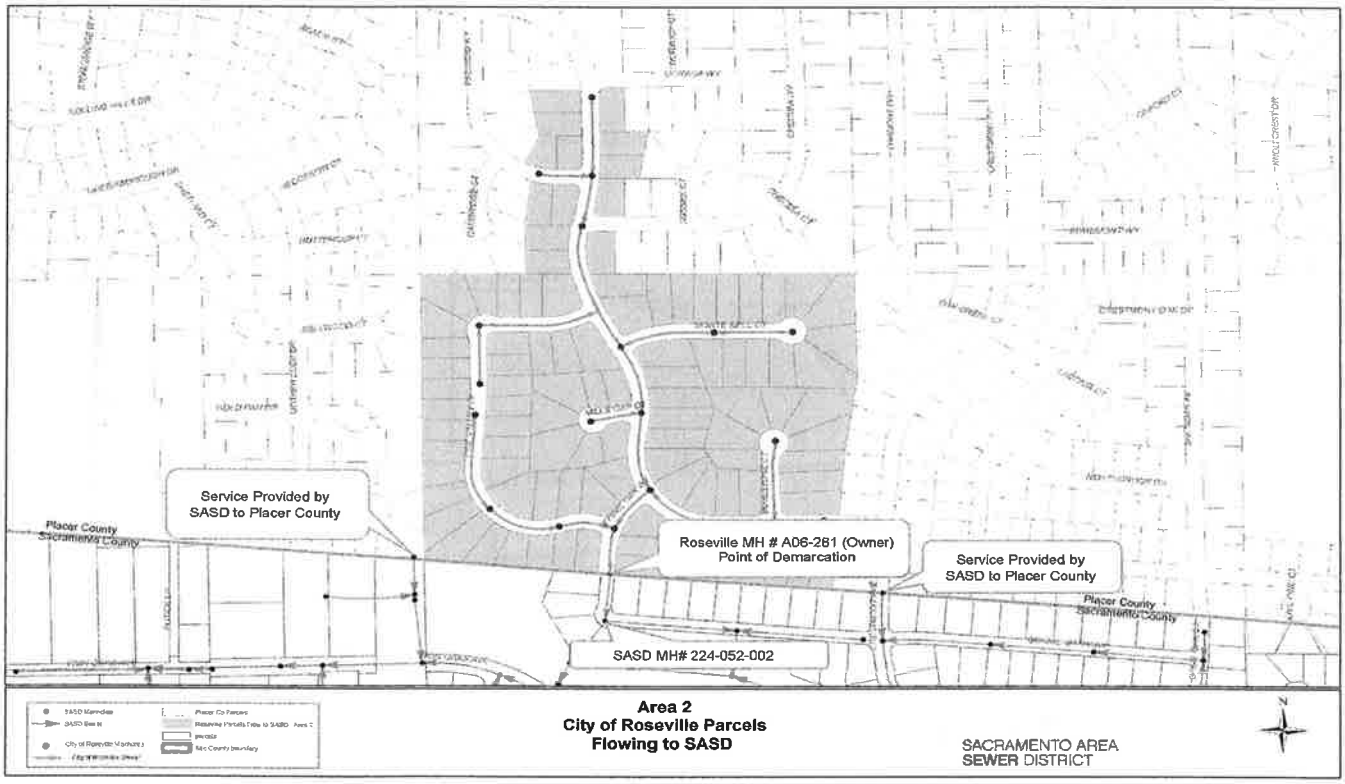


EXHIBIT C – ROSEVILLE TO SASD FLOW (AREA 3)

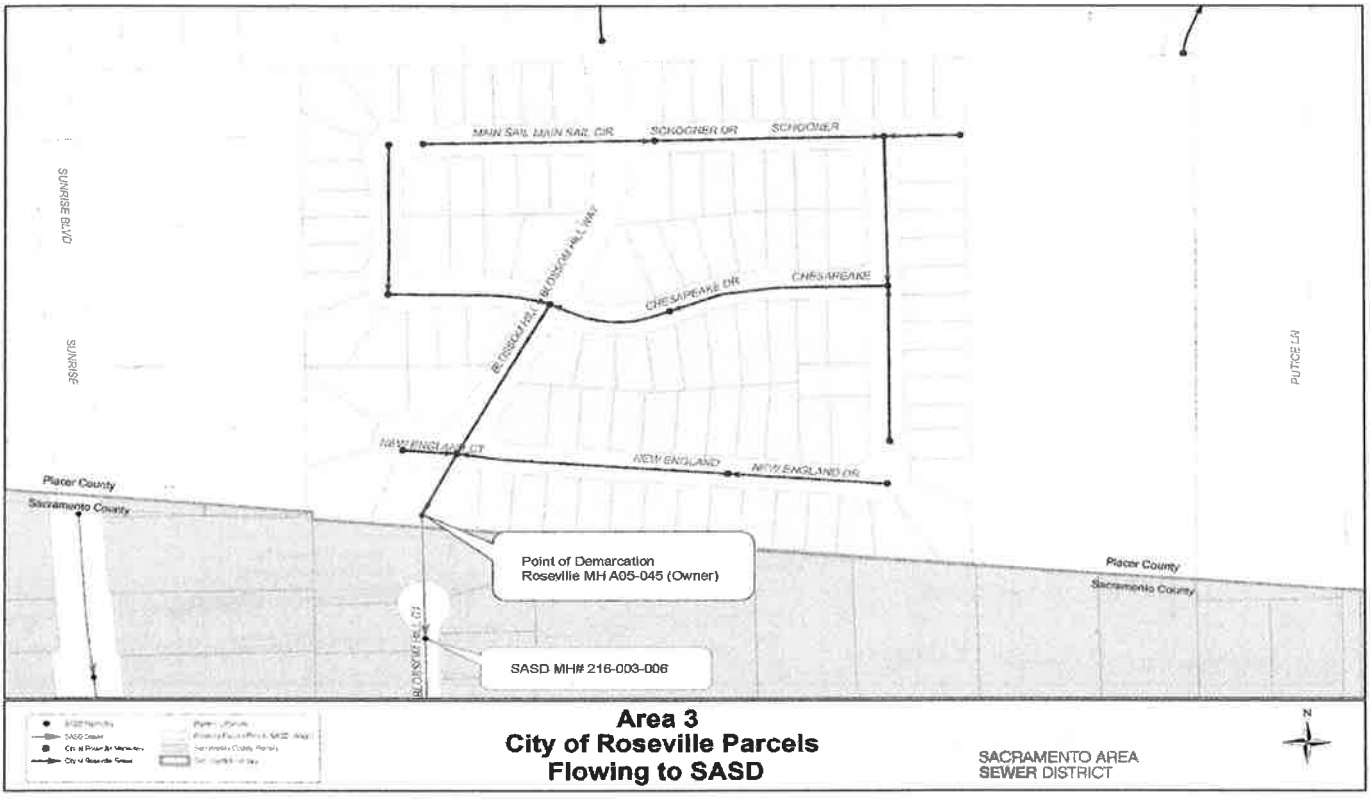


EXHIBIT D – ROSEVILLE TO SASD FLOW (AREA 4)

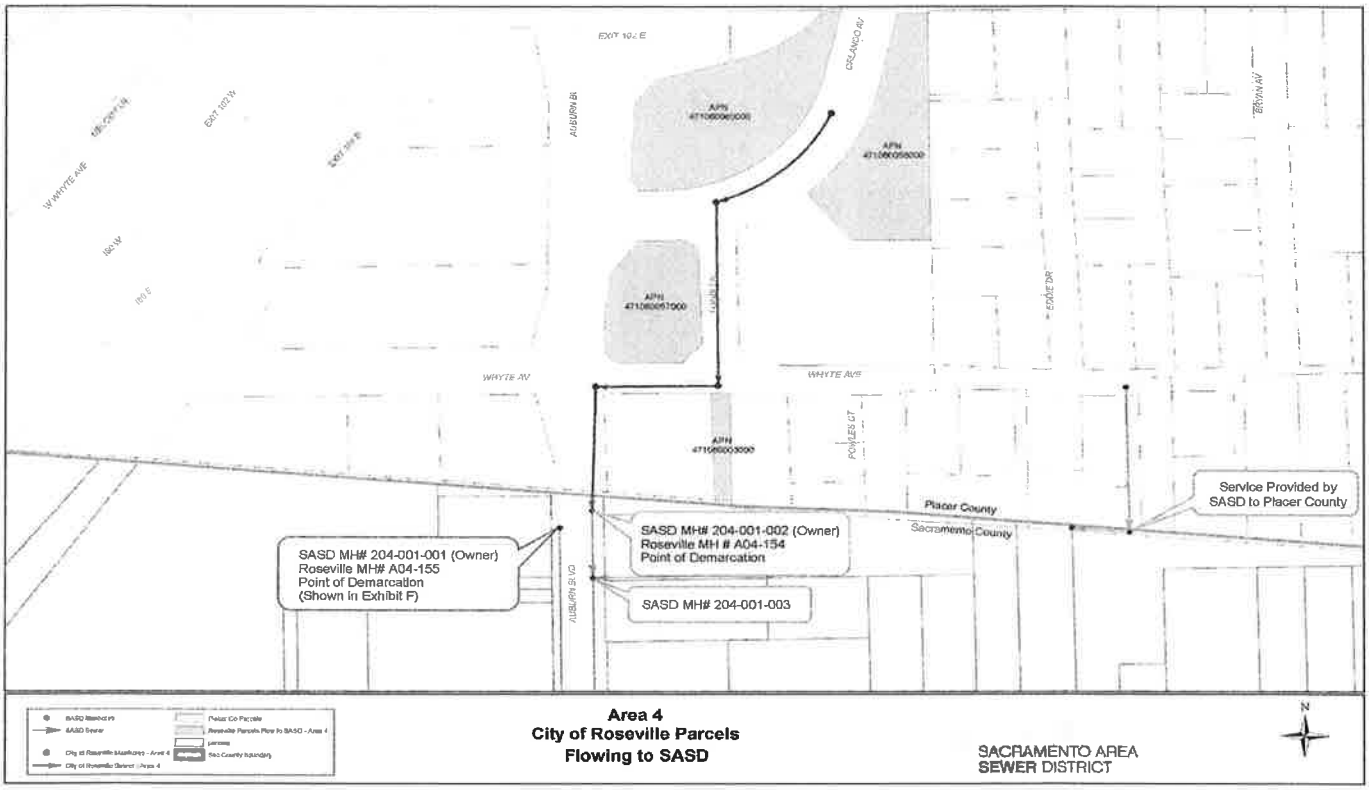


EXHIBIT E – ROSEVILLE TO SASD FLOW (AREA 5)

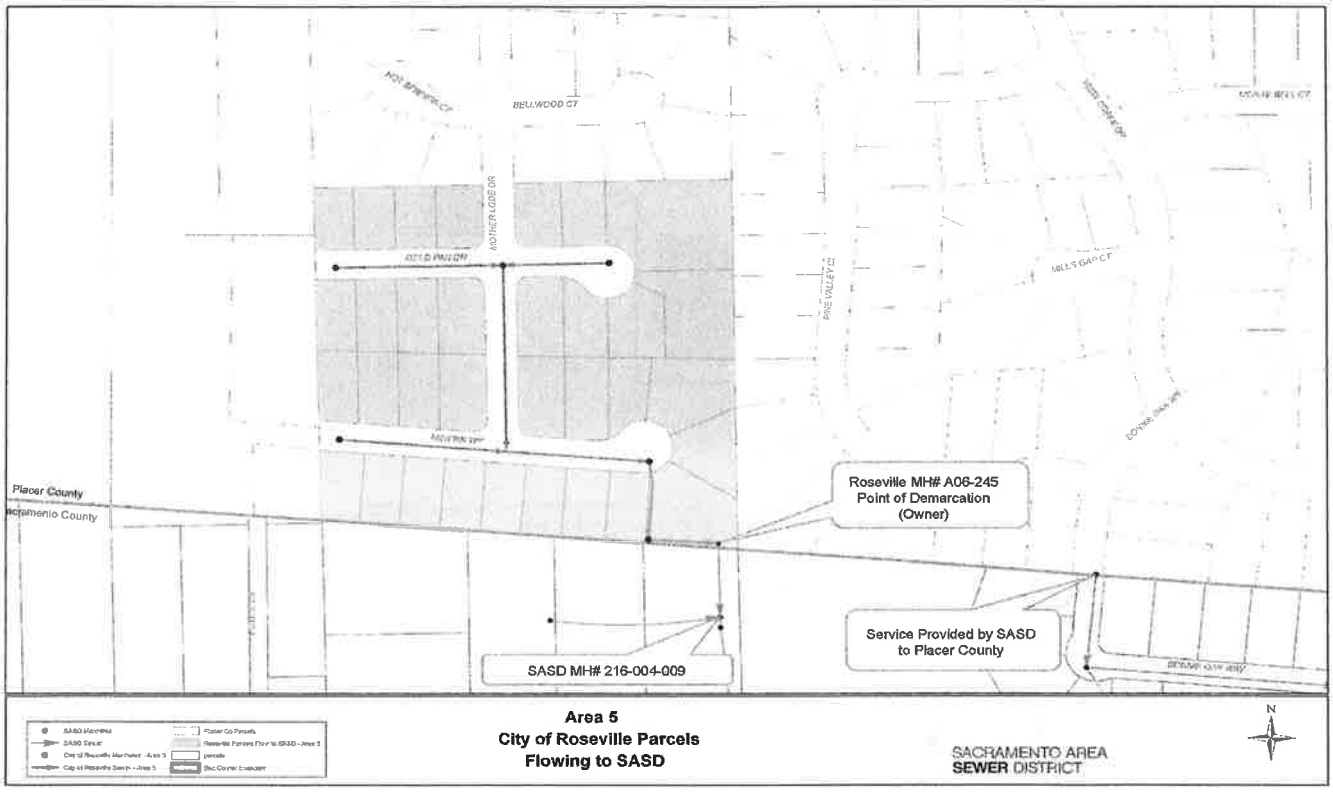


EXHIBIT F – ROSEVILLE TO SASD FLOW (AREA 6)

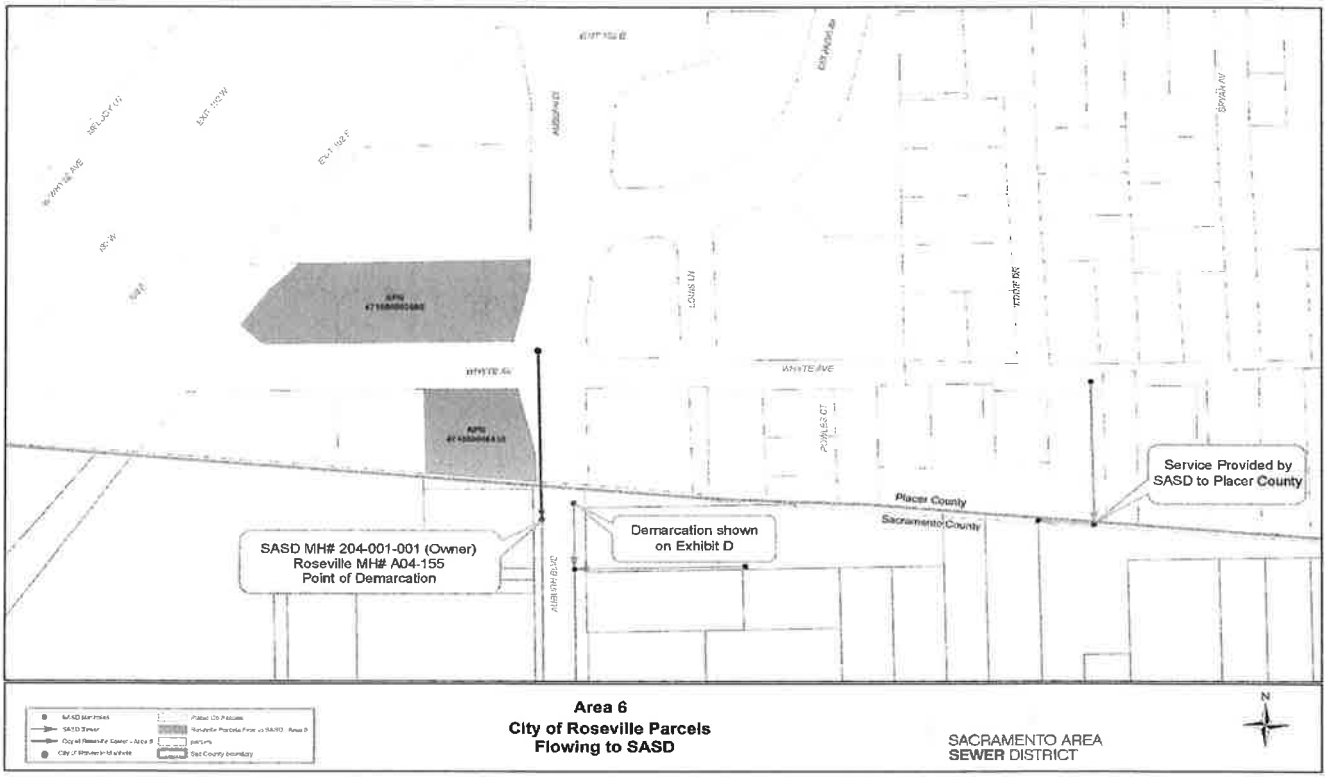
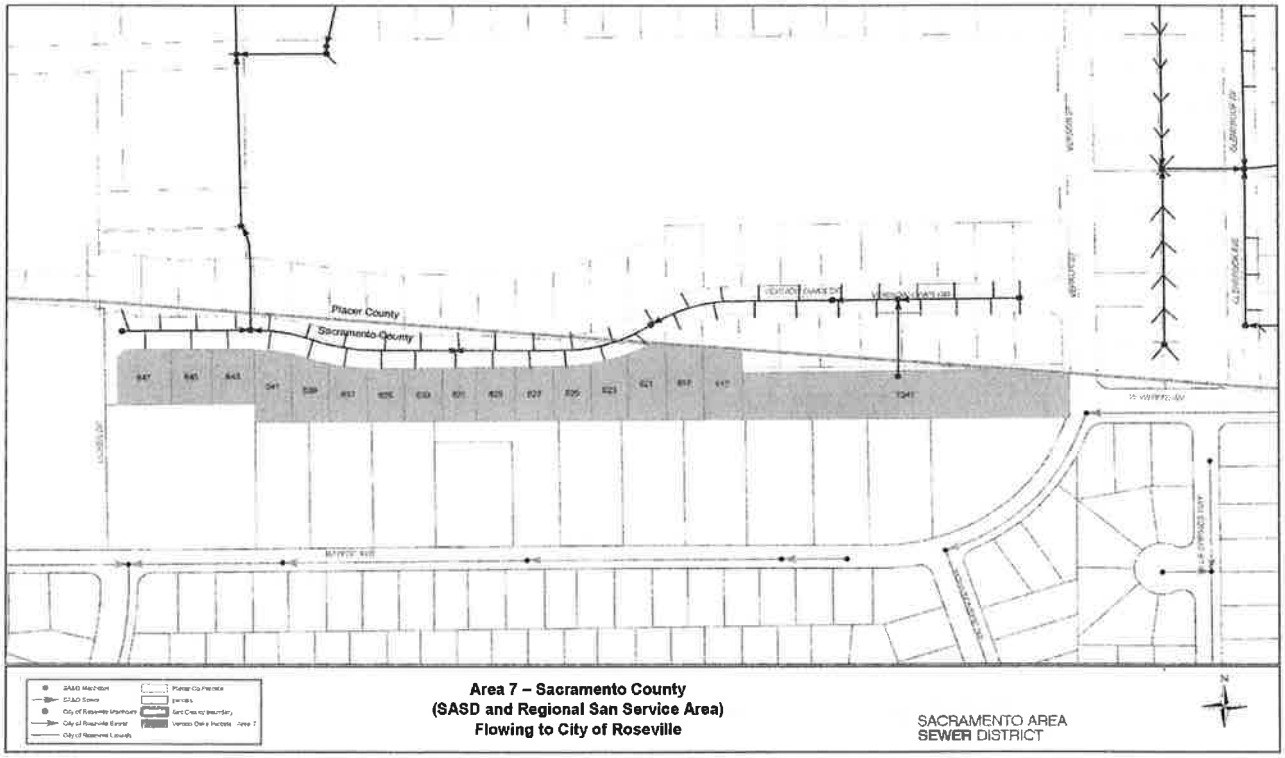


EXHIBIT G – SASD TO ROSEVILLE FLOW (VERNON OAKS)



Area 7 – Sacramento County
(SASD and Regional San Service Area)
Flowing to City of Roseville

SACRAMENTO AREA
SEWER DISTRICT

RESOLUTION NO. 16-328

APPROVING AN AGREEMENT BY AND BETWEEN SACRAMENTO REGIONAL COUNTY SANITATION DISTRICT, SACRAMENTO AREA SEWER DISTRICT AND THE CITY OF ROSEVILLE, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a Wastewater Services Contract and Operating Agreement, by and between Sacramento Regional County Sanitation District, Sacramento Area Sewer District and the City of Roseville, has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said agreement is hereby approved and that the City Manager is authorized to execute it on behalf of the City of Roseville; and

PASSED AND ADOPTED by the Council of the City of Roseville this 3rd day of August, 2016 by the following vote on roll call:

AYES COUNCILMEMBERS: Gore, Rohan, Herman, Roccucci

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: Garcia

Susan Rohan
VICE MAYOR

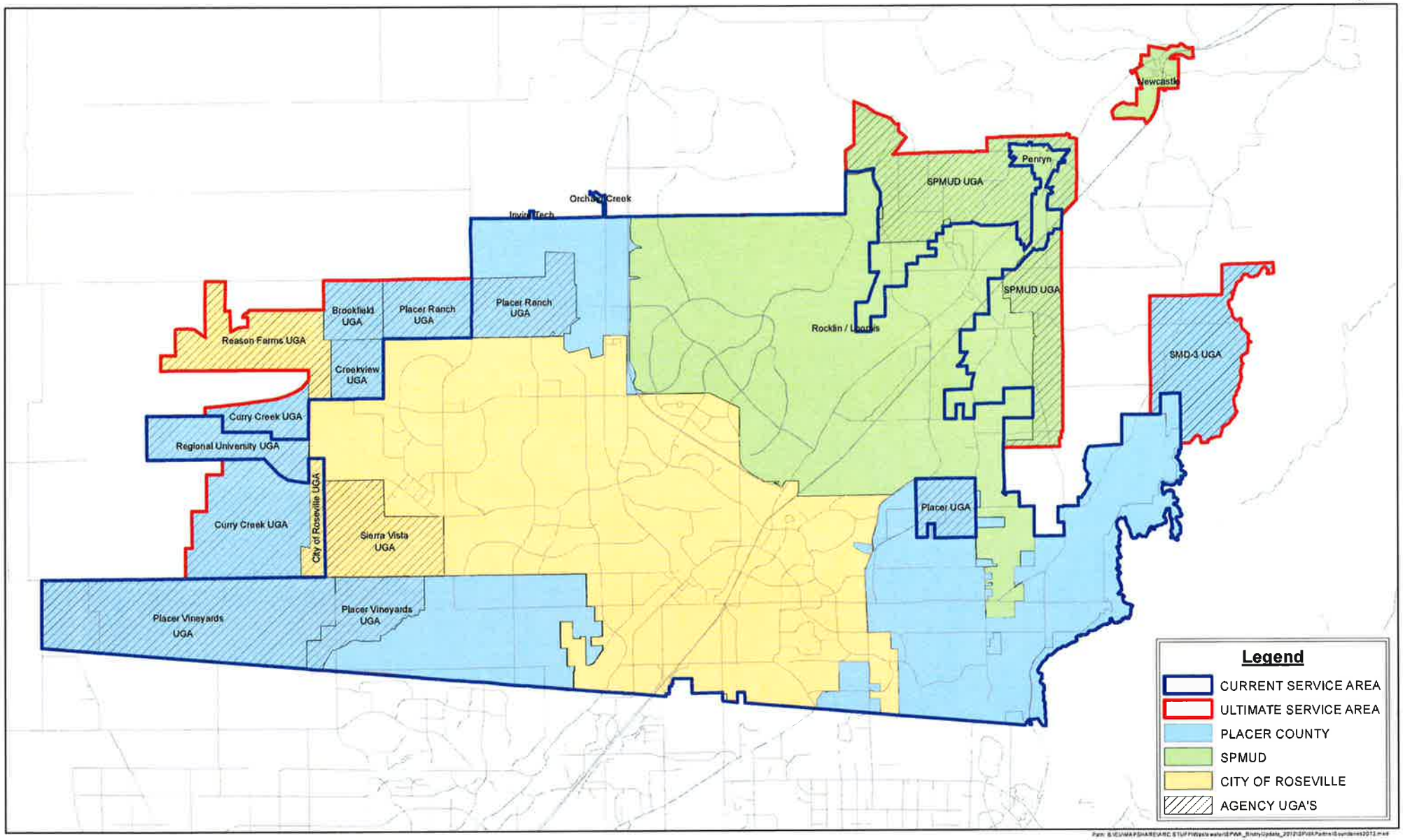
ATTEST:

Sonia Orozco
City Clerk

Appendix 3-5

South Placer Wastewater Authority Service Area Boundary

SPWA Partner Agencies, 2012 Service Area & Ultimate Service Area Boundary



Appendix 4-1

Scheduled Preventative Maintenance

Wastewater Collections
Preventive Maintenance

PM	Description	Next Due Date
HOT SPOTS TC	Hot Spots - Traffic Control	5/2/2022
HOT SPOTS	Hot Spots Non Traffic Control	5/2/2022
137178 HN	LIFT STATION GROUNDS	2/10/2022
138098 HN	PULL PUMPS FOR MAINTENANCE	2/3/2022
138157 HN	WET WELL CLEAN	2/3/2022
135781 HN	MONTHLY LIFT STATION CHECKS	2/10/2022
137268 HN	VERMIN CONTROL	5/3/2022
129353 HN	SM B04	6/1/2022
128854 HN	SM A03	2/1/2022
129012 HN	SM A04	11/1/2022
128866 HN	SM A05	4/1/2022
129017 HN	SM A06	5/1/2022
99933 HN	SM A07	2/3/2022
135869 HN	SM A08	7/1/2022
129276 HN	SM B03	4/1/2022
136850 HN	SM B05	10/3/2022
129578 HN	SM B06	1/3/2023
129953 HN	SM B07	6/1/2022
130290 HN	SM B08	3/2/2022
135872 HN	SM C01	2/1/2024
100428 HN	SM C02	1/1/2023
116668 HN	SM C03	3/1/2022
135188 HN	SM C04	2/2/2022
135435 HN	SM C05	9/2/2022
96770 HN	SM C06	8/2/2022
135870 HN	SM C07	10/1/2023
137191 HN	SM D01	7/1/2023
100165 HN	SM D02	6/1/2024

116947 HN	SM D03	5/1/2022
110644 HN	SM D04	9/1/2022
110891 HN	SM D05	8/2/2022
117276 HN	SM D06	6/1/2022
117329 HN	SM D07	6/1/2023
135782 HN	SM E01	4/1/2023
137040 HN	SM E02	9/1/2022
130663 HN	SM E03	2/1/2022
137038 HN	SM E04	5/3/2023
135874 HN	SM E05	5/31/2023
135823 HN	SM F03	4/1/2022
135879 HN	SM F04	9/1/2023
138206 HN	A04 LATERAL MAINTENANCE VAPOROOTER	2/1/2022
138337 HN	A05 LATERAL MAINTENANCE VAPOROOTER	10/1/2022
137871 HN	A06_1 LATERAL MAINTENANCE VAPOROOTER	2/4/2022
138134 HN	A06_2 LATERAL MAINTENANCE VAPOROOTER	11/1/2022
138233 HN	A07 LATERAL MAINTENANCE VAPOROOTER	5/3/2022
138229 HN	B04 LATERAL MAINTENANCE VAPOROOTER	4/1/2022
138232 HN	B05_1 LATERAL MAINTENANCE VAPOROOTER	3/1/2022
138129 HN	B05_2 LATERAL MAINTENANCE VAPOROOTER	11/1/2022
138167 HN	B06_1 LATERAL MAINTENANCE VAPOROOTER	12/9/2022
138103 HN	B06_2 LATERAL MAINTENANCE VAPOROOTER	9/1/2022
138628 HN	C02 LATERAL MAINTENANCE VAPOROOTER	9/1/2022
138230 HN	C03 LATERAL MAINTENANCE VAPOROOTER	3/1/2022
138034 HN	C04_1 LATERAL MAINTENANCE VAPOROOTER	2/1/2022
138038 HN	C04_2 LATERAL MAINTENANCE VAPOROOTER	5/3/2022
138054 HN	C04_3 LATERAL MAINTENANCE VAPOROOTER	4/1/2022
138056 HN	C04_4 LATERAL MAINTENANCE VAPOROOTER	6/1/2022
138079 HN	C05_1 LATERAL MAINTENANCE VAPOROOTER	7/12/2022
138114 HN	C05_2 LATERAL MAINTENANCE VAPOROOTER	1/3/2023
138080 HN	C05_3 LATERAL MAINTENANCE VAPOROOTER	6/1/2022
138074 HN	C05_4 LATERAL MAINTENANCE VAPOROOTER	7/2/2022

138115 HN	C05_5 LATERAL MAINTENANCE VAPOROOTER	9/1/2022
138231 HN	D02 LATERAL MAINTENANCE VAPOROOTER	4/1/2022
138343 HN	D03 LATERAL MAINTENANCE VAPOROOTER	11/1/2022
138184 HN	D04 LATERAL MAINTENANCE VAPOROOTER	2/1/2022
138352 HN	D05 LATERAL MAINTENANCE VAPOROOTER	1/3/2023
138426 HN	E02 LATERAL MAINTENANCE VAPOROOTER	9/1/2022
138349 HN	Backyard #2 LATERAL MAINTENANCE VAPOROOTER	11/1/2022
138403 HN	Backyard #1 LATERAL MAINTENANCE VAPOROOTER	4/1/2022
138238 HN	SSO LATERAL MAINTENANCE VAPOROOTER	4/2/2022
138148 HN	PILOT LATERAL MAINTENANCE VAPOROOTER	12/1/2022

Appendix 6

Spill Emergency Response Plan

Spill Emergency Response Plan

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Appendix G- Field Spill Report 25

The City of Roseville developed this Spill Emergency Response Plan (SERP) for responding to spills originating from the sanitary sewer system. This plan ensures that all spill responses are conducted efficiently and effectively while meeting all regulatory requirements of the General Order.

The division has provided all employees with a binder containing this emergency response plan, estimation tables, and strategies for notifying primary responders, local officials, and regulatory agencies.

I. Goals of SERP

This SERP aims to ensure that all wastewater collection personnel follows the established guidelines in cleaning up and decontaminating spills within the City's collection system service area. The City's goals concerning spill response are:

A. Respond quickly to minimize the extent of the spill;
   1. The division's goal is a 20-minute response time during business hours and 40 minutes after hours.
B. Contain the spill to the extent feasible;
C. Eliminate the cause of the spill;
D. Eliminate public contact with the spill;
E. Mitigate the impact of the spill; and
F. Comply with the RWQCB Monitoring and Reporting requirements

II. Respond and Assess

Calls for service come through either the office landline or a 24-hour answering service. Calls for service to the Administrative Technician are documented in a service request in the City's CMMS. In turn, the Technician will dispatch the call with all information to the on-call service worker via cellular phone. After business hours, the City's contracted answering service is provided a script of questions used to collect information from the caller. Once gathered, they also dispatch the call information via cellular phone to the on-call service worker. After the call, the answering service time stamps the call, and an email is sent to the division management and service call address with all pertinent information regarding the call. Additionally, the wastewater treatment plant staff monitors lift station SCADA alarms. Operators notify the on-call service worker via cellular phone if they receive an alarm at any of the City's lift stations.

Assessment starts with the phone call to the customer. Upon contact with the resident, request that the resident stop all water use, then begin gathering as much relevant information as possible such as:

A. Description of problem
B. Specific location if a spill has occurred (e.g.,. manhole in the street, front or back of the property, cleanout box)
C. The approximate time the spill was noticed helps tremendously in determining the start time of the spill.

D. Any other observations from the caller (e.g., currently spilling, odor, duration of the spill, slow drains, currently spilling, water use in home)

E. If the service worker believes an active spill is occurring, they will mobilize a hydro-vac immediately to the location.

A. The wastewater crewmember arriving first at the scene is the ***First Responder***. Upon arrival, the first Responder will quickly assess the spill to determine the extent, spill category, and resources needed to address the spill. The ***First Responder*** is responsible for the following:

1. Location of the spill by the address and cross street the spill appearance point (i.e., manhole, cleanout, lift station, etc.)
2. Documenting the time the call was received, time of arrival, and determining the start and stop times of the spill. Appendix A will aid in establishing the start and stop time for the spill.
3. Determine the extent and the category of the spill;
    i. If the spill is a Category 1 or 2, notify the Superintendent or Supervisor immediately. Cal OES notification is required within 2 hours of becoming aware of the spill.
    ii. Did the spill cause a backup in a structure? – Appendix B addresses the process
    iii. Did the spill enter into a drainage conveyance system?
    iv. If a potential for public exposure is present, control foot and auto traffic through the area
    v. Other concerns due to the spill
        a. Is the spill related to a street collapse?
        b. Is the spill related to recent construction work?
        c. Has the spill displaced a manhole cover creating a traffic hazard
4. Requesting additional wastewater crews or personnel as needed;
5. All field documentation, including photographs of the spill and completion of the Field Spill Report Form

F. If the spill is a Category 1, follow directions from RWQCB, Placer County Environmental Health, or the Department of Fish and Wildlife for posting warning signs around the contaminated area.

III. Spill Categories

Individual spill notification, monitoring and reporting must be in accordance with the following spill categories:

A. **Category 1** - any volume of sewage from or caused by a sanitary sewer system regulated under this General Order that results in a discharge to:

1. A surface water, including a surface water body that contains no flow or volume of water.
    i. A drainage conveyance system that discharges to surface waters when the sewage is not fully captured and returned to the sewer system or disposed of properly.
    ii. Any spill volume not recovered from a drainage conveyance system is considered a discharge to surface water unless the drainage conveyance system discharges to a dedicated stormwater infiltration basin or facility.
2. **Category 2** - is a spill of 1,000 gallons or greater from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.
3. **Category 3**- is a spill of equal to or greater than 50 gallons and less than 1,000 gallons from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.
4. **Category 4** - is a spill of less than 50 gallons from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.

IV. Spill Containment

Containment of a spill becomes increasingly difficult once the overflow reaches a drainage conveyance system or a waterway. The quicker the spill's source and extent can be identified, contained, or controlled significantly reduces the spill's impact. Upon arrival, survey the scene to determine the potential spill appearance point. There are times when responding to a spill, the source of the spill is potable water, a backyard drain, or a storm issue. Once confirmed that the spill is the sewer, mobilize the necessary personnel and equipment for assistance. During dry weather, the drainage conveyance system can store the spill, if plugged at a point downstream of the spill.

A. Multiple techniques are identified to contain the spill depending on the circumstances, spill category, and material available. In no particular order, the list below includes possible containment options for field crews.

Location	Options for Containment
Curb and Gutter	Create berm with rubber berm, dry sweep, dirt or sandbags: Utilize natural low spots or grade deviations
Lift Station	• Use Hydro-Vac to contain • Setup bypass pumping • Setup backup generation
Open Space	• Dig a trench to contain • Sandbag berm • Dirt berm
Creek	• Plug storm drain inlets and outlet pipes to creek
Storm Drain Conveyance System (Dry)	• Plug all affected storm drain inlets; plug outfall if necessary • Contain using the hydro-vac • Request additional hydro-vac support if necessary
Storm Drain Conveyance System (Wet Weather)	• Plug all affected storm drain inlets • Emergency bypass pumping • Turn off stormwater pump station if applicable
Backup in Structure	▪ Evacuate residents if needed ▪ Pop cleanout cap off; If no city cleanout, attempt to locate ▪ Pop private cleanout if available • Contain outside if overflow is relieved by finding/removing cleanout cap.

1. Containment with Hydro-Vac
   Determine a location downstream of the spill appearance point where the hydro-vac unit can be set up to capture all spilled water. Ensure no storm drain inlets are between the containment and spill appearance points. Continue vacuuming overflow until the blockage has been cleared, then proceed with the spill's cleanup. Wash all debris and spill evidence into the vacuum tube for removal and disposal at the DCWWTP.
2. Containment Using Berms and Mats

   Utilize dirt, dry sweep, a rubber berm, sandbags, or other obstructing material that is readily available to block drain inlets and ponds the spill to a naturally low area to contain and minimize the spill's impact. If possible, divert the spill to a downstream manhole unaffected by the blockage. Attempt containment by covering any affected storm drain inlets with rubber mats and securing them with sandbags, dirt, or other heavy objects to keep them in place.

3. Containment Using Pneumatic Plugs

   Plugging the affected drain inlet or multiple drain inlets with a pneumatic plug can be effective. For example, a pneumatic plug in the storm drain outfall would prevent the overflow from reaching the waterway. However, depending on the location within the City, drain inlets will vary in size, so utilizing plugs may not be the best option.

B. Backup in Structure

Advise the customer to keep family members and pets out of the spill areas to not track any contamination into non-affected areas. If necessary, evacuate affected people and pets.

1. During regular business hours, notify Risk Management at 916-774-5420 or 916-774-5202. After hours or if there is no answer at the above numbers, contact Risk Manager Virginia Bolmsn at 916-501-2073.
2. If Risk Manager or their staff cannot be reached, contact one of the approved restoration companies in the order below and authorize cleanup services only:
   i. Serv-Pro 916-632-2250
   ii. Restoration Management 800-400-5058
3. Before the restoration company or the Risk Manager arrives, hand the resident our camera and ask them to photograph the affected area. Do not enter the house, even if invited.
4. If the resident declines the cleaning services, request that they sign and date the Declination of Clean Up Services Form.

C. Overflow into Storm Drain Conveyance System (DCS)

1. Trace overflow in the DCS to the downstream endpoint using the Stormwater Map on the GIS. Plug all affected storm drain outfalls or block the creek and channels to contain the spill.
2. While tracing the system, if you determine that the spill is contained within a mainline section, plug the downstream end at a manhole to contain the spill. Many storm drain manholes are built with sumps in the base, and depending on the spill volume, these sumps may prevent the spill from continuing downstream. Note all the storm drain assets cleaned on the Field Spill Report Form.
3. If a stormwater pump station is near the spill and may be affected, contact Streets Division to turn off the pumps.

D. If the SPILL is a Category 1 spill, follow directions from RWQCB, Placer County Environmental Health, or the Department of Fish and Wildlife for posting warning signs around the containment area.

V. Traffic Control

Traffic control may be needed immediately to protect the health and safety of the public and responding wastewater crews. Typically, immediate traffic control is necessary if there is a street collapse or significant undermining of the pavement section related to the blockage and sewer spill, if the manhole cover is ajar, or if the spill causes street flooding. In addition, temporary traffic control may be needed to allow responding crews to contain and clear the blockage and prevent sewer from being further dispersed by vehicular traffic.

A. Provide traffic control per Cal Trans Work Area Traffic Control Handbook (WATCH)
B. Control public contact with the spill by isolating the area with barricades, signs or traffic cones.
C. If necessary, use other departments (i.e. Police, Public Works) to ensure adequate traffic control. Contact Roseville Police/Fire Dispatch at 916-774-5123 to coordinate.

VI. Correct Cause

The cause of the overflow may be located a considerable distance downstream of the spill in areas with flat terrain. During significant rain events, overflows can be caused by excessive I&I in the collection system. I&I can significantly increase the flow in a collection system and cause overflows from pipes that are only partially blocked. I&I can also directly affect the hydraulic capacity of mainlines and lift stations. Under these conditions, stopping the overflow may not be possible until the flows recede.

A. Locate the cause of the overflow
    1. Sewer Main
        i. Check flow in manholes
        ii. Blockage should be between a manhole with sluggish flow or surcharging and a manhole with very little flow or completely dry
        iii. Clear the mainline blockage using a hydro-vac unit from the dry manhole. Refer to SOP WWC-002 for hydro-vac procedures. Observe the material that flows downstream after clearing the obstruction to determine the possible cause of the blockage and note it on the spill report form.
        iv. Continue to monitor manholes in the area until the surcharged manhole empties.
        v. If the blockage cannot be cleared. Increase containment and request additional crews for assistance.
            a. Perform a CCTV inspection to determine the blockage

b. Request additional hydro-vacs to contain, or initiate by-pass pumping
c. Dig and repair the sewer main to correct pipe defect

2. Sewer Service
    i. Check flow in the city cleanout. If the riser is full of water, wait until a hydro-vac is onsite to remove or contain the water before eeling. If the cleanout is holding but not full, carefully insert the gas powered ell rod and cutting head into the service until you contact the obstruction. Inserting the eel rod quickly, can cause the service to spill. Proceed with the eeling process until the service drains, then CCTV inspect to identify the blockage details.
    ii. If the City cleanout is dry and the resident is still plugged, the stoppage is likely on the private side and is not the City's responsibility. However, it is good customer service to CCTV the service to ensure the City line is clear.
    iii. If no city cleanout exists, but the resident has a 4" private cleanout, run this private cleanout to clear the blockage. Once removed, CCTV to determine the location of the problem. Refer to Appendix D to determine if the private cleanout meets the criteria before using city equipment.
    iv. Check the upstream and downstream mains if a city or private cleanout cannot be located. If the main is running clear, notify the resident that the problem is on their side, and explain the city cleanout installation policy.
    v. If the service line ties into a dead-end run, regardless if the City cleanout is clear, clean the mainline segment with a hydro-vac.
3. Lift Station
    i. Check the alarm status inside the control panel for indication of a problem.
    ii. If no power is present:
        a. Contact Roseville Electric to verify the outage and an estimated time the power will be restored.
        b. Determine the wet well level and remaining downtime left at the station.
        c. If downtime exceeds the max allowable retention, mobilize additional wastewater crews and a hydro-vac to the station. If the power outage is extensive, request multiple hydro-vacs for assistance.

d. Continue vacuuming the wet well until power is restored and the lift station operates in auto mode. Watch the station for an entire pump cycle before leaving.

iii. If power is present, but the pumps aren't operating in auto, switch the controls to the hand position. If the pumps are operational in hand mode, contact the on-call EU electrician and continue running and monitoring the station in hand mode.

iv. If portable generation is required to power the station, the on-call EU Electrician must be onsite to make the connections. All control panels have an exterior plug and disconnects for portable generation connection, with each station having a specific cable. All cables are labeled and located in the EU Maintenance shop.

4. Force Main

i. If the spill is from a ruptured force main, control the power using the written Energy Control Procedures (ECP), located in the door panel at the station. A qualified electrician shall perform the switching of any panel breakers.

ii. Contain the spill from the pipe break using the containment procedures in Section IV.

iii. Monitor and control the wet well levels using bypass pumping or hydro-vac units until the repair is completed.

iv. If the station is equipped with dual force mains, transfer flows to the additional force main to continue normal lift station operation.

VII. Spill-Specific Monitoring Requirements

Spill specific monitoring requires gathering and storing records using photography, GPS coordinates and other best-available tools to document a particular spill event. Additionally, first responders can use this information to estimate the approximate spill volume and spread. Therefore, the first responder shall collect the following critical spill location information:

A. Photography and GPS Coordinates for:

1. The spill appearance point
2. If multiple spill points exist, document the point closest to the spill origin.

B. Photographs for:

1. Locations where the spill entered the drainage conveyance system;
2. If applicable, the location where the spill discharged into surface waters;
3. Extent of the spill spread, and;
4. Locations documenting spill cleanup

C. Photograph all affected areas during the spill, documenting the appearance point, containment point, spread of the spill, and any post-spill cleanup. When photographing areas, ensure there is an object in the picture to aid in gauging the size of the area. The Field Spill Report Form also has a small camera indicating when a photograph is required.

VIII. Receiving Water Sampling

For sewage spills in which an estimated 50,000 gallons or greater are discharged into a surface water, the Enrollee shall conduct water quality sampling no later than 18 hours after the Enrollee's knowledge of a potential discharge to a surface water. In addition, the Enrollee shall gather information during and after the spill event to assess the spill magnitude and update its notification and estimated spill volume. The Superintendent or their designee will handle all notifications to regulatory agencies. Refer to Appendix C for sampling procedures.

IX. Final Spill Volume Estimation

The final spill volume estimation is critical for CIWQS reporting and determines whether additional reporting to regulatory agencies is required. Additionally, the Enrollee shall update its notification and reporting of estimated spill volume, including spill volume recovered, as further information is gathered during and after a spill event. Calculating large-volume spills is challenging because the area and depth are difficult to measure, and chances are these spills are not fully contained. Use SOP WWC-044 for spill volume estimation methods and guidance.

X. Initiate Cleanup

When cleaning sewer spills, all solids and materials shall be recovered and removed from the site. Disinfection of contaminated soil or drainage conveyance systems is performed only at the direction of California Fish and Wildlife or Placer County Environmental Health. Procedures for cleaning affected areas after a spill are as follows:

A. Flooded building or structure
   1. If building or structure is flooded due to a failure in the City's collection system, contact Risk Management or Virginia Balmsn after hours. Risk Management will respond, assess and notify restoration companies on contract with the City.
   2. Storm Drain Conveyance System
      i. Pump out or vacuum any ponded water present.
      ii. Remove all debris and solids using a Hydro-Vac to clean affected storm drains and vacuum all water from the drainage conveyance system.

iii. Wash all affected concrete areas with the high-pressure wand. Then, capture and remove all wash water using the vacuum on the Hydro-Vac.
iv. Remove all containment and finish flushing and vacuuming area, capturing all remaining wash water.

3. Street, Curb or Gutter and Landscape
   i. Remove all debris and solids with hydro-vac
   ii. Remove any contaminated soil and plants
   iii. Wash pavement, curb and gutter area, with the high-pressure wand, then vacuum all wash water with a hydro-vac.
   iv. If Hydro-Vac decant pump is used, utilize the decant apparatus to alleviate possibility of a secondary spill and provide fall protection at the open manhole.

XI. Notification Requirements

The General Order requires prompt reporting of all spills to regulatory agencies. As such, notification procedures are identified in the SERP and included in the SERP binder provided to you.

A. If the First Responder determines the spill to be a Category 1 or 2, the first notification begins with the LRO (s) or their designee, who are responsible for notifying all regulatory agencies regarding reportable spills.
B. In addition, when notifying regulatory agencies, site-specific spill information is required before receiving an OES Control Number. First responder information gathered on the Supplemental Sheet in the back of the Field Spill Report Form (Appendix G) will be used to notify OES and assist Data Submitters when inputting information into CIWQS.
C. Following the initial notification, the Enrollee shall provide any updates to OES regarding additional impacts to receiving waters, including increased or decreased changes to the estimated spill volume and the estimated discharge volume directly into waters of the state or indirectly to a drainage conveyance system.
D. Table 1 is the regulatory notification guide. The table, used by the field crews, provides a quick reference for notifications.
E. Table 2 provides information on the monitoring and reporting guidelines set in the General Order.

Table 1- Regulatory Notification

If a Spill	And Affects	Notify
.that discharges in or on waters of the State or discharges to a location where it will probably be discharged to waters of the State, the Enrollee shall notify the Office of Emergency Services (OES) and obtain a control number as soon as possible, but no later than 2 hours after becoming aware of the discharge; and notification can be provided without substantially impeding cleanup or emergency measures	Sacramento River A structure that requires cleanup	• WWC Supervisor- Cody Wilbanks Office 916-746-1889 Cell 916-472-1488 • WWC Supervisor- Shane Rodgers Office 916-746-1894 Cell 916-223-7711 • WWC Supervisor – Kevin Ryan Office 916-746-1895 Cell 916-223-7537 • WWC Superintendent – Dan Pruden Office 916-746-1891 Cell 916-580-5600 **<u>The individuals above are responsible for notifying</u>** • OES 1-800-852-7550; Obtain a control number for spill report form **Water Quality Sampling- Frank Dittrich 916-746-1882 - During normal business hours only; after hours, call** ▪ **Cal Test 707-258-4000** ▪ **California Lab Services 1-800-638-7301** ▪ **Excel Chem 916-938-0519** **<u>Additional Numbers for Reference</u>** ▪ **Placer County Environmental Health** 1-530-745-2300 Main Line 1-530-745-2306 After-Hours Supervisor • **California Department of Fish and Wildlife** 916-445-0045 Option #2 • **Sacramento River Water Treatment Plant** 916-808-4961 916-264-5011 • **City of Roseville-Risk Management** 916-774-5420 or 916-774-5202 o After hours, Contact Risk Manager Virginia Bolmsn at 916-501-2073 o If there is no answer, first responder can authorize cleanup only from the

		restoration companies listed in the SERP

Table 2 - Monitoring and Reporting

Spill Category	OES Notification	Monitoring	Draft Report	Certified Report
Category 1 Any volume of sewer discharging to surface water	• **Within 2 hours** of the Enrollee's knowledge of the spill of 1,000 gallons or greater discharging or threatening to discharge to surface waters. • Obtain a Control number from OES	• Conduct spill-specific monitoring. • Conduct water quality sampling **within 18 hours of knowledge of a spill 50,000 gallons** or greater to surface waters	Due within **3 business days** of knowledge or self-discovery of Category 1 spill.	• Due within **15 calendar days** of the spill end date. Upon completion, the CIWQS will issue final spill event ID number. • Submit Technical Report within 45 calendar days after the spill end date for spills greater than 50,000 gallons • Submit Amended Report within **90 calendar days** after the spill end date
Category 2 Spills of 1,000 gallons or greater that do not discharge to waters of the State	• **Within 2 hours** of the Enrollee's knowledge of the spill of 1,000 gallons or greater discharging or threatening to discharge to surface waters. • Obtain a Control number from OES	• Conduct spill-specific monitoring.	Due within **3 business days** of the Enrollee's knowledge of the spill	• Due within **15 calendar days** of the spill end date. Upon completion, the CIWQS will issue final spill event ID number. • Submit Amended reports within **90 calendar days** of the Certified Report due date
Category 3 Spills of 50 gallons to less than 1,000 gallons that don't discharge to surface waters	N/A	• Conduct spill-specific monitoring.	N/A	• Due **30 calendar days** after the end of the month in which the spills occurred. After LRO certifies the spill, CIWQS will issue a spill identification number for each spill. • Submit Amended reports within **90 calendar days** of Certified Report due date
Category 4 Spills less than 50 gallons that don't discharge to surface waters	N/A	• Conduct spill-specific monitoring.	N/A	• Within **30 calendar days** after the end of the month in which the spills occurred, certify monthly the volume spilled and the total number of spills • Upload and certify a digital report of all Category 4 spills in CIWQS by 1 FEB after the end of the calendar year of which the spills occur.

XII. Documentation and Data Tracking

All spills are tracked with a service request module in the City of Roseville's CMMS. Completed service requests, work order requests and any overtime tags are turned into Superintendent/Supervisor for QA/QC. These are all resolved in the CMMS. Service requests for after-hours call will be generated the following business day. Ensure all appropriate documentation has been completed.

A. Follow-up work orders are generated to CCTV inspect the point of failure within the sewer system. The System Failure Analysis Form includes post-spill assessments of response activities and recommendations for repair, replacement, or preventative maintenance schedule adjustments. The Superintendent or Supervisor will review the results and recommendations from the CCTV crew and implement the changes into the appropriate corrective or preventative maintenance schedules.

B. The first responder turns in the spill Field Report Form documenting all actions taken during the overflow to the Data Submitter. The Data Submitter entering the report in CIWQS writes an after-action narrative based on the data provided in the Field Spill Report Form and all information provided by the first responder. This document contains the pertinent details of the overflow, verifies all spill response activities, verifies the accuracy of the start and stop times, and all actions taken by the first responder. At least five pictures are required for every spill response, which establishes the spill appearance point, final destination, containment procedures, and cleanup response. In addition, overall effectiveness of the response activities are discussed, and any areas for improvement are identified. Before certifying the report in CIWQS, the LRO reviews the information and verifies the spill response and estimations are accurate and justified.

C. Private Commercial Spills

1. City crews will respond and contain or clear blockages, depending on the type of business and cooperation of the management staff at the business. If the business refuses to stop using water to alleviate the potential for a continued overflow, first responders can call Placer County Health Department to assist with the response from the business. The City will document all time, equipment, pictures, comments, and response activities on the Field Spill Report Form, which will be stored electronically.

D. Private Residential Spills

1. City crews will respond and contain if necessary until the resident has stopped all water use causing the spill. City crews will verify that the problem is on the private side by inspecting the city infrastructure. If no city cleanout is located, and If the resident has a private cleanout that meets

the criteria Appendix D. (5) of the SERP, the City will clear the blockage and document activities on the field spill report. If no spill occurs, the Responder will document all findings on the issued service request.

XIII. Staff and Contractor Training

A. WWC Employees train annually on the importance of the SERP. Supervisors utilize a Powerpoint Presentation and the written SERP as an interactive training resource in a classroom setting. This setting allows employees to clarify any elements within the procedure and enables management staff to gather feedback from field crews, assess the effectiveness of the current emergency response plan, and update the procedures as necessary. A written competency test follows the annual training.

B. WWC employees constructed a spill simulator to test employees' skills in estimating spill volumes. Training on spill estimation occurs annually for City wastewater crews. After completing the SERP training, Supervisors use the simulator to evaluate the employees' volume estimation skills. Supervisors can create spills from either a manhole, a cleanout, or both. The water is metered in gallons per minute, creating an accurate simulation within the confines of the WWTP.

C. The CWEA Technical Certification Program provides certification in various wastewater disciplines to promote the knowledge and skills of wastewater professionals. The City of Roseville requires employees to hold Collection System Operator certification to promote within the ranks.

D. The City of Roseville is a Regional Treatment Facility, and as such, Regional Partner meetings are held quarterly with the neighboring agencies having tributary flow through the City's collection system. A mutual aid agreement has been written between the three partners, agreeing to assist each other with equipment and manpower, depending on the extent each agency has been affected by a regional catastrophe. Partner meetings include discussions of mutual aid agreements, new and ongoing projects, and brainstorming new ideas or technologies that could benefit the agencies.

E. The City of Roseville is a full-service city, owning and operating all municipal utilities except gas. Wastewater and Streets Division management staff consistently communicate and have scheduled quarterly meetings to discuss overlay projects, trench paving, and storm drain maintenance concerns.

F. Contractors are provided with the City's wastewater collection system policies and procedures. Per the contract, they must train all their employees on the City's wastewater collection system policies and procedures before performing work on the City's wastewater collection and conveyance system.

Appendix A- Spill Start Time Policy

The Service worker shall use the time a call is received from Administrative Tech or the answering service as a **base** for when the spill started. When talking with the resident or business, instruct them to stop using all water.

A. Upon arrival, note if the spill appearance point is actively spilling. If not spilling, but there is evidence a spill occurred requiring a cleanup effort, notify additional crewmembers for additional equipment to clean up the spill.
B. If spilling, initiate the SERP to ensure the spill is contained and the cause is corrected.
C. Interview the resident or the individual reporting the spill to determine the following:
    1. Did you notice water coming from the cleanout at the property line or manhole in the street? If so, what was the approximate time?
    2. Were your drains running slowly at any time before you called? If so, what was the approximate time?
    3. Do you remember the last time you didn't see a spill occurring?
    4. If neighbors were outside, close to the area of the SPILL, did they notice water spilling? If so, what was the approximate time?
    5. Be prepared to summarize how you determined the start time, describing the steps you took while making your decision.
D. If the above questions do not produce an accurate account for the SPILL start time, use the time the call was received by either the office personnel or the after-hours answering service, and subtract 15 minutes. Record this time as the actual start time on the Spill Field Report Form. However, If the spill evidence travels farther than the logic of the 15 minutes, the field crew/responders shall try to recreate the spill the following day using clean water.
E. Any of the following will determine the stop time of the spill
    1. The arrival time of the service worker if the spill had stopped before their arrival.
    2. The clearing of the blockage and the spill stops overflowing.
    3. Interview the resident or witnesses observing the spill, provided the time concurs with the evidence.

F. Provide a detailed description of the spill event, including exact times of arrival, spill start and stop time, containment procedures, and names of collection personnel assisting you in the overflow. Detail your process for determining the start and stop time of the spill. After completing the necessary paperwork, provide the photos and field report to the Data Submitter.

G. In the event of a SPILL from a sewer lift station, the start time will be determined using information gathered from the SCADA system.

Appendix B- Flooded Structure Procedures

In the event a failure in the City's wastewater collection system causes a sewer spill in a resident's home or business instruct them to:

1. Keep people and pets away from the affected area(s), and do not track contamination throughout non-affected areas.
2. Don't attempt to clean up the overflow. Instead, instruct them the City has restoration companies available and will respond.
3. Turn off all central heat and air-conditioning systems and prevent flow from reaching any floor vents with towels or blankets.
4. Leave these items in the affected areas for restoration companies to clean up.

Contact Risk Management at 774-5420 or 774-5202 during regular business hours. After hours, if there is no answer, contact Virginia Bolmsn, Risk Manager, at 916-501-2073. They will assess and notify restoration companies on contract with the City to respond. If the resident refuses the offered cleanup services, ask them to sign the declination letter refusing the service.

If the resident chooses to file a claim for damages, inform them that they must fill out a Government Claim Form.

A claim form can be obtained in the following ways:

- In person at the Roseville Civic Center, City Clerks Department and Risk Management Division, 311 Vernon St., Roseville, CA.
- By mail, by contacting the Risk Management Division at (916) 774-5202 or by e-mailing the request to riskmanagement@roseville.ca.us
- Electronically by following this link: http://www.roseville.ca.us/hr/risk_management/how_to_file_a_claim.asp

Completed forms must be returned by mail or in-person to the City Clerk's office at the Roseville Civic Center

Appendix C- Receiving Water Quality Monitoring, Sampling and Analysis

This procedure describes the Water Quality Monitoring, Sampling and Analysis process to be used if a sanitary sewer overflow exceeds 50,000 gallons. The water quality sampling results will enable the division to prioritize areas of concern regarding water quality impacts

A. Receiving Water Monitoring

Through visual observation, spill volume-estimating, and field calculation techniques, the Enrollee shall gather and document the following information for spills discharging into receiving waters:

1. Estimated spill travel time to the receiving water
2. For spills entering a drainage system, estimated spill travel time from the point of entry to the point of discharge into receiving water
3. Spill travel time can be estimated in the following ways:
    i. NCPI Gravity Flow Hydraulics Calculator
    ii. Travel time based on design slope of 2 fps
    iii. Timed water release in the cleaned pipe over the distance traveled
4. Estimated spill volume entering the receiving water
5. Photographs of the following:
    i. Waterbody bank erosion
    ii. Floating matter
    iii. Water surface sheen (potentially from oil and grease)
    iv. Discoloration of receiving water
    v. Impact on the receiving water

B. Water Quality Sampling and Analysis

Surface water samples will be collected using a grab sample technique. Employees must wear new sterile powder-free surgical gloves when collecting all samples.

1. ***Trigger for Sampling*** -Water quality sampling is required within 18 hours of initial SPILL notification for Category 1 Spills in which 50,000 gallons or greater are spilled into surface waters.
2. ***Safety and Access***- Water quality sampling should only be performed if it is safe to do so and access is not restricted or unsafe. Unsafe conditions include traffic, heavy rains, slippery or steep creek banks, visibility issues, high-flowing creeks, and limited access due to soil conditions or poor terrain. If access restrictions or unsafe conditions prevent compliance with these monitoring requirements, the Enrollee shall provide documentation of the access restriction or safety hazards in the required report.

3. ***Where to Sample***- The Enrollee must use the best professional judgment to determine the upstream and downstream distances based on receiving water flow, accessibility to waterbody banks and size of visible plume. Collect one sample each day for the duration of the spill. In addition, the Enrollee shall collect receiving water samples from the following locations.
    i. A point in the drainage conveyance system before the flow discharges into the receiving water. Label this sample DCS-001
    ii. Point of Discharge into the receiving water where sewage initially enters the receiving water. Label this sample RSW-001
    iii. Upstream Sample – A point in the receiving water, upstream of the point of sewage discharge. Label this sample RSW-001U
    iv. Downstream Sample – A point in the receiving water, downstream of the point of discharge where the spill is fully mixed with the receiving water. Label this sample RSW-001D

Determine the water velocity present in the creek or body of water during the SPILL. Dropping debris in the creek and timing how long the debris takes to travel a known distance is a good indicator of the water velocity present. Use this information to determine the next downstream sampling point. Then, multiply the water velocity by the spill duration to determine the furthest point downstream to the sample.

C. **Sampling Procedure**

1. Put on the required PPE (safety glasses and latex gloves)
2. **Collect Drainage Conveyance System Sample** – Sample at a point in the drainage conveyance system before the flow discharges into receiving waters
    a. Label this sample DCS-001 and take a picture of the location you are sampling.
    b. Avoid any debris or scum layer from the drainage system.
    c. Fill the bottle against the direction of flow, replace the cap, and secure the sample to avoid contamination.
    d. Use a thermometer to measure the temperature of the sample and record the results
3. **Collect Upstream Sample** - Move approximately 100 feet upstream of the source.
    a. Label the bottle RSW-001U and take a picture of your sampling location.
    b. Sample away from the bank and avoid any debris or scum layer from the surface.
    c. Fill the bottle against the direction of flow, replace the cap, and secure the sample to avoid contamination.
    d. Use a thermometer to measure the temperature of the upstream sample location and record the results.

4. **Collect Point of Discharge Sample-** Move approximately 10 feet downstream of the source location.
    - **a.** Label the bottle RSW-001 and take a picture of your sampling location.
    - **b.** Sample away from the bank and avoid any debris or scum layer from the surface.
    - **c.** Fill the bottle against the direction of flow, replace the cap, and secure the sample to prevent contamination.
    - **d.** Use a thermometer to measure the temperature of the source sample location and record the results.
5. **Collect Downstream Sample –** Move approximately 100 feet downstream of the source.
    - **a.** Label this sample RSW-001D and take a picture of the location you are sampling.
    - **b.** Sample away from the bank and avoid any debris or scum layer from the surface.
    - **c.** Fill the bottle against the direction of flow, replace the cap, and secure the sample to prevent contamination.
    - **d.** Use a thermometer to measure the temperature of the downstream sample 1 and record the results

D. **Required Water Quality Analyses** – All samples will be immediately transported to the nearest certified water quality laboratory for analysis. The sample analysis, at a minimum, will include the following:

1. Ammonia
2. pH
3. Electrical Conductivity
4. Bacterial indicators, such as total and fecal coliform, enterococcus, and e-coli, per the regional Basin Plan or as directed by SWRCB
5. Temperature

The City has contracts with the following Certified Labs for Spill Response:
Cal Test 707-258-4000
California Laboratory Services 1-800-638-7301
ExcelChem. 916-938-0519

E. **Equipment and Supplies** – The following items and PPE are required for sampling:

1. Cooler with Blue Ice
2. Sterile sampling bottles
3. Powder-free latex gloves
4. Safety glasses
5. Marking pen
6. Field log forms

Appendix D- Sewer Call For Service

When dispatched to a home experiencing a sewer problem, the service worker shall follow the procedures below to provide the resident with the best possible customer service and quickly correct the problem causing the SPILL.

Residential

1. Upon arrival and before performing any work, contact the homeowner or resident. Explain the process you will use to determine the problem. During the initial phone call, the responder should have requested the resident to stop all water use, so if water is still spilling from cleanout, check the nearest upstream manhole on the mainline for a blockage.
2. If no cleanout is visible, look in CMMS for a cleanout location, an "S" marked on the curb, or other information that might indicate a cleanout.
3. If a city cleanout is found, clear the lateral blockage using the eel and a root-cutting head, do not use hand tape. CCTV to ensure the line is clear and all blockages have been removed. Record all time and pertinent information you have found on a work order, service request, or an overtime tag for after-hours calls.
4. If no cleanout is found, locate the closest downstream manhole, call for Hydro-Vac assistance, and run the main.
5. If the residence does not have a city cleanout, and the above procedures did not alleviate the blockage, we will use our equipment to run a "Viable" cleanout that belongs to the resident. This "viable" cleanout should be a factory-fitting 4" cleanout, either a wye or combo wye, so we can easily get our equipment into and service the line. Once the service has been cleared, CCTV through this cleanout and determine the blockage location.
6. If CCTV inspection identifies the problem below the location where a city cleanout should be located, the Supervisor will schedule a cleanout installation during regular business hours.
7. If the problem causing the blockage is located within the customer's service line, notify them that the problem is in their portion of the lateral, the location, and the severity of the problem. Advise the resident of the City's policy for cleanout installation, and let them know this is a one-time service, and the City will not clear future blockages from the homeowner's cleanout. Document all information in the CMMS under activity code- SPHCC (Sewer Plug Homeowner City Cleared) on a service request.

Private Commercial

When dispatched to a commercial property experiencing a spill, start containment immediately. Notify the manager to stop using water and to call a plumber. Ensure the manager understands that City staff will contain the spill until their plumber responds, and they will be billed for staff and equipment. If, after 60 minutes, the plumber doesn't show, notify Placer County Health Department. Notify your supervisor that the health department has been called and discuss possibly clearing the main or service.

Appendix E- Sewer Lift Station Failure Response

This procedure aims to define strategies necessary to prevent a spill from a lift station in the event of a power or component failure within a lift station. The City of Roseville operates and maintains 17 neighborhood lift stations. Each station is equipped with SCADA, monitored 24 hours per day by wastewater treatment plant personnel. In addition, each station has the maximum allowable downtime posted inside the door of each control panel. This identifies the retention time and the storage capacity in the collection system assets before a spill occurs. The potential spill point manhole is also identified to assist on-call personnel in determining the remaining downtime. In the event of a lift station failure, the plant operator will notify the answering service that an alarm has been activated at a station, and the on-call service worker will respond and assess the alarm.

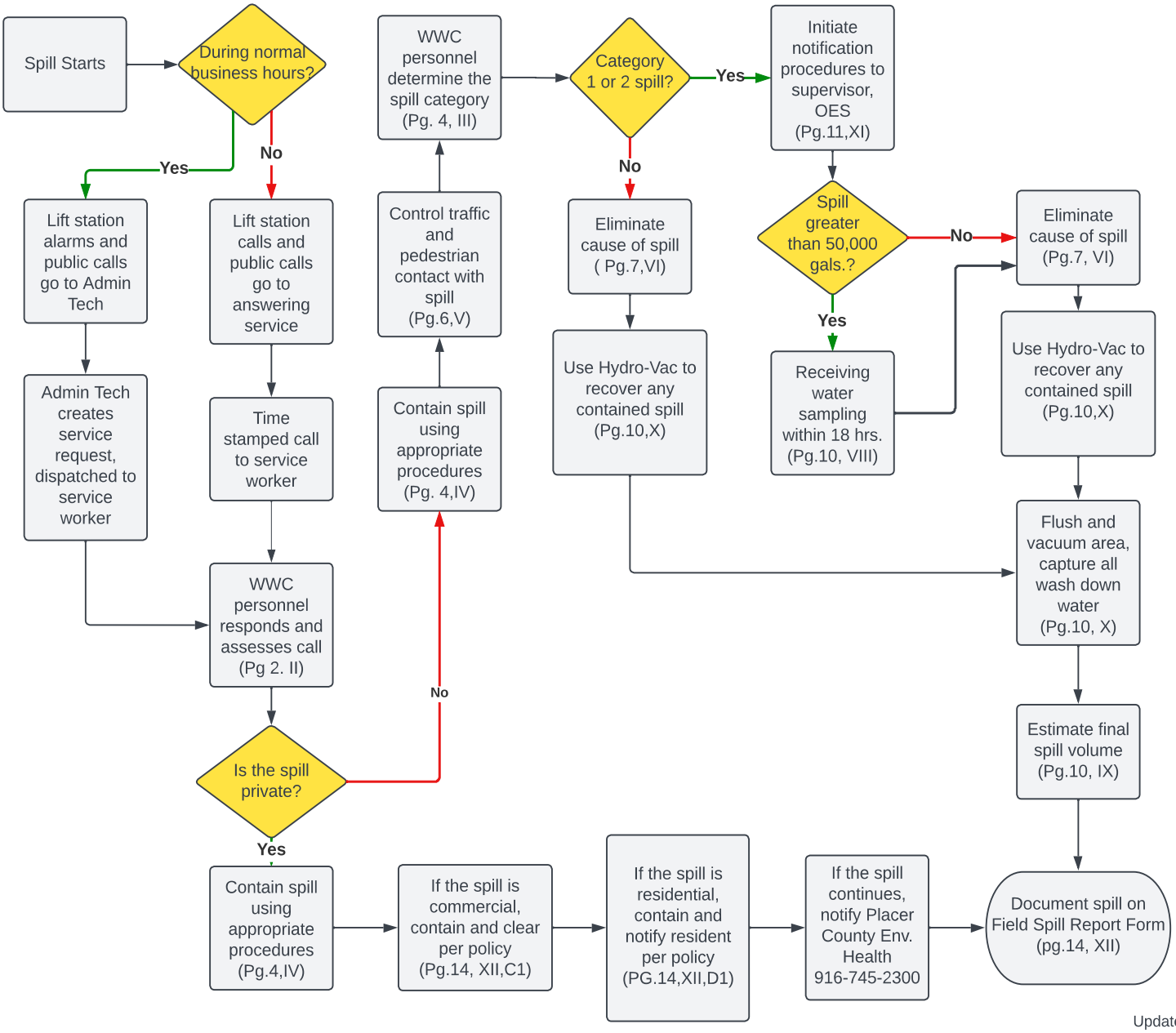
If no power is present in the panel, the service worker will:

1. Contact Roseville Electric at 774-5620 to verify they know about the outage.
2. Determine the level and remaining downtime left in the station.
3. If downtime exceeds the maximum allowable retention, the on-call service worker will call collection system personnel off the standby list to get a Hydro-Vac en route. The Hydro-Vac will decant water at an identified point in the system, which won't affect the left station levels. If it appears that one Hydro-Vac won't keep up with flows, the on-call service worker will call in additional personnel with Hydro-Vac to maintain levels in the station.
4. If an outage appears to be a lengthy process, contact the supervisor. A portable generator may be needed. In this event, an electrician will be required.
5. Once flows are maintained, contact Supervisor to make them aware of the situation.

If power is present in the station, but pumps are not operating, the service worker will:

1. Attempt to run the pumps in "hand" mode to eliminate the possibility of a spill
2. If the pump operates in "hand," continue operating and monitor the levels in the wet well. Contact the On Call Electrician at 916-532-0612 and continue to monitor.
3. If the station does not operate in hand mode, call additional personnel in with Hydro-Vac to monitor wet well levels. Vacuum and decant accordingly until the problem is rectified.
4. If it appears that one Hydro-Vac won't keep up with the flow into the wet well, mobilize a second Hydro-Vac to maintain the levels in the station.
5. Stand by and assist the on-call electrician until the station is operational.

Appendix F- Spill Response Chart



Updated 12 APR 23

Appendix G- Field Spill Report

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CITY OF ROSEVILLE CALIFORNIA Environmental Utilities

Spill Field Report Form

Resident Asked to Stop All Water Use? [ ] Yes [ ] No Spilling Upon Arrival? [ ] Yes [ ] No

First Responder:_____ Date:_____

Did the spill discharge to a storm drain conveyance system flowing to surface water [ ] Yes [ ] No

Was all wastewater fully captured and removed from the storm drain conveyance system [ ] Yes [ ] No

Estimate volume that reached a storm drain conveyance system flowing to surface water _____Gals.

Estimate volume recovered from storm drain conveyance system flowing to surface water _____Gals.

Estimate spill volume discharged directly to surface water (Category 1) _____Gals.

Estimate spill volume recovered from surface water (Category 1) _____Gals.

Estimate spill volume discharged to land _____Gals.

Estimate spill volume recovered from discharge to land _____Gals.

Spill Rate (GPM) _____ Total Spill Volume _____ Gals. Total Volume Recovered _____ Gals.

The location where the captured spill and washdown water was disposed of: _____

Address of Call:_____ Weather Conditions: _____

Spill Category (Place an X)		
	Category 1	Any volume that discharges to surface water, or a dry surface water body with no flow, or storm drain system and is not fully captured- ***Use supplemental sheet***
	Category 2	A spill of 1,000 gallons or greater that does not discharge to a surface water – ***Use supplemental sheet***
	Category 3	A spill of 50 gallons and less than 1,000 gallons that does not discharge to a surface water
	Category 4	A spill of less than 50 gallons that does not discharge to a surface water
	Private	If Private Commercial, get a signed Miscellaneous Billing Charge Form from Manager

Spill Specific Times				
Estimated Spill Start Time:	[ ]am [ ]pm	Did Caller Notice Active Spill?	[ ] Y [ ] N	[ ]am[ ] pm
Time Call Received:	[ ]am [ ]pm	Were Drains Running Slowly?	[ ] Y [ ] N	[ ]am[ ] pm
Arrival Time	[ ]am [ ]pm	Neighbors Notice Active Spill?	[ ] Y [ ] N	[ ]am[ ] pm
Spill End Time	[ ]am [ ]pm			

Start and stop time determination (Refer to Appendix A in SERP):

_____

_____

_____

_____

_____



Number of Spill Appearance Points: _____

If multiple appearance points are in a single event, photograph the point closest to the spill origin.



	Building or Structure		Force Main		Gravity Main		Manhole		Cleanout
	Other:				List Asset ID #'s				

Spill Appearance Point:



Failure Location: (select all that apply)

	Lower Lateral		Lift Station		Gravity Main		Force Main
	Upper Lateral- Private		Other:		List Asset ID#'s		



	Debris-Rags		Root Intrusion		Grease
	Debris-Construction		Lift Station Failure-Mechanical		Non-Dispersables
	Pipe/Structural Failure		Lift Station Failure- Electrical		Vandalism
	Natural Disaster		Rainfall Exceeded Capacity-I&I		WWC Staff Caused
	Other-(please list)				



SSO Cause: (select all that apply)

	Building or Structure		Storm Drain		Paved Surface		Surface Water		Landscape
	Street Curb/Gutter		Unpaved Surface		Other:				

Final Spill Destination:

Containment Procedures:

	Rubber May w/Sandbags		Rubber Berm		Dry Sweep
	Air Plug		Hydro-Vac		Dirt Berm
	By Pass Pumping		Naturally Contained (dirt/debris, misaligned gutter-pan)		

Spill Response Activities:

	Mitigated Effects of Spill		Contained All or a Portion of Spill		Restored Flow
	CCTV Inspected for Cause		Hydro Affected Storm Drains		Document Spill Spread
	Appropriate Photos Taken		Properly Dispose of Washdown and Captured Wastewater		

Description of Spill Response Activities and Actions Taken:

_____

_____

_____

_____

_____

_____

_____

Spill Spread

Document the spill spread and magnitude by providing a sketch starting at the appearance point and ending at either the containment point or the endpoint of the spill. In addition, provide area measurements of the spill and depths of ponded water to get an average depth to estimate the volume. Finally, select the surface type (s) where the spill occurred and label the sketch accordingly.

[ ] Landscape [ ] Asphalt [ ] Concrete [ ] Dirt [ ] Other _____

Spill Volume Estimation Method (select that apply)

	Measured Volume		Flow Estimation Chart		Flow Rate and Duration
	Estimated Flow EDU		City Design Standard 9-2		NCPI Chart
	Hydraulic Model		SCADA and Pump Info		Other:

Describe your process for volume estimation:

_____

_____

_____

_____

_____

_____

Estimated Flow EDU Chart:

Time Period	Estimated City Flow Rate Per EDU (190 gpd)				Spill	
	A	B	C	D	E	F
	Gallons Per Period	Hours Per Period	A÷B = Gals. Per Hour	C÷60 = Gals. Per Min.	Minutes Spill Was Active	D x E= Gallons Spilled Per Period
6 am-Noon	75	6	12.5	.21		
Noon – 6 pm	55	6	9.16	.15		
6 pm - Midnight	50	6	8.33	.14		
Midnight -6am	10	6	1.67	.03		
Total Estimated Spill Volume						

City Design Standard 9-2:

Land Use Designation	Units	Flow Factor (GPD/Unit) 1,3
Commercial	GPD per acre	850
Heavy Industrial	GPD per acre	850
Light Industrial	GPD per acre	850
Mixed Use	GPD per acre	2,300
Public/Quasi-Public	GPD per acre	660
Schools	GPD per acre	170
Residential 1 DU	GPD per acre	190
Residential 2 DU	GPD per acre	190
Residential 3 DU	GPD per acre	190
Residential Multiple DU[2]	GPD per acre or GPD per DU	2040 or 130
Parks > 10 Acres	GPD per acre	10

Contacts and Reporting:

LRO or their designee to contact OES and obtain a Control Number

OES 1-800-852-7550 Time Called _____ AM PM Control Number _____

Additional numbers for Reference

Ca Fish and Wildlife 916-445-0045 (option 2) Time Called _____AM PM

Placer County Environmental Health 916-745-2300 Time Called _____AM PM

EVENT ID #_____

Contact	Time	Name
Supervisor- Category 1 or 2	[ ] AM [ ] PM	
Request Additional Support *	[ ] AM [ ] PM	
	[ ] AM [ ] PM	
	[ ] AM [ ] PM	
	[ ] AM [ ] PM	
	[ ] AM [ ] PM	
Lab Personnel	[ ] AM [ ] PM	
Risk Management	[ ] AM [ ] PM	

CERT ID # _____

Conversion Tables

Inches	Feet
1/64	.0013
1/32	.0026
1/16	.005
1/8	.010
¼	.021
3/8	.031
½	.042
5/8	.052
¾	.063
7/8	.073
1	.083
2	.17
3	.25
4	.33
5	.42
6	.50
7	.58
8	.67
9	.75
10	.83
11	.92
12	1.0

Length X Width X Depth = Volume (ft^3)

Volume (ft^3) X 7.48 = Gallons

Use the conversion chart to convert inches into feet.

If you are unable to measure the water depth, use the following measurements:

1/64" (.0013 feet) for depth of wet areas on concrete

1/32" (.0026 feet) for depth of wet areas on asphalt

Area Calculation(sq.ft.)

Rectangle = Length (ft) X Width (ft)

Triangle = Height (ft) X Base (ft) X .5

Circle = $Diameter^2$ X .785

If additional lines are needed, use the notes sheet

Notes:

Supplemental Sheet- Category 1 or 2 Spill Only

If a spill is a Category 1 or 2, at a minimum, OES requires the information below to obtain a Control Number. The Enrollee shall notify OES within 2 hours of knowledge of the spill. Notify the Supervisor as soon as the information is gathered, then continue to complete the remaining Spill Field Report Form.

Spill Category (Place X)

	Category 1	Any volume that discharges to surface water, a dry surface water body with no flow, or a storm drain system and is not fully captured
	Category 2	A spill of 1,000 gallons or greater that does not discharge to a surface water

Date Notified:_____ Time Notified:_____

Spill Location : _____ Cross Street: _____

Estimated Spill Volume (Gallons) _____ Estimated Spill Rate From System (GPM)_____

Estimated Discharge Rate to : Waters of the State _____(GPM)

Drainage Conveyance System_____(GPM)

Brief Spill Incident Narrative:

_____

_____

_____

_____

_____

Spill Cause

	Debris-Rags		Root Intrusion		Grease
	Debris-Construction		Lift Station Failure-Mechanical		Non-Dispersables
	Pipe/Structural Failure		Lift Station Failure- Electrical		Vandalism
	Natural Disaster		Rainfall Exceeded Capacity-I&I		WWC Staff Caused
	Other-(please list)				

Amount of Spill Contained (Gals.)_____ Name of Affected Surface Waters_____

Description of impact to Surface Waters:

_____

_____

_____

Required Photographs: (check box) 

[ ] Waterbody bank erosion [ ] Water Sheen (potential from grease or oil)

[ ] Floating matter [ ] Discoloration of water [ ] Impact to receiving water

Appendix 9-1

City Performance Metrics and Key Performance Indicators

SSS WDR Element	SSS WDR Ref.	Description	Performance Indicator	Unit	Target	KPI Data FY 14/15	KPI Data FY 15/16	KPI Data FY 16/17	KPI Data FY 17/18	KPI Data FY 18/19	KPI Data FY 19/20	KPI Data FY 20/21	KPI DATA FY 21/22	KPI DATA FY 22/23	KPI DATA FY 23/24	Audit Frequency	Responsible Party
Organization	D.ii.c	Chain of Communication	Average response to customer inquiry	Minute	40	19.58	23	20	21	20	21	21	20	20	20	Quarterly	WW Superintendent
			Total customer service requests	Number	0	915	1549	533	302	288	523	325	618	674	252	Quarterly	WW Superintendent
			Total sewer odor complaints	Number	0	9	43	50	39	45	10	24	7	10	25	Quarterly	WW Superintendent
			Total roache complants	Number									N/A	N/A	106	Quarterly	WW Superintendent
			Average rating in customer service card	Number	5	5	5	5	5	5	5	5	4.93	5	5	Quarterly	WW Superintendent
O&M	D.iv.a	Maps	Average response time to map update requests	Days	90	90	90	90	90	90	90	90	30	10	10	Quarterly	WW Superintendent
			Miles of Pipe / Main	Miles									286.05	597.93	602.49	Annually	WW Superintendent
			Miles of Pipe /Laterals	Miles									286.26	291.88	292.93	Annually	WW Superintendent
			Miles of Force Main	Miles										9.9	9.9	Annually	WW Superintendent
	D.iv.b	PM Activities	Manholes Inspection performed	Number	0	2493	3575	1547	1511	149	293	88	0	0	0	Quarterly	WW Superintendent
			Sewer main flushed per year	Miles	250	284	248	295	283.12	226.1	235.9	296.14	288.73	301.36	146.12	Quarterly	WW Superintendent
			Sewer laterals chemically treated per year	Number	1100								1106	1088	404	Quarterly	WW Superintendent
			Sewer laterals mechanically cleaned (eeled) per year	Number	0	14.32	14.77	7.41	1.07	268	235	74	146	107	47	Quarterly	WW Superintendent
			Working staff time to PM program	%	80%	85%	82%	82%	84%	84%	83%	84%	85%	85%	85%	Quarterly	WW Superintendent
			Number of customer accounts per WW employee	Number	561	1517	1554	1772	1757	1943	1873	1873	1852	1944	1821	Quarterly	WW Superintendent
			Average cost of hydro cleaning	$/lf	$0.36	$0.32	$0.33	$0.29	$0.32	$0.34	$0.34	$0.34	N/A	N/A	N/A	Annually	WW Superintendent
			Average cost of sewer mechanical cleaning	$/lf	$1.60	$1.20	$0.77	$0.94	$1.66	$0.30	$0.30	$0.30	N/A	N/A	N/A	Annually	WW Superintendent
	D.iv.c	R&R Plan	Manholes rehabilitated	Number	50	0	0	0	0	0	0	0	0	0	1	Quarterly	WW Superintendent
			Sewer main CCTV inspected per year	Miles	30	75	84.32	59.71	64.1	119.9	94.65	38.57	50.05	51.59	24.82	Quarterly	WW Superintendent
			Sewer laterals CCTV inspected per year	Miles	16	26	35.71	32.51	36.14	29.74	22.46	27.88	28.76	29.99	18.68	Quarterly	WW Superintendent
			Sewer cleanouts installed per year	Number	75	76	83	144	141	67	118	58	46	24	11	Quarterly	WW Superintendent
			Sewer Laterals Rehabilitated	Number	50	48	60	85	89	74	82	110	79	51	37	Quarterly	WW Superintendent
			Total miles rehabed or replaced per year (main)	Miles	5	6	0	0	1.07	0.05	0.09	3.4	3.4	0	3.75	Annually	WW Superintendent
			Total miles rehabed or replaced per year (lateral)	Miles	0.25	0.16	0.27	0.66	0.42	0.45	0.46	0.62	0.43	0.29	0.23	Annually	WW Superintendent
			Annual capitol budget sewer rehab/replacement	$/M	$1.80	$1.05	$1.36	$2.61	$2.25	$2.70	$2.70	$2.10	$3.40	$3.20	$3.11	Annually	WW Superintendent
			Average cost of CCTV main	$/lf	$0.53	$0.41	$0.41	$0.36	$0.40	$0.60	$0.75	$1.85	N/A	N/A	N/A	Annually	WW Superintendent
			Average cost of CCTV lateral	$/lf	$1.34	$1.11	$1.15	$1.04	$1.00	$1.24	$1.29	$1.28	N/A	N/A	N/A	Annually	WW Superintendent
	D.iv.d	Training	On the job accidents	Number	0	5	3	3	4	10	8	6	0	0	1	Quarterly	EU Safety Coordinator
	D.iv.e	Critical Parts	% of required number of identified critical parts are stocked	%	100	100	100	100	100	100	100	100	100	100	100	Annually	Materials Technician
Design	D.v.a&b	Construction	% of new sewer main accepted vs. inspected	%	100	100	100	100	100	100	100	100	100	100	100	Annually	WW Supervisor
			% of new sewer lateral accepted vs. inspected	%	100	100	100	100	100	100	100	100	100	100	100	Annually	WW Supervisor
OERP	D.vi.a	Notification	Average response time to SSO	Minutes	40	20	23	20	17	21	22	17	20	34	21	Quarterly	WW Superintendent
	D.vi.b	SSO Response	Average SSO duration (main)	Minutes	40	n/a	70	0	0	0	154	146	1670	140.8	289	Quarterly	WW Superintendent
			Average SSO duration (lateral)	Minutes	40	n/a	37	48	36	171	245	285	94	25.28	50	Quarterly	WW Superintendent
FOG	D.vii.a	Public Education	FOG public education outreach program events per year	Number	4	3	4	3	3	2	1	1	1	2	2	Annually	Environmental Utilities PIO
	D.vii.b	FOG Disposal	Gallons of FOG curbside pickup per year	Gallons	25	179.75	293.1	373.25	296	506	323	595	476	445	230	Annually	Refuse Division
	D.vii.d	BMPs &Devices	% of total FSE's with grease removal devices	%	90	90	97	98	98	98	98	98	94	94	94	Annually	FOG Supervisor
			% of total FSE's with a variance	%	5	4	4	4	4	4	4	4	4	4	4	Annually	FOG Supervisor
	D.vii.e	FOG Inspections	FSE FOG inspections per year	Number	294	n/a	n/a	181	231	N/A	N/A	221	756	1012	492	Annually	FOG Supervisor
			Number of new FSE permits issued per year	Number	5	n/a	n/a	40	46	N/A	N/A	36	31	35	19	Quarterly	FOG Supervisor
	D.vii.f	Hot Spots	% of hotspot pipes CCTV inspected each year	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	Annually	WW Supervisor
			Number of SSO's caused by hot spots	Number	0	0	0	0	0	0	0	0	0	1	0	Quarterly	WW Superintendent
			SSO volume casued by hot spots	Gallons	0	0	0	0	0	0	0	0	0	33	0	Quarterly	WW Superintendent
MMM	D.ix.e	SSO Trends	Total number of SSO's mains and laterals	Number	35	42	39	24	25	31	32	51	32	30	17	Quarterly	WW Superintendent
			Total volume SSO's mains and laterals	Gallons	2000	1202	2523	1086	1565	869	517	772	77,828	13,443	381842	Quarterly	WW Superintendent
			% of total SSO volume recovered	%	100	94.5	95.42	91.25	53.86	37.63	86.8	63	50.1	63%	24.30%	Quarterly	WW Superintendent
			Total number of wet weather SSO's	Number	0	0	0	0	0	0	0	0	1	2	0	Quarterly	WW Superintendent
			Total volume of wet weather SSO's	Gallons	0	0	0	0	0	0	0	0	1357	12,920	0	Quarterly	WW Superintendent
			% of SSO's caused by FOG (main)	%	1	50	50	0	0	100%	0	0	0	40%	0.06%	Quarterly	WW Superintendent
			% of SSO's caused by roots (main)	%	70	0	0	0	0	0	0	50%	33%	0%	99.92%	Quarterly	WW Superintendent
			% of SSO's caused by debris/rags (main)	%	0	0	0	0	0	0	100%	50%	0%	60%	0	Quarterly	WW Superintendent
			Number of SSO's caused by LS failure	Number	0	0	0	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
			Number of SSO's caused by pipe/structural failures	Number	0	0	1	1	3	1	3	14	1	1	4	Quarterly	WW Superintendent
			% of SSO's caused by FOG (laterals)	%	10	0	0	0	0	0	0	0	1	12.50%	0	Quarterly	WW Superintendent
			% of SSO's casued by roots (laterals)	%	75	77.5	84	87	48	20	16	35	26	56%	46.20%	Quarterly	WW Superintendent
			% of SSO's casued by debris/rags (laterals)	%	0	12.5	10.8	9	28	9	11	2	7	24%	5.60%	Quarterly	WW Superintendent
			Repeats SSO's within two years	Number	0	2	0	0	0	4	1	1	0	1	1	Quarterly	WW Superintendent
			Number of Category 1 SSO's	Number	0	0	0	0	1	0	0	0	2	2	1	Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year- Category 2	Number	2	0	1	0	0	0	0	0	0	0	TBD	Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year - lateral	Number	15	16.26	15.04	9.35	8.81	9.56	10.24	16.38	10.13	11.5	TBD	Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year -mains	Number	0.6	0.4	0.4	0	0.19	0.52	0.52	0.35	0.51	0.8	TBD	Quarterly	WW Superintendent
			Flooding claims per year	Number	0	1	0	0					1	1	1	Quarterly	WW Superintendent
			Total Cost of claims per year	$	0		0	0					430	16,620	1,431	Quarterly	Risk Management
			Flooding and Claims											Update 23JAN24			

Appendix 9-2

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Appendix 9-3

City Spill Performance Report

Appendix 1 — City Spill Performance Report

The purpose of this Appendix is to provide visual data tools to showcase the City's historic spill performance compared with other collection system agencies within the Central Valley Regional Water Board area and state from the required City Audit period 5/2/2021 to 5/2/2024).

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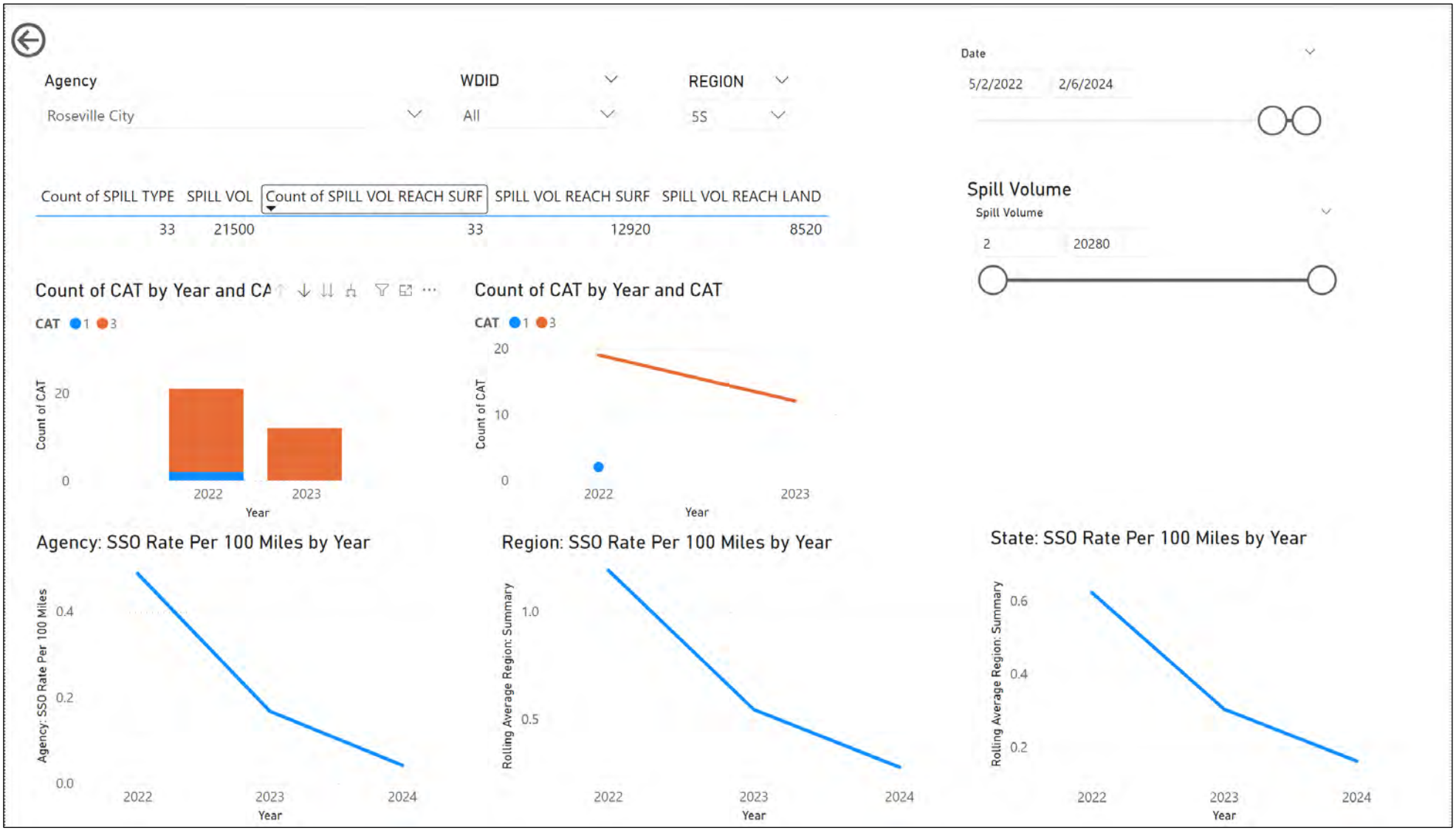


Figure 1 – City Spill Dashboard during SSMP Audit Period (May 2021-May 2024)

Observation: The City's rolling average spill rate per year during the SSMP Audit period decreased from 0.49 spills/100 miles of sewer per year to 0.04 spills/100 miles of sewer per year.

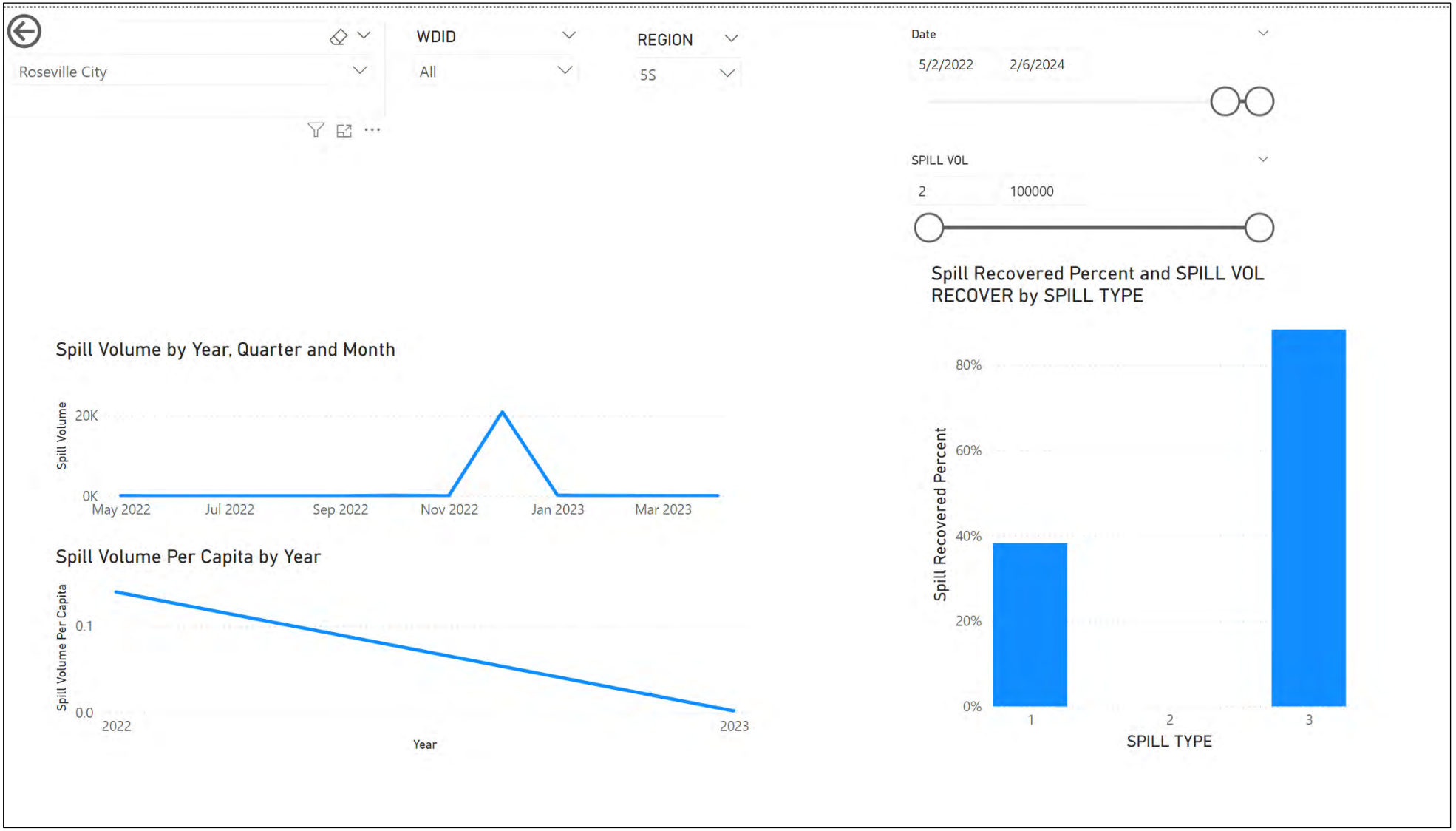


Figure 2 - City Spill Dashboard (volume of spills by year during SSMP Audit Period (May 2021-May 2024)

Observations: The City's volume of spills per capita (population) decreased during the SSMP Audit period from 0.139 gallons per capita to 0.002 gallons per capita). The City's average recovery (%) for Category 1 spills averaged 38% and 88% for Category 3 spills during the SSMP Audit period.

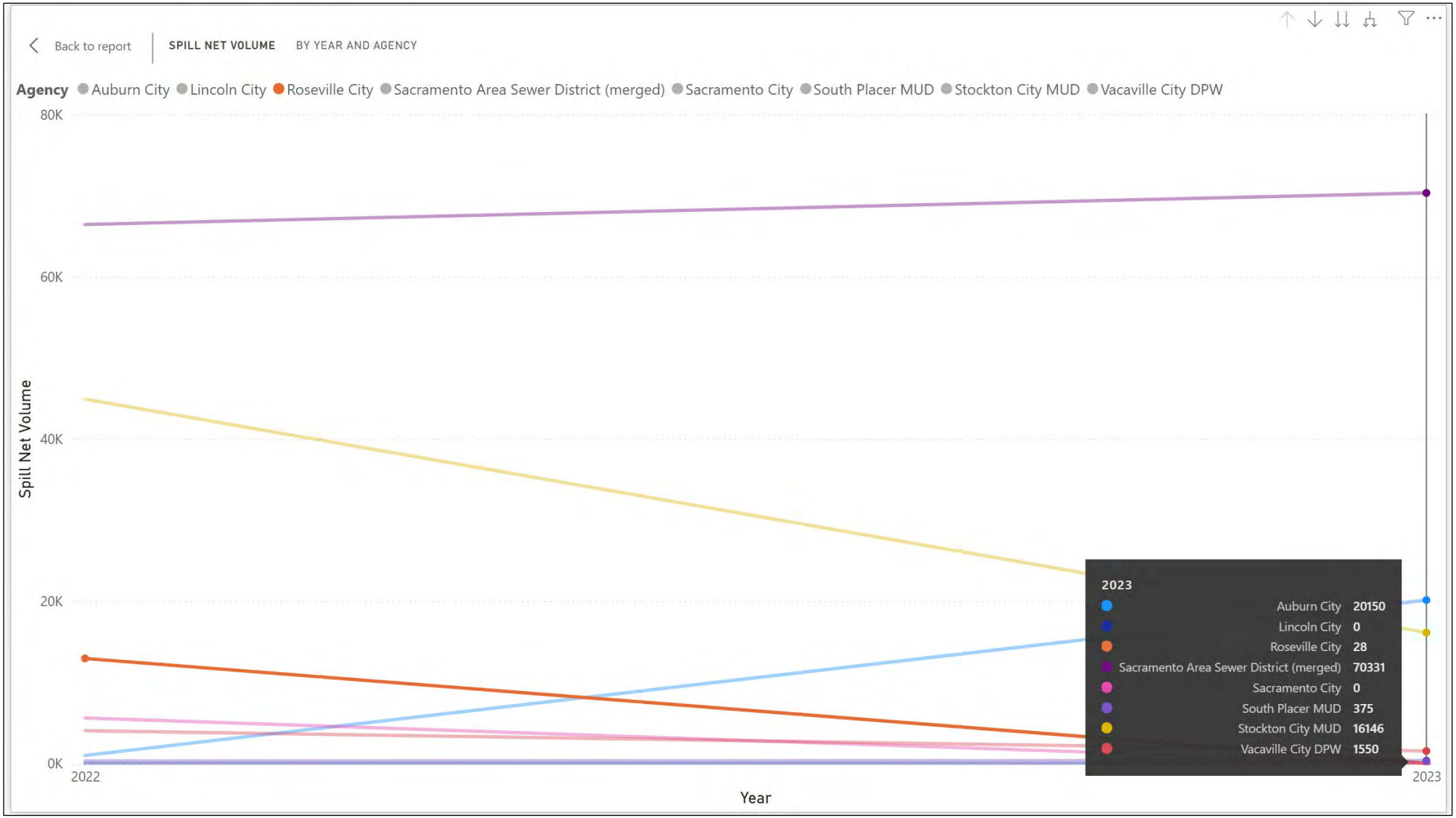


Figure 3 - City Spill Net Volume compared to agencies by year during SSMP Audit Period (May 2021-May 2024)

Observations: The City's net spill volume decreased during the SSMP Audit period from 12,960 gallons in 2022 to 28 gallons. The City's average recovery (%) for Category 1 spills averaged 38% and 88% for Category 3 spills during the SSMP Audit period.

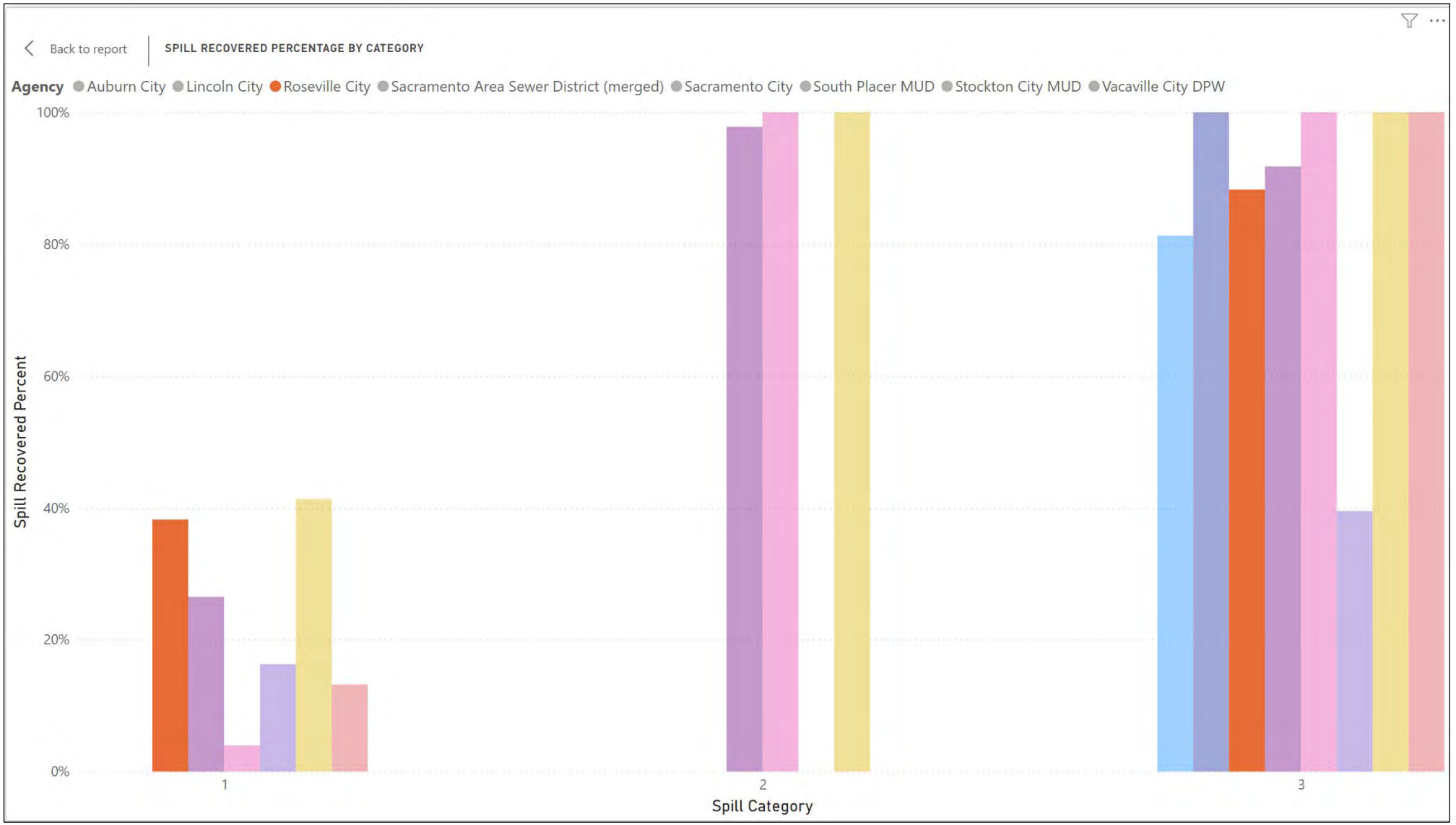


Figure 4 - City Spill Volumes Recovered compared to agencies by year during SSMP Audit Period (May 2021-May 2024)

Observations: The City's spill % of spill volume recovered for Category 1 spills (38%) and for Category 3 spills (88%) was higher than most other agencies within the region during the SSMP Audit period.

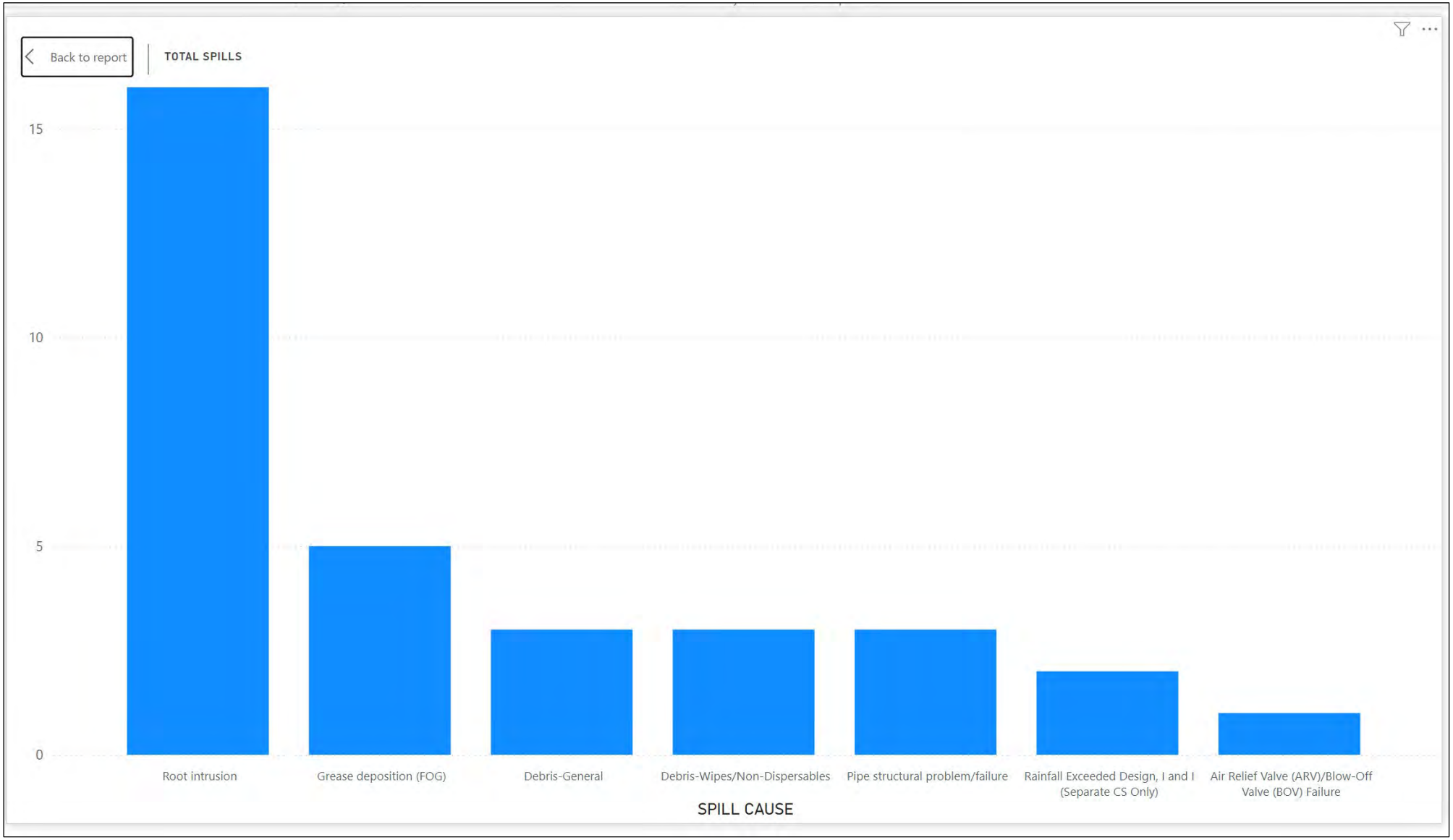


Figure 5 - City Spill Causes (by # of spill) during SSMP Audit Period (May 2021-May 2024)

Observation: The City's spill main causes (by number of spills) were root intrusion and grease during the SSMP Audit period.

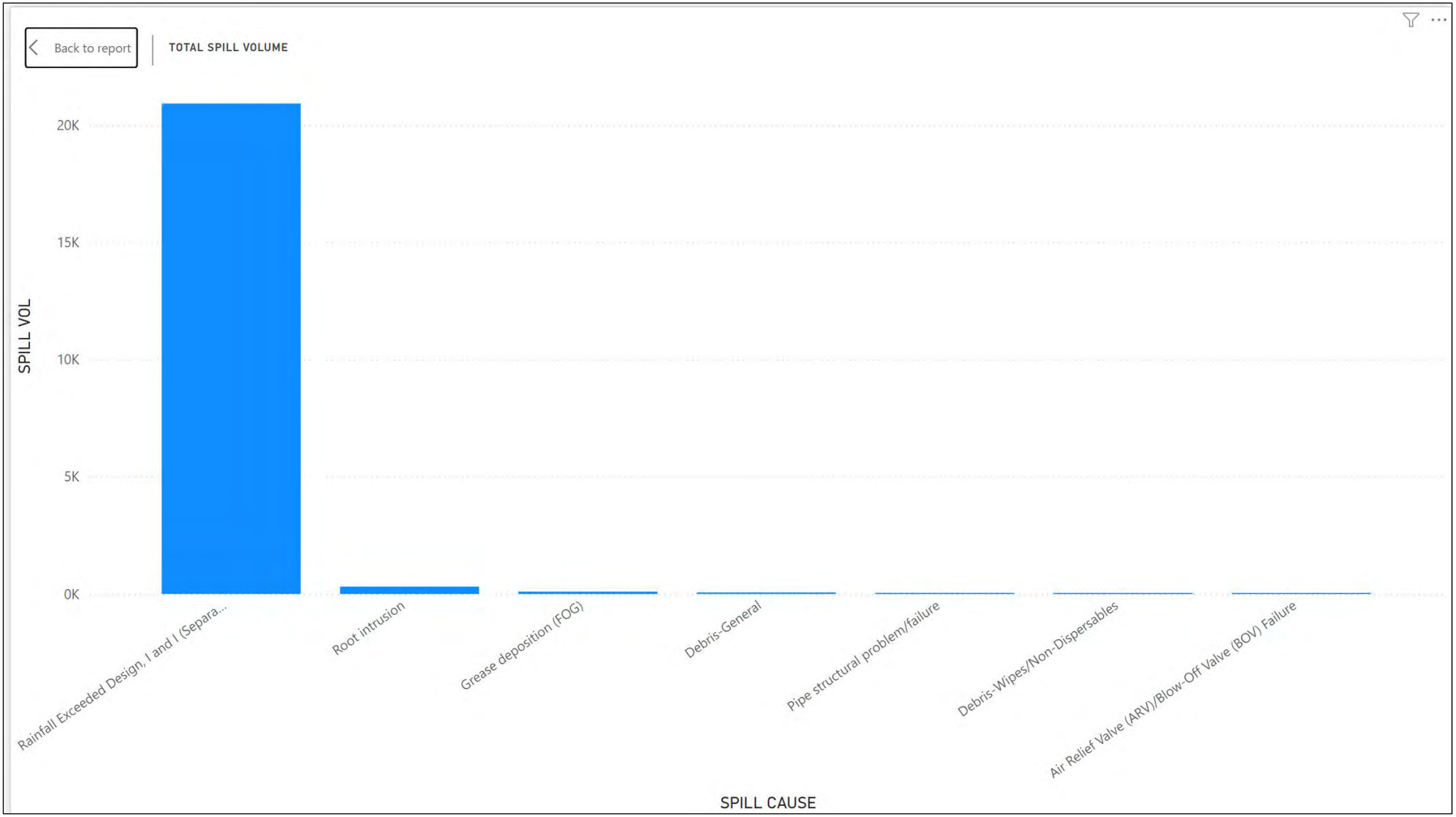


Figure 6 - City Spill Causes (by volume of spill) during SSMP Audit Period (May 2021-May 2024)

Observation: The City's spill main cause (by volume of spills) was rainfall (wet weather) during the SSMP Audit period.

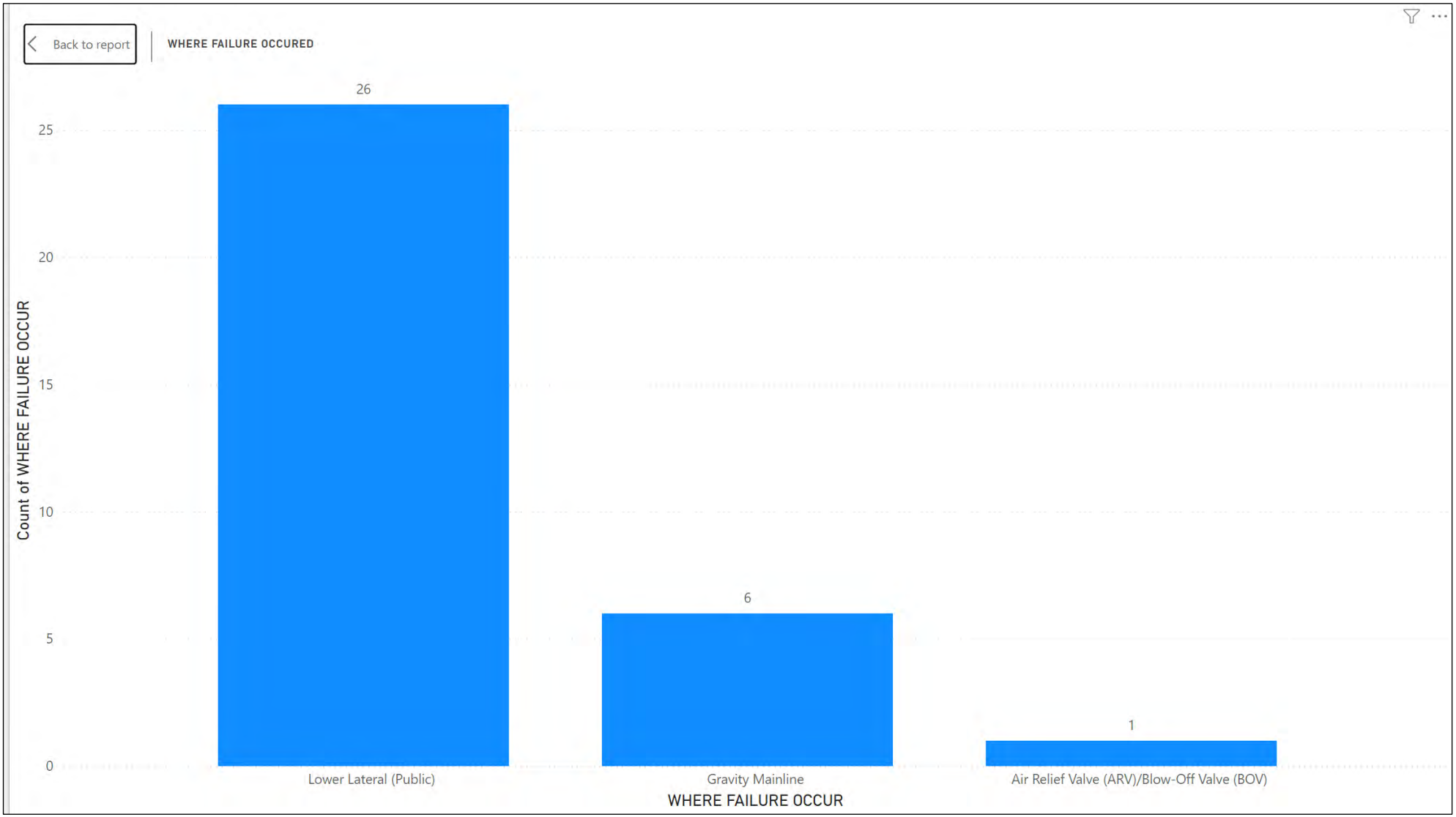


Figure 7 – City Spill Counts of Where Failures Occurred during SSMP Audit Period (May 2021-May 2024)

Observation: The City's main asset location were failures occurred was from lower sewer laterals during the SSMP Audit period.

SPILL ID	AGENCY NOTIFY DT	OPRTOR ARRVL DT	Spill CREATED DT	EST END DT	Agency Notify - Spill Created (Days)	AGENCY NOTIFY - OP ARR (Days)	AGENCY NOTIFY - OP ARR (Hours)	AGENCY NOTIFY - OP ARR (Minutes)
888126	4/8/2023 15:36	4/8/2023 16:30	5/5/2023 0:00	4/8/2023 11:00	27	0	1	54
888177	4/3/2023 10:30	4/3/2023 11:20	5/9/2023 0:00	4/3/2023 11:53	36	0	1	50
887707	3/17/2023 11:09	3/17/2023 11:24	4/17/2023 0:00	3/17/2023 11:24	31	0	0	15
887182	2/25/2023 15:39	2/25/2023 16:12	3/20/2023 0:00	2/25/2023 16:17	23	0	1	33
886996	2/18/2023 8:49	2/18/2023 9:22	3/10/2023 0:00	2/18/2023 9:22	20	0	1	33
887026	2/17/2023 14:20	2/17/2023 14:30	3/13/2023 0:00	2/17/2023 14:35	24	0	0	10
886942	2/15/2023 17:49	2/15/2023 18:36	3/8/2023 0:00	2/15/2023 18:42	21	0	1	47
887213	2/15/2023 14:21	2/15/2023 14:41	3/21/2023 0:00	2/15/2023 14:46	34	0	0	20
886923	2/14/2023 12:07	2/14/2023 12:19	3/7/2023 0:00	2/14/2023 12:19	21	0	0	12
886143	1/23/2023 10:27	1/23/2023 10:36	2/15/2023 0:00	1/23/2023 10:36	23	0	0	9
886302	1/23/2023 7:20	1/23/2023 7:34	2/21/2023 0:00	1/23/2023 7:34	29	0	0	14
886050	1/18/2023 8:52	1/18/2023 9:05	2/10/2023 0:00	1/18/2023 9:05	23	0	1	13
885184	12/31/2022 21:14	12/31/2022 7:46	1/4/2023 0:00	12/31/2022 23:22	4	0	-14	-808
885166	12/31/2022 18:40	12/31/2022 19:07	1/4/2023 0:00	1/1/2023 0:03	4	0	1	27
885444	12/22/2022 13:00	12/22/2022 13:18	1/13/2023 0:00	12/22/2022 13:18	22	0	0	18
885443	12/7/2022 10:58	12/7/2022 11:06	1/13/2023 0:00	12/7/2022 11:06	37	0	1	8
885074	12/4/2022 14:03	12/4/2022 14:35	12/30/2022 0:00	12/4/2022 14:35	26	0	0	32
885042	12/3/2022 11:42	12/3/2022 12:14	12/29/2022 0:00	12/3/2022 12:14	26	0	1	32
884664	11/15/2022 10:29	11/15/2022 10:51	12/7/2022 0:00	11/15/2022 11:00	22	0	0	22
884413	11/9/2022 16:14	11/9/2022 17:25	11/23/2022 0:00	11/9/2022 16:15	14	0	1	71
884376	11/4/2022 19:00	11/4/2022 19:00	11/22/2022 0:00	11/4/2022 19:00	18	0	0	0
884332	10/31/2022 17:22	10/31/2022 17:42	11/18/2022 0:00	10/31/2022 17:42	18	0	0	20
883827	10/14/2022 19:39	10/14/2022 20:17	10/19/2022 0:00	10/14/2022 20:17	5	0	1	38
883804	10/12/2022 15:58	10/12/2022 16:16	10/18/2022 0:00	10/12/2022 16:16	6	0	1	18
883741	9/27/2022 7:03	9/27/2022 7:30	10/12/2022 0:00	9/27/2022 7:30	15	0	0	27
882939	8/21/2022 12:42	8/21/2022 13:05	8/25/2022 0:00	8/21/2022 13:05	4	0	1	23
882862	8/11/2022 13:50	8/11/2022 13:58	8/22/2022 0:00	8/11/2022 13:58	11	0	0	8
882367	7/7/2022 16:58	7/7/2022 17:34	7/19/2022 0:00	7/7/2022 17:34	12	0	1	36
882603	7/1/2022 11:28	7/1/2022 11:37	8/3/2022 0:00	7/1/2022 11:37	33	0	0	9
882213	6/22/2022 8:19	6/22/2022 8:26	7/11/2022 0:00	6/22/2022 8:26	19	0	0	7
881796	6/4/2022 10:12	6/4/2022 10:31	6/16/2022 0:00	6/4/2022 9:30	12	0	0	19
881950	5/2/2022 20:33	5/2/2022 20:52	6/27/2022 0:00	5/2/2022 20:53	56	0	0	19
881952	5/2/2022 17:31	5/2/2022 17:53	6/27/2022 0:00	5/2/2022 17:53	56	0	0	22

Figure 8 – City Spill Benchmarks during SSMP Audit period (May 2021-May 2024)

Observations: The City averaged approximately 24 minutes between the agency spill notification time and operator arrival times (removing erroneous data logged for spill ID #885184 occurring on 12/31/2022). The City failed to notify Cal-OES within two hours (32 minutes late) for one spill occurring on 12/31/2022 (spill ID #885184. Erroneous data was also observed for two spills (ID #884376 and #881796). The City was fully compliant with providing draft and certified reports within the required timeframes for all Category 1 spills during the SSMP Audit.

Appendix 10-1

SSPM Internal Audit Fiscal Year 2010/2011

City of Roseville Wastewater Collection

FY 2010-2011 SSMP Program Audit (Internal)



City of Roseville Wastewater Collection

FY 2010-2011 SSMP Program Audit (Internal)

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City of Roseville Wastewater Collection

FY 2010-2011 SSMP Program Audit (Internal)

WDR Requirement for SSMP Element 10: SSMP Program Audits

As part of the Sewer System Management Plan (SSMP), the enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of Sanitary Sewer Overflows (SSOs). At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the enrollee's compliance with the SSMP requirements identified in subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

Audit Tasks

The City of Roseville will complete biennial audits of the SSMP beginning in calendar year 2009. To ensure that the audit is performed objectively, this task will be assigned to individuals that are removed from the daily activities of the division. These individuals, along with the assistance from the Wastewater Collection Superintendent or Supervisor, must have a working knowledge of the collection system and the authority to carry out gathering the appropriate data to perform the audit. In addition to filling out the SSMP audit form, the following tasks, at a minimum shall be performed.

1. *Compare the records from the Computerized Maintenance and Management System (CMMS) of record, to the data reported to the California Integrated Water Quality System (CIWQS). Review performance metrics tracked by the division versus previous years to identify trends.*
2. *Review condition assessment data and rehabilitation philosophy/strategies with the Wastewater Superintendent or Supervisor and the Rehabilitation Manager.*
3. *Review records from previous internal audits, to ensure noted deficiencies have been addressed.*
4. *Review preventative maintenance schedules, response to SSOs, and mitigation of SSO causes.*
5. *Review SSO Emergency Response Plan and identify improvements if needed.*
6. *Identify accomplishments in improving the collection system.*
7. *Record all findings during the audit process on the attached SSMP Audit Form. This form will be the final audit report for the City of Roseville Wastewater Collection SSMP. This report will be kept on file along with other relevant SSMP documents on the city's internet website.*

Conclusion and Improvement Opportunities

The City of Roseville Wastewater Collection Division recognizes that the biennial audit of the SSMP and its programs are approximately 9 months late. Due to significant change within the division, and appointments of a new LRO and data submitter, the internal audit deadline was missed. The SSMP is a living document and is updated frequently. Although the online version may not contain the most recent SSMP, a revision log is available that lists all changes to the master document. The online document is updated periodically. The wastewater collection division's record for SSOs continues to be very good; reporting two spills from mainlines during fiscal year 2010/2011. Lateral overflows have increased, only slightly, but the wastewater collection division has an aggressive lateral maintenance program in place, and along with CIPP lining, looks to lower the number of overflows through these efforts. The city continually adjusts maintenance frequency to address these issues. There are several SSMP elements that need to be updated in city's SSMP. These are listed below:

1. The Executive Summary, boundary map, service area and population need to be updated and posted to the city's website.
2. Roseville goals, section 1.2 needs to be revised, as the development plan and implementation schedule in the SSMP are already completed.
3. All sections for Element 2 need to be updated on the city's website.
4. Appendix D-6 and D-7 need to be updated.
5. Element 6 Appendix F needs to be updated to include NASSCO training, and information needs to be posted to city's website.
6. Element 9.4 needs to be updated. Remove chemical root control and add lateral lining to monitor and measurement.
7. All elements need to be reviewed and posted to city's website.

City of Roseville Wastewater Collection

FY 2010-2011 SSMP Program Audit (Internal)

Name of Auditor (s)	Mark Cossairt Michael Zacharia		
Date of Audit	14 Mar 2012	Audit Period	FY 2010-2011
Collection System Overview			
Miles of Gravity Sewer Mains			522 Miles
Miles of Sewer Laterals			208 Miles
Number of Pump Stations			14
Population Served			118,788
Total Category 1 Spills	0	Total Category 2 Spills	13

Note: Information above is for FY 2010-2011

Element 1: Goals

The goal of the SSMP is to provide a plan and a schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help in reducing and preventing SSOs as well as mitigate any SSOs that do occur.

Audit Elements:

- *Are goals, clearly stated, obtainable and measurable?*

SSMP Requirement	Current Y or N	If no, action items required
Are the goals stated in the SSMP still relevant and accurate in complying with the Waste Discharge Requirement (WDR)	*N*	*Review and revise goals. Goal one is obsolete. The city's SSMP development plan and implementation schedule is complete*

Element 2: Organization

The WDR/SSMP organization requirement specifies that the SSMP shall identify the LRO, management, administrative and maintenance positions and their contact information. It shall also include the chain of communication for reporting SSOs

Audit Elements:

- *SSMP Org Chart*
- *Legally Responsible Official (LRO)Designated*
- *Emergency Response Plan*
- *Chain of Communication Chart*

SSMP Requirement	Current Y or N	If No, action items required
Legal Responsible Official (LRO) designated	*N*	*LRO needs to be updated on city's website*
Lines of authority designated through organization chart. Is chart current and up to date?	*N*	*Section 2.2 needs to be updated, then placed on city's website*
Names and phone numbers for key management personnel.	*N*	*Management needs to be updated on city's website and general position descriptions need updating*

Contact information for maintenance personnel and after hour's response	*N*	*Information needs to be updated on city's website*
Chain of Communication reporting chart current and numbers current?	*N*	*Section needs to be updated on city's website, along with RWQCB contacts updated*

Element 3: Legal Authority

The WDR/SSMP Legal Authority requirement specifies that each enrollee must demonstrate that it possesses the necessary legal authority to enforce their sewer use ordinances, service agreements or other legally binding procedures.

Audit Elements:

- *City of Roseville Sewer Use and FOG Ordinance*
- *Design and Construction Standards*
- *Municipal Code –Sewer Use*

SSMP Requirement	Current Y or N	If No, action items required
Prevent illicit discharges into the sanitary sewer system	*Y*	*RMC 14.12.050*
Sewers and connections properly designed , constructed and inspected	*Y*	*City has updated construction and design specifications*
Ensure access for maintenance, inspection and repairs	*Y*	
Enforce violations of sewer use and fog ordinances	*Y*	*RMC 14.14 FOG for Food Service Establishments (FSE)*
Inter-agency and satellite agency agreements in place	*Y*	

Element 4: Operations and Maintenance

The WDR/SSMP Operation and Maintenance Program requirement specifies that each SSMP must include those elements that are appropriate and applicable to enrollee's system.

Audit Elements:

- *Mapping System*
- *Work Orders and Maintenance Schedules*
- *Condition Assessment Data*
- *Equipment and Parts Inventory*
- *Employee Training Records*
- *Capital Improvement Projects*
- *Interview Maintenance Staff*

SSMP Requirement	Current Y or N	If no, action items required
Maintain current mapping system with procedures for updating	*N*	*Business process needs to be developed to ensure mapping updates are completed*
Preventative maintenance schedules are sufficient in reducing or preventing SSOs	*Y*	
Document preventative maintenance work orders using CMMS	*Y*	*Sample of preventative maintenance schedule in appendix D-2*
Condition assessment program that identifies and ranks criticality of line segments for capital improvement	*Y*	*City currently is in Phase 10 of 21 phases on condition assessment. City currently is using Pipelogix software with NASSCO rating criteria*
Provide relevant technical training to sewer system staff	*Y*	*Add NASSCO training to Element 4.5*
Does the city allocate sufficient funds for operation and maintenance as well as Capital Improvement Projects (CIPs)	*Y*	
Maintain equipment inventory and critical spare parts sufficient for emergency response	*N*	*Update needed to Appendix D-6 and D-7*

Element 5: Design and Performance Provisions

The WDR/SSMP Design and Performance Provision requirement specifies that each enrollee have design and construction standards for installation, repair, inspection and rehabilitation for all new sewers and appurtenances.

Audit Elements:

- *City of Roseville Sanitary Sewer Design and Specifications*
- *City of Roseville Sanitary Sewer Construction Standards*
- *Interview Maintenance Staff*

SSMP Requirement	Current Y or N	If no, action items required
Design and construction standards for new sanitary sewer system facilities	*Y*	*City maintains and regularly updates design and construction standards*
Design and construction standards for repair and rehabilitation of existing sanitary sewer facilities	*Y*	
Procedures for inspection and acceptance of repaired and rehabilitated and new sanitary sewer facilities	*Y*	*Procedures are contained in city construction and design standards*
Standard operating procedures for existing sanitary sewer facilities	*Y*	*SOPs are trained on annually by staff and continually updated*

Element 6: Overflow Emergency Response Plan

The WDR/SSMP Overflow Emergency Response Plan requirement specifies that each enrollee shall develop and implement an Overflow Response Plan that identifies measures to protect public health and the environment.

Audit Items:

- *Compare CMMS Records with CIWQS Database Information*
- *Review SSO Emergency Response Plan (SSOERP)*
- *Notification Procedures Current and Relevant*
- *Review Performance Metrics SSO Data*
- *Review Standard Operating Procedures for Containment*
- *Review Training Records for Sanitary Sewer Overflow Response Plan(SSOERP)*

- *Interview Maintenance Staff*

SSMP Requirement	Current Y or N	If no, action items required
Procedures established for emergency response, notification and reporting of SSOs	*N*	*Updates needed to Appendix F. Changes to SSOERP flowchart are needed for notifications. Information needs to be updated on city's website*
Procedures established for proper training of SSOERP	*Y*	*SSOERP is trained on annually and documented in LMS*
Procedures established for contractor awareness and training of SSOERP while working on city infrastructure	*Y*	*Contractors are made aware of city's SSOERP in pre-construction meetings, and updated as needed depending on projects*
Emergency response plan addresses traffic and crowd control in the event of SSO	*Y*	*Contained in Appendix F-1 SSO Emergency Response Procedures*
Procedures to prevent the discharge of sewage to waters of the state	*Y*	*Procedures are addressed in SOP for containment measures*
Program and procedures established to correct or minimize the impacts of any SSOs that occur	*Y*	*Business process has been established*
Considering performance metric data, is SSOERP effective in handling SSOs	*Y*	

Element 7: Fats, Oils and Grease (FOG) Control Program

The WDR/SSMP FOG Source Control Program requirement specifies that each enrollee shall prepare and implement a program to reduce the amount of these substances discharged into the sanitary sewer system.

Audit Elements:

- *Municipal Code 14.14 FOG Program*
- *Food Service Establishment(FSE)- FOG Permit*
- *Public Outreach- FOG Disposal*
- *Hot Spot Hydro Schedules and Locations*
- *Interview Maintenance Staff and Industrial Waste Personnel*

SSMP Requirement	Current Y or N	If no, action items required
Does FOG program include public outreach schedule to educate public on proper handling and disposal of FOG	*Y*	*WW administration budgets annually for FOG education and awareness. Will provide plan and schedule in supporting documents*
Does the FOG program identify sections of the collection system subject to FOG blockages, establish an effective PM schedule and address source control measures to minimize these blockages	*Y*	*Hot spot cleaning schedule is attached in supporting documents*
Are requirements for grease removal devices BMPs, installations, record keeping and reporting established in the city's FOG Control Program	*Y*	*RMC 14.12.050(F)addresses the requirements for grease removal devices*
Does the city have sufficient authority to implement, inspect, and enforce the FOG Control Program	*Y*	*RMC 14.14*
Has the current FOG program been effective in minimizing blockages of sewer lines from discharges of FOG to the system	*Y*	

Element 8: System Evaluation and Capacity Assurance Plan (SECAP)

The WDR/SSMP SECAP requirement specifies that each enrollee shall prepare and implement a capital improvement plan (CIP) that provides hydraulic capacity of key sanitary sewer elements for dry weather peak flow as well as the appropriate design storm or wet weather event.

Audit Elements:

- *Hydraulic Model*
- *Technical Memorandum- System Evaluation and Capacity Assurance Plan*
- *Technical Memorandum- Wet Weather Flow Projection for the Ultimate SPWA area*
- *Technical Memorandum- Trunk Sewer Hydraulic Analysis*
- *Wastewater Condition Assessment*
- *Capital Improvement Plan (CIP) - Wastewater System Condition Assessment*
- *Construction Projects List*

SSMP Requirements	Current Y or N	If no, action items required
Provide hydraulic capacity of key sanitary sewer elements for dry weather peak flow conditions as well as designed storm or wet weather event	*Y*	*Per Utility Manager, all up to date*
Does the city's Capital Improvement Plan (CIP) establish projects and a schedule of approximate completion dates for both short term and long term improvements	*Y*	*Per Utility Manager, all up to date*
Does the CIP identify sources of funding for improvements	*Y*	*Per Utility Manager, all up to date*
Procedures for the analysis, evaluation, and prioritization of hydraulic deficiencies	*Y*	*Per Utility Manager, all up to date*

Element 9: Monitoring, Measurement, and Program Modifications

The WDR/SSMP Monitoring, Measurement, and Program Modification requirement specifies that each enrollee shall establish and prioritize appropriate SSMP activities.

Audit Elements:

- *Preventative, Corrective, and Emergency Work Order History*
- *PM Schedules*
- *SSO History*
- *Benchmarking Metrics*
- *Strategic Plan Data*
- *Staff Training Records*
- *Condition Assessment Data*
- *Program Improvements*

SSMP Requirement	Current Y or N	If no, action items required
Monitor, measure and modify where appropriate, the elements of the SSMP	*Y*	*Completed through Hansen and excel spreadsheets monitoring trends*
Evaluate the success of the preventative maintenance program	*Y*	*Completed through Hansen and excel spreadsheets monitoring trends*
Update program elements based on monitoring or performance evaluations	*N*	*Update Element 9.4 to add lateral lining and maintenance programs. Remove the measure for chemical root control as the city does not use chemicals to control root growth.*
Identify and illustrate SSO trends, including frequency, location, cause and volume.	*Y*	*Completed through Hansen and excel spreadsheets monitoring trends*
Is the City able to evaluate the effectiveness of the SSMP based on relevant information	*Y*	*Completed through Hansen and excel spreadsheets monitoring trends*

Element 10: SSMP Audits

The WDR/SSMP –SSMP Program Audit requirement specifies that each enrollee shall conduct periodic internal audits based on size of system and number of SSOs.

Audit Elements:

- *Previous SSMP Audits*
- *Discuss the effectiveness of this audit format and provide suggestions for improvements*

SSMP Requirement	Current Y or N	If no, action items required
Conduct periodic internal audits and record results of audit in a report	*Y*	
Record changes made and/or corrective actions taken	*Y*	

Element 11: Communication Program

The WDR/SSMP Communication Program Requirement specifies that each enrollee shall communicate with the public, on a regular basis, on the development, implementation and performance of the SSMP.

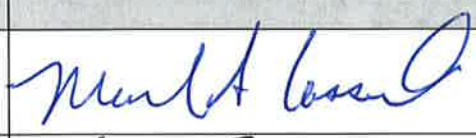
Audit Elements:

- *City of Roseville Website*
- *Public Outreach/ Customers and Other Agencies*

SSMP Requirement	Current Y or N	If no, action items required
Communicate with public on SSMP performance	*N*	*SSMP and supporting documents need to be updated on the city's website. Revisions and log kept internally , but neglected to update via the website.*
Communicate with satellite agencies	*Y*	*Regional partner meetings, SPWA, website updates*
Does the city have a mechanism to address public feedback	*Y*	*Public comments can be submitted through city website, PUC and council meetings. The wastewater division uses a customer survey card for feedback from customers directly affected by maintenance activities.*

Certification of Audit:

By signing below, we certify that the information contained in this audit report is correct to the best of our knowledge.

Name	Position	Signature	Date
Mark Cossairt	*Refuse Utility Manager (Auditor)*		3/20/12
Mike Zacharia	*Principal Engineer (Auditor)*		3-20-12
Kenneth Glotzbach	*Wastewater Utility Manager Legal Responsible Official (LRO)*		4-29-12
Chris Bracco	*Wastewater Collection Supervisor*		29MAR12

City of Roseville Wastewater Collection

FY 2010-2011 SSMP Program Audit (Internal)

SUPPORT DOCUMENTS,TRENDS AND DATA

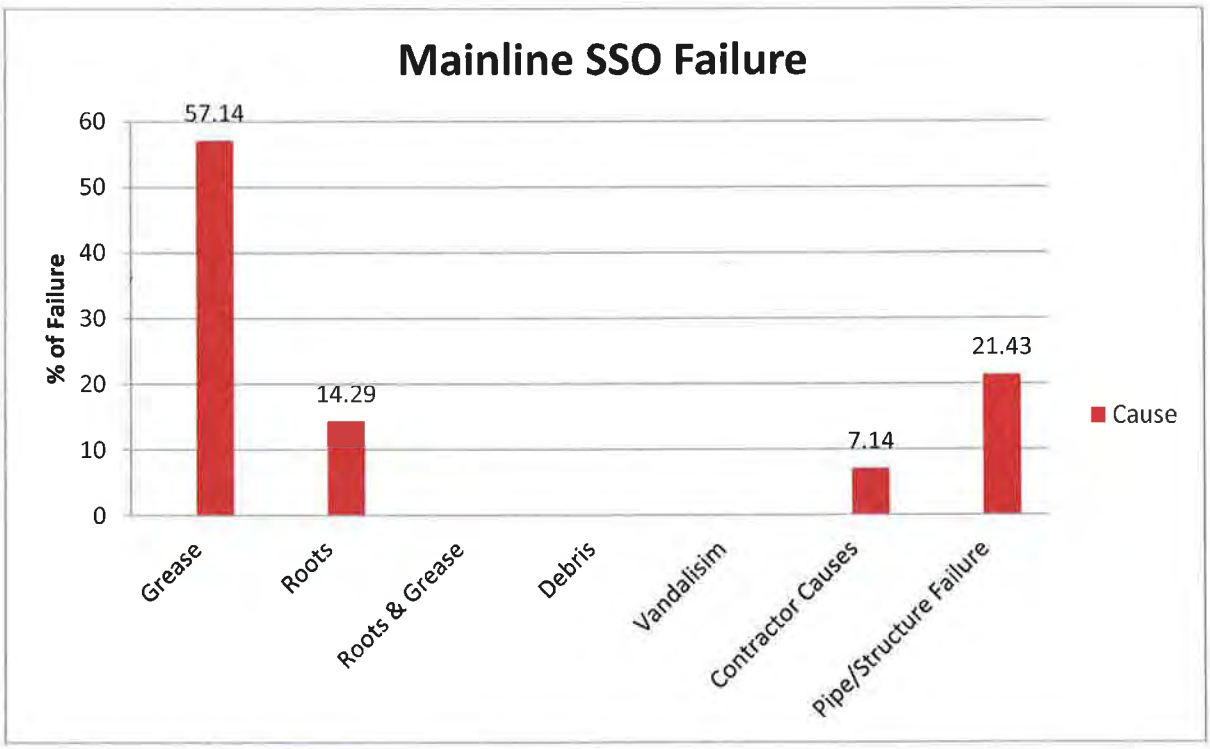
ATTACHMENT 1

System Performance Metrics

Management, Operation and Maintenance System-Performance Metrics									
Source	Main Line SSO's-Fiscal Year						Total	Avg/YR	Avg/100 miles sewer
	7/8	8/9	9/10	10/11	11/12	12/13			
Main Lines	3	2	2	3			10	2.5	0.019
Volume/Gals.	770	100	223	87			1180	295	2.261
Source	Lateral Line SSO's-Fiscal Year						Total	Avg/YR	Avg/100 miles sewer
	7/8	8/9	9/10	10/11	11/12	12/13			
Laterals	16	9	6	10			41	10.25	0.197
Volume/Gals.	456	166	99	164			885	221.25	4.255
Source	Total SSO's-Fiscal Year						Total	Avg/YR	Avg/100 miles sewer
	7/8	8/9	9/10	10/11	11/12	12/13			
Laterals/Mains	19	11	8	13			51	12.75	0.070
Volume/Gals.	1226	266	322	251			2065	516.25	2.829

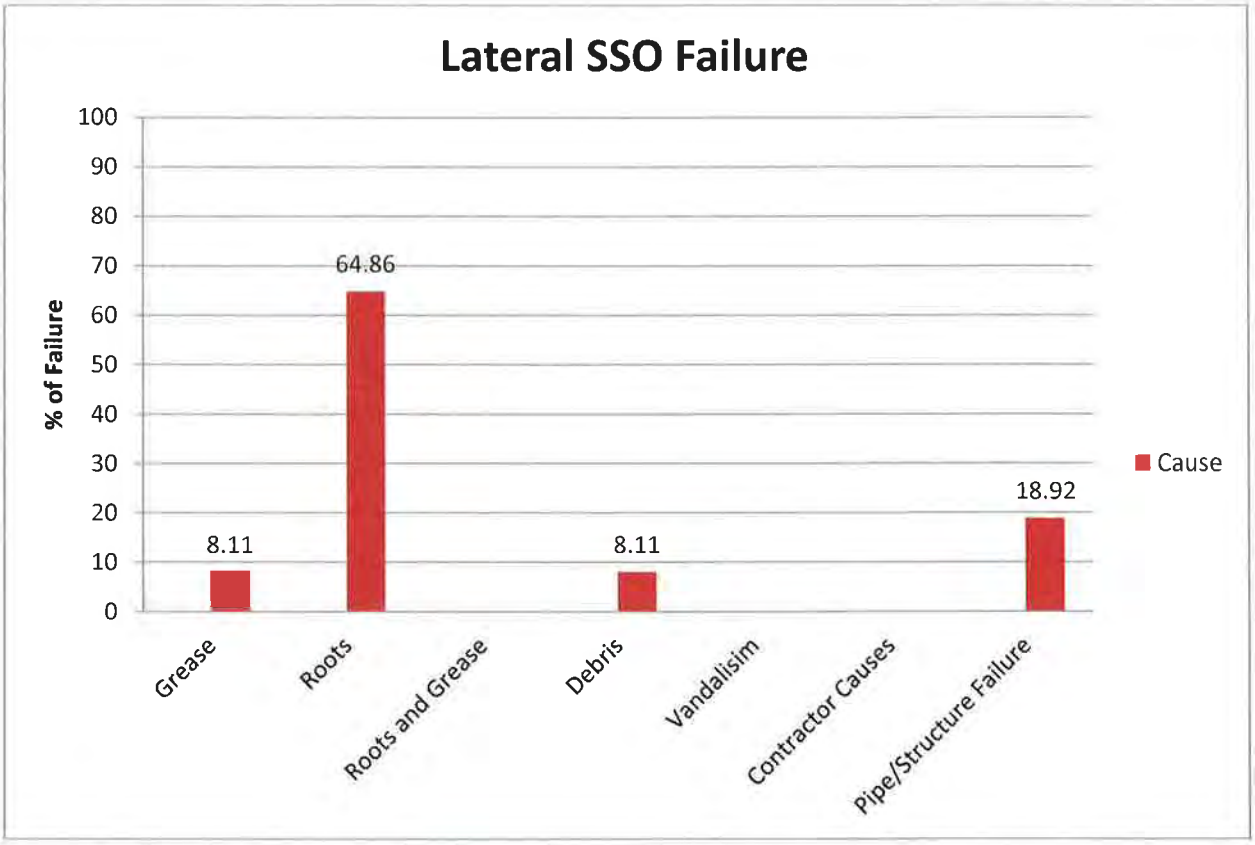
Mainline Stoppages by Cause

	Fiscal Year							
	7/8	8/9	9/10	10/11	11/12	12/13		
Cause	**Count**						Total	%
Grease	3	1	2	2			8	57.14
Roots		1		1			2	14.29
Roots & Grease								
Debris								
Vandalisim								
Contractor Causes	1						1	7.14
Pipe/Structure Failure		2	1				3	21.43
Total	4	4	3	3			14	100.00



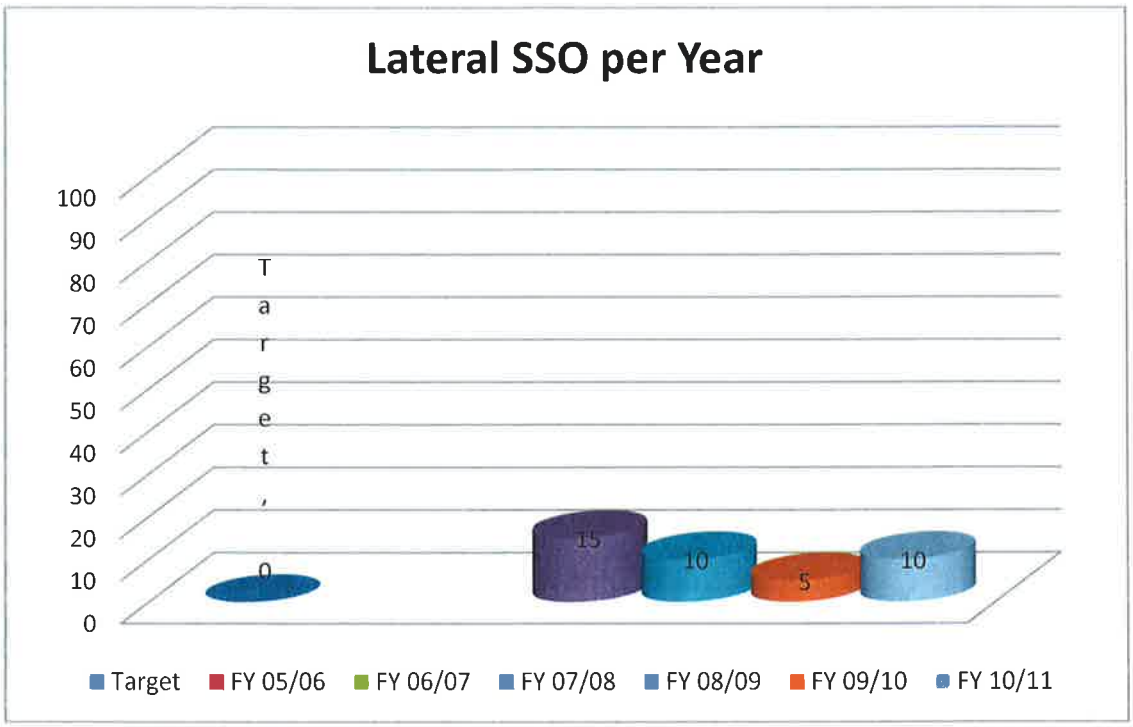
Note: The data represents trends from FY 2007 to present

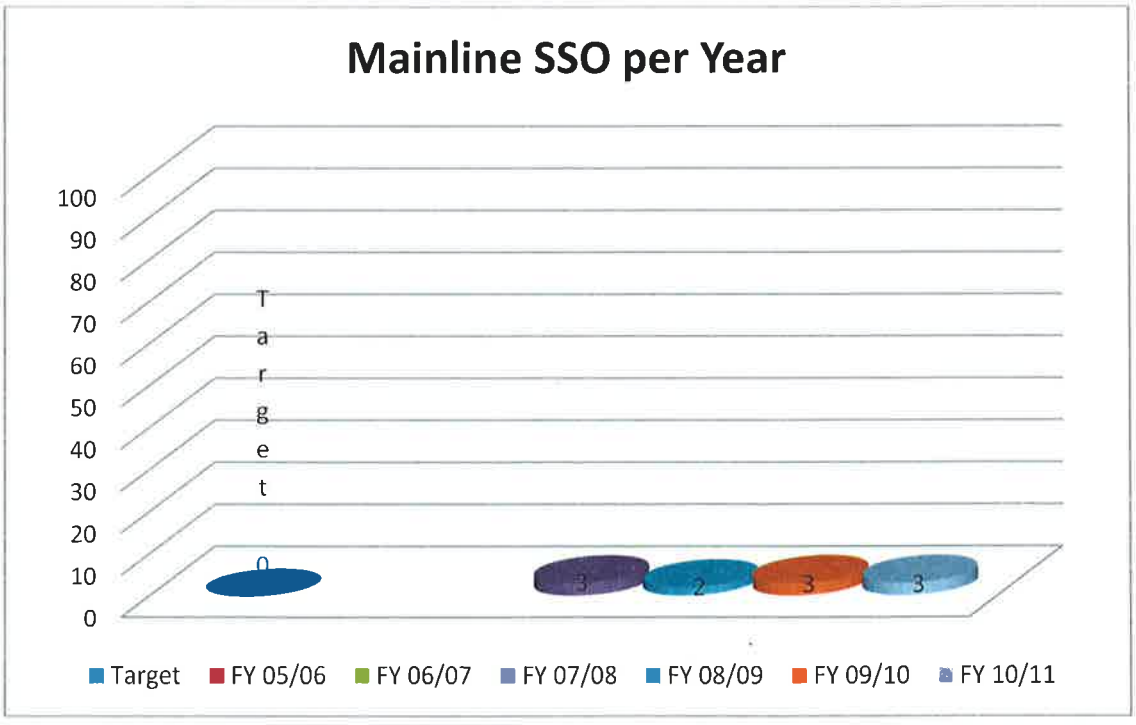
Lateral Stoppages by Cause								
	Fiscal Year							
	7/8	8/9	9/10	10/11	11/12	12/13		
Cause	**Count**						Total	%
Grease	1	2					3	8.11
Roots	8	5	4	7			24	64.86
Roots and Grease								
Debris	1	1		1			3	8.11
Vandalisim								
Contractor Causes								
Pipe/Structure Failure	4		1	2			7	18.92
Total	14	8	5	10			37	100.00



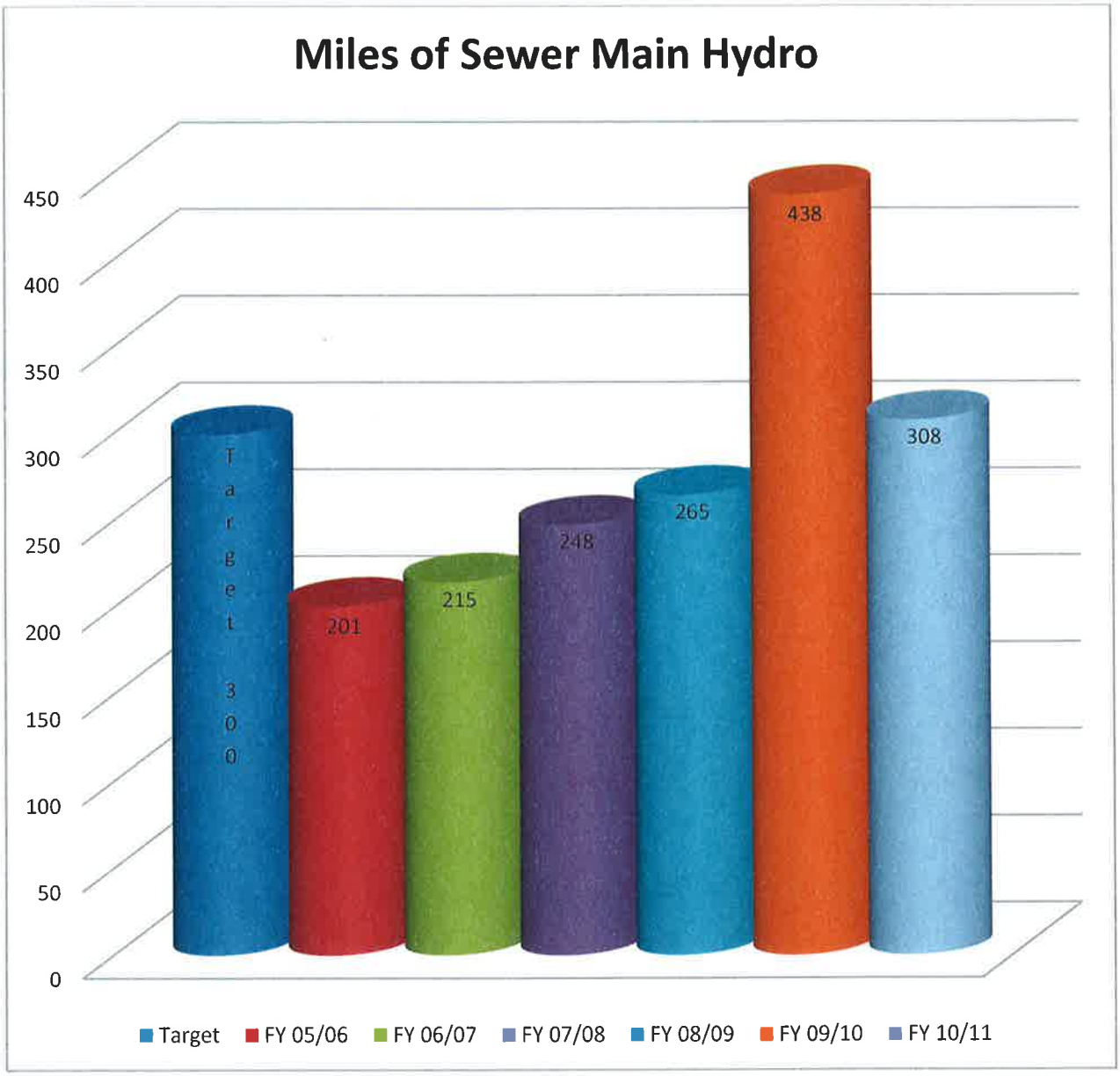
Note: The data represents trends from FY 2007 to present

Lateral/Mainline SSO Charts FY 07 to Present

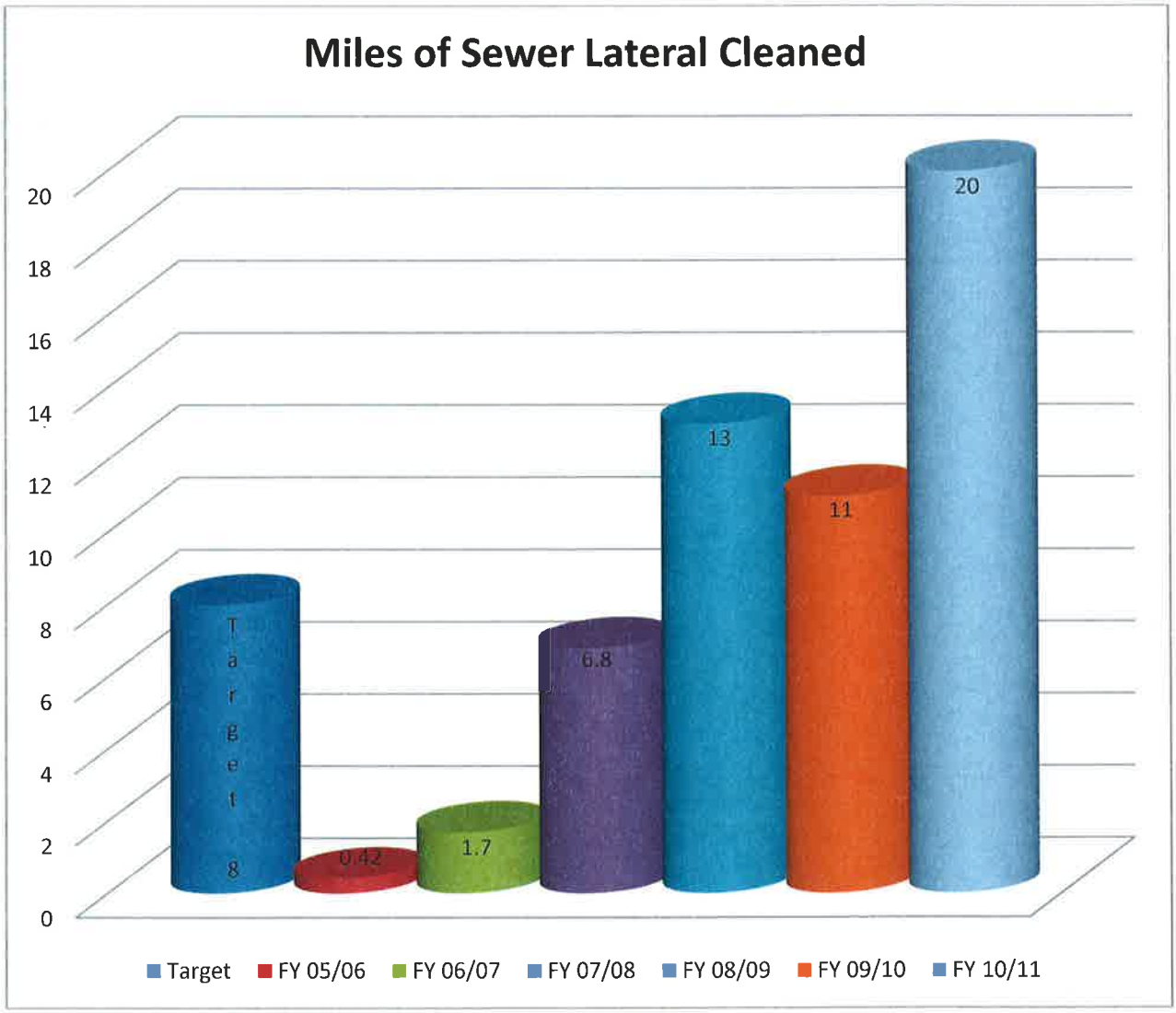




Vactor Footage Chart



Sewer Lateral Cleaned Chart



Appendix 10-2

SSPM Audit Fiscal Year 2012/2013

CITY OF ROSEVILLE
Sewer System Management Plan (SSMP)
Biennual Audit for FY 11/12 – FY 12/13

Date: December 2013

Prepared by: Eric Nielsen, P.E., Water Works Engineers
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SECTION 1 Audit Objectives

This report summarizes the results of the required Sewer System Management Plan (SSMP) internal audit process for the FY 11/12 and FY 12/13 evaluation period. The purpose of the SSMP is to provide a written framework for sanitary sewer collection system management, operation, and maintenance programs executed by the City of Roseville (City) with the ultimate goal of minimizing sanitary sewer overflows (SSOs) and achieving compliance with California State Water Resources Control Board (SWRCB) Order No. 2006-0003-DWQ, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS WDR). The SSMP audit is based on a review of performance measures established to evaluate the City's success in achieving compliance with various requirements of the SSS WDRs and implementing programs as stated in the SSMP. The SSMP audit process allows the SSMP document to evolve over time through the identification of potential enhancements in the management, operation and maintenance of the sanitary sewer collection system and the implementation of changes to the SSMP to address any deficiencies.

The City of Roseville is committed to complete biennial audits of the SSMP consistent with the procedure outlined in Appendix J-1 of the SSMP. To ensure that the audits are performed objectively, the City assigns this task to individuals that are removed from the daily activities of the Wastewater Collections (WWC) division. These individuals, along with the assistance from the Wastewater Collection Superintendent and/or Supervisor, must have a working knowledge of the collection system and the ability to gather the appropriate data to perform the audit. The following tasks, at a minimum shall be performed with each audit:

1. Compare the records from the computerized maintenance management system (CMMS) of record, to the data reported to the California Integrated Water Quality System (CIWQS). Review performance metrics tracked by the WWC division versus previous years to identify trends. (see **Section 3.1**)
2. Review condition assessment data and rehabilitation philosophy/strategies with the Wastewater Superintendent and/or Supervisor and the Rehabilitation Manager. **(See Section 5.4)**
3. Review records from previous internal audits, to ensure noted deficiencies have been addressed. (**this Section**)
4. Review preventative maintenance schedules, responses to SSOs, and mitigation of SSO causes. (see **Section 3.1**)
5. Review SSO Emergency Response Plan (SSOERP) and identify improvements if needed. (see **Section 5.6**)
6. Identify accomplishments in improving the collection system.
7. Record all findings during the audit process and keep the audit on file. (see **Section 5.10**)

SECTION 2 Agency Background / System Information

The City of Roseville is located in Placer County and situated approximately 16 miles north of Sacramento. The City covers approximately 42 square miles near the base of foothills of the Sierra Mountains. The elevations in Roseville range from approximately 250 feet to 100 feet above sea level with an average slope across the City of 0.5% from east to west. Several streams flow through the City (i.e., Dry Creek, Pleasant Grove Creek, Kaseburg Creek, Linda Creek, Cirby Creek, Secret Ravine, and Miners Ravine).

The City is responsible for operation and maintenance of a growing sewer system. The current population is approximately 122,000. The population of the City of Roseville grew 48.6% between 2000 and 2010, which is more than five times the national average according the U.S. Census Bureau. The City's sewer collection system has grown in step with the rapid population growth. The City currently provides service to over 41,000 connections to the system. **Table 1** provides additional information about the City collection system and WWC division over the last two SSMP audit periods.

Table 1. Overview of System Indicators

Audit	FY 09/10 – 10/11	FY 11/12 – 12/13
Miles of Mainline	522	485.52*
Miles of laterals (lower)	208	235.3
Pump stations	13	14
Population served	118,788	122,060
WWC Staff	24	25
Annual Budget (FY1 – FY2)	$3,200,000 / $3,200,00	$3,400,000 / $3,800,00
Category 1 SSOs	2	2
Category 2 SSOs	19	75

* Previously recycled water pipelines were included in "Miles of Mainline".

The City treats the wastewater conveyed through its collection system at two regional wastewater treatment plants owned and operated by the City (i.e., the Dry Creek and Pleasant Grove WWTPs). Two satellite agencies (i.e., South Placer Municipal Utility District and Placer County) discharge wastewater into the City's collection system. A small portion of the City's collection system discharges into the Sacramento Area Sewer District system and is treated at the Sacramento Regional WWTP.

2.1 Review of Last SSMP Audit

An internal audit of the City SSMP was conducted and concluded on March 14, 2012 which reviewed the activities and performance related to the SSMP for the fiscal year 2010/2011 (FY10/11). **Table 2** summarizes the identified deficiencies and the associated action items outlined in the previous SSMP audit. The table also shows the date when the identified deficiencies have been resolved. All identified deficiencies in the previous audit were addressed quickly. The three items that have a "Yes" in the "Resolved" column were found to have been updated when reviewed as part of this audit, but no revision date was available. The remainder of the deficiencies were updated in the SSMP and referenced documents and marked with a revision/updated date.

Table 2. Summary of Findings from the Last SSMP Internal Audit

Element	Action Item	Resolved
1 – Goals	Review and revise goals. Goal 1 is obsolete since the City's SSMP development plan and implementation schedule is complete.	16 APR 2012
2 – Organization	LRO needs to be updated on City's website.	3 MAR 2012
	Section 2.2 outlining SSMP Responsibility Organization Chart needs to be updated, then placed on City's website.	16 APR 2012
	Management contact information needs to be updated on City's website and general position descriptions need updating.	Yes
	Contact information for maintenance personnel and after-hour response needs to be updated on City's website.	22 FEB 2012
	Chain of Communication reporting section needs to be updated on City's website, along with RWQCB contacts updated.	9 MAY 2012
4 – O&M	Business process needs to be developed to ensure mapping updates are completed.	28 MAR 2012
	Update needed to App D-6 (Equipment Inventory) and D-7 (Critical Parts)	Yes
6 – OERP	Updates needed to Appendix F (SSOERP Documents). Changes to SSOERP flowchart are needed for notifications. Information needs to be updated on City's website.	20 MAR 2012
8 – MMM	Update Element 9.4 to add lateral lining and maintenance programs. Remove the measure for chemical root control as the City does not use chemicals to control root growth.	16 APR 2012
11 - Communication	SSMP and supporting documents need to be updated on the City's website. Revisions and log kept internally, but neglected to update via the website.	Yes

2.2 Review of FY11/12 and FY12/13

Over the past two fiscal years it has been a priority of the City to eliminate mainline SSOs, which pose the largest risk for Category 1 SSOs due to the larger volumetric flowrate of wastewater in mainlines versus laterals. Having only six mainline SSOs (two Category 1 and four Category 2) over the two year period for an average of 0.62 SSOs/100 miles of pipeline per year is evidence of that priority. Of the six, two SSOs were caused by an unusually large storm that was reported as greater than the design capacity of a 10 year 24 hours storm. Two SSOs were caused by the accumulation of Fats, Oils, and Grease (FOG), and the last two were caused by overgrown roots.

Due to the large number of SSOs from laterals over the current audit period, plans were developed to address the issue of lateral SSOs. Records of the events listed the causes of the 71 lateral SSOs as; roots (49), debris (12), pipe failure (9), and vandalism (1). In FY11/12 the City rehabilitated 0.22 miles of laterals and 0.25 miles of laterals in FY12/13. Also, the Roseville WWC has developed and implemented an eeling program for lateral lines as a preventative maintenance activity targeted at reducing SSOs from laterals. This plan is explained below in **Section 3.2** regarding SSO reduction goals.

SECTION 3 SSO Trends

3.1 Historical SSO Data

There are a total of 77 spills that occurred in the fiscal years of 2011/2012 and 2012/2013. Information regarding the 77 SSOs is located in **Appendix 7.1** of this internal audit and includes information such as; date, location, spill type, spill volume, spill volume recovered, and a short description.

One of the City-defined tasks of the internal audit is to compare the information submitted to the state CIWQS database against the information keep in the City records regarding SSO events. **Table 3** organizes the data by source to show discrepancies, if any, between the data reported to CIWQS and the City's records.

Table 3. CIWQS and City SSO Historic Data

SSO Historical Data since last SSMP Internal Audit	CIWQS Data FY 11/12 – 12/13	Internal Records FY 11/12 – 12/13
The total number of potential SSO service calls received	-	943 service calls
The total number of SSOs reported	77 SSOs	77 SSOs
The reported total volume of SSOs	2053 gallons	2053 gallons
The reported total volume of SSOs that reached waters of the state	405 gallons	405 gallons
The percent volume of SSOs recovered	80%	80%
The average SSO response time	23 minutes	21 minutes
The average SSO duration time	18 minutes	-

The WWC Superintendent verifies, on a quarterly basis, the data in CIWQS against the information gathered and maintained by the City on individual SSO Field Report Forms on a regular basis. The information presented in the column labeled "Internal Records" of **Table 3** represents the summarized information reported in the various performance measures maintained by the City.

The City strives to maintain quality data regarding historical SSOs so that trends in the occurrences and potential causes of SSOs can be investigated. The following discussion investigates the City's historical SSO data to identify potential SSO trends so that future efforts can be targeted to reduce SSOs.

Figure 1: Number of SSOs per Fiscal Year

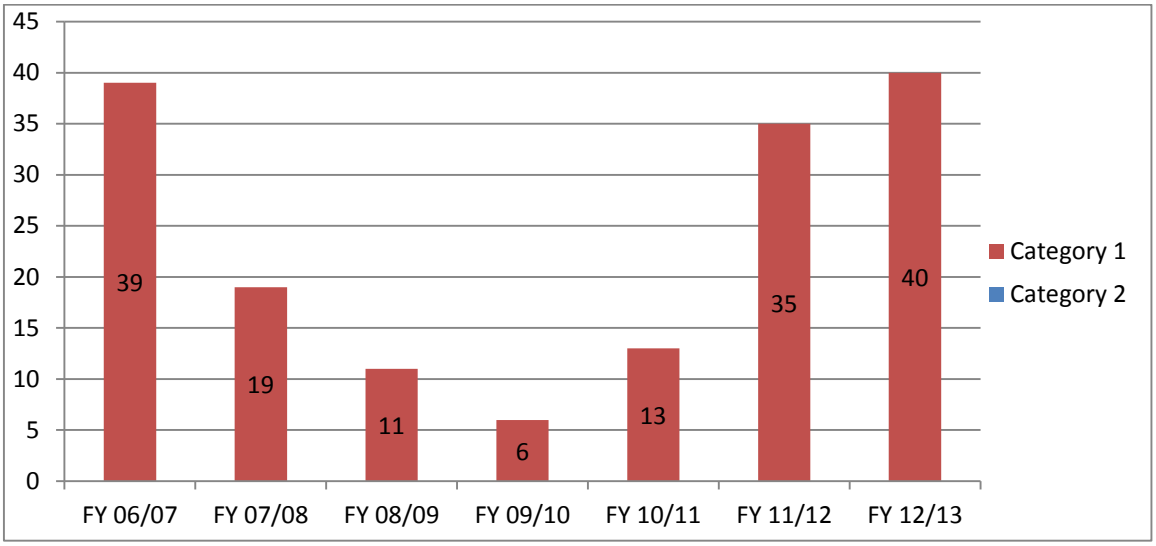
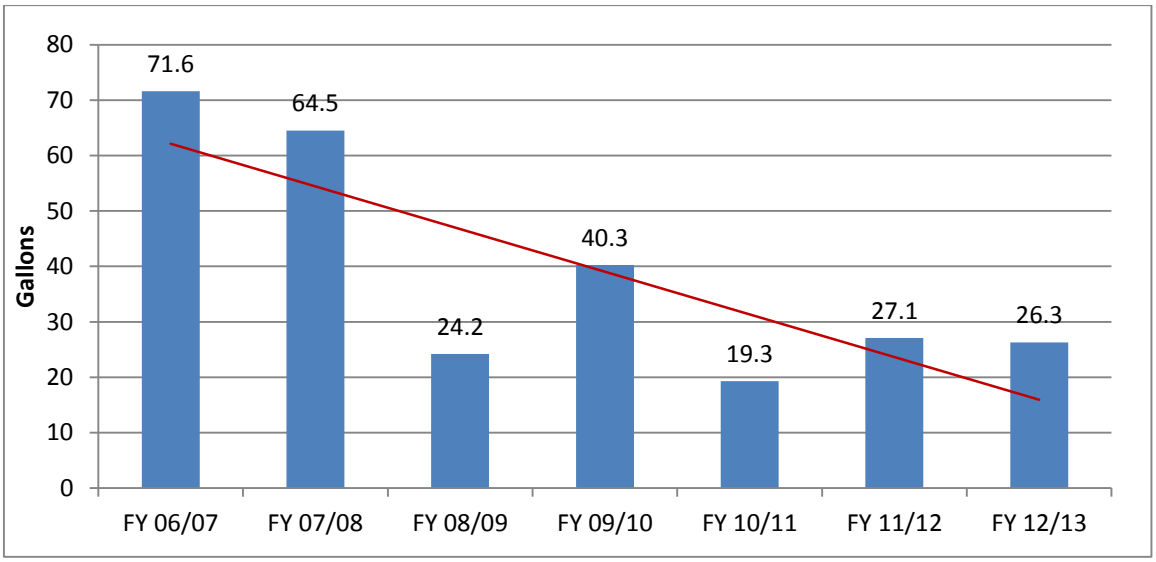


Figure 1 shows a decrease in the number of SSOs per year from FY06/07 to FY09/10 and an increase in the number of SSOs since that time. However, if we investigate the average spill volume for each SSO over the same time period, we see a downward trend (see **Figure 2**). Although the number of SSOs in FY11/12 and FY12/13 is similar to the number of SSOs seen in FY06/07, the average spill volume per SSO during FY11/12 and FY12/13 is less than half of what was recorded during FY06/07 and FY07/08.

Figure 2: Average Gallons per SSO



These trends indicate that the City has effectively targeted its efforts to limit large-volume SSOs through the preventative maintenance programs for mainline assets (e.g., hydroflushing, CCTV inspection) and the City SSO emergency response plan. However, these trends also show that the number of SSOs (specifically those from laterals) is on the rise over the period of this internal audit.

The City's SSO records were queried to identify the leading causes of SSOs. **Table 4** shows the leading causes of SSOs in the City by 1) the number of SSOs, 2) the spill volume of SSOs, and 3) the average spill volume per SSO.

Table 4. Leading Causes of SSOs in FY11/12 and FY12/13

By Number		By Volume		By Average Volume per SSO	
Cause	**Number**	**Cause**	**Gallons**	**Cause**	**Gallons**
Roots	51	Roots	1235	Capacity	200
Debris	12	Capacity	400	FOG	39
Pipe Failure	9	Debris	222	Roots	24
FOG	2	Pipe Failure	114	Debris	19
Capacity	2	FOG	77	Pipe Failure	13
Vandalism	1	Vandalism	5	Vandalism	5

Table 4 shows that root growth in pipelines is the major cause of an occurrence of a SSO, and capacity-deficient pipelines are the major cause for SSOs with large spill volumes. The actions planned as a result of this SSMP audit will target the leading causes to most effectively reduce the number and spill volume of SSOs.

3.2 SSO Reduction Performance Goals

One of the goals of the City's SSMP is "to minimize the frequency of SSOs". The City has set specific goals to monitor its performance in regards to the frequency of SSOs. **Table 5** compares the City SSO goals against the actual number of SSOs during the timeframe of the last SSMP internal audit, the timeframe of the current SSMP internal audit, and the table lists the SSO goals projected before the City's next internal SSMP audit. It should be noted that the goals for the upcoming two fiscal years reflect the change in how SSOs will be categorized and reported to the state based on the recent SSS WDR Revised Monitoring and Reporting Program (Revised MRP) (WQ 2013-0058-EXEC). Additional recommendations on tasks the City should implement to comply with the Revised MRP are described in **Section 5.9**.

Table 5. SSO Reduction Goals

	FY09/10 – 10/11		FY11/12 – 12/13		FY13/14 – 14/15
	Goal	Actual	Goal	Actual	**Goal**
Mainline SSOs	6[1]	4	6[1]	6	**6**
Lateral SSOs	38[2]	17	38[2]	71	**70**
Category 1 SSOs	0	2	0	2	**0**
Category 2 SSOs	28[3]	19	28[3]	75	**6**
Category 3 SSOs[4]	-	-	-	-	**70**
Total SSOs	**44**	**21**	**44**	**77**	**76**

[1] Based on a goal of 0.6 mainline SSOs per 100 miles of sewer main per year w/ 487 miles of mains.
[2] Based on a goal of 8.0 lateral SSOs per 100 miles of service laterals per year w/ 235 miles of laterals.
[3] Based on a goal of 2.0 Category 2 SSOs per 100 miles of sewer pipe per year w/ 722 miles of total pipe.
[4] Category 3 was added as a new spill definition by State Order No. WQ 2013-0058-EXEC in Sept. 2013.

The SSO performance goals for the period before the next internal SSMP audit are set consistent with the performance metrics set by the City (i.e., number SSOs per 100 miles of pipe per year) and the performance of municipal agencies in the state. The goal for the number of mainline SSOs is based on an aggressive performance measure of 0.6 SSOs per 100 miles of mainline per year. The performance of the City has been consistent against this goal based on the data in **Table 5**, and represents a satisfactory level of service. The goal for the number of lateral SSOs was exceeded during the period of this internal audit. This goal was adjusted to a total of 70 lateral SSOs for the next SSMP audit period. This represents a realistic goal for the City to strive for and represents a reduction in the number of lateral SSOs. This goal represents an average of approximately 15 SSOs per 100 miles of service lateral per year, which is significantly less (i.e., 42% less) than the statewide average of 26 SSOs per 100 miles of pipe for municipal agencies according to past SSO Facility Operational Reports provided by the State Board.

3.2.1 Planned Efforts to Reach Identified SSO Reduction Goals

The following section describes specific changes to be implemented based on the identified SSO trends to meet the target reduction goals in **Table 5**. The discussion of planned efforts is broken down into a number of potential categories (i.e., cleaning, tools, maintenance schedules, BMPs, staffing, funding, and training). It is recommended that these categories for potential changes be revisited with each subsequent SSMP internal program audit to examine if they may apply to future conditions. Changes in each category may not be necessary in each audit, but addresses each category provides a holistic approach to SSO reduction.

Changes to be employed to sanitary sewer system cleaning

No planned changes to current cleaning activities are anticipated to meet SSO reduction goals.

Changes to be employed to sanitary sewer system tools and/or technology

The City has implemented a standard operating procedure to utilize trenchless technology to rehabilitate service laterals that are prone to blockages. After hour service calls are tracked by the City for each sewer service lateral. Once a sewer service lateral receives six after hour service calls, it is lined to minimize root growth.

Changes to be employed to sanitary sewer system maintenance and repair schedules

The City has investigated methods to decrease the growing number of SSOs from laterals. The City reinforced the efforts of its eeling program near the end of FY12/13. More details about the eeling program are outlined in **Section 5.4**. Based on the data collected during the two months that the eeling program has been in effect, there has been marked improvement. The City of Roseville averaged approximately four lateral SSOs per month during the period of this audit. In the two months since the start of the new eeling program, there was an average of one lateral SSO per month. Although the new eeling program has only been in effect for a short time, the preliminary results indicate that it is effective in reducing the number of SSOs from laterals and should be continued. The new eeling program is one of the planned efforts to meet the SSO reduction goals set in **Table 5**.

Changes to be employed to sanitary sewer system best management practices

No planned changes to sewer system best management practices are anticipated to meet SSO reduction goals.

Changes to be employed to sanitary sewer system staffing levels

The City intends to hire one additional staff during the period of the next SSMP audit.

Changes to be employed to sanitary sewer system funding levels

No planned changes to funding levels are anticipated to meet SSO reduction goals.

Changes to be employed to sanitary sewer system training

It is anticipated that training of WWC staff to the revised OERP (see **Section 5.6**) will be required to effective meet the SSO reduction goals.

Measures to Assure No Repeat SSOs

"No repeat overflows from the same location" is one of the City's SSMP goals and one of the performance measures tracked over time. The City employs various strategies to meet the goal of no repeat SSOs from the same location. The City completes a System Failure Form for every SSO that occurs to identify any potential for a repeat blockage.

Table 6 describes the related sanitary sewer system rehabilitation and capital improvement projects, including schedules and costs, planned before the next SSMP internal program audit.

Table 6. Planned R&R and CIP Projects Planned Before Next SSMP Audit

Project	Year	Cost
Atkinson / Dry Creek Crossing	2013	$ 314,500
Shadowbrook Lift Station Rehab and Replacement	2014	$ 525,000
2012 CIPP Rehab Project	2014	$ 1,890,000
Wastewater Interceptor Inspection and Assessment	2014	$ 500,000
Sewer Line / Clean Out / Sewer Service Upgrades	2014	$ 300,000
WW – Technology Replacement	2014	$ 50,000
Sewer Manhole Upgrade	2014	$ 250,000
2013 CIPP Rehab Project	2015	$ 1,890,000
Sewer Line / Clean Out / Sewer Service Upgrades	2015	$ 300,000
WW – Technology Replacement	2015	$ 50,000
Sewer Manhole Upgrade	2015	$ 250,000

Table 7 describes the target goals for time between notification of a potential SSO and arrival on scene for containment (i.e., SSO response time) under varying conditions.

Table 7. Goals for SSO Response Time

Condition	Goal
During normal business hours	40 minutes
After business hours / holidays	40 minutes

SECTION 4 Audit Procedure

Per SSS WDR Section D.13.x, the objective of this audit is to focus on evaluating the effectiveness of the SSMP and the City's compliance with the SSMP requirements identified in the SSS WDR order. This section describes the procedure used to accomplish this objective.

4.1 Review of SSMP Compliance

An assessment of the City of Roseville's SSMP was conducted as part of the audit against the requirements outlined in the SSS WDR. The subsections of **SECTION 5** below are organized by SSMP element. Each subsection contains a table which lists the requirements of section D.13 of the SSS WDR for the respective SSMP element and indicates the level of compliance of the SSMP against that requirement. The compliance status of the City's SSMP is indicated with one of the following ratings; *1 - in compliance, 2 - not in compliance, or 3 – N/A with written justification in SSMP*. If there are deficiencies with regards to compliance, an explanation of the deficiency is given. Each deficiency will have associated SSMP enhancements which may include action items, SSMP adjustments, and/or timelines of planned completion.

4.2 Review of SSMP Effectiveness

Subsequent to the indication of the level of compliance of the SSMP in relation to the requirements of the SSS WDR, an evaluation of the effectiveness of the SSMP elements will be conducted to comply with the requirements for SSMP audits per subsection D.13.x of the SSS WDR. Where appropriate, recommendations will be made based on the results of this audit to identify tasks to improve the effectiveness of SSMP activities. Wherever possible, performance metrics will be used to measure the effectiveness of SSMP elements. Performance indicators (PIs) will be recommended for SSMP elements that do not currently have a means for quantifiably measuring performance and where it is justified.

A summary of the recommended modifications made throughout this SSMP internal program audit is included in **SECTION 6** – Audit Summary.

SECTION 5 Audit of SSMP Elements

This chapter evaluates all elements of the City's SSMP. Each section of this chapter is associated with one of the eleven elements of the SSMP required by SSS WDR D.13. Each element is evaluated for compliance and effectiveness using the procedure described above in **Sections 4.1** and **4.2**, respectively.

5.1 Goals

5.1.1 Compliance

Table 8. Compliance with SSS WDR D.13.i - Goals

SSMP Requirement	Compliance	Deficiencies
i Properly manage, operate, and maintain all portions of the City's wastewater collection system.	1	-

5.1.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Goals (SSMP 1.2)

- Description of Current Status: The City currently has six goals identified in the SSMP.
- Level of Effectiveness: The goals the City of Roseville recorded in the SSMP have been effective in guiding the activities of the City and support the objective of the SSS WDR to protect waters of the state.
- Recommendations: No recommended modifications at this time.

5.2 Organization

5.2.1 Compliance

Table 9. Compliance with SSS WDR D.13.ii - Organization

SSMP Requirement	Compliance	Deficiencies
ii(a) Identify Legally Responsible Official (LRO)	1	-
ii(b) SSMP responsibility and organization chart	1	-
ii(c) Chain of communication for reporting SSOs	1	-

5.2.2 Effectiveness of SSMP Elements and Recommended Modifications

List Legally Responsible Official (LRO) (SSMP 2.1)

- Description of Current Status: Currently Ken Glotzbach (Utility Manager) and Chris Bracco (Wastewater Collections Superintendent) are registered in the California Integrated Water Quality System (CIWQS) as legally responsible officials as of 9 SEP 2013. This type of information is recorded in Appendix B-1 of the City SSMP, which is accessible to the public via the City website.
- Level of Effectiveness: Posting Appendix B-1 on the City website is effective in communicating the legally responsible officials and data submitters for the City to the public.

- Recommendations: Appendix B-1 needs to be updated to show Ken Glotzbach and Chris Bracco as LROs for the City. Additionally, once Dan Pruden (Wastewater Collections Supervisor) is registered as a Data Submitter in CIWQS, his information should be added to Appendix B-1 and updated on the City website.

SSMP Responsibility Organization Chart (SSMP 2.2)

- Description of Current Status: The SSMP Resposibility Organization Chart (SSMP Figure 2-1) is current in the SSMP, with descriptive definitions of each individual's responsibilities. Additionally, a narrative of "general position descriptions" are outlined in section 2.2 of the SSMP.
- Level of Effectiveness: The chart is effective in defining the work flow and responsibilities of the individual as well as departments within the City of Roseville's operations with relation to the SSMP.
- Recommendations: No recommended modifications at this time.

Chain of Communication Reporting Chart (SSMP 2.3)

- Description of Current Status: The internal notification contact chart is current and readily available to all faculty members of the waste water utility district. The City of Roseville has a 24 hour call center and a full time staff wastewater utility customer service representative. This individual's job is to respond to any service calls including but not limited too; backups, SSOs, smell complaints, etc.
- Level of Effectiveness: This has been effective as represented in customer notification to operator arrival time average is 23 minutes during business and non-business hours over the past two fiscal years. This average time is well below the target of 40 minute arrival time. There is only one instance that the operator arrival time exceeded the target 40 minutes in the past two year. This track record indicates the right people are getting the information to correct staff members make a quick decision to respond and mitigate the SSO.
- Recommendations: Figure 2.2 in SSMP section 2.3 has typographical errors. There is text missing. The figure found in SSMP Appendix F-1 (1) - *SSO Procedures Flowchart* is the same chart, but includes all of the text. WWE recommends reinserting the figure from Appendix F-1 (1) into section 2.3 of the SSMP with the corrections made.

  Appendix B-3 includes a call list of staff members who are on call during non-business hours; this is out of date, but also unnecessary. WWE recommends the City develop a SOP for the call center procedures for receiving calls and mobilizing field staff. A call list may be kept internally as deemed necessary by the City.

5.3 Legal Authority

5.3.1 Compliance

Table 10. Compliance with SSS WDR D.13.iii – Legal Authority

SSMP Requirement	Compliance	Deficiencies
iii(a) Prevent illicit discharges	1	-
iii(b) Properly designed and constructed sewers	1	-
iii(c) Ensure access to laterals owned/maintained by City	1	-
iii(d) Limit the discharge of FOG and other debris	1	-
iii(e) Enforce any violation of City ordinances	1	-

5.3.2 Effectiveness of SSMP Elements and Recommended Modifications

Industrial Pretreatment Program (SSMP 3.2)

- Description of Current Status: The Industrial Waste Section (IWS) administers the Pretreatment Program Enforcement Response Plan and implements enforcement procedures specified by the U.S. EPA in accordance with 40CFR 403.5 (f) (5). The IWD has the authority to permit and monitor significant industrial users (SIUs) and small commercial/industrial dischargers.
- Level of Effectiveness: The implementation of the Pretreatment Program Enforcement Response Plan has been effective in providing the City the authority to control and prevent illicit discharges to the collection system.
- Recommendations: No recommended modifications at this time.

Municipal Code and Design and Construction Standards (SSMP 3.3)

- Description of Current Status: The City's design and construction standards regulate the preparation of plans for construction of additions/improvements to the sewer. The Roseville Municipal Code (RMC) section 14.12.040 requires that building sewers and connection into the public sewer system conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City. The RMC also requires an installation of a lateral line clean out at the point of connection with the public sewer.
- Level of Effectiveness: The City design and construction standards and the RMC section 14.12.040 have been effective in providing the City the legal authority to properly design and construct the sewers and connections.
- Recommendations: No recommended modifications at this time.

Municipal Code – Sewer Access Authority (SSMP 3.4)

- Description of Current Status: The Charter in the RMC, Article X Sec. 10.01 designates the authority to access City owned and operated facilities, either within or outside its corporate limits, for a number of activities including, but not limited to maintenance, inspection, and repair related to sewage collection.
- Level of Effectiveness: This authority gives legal access to all City-owned sewer facilities. The City has not had issues to date with lack of access to facilities based on legal authority. The current legal authority to access sewer facilities has been effective in supporting the goals of the SSMP.
- Recommendations: No recommended modifications at this time.

Municipal Code – FOG (SSMP 3.5)

- Description of Current Status: The RMC section 14.12.050 provides authority to require grease and grit interceptors when the director deems necessary for proper handling of liquid waste. Chapter 14.14 is the FOG ordinance that provides liquid discharge requirements for Food Service Establishments (FSEs). An FSE must remain in compliance with this ordinance or fees as explained in 14.14.140 can be cited.
- Level of Effectiveness: This ordinance is effective in identifying the required equipment/BMPs for FSEs as well as indicating the authority of the City to enforce the FOG requirements
- Recommendations: No recommended modifications at this time.

Municipal Code – Enforcement Authority (SSMP 3.6)

- Description of Current Status: The RMC section 14.12.060 provides authority to penalize violators of the City's code requirements. An individual may be charged with an infraction or a misdemeanor, at the discretion of the city attorney.
- Level of Effectiveness: The authority to penalize infractions that may cost the City recourses has proven effective to maintain proper use of the wastewater collection system.
- Recommendations: No recommended modifications at this time.

Inter-Agency Agreements and Satellite Systems (SSMP 3.7)

- Description of Current Status: The City of Roseville has the following agreements in effect:
  - Joint Exercise of Powers Agreement for the South Placer Wastewater Authority
  - Agreement Regarding the Operation and use of the South Placer Regional Wastewater Facilities
- Level of Effectiveness: These agreements have proven effective in laying out the legal requirements and responsibilities of the regional partners (City of Roseville, South Placer Municipal Utility District, and Placer County) with regards to planning, financing, acquisition, ownership, construction, and operation of Regional Wastewater Facilities for the treatment of the wastewater collected and conveyed through the City's collection system, and treated at the Regional Wastewater Facilities.
- Recommendations: No recommended modifications at this time.

5.4 Operation and Maintenance Program

5.4.1 Compliance

Table 11. Compliance with SSS WDR D.13.iv – O&M Program

SSMP Requirement	Compliance	Deficiencies
iv(a) Collection system maps	1	-
iv(b) Preventive O&M activities	1	-
iv(c) Rehabilitation and Replacement (R&R) plan	1	-
iv(d) Training	1	-
iv(e) Equipment and critical replacement parts	1	-

5.4.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Collection System Maps (SSMP 4.2)

- Description of Current Status: The City maintains electronic and hard copy maps of the sanitary sewer system and storm drain system. The electronic mapping data are accessible in the City's GIS and hard copy maps are located in the various utility department offices and field crew trucks.
  Maps are updated with new sub-divisions, repairs, or rehabilitation or replacement of assets that require updating of the maps. The City Mapping Update Policy is followed in order in ensure mapping is correct and completed in GIS and made available to the required users.

- Level of Effectiveness: The City meets the requirements of section D.13.iv(a) of the SSS WDR for maintaining up-to-date mapping. However, the City currently has not identified the number and length of pipeline in the collection systems that is located in easements. Doing so will assist the City in identifying assets located in areas that are potentially difficult to access, thus increasing the risk of identifying and/or responding to SSOs from those locations.
- Recommendations:
    - Include the Mapping Update Policy document as an appendix to the SSMP and post it on the City's SSMP page of its website.

Roseville Preventive Operations & Maintenance Activities (SSMP 4.3)

- Description of Current Status: The audit identified and verified that the WWC engages in programs to complete the following routine preventative O&M programs/activities: cleaning program, CCTV inspection, visual inspection, regular maintenance, construction/repair, rehabilitation projects, customer service, and staff support.

  In response to the increased number of SSOs from laterals over the last two years, the City has reassigned one additional crew to the eeling program for service lines. Eeling is a mechanical cleaning process used to remove roots or blockages.

  The City has SOPs for both office and field workflows related to CCTV inspection work. SSMP appendices D-4 and F-4 are the same SOP for SSO Containment and Mitigation. The SSMP identifies that the City has standard operating procedures for SSO response and mitigation, backhoe operation, sewer cleaning equipment, locating and marking USAs.
- Level of Effectiveness: The City sets a number of metrics to measure the performance of the O&M activities, which are listed in SSMP section 9.4. The performance measures related to the O&M activities are listed in **Table 12**. The table also lists the targets for each performance measure and the actual performance accomplished in FY11/12 and FY12/13. The table shows that the City has met or exceeded the target level of performance in all of the measures that have a target.

Table 12. Performance Measures related to SSS WDR D.13.iv(b)

Performance Measure	Target	FY11/12	FY12/13
Total miles cleaned per year	250	277	272
Total miles of mechanical root control per year	-	9.74	11.23
Total number of sewer maintenance field staff	NA	23	23
Average high velocity cleaning per crew per day	NA	1866 LF	1852 LF
Average cost of sewer mechanical cleaning	-	$1.57 /LF	$1.36/LF

The City's recent effort to bolster its eeling program has initially shown a high level of effectiveness. As mentioned in **Section 3.2.1**, the number of SSOs from laterals has dropped from four SSOs per month on average to one SSO per month on average after the initiation of the changes to the eeling program.

The SOPs for preventative maintenance work are in their preliminary stages and could be more effective if they were finalized and documented for frequent use. The SOP WWC – 01 for SSO Containment found

in the SSMP appendices, could be used as a template for standardizing the development of the remaining SOPs.

- Recommendations:
  - Identify targets for all performance measures so that data collected can be compared to a goal to assess performance and the effectiveness of SSMP activities. A comprehensive review of benchmarks or performance measures/indicators is discussed in the recommendations of **Section 5.9**.
  - Continue the efforts of the recently revised eeling program due to the immediate impact on the frequency of SSOs from laterals. Data on the number of lateral SSOs per month should be monitored so that the impact of these efforts can be evaluated at the time of the next internal SSMP audit.
  - Develop SOPs for the regular preventative maintenance activities using SOP-WWC-01 as a template. The following is a list of suggested SOPs based on the activities currently tracked with performance measures:
    - Lift station maintenance
    - Receiving and responding to customer service request

Rehabilitation and Replacement Plan (SSMP 4.4)

- Description of Current Status: Pipelines and manholes are regularly inspected in accordance with the City's WWC Capital Improvement Plan, which began in 2006. The NASSCO rating system is used to document observations and rate defects. The length of pipeline and the number of manholes inspected each year are tracked with performance measures. The City evaluates the risk of failure for each asset based on the various data sources it maintains (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections) and assigns high risk assets to the Rehabilitation and Replacement (R&R) Plan.

  The City keeps a list of known R&R CIP projects that is developed and maintained by the Rehabilitation Manager. This list outlines the planned projects over the next five year to rehabilitate the system and includes information such as; the year of action, the project budget, the bid amount for current projects, the project status (e.g., in design, in construction, in punch list, completed), and tracking of various milestones.
- Level of Effectiveness: The City sets a number of metrics to measure the performance of the WWC activities, which are listed in SSMP section 9.4. The performance measures related to the inspection activities and R&R program are listed in **Table 13**. The table also lists the targets for each performance measure and the actual performance accomplished in FY11/12 and FY12/13. The table shows that the City has met or exceeded the target level of performance in all of the measures that have a target, with one exception. In FY11/12 the City missed its goal for total miles of CCTV inspection by 0.8 miles (2.7% of the goal). The City responded in the following fiscal year by more than doubling the targeted goal for CCTV inspection.

Table 13. Performance Measures related to SSS WDR D.13.iv(c)

Performance Measure	Target	FY11/12	FY12/13
Total miles visually inspected per year (not CCTV)	-	0.25	0.25
Independent manhole inspections per year	1054	1424	1328
Number of laterals rehabilitated using CIPP per year	50	134	50
Total miles CCTV inspected per year (main)	30	29.2	67.6
Average cost of CCTV	-	$0.48/LF	$0.56/LF

The known R&R CIP projects list has proven effective in identifying and planning the projects to be completed to address high risk areas of the system.

- Recommendations: The following recommendations are given to increase the effectiveness of this SSMP element:
    - Develop SOPs for regular inspection activities using SOP-WWC-01 as a template. The following is a list of suggested SOPs based on the activities currently tracked with performance measures:
        - Alarm testing of lift stations
    - Document the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data.

Training (SSMP 4.5)

- Description of Current Status: The WWC require all employees to be certified with CWEA, DMV, CPR, First Aid, Confined Space Policy, and Gas Detector Policy, as well be trained in equipment safety, maintain OSHA rules, and review material safety data sheets.
- Level of Effectiveness: The training program has been effective in safe, well-trained staff. Over this audit period the City has reported three on-the-job accidents; two in FY11/12 and one in FY12/13. The City strives for zero on-the-job accidents and uses the training programs to improve safety at work.
- Recommendations:
    - The SSMP internal audit from FY10/11 stated that NASSCO training for condition assessment should be added to SSMP Element 4.5. The City implements the NASSCO rating system for collecting condition assessment data and provides this training to the WWC staff. While this is not a requirement of the SSS WDR, the City needs to decide if this training will be referenced in SSMP Element 4.5.
    - Use the SOPs recommended to be developed in this section as a training tool for WWC staff. The SOPs can also be used to inform contractors working in the system of the role they play in responding to and mitigating potential SSOs.

Equipment and Critical Replacement Parts (SSMP 4.6)

- Description of Current Status: The equipment inventory is found in Appendix D of the SSMP. WWC equipment use is monitored and maintained by the following persons:
    - WWC Superintendent – Equipment
    - Materials Technician – Pipes, manholes

- Mechanical Maintenance – Lift station equipment and appurtenances

The City currently has critical parts on hand but there are limited records about those parts. Appendix D-7 of the SSMP contains a matrix of the City lift stations and the types of critical spare parts (i.e., bubbler compressor, PLC cards, pumps, fuses, level control, radio telemetry, and heater/overloads).

- Level of Effectiveness: The City has experienced one SSO related to a lift station failure since 2007. The SSO occurred in 2008 as a result of a failed bubbler line, which caused the lift station to shut down. The volume of this spill was only 10 gallons due to the quick response of City staff and all 10 gallons were recovered. However, this lift station that caused the SSO is one of the smallest in the system with regards to flow rate. Although the probability of a lift station failure may be low based on the low frequency of SSOs from lift stations in the past, the consequence of such a failure could be very high and justifies the need for up-to-date records of critical spare parts.
- Recommendations:
  - The SSMP identifies the WWC Superintendent as the person responsible for maintaining lists of the equipment and critical spare parts. The position directly responsible for tracking equipment and maintaining up-to-date equipment and critical spare parts lists is Materials Technician. The SSMP should be updated to correctly reflect the responsible party for equipment and critical spare parts.

5.5 Design and Performance Provisions

5.5.1 Compliance

Table 14. Compliance with SSS WDR D.13.v – Design and Performance Provisions

SSMP Requirement	Compliance	Deficiencies
v(a) Sanitary sewer design and construction specifications	1	-
v(b) Procedures and standards for inspecting and testing new and R&R projects	1	-

5.5.2 Effectiveness of SSMP Elements and Recommended Modifications

Sanitary Sewer Design and Specifications (SSMP 5.2)

- Description of Current Status: The City's design and construction standards are available on the City website. These designs encompass the design needs for the waste water system for the City of Roseville. These standard details are available on records in the county office as well as on the City's website. The operating procedure for testing of new constructed pipes is clear and effective in determining readiness of newly constructed pipe. City specifications are updated as needed.
- Level of Effectiveness: These design and construction standards are effective in ensuring that new or rehabilitated infrastructure is designed and constructed in a manner acceptable to the City.

- Recommendations: No recommended modifications at this time.

Sanitary Sewer System Construction and Performance Provisions (SSMP 5.3)

- Description of Current Status: Section 91-12 of the City's Sanitary Sewer Construction Standards defines the criteria for testing and cleaning of installed sewer improvements. There is a punch list that must be followed to indicate compliance with this measure to ensure proper construction.
- Level of Effectiveness: This process lessens the chance of pipe failure by verifying, through proper testing, that new construction and rehabilitation work are completed correctly.
- Recommendations: No recommended modifications at this time.

5.6 Overflow Emergency Response Plan

5.6.1 Compliance

Table 15. Compliance with SSS WDR D.13.vi - OERP

SSMP Requirement	Compliance	Deficiencies
vi(a) Proper notification procedures	1	-
vi(b) Program for appropriate SSO response	1	-
vi(c) Procedure for prompt notification to regulatory agencies	1	-
vi(d) Procedures for appropriate staff and contractor training	1	
vi(e) Procedures to address emergency operations (e.g., traffic, crowd control)	1	-
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	1	-

The State Water Board amended the monitoring and reporting program (MRP) with revised requirements (Revised MRP WQ 2013-0058-EXEC) that took effect September 9, 2013. The revised requirements are available at the State Water Resources Control Board's Sanitary Sewer Overflow Reduction Program website (http://www.waterboards.ca.gov/water_issues/programs/sso/). The changes from these revised requirements include the type data that must be collected in the event of an SSO and the follow up reporting that is required.

- Recommendations:
  - Complete all unpopulated fields in the revised "Collection System Questionnaire" in CIWQS. Enrollees have six months from the date that the revised MRP became effective to complete the questionnaire. This means that the questionnaire must be completed by approximately March 9,

2014. If this questionnaire is not completed by that time, the system will lock the Enrollee out from all reporting capabilities.

5.6.2 Effectiveness of SSMP Elements and Recommended Modifications

Notification Procedures (SSMP 6.2)

- Description of Current Status: The notification procedures are available in the on-call service vehicles and in the main office. The procedures include an easy to read flow chart with corresponding action items including contact information for the parties that require notification during an SSO event.
- Level of Effectiveness: The measures taken to ensure proper notification have been effective in providing prompt notification to the required parties based on various SSO scenarios. This is evident in the fact that the average SSO response time is just under 24 minutes for this audit period.
- Recommendations: No recommended modifications at this time.

Response Program (SSMP 6.3)

- Description of Current Status: The response procedure are documented in Appendix F-1 Section 2 of the SSMP and are summarized in a flow chart of actions required to respond to and mitigate a SSO.
- Level of Effectiveness: The flow chart steps through a series of yes/no questions to guide SSO responders to on the sequence of actions to proper assess and mitigate a SSO. This chart is simple and effective in explaining a process in which to mitigate an SSO.
  The SSO Response Program has been effective in responding and mitigating SSOs. This is evident in the fact that the average SSO duration is under 18 minutes. The average spill volume is less than 27 gallons and the average volume of SSO recovered is just over 21 gallons. The SSO response crew recovers on average almost 80% of a SSO. These averages come from the SSO data from this audit period (i.e., last two fiscal years).
- Recommendations:
  - Figure 6.2 in SSMP section 6.3 has a typographical error. There is text missing in some of the decision boxes. The same figure is in SSMP Appendix F-1(1) without the missing text. WWE recommends reinserting the figure with the corrections made or removing the figure from the SSMP and only reference Appendix F-1(1).
  - Section 2.I.A of the City SSO Response Procedures indicates that the time a call was received notifying the City of a SSO will be used as the SSO start time on the forms reported to CIWQS. WWE recommends that the City develop a SOP for estimating the start time of SSOs to include additional methods for examining possible start times to support the SSO start time entered into CIWQS.
  - The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the

decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station.

Regulatory Notification Procedure (SSMP 6.4)

- Description of Current Status: The Superintendent and Utility Manager are the legally responsible officials (LRO) for certification of SSO reports submitted to CIWQS data base. Also the Superintendent and Supervisor are responsible for reporting SSO to RWQCB, OES and Placer Environmental Health Department as necessary.
  Level of Effectiveness: This section clearly indicates the responsibility of the LRO regarding reporting SSO events to the proper authorities. To date, the City has not encountered a situation in which notification information for a required party was not available to City staff responding to a SSO.
- Recommendations: No recommended modifications at this time.

Staff and Contractors Training (SSMP 6.5)

- Description of Current Status: Each employee is required to complete SSO response procedure training. Updates and review of SSO training are included in the weekly tailgate meeting throughout the year. Contractors are also required to implement the procedures identified in the SSO training prior to working within the collection system.
- Level of Effectiveness: The implementation of the training program has been very successful as indicated in the historical data. Response and mitigation times of SSOs are almost half of the WWC set target time of 40 minutes.
- Recommendations: No recommended modifications at this time.

Emergency Response Coordination (SSMP 6.6)

- Description of Current Status: Employees are required to complete Emergency Action plan training annually. This covers HAZ WOPER 1st responder and Roseville's Incident Command System (ICS). These procedures, processes and systems are also reviewed through the year in weekly safety tail gate meetings.
- Level of Effectiveness: Training with HAZ WOPER is an effective way to ensure safety of the staff members when dealing with hazardous waste and materials.
- Recommendations: No recommended modifications at this time.

Spill Mitigation and Containment Procedure (SSMP 6.7)

- Description of Current Status: An SSOERP is available for staff to review and following during an emergency which includes an SOP for spill mitigation and containment.
- Level of Effectiveness: The SSOERP is comprehensive with indication of proper responsibilities as well as SOPs for containment (SOP WWC-01) and spill rate estimation (Section 5 of SSOERP).
- Recommendations: No recommended modifications at this time.

5.7 FOG Control Program

5.7.1 Compliance

Table 16. Compliance with SSS WDR D.13.vii – FOG Control Program

SSMP Requirement	Compliance	Deficiencies
vii(a) Public education plan	1	-
vii(b) FOG disposal plan	1	-
vii(c) Legal authority to prohibit SSOs and blockages caused by FOG discharges	1	-
vii(d) BMPs, grease removal devices, recordkeeping, and reporting requirements	1	-
vii(e) Authority to inspect and enforce FOG ordinance	1	-
vii(f) FOG Characterization Assessment and Hot Spot Cleaning Schedule	1	-
vii(g) FOG Control Program Measures	1	-

5.7.2 Effectiveness of SSMP Elements and Recommended Modifications

Public Education Plan (SSMP 7.2)

- Description of Current Status: There is a comprehensive FOG outreach program to residents, restaurants and the plumbing community on the proper disposal of FOG that the WWC adopted in May 2006. The main objective is to educate City of Roseville residents and restaurants on the proper disposal of FOG to meet or exceed outreach standards set forth in the State General WDR Requirements.
- Level of Effectiveness: This program implements modern media communication technologies; TV advertisements, flyers, inter-active website information, and information printed on monthly statements. The Public Education Plan recommends reaching out to K-12 schools to provide public education about the issues related to proper disposal of materials to the collection system. The efforts the City has made to incorporate multi-media information and target future users of the system appear to be effective in reaching the objective of educating the public on the proper disposal of FOG and other substances.
- Recommendations:
    - List Sean Bigley as the responsible party for the FOG Public Education Plan.

FOG Disposal Plan (SSMP 7.3)

- Description of Current Status: The Lab/Industrial Waste Supervisor oversees the Industrial Waste Pretreatment Program and FOG control program. Each food service establishment (FSE) is required to obtain a FOG wastewater discharge permit (FOG WDP). There are currently 294 permitted FSEs in the City. The Lab/Industrial Waste Supervisor oversees the inspection of permitted FSEs. A FOG WDP holder is required to keep all manifests, receipts and invoices of all cleaning, maintenance, grease removal from the grease control device, disposal carrier and disposal site location for no less than three years.

The City provides information about the permitting process and permit applications on the City website (address below) as a resource for businesses within the City.
http://www.roseville.ca.us/eu/wastewater_utility/fats_oils_n_grease/businesses.asp
City residents are offered free curbside pickup of FOG services that can be scheduled with the City. This helps ensure that FOG from residential units is properly collected and disposed. Information about the FOG pickup program can be found at the link below.
http://www.roseville.ca.us/eu/wastewater_utility/fats_oils_n_grease/residential.asp

- Level of Effectiveness: The City has developed a comprehensive FOG disposal program to address the various dischargers of FOG to the collection system. This program appears effective because the City has only had two FOG-related SSOs over the audit period (less than 3% of the total spills). This indicates that amount of FOG being disposed into the collection system is manageable and the FOG disposal program is meeting its objective in limiting the amount of FOG.
- Recommendations: No recommended modifications at this time.

Record Keeping Requirements (SSMP 7.4)

- Description of Current Status: The RMC Section 14.14.260 – "Recordkeeping requirements" includes a list of items that may be required to be kept for no less than three years and made available upon request of a FOG inspector/Industrial Waste technician or City representative. The SSMP further identifies which of these recordkeeping items is mandatory for a FSE and which items may be deemed mandatory at the discretion of the City.
- Level of Effectiveness: The recordkeeping requirements and timeframes identified in the RMC have been effective in providing the City the information necessary to enforce permit requirements of FSEs.
- Recommendations: No recommended modifications at this time.

Legal Authority to Prohibit SSOs and Blockages Caused by FOG Discharges (SSMP 7.5)

- Description of Current Status: The RMC section 14.12.050 provides authority to require grease and grit interceptors when the director deems necessary for proper handling of liquid waste. Additionally, chapter 14.14 of the RMC defines the City's FOG ordinance and provides the authority to implement its FOG control program, prohibit SSOs and blockages caused by FOG, and limit the concentration of FOG as set forth in RMC section 14.26.140.
- Level of Effectiveness: These codes are effective in organizing the type of equipment required to reduce FOG discharged from FSEs, as well as indicating the authority of the City to prohibit SSOs and blockages due to FOG. The City FOG Ordinance is also effective in a practical way because if the City has reason to believe that a FSE or residence is contributing too much FOG, it can numerically test the effluent from the property against the concentrations limits set in RMC section 14.26.140 to identify if there is a violation.
- Recommendations: No recommended modifications at this time.

BMP, Grease Removal Devices, Recordkeeping, and Reporting Requirements (SSMP 7.6)

Description of Current Status: The Industrial Waste Section requires that all FSEs have best management practices (BMPs) in accordance with the City FOG ordinance. Also each FSE must have an appropriately

sized grease removal device per the Uniform Plumbing Code and they must maintain records as outlined in section 7.4 of the SSMP.

The City provides information about BMP requirements, BMP posters, and BMP information sheets on the following topics; proper grease disposal, requirements for new and remodeled FSEs, grease interceptor maintenance, grease trap maintenance, selecting a grease hauler, a list of licensed grease haulers, dumpster maintenance, and equipment cleaning on the City website (address below) as a resource for businesses within the City.

http://www.roseville.ca.us/eu/wastewater_utility/fats_oils_n_grease/businesses.asp

The City supplements the information provided on its website through onsite inspections/meetings with FSEs to reinforce the level of understanding of the FOG program and its requirements.

- Level of Effectiveness: The City's efforts to disseminate information regarding BMPs, grease removal devices and the associated record keeping and reporting requirements have been effective.
- Recommendations: No recommended modifications at this time.

Inspection and Enforcement Authority – FOG Producers (SSMP 7.7)

- Description of Current Status: All FSEs that discharge wastewater containing FOG into the sewer system are required to obtain a Fat, Oil, and Grease Water Discharge Permit (FOG WDP) from the City. FOG WDPs are expressly subject to all provisions of the ordinances and regulations regarding FOG, charges for use, and violation fees established by the City. The RMC section 14.14.290 provides City representatives right of entry to access and inspect permitted FSEs.

  The City currently has 294 FSEs subject to FOG control that are connected to its system. All 294 FSEs are permitted under the City's FOG control program. Over the past 12 months, all 294 of the FSEs received a FOG inspection. During that same time zero enforcement actions were initiated. The Industrial Waste Section plans to conduct 294 FOG inspections (i.e., every FSE again) in the next 12 months.
- Level of Effectiveness: Over the period of this audit, two SSOs (less than 3% of the total spills over the audit period) were caused by blockages in the collection system due to FOG. The total volume of wastewater that left the system as a result of these two spills was 77 gallons or less than 4% of the total volume of wastewater spilled during the audit period. As identified in **Section 3.1** above, FOG is not a significant contributor the number or volume of SSOs. If FOG were a significant contributor to SSOs, then it would be expected that the number of enforcement actions might be higher and potentially taken against FSEs contributing to the blockages. However, the low number of FOG-related SSOs correlates with the low number of FOG-related enforcement actions.

  Currently, the communication between IWS and WWC departments is limited regarding the correlation between pipelines with deposits of FOG and FSEs with poor maintenance of BMPs and grease removal devices.
- Recommendations:
  - Schedule routine meetings between WWC and IWS to share findings from preventative maintenance activities and FSE inspections to identify FSEs who are negatively impacting the collection system by discharging excessive amounts of FOG. An active FSE inspection program and communication of inspection results is key to a FOG control program.

FOG Characterization Assessment and Hot Spot Cleaning Schedule (SSMP 7.8)

- Description of Current Status: The City conducted a FOG characterization assessment of the system that established a hot spot cleaning schedule. This schedule includes quarterly, semiannually, and annually cleaning to ensure that FOG is controlled in these lines that are subject to FOG blockages. Additionally, each hot spot is CCTV inspected once each year to verify the cleaning schedule is adequate to mitigate the probability of a FOG blockage. The cleaning schedule and records of cleaning are documented in the CMMS. The City currently has 101 pipeline segments on the hot spot cleaning schedule.
- Level of Effectiveness: The City's aggressive hot spot cleaning schedule has proven effective in limiting the number of SSOs due to FOG blockages.
- Recommendations:
    - Develop a SOP describing the process of how pipelines are added to the hot spot cleaning schedule, how the cleaning frequency (i.e., quarterly, semiannually, annually) for each hot spot is initially set, and how the cleaning frequency for an individual hot spot may be adjusted over time.
    - SSMP section 7.8, paragraph three contains a typographical error. It states that "sewer line maintenance work orders are issued and completed to ensure that hot spot lines **do** have grease blockages/SSOs between cleaning schedules". The word "do" should be changed to "do not".

FOG Control Program Measures (SSMP 7.9)

- Description of Current Status: The Industrial Waste Section has instituted a FOG waste discharge permit (FOG WDP) as the method of source control for FSEs. A FSE must obtain a FOG WDP before it is able to discharge to the public sewer per the RMC section 14.14.030. The City uses the FOG WDP as a means to apply incremental and progressive discipline if permit holders are in violation of the FOG ordinance until performance measurements are met.
- Level of Effectiveness: This City's FOG source control measures have proven effective during the period of this audit with respect to the low number of FOG-related SSOs.
- Recommendations: No recommended modifications at this time.

5.8 System Evaluation and Capacity Assurance Plan

5.8.1 Compliance

Table 17. Compliance with SSS WDR D.13.viii - SECAP

SSMP Requirement	Compliance	Deficiencies
viii(a) Evaluate hydraulic deficiencies	2	The schedule is to be reviewed and updated consistent with the SSMP review and update requirements in SSS WDR D.14 (i.e., every 5 years). The schedule is 7 years old.
viii(b) Establish design criteria	1	-
viii(c) Establish short- and long-term CIP	1	-
viii(d) Develop schedule of completion dates for CIP	1	-

5.8.2 Effectiveness of SSMP Elements and Recommended Modifications

Evaluation Process – Capacity Enhancement Projects (SSMP 8.2)

- Description of Current Status: The City developed two hydraulic models (i.e., the Roseville Model Project and the South Placer Wastewater Authority (SPWA) Wastewater Systems Evaluation Project) to identify peak flows in each collection system component (i.e., pipe and pump station). The evaluation of hydraulic capacity using these two models identified potential deficiencies and recommended improvements. Additionally, the City has started the process of evaluating the hydraulic capacity of the collection system again.
- Level of Effectiveness: Appendix I-1 of the SSMP indicates that the system evaluation & capacity assurance plan will be reviewed and updated every five years. The Roseville Model Project and the SPWA Wastewater Systems Evaluation Project were both conducted in 2006 (seven years ago). According to the SSMP, the system should have been reevaluated in 2011. However, the modeling efforts conducted in 2006 have been effective in evaluating the system and planning for future capacity.
- Recommendations: Complete the recently initiated capacity assessment so that changes to the system can be updated and recent flow monitoring results can be used to update findings to reflect current conditions and revisions to planned development. The City should consider revising the planned frequency for system evaluation updates if a frequency of five years is not warranted based on system needs.

Design Criteria (SSMP 8.3)

- Description of Current Status: The City established a 10-year 24-hour peak wet weather design storm for the evaluation of existing collection system components and sizing of new collection system components. This included the development of wastewater flow generation factors based on water use records and flow monitoring data.
- Level of Effectiveness: A 10-year 24-hour peak wet weather design storm has been effective in accounting for the impact wet weather on the system and planning for system improvements. In December 2012, a

storm occurred that resulted in two Category 1 SSOs that were caused by excessive rainfall as reported to CIWQS. This was actually one SSO that had two appearance points. The appearance points were two manholes that are located next to a utility path/bike path that runs along a tributary to Linda Creek. The combined SSO volume was approximately 400 gallons, all of which flowed into the creek. Considering the relatively small SSO volume that resulted from the rainfall event, the existing design storm appears sufficient.

- Recommendations: Add documentation to internal SSO reports showing that the amount of precipitation over a 24-hour period exceeded 2.82 inches if the cause of the SSO is identified as "rainfall exceeded design". The lower bound of the 10-year 24-hour precipitation frequency estimate with a 90% confidence interval from the NOAA Atlas 14, Volume 6, Version 2 data for the Rocklin (station ID 04-7516) is 2.82 inches.

  Investigate excessive I/I observed from satellite agencies (e.g., observed peaking factors) associated with storms that caused an SSO to document the correlation between the SSO and the excessive offsite I/I.

Capacity Enhancement Measures (SSMP 8.4)

- Description of Current Status: The SPWA Wastewater Systems Evaluation includes the identification of short and long-term Capital Improvement Projects (CIP) to meet current and future build-out flow projections for trunk sewers larger than 15 inches. Two capacity deficiencies under peak wet weather scenarios were identified in the SPWA Wastewater Systems Evaluation. The Roseville Model Project did not include the identification of capacity improvement projects.
- Level of Effectiveness: The Roseville Model Project evaluated the capacity of every pipe within the City collection system. However, the project did not identify measures to address capacity deficiencies. Appendix H-1 of the SSMP states that the process of identifying projects to address capacity deficiencies will be performed by the City at a later date.
- Recommendations: No recommended modifications at this time.

Capital Improvement Program Schedule (SSMP 8.5)

- Description of Current Status: The following table lists the projects that are identified in the SPWA Wastewater Systems Evaluation that identify the City as the agency with the primary responsibility for the project. The other projects identified in the SPWA Wastewater Systems Evaluation do not list the City as the agency with primary responsibility, so they are not considered in this audit.

Table 18. Schedule of CIPs to Address Capacity Deficiencies

CIPs (from SPWA Report)	Responsible Agency	Assigned Date	Completed Date	Revised Date
Improvement Project 5 – Area D	Roseville	APR 2006	SEP 2006	NA
Improvement Project 6 – Area E	Roseville	APR 2006	NA	NA

SSMP Appendix H-1 states that the SPWA project at Area D, which consisted of installing a diversion structure to shed approximately 1.1 mgd at manhole B06-313 to the existing 33-inch trunk sewer, was

completed by the fall of 2006. Flow monitoring of Area E was completed and following the evaluation of the data, it was determined that the proposed sewer relief project is not required.
The existing CIP schedule is

- Level of Effectiveness: The schedule of capital improvement projects to address potential hydraulic deficiencies in the system has been effective in identifying the tasks needed to assure hydraulic capacity within the collection system.
- Recommendations: No recommended modifications at this time.

5.9 Monitoring, Measurement, and Program Modifications

5.9.1 Compliance

Table 19. Compliance with SSS WDR D.13.ix – MMM

SSMP Requirement	Compliance	Deficiencies
ix(a) Maintain metrics to prioritize SSMP activities	1	-
ix(b) Measure effectiveness of SSMP elements	1	-
ix(c) Assess preventative maintenance program	1	-
ix(d) Update elements based on evaluations	1	-
ix(e) Identify and illustrate SSO trends	1	-

5.9.2 Effectiveness of SSMP Elements and Recommended Modifications

Utility Metrics to Prioritize SSMP Activities (SSMP 9.2)

- Description of Current Status: The City has established four categories of metrics to monitor and measure the effectiveness of the various elements of this SSMP: System Information, Financial Information, Sewer Maintenance, and Performance Measures. In addition to these metrics, the City maintains a number of performance measures related to various SSMP activities. A summary of all of the performance measures tracked by the City is included in **Appendix 7.2** of this internal audit.
- Level of Effectiveness: Appendix I has effectively been used to identify and track the specific metrics in each of the four categories established by the City.
- Recommendations: Update Appendix I-Benchmarking Metrics on City website with information from FY11/12 and FY12/13.

Metrics to Monitor Effectiveness of SSMP (SSMP 9.3)

- Description of Current Status: SSMP Appendix I is a schedule that assigns individual staff members to one or more SSMP element and defines the frequency that each element must be monitored and updated.
- Level of Effectiveness: The City currently tracks performance using a number of metrics. However, none of these metrics are associated with specific SSMP elements. Some of these metrics have identified targets or goals, but not all. These metrics can be used to measure the effectiveness of elements, but without associating metrics with specific SSMP elements and without setting goals for each metric it is difficult to monitor the effectiveness of the SSMP.
- Recommendations:

- Update Appendix I. This appendix includes information from the initial 2007 Implementation Schedule. The initial SSMP implementation and the SWRCB compliance schedule concluded many years ago and does not need to be included in the SSMP. However, the information regarding the continual implementation of the SSMP such as the document location, responsible person, and review frequency should be included.
- Identify the metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals, will help determine how success in those elements, relates to the overall effectiveness of limiting SSOs. Associating metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. **Appendix 7.2** of this internal audit contains a list of PI and associates each one with a SSMP element, a suggested audit frequency, and a person responsible for monitoring that PI. A sample Performance Indicator Assessment Form is included in **Appendix 7.3** of this internal audit. Performance Indicator Assessment Forms can be developed for each metric and assessed periodically by the person responsible, according to the suggested audit frequency for that metric. At the time of the next internal SSMP audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit.
- Consider tracking additional metrics targeted at measuring the effectiveness of SSMP elements that do not currently have metrics associated with them. A list of potential performance measures listed by SSMP element is included in **Appendix 7.2** of this internal audit.

Metrics to Assess Preventative Maintenance Program (SSMP 9.4)

- Description of Current Status: The metrics listed in SSMP section 9.4 are measured, recorded, and analyzed to assess the effectiveness of the preventative maintenance program. **Table 20** below contains a summary of the metrics listed in SSMP section 9.4 as well as other performance metrics tracked by the City in various appendices and reports. The column labeled "Source" identifies which plan, appendix, or report tracks a particular metric.

Table 20. Summary of Current Preventative Maintenance Performance Metrics

Performance Indicator	Unit	Target	Source
Sewer main - flushed	Miles	250	A, B, C, D, E
Service laterals - cleaned	Miles	8	D
Sewer main – visually inspected (not CCTV)	Miles	-	A, B
Manholes – cleaned and inspected	Number	1054	A, D
Manholes - rehabilitated	Number	25	D
Service laterals - rehabilitated	Number	50	A, C, D, E
Service laterals – mechanically cleaned (eeled)	Miles	8	A, E
Sewer main - CCTV inspected	Miles	30	A, B, C, D, E
Service laterals - CCTV inspected	Miles	16	B, D, E
Total number of sewer maintenance field staff	Number	-	A, B
Working staff time to PM program	%	80	D
Total emergency work orders	Number	-	B
Average high velocity cleaning per crew per day	LF/day	-	A, B
Average cost of sewer mechanical cleaning	$/LF	-	A, B
Average cost of hydro cleaning	$/LF	-	B
Average cost of CCTV (main)	$/LF	-	A, B
Average cost of CCTV (lateral)	$/LF	-	B
Cleanouts - installed	Number	100	B, C, D
On-the-Job accidents	Number	0	D, E
Average response time to customer inquiry	Minutes	40	A, D, C

A = SSMP section 9.4
B = SSMP Appendix I
C = WW Collections KPIs
D = Program / Performance Reports
E = Strategic Plan Data

- Level of Effectiveness: The City tracks a number of metrics to quantitatively evaluate the performance of the activities of the preventative maintenance program. This is effective because it allows the City to monitor the performance of particular activities over time and against other metrics (e.g., staffing levels, SSO trends) to determine correlations between the data. However, not all of the metrics have an associated goal, which makes it difficult to assess whether or not that activity is meeting the intended result.
- Recommendations: Using the data collected in SSMP Appendix I as a reference, develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals. See **Appendix 7.2** for a list of potential performance indicators for preventative maintenance activities with responsible parties.

SSMP Performance Monitoring and Update Process (SSMP 9.5)

- Description of Current Status: Individual staff responsibilities for each SSMP element and the frequency that each element must be monitored are defined in SSMP Appendix I. The City tracks revisions/updates to the SSMP using a SSMP Revision Log that is maintained by the LRO. The SSMP Revision Log is a

spreadsheet that chronicles revisions to the SSMP by logging the date of the revision, the SSMP element that was changed, a brief description of the change, and who made the change.

- Level of Effectiveness: The SSMP Revision Log is effective in tracking changes to the SSMP.
- Recommendations: Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. See **Appendix 7.2** for a list of potential performance indicators with the assigned responsible parties.

SSO Trends – Frequency, Location and Volume (SSMP 9.6)

- Description of Current Status: The metrics listed in SSMP section 9.6 are measured, recorded, and analyzed to identify and illustrate SSO trends, including: frequency, location, and volume. **Table 21** below contains a summary of the metrics listed in SSMP section 9.6 as well as other performance metrics tracked by the City in various appendices and reports. The column labeled "Source" identifies which plan, appendix, or report tracks a particular metric.

Table 21. Current Performance Measures to Monitor SSO Trends

Performance Measure	Unit	Target	Source
SSOs - Total number, mains and laterals	Number	-	A, B
SSOs - Total volume, mains and laterals	Gal	-	A, B
SSOs - Total volume recovered	Gal	-	B
SSOs - Total number of wet weather	Number	-	A, B
SSOs - Total volume of wet weather	Gal	-	A, B
SSOs - % of spills caused by FOG (main)	%	-	A, B
SSOs - % of spills caused by roots (main)	%	-	A, B
SSOs - % of spills caused by Vandalism (main)	%	-	A, B
SSOs - caused by LS failures	Number	-	A, B
SSOs - caused by pipe failures	Number	-	A, B
SSOs - % of spill volume caused by FOG (lateral)	%	-	A, B
SSOs - % of spill volume caused by roots (lateral)	%	-	A, B
SSOs - % of spill volume caused by Vandalism (lateral)	%	-	A, B
Customer service requests per year	Number	-	A, B
Sewer odor complaints	Number	-	A, B
Flooding claims per year	Number	-	A, B
Cost of flooding claims per year	$	-	A, B
SSO – Repeats within two years	Number	0	B, C
SSOs - Category 1	Number	0	C, D
SSOs / 100 mi pipe / year - Category 2	Number	2.0	C
SSOs / 100 mi pipe / year - Mainline	Number	0.6	C
SSOs / 100 mi pipe / year - Lateral	Number	8.0	C

A = SSMP section 9.6
B = SSMP Appendix I
C = WW Collections KPIs
D = Program / Performance Reports

- Level of Effectiveness: Data for most of the metrics listed in **Table 21** are tracked annually in SSMP Appendix I and the Program / Performance Report. This allows the City to effectively review trends in SSOs over time.
- Recommendations: Using the data collected in SSMP Appendix I as a reference, set performance goals for the metrics used to illustrate SSO trends. See **Appendix 7.2** for a list of potential performance indicators related to SSO trends.

5.10 SSMP Program Audits

5.10.1 Compliance

Table 22. Compliance with SSS WDR D.13.x – SSMP Program Audits

SSMP Requirement	Compliance	Deficiencies
x Conduct periodic audits	1	-

5.10.2 Effectiveness of SSMP Elements and Recommended Modifications

Audit Procedures, Roles, and Responsibilities (SSMP 10.2)

- Description of Current Status: The City conducts an internal audit biennially with a primary focus on the evaluation of system metrics towards the elimination of preventable SSO and the reduction of the impact of those SSOs that do occur.
  The City developed an audit form as a template to record information produced during internal SSMP audits. This form is included in SSMP Appendix J-2.
- Level of Effectiveness: The internal audit has had success in identifying areas of improvement. The past audit identified two major enhancements and plans were put in place to improve the SSMP. This audit has specified additional recommended enhancements. The regular review of the SSMP is effective in assuring the usefulness of the planned activities.
  The Audit Form in Appendix J-2 assesses the compliance of the SSMP. However, the Audit Form does not adequately evaluate the effectiveness of the SSMP elements. SSS WDR D.13(x) requires that the internal audits evaluate both the *effectiveness* of the SSMP and the Enrollee's *compliance* with the SSMP requirements.
- Recommendations:
  - Post this SSMP internal audit to the City website.
  - Schedule the next internal SSMP audit for July - August 2015.
  - The SSMP must be recertified by the City Council before January 21, 2014. Per SSS WDR D.14, the City must have the SSMP updated and re-certified by the governing board (i.e., City Council) every five years. The City Council approved the original SSMP on January 21, 2009 which sets the date for re-certification on January 21, 2014.

- Revise Appendix J-1 to reflect recommendations for review of performance indicators (i.e., metrics associated with specific SSMP elements and the associated timelines).
- Revise Appendix J-2 (Audit Form) to provide areas in the tables for each SSMP element to conduct an assessment of both 1) the compliance against SSMP requirements and 2) the effectiveness of the SSMP element. Information gathered on the recommended Performance Indicator Assessment Forms should be included in the "Support Documents and Data" section of the Audit Form.

SSMP Program Modification/Update Process (SSMP 10.3)

- Description of Current Status: The City established a program for monitoring and reviewing sewer performance metrics on a periodic basis and the status of each element of the SSMP on a biennial basis. The City conducts internal SSMP audits every two years following the adoption of this SSMP. The Wastewater Utility Manager is assigned to initiate/direct corrective action when and if SSMP deficiencies are identified between/during periodic internal audits.
- Level of Effectiveness: The City has been prompt in responding to deficiencies/enhancements identified during regular reviews of SSMP data and during formal internal audits as documented in the City's SSMP Revision Log.
- Recommendations:
  - Document the submittal process for proposed changes to the SSMP. The process may include, the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes.

5.11 Communication Program

5.11.1 Compliance

Table 23. Compliance with SSS WDR D.13.xi – Communications Program

SSMP Requirement	Compliance	Deficiencies
xi(a) Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP	1	-

5.11.2 Effectiveness of SSMP Elements and Recommended Modifications

Internal Communication – Staff, Utility Commission, and City Council (SSMP 11.2)

- Description of Current Status: The WWC uses two PowerPoint presentations for the purpose of presenting internally to the City Council and City staff, the purposes of the SSMP. The presentations are organized in a simple manner to explain an overview of the SSS WDR. These presentations support the City's WDR Awareness Program with the goal to provide staff with an overview of the SSS WDR regulation and educate the Public Utilities Commission and the City Council.

- Level of Effectiveness: This has been an effective way to ensure the City Council and WWC department have clear communications regarding the expectations place on the City with regards to complying with the regulation, the City's SSMP to limit SSOs and address the requirements of the regulation. These presentations were used during the initial implementation of the SSMP to educate City Council and staff on the new requirements being placed on the City.
- Recommendations:
    - As of September 2013 the State Water Board amended the MRP of the SSS WDR. Update or develop a new PowerPoint presentation to reflect the new reporting requirements and how it affects the City.

Stakeholder Communication – Residential, Commercial and Industrial (SSMP 11.3)

- Description of Current Status: The City communicates information about the SSMP by posting the entire SSMP (including appendices) on the City website. The contact information of the City's LROs is included on the website inviting public input or questions about the SSMP.

  The City has a created a PowerPoint presentation for the purpose of presenting in a public setting. The presentation is organized in a simple manner to provide an overview of the SSS WDR. This presentation has been presented as needed to the public in regards to informing the public about the implementation process of the SSMP to limit SSOs.

  The City also produces a series newsletters called "EU Today" that are distributed to customers and posted on the City website every two months with information about FOG and what not to flush. A crucial step to prevent SSOs is collaboration with the public.

  The City developed a marketing objective and strategy for the FOG outreach program targeted to Roseville residents and restaurants. The outreach program includes television advertisement, mail notices and direct visits to heavy FOG producing food service establishments. The City developed a budget, broken down by month, to fund the activities of the FOG outreach marketing plan.

  Additionally, the City joined with other agencies in the region (the Cities of Auburn and Lincoln and Placer County) to develop an outreach program to educate residents about the consequences of what is put into the sewers with of ultimate goal of protecting the environment. The Live Sewer Smart campaign has information available on the internet, monthly newsletters, and the campaign participates in public events.
- Level of Effectiveness:

  Posting the SSMP on the City website has been an effective way for communicating information about the SSMP to the public. The City has made significant efforts to modify/update the SSMP so that the information there is current and accessible to all who desire access.

  The PowerPoint presentation has been used in public meetings. The effectiveness of how well these presentations educate the general public about the SSMP is difficult to measure.

  The City devotes significant staff time on a regular and reoccurring basis to produce the "EU Today" newsletters. These newsletters are distributed to the City's customers on a regular basis and provide another conduit of information about the ways the customers can support the aims of the SSMP.

The FOG outreach program has multiple ways of communicating information to the public. This increases the likelihood that all members of the community will receive information about the items that may be properly disposed into the waste water conveyance system.

The LiveSewerSmart campaign has been another effective tool in communicating to the public about the ways in which they impact the potential for blockages and SSOs in the system.

- Recommendations: No recommended modifications at this time.

Tributary/Satellite Communication (11.4)

- Description of Current Status: The City has created and implemented agreements to facilitate communication with tributary/satellite agencies. The WWC routinely communicates with their satellite partners and often supports them with mutual aid sharing equipment and resources. The City has three formal agreements that include the following:
  - The Joint Exercise of Powers Agreement for the SPWA
  - The Agreement Regarding the Operation and Use of the South Placer Regional WW Facilities
  - The Funding Agreement Relating to the South Placer Regional WW Facilities
- Level of Effectiveness: Having agreements in place is great preparation for establishing a source of help during an emergency event. A quarterly meetings with the regional partners has proven effective to discuss the ongoing coordinate between the tributary/satellite systems.

  A small portion of the City discharges to the Sacramento Area Sewer District's (SASD) sewer collection system. The City identified this portion of its system that is satellite to SASD and is in the process of formalizing an agreement with SASD about the expectations between the two agencies.
- Recommendations:
  - Finalize the formal agreement with Sacramento Area Sewer District (SASD) regarding the discharge of wastewater from the City collection system into the SASD system.
  - Update SSMP section 11.4 to reference Appendix C-5 for the Joint Exercise of Powers Agreement for the SPWA and to reference SSMP Appendix C-6 for the Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities.
  - Update SSMP Appendix K-5 to include the Funding Agreement Relating to the South Placer Wastewater Facilities. It currently includes only the flysheet.
  - Update SSMP document to reference the appendices included on the City website (i.e., Appendix K-6 Sewer Smart Newsletter and Appendix K – FOG Pharm Outreach 2012-13 Budget).

SECTION 6 Audit Summary

This section summarizes the level of compliance of the SSMP with the SSMP requirements identified in subsection D.13 and the identified deficiencies as described in **Section 4.1**. **Table 24** is a summary of the results of that evaluation.

Table 24. Summary of SSMP Compliance Deficiencies

SSMP Requirement	Compliance	Deficiencies
viii(a) Evaluate hydraulic deficiencies	2	The schedule is to be reviewed and updated consistent with the SSMP review and update requirements in SSS WDR D.14 (i.e., every 5 years). The schedule is 7 years old.

This section also summarizes the recommended enhancements made during the process of evaluating each SSMP elements effectiveness as described in **Section 4.2**. **Table 25** is a summary of those recommendations.

Table 25. Summary of Audit Recommendations

SSMP Section	Recommendation	Timeline for Completion
2.1	Appendix B-1 needs to be updated to show Ken Glotzbach and Chris Bracco as LROs for the City. Additionally, once Dan Pruden (Wastewater Collections Supervisor) is registered as a Data Submitter in CIWQS, his information should be added to Appendix B-1 and updated on the City website.	JAN 2014
2.3	Figure 2.2 in SSMP section 2.3 has typographical errors. There is text missing. The figure found in SSMP Appendix F-1 (1) - SSO Procedures Flowchart is the same chart, but includes all of the text. WWE recommends reinserting the figure from Appendix F-1 (1) into section 2.3 of the SSMP with the corrections made.	JAN 2014
2.3	Appendix B-3 includes a call list of staff members who are on call during non-business hours; this is out of date, but also unnecessary. WWE recommends the City develop a SOP for the call center procedures for receiving calls and mobilizing field staff. A call list may be kept internally as deemed necessary by the City.	JAN 2014
4.2	Include the Mapping Update Policy document on the City SSMP website	JAN 2014
4.3	Identify targets for all performance measures so that data collected can be compared to a goal to assess performance and the effectiveness of SSMP activities. A comprehensive review of benchmarks or performance measures/indicators is discussed in the recommendations of **Section 5.9.**	JAN 2014
4.3	Continue the efforts of the recently revised eeling program due to the immediate impact on the frequency of SSOs from laterals. Data on the number of lateral SSOs per month should be monitored so that the impact of these efforts can be evaluated at the time of the next internal SSMP audit.	JAN 2014

SSMP Section	Recommendation	Timeline for Completion
4.3	Develop SOPs for the regular preventative maintenance activities using SOP-WWC-01 as a template. The following is a list of suggested SOPs based on the activities currently tracked with performance measures: ▪ Lift station maintenance ▪ Receiving and responding to customer service request	JUL 2014
4.4	Develop SOPs for regular inspection activities using SOP-WWC-01 as a template. The following is a list of suggested SOPs based on the activities currently tracked with performance measures: ▪ Alarm testing of lift stations	JUL 2014
4.4	Document the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data.	SEP 2014
4.5	The SSMP internal audit from FY10/11 stated that NASSCO training for condition assessment should be added to SSMP Element 4.5. The City implements the NASSCO rating system for collecting condition assessment data and provides this training to the WWC staff. While this is not a requirement of the SSS WDR, the City needs to decide if this training will be referenced in SSMP Element 4.5.	JAN 2014
4.5	Use the SOPs recommended to be developed in this section as a training tool for WWC staff. The SOPs can also be used to inform contractors working in the system of the role they play in responding to and mitigating potential SSOs.	JAN 2014
4.6	The SSMP identifies the WWC Superintendent as the person responsible for maintaining lists of the equipment and critical spare parts. The position directly responsible for tracking equipment and maintaining up-to-date equipment and critical spare parts lists is Materials Technician. The SSMP should be updated to correctly reflect the responsible party for equipment and critical spare parts.	JAN 2014
6	Complete all unpopulated fields in the revised "Collection System Questionnaire" in CIWQS. Enrollees have six months from the date that the revised MRP became effective to complete the questionnaire. This means that the questionnaire must be completed by approximately March 9, 2014. If this questionnaire is not completed by that time, the system will lock the Enrollee out from all reporting capabilities.	JAN 2014
6.3	Figure 6.2 in SSMP section 6.3 has a typographical error. There is text missing in some of the decision boxes. The same figure is in SSMP Appendix F-1(1) without the missing text. WWE recommends reinserting the figure with the corrections made or removing the figure from the SSMP and only reference Appendix F-1(1).	JAN 2014
6.3	Section 2.I.A of the City SSO Response Procedures indicates that the time a call was received notifying the City of a SSO will be used as the SSO start time on the forms reported to CIWQS. WWE recommends that the City develop a SOP for estimating the start time of SSOs to include additional methods for examining possible start times to support the SSO start time entered into CIWQS.	JAN 2014

SSMP Section	Recommendation	Timeline for Completion
6.3	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station.	JAN 2014
7.2	List Sean Bigley as the responsible party for the FOG Public Education Plan.	JAN 2014
7.7	Schedule routine meetings between WWC and IWS to share findings from preventative maintenance activities and FSE inspections to identify FSEs who are negatively impacting the collection system by discharging excessive amounts of FOG.	JAN 2014
7.8	Develop a SOP describing the process of how pipelines are added to the hot spot cleaning schedule, how the cleaning frequency (i.e., quarterly, semiannually, annually) for each hot spot is initially set, and how the cleaning frequency for an individual hot spot may be adjusted over time.	JUL 2014
7.8	SSMP section 7.8, paragraph three contains a typographical error. It states that "sewer line maintenance work orders are issued and completed to ensure that hot spot lines **do** have grease blockages/SSOs between cleaning schedules". The word "do" should be changed to "do not".	JAN 2014
8.2	Reevaluate the capacity of the system so that changes to the system can be updated and recent flow monitoring results can be used to update findings to reflect current conditions and revisions to planned development. The City should consider revising the planned frequency for system evaluation updates if a frequency of five years is not warranted based on system needs.	JAN 2014
8.3	Add documentation to internal SSO reports showing that the amount of precipitation over a 24-hour period exceeded 2.82 inches if the cause of the SSO is identified as "rainfall exceeded design". The lower bound of the 10-year 24-hour precipitation frequency estimate with a 90% confidence interval from the NOAA Atlas 14, Volume 6, Version 2 data for the Rocklin (station ID 04-7516) is 2.82 inches.	JAN 2014
9.2	Update Appendix I-Benchmarking Metrics on City website with information from FY11/12 and FY12/13	JAN 2014
9.3	Update Appendix I. This appendix includes information from the initial 2007 Implementation Schedule. The initial SSMP implementation and the SWRCB compliance schedule concluded many years ago and does not need to be included in the SSMP. However, the information regarding the continual implementation of the SSMP such as the document location, responsible person, and review frequency should be included	JAN 2014
9.3	Identify the metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness.	JAN 2014

SSMP Section	Recommendation	Timeline for Completion
9.3	Consider tracking additional metrics targeted at measuring the effectiveness of SSMP elements that do not currently have metrics associated with them. A list of potential performance measures listed by SSMP element is included in **Appendix 7.2** of this internal audit.	JAN 2014
9.4	Using the data collected in SSMP Appendix I as a reference, develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals. See **Appendix 7.2** for a list of potential performance indicators for preventative maintenance activities with responsible parties.	JAN 2014
9.5	Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. See **Appendix 7.2** for a list of potential performance indicators with the assigned responsible parties.	JAN 2014
9.6	Using the data collected in SSMP Appendix I as a reference, set performance goals for the metrics used to illustrate SSO trends. See **Appendix 7.2** for a list of potential performance indicators related to SSO trends.	JAN 2014
10.2	Post this SSMP internal audit to the City website.	JAN 2014
10.2	Schedule the next internal SSMP audit for July - August 2015.	JAN 2014
10.2	The SSMP must be recertified by the City Council before January 21, 2014. Per SSS WDR D.14, the City must have the SSMP updated and re-certified by the governing board (i.e., City Council) every five years. The City Council approved the original SSMP on January 21, 2009 which sets the date for re-certification on January 21, 2014.	JAN 2014
10.2	Revise Appendix J-1 to reflect recommendations for review of performance indicators (i.e., metrics associated with specific SSMP elements and the associated timelines).	JAN 2014
10.2	Revise Appendix J-2 (Audit Form) to provide areas in the tables for each SSMP element to conduct an assessment of both 1) the compliance against SSMP requirements and 2) the effectiveness of the SSMP element. Information gathered on the recommended Performance Indicator Assessment Forms should be included in the "Support Documents and Data" section of the Audit Form.	AUG 2015
10.3	Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes.	DEC 2014
11.2	As of September 2013 the State Water Board amended the MRP of the SSS WDR. Update or develop a new PowerPoint presentation to reflect the new reporting requirements and how it affects the City.	JAN 2014
11.4	Finalize the formal agreement with Sacramento Area Sewer District (SASD) regarding the discharge of wastewater from the City collection system into the SASD system.	DEC 2014

SSMP Section	Recommendation	Timeline for Completion
11.4	Update SSMP section 11.4 to reference Appendix C-5 for the Joint Exercise of Powers Agreement for the SPWA and to reference SSMP Appendix C-6 for the Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities.	JAN 2014
11.4	Update SSMP Appendix K-5 to include the Funding Agreement Relating to the South Placer Wastewater Facilities. It currently includes only the flysheet.	JAN 2014
11.4	Update SSMP document to reference the appendices included on the City website (i.e., Appendix K-6 Sewer Smart Newsletter and Appendix K – FOG Pharm Outreach 2012-13 Budget).	JAN 2014

SECTION 7 Appendices

7.1 Appendix – Historical SSO Data

7.2 Appendix – Performance Indicators

7.3 Appendix – Sample Performance Indicator Assessment Form

7.1 Appendix – Historical SSO Data

Dated: FY 2012 – FY 2013

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
7/20/2011	127 Elm Street A Roseville, 95678	Category 2	20	20	Root intrusion	Root intrusion caused 20 gallons of sewage to spill from Gravity sewer; City Cleanout at 127 A Elm Street to Unpaved surface; Other (specify below);Landscape Area: No surface water body affected:
8/13/2011	201 Berkeley Avenue Roseville, 95678	Category 2	50	50	Debris-Rags	Debris-Rags caused 50 gallons of sewage to spill from Gravity sewer at 201 Berkeley Ave to Other paved surface: No surface water body affected:
8/22/2011	251 Elm Street Roseville, 95678	Category 2	20	20	Debris-Rags	Debris-Rags caused 20 gallons of sewage to spill from Gravity sewer; City Cleanout at 251 Elm Street to Unpaved surface: No surface water body affected:
9/11/2011	1332 Blossom Hill Way Roseville, 95661	Category 2	15	15	Root intrusion	Root intrusion caused 15 gallons of sewage to spill from Gravity sewer at 1332 Blossom Hill to Street/curb and gutter; Other (specify below);Landscape Area: No surface water body affected:
10/3/2011	319 Fifth Street Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer at 319 Fifth ST to Unpaved surface; Landscape Area: No surface water body affected:
10/7/2011	1414 Frances Drive Roseville, 95661	Category 2	30	30	Root intrusion	Root intrusion caused 30 gallons of sewage to spill from Gravity sewer at 1414 Frances Drive to Street/curb and gutter; Unpaved surface: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
10/8/2011	304 Walton Way Roseville, 95678	Category 2	20	20	Debris-Rags Wipes and Toilet Paper	Debris-Rags; Wipes and Toilet Paper caused 20 gallons of sewage to spill from Gravity sewer at 304 Walton Way to Street/curb and gutter: No surface water body affected:
10/11/2011	1718 Russell Way Roseville, 95661	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer at 1718 Russell Way to Unpaved surface; Landscape Area: No surface water body affected:
10/12/2011	1549 Misty Wood Drive Roseville, 95747	Category 2	10	10	Root intrusion	Root intrusion caused 10 gallons of sewage to spill from Gravity sewer at 1549 Misty Wood Drive to Street/curb and gutter: No surface water body affected:
11/28/2011	750 Atlantic Street Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer at 750 Atlantic St to Other paved surface: No surface water body affected:
12/2/2011	111 Valencia Avenue Roseville, 95678	Category 2	10	9	Root intrusion	Root intrusion caused 10 gallons of sewage to spill from Gravity sewer at 111 Valencia Ave to Unpaved surface; Landscape Area: No surface water body affected:
12/6/2011	600 Wemberly Drive Roseville, 95678	Category 2	20	20	Root intrusion	Root intrusion caused 20 gallons of sewage to spill from Gravity sewer at 600 Wemberly Drive to Other paved surface: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
12/10/2011	206 Irene Avenue Roseville, 95678	Category 2	2	2	Debris-Rags	Debris-Rags caused 2 gallons of sewage to spill from Gravity sewer at 206 Irene Avenue to Other paved surface; Contained in low area by driveway- Not spilling upon operator arrival: No surface water body affected:
12/16/2011	8980 Box Canyon Way Roseville, 95747	Category 2	10	10	Debris-Rags	Debris-Rags caused 10 gallons of sewage to spill from Gravity sewer at 8980 Box Canyon Way to Street/curb and gutter: No surface water body affected:
12/20/2011	1014 Coloma Way Roseville, 95661	Category 2	5	5	Other (specify below) Construction Debris	Other (specify below);Construction Debris caused 5 gallons of sewage to spill from Gravity sewer at 1014 Coloma Way to Unpaved surface; Other (specify below);Landscape Area: No surface water body affected:
12/29/2011	Joanne Lane Roseville, 95678	Category 2	480	480	Root intrusion	Root intrusion caused 480 gallons of sewage to spill from Manhole at SMH B05-240 to Other (specify below);Open Field and landscape area: No surface water body affected:
1/18/2012	219 Estates Drive Roseville, 95678	Category 2	10	10	Pipe structural problem/failure	Pipe structural problem/failure caused 10 gallons of sewage to spill from Gravity sewer at 219 Estates Drive to Street/curb and gutter: No surface water body affected:
1/25/2012	322 Berkeley Avenue Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer at 322 Berkeley Ave to Unpaved surface: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
1/25/2012	1162 Cirby Way Roseville, 95661	Category 2	45	45	Pipe structural problem/failure	Pipe structural problem/failure caused 45 gallons of sewage to spill from Gravity sewer at 1162 Cirby Way to Other paved surface: No surface water body affected:
12/23/2011	8025 Bauser Avenue Roseville, 95747	Category 2	15	15	Root intrusion	Root intrusion caused 15 gallons of sewage to spill from Gravity sewer at 8025 Bauser Ave to Unpaved surface; Landscape Area: No surface water body affected:
1/27/2012	1313 Champion Oaks Drive Roseville, 95661	Category 2	30	30	Root intrusion	Root intrusion caused 30 gallons of sewage to spill from Gravity sewer; City Cleanout at 1313 Champion Oaks Drive to Unpaved surface; Landscape: No surface water body affected:
2/9/2012	515 Encinal Avenue Roseville, 95747	Category 2	10	10	Root intrusion Roots and Offset	Root intrusion; Roots and Offset caused 10 gallons of sewage to spill from Gravity sewer; Sewer Cleanout at 515 Encinal Ave to Unpaved surface; Landscape: No surface water body affected:
2/15/2012	824 Elefa Street Roseville, 95678	Category 2	10	10	Pipe structural problem/failure	Pipe structural problem/failure caused 10 gallons of sewage to spill from Gravity sewer; Cleanout at 824 Elefa Street to Street/curb and gutter: No surface water body affected:
3/5/2012	1326 Chignahuapan Way Roseville, 95747	Category 2	1	1	Debris-General	Debris-General caused 1 gallons of sewage to spill from Gravity sewer; Cleanout at 1326 Chignahuapan Way to Unpaved surface; Contained in high grass area: Not spilling upon arrival: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
3/4/2012	406 Clinton Avenue Roseville, 95678	Category 2	15	15	Pipe structural problem/failure Broken pipe at mainline	Pipe structural problem/failure; Broken pipe at mainline caused 15 gallons of sewage to spill from Gravity sewer; Cleanout in alley at 406 Clinton Ave to Other paved surface; Spill was in paved alley, contained by dirt berm and low areas in the alley: No surface water body affected:
3/10/2012	417 Pleasant Street Roseville, 95678	Category 2	6	6	Pipe structural problem/failure	Pipe structural problem/failure caused 6 gallons of sewage to spill from Gravity sewer at 417 Pleasant Street to Unpaved surface; Contained in flower bed: Vacuumed all wet dirt from area: No surface water body affected: Spill was stopped upon arrival: Instructed resident to obstain from using until arrival
3/27/2012	335 Pleasant Street Alta Ave, 95678	Category 2	2	2	Root intrusion	Root intrusion caused 2 gallons of sewage to spill from Gravity sewer; Cleanout at 335 Pleasant Street to Unpaved surface; Spill was in lawn: Removed all standing water and debris from landscape: No surface water body affected:
4/9/2012	221 Ash Street Roseville, 95678	Category 2	14	13	Other (specify below) Mortar or pool plaster in mainline caused backup out of cleanout at 221 Ash St	Other (specify below);Mortar or pool plaster in mainline caused backup out of cleanout at 221 Ash St caused 14 gallons of sewage to spill from Gravity sewer; Cleanout at 221 Ash St at 221 Ash St to Unpaved surface; Contained in Lawn Area: No surface water body affected: Vactor main to remove mortar, cctv mainline to access cleaning effectiveness

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
4/11/2012	401 Vernon Street Roseville, 95678	Category 2	32	31	Root intrusion	Root intrusion caused 32 gallons of sewage to spill from Gravity sewer; City Cleanout at 401 Vernon St to Other paved surface; Unpaved surface; Spill was in parking lot and portion of overflow soaked into dirt landscape area: No surface water body affected: Service has been rehabilitated using CIPP liner
4/18/2012	2017 Katherine Place Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer; City Cleanout at 2017 Katherine Place to Street/curb and gutter; Spill contained in low area in gutter: Not spilling upon arrival: No surface water body affected: Work order created to CIPP line lateral
4/19/2012	936 Parry Street Roseville, 95678	Category 2	10	8	Root intrusion Was not spilling upon arrival	Root intrusion; Was not spilling upon arrival caused 10 gallons of sewage to spill from Gravity sewer; City Cleanout at 936 Parry Street to Unpaved surface; Lawn area: No surface water body affected:
5/1/2012	402 Main Street Roseville, 95678	Category 2	10	10	Debris-Rags Large rags in service that didn't dissolve	Debris-Rags; Large rags in service that didn't dissolve caused 10 gallons of sewage to spill from Gravity sewer; City Cleanout at 402 Main Street to Separate storm drain; Unpaved surface; Storm Drain DI was plugged full of dirt, and contained spill in inlet box: Line was not spilling upon arrival: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
5/30/2012	200 Atlantic Street Roseville, 95678	Category 2	15	15	Pipe structural problem/failure Pipe had separated causing blockage	Pipe structural problem/failure; Pipe had separated causing blockage caused 15 gallons of sewage to spill from Gravity sewer; City Cleanout at 200 Atlantic St to Other paved surface: No surface water body affected: Dig to repair lateral and restore service
6/7/2012	504 Church Street Roseville, 95678	Category 2	1	1	Debris-Rags Disposable wipes	Debris-Rags; Disposable wipes caused 1 gallons of sewage to spill from Gravity sewer; City Cleanout at 504 Church St to Other paved surface; Sidewalk and gutter: No surface water body affected:
6/15/2012	321 Elefa Street Roseville, 95678	Category 2	5	5	Vandalism Plastic window part was down cleanout and plugged lateral	Vandalism; Plastic window part was down cleanout and plugged lateral caused 5:0 gallons of sewage to spill from Gravity sewer; City Cleanout at 321 Elefa Street to Other paved surface; Unpaved surface; Spill was located in alley behind address: No surface water body affected:
7/8/2012	1104 Dartmouth Avenue Roseville, 95678	Category 2	5	5	Pipe structural problem/failure line has sag in it causing paper to build up	Pipe structural problem/failure; line has sag in it causing paper to build up caused 5 gallons of sewage to spill from Gravity sewer; Paper spilled from cleanout when homeowner removed cap from city cleanout at 1104 Dartmouth Ave to Other paved surface; Spill stayed on driveway and was not actively spilling upon arrival: No surface water body affected: Created work order to replace lateral

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
7/17/2012	300 Roseville Street Roseville, 95678	Category 2	50	50	Root intrusion Service was not spilling upon arrival and resident saw water standing in alley, after neighbor brought it to her attention:	Root intrusion; Service was not spilling upon arrival and resident saw water standing in alley, after neighbor brought it to her attention: caused 50 gallons of sewage to spill from Gravity sewer; City cleanout at 300 Roseville Street to Other paved surface; Spill was naturally contained in a low spot in the alley pavement: No surface water body affected:
7/19/2012	209 Birch Street Roseville, 95678	Category 2	10	10	Root intrusion Spoke with neighbor and resident and they stated they only saw the debris in the gutter, not the actual spill occur: No water was running upon arrival	Root intrusion; Spoke with neighbor and resident and they stated they only saw the debris in the gutter, not the actual spill occur: No water was running upon arrival caused 10 gallons of sewage to spill from Gravity sewer; City Cleanout had evidence of spill but was not spilling upon arrival at 209 Birch St to Street/curb and gutter; Low point in gutter held water from spill: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
7/20/2012	310 Oakridge Drive Roseville, 95661	Category 2	74	74	Debris-Rags Spill was caused by rags hanging up on roots in service:	Debris-Rags; Spill was caused by rags hanging up on roots in service: caused 74 gallons of sewage to spill from Gravity sewer; Cleanout was buried under landscape at 310 Oakridge Dr to Separate storm drain; Street/curb and gutter; Spill was in curb and gutter, and made it to storm drain DI 503' away from cleanout: Storm drain manhole was checked, and found completely dry: Vactored affected areas and vacuumed water out and returned to sewer system: No surface water body affected:
7/23/2012	175 Lincoln Street Roseville, 95678	Category 2	6	6	Root intrusion	Root intrusion caused 6 gallons of sewage to spill from Gravity sewer; Spill occurred from the city cleanout back of sidewalk: Neighbor noticed water coming from cleanout and notified resident at 175 South Lincoln St to Street/curb and gutter; Spill was contained in sunken area of gutter: No surface water body affected: Lateral has been scheduled for CIPP liner to rectify root intrusion
8/10/2012	1227 South Bluff Drive Roseville, 95678	Category 2	10	10	Root intrusion	Root intrusion caused 10 gallons of sewage to spill from Gravity sewer; Spill occurred from city cleanout, however, it wasn't spilling upon arrival: SSO occurred when eeling was started on the service: at 1227 South Bluff to Street/curb and gutter; Fully contained in gutter with dry sweep: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
8/1/2012	233 East Street Roseville, 95678	Category 2	53	53	Other (specify below) Debris-rags and roots caused the overflow	Other (specify below);Debris-rags and roots caused the overflow caused 53 gallons of sewage to spill from Gravity sewer; Spill point was from flushing branch on dead end line at 233 East Street to Street/curb and gutter; Spill was contained in gutter using rubber berm and dry sweep: All spilled water was vacuumed and area flushed: All water was captured and returned to sewer system: No surface water body affected: Section of main with root intrusion will be re-directed for better alignment: Flushing branch will be removed with a manhole installed in it's place: Upon completion, all pipe in section will be new pipe:
8/15/2012	98 Alta Vista Avenue Roseville, 95678	Category 2	75	70	Grease deposition (FOG)	Grease deposition (FOG) caused 75 gallons of sewage to spill from Gravity sewer; Manhole; Manhole and cleanout approx: 5' away from manhole at 98 Alta Vista AV to Separate storm drain; Unpaved surface; Other (specify below);Spill reached a DI that day lighted to a drainage channel along the railroad tracks: Spill was contained in this area, although we assumed approx 5 gallons seeped into dry dirt: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
8/30/2012	905 Main Street Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer; City Cleanout at 905 Main Street to Street/curb and gutter; Spill was contained in gutter with dry sweep: No surface water body affected: Follow up work order generated to CIPP line lower lateral
9/19/2012	159 Donner Avenue Roseville, 95678	Category 2	5	5	Root intrusion Root intrusion caused backup	Root intrusion; Root intrusion caused backup caused 5 gallons of sewage to spill from Gravity sewer; Cleanout was not spilling upon arrival at 159 Donner Ave to Street/curb and gutter: No surface water body affected: Work order generated to repair offset and damage caused by root intrusion
9/24/2012	615 Encinal Avenue Roseville, 95678	Category 2	5	5	Root intrusion Root intrusion and rags in the lower lateral	Root intrusion; Root intrusion and rags in the lower lateral caused 5 gallons of sewage to spill from Gravity sewer; Spilled from city cleanout at 615 Encinal Ave to Street/curb and gutter; Unpaved surface; Lateral was not spilling upon operator arrival, as resident had stopped all water use in the house: Spill was partially in a lawn area as well as the sidewalk, curb and gutter: No surface water body affected: Work order generated in CIPP line lateral

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
10/20/2012	995 Darling Way Roseville, 95678	Category 2	18	15	Root intrusion	Root intrusion caused 18 gallons of sewage to spill from Gravity sewer; City cleanout wasn't spilling upon arrival, but there was evidence of prior spill: Approx 3 gallons soaked into landscape area: Resident stated spill had only been going on for a few minutes: at 995 Darling Way to Unpaved surface; Other (specify below);Landscape/planter bed area: No surface water body affected:
11/1/2012	1100 Creekridge Court Roseville, 95747	Category 2	25	25	Root intrusion	Root intrusion caused 25 gallons of sewage to spill from Gravity sewer; Cleanout at 1100 Creekridge Ct to Street/curb and gutter; Spill was contained in gutter by leaves and debris, but was not actively spilling upon arrival: No surface water body affected:
11/3/2012	601 Encinal Avenue Roseville, 95678	Category 2	35	35	Root intrusion	Root intrusion caused 35 gallons of sewage to spill from Gravity sewer; Neighbor noticed a smell and traced odor back to this address, and then called dispatch service: Notified neighbor of water coming from city cleanout at 601 Encinal to Street/curb and gutter; Spill was contained in gutter by leaves and debris: Vacuumed all material out of gutter: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
11/5/2012	2208 Bud Court Roseville, 95661	Category 2	75	75	Root intrusion	Root intrusion caused 75 gallons of sewage to spill from Gravity sewer; Spill was from City cleanout, however, at phone call to homeowner, they indicated that all water had stopped, but her children had washed the driveway down with garden hose: at 2208 Bud Ct to Separate storm drain; Street/curb and gutter; Storm Drain DI is approx 450' from address, and minimal water had made it to the di: Di and gutter were flushed and all water vacuumed out: Spill volume was estimated by L x W x Depth of water, plus minimal volume in basin of DI: No surface water body affected:
12/2/2012	Eastridge Drive Roseville, 95661	Category 1	100	0	Rainfall exceeded design (Separate CS Only) Collection System was inundated by storm surge	Rainfall exceeded design (Separate CS Only);Collection System was inundated by storm surge caused 100:0 gallons of sewage to spill from Manhole; Spill was slowing seeping from the gap between the manhole frame and the manhole cover: The manhole was bolted down, slowing the release of water: at Eastridge Drive -East of Bridge to Surface water: Surface water body affected: Visually inspected the collection system and verified surcharge conditions were receding:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
12/2/2012	Eastridge Drive Roseville, 95661	Category 1	300	0	Rainfall exceeded design (Separate CS Only) Collection system was inundated by storm surge	Rainfall exceeded design (Separate CS Only);Collection system was inundated by storm surge caused 300:0 gallons of sewage to spill from Manhole; Spill was seeping from the gap between the frame and the cover: The manhole was also bolted down: at Eastridge Drive- West of Bridge to Surface water: Surface water body affected: Visually inspected collection system and verified surcharge conditions were receding
11/24/2012	1941 Inglis Way Roseville, 95678	Category 2	3	3	Root intrusion	Root intrusion caused 3 gallons of sewage to spill from Gravity sewer; City Cleanout- No visible water, but toilet paper was standing around cleanout at 1941 Inglis Way to Unpaved surface; Landscaped Area: No surface water body affected:
11/28/2012	1955 Inglis Way Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer; City cleanout at 1955 Inglis Way to Street/curb and gutter; Other (specify below);Landscape Area: No surface water body affected:
11/26/2012	1501 Colonial Parkway Roseville, 95661	Category 2	10	10	Root intrusion	Root intrusion caused 10 gallons of sewage to spill from Gravity sewer; City cleanout at 1501 East Colonial to Street/curb and gutter: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
12/14/2012	120 Fig Street Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer; City Cleanout at 120 Fig Street to Other paved surface; Sidewalk: No surface water body affected:
12/31/2012	301 Loretto Drive Roseville, 95661	Category 2	15	15	Other (specify below) Private plumber lost screw plug down line and was wedged in lower lateral, causing spill	Other (specify below);Private plumber lost screw plug down line and was wedged in lower lateral, causing spill caused 15 gallons of sewage to spill from Gravity sewer; City cleanout at 301 Loretto Drive to Street/curb and gutter; Used dry sweep to contain water in gutter: No surface water body affected:
12/31/2012	138 Cedar Street Roseville, 95678	Category 2	10	10	Root intrusion	Root intrusion caused 10 gallons of sewage to spill from Gravity sewer at 138 Cedar St to Street/curb and gutter; Used dry sweep to contain spill in gutter: All areas were flushed and vacuumed: No surface water body affected:
1/14/2013	376 Circuit Drive Roseville, 95678	Category 2	20	20	Root intrusion	Root intrusion caused 20 gallons of sewage to spill from Gravity sewer at 376 Circuit Drive to Other paved surface; Street/curb and gutter; Sidewalk: No surface water body affected: Added to lateral maintenance group project, 4 month interval
1/17/2013	1080 Douglas Boulevard Roseville, 95678	Category 2	10	10	Root intrusion	Root intrusion caused 10 gallons of sewage to spill from Gravity sewer at 1080 Douglas Blvd to Street/curb and gutter: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
1/18/2013	108 Ben Ezra Avenue Roseville, 95678	Category 2	10	10	Pipe structural problem/failure Pipe had failed due to significant roots crushing pipe	Pipe structural problem/failure; Pipe had failed due to significant roots crushing pipe caused 10 gallons of sewage to spill from Gravity sewer at 108 Ben Ezra Avenue to Other paved surface; Street/curb and gutter: No surface water body affected: Lateral was repaired at point of pipe failure, and work order generated to CIPP line entire service:
1/21/2013	2318 Cirby Way Roseville, 95661	Category 2	6	6	Root intrusion	Root intrusion caused 6 gallons of sewage to spill from Gravity sewer at 2318 N Cirby Way to Street/curb and gutter; Unpaved surface; Landscape area: No surface water body affected: Work order created and scheduled to CIPP line lateral
1/28/2013	1741 Evergreen Drive Roseville, 95747	Category 2	10	10	Root intrusion Root intrusion is coming from backside of cleanout wye: Notified homeowner that he would need to maintain or repair the break in their line	Root intrusion; Root intrusion is coming from backside of cleanout wye: Notified homeowner that he would need to maintain or repair the break in their line caused 10 gallons of sewage to spill from Gravity sewer; City cleanout at 1741 Evergreen Drive to Street/curb and gutter: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
2/12/2013	1332 Blossom Hill Way Roseville, 95661	Category 2	3	3	Pipe structural problem/failure Lateral had been CIPP lined within the last few weeks, and resin did not setup, causing the liner to collapse enough to hold back paper products	Pipe structural problem/failure; Lateral had been CIPP lined within the last few weeks, and resin did not setup, causing the liner to collapse enough to hold back paper products caused 3 gallons of sewage to spill from Gravity sewer; City cleanout at 1332 Blossom Hill to Other paved surface; Street/curb and gutter; Sidewalk and landscape area: No surface water body affected: Bad spot of liner has been cut out and repaired
2/16/2013	497 Diamond Bar Lane Roseville, 95678	Category 2	5	5	Pipe structural problem/failure House is on the top end of a dead end run: Lateral ties into main with a tee rather than a wye: Resident has also replaced all toilet fixtures with low flow units: All of this together equates to a problem with moving paper and waste through the lateral: Work order created to replace tee with wye to aid better flow angle:	Pipe structural problem/failure; House is on the top end of a dead end run: Lateral ties into main with a tee rather than a wye: Resident has also replaced all toilet fixtures with low flow units: All of this together equates to a problem with moving paper and waste through the lateral: Work order created to replace tee with wye to aid better flow angle: caused 5 gallons of sewage to spill from Gravity sewer; City cleanout at 497 Diamond Bar Ln to Street/curb and gutter: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
3/11/2013	120 Silverado Circle Roseville, 95678	Category 2	2	2	Other (specify below) Cleanout was holding water, but not spilling: As technician began to clear blockage, the cleanout started to spill: Cleared line and water subsided:	Other (specify below);Cleanout was holding water, but not spilling: As technician began to clear blockage, the cleanout started to spill: Cleared line and water subsided: caused 2 gallons of sewage to spill from Gravity sewer; City Cleanout at 120 Silverado Circle to Street/curb and gutter; Other (specify below);Landscape Area: No surface water body affected: Failure analysis showed root coming in from backside of wye, and traveling through coupling: Wye was dug up and replaced, large roots were removed from customer side of lateral: Lateral is also very flat
3/15/2013	237 La Rue Alley Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer; Cleanout- Resident was informed to stop all water use, and was not spilling upon arrival: at 237 LaRue Alley to Other (specify below);Landscape Area: No surface water body affected: Work order generated to CIPP line the lateral
3/23/2013	1505 Antrim Court Roseville, 95747	Category 2	8	8	Root intrusion	Root intrusion caused 8 gallons of sewage to spill from Gravity sewer; Resident was requested to stop all water use, and lateral was not spilling upon arrival at 1505 Antrim Ct to Street/curb and gutter; Other (specify below);Grass Area: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
3/23/2013	211 Kenroy Lane Roseville, 95678	Category 2	10	10	Root intrusion	Root intrusion caused 10 gallons of sewage to spill from Gravity sewer at 211 Kenroy Lane to Street/curb and gutter: No surface water body affected: Created work order to repair cleanout
4/2/2013	1415 frances Drive Roseville, 95661	Category 2	25	25	Root intrusion	Root intrusion caused 25 gallons of sewage to spill from Gravity sewer; City cleanout at 1415 Frances Drive to Street/curb and gutter; No water was spilling upon arrival: Overflow was contained by debris and a large offset in gutter: No surface water body affected: Work order generated to CIPP line lateral
4/9/2013	215 Coronado Avenue Roseville, 95678	Category 2	47	47	Root intrusion	Root intrusion caused 47 gallons of sewage to spill from Gravity sewer at 215 Coronado Ave to Other paved surface; Spill was contained with dry sweep and dirt berm: No surface water body affected:
4/14/2013	1307 Sheffield Way Roseville, 95661	Category 2	3	3	Root intrusion	Root intrusion caused 3 gallons of sewage to spill from Gravity sewer; Sewer cleanout in front lawn at 1307 Sheffield Way to Unpaved surface; Landscape lawn area: No surface water body affected:
4/18/2013	1015 Sunset Drive Roseville, 95678	Category 2	2	2	Root intrusion	Root intrusion caused 2 gallons of sewage to spill from Gravity sewer; City cleanout in landscape area: Not spilling upon arrival at 1015 Sunset Dr to Unpaved surface; Landscape: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
4/30/2013	2218 Americana Drive Roseville, 95747	Category 2	5	0	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer; City Cleanout at 2218 Americana Drive to Street/curb and gutter; Area was dry, but there was evidence of debris on sidewalk and gutter in front of address: No surface water body affected:
4/30/2013	512 Royer Street Roseville, 95678	Category 2	10	10	Root intrusion	Root intrusion caused 10 gallons of sewage to spill from Gravity sewer; City cleanout at 512 Royer St to Unpaved surface: No surface water body affected: Created work order to repair damaged pipe caused by root intrusion:
5/10/2013	330 Circuit Drive Roseville, 95678	Category 2	20	20	Root intrusion City cleanout started spilling after resident had a plumber clear their portion of the line: The large mass of roots stayed in the lower lateral, caused it to back up and spill	Root intrusion; City cleanout started spilling after resident had a plumber clear their portion of the line: The large mass of roots stayed in the lower lateral, caused it to back up and spill caused 20 gallons of sewage to spill from Gravity sewer; City cleanout had evidence of spill: at 330 Circuit Drive to Street/curb and gutter; Spill was contained in gutter by leaves and dirt: No surface water body affected:
6/20/2013	1795 Vista Creek Drive Roseville, 95661	Category 2	5	5	Debris-Rags	Debris-Rags caused 5 gallons of sewage to spill from Gravity sewer; City Cleanout at 1795 Vista Creek Dr to Street/curb and gutter: No surface water body affected:

Date Of SSO	Address Of SSO	Spill Type	Spill Volume (gal)	Spill Volume Recovered (gal)	Spill Cause	Overall Description
7/14/2013	618 Lassen Way Roseville, 95678	Category 2	5	5	Root intrusion	Root intrusion caused 5 gallons of sewage to spill from Gravity sewer; City cleanout: Customer said it was not spilling, and no one was home at 618 Lassen Way to Street/curb and gutter: No surface water body affected:

7.2 Appendix – Performance Indicators

SSS WDR Element	SSS WDR Ref.	Description	Performance Indicator	Unit	Target	City SSMP (section)	Utility Metrics (SSMP Appendix I)	WW Collections KPI.doc	Program / Performance Report FY12/13	Strategic Plan Data FY12/13.xls	Performance Metrics.xls	Suggested Audit Frequency	Suggested Responsible Party
Organization	D.ii.c	Chain of communication	Average response time to customer inquiry	Minutes	40		Data	40	-	-	-	Quarterly	Office Assistant
			Total customer service requests	Number	0	(9.6)	Data	-	-	-	-	Quarterly	Office Assistant
			Total sewer odor complaints	Number	0	(9.6)	Data	-	-	-	-	Quarterly	Office Assistant
			Average rating in feeback survey card	Number	5	-	Data	-	-	-	-	Quarterly	Office Assistant
O&M	D.iv.a	Maps	Average response time to map update requests	Days	30	-	-	-	-	-	-	Quarterly	GIS Manager
	D.iv.b	PM activites	Manholes - cleaned & visually inspected per year	Number	1054	(9.4)	-	-	1054	-	-	Quarterly	WWC Supervisor
			Sewer main - flushed per year	Miles	250	(9.4)	Data	250	250	250	-	Quarterly	WWC Supervisor
			Service laterals - cleaned per year	Miles	8	-	-	-	8	-	-	Quarterly	WWC Supervisor
			Service laterals - mechancially cleaned (eeled) per year	Miles	8	(9.4)	-	-	-	8	-	Quarterly	WWC Supervisor
			Working staff time to PM program	%	80	-	-	-	80	-	-	Quarterly	WW Superindendent
			Number of customer accounts per wastewater employee	Number	561	(9.4)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of work orders completed as emergency	%	0.4	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Average cost of hydro cleaning	$/ lf	0.36	-	Data	-	-	-	-	Annually	WW Superindendent
			Average cost of sewer mechanical cleaning	$/lf	1.6	(9.4)	Data	-	-	-	-	Annually	WW Superindendent
	D.iv.c	R&R plan	Manholes - rehabilitated (i.e., lined with CIPP)	Number	25	-	-	-	25	-	-	Annually	Rehabiliation Manger
			Sewer main - CCTV inspected per year	Miles	30	(9.4)	Data	30	30	30	-	Quarterly	WWC Supervisor
			Service laterals - CCTV inspected per year	Miles	16	-	Data	-	8	16	-	Quarterly	WWC Supervisor
			Service laterals - rehabilitated per year	Number	50	(9.4)	-	50	50	50	-	Quarterly	WW Superindendent
			Cleanouts - installed per year	Number	100	-	-	100	100	75	-	Quarterly	WWC Supervisor
			Total miles rehabed or replaced per year (main)	Miles	5	(9.6)	Data	-	-	-	-	Annually	Rehabiliation Manger
			Total miles rehabed or replaced per year (lateral)	Miles	0.25	(9.6)	Data	-	-	-	-	Annually	Rehabiliation Manger
			Annual capital budget for sewer rehab/replacement	$M	1.8	-	Data	-	-	-	-	Annually	Rehabiliation Manger
			Average cost of CCTV (main)	$/lf	0.53	(9.4)	Data	-	-	-	-	Annually	WW Superindendent
			Average cost of CCTV (lateral)	$/lf	1.34	-	Data	-	-	-	-	Annually	WW Superindendent
	D.iv.d	Training	On-the-Job accidents	Number	0	-	-	-	0	0	-	Quarterly	Safety Manager
	D.iv.e	Critical Parts	% of required number of identified critical parts are stocked	%	100	-	-	-	-	-	-	Annually	Materials Technician
Design	D.v.a & b	Construction	% of new sewer main construction accepted vs. inspected	%	100	(9.6)	Data	-	-	-	-	Annually	GIS Manager
			% of new sewer lateral construction accepted vs. inspected	%	100	(9.6)	Data	-	-	-	-	Annually	GIS Manager
OERP	D.vi.a	Notification	Average response time to SSO	Minutes	40	-	Data	-	-	-	-	Quarterly	WWC Supervisor
	D.vi.b	SSO response	Average SSO duration (main)	Minutes	40	-	-	-	-	-	-	Quarterly	WWC Supervisor
			Average SSO duration (lateral)	Minutes	40	-	-	-	-	-	-	Quarterly	WWC Supervisor
FOG	D.vii.a	Public education	FOG public education outreach program events per year	Number	4	-	-	-	-	-	-	Annually	Administrative Analyst
	D.vii.b	FOG disposal	Number of curbside FOG pickups per year	Number	25	-	-	-	-	-	-	Annually	Refuse Division
			% of CCTV inspections with grease observations (DAGS, >20%)	%	5	-	-	-	-	-	-	Quarterly	WWC Supervisor
	D.vii.d	BMPs & Devices	% of total FSEs with grease removal devices or waiver/variance	%	100	-	-	-	-	-	-	Annually	IWS Inspector
			% of total FSEs with a variance	%	5	-	-	-	-	-	-	Annually	IWS Inspector
	D.vii.e	FOG inspections	FSE FOG inspections per year	Number	294	-	-	-	-	-	-	Quarterly	IWS Inspector
			Coordination meetings between WWC and IWS per year	Number	4	-	-	-	-	-	-	Quarterly	IWS Inspector
	D.vii.f	Hot Spots	% of hot spot pipes CCTV inspected each year	%	100	-	-	-	-	-	-	Annually	WW Superindendent
			Number of spills caused by hot spots	Number	0	-	-	-	-	-	-	Quarterly	WW Superindendent
			Volume of spill volume caused hot spots	Gal	0	-	-	-	-	-	-	Quarterly	WW Superindendent
SECAP	D.viii.a	Evaluation	Frequency for capacity assurance evaluation (hydraulic model)	Years	5	App I	-	-	-	-	-	Annually	EU Engineering
MMM	D.ix.e	SSO trends	Total number of SSOs, mains and laterals	Number	76	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Total SSO volume, mains and laterals	Gal	2000	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of total SSO volume recovered	%	100	-	Data	-	-	-	-	Quarterly	WW Superindendent
			Total number of wet weather SSOs	Number	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Total volume of wet weather SSOs	Gal	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSOs caused by FOG (main)	%	1	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSOs caused by roots (main)	%	70	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSOs caused by Vandalism (main)	%	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Number of SSOs caused by LS failures	Number	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Number of SSOs caused by pipe failures	Number	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSO volume caused by FOG (lateral)	%	10	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSO volume caused by roots (lateral)	%	75	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSO volume caused by Vandalism (lateral)	%	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Repeat SSOs within two years	Number	0	(9.6)	Data	0	-	-	-	Quarterly	WW Superindendent
			Category 1 SSOs	Number	0	-	-	0	0	-	-	Quarterly	WW Superindendent
			SSOs / 100 mi pipe / year - Category 2	Number	2.0	-	-	2.0	-	-	-	Quarterly	WW Superindendent
			SSOs / 100 mi pipe / year - Lateral	Number	15.0	-	-	8.0	-	-	8	Quarterly	WW Superindendent
			SSOs / 100 mi pipe / year - Mainline	Number	0.6	-	-	0.6	-	-	0.6	Quarterly	WW Superindendent
			Flooding claims per year	Number	0	(9.6)	Data	-	-	-	-	Annually	WW Superindendent
			Total cost of claims per year	$	0	(9.6)	Data	-	-	-	-	Annually	WW Superindendent

Legend

Green Text Indicates the goal for the respective performance measure as stated in the associated document.

"Data" Indicates that is recorded and tracked but no goal is defined in the associated document.

7.3 Appendix – Sample Performance Indicator Assessment Form

Goal:	**MRP (FY 2014 / 2015)**
Responsible Person (RP):	WWC Superintendent

Description of Performance Indicator(s) (PIs):

The State Water Board has recently concluded that the existing Monitoring and Reporting Program must be amended to remain adequate enough to advance the Sanitary Sewer Overflow Reduction Program objectives, assess compliance, and enforce the requirements of the Sanitary Sewer Systems Waste Discharge Requirements. The amended MRP will become effective on September 9, 2013 concurrent with the routine bimonthly CIWQS maintenance release. The Wastewater Collection Division is responsible for submitting, signing, and certifying all reports required by the SSS WDRs and the amended MRP order. The PIs listed below track the completion of tasks necessary for the City to remain compliant with the SSS WDRs.

PIs and Data Analysis Methods:

1. *Completion of unpopulated fields in revised "Collection System Questionnaire"*
   Discussion & Scoring Criteria: The City has three (3) months after September 9, 2013 to complete all unpopulated fields in the revised "Collection System Questionnaire" before the CIWQS locks you out from all reporting. After the questionnaire is completed, the system will default back to the annual update requirement and lock you out from all reporting only if the questionnaire is not updated at least annually.

2. *Update of OERP section in SSMP*
   Discussion & Scoring Criteria: The Overflow and Emergency Response Plan section of the City's SSMP must be updated in accordance with the amended MRP by January 21 2014, when a board review of the SSMP will take place.

PI	A+	A	A-	B+	B	B-	C+	C	C-	D	F
1	All unpopulated fields completed by December 9, 2013.			N/A			N/A			All or some of the unpopulated fields not completed by December 9, 2013.	
2	OERP section fully updated in SSMP before review.			N/A			N/A			OERP section never, or only partially, updated before review.	

Performance Tracking		
PI	**Measured Value**	**Performance Assessment Comments**
1		
2		

Recommendations for Programmatic or SSMP Updates
PI 1 – Completion of unpopulated fields in revised "Collection System Questionnaire" Recommendation: **PI 2 – Update of OERP section in SSMP** Recommendation:

Signature of Responsible Person: (sign when complete)	Date:

Appendix 10-3

SSPM Audit Fiscal Years 13/14 and 14/15

CITY OF ROSEVILLE
Sewer System Management Plan (SSMP)
Biennial Audit for FY 13/14 – FY 14/15

Date: June 2016

Prepared by: Michael Fisher, P.E., Water Works Engineers
Tim Lewis, E.I.T., Water Works Engineers

Assisted by: Chris Bracco, City Wastewater Superintendent
Dan Pruden, City Wastewater Supervisor

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SECTION 1 Audit Objectives

This report covers the results of the required Sewer System Management Plan (SSMP) internal audit process for the City of Roseville (City) for fiscal years 2013-2014 (FY13/14), and 2015-2015 (FY14/15). The purpose of the SSMP is to provide a written framework and process for sanitary sewer collection system (collection system) management, operation, and maintenance programs executed by the City with the ultimate goal of minimizing sanitary sewer overflows (SSOs) and sustaining compliance with the California State Water Resources Control Board (SWRCB) order No. 2006-0003-DWQ, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS WDR). The basis for the SSMP internal audit process is reviewing the performance of the collection system versus the performance measures used by the City to evaluate compliance with the various requirements of the SSS WDRs. The intention of the SSMP audit is to help the SSMP evolve over time as a "living document" that City continually adjusts after identifying potential enhancements and implementing changes to address any deficiencies to the management, operation and maintenance of the City sanitary sewer collection system.

The City is committed to completing the SSMP internal audit (Audit) on a biennial basis that is consistent with the procedure outlined in Appendix J-1 of the SSMP. The City completed its first Audit for FY 2011-2012, but subsequently contracted Water Works Engineers (WaterWorks) to conduct the FY 11/12-13/14 biennial audit. Similarly, the City contracted WaterWorks to complete the FY 13/14-14/15 biennial audit, the results of which are detailed in this document. The key objective of the Audit is to review SSMP compliance, implementation, and effectiveness. The key tasks performed in this Audit are detailed below:

1. Review records from previous internal audits, and confirm deficiencies have been addressed (See SECTION 2)
2. Analyze the City's historical SSO data and performance measures listed in the SSMP (See SECTION 3)
3. Using a standardized audit procedure detailed in SECTION 4 , identify deficiencies and provide recommendations that could improve the effectiveness of the SSMP (See SECTION 4).
4. Analyze the City's preventative maintenance (PM) program and rehabilitation and replacement (R&R) program as it relates to the operation and maintenance of the collection system (See Section 5.4)
5. Review the Sanitary Sewer Overflow Emergency Response Plan (SSEORP) for SSOs and identify improvements as needed (See Section 5.6)
6. Document all findings during the Audit and retain it on file (See SECTION 6)

SECTION 2 Agency Background / System Information

The City of Roseville is located in Placer County and is situated approximately 16 miles north of the City of Sacramento. Along Interstate 80, Roseville is located adjacent to the City of Rocklin in the north-east and the City of Citrus Heights in the south. The City covers approximately 42 square miles near the base of the foothills of the Sierra Mountains. Typical elevations are within a range of 250 to 100 feet of sea level with an average slope across the City of 0.5% from east to west. Several streams flow through the City (i.e., Dry Creek, Pleasant Grove Creek, Kaseburg Creek, Linda Creek, Cirby Creek, Secret Ravine, and Miners Ravine.).

The City is responsible for the operation and maintenance of a continually growing collection system that has grown over 5% since the last internal audit to now serve approximately 129,000 people. Table 1 below highlights key indicators about the City collection system.

Table 1. Overview of System Indicators

Audit	FY 11/12 – 12/13	FY 13/14 – 14/15
Miles of Mainline	485.52	501.11
Miles of laterals (lower)	235.3	238
Pump stations	14	15
Sewer service lateral connections	41,568	43,619
Population served	122,060	128,832
WWC Staff	25	28
Annual Budget (FY1 – FY2)	$3,400,000 / $3,800,00	$3,700,000 / $4,000,000
Category 1 SSOs	2	0
Category 2 SSOs	75	0
Category 3 SSOs	-	89

The City treats wastewater conveyed through its collection system at two regional wastewater treatment plants that are both owned and operated by the City (i.e., Dry Creek and Pleasant Grove WWTPs). Two other satellite collection systems owned and operated by other agencies (i.e., South Placer Municipal Utility District and Placer County) discharge directly into the City's collection system as well. One small portion of the City's collection system, however, discharge outside of Roseville into the Sacramento Area Sewer District (SASD) collection system and is treated at the Sacramento Regional WWTP. The City is a part of the Central Valley Region 5 (Sacramento sub-region) of the SWRCB.

2.1 Review of Last SSMP Audit

The previous biennial SSMP audit for Roseville was conducted by WaterWorks for FY 11/12-12/13 and was completed in December 2013. In the last Audit, a list of approximately 40 recommended actions to address deficiencies or improve the effectiveness of the City SSMP were listed. That list is re-inserted and adapted in Table 2 below, along with a description of the status of the task (i.e., Completed, Ongoing Updates, In/No Progress, Considered) per the latest SSMP documents on the City's website and based on information from City staff.

Table 2. Summary of Findings from the Last SSMP Internal Audit

Element	Action Item	Status
2 – Organization	Appendix B-1 needs to be updated to show Ken Glotzbach and Chris Bracco as LROs for the City. Additionally, once Dan Pruden (Wastewater Collections Supervisor) is registered as a Data Submitter in CIWQS, his information should be added to Appendix B-1 and updated on the City website.	Completed.
	Figure 2.2 in SSMP section 2.3 has typographical errors. There is text missing. The figure found in SSMP Appendix F-1 (1) - SSO Procedures Flowchart is the same chart, but includes all of the text. WWE recommends reinserting the figure from Appendix F-1 (1) into section 2.3 of the SSMP with the corrections made.	Completed
	Appendix B-3 includes a call list of staff members who are on call during non-business hours; this is out of date, but also unnecessary. WWE recommends the City develop a SOP for the call center procedures for receiving calls and mobilizing field staff. A call list may be kept internally as deemed necessary by the City.	Considered.
4 – O&M	Include the Mapping Update Policy document on the City SSMP website	No Progress
	Identify targets for all performance measures so that data collected can be compared to a goal to assess performance and the effectiveness of SSMP activities. A comprehensive review of benchmarks or performance measures/indicators is discussed in the recommendations of **Section 5.9.**	No Progress.
	Continue the efforts of the recently revised eeling program due to the immediate impact on the frequency of SSOs from laterals. Data on the number of lateral SSOs per month should be monitored so that the impact of these efforts can be evaluated at the time of the next internal SSMP audit.	Considered.
	Develop SOPs for the regular preventative maintenance activities using SOP-WWC-01 as a template. The following is a list of suggested SOPs based on the	Considered

	activities currently tracked with performance measures: ▪ Lift station maintenance ▪ Receiving and responding to customer service request	
	Develop SOPs for regular inspection activities using SOP-WWC-01 as a template. The following is a list of suggested SOPs based on the activities currently tracked with performance measures: -Alarm testing of lift stations	Considered
	Document the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data.	No Progress
	The SSMP internal audit from FY10/11 stated that NASSCO training for condition assessment should be added to SSMP Element 4.5. The City implements the NASSCO rating system for collecting condition assessment data and provides this training to the WWC staff. While this is not a requirement of the SSS WDR, the City needs to decide if this training will be referenced in SSMP Element 4.5.	Considered.
	Use the SOPs recommended to be developed in this section as a training tool for WWC staff. The SOPs can also be used to inform contractors working in the system of the role they play in responding to and mitigating potential SSOs.	Considered.
	The SSMP identifies the WWC Superintendent as the person responsible for maintaining lists of the equipment and critical spare parts. The position directly responsible for tracking equipment and maintaining up-to-date equipment and critical spare parts lists is Materials Technician. The SSMP should be updated to correctly reflect the responsible party for equipment and critical spare parts.	Completed.
6 – OERP	Complete all unpopulated fields in the revised "Collection System Questionnaire" in CIWQS. Enrollees have six months from the date that the revised MRP became effective to complete the questionnaire. This means that the questionnaire must be completed by approximately March 9, 2014. If this questionnaire is not completed by that time, the system will lock the Enrollee out from all reporting capabilities.	Completed

	Figure 6.2 in SSMP section 6.3 has a typographical error. There is text missing in some of the decision boxes. The same figure is in SSMP Appendix F-1(1) without the missing text. WWE recommends reinserting the figure with the corrections made or removing the figure from the SSMP and only reference Appendix F-1(1).	Completed.
	Section 2.I.A of the City SSO Response Procedures indicates that the time a call was received notifying the City of a SSO will be used as the SSO start time on the forms reported to CIWQS. WWE recommends that the City develop a SOP for estimating the start time of SSOs to include additional methods for examining possible start times to support the SSO start time entered into CIWQS.	Considered.
	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station.	In Progress.
7 – FOG Control Program	List Sean Bigley as the responsible party for the FOG Public Education Plan.	Ongoing updates.
	Schedule routine meetings between WWC and IWS to share findings from preventative maintenance activities and FSE inspections to identify FSEs who are negatively impacting the collection system by discharging excessive amounts of FOG.	Considered.
	Develop a SOP describing the process of how pipelines are added to the hot spot cleaning schedule, how the cleaning frequency (i.e., quarterly, semiannually, annually) for each hot spot is initially set, and how the cleaning frequency for an individual hot spot may be adjusted over time.	In Progress
	SSMP section 7.8, paragraph three contains a typographical error. It states that "sewer line maintenance work orders are issued and completed to ensure that hot spot lines **do** have grease blockages/SSOs between cleaning schedules".	Completed

	The word "do" should be changed to "do not".	
8 – SECAP	Reevaluate the capacity of the system so that changes to the system can be updated and recent flow monitoring results can be used to update findings to reflect current conditions and revisions to planned development. The City should consider revising the planned frequency for system evaluation updates if a frequency of five years is not warranted based on system needs.	In Progress
	Add documentation to internal SSO reports showing that the amount of precipitation over a 24-hour period exceeded 2.82 inches if the cause of the SSO is identified as "rainfall exceeded design". The lower bound of the 10-year 24-hour precipitation frequency estimate with a 90% confidence interval from the NOAA Atlas 14, Volume 6, Version 2 data for the Rocklin (station ID 04-7516) is 2.82 inches.	Considered
9 – MMM	Update Appendix I-Benchmarking Metrics on City website with information from FY11/12 and FY12/13	Completed.
	Update Appendix I. This appendix includes information from the initial 2007 Implementation Schedule. The initial SSMP implementation and the SWRCB compliance schedule concluded many years ago and does not need to be included in the SSMP. However, the information regarding the continual implementation of the SSMP such as the document location, responsible person, and review frequency should be included	No Progress
	Identify the metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness.	Considered
	Consider tracking additional metrics targeted at measuring the effectiveness of SSMP elements that do not currently have metrics associated with them. A list of potential performance measures listed by SSMP element is included in **Appendix 7.2** of this internal audit.	Considered

	Using the data collected in SSMP Appendix I as a reference, develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals. See **Appendix 7.2** for a list of potential performance indicators for preventative maintenance activities with responsible parties.	Considered
	Assign the individuals responsible for the various elements of the SSMP to complete the Performance Indicator Assessment Forms that are developed for their SSMP elements. See **Appendix 7.2** for a list of potential performance indicators with the assigned responsible parties.	Considered
	Using the data collected in SSMP Appendix I as a reference, set performance goals for the metrics used to illustrate SSO trends. See **Appendix 7.2** for a list of potential performance indicators related to SSO trends.	Considered
10 – SSMP Program Audits	Post this SSMP internal audit to the City website.	No Progress
	Schedule the next internal SSMP audit for July - August 2015.	Considered
	The SSMP must be recertified by the City Council before January 21, 2014. Per SSS WDR D.14, the City must have the SSMP updated and re-certified by the governing board (i.e., City Council) every five years. The City Council approved the original SSMP on January 21, 2009 which sets the date for re-certification on January 21, 2014.	Completed
	Revise Appendix J-1 to reflect recommendations for review of performance indicators (i.e., metrics associated with specific SSMP elements and the associated timelines).	No progress.

	Revise Appendix J-2 (Audit Form) to provide areas in the tables for each SSMP element to conduct an assessment of both 1) the compliance against SSMP requirements and 2) the effectiveness of the SSMP element. Information gathered on the recommended Performance Indicator Assessment Forms should be included in the "Support Documents and Data" section of the Audit Form.	No progress.
	Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes.	In progress.
11 - Communication	As of September 2013 the State Water Board amended the MRP of the SSS WDR. Update or develop a new PowerPoint presentation to reflect the new reporting requirements and how it affects the City.	Completed.
	Finalize the formal agreement with Sacramento Area Sewer District (SASD) regarding the discharge of wastewater from the City collection system into the SASD system.	Completed.
	Update SSMP section 11.4 to reference Appendix C-5 for the Joint Exercise of Powers Agreement for the SPWA and to reference SSMP Appendix C-6 for the Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities.	In Progress
	Update SSMP Appendix K-5 to include the Funding Agreement Relating to the South Placer Wastewater Facilities. It currently includes only the flysheet.	No Progress.
	Update SSMP document to reference the appendices included on the City website (i.e., Appendix K-6 Sewer Smart Newsletter and Appendix K – FOG Pharm Outreach 2012-13 Budget).	No progress.

2.2 Review of FY13/14 and FY14/15

The City has prioritized eliminating SSOs from the collection system and was successful preventing any Category 1 and Category 2 SSOs during the FY 13/14-14/15 audit period. A total of 10 Category 3 mainline SSOs occurred, of which 5 were caused by Grease Deposition (FOG) issues (i.e., 50% of all mainline SSOs). A total of 79 Category 3 lateral SSOs occurred, of which 63 were caused by Root intrusion (i.e., 80% of all lateral SSOs).

SECTION 3 SSO Trends

3.1 Historical SSO Data

A total of 89 Category 3 SSOs occurred during FY 2013/14 (47 SSOs) and FY 2014/15 (42 SSOs). Information regarding these SSOs is located in Section 7.1 and details the date, location, type, volume, volume recovered, and recovery percentage of total volume of each spill.

One of the City-defined tasks of the Audit is to compare the information submitted to the publicly available California Integrated Water Quality System (CIWQS) database with internal City records. The WWC Superintendent verifies that SSO data in CIWQS is accurate and matches the SSO Field Report Forms. Table 3 shows an organized view of key data present in the CIWQS and City internal records and shows discrepancies, if any, between them. The information presented in the "Internal Records" column represents a summarized view of various performance measures maintained by the City.

Table 3: CIWQS and City SSO Historic Data

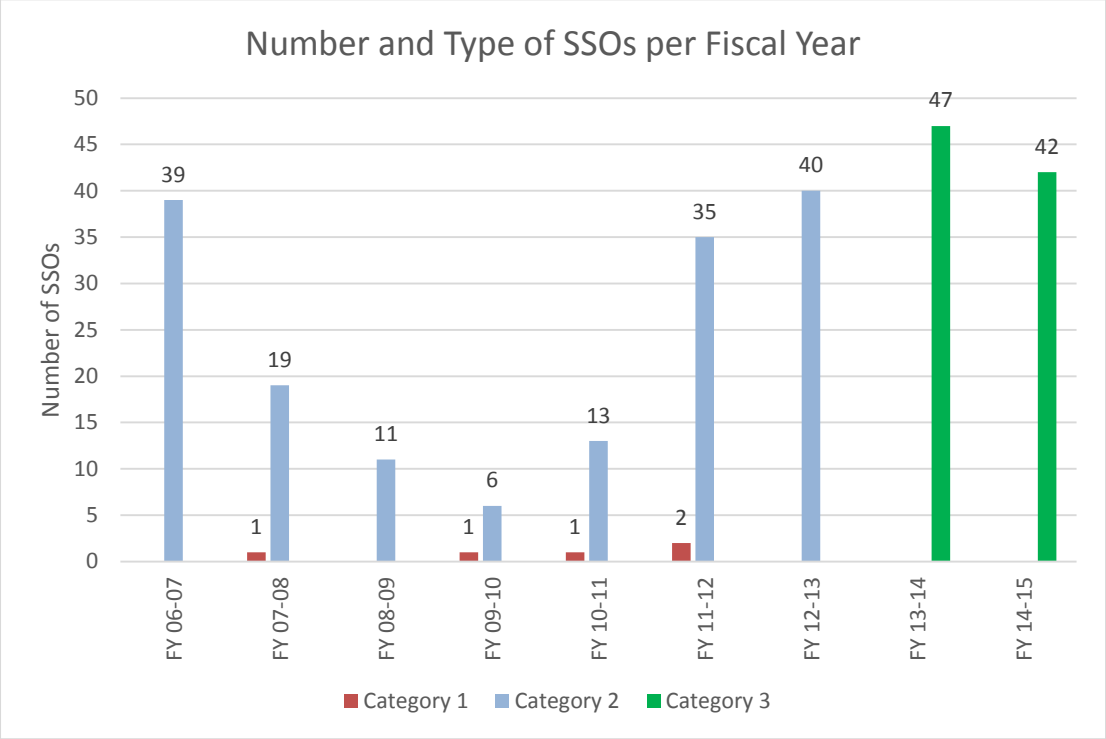
SSO Historical Data since last SSMP Internal Audit	CIWQS Data FY 11/12 – 12/13	Internal Records FY 11/12 – 12/13	CIWQS Data FY 13/14 – 14/15	Internal Records FY 13/14 – 14/15
The total number of potential SSO service calls received	-	505 / 438 calls	-	627 / 915 calls
The total number of SSOs reported	77 SSOs	77 SSOs	47 / 42 SSOs	47 / 42 SSOs
The reported total volume of SSOs	2053 gallons	2053 gallons	2388 gallons	2385 gallons
The reported total volume of SSOs that reached waters of the state	405 gallons	405 gallons	0 gallons	0 gallons
The percent volume of SSOs recovered	80%	80%	93%	94%
The average SSO response time	23 minutes	21 minutes	18 minutes	18 minutes
The average SSO duration time	18 minutes	-	3:00 hours*	-
The average SSO mitigation time	-	-	< 6 minutes	< 5 minutes

* Seven long-duration SSOs (> 3 hours long) occurred during the audit period that increased the average SSO duration length from 42 minutes to 3 hours

The following discussion investigates the City's historical SSO data to identify potential SSO trends to provide insight into measuring the effectiveness of the City SSMP and future improvements in reducing SSOs. Figure 1 highlights the type and number of SSOs since FY 2006/07. The SWRCB defined new three SSO categories as of September 13th, 2013. A category 1 SSO is currently defined as a spill of any volume that reaches surface water. A Category 2 SSO is currently defined as a spill greater than or equal to 1,000 gallons that does not reach surface

water. A Category 3 SSO is currently defined as a spill less than 1,000 gallons that does not reach surface water. As demonstrated in Figure 1, the total number of SSOs per fiscal year has increased slightly since FY 11/12 and FY 12/13 but is limited to Category 3 SSOs.

Figure 1: Number of SSOs per Fiscal Year



To provide regional context and insight into the City's collection system performance, **Table 4** compares the City's average number of SSOs and average spill volume per SSO per 100 miles of sewer pipeline next to results from sub-region Central Valley –Sacramento (part of State Water Control Board Region 5) and California (State). This information is gathered from the SWRCB's annual compliance reports. These reports and their related data can be found online at the following link: http://www.waterboards.ca.gov/water_issues/programs/sso/docs/compliance_report_fy1112.pdf. Generally the City average SSOs/100 miles of sewer pipe is far below the average of all municipal agencies in the Central Valley Sacramento subregion, and is slightly higher than the State. The City's average spill volume/100 miles of sewer pipe is an order of magnitude smaller than the state, which highlights how effective the City's SSO preventative maintenance and response program has been.

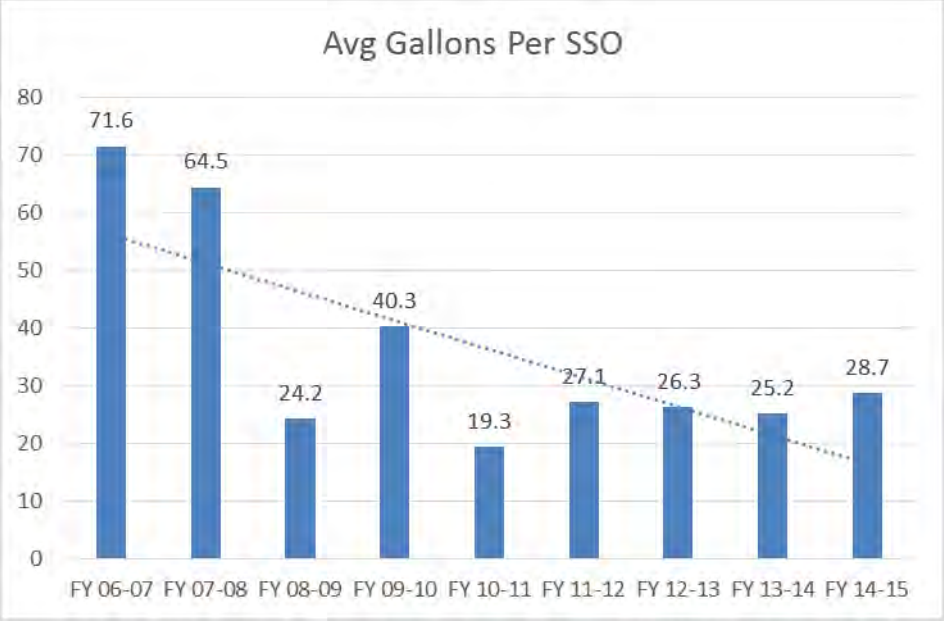
Table 4: Regional Comparison of SSO Data

Fiscal Year	Average # of SSOs per 100 miles (number)			Average Spill Volume per 100 miles (gallons)		
	City	Central Valley - Sacramento	State	City	Central Valley - Sacramento	State
2011/12	4.88	12.4	4.28	132	3,396	13,925
2012/13	5.85	12.72	4.38	154	4,371	8,194
2013/14	6.39	11.96	4.38	160	2,878	4,587
2014/15	5.71	Report not available yet		163	Report not available yet	

* Includes gravity mainline, laterals, and pressure pipes

A valuable source of analysis is also comparing average gallons spilled per SSO across fiscal years. As demonstrated in Figure 2, the overall gallons per SSO since 2007 shows a downward trend, but the more recent trend in the past 4 years shows that gallons per SSO is generally steady and holding at approximately 27 gal/SSO. Table 4: Regional Comparison of SSO Data

Figure 2: Average Gallons per SSO



Based on CIWQS records, Table 5 demonstrates the leading causes of SSOs in this audit period compared to the previous audit period. Generally SSOs from Debris and Fog have increased moderately, but SSOs caused by Roots (51 to 63) have experienced a notable increase. There have been no Capacity-caused SSOs in this audit period. The actions planned as a result of this SSMP Audit will target the leading causes to most effectively reduce the number and spill volume of SSOs.

Table 5. Leading Causes of SSOs in FY13-15 (results from FY11-13 in parenthesis)

By Number		By Volume		By Average Volume per SSO	
Cause	**Number**	**Cause**	**Gallons**	**Cause**	**Gallons**
Roots	63 (51)	Roots	1281 (1235)	FOG	149 (39)
Debris	15 (12)	FOG	743 (77)	Debris	21 (19)
Pipe Failure	6 (9)	Debris	314 (222)	Roots	20 (24)
FOG	5 (2)	Pipe Failure	50 (114)	Pipe Failure	8 (13)
Capacity	0 (2)	Capacity	0 (400)	Capacity	0 (200)
Vandalism	0 (1)	Vandalism	0 (5)	Vandalism	0 (5)

3.2 Performance Measures

The City utilizes multiple performance measures to assess the effectiveness of the SSMP in achieving proper operation and management of the sanitary sewer system to reduce and prevent SSOs. While the City may use other performance measures for evaluation purposes, the following measures are typically used:

- SSO Rate (SSOs per 100 miles of collection system piping per year)
- Number of SSOs for each cause (roots, FOG, debris, pipe failure, capacity, lift station failures, etc.)
- Median SSO volume (gallons)
- Percentage of SSOs greater than 100 gallons (%)
- Percentage of SSOs reported as Category 1 (%)
- Percentage of SSO volume recovered (%)
- Percentage of SSO volume reaching a surface water (%)

The City's CIWQS SSO record were queried to analyze each performance measure from FY 11/12 to FY 14/15 and the data is displayed in **Table 6** below. From analyzing the table, the City's SSO rate has increased slightly during this audit period compared to the last, mostly related to the increase in root-related SSOs.

Table 6: Performance Measures

Performance Measures		FY 11/12	FY 12/13	FY 13/14	FY 14/15
SSO Rate, SSOs/100 mi		4.88	5.85	6.39	5.71
SSO Cause	FOG	0	1	4	1
	Roots	18	30	32	31
	Debris	1	0	1	0
	Debris-Rags	7	2	7	2
	Pipe Failure	6	4	1	5
	Non Dispersables	0	0	1	2
	Vandalism	1	0	0	0
	Capacity	0	2	0	0
	Construction	0	0	0	1
	Unknown/Other	2	3	1	0
Median SSO Vol (gal)		27	26	25	29
% of SSOs > 100 gal		2.8	2.3	2.1	4.7
Category 1 % of Total SSOs		0	7	0	0
% of Spill Volume Recovered		99	63	94	93
% of Spill Vol Reaching Surface Water		0	37	0	0

SECTION 4 Audit Procedure

In accordance with SSS WDER Section D.13.x, the primary SSMP audit objective is to focus on evaluating the effectiveness of implementing the SSMP and the City's compliance with the SSMP requirements identified in the SSS WSDR Order. This section details the procedures used to meet this objective.

4.1 Review of SSMP Compliance

This Audit assessed the City's SSMP against the requirements outlines in the SSS WDR. The subsections of SECTION 5 listed below are organized by SSMP elements. Each subsection contains a table which lists the SSS WDR section D.13 requirements and City's level of compliance of the SSMP with that particular requirement. The compliance status of the City's SSMP is indicated with one of the following ratings: ***Yes*** *– in compliance,* ***No*** *– not in compliance, or* ***N/A*** *– not applicable with a written justification in the SSMP.* If there are any compliance deficiencies, then an explanation of the deficiency is given. Each deficiency will have a recommended SSMP enhancement, which may include action items, adjustments, and/or timelines of the planned completion.

4.2 Review of SSMP Effectiveness

Subsequent to the SSMP compliance assessment compared to SSS WDR requirements, an evaluation of the effectiveness of the SSMP elements has been conducted to comply with the requirements for SSMP audits per subsection D.13.x of the SSS WDR. The discussion review if the plan outlined for each section is being followed, and how effective the plan is at reaching the desired objectives. Recommendations will be made where

appropriate based on the results of this Audit to identify tasks to improve the effectiveness of SSMP activities. Performance metrics will be used wherever possible to measure the effectiveness of the SSMP elements.

This section will not repeat the information and plans presented in each section of the SSMP and is intended to evaluate the effectiveness of the stated plans for each SSMP element. The reader should reference the City's SSMP to obtain the information referenced by this Audit.

A summary of the recommended modifications made through this Audit is included in SECTION 6.

SECTION 5 Audit of SSMP Elements

This section evaluates all elements of the City's SSMP. Each section of this chapter is associated with one of the eleven elements of the SSMP in accordance with SS WDR section D.13 requirements. Each element is evaluated for compliance and effectiveness described above in 4.1 and 4.2 respectively.

5.1 Goals

5.1.1 Compliance

Table 7. Compliance with SSS WDR D.13.i - Goals

SSMP Requirement	Compliance	Deficiencies
i Properly manage, operate, and maintain all portions of the City's wastewater collection system.	Yes	-

5.1.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Goals (SSMP 1.2)

- Level of Effectiveness: The City currently has six goals identified in the SSMP. The goals of the City recorded in the SSMP have been effective in guiding the City's activities to support the objective of the SSS WDR to protect the waters of the state.

- Recommendations: No recommendations at this time

5.2 Organization

5.2.1 Compliance

Table 8. Compliance with SSS WDR D.13.ii - Organization

SSMP Requirement	Compliance	Deficiencies
ii(a) Identify Legally Responsible Official (LRO)	Yes	-
ii(b) SSMP responsibility and organization chart	Yes	-
ii(c) Chain of communication for reporting SSOs	Yes	-

5.2.2 Effectiveness of SSMP Elements and Recommended Modifications

List Legally Responsible Official (LRO) (SSMP 2.1)

- Level of Effectiveness: The City has Ken Glotzbach (Utility Manager) and Chris Bracco (Wastewater Collections Superintendent) listed in CIWQS as LROs. Dan Pruden (Wastewater Collections Supervisor) is listed as a data submitter. This is recorded in Appendix B-1 of the SSMP and is publicly accessible. The

current organization of data submitters and LROs has proven effective in reporting SSOs to meet the requirements of the September 2013 amended Monitoring and Reporting Program.

- Recommendations:
  - Modify Appendix B-1: Add Wastewater Collections Supervisor Dan Pruden to Appendix B-1
  - Modify Appendix B-1: Update City Council positions and add phone numbers (Mayor Carol Garcia, Vice Mayor Susan Rohan, City Attorney Robert Schmitt). Update Commissioners and phone numbers: Chair Blandon Granger, Vice Chair John Speight. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Cheryl Hammond. Update Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.

SSMP Responsibility Organization Chart (SSMP 2.2)

- Level of Effectiveness: The SSMP Responsibility Organization Chart (SSMP Figure 2-1) is current in the SSMP and lists a descriptive definition of each individual's responsibilities. The chart is effective in defining the work flow and responsibilities of the individuals as well as departments within the City of Roseville's operations with relation to the SSMP. The narrative of the general position description are outlined in Section 2.2 of the SSMP.

- Recommendations:
  - Modify Figure 2-1: Modify the Industrial Waste Specialist category and remove the FOG Control Program from the description due to the FOG program oversight transitioning from IWS to WWC in 2016. Add the Fog Control Program description to the Wastewater Collection Office Assistant category.
  - Modify SSMP Section 2.2: Modify the general position description and SSMP responsibilities under the Lab/Industrial Waste Supervisor, Specialist, and Technician and remove the FOG Control Program or inspection program from those descriptions.
  - Move the FOG Control Program SSMP responsibility into the WWC Superintendent category and the WWC Office Assistant category.

Chain of Communication Reporting Chart (SSMP 2.3)

- Level of Effectiveness: The internal notification contact chart is current and readily available to all wastewater utility district staff. The city of Roseville has a 24 hour call center, standardized answering script and procedures, and a full time staff wastewater utility customer service representative. The individual's job is to respond to any service calls including but not limited too: backups, SSOs, smell complaints, etc. This has been an effective and well-utilized service, as service calls have increased and the average SSO response time has decreased from 23 minutes from the previous audit period to 18 minutes which is well below the 40 minute target. Only 3 SSO response times were above 40 minutes during the audit period (1:30:00, 00:42:00, and 1:11:00) which totaled 16 gallons in spills and all occurring in the morning at around 8:30 AM, two of which occurred on weekday mornings possibly impacted by dense morning traffic.

- Recommendations:
  - Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24 hour call center instead of WWC service staff. In addition, modify the Wastewater Admin cell and rename the position as Office Assistant.
  - Modify Appendix F-1 Flowchart: Follow the same recommendations written above.

5.3 Legal Authority

5.3.1 Compliance

Table 9. Compliance with SSS WDR D.13.iii – Legal Authority

SSMP Requirement	Compliance	Deficiencies
iii(a) Prevent illicit discharges	Yes	-
iii(b) Properly designed and constructed sewers	Yes	-
iii(c) Ensure access to laterals owned/maintained by City	Yes	-
iii(d) Limit the discharge of FOG and other debris	Yes	-
iii(e) Enforce any violation of City ordinances	Yes	-

5.3.2 Effectiveness of SSMP Elements and Recommended Modifications

Industrial Pretreatment Program (SSMP 3.2)

- Level of Effectiveness: The Industrial Waste Section (IWS) administers the Pretreatment Program Enforcement Response Plan and implements enforcement procedures specified by the U.S. EPA in accordance with 40CFR 403.5 (f) (5). The IWS has the authority to permit and monitor significant industrial users (SIUs) and small commercial/industrial dischargers. The implementation of the Pretreatment Program Enforcement Response Plan has been effective in providing the City the authority to control and prevent illicit discharges to the collection system.

- Recommendations: No recommended modifications at this time.

Municipal Code and Design and Construction Standards (SSMP 3.3)

- Level of Effectiveness: The City's design and construction standards regulate the preparation of plans for construction of additions/improvements to the sewer. The Roseville Municipal Code (RMC) section 14.12.040 requires that building sewer and connection into the public sewer system conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City. The RMC also requires an installation of a lateral line clean out at the point of connection with the public sewer. The City design and construction standards and the RMC section 14.12.040 have been effective in providing the City the legal authority to properly design and construct the sewers and connections.

- Recommendations: No recommended modifications at this time.

Municipal Code – Sewer Access Authority (SSMP 3.4)

- Level of Effectiveness: The Charter in the RMC, Article X Sec. 10.01 designates the authority to access City owned and operated facilities, either within or outside its corporate limits, number of activities including, but not limited to maintenance, inspection, and repair related to sewage collection. The authority gives legal access to all City-owned sewer facilities. The City has not had issues to date with lack of access to facilities based on legal authority. The current legal authority to access sewer facilities has been effective in supporting the goals of the SSMP.

- Recommendations: No recommended modifications at this time.

Municipal Code – FOG (SSMP 3.5)

- Level of Effectiveness: The RMC chapter 14.14 is a robust FOG ordinance that lists regulatory requirements, fees, administrative requirements, and authority to enforce regulatory compliance. This ordinance is effective in identifying the required equipment and BMPs for FSEs as well as indicating the authority of the City to enforce the FOG requirements.

- Recommendations: No recommended modifications at this time.

Municipal Code – Enforcement Authority (SSMP 3.6)

- Level of Effectiveness: The RMC section 14.12.060 authorizes the City to penalize violators of the City's code requirements. At the discretion of the City attorney, an individual may be charged with an infraction or a misdemeanor. The authority to penalize infractions that may cost City resources has proven effective to maintain proper use of the wastewater collection system.

- Recommendations: No recommended modifications at this time.

Inter-Agency Agreements and Satellite Systems (SSMP 3.7)

- Level of Effectiveness: The City maintains a Joint Exercise of Powers Agreement for the South Placer Wastewater Authority and Agreement Regarding the Operation and use of the South Placer Regional Wastewater Facilities. In addition, the City has an Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

- Recommendations: Update SSMP section 3.7 to include the Wastewater Service Contract and Operating Agreement between the City, SASD, and SRCSD.

5.4 Operation and Maintenance Program

5.4.1 Compliance

Table 10. Compliance with SSS WDR D.13.iv – O&M Program

SSMP Requirement	Compliance	Deficiencies
iv(a) Collection system maps	Yes	-
iv(b) Preventive O&M activities	Yes	-
iv(c) Rehabilitation and Replacement (R&R) plan	Yes	The City does have an R&R plan in place but additional improvement should be implemented (see below)
iv(d) Training	Yes	The City provides regular training but additional improvements to the training program should be implemented (see below)
iv(e) Equipment and critical replacement parts	Yes	-

5.4.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Collection System Maps (SSMP 4.2)

- Level of Effectiveness: The city maintains electronic and hard copy maps of the sanitary sewer system and storm drain system. Updates to the electronic map system are translated to the field crew trucks via single sheet prints, if required. Full hard copy mapbooks are updated on a yearly basis. The City Mapping Update Policy is followed in order to ensure mapping is correct and completed in GIS and made available to the required users.

- Recommendations: Include the Mapping Update Policy Document as an appendix to the SSMP and post it to the City's SSMP website page.

Roseville Preventive Operations & Maintenance Activities (SSMP 4.3)

- Level of Effectiveness: WWC engages in various programs to complete routine preventative maintenance activities, which include jet cleaning, lateral eeling, chemical root control, CCTV inspections, visual inspections, and lift station maintenance.

  The City experienced a 24% increase in root-caused SSOs during the audit period but also increased total mechanical root control by 35% and implemented chemical root control in laterals with known root issues. The spike in root growth SSOs could be correlated with the City's mandatory water conservation efforts in response to California historic drought over the audit period. Homeowners and the City responded by decreasing irrigation use, in which case root systems may have intensified growth around existing laterals and connection points to main line pipes as overall soil moisture decreased.

The City outperformed targets and past performance measures as evident in Table 11. Other performance measures or benchmarks are reviewed in full in the recommendations of Section 5.9.

Table 11. Performance Measures related to SSS WDR D.13.iv(b)

Performance Measure	Target	FY11/12	FY12/13	FY13/14	FY14/15
Total miles cleaned per year	250	277	272	330	284
Total miles of mechanical root control per year	-	9.74	11.23	13.89	14.69
Total number of sewer maintenance field staff	NA	23	23	23	24
Average high velocity cleaning per crew per day	NA	1866 LF	1852 LF	2393	2922
Average cost of sewer mechanical cleaning	-	$1.57/LF	$1.36/LF	$1.23/LF	$1.20/LF

- Recommendations:
  - Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.

Rehabilitation and Replacement Plan (SSMP 4.4)

- Level of Effectiveness: The City regularly CCTV inspects pipelines using the national Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) coding standard. The City evaluates the risk of failure for each asset based on the various data sources it maintains (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections) and assigns high risk assets in a ranked Rehabilitation and Replacement (R&R) Plan. If an R&R project is not completed in one year, then it is rolled over to the next. The City maintains a 5-year list of planned R&R CIP projects.

  During this audit period WWC produced the R&R list for pipeline lining and manhole rehabilitation which was then used by EU Engineering which operates the R&R program. The City is anticipating changes to this program soon, however, and WWC will produce its own manhole R&R list like before but will also operate the R&R program for it. In addition, EU Engineering will receive the condition assessment data generated by WWC for sewer pipelines and will then produce its own R&R list and continue operating the R&R program for sewer pipelines. In addition, use of the Hansen CMMS software will be discontinued and Maximo CMMS software implemented.

  In accordance with City-utilized performance measures related to inspection and R&R program activities as displayed in Table 12, the City has met or exceeded targets with one exception. In FY 14/15 the City missed its goal for total miles of laterals rehabilitated using CIPP per year. The total number of laterals rehabilitated in this audit period was less than the previous audit period, but the total sewer main miles of CCTV inspections increased. Overall the R&R plan development and implementation has been effective and ensures high-priority projects are implemented.

Table 12. Performance Measures related to SSS WDR D.13.iv(c)

Performance Measure	Target	FY11/12	FY12/13	FY13/14	FY14/15
Total miles visually inspected per year (not CCTV)	-	0.25	0.25	0.25	0.25
Number of laterals rehabilitated using CIPP per year	50	134	50	90	43
Total miles CCTV inspected per year (main)	30	29.2	67.6	53.27	65
Average cost of CCTV (main)	-	$0.48/LF	$0.56/LF	$0.35/LF	$0.41/LF

- Recommendations:
  - Document the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.
  - Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment.

Training (SSMP 4.5)

- Level of Effectiveness: The WWC requires employees be certified with CWEA, DMV, CPR, First Aid, Confined Space Policy, Gas Detector Policy, as well be trained in equipment safety, maintain OSHA rules, and review material safety data sheets.

  The existing training program has been effective in supporting a well-trained staff. Over this audit period WWC has reported 2 on the job accidents in FY 13/14 and 8 in FY 14/15. WWC strives for zero-on-the-job accidents and has weekly tail-gate training meetings and monthly training sessions where WWC staff is trained in part via various SOPs.

- Recommendations:
  - Augment the ongoing training program by documenting that WWC staff have demonstrated the ability to operate a major piece of equipment (i.e., combo Vactor unit) in accordance with available SOPs to a supervisor before using it for the first time in the field and at a specified frequency (i.e., annually or if equipment is upgraded). The document would need to list a piece of equipment, the name of the journeyman, supervisor, signatures, name of SOP if used, and date.
  - Modify SSMP Section 4.5 to include training on SSOERP.

Equipment and Critical Replacement Parts (SSMP 4.6)

- Level of Effectiveness: WWC maintains a list of equipment and critical replacement parts inventory in Appendix D of the SSMP. The critical replacement parts list is 100% stocked, up to date, and is maintained by the Material Technician at Dry Creek WWTP. The equipment and critical replacement

parts inventory and upkeep is effective and ensures that a lift station critical part failure can be quickly mitigated.

- Recommendations: No recommended modifications at this time.

5.5 Design and Performance Provisions

5.5.1 Compliance

Table 13. Compliance with SSS WDR D.13.v – Design and Performance Provisions

SSMP Requirement	Compliance	Deficiencies
v(a) Sanitary sewer design and construction specifications	Yes	-
v(b) Procedures and standards for inspecting and testing new and R&R projects	Yes	-

5.5.2 Effectiveness of SSMP Elements and Recommended Modifications

Sanitary Sewer Design and Specifications (SSMP 5.2)

- Level of Effectiveness: The City's design and construction standards are available on the website and the online SSMP documentation lists their location. These designs and construction standards are effective in ensuring that new or rehabilitated infrastructure is designed and constructed in an acceptable manner.

- Recommendations: No recommended modifications at this time.

Sanitary Sewer System Construction and Performance Provisions (SSMP 5.3)

- Level of Effectiveness: The City's construction and design standards include procedures and requirements for the testing of new/rehabilitated assets and has been effective in ensuring that recently constructed assets perform as expected.

- Recommendations: No recommended modifications at this time.

5.6 Overflow Emergency Response Plan

5.6.1 Compliance

Table 14. Compliance with SSS WDR D.13.vi - OERP

SSMP Requirement	Compliance	Deficiencies
vi(a) Proper notification procedures	Yes	-
vi(b) Program for appropriate SSO response	Yes	-
vi(c) Procedure for prompt notification to regulatory agencies	Yes	-
vi(d) Procedures for appropriate staff and contractor training	Yes	
vi(e) Procedures to address emergency operations (e.g., traffic, crowd control)	Yes	-
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	No	SSOERP does not meet certain water quality monitoring requirements of the amended MRP document

5.6.2 Effectiveness of SSMP Elements and Recommended Modifications

Notification Procedures (SSMP 6.2)

- Level of Effectiveness: The average SSO response time was 18 minutes from notification of SSO to operator arrival time for the City of Roseville. This response time is much faster than the City target response time of 40 minutes and indicates that the notification procedures employed the City are effective in facilitating a rapid response from the City's first responders.

- Recommendations: No recommended modifications at this time.

Response Program (SSMP 6.3)

- Level of Effectiveness: SSO response procedures are documented in Appendix F-1 Section 2 of the SSMP and are summarized in the flow chart in Figure 6-2 of the SSMP and Appendix F-1 SSOERP. The flow chart uses a series of yes/no questions to guide SSO responders in quickly identifying the right sequence of decisions and actions to properly assess and mitigate an SSO. This chart is simple and effective in explaining the process in which to mitigate an SSO.

  During the audit period, the average SSO volume spilled was 26 gallons, with an average 94% recovered from the total SSO volume. Similarly, the average SSO duration length was 3:00 hours long, however there were 7 long-duration SSOs (over 3 hours) that caused the average SSO duration length to increase from 42 minutes. One of these SSOs in FY 13/14 spilled from a lower lateral for 70 hours and resulted in the largest volume spilled of 570 gallons, however all of it was recovered. In all of these instances, the City was notified very late, and once notified, stopped all of the long duration SSOs in under 25 minutes.

The average City response time to SSO calls during the audit period was 18 minutes, and the average time it took to stop the SSO (SSO mitigation) once on-site was just under 5 minutes. These statistics demonstrate that the City has been effective in responding and mitigating SSOs.

- Recommendations:
  - The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.
  - Modify SSOERP Section IV Traffic Control (WWC Personnel) to require WWC Personnel to implement traffic control in every situation where WWC personnel may be at risk of vehicular impact in accordance with MUTCD (part of Caltrans Work Area Traffic Control Handbook). It is recommended that WWC produce several standard TCPs (Traffic Control Plan) to match existing traffic conditions or type of roadway (i.e., arterial, residential, etc.).
  - Modify SSOERP Section V Correct Cause (WWC Personnel) to include a discussion of whether a root-caused SSO could be classified as a PLSD if the City defines a spill cause as the entry point of the root and whether that location is on lower (city) or upper lateral side (private). Include recommendations to provide good documentation of the decision with photographic evidence and a logical narrative.

Regulatory Notification Procedure (SSMP 6.4)

- Level of Effectiveness: The Superintendent and Utility Manager are the legally responsible officials (LRO) for certifying SSO reports submitted to CIWQs. The Superintendent and Supervisor are also responsible for reporting the SSOs to RWQCB, OES, and Placer Environmental Health Department as required. This section is effective in conveying the responsibility the LRO in reporting SSOs to the proper authorities.

- Recommendations: No recommended modifications at this time.

Staff and Contractors Training (SSMP 6.5)

- Level of Effectiveness: Each WWC employee is required to complete the SSO response procedure training updates and review of SSO training are included in the weekly tailgate meeting throughout the year. They are also trained on the various SOPs implemented within WWC. Contractors are also required to implement the procedures identified in the SSO training prior to working within the collection system. As evidenced by the fast response and mitigation times, the WWC staff's training has been effective.

- Recommendations: No recommended modifications at this time.

Emergency Response Coordination (SSMP 6.6)

- Level of Effectiveness: WWC employees are required to complete the Emergency Action plan training annually. This covers HAZ WOPER first responders and Roseville's Incident Command System (ICS). These process, procedures, and response systems are also reviewed via weekly safety tail gate meetings. These training sessions have been effective way to prepare staff to deal with hazardous waste and materials.

- Recommendations: No recommended modifications at this time.

Spill Mitigation and Containment Procedure (SSMP 6.7)

- Level of Effectiveness: Appendix F-1 of the SSMP includes an SSOERP which includes an SOP for estimating spill volumes, containment, and mitigation of spills. The new amended Monitoring and Reporting Program (MRP) requirements implemented in September 2013 require a robust water quality monitoring plan that must account for spill travel time in surface water, among several new requirements. The City's current SSOERP Appendix C Water Quality Sampling Procedures document does not meet these requirements.

- Recommendations:
    - Modify SSOERP Appendix A – Start Time Documentation Policy to include the following WWC standard field practice: If the start time cannot be set based on witnesses and if there is evidence of a spill traveling a farther distance than 15 minutes, then the field crew estimates the new start time and may try to recreate the spill (with clean water) to estimate volumes.
    - Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP.
        - Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance.
        - Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan.
    - Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling.

5.7 FOG Control Program

5.7.1 Compliance

Table 15. Compliance with SSS WDR D.13.vii – FOG Control Program

SSMP Requirement	Compliance	Deficiencies
vii(a) Public education plan	Yes	The City does have a public education plan but additional improvements should be implemented (see below)
vii(b) FOG disposal plan	Yes	-
vii(c) Legal authority to prohibit SSOs and blockages caused by FOG discharges	Yes	-
vii(d) BMPs, grease removal devices, recordkeeping, and reporting requirements	Yes	-
vii(e) Authority to inspect and enforce FOG ordinance	No	The City does have the authority to inspect/enforce FOG ordinance but no inspection records were produced for the Audit period.
vii(f) FOG Characterization Assessment and Hot Spot Cleaning Schedule	Yes	-
vii(g) FOG Control Program Measures	Yes	-

5.7.2 Effectiveness of SSMP Elements and Recommended Modifications

Public Education Plan (SSMP 7.2)

- Level of Effectiveness: The City has developed and operates a comprehensive FOG outreach program to residents, restaurants, and the plumbing community on the proper disposal of FOG. The main objective is to educate the City of Roseville residents and restaurants on the proper disposal of FOG to meet or exceed outreach standards set forth in the State General WDR requirements. The program has implemented TV ads, flyers, bill inserts, and websites to convey the message of educating the public on the proper disposal of FOG and other substances. This system appears to be effective in educating the public on the proper disposal of FOG and other substances.

- Recommendations: List Maurice Chaney as the responsible party for the FOG Public Education Plan.

FOG Disposal Plan (SSMP 7.3)

- Level of Effectiveness: During the audit period the Industrial Waste Section (IWS) oversaw the FOG disposal plan with permitted FSEs, however all FOG program-related responsibilities transitioned to WWC in 2016. The City currently has 319 FSEs that are required to and have obtained a FOG wastewater discharge permit (FOG WDP). The same City regulations from the audit period are in place which require

permittees to retain a minimum 3 years of documentation to prove the proper cleaning, maintenance, and removal of FOG from grease control devices and the disposal site location. The City provides information about the permitting process and permit applications on the City website (URL address below) as a resource for businesses and residences within the City.
(http://www.roseville.ca.us/eu/wastewater_utility/fats_oils_n_grease/default.asp)
The FOG record keeping requirements for FSEs appear to be effective in that only three FOG-related SSOs occurred over the audit period.

- Recommendations:
  - Modify SSMP Section 7.3 to reflect the change in responsibilities from IWS to WWC.

Record Keeping Requirements (SSMP 7.4)

- Level of Effectiveness: As discussed in the previous section, FOG control program responsibilities transitioned from IWS to WWC in 2016, but during the audit period, IWS operated the program. The City requires in RMC Section 14.14.260 that permitted FSEs retain logbooks on grease control device maintenance cycles, FOG hauling records, sampling data and sludge height monitoring in FOG control devices, BMPs, and records of private lateral SSOs and subsequent mitigation. The recordkeeping requirements and time frames identified in the RMC have enough information necessary for the City to enforce permit requirements of FSEs.

- Recommendations:
  - Modify SSMP Section 7.4 to reflect the change in responsibilities from IWS to WWC

Legal Authority to Prohibit SSOs and Blockages Caused by FOG Discharges (SSMP 7.5)

- Level of Effectiveness: The RMC Section 14.12.050 provides the City with a FOG ordinance and legal authority to require FOG interceptors when deemed necessary by the director. The ordinance prohibits FOG-related blockages and SSOs, and limits the maximum allowable concentration of FOG in FSE discharges at the current level of 100 mg/L of wastewater. This ordinance is effective in providing the City with the tools necessary to minimize FOG discharges into the sewer system.

- Recommendations: No modifications recommended at this time.

BMP, Grease Removal Devices, Recordkeeping, and Reporting Requirements (SSMP 7.6)

- Level of Effectiveness: The City requires all FSEs that discharge FOG to acquire a FOG WDP permit which includes provisions for FSEs to maintain BMPs and grease interceptors, cleaning records, and to report private FOG-related SSOs or blockages. The FOG WDP requirements are effective in providing the City with the tools to limit FOG discharges into the sewer system.

- Recommendations:
  - Modify SSMP Section 7.6 to reflect the change in responsibilities from IWS to WWC

Inspection and Enforcement Authority – FOG Producers (SSMP 7.7)

- Level of Effectiveness: All FSEs that discharge FOG are required to obtain and comply with a City FOG WDP. Under the permit, the FSE must comply with the FOG ordinance as detailed under the RMC, and the City maintains the legal authority to physically inspect the FSE and determine if it is in compliance. During the audit period, the City reported that all 319 permitted FSEs were inspected by IWS and zero enforcement actions initiated. Under oversight from WWC, the City plans on inspecting all 319 FSEs each fiscal year.

  The City possesses effective tools to regulate FOG discharges via a robust FOG ordinance which also requires an effective FSE inspection program. During this audit, the City did not provide inspection records, however, and without detailed documentation it is not possible to judge the effectiveness of the FOG inspection and enforcement authority element of the SSMP.

- Recommendations:
  - Modify SSMP Section 7.7 to reflect the change in oversight from IWS to WWC
  - Document all FSE inspections. Develop a standard FSE inspection form which lists individual elements the FOG WDP permittee is required to maintain in a logical order for the inspector to follow. At a minimum, the inspector should enter the FSE, check the grease removal device, conduct a FOG concentration sample, request and view cleaning/hauling records and associated BMPs. After filling out the inspection form to document the whole procedure, transfer the results of the inspection form into a database or spreadsheet by which WWC can track compliance of the multiple required elements under the permit. Follow up with FSEs as required and formally document the process. Attach a blank version of the inspection form as an appendix in the SSMP.

FOG Characterization Assessment and Hot Spot Cleaning Schedule (SSMP 7.8)

- Level of Effectiveness: The City has been effective in limiting FOG-related SSOs to three during the audit period by identifying and placing assets impacted by FOG as a last resort on the hot-spot, high frequency 3-month cleaning list. If the City encounters abnormal FOG levels in a pipe it will first reach out to FSEs and residents that it thinks may be contributing to it and distribute pamphlets to them to minimize FOG discharges. If that does not solve the problem, then the asset is put on the hot-spot list. Approximately 60% of the 90 hot-spot assets have FOG-related issues that as a whole require significant City resources to clean every 3 months.

- Recommendations:
  - Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.
  - Modify SSMP Section 7.8 to describe the process of how pipelines are added to the hot spot cleaning schedule, and remove mention of annual sewer line maintenance work orders.

FOG Control Program Measures (SSMP 7.9)

- Level of Effectiveness: The City has established that all FOG-producing FSEs acquire a FOG WDP which limits discharge of FOG, requires proper O&M records, hauling record, BMPs, and other conditions. The FOG Control Program measure provides the City's with an effective tool to limit FOG discharges from FSEs.

- Recommendations:
  - Modify SSMP Section 7.9 to reflect the change in responsibilities from IWS to WWC.

5.8 System Evaluation and Capacity Assurance Plan

5.8.1 Compliance

Table 16. Compliance with SSS WDR D.13.viii - SECAP

SSMP Requirement	Compliance	Deficiencies
viii(a) Evaluate hydraulic deficiencies	Yes	
viii(b) Establish design criteria	Yes	-
viii(c) Establish short- and long-term CIP	Yes	-
viii(d) Develop schedule of completion dates for CIP	Yes	-

5.8.2 Effectiveness of SSMP Elements and Recommended Modifications

Evaluation Process – Capacity Enhancement Projects (SSMP 8.2)

- Level of Effectiveness: The City has developed two hydraulic simulation models to identify peak flows in the collection system in 2006. The City is currently developing a new hydraulic model and drafting a new System Evaluation and Capacity Assurance Plan (SECAP) that will conclude in 2017, making it 10 years since the last study. The modeling efforts conducted in 2006 have been effective in evaluating the system and planning for future growth, which is evident from no capacity-deficiency-related SSOs during this audit period.

- Recommendations: Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years.

Design Criteria (SSMP 8.3)

- Level of Effectiveness: The City established a 10-year, 24-hour peak design storm for the hydraulic wet weather loading of the existing collection system along with flow generation factors based on water use

records and flow monitoring data. Based on the lack of capacity-related SSOs during the audit period, it appears the City's capacity design criteria are effective.

- Recommendations: No recommended modifications at this time.

Capacity Enhancement Measures (SSMP 8.4)

- Level of Effectiveness: The SPWA Wastewater Systems Evaluation includes the identification of short and long-term Capital Improvement Project (CIP) to meet current and future wastewater flows. The new hydraulic model which will be introduced in 2017 will provide new capacity enhancement measures.

- Recommendations: No modifications recommended at this time.

Capital Improvement Program Schedule (SSMP 8.5)

- Level of Effectiveness: The City lists the goal of the CIP is to develop annual project bundles of approximately $1.5 million based on WWC condition assessment data and the hydraulic model CIP results and subsequent flow monitoring or studies. The CIP schedule is effective in identifying the tasks required to assure hydraulic capacity within the collection system.

- Recommendations: No modifications recommended at this time.

5.9 Monitoring, Measurement, and Program Modifications

5.9.1 Compliance

Table 17. Compliance with SSS WDR D.13.ix – MMM

SSMP Requirement	Compliance	Deficiencies
ix(a) Maintain metrics to prioritize SSMP activities	Yes	-
ix(b) Measure effectiveness of SSMP elements	Yes	The City does have performance indicators linked with SSMP elements, but additional improvements should be implemented (see below)
ix(c) Assess preventative maintenance program	Yes	-
ix(d) Update elements based on evaluations	Yes	-
ix(e) Identify and illustrate SSO trends	Yes	-

5.9.2 Effectiveness of SSMP Elements and Recommended Modifications

Utility Metrics to Prioritize SSMP Activities (SSMP 9.2)

- Level of Effectiveness: The WWC tracks four categories of utility metrics to monitor and measure the effectiveness of the various elements of this SSMP, which include system information, financial

information, sewer maintenance, and performance measures. The city also tracks various performance measures related to various SSMP elements and they are summarized in Appendix 7.2. Appendix I has effectively been used to identify and track the specific metrics each of the City's four categories.

- Recommendations: Update Appendix I on the City website with information from FY 13/14 and FY 14/15.

Metrics to Monitor Effectiveness of SSMP (SSMP 9.3)

- Level of Effectiveness: The utility metrics listed in Appendix I pertain to different overseeing departments within the City, and the coordination between these different Departments in measuring/monitoring various metrics and sharing results has been effective in ensuring the SSMP goals have been met.
- Recommendations:
    - Update Appendix I and modify it to include document location, responsible person, and review frequency. This was also recommended during the previous audit but has not been completed.
    - Identify the metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals, will help determine how success in those elements, relates to the overall effectiveness of limiting SSOs. Associating metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. **Appendix 7.2** of this internal audit contains a list of PI and associates each one with a SSMP element, a suggested audit frequency, and a person responsible for monitoring that PI. A sample Performance Indicator Assessment Form is included in **Appendix 7.3** of this internal audit. Performance Indicator Assessment Forms can be developed for each metric and assessed periodically by the person responsible, according to the suggested audit frequency for that metric. At the time of the next internal SSMP audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit. This was also recommended during the previous audit but has not been implemented.
    - Consider tracking additional metrics targeted at measuring the effectiveness of SSMP elements that do not currently have metrics associated with them. A list of potential performance measures listed by SSMP element is included in **Appendix 7.2** of this internal audit. This was also recommended during the previous audit but has not been implemented.

Metrics to Assess Preventative Maintenance Program (SSMP 9.4)

- Level of Effectiveness: The City's current utility metrics Appendix I defines the frequency and type of utility metric that is being tracked to measure SSMP effectiveness. This is effective because it allows the city to monitor performance of particular activities and compare against SSO trends to determined data

correlations. These metrics do not all have associated goals or targets, however, which makes it hard to track whether the activity is meeting the intended result.

- Recommendations: As discussed in the previous section, use data collected in SSMP Appendix I as a reference, and develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals. See **Appendix 7.2** for a list of potential performance indicators for preventative maintenance activities with responsible parties. This was also recommended during the previous audit but has not been implemented

SSMP Performance Monitoring and Update Process (SSMP 9.5)

- Level of Effectiveness: Individual staff oversee various SSMP element performance indicators. The City tracks all revisions/updates with the SSMP using a revision log that is maintained by the LRO. The log is effective documenting changes to the SSMP and encourages the use of the SSMP as a living document.

- Recommendations: No modifications recommended at this time.

SSO Trends – Frequency, Location and Volume (SSMP 9.6)

- Level of Effectiveness: The City tracks a comprehensive list of metrics that are included in Appendix I and the City's Performance Reports. This allows the City to quickly identify and respond to changing trends in SSOs over time.

- Recommendations: Using the data collected in SSMP Appendix I as a reference, set performance goals for the metrics used to illustrate SSO trends. See **Appendix 7.2** for a list of potential performance indicators related to SSO trends. This was also recommended during the previous audit but has not been implemented.

Table 18. Current Performance Measures to Monitor SSO Trends

Performance Measure	Unit	Target	Source
SSOs - Total number, mains and laterals	Number	-	A, B
SSOs - Total volume, mains and laterals	Gal	-	A, B
SSOs - Total volume recovered	Gal	-	B
SSOs - Total number of wet weather	Number	-	A, B
SSOs - Total volume of wet weather	Gal	-	A, B
SSOs - % of spills caused by FOG (main)	%	-	A, B
SSOs - % of spills caused by roots (main)	%	-	A, B
SSOs - % of spills caused by Vandalism (main)	%	-	A, B
SSOs - caused by LS failures	Number	-	A, B
SSOs - caused by pipe failures	Number	-	A, B
SSOs - % of spill volume caused by FOG (lateral)	%	-	A, B
SSOs - % of spill volume caused by roots (lateral)	%	-	A, B
SSOs - % of spill volume caused by Vandalism (lateral)	%	-	A, B
Customer service requests per year	Number	-	A, B
Sewer odor complaints	Number	-	A, B
Flooding claims per year	Number	-	A, B
Cost of flooding claims per year	$	-	A, B
SSO – Repeats within two years	Number	0	B, C
SSOs - Category 1	Number	0	C, D
SSOs / 100 mi pipe / year - Category 2	Number	2.0	C
SSOs / 100 mi pipe / year - Mainline	Number	0.6	C
SSOs / 100 mi pipe / year - Lateral	Number	8.0	C

A = SSMP section 9.6
B = SSMP Appendix I
C = WW Collections KPIs
D = Program / Performance Reports

5.10 SSMP Program Audits

5.10.1 Compliance

Table 19. Compliance with SSS WDR D.13.x – SSMP Program Audits

SSMP Requirement	Compliance	Deficiencies
x Conduct periodic audits	Yes	-

5.10.2 Effectiveness of SSMP Elements and Recommended Modifications

Audit Procedures, Roles, and Responsibilities (SSMP 10.2)

- Level of Effectiveness: The City conducts an internal audit biennially to continually measure the effectiveness of the SSMP primarily through evaluating system metrics, performance measures, and reduce SSOs by improving SSMP procedures to better respond to new SSO trends. In addition the audit evaluates the City's compliance with SSMP requirements, particularly the amended MRP requirements that were formalized in September 2013. The City developed an audit form as a template to record information produced during the internal SSMP audits. This form is included in SSMP Appendix J-2. The previous audit identified many areas of improvement which the City responded and acted on. Some of these recommended improvements were excluded from this audit based on discussions with the City that eliminated the need for them. Others are considered standing, and should still be implemented by the City. Generally the internal audits implemented by the City have been effective in improving the SSMP and turning it into a living document that that is current, practical, and useful for the City.
- Recommendations:
    - Post the previous SSMP internal audit (FY 11/12 and FY 12/13) and this SSMP internal audit to the City website.
    - Post the most recent City council SSMP recertification (from 2014) the City website.
    - Schedule the next internal SSMP audit for July-August of 2017
    - Revise Appendix J-1 to reflect recommendations for review of performance indicators (i.e., metrics associated with specific SSMP elements and the associated timelines). This was also recommended during the previous audit but has not been implemented.

      Revise Appendix J-2 (audit form) to provide areas in the tables for each SSMP element to conduct an assessment of both SSMP compliance to Regional Board requirements, and effectiveness of individual SSMP elements. Remove Kim Spears and IWS from the certification of audit table. This was also recommended during the previous audit but has not been implemented.

SSMP Program Modification/Update Process (SSMP 10.3)

- Level of Effectiveness: The City developed a program for monitoring, reviewing sewer performance metrics and the effectiveness of SSMP elements on a biennial basis. Based on the results of the SSMP audits, the Wastewater Utility Manager is assigned to initiate/direct corrective actions to respond to deficiencies and enhancements identified in the audit. As determined in the City's SSMP revision log, the City has been prompt in responding to audit and continually strives to implement improvements.

- Recommendations:
    - Update the SSMP revision log and post on the website.
    - Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated

with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.

5.11 Communication Program

5.11.1 Compliance

Table 20. Compliance with SSS WDR D.13.xi – Communications Program

SSMP Requirement	Compliance	Deficiencies
xi(a) Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP	Yes	-

5.11.2 Effectiveness of SSMP Elements and Recommended Modifications

Internal Communication – Staff, Utility Commission, and City Council (SSMP 11.2)

- Level of Effectiveness: The WWC has used PowerPoint presentations as a resource to describe the purpose of the SSMP and summarize SSS WDR requirements to the City council and City staff. These presentations are attached to the SSMP website.

- Recommendations:
  - As of September 2013 the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website.

Stakeholder Communication – Residential, Commercial and Industrial (SSMP 11.3)

- Level of Effectiveness: The City communicates regularly with the public and stakeholders via monthly newsletters entitled "EU Today" that includes items regarding sewer utilities. This newsletter is presented online and through bill inserts. A sample newsletter is included in Appendix K of the SSMP. In addition, the City specifically communicates FOG related items to the community via FOG outreach program over TV ads, flyers, direct mail, and site visits to FSEs. The WWC registered approximately 40 percent more service calls during this audit period than during the last. As the level of SSOs has only increased slightly since the previous audit period, the increase in service calls may indicate the effectiveness of City outreach programs in encouraging the public to communicate with WWC their concerns or observations about any sewer utility issues.

- Recommendations:
  - Update SSMP Appendix K-4 with FY 13-15 EU marketing Plan budget & spending

Tributary/Satellite Communication (11.4)

- Level of Effectiveness: The City routinely communicates with their satellite partners and has three formal agreements in place that include:
  - The joint exercise of power agreement for the SPWA
  - The agreement regarding the operation of and use of South Placer Regional Wastewater Facilities
  - The funding agreement relating to the South Placer Regional Wastewater Facilities
  - Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

- Recommendations:
  - Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as attachment K-7 and modify the SSMP to mention it.
  - Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

SECTION 6 Audit Summary

Table 21. Summary of SSMP Compliance Deficiencies

SSMP Requirement	Compliance	Deficiencies
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	No	SSOERP does not meet certain water quality monitoring requirements of the amended MRP document.
vii(e) Authority to inspect and enforce FOG ordinance	No	The City does have the authority to inspect/enforce FOG ordinance but no inspection records were produced for the Audit period.

Table 22. Summary of Audit Recommendations

SSMP Section	Recommendation	Suggested Timeline for Completion
2.1	Modify Appendix B-1: Add Wastewater Collections Supervisor Dan Pruden. Update City Council positions and add phone numbers (Mayor Carol Garcia, Vice Mayor Susan Rohan, City Attorney Robert Schmitt). Update Commissioners and phone numbers: Chair Blandon Granger, Vice Chair John Speight. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Cheryl Hammond. Update Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.	
2.2	Modify Figure 2-1: Modify the Industrial Waste Specialist category and remove the FOG Control Program from the description due to the FOG program oversight transitioning from IWS to WWC in 2016. Add the Fog Control Program description to the Wastewater Collection Office Assistant category.	
2.2	Modify SSMP Section 2.2: Modify the general position description and SSMP responsibilities under the Lab/Industrial Waste Supervisor, Specialist, and Technician and remove the FOG Control Program or inspection program from those descriptions.	
2.2	Move the FOG Control Program SSMP responsibility into the WWC Superintendent category and the WWC Office Assistant category.	
2.3	Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24 hour call center instead of WWC service staff. In addition, modify the Wastewater Admin cell and rename the position as Office Assistant.	
2.3	Modify Appendix F-1 Flowchart: Follow the same recommendations written above.	
3.7	Update SSMP section 3.7 to include the Wastewater Service Contract and Operating Agreement between the City, SASD, and SRCSD.	
4.2	Include the Mapping Update Policy Document as an appendix to the SSMP and post it to the City's SSMP website page.	
4.3	Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.	
4.4	Document the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine	

	the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.	
4.4	Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment.	
4.5	Augment the ongoing training program by documenting that WWC staff have demonstrated the ability to operate a major piece of equipment (i.e., combo Vactor unit) in accordance with available SOPs to a supervisor before using it for the first time in the field and at a specified frequency (i.e., annually or if equipment is upgraded). The document would need to list a piece of equipment, the name of the journeyman, supervisor, signatures, name of SOP if used, and date.	
4.5	Modify SSMP Section 4.5 to include training on SSOERP.	
6.3	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.	
6.3	Modify SSOERP Section IV Traffic Control (WWC Personnel) to require WWC Personnel to implement traffic control in every situation where WWC personnel may be at risk of vehicular impact in accordance with MUTCD (part of Caltrans Work Area Traffic Control Handbook). It is recommended that WWC produce several standard TCPs (Traffic Control Plan) to match existing traffic conditions or type of roadway (i.e., arterial, residential, etc.).	
6.3	Modify SSOERP Section V Correct Cause (WWC Personnel) to include a discussion of whether a root-caused SSO could be classified as a PLSD if the City defines a spill cause as the entry point of the root and whether that location is on lower (city) or upper lateral side (private). Include recommendations to provide good documentation of the decision with photographic evidence and a logical narrative.	
6.7	Modify SSOERP Appendix A – Start Time Documentation Policy to include the following WWC standard field practice: If the start time cannot be set based on witnesses and if there is evidence of a spill traveling a farther distance than 15 minutes, then the field crew estimates the new start time and may try to recreate the spill (with clean water) to estimate volumes.	
6.7	Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the	

	requirements of the amended MRP. • Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. • Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan.	
6.7	Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling.	
7.3	Modify SSMP Section 7.3 to reflect the change in responsibilities from IWS to WWC.	
7.4	Modify SSMP Section 7.4 to reflect the change in responsibilities from IWS to WWC	
7.6	Modify SSMP Section 7.6 to reflect the change in responsibilities from IWS to WWC	
7.7	Modify SSMP Section 7.7 to reflect the change in oversight from IWS to WWC	
7.7	Document all FSE inspections. Develop a standard FSE inspection form which lists individual elements the FOG WDP permittee is required to maintain in a logical order for the inspector to follow. At a minimum, the inspector should enter the FSE, check the grease removal device, conduct a FOG concentration sample, request and view cleaning/hauling records and associated BMPs. After filling out the inspection form to document the whole procedure, transfer the results of the inspection form into a database or spreadsheet by which WWC can track compliance of the multiple required elements under the permit. Follow up with FSEs as required and formally document the process. Attach a blank version of the inspection form as an appendix in the SSMP.	
7.8	Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.	
7.8	Modify SSMP Section 7.8 to describe the process of how pipelines are added to the hot spot cleaning schedule, and remove mention of annual sewer line maintenance work orders	
7.9	Modify SSMP Section 7.9 to reflect the change in responsibilities from IWS to WWC.	
8.2	Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years.	
9.2	Update Appendix I on the City website with information from FY 13/14 and FY 14/15.	
9.3	Update Appendix I and modify it to include document location, responsible person, and review frequency. This was also recommended during the previous audit but has not been	

	completed.	
9.3	Identify the metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals, will help determine how success in those elements, relates to the overall effectiveness of limiting SSOs. Associating metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. **Appendix 7.2** of this internal audit contains a list of PI and associates each one with a SSMP element, a suggested audit frequency, and a person responsible for monitoring that PI. A sample Performance Indicator Assessment Form is included in **Appendix 7.3** of this internal audit. Performance Indicator Assessment Forms can be developed for each metric and assessed periodically by the person responsible, according to the suggested audit frequency for that metric. At the time of the next internal SSMP audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit. This was also recommended during the previous audit but has not been implemented.	
9.3	Consider tracking additional metrics targeted at measuring the effectiveness of SSMP elements that do not currently have metrics associated with them. A list of potential performance measures listed by SSMP element is included in **Appendix 7.2** of this internal audit. This was also recommended during the previous audit but has not been implemented.	
9.4	As discussed in the previous section, use data collected in SSMP Appendix I as a reference, and develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals. See **Appendix 7.2** for a list of potential performance indicators for preventative maintenance activities with responsible parties. This was also recommended during the previous audit but has not been implemented	
9.6	Using the data collected in SSMP Appendix I as a reference, set performance goals for the metrics used to illustrate SSO trends. See **Appendix 7.2** for a list of potential performance indicators related to SSO trends. This was also recommended during the previous audit but has not been implemented.	
10.2	Post the previous SSMP internal audit (FY 11/12 and FY 12/13) and this SSMP internal audit to the City website.	
10.2	Post the most recent City council SSMP recertification (from 2014) the City website.	
10.2	Schedule the next internal SSMP audit for July-August of 2017	

10.2	Revise Appendix J-1 to reflect recommendations for review of performance indicators (i.e., metrics associated with specific SSMP elements and the associated timelines). This was also recommended during the previous audit but has not been implemented. Revise Appendix J-2 (audit form) to provide areas in the tables for each SSMP element to conduct an assessment of both SSMP compliance to Regional Board requirements, and effectiveness of individual SSMP elements. Remove Kim Spears and IWS from the certification of audit table. This was also recommended during the previous audit but has not been implemented.	
10.3	Update the SSMP revision log and post on the website.	
10.3	Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.	
11.2	As of September 2013 the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website.	
11.3	Update SSMP Appendix K-4 with FY 13-15 EU marketing Plan budget & spending	
11.4	Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as attachment K-7 and modify the SSMP to mention it.	
11.4	Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).	

SECTION 7 Appendices

7.1 Appendix – Historical SSO Data

7.2 Appendix – Performance Indicators

7.3 Appendix – Sample Performance Indicator Assessment Form

7.1 Appendix – Historical SSO Data

Dated: FY 2013 - 2015

Date of SSO	Address of SSO	Spill Type	Spill Vol (Gal)	Spill Vol Recovered (Gal)	Spill Recovery %	Spill Cause
7/23/13	618 Lassen Way	Category 3	5	5	100%	Root intrusion
8/29/13	2012 Katherine Place	Category 3	5	5	100%	Root intrusion
8/29/13	605 Oak Street	Category 3	50	50	100%	Root intrusion
9/9/13	149 South Lincoln St	Category 3	2	1	50%	Root Intrusion
10/4/13	311 Evelyn Avenue	Category 3	8	8	100%	Debris-Rags
9/17/13	801 Main Street	Category 3	9	8	89%	Root Intrusion
10/11/13	116 Berry Street	Category 3	10	9	90%	Root Intrusion
10/11/13	528 Royer Street	Category 3	15	15	100%	Root Intrusion
10/11/13	509 Royer St	Category 3	3	3	100%	Root Intrusion
11/6/13	348 W Duranta	Category 3	3	1	33%	Root Intrusion
11/6/13	1004 Crete Way	Category 3	1	1	100%	Root Intrusion
11/6/13	109 Keehner Ave	Category 3	35	35	100%	Root Intrusion
11/8/13	308 Folsom Rd	Category 3	80	75	94%	Debris-General
11/12/13	Roseville St.	Category 3	25	25	100%	Grease Deposition (FOG)
11/6/13	900 Herbert Street	Category 3	5	1	20%	Root Intrusion
11/6/13	503 Sixth Street	Category 3	10	10	100%	Root Intrusion
11/13/13	312 Folsom Rd.	Category 3	10	10	100%	Root Intrusion
11/14/13	SMH C04-356	Category 3	10	10	100%	Grease Deposition (FOG)
12/16/13	214 Cedar	Category 3	2	1	50%	Root Intrusion
12/16/13	Folsom, Cross Street Sutter	Category 3	26	22	85%	Root Intrusion
12/16/13	900 Atlantic St.	Category 3	5	5	100%	Root Intrusion
12/16/13	335 Grove St.	Category 3	1	1	100%	Root Intrusion
12/17/13	607 Windsor	Category 3	5	5	100%	Root Intrusion
12/18/13	168 Donner	Category 3	5	5	100%	Grease Deposition (FOG)
12/17/13	503 Tahoe	Category 3	50	45	90%	Root Intrusion
1/16/14	153 Nevada	Category 3	2	1	50%	Root Intrusion
1/3/14	1044 Magnolia Wy	Category 3	2	2	100%	Root Intrusion
1/15/14	1207 Meadow Lane	Category 3	5	5	100%	Root Intrusion
1/9/14	620 Dawnridge	Category 3	5	5	100%	Root Intrusion

1/14/14	358 Circuit Dr.	Category 3	1	1	100%	Non-Dispersables
1/14/14	806 Joe Anne Lane	Category 3	5	5	100%	Debris-Rags
1/17/14	213 Church St.	Category 3	3	3	100%	Root Intrusion
1/29/14	358 Circuit	Category 3	6	6	100%	Other (specify below)
2/14/14	820 Shearer	Category 3	5	5	100%	Root Intrusion
2/24/14	730 Elefa	Category 3	570	570	100%	Root Intrusion
2/25/14	518 Dudley	Category 3	8	7	88%	Root Intrusion
4/10/14	311 Vernon St	Category 3	30	29	97%	Debris-Rags
4/14/14	211 S. Lincoln	Category 3	1	1	100%	Root Intrusion
4/16/14	1620 Santa Clara	Category 3	15	14	93%	Debris-Rags
4/25/14	204 Sutter Ave.	Category 3	5	4	80%	Root Intrusion
5/15/14	608 Encinal Ave.	Category 3	6	6	100%	Pipe Structural Problem/Failure
5/21/14	1498 Deerfield	Category 3	6	5	83%	Debris-Rags
5/23/14	200 N. Grant	Category 3	5	0	0%	Root Intrusion
6/20/14	1020 Church St	Category 3	5	5	100%	Debris-Rags
6/30/14	2001 Polley	Category 3	30	0	0%	Debris-Rags
7/1/14	1007 Hillcrest	Category 3	80	75	94%	Grease Deposition (FOG)
7/10/14	1809 Piedmont	Category 3	8	5	63%	Root Intrusion
7/15/14	1133 Smith ln	Category 3	14	4	29%	Root Intrusion
8/26/14	1707 Sunningdale Dr	Category 3	10	10	100%	Root Intrusion
8/28/14	408 Garden Breeze Ct	Category 3	3	3	100%	Root Intrusion
9/24/14	201 N. Grant	Category 3	20	19	95%	Root Intrusion
9/25/14	1308 Plymouth Ct.	Category 3	100	100	100%	Debris-Rags
9/25/14	1007 Chisum Ct	Category 3	4	4	100%	Root Intrusion
9/25/14	1501 Cardinal Wy.	Category 3	2	2	100%	Root Intrusion
10/7/14	1007 Chisum Ct.	Category 3	2	1	50%	Debris from Construction
10/7/14	2588 McCloud	Category 3	77	77	100%	Root Intrusion
10/8/14	1789 Vista Creek	Category 3	2	1	50%	Pipe Structural Problem/Failure
10/21/14	115 Campo St.	Category 3	5	4	80%	Root Intrusion
10/29/14	7164 Marblethorpe	Category 3	36	11	31%	Root Intrusion

11/17/14	318 Earl	Category 3	18	18	100%	Root Intrusion
10/22/14	7040 Petersborough	Category 3	1	1	100%	Root Intrusion
11/20/14	319 Clinton	Category 3	5	4	80%	Root Intrusion
12/15/14	1198 Ravine View	Category 3	12	1	8%	Root Intrusion
12/11/14	1025 Douglas	Category 3	26	26	100%	Root Intrusion
12/5/14	312 B St.	Category 3	623	623	100%	Grease Deposition (FOG)
1/13/15	7337 Pineschi	Category 3	5	5	100%	Root Intrusion
12/23/14	97 Vernon St.	Category 3	22	19	86%	Root Intrusion
12/18/14	915 Main St	Category 3	17	17	100%	Root Intrusion
12/24/14	1748 Chilton Dr	Category 3	3	3	100%	Root Intrusion
1/14/15	212 C St.	Category 3	10	7	70%	Root Intrusion
1/14/15	1012 Melrose	Category 3	9	7	78%	Root Intrusion
2/23/15	1106 Windermere Av, Roseville Ca.	Category 3	10	8	80%	Root Intrusion
1/28/15	1211 Donahue	Category 3	10	10	100%	Pipe Structural Problem/Failure
2/10/15	504 Diamond Bar	Category 3	3	3	100%	Root Intrusion
2/23/15	1409 Oakmont	Category 3	11	11	100%	Root Intrusion
3/4/15	1212 Stiney Point	Category 3	1	1	100%	Root Intrusion
2/25/15	1044 Treasure Ln.	Category 3	2	2	100%	Debris-Rags
3/27/15	1700 Hiawatha	Category 3	21	5	24%	Non-Dispersables
3/13/15	605 Mayfair	Category 3	12	10	83%	Root Intrusion
4/16/15	114 Vernon St.	Category 3	43	43	100%	Root Intrusion
3/26/15	311 Main St	Category 3	17	16	94%	Pipe Structural Problem/Failure
4/16/15	332 Irene	Category 3	5	3	60%	Root Intrusion
4/16/15	313 Coranado	Category 3	10	10	100%	Pipe Structural Problem/Failure
5/21/15	213 Irene	Category 3	5	5	100%	Root Intrusion
5/13/15	411 Loretto Dr	Category 3	1	1	100%	Root Intrusion
6/3/15	214 Coronado Ave	Category 3	5	0	0%	Pipe Structural Problem/Failure
6/19/15	902 Avalon Ct	Category 3	5	5	100%	Root Intrusion
6/15/15	1415 McBride	Category 3	15	15	100%	Root Intrusion
7/9/15	2801 Courtside	Category 3	3	1	33%	Non-Dispersables

7.2 Appendix – Performance Indicators

SSS WDR Element	SSS WDR Ref.	Description	Performance Indicator	Unit	Target	City SSMP (section)	Utility Metrics (SSMP Appendix I)	WW Collections KPI.doc	Program / Performance Report FY12/13	Strategic Plan Data FY12/13.xls	Performance Metrics.xls	Suggested Audit Frequency	Suggested Responsible Party
Organization	D.ii.c	Chain of communication	Average response time to customer inquiry	Minutes	40		Data	40	-	-	-	Quarterly	Office Assistant
			Total customer service requests	Number	0	(9.6)	Data	-	-	-	-	Quarterly	Office Assistant
			Total sewer odor complaints	Number	0	(9.6)	Data	-	-	-	-	Quarterly	Office Assistant
			Average rating in feeback survey card	Number	5	-	Data	-	-	-	-	Quarterly	Office Assistant
	D.iv.b	PM activites	Manholes - cleaned & visually inspected per year	Number		(9.4)	-	-	-	-	-	Quarterly	WWC Supervisor
			Sewer main - flushed per year	Miles	250	(9.4)	Data	250	250	250	-	Quarterly	WWC Supervisor
			Service laterals - cleaned per year	Miles	8	-	-	-	8	-	-	Quarterly	WWC Supervisor
			Service laterals - mechancially cleaned (eeled) per year	Miles	8	(9.4)	-	-	-	8	-	Quarterly	WWC Supervisor
			Working staff time to PM program	%	80	-	-	-	80	-	-	Quarterly	WW Superindendent
			Number of customer accounts per wastewater employee	Number	561	(9.4)	Data	-	-	-	-	Quarterly	WW Superindendent
			Average cost of hydro cleaning	$/ lf	0.36	-	Data	-	-	-	-	Annually	WW Superindendent
			Average cost of sewer mechanical cleaning	$/lf	1.6	(9.4)	Data	-	-	-	-	Annually	WW Superindendent
	D.iv.c	R&R plan	Manholes - rehabilitated (i.e., lined with CIPP)	Number	25	-	-	-	25	-	-	Annually	Rehabiliation Manger
			Sewer main - CCTV inspected per year	Miles	30	(9.4)	Data	30	30	30	-	Quarterly	WWC Supervisor
			Service laterals - CCTV inspected per year	Miles	16	-	Data	-	8	16	-	Quarterly	WWC Supervisor
			Service laterals - rehabilitated per year	Number	50	(9.4)	-	50	50	50	-	Quarterly	WW Superindendent
			Cleanouts - installed per year	Number	100	-	-	100	100	75	-	Quarterly	WWC Supervisor
			Total miles rehabed or replaced per year (main)	Miles	5	(9.6)	Data	-	-	-	-	Annually	Rehabiliation Manger
			Total miles rehabed or replaced per year (lateral)	Miles	0.25	(9.6)	Data	-	-	-	-	Annually	Rehabiliation Manger
			Annual capital budget for sewer rehab/replacement	$M	1.8	-	Data	-	-	-	-	Annually	Rehabiliation Manger
			Average cost of CCTV (main)	$/lf	0.53	(9.4)	Data	-	-	-	-	Annually	WW Superindendent
			Average cost of CCTV (lateral)	$/lf	1.34	-	Data	-	-	-	-	Annually	WW Superindendent
	D.iv.d	Training	On-the-Job accidents	Number	0	-	-	-	0	0	-	Quarterly	Safety Manager
	D.iv.e	Critical Parts	% of required number of identified critical parts are stocked	%	100	-	-	-	-	-	-	Annually	Materials Technician
Design	D.v.a & b	Construction	% of new sewer main construction accepted vs. inspected	%	100	(9.6)	Data	-	-	-	-	Annually	GIS Manager
			% of new sewer lateral construction accepted vs. inspected	%	100	(9.6)	Data	-	-	-	-	Annually	GIS Manager
OERP	D.vi.a	Notification	Average response time to SSO	Minutes	40	-	Data	-	-	-	-	Quarterly	WWC Supervisor
	D.vi.b	SSO response	Average SSO duration (main)	Minutes	40	-	-	-	-	-	-	Quarterly	WWC Supervisor
			Average SSO duration (lateral)	Minutes	40	-	-	-	-	-	-	Quarterly	WWC Supervisor
FOG	D.vii.a	Public education	FOG public education outreach program events per year	Number	4	-	-	-	-	-	-	Annually	Administrative Analyst
	D.vii.b	FOG disposal	Number of curbside FOG pickups per year	Number	25	-	-	-	-	-	-	Annually	Refuse Division
			% of CCTV inspections with grease observations (DAGS, >20%)	%	5	-	-	-	-	-	-	Quarterly	WWC Supervisor
	D.vii.d	BMPs & Devices	% of total FSEs with grease removal devices or waiver/variance	%	100	-	-	-	-	-	-	Annually	WW Superindendent
			% of total FSEs with a variance	%	5	-	-	-	-	-	-	Annually	WW Superindendent
	D.vii.e	FOG inspections	FSE FOG inspections per year	Number	319	-	-	-	-	-	-	Quarterly	WW Superindendent
	D.vii.f	Hot Spots	% of hot spot pipes CCTV inspected each year	%	100	-	-	-	-	-	-	Annually	WW Superindendent
			Number of spills caused by hot spots	Number	0	-	-	-	-	-	-	Quarterly	WW Superindendent
			Volume of spill volume caused hot spots	Gal	0	-	-	-	-	-	-	Quarterly	WW Superindendent
SECAP	D.viii.a	Evaluation	Frequency for capacity assurance evaluation (hydraulic model)	Years	10	App I	-	-	-	-	-	Annually	EU Engineering
MMM	D.ix.e	SSO trends	Total number of SSOs, mains and laterals	Number	76	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Total SSO volume, mains and laterals	Gal	2000	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of total SSO volume recovered	%	100	-	Data	-	-	-	-	Quarterly	WW Superindendent
			Total number of wet weather SSOs	Number	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Total volume of wet weather SSOs	Gal	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSOs caused by FOG (main)	%	1	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSOs caused by roots (main)	%	70	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSOs caused by Vandalism (main)	%	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Number of SSOs caused by LS failures	Number	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Number of SSOs caused by pipe failures	Number	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSO volume caused by FOG (lateral)	%	10	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSO volume caused by roots (lateral)	%	75	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			% of SSO volume caused by Vandalism (lateral)	%	0	(9.6)	Data	-	-	-	-	Quarterly	WW Superindendent
			Repeat SSOs within two years	Number	0	(9.6)	Data	0	-	-	-	Quarterly	WW Superindendent
			Category 1 SSOs	Number	0	-	-	0	0	-	-	Quarterly	WW Superindendent
			Category 2 SSOs	Number	6	-	-	-	-	-	-	Quarterly	WW Superindendent
			SSOs / 100 mi pipe / year - Category 3	Number	2.0	-	-	2.0	-	-	-	Quarterly	WW Superindendent
			SSOs / 100 mi pipe / year - Lateral	Number	15.0	-	-	8.0	-	-	8	Quarterly	WW Superindendent
			SSOs / 100 mi pipe / year - Mainline	Number	0.6	-	-	0.6	-	-	0.6	Quarterly	WW Superindendent
			Flooding claims per year	Number	0	(9.6)	Data	-	-	-	-	Annually	WW Superindendent
			Total cost of claims per year	$	0	(9.6)	Data	-	-	-	-	Annually	WW Superindendent

Legend

Green Text	Indicates the goal for the respective performance measure as stated in the associated document.
"Data"	Indicates that is recorded and tracked but no goal is defined in the associated document.

7.3 Appendix – Sample Performance Indicator Assessment Form

Goal:	**MRP (FY 2014 / 2015)**
Responsible Person (RP):	WWC Superintendent

Description of Performance Indicator(s) (PIs):

The State Water Board has recently concluded that the existing Monitoring and Reporting Program must be amended to remain adequate enough to advance the Sanitary Sewer Overflow Reduction Program objectives, assess compliance, and enforce the requirements of the Sanitary Sewer Systems Waste Discharge Requirements. The amended MRP will become effective on September 9, 2013 concurrent with the routine bimonthly CIWQS maintenance release. The Wastewater Collection Division is responsible for submitting, signing, and certifying all reports required by the SSS WDRs and the amended MRP order. The PIs listed below track the completion of tasks necessary for the City to remain compliant with the SSS WDRs.

PIs and Data Analysis Methods:

1. *Completion of unpopulated fields in revised "Collection System Questionnaire"*
   Discussion & Scoring Criteria: The City has three (3) months after September 9, 2013 to complete all unpopulated fields in the revised "Collection System Questionnaire" before the CIWQS locks you out from all reporting. After the questionnaire is completed, the system will default back to the annual update requirement and lock you out from all reporting only if the questionnaire is not updated at least annually.

2. *Update of OERP section in SSMP*
   Discussion & Scoring Criteria: The Overflow and Emergency Response Plan section of the City's SSMP must be updated in accordance with the amended MRP by January 21 2014, when a board review of the SSMP will take place.

PI	Exceeding Goal?	Met Goal?	Below Goal?	
1	All unpopulated fields completed by December 9, 2013.	N/A	N/A	All or some of the unpopulated fields not completed by December 9, 2013.
2	OERP section fully updated in SSMP before review.	N/A	N/A	OERP section never, or only partially, updated before review.

Performance Tracking		
PI	**Measured Value**	**Performance Assessment Comments**
1		
2		

Recommendations for Programmatic or SSMP Updates
PI 1 – Completion of unpopulated fields in revised "Collection System Questionnaire" Recommendation: **PI 2 – Update of OERP section in SSMP** Recommendation:

Signature of Responsible Person: (sign when complete)	Date:

Appendix 10-4

SSPM Audit Fiscal Years 15/16, 16/17 and 17/18

CITY OF ROSEVILLE
Sewer System Management Plan (SSMP)
Three-Year Audit for FY 15/16 – FY 17/18

Date: September 19

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SECTION 1 Audit Objectives

This report covers the results of the required Sewer System Management Plan (SSMP) internal audit process for the City of Roseville (City) for fiscal years 2015-2016 (FY 15/16), 2016-2017 (FY 16/17), and 2017-2018 (FY 17/18). The goal of the SSMP is to provide a written framework and plan for properly managing, operating, and maintaining all parts of the sanitary sewer system (collection system). The SSMP will help the City minimizing sanitary sewer overflows (SSOs) and complying with the California State Water Resources Control Board (SWRCB) order No. 2006-0003-DWQ, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS WDR). The SSMP audit evaluates the effectiveness of the SSMP, by reviewing the performance of the collection system against the performance measures used by the City to evaluate compliance with requirements of the SSS WDRs.

The intention of the SSMP audit is to help the SSMP evolve over time as a "living document" that City continually adjusts after identifying potential enhancements and implementing changes to address any deficiencies to the management, operation and maintenance of the City sanitary sewer collection system. Recently, the SWRCB is proposing a statewide sanitary sewer system order reissuance. The proposed reissuance, which will be built on the existing general order, is planned to be adopted in 2020, with a primary focus of reducing the statewide spill volume. This audit briefly discusses the proposed reissued order by the SWRCB and considers recommendations for future compliance.

The City is committed to completing the SSMP internal audit (Audit) on a biennial basis that is consistent with the procedure outlined in Appendix J-1 of the SSMP. The City completed its first Audit for FY 2011-2012, but subsequently contracted Water Works Engineers (WWE) to conduct the FY 11/12-12/13 and FY 13/14-14/15 biennial audits. This audit reviews results of the FY 15/16, 16/17, and 17-18, which is a three-year program. The key objective of this Audit is to review the SSMP compliance, implementation, and effectiveness. This report includes the following key tasks:

1. Review records from previous Audits and confirm deficiencies have been addressed (SECTION 2).
2. Evaluate the City's historical SSO data and performance measures listed in the SSMP (SECTION 3).
3. Using a standardized audit procedure detailed in 0 , identify deficiencies and provide recommendations that could improve the effectiveness of the SSMP and its compliance with the future reissue order.
4. Analyze the City's preventative maintenance (PM) and rehabilitation and replacement (R&R) programs as it relates to the operation and maintenance of the collection system (Section 5.4).
5. Review the Sanitary Sewer Overflow Emergency Response Plan (SSEORP) for SSOs and identify improvements as needed (Section 5.6).
6. Document all findings during the Audit and retain it on file (SECTION 6).

SECTION 2 Agency Background / System Information

The City of Roseville, in Placer County, is located approximately 16 miles north of the City of Sacramento. Along Interstate 80, Roseville is located adjacent to the City of Rocklin in the north-east and the City of Citrus Heights in the south. The City covers approximately 43 square miles near the base of the foothills of the Sierra Mountains. Typical elevations are within a range of 250 to 100 feet of sea level with an average slope across the City of 0.5% from east to west. Several streams flow through the City (i.e., Dry Creek, Pleasant Grove Creek, Kaseburg Creek, Linda Creek, Cirby Creek, Secret Ravine, and Miners Ravine.).

The City is responsible for the operation and maintenance of a continually growing collection system that has grown over 6% since the last internal audit to now serve approximately 137,000 people. **Table 1** lists key information about the City collection system over the past three Audit periods.

Table 1 – Overview of Collection System

Audit	FY 11/12 – 12/13	FY 13/14 – 14/15	FY 15/16 – 17/18*
Miles of Mainline	485.52	501.11	515.7
Miles of laterals (lower)	235.3	238	266
Pump stations	14	15	16
Sewer service lateral connections	41,568	43,619	47,638
Population served	122,060	128,832	137,213
WWC Staff	25	28	29
Annual Budget (FY1/ FY2/ FY3)	$3,400,000/ $3,800,00	$3,700,000/ $4,000,000	$5,069,000/ $5,279,0000
Category 1 SSOs	2	0	1
Category 2 SSOs	75	0	1
Category 3 SSOs	-	89	85

*Three-year audit

The City treats wastewater conveyed through its collection system at two regional wastewater treatment plants that are both owned and operated by the City (i.e., Dry Creek and Pleasant Grove WWTPs). Two other satellite collection systems owned and operated by other agencies (i.e., South Placer Municipal Utility District and Placer County) discharge directly into the City's collection system. A small portion of the City's collection system discharges outside of Roseville and into the Sacramento Area Sewer District (SASD) collection system, which is treated at the Sacramento Regional WWTP. The City is a part of the Central Valley Region 5 (Sacramento sub-region) of the SWRCB.

2.1 Review of Last SSMP Audit

The previous biennial audit for of the City SSMP was conducted by WWE for FY 13/14-14/15 and was completed in June 2016. In the last Audit, a list of approximately 47 recommended actions to address deficiencies or improve the effectiveness of the City SSMP were listed. **Table 2** summarizes identified deficiencies and associated action items, along with a description of the status of the task (i.e., Completed, Ongoing Updates, In/No Progress, Considered) outlined in the last SSMP audit. documents on the City's website and based on information from City staff.

Table 2 – Summary of Findings from the Last SSMP Internal Audit

Element	Action Item	Status
2 – Organization	Modify Appendix B-1: Add Wastewater Collections Supervisor Dan Pruden to Appendix B-1.	Completed
	Modify Appendix B-1: Update City Council positions and add phone numbers (Mayor Carol Garcia, Vice Mayor Susan Rohan, City Attorney Robert Schmitt). Update Commissioners and phone numbers: Chair Blandon Granger, Vice Chair John Speight. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Cheryl Hammond. Update Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.	Ongoing Progress
	Modify Figure 2-1: Modify the Industrial Waste Specialist category and remove the FOG Control Program from the description due to the FOG program oversight transitioning from IWS to WWC in 2016. Add the Fog Control Program description to the Wastewater Collection Office Assistant category.	Completed
	Modify SSMP Section 2.2: Modify the general position description and SSMP responsibilities under the Lab/Industrial Waste Supervisor, Specialist, and Technician and remove the FOG Control Program or inspection program from those descriptions.	Completed
	Move the FOG Control Program SSMP responsibility into the WWC Superintendent category and the WWC Office Assistant category.	Completed
	Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff. In addition, modify the Wastewater Admin cell and rename the position as Office Assistant.	In Progress

	Modify Appendix F-1 Flowchart: Follow the same recommendations written above.	Completed
3 – Legal Authority	Update SSMP section 3.7 to include the Wastewater Service Contract and Operating Agreement between the City, SASD, and SRCSD.	Completed
4 – O&M	Include the Mapping Update Policy Document as an appendix to the SSMP and post it to the City's SSMP website page.	Completed
	Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.	Ongoing Progress
	Document the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.	No Progress
	Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment.	No Progress
	Augment the ongoing training program by documenting that WWC staff have demonstrated the ability to operate a major piece of equipment (i.e., combo Vactor unit) in accordance with available SOPs to a supervisor before using it for the first time in the field and at a specified frequency (i.e., annually or if equipment is upgraded). The document would need to list a piece of equipment, the name of the journeyman, supervisor, signatures, name of SOP if used, and date.	Completed
	Modify SSMP Section 4.5 to include training on SSOERP.	Completed
6 – OERP	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.	In Progress

	Modify SSOERP Section IV Traffic Control (WWC Personnel) to require WWC Personnel to implement traffic control in every situation where WWC personnel may be at risk of vehicular impact in accordance with MUTCD (part of Caltrans Work Area Traffic Control Handbook). It is recommended that WWC produce several standard TCPs (Traffic Control Plan) to match existing traffic conditions or type of roadway (i.e., arterial, residential, etc.).	Completed
	Modify SSOERP Section V Correct Cause (WWC Personnel) to include a discussion of whether a root-caused SSO could be classified as a Private Lateral Sewage Discharge (PLSD) if the City defines a spill cause as the entry point of the root and whether that location is on lower (city) or upper lateral side (private). Include recommendations to provide good documentation of the decision with photographic evidence and a logical narrative.	Completed
	Modify SSOERP Appendix A – Start Time Documentation Policy to include the following WWC standard field practice: If the start time cannot be set based on witnesses and if there is evidence of a spill traveling a farther distance than 15 minutes, then the field crew estimates the new start time and may try to recreate the spill (with clean water) to estimate volumes.	Completed
	Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP. • Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. • Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan.	No Progress
	Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all the required equipment that the employee would need to conduct proper sampling.	No Progress
7 – FOG Control Program	List Maurice Chaney as the responsible party for the FOG Public Education Plan.	Completed
	Modify SSMP Section 7.3 to reflect the change in responsibilities from IWS to WWC.	Completed
	Modify SSMP Section 7.4 to reflect the change in responsibilities from IWS to WWC.	Completed

	Modify SSMP Section 7.6 to reflect the change in responsibilities from IWS to WWC.	Completed
	Modify SSMP Section 7.7 to reflect the change in oversight from IWS to WWC.	Completed
	Document all FSE inspections. Develop a standard FSE inspection form which lists individual elements the FOG WDP permittee is required to maintain in a logical order for the inspector to follow. At a minimum, the inspector should enter the FSE, check the grease removal device, conduct a FOG concentration sample, request and view cleaning/hauling records and associated BMPs. After filling out the inspection form to document the whole procedure, transfer the results of the inspection form into a database or spreadsheet by which WWC can track compliance of the multiple required elements under the permit. Follow up with FSEs as required and formally document the process. Attach a blank version of the inspection form as an appendix in the SSMP.	Completed
	Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.	Ongoing Progress
	Modify SSMP Section 7.8 to describe the process of how pipelines are added to the hot spot cleaning schedule and remove mention of annual sewer line maintenance work orders.	Completed
	Modify SSMP Section 7.9 to reflect the change in responsibilities from IWS to WWC.	Completed
8 – SECAP	Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years.	No Progress
9 – MMM	Update Appendix I on the City website with information from FY 13/14 and FY 14/15.	In Progress
	Update Appendix I and modify it to include document location, responsible person, and review frequency. This was also recommended during the previous audit but has not been completed.	In Progress
	Identify the metrics that correspond with specific elements of the SSMP and develop numerical goal ranges so the data currently collected and monitored by the City can be used as performance indicators (PIs) to quantitatively monitor SSMP effectiveness. The ultimate measure of SSMP effectiveness is the limiting of SSOs. However, setting goals for activities related to various SSMP elements and measuring performance against those goals, will help determine how success in those elements, relates to the overall effectiveness of limiting SSOs. Associating metrics with specific SSMP elements will allow for direct assessment of those elements and provide consistency in their evaluation in future audits. **Appendix 7.2** of this internal audit contains a list of PI and associates each one with a SSMP element, a suggested audit frequency, and a person responsible for monitoring that PI. A sample Performance Indicator Assessment Form is included in **Appendix 7.3** of this internal audit. Performance Indicator Assessment Forms can be developed for each metric and assessed periodically by the person responsible, according to the suggested audit frequency for that metric. At the time of	In Progress

	the next internal SSMP audit, the completed Performance Indicator Assessment Forms can be used to evaluate the effectiveness of SSMP elements and included as attachments to the audit. This was also recommended during the previous audit but has not been implemented.	
	Consider tracking additional metrics targeted at measuring the effectiveness of SSMP elements that do not currently have metrics associated with them. A list of potential performance measures listed by SSMP element is included in **Appendix 7.2** of this internal audit. This was also recommended during the previous audit but has not been implemented.	In Progress
	As discussed in the previous section, use data collected in SSMP Appendix I as a reference, and develop goals for metrics that track preventative maintenance activities and identify the person/position responsible for tracking data against those goals. See **Appendix 7.2** for a list of potential performance indicators for preventative maintenance activities with responsible parties. This was also recommended during the previous audit but has not been implemented.	In Progress
	Using the data collected in SSMP Appendix I as a reference, set performance goals for the metrics used to illustrate SSO trends. See **Appendix 7.2** for a list of potential performance indicators related to SSO trends. This was also recommended during the previous audit but has not been implemented.	Completed
10 – SSMP Program Audits	Post the previous SSMP internal audit (FY 11/12 and FY 12/13) and this SSMP internal audit to the City website.	Completed
	Post the most recent City council SSMP recertification (from 2014) the City website.	Completed
	Schedule the next internal SSMP audit for July-August of 2017.	Completed
	Revise Appendix J-1 to reflect recommendations for review of performance indicators (i.e., metrics associated with specific SSMP elements and the associated timelines). This was also recommended during the previous audit but has not been implemented.	In Progress
	Revise Appendix J-2 (audit form) to provide areas in the tables for each SSMP element to assess both SSMP compliance to Regional Board requirements, and effectiveness of individual SSMP elements. Remove Kim Spears and IWS from the certification of audit table. This was also recommended during the previous audit but has not been implemented.	In Progress
	Update the SSMP revision log and post on the website.	No Progress

	Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.	No Progress
11 - Communication	As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website.	No Progress
	Update SSMP Appendix K-4 with FY 13-15 EU marketing Plan budget & spending.	No Progress
	Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as attachment K-7 and modify the SSMP to mention it.	No Progress
	Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).	No Progress

2.2 Review of FY 15/16, FY 16/17, and FY 17/18

The City has prioritized eliminating SSOs from the collection system and was successful preventing Category 1 SSOs during the FY 15/16-16/17 period. However, during the FY 17/18, one Category 1 SSO occurred, which was resulted by an equipment failure (Vacuum truck). This incident caused 342 gal of spill, of which 97% was recovered and 7 gal of it reached the state's surface waters. During this period, only one Category 2 SSOs occurred (FY 15/16), which was resulted by a pipe/structure failure. This event spilled 2020 gallons of sewage from a mainline, most of which was captured and recovered. In addition, the city experienced two Category 3 spills larger than 500 gallons, from which, one occurred on a mainline (caused by debris) and one occurred on a lower lateral, which was caused by roots. All remaining spills were less than 100 gallons, of which, four of them occurred on mainlines.

SECTION 3 SSO Trends

3.1 Historical SSO Data

A total of 85 Category 3 SSOs occurred during the audit period FY15/16 (38 SSOs), FY16/17 (23 SSOs), and FY17/18 (24 SSOs). **Appendix 7.1** of this report includes the date, location, type, volume, volume recovered, and recovery percentage of total volume of each SSO spill.

One of the City-defined tasks of the Audit is to compare the information submitted to the publicly available California Integrated Water Quality System (CIWQS) database with internal City records. The WWC Superintendent verifies that SSO data in CIWQS is accurate and matches the SSO Field Report Forms. **Table 3** shows an organized view of key data present in the CIWQS and City internal records and shows discrepancies, for the three-year audit period. As shown, Table 3 shows how accurately CIWQS data reflect the City's records, with few exceptions, details of which are listed in **Appendix 7.2**. The information presented in the "Internal Records" column represents a summarized view of various performance measures maintained by the City.

Table 3 – CIWQS and City SSO Historic Data

SSO Historical Data since last SSMP Internal Audit	CIWQS Data FY 15/16	Internal Records FY 15/16	CIWQS Data FY 16/17	Internal Records FY 16/17	CIWQS Data FY 17/18	Internal Records FY 17/18
Total number of potential SSO service calls received	-	266	-	252	-	259
Total number of SSOs reported	39	39	23	23	25	25
Total volume of SSOs [Gal]	2525	2525	1081	1081	1531	1565
Total volume of SSOs that reached waters of the state [Gal]	0	0	0	0	7	7
Volume of SSOs recovered [%]	95%	95%	91%	91%	53%	54%
Average SSO response time [h:mm]	0:25	0:25	0:18	0:18	0:15	0:20
Average SSO duration time [h:mm]*	2:59	2:56	6:22	6:22	6:49	6:49

* Including long-duration SSO events (> 3 hours long) that increased the average SSO duration.

The following section investigates the City's historical SSO data to identify potential SSO trends to provide insight into measuring the effectiveness of the City SSMP and future improvements in reducing SSOs. **Figure 1** highlights the category and number of SSOs since FY 06/07. The SWRCB defined new three SSO categories as of September 13th, 2013. A category 1 SSO is currently defined as a spill of any volume that reaches surface water. A Category 2 SSO is currently defined as a spill greater than or equal to 1,000 gallons that does not reach surface water. A Category 3 SSO is currently defined as a spill less than 1,000 gallons that does not reach surface water. **Figure 1** shows a declining trend on the total number of SSO events per year since FY 13/14 and is mostly limited to Category 3 SSOs.

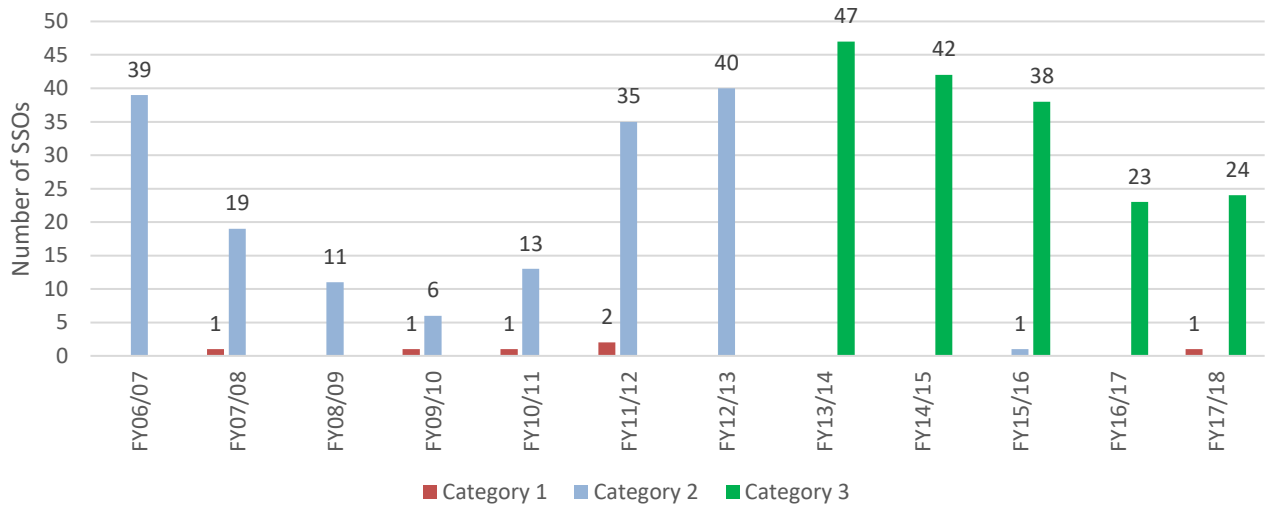


Figure 1 – Number of SSOs per Fiscal Year

With the goal of minimizing the spill volume, another valuable source of analysis is comparing average gallons spilled per SSO across fiscal years. **Figure 2** demonstrates average volume per SSO event since 2007, which equally weight out all spills and shows an annual average. Although, the number of SSO events has dropped over the years (See **Figure 1**), **Figure 2** indicates that the average spill volume per incident has been increased during this audit period. This trend was also observed by the SWRCB throughout the state. Although the number of statewide events has dropped over the years, but the spill volume has increased. Also, two wet seasons of FY 15/16 and 17/18 can also be clearly identified in **Figure 2**. In case of City of Roseville, it appeared that the high average volume was caused by the few high-volume spills occurred in FY15/16 and 17/18, majority of which was recovered. As mentioned, one of these high-volume incidents occurred by a main pipe/structure failure (FY 15/16: 2020 gallons) and the second largest spill was caused by roots in a lower lateral (FY 16/17: 760 gallons). Given the past records, **Figure 2** shows an average value of about 40 gal/SSO throughout the years. After reviewing the City's performance measures, it appears that the resulted high average volumes were most likely incidental driven and were not related to the SSMP effectiveness or the system performance. In addition, analysis of the City's SSO data showed that in about 18% of the events the City's staff did not see an active spill, in other words, these spills were ended before arrival of the staff. These incidents correspond to 5% of the total spill volume during this audit period.

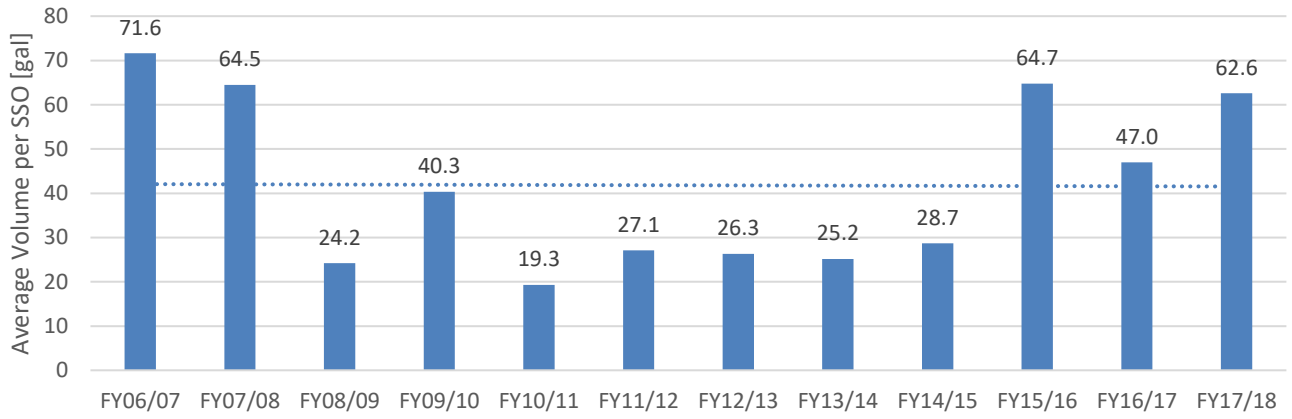


Figure 2 – Average Gallons per SSO

Here, City's average number of SSOs and average spill volume per SSO per 100 miles of sewer pipeline are compared with the results from sub-region Central Valley –Sacramento (part of State Water Control Board Region 5) and California (State), to provide regional context and insight into the City's collection system performance. **Table 4** summarizes these findings, gathered from the SWRCB's annual performance reports. These reports and their related data can be found online at the following link:

https://www.waterboards.ca.gov/water_issues/programs/sso/#prgm_docs

https://www.waterboards.ca.gov/board_info/exec_dir_rpts/

The board has not published similar data for fiscal years later than 2016. However, as shown in **Table 4**, the City average SSOs/100 miles of sewer pipe is far below the average of all municipal agencies in the Central Valley Sacramento subregion, and is slightly higher than the State. The City's average spill volume/100 miles of sewer pipe is an order of magnitude smaller than the state, which highlights how effective the City's SSO preventative maintenance and response program has been.

Table 4 – Regional Comparison of SSO Data

Fiscal Year	Average # of SSOs per 100 miles			Average Spill Volume per 100 miles [gallons]		
	City	Region 5	State	City	Region 5	State
2011/12	4.88	12.4	4.28	132	3,396	13,925
2012/13	5.85	12.72	4.38	154	4,371	8,194
2013/14	6.39	11.96	4.38	160	2,878	4,587
2014/15*	5.71	9.91	4.65	163	6,324	11,484
2015/16*	4.99	8.76	4.01	323	7,484	25,134
2016/17	2.94	Not Available		138	Not Available	
2017/18	3.20	Not Available		196	Not Available	

* These values do not include laterals in the total system size.

Table 5 demonstrates the leading causes of SSOs in this audit period compared to the previous audit period (FY 13/14-14/15). Generally, given the three-year period, number of SSOs caused by roots has decreased, but the volume has increased by 23%, which resulted in a higher average SSO volume. Also, FOG related events have decreased significantly during this period. However, SSOs caused by debris and pipe/structure failure have experienced a notable volume increase comparing to the previous audit period. Furthermore, no Capacity-caused SSOs was observed in this audit period and only one accidental truck incident caused a Category 1 event.

Table 5 – Leading Causes of SSOs in FY15-18 (results from FY13-15 in parenthesis)

By Number		By Volume		By Average Volume per SSO	
Cause	**Number**	**Cause**	**Gallons**	**Cause**	**Gallons**
Roots	62 (63)	Roots	1576 (1281)	Roots	25 (20)
FOG	2 (5)	FOG	67 (743)	FOG	34 (149)
Debris	15 (15)	Debris	908 (314)	Debris	61 (21)
Pipe Failure	7 (6)	Pipe Failure	2278 (50)	Pipe Failure	325 (8)
Capacity	0 (0)	Capacity	0 (0)	Capacity	0 (0)
Others*	1 (0)	Others*	342 (0)	Others*	342 (0)
Total	87 (89)	Total	5171 (2388)	Total	787 (198)

*Includes a vacuum truck incident for this audit (past audit includes an SSO caused by an act of vandalism).

To track the leading SSO cause, WWE summarized the average SSO volume per cause for the past three audit periods, results of which are shown in **Figure 3**. The actions planned because of this SSMP Audit will target the leading causes to most effectively reduce the number and more importantly spill volume of SSOs. As shown here, the FY15/16-17/18 period has experienced similar average volume of root caused SSOs, lower FOG related spill volumes, and slightly higher debris caused spills. However, as shown here, pipe/structure failure caused SSOs and incidental SSOs have increased during this period and since these are typically corresponded with high volume spills over small number of SSOs, these averages are significantly higher than the rest.

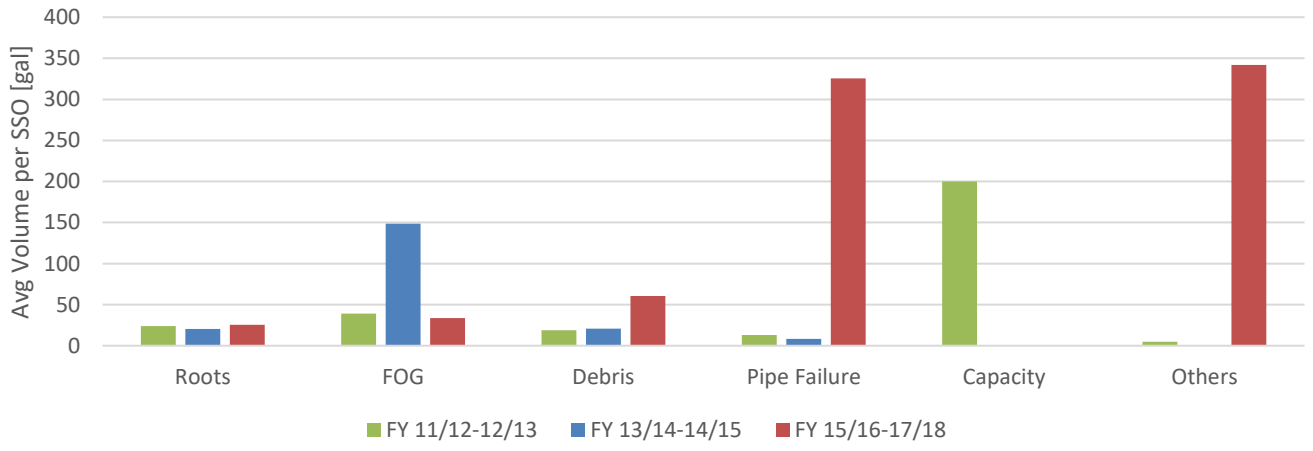


Figure 3 – Average SSO Volume per Cause

3.2 Performance Measures

To achieve proper operation and management of the sanitary sewer system and to prevent SSOs, the City utilizes multiple performance measures to assess the effectiveness of the SSMP. While the City may use other performance measures for evaluation purposes, the following measures are typically used:

- SSO Rate (SSOs per 100 miles of collection system piping per year)
- Number of SSOs for each cause (roots, FOG, debris, pipe failure, capacity, lift station failures, etc.)
- Average SSO volume (gallons)
- Percentage of SSOs greater than 100 gallons (%)
- Percentage of SSOs reported as Category 1 (%)
- Percentage of SSO volume recovered (%)
- Percentage of SSO volume reaching a surface water (%)

The City's SSO record were queried to analyze each performance measure from FY 11/12 to FY 17/18 and the data is shown in **Table 6** below. Overall, despite the decrease in the number of SSOs during this audit period, the City's SSO average has increased compared to previous years, which was due to few high-volume incidents, caused by pipe/structure failure and accidental spills.

Table 6 – Performance Measures

Performance Measures		FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18
SSO Rate, SSOs/100 mi		4.88	5.85	6.39	5.71	4.99	2.94	3.20
SSO Cause	FOG	0	1	4	1	2	0	0
	Roots	18	30	32	31	30	20	12
	Debris*	8	2	8	2	4	2	9
	Pipe/Structure Failure	6	4	2	7	3	1	3
	Vandalism	1	0	0	0	0	0	0
	Capacity	0	2	0	0	0	0	0
	Construction	0	0	0	1	0	0	0
	Unknown/Other	2	3	1	0	0	0	1
Average SSO Vol (gal)		27	26	25	29	65	47	63
% of SSOs > 100 gal		2.8%	2.3%	2.1%	4.7%	2.6%	4.3%	8.0%
Category 1 % of Total SSOs		0%	7%	0%	0%	0%	0%	22.3%
% of Spill Volume Recovered		99%	63%	94%	93%	95%	91%	54%
% of Spill Vol Reaching Surface Water		0%	37%	0%	0%	0%	0%	0.4%

*Includes non-dispersible and rags

SECTION 4 Audit Procedure

In accordance with SSS WDER Section D.13.x, the primary SSMP audit objective is to focus on evaluating the effectiveness of implementing the SSMP and the City's compliance with the SSMP requirements identified in the SSS WSDR Order. Also, according to recent SWRCB WDR workshops, it is expected that the statewide general order reissuance, with the primary focus on reducing spill volume, emphasis on the following:

- **Requirements focused on spill volume:** Although the total number of spills has decreased over the past few years, the CIWQS data has shown that the state experienced higher volume of spills. While, this could be caused by the previous wet seasons, the proposed reissuance will likely require enrollees to demonstrate system-specific spill reduction programs.
- **Improved Data Quality**: With the goal of enhancing data accuracy, additional measures are being considered to provide higher quality spill volume data, such as maintaining certified operators and emphasizing on staff training.
- **Enhanced Order Enforceability**: To address poor performing systems and those with lack of SSMP implementation.
- **To Incentivize Order Compliance**: To recognize and acknowledge systems with good performance.
- **Effective Planning for System Resilience**: To ensure effective and adaptive planning for spill reduction.

This section details the procedures used to meet the existing order, while considering future expectations.

4.1 Review of SSMP Compliance

This Audit assessed the City's SSMP against the requirements outlines in the SSS WDR. The subsections of **SECTION 5** listed below are organized by SSMP elements. Each subsection contains a table which lists the SSS WDR section D.13 requirements and City's level of compliance of the SSMP with that requirement. The compliance status of the City's SSMP is indicated with one of the following ratings: ***Yes*** *– in compliance,* ***No*** *– not in compliance, or* ***N/A*** *– not applicable with a written justification in the SSMP.* If there are any compliance deficiencies, then an explanation of the deficiency is given. Each deficiency will have a recommended SSMP enhancement, which may include action items, adjustments, and/or timelines of the planned completion.

4.2 Review of SSMP Effectiveness

After the SSMP compliance assessment compared to SSS WDR requirements, an evaluation of the effectiveness of the SSMP elements has been conducted to comply with the requirements for SSMP audits per subsection D.13.x of the SSS WDR. The discussion review if the plan outlined for each section is being followed, and how effective the plan is at reaching the desired objectives. Recommendations will be made where appropriate based on the results of this Audit to identify tasks to improve the effectiveness of SSMP activities. Performance metrics will be used wherever possible to measure the effectiveness of the SSMP elements.

This section will not repeat the information and plans presented in each section of the SSMP and is intended to evaluate the effectiveness of the stated plans for each SSMP element. The reader should reference the City's SSMP to obtain the information referenced by this Audit.

A summary of the recommended modifications made through this Audit is included in **SECTION 6**.

SECTION 5 Audit of SSMP Elements

This section evaluates all elements of the City's SSMP. Each section of this chapter is associated with one of the eleven elements of the SSMP in accordance with SS WDR section D.13 requirements. Each element is evaluated for compliance and effectiveness described above in 4.1 and 4.2 respectively.

5.1 Goals

5.1.1 Compliance

Table 7 – Compliance with SSS WDR D.13.i - Goals

SSMP Requirement	Compliance	Deficiencies
i Properly manage, operate, and maintain all portions of the City's wastewater collection system.	Yes	-

5.1.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Goals (SSMP 1.2)

- Level of Effectiveness: The City currently has seven goals identified in the SSMP. The goals of the City recorded in the SSMP have been effective in guiding the City's activities to support the objective of the SSS WDR to protect the waters of the state.

- Recommendations: Post Appendix A-1 – Roseville's SSMP Development Plan and Implementation Schedule on the website.

5.2 Organization

5.2.1 Compliance

Table 8 – Compliance with SSS WDR D.13.ii - Organization

SSMP Requirement	Compliance	Deficiencies
ii(a) Identify Legally Responsible Official (LRO)	Yes	-
ii(b) SSMP responsibility and organization chart	Yes	-
ii(c) Chain of communication for reporting SSOs	Yes	-

5.2.2 Effectiveness of SSMP Elements and Recommended Modifications

List Legally Responsible Official (LRO) (SSMP 2.1)

- Level of Effectiveness: The City has Ken Glotzbach (Utility Manager) and Chris Bracco (Wastewater Collections Superintendent) listed in CIWQS as LROs. Dan Pruden (Wastewater Collections Supervisor) is

listed as a data submitter. This is recorded in Appendix B-1 of the SSMP and is publicly accessible. The current organization of data submitters and LROs has proven effective in reporting SSOs to meet the requirements of the September 2013 amended Monitoring and Reporting Program.

- Recommendations:
    - Modify Appendix B-1: Update City Council positions and add phone numbers (Mayor Carol Garcia, Vice Mayor Susan Rohan, City Attorney Robert Schmitt). Update Commissioners and phone numbers: Chair Blandon Granger, Vice Chair John Speight. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Cheryl Hammond. Update Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.
    - Post the following Appendices on the website:
        - Appendix B-1 – Personnel Responsible for SSMP Elements
        - Appendix B-2 – Personnel Responsible for SSO Reporting
        - Appendix B-3 – Personnel Responsible for Responding to SSOs Weekly Standby

SSMP Responsibility Organization Chart (SSMP 2.2)

- Level of Effectiveness: The SSMP Responsibility Organization Chart (SSMP Figure 2-1) is current in the SSMP and lists a descriptive definition of each individual's responsibilities. The chart is effective in defining the work flow and responsibilities of the individuals as well as departments within the City of Roseville's operations with relation to the SSMP. The narrative of the general position description is outlined in Section 2.2 of the SSMP.

- Recommendations: No recommendations at this time.

Chain of Communication Reporting Chart (SSMP 2.3)

- Level of Effectiveness: The internal notification contact chart is current and readily available to all wastewater utility district staff. The city of Roseville has a 24-hour call center, standardized answering script and procedures, and a full-time staff wastewater utility customer service representative. The individual's job is to respond to any service calls including but not limited to: backups, SSOs, smell complaints, etc. This has been an effective and well-utilized service, as service calls have increased and the average SSO response time has remained below the 40-minute target. Only 6 SSO response times were above 40 minutes during the audit period (1:48:00, 3:15:00, 0:45:00, 0:42:00, 0:45:00, and 0:45:00) which totaled 31 gallons in spills and the remaining 93% of the responses were under 40 min.

- Recommendations:
    - Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff.
    - Include Figure 2-2 flowchart as Appendix F to the SSOERP (Appendix F-1) and mention in the text.

5.3 Legal Authority

5.3.1 Compliance

Table 9 – Compliance with SSS WDR D.13.iii – Legal Authority

SSMP Requirement	Compliance	Deficiencies
iii(a) Prevent illicit discharges	Yes	-
iii(b) Properly designed and constructed sewers	Yes	-
iii(c) Ensure access to laterals owned/maintained by City	Yes	-
iii(d) Limit the discharge of FOG and other debris	Yes	-
iii(e) Enforce any violation of City ordinances	Yes	-

5.3.2 Effectiveness of SSMP Elements and Recommended Modifications

Industrial Pretreatment Program (SSMP 3.2)

- Level of Effectiveness: The Industrial Waste Section (IWS) administers the Pretreatment Program Enforcement Response Plan and implements enforcement procedures specified by the U.S. EPA in accordance with 40CFR 403.5 (f) (5). The IWS has the authority to permit and monitor significant industrial users (SIUs) and small commercial/industrial dischargers. The implementation of the Pretreatment Program Enforcement Response Plan has been effective in providing the City the authority to control and prevent illicit discharges to the collection system.

- Recommendations: Post Appendix C-1 – Pretreatment Program Enforcement Response Plan on the website.

Municipal Code and Design and Construction Standards (SSMP 3.3)

- Level of Effectiveness: The City's design and construction standards regulate the preparation of plans for construction of additions/improvements to the sewer. The Roseville Municipal Code (RMC) section 14.12.040 requires that building sewer and connection into the public sewer system conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City. The RMC also requires an installation of a lateral line clean out at the point of connection with the public sewer. The City design and construction standards and the RMC section 14.12.040 have been effective in providing the City the legal authority to properly design and construct the sewers and connections.

- Recommendations: Update the related links for Appendices C-3 and C-4 for sanitary sewer design and construction.

Municipal Code – Sewer Access Authority (SSMP 3.4)

- Level of Effectiveness: The Charter in the RMC, Article X Sec. 10.01 designates the authority to access City owned and operated facilities, either within or outside its corporate limits, number of activities including, but not limited to maintenance, inspection, and repair related to sewage collection. The authority gives legal access to all City-owned sewer facilities. The City has not had issues to date with lack of access to

facilities based on legal authority. The current legal authority to access sewer facilities has been effective in supporting the goals of the SSMP.

- Recommendations: No recommended modifications at this time.

Municipal Code – FOG (SSMP 3.5)

- Level of Effectiveness: The RMC chapter 14.14 is a robust FOG ordinance that lists regulatory requirements, fees, administrative requirements, and authority to enforce regulatory compliance. This ordinance is effective in identifying the required equipment and BMPs for FSEs as well as indicating the authority of the City to enforce the FOG requirements.

- Recommendations: No recommended modifications at this time.

Municipal Code – Enforcement Authority (SSMP 3.6)

- Level of Effectiveness: The RMC section 14.12.060 authorizes the City to penalize violators of the City's code requirements. At the discretion of the City attorney, an individual may be charged with an infraction or a misdemeanor. The authority to penalize infractions that may cost City resources has proven effective to maintain proper use of the wastewater collection system.

- Recommendations: No recommended modifications at this time.

Inter-Agency Agreements and Satellite Systems (SSMP 3.7)

- Level of Effectiveness: The City maintains a Joint Exercise of Powers Agreement for the South Placer Wastewater Authority and Agreement Regarding the Operation and use of the South Placer Regional Wastewater Facilities. In addition, the City has an Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

- Recommendations: Post the following Appendices on the website:
    - Appendix C-5 – Joint Exercise of Powers Agreement for the South Placer Wastewater Authority
    - Appendix C-6 – Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities
    - Appendix C-7 – Wastewater Service Agreement by Contract and Operating Agreement between SASD, SRCSD and City of Roseville

5.4 Operation and Maintenance Program

5.4.1 Compliance

Table 10 – Compliance with SSS WDR D.13.iv – O&M Program

SSMP Requirement	Compliance	Deficiencies
iv(a) Collection system maps	Yes	-
iv(b) Preventive O&M activities	Yes	-
iv(c) Rehabilitation and Replacement (R&R) plan	Yes	The City does have an R&R plan in place, but additional improvement should be implemented (see below)
iv(d) Training	Yes	The City provides regular training but additional improvements to the training program should be implemented (see below)
iv(e) Equipment and critical replacement parts	Yes	-

5.4.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Collection System Maps (SSMP 4.2)

- Level of Effectiveness: The city maintains electronic and hard copy maps of the sanitary sewer system and storm drain system. Updates to the electronic map system are translated to the field crew trucks via single sheet prints, if required. Full hard copy mapbooks are updated on a yearly basis. The City Mapping Update Policy is followed to ensure mapping is correct and completed in GIS and made available to the required users. The mapping policy document is added to the SSMP as an appendix and is posted to the City's SSMP website page.

- Recommendations: Post the following Appendices on the website:
  - Appendix D-1 – City of Roseville Sewer Map Grid System
  - Appendix D-9 – Mapping Update Policy

Roseville Preventive Operations & Maintenance Activities (SSMP 4.3)

- Level of Effectiveness: WWC engages in various programs to complete routine preventative maintenance activities, which include jet cleaning, lateral eeling, chemical root control, CCTV inspections, visual inspections, and lift station maintenance.

  According to **Table 6**, the City experienced a slight decrease in root-caused SSOs during the last years of the audit period, which explains the decrease in the total sewer lateral mechanical cleaning (eeled), as shown in **Table 11**. The City outperformed preventative maintenance targets and past performance measures as evident in **Table 11,** with the exception of mechanical root cleaning during FY 17/18, which may have been related to an equipment maintenance issue (see **Table 12**). Other performance measures or benchmarks are reviewed in full in the recommendations of **Section 5.9**.

Table 11 – Performance Measures related to SSS WDR D.13.iv(b)

Performance Measure	Target	FY13/14	FY14/15	FY15/16	FY16/17	FY17/18
Total number of sewer maintenance field staff	NA	23	24	24	24	26
Sewer main flushed per year (miles)	250	330	284	248	295	283
Sewer laterals mechanically cleaned (eeled) per year (miles)	8	13.89	14.69	14.77	7.41	1.07
Average high velocity cleaning per crew per day [LF]	1670	2393	2922	2618	3115	2998
Average cost of hydro cleaning [$/LF]	0.36	0.30	0.32	0.33	0.29	0.32
Average cost of sewer mechanical cleaning [$/LF]	1.60	1.23	1.20	0.77	0.94	1.66

- Recommendations:
  - Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.
  - Update the following Appendices and post on the website:
    - Appendix D-2 – Maintenance Cleaning Schedule: Update with Maximo CCMS example
    - Appendix D-3 – CCTV Video Report
    - Appendix D-4 – SOP

Rehabilitation and Replacement Plan (SSMP 4.4)

- Level of Effectiveness: The City regularly CCTV inspects pipelines using the national Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) coding standard. The City evaluates the risk of failure for each asset based on the various data sources it maintains (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections) and assigns high risk assets in a ranked Rehabilitation and Replacement (R&R) Plan. If an R&R project is not completed in one year, then it is rolled over to the next. The City maintains a 5-year list of planned R&R CIP projects.

  The city creates an asset group in their Maximo CCMS, based on their condition assessment and PACP scores. This ongoing list is prioritized and provided to Tech Services, when CIP budget is prepared, to put a CIPPP project together. Also, while performing routine hydro work in the grids, the vactor group performs manhole inspections of each asset. Once there are enough manholes that require rehabilitation, the City produces a list with asset IDs that will be sent to Tech Services for manhole Rehabilitation CIP. In the past 6 years, the City has not discovered a substantial number of manholes to develop a manhole CIP project.

  In accordance with the City-utilized performance measures related to inspection and R&R program activities as displayed in **Table 12**, the City has met or exceeded all inspection targets during this audit program. However, total miles of mainline rehabilitated during this three-year were less than the target. SSOs caused by structural failure during the audit period are overlaid with the City's 2018 I/I study and shown in **Appendix 7.3.** As shown, most of these spills occurred in regions with older pipes, such as region 5, 15, and 17. These regions are also known for their higher I/I response and capacity issues during wet

seasons. The City has been actively performing I/I analysis and smoke testing to identify system defects in these regions, results of which are incorporated in CIP decision makings.

Table 12 – Performance Measures related to SSS WDR D.13.iv (c)

Performance Measure	Target	FY13/14	FY14/15	FY15/16	FY16/17	FY17/18
Total miles visually inspected per year (not CCTV)	0.25	0.25	0.25	0.18	0.25	0.25
Lateral CCTV inspected per year [miles]	16	14.69	26	35.71	32.51	36.14
Main CCTV inspected per year [miles]	30	53.27	65	84.32	59.71	64.1
Laterals rehabilitated per year [number]	50	90	43	60	85	89
Laterals rehabilitated or replaced per year [miles]	0.25	0.39	0.16	0.27	0.66	0.42
Mains Rehabilitated or replaced per year [miles]	5	2.65	6	0	0	1.07
Average Cost of CCTV (lateral) [$/LF]	1.34	1.46	1.11	1.15	1.04	1.00
Average cost of CCTV (main) [$/LF]	0.53	0.55	0.41	0.41	0.36	0.40

- Recommendations:
  - Describe the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.
  - Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment. This was also included during the previous audit but has not been completed.
  - Post Appendix D-8 – Technical Memorandum O&M Program SSMP Audit-Rehabilitation and Replacement Plan (Element IVC) on the website.

Training (SSMP 4.5)

- Level of Effectiveness: The WWC requires employees be certified with CWEA, DMV, CPR, First Aid, Confined Space Policy, Gas Detector Policy, as well be trained in equipment safety, maintain OSHA rules, and review material safety data sheets.

  The existing training program has been effective in supporting a well-trained staff. Over this audit period WWC has reported 3 on the job accidents in FY 15/16, 3 in FY 16/17, and 4 in FY 17/18, which are less than previous audits. WWC strives for zero-on-the-job accidents and has weekly tail-gate training meetings and monthly training sessions where WWC staff is trained in part via various SOPs.

- Recommendations: Update the following links:
  - The CWEA website link
  - Appendix D-5 – CWEA Certification Handbook link

Equipment and Critical Replacement Parts (SSMP 4.6)

- Level of Effectiveness: WWC maintains a list of equipment and critical replacement parts inventory in Appendix D of the SSMP. The critical replacement parts list is 100% stocked, up to date, and is maintained by the Material Technician at Dry Creek WWTP. The equipment and critical replacement parts inventory and upkeep is effective and ensures that a lift station critical part failure can be quickly mitigated.

- Recommendations: Update and post the following Appendices on the website:
  - Appendix D-6 – Equipment Inventory List
  - Appendix D-7 – Critical Replace Parts List

5.5 Design and Performance Provisions

5.5.1 Compliance

Table 13 – Compliance with SSS WDR D.13.v – Design and Performance Provisions

SSMP Requirement	Compliance	Deficiencies
v(a) Sanitary sewer design and construction specifications	Yes	-
v(b) Procedures and standards for inspecting and testing new and R&R projects	Yes	-

5.5.2 Effectiveness of SSMP Elements and Recommended Modifications

Sanitary Sewer Design and Specifications (SSMP 5.2)

- Level of Effectiveness: The City's design and construction standards are available on the website and the online SSMP documentation lists their location. These designs and construction standards are effective in ensuring that new or rehabilitated infrastructure is designed and constructed in an acceptable manner.

- Recommendations: Update Appendix E-1 – Sanitary Sewer Design link.

Sanitary Sewer System Construction and Performance Provisions (SSMP 5.3)

- Level of Effectiveness: The City's construction and design standards include procedures and requirements for the testing of new/rehabilitated assets and has been effective in ensuring that recently constructed assets perform as expected.

- Recommendations:
  - Update Appendix E-2 – Sanitary Sewer System Construction link.
  - Post Appendix E-3 – Technical Memo, SSMP Preparedness Audit Design and Performance Provisions Element V on the website.

5.6 Overflow Emergency Response Plan

5.6.1 Compliance

Table 14 – Compliance with SSS WDR D.13.vi - OERP

SSMP Requirement	Compliance	Deficiencies
vi(a) Proper notification procedures	Yes	-
vi(b) Program for appropriate SSO response	Yes	-
vi(c) Procedure for prompt notification to regulatory agencies	Yes	-
vi(d) Procedures for appropriate staff and contractor training	Yes	
vi(e) Procedures to address emergency operations (e.g., traffic, crowd control)	Yes	-
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	No	SSOERP does not meet certain water quality monitoring requirements of the amended MRP document

5.6.2 Effectiveness of SSMP Elements and Recommended Modifications

Notification Procedures (SSMP 6.2)

- Level of Effectiveness: The average SSO response time during the audit period was 22 minutes, with 25 minutes for FY 15/16, 18 minutes for FY 16/17, and 20 minutes for FY 17/18 (see **Table 3**). These response times are much faster than the City target response time of 40 minutes and indicates that the notification procedures employed the City are effective in facilitating a rapid response from the City's first responders.

- Recommendations: No recommended modifications at this time.

Response Program (SSMP 6.3)

- Level of Effectiveness: SSO response procedures are documented in Appendix F-1 Section 2 of the SSMP and are summarized in the flow chart in Figure 6-2 of the SSMP and Appendix F-1 SSOERP. The flow chart uses a series of yes/no questions to guide SSO responders in quickly identifying the right sequence of decisions and actions to properly assess and mitigate an SSO. This chart is simple and effective in explaining the process in which to mitigate an SSO.

  During the audit period, the average SSO volume spilled was 59 gallons, with an average 82% recovered from the total SSO volume. Similarly, the average SSO duration length was 4:57 hours long, however there were 13 long-duration SSOs (over 3 hours) that caused the average SSO duration length to increase. One of these SSOs in FY 15/16 spilled from a main for 65 hours and resulted in volume spilled of 65 gallons. In all these instances, the City was notified very late, and once notified, stopped all long duration SSOs in under 30 minutes. The average City response time to SSO calls during the audit period was 22 minutes,

and the average time it took to stop the SSO (SSO mitigation) once on-site was just under 5 minutes. These statistics demonstrate that the City has been effective in responding and mitigating SSOs.

- Recommendations:
  - The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.
  - Modify Figure 6-2 – SSO Procedure Flow Chat, to report SSO category 1 larger than 1,000 gallons to Cal OES within 2 hours per WDR requirements (currently if > 50,000 gal).
  - Post Appendix F-1 – SSOERP on the website along with corresponding attachments.

Regulatory Notification Procedure (SSMP 6.4)

- Level of Effectiveness: The Superintendent and Utility Manager are the legally responsible officials (LRO) for certifying SSO reports submitted to CIWQs. The Superintendent and Supervisor are also responsible for reporting the SSOs to RWQCB, OES, and Placer Environmental Health Department as required. This section is effective in conveying the responsibility the LRO in reporting SSOs to the proper authorities.

- Recommendations: No recommended modifications at this time.

Staff and Contractors Training (SSMP 6.5)

- Level of Effectiveness: Each WWC employee is required to complete the SSO response procedure training updates and review of SSO training are included in the weekly tailgate meeting throughout the year. They are also trained on the various SOPs implemented within WWC. Contractors are also required to implement the procedures identified in the SSO training prior to working within the collection system. As evidenced by the fast response and mitigation times, the WWC staff's training has been effective.

- Recommendations: No recommended modifications at this time.

Emergency Response Coordination (SSMP 6.6)

- Level of Effectiveness: WWC employees are required to complete the Emergency Action plan training annually. This covers HAZ WOPER first responders and Roseville's Incident Command System (ICS). These process, procedures, and response systems are also reviewed via weekly safety tail gate meetings. These training sessions have been effective way to prepare staff to deal with hazardous waste and materials.

- Recommendations: No recommended modifications at this time.

Spill Mitigation and Containment Procedure (SSMP 6.7)

- Level of Effectiveness: Appendix F-1 of the SSMP includes an SSOERP which includes an SOP for estimating spill volumes, containment, and mitigation of spills. The new amended Monitoring and Reporting Program (MRP) requirements implemented in September 2013 require a robust water quality monitoring plan that must account for spill travel time in surface water, among several new requirements. The City's current SSOERP Appendix C Water Quality Sampling Procedures document does not meet these requirements.

- Recommendations:
    - Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP.
        - Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. This was also recommended during the previous audit but has not been implemented.
        - Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan. This was also recommended during the previous audit but has not been implemented.
    - Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling. This was also recommended during the previous audit but has not been implemented.

5.7 FOG Control Program

5.7.1 Compliance

Table 15 – Compliance with SSS WDR D.13.vii – FOG Control Program

SSMP Requirement	Compliance	Deficiencies
vii(a) Public education plan	Yes	The City does have a public education plan, but additional improvements should be implemented (see below)
vii(b) FOG disposal plan	Yes	-
vii(c) Legal authority to prohibit SSOs and blockages caused by FOG discharges	Yes	-
vii(d) BMPs, grease removal devices, recordkeeping, and reporting requirements	Yes	-
vii(e) Authority to inspect and enforce FOG ordinance	Yes	
vii(f) FOG Characterization Assessment and Hot Spot Cleaning Schedule	Yes	-
vii(g) FOG Control Program Measures	Yes	-

5.7.2 Effectiveness of SSMP Elements and Recommended Modifications

Public Education Plan (SSMP 7.2)

- Level of Effectiveness: The City has developed and operates a comprehensive FOG outreach program to residents, restaurants, and the plumbing community on the proper disposal of FOG. The main objective is to educate the City of Roseville residents and restaurants on the proper disposal of FOG to meet or exceed outreach standards set forth in the State General WDR requirements. The program has implemented TV ads, flyers, bill inserts, and websites to convey the message of educating the public on the proper disposal of FOG and other substances. This system appears to be effective in educating the public on the proper disposal of FOG and other substances. Maurice Chaney is listed as responsible party for FOG publica Education Plan in Appendix B-1.

- Recommendations: No modifications recommended at this time.

FOG Disposal Plan (SSMP 7.3)

- Level of Effectiveness: During the past audit periods the Industrial Waste Section (IWS) oversaw the FOG disposal plan with permitted FSEs, however all FOG program-related responsibilities transitioned to WWC in 2016. The City currently has 319 FSEs that are required to and have obtained a FOG wastewater discharge permit (FOG WDP). The same City regulations from the audit period are in place which require permittees to retain a minimum 3 years of documentation to prove the proper cleaning, maintenance, and removal of FOG from grease control devices and the disposal site location. The City provides

information about the permitting process and permit applications on the City website (URL address below) as a resource for businesses and residences within the City.
(https://livesewersmart.com/)
The FOG record keeping requirements for FSEs appear to be effective in that only three FOG-related SSOs occurred over the audit period.

- Recommendations: No modifications recommended at this time.

Record Keeping Requirements (SSMP 7.4)

- Level of Effectiveness: As discussed in the previous section, FOG control program responsibilities transitioned from IWS to WWC in 2016, but during the audit period, IWS operated the program. The City requires in RMC Section 14.14.260 that permitted FSEs retain logbooks on grease control device maintenance cycles, FOG hauling records, sampling data and sludge height monitoring in FOG control devices, BMPs, and records of private lateral SSOs and subsequent mitigation. The recordkeeping requirements and time frames identified in the RMC have enough information necessary for the City to enforce permit requirements of FSEs.

- Recommendations: No modifications recommended at this time.

Legal Authority to Prohibit SSOs and Blockages Caused by FOG Discharges (SSMP 7.5)

- Level of Effectiveness: The RMC Section 14.12.050 provides the City with a FOG ordinance and legal authority to require FOG interceptors when deemed necessary by the director. The ordinance prohibits FOG-related blockages and SSOs and limits the maximum allowable concentration of FOG in FSE discharges at the current level of 100 mg/L of wastewater. This ordinance is effective in providing the City with the tools necessary to minimize FOG discharges into the sewer system.

- Recommendations: No modifications recommended at this time.

BMP, Grease Removal Devices, Recordkeeping, and Reporting Requirements (SSMP 7.6)

- Level of Effectiveness: The City requires all FSEs that discharge FOG to acquire a FOG WDP permit which includes provisions for FSEs to maintain BMPs and grease interceptors, cleaning records, and to report private FOG-related SSOs or blockages. The FOG WDP requirements are effective in providing the City with the tools to limit FOG discharges into the sewer system.

- Recommendations: No modifications recommended at this time.

Inspection and Enforcement Authority – FOG Producers (SSMP 7.7)

- Level of Effectiveness: All FSEs that discharge FOG are required to obtain and comply with a City FOG WDP. Under the permit, the FSE must comply with the FOG ordinance as detailed under the RMC, and the City maintains the legal authority to physically inspect the FSE and determine if it is in compliance. The City possesses effective tools to regulate FOG discharges via a robust FOG ordinance which also requires an

effective FSE inspection program. Under oversight from WWC, the City plans on inspecting at least 294 FSEs each fiscal year During this audit, the city documented 181 FSE inspections for FY 16/17 and 231 for 17/18, which shows effectiveness of the FOG inspection and enforcement authority element of the SSMP.

- Recommendations: No modifications recommended at this time.

FOG Characterization Assessment and Hot Spot Cleaning Schedule (SSMP 7.8)

- Level of Effectiveness: The City has been effective in limiting FOG-related SSOs to two during the three-year audit period by identifying and placing assets impacted by FOG as a last resort on the hot-spot, high frequency 3-month cleaning list. If the City encounters abnormal FOG levels in a pipe it will first reach out to FSEs and residents that it thinks may be contributing to it and distribute pamphlets to them to minimize FOG discharges. If that does not solve the problem, then the asset is put on the hot-spot list. Approximately 60% of the 90 hot-spot assets have FOG-related issues that require significant City resources to clean every 3 months.

- Recommendations:
    - Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.

FOG Control Program Measures (SSMP 7.9)

- Level of Effectiveness: The City has established that all FOG-producing FSEs acquire a FOG WDP which limits discharge of FOG, requires proper O&M records, hauling record, BMPs, and other conditions. The FOG Control Program measure provides the City's with an effective tool to limit FOG discharges from FSEs.

- Recommendations: No modifications recommended at this time.

5.8 System Evaluation and Capacity Assurance Plan

5.8.1 Compliance

Table 16 – Compliance with SSS WDR D.13.viii - SECAP

SSMP Requirement	Compliance	Deficiencies
viii(a) Evaluate hydraulic deficiencies	Yes	-
viii(b) Establish design criteria	Yes	-
viii(c) Establish short- and long-term CIP	Yes	-
viii(d) Develop schedule of completion dates for CIP	Yes	-

5.8.2 Effectiveness of SSMP Elements and Recommended Modifications

Evaluation Process – Capacity Enhancement Projects (SSMP 8.2)

- Level of Effectiveness: The City has developed two hydraulic simulation models to identify peak flows in the collection system in 2006. In addition, the City developed a new hydraulic model and System Evaluation and Capacity Assurance Plan (SECAP) in 2017, which was done by Woodard and Curran. The modeling efforts conducted in 2006 and 2017 have been effective in evaluating the system and planning for future growth, which is evident from no capacity-deficiency-related SSOs during this audit period. In 2018, Water Works Engineers (WWE) conducted a follow up I/I study upon the existing 2017 model to further analyze results and identify basins and assets with high I/I response. The results of the 2018 I/I study is being actively used by the City as their I/I reduction program base.

- Recommendations: Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years. This was also recommended during the previous audit but has not been implemented.

Design Criteria (SSMP 8.3)

- Level of Effectiveness: The City established a 10-year, 24-hour peak design storm for the hydraulic wet weather loading of the existing collection system along with flow generation factors based on water use records and flow monitoring data. Based on the lack of capacity-related SSOs during the audit period, it appears the City's capacity design criteria are effective.

- Recommendations: No recommended modifications at this time.

Capacity Enhancement Measures (SSMP 8.4)

- Level of Effectiveness: The SPWA Wastewater Systems Evaluation includes the identification of short and long-term Capital Improvement Project (CIP) to meet current and future wastewater flows. The new hydraulic model introduced in 2017 provides new capacity enhancement measures.

- Recommendations: No modifications recommended at this time.

Capital Improvement Program Schedule (SSMP 8.5)

- Level of Effectiveness: The City lists the goal of the CIP is to develop annual project bundles of approximately $1.5 to $2.0 million based on WWC condition assessment data and the hydraulic model CIP results and subsequent flow monitoring or studies. The CIP schedule is effective in identifying the tasks required to assure hydraulic capacity within the collection system.

- Recommendations: No modifications recommended at this time.

5.9 Monitoring, Measurement, and Program Modifications

5.9.1 Compliance

Table 17 – Compliance with SSS WDR D.13.ix – MMM

SSMP Requirement	Compliance	Deficiencies
ix(a) Maintain metrics to prioritize SSMP activities	Yes	-
ix(b) Measure effectiveness of SSMP elements	Yes	The City does have performance indicators linked with SSMP elements, but additional improvements should be implemented (see below)
ix(c) Assess preventative maintenance program	Yes	-
ix(d) Update elements based on evaluations	Yes	-
ix(e) Identify and illustrate SSO trends	Yes	-

5.9.2 Effectiveness of SSMP Elements and Recommended Modifications

Utility Metrics to Prioritize SSMP Activities (SSMP 9.2)

- Level of Effectiveness: The WWC tracks four categories of utility metrics to monitor and measure the effectiveness of the various elements of this SSMP, which include system information, financial information, sewer maintenance, and performance measures. The city also tracks various performance measures related to various SSMP elements and they are summarized in **Appendix 7.4**. Appendix I has effectively been used to identify and track the specific metrics each of the City's four categories.

- Recommendations: No modifications recommended at this time.

Metrics to Monitor Effectiveness of SSMP (SSMP 9.3)

- Level of Effectiveness: The utility metrics listed in Appendix I-4 pertain to different overseeing departments within the City, and the coordination between these different Departments in measuring/monitoring various metrics and sharing results has been effective in ensuring the SSMP goals have been met.
- Recommendations:
    - Incorporate system and financial measures recommended in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP.
    - Update Appendix I-4 and modify it to include document location and review frequency.
    - Modify I-4 – Key Performance Indicators (KPI) FOG section, to reflect the change in responsibilities from IWS to WWC.

Metrics to Assess Preventative Maintenance Program (SSMP 9.4)

- Level of Effectiveness: The City's current utility metrics Appendix I defines the frequency and type of utility metric that is being tracked to measure SSMP effectiveness. This is effective because it allows the city to monitor performance of particular activities and compare against SSO trends to determined data

correlations. These metrics do not all have associated goals or targets, however, which makes it hard to track whether the activity is meeting the intended result.

- Recommendations: Consider addition of recommended PM measures in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.

SSMP Performance Monitoring and Update Process (SSMP 9.5)

- Level of Effectiveness: Individual staff oversee various SSMP element performance indicators. The City tracks all revisions/updates with the SSMP using a revision log that is maintained by the LRO. The log is effective documenting changes to the SSMP and encourages the use of the SSMP as a living document.

- Recommendations: No modifications recommended at this time.

SSO Trends – Frequency, Location and Volume (SSMP 9.6)

- Level of Effectiveness: The City tracks a comprehensive list of performance metrics that are included in Appendix I-4 of the SSMP and summarized in **Table 19**. This allows the City to quickly identify and respond to changing trends in SSOs over time. These metrics are monitored on a monthly, quarterly, semi-annual, and annual basis.

- Recommendations:
  - Update Appendix I-3 – SSO History (last update 2013).
  - Update SSO trends data in Appendix I-4 – KPI Benchmarking.
  - Consider addition of recommended SSO measures in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.

Table 18 –Recommended Additional Performance Indicators

Description	Performance Indicator	Unit
System Information	Total System Length	miles
	Service Area	sq. miles
	Population	people
	# maintenance Holes	MHs
	# Pump Stations PS/ Lift Station	number
	Sewer < 8 inch	miles
	8 inches < sewer < 15 inches	miles
	15 inches < sewer < 21 inches	miles
	21 inches < sewer < 42 inches	miles
	Average age of system	years
	New sewer main installation	miles
	New sewer lateral installation	miles

	WWC Staff	number
Financial Information	Total annual division budget	$
	Total annual O&M budget	$
	O&M budget of annual	%
	Lift station O&M cost	$
	Lift station O&M cost of annual	%
	Annual capital for sewer rehab	$
	Sewer monthly rate for residents	$
O&M	Certified operators	number
	O&M field staff	number
	Average high velocity cleaning per crew per day	LF
	Total visually inspected per year (not CCTV)	miles
SSO	Number of SSO calls received	number
FOG	Public education outreach budget per year	$
	Public education outreach budget of annual	%

Table 19 – Current Performance Measures to Monitor SSO Trends

Performance Measure	Unit	Target	Source
SSOs - Total number, mains and laterals	Number	-	A, B
SSOs - Total volume, mains and laterals	Gal	-	A, B
SSOs - Total volume recovered	Gal	-	B
SSOs - Total number of wet weather	Number	-	A, B
SSOs - Total volume of wet weather	Gal	-	A, B
SSOs - % of spills caused by FOG (main)	%	-	A, B
SSOs - % of spills caused by roots (main)	%	-	A, B
SSOs - % of spills caused by Vandalism (main)	%	-	A, B
SSOs - caused by LS failures	Number	-	A, B
SSOs - caused by pipe failures	Number	-	A, B
SSOs - % of spill volume caused by FOG (lateral)	%	-	A, B
SSOs - % of spill volume caused by roots (lateral)	%	-	A, B
SSOs - % of spill volume caused by Vandalism (lateral)	%	-	A, B
Customer service requests per year	Number	-	A, B
Sewer odor complaints	Number	-	A, B
Flooding claims per year	Number	-	A, B
Cost of flooding claims per year	$	-	A, B
SSO – Repeats within two years	Number	0	B, C
SSOs - Category 1	Number	0	C, D
SSOs / 100 mi pipe / year - Category 2	Number	2.0	C
SSOs / 100 mi pipe / year - Mainline	Number	0.6	C
SSOs / 100 mi pipe / year - Lateral	Number	8.0	C

A = SSMP section 9.6

B = SSMP Appendix I

C = WW Collections KPIs

D = Program / Performance Reports

5.10 SSMP Program Audits

5.10.1 Compliance

Table 20 – Compliance with SSS WDR D.13.x – SSMP Program Audits

SSMP Requirement	Compliance	Deficiencies
x Conduct periodic audits	Yes	-

5.10.2 Effectiveness of SSMP Elements and Recommended Modifications

Audit Procedures, Roles, and Responsibilities (SSMP 10.2)

- Level of Effectiveness: The City conducts an internal audit biennially to continually measure the effectiveness of the SSMP primarily through evaluating system metrics, performance measures, and reduce SSOs by improving SSMP procedures to better respond to new SSO trends. In addition, the audit evaluates the City's compliance with SSMP requirements, particularly the amended MRP requirements that were formalized in September 2013. The City developed an audit form as a template to record information produced during the internal SSMP audits. This form is included in SSMP Appendix J-2. The previous audit identified many areas of improvement which the City responded and acted on. Some of these recommended improvements were excluded from this audit based on discussions with the City that eliminated the need for them. Others are considered standing and should still be implemented by the City. Generally, the internal audits implemented by the City have been effective in improving the SSMP and turning it into a living document that that is current, practical, and useful for the City.
- Recommendations:
    - Post this SSMP internal audit to the City website.
    - Schedule the next internal SSMP audit for July-August of 2021.
    - Develop a description manual to replace Appendix J-1 and J-2 of the SSMP, to support each KPI element. This manual describes required information for KPI monitoring, including but not limited to:
        - Elements definition
        - How to fill each KPI items
        - Personnel responsible
        - Review frequency

SSMP Program Modification/Update Process (SSMP 10.3)

- Level of Effectiveness: The City developed a program for monitoring, reviewing sewer performance metrics and the effectiveness of SSMP elements on a biennial basis. Based on the results of the SSMP audits, the Wastewater Utility Manager is assigned to initiate/direct corrective actions to respond to deficiencies and enhancements identified in the audit. As determined in the City's SSMP revision log, the City has been prompt in responding to audit and continually strives to implement improvements.

- Recommendations:

- Update the SSMP change log and add it as an appendix to the SSMP, documenting all changes made to the SSMP since its last certification, indicating when an element was changed/updated and who authorized the change. An example of a change log is shown at **Appendix 7.5**. This was also recommended during the previous audit but has not been implemented.
- Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.

5.11 Communication Program

5.11.1 Compliance

Table 21 – Compliance with SSS WDR D.13.xi – Communications Program

SSMP Requirement	Compliance	Deficiencies
xi(a) Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP	Yes	-

5.11.2 Effectiveness of SSMP Elements and Recommended Modifications

Internal Communication – Staff, Utility Commission, and City Council (SSMP 11.2)

- Level of Effectiveness: The WWC has used PowerPoint presentations as a resource to describe the purpose of the SSMP and summarize SSS WDR requirements to the City council and City staff. These presentations are attached to the SSMP website.

- Recommendations:
  - As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website. This was also recommended during the previous audit but has not been implemented.
  - Post Appendices K-1 – WWC WDR awareness Program and K-2 – Sanitary sewer regulations/WDR PowerPoint presentations on the website.
  - Update Appendix K-3 – Two EU newsletters FOG/medications links.

Stakeholder Communication – Residential, Commercial and Industrial (SSMP 11.3)

- Level of Effectiveness: The City communicates regularly with the public and stakeholders via monthly newsletters entitled “EU Today” that includes items regarding sewer utilities. This newsletter is presented online and through bill inserts. A sample newsletter is included in Appendix K of the SSMP. In addition,

the City specifically communicates FOG related items to the community via FOG outreach program over TV ads, flyers, direct mail, and site visits to FSEs.

- Recommendations:
  - Update SSMP Appendix K-4 – FOG Outreach Program with marketing Plan budget & spending and post it on the website. Consider an additional metric to be used in the KPI that reflects the City's performance in terms of FOG outreach program. Few additional metrics are recommended in **Table 18**. This was also recommended during the previous audit but has not been implemented.

Tributary/Satellite Communication (11.4)

- Level of Effectiveness: The City routinely communicates with their satellite partners and has three formal agreements in place that include:
  - The joint exercise of power agreement for the SPWA
  - The agreement regarding the operation of and use of South Placer Regional Wastewater Facilities
  - The funding agreement relating to the South Placer Regional Wastewater Facilities
  - Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

- Recommendations:
  - Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as an appendix. This was also recommended during the previous audit but has not been implemented.
  - Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). This was also recommended during the previous audit but has not been implemented.
  - Post Appendix K-5 – Funding agreement related to south placer regional wastewater facilities on the website.

SECTION 6 Audit Summary

This section summarizes the level of compliance of the SSMP with the SSMP requirements identified in subsection D.13 and he identified deficiencies as described in **Section 4.1. Table 22** summarizes the result of this evaluation.

Table 22 – Summary of SSMP Compliance Deficiencies

SSMP Requirement	Compliance	Deficiencies
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	No	SSOERP does not meet certain water quality monitoring requirements of the amended MRP document.

In addition, **Table 23** lists a summary of all recommendations for this audit.

Table 23 – Summary of Audit Recommendations

SSMP Section	Recommendation	Suggested Timeline for Completion
1.2	Post Appendix A-1 – Roseville's SSMP Development Plan and Implementation Schedule on the website.	
2.1	Modify Appendix B-1: Update City Council positions and add phone numbers (Mayor Carol Garcia, Vice Mayor Susan Rohan, City Attorney Robert Schmitt). Update Commissioners and phone numbers: Chair Blandon Granger, Vice Chair John Speight. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Cheryl Hammond. Update Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.	
2.1	Post the following Appendices on the website: o Appendix B-1 – Personnel Responsible for SSMP Elements o Appendix B-2 – Personnel Responsible for SSO Reporting o Appendix B-3 – Personnel Responsible for Responding to SSOs Weekly Standby	
2.3	Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff.	
2.3	Include Figure 2-2 flowchart as Appendix F to the SSOERP (Appendix F-1) and mention in the text.	
3.2	Post Appendix C-1 – Pretreatment Program Enforcement Response Plan on the website.	
3.3	Update the related links for Appendices C-3 and C-4 for sanitary sewer design and construction.	
3.7	Post the following Appendices on the website: o Appendix C-5 – Joint Exercise of Powers Agreement for the South Placer Wastewater Authority o Appendix C-6 – Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities o Appendix C-7 – Wastewater Service Agreement by Contract and Operating Agreement between SASD, SRCSD and City of Roseville	
4.2	Post the following Appendices on the website: o Post Appendix D-1 – City of Roseville Sewer Map Grid System on the website. o Post Appendix D-9 – Mapping Update Policy on the website.	
4.3	Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.	

4.3	Update the following Appendices and post on the website: o Appendix D-2 – Maintenance Cleaning Schedule: Update with Maximo CCMS example o Appendix D-3 – CCTV Video Report o Appendix D-4 – SOP	
4.4	Describe the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.	
4.4	Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment. This was also included during the previous audit but has not been completed.	
4.4	Post Appendix D-8 – Technical Memorandum O&M Program SSMP Audit-Rehabilitation and Replacement Plan (Element IVC) on the website.	
4.5	Update the following links: o The CWEA website link. o Appendix D-5 – CWEA Certification Handbook link.	
4.6	Update and post the following Appendices on the website: o Appendix D-6 – Equipment Inventory List o Appendix D-7 – Critical Replace Parts List	
5.2	Update Appendix E-1 – Sanitary Sewer Design link.	
5.3	Update Appendix E-2 – Sanitary Sewer System Construction link.	
5.3	Post Appendix E-3 – Technical Memo, SSMP Preparedness Audit Design and Performance Provisions Element V on the website.	
6.3	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.	
6.3	Modify Figure 6-2 – SSO Procedure Flow Chat, to report SSO category 1 larger than 1,000 gallons to Cal OES within 2 hours per WDR requirements (currently if > 50,000 gal).	
6.3	Post Appendix F-1 – SSOERP on the website along with corresponding attachments	
6.7	Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP. o Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. This was also recommended during the previous audit but has not been implemented. o Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan. This was also recommended during the previous audit but has not been implemented.	

6.7	Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling. This was also recommended during the previous audit but has not been implemented.	
7.8	Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.	
8.2	Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years. This was also recommended during the previous audit but has not been implemented.	
9.3	Incorporate system and financial measures recommended in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP.	
9.3	Update Appendix I-4 and modify it to include document location and review frequency.	
9.3	Modify I-4 – Key Performance Indicators (KPI) FOG section, to reflect the change in responsibilities from IWS to WWC.	
9.4	Consider addition of recommended PM measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	
9.6	Update Appendix I-3 – SSO History (last update 2013).	
9.6	Update SSO trends data in Appendix I-4 – KPI Benchmarking.	
9.6	Consider addition of recommended SSO measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	
10.2	Post this SSMP internal audit to the City website.	
10.2	Schedule the next internal SSMP audit for July-August of 2021.	
10.2	Develop a description manual to replace Appendix J-1 and J-2 of the SSMP, to support each KPI element. This manual describes required information for KPI monitoring, including but not limited to: o Elements definition o How to fill each KPI items o Personnel responsible o Review frequency	
10.3	Update the SSMP change log and add it as an appendix to the SSMP, documenting all changes made to the SSMP since its last certification, indicating when an element was changed/updated and who authorized the change. An example of a change log is shown at Appendix 7.5. This was also recommended during the previous audit but has not been implemented.	
10.3	Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.	
11.2	As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website. This was also recommended during the previous audit but has not been implemented.	
11.2	Post Appendices K-1 – WWC WDR awareness Program and K-2 – Sanitary sewer regulations/WDR PowerPoint presentations on the website.	
11.2	Update Appendix K-3 – Two EU newsletters FOG/medications links.	

11.3	Update SSMP Appendix K-4 – FOG Outreach Program with marketing Plan budget & spending and post it on the website. Consider an additional metric to be used in the KPI that reflects the City's performance in terms of FOG outreach program. Few additional metrics are recommended in **Table 18**. This was also recommended during the previous audit but has not been implemented.	
11.4	Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as an appendix. This was also recommended during the previous audit but has not been implemented.	
11.4	Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). This was also recommended during the previous audit but has not been implemented.	
11.4	Post Appendix K-5 – Funding agreement related to south placer regional wastewater facilities on the website.	

SECTION 7 Appendices

7.1 Appendix – Historical SSO Data

7.2 Appendix – SSO Data Comparison Charts

7.3 Appendix – Structural SSO GIS Mapping

7.4 Appendix – Key Performance Indicators

7.5 Appendix – Change Log Example

7.1 Appendix – Historical SSO Data

Dated: FY 15/16, FY 16/17, and FY 17/18

Appendix 7.1 – Historical SSO Data for FY 15/16 to FY 17/18

#	Event ID	Date of SSO	Address	Spill Type	Spill Volume [gal]	Spill Recovered [gal]	Spill Recovery [%]	Spill Cause	Location
1	825330	6/7/2016	208 King	Category 2	2020	2000	99%	Pipe/Structure Failure	Main
2	818220	9/19/2015	217 Cedar St	Category 3	15	15	100%	Roots	LL
3	818891	9/23/2015	218 Judah	Category 3	10	6	60%	Debris-Other	LL
4	819343	10/13/2015	236 Elm St	Category 3	2	1	50%	Roots	LL
5	817820	8/3/2015	271 Spyglass Hill	category 3	13	11	85%	Debris-Rags	LL
6	822789	3/8/2016	319 Coronado	Category 3	3	3	100%	Debris-Rags	LL
7	817564	7/20/2015	320 Grove St	Category 3	10	8	80%	Roots	LL
8	821313	1/8/2016	405 Fourth St	Category 3	10	10	100%	Pipe/Structure Failure	LL
9	824524	4/29/2016	407 Yosemite	Category 3	1	1	100%	Roots	LL
10	819342	10/16/2015	409 Washington Blvd	Category 3	5	4	80%	Roots	LL
11	826670	6/4/2016	417 Shannon Way	Category 3	5	4	80%	Roots	LL
12	819344	10/20/2015	500 Oak St	Category 3	5	1	20%	Roots	LL
13	820342	12/17/2015	503 Oak ridge	Category 3	59	59	100%	Roots	LL
14	820369	12/18/2015	503 Bedford Ct	Category 3	79	79	100%	Roots	LL
15	825184	5/10/2016	503 Loretto	Category 3	5	4	80%	Roots	LL
16	817422	7/15/2015	505 Main St	Category 3	10	10	100%	Roots	LL
17	820331	12/9/2015	524 Main St	Category 3	7	7	100%	Roots	LL
18	822520	2/9/2016	603 Rigby Ct	Category 3	1	1	100%	Roots	LL
19	818888	9/25/2015	705 Oak ridge	Category 3	7	3	43%	Roots	LL
20	824651	5/4/2016	801 Vernon St	Category 3	6	6	100%	Debris-Rags	LL
21	819957	11/24/2015	864 Portside	Category 3	3	2	67%	Roots	LL
22	822330	2/8/2016	900 Main St	Category 3	28	23	82%	Roots	LL
23	820975	12/28/2015	901 Herbert St	Category 3	65	12	18%	Grease	Main
24	824652	5/9/2016	1010 Tamarack Ct	Category 3	2	1	50%	Grease	LL
25	818514	9/19/2015	1011 Tamarack Ct	Category 3	14	14	100%	Pipe/Structure Failure	LL
26	824373	4/15/2016	1013 Shearer St	Category 3	10	10	100%	Roots	LL
27	823160	3/8/2016	1265 Pleasant Grove	Category 3	19	17	89%	Roots	LL
28	821374	1/6/2016	1302 Hedgerow	Category 3	2	2	100%	Roots	LL
29	819956	11/16/2015	1404 McBride	Category 3	2	0	0%	Roots	LL
30	822332	2/9/2016	1428 Gregory Way	Category 3	25	22	88%	Roots	LL
31	820220	11/27/2015	1444 Tiffany Cir	Category 3	5	4	80%	Roots	LL
32	819955	11/13/2015	1528 Oak Tree	Category 3	4	1	25%	Roots	LL
33	818299	9/7/2015	1538 E Colonial Pw	Category 3	21	21	100%	Roots	LL
34	816746	7/4/2015	1601 Russell	Category 3	2	2	100%	Roots	LL
35	825736	5/24/2016	1647 Ashford	Category 3	2	1	50%	Roots	LL
36	819594	10/22/2015	1748 Hillingdon	Category 3	2	2	100%	Roots	LL
37	818910	9/27/2015	4121 Enchanted Cir	Category 3	1	0	0%	Roots	LL
38	821372	1/11/2016	6176 Crater Lake	Category 3	40	40	100%	Roots	LL
39	823936	3/21/2016	7216 Pineschi	Category 3	5	4	80%	Roots	LL
40	831836	12/27/2016	106 Estates	Category 3	2	2	100%	Roots	LL
41	829712	11/7/2016	114 Vernon	Category 3	5	5	100%	Roots	LL
42	832603	2/6/2017	117 Vallejo Ave	Category 3	45	38	84%	Debris-Rags	LL
43	828212	9/13/2016	205 Bonny Knoll	Category 3	3	2	67%	Roots	LL
44	829388	10/20/2016	300 James	Category 3	5	5	100%	Roots	LL
45	829319	10/19/2016	302 Margaret Way	Category 3	2	2	100%	Roots	LL

46	833704	2/28/2017	310 Sierra Blvd	Category 3	20	18	90%	Roots	LL
47	834443	4/9/2017	333 Elfa St (Alley)	Category 3	17	17	100%	Roots	LL
48	834223	3/29/2017	401 Coronado Ave	Category 3	5	5	100%	Roots	LL
49	828445	9/21/2016	411 Greenridge	Category 3	18	16	89%	Roots	LL
50	835208	5/9/2017	529 Dudley	Category 3	3	1	33%	Roots	LL
51	828840	10/3/2016	602 Dove Wy	Category 3	8	7	88%	Debris-Rags	LL
52	830389	11/25/2016	701 Sawyer Ct	Category 3	15	9	60%	Roots	LL
53	830004	11/13/2016	800 Main St	Category 3	47	44	94%	Pipe/Structure Failure	LL
54	827325	7/22/2016	854 Shearer St	Category 3	2	2	100%	Roots	LL
55	832386	1/26/2017	1025 Enwood	Category 3	6	4	67%	Roots	LL
56	830793	12/9/2016	1123 Augusta Wy	Category 3	4	3	75%	Roots	LL
57	832142	1/25/2017	1166 Greenhill Dr	Category 3	17	15	88%	Roots	LL
58	830807	12/13/2016	1217 McKinley Dr	Category 3	760	704	93%	Roots	LL
59	829562	10/27/2016	1302 Coloma	Category 3	68	65	96%	Roots	LL
60	835206	5/10/2017	1311 Wendy Ct	Category 3	4	4	100%	Roots	LL
61	826874	7/26/2016	1402 Crestmont	Category 3	20	15	75%	Roots	LL
62	827536	8/12/2016	1713 Tanglewood Ln	Category 3	5	3	60%	Roots	LL
63	844166	1/18/2018	224 1/2 D St	Category 3	45	42	93%	Roots	LL
64	840980	10/9/2017	245 Duranta	Category 3	10	8	80%	Debris-Other	Main
65	842032	11/30/2017	250 S Harding	Category 3	58	58	100%	Roots	LL
66	847009	4/10/2018	317 Princeton	Category 3	10	10	100%	Roots	LL
67	847760	5/17/2018	326 Grove St	Category 3	3	0	0%	Debris-Rags	LL
68	847278	4/18/2018	329 Alta Vista	Category 3	51	49	96%	Debris-Other	LL
69	843124	12/17/2017	372 Circuit Dr	Category 3	5	1	20%	Roots	LL
70	848005	5/24/2018	376 Circuit Dr	Category 3	3	1	33%	Roots	LL
71	848614	5/31/2018	441 Briggs Ct	Category 3	86	81	94%	Pipe/Structure Failure	Main
72	846885	4/4/2018	531 Vernon	Category 3	20	17	85%	Debris-Other	LL
73	846248	3/2/2018	531 Vernon	Category 3	6	6	100%	Debris-Rags	LL
74	841083	10/24/2017	615 Main St	Category 3	96	10	10%	Pipe/Structure Failure	LL
75	843509	12/11/2017	710 Vernon	Category 3	8	4	50%	Debris-Other	LL
76	848224	5/28/2018	1033 Coloma Way	Category 3	5	1	20%	Pipe/Structure Failure	LL
77	840077	9/15/2017	1102 Fairfeld Ave	Category 3	3	0	0%	Roots	LL
78	843230	12/13/2017	1206 McKinley	Category 3	6	0	0%	Roots	LL
79	848002	5/27/2018	1245 Vista Verde	Category 3	88	77	88%	Debris-Rags	LL
80	843665	12/22/2017	1338 Blossom Hill Way	Category 3	45	45	100%	Roots	LL
81	842779	12/7/2017	1338 Ridge Run	Category 3	52	51	98%	Debris-Other	LL
82	849496	6/30/2018	1413 West Colonial Park Way	Category 3	9	1	11%	Roots	LL
83	849045	6/26/2018	1552 Diamond Wood Cir	Category 3	19	0	0%	Roots	LL
84	844961	2/8/2018	2204 McLaren Dr	Category 3	6	5	83%	Roots	LL
85	847241	4/18/2018	8409 Early Way	Category 3	4	3	75%	Roots	LL
86	840892	9/11/2017	9000 Washington Blvd	Category 3	585	40	7%	Debris-Other	Main
87	843899	1/16/2018	Darling Way Clinton Ave	Category 1	342	333	97%	Contractor Cause	Vactor

7.2 Appendix – SSO Data Comparison Charts

2015/2016 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	825330	2020	2020	2000	2000	1.048611	1.048611	0.00763889	0.007639	1	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
2	818220	15	15	15	15	0.010417	0.010417	0.02083333	0.020833	0	0	Root Intrusion	Roots	
3	818891	10	10	6	6	0.111111	0.111111	0.02222222	0.022222	0	0	Non-Dispersables	Debris-Other	
4	819343	2	2	1	1	0.011111	0.011111	0.00069444	0.000694	0	0	Root Intrusion	Roots	
5	817820	13	13	11	11	0.025694	0.025694	0.01527778	0.015278	0	0	Non-Dispersables	Debris-Rags	
6	822789	3	3	3	3	0.040972	0.040972	0.02013889	0.020139	0	0	Non-Dispersables	Debris-Rags	
7	817564	10	10	8	8	0.017361	0.017361	0.01875	0.018056	0	0	Root Intrusion	Roots	
8	821313	10	10	10	10	0.032639	0.032639	0.02083333	0.020833	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
9	824524	1	1	1	1	0.020833	0.020833	0.00694444	0.006944	0	0	Root Intrusion	Roots	
10	819342	5	5	4	4	0.01875	0.01875	0.0125	0.0125	0	0	Root Intrusion	Roots	
11	826670	5	5	4	4	0.024306	0.024306	0.01388889	0.013889	0	0	Root Intrusion	Roots	
12	819344	5	5	1	1	0.038194	0.038194	0.01458333	0.014583	0	0	Root Intrusion	Roots	
13	820342	59	59	59	59	0.055556	0.055556	0.00347222	0.003472	0	0	Root Intrusion	Roots	
14	820369	79	79	79	79	0.034722	0.034722	0.01666667	0.016667	0	0	Root Intrusion	Roots	
15	825184	5	5	4	4	0.018056	0.018056	0.00763889	0.006944	0	0	Root Intrusion	Roots	
16	817422	10	10	10	10	0.051389	0.051389	0.13472222	0.009722	0	0	Root Intrusion	Roots	Incorrect arrival time in CIWQS
17	820331	7	7	7	7	0.021528	0.021528	0.00138889	0.001389	0	0	Root Intrusion	Roots	
18	822520	1	1	0	1	0.085417	0.085417	0.075	0.075	0	1	Root Intrusion	Roots	
19	818888	7	7	3	3	0.041667	0.041667	0.01041667	0.135417	0	1	Root Intrusion	Roots	
20	824651	6	6	6	6	0.024306	0.024306	0.00694444	0.006944	0	0	Debris-Rags	Debris-Rags	
21	819957	3	3	2	2	0.001389	0.001389	0.01388889	0.013889	0	0	Root Intrusion	Roots	
22	822330	28	28	23	23	0.016667	0.016667	0.00416667	0.004167	0	0	Root Intrusion	Roots	
23	820975	65	65	12	12	2.791667	2.708333	0.00694444	0.006944	1	0	Grease Deposition (FOG)	Grease	Incorrect start time in CIWQS
24	824652	2	2	1	1	0.018056	0.018056	0.00694444	0.006944	0	0	Grease Deposition (FOG)	Grease	
25	818514	14	14	14	14	0.015972	0.015972	0.01111111	0.011111	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
26	824373	10	10	10	10	0.052083	0.052083	0.03125	0.03125	0	1	Root Intrusion	Roots	
27	823160	19	19	17	17	0.017361	0.017361	0.00694444	0.006944	0	0	Root Intrusion	Roots	
28	821374	2	2	2	2	0.03125	0.03125	0.02083333	0.020833	0	0	Root Intrusion	Roots	
29	819956	2	2	0	0	0.021528	0.021528	0.01111111	0.011111	0	0	Root Intrusion	Roots	
30	822332	25	25	22	22	0.031944	0.031944	0.01111111	0.011111	0	0	Root Intrusion	Roots	
31	820220	5	5	4	4	0.024306	0.024306	0.01388889	0.013889	0	0	Root Intrusion	Roots	
32	819955	4	4	1	1	0.052083	0.052083	0.01388889	0.013889	0	0	Root Intrusion	Roots	
33	818299	21	21	21	21	0.003472	0.003472	0.02291667	0.022917	0	0	Root Intrusion	Roots	
34	816746	2	2	2	2	0.000694	0.000694	0.025	0.025	0	0	Root Intrusion	Roots	
35	825736	2	2	1	1	0.024306	0.024306	0.01388889	0.013889	0	0	Root Intrusion	Roots	
36	819594	2	2	2	2	0.000694	0.000694	0.0125	0.0125	0	0	Root Intrusion	Roots	
37	818910	1	1	1	0	0.020833	0.020833	0.01041667	0.010417	0	0	Root Intrusion	Roots	
38	821372	40	40	40	40	0.002778	0.002778	0.02013889	0.020139	0	0	Root Intrusion	Roots	
39	823936	5	5	4	4	0.007639	0.007639	0.00972222	0.009722	0	0	Root Intrusion	Roots	
	Total	2525	2525	2411	2411	4.867361	4.784028	0.69722222	0.695833	2	3			
	39			95%	95%									
	Avg					2:59:43	2:56:38	0:25:45	0:25:42					

2016/2017 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	831836	2	2	2	2	0.027778	0.027778	0.013889	0.013889	0	0	Root Intrusion	Roots	
2	829712	5	5	5	5	0.01875	0.01875	0.008333	0.008333	0	0	Root Intrusion	Roots	
3	832603	45	45	38	38	2.84375	2.84375	0.013889	0.008333	1	0	Non-Dispersables	Debris-Rags	Incorrect Not time
4	828212	3	3	2	2	0.004167	0.004167	0	0	0	0	Root Intrusion	Roots	No notification
5	829388	5	5	5	5	0.025694	0.025694	0.011806	0.011806	0	0	Root Intrusion	Roots	
6	829319	2	2	2	2	0.016667	0.016667	0.008333	0.008333	0	0	Root Intrusion	Roots	
7	833704	20	20	18	18	0.242361	0.242361	0.004167	0.004167	1	0	Root Intrusion	Roots	
8	834443	17	17	17	17	0.032639	0.032639	0.022222	0.022222	0	0	Root Intrusion	Roots	
9	834223	5	5	5	5	0.03125	0.03125	0.020833	0.020833	0	0	Root Intrusion	Roots	
10	828445	18	18	16	16	0.184028	0.184028	0.017361	0.017361	1	0	Root Intrusion	Roots	
11	835208	3	3	1	1	0.045139	0.045139	0.004861	0.004861	0	0	Root Intrusion	Roots	
12	828840	8	8	7	7	0.006944	0.006944	0.020139	0.01875	0	0	Non-Dispersables	Debris-Rags	
13	830389	15	15	9	9	0.006944	0.006944	0.017361	0.017361	0	0	Root Intrusion	Roots	
14	830004	47	47	44	44	0.089583	0.089583	0.014583	0.014583	0	0	Root Intrusion	Pipe/Structure Failure	Incorrect cause in CIWQS
15	827325	2	2	2	2	0.013889	0.013889	0.029167	0.029167	0	1	Root Intrusion	Roots	
16	832386	6	6	4	4	0.024306	0.024306	0.013889	0.013889	0	0	Root Intrusion	Roots	
17	830793	4	4	3	3	0.018056	0.018056	0.007639	0.007639	0	0	Root Intrusion	Roots	
18	832142	17	17	15	15	0.1875	0.1875	0.010417	0.010417	1	0	Root Intrusion	Roots	
19	830807	760	760	704	704	2.140278	2.140278	0.009722	0.009722	1	0	Root Intrusion	Roots	
20	829562	68	68	65	65	0.086806	0.086806	0.008333	0.008333	0	0	Root Intrusion	Roots	
21	835206	4	4	4	4	0.042361	0.042361	0.009722	0.009722	0	0	Root Intrusion	Roots	
22	826874	20	20	15	15	0.002778	0.002778	0.027778	0.025	0	0	CS Mainentance Caused Spill/Damage	Roots	Incorrect cause in CIWQS
23	827536	5	5	3	3	0.010417	0.010417	0.003472	0.003472	0	0	Root Intrusion	Roots	
	Total	1081	1081	986	986	6.102083	6.102083	0.297917	0.288194	5	1			
	23			91%	91%									
	Avg					6:22:03	6:22:03	0:18:39	0:18:03					

2017/2018 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	840077	3	3	0	0	0.018056	0.018056	0.007639	0.006944	0	0	Root Intrusion	Roots	Incorrect not time in CIWQS
2	840892	585	585	40	40	0.041667	0.027778	0	0.010417	0	0	Debris from Construction	Debris-Other	Incorrect not time in CIWQS
3	840980	10	10	8	8	0.020833	0.020833	0.008333	0.008333	0	0	Debris from Construction	Debris-Other	
4	841083	96	96	10	10	1.354167	1.354167	0.003472	0.003472	1	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
5	842032	58	58	58	58	0.006944	0.006944	0	0.006944	0	0	Root Intrusion	Roots	Incorrect not time in CIWQS
6	842779	52	52	51	51	0.029861	0.029861	0.015972	0.015972	0	0	Debris-Wipes/Non-Dispersables	Debris-Other	
7	843509	8	8	4	4	2.088194	2.088194	0.013889	0.013889	1	0	Debris-Wipes/Non-Dispersables	Debris-Other	Event ID does not match CIWQS ID
8	843124	5	5	1	1	0.017361	0.017361	0.03125	0.03125	0	1	Root Intrusion	Roots	
9	843230	6	6	0	0	0.026389	0.026389	0.015972	0.016667	0	0	Root Intrusion	Roots	
10	843665	11	45	11	45	0.005556	0.005556	0.020833	0.020833	0	0	Root Intrusion	Roots	Incorrect volume reports on CIWQS
11	843899	342	342	333	333	0.007639	0.007639	0	0	0	0	Other (specify below)	Contractor Cause	
12	844166	45	45	42	42	2.024306	2.024306	0.008333	0.008333	1	0	Root Intrusion	Roots	
13	844961	6	6	5	5	0.047222	0.047222	0.03125	0.03125	0	1	Root Intrusion	Roots	
14	846248	6	6	6	6	0.002083	0.002083	0	0.021528	0	0	Debris-Rags	Debris-Rags	Incorrect not time in CIWQS
15	846885	20	20	17	17	0.017361	0.017361	0.007639	0.007639	0	0	Debris-Wipes/Non-Dispersables	Debris-Other	
16	847009	10	10	10	10	0.071528	0.061111	0.025694	0.025694	0	0	Root Intrusion	Roots	
17	847241	4	4	3	3	0.170139	0.170139	0.00625	0.00625	1	0	Root Intrusion	Roots	
18	847278	51	51	49	49	0.035417	0.035417	0.025	0.025	0	0	Debris-Wipes/Non-Dispersables	Debris-Other	
19	847760	3	3	0	0	0.041667	0.041667	0	0	0	0	Debris-Rags	Debris-Rags	
20	848002	88	88	77	77	0.788194	0.788194	0.011806	0.017361	1	0	Debris from Construction	Debris-Rags	
21	848005	3	3	1	1	0.021528	0.021528	0.011111	0.011111	0	0	Root Intrusion	Roots	
22	848224	5	5	1	1	0.073611	0.073611	0.015278	0.015278	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
23	848614	86	86	81	81	0.202083	0.202083	0.011111	0.011111	1	0	Pipe Structural Problem/Failure - Installation	Pipe/Structure Failure	
24	849045	19	19	0	0	0.013889	0.013889	0.016667	0.016667	0	0	Root Intrusion	Roots	Incorrect not time in CIWQS
25	849496	9	9	1	1	0.00625	0.00625	0.024306	0.022222	0	0	Root Intrusion	Roots	Incorrect not time in CIWQS
	Total	1531	1565	809	843	7.131944	7.107639	0.311806	0.354167	6	2			
				53%	54%									
	25													
	Avg					6:50:48	6:49:24	0:17:58	0:20:24					

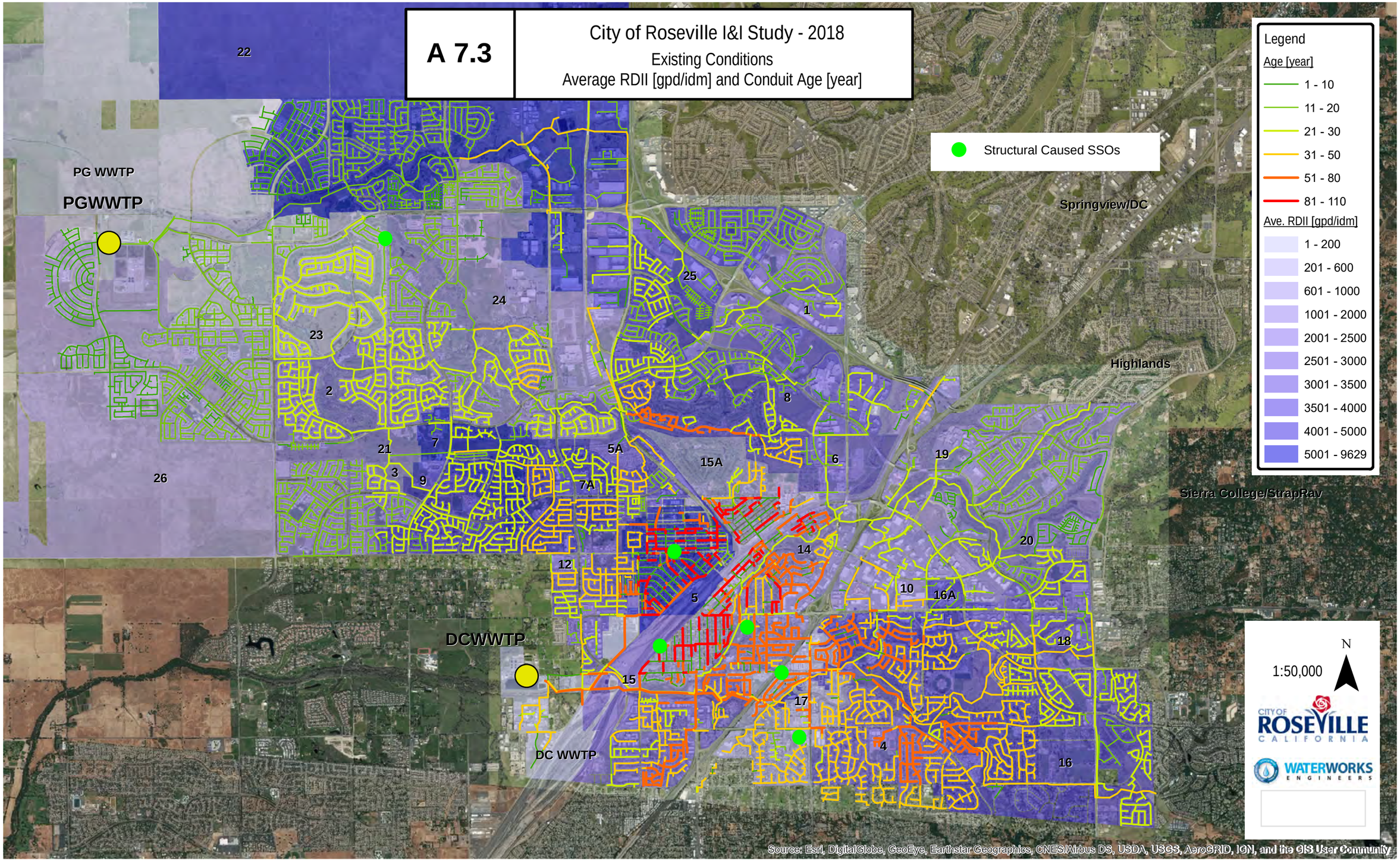
7.3 Appendix – Structural SSO GIS Mapping

A 7.3

City of Roseville I&I Study - 2018

Existing Conditions

Average RDII [gpd/idm] and Conduit Age [year]



7.4 Appendix – Key Performance Indicators

SSS WDR Element	SSS WDR Ref.	Description	Performance Indicator	Unit	Target	KPI Data FY 14/15	KPI Data FY 15/16	KPI Data FY 16/17	KPI Data FY 17/18	KPI Data FY 18/19	Audit Frequency	Responsible Party
Organization	D.ii.c	Chain of Communication	Average response to customer inquiry	Minute	40	19.58	23	20	17		Quarterly	WW Superintendent
			Total customer service requests	Number	0	915	1549	533	302		Quarterly	WW Superintendent
			Total sewer odor complaints	Number	0	9	43	50	39		Quarterly	WW Superintendent
			Average rating in customer service card	Number	5	5	5	5	5		Quarterly	WW Superintendent
O&M	D.iv.a	Maps	Average response time to map update requests	Days	90	90	90	90	90		Quarterly	WW Superintendent
	D.iv.b	PM Activities	Manholes Inspection performed	Number	0	2493	3575	1547	1511		Quarterly	WW Superintendent
			Sewer main flushed per year	Miles	250	284	248	295	283.12		Quarterly	WW Superintendent
			Sewer laterals mechanically cleaned (eeled) per year	staff	8	14.32	14.77	7.41	1.07		Quarterly	WW Superintendent
			Working staff time to PM program	%	80%	85%	82%	82%	84%		Quarterly	WW Superintendent
			Number of customer accounts per WW employee	Number	561	1517	1554	1772	1757		Quarterly	WW Superintendent
			Average cost of hydro cleaning	$/lf	$0.36	$0.32	$0.33	$0.29	$0.32		Annually	WW Superintendent
			Average cost of sewer mechanical cleaning	$/lf	$1.60	$1.20	$0.77	$0.94	$1.66		Annually	WW Superintendent
	D.iv.c	R&R Plan	Manholes rehabilitated	Number	50	0	0	0	0		Quarterly	WW Superintendent
			Sewer main CCTV inspected per year	Miles	30	75	84.32	59.71	64.1		Quarterly	WW Superintendent
			Sewer laterals CCTV inspected per year	Miles	16	26	35.71	32.51	36.14		Quarterly	WW Superintendent
			Sewer cleanouts installed per year	Number	75	76	83	144	141		Quarterly	WW Superintendent
			Sewer Laterals Rehabilitated	Number	50	48	60	85	89		Quarterly	WW Superintendent
			Total miles rehabed or replaced per year (main)	Miles	5	6	0	0	1.07		Annually	EU Engineering
			Total miles rehabed or replaced per year (lateral)	Miles	0.25	0.16	0.27	0.66	0.42		Annually	EU Engineering
			Annual capitol budget sewer rehab/replacement	$/M	$1.80	$1.05	$1.36	$2.61	$2.25		Annually	WW Superintendent
			Average cost of CCTV main	$/lf	$0.53	$0.41	$0.41	$0.36	$0.40		Annually	WW Superintendent
			Average cost of CCTV lateral	$/lf	$1.34	$1.11	$1.15	$1.04	$1.00		Annually	WW Superintendent
	D.iv.d	Training	On the job accidents	Number	0	5	3	3	4		Quarterly	EU Safety Coordinator
	D.iv.e	Critical Parts	% of required numberof identified critical parts are stocked	%	100	100	100	100	100		Annually	Materials Technician
Design	D.v.a&b	Construction	% of new sewer main accepted vs. inspected	%	100	100	100	100	100		Annually	WW Supervisor
			% of new sewer lateral accepted vs. inspected	%	100	100	100	100	100		Annually	WW Supervisor
OERP	D.vi.a	Notification	Average response time to SSO	Minutes	40	20	23	20	17		Quarterly	WW Superintendent
	D.vi.b	SSO Response	Average SSO duration (main)	Minutes	40	n/a	70	0	0		Quarterly	WW Superintendent
			Average SSO duration (lateral)	Minutes	40	n/a	37	48	36		Quarterly	WW Superintendent
FOG	D.vii.a	Public Education	FOG public education outreach program events per year	Number	4	3	4	3	3		Annually	Environmental Utilities PIO
	D.vii.b	FOG Disposal	Gallons of FOG curbside pickup per year	Gallons	25	179.75	293.1	373.25	296		Quarterly	Refuse Division
	D.vii.d	BMPs &Devices	% of total FSE's with grease removal devices	%	90	90	97	98	98		Annually	Ind Waste Technician
			% of total FSE's with a variance	%	5	4	4	4	4		Annually	Ind Waste Technician
	D.vii.e	FOG Inspections	FSE FOG inspections per year	Number	294	n/a	n/a	181	231		Quarterly	Ind Waste Technician
			Number of new FSE permits issued per year	Number	5	n/a	n/a	40	46		Quarterly	Ind Waste Technician
	D.vii.f	Hot Spots	% of hotspot pipes CCTV inspected each year	%	100%	100%	100%	100%	100%		Annually	WW Supervisor
			Number of SSO's caused by hot spots	Number	0	0	0	0	0		Quarterly	WW Superintendent
			SSO volume casued by hot spots	Gallons	0	0	0	0	0		Quarterly	WW Superintendent
			Total number of SSO's mains and laterals	Number	76	42	39	24	25		Quarterly	WW Superintendent
			Total volume SSO's mains and laterals	Gallons	2000	1202	2523	1086	1565		Quarterly	WW Superintendent

MMM	D.ix.e	SSO Trends	% of total SSO volume recovered	%	100	94.5	95.42	91.25	53.86		Quarterly	WW Superintendent
			Total number of wet weather SSO's	Number	0	0	0	0	0		Quarterly	WW Superintendent
			Total volume of wet weather SSO's	Gallons	0	0	0	0	0		Quarterly	WW Superintendent
			% of SSO's caused by FOG (main)	%	1	50	50	0	0		Quarterly	WW Superintendent
			% of SSO's caused by roots (main)	%	70	0	0	0	0		Quarterly	WW Superintendent
			% of SSO's caused by debris/rags (main)	%	0	0	0	0	0		Quarterly	WW Superintendent
			Number of SSO's caused by LS failure	Number	0	0	0	0	0		Quarterly	WW Superintendent
			Number of SSO's caused by pipe/structural failures	Number	0	0	1	1	3		Quarterly	WW Superintendent
			% of SSO's caused by FOG (laterals)	%	10	0	0	0	0		Quarterly	WW Superintendent
			% of SSO's casued by roots (laterals)	%	75	77.5	84	87	48		Quarterly	WW Superintendent
			% of SSO's casued by debris/rags (laterals)	%	0	12.5	10.8	9	28		Quarterly	WW Superintendent
			Repeats SSO's within two years	Number	0	2	0	0	0		Quarterly	WW Superintendent
			Number of Category 1 SSO's	Number	0	0	0	0	1		Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year- Category 2	Number	2	0	1	0	0		Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year - lateral	Number	15	16.26	15.04	9.35	8.81		Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year -mains	Number	0.6	0.4	0.4	0	0.19		Quarterly	WW Superintendent
			Flooding claims per year	Number	0	1	0	0			Quarterly	WW Superintendent
			Total Cost of claims per year	$	0		0	0			Quarterly	Risk Management

7.5 Appendix – Change Log Example

3.5 References

3.5.1 SSMP Sample Change Log

{Insert Enrollee Name}
Sewer System Management Plan
Change Log

Date	SSMP Element/ Section	Description of Change/Revision Made	Change Authorized By:

Appendix 10-5

SSPM Audit Fiscal Years 18/19, 19/20 and 20/21

CITY OF ROSEVILLE
Sewer System Management Plan (SSMP)
Three-Year Audit for FY 18/19 – FY 20/21

Date: October 21

Prepared by: Michael Fisher, P.E., Water Works Engineers
Adam Correa, E.I.T., Water Works Engineers

Assisted by: Dan Pruden, City Wastewater Superintendent

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SECTION 1 Audit Objectives

This report covers the results of the required Sewer System Management Plan (SSMP) internal audit process for the City of Roseville (City) for fiscal years 2018-2019 (FY 18/19), 2019-2020 (FY 19/20), and 2020-2021 (FY 20/21). The goal of the SSMP is to provide a written framework and plan for properly managing, operating, and maintaining all parts of the sanitary sewer system (collection system). The SSMP will help the City minimizing sanitary sewer overflows (SSOs) and complying with the California State Water Resources Control Board (SWRCB) order No. 2006-0003-DWQ, the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS WDR). The SSMP audit evaluates the effectiveness of the SSMP, by reviewing the performance of the collection system against the performance measures used by the City to evaluate compliance with requirements of the SSS WDRs.

The intention of the SSMP audit is to help the SSMP evolve over time as a "living document" that City continually adjusts after identifying potential enhancements and implementing changes to address any deficiencies to the management, operation and maintenance of the City sanitary sewer collection system. Recently, the SWRCB is proposing a statewide sanitary sewer system order reissuance. The proposed reissuance, which will be built on the existing general order, with a primary focus of reducing the statewide spill volume. This audit briefly discusses the proposed reissued order by the SWRCB and considers recommendations for future compliance.

The City is committed to completing the SSMP internal audit (Audit) on a biennial basis that is consistent with the procedure outlined in Appendix J-1 of the SSMP. The City completed its first Audit for years 2010 and 2011, but subsequently contracted Water Works Engineers (WWE) to conduct the FY 11/12-12/13, FY 13/14-14/15, and FY15/16-17/18 audits. This audit reviews results of the FY 18/19, FY 19/20, and FY 20/21, which is a three-year program. The key objective of this Audit is to review the SSMP compliance, implementation, and effectiveness. This report includes the following key tasks:

1. Review records from previous Audits and confirm deficiencies have been addressed (SECTION 2).
2. Evaluate the City's historical SSO data and performance measures listed in the SSMP (SECTION 3).
3. Using a standardized audit procedure detailed in Section 4, identify deficiencies and provide recommendations that could improve the effectiveness of the SSMP and its compliance with the future reissue order.
4. Analyze the City's preventative maintenance (PM) and rehabilitation and replacement (R&R) programs as it relates to the operation and maintenance of the collection system (Section 5.4).
5. Review the Sanitary Sewer Overflow Emergency Response Plan (SSEORP) for SSOs and identify improvements as needed (Section 5.6).
6. Document all findings during the Audit and retain it on file (SECTION 6).

SECTION 2 Agency Background / System Information

The City of Roseville, in Placer County, is located approximately 16 miles north of the City of Sacramento. Along Interstate 80, Roseville is located adjacent to the City of Rocklin in the north-east and the City of Citrus Heights in the south. The City covers approximately 43 square miles near the base of the foothills of the Sierra Mountains. Typical elevations are within a range of 250 to 100 feet of sea level with an average slope across the City of 0.5% from east to west. Several streams flow through the City (i.e., Dry Creek, Pleasant Grove Creek, Kaseburg Creek, Linda Creek, Cirby Creek, Secret Ravine, and Miners Ravine.).

The City is responsible for the operation and maintenance of a continually growing collection system that has grown over 6% since the last internal audit to now serve approximately 147,000 people. **Table 1** lists key information about the City collection system over the past three Audit periods.

Table 1 – Overview of Collection System

Audit	FY 11/12 – 12/13	FY 13/14 – 14/15	FY 15/16 – 17/18*	FY18/19-20/21*
Miles of Mainline	485.52	501.11	515.7	578.4
Miles of laterals (lower)	235.3	238	266	293
Pump stations	14	15	16	17
Sewer service lateral connections	41,568	43,619	47,638	51605
Population served	122,060	128,832	137,213	146590
WWC Staff	25	28	29	33
Annual Budget (FY1/ FY2/ FY3)	$3,400,000/ $3,800,00	$3,700,000/ $4,000,000	$5,069,000/ $5,279,0000	$5,572,264/$5,702,649/$6,258,201
Category 1 SSOs	2	0	1	0
Category 2 SSOs	75	0	1	0
Category 3 SSOs	-	89	85	114

*Three-year audit

The City treats wastewater conveyed through its collection system at two regional wastewater treatment plants that are both owned and operated by the City (i.e., Dry Creek and Pleasant Grove WWTPs). Two other satellite collection systems owned and operated by other agencies (i.e., South Placer Municipal Utility District and Placer County) discharge directly into the City's collection system. A small portion of the City's collection system discharges outside of Roseville and into the Sacramento Area Sewer District (SASD) collection system, which is treated at the Sacramento Regional WWTP. The City is a part of the Central Valley Region 5 (Sacramento sub-region) of the SWRCB.

2.1 Review of Last SSMP Audit

The previous audit for of the City SSMP was conducted by WWE for FY 15/16-17/18 and was completed in September 2019. In the last Audit, a list of approximately 54 recommended actions to address deficiencies or improve the effectiveness of the City SSMP were listed. **Table 2** summarizes identified deficiencies and associated action items, along with a description of the status of the task (i.e., Completed, Ongoing Updates, In/No Progress, Considered) outlined in the last SSMP audit. documents on the City's website and based on information from City staff.

Table 2 – Summary of Findings from the Last SSMP Internal Audit

Element	Action Item	Status
2 – Organization	Post Appendix A-1 – Roseville's SSMP Development Plan and Implementation Schedule on the website.	In Progress
	Modify Appendix B-1: Update City Council positions and add phone numbers (Mayor Carol Garcia, Vice Mayor Susan Rohan, City Attorney Robert Schmitt). Update Commissioners and phone numbers: Chair Blandon Granger, Vice Chair John Speight. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Cheryl Hammond. Update Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.	Ongoing Progress
	Post Appendix Appendix B-1 – Personnel Responsible for SSMP Elements on the website.	No Progress
	Post Appendix Appendix B-2 – Personnel Responsible for SSO Reporting on the website.	No Progress
	Post Appendix Appendix B-3 – Personnel Responsible for Responding to SSOs Weekly Standby on the website.	No Progress
	Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff. This was also included during the previous audit but has not been completed.	No Progress
	Include Figure 2-2 flowchart as Appendix F to the SSOERP (Appendix F-1) and mention in the text.	No Progress
3 - Legal Authority	Post Appendix C-1 – Pretreatment Program Enforcement Response Plan on the website.	No Progress
	Update the related links for Appendices C-3 and C-4 for sanitary sewer design and construction.	No Progress
	Post Appendix C-5 – Joint Exercise of Powers Agreement for the South Placer Wastewater Authority on the website.	No Progress
	Post Appendix C-6 – Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities on the website.	In Progress

	Post Appendix C-7 – Wastewater Service Agreement by Contract and Operating Agreement between SASD, SRCSD and City of Roseville on the website.	No Progress
4 - O&M	Post Appendix D-1 – City of Roseville Sewer Map Grid System on the website.	No Progress
	Post Appendix D-9 – Mapping Update Policy on the website.	No Progress
	Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.	Ongoing Progress
	Update Appendix D-2 – Maintenance Cleaning Schedule: Update with Maximo CCMS example and post on the website.	No Progress
	Update Appendix D-3 –CCTV Video Report and post on the website.	No Progress
	Update Appendix D-4 –SOP and post on the website.	No Progress
	Describe the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.	No Progress
	Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment. This was also included during the previous audit but has not been completed.	No Progress
	Post Appendix D-8 – Technical Memorandum O&M Program SSMP Audit-Rehabilitation and Replacement Plan (Element IVC) on the website.	No Progress
	Update the CWEA website link.	No Progress
	Update Appendix D-5 – CWEA Certification Handbook Link.	No Progress
	Update and post Appendix D-6 – Equipment Inventory List on the website.	No Progress
	Update and post Appendix D-7 – Critical Replace Parts List on the website.	No Progress
5 - DPP	Update Appendix E-1 – Sanitary Sewer Design link.	No Progress
	Update Appendix E-2 – Sanitary Sewer System Construction link.	No Progress
	Post Appendix E-3 – Technical Memo, SSMP Preparedness Audit Design and Performance Provisions Element V on the website.	No Progress
6 - OERP	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.	No Progress
	Modify Figure 6-2 – SSO Procedure Flow Chat, to report SSO category 1 larger than 1,000 gallons to Cal OES within 2 hours per WDR requirements (currently if > 50,000 gal).	No Progress
	Post Appendix F-1 – SSOERP on the website along with corresponding attachments	No Progress
	Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP.	No Progress

	o Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. This was also recommended during the previous audit but has not been implemented. Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan. This was also recommended during the previous audit but has not been implemented.	
	Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling. This was also recommended during the previous audit but has not been implemented.	No Progress
7 – FOG Control Program	Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.	No Progress
8 – SECAP	Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years. This was also recommended during the previous audit but has not been implemented.	No Progress
9 – MMM	Incorporate system and financial measures recommended in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP.	No Progress
	Update Appendix I-4 and modify it to include document location and review frequency.	No Progress
	Modify I-4 – Key Performance Indicators (KPI) FOG section, to reflect the change in responsibilities from IWS to WWC.	No Progress
	Consider addition of recommended PM measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	No Progress
	Update Appendix I-3 – SSO History (last update 2013).	No Progress
	Update SSO trends data in Appendix I-4 – KPI Benchmarking.	In Progress
	Consider addition of recommended SSO measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	No progress
10.2	Post this SSMP internal audit to the City website.	Complete
10.2	Schedule the next internal SSMP audit for July-August of 2021.	Complete
10 – SSMP Program Audits	Develop a description manual to replace Appendix J-1 and J-2 of the SSMP, to support each KPI element. This manual describes required information for KPI monitoring, including but not limited to: o Elements definition o How to fill each KPI items o Personnel responsible o Review frequency	No Progress
	Update the SSMP change log and add it as an appendix to the SSMP, documenting all changes made to the SSMP since its last certification, indicating when an element was changed/updated and who authorized the change. An example of a change log is shown at Appendix 7.5. This was also recommended during the previous audit but has not been implemented.	No Progress
	Document the submittal process for proposed changes to the SSMP. The process	No Progress

	may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.	
11 – Communication	As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website. This was also recommended during the previous audit but has not been implemented.	No Progress
	Post Appendices K-1 – WWC WDR awareness Program and K-2 – Sanitary sewer regulations/WDR PowerPoint presentations on the website.	No Progress
	Update Appendix K-3 – Two EU newsletters FOG/medications links.	No Progress
	Update SSMP Appendix K-4 – FOG Outreach Program with marketing Plan budget & spending and post it on the website. Consider an additional metric to be used in the KPI that reflects the City's performance in terms of FOG outreach program. Few additional metrics are recommended in **Table 18**. This was also recommended during the previous audit but has not been implemented.	No Progress
	Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as an appendix. This was also recommended during the previous audit but has not been implemented.	No Progress
	Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). This was also recommended during the previous audit but has not been implemented.	No Progress
	Post Appendix K-5 – Funding agreement related to south placer regional wastewater facilities on the website.	No Progress

2.2 Review of FY 18/19, FY 19/20, and FY 20/21

The City has prioritized eliminating SSOs from the collection system and was successful preventing Category 1 and Category 2 SSOs during the FY 18/19, FY 19/20 and FY 20/21. The city experienced one Category 3 spill during FY 18/19 which resulted in a 409 gallon spill, which occurred on a lower lateral, caused by roots. Two Additional Category 3 spills over 100 gallons, from which, one occurred on a lower later (caused by pipe failures) and the other occurred on a mainline, which was caused by cross connection with a conduit. All remaining spills were less than 100 gallons, of which, seven of them occurred on mainlines.

SECTION 3 SSO Trends

3.1 Historical SSO Data

A total of 114 Category 3 SSOs occurred during the audit period FY 18/19 (31 SSOs), FY 19/20 (33 SSOs), and FY 20/21 (50 SSOs). **Appendix 7.1** of this report includes the date, location, type, volume, volume recovered, and recovery percentage of total volume of each SSO spill.

One of the City-defined tasks of the Audit is to compare the information submitted to the publicly available California Integrated Water Quality System (CIWQS) database with internal City records. The WWC Superintendent verifies that SSO data in CIWQS is accurate and matches the SSO Field Report Forms. **Table 3** shows an organized view of key data present in the CIWQS and City internal records and shows discrepancies, for the three-year audit period. As shown, Table 3 shows how accurately CIWQS data reflect the City's records, with few exceptions, details of which are listed in **Appendix 7.2**. The information presented in the "Internal Records" column represents a summarized view of various performance measures maintained by the City.

Table 3 – CIWQS and City SSO Historic Data

SSO Historical Data since last SSMP Internal Audit	CIWQS Data FY 18/19	Internal Records FY 18/19	CIWQS Data FY 19/20	Internal Records FY 19/20	CIWQS Data FY 20/21	Internal Records FY 20/21
Total number of potential SSO service calls received	-	288	-	523	-	325
Total number of SSOs reported	31	31	33	33	50	50
Total volume of SSOs [Gal]	869	869	580	520	825	823.7
Total volume of SSOs that reached waters of the state [Gal]	0	0	0	0	0	0
Volume of SSOs recovered [%]	38%	38%	84%	85%	64%	64%
Average SSO response time [h:mm]	0:19	0:21	0:22	0:21	0:18	0:18
Average SSO duration time [h:mm]*	3:59	4:00	4:35	1:47**	6:13	6:12

* Including long-duration SSO events (> 3 hours long) that increased the average SSO duration.

**Missing one City Internal report with large Spill duration. Spill was entered in CIWQS.

The following section investigates the City's historical SSO data to identify potential SSO trends to provide insight into measuring the effectiveness of the City SSMP and future improvements in reducing SSOs. **Figure 1** highlights the category and number of SSOs since FY 06/07. The SWRCB defined three new SSO categories as of September 13th, 2013. A category 1 SSO is currently defined as a spill of any volume that reaches surface water. A Category 2 SSO is currently defined as a spill greater than or equal to 1,000 gallons that does not reach surface water. A Category 3 SSO is currently defined as a spill less than 1,000 gallons that does not reach surface water. **Figure 1** shows an increasing trend on the total number of SSO events per year since FY 16/17 and is limited to Category 3 SSOs only.

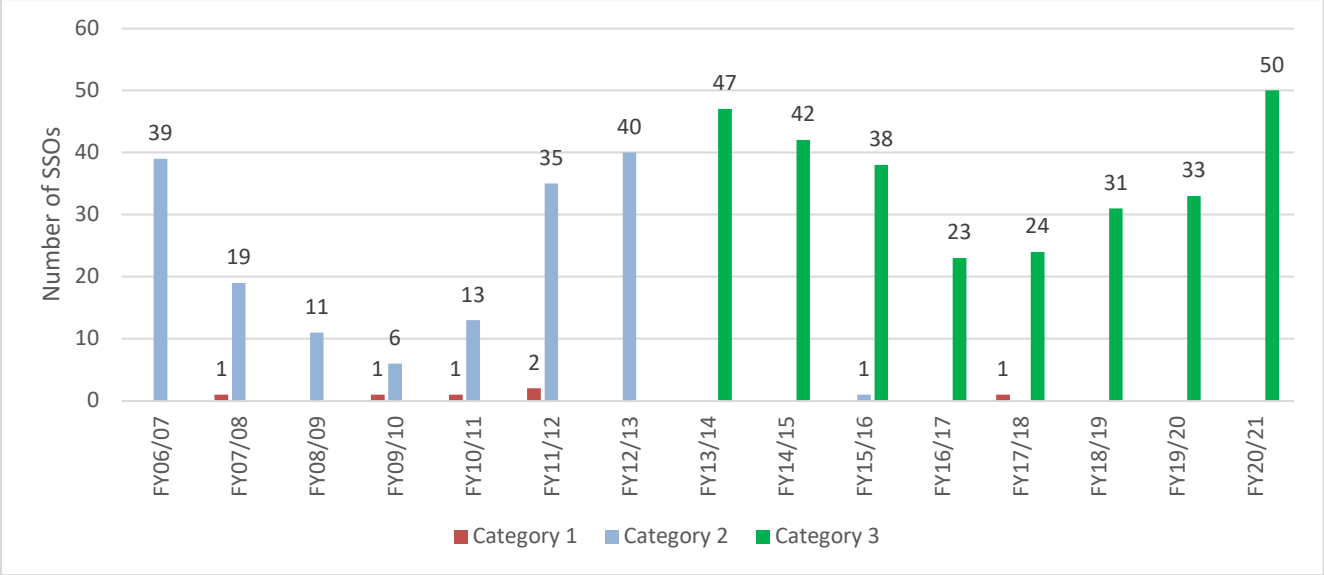


Figure 1 – Number of SSOs per Fiscal Year

With the goal of minimizing the spill volume, another valuable source of analysis is comparing average gallons spilled per SSO across fiscal years. **Figure 2** demonstrates average volume per SSO event since 2007, which equally weight out all spills and shows an annual average. Although, the number of SSO events has increased over the years (See **Figure 1**), **Figure 2** indicates that the average spill volume per incident has decreased during this audit period. It appears that the average volume was higher due to several outliners including the three high-volume spills occurring in FY18/19 (two spills) and FY 19/20 (one spill). As mentioned, during FY 18/19 one of these high-volume incidents occurred by a pipe/structure failure (105 gallons, all of which was recovered). The second spill was caused by roots in a lower lateral (409 gallons, zero gallons recovered). In FY 19/20 one large spill occurred in a mainline caused by Contractor in a mainline (154 gallons, 149 gallons recovered). Given the past records, **Figure 2** shows an average value of about 38 gal/SSO throughout the years. After reviewing the City's performance measures, it appears that the resulted high average volumes were most likely incidental driven and were not related to the SSMP effectiveness or the system performance. In addition, analysis of the City's SSO data showed that in about 21% of the events the City's staff did not see an active spill, in other words, these spills were ended before arrival of the staff. These incidents correspond to 11% of the total spill volume during this audit period.

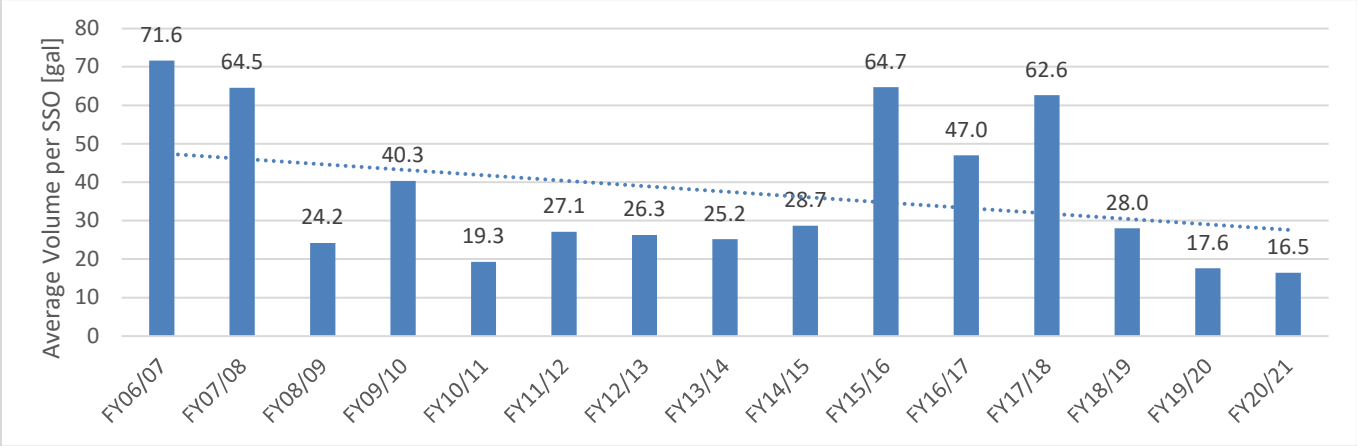


Figure 2 – Average Gallons per SSO

Here, City's average number of SSOs and average spill volume per SSO per 100 miles of sewer pipeline are compared with the results from sub-region Central Valley –Sacramento (part of State Water Control Board Region 5) and California (State), to provide regional context and insight into the City's collection system performance. **Table 4** summarizes these findings, gathered from the SWRCB's annual performance reports. These reports and their related data can be found online at the following link:

https://www.waterboards.ca.gov/water_issues/programs/sso/#prgm_docs

https://www.waterboards.ca.gov/board_info/exec_dir_rpts/

The board has not published similar data for fiscal years later than 2016. However, as shown in **Table 4**, the City average SSOs/100 miles of sewer pipe is far below the average of all municipal agencies in the Central Valley Sacramento region 5, and is lower than the State. The City's average spill volume/100 miles of sewer pipe is an order of magnitude smaller than the state, which highlights how effective the City's SSO preventative maintenance and response program has been.

Table 4 – Regional Comparison of SSO Data

Fiscal Year	Average # of SSOs per 100 miles			Average Spill Volume per 100 miles [gallons]		
	City	Region 5	State	City	Region 5	State
2011/12	4.88	12.4	4.28	132	3,396	13,925
2012/13	5.85	12.72	4.38	154	4,371	8,194
2013/14	6.39	11.96	4.38	160	2,878	4,587
2014/15*	5.71	9.91	4.65	163	6,324	11,484
2015/16*	4.99	8.76	4.01	323	7,484	25,134
2016/17	2.94	Not Available		138	Not Available	
2017/18	3.20	Not Available		196	Not Available	
2018/19	3.56	Not Available		100	Not Available	
2019/20	3.79	Not Available		67	Not Available	
2020/21	3.76	Not Available		95	Not Available	

* These values do not include laterals in the total system size.

Table 5 demonstrates the leading causes of SSOs in this audit period compared to the previous audit period (FY 15/16-17/18). Generally, given the three-year period, the number of SSOs caused by roots has increased, but the volume has decreased by 16%, which results in a lower average SSO volume. Also, FOG related events have decreased during this period. Furthermore, no Capacity-caused SSOs was observed in this audit period. However, SSOs caused by debris and pipe/structure failure have experienced a notable increase in quantity of spills. With debris spills increasing by 53%, while Pipe Failures increased by 157%.

Table 5 – Leading Causes of SSOs in FY18-21 (results from FY15-18 in parenthesis)

By Number		By Volume		By Average Volume per SSO	
Cause	**Number**	**Cause**	**Gallons**	**Cause**	**Gallons**
Roots	70 (62)	Roots	1325.5 (1576)	Roots	19 (25)
FOG	1 (2)	FOG	10 (67)	FOG	10 (34)
Debris	23 (15)	Debris	475.2 (908)	Debris	21 (61)
Pipe Failure	18 (7)	Pipe Failure	244 (2278)	Pipe Failure	14 (325)
Capacity	0 (0)	Capacity	0 (0)	Capacity	0 (0)
Others*	2 (1)	Others*	155 (342)	Others*	78 (342)
Total	114 (87)	Total	2212.7 (5171)	Total	141 (787)

*Includes one vacuum truck incident for this audit, and one contractor incident with a bored conduit.

To track the leading SSO cause, WWE summarized the average SSO volume per cause for the past four audit periods, results are shown in **Figure 3**. The actions planned because of this SSMP Audit will target the leading causes to most effectively reduce the number and more importantly spill volume of SSOs. As shown here, the FY 18/19 - FY 20/21 period has experienced similar average volume of root caused SSOs, lower FOG related spill volumes, and similar average volume for debris caused spills. However, as shown here, pipe failure and incidental SSOs volumes have decreased during this period which would typically correspond with SSOs occurring on residential lateral or small diameter pipes.

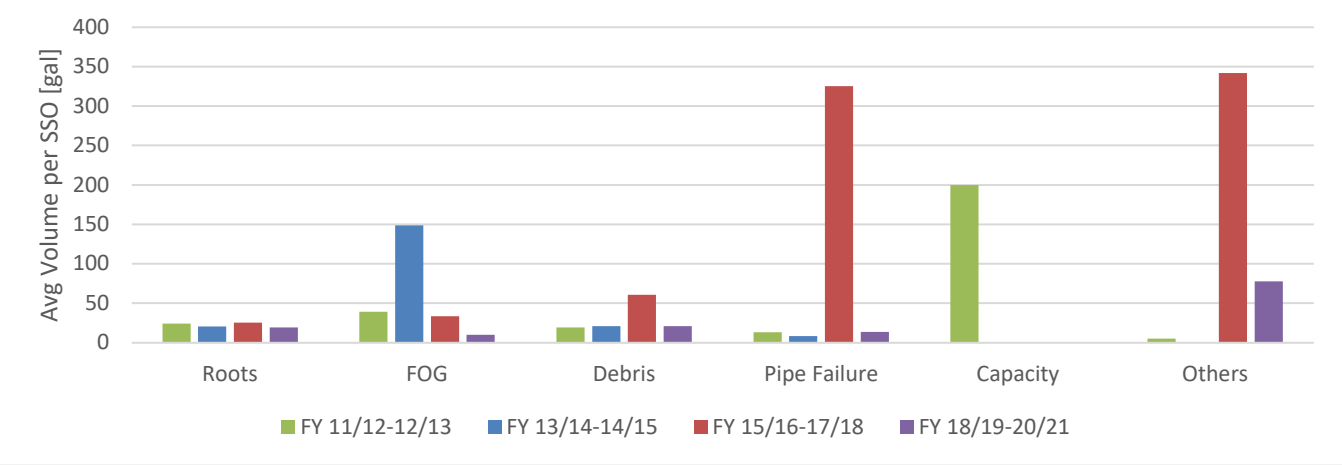


Figure 3 – Average SSO Volume per Cause

3.2 Performance Measures

To achieve proper operation and management of the sanitary sewer system and to prevent SSOs, the City utilizes multiple performance measures to assess the effectiveness of the SSMP. While the City may use other performance measures for evaluation purposes, the following measures are typically used:

- SSO Rate (SSOs per 100 miles of collection system piping per year)
- Number of SSOs for each cause (roots, FOG, debris, pipe failure, capacity, lift station failures, etc.)
- Average SSO volume (gallons)
- Percentage of SSOs greater than 100 gallons (%)
- Percentage of SSOs reported as Category 1 (%)
- Percentage of SSO volume recovered (%)
- Percentage of SSO volume reaching a surface water (%)

The City's SSO records were queried to analyze each performance measure from FY 11/12 to FY 20/21 and the data is shown in **Table 6** below. Overall, there was an increase in the number of SSOs during this audit period, however the City's SSO average has decreased compared to previous years, which was due to smaller-volume incidents, caused by roots and debris.

Table 6 – Performance Measures

Performance Measures		FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21
SSO Rate, SSOs/100 mi		4.88	5.85	6.39	5.71	4.99	2.94	3.20	3.56	3.79	5.74
SSO Cause	FOG	0	1	4	1	2	0	0	1	0	0
	Roots	18	30	32	31	30	20	12	20	17	33
	Debris*	8	2	8	2	4	2	9	8	12	3
	Pipe/Structure Failure	6	4	2	7	3	1	3	2	3	13
	Vandalism	1	0	0	0	0	0	0	0	0	0
	Capacity	0	2	0	0	0	0	0	0	0	0
	Construction	0	0	0	1	0	0	0	0	0	0
	Unknown/Other	2	3	1	0	0	0	1	0	1	1
TOTAL # of SSO		35	42	47	42	39	23	25	31	33	50
Average SSO Vol (gal)		27	26	25	29	65	47	63	28	18	16
% of SSOs > 100 gal		2.8%	2.3%	2.1%	4.7%	2.6%	4.3%	8.0%	6.5%	3.0%	0.0%
Category 1 % of Total SSOs		0%	7%	0%	0%	0%	0%	22.3%	0%	0%	0%
% of Spill Volume Recovered		99%	63%	94%	93%	95%	91%	54%	38%	84%	64%
% of Spill Vol Reaching Surface Water		0%	37%	0%	0%	0%	0%	0.4%	0%	0%	0%

*Includes non-dispersible and rags

SECTION 4 Audit Procedure

In accordance with SSS WDRs Section D.13, the primary SSMP audit objective is to focus on evaluating the effectiveness of implementing the SSMP and the City's compliance with the SSMP requirements identified in the SSS WDRs Order. Also, according to recent SWRCB WDR workshops, it is expected that the statewide general order reissuance, with the primary focus on reducing spill volume, emphasis on the following:

- **Requirements focused on spill volume:** Although the total number of spills has increased over the past few years, the CIWQS data has shown that the state experienced lower volume of spills. While, majority are caused by tree roots, the proposed reissuance will likely require enrollees to demonstrate system-specific spill reduction programs.
- **Improved Data Quality**: With the goal of enhancing data accuracy, additional measures are being considered to provide higher quality spill volume data, such as maintaining certified operators and emphasizing on staff training.
- **Enhanced Order Enforceability**: To address poor performing systems and those with lack of SSMP implementation.
- **To Incentivize Order Compliance**: To recognize and acknowledge systems with good performance.
- **Effective Planning for System Resilience**: To ensure effective and adaptive planning for spill reduction.

This section details the procedures used to meet the existing order, while considering future expectations.

4.1 Review of SSMP Compliance

This Audit assessed the City's SSMP against the requirements outlines in the SSS WDR. The subsections of **SECTION 5** listed below are organized by SSMP elements. Each subsection contains a table which lists the SSS WDR section D.13 requirements and City's level of compliance of the SSMP with that requirement. The compliance status of the City's SSMP is indicated with one of the following ratings: ***Yes*** *– in compliance,* ***No*** *– not in compliance, or* ***N/A*** *– not applicable with a written justification in the SSMP.* If there are any compliance deficiencies, then an explanation of the deficiency is given. Each deficiency will have a recommended SSMP enhancement, which may include action items, adjustments, and/or timelines of the planned completion.

4.2 Review of SSMP Effectiveness

After the SSMP compliance assessment compared to SSS WDR requirements, an evaluation of the effectiveness of the SSMP elements has been conducted to comply with the requirements for SSMP audits per subsection D.13 of the SSS WDR. The discussion review if the plan outlined for each section is being followed, and how effective the plan is at reaching the desired objectives. Recommendations will be made where appropriate based on the results of this Audit to identify tasks to improve the effectiveness of SSMP activities. Performance metrics will be used wherever possible to measure the effectiveness of the SSMP elements.

This section will not repeat the information and plans presented in each section of the SSMP and is intended to evaluate the effectiveness of the stated plans for each SSMP element. The reader should reference the City's SSMP to obtain the information referenced by this Audit.

A summary of the recommended modifications made through this Audit is included in **SECTION 6**.

SECTION 5 Audit of SSMP Elements

This section evaluates all elements of the City's SSMP. Each section of this chapter is associated with one of the eleven elements of the SSMP in accordance with SS WDR section D.13 requirements. Each element is evaluated for compliance and effectiveness described above in 4.1 and 4.2 respectively.

5.1 Goals

5.1.1 Compliance

Table 7 – Compliance with SSS WDR D.13.i - Goals

SSMP Requirement	Compliance	Deficiencies
i Properly manage, operate, and maintain all portions of the City's wastewater collection system.	Yes	-

5.1.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Goals (SSMP 1.2)

- Level of Effectiveness: The City currently has seven goals identified in the SSMP. The goals of the City recorded in the SSMP have been effective in guiding the City's activities to support the objective of the SSS WDR to protect the waters of the state.

- Recommendations: Post Appendix A-1 – Roseville's SSMP Development Plan and Implementation Schedule on the website. This was also included during the previous audit but has not been completed.

5.2 Organization

5.2.1 Compliance

Table 8 – Compliance with SSS WDR D.13.ii - Organization

SSMP Requirement	Compliance	Deficiencies
ii(a) Identify Legally Responsible Official (LRO)	Yes	-
ii(b) SSMP responsibility and organization chart	Yes	-
ii(c) Chain of communication for reporting SSOs	Yes	-

5.2.2 Effectiveness of SSMP Elements and Recommended Modifications

List Legally Responsible Official (LRO) (SSMP 2.1)

- Level of Effectiveness: The City has Ken Glotzbach (EU Director) and Dan Pruden (Wastewater Collections Superintendent) listed in CIWQS as LROs. Todd Jordan (Process Engineer) is listed as a data

submitter. Appendix B-1 of the SSMP is not currently publicly accessible. The current organization of data submitters and LROs has proven effective in reporting SSOs to meet the requirements of the September 2013 amended Monitoring and Reporting Program.

- Recommendations:
  - Modify Appendix B-1: Update City Mayor, Vice Mayor, City Attorney, and City Council positions and add phone numbers (Mayor Krista Berrnasconi, Vice Mayor Bruce Houdesheldt, City Attorney Michelle Sheidenberger, Councilmember Tracy Mendonsa). Update Commissioners and phone numbers: Chair Elaine Webb, Vice Chair James knox, Commissioners: Edward Belski, John Delancy, Richard Demarchi, Einar Maisch. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Pam Walsh. Update Assistant EU Director Ken Glotzbach, Wastewater Collection Superintendent Dan Prudent, Waste Water Collection Supervisor positions, Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.
  - Update and Post the following Appendices on the website:
    - Appendix B-1 – Personnel Responsible for SSMP Elements This was also included during the previous audit but has not been completed.
    - Appendix B-2 – Personnel Responsible for SSO Reporting This was also included during the previous audit but has not been completed.
    - Appendix B-3 – Personnel Responsible for Responding to SSOs Weekly Standby. This was also included during the previous audit but has not been completed.

SSMP Responsibility Organization Chart (SSMP 2.2)

- Level of Effectiveness: The SSMP Responsibility Organization Chart (SSMP Figure 2-1) is current in the SSMP and lists a descriptive definition of each individual's responsibilities. The chart is effective in defining the work flow and responsibilities of the individuals as well as departments within the City of Roseville's operations with relation to the SSMP. The narrative of the general position description is outlined in Section 2.2 of the SSMP.

- Recommendations: No recommendations at this time.

Chain of Communication Reporting Chart (SSMP 2.3)

- Level of Effectiveness: The internal notification contact chart is current and readily available to all wastewater utility district staff. The city of Roseville has a 24-hour call center, standardized answering script and procedures, and a full-time staff wastewater utility customer service representative. The individual's job is to respond to any service calls including but not limited to: backups, SSOs, smell complaints, etc. This has been an effective and well-utilized service, as service calls have increased and the average SSO response time has remained below the 40-minute target. Only 6 SSO response times were above 40 minutes during the audit period (0:42:00, 0:45:00, 0:46:00, 0:41:00, 0:43:00, and 1:05:00) which totaled 51 gallons in spills and the remaining 95% of the responses were under 40 min.

- Recommendations:
  - Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff per Appendix B-3. This was also included during the previous audit but has not been completed.
  - Include Figure 2-2 flowchart as Appendix F to the SSOERP (Appendix F-1) and mention in the text. This was also included during the previous audit but has not been completed.

5.3 Legal Authority

5.3.1 Compliance

Table 9 – Compliance with SSS WDR D.13.iii – Legal Authority

SSMP Requirement	Compliance	Deficiencies
iii(a) Prevent illicit discharges	Yes	-
iii(b) Properly designed and constructed sewers	Yes	-
iii(c) Ensure access to laterals owned/maintained by City	Yes	-
iii(d) Limit the discharge of FOG and other debris	Yes	-
iii(e) Enforce any violation of City ordinances	Yes	-

5.3.2 Effectiveness of SSMP Elements and Recommended Modifications

Industrial Pretreatment Program (SSMP 3.2)

- Level of Effectiveness: The Industrial Waste Section (IWS) administers the Pretreatment Program Enforcement Response Plan and implements enforcement procedures specified by the U.S. EPA in accordance with 40CFR 403.5 (f) (5). The IWS has the authority to permit and monitor significant industrial users (SIUs) and small commercial/industrial dischargers. The implementation of the Pretreatment Program Enforcement Response Plan has been effective in providing the City the authority to control and prevent illicit discharges to the collection system.

- Recommendations: Post Appendix C-1 – Pretreatment Program Enforcement Response Plan on the website. This was also included during the previous audit but has not been completed.

Municipal Code and Design and Construction Standards (SSMP 3.3)

- Level of Effectiveness: The City's design and construction standards regulate the preparation of plans for construction of additions/improvements to the sewer. The Roseville Municipal Code (RMC) section 14.12.040 requires that building sewer and connection into the public sewer system conform to the requirements of the building and plumbing code or other applicable rules and regulations of the City. The RMC also requires an installation of a lateral line clean out at the point of connection with the public sewer. The City design and construction standards and the RMC section 14.12.040 have been effective in providing the City the legal authority to properly design and construct the sewers and connections.

- Recommendations: Post Appendices C-2, C-3, and C-4 for Municipal Code, sanitary sewer design and construction.

Municipal Code – Sewer Access Authority (SSMP 3.4)

- Level of Effectiveness: The Charter in the RMC, Article X Sec. 10.01 designates the authority to access City owned and operated facilities, either within or outside its corporate limits, number of activities including, but not limited to maintenance, inspection, and repair related to sewage collection. The authority gives legal access to all City-owned sewer facilities. The City has not had issues to date with lack of access to facilities based on legal authority. The current legal authority to access sewer facilities has been effective in supporting the goals of the SSMP.

- Recommendations: No recommended modifications at this time.

Municipal Code – FOG (SSMP 3.5)

- Level of Effectiveness: The RMC chapter 14.14 is a robust FOG ordinance that lists regulatory requirements, fees, administrative requirements, and authority to enforce regulatory compliance. This ordinance is effective in identifying the required equipment and BMPs for FSEs as well as indicating the authority of the City to enforce the FOG requirements.

- Recommendations: No recommended modifications at this time.

Municipal Code – Enforcement Authority (SSMP 3.6)

- Level of Effectiveness: The RMC section 14.12.060 authorizes the City to penalize violators of the City's code requirements. At the discretion of the City attorney, an individual may be charged with an infraction or a misdemeanor. The authority to penalize infractions that may cost City resources has proven effective to maintain proper use of the wastewater collection system.

- Recommendations: No recommended modifications at this time.

Inter-Agency Agreements and Satellite Systems (SSMP 3.7)

- Level of Effectiveness: The City maintains a Joint Exercise of Powers Agreement for the South Placer Wastewater Authority and Agreement Regarding the Operation and use of the South Placer Regional Wastewater Facilities. In addition, the City has an Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

- Recommendations: Post the following Appendices on the website:
    - Appendix C-5 – Joint Exercise of Powers Agreement for the South Placer Wastewater Authority. This was also included during the previous audit but has not been completed.

- Appendix C-6 – Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities. This was also included during the previous audit but has not been completed.
- Appendix C-7 – Wastewater Service Agreement by Contract and Operating Agreement between SASD, SRCSD and City of Roseville. This was also included during the previous audit but has not been completed.

5.4 Operation and Maintenance Program

5.4.1 Compliance

Table 10 – Compliance with SSS WDR D.13.iv – O&M Program

SSMP Requirement	Compliance	Deficiencies
iv(a) Collection system maps	Yes	-
iv(b) Preventive O&M activities	Yes	-
iv(c) Rehabilitation and Replacement (R&R) plan	Yes	The City does have an R&R plan in place, but additional improvement should be implemented (see below)
iv(d) Training	Yes	The City provides regular training but additional improvements to the training program should be implemented (see below)
iv(e) Equipment and critical replacement parts	Yes	-

5.4.2 Effectiveness of SSMP Elements and Recommended Modifications

Roseville Collection System Maps (SSMP 4.2)

- Level of Effectiveness: The city maintains electronic and hard copy maps of the sanitary sewer system and storm drain system. Updates to the electronic map system are translated to the field crew trucks via single sheet prints, if required. Full hard copy mapbooks are updated on a yearly basis. The City Mapping Update Policy is followed to ensure mapping is correct and completed in GIS and made available to the required users. The mapping policy document is added to the SSMP as an appendix and is posted to the City's SSMP website page.

- Recommendations: Post the following Appendices on the website:
  - Appendix D-1 – City of Roseville Sewer Map Grid System. This was also included during the previous audit but has not been completed.
  - Appendix D-9 – Mapping Update Policy. This was also included during the previous two audits but has not been completed.

Roseville Preventive Operations & Maintenance Activities (SSMP 4.3)

- Level of Effectiveness: WWC engages in various programs to complete routine preventative maintenance activities, which include jet cleaning, lateral eeling, chemical root control, CCTV inspections, visual inspections, and lift station maintenance.

  According to **Table 6**, the City experienced an increase in root-caused SSOs during the last year of the audit period, which is explained by the decrease of total sewer lateral mechanical cleaning (eeled), as shown in **Table 11**. The City outperformed preventative maintenance targets and past performance measures as evident in **Table 11,** with the exception of Sewer main flushed per year (miles) during FY 18/19, and FY 19/20, which may have been related to an equipment maintenance issue (see **Table 12**). Other performance measures or benchmarks are reviewed in full in the recommendations of **Section 5.9**.

Table 11 – Performance Measures related to SSS WDR D.13.iv(b)

Performance Measure	Target	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21
Total number of sewer maintenance field staff	NA	23	24	24	24	26	24	26	26
Sewer main flushed per year (miles)	250	330	284	248	295	283	226.1	235.9	296.14
Sewer laterals mechanically cleaned (eeled) per year (miles)	8	13.89	14.69	14.77	7.41	1.07	268	265	74
Average high velocity cleaning per crew per day [LF]	1670	2393	2922	2618	3115	2998	N/A	N/A	N/A
Average cost of hydro cleaning [$/LF]	0.36	0.30	0.32	0.33	0.29	0.32	0.34	0.34	0.34
Average cost of sewer mechanical cleaning [$/LF]	1.60	1.23	1.20	0.77	0.94	1.66	0.30	0.30	0.30

- Recommendations:
  - Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.
  - Update the following Appendices and post on the website:
    - Appendix D-2 – Maintenance Cleaning Schedule: Update with Maximo CCMS example. This was also included during the previous audit but has not been completed.
    - Appendix D-3 – CCTV Video Report. This was also included during the previous audit but has not been completed.

- Appendix D-4 – SOP. This was also included during the previous audit but has not been completed.

Rehabilitation and Replacement Plan (SSMP 4.4)

- Level of Effectiveness: The City regularly CCTV inspects pipelines using the national Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) coding standard. The City evaluates the risk of failure for each asset based on the various data sources it maintains (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections) and assigns high risk assets in a ranked Rehabilitation and Replacement (R&R) Plan. If an R&R project is not completed in one year, then it is rolled over to the next. The City maintains a 5-year list of planned R&R CIP projects.

  The city creates an asset group in their Maximo CCMS, based on their condition assessment and PACP scores. This ongoing list is prioritized and provided to Tech Services, when CIP budget is prepared, to put a CIPPP project together. Also, while performing routine hydro work in the grids, the vactor group performs manhole inspections of each asset. Once there are enough manholes that require rehabilitation, the City produces a list with asset IDs that will be sent to Tech Services for manhole Rehabilitation CIP. In the past 9 years, the City has not discovered a substantial number of manholes to develop a manhole CIP project.

  In accordance with the City-utilized performance measures related to inspection and R&R program activities as displayed in **Table 12**, the City has met or exceeded majority of inspection targets during this audit program. However, total miles of mainline rehabilitated during this three-year were less than the target. SSOs caused by structural failure during the audit period are overlaid with the City's 2018 I/I study and shown in **Appendix 7.3.** As shown, most of these spills occurred in regions with older pipes, such as region 5, 15, and 15A. These regions are also known for their higher I/I response and capacity issues during wet seasons. The City has been actively performing I/I analysis and smoke testing to identify system defects in these regions, results of which are incorporated in CIP decision makings.

Table 12 – Performance Measures related to SSS WDR D.13.iv (c)

Performance Measure	Target	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21
Total miles visually inspected per year (not CCTV)	0.25	0.25	0.25	0.18	0.25	0.25	0	0	0
Lateral CCTV inspected per year [miles]	16	14.69	26	35.71	32.51	36.14	29.74	22.46	27.88
Main CCTV inspected per year [miles]	30	53.27	65	84.32	59.71	64.1	119.9	94.65	38.57
Laterals rehabilitated per year [number]	50	90	43	60	85	89	74	82	110
Laterals rehabilitated or replaced per year [miles]	0.25	0.39	0.16	0.27	0.66	0.42	0.45	0.46	0.62
Mains Rehabilitated or replaced per year [miles]	5	2.65	6	0	0	1.07	0.05	0.09	3.4
Average Cost of CCTV (lateral) [$/LF]	1.34	1.46	1.11	1.15	1.04	1.00	1.24	1.29	1.28
Average cost of CCTV (main) [$/LF]	0.53	0.55	0.41	0.41	0.36	0.40	0.60	0.75	1.85

- Recommendations:
  - Describe the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous two audit but has not been completed.
  - Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment. This was also included during the previous two audits but has not been completed.
  - Post Appendix D-8 – Technical Memorandum O&M Program SSMP Audit-Rehabilitation and Replacement Plan (Element IVC) on the website. This was also included during the previous audit but has not been completed.

Training (SSMP 4.5)

- Level of Effectiveness: The WWC requires employees be certified with CWEA, DMV, CPR, First Aid, Confined Space Policy, Gas Detector Policy, as well be trained in equipment safety, maintain OSHA rules, and review material safety data sheets.

  The existing training program has been effective in supporting a well-trained staff. Over this audit period WWC has reported 10 on the job accidents in FY 18/19, 8 in FY 19/20, and 6 in FY 20/21, which are more than previous audits however the number of accidents has declined year over year. WWC strives for

zero-on-the-job accidents and has weekly tail-gate training meetings and monthly training sessions where WWC staff is trained in part via various SOPs.

- Recommendations: Update the following links:
  - The CWEA website link. This was also included during the previous audit but has not been completed.
  - Appendix D-5 – CWEA Certification Handbook link. This was also included during the previous audit but has not been completed.

Equipment and Critical Replacement Parts (SSMP 4.6)

- Level of Effectiveness: WWC maintains a list of equipment and critical replacement parts inventory in Appendix D of the SSMP. The critical replacement parts list is 100% stocked, up to date, and is maintained by the Material Technician at Dry Creek WWTP. The equipment and critical replacement parts inventory and upkeep is effective and ensures that a lift station critical part failure can be quickly mitigated.

- Recommendations: Update and post the following Appendices on the website:
  - Appendix D-6 – Equipment Inventory List. This was also included during the previous audit but has not been completed.
  - Appendix D-7 – Critical Replace Parts List. This was also included during the previous audit but has not been completed.

5.5 Design and Performance Provisions

5.5.1 Compliance

Table 13 – Compliance with SSS WDR D.13.v – Design and Performance Provisions

SSMP Requirement	Compliance	Deficiencies
v(a) Sanitary sewer design and construction specifications	Yes	-
v(b) Procedures and standards for inspecting and testing new and R&R projects	Yes	-

5.5.2 Effectiveness of SSMP Elements and Recommended Modifications

Sanitary Sewer Design and Specifications (SSMP 5.2)

- Level of Effectiveness: The City's design and construction standards are available on the website and the online SSMP documentation lists their location. These designs and construction standards are effective in ensuring that new or rehabilitated infrastructure is designed and constructed in an acceptable manner.

- Recommendations: Update Appendix E-1 – Sanitary Sewer Design link. This was also included during the previous audit but has not been completed.

Sanitary Sewer System Construction and Performance Provisions (SSMP 5.3)

- Level of Effectiveness: The City's construction and design standards include procedures and requirements for the testing of new/rehabilitated assets and has been effective in ensuring that recently constructed assets perform as expected.

- Recommendations:
  - Update Appendix E-2 – Sanitary Sewer System Construction link. This was also included during the previous audit but has not been completed.
  - Post Appendix E-3 – Technical Memo, SSMP Preparedness Audit Design and Performance Provisions Element V on the website. This was also included during the previous audit but has not been completed.

5.6 Overflow Emergency Response Plan

5.6.1 Compliance

Table 14 – Compliance with SSS WDR D.13.vi - OERP

SSMP Requirement	Compliance	Deficiencies
vi(a) Proper notification procedures	Yes	-
vi(b) Program for appropriate SSO response	Yes	-
vi(c) Procedure for prompt notification to regulatory agencies	Yes	-
vi(d) Procedures for appropriate staff and contractor training	Yes	
vi(e) Procedures to address emergency operations (e.g., traffic, crowd control)	Yes	-
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	No	SSOERP does not meet certain water quality monitoring requirements of the amended MRP document

5.6.2 Effectiveness of SSMP Elements and Recommended Modifications

Notification Procedures (SSMP 6.2)

- Level of Effectiveness: The average SSO response time during the audit period was 20 minutes, with 21 minutes for FY 18/19, 21 minutes for FY 19/20, and 18 minutes for FY 20/21 (see **Table 3**). These response times are much faster than the City target response time of 40 minutes and indicates that the notification procedures employed the City are effective in facilitating a rapid response from the City's first responders.

- Recommendations: No recommended modifications at this time.

Response Program (SSMP 6.3)

- Level of Effectiveness: SSO response procedures are documented in Appendix F-1 Section 2 of the SSMP and are summarized in the flow chart in Figure 6-2 of the SSMP and Appendix F-1 SSOERP. The flow chart uses a series of yes/no questions to guide SSO responders in quickly identifying the right sequence of decisions and actions to properly assess and mitigate an SSO. This chart is simple and effective in explaining the process in which to mitigate an SSO.

  During the audit period, the average SSO volume spilled was 21 gallons, with an average 62% recovered from the total SSO volume. Similarly, the average SSO duration length was 4:55 hours long, however there were 20 long-duration SSOs (over 3 hours) that caused the average SSO duration length to increase. One of these SSOs in FY 20/21 spilled from a lateral for 94 hours and resulted in volume spilled of 1.5 gallons. In all these instances, the City was notified very late, and once notified, stopped all long duration SSOs in under 30 minutes. The average City response time to SSO calls during the audit period was 20 minutes, and the average time it took to stop the SSO (SSO mitigation) once on-site was just under 5 minutes. These statistics demonstrate that the City has been effective in responding and mitigating SSOs.

- Recommendations:
  - The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous two audits but has not been implemented.
  - Modify Figure 6-2 – SSO Procedure Flow Chat, to report SSO category 1 larger than 1,000 gallons to Cal OES within 2 hours per WDR requirements (currently if > 50,000 gal). This was also recommended during the previous audit but has not been implemented.
  - Post Appendix F-1 – SSOERP on the website along with corresponding attachments. This was also recommended during the previous audit but has not been implemented.

Regulatory Notification Procedure (SSMP 6.4)

- Level of Effectiveness: The Superintendent and Utility Manager are the legally responsible officials (LRO) for certifying SSO reports submitted to CIWQs. The Superintendent and Supervisor are also responsible for reporting the SSOs to RWQCB, OES, and Placer Environmental Health Department as required. This section is effective in conveying the responsibility the LRO in reporting SSOs to the proper authorities.

- Recommendations: No recommended modifications at this time.

Staff and Contractors Training (SSMP 6.5)

- Level of Effectiveness: Each WWC employee is required to complete the SSO response procedure training updates and review of SSO training are included in the weekly tailgate meeting throughout the year. They are also trained on the various SOPs implemented within WWC. Contractors are also required to implement the procedures identified in the SSO training prior to working within the collection system. As evidenced by the fast response and mitigation times, the WWC staff's training has been effective.

- Recommendations: No recommended modifications at this time.

Emergency Response Coordination (SSMP 6.6)

- Level of Effectiveness: WWC employees are required to complete the Emergency Action plan training annually. This covers HAZ WOPER first responders and Roseville's Incident Command System (ICS). These process, procedures, and response systems are also reviewed via weekly safety tail gate meetings. These training sessions have been effective way to prepare staff to deal with hazardous waste and materials.

- Recommendations: No recommended modifications at this time.

Spill Mitigation and Containment Procedure (SSMP 6.7)

- Level of Effectiveness: Appendix F-1 of the SSMP includes an SSOERP which includes an SOP for estimating spill volumes, containment, and mitigation of spills. The new amended Monitoring and Reporting Program (MRP) requirements implemented in September 2013 require a robust water quality monitoring plan that must account for spill travel time in surface water, among several new requirements. The City's current SSOERP Appendix C Water Quality Sampling Procedures document does not meet these requirements.

- Recommendations:
    - Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP.
        - Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. This was also recommended during the previous audit but has not been implemented.
        - Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more

broadly listed by the regional Basin Plan. This was also recommended during the previous audit but has not been implemented.

- Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling. This was also recommended during the previous audit but has not been implemented.

5.7 FOG Control Program

5.7.1 Compliance

Table 15 – Compliance with SSS WDR D.13.vii – FOG Control Program

SSMP Requirement	Compliance	Deficiencies
vii(a) Public education plan	Yes	-
vii(b) FOG disposal plan	Yes	-
vii(c) Legal authority to prohibit SSOs and blockages caused by FOG discharges	Yes	-
vii(d) BMPs, grease removal devices, recordkeeping, and reporting requirements	Yes	-
vii(e) Authority to inspect and enforce FOG ordinance	Yes	
vii(f) FOG Characterization Assessment and Hot Spot Cleaning Schedule	Yes	-
vii(g) FOG Control Program Measures	Yes	-

5.7.2 Effectiveness of SSMP Elements and Recommended Modifications

Public Education Plan (SSMP 7.2)

- Level of Effectiveness: The City has developed and operates a comprehensive FOG outreach program to residents, restaurants, and the plumbing community on the proper disposal of FOG. The main objective is to educate the City of Roseville residents and restaurants on the proper disposal of FOG to meet or exceed outreach standards set forth in the State General WDR requirements. The program has implemented TV ads, flyers, bill inserts, and websites to convey the message of educating the public on the proper disposal of FOG and other substances. This system appears to be effective in educating the public on the proper disposal of FOG and other substances. Maurice Chaney is listed as responsible party for FOG public Education Plan in Appendix B-1.

- Recommendations: No modifications recommended at this time.

FOG Disposal Plan (SSMP 7.3)

- Level of Effectiveness: During the past audit periods the Industrial Waste Section (IWS) oversaw the FOG disposal plan with permitted Food Service Establishment (FSE), however all FOG program-related responsibilities transitioned to WWC in 2016. The City currently has 421 FSEs that are required to and

have obtained a FOG wastewater discharge permit (FOG WDP). The same City regulations from the audit period are in place which require permittees to retain a minimum 3 years of documentation to prove the proper cleaning, maintenance, and removal of FOG from grease control devices and the disposal site location. The City provides information about the permitting process and permit applications on the City website (URL address below) as a resource for businesses and residences within the City. (https://livesewersmart.com/)

The FOG record keeping requirements for FSEs appear to be effective in that only 1 FOG-related SSOs occurred over the audit period.

- Recommendations: No modifications recommended at this time.

Record Keeping Requirements (SSMP 7.4)

- Level of Effectiveness: As discussed in the previous section, FOG control program responsibilities transitioned from IWS to WWC in 2016, but during the audit period, IWS operated the program. The City requires in RMC Section 14.14.260 that permitted FSEs retain logbooks on grease control device maintenance cycles, FOG hauling records, sampling data and sludge height monitoring in FOG control devices, BMPs, and records of private lateral SSOs and subsequent mitigation. The recordkeeping requirements and time frames identified in the RMC have enough information necessary for the City to enforce permit requirements of FSEs.

- Recommendations: No modifications recommended at this time.

Legal Authority to Prohibit SSOs and Blockages Caused by FOG Discharges (SSMP 7.5)

- Level of Effectiveness: The RMC Section 14.12.050 provides the City with a FOG ordinance and legal authority to require FOG interceptors when deemed necessary by the director. The ordinance prohibits FOG-related blockages and SSOs and limits the maximum allowable concentration of FOG in FSE discharges at the current level of 100 mg/L of wastewater. This ordinance is effective in providing the City with the tools necessary to minimize FOG discharges into the sewer system.

- Recommendations: No modifications recommended at this time.

BMP, Grease Removal Devices, Recordkeeping, and Reporting Requirements (SSMP 7.6)

- Level of Effectiveness: The City requires all FSEs that discharge FOG to acquire a FOG WDP permit which includes provisions for FSEs to maintain BMPs and grease interceptors, cleaning records, and to report private FOG-related SSOs or blockages. The FOG WDP requirements are effective in providing the City with the tools to limit FOG discharges into the sewer system.

- Recommendations: No modifications recommended at this time.

Inspection and Enforcement Authority – FOG Producers (SSMP 7.7)

- Level of Effectiveness: All FSEs that discharge FOG are required to obtain and comply with a City FOG WDP. Under the permit, the FSE must comply with the FOG ordinance as detailed under the RMC, and the City maintains the legal authority to physically inspect the FSE and determine if it is in compliance. The City possesses effective tools to regulate FOG discharges via a robust FOG ordinance which also requires an effective FSE inspection program. Under oversight from WWC, the City plans on inspecting at least 294 FSEs each fiscal year During this audit, the city documented 0 FSE inspections for FY 18/19, 0 inspections for FY 19/20, and 221 inspections for FY 20/21. The lack of inspections could be due to equipment or due to Covid Pandemic however since only one SSO was caused by FOG, the FOG inspection and enforcement authority element of the SSMP has been effective.

- Recommendations: No modifications recommended at this time.

FOG Characterization Assessment and Hot Spot Cleaning Schedule (SSMP 7.8)

- Level of Effectiveness: The City has been effective in limiting FOG-related SSOs to one during the three-year audit period by identifying and placing assets impacted by FOG as a last resort on the hot-spot, high frequency 3-month cleaning list. If the City encounters abnormal FOG levels in a pipe it will first reach out to FSEs and residents that it thinks may be contributing to it and distribute pamphlets to them to minimize FOG discharges. If that does not solve the problem, then the asset is put on the hot-spot list. Approximately 60% of the 90 hot-spot assets have FOG-related issues that require significant City resources to clean every 3 months.

- Recommendations:
    - Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.

FOG Control Program Measures (SSMP 7.9)

- Level of Effectiveness: The City has established that all FOG-producing FSEs acquire a FOG WDP which limits discharge of FOG, requires proper O&M records, hauling record, BMPs, and other conditions. The FOG Control Program measure provides the City's with an effective tool to limit FOG discharges from FSEs.

- Recommendations: No modifications recommended at this time.

5.8 System Evaluation and Capacity Assurance Plan

5.8.1 Compliance

Table 16 – Compliance with SSS WDR D.13.viii - SECAP

SSMP Requirement		Compliance	Deficiencies
viii(a)	Evaluate hydraulic deficiencies	Yes	-
viii(b)	Establish design criteria	Yes	-
viii(c)	Establish short- and long-term CIP	Yes	-
viii(d)	Develop schedule of completion dates for CIP	Yes	-

5.8.2 Effectiveness of SSMP Elements and Recommended Modifications

Evaluation Process – Capacity Enhancement Projects (SSMP 8.2)

- Level of Effectiveness: The City has developed two hydraulic simulation models to identify peak flows in the collection system in 2006. In addition, the City developed a new hydraulic model and System Evaluation and Capacity Assurance Plan (SECAP) in 2017, which was done by Woodard and Curran. The modeling efforts conducted in 2006 and 2017 have been effective in evaluating the system and planning for future growth, which is evident from no capacity-deficiency-related SSOs during this audit period. In 2018, Water Works Engineers (WWE) conducted a follow up I/I study upon the existing 2017 model to further analyze results and identify basins and assets with high I/I response. The results of the 2018 I/I study is being actively used by the City as their I/I reduction program base.

- Recommendations: Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years. This was also recommended during the previous two audit but has not been implemented.

Design Criteria (SSMP 8.3)

- Level of Effectiveness: The City established a 10-year, 24-hour peak design storm for the hydraulic wet weather loading of the existing collection system along with flow generation factors based on water use records and flow monitoring data. Based on the lack of capacity-related SSOs during the audit period, it appears the City's capacity design criteria are effective.

- Recommendations: No recommended modifications at this time.

Capacity Enhancement Measures (SSMP 8.4)

- Level of Effectiveness: The SPWA Wastewater Systems Evaluation includes the identification of short and long-term Capital Improvement Project (CIP) to meet current and future wastewater flows. The new hydraulic model introduced in 2017 provides new capacity enhancement measures.

- Recommendations: No modifications recommended at this time.

Capital Improvement Program Schedule (SSMP 8.5)

- Level of Effectiveness: The City lists the goal of the CIP is to develop annual project bundles of approximately $1.5 to $2.0 million based on WWC condition assessment data and the hydraulic model CIP results and subsequent flow monitoring or studies. The CIP schedule is effective in identifying the tasks required to assure hydraulic capacity within the collection system.

- Recommendations: No modifications recommended at this time.

5.9 Monitoring, Measurement, and Program Modifications

5.9.1 Compliance

Table 17 – Compliance with SSS WDR D.13.ix – MMM

SSMP Requirement	Compliance	Deficiencies
ix(a) Maintain metrics to prioritize SSMP activities	Yes	-
ix(b) Measure effectiveness of SSMP elements	Yes	The City does have performance indicators linked with SSMP elements, but additional improvements should be implemented (see below)
ix(c) Assess preventative maintenance program	Yes	-
ix(d) Update elements based on evaluations	Yes	-
ix(e) Identify and illustrate SSO trends	Yes	-

5.9.2 Effectiveness of SSMP Elements and Recommended Modifications

Utility Metrics to Prioritize SSMP Activities (SSMP 9.2)

- Level of Effectiveness: The WWC tracks four categories of utility metrics to monitor and measure the effectiveness of the various elements of this SSMP, which include system information, financial information, sewer maintenance, and performance measures. The city also tracks various performance measures related to various SSMP elements and they are summarized in **Appendix 7.4**. Appendix I has effectively been used to identify and track the specific metrics each of the City's four categories.

- Recommendations: No modifications recommended at this time.

Metrics to Monitor Effectiveness of SSMP (SSMP 9.3)

- Level of Effectiveness: The utility metrics listed in Appendix I-4 pertain to different overseeing departments within the City, and the coordination between these different Departments in measuring/monitoring various metrics and sharing results has been effective in ensuring the SSMP goals have been met.
- Recommendations:

- Incorporate system and financial measures recommended in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP.
- Update Appendix I-4 and modify it to include document location and review frequency.
- Modify I-4 – Key Performance Indicators (KPI) FOG section, to reflect the change in responsibilities from IWS to WWC.

Metrics to Assess Preventative Maintenance Program (SSMP 9.4)

- Level of Effectiveness: The City's current utility metrics Appendix I defines the frequency and type of utility metric that is being tracked to measure SSMP effectiveness. This is effective because it allows the city to monitor performance of particular activities and compare against SSO trends to determined data correlations. These metrics do not all have associated goals or targets, however, which makes it hard to track whether the activity is meeting the intended result.

- Recommendations: Consider addition of recommended PM measures in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.

SSMP Performance Monitoring and Update Process (SSMP 9.5)

- Level of Effectiveness: Individual staff oversee various SSMP element performance indicators. The City tracks all revisions/updates with the SSMP using a revision log that is maintained by the LRO. The log is effective documenting changes to the SSMP and encourages the use of the SSMP as a living document.

- Recommendations: No modifications recommended at this time.

SSO Trends – Frequency, Location and Volume (SSMP 9.6)

- Level of Effectiveness: The City tracks a comprehensive list of performance metrics that are included in Appendix I-4 of the SSMP and summarized in **Table 19**. This allows the City to quickly identify and respond to changing trends in SSOs over time. These metrics are monitored on a monthly, quarterly, semi-annual, and annual basis.

- Recommendations:
  - Update Appendix I-3 – SSO History (last update 2013).
  - Update SSO trends data in Appendix I-4 – KPI Benchmarking.
  - Consider addition of recommended SSO measures in **Table 18,** from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.

Table 18 –Recommended Additional Performance Indicators

Description	Performance Indicator	Unit
System Information	Total System Length	miles
	Service Area	sq. miles

	Population	people
	# maintenance Holes	MHs
	# Pump Stations PS/ Lift Station	number
	Sewer < 8 inch	miles
	8 inches < sewer < 15 inches	miles
	15 inches < sewer < 21 inches	miles
	21 inches < sewer < 42 inches	miles
	Average age of system	years
	New sewer main installation	miles
	New sewer lateral installation	miles
	WWC Staff	number
Financial Information	Total annual division budget	$
	Total annual O&M budget	$
	O&M budget of annual	%
	Lift station O&M cost	$
	Lift station O&M cost of annual	%
	Annual capital for sewer rehab	$
	Sewer monthly rate for residents	$
O&M	Certified operators	number
	O&M field staff	number
	Average high velocity cleaning per crew per day	LF
	Total visually inspected per year (not CCTV)	miles
SSO	Number of SSO calls received	number
FOG	Public education outreach budget per year	$
	Public education outreach budget of annual	%

Table 19 – Current Performance Measures to Monitor SSO Trends

Performance Measure	Unit	Target	Source
SSOs - Total number, mains and laterals	Number	-	A, B
SSOs - Total volume, mains and laterals	Gal	-	A, B
SSOs - Total volume recovered	Gal	-	B
SSOs - Total number of wet weather	Number	-	A, B
SSOs - Total volume of wet weather	Gal	-	A, B
SSOs - % of spills caused by FOG (main)	%	-	A, B
SSOs - % of spills caused by roots (main)	%	-	A, B
SSOs - % of spills caused by Vandalism (main)	%	-	A, B
SSOs - caused by LS failures	Number	-	A, B
SSOs - caused by pipe failures	Number	-	A, B
SSOs - % of spill volume caused by FOG (lateral)	%	-	A, B
SSOs - % of spill volume caused by roots (lateral)	%	-	A, B
SSOs - % of spill volume caused by Vandalism (lateral)	%	-	A, B
Customer service requests per year	Number	-	A, B
Sewer odor complaints	Number	-	A, B
Flooding claims per year	Number	-	A, B
Cost of flooding claims per year	$	-	A, B
SSO – Repeats within two years	Number	0	B, C
SSOs - Category 1	Number	0	C, D
SSOs / 100 mi pipe / year - Category 2	Number	2.0	C
SSOs / 100 mi pipe / year - Mainline	Number	0.6	C
SSOs / 100 mi pipe / year - Lateral	Number	8.0	C

A = SSMP section 9.6

B = SSMP Appendix I

C = WW Collections KPIs

D = Program / Performance Reports

5.10 SSMP Program Audits

5.10.1 Compliance

Table 20 – Compliance with SSS WDR D.13.x – SSMP Program Audits

SSMP Requirement	Compliance	Deficiencies
x Conduct periodic audits	Yes	-

5.10.2 Effectiveness of SSMP Elements and Recommended Modifications

Audit Procedures, Roles, and Responsibilities (SSMP 10.2)

- Level of Effectiveness: The City conducts an internal audit biennially to continually measure the effectiveness of the SSMP primarily through evaluating system metrics, performance measures, and reduce SSOs by improving SSMP procedures to better respond to new SSO trends. In addition, the audit evaluates the City's compliance with SSMP requirements, particularly the amended MRP requirements that were formalized in September 2013. The City developed an audit form as a template to record information produced during the internal SSMP audits. This form is included in SSMP Appendix J-2. The previous audit identified many areas of improvement which the City responded and acted on. Some of these recommended improvements were excluded from this audit based on discussions with the City that eliminated the need for them. Others are considered standing and should still be implemented by the City. Generally, the internal audits implemented by the City have been effective in improving the SSMP and turning it into a living document that that is current, practical, and useful for the City.
- Recommendations:
    - The SSMP must be recertified by the City Council. Last Certification was completed 4/7/2014. Per SSS WDR D.14, the City must have the SSMP updated and re-certified by the governing board (i.e. City Council) every five years.
    - Post this SSMP internal audit to the City website.
    - Schedule the next internal SSMP audit for July-August of 2023.
    - Develop a description manual to replace Appendix J-1 and J-2 of the SSMP, to support each KPI element. This manual describes required information for KPI monitoring, including but not limited to:
        - Elements definition
        - How to fill each KPI items
        - Personnel responsible
        - Review frequency

SSMP Program Modification/Update Process (SSMP 10.3)

- Level of Effectiveness: The City developed a program for monitoring, reviewing sewer performance metrics and the effectiveness of SSMP elements on a biennial basis. Based on the results of the SSMP audits, the Wastewater Utility Manager is assigned to initiate/direct corrective actions to respond to

deficiencies and enhancements identified in the audit. As determined in the City's SSMP revision log, the City has been prompt in responding to audit and continually strives to implement improvements.

- Recommendations:
  - Update the SSMP change log and add it as an appendix to the SSMP, documenting all changes made to the SSMP since its last certification, indicating when an element was changed/updated and who authorized the change. An example of a change log is shown at **Appendix 7.5**. This was also recommended during the previous audit but has not been implemented.
  - Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.

5.11 Communication Program

5.11.1 Compliance

Table 21 – Compliance with SSS WDR D.13.xi – Communications Program

SSMP Requirement	Compliance	Deficiencies
xi(a) Communicate on a regular basis with the public and tributary/satellite systems regarding SSMP	Yes	-

5.11.2 Effectiveness of SSMP Elements and Recommended Modifications

Internal Communication – Staff, Utility Commission, and City Council (SSMP 11.2)

- Level of Effectiveness: The WWC has used PowerPoint presentations as a resource to describe the purpose of the SSMP and summarize SSS WDR requirements to the City council and City staff. These presentations are attached to the SSMP website.

- Recommendations:
  - As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website. This was also recommended during the previous audit but has not been implemented.
  - Post Appendices K-1 – WWC WDR awareness Program and K-2 – Sanitary sewer regulations/WDR PowerPoint presentations on the website.
  - Post Appendix K-3 – Two "EU Today" Newsletters Preventing Fog in Pipes and Not Flushing Medication down the Sewer.
  - Update Appendix K-3 – Two EU newsletters FOG/medications links.

Stakeholder Communication – Residential, Commercial and Industrial (SSMP 11.3)

- Level of Effectiveness: The City communicates regularly with the public and stakeholders via monthly newsletters entitled "EU Today" that includes items regarding sewer utilities. This newsletter is presented online and through bill inserts. A sample newsletter is included in Appendix K of the SSMP. In addition, the City specifically communicates FOG related items to the community via FOG outreach program over TV ads, flyers, direct mail, and site visits to FSEs.

- Recommendations:
    - Update and Post SSMP Appendix K-4 – FOG Outreach Program with marketing Plan budget & spending and post it on the website. Consider an additional metric to be used in the KPI that reflects the City's performance in terms of FOG outreach program. Few additional metrics are recommended in **Table 18**. This was also recommended during the previous audit but has not been implemented.

Tributary/Satellite Communication (11.4)

- Level of Effectiveness: The City routinely communicates with their satellite partners and has three formal agreements in place that include:
    - The joint exercise of power agreement for the SPWA
    - The agreement regarding the operation of and use of South Placer Regional Wastewater Facilities
    - The funding agreement relating to the South Placer Regional Wastewater Facilities
    - Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD).

- Recommendations:
    - Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as an appendix. This was also recommended during the previous audit but has not been implemented.
    - Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). This was also recommended during the previous audit but has not been implemented.
    - Post Appendix K-5 – Funding agreement related to south placer regional wastewater facilities on the website.

SECTION 6 Audit Summary

This section summarizes the level of compliance of the SSMP with the SSMP requirements identified in subsection D.13 and he identified deficiencies as described in **Section 4.1. Table 22** summarizes the result of this evaluation.

Table 22 – Summary of SSMP Compliance Deficiencies

SSMP Requirement	Compliance	Deficiencies
vi(f) Program to ensure containment of SSO to prevent discharge and minimize adverse impacts on the environment	No	SSOERP does not meet certain water quality monitoring requirements of the amended MRP document.

In addition, **Table 23** lists a summary of all recommendations for this audit.

Table 23 – Summary of Audit Recommendations

SSMP Section	Recommendation	Suggested Timeline for Completion
1.2	Post Appendix A-1 – Roseville's SSMP Development Plan and Implementation Schedule on the website.	Jan 2022
2.1	Modify Appendix B-1: Update City Mayor, Vice Mayor, City Attorney, and City Council positions and add phone numbers (Mayor Krista Berrnasconi, Vice Mayor Bruce Houdesheldt, City Attorney Michelle Sheidenberger, Councilmember Tracy Mendonsa). Update Commissioners and phone numbers: Chair Elaine Webb, Vice Chair James knox, Commissioners: Edward Belski, John Delancy, Richard Demarchi, Einar Maisch. Update Liaisons and phone numbers for EU Director Richard Plecker, and Secretary Pam Walsh. Update Assistant EU Director Ken Glotzbach, Wastewater Collection Superintendent Dan Prudent, Waste Water Collection Supervisor positions, Principal EU engineer and phone number for Jason Shykowski. Update Administrative Analyst and phone number for Maurice Chaney.	Jan 2022
2.1	Post the following Appendices on the website: o Appendix B-1 – Personnel Responsible for SSMP Elements o Appendix B-2 – Personnel Responsible for SSO Reporting o Appendix B-3 – Personnel Responsible for Responding to SSOs Weekly Standby	Jan 2022
2.3	Modify Figure 2-2 Flowchart: Update the WWC Divisions overflow emergency response plan chain of communication to match existing operations, whereby WWTP and LS staff and SCADA alerts should always call the 24-hour call center instead of WWC service staff.	Jan 2022
2.3	Include Figure 2-2 flowchart as Appendix F to the SSOERP (Appendix F-1) and mention in the text.	Jan 2022
3.2	Post Appendix C-1 – Pretreatment Program Enforcement Response Plan on the website.	Jan 2022
3.3	Update the related links for Appendices C-2, C-3, and C-4 for sanitary sewer design and construction.	Jan 2022
3.7	Post the following Appendices on the website: o Appendix C-5 – Joint Exercise of Powers Agreement for the South Placer Wastewater Authority	Jan 2022

	o Appendix C-6 – Agreement Regarding the Operation and Use of the South Placer Regional Wastewater Facilities o Appendix C-7 – Wastewater Service Agreement by Contract and Operating Agreement between SASD, SRCSD and City of Roseville	
4.2	Post the following Appendices on the website: o Post Appendix D-1 – City of Roseville Sewer Map Grid System on the website. o Post Appendix D-9 – Mapping Update Policy on the website.	Jan 2022
4.3	Update SSMP Section 4.3 Overview with updated statistics about the City's service area, number of customers, miles of main, number of services, and number of lift stations. Also update the number of WWC employees.	Jan 2022
4.3	Update the following Appendices and post on the website: o Appendix D-2 – Maintenance Cleaning Schedule: Update with Maximo CCMS example o Appendix D-3 – CCTV Video Report o Appendix D-4 – SOP	Jan 2022
4.4	Describe the process/procedure for evaluating available data (i.e., CCTV, CMMS, GIS, capacity assessment, visual inspections, etc.), conducting a risk assessment to determine the assets to be renewed, and developing the R&R plan with its associated data. This was also included during the previous audit but has not been completed.	Jan 2022
4.4	Document the upcoming transition in responsibilities between WWC and EU Engineering in developing and operating the R&R plan by describing it in the SSMP. Confirm that field observations from WWC field crew are accounted for by EU Engineering when conducting risk assessment. This was also included during the previous audit but has not been completed.	Jan 2022
4.4	Post Appendix D-8 – Technical Memorandum O&M Program SSMP Audit-Rehabilitation and Replacement Plan (Element IVC) on the website.	Jan 2022
4.5	Update the following links: o The CWEA website link. o Appendix D-5 – CWEA Certification Handbook link.	Jan 2022
4.6	Update and post the following Appendices on the website: o Appendix D-6 – Equipment Inventory List o Appendix D-7 – Critical Replace Parts List	Jan 2022
5.2	Update Appendix E-1 – Sanitary Sewer Design link.	Jan 2022
5.3	Update Appendix E-2 – Sanitary Sewer System Construction link.	Jan 2022
5.3	Post Appendix E-3 – Technical Memo, SSMP Preparedness Audit Design and Performance Provisions Element V on the website.	Jan 2022
6.3	The WWC has developed a table of information specific to lift station response which includes all of the lift stations in the City and lists for each station; the average flow from the station, the wet well depth, the volume of the wet well, the available storage/downtime if the lift station goes down, the point at which a SSO will first occur if the lift station goes down, the assigned manhole for decanting if vacuum trucks are used to draw down the wet well, and the street location of the decant manhole. This information should be included as an Appendix in the OERP and the information for each lift station should be posted onsite at each respective lift station. This list should also be updated to incorporate new lift stations at Washington Blvd and 7600 Sierra College. This was also recommended during the previous audit but has not been implemented.	Jan 2022
6.3	Modify Figure 6-2 – SSO Procedure Flow Chat, to report SSO category 1 larger than 1,000 gallons to Cal OES within 2 hours per WDR requirements (currently if > 50,000 gal).	Jan 2022
6.3	Post Appendix F-1 – SSOERP on the website along with corresponding attachments	Jan 2022
6.7	Modify SSOERP Appendix C – Water Quality Sampling Procedures to the meet the requirements of the amended MRP.	Jan 2022

	o Account for spill travel time in the surface water and scenarios where monitoring may not be possible to safety concerns or access restrictions once an SSO has stopped. This may be estimated by dropping floatable debris, for instance, and measuring the time required to travel a certain distance. This was also recommended during the previous audit but has not been implemented. o Expand minimum sampling parameters to include appropriate bacterial indicators that have been specifically listed in the beneficial uses of the City's waterways or more broadly listed by the regional Basin Plan. This was also recommended during the previous audit but has not been implemented.	
6.7	Modify SSOERP Appendix C – Water Quality Sampling Procedures to include a list of all of the required equipment that the employee would need to conduct proper sampling. This was also recommended during the previous audit but has not been implemented.	Jan 2022
7.8	Modify the EU Engineering GIS database to include hotspot assets and FSEs and add them as layers to the maps that WWC receives.	Jan 2022
8.2	Modify Appendix I-1 of the SSMP to indicate that the system evaluation and capacity assurance plan will be reviewed and updated every 10 years. This was also recommended during the previous audit but has not been implemented.	Jan 2022
9.3	Incorporate system and financial measures recommended in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP.	Jan 2022
9.3	Update Appendix I-4 and modify it to include document location and review frequency.	Jan 2022
9.3	Modify I-4 – Key Performance Indicators (KPI) FOG section, to reflect the change in responsibilities from IWS to WWC.	Jan 2022
9.4	Consider addition of recommended PM measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	Jan 2022
9.6	Update Appendix I-3 – SSO History (last update 2013).	Jan 2022
9.6	Update SSO trends data in Appendix I-4 – KPI Benchmarking.	Jan 2022
9.6	Consider addition of recommended SSO measures in Table 18, from Appendix I-2 into Appendix I-4 and discard Appendix I-2 from the SSMP. The goal is to produce a single living KPI document that can be used to evaluate the effectiveness of SSMP elements.	Jan 2022
10.2	The SSMP must be recertified by the City Council. Last Certification was completed 4/7/2014. Per SSS WDR D.14, the City must have the SSMP updated and re-certified by the governing board (i.e. City Council) every five years.	Jan 2022
10.2	Post this SSMP internal audit to the City website.	Jan 2022
10.2	Schedule the next internal SSMP audit for July-August of 2023.	Jan 2022
10.2	Develop a description manual to replace Appendix J-1 and J-2 of the SSMP, to support each KPI element. This manual describes required information for KPI monitoring, including but not limited to: o Elements definition o How to fill each KPI items o Personnel responsible o Review frequency	Jan 2022
10.3	Update the SSMP change log and add it as an appendix to the SSMP, documenting all changes made to the SSMP since its last certification, indicating when an element was changed/updated and who authorized the change. An example of a change log is shown at Appendix 7.5. This was also recommended during the previous audit but has not been implemented.	Jan 2022
10.3	Document the submittal process for proposed changes to the SSMP. The process may include the following; identify the individual who maintains the most current version of the SSMP, the steps in which suggested modifications are received (by internal staff or the public), how	Jan 2022

	suggestions are routed to the individual/position responsible for the SSMP element associated with suggested modification, the process for review, and the process for updating the SSMP on the City website and documenting changes. This was also recommended during the previous audit but has not been implemented.	
11.2	As of September 2013, the State Water board amended the MRP of the SSS WDR and the City produced a training PowerPoint to City staff, council, and stakeholders regarding the update. Attach the PowerPoint to the SSMP website. This was also recommended during the previous audit but has not been implemented.	Jan 2022
11.2	Post Appendices K-1 – WWC WDR awareness Program and K-2 – Sanitary sewer regulations/WDR PowerPoint presentations on the website.	Jan 2022
11.2	Update Appendix K-3 – Two EU newsletters FOG/medications links.	Jan 2022
11.3	Update SSMP Appendix K-4 – FOG Outreach Program with marketing Plan budget & spending and post it on the website. Consider an additional metric to be used in the KPI that reflects the City's performance in terms of FOG outreach program. Few additional metrics are recommended in **Table 18**. This was also recommended during the previous audit but has not been implemented.	Jan 2022
11.4	Add the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD) as an appendix. This was also recommended during the previous audit but has not been implemented.	Jan 2022
11.4	Modify SSMP 11.4 to include the Agreement Regarding the Operation and Use of Wastewater Services between the Sacramento Area Sewer District (SASD) and the Sacramento Regional County Sanitation District (SRCSD). This was also recommended during the previous audit but has not been implemented.	Jan 2022
11.4	Post Appendix K-5 – Funding agreement related to south placer regional wastewater facilities on the website.	Jan 2022

SECTION 7 Appendices

7.1 Appendix – Historical SSO Data

7.2 Appendix – SSO Data Comparison Charts

7.3 Appendix – Structural SSO GIS Mapping

7.4 Appendix – Key Performance Indicators

7.5 Appendix – Change Log Example

7.1 Appendix – Historical SSO Data

Dated: FY 18/19, FY 19/20, and FY 20/21

Appendix 7.1 – Historical SSO Data for FY 18/19 to FY 20/21

#	Event ID	Date of SSO	Address	Spill Type	Spill Volume [gal]	Spill Recovered [gal]	Spill Recovery [%]	Spill Cause	Location
1	850146	7/30/2018	276 Spyglass Hill	Category 3	105	105	100%	Debris-Rags	LL
2	850517	8/8/2018	196 South Lincoln	Category 3	1	1	100%	Roots	LL
3	850609	8/9/2018	117 Meadowgate Drive	Category 3	26	0	0%	Roots	LL
4	850709	8/12/2018	117 Ash St	Category 3	13	3	23%	Roots	LL
5	851063	8/28/2018	300 Yosemite	Category 3	409	0	0%	Roots	LL
6	850868	8/28/2018	601 Douglas Blvd	Category 3	28	25	89%	Roots	LL
7	851163	9/9/2018	1201 Meadow Ln	Category 3	16	1	6%	Roots	LL
8	851297	9/19/2018	312 Folsom	Category 3	2	2	100%	Roots	Main
9	852004	10/4/2018	400 Elefa St	Category 3	17	15	88%	Roots	LL
10	852225	10/25/2018	9117 Moondancer Cir	Category 3	19	13	68%	Roots	LL
11	855199	12/21/2018	1331 Champagne Cir	Category 3	33	0	0%	Roots	LL
12	855472	12/23/2018	100 Alta Vista	Category 3	10	10	100%	Grease	Main
13	855930	1/12/2019	240 Duranta	Category 3	1	1	100%	Roots	LL
14	855675	1/15/2019	1211 Ross CT	Category 3	29	25	86%	Debris-Rags	LL
15	855986	1/20/2019	1018 Melrose Ave	Category 3	2	2	100%	Pipe/Structure Failure	LL
16	856355	1/28/2019	1040 Shenencock Way	Category 3	15	14	93%	Roots	LL
17	856617	2/4/2019	314 Folsom	Category 3	15	14	93%	Debris-Rags	LL
18	856801	2/6/2019	312 Folsom	Category 3	3	2	67%	Debris-Rags	Main
19	856820	2/19/2019	236 Elm St	Category 3	3	1	33%	Pipe/Structure Failure	LL
20	856798	2/24/2019	712 Hillcrest	Category 3	9	7	78%	Roots	LL
21	857431	3/18/2019	1044 Magnolia Way	Category 3	20	19	95%	Roots	LL
22	857531	3/30/2019	301 Coronado	Category 3	5	5	100%	Roots	LL
23	858014	4/12/2019	311 Circuit	Category 3	3	0	0%	Roots	LL
24	858150	4/19/2019	801 Vernon St	Category 3	15	12	80%	Debris-Rags	LL
25	858533	5/2/2019	2551 La Croix Dr	Category 3	6	4	67%	Debris-Rags	LL
26	858177	5/4/2019	276 SpyGlass Hill	Category 3	5	3	60%	Debris-Rags	LL
27	859382	5/12/2019	1121 Champion Oaks	Category 3	20	15	75%	Roots	LL
28	858540	5/14/2019	801 Vernon St	Category 3	4	3	75%	Debris-Rags	LL
29	858670	5/20/2019	146 Elm St	Category 3	22	13	59%	Roots	LL
30	858673	5/24/2019	130 Donner Ave	Category 3	11	10	91%	Roots	LL
31	860089	6/23/2019	348 B St	Category 3	2	2	100%	Roots	LL
32	861344	8/6/2019	312 Evelyn Ct	Category 3	3	0	0%	Roots	LL
33	861387	8/19/2019	233 D St	Category 3	18	8	44%	Roots	LL
34	861459	8/22/2019	1012 Audrey Way	Category 3	5	2	40%	Roots	LL
35	861492	9/2/2019	110 Zola Ave	Category 3	3	2	67%	Roots	LL
36	861672	9/14/2019	1420 Spring Valley Dr	Category 3	2	2	100%	Roots	LL
37	862432	9/15/2019	73 Bernice Ave	Category 3	9	8	89%	Roots	LL
38	862480	9/26/2019	300 Main St	Category 3	3	2	67%	Debris-Rags	LL
39	863062	10/8/2019	421 Pleasant St	Category 3	5	0	0%	Pipe/Structure Failure	LL
40	863198	10/16/2019	1008 Shearer st	Category 3	1	1	100%	Roots	LL
41	863091	10/21/2019	100 Atkinson St	Category 3	16	12	75%	Debris-Rags	LL
42	863728	11/9/2019	137 Cedar St	Category 3	8	6	75%	Roots	LL
43	863690	11/11/2019	921 Herbert St	Category 3	11	6	55%	Roots	LL
44	863729	11/20/2019	131 Elm St	Category 3	9	3	33%	Pipe/Structure Failure	LL
45	863634	11/23/2019	520 B St	Category 3	77	74	96%	Debris-Rags	LL

46	863785	12/3/2019	1005 Circuit Dr	Category 3	11	10	91%	Roots	LL
47	863909	12/13/2019	276 Spyglass Hill	Category 3	5	3	60%	Debris-Rags	LL
48	863802	12/15/2019	301 Bitner St	Category 3	33	31	94%	Roots	LL
49	863888	12/16/2019	501 Brookwood Dr	Category 3	20	19	95%	Roots	LL
50	864408	12/17/2019	1033 Portside Cir.	Category 3	9	8	89%	Debris-Rags	LL
51	864470	12/17/2019	1896 Ambridge Dr	Category 3	4	3	75%	Pipe/Structure Failure	LL
52	863893	12/27/2019	1940 Inglis Wy.	Category 3	13	12	92%	Roots	LL
53	864668	1/16/2020	910 Carol Ann Ct.	Category 3	20	19	95%	Roots	Main
54	864878	1/18/2020	2012 Cirby Way	Category 3	3	3	100%	Roots	LL
55	865188	1/20/2020	197 Donner	Category 3	2	1	50%	Debris-Other	LL
56	864796	1/28/2020	603 Rigby Ct	Category 3	40	38	95%	Debris-Rags	LL
57	865414	2/11/2020	1080 Douglas Blvd	Category 3	2	1	50%	Roots	LL
58	865218	2/23/2020	530 Loretto Dr	Category 3	1	0	0%	Roots	LL
59	865833	2/25/2020	640 Elefa St	Category 3	3	1	33%	Debris-Rags	LL
60	866387	3/22/2020	276 Spyglass Hill	Category 3	5	5	100%	Debris-Rags	LL
61	867100	4/14/2020	311 Manzanita	Category 3	16	14	88%	Debris-Rags	Main
62	866491	4/19/2020	1335 Chignahuapan Way	Category 3	9	9	100%	Debris-Rags	LL
63	866906	5/9/2020	400 Automall Dr	Category 3	154	139	90%	Contractor Cause	Main
64*	867987	6/21/2020	401 Coronado	Category 3	60	35	58%	Debris-Rags	Main
65	868910	9/5/2020	1600 Russel Way	Category 3	10	9	90%	Roots	LL
66	868986	9/13/2020	625 Windsor	Category 3	10	9	90%	Roots	LL
67	869306	9/15/2020	4100 Shorthorn Way	Category 3	89.2	32	36%	Debris-Rags	LL
68	869422	9/22/2020	1600 Kit Carson Way	Category 3	17	16	94%	Roots	LL
69	869983	10/11/2020	710 Vine Ave	Category 3	10	9	90%	Pipe/Structure Failure	LL
70	869767	10/11/2020	2006 Poliey Dr	Category 3	5	4	80%	Roots	LL
71	870006	10/22/2020	305 Union St	Category 3	1.5	0.28	19%	Roots	LL
72	870345	10/28/2020	2207 Lee Way	Category 3	6	4	67%	Roots	LL
73	870728	11/4/2020	420 Winfield Ct	Category 3	30	29	97%	Roots	LL
74	870959	11/11/2020	101 Sharon Way	Category 3	2	2	100%	Roots	LL
75	871000	11/24/2020	1559 Mistywood Dr	Category 3	55	0	0%	Roots	LL
76	871051	11/27/2020	1011 Oakland Ave	Category 3	64	44	69%	Pipe/Structure Failure	LL
77	871442	12/9/2020	609 Windsor Dr	Category 3	44	43	98%	Pipe/Structure Failure	Main
78	871608	12/14/2020	105 Half D St	Category 3	48	44	92%	Roots	LL
79	872084	12/22/2020	333 Atkinson St	Category 3	17	1	6%	Roots	LL
80	871663	12/26/2020	406 Berkeley	Category 3	2	0	0%	Roots	LL
81	871531	1/3/2021	538 Loretto Ave	Category 3	5	1	20%	Roots	LL
82	872200	1/5/2021	330 Circuit Dr	Category 3	5	1	20%	Pipe/Structure Failure	LL
83	872110	1/9/2021	1729 Tanglewood	Category 3	33	30	91%	Roots	Main
84	871602	1/10/2021	628 Main St	Category 3	49	46	94%	Roots	LL
85	872277	1/25/2021	420 Circuit Dr	Category 3	5	2	40%	Roots	LL
86	872331	2/4/2021	213.5 Irene	Category 3	2	1	50%	Pipe/Structure Failure	LL
87	872405	2/4/2021	221 Church St	Category 3	2	1	50%	Roots	LL
88	872635	2/8/2021	1326 Chignahuapan Way	Category 3	2	2	100%	Debris-Rags	LL
89	872485	2/9/2021	805 Clina Way	Category 3	17	15	88%	Debris-Rags	LL
90	873130	2/14/2021	1011 Circuit Dr	Category 3	46	41	89%	Roots	LL
91	873014	2/16/2021	209 Elm St	Category 3	19	0	0%	Pipe/Structure Failure	LL
92	872794	2/16/2021	224 Diamond Oaks Rd	Category 3	15	15	100%	Pipe/Structure Failure	LL
93	872482	2/18/2021	510 Highland Ave	Category 3	2	0	0%	Roots	LL

94	872632	2/26/2021	1467 West Colonial Pkwy	Category 3	2	1	50%	Pipe/Structure Failure	LL
95	872728	3/1/2021	329 Berkeley Ave	Category 3	9	8	89%	Pipe/Structure Failure	LL
96	872928	3/4/2021	115 Alta Vista Ave	Category 3	2	1	50%	Pipe/Structure Failure	LL
97	872853	3/9/20121	701 Lincoln St	Category 3	23	22	96%	Roots	LL
98	873302	3/11/2021	543 Alta Vista Ave	Category 3	31	25	81%	Roots	LL
99	873405	3/16/2021	406 Earl	Category 3	11	9	82%	Pipe/Structure Failure	LL
100	873615	3/24/2021	824 Atlantic St	Category 3	18	14	78%	Pipe/Structure Failure	LL
101	873317	3/27/2021	69 Bernice Ave	Category 3	1	0	0%	Roots	LL
102	873318	3/28/2021	206 Irene Ave	Category 3	3	3	100%	Roots	LL
103	873529	3/31/2021	100 Atkinson St	Category 3	20	2	10%	Pipe/Structure Failure	LL
104	873738	4/5/2021	243 Irene Ave	Category 3	1	0	0%	Contractor Cause	LL
105	873705	4/6/2021	2029 Polley Dr	Category 3	19	0	0%	Roots	LL
106	874120	4/12/2021	521 Main St	Category 3	2	1	50%	Roots	LL
107	873979	4/19/2021	1105 Muir Ct	Category 3	6	5	83%	Roots	LL
108	874115	4/21/2021	252 Elm St	Category 3	4	0	0%	Roots	LL
109	874206	4/28/2021	702 Vinewood	Category 3	12	3	25%	Roots	LL
110	873975	5/1/2021	1215 Sheffield Way	Category 3	2	1	50%	Roots	LL
111	873970	5/4/2021	1610 Old Hart Ranch Rd	Category 3	28	25	89%	Roots	LL
112	874471	5/17/2021	213 Half Irene Ave	Category 3	5	1	20%	Roots	LL
113	874814	5/30/2021	312 Earl Ave	Category 3	7	1	14%	Roots	LL
114	875444	6/28/2021	307 Brentwood Rd	Category 3	5	1	20%	Roots	LL

NOTES:

*Spill Report was entered in California Integrated Water Quality System Project (CIWQS). However City Spill Report was lost during Transition.

7.2 Appendix – SSO Data Comparison Charts

2018/2019 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	850146	105	105	105	105	0.156944	0.156944	0.006944	0.006944	1	0	Pipe Structural Problem/Failure	Debris-Rags	
2	850517	1	1	1	1	0.033333	0.033333	0.017361	0.017361	0	0	Root Intrusion	Roots	
3	850609	26	26	0	0	0.189583	0.189583	0.013889	0.013889	1	0	Root Intrusion	Roots	
4	850709	13	13	3	3	0.004167	0.004167	0.029167	0.029167	0	1	Pipe Structural Problem/Failure	Roots	
5	850868	28	28	25	25	0.765972	0.765972	0.006944	0.006944	1	0	Root Intrusion	Roots	
6	851063	409	409	0	0	2.180556	2.180556	0.011111	0.011111	1	0	Root Intrusion	Roots	
7	851163	16	16	1	1	0.046528	0.046528	0.03125	0.03125	0	1	Pipe Structural Problem/Failure - Installation	Roots	
8	851297	2	2	2	2	0.001389	0.001389	0	0.019444	0	0	Pipe Structural Problem/Failure	Roots	Incorrect Agency Notification time in CIWQS
9	852004	17	17	15	15	0.024306	0.024306	0.009028	0.009028	0	0	Root Intrusion	Roots	
10	852225	19	19	13	13	0.051389	0.051389	0.009028	0.009028	0	0	Root Intrusion	Roots	
11	855199	33	33	0	0	0.083333	0.083333	0.013889	0.013889	0	0	Root Intrusion	Roots	
12	855472	10	10	10	10	0.0625	0.0625	0.009722	0.009722	0	0	Grease Deposition (FOG)	Grease	
13	855675	29	29	25	25	0.072917	0.072917	0.006944	0.006944	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
14	855930	1	1	1	1	0.007639	0.007639	0.006944	0.006944	0	0	Root Intrusion	Roots	
15	855986	2	2	2	2	0.030556	0.030556	0.013194	0.013194	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
16	856355	15	15	14	14	0.115278	0.115278	0.009722	0.009722	0	0	Root Intrusion	Roots	
17	856617	15	15	14	14	0.035417	0.035417	0.021528	0.021528	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
18	856798	9	9	7	7	0.047222	0.047222	0.027778	0.027778	0	0	Root Intrusion	Roots	
19	856801	3	3	2	2	0.027083	0.027083	0.00625	0.00625	0	0	Pipe Structural Problem/Failure	Debris-Rags	
20	856820	3	3	1	1	0.045833	0.058333	0	0.0125	0	0	Pipe Structural Problem/Failure - Installation	Pipe/Structure Failure	Incorrect Operator Arrival time and SSO End time in CIWQS
21	857431	20	20	19	19	0.549306	0.549306	0.01875	0.01875	1	0	Root Intrusion	Roots	
22	857531	5	5	5	5	0.038889	0.049306	0.013889	0.013889	0	0	Root Intrusion	Roots	Incorrect SSO Start time in CIWQS
23	858014	3	3	0	0	0.217361	0.217361	0.018056	0.018056	1	0	Root Intrusion	Roots	
24	858150	15	15	12	12	0.0375	0.0375	0.009722	0.009722	0	0	Debris from Construction	Debris-Rags	
25	858177	5	5	3	3	0.050694	0.050694	0.020833	0.020833	0	0	Debris-Rags	Debris-Rags	
26	858533	6	6	4	4	0.044444	0.044444	0.023611	0.023611	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
27	858540	4	4	3	3	0.036111	0.036111	0.011806	0.011806	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
28	858670	22	22	13	13	0.05625	0.05625	0.004861	0.004861	0	0	Root Intrusion	Roots	
29	858673	11	11	10	10	0.041667	0.041667	0.0125	0.0125	0	0	Root Intrusion	Roots	
30	859382	20	20	15	15	0.054167	0.054167	0.019444	0.019444	0	0	Root Intrusion	Roots	
31	860089	2	2	2	2	0.0375	0.0375	0.017361	0.015972	0	0	Root Intrusion	Roots	Incorrect Agency Notification time in CIWQS
	Total	869	869	327	327	5.145833	5.16875	0.421528	0.452083	6	2			
				38%	38%									
	31													
	Avg					3:59:02	4:00:06	0:19:35	0:21:00					

2019/2020 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	861344	3	3	0	0	0.68125	0.68125	0.021528	0.011111	1	0	Root Intrusion	Roots	Incorrect Agency notification time in CIWQS
2	861387	18	18	8	8	0.041667	0.041667	0.013889	0.013889	0	0	Root Intrusion	Roots	
3	861459	5	5	2	2	0.021528	0.021528	0.014583	0.014583	0	0	Root Intrusion	Roots	
4	861492	3	3	2	2	0.109028	0.109028	0.031944	0.031944	0	1	Pipe Structural Problem/Failure	Roots	
5	861672	2	2	2	2	0.000694	0.000694	0	0.011111	0	0	CS Mainentance Caused Spill/Damage	Roots	Incorrect Agency notification time in CIWQS
6	862432	9	9	8	8	0.034028	0.034028	0.023611	0.023611	0	0	Root Intrusion	Roots	
7	862480	3	3	2	2	0.036111	0.036111	0.025694	0.025694	0	0	Debris-Rags	Debris-Rags	
8	863062	5	5	0	0	0.533333	0.533333	0.016667	0.016667	1	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
9	863091	16	16	12	12	0.038194	0.038194	0.027778	0.027778	0	0	Debris-Rags	Debris-Rags	
10	863198	1	1	1	1	0.022222	0.022222	0.011806	0.011806	0	0	Root Intrusion	Roots	
11	863634	77	77	74	74	0.043056	0.043056	0.011806	0.011806	0	0	Debris-Rags	Debris-Rags	
12	863690	13	11	6	6	0.027778	0.027778	0.017361	0.017361	0	0	Root Intrusion	Roots	
13	863728	8	8	6	6	0.040278	0.04375	0.028472	0.028472	0	1	Root Intrusion	Roots	Incorrect SSO Start time in CIWQS- off by 5 mins
14	863729	9	9	3	3	0.601389	0.601389	0.007639	0.007639	1	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
15	863785	11	11	10	10	0.029167	0.029167	0.009722	0.009722	0	0	Root Intrusion	Roots	
16	863802	33	33	31	31	0.039583	0.039583	0.008333	0.008333	0	0	Root Intrusion	Roots	
17	863888	20	20	19	19	0.032639	0.032639	0.011806	0.011806	0	0	Root Intrusion	Roots	
18	863893	13	13	12	12	0.015972	0.015972	0.005556	0.005556	0	0	Root Intrusion	Roots	
19	863909	3	5	1	3	0.020139	0.020139	0.009722	0.009722	0	0	Debris-Rags	Debris-Rags	
20	864408	9	9	8	8	0.011806	0.011806	0.013889	0.013889	0	0	Debris-Rags	Debris-Rags	
21	864470	4	4	3	3	0.0375	0.0375	0.022222	0.022222	0	0	Root Intrusion	Pipe/Structure Failure	
22	864668	20	20	19	19	0.006944	0.006944	0.008333	0.008333	0	0	Root Intrusion	Roots	
23	864796	40	40	38	38	1.020833	0.020833	0.008333	0.008333	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	
24	864878	3	3	3	3	0.010417	0.010417	0.01875	0.01875	0	0	Root Intrusion	Roots	
25	865188	2	2	1	1	0.006944	0.006944	0.017361	0.017361	0	0	Pipe Structural Problem/Failure	Debris-Other	
26	865218	1	1	0	0	0.020833	-0.01181	0.016667	0.016667	0	0	Root Intrusion	Roots	SSO End Time on City Spill Report does not make sense.
27	865414	2	2	1	1	0.034722	0.034722	0.013889	0.013889	0	0	Root Intrusion	Roots	
28	865833	3	3	1	1	0.073611	0.073611	0	0	0	0	Debris-Wipes/Non-Dispersables	Debris-Rags	Notification time and Arrival time occurred at the same time. This a a operator noticed spill.
29	866387	5	5	5	5	0.040278	0.040278	0.029861	0.029861	0	1	Debris-Wipes/Non-Dispersables	Debris-Rags	
30	866491	9	9	9	9	0.832639	0.832639	0.005556	0.005556	1	0	Debris-Rags	Debris-Rags	
31	866906	154	154	149	139	0.106944	0.106944	0.015972	0.015972	0	0	Damage by Others Not Related to CS Construction/Maintenance (Specify Below)	Contractor Cause	
32	867100	16	16	14	14	0.039583	0.039583	0.015972	0.015972	0	0	Debris-Rags	Debris-Rags	
33	867987	60	0	35	0	1.704861	0	0.034722	0	0	0	Debris-Rags	Debris-Rags	CIty spill report is missing no way to compare info
	Total	580	520	485	442	6.315972	2.465972	0.519444	0.485417	4	3			
				84%	85%									
	33													
	Avg					4:35:36	1:47:36	0:22:40	0:21:11					

2020/2021 SSO Data Comparison

		Spill Volume		Rec Volume		SSO Duration		Response Time		Duration	Response	Cause		
	EVENT ID	CIWQS	City	CIWQS	City	CIWQS	City	CIWQS	City	>3 hr	>40 min	CIWQS	City	Notes
1	868910	10	10	9	9	0.020833	0.020833	0.010417	0.010417	0	0	Root Intrusion	Roots	
2	868986	10	10	9	9	0	0.025694	0.015278	0.015278	0	0	Root Intrusion	Roots	Incorrect Spill End Date was entered in CIWQS. Should be 9/13, but 9/3 was entered. Time was correct.
3	869306	90	89.2	32	32	0.600694	0.600694	0.015278	0.015278	1	0	Debris-Wipes/Non-Dispersables	Debris-Rags	Incorrect Spill Volume Reported to CIWQS.
4	869422	17	17	16	16	0.029167	0.029167	0.01875	0.01875	0	0	Root Intrusion	Roots	
5	869767	5	5	4	4	0.025	0.025	0.014583	0.014583	0	0	Root Intrusion	Roots	
6	869983	10	10	9	9	0.021528	0.021528	0.011111	0.011111	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
7	870006	2	1.5	0	0.28	3.945833	3.945833	0.009028	0.009028	1	0	Root Intrusion	Roots	Incorrect Spill Volume and Recovered Volume Reported to CIWQS
8	870345	6	6	4	4	0.028472	0.028472	0.018056	0.018056	0	0	Root Intrusion	Roots	
9	870728	30	30	29	29	0.015278	0.015278	0.013194	0.013194	0	0	Root Intrusion	Roots	
10	870959	2	2	2	2	0.020139	0.020139	0.008333	0.008333	0	0	Root Intrusion	Roots	
11	871000	55	55	0	0	0.664583	0.664583	0.00625	0.00625	1	0	Root Intrusion	Roots	
12	871051	64	64	44	44	1.996528	1.996528	0.001389	0.001389	1	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
13	871442	44	44	43	43	0.03125	0.03125	0.007639	0.007639	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
14	871531	5	5	1	1	0.032639	0	0.022222	0.022222	0	0	Root Intrusion	Roots	Incorrect End Spill time entered in CIWQS. Spill was not active upon arrival.
15	871602	49	49	46	46	0.329861	0.329861	0.009028	0.009028	1	0	Root Intrusion	Roots	
16	871608	48	48	44	44	0.041667	0.041667	0.00625	0.00625	0	0	Root Intrusion	Roots	
17	871663	2	2	0	0	0.020833	0	0.016667	0.017361	0	0	Root Intrusion	Roots	Incorrect Agency Notification time in CIWQS. No SSO end time in City report or Narrative. Unknown when Spill ended.
18	872084	17	17	1	1	0.041667	0.041667	0.007639	0.004861	0	0	Root Intrusion	Roots	Incorrect Agency Notification time in CIWQS
19	872110	33	33	30	30	0.15625	0.15625	0.006944	0.006944	1	0	Root Intrusion	Roots	
20	872200	5	5	1	1	0.0375	0.0375	0.004167	0.004167	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
21	872277	5	5	2	2	0.052778	0.020833	0.010417	0.010417	0	0	Root Intrusion	Roots	Incorrect End Spill time entered in CIWQS. Spill was not active upon arrival.
22	872331	2	2	1	1	0.056944	0.056944	0.014583	0.014583	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
23	872405	2	2	1	1	0.010417	0.010417	0.011806	0.011806	0	0	Root Intrusion	Roots	
24	872482	2	2	0	0	0.529861	0.529861	0.013889	0.013889	1	0	Root Intrusion	Roots	
25	872485	17	17	15	15	0.003472	0.003472	0	0.01875	0	0	Debris from Lateral	Debris-Rags	Incorrect Agency Notification time in CIWQS
26	872632	2	2	1	1	0.010417	0.010417	0.008333	0.008333	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
27	872635	2	2	2	2	0.071528	0.071528	0.026389	0.026389	0	0	Root Intrusion	Debris-Rags	
28	872728	9	9	8	8	0.001389	0.001389	0	0.009722	0	0	Debris from Lateral	Pipe/Structure Failure	Incorrect Agency Notification time in CIWQS
29	872794	15	15	15	15	0.052083	0.054167	0.009722	0.008333	0	0	Root Intrusion	Pipe/Structure Failure	Incorrect End spill time and Agency notification time in CIWQS
30	872853	23	23	22	22	0.048611	0.048611	0.007639	0.007639	0	0	Root Intrusion	Roots	
31	872928	2	2	1	1	0.010417	0.010417	0.00625	0.00625	0	0	Root Intrusion	Pipe/Structure Failure	
32	873014	19	19	0	0	0.0625	0.0625	0.009722	0.009722	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
33	873130	46	46	41	41	0.111806	0.111806	0.025694	0.025694	0	0	Root Intrusion	Roots	
34	873302	31	31	25	25	2.027083	2.027778	0.004861	0.004861	1	0	Root Intrusion	Roots	
35	873317	1	1	0	0	0.034028	0.034028	0.023611	0.023611	0	0	Root Intrusion	Roots	
36	873318	3	3	3	3	0.011806	0.011806	0.020833	0.020833	0	0	Root Intrusion	Roots	
37	873405	11	11	9	9	0.024306	0.024306	0.013889	0.013889	0	0	Pipe Structural Problem/Failure	Pipe/Structure Failure	
38	873529	20	20	2	2	0.604167	0.604167	0.009028	0.009028	1	0	Grease Deposition (FOG)	Pipe/Structure Failure	

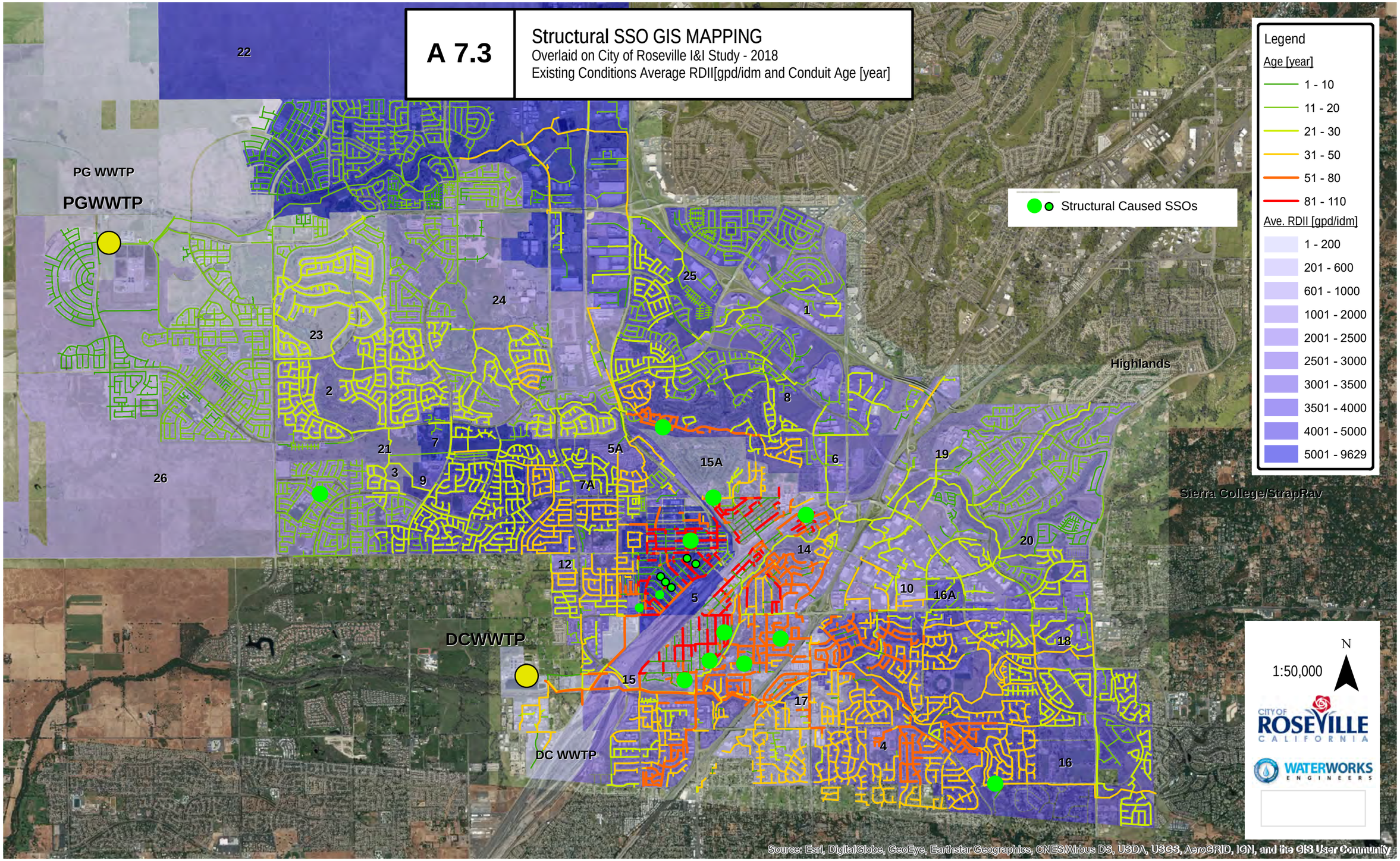
7.3 Appendix – Structural SSO GIS Mapping

A 7.3

Structural SSO GIS MAPPING

Overlaid on City of Roseville I&I Study - 2018

Existing Conditions Average RDII[gpd/idm and Conduit Age [year]



7.4 Appendix – Key Performance Indicators

SSS WDR Ref.	Description	Performance Indicator	Unit	Target	KPI Data FY 14/15	KPI Data FY 15/16	KPI Data FY 16/17	KPI Data FY 17/18	KPI Data FY 18/19	KPI Data FY 19/20	KPI Data FY 20/21	Audit Frequency	Responsible Party
D.ii.c	Chain of Communication	Average response to customer inquiry	Minute	40	19.58	23	20	21	20	21	21	Quarterly	WW Superintendent
		Total customer service requests	Number	0	915	1549	533	302	288	523	325	Quarterly	WW Superintendent
		Total sewer odor complaints	Number	0	9	43	50	39	45	10	24	Quarterly	WW Superintendent
		Average rating in customer service card	Number	5	5	5	5	5	5	5	5	Quarterly	WW Superintendent
D.iv.a	Maps	Average response time to map update requests	Days	90	90	90	90	90	90	90	90	Quarterly	WW Superintendent
D.iv.b	PM Activities	Manholes Inspection performed	Number	0	2493	3575	1547	1511	149	293	88	Quarterly	WW Superintendent
		Sewer main flushed per year	Miles	250	284	248	295	283.12	226.1	235.9	296.14	Quarterly	WW Superintendent
		Sewer laterals mechanically cleaned (eeled) per year	Miles	8	14.32	14.77	7.41	1.07	268	235	74	Quarterly	WW Superintendent
		Working staff time to PM program	%	80%	85%	82%	82%	84%	84%	83%	84%	Quarterly	WW Superintendent
		Number of customer accounts per WW employee	Number	561	1517	1554	1772	1757	1943	1873	1873	Quarterly	WW Superintendent
		Average cost of hydro cleaning	$/lf	$0.36	$0.32	$0.33	$0.29	$0.32	$0.34	$0.34	$0.34	Annually	WW Superintendent
		Average cost of sewer mechanical cleaning	$/lf	$1.60	$1.20	$0.77	$0.94	$1.66	$0.30	$0.30	$0.30	Annually	WW Superintendent
D.iv.c	R&R Plan	Manholes rehabilitated	Number	50	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		Sewer main CCTV inspected per year	Miles	30	75	84.32	59.71	64.1	119.9	94.65	38.57	Quarterly	WW Superintendent
		Sewer laterals CCTV inspected per year	Miles	16	26	35.71	32.51	36.14	29.74	22.46	27.88	Quarterly	WW Superintendent
		Sewer cleanouts installed per year	Number	75	76	83	144	141	67	118	58	Quarterly	WW Superintendent
		Sewer Laterals Rehabilitated	Number	50	48	60	85	89	74	82	110	Quarterly	WW Superintendent
		Total miles rehabed or replaced per year (main)	Miles	5	6	0	0	1.07	0.05	0.09	3.4	Annually	EU Engineering
		Total miles rehabed or replaced per year (lateral)	Miles	0.25	0.16	0.27	0.66	0.42	0.45	0.46	0.62	Annually	EU Engineering
		Annual capitol budget sewer rehab/replacement	$/M	$1.80	$1.05	$1.36	$2.61	$2.25	$2.70	$2.70	$2.10	Annually	WW Superintendent
		Average cost of CCTV main	$/lf	$0.53	$0.41	$0.41	$0.36	$0.40	$0.60	$0.75	$1.85	Annually	WW Superintendent
		Average cost of CCTV lateral	S/lf	$1.34	$1.11	$1.15	$1.04	$1.00	$1.24	$1.29	$1.28	Annually	WW Superintendent
D.iv.d	Training	On the job accidents	Number	0	5	3	3	4				Quarterly	EU Safety Coordinator
D.iv.e	Critical Parts	% of required numberof identified critical parts are stocked	%	100	100	100	100	100	100	100	100	Annually	Materials Technician
D.v.a&b	Construction	% of new sewer main accepted vs. inspected	%	100	100	100	100	100	100	100	100	Annually	WW Supervisor
		% of new sewer lateral accepted vs. inspected	%	100	100	100	100	100	100	100	100	Annually	WW Supervisor
D.vi.a	Notification	Average response time to SSO	Minutes	40	20	23	20	17	21	22	17	Quarterly	WW Superintendent
D.vi.b	SSO Response	Average SSO duration (main)	Minutes	40	n/a	70	0	0	0	154	146	Quarterly	WW Superintendent
		Average SSO duration (lateral)	Minutes	40	n/a	37	48	36	171	245	285	Quarterly	WW Superintendent
D.vii.a	Public Education	FOG public education outreach program events per year	Number	4	3	4	3	3	2	1	1	Annually	Environmental Utilities PIO
D.vii.b	FOG Disposal	Gallons of FOG curbside pickup per year	Gallons	25	179.75	293.1	373.25	296	506	323	595	Quarterly	Refuse Division
D.vii.d	BMPs &Devices	% of total FSE's with grease removal devices	%	90	90	97	98	98	98	98	98	Annually	Ind Waste Technician
		% of total FSE's with a variance	%	5	4	4	4	4	4	4	4	Annually	Ind Waste Technician
D.vii.e	FOG Inspections	FSE FOG inspections per year	Number	294	n/a	n/a	181	231	N/A	N/A	221	Quarterly	Ind Waste Technician
		Number of new FSE permits issued per year	Number	5	n/a	n/a	40	46	N/A	N/A	36	Quarterly	Ind Waste Technician
D.vii.f	Hot Spots	% of hotspot pipes CCTV inspected each year	%	100%	100%	100%	100%	100%	100%	100%	100%	Annually	WW Supervisor
		Number of SSO's caused by hot spots	Number	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		SSO volume casued by hot spots	Gallons	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		Total number of SSO's mains and laterals	Number	76	42	39	24	25	31	32	51	Quarterly	WW Superintendent
		Total volume SSO's mains and laterals	Gallons	2000	1202	2523	1086	1565	869	517	772	Quarterly	WW Superintendent
		% of total SSO volume recovered	%	100	94.5	95.42	91.25	53.86	37.63	86.8	63	Quarterly	WW Superintendent
		Total number of wet weather SSO's	Number	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		Total volume of wet weather SSO's	Gallons	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent

D.ix.e	SSO Trends	% of SSO's caused by FOG (main)	%	1	50	50	0	0	100%	0	0	Quarterly	WW Superintendent
		% of SSO's caused by roots (main)	%	70	0	0	0	0	0	0	50%	Quarterly	WW Superintendent
		% of SSO's caused by debris/rags (main)	%	0	0	0	0	0	0	100%	50%	Quarterly	WW Superintendent
		Number of SSO's caused by LS failure	Number	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		Number of SSO's caused by pipe/structural failures	Number	0	0	1	1	3	1	3	14	Quarterly	WW Superintendent
		% of SSO's caused by FOG (laterals)	%	10	0	0	0	0	0	0	0	Quarterly	WW Superintendent
		% of SSO's casued by roots (laterals)	%	75	77.5	84	87	48	20	16	35	Quarterly	WW Superintendent
		% of SSO's casued by debris/rags (laterals)	%	0	12.5	10.8	9	28	9	11	2	Quarterly	WW Superintendent
		Repeats SSO's within two years	Number	0	2	0	0	0	4	1	1	Quarterly	WW Superintendent
		Number of Category 1 SSO's	Number	0	0	0	0	1	0	0	0	Quarterly	WW Superintendent
		SSO's/100 miles of pipe/year- Category 2	Number	2	0	1	0	0	0	0	0	Quarterly	WW Superintendent
		SSO's/100 miles of pipe/year - lateral	Number	15	16.26	15.04	9.35	8.81	9.56	10.24	16.38	Quarterly	WW Superintendent
		SSO's/100 miles of pipe/year -mains	Number	0.6	0.4	0.4	0	0.19	0.52	0.52	0.35	Quarterly	WW Superintendent
		Flooding claims per year	Number	0	1	0	0					Quarterly	WW Superintendent
		Total Cost of claims per year	$	0		0	0					Quarterly	Risk Management

7.5 Appendix – Change Log Example

3.5 References

3.5.1 SSMP Sample Change Log

{Insert Enrollee Name}
Sewer System Management Plan
Change Log

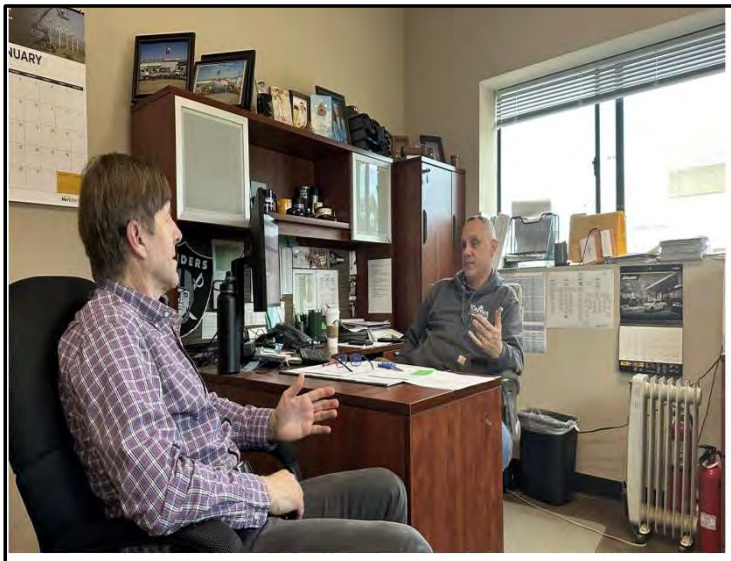
Date	SSMP Element/ Section	Description of Change/Revision Made	Change Authorized By:

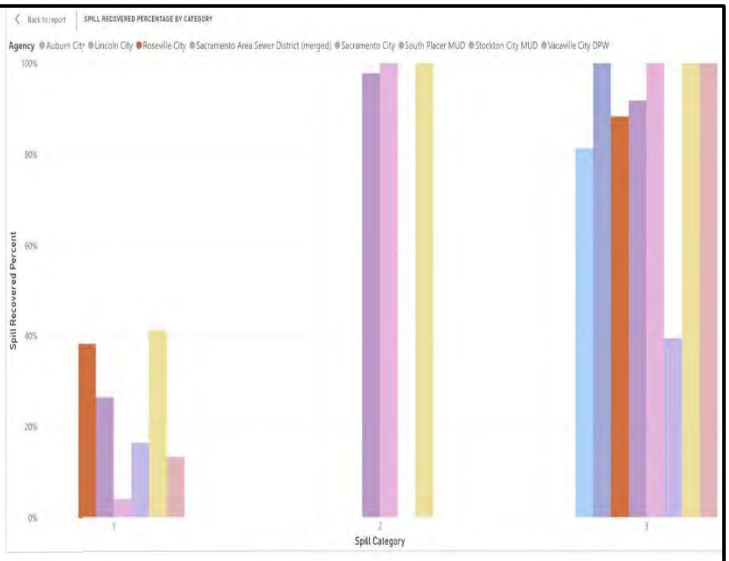
Appendix 10-6

SSPM Audit Fiscal Years 22/23 and 23/24

Sewer System Management Plan (SSMP) Audit

(May 2022 to May 2024)









CITY OF ROSEVILLE CALIFORNIA

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CERTIFICATE

OF COMPLETION

CITY OF ROSEVILLE

Sewer System Management Plan Audit

May 2022-May 2024

- *Regulatory review, agency expectations and compliance best practices.*
- *Regional Water Quality Control Board inspector expectations.*
- *Completion of State Water Board Pre-Inspection Questionnaire*
- *Completion of Compliance Evaluation Inspection (CEI).*
- *Findings/Best Practice Recommendations for further improving agency program effectiveness, compliance, and resilience.*

FISCHER LLC COMPLIANCE
REGULATORY BEST PRACTICES

Jim Fischer

James Fischer, PE (NPDES Compliance Inspector)

May 7, 2024

FISCHER LLC COMPLIANCE
PRACTICES THAT COMPLY

3230 Arena Blvd, Suite #245.
Sacramento, CA 95834
916.606.5275
FischerCompliance.com

Mr. Dan Pruden
Collection System Superintendent
1800 Booth Road
Roseville, CA 95747

June 11, 2024

Dear Mr. Pruden,

We are pleased to present the 2022-2024 Sewer System Management Plan (SSMP) Audit for the City of Roseville (Attachment 1).

The SSMP Audit revealed the City is in full compliance with Attachment D-10 of the Reissued WDR (State Water Board Order No. 2022-0103-DWQ). The Audit also shed light on many City successful work programs in place. When comparing the City spill performance metrics with other collection systems in the Central Valley Regional Water Board area and throughout the State, the City performs near the top.

Detailed document reviews incorporating USEPA/Water Board inspection standards, an onsite simulated compliance inspection, and interviews with management and field staff were relied on for generating final findings and best practice recommendations in the report.

We look forward to supporting the City with its ongoing training, work program/process improvements, and implementation of the SSMP Audit findings to comply with the Reissued WDR.

Sincerely,

Jim Fischer

James Fischer, P.E.
Principal, Credentialed U.S. EPA NPDES Compliance Inspector

Attachment 1 (2022-2024 Sewer System Management Plan Audit Report)

PART 1 (Executive Summary)

The City of Roseville (City) is charged with complying the State Water Resources Control Board (SWRCB) General Reissued Waste Discharge Requirements (WDR) for Sanitary Sewer Systems ("Reissued WDR", Order No. 2022-0103-DWQ). The Reissued WDR replaced the original 2006 WDR (Order No. 2006-003-DWQ and its Monitoring and Reporting Program, Order No. 2013-0058-EXEC), which became effective on June 5, 2023.

The Reissued WDR requirements are the strictest sewer regulations in the country requiring a proactive approach for operations, maintenance, and management of sanitary sewer collection system to reduce or eliminate sewer spills. Attachment D-10 of the Reissued WDR requires periodic SSMP Audits to be completed by the City at least every three years.

To comply with the SSMP Audit requirements, Fischer Compliance LLC in collaboration with City management completed a Sewer System Management Plan (SSMP) Audit covering May 2021 through May 2024.



This Audit report meets and exceeds the minimum requirements specified in the Reissued WDR (Attachment D-10 and Specifications 5.4), scaled to the size/complexity of the City's sewer system.

Regulatory Background

The Reissued WDR requires local public sewer collection system agencies, referred to as "Enrollees," to develop a Sewer System Management Plan (Sewer System Management Plan). Sewer System Management Plans must be audited (by City staff or outside consultants) at least every three (3) years and updated every five (6) years according to the Water Board's regulatory schedule.

2006 WDR: To provide a consistent, statewide regulatory approach to address sewage spills, the State Water Resources Control Board (State Water Board) adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Order No. 2006-0003 (SSS WDRs), on May 2, 2006. All public agencies that own or operate a sanitary sewer system that is comprised of more than one mile of pipes or sewer lines that convey wastewater to a publicly owned treatment facility were required to apply for coverage under the Order.

2022 WDR: The 2006 WDR was rescinded and replaced with a "Reissued WDR" (Order No. 2022-0103-DWQ), adopted on December 5, 2023 which became effective on 6/5/2023. The Reissued WDR updates many aspects of the 16-year-old Order and includes a number of new requirements for Sewer System Management Plans.

SSMP Audit Procedures

A comprehensive SSMP Audit incorporating procedures developed by Fischer Compliance LLC was completed in June 2024. To complete of the SSMP Audit, the following key elements were incorporated for the SSMP assessments:

- Evaluation of pre-Inspection questionnaires
- Interviews with City collection management and field including both online and onsite conferences

- Completion of a Compliance Evaluation Inspection (CEI) incorporating standards and procedures utilized by U.S. EPA and the Water Boards to evaluate sanitary sewer system compliance (see Appendix 1)
- Review of the City's 2022 Sewer System Management Plan (SSMP)
- Review of City spill reports, system data, and other documentation
- Incorporation of guidelines and recommendations for SSMPs published by the Bay Area Clean Water Agencies (BACWA)[1].

Collection System Information

The City owns and operates sanitary sewer collection system (collection system) serving a population of approximately 151,901 and includes a total of 53,720 sanitary sewer connections. The collection system consists of approximately 590 miles of gravity sewer mains, 8 miles of pressure ("force main") sewers, and 17 individual sewage lift/pump stations.

Figure 1 below provides an overview of the City's current sanitary sewer system service area.

[1] *Available for download at: https://bacwa.app.box.com/s/cucxst3w2c4fl53jopuyayt6b3u4xjs5/file/1489440015726*

Figure 1: City sanitary sewer system service area

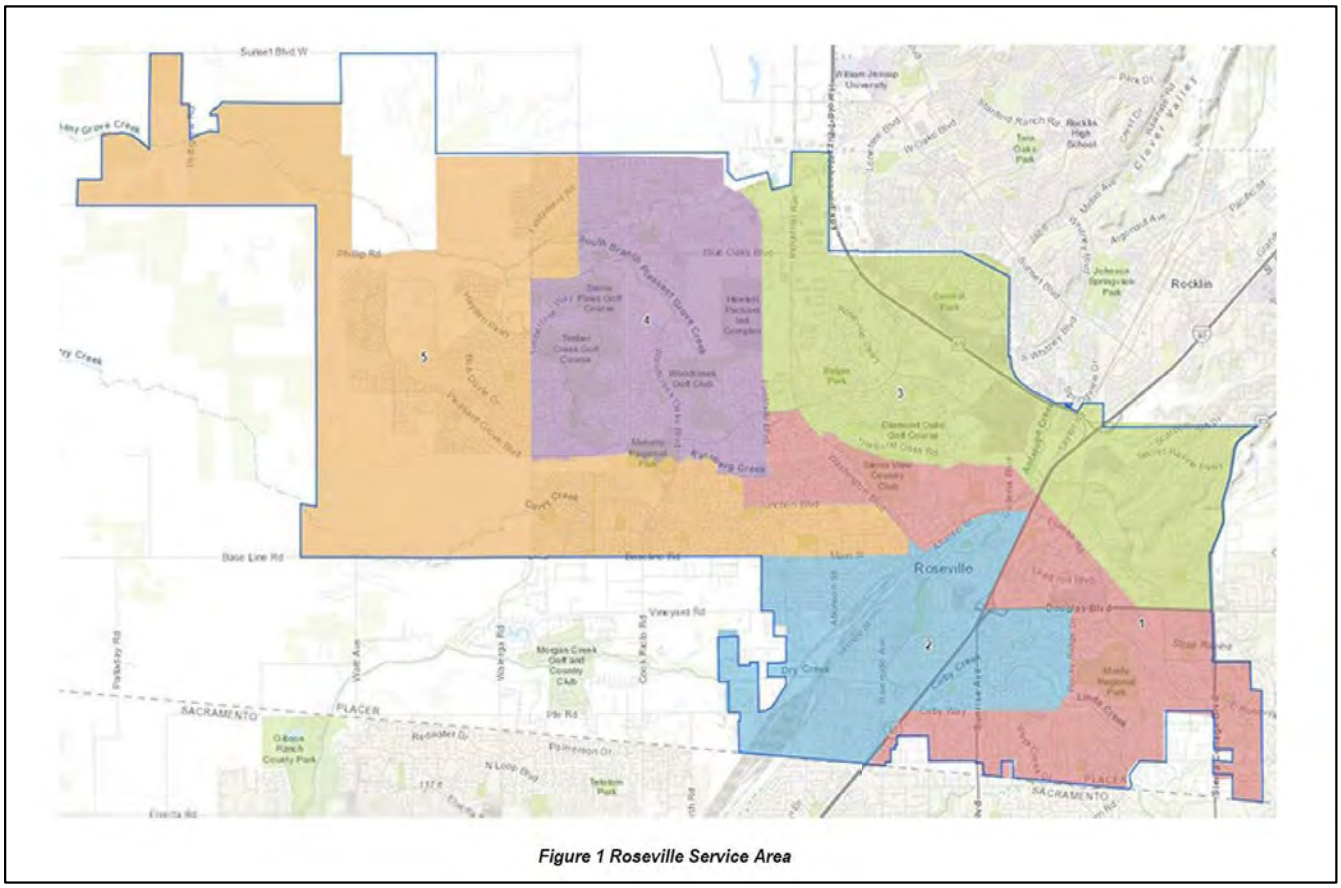


Figure 1 Roseville Service Area

Figure 2, below provides current City regulatory measures data published in the State Water Board Database (CIWQS)[2].

[2]*California Integrated Water Quality System (CIWQS), availably publicly at the following link:* *https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=drilldown&reportName=facilityAtAGlance&placeID=630701&reportID=7029229*

Figure 2: CIWQS regulatory measures information (City of Roseville, WDID # 5SPILL10935)

DRILLDOWN HISTORY: [BACK TO FACILITY LIST]
Place ID **630698**

General Information

Region	Place ID	Place Name	Place Type	Place Address	Place County
5S	630698	Dry Creek CS	Collection_System	2005 Hilltop Roseville, CA, 95747	Placer

Related Parties

Party	Party Type	Party Name	Role	Classification	Relationship Start Date	Relationship End Date
525944	Person	Chris Bracco	Is A Data Submitter For		01/29/2024	
633100	Person	Charles Cody Wilbanks	Is A Data Submitter For		05/12/2022	
532117	Person	Bryan Richard Buchanan	Is Onsite Manager For		05/02/2022	
543932	Person	Daniel Pruden	Is Onsite Manager For		01/28/2021	
610349	Person	Todd Jordan	Is Onsite Manager For		07/31/2020	03/07/2023
607016	Person	JAMES ISAAC VANDEVEER	Is A Data Submitter For		02/26/2020	04/05/2023
606422	Person	Michael Ryan	Is A Data Submitter For		02/06/2020	
606277	Person	joseph wade lightle	Is A Data Submitter For		01/31/2020	04/20/2022
606278	Person	Shane Rodgers	Is A Data Submitter For		01/31/2020	
543932	Person	Daniel Pruden	Is A Data Submitter For		10/24/2013	03/02/2021
534771	Person	Brian Bracco	Is Onsite Manager For		07/11/2012	01/26/2021
526457	Person	Dale Olson	Is Onsite Manager For		04/04/2011	08/14/2012
525944	Person	Chris Bracco	Is A Data Submitter For		02/18/2011	07/13/2012
525529	Person	Kenneth J. Glotzbach	Is Onsite Manager For		02/10/2011	
516794	Person	Kim Spear	Is Onsite Manager For		10/26/2009	05/24/2010
54788	Person	Arthur O'Brien	Is Onsite Manager For		10/23/2009	12/23/2010
388834	Person	Mark Cossairt	Is Onsite Manager For		07/16/2007	02/10/2011
11142	Organization	Roseville City	Owner	City Agency	10/12/2006	

Total Related Parties: 18

Regulatory Measures

Reg Measure ID	Reg Measure Type	Region	Program	Order No.	WDID	Effective Date	Expiration Date	Status	Amended?
301426	Enrollee - WDR	5S	SSOMUNILRG	2022-0103-DWQ	5SSO10935	08/03/2006		Active	N

Total Reg Measures: 1

Violations

Violation ID	Occurred Date	Violation Type	(-) Violation Description	Corrective Action	Status	Classification	Source

Report displays most recent five years of violations. Refer to the Interactive Violation Report for more data.

Total Violations: 0 **Priority Violations: 0**

*Click the "(+/-) Violation Description" link to expand and contract the violation description.
*As of 5/20/2010, the Water Board's Enforcement Policy requires that all violations be classified as 1, 2 or 3, with class 1 being the highest. Prior to this, violations were simply classified as Yes or No. If a 123 classification has been assigned to a violation that occurred before this date, that classification data will be displayed instead of the Yes/No data.

Violation Types

Enforcement Actions

Enf Id	Enf Type	Enf Order No.	Effective Date	Status
389207	Notice of Violation		02/19/2013	Historical

Total Enf Actions: 1

Inspections

Inspection ID	Inspection Type	Lead Inspector	Actual End Date	Planned	Violations	Attachment

Total Inspections: 0 **Last Inspection: None**

City SSMP/Audit Due Dates

This section provides an overview of upcoming due dates for the City to update its SSMP and complete its next SSMP Audit. Figure 4 below displays a summary of the upcoming due dates for the City (5/2/2025 for its next SSMP Update and 12/2/2024 for its next SSMP Audit) required under the Reissued WDR.

Figure 4: City of Roseville SSMP/Audit Due Dates

Sewer System Management Plan & Audit Required Due Dates
Transition from General Order 2006-0003-DWQ to Reissued General Order

Search by Waste Discharge Identification (WDID) Number

Enter your Waste Discharge Identification (WDID) number in the search field to retrieve the required Sewer System Management Plan (SSMP) Update and Audit due dates for your system

5SSO10935

Show Update/Audit Dates

Sewer System Management Plan & Subsequent Update Due Dates

System Name	WDID Number	Original Plan Required Due Date	Required Plan Update Due Date	Required Plan Update Due Date	Required Plan Update Due Date*
Dry Creek CS	5SSO10935	5/2/2009	5/2/2014	5/2/2019	5/2/2025

Audit Due Dates

System Name	WDID Number	Original Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	End of Required 3-Year Audit Period**
Dry Creek CS	5SSO10935	5/2/2011	5/2/2013	5/2/2015	5/2/2017	5/2/2019	5/2/2021	5/2/2024

* Per Section 5.5 and Attachment E1, Section 3.11 of the General Order, Plan updates are due within six years after the required due date of the Enrollee's last Plan Update.

** Per Section 5.4 and Attachment E1, Section 3.10 of the General Order, the Audit Report is due within six months after the end of the required 3-year audit period.

City Spill Performance

This section provides an overview to showcase City spill performance information, including trends and benchmarks to allow a comparison of the City's performance against other collection system agencies within the Central Valley Regional Board area and State. Numerous data sets and visualizations were created (see Figures 5-8 below and Appendix 3, City Spill Performance Benchmark Report). As displayed in many of the visualizations, the City's spill rates and volumes discharged during the Audit period were consistently lower than most other sanitary sewer system agencies of comparable size located within the Central Valley Regional Board area. Additional visualizations, data, and observations are included in Appendix 3.

Figure 5: City of Roseville Spill Rates (# of spill per 100 miles of sewers) compared with other agencies

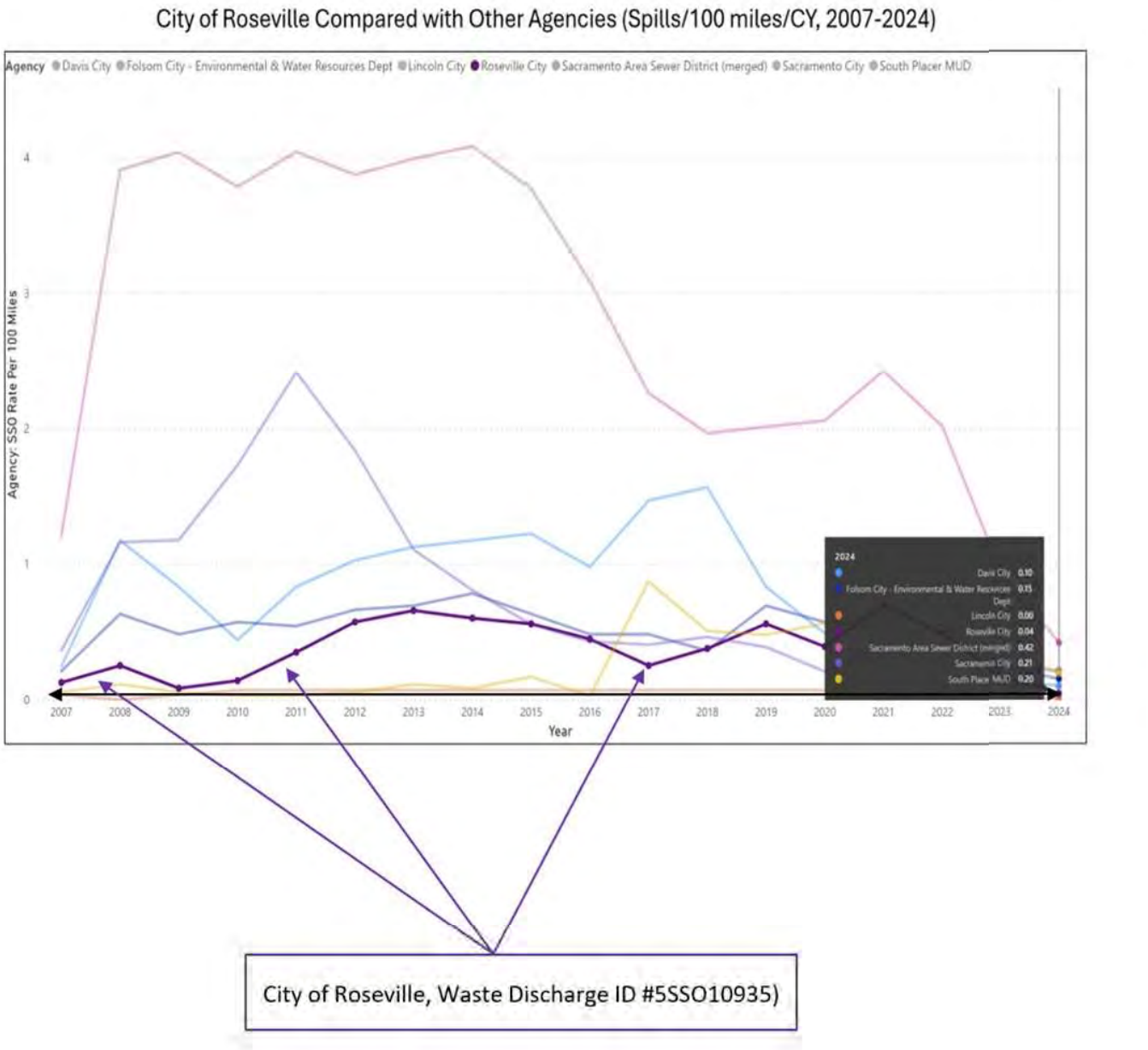
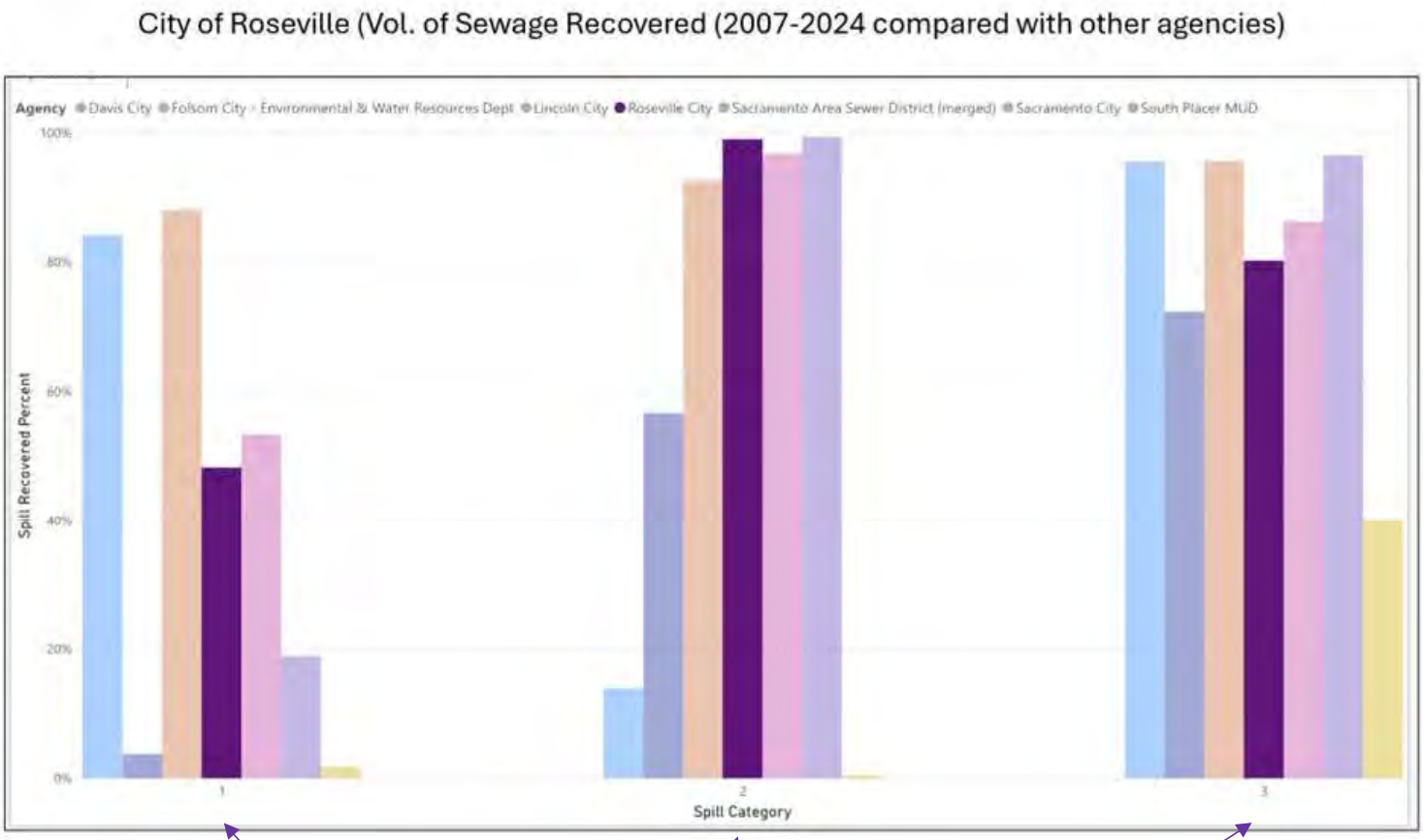


Figure 6: City of Roseville Spill Recovery Rates (%) compared with other agencies



City of Roseville, Waste Discharge ID

Figure 7: City of Roseville spill volumes (gallons/year) compared with other agencies.

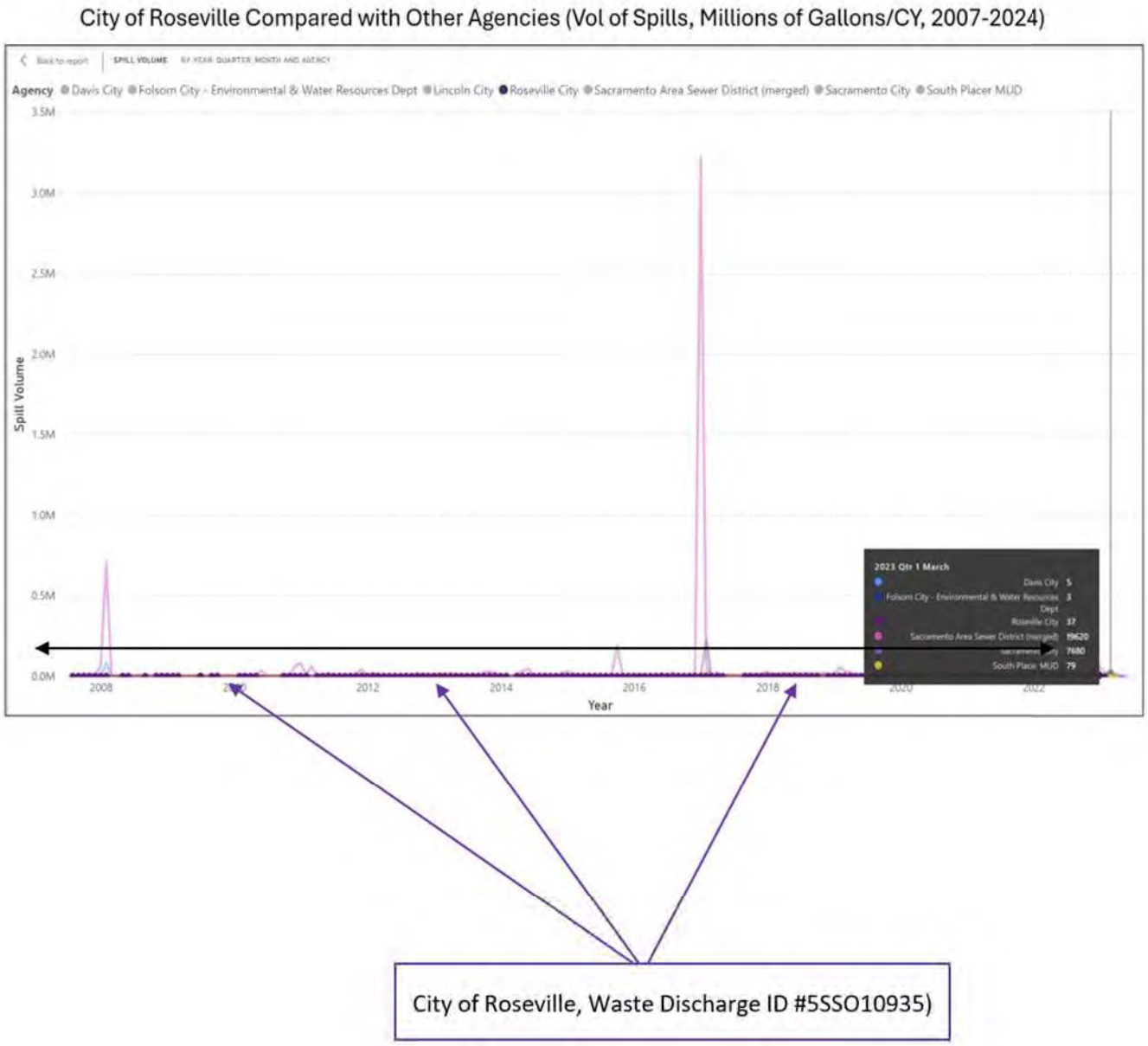


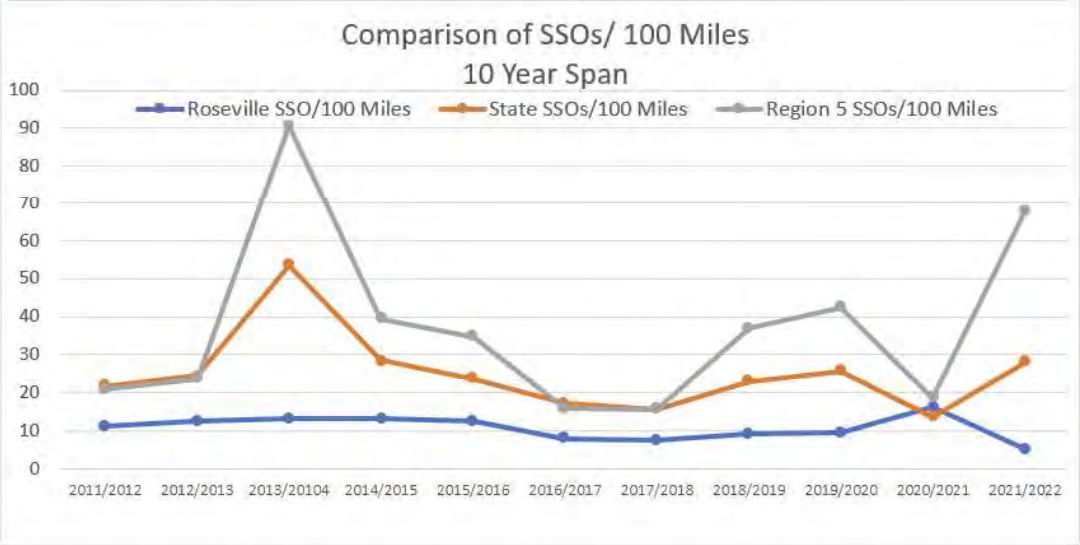
Figure 8: City of Roseville historical spill summary (2011-2022).

Table 9-1 Historical Summary of Sanitary Sewer Overflows

Year	Roseville Total SSOs	Roseville SSOs Rate/100 Miles	State SSOs Rate/100 Miles	Region 5 SSOs Rate/100 Miles	Roseville Total Spill Volume, Gallons	Roseville Net Volume * Spill/1000 Capita	State Net Volume* Spill/1000 Capita	Region 5 Net Volume* Spill/1000 Capita
2011/12	35	11.25	21.46	20.87	948	.03	1.89	4.53
2012/13	42	12.65	24.44	23.71	1105	.05	13.17	16.14
2013/14	47	13.34	53.55	90.77	1136	.37	12.26	12.46
2014/15	42	13.34	28.5	39.42	1205	.60	10.55	18.5
2015/16	39	12.62	23.49	34.8	2525	.28	2.61	25.54
2016/17	23	7.87	17.24	15.83	1081	.65	6.39	.43
2017/18	25	7.52	15.64	15.5	1531	1.11	3.57	1.73
2018/19	31	9.23	23.07	37.05	869	.05	3.67	1.88
2019/20	33	9.55	25.7	42.52	580	.4	2.88	.75
2020/21	50	16.07	13.39	18.7	825	1.97	.64	.64
2021/22	17	5.13	38.06	67.93	1570	.49	.55	.25

*Net Volume = Volume Spilled minus Volume Recovered

Table 9-2, 10 Year SSO Comparison



SSMP Audit Findings

This section provides a high-level summary of the SSMP Audit findings (see Tables 2 and 3 below). No WDR violations were noted during the Audit. However, several Areas of Concern for the WDR were observed and documented in each SSMP element analysis located in PART 2 (Detailed SSMP Audit Findings). A total of 4/11 (36%) of SSMP Attachments were noted as Areas of Concern (64% compliance rate). A total of 3/12 (25%) of SSMP Specifications were noted as Areas of Concern (75% compliance rate).

Table 2: Summary of SSMP Audit Findings (WDR Attachments, 2022-2024)

FINDINGS (ATTACHMENTS)				
Requirements		Violations?	Areas of Concern?	Findings/Recommendations
Att. D-1	Goal & Intro	No	No	✓ Improve evaluating allocation of system resources ✓ Improve prioritization of system repairs
Att. D-2	Organization	No	Yes	✓ Improve LRO and Data Submitter training ✓ Improve internal communication/training procedures
Att. D-3	Legal Authority	No	No	✓ None
Att. D-4	O/M Program	No	Yes	✓ Improve training, procedures, identification of known problem areas ✓ Improve SSMP working knowledge ✓ Improve CIWQS training on requirements. ✓ Improve easement maintenance and emergency response activities
Att. D-5	Design and Performance	No	No	✓ None
Att. D-6	SERP	No	No	✓ Improve training, regional partner collaboration
Att. D-7	Pipe Blockage Control Program	No	Yes	✓ Improve source control measures, schedule
Att. D-8	SECAP	No	Yes	✓ Improve assessments for priority locations ✓ Improve field data collection procedures
Att. D-9	Monitoring, Measurement	No	No	✓ None
Att. D-10	Audits	No	No	✓ Solicit input from field staff for future Audits
Att. D-11	Communications	No	No	✓ None

Table 3: Summary of SSMP Audit Findings (WDR Specifications, 2022-2024)

FINDINGS (SPECIFICATIONS)				
Requirements		Violations?[3]	Areas of Concern?[4]	Findings/Recommendations
Spec. 5.1	Designation of LRO	No	Yes	✓ Improve LRO training/oversight
Spec. 5.2	SSMP Development, Implementation	No	No	✓ None
Spec. 5.3	SSMP Updates	No	No	✓ None
Spec. 5.4	SSMP Audits	No	No	✓ Solicit input from field staff for future Audits
Spec. 5.6	System Resilience	No	Yes	✓ Consider recommendations outlined in each element including evaluation of climate impacts.
Spec. 5.10	Resources	No	No	✓ Improve evaluating allocation of collection system resources
Spec. 5.11	Performance Analysis	No	No	✓ None
Spec. 5.12	SERP	No	Yes	✓ Improve training, regional partner collaboration
Spec. 5.13	Notif, Monitoring, Reporting, Records	No	No	✓ Improve training/field data collection procedures
Spec. 5.14	Notifications (private spills)	No	No	✓ None
Spec. 5.15	Failure to report	No	No	✓ None
Spec. 5.19	Proper O/M	No	No	✓ None

[3] *V (Violation of* REISSUED WDR*)*

[4] *AOC (Area of Concern with* REISSUED WDR*)*

Conclusions

The SSMP Audit completed by Fischer Compliance LLC in collaboration with City management shed light on many existing successful work programs in place. When comparing the City spill data/metrics performance with other collection systems in the Central Valley Regional Water Board area and throughout the State, the City performs near the top.

Detailed Auditing procedures incorporating review of questionnaires, the City's existing 2022 SSMP, interviews and other data were relied on for generating the detailed Audit findings to document the City's SSMP compliance and implementation efforts. Several recommendations along with an implementation plan/schedule were also generated to help the City get a jump start on updating its 2022 SSMP long before its next update is due (5/2/2024).

The Audit further revealed several areas of concern providing an advantage to help prepare the City for future regulatory compliance inspections and improve the effectiveness of its SSMP, well ahead of the required compliance schedule (>5 month ahead of schedule).

The audit results also help the City reflect on additional ways to improve its existing work programs and spill reduction measures. Additional Key performance indicators (KPIs) for improved tracking and monitoring of SSMP effectiveness, improvements to the existing City collection system critical spare part identification/inventories, improved spill data collection, reporting and training are examples of recommendations presented in the Audit.

PART 2 (SSMP Audit Findings/Recommendations)

This section provides detailed information including detailed SSMP Audit findings and recommendations. The procedures employed included evaluating the City's sewer programs against each required SSMP element required in the Reissued WDR. Requirements are presented at the beginning for each element along with an analysis of City compliance and implementation.

Additional information for helping City managers measure SSMP effectiveness and provide resilience are also included for each SSMP element in this section. This information provides a strong foundation to help the City with updating its next SSMP, due by August 2, 2025. Each section ends with a checklist of common potential violations/areas and a checklist of findings including determination of compliance.

Element 1 – Goal And Introduction

1.1 Regulatory Context

"The Plan Introduction section must provide a general description of the local sewer system management program and discuss Plan implementation and updates."

1.2 SSMP Update Schedule

"The Plan Introduction section must include a schedule for the Enrollee to update the Plan, including the schedule for conducting internal audits. The schedule must include milestones for incorporation of activities addressing prevention of sewer spills."

1.3 Sewer System Asset Overview

"The City Sewer System Management Plan must have an Introduction section to provide a description of the City-owned assets and service area including but not limited to.

- Location, including county(ies).
- Service area boundary.
- Population and community served;
- System size, including total length in miles, length of gravity mainlines, length of pressurized (force) mains, and number of pump stations and siphons.
- Structures diverting stormwater to the sewer system.
- Data management systems.
- Sewer system ownership and operation responsibilities between Enrollee and private entities for upper and lower sewer laterals.
- Estimated number or percent of residential, commercial, and industrial service connections.
- Unique service boundary conditions and challenge(s).
- Reference to the Enrollee's up to-date map of its sanitary sewer system, as required in section 4.1 (Updated Map of Sanitary Sewer System) of this Attachment."

FINDINGS (Element 1: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 22+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 22+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • City management identified the need to further improve measuring effectiveness to ensure appropriate allocation of collection system resources. • The City could further improve procedures for prioritization of system repairs and maintenance to prevent spills.
EFFECTIVENESS	Pg. 22+	• The City utilizes an extensive list of customized performance metrics and Key Performance Indicators (KPIs) to track, measure, and adjust effectiveness of work programs (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: - Has the schedule for conducting audits been adhered to? - Has the schedule for updating the Sewer System Management Plan been adhered to? - Are established milestones being monitored? - Is the sewer system management program description up to date? - Have audits been performed on schedule? Measured by review of completion for audits against required timelines. - Has the Sewer System Management Plan been approved by the governing board on schedule (every six years)? Measured by review of historic local board adoption dates against required timelines. - Are established milestones being monitored? - Are the system maps up to date? - Is asset data kept in the computerized maintenance management system, GIS, etc., programs up to date? - Are updates to the maps performed in a timely manner?

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
RESILIENCE	Pg. 22+	• For added resilience, the City could incorporate the following: - Create a work order report for auditing open work orders and assets any repeat spill locations. - Implement a formal schedule to ensure all WDR compliance deadlines are logged into management calendars. Ensure cross-training for data submitters to ensure more than one staff member can collect/manage all required spill data and meet all required deadlines specified in Attachment E1.

FINDINGS (Element 1: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations?	• Potential Areas of Concern?	• City In Compliance?
✓ Failure to identify appropriate goals	• No	• No	• Yes
✓ Failure to update Sewer System Management Plan sub-elements	• No	• No	• Yes
✓ Failure to establish process to ensure public has access/input to Sewer System Management Plan	• No	• No	• Yes
✓ Failure to complete appropriate Sewer System Management Plan audit	• No	• No	• Yes
✓ Failure to measure effectiveness and progress	• No	• No	• Yes
✓ Failure to develop and implement procedures for updating sewer maps	• No	• No	• Yes
✓ Failure to provide appropriate narrative descriptions describing procedures for prioritization of system repairs and maintenance to prevent spills.	• No	• No	• Yes
✓ Failure to describe technologies and practices to reduce spills	• No	• No	• Yes

Element 2 – Organization

REQUIREMENTS[1]

"The Plan must identify organizational staffing responsible and integral for implementing the local Sewer System Management Plan through an organizational chart of other similar narrative documentation that includes:

- The name of the Legally Responsible Official as required in section 5.1 (Designation of a Legally Responsible Official) of this General Order;
- The position titles, telephone numbers, and email addresses for management, administrative, and maintenance positions responsible for implementing specific Sewer System Management Plan elements;
- Organizational lines of authority.
- Chain of communication for reporting spills from receipt of complaint or other information, including the person responsible for reporting spills to the State and Regional Water Boards and other agencies, as applicable. (For example, county health officer, county environmental health City, and State Office of Emergency Services)."

FINDINGS (Element 2: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 24+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 24+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • City management indicated that to some degree, decisions and request for the collection system operations are changed without input from the City LRO and could be further improved. • City management commented that the LRO should have final authority for all projects affecting the collection system including those proposed by developers that have historically been overridden by City Public Works staff without approval of the LRO which could be further improved. • The inspection revealed weaknesses in City internal compliant procedures which could be further improved (see Appendix 1, Table 10, finding AOC A2). However, the City adequately addressed this finding and has improved its internal communications protocols (see Post-Inspection findings, AOC A2). • The inspection identified the potential to further improve LRO and Data Submitter trainings (see Appendix 1, Table 10, finding AOC A3 and AOC B4) which should be pursued. • The inspection identified the potential to further improve coordination between line staff and electricians (see Appendix 1, Table 10, finding AOC A6). However, the City addressed this concern (see Post-Inspection findings, AOC A6).

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
EFFECTIVENESS	Pg. 24+	• The City utilizes an extensive list of customized performance metrics and Key Performance Indicators (KPIs) to track, measure, and adjust effectiveness of work programs (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: - Have there been instances when a service call for a spill was not properly routed to response personnel? - Was all spill response activity documented and forwarded to the LRO? - Have there been any changes in assigned responsibilities for implementing the Sewer System Management Plan? - Is there a process in place to ensure all contact information remains up to date? - Is there a process in place to ensure the organizational chart up to date?
RESILIENCE	Pg. 24+	• For added resilience, the City could incorporate the following: - Ensuring more than one person is capable and responsible for specific duties for Sewer System Management Plan implementation, e.g. back-up personnel. - Designation of more than one LRO to help ensure full and continuous coverage of duties. - Ensuring more than one staff member can implement and be responsible for specific Sewer System Management Plan elements. - Periodically review contact info. to ensure it is up to date.

FINDINGS (Element 2: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations?	• Potential Areas of Concern?	• City In Compliance?
✓ Failure to properly secure Legally Responsible Official with appropriate training and experience.	• No	• No	• Yes
✓ Failure to establish and update all related necessary responsible staff and lines of authority.	• No	• No	• Yes
✓ Failure to establish and update City chain of communication for reporting spills.	• No	• No	• Yes

Element 3 – Legal Authority

REQUIREMENTS[5]

"The City Sewer System Management Plan must include copies or an electronic link to the Enrollee's current sewer system use ordinances, service agreements and/or other legally binding procedures to demonstrate the Enrollee possesses the necessary legal authority."

- "Prevent illicit discharges into its sanitary sewer system from inflow and infiltration (I&I); unauthorized stormwater; chemical dumping; unauthorized debris; roots; fats, oils, and grease; and trash, including rags and other debris that may cause blockages."
- "Collaborate with storm sewer agencies to coordinate emergency spill responses, ensure access to storm sewer systems during spill events, and prevent unintentional cross connections of sanitary sewer infrastructure to storm sewer infrastructure."
- "Require that sewer system components and connections be properly designed and constructed."
- "Ensure access for maintenance, inspection, and/or repairs for portions of the service lateral owned and/or operated by the Enrollee."
- "Enforce violation(s) of ordinances, service agreements, or other legally binding procedures."
- "Obtain easement accessibility agreements for locations requiring sewer system operations and maintenance, as applicable."

[5] *See Attachment D-3 of* Reissued WDR *(page D-4)*

FINDINGS (Element 3: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 28+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 28+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
EFFECTIVENESS	Pg. 28+	• The City utilizes an extensive list of customized performance metrics and Key Performance Indicators (KPIs) to track, measure, and adjust effectiveness of work programs (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: - Are the District codes and ordinances adequate for fulfilling the Sewer System Management Plan legal requirements? - Have there been instances when the code or ordinance did not address a need or circumstance?
RESILIENCE	Pg. 28+	• For added resilience, the City could incorporate the following: - Monitor performance of ordinances, codes, and agreements for deficiencies and omissions. - Perform periodic review of ordinances, codes, and service agreements. - Stay abreast of industry trends and local ordinances that may affect operations. - Check to ensure codes and ordinances periodically reviewed.

FINDINGS (Element 3: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations?	• Potential Areas of Concern?	• City In Compliance?
✓ Failure to establish proper codes, standards, legal agreements, and procedures to ensure conformance to requirements.	• No	• No	• Yes
✓ Failure to periodically review codes, standards, legal agreements, and procedures to ensure conformance to requirements.	• No	• No	• Yes

Element 4 – Operations and Maintenance Program

4.1 Updated Map of Sewer System

REQUIREMENTS[6]

"The Plan must include the items listed below that are appropriate and applicable to the Enrollee's system.

An up-to-date map(s) of the sanitary sewer system, and procedures for maintaining and providing State and Regional Water Board staff access to the map(s). The map(s) must show gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities within the sewer system service area boundaries."

4.2 Preventive Operation and Maintenance Activities

REQUIREMENTS[1]

"A scheduling system and a data collection system for preventive operation and maintenance activities conducted by staff and contractors.

The scheduling system must include:

- inspection and maintenance activities, Higher-frequency inspections
- Maintenance of known problem areas including areas with tree root problems
- Regular visual and closed-circuit television (CCTV) inspections of manholes and sewer pipes.

The data collection system must document the data from system inspection and maintenance activities, including system areas/components prone to root-intrusion potentially resulting in system backup and/or failure."

4.3 Training

REQUIREMENTS

"In-house and external training provided on a regular basis for sanitary sewer system operations and maintenance staff and contractors.

The training must cover the requirements of this General Order; the Enrollee's Spill Emergency Response Plan procedures and practice drills, skilled estimation of spill volume for field operators, and electronic CIWQS reporting procedures for staff submitting data."

[6] *See Attachment D-4.1 of* Reissued WDR *(page D-4)*

4.4 Equipment Inventory

REQUIREMENTS[1]

- "An inventory of sewer system equipment, including the identification of critical replacement and spare parts."

FINDINGS (Element 4: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 32+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 32+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • City management commented that field staff training programs could be further improved with use of spill simulations/scenarios. • The inspection revealed operator training and procedures could be further improved for City pump stations (see Appendix 1, Table 10, , findings AOC A1 and AOC B1). • The inspection revealed the opportunity to further improve the City's existing critical spare parts/inventory (see Appendix 1, Table 10, finding AOC A8 and AOC B3). However, the City addressed this finding and is encouraged to continuously check/update its critical spare parts inventories to ensure spill response readiness (see Post-Inspection Findings, AOC A8). • The inspection revealed the opportunity to further improve the City's existing Hot Spot program for problem locations (see Appendix 1, Table 10, AOC B6). However, the City adequately addressed this finding (see Appendix 1, Post-Inspection Findings, AOC B6). • The inspection revealed the opportunity to further improve the City's existing procedures to identify and address all known problem/deficiencies (see Appendix 1, Table 10, AOC B7) which should be further improved. • The inspection revealed the opportunity to further improve the City's existing training on the SSMP and CIWQWS reporting procedures (see Appendix 1, Table 10, AOC B9) which should be further improved.

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
IMPLEMENTATION	Pg. 32+	• The inspection revealed the opportunity to further improve the City's maintenance activities covering remote areas and open spaces including easements (see Appendix 1, Table 10, AOC D1) which should be further improved). • The inspection revealed the opportunity to further improve the City's spill emergency response training program covering remote areas and open spaces including easements (see Appendix 1, Table 10, AOC D2) which should be further improved). • The inspection revealed the opportunity to further improve the City's existing easement access/maintenance program (see Appendix 1, Table 10, AOC D3). However, the City adequately addressed this concern (see Appendix 1, Post-Inspection Findings, AOC D3).
EFFECTIVENESS	Pg. 32+	• The City utilizes an extensive list of customized performance metrics and Key Performance Indicators (KPIs) to track, measure, and adjust effectiveness of work programs (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: - Were all map updates completed in a timely manner? - Are staff trained for providing map update information? - Are newly installed assets incorporated into maps? - Are the City maintenance, operations, engineering work orders periodically reviewed for completeness? - Does the City monitor "open" or "overdue" work orders? - Are inspection and maintenance activities reducing the number and volume of spills? - Is maintenance work being completed as scheduled? - Are inspections of pipes, manholes, and lift completed? - Does the City have a proactive root control program? - Has all training been completed as scheduled? - Have consistent training records been maintained? - Have staff demonstrated ability/knowledge after trainings? - Have contractors received, at a minimum, direction for 1) reporting spills, containment, securing sites? - Has the inventory list been audited as scheduled? - Have any inventory deficiencies or omissions been discovered? - Has the City experienced failures inhibiting any spill responses?

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
RESILIENCE	Pg. 32+	• For added resilience, the City could incorporate the following: - Develop an SOP for updating maps when errors are discovered. - Develop and use forms (paper or electronic) for data collection to help ensure all pertinent information is consistently collected. - Periodically evaluate inspection cycle intervals to help ensure they are optimized. - Require staff to demonstrate ability and/or knowledge for all training activities. - Monitor equipment and critical spare parts usage for and trends.

FINDINGS (Element 4: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations?	• Potential Areas of Concern?	• City In Compliance?
✓ Failure to establish process to ensure sewer maps are up to date.	• No	• No	• Yes
✓ Failure to establish and review required maintenance program activities (CCTV, inspections, etc.)	• No	• No	• Yes
✓ Failure to establish adequate training program for staff and contractors.	• No	• Yes	• Yes
✓ Failure to establish equipment inventory including identification of critical spare part.	• No	• No	• Yes

Element 5 – Design and Performance Provisions

5.1 Updated Design Criteria and Construction Standards

REQUIREMENTS[7]

"The Plan must include the following items as appropriate and applicable to the Enrollee's system".

- "Updated design criteria, and construction standards and specifications, for the construction, installation, repair, and rehabilitation of existing and proposed system infrastructure components, including but not limited to pipelines, pump stations, and other system appurtenances. If existing design criteria and construction standards are deficient to address the necessary component-specific hydraulic capacity as specified in section 8 (System Evaluation, Capacity Assurance and Capital Improvements) of this Attachment, the procedures must include component-specific evaluation of the design criteria."

5.2 Procedures and Standards

REQUIREMENTS[1]

- "Procedures, and standards for the inspection and testing of newly constructed, newly installed, repaired, and rehabilitated system pipelines, pumps, and other equipment and appurtenances."

FINDINGS (Element 5: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 45+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 45+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • The inspection revealed the opportunity to further improve design standards (see Appendix 1, Table 10, AOC 10; however, the City addressed this concern (see Post-Inspection Findings, AOC A10).

[7] *See Attachment D-5.1 of* Reissued WDR *(page D-5)*

EFFECTIVENESS	Pg. 45+	• The City utilizes an extensive list of customized performance metrics and KPIs to help assess effectiveness of this element (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: - Does the City implement its current design and construction standards, specifications, and inspection procedures? - Does the City annually review of design and construction standards, specifications, and inspection procedures to ensure conformance to requirements? - Does the City have a review process for its standards and procedures? - Were any design or installation deficiencies found during warranty inspections? - Are hydraulic model findings included in the design process? - Does the City stay abreast of industry design standards?
RESILIENCE	Pg. 45+	• For added resilience, the City could incorporate the following: - Staying abreast of industry trends and standards. - Performing warranty inspections of newly installed or repaired assets to evaluate design and installation practices. - Evaluating as-built changes for trends and areas for design and performance improvements.

FINDINGS (Element 5: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations?	• Areas of Concern?	• City In Compliance?
✓ Failure to establish, implement, and maintain appropriate sewer standards and procedures for inspections, and testing.	• No	• No	• Yes
✓ Failure to enforce instances of noncompliance.	• No	• No	• Yes

Element 6 – Spill Emergency Response Plan

REQUIREMENTS[8]

The Plan must include an up-to-date Spill Emergency Response Plan to ensure prompt detection and response to spills to reduce spill volumes and collect information for prevention of future spills. The Spill Emergency Response Plan must include procedures to meet all the following.

- *"Notify primary responders, appropriate local officials, and appropriate regulatory agencies of a* spill in a timely manner.
- *Notify other potentially affected entities (for example, health agencies, water suppliers, etc.) of spills that potentially affect public health or reach waters of the State.*
- *Comply with the notification, monitoring and reporting requirements of this General Order, State law and regulations, and applicable Regional Water Board Orders.*
- *Ensure that appropriate staff and contractors implement the Spill Emergency Response Plan and are appropriately trained.*
- *Address emergency system operations, traffic control and other necessary response activities.*
- *Contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system.*
- *Minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State.*
- *Remove sewage from the drainage conveyance system.*
- *Clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters.*
- *Implement technologies, practices, equipment, and interCity coordination to expedite spill containment and recovery.*
- *Implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event.*
- *Conduct post-spill Guidance of spill response activities.*
- *Document and report spill events as required in this General Order.*
- *Annually, review and assess effectiveness of the Spill Emergency Response Plan, and update the* Plan as needed."

[8] *See Attachment D-6 of* Reissued WDR *(page D-6)*

FINDINGS (Element 6: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 50+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 50+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • City management indicated the City does not perform any "pre-planned dills or training with its stormwater. • City management commented during the inspection that field data collection/documentation could be further improved. • The inspection revealed coordination with regional partners could be further improved (see Appendix 1, Table 10, finding AOC A9 and AOC B5) which should be pursued to augment City resources to the extent practical. • The inspection revealed 3 violations for failure to notify Cal-OES within 2 hours required for Category 1 Spills in 2021-2022 (see Appendix 1, Table 10, AOC A11. The City is encouraged to further refine internal notification procedures to help avoid future violations of this requirement. • The inspection revealed the opportunity to further improve contractor emergency response training (see Appendix 1, Table 10, AOC A12) which could be further improved. The inspection also revealed concerns with spill emergency response trainings including post-spill assessments (see Appendix 1, Table 10, AOC B2). However, the City adequate addressed this finding (see Appendix 1, Post-Inspection Findings, AOC B2).

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
EFFECTIVENESS	Pg. 50+	• The City utilizes an extensive list of customized performance metrics and KPIs to help assess effectiveness of this element (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: - Check to ensure the City is implementing all recommendations for spill emergency response plans incorporated in SSMP Guidance Manual (see pages 37-28) - Does the agency implement an effective Spill Emergency Response Plan? Measured by quarterly review, training/practice drills, and completion of field data collection forms for conforming with Attachment E1 requirements. -
RESILIENCE	Pg. 50+	• For added resilience, the City could incorporate the following: – Provide training on a regular basis for all spill response staff. Training should include: – Determining Spill Start Time – Determining spill volume and volume recovered. – Data Collection (forms) – Containment and clean up. – CIWQS Data Submitting – Develop a training plan for contracted services. – Periodically review post-spill assessments for trends and areas for improvement.

FINDINGS (Element 6: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations?	• Areas of Concern?	• City In Compliance?
✓ Failure to develop and implement a Spill Emergency Response Plan that meets all requirements.	• No	• No	• Yes
✓ Failure to test/evaluate emergency procedures during including deploying contracted services where necessary.	• No	• No	• Yes
✓ Failure to ensure supply of adequate critical/identified spare parts/equipment prior to spills.	• No	• No	• Yes
✓ Failure to properly notify appropriate outside agencies/officials.	• No	• No	• Yes

Element 7 – Sewer Pipe Blockage Control Program

REQUIREMENTS[9]

"The Sewer System Management Plan must include procedures for the evaluation of the Enrollee's service area to determine whether a sewer pipe blockage control program is needed to control fats, oils, grease, rags, and debris. If the Enrollee determines that a program is not needed, the Enrollee shall provide justification in its Plan for why a program is not needed. The procedures must include, at minimum:

- An implementation plan and schedule for a public education and outreach program that promotes proper disposal of pipe-blocking substances.
- A plan and schedule for the disposal of pipe-blocking substances generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of substances generated within a sanitary sewer system service area.
- The legal authority prohibits discharges to the system and identifies measures to prevent spills and blockages.
- Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, best management practices requirements, recordkeeping, and reporting requirements.
- Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the fats, oils, and grease ordinance.
- An identification of sanitary sewer system sections subject to fats, oils, and grease blockages and establishment of a cleaning schedule for each section; and
- Implementation of source control measures for all sources of fats, oils, and grease reaching the sanitary sewer system for each section identified above."

[9] *See Attachment D-7 of* Reissued WDR *(page D-7)*

FINDINGS (Element 7: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 76+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 76+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • City management indicated the City could further improve an implementation plan and schedule for a public education and outreach program that promotes proper disposal of pipe-blocking substances. • City Management commented during the inspection that the City will soon need additional resources inspecting grease producing facilities. • The inspection revealed the opportunity to further improve the City's FOG program implementation (see Appendix 1, Table 10, finding AOC A7 and AOC B8). The City is encouraged to pursue additional FOG program improvements to continue improving existing source control measures.
EFFECTIVENESS	Pg. 76+	• The City utilizes an extensive list of customized performance metrics and KPIs to help assess effectiveness of this element (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: – Have there been any blockages/spills from any identified problem area? – Is the agency receiving feedback on public outreach efforts? – Is the debris and other sewage solids collected during cleaning activities being disposed of appropriately? – Does the agency have a plan and schedule for inspection of grease producing facilities? Was the schedule adhered to? – Have there been spills due to excessive fats, oil, or grease in the system? – Are Source Control staff included in the plan check process?

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
RESILIENCE	Pg. 76+	• For added resilience, the City could incorporate the following: – Inspect assets directly downstream of grease producing businesses to- ensure source control is effective. – Develop outreach doorhangers or flyers to perform targeted outreach when discoveries are made in the field. – Perform regular assessments of system assets to monitor performance. – Establish a QA/QA process for evaluating pipe cleaning effectiveness.

FINDINGS (Element 7: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations?	• Areas of Concern?	• City In Compliance?
✓ Failure to identify appropriate needs for pipe blockage program.	• No	• No	• Yes
✓ Failure to ensure adequate pipe blockage control enforcement authority.	• No	• No	• Yes
✓ Failure to enforce requirements for instances of noncompliance.	• No	• No	• Yes

Element 8 – System Evaluation, Capacity Assurance, Capital Improvements

REQUIREMENTS

"The Plan must include procedures and activities for

- Routine evaluation and Guidance of system conditions,
- Capacity Guidance and design criteria.
- Prioritization of corrective actions.
- Capital improvement plan."

8.1. System Evaluation and Condition Guidance

REQUIREMENTS[10]

"The Plan must include procedures to:

- Evaluate the sanitary sewer system assets utilizing the best practices and technologies available.
- Identify and justify the amount (percentage) of its system for its condition to be assessed each year.
- Prioritize the condition Guidance of system areas that:
  - Hold a high level of environmental consequences if vulnerable to collapse, failure, blockage, capacity issues, or other system deficiencies.
  - Are in or within the vicinity of surface waters, steep terrain, high groundwater elevations, and environmentally sensitive areas.
  - Are within the vicinity of a receiving water with a bacterial-related impairment on the most current Clean Water Act section 303(d) List.
- Assess the system conditions using visual observations, video surveillance and/or other comparable system inspection methods.
- Utilize observations/Audit Findings/Recommendations of system conditions that may contribute to exiting of sewage from the system which can reasonably be expected to discharge into a water of the State.
- Maintain documents and recordkeeping of system evaluation and condition Guidance inspections and activities,
- Identify system assets vulnerable to direct and indirect impacts of climate change, including but not limited to sea level rise; flooding and/or erosion due to increased storm volumes, frequency, and/or intensity; wildfires; and increased power disruptions."

[10] *See Attachment D-8.1 of* Reissued WDR *(pages D-7 and D-8)*

FINDINGS (Element 8: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 82+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • The City has identified at least 2 locations where insufficient capacity exists which is being addressed in its current capital improvement plan (CIP). • City Management commented during the inspection that it could further improve its identification/ justification of its condition assessment to be inspected each year throughout the system. • City Management commented during the inspection that the City currently does not prioritize condition assessments for areas holding high environmental consequences, are located within the vicinity of surface waters, steep terrain, high groundwater, etc., and are within the vicinity of bacterial-related impairments, including documenting situations where sewage could be reasonability expected to exit the system (exfiltration) as part of its condition assessment program. • City Management commented during the inspection that the City does not currently assess climate change impacts other than power interruptions/potential impacts from wildfires on field staff. Management also commented that the City currently does not have procedures to identify system components that are experiencing or causing spills during dry peak flow conditions. However, management has been proactive in shoring up creek banks, securing sewer crossings to piles and ensuring infrastructure is intact after severe rain events or flooding.

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
IMPLEMENTATION	Pg. 82+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • City Management commented during inspection that it is sometimes hard to find data from condition assessments, inspections, audits, ETC. which should be improved. • Management commented during the inspection that it has not identified areas vulnerable to increases in erosive forces which should be further improved. • The inspection revealed potential improvements between City Engineering and Collections/Operations Departments (see Appendix 1, Table 10, finding AOC A4) which should be further improved. • The inspection revealed potential improvements for improving condition assessments for City force main sewers (see Appendix 1, Table 10, finding AOC A5) which should be further improved.
EFFECTIVENESS	Pg. 82+	• The City utilizes an extensive list of customized performance metrics and KPIs to help assess effectiveness of this element (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: – Number of capacity-related spills or surcharge condition during the audit period? – Has the system responded to rain events as indicated by the hydraulic model? – Has there been any changes to zoning designations (residential, commercial, industrial)? – Rain event trends: Has there been changes in rain event occurrences, intensity, and duration? – Has the agency's capital improvement plan been adhered to? – Is there an annual review of the Capital Improvement Plan by all necessary individuals? – Has the City adhered to its system evaluation/condition assessment efforts? Measured by annual review and update of system inspections/evaluations procedures. – Has the City adhered to its prioritization/corrective actions for sewer repair and capacity improvement projects? Measured by annual review and agency prioritization/corrective actions procedures.

FINDINGS (Element 8: Common WDR Violations/Areas of Concern Evaluation Evaluation)

• Potential Violations	• Potential Violations?	• Areas of Concern?	• City In Compliance?
✓ Failure to develop and implement system evaluation, capacity assurance, and capital improvement programs.	• No	• No	• Yes
✓ Failure to identify sections holding high degree of environmental consequences if vulnerable to collapse, failure, blockage, capacity issues, or other system deficiencies.	• No	• No	• Yes
✓ Failure to identify sections located in or within the vicinity of surface waters, steep terrain, high groundwater elevations, and environmentally sensitive areas.	• No	• No	• Yes
✓ Failure to identify assets within the vicinity of receiving water with a bacterial-related impairment on the most current Clean Water Act section 303(d) List.	• No	• No	• Yes
✓ Failure to develop and implement capital improvement plan (CIP) for necessary sewer system repairs and improvements (short term and long-term).	• No	• No	• Yes

Element 9 – Monitoring, Measurement, Program Modifications

REQUIREMENTS[11]

"The Plan must include an Adaptive Management section that addresses Plan-implementation effectiveness and the steps for necessary Plan improvement, including:

- Maintaining relevant information, including audit findings, to establish and prioritize appropriate Plan activities.
- Monitoring the implementation and measuring the effectiveness of each Plan Element.
- Assessing the success of the preventive operation and maintenance activities.
- Updating Plan procedures and activities, as appropriate, based on results of monitoring and performance evaluations; and
- Identifying and illustrating spill trends, including spill frequency, locations, and estimated volumes."

FINDINGS (Element 9: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 86+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 86+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
EFFECTIVENESS	Pg. 86+	• The City utilizes an extensive list of customized performance metrics and KPIs to help assess effectiveness of this element (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: – Are trends being monitored and corrective action taken as necessary? – Have Key Performance Indicators been developed to measure the effectiveness of each Sewer System Management Plan element? – Has a plan and schedule been established to address audit findings/deficiencies? – Have changes been made to work programs and procedures because of monitoring efforts?

[11] *See Attachment D-9 of* Reissued WDR *(page D-9)*

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
RESILIENCE	Pg. 86+	• For added resilience, the City could incorporate the following: – Develop key performance indicators to measure effectiveness of the Sewer System Management Plan. – Perform periodic reviews of the Sewer System Management Plan to help ensure the plan is being properly implemented. – Develop and adhere to a timeline to correct deficiencies found during the audit process. – Periodically evaluate work programs to help ensure effectiveness.

FINDINGS (Element 9: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations	• Areas of Concern	• City in Compliance?
✓ Failure to collect/maintain and evaluate relevant data for monitoring, measuring, and assessing preventive maintenance program effectiveness.	• No	• No	• Yes
✓ Failure to update/modify agency Sewer System Management Plan based on results from audits and evaluation of data required for this element.	• No	• No	• Yes

Element 10 – Internal Audits

REQUIREMENTS[12]

"The Plan shall include internal audit procedures, appropriate to the size and performance of the system, for the Enrollee to comply with section 5.4 (Sewer System Management Plan Audits) of this General Order."

- Specifications 5.4 (Sewer System Management Plan Audits")

"The Enrollee shall conduct an internal audit of its Sewer System Management Plan, and implementation of its Plan, at a minimum frequency of once every three years. The audit must be conducted for the period after the end of the Enrollee's last required audit period. Within six months after the end of the required 3-year audit period, the Legally Responsible Official shall submit an audit report into the online CIWQS Sanitary Sewer System Database per the requirements in section 3.10 (Sewer System Management Plan Audit Reporting Requirements) of Attachment E1 of this General Order. Audit reports submitted to the CIWQS Sanitary Sewer System Database will be viewable only to Water Boards staff. The internal audit shall be appropriately scaled to the size of the system(s) and the number of spills. The Enrollee's sewer system operators must be involved in completing the audit. At minimum, the audit must:

- Evaluate the implementation and effectiveness of the Enrollee's Sewer System Management Plan in preventing spills.
- Evaluate the Enrollee's compliance with this General Order.
- Identify Sewer System Management Plan deficiencies in addressing ongoing spills and discharges to waters of the State; and
- Identify necessary modifications to the Sewer System Management Plan to correct deficiencies.
- The Enrollee shall submit a complete audit report that includes:
    - Audit findings and recommended corrective actions.
    - A statement that sewer system operators' input on the audit findings has been considered; and
    - A proposed schedule for the Enrollee to address the identified deficiencies."

[12] *See Attachment D-10 of* Reissued WDR *(page D-10)*

FINDINGS (Element 10: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 92+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025. • The City complies with this requirement by completing SSMP internal audits every 2 years since 2010 as required. • The City informed the consulting team that input from collection system field staff have not traditionally been incorporated into the City SSMP (only input from City Collection System Supervisors at the management level).
IMPLEMENTATION	Pg. 92+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
EFFECTIVENESS	Pg. 92+	• The City utilizes an extensive list of customized performance metrics and KPIs to help assess effectiveness of this element (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: – Have audits been performed as required? – Have the audits assessed compliance, implementation, and effectiveness? – Have deficiencies been identified? – Has a plan and schedule to rectify the deficiencies been established?
RESILIENCE	Pg. 92+	• For added resilience, the City could incorporate the following: – Periodically evaluate key performance indicators to assess effectiveness of each Sewer System Management Plan element. – Evaluate previous audit to ensure deficiencies have been rectified. – Calendar the audit due dates and complete the audit on time. – Prepare for announced/unannounced compliance inspections by regulators and by proactive with preparing required Audits by completing the State Water Board Pre-Inspection Questionnaire (see Appendix 6).

FINDINGS (Element 10: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations	• Areas of Concern	• City in Compliance?
✓ Failure to conduct routine Sewer System Management Plan audits.	• No	• No	• Yes
✓ Failure to measure Sewer System Management Plan element effectiveness (a simple checklist will not fulfill this obligation).	• No	• No	• Yes
✓ Failure to implement identified deficiencies/recommendations and commit to new enhancements via a plan/schedule (short and long-term).	• No	• No	• Yes

Element 11 – Communication Program

REQUIREMENTS[13]

"The Plan must include procedures for the Enrollee to communicate with:

- The public for spills and discharges resulting in closures of public areas, or that enter a source of drinking water, and the development, implementation, update of its Plan, including opportunities for public input to Plan implementation and updates.
- Owners/operators of systems that connect into the Enrollee's system, including satellite systems, for system operation, maintenance, and capital improvement-related activities."

FINDINGS (Element 11: Analysis)

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
COMPLIANCE	Pg. 95+	• The City SSMP complies with the basic requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
IMPLEMENTATION	Pg. 95+	• The City is implementing these requirements. The City should complete a gap analysis and incorporate all SSMP Audit findings into its next SSMP Update due by May 2, 2025.
EFFECTIVENESS	Pg. 95+	• The City utilizes an extensive list of customized performance metrics and KPIs to help assess effectiveness of this element (see Appendix 2). • The City should consider the following additional effectiveness checks for this element: – Does the agency place all Sewer System Management Plan action items on the agenda for regular counsel/board meetings? – Does the agency have signage, or other means, readily available to notify the public of environmental or public risk factors related to a sewage spill? – Does the agency regularly communicate with other systems connected to the system? – Was the public afforded the opportunity to provide input as the program was being implemented? – Does the agency perform outreach to residential customers?
Areas Assessed	SSMP Ref.	Audit Findings/Recommendations

[13] *See Attachment D-11 of* Reissued WDR *(page D-10)*

Areas Assessed	SSMP Ref.	Audit Findings/Recommendations
RESILIENCE	Pg. 95+	– Use the Sewer System Management Plan as a tool to communicate to the public how the agency is managing the system. – Maintain a consistent presence in the service area by attending community events or issuing periodic newsletters or other communications to the public. – Make it clear and easy for the public to contact the agency. •

FINDINGS (Element 11: Common WDR Violations/Areas of Concern Evaluation)

• Potential Violations	• Potential Violations	• Areas of Concern
✓ Failure to develop and implement a public communication program, especially during emergencies.	• No	• No
✓ Failure to solicit input on Sewer System Management Plan content.	• No	• No
✓ Failure to communicate with owners/operators of sewer system(s) connected to the agency's sewer system.	• No	• No

LIST OF APPENDICIES

- APPENDIX 1 – Compliance Evaluation Inspection (CEI) Report
- APPENDIX 2 – City Performance Metrics and Key Performance Indicators (KPIs)
- APPENDIX 3 – City Spill Performance Benchmark Report
- APPENDIX 4 – City SSMP Audit Implementation Plan and Schedule (2024-2025)



COMPLIANCE EVALUATION INSPECTION REPORT

Prepared by:

FISCHER COMPLIANCE LLC
PRACTICES THAT COMPLY

Sanitary Sewer
Collection System
WDID=5SSO10935

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1. Introduction

On January 30 ,2024, James Fischer and Chris Bracco (Fischer Compliance LLC) conducted a Compliance Evaluation Inspection (CEI) for the City of Roseville (City) to evaluate compliance with the Statewide Sanitary Sewer Systems General Order (Order No. 2022-0103-DWQ), hereafter "Reissued WDR[1].

FACILTY INSPECTED:	INSPECTED BY: James Fischer, P.E. NPDES Compliance Inspector[2] Principal, FISCHER COMPLIANCE, LLC James Fischer Date: 1/30/2024	
SANITARY SEWER COLLECTION SYSTEM (WASTEWATER)	Waste Discharge ID (WDID): 5SSO10935 ("Dry Creek CS")	
Water Quality Order(s)	2022-0103-DWQ (Reissued WDR)	
Regional Water Boards	5S	
County	Sacramento	
Population/Area	151,901 (2023 Questionnaire)	
Miles of Sewers (gravity)	589.55 (2023 Questionnaire)	
Miles of Sewers (force mains)	7.55 (2023 Questionnaire)	
Sewer Connections (#)	53,720 (2023 Questionnaire)	
Lift/Pump Stations (#)	17 (2023 Questionnaire)	
Above pipelines (#)	22 (2023 Questionnaire)	
Air release valves (force mains, #)	3 (2023 Questionnaire)	
Sewer siphons (#)	22 (2023 Questionnaire)	
Flows (dry/wet, million gallons per day)	17.5/43 (2023 Questionnaire)	
CWEA Maintenance Certifications (#)	32 (2023 Questionnaire)	
Sewer lower later responsibility (Y/N)	Y (2023 Questionnaire)	
Final wastewater disposal	Dry Creek and Pleasant Grove WWTPs	
FACILITY REPRESENTATIVE	TITLE	CONTACT
Dan Pruden	Superintendent	(916) 746-1891
Shane Rodgers	Supervisor	(916) 746-1894
Cody Wilbanks	Supervisor	(916) 746-1889

[1] See https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2022/wqo_2022-0103-dwq.pdf
[2] Credentialed, U.S EPA summary(2017)

2. Inspection Summary

The inspection incorporated both pre-inspection meetings for comprehensively assessing the City's SSMP compliance, implementation, and effectiveness with the Reissued WDR (see Tables 1-2 below). This information provides a key advantage for helping City managers proactively reflect on ways for further improving its and implementing necessary adjustments to existing programs for preparing for its required SSMP Audit due by November 2024.

A summary of the overall inspection areas assessed and scores for the City are provided in Table 1 below.

Table 1 – Inspection Summary

Item	Tasks	Areas Assessed	WDR Reqs.	Compliance (0-5)	Implementation (0-5)	City Points	City Score
A	**Pre-Inspection** (Superintendent) 1800 Booth Rd	Field staff training program/competency, maintenance program, SCADA monitoring/improvements, SERP implementation, capital improvement program (CIP) collaboration between engineering and collections operations, lift station operator inspection logging/data and alarms, FOG enforcement, critical spare parts, mutual assistance practices, design/construction standards, customer complaint system/tracking, Key Performance Indicators (KPIs), root controls, staff certifications, new enhancements necessary for complying with Reissued WDR	Order 2022-0103-DWQ (Spec. 5.19, Att. D-4)	4	4	8	80%
B	**Pre-Inspection** (Supervisors) 1800 Booth Rd	Field staff training program/competency, pump station training, identification/tracking of critical spare parts, SERP training and implementation, post-spill assessments, Supervisor SSMP familiarity/training/inter-coordination, SSMP responsibilities, outside agency coordination, condition assessment process and data, FOG enforcement, new enhancements necessary for complying with Reissued WDR	Order 222-0103-DWQ (Spec. 5.19, Att. D-4)	4	3	7	70%
C	**Field Inspection** (Operator Interviews) Brady Pump Station 8190 Brady Ln	Operator interviews (reviewed spill City emergency response readiness and procedures, operator training/competency, O/M activities, alarms, standard operating procedures (SOPs), and logbook; reviewed asset conditions)	Order 222-0103-DWQ (Spec. 5.19, Att. D-4)	4	3	7	70%
D	**Field Inspection** (Operator Interviews) 8800 Sierra College Blvd	Operator interviews (reviewed spill City emergency response procedures; reviewed spill response/mitigation details and future planned activities for further minimizing future spills	Order 222-0103-DWQ (Spec. 5.19, Att. D-4)	4	4	8	80%
						Avg. Compliance Score	75%

3. Inspection Procedures

The inspection incorporated the following procedures:

1. Desktop Review (review of City SSMP, previous regional board enforcement, benchmarks)
2. Pre-Inspection Meetings
3. Data Review (City answers to completed SWRCB/FCL Questionnaires, spill reports, work programs, other info.)
4. Compliance Evaluation Inspection
5. Post-Inspection Review

4. Inspection Tasks

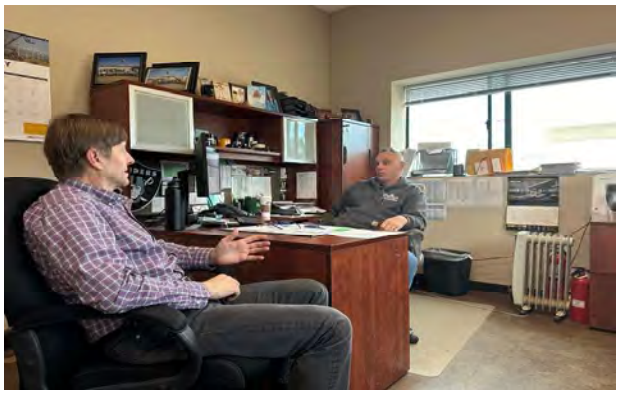
The inspection incorporated several key tasks for evaluating the City's SSMP compliance, implementation, and effectiveness with the Reissued WDR (see Table 2 below).

Table 2 – Summary of inspection Tasks during Inspection

Task	Description	Areas Assessed	WDR Citations
A	**Pre-Inspection Conf.** (Collection System Superintendent) 1800 Booth Rd	• Field staff training program/competency, maintenance program, SCADA monitoring/improvements, SERP implementation, capital improvement program (CIP) collaboration between engineering and collections operations, lift station operator inspection logging/data and alarms, FOG enforcement, critical spare parts, mutual assistance practices, design/construction standards, customer complaint system/tracking, Key Performance Indicators (KPIs), root controls, staff certifications, new enhancements necessary for complying with Reissued WDR	• Spec. 5.19 • Att. D-4 • Att. D-6 • Att. D-8 • Att. E1 • Att. D-11 • Att. D-5 • Att. D-2 • Att. D-8 • Att. D-9
B	**Pre-Inspection Conf.** (Collection System Supervisors) 1800 Booth Rd	• Field staff training program/competency, pump station training, identification/tracking of critical spare parts, SERP training and implementation, post-spill assessments, Supervisor SSMP familiarity/training/inter-coordination, SSMP responsibilities, outside agency coordination, condition assessment process and data, FOG enforcement, new enhancements necessary for complying with Reissued WDR	• Spec. 5.19 • Att. D-4 • Att. D-6 • Att. D-2 • Att. D-11 • Att. D-8 • Att. D-7
C	**Field Inspection #1/2** (Operator Interviews) Brady Pump Station 8190 Brady Ln	• Operator interviews (reviewed spill City emergency response readiness and procedures, operator training/competency, O/M activities, alarms, standard operating procedures (SOPs), and logbook; reviewed asset conditions)	• Spec. 5.19 • Att. D-4
D	**Field Inspection #2/2** (Operator Interviews) 8800 Sierra College Blvd	• Operator interviews (reviewed spill City emergency response procedures; reviewed spill response/mitigation records, details and discussed future planned activities to minimizing any future spills at location	• Spec. 5.19 • Att. D-4 • Att. D-6 • Att. E1

5. TASK A (Pre-Inspection Conf – Superintendent)

This task included a detailed interview with the City's Collection System Superintendent, Mr. Dan Prudent who was very knowledgeable and instrumental in providing clear answers to all questions asked during the inspection. Mr. Pruden also provided a comprehensive set of documents requested previous Pre-Inspection conferences for supplementing data necessary for completing the SSMP Audit package.



TASK A (Photo A1): Pre-inspection conference with Superintendent (Mr. Dan Pruden).

A list of Best Practices (BPs) identified during the interview with the Superintendent is presented in Table 3 below.

Table 3 – TASK A (Best practices identified during inspection)

TASK B	Best Practices (BPs)	WDR Citations
Pre-Inspection (Collection System Supervisors)	• BP A1: Tenured Superintendent and Supervisors with >50 years of combined experience	• Spec. 5.7 • Spec. 5.1
	• BP A2: High quality SSMP, Audits, SERP, spill reports, maintenance equipment	• Spec. 5.2 • Spec 5.12 • Att. E1
	• BP A3: Extensive routine cleaning/inspection programs in place with demonstrated successful outcomes	• Att. D-4
	• BP A4: Extensive pump station/backup power, and spill readiness efforts securely in place	• Spec. 5.19 • Att. D

The following Areas of Concern (AOC) were identified for Task A during the inspection (see Table 6 below).

Table 4 – TASK A (Areas of Concern)

Task A	Areas of Concern (AOC)	WDR Citations
Pre-Inspection Conf. (Collection System Superintendent)	• AOC A1: Field staff training/SERP competency with pump stations	• Spec. 5.19 • Att. D-4
	• AOC A2: Communication and coordination between City dispatch operators and Collections management for ensuring all complaints are promptly assessed and addressed	• Att. D-2 • Att. E1
	• AOC A3: Legally Responsible Official (LRO) training/Data Submitter training	• Spec. 5.1
	• AOC A4: Coordination (engineering/operations)	• Att. D-8
	• AOC A5: Force mains (condition assessments/monitoring)	• Att. D-8
	• AOC A6: Pump station coordination (electricians/line staff)	• Att. D-2
	• AOC A7: FOG program (implementation/enforcement)	• Att. D-7
	• AOC A8: Maintenance of critical spare parts, inventory	• Att. D-4
	• AOC A9: Improvements (regional partners, coordination)	• Att. D-6
	• AOC A10: Improvements (design, construction standards)	• Att. D-5
	• AOC A11: Improvements (Cal-OES notifications, Cat. 1 spills)	• Att E1
	• AOC A12: Improvements (SERP training for staff, contractors)	• Att. D-6

6. TASK B (Pre-Inspection Conf – Supervisors)

This task included interviews with both collection system Supervisors for further assessing the City's SSMP compliance, implementation, and effectiveness against several key Reissued WDR requirements. This included reviewing training program, O/M programs, staffing, and other information. Mr. Rodgers and Mr. Wilbanks were very knowledgeable and provided clear answers to the majority of the questions asked during the inspection.

The Supervisors were asked questions jointly about things going well, best practices in place, and recommendations for what could further be improved. They both agreed with Mr. Pruden regarding the need to further improve the City's existing training program and are concerned about having many inexperienced staff with less than 5 years of actual practical collection system maintenance experience. The Supervisors had some uncertainty with a number of the answers to questions about the City's SSMP documentation, implementation practices of key SSMP elements, and explanation of existing work programs which could be further improved. A list of Areas of Concern (AOC) identified for Task B during the inspection are presented in Table 5 below.



Location B (Photo B1): Pre-inspection conference with Supervisors (Mr. Shane Rodgers and Mr. Cody Wilbanks).

A list of Areas of Concern (AOC) identified for Task B during the inspection are presented in Table 5 below.

Table 5 – Task B (Areas of Concern identified during inspection)

TASK B	Areas of Concern (AOC)	WDR Citations
Pre-Inspection (Collection System Supervisors)	• AOC B1: Inexperienced line staff/SSMP training/competency; pump station training	• Spec. 5.19 • Att. D-4
	• AOC B2: SERP implementation/trainings/post-spill assessments	• Att. D-6
	• AOC B3: Improvements to critical spare parts/inventory/controls	• Att. D-4
	• AOC B4: Supplemental Data Submitter CIWQS training	• Att. E1
	• AOC B5: Improvements (regional partners/ coordination)	• Att. D-6
	• AOC B6: Improvements (reducing “hot spots”)	• Att. D-4
	• AOC B7: Improvements (procedures for addressing system deficiencies)	• Att D-8
	• AOC B8: Improvements (FOG implementation/enforcement)	• Att. D-7
	• AOC B9: Training/familiarity with Reissued WDR requirements, the City’s SSMP, and CIWQS reporting procedures	• Spec. 5.19 • Att. D-4

7. TASK C (Field Inspection #1/2 – Brady Pump Station)

This task included interviewing collection system line staff to assess adequacy of the City's existing program for training line staff for operations of the City's pump stations to comply with Attachment D-6, Spill Emergency Response Plan, and Attachment D-4.3, Training (see photos C1-C6 below). This included interviews with field operations staff at the Brady station. Detailed questions about the station's equipment, inspection/maintenance procedures, emergency troubleshooting procedures, and logbook were asked. Although operators were very experienced and knowledgeable, no specific references to standard procedures were cited and many answers asked during the assessment were either incomplete or inconsistent.

Alarms/Emergency Troubleshooting: To assess emergency response and troubleshooting, operators were asked questions about the station's equipment, operations, and troubleshooting procedures for responding to alarm calls or possible emergencies at the station. No references to SSMP/standard procedures for pump stations were cited by operators.

Logbook: Inspection of the station logbook revealed only very basic entries being logged by operators without detailed information for maintenance activities or resolution of any problems encountered. Operators stated that pumps are serviced on 90-day intervals. However, inspection of the logbook entries revealed the last pump servicing was completed in July 2023.

Alarm Simulation: A high float alarm check was completed. No references to SSMP/standard procedures for pump stations for handling alarms were cited by operators (procedures for pulling float, checking motor control center (MCC) panel, calling wastewater treatment plant to inform them of the test, logging the test in logbook and into CMMS, etc.).

Allowable Downtime: The City completed comprehensive downtime calculations without power for all of its pump stations including the Brady station. The maximum allowable holding time specified for the Brady station is 11 hours (see Photo C3).

Bypassing: The inspection revealed the Brady station does not have a force main bypass valve installed and traditional bypassing would prove difficult due to challenges accessing the force main which flows under the adjacent creek immediately south/southwest of the station. No references to SSMP/standard procedures for pump stations for bypassing were cited by operators.

Spill Appearance Point: Operations staff were unable to quickly reference the lowest upstream spill appearance point for the station.



Task C (Photo C1): Inspection of Brady Pump Station; emergency notification signage mounted on the station fence including City contact information.



Task C (Photo C2): Interviews with City field operations staff at station.

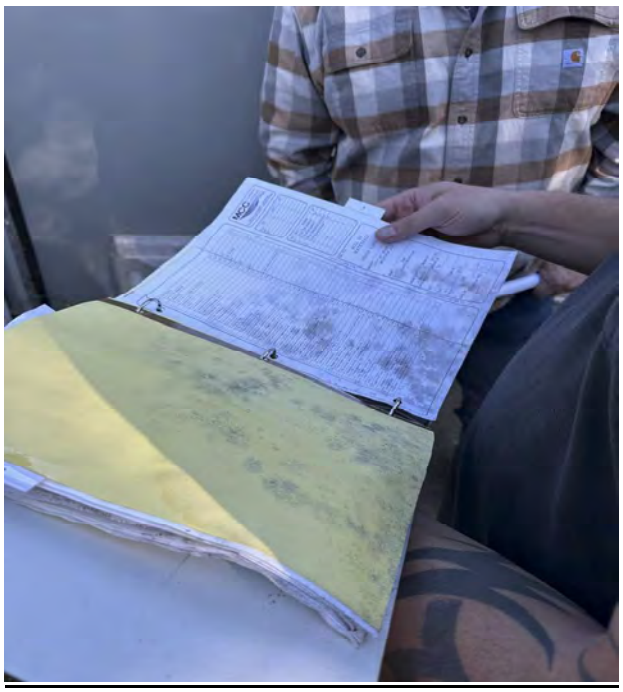


Task C (Photo C3): Inspection of station motor control center (MCC) panel and controls.



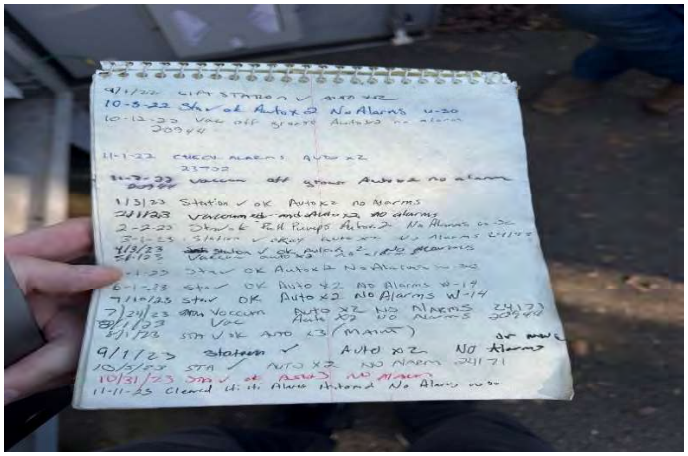
Task C (Photo C4): Inspection of station Wetwell.



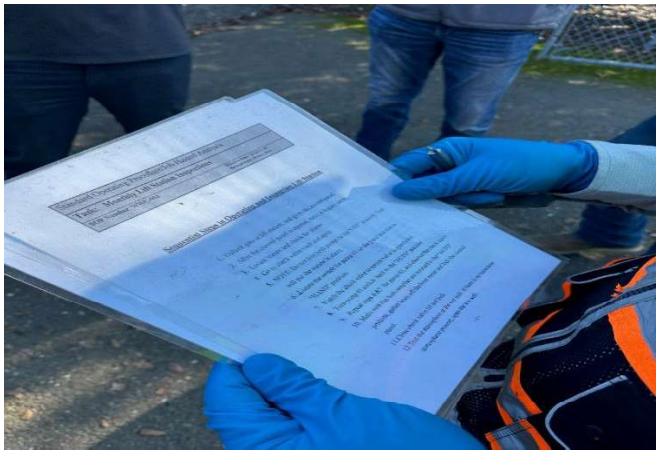


Task C (Photo C5): Inspection of station MCC panel; the City has written critical information for all of its pump stations including the Brady station for reference during routine/emergency operations; written specifications include "allowable downtime without power=11 hours, "overflow point= Wetwell", decant manhole (MH C03-216 located at 1311 Brady Lane; "high alarm" set point=96", "lag start" set point=70", "lead start set point=59", "lead/lag" stop point=27", "low alarm" set point=12", and "low float" set point at 4").

Task C (Photo C6): Inspection of 2008 original construction documentation stored in the MCC inside panel at station.



Task C (Photo C7): Inspection of station logbook; only basic entries are logged by operators.



Task C (Photo C8): Inspection of "Standard Operating Procedure/Job Hazard Analysis" form stored in the MCC inside panel; operations staff were unaware of the form; station operators were also initially unsure of lowest upstream spill appearance point for station.

A list of Areas of Concern (AOC) identified for Task C during the inspection are presented in Table 6 below.

Table 6 – Task C (Areas of Concern identified during inspection)

TASK C	Areas of Concern (AOC)	WDR Citations
Field Inspection #1/2 (Operator Interviews) Brady Pump Station 8190 Brady Ln	• AOC C1: Insufficient answers to questions related to Standard Operating Procedures (SOP) for pump stations	• Spec. 5.19 • Att. D-4
	• AOC C2: Insufficient answers to inspection questions related to Spill Emergency Response Plan (SERP) implementation procedures, station equipment, and alarm response/procedures	• Spec 5.12 • Att. D-6

8. TASK D (Field Inspection #2/2 – 8800 Sierra College Blvd)

This task included assessing the City's response to addressing a spill originating from an odor complaint submitted to the City for this location (see Spill CIWQS Spill ID #891462 (Attachment X) and photos D1-D8 below). This call originated from a public odor complaint submitted to the City for field assessment and response. The problem was ultimately discovered to be caused by tree root problems within the City's mainline sewer in this location.

Spill Summary Narrative (from Spill Technical Report submitted in CIWQS): "*On Monday, December 4, 2023, the City Wastewater Collection Division received an odor complaint from a resident at 8800 Sierra College Blvd (Slate Creek Apartment Complex). The resident indicated that despite reporting a sulfur-like odor to the property manager, the resident hadn't seen any action being taken. During the investigation of the odor complaint, the City Wastewater Collection Service Worker followed City standard operating procedures (SOPs) and discovered a sewer manhole (Asset SMH B08-032) located on a 8 inch City sewer main line discharging into a wetlands area located behind the apartment complex. The next downstream manhole (Asset ID) was discovered by the Service Worker to be fully obstructed by tree roots which the City determined after a lengthy investigation the cause of the sewer spill. Upon discovering the spill, the Service worker promptly notified a supervisor, and wastewater crews promptly implemented the City's Sewer System Management Plan (SSMP) procedures outlined in the Spill Emergency Response Plan (SERP) for containment, control and mitigation of the spill. Due to its entry into the wetlands area which flows into Strap Ravine, the spill was treated as a Category 1. Prompt notification was made to Cal-OES and a control number issued. Following containment of the spill and initiating cleanup, it became apparent that the volume of the spill exceeded 50,000 gallons, which required the need for Water Quality Monitoring and submission of a Technical Report within 45 days as required by Attachment E1 of the Reissued WDR. The City followed all required procedures outlined in its SERP for effective spill investigation, response, and cleanup, including extensive deployment of City staff and resources including Hydro-Vac units, excavators, trash pumps, and washdown water to mitigate the effects of the spill.*"



Task D (Photo D1): Inspection of former spill site (looking south/southwest); City improved former access and fully restored area immediately following the spill



Task D (Photo D2): Inspection of former spill site (looking west)



Task D (Photo D3): Inspection of manhole structure at spill appearance point (manhole asset ID #B08-028; the failure location was at manhole asset ID #B08-032.



Task D (Photo D4): Inspection of manhole structure; no significant solids or debris observed in the channel, barrel, or the bench area.



Task D (Photo D5): Inspection of Strap Creek (looking south/southeast); no evidence of spill/impacts observed



Task D (Photo D6): Inspection of Strap Creek (looking west/northwest); no evidence of spill/impacts observed



Task D (Photo D7): Close view of Strap Creek; no evidence of spill impacts observed



Task D (Photo D8): Inspection of stormwater best management practices (silt fence) installed for mitigating impacts to creek during spill cleanup/restoration; no evidence of spill/impacts observed

The following Areas of Concern (AOC) were identified for Task D of the inspection (see Table 7 below).

Table 7 – Task D (Areas of Concern identified during inspection)

TASK D	Areas of Concern (AOC)	Related WDR Citations
Field Inspection #2/2 (Operator Interviews) 8800 Sierra College Blvd	• AOC D1: Risks/threats for future spills at this location	• Prohibitions
	• AOC D2: SERP training/drills at this location	• Att. D-6
	• AOC D3: Lack of easement area access and maintenance	• Att. D-3 • Spec. 5.19

9. Findings and Recommendations

To meet/exceed the requirements of the Reissued WDR, the Agency should address all findings including potential violations and areas of concerns identified in Table 10 below prior to completion of its next required SSMP Audit.

Table 10 – Findings and Recommendations

Areas of Concern (AOC)	WDR Citations	Recommendations
• AOC A1: Field staff training/competency with SERP competency for pump stations	• Spec. 5.19 • Att. D-4	• Improve operator training program for SERP/pump stations; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC A2: Communication and coordination between City dispatch operators and Collections management for ensuring all complaints are promptly assessed and addressed	• Att. D-2 • Att. E1	• Develop/improve internal compliant procedures to ensure all incoming complaints are addressed between departments in timely manner, recorded, and staff adhere to expectations/procedures established; update SSMP and change log when implemented
• AOC A3: LRO training/Data Submitter training	• Spec. 5.1	• Improve LRO/data submitter training to achieve desired results; update SSMP and change log when implemented
• AOC A4: Coordination (engineering/operations)	• Att. D-8	• Improve coordination between engineering and operations to achieve desired results; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC A5: Force mains (condition assessments, monitoring)	• Att. D-8	• Initiate condition assessment program for force mains to achieve desired results; update SSMP and change log when implemented
• AOC A6: Pump station coordination (electricians/line staff)	• Att. D-2	• Improve training and coordination to achieve desired results; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC A7: FOG program (implementation/enforcement)	• Att. D-7	• Improve FOG program implementation to achieve desired results; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC A8: Maintenance of critical spare parts, inventory	• Att. D-4	• Improve existing inventory to achieve desired results; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC A9: Improvements (regional partners, coordination)	• Att. D-6	• Improve coordination to achieve desired results; update SSMP and change log when implemented

Areas of Concern (AOC)	WDR Citations	Recommendations
• AOC A10: Improvements (design, construction standards)	• Att. D-5	• Conduct routine period reviews of standards to address any instances where insufficient or ineffective; update SSMP and change log when implemented
• AOC A11: Improvements (Cal-OES notifications, Cat. 1 spills)	• Att E1	• Improve SERP training/drills/implementation to avoid future violations; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC A12: Improvements (SERP training for staff/contractors)	• Att. D-6	• Improve SERP training/drills/implementation with contractors; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC B1: Inexperienced line staff/SSMP training/competency; pump station training	• Spec. 5.19 • Att. D-4	• Refer to AOC A1
• AOC B2: SERP implementation, trainings, post-spill assessments	• Att. D-6	• Refer to AOC A1
• AOC B3: Improvements to critical spare parts/inventory, controls	• Att. D-4	• Refer to AOC A8
• AOC B4: Supplemental Data Submitter CIWQS training	• Att. E1	• Improve training; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC B5: Improvements (regional partners, coordination)	• Att. D-6	• Refer to AOC A9
• AOC B6: Improvements (reducing “hot spots”)	• Att. D-4	• Implement “hot spot” elimination program; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC B7: Improvements (procedures for addressing system deficiencies)	• Att D-8	• Improve narration detail for procedures in place to inspect/identify and rectify operations deficiencies discovered; update SSMP and change log when implemented
• AOC B8: Improvements (FOG implementation, enforcement)	• Att. D-7	• Refer to AOC A7
• AOC B9: Training/familiarity with the City’s SSMP and CIWQS reporting procedures	• Att. D-4 • Att. E1	• Improve Supervisor training on WDR requirements, City SSMP details, and CIWQS reporting requirements for Data Submitters to ensure competency with entering all appropriate data prior to certification of spill reports by LRO (Legally Responsible Official).

Areas of Concern (AOC)	WDR Citations	Recommendations
• AOC C1: Insufficient answers to questions related to Standard Operating Procedures (SOP) for pump stations	• Spec. 5.19 • Att. D-4	• Improve SERP training/drills/implementation to avoid future violations; ensure adherence to established procedures; update SSMP and change log when implemented
• AOC C2: Insufficient answers to inspection questions related to Spill Emergency Response Plan (SERP) implementation procedures, station equipment, and alarm response/procedures	• Spec 5.12 • Att. D-6	• Improve SERP training/drills/implementation to avoid future violations; ensure adherence to established procedures; update SSMP and change log when implemented

Areas of Concern (AOC)	WDR Citations	Recommendations
• AOC D1: Risks/threats for future spills in remote areas	• Prohibitions	• To help further reduce risks/threats/impacts from future spills at this location and at other similar assets, the City should audit and improve its existing maintenance practices for remote locations; the City should also consider utilization of monitoring technology to help further improve oversight of identified critical remote areas
• AOC D2: SERP training/drills in remote areas	• Att. D-6	• To help reduce risks/impacts with future spills, the City should consider conducting customized drills for its SERP specific for remote locations
• AOC D3: Lack of easement area access and maintenance	• Att. D-3 • Spec. 5.19	• The City should further assess access/maintenance practices for assets in this location and others throughout the system to ensure compliance with Att. D-3 requiring adequate accessibility for operations and maintenance

10. Post-Inspection Findings

The Compliance Evaluation Inspection Report (CEI) was submitted to the City on March 7, 2024. In response, the following information was received from the City providing detailed responses to all Areas of Concern (AOCs) identified during the inspection report.

Areas of Concern (AOC)	City Responses
• AOC A1: Field staff training/competency with SERP competency for pump stations	• *"All staff receive training once a year on our SOP # 003 "Lift Station Inspection specifically". They also receive additional training on lift stations once a year when we train of our SERP and SSMP (element 4). Lastly, they receive a separate training on SOP # 042 "Lift Station Overflow Structure". Our crews are taught that they have the support of management, and we can be called in any situation to help or advise."*
• AOC A2: Communication and coordination between City dispatch operators and Collections management for ensuring all complaints are promptly assessed and addressed	• *"The City of Roseville has a person that answers phones from 0630-1600 five days a week. If they are unavailable, after hours and on weekends we have an answering service that the call rolls over to. Calls received by the answering service are relayed to the Service Worker / On Call personnel. The city also customer relationship management system that the public can use to contact us as well. We are also notified of odor complaints that are submitted online that the City can quickly respond too. Are communication with regulatory agencies is handled by reporting on CIWQS, spills that are category 1 or over 1000 gallons are reported to OES as required."*
• AOC A3: LRO training/Data Submitter training	• *"LRO and data submitting training is learned on the job and by attending CWEA and Tri State training classes. Additional training is received through consultant training classes as well. All LRO's and data submitted hold at a minimum a CWEA Collection System maintenance Grade 4 or is a registered PE in California."*
• AOC A4: Coordination (engineering/operations)	• *"The City of Roseville plans capital improvements through system evaluation and condition assessment. Areas of concern are identified with CCTV, visual observations, modeling and impacts on environmental areas of concern. Projects are scheduled and planned through our Tech Services group and on projects that we bring to them we are highly involved. We are currently working with Tech Services on two areas where we have capacity issues. The projects will upsize the existing mains to allow for more capacity and relieve choke points. Projects that effect the collection system on the development side are handled by our Development Services group and Wastewater Collections is involved in these activities. The actual design we do have input on, but we are not involved so much with the day to day building of the infrastructure. If changes are made in the field, we may not know about them until much later. More oversite is needed by the wastewater Collection staff.*

Areas of Concern (AOC)	City Responses
• AOC A5: Force mains (condition assessments, monitoring)	A5: The City of Roseville is currently working on a project to complete a full condition assessment of its force mains. As of today, we have not started a full condition assessment of our force mains do to the lack of technology out there. Tech Service is working to find a technology that will work for our small diameter mains. It may come down to excavating and removing a coupon to do our evaluation.
• AOC A6: Pump station coordination (electricians/line staff)	A6: Wastewater Collection staff are only authorized to operate lift stations with the Hand Off Auto switch. All other electrical work is performed by our Electrical Technicians. These staff members are available 24/7, 365 and have full access to spare / stocked parts that may be required. They can perform electrical work, signal and control wiring, PLC and SCDA programming and troubleshooting.
• AOC A7: FOG program (implementation/enforcement)	A7: The City of Roseville has two full time FOG inspectors that perform public outreach and enforces the City's municipal code section 14.14. The city relies on two components to control FOG, 1. Cleaning and inspection 2. Enforcement and education working with our FSE's. You may also refer to element #7 of our SSMP. We are working with Code Enforcement to apply monetary penalties on an as needed basis. We have developed a program that is currently at the City Attorney's Office for review where we do the inspection, notification of violation (three times) and then hand of to Code enforce the monetary aspect of the enforcement or the closing of the business. We also have language in the code that we can sever or temporarily stop flow from an establishment.
• AOC A8: Maintenance of critical spare parts, inventory	A8: The City of Roseville has identified critical parts that are required to be on hand for the preventive maintenance and emergency maintenance that may be required. These parts are called out in our SSMP element #4 Operation and Maintenance. All electrical components are maintained in our mechanical maintenance warehouse that is controlled by the electrical technicians at the Dry Creek WWTP. All repair fittings and pipe are warehoused at the Collections building and controlled by the wastewater collections team. As material / components are used they are replaced to maintain a reasonable inventory of required parts. All warehoused material is controlled by a material technician that works in wastewater collections to allow better control of what we need to have on hand.
• AOC A9: Improvements (regional partners, coordination)	A9: More work can be performed here. There is a JPA in place but nothing specific to mutual aid and how that would work in an emergency. We do meet three times a year with our satellite agencies, and we do from time to time reach out to work on and or discuss issues of the day.

Areas of Concern (AOC)	City Responses
• AOC A10: Improvements (design, construction standards)	• *"As stated in element #5 of our SSMP, the City of Roseville maintains design and construction standards with minimum requirements for developers and contractors for installing a complete and operable wastewater collection system. The standard has language that calls out for air and vacuum testing along with CCTV for acceptance. The City of Roseville also has a punch list procedure to communicate unacceptable work to developers and contractors. According to the National Clay Pipe Institute the City of Roseville has the most stringent standard for installation and acceptance in the country."*
• AOC A11: Improvements (Cal-OES notifications, Cat. 1 spills)	• *"All category 1 and 2 spills are reported to Cal OES with in the required two hours. All information that is required to be reported is given to the Cal OES operator based on the questions that they ask, and a control number is obtained. Should information change there is an option for updating information. Water samples are taken for spills that are greater than 50,000 gallons. See element #6 of our SSMP."*
• AOC A12: Improvements (SERP training for staff/contractors)	• *"We train on the SERP annually and impromptu classes and testing are conducted through the year. We use an onsite spill simulator to train on spills from a lower lateral clean out and a sewer manhole. Spill volume and start and stop times estimation are trained on as well."* • *"We respond to calls for service within 20 minutes during business hours and within 40 minutes after hours and on weekend and holidays. We train on containing the spill, eliminating the cause, and mitigating the impacts of the spill. Notifications for category 1 and 2 spills are made as required and all spills are photographed and documented. Spills that require reporting to CIWQS are done so within the required time."*

Areas of Concern (AOC)	City Responses
• AOC B1: Inexperienced line staff/SSMP training/competency; pump station training	• B1: While the personnel question may not have answered all the question to the satisfaction of the interviewer it does not mean that they do not know that their job is to protect from dischargers to the environment. The personal questioned were from other crews and do not typically work on lift stations. They have been trained and if they had arrived at a true spill, they would have followed their training to mitigate the issue.
• AOC B2: SERP implementation, trainings, post-spill assessments	• B2: All COR WWC staff have been trained on the SERP twice in the last year. The first training was conducted by the LRO, and a second training was conducted with a consultant. One Source Utility Consulting was used for a half day training along with a spill simulator test for volume estimation, duration and volume recovered. Post spill assessments are completed by the LRO or his supervisors this is not a requirement of the operation staff.
• AOC B3: Improvements to critical spare parts/inventory, controls	• B3: The warehousing of critical spare parts is sufficient to handle any issues that we may encounter. To date we have not had a spill due to lack of spare parts. In extreme cases bypass pumping of the lift stations could be performed as well as any mains that we have in our system.
• AOC B4: Supplemental Data Submitter CIWQS training	• B4: More training may be warranted here and adding another LRO in Collections should be implemented. Seek out third party training for additional compliance training.
• AOC B5: Improvements (regional partners, coordination)	• B5: More work can be performed here. There is a JPA in place but nothing specific to mutual aid and how that would work in an emergency. We do meet three times a year with our satellite agencies.
• AOC B6: Improvements (reducing “hot spots”)	• B6: Hot Spots are removed, when possible, by way of CIPP or replacing with new pipe. We also use FOG Inspection and compliance measure to try and reduce Hot Spots. Time has taught us the FOG does stick to CIP so removal of a main does not mean in perpetuity, it can end up back on the list!
• AOC B7: Improvements (procedures for addressing system deficiencies)	• B7: Improvements are based on our Vactor operator’s observations and CCTV crews condition assessment. We also contract with outside contractors to perform condition assessment of our larger trunk mains. We recently bypassed pumped and inspected our 63” and 66” in two locations to determine the cause and possible extent of damage after blistering was seen in the 2019 Condition assessment of the same mains. As issues are found through condition assessments of collector’s work orders are created and prioritized for repair. COR has its own in house construction crew and work is performed to make all repairs.
• AOC B8: Improvements (FOG implementation, enforcement)	• B8: The City of Roseville has two full time FOG inspectors that perform public outreach and enforces the City’s municipal code section 14.14. The city relies on two components to control FOG, 1. Cleaning and inspection 2. Enforcement and education working with our FSE’s. You may also refer to element #7 of our SSMP. We work with Code enforcement to apply monetary penalties on an as needed basis.

Areas of Concern (AOC)	City Responses
• AOC B9: Training/familiarity with the City's SSMP and CIWQS reporting procedures	• B9: More hands on training is required for probationary employees and a few of our Journeymen. Personnel can sometimes get placed on a crew for years on end and the day to day knowledge may be lost when asked to fill in on another discipline. We train annually on lift station operations the SERP, WDR and SSMP as well as SOP training for mission essential equipment used for preventive and reactive maintenance.

Areas of Concern (AOC)	City Responses
• AOC C1: Insufficient answers to questions related to Standard Operating Procedures (SOP) for pump stations	• C1: While the answers may have been insufficient at the time the fact is that all employees know that if they arrive at any call for service that if they have any questions or issue, they can always call a supervisor. We can improve in this area; we have created an atmosphere where the crews rely on direction from leads and supervisors. More will be done in this space to make the crews feel they can do this all on their own.
• AOC C2: Insufficient answers to inspection questions related to Spill Emergency Response Plan (SERP) implementation procedures, station equipment, and alarm response/procedures	• C2: There has been training and testing on the SERP and on lift station operations, but this audit shows more work is needed. New testing requirements will be implemented for both the SERP and Lift Station training along with impromptu testing on all our disciplines in wastewater collections.

Areas of Concern (AOC)	City Responses
• AOC D1: Risks/threats for future spills in remote areas	• D1: The first lesson learned from this spill was the need for a more aggressive and consistent hydro cleaning schedule for easements and open spaces. We have embarked on a new program that has identified all easements and open spaces and prioritized mains that if water were to spill would have the greatest impact on the environment. Second, we have procured an easement machine to better access some of the harder to reach SMH in easements. This machine adds an additional 500' of reach to the 800' we have on our Vactor trucks.
• AOC D2: SERP training/drills in remote areas	• D2: With our annual training we will be adding an element to cover easements and how to access hard to reach manholes. We will also cover deployment of the easement machine and best practices for working in off site locations. Included in this training we will touch on spill containment and recovery of spilled water as open spaces and easement offer their own unique challenges.
• AOC D3: Lack of easement area access and maintenance	• D3: We have identified areas of concern with regards to access. We are working on removing brush and overgrowth in some areas along with installing base rock and building solid access roads in others. The City's Public Works Department has under construction right now a bike path project that Wastewater Collection worked with them on to gain access to more SMH's along creeks. There is a second project that is kicking off that Collections is involved that will give us even more access to SMH's.

END OF REPORT

Appendix 2 - City Performance Metrics and KPIs

SSS WDR Element	SSS WDR Ref.	Description	Performance Indicator	Unit	Target	KPI Data FY 14/15	KPI Data FY 15/16	KPI Data FY 16/17	KPI Data FY 17/18	KPI Data FY 18/19	KPI Data FY 19/20	KPI Data FY 20/21	KPI DATA FY 21/22	KPI DATA FY 22/23	KPI DATA FY 23/24	Audit Frequency	Responsible Party
Organization	D.ii.c	Chain of Communication	Average response to customer inquiry	Minute	40	19.58	23	20	21	20	21	21	20	20	20	Quarterly	WW Superintendent
			Total customer service requests	Number	0	915	1549	533	302	288	523	325	618	674	252	Quarterly	WW Superintendent
			Total sewer odor complaints	Number	0	9	43	50	39	45	10	24	7	10	25	Quarterly	WW Superintendent
			Total roache complants	Number									N/A	N/A	106	Quarterly	WW Superintendent
			Average rating in customer service card	Number	5	5	5	5	5	5	5	5	4.93	5	5	Quarterly	WW Superintendent
O&M	D.iv.a	Maps	Average response time to map update requests	Days	90	90	90	90	90	90	90	90	30	10	10	Quarterly	WW Superintendent
			Miles of Pipe / Main	Miles									286.05	597.93	602.49	Annually	WW Superintendent
			Miles of Pipe /Laterals	Miles									286.26	291.88	292.93	Annually	WW Superintendent
			Miles of Force Main	Miles										9.9	9.9	Annually	WW Superintendent
	D.iv.b	PM Activities	Manholes Inspection performed	Number	0	2493	3575	1547	1511	149	293	88	0	0	0	Quarterly	WW Superintendent
			Sewer main flushed per year	Miles	250	284	248	295	283.12	226.1	235.9	296.14	288.73	301.36	146.12	Quarterly	WW Superintendent
			Sewer laterals chemically treated per year	Number	1100								1106	1088	404	Quarterly	WW Superintendent
			Sewer laterals mechanically cleaned (eeled) per year	Number	0	14.32	14.77	7.41	1.07	268	235	74	146	107	47	Quarterly	WW Superintendent
			Working staff time to PM program	%	80%	85%	82%	82%	84%	84%	83%	84%	85%	85%	85%	Quarterly	WW Superintendent
			Number of customer accounts per WW employee	Number	561	1517	1554	1772	1757	1943	1873	1873	1852	1944	1821	Quarterly	WW Superintendent
			Average cost of hydro cleaning	$/lf	$0.36	$0.32	$0.33	$0.29	$0.32	$0.34	$0.34	$0.34	N/A	N/A	N/A	Annually	WW Superintendent
			Average cost of sewer mechanical cleaning	$/lf	$1.60	$1.20	$0.77	$0.94	$1.66	$0.30	$0.30	$0.30	N/A	N/A	N/A	Annually	WW Superintendent
	D.iv.c	R&R Plan	Manholes rehabilitated	Number	50	0	0	0	0	0	0	0	0	0	1	Quarterly	WW Superintendent
			Sewer main CCTV inspected per year	Miles	30	75	84.32	59.71	64.1	119.9	94.65	38.57	50.05	51.59	24.82	Quarterly	WW Superintendent
			Sewer laterals CCTV inspected per year	Miles	16	26	35.71	32.51	36.14	29.74	22.46	27.88	28.76	29.99	18.68	Quarterly	WW Superintendent
			Sewer cleanouts installed per year	Number	75	76	83	144	141	67	118	58	46	24	11	Quarterly	WW Superintendent
			Sewer Laterals Rehabilitated	Number	50	48	60	85	89	74	82	110	79	51	37	Quarterly	WW Superintendent
			Total miles rehabed or replaced per year (main)	Miles	5	6	0	0	1.07	0.05	0.09	3.4	3.4	0	3.75	Annually	WW Superintendent
			Total miles rehabed or replaced per year (lateral)	Miles	0.25	0.16	0.27	0.66	0.42	0.45	0.46	0.62	0.43	0.29	0.23	Annually	WW Superintendent
			Annual capitol budget sewer rehab/replacement	$/M	$1.80	$1.05	$1.36	$2.61	$2.25	$2.70	$2.70	$2.10	$3.40	$3.20	$3.11	Annually	WW Superintendent
			Average cost of CCTV main	$/lf	$0.53	$0.41	$0.41	$0.36	$0.40	$0.60	$0.75	$1.85	N/A	N/A	N/A	Annually	WW Superintendent
			Average cost of CCTV lateral	$/lf	$1.34	$1.11	$1.15	$1.04	$1.00	$1.24	$1.29	$1.28	N/A	N/A	N/A	Annually	WW Superintendent
	D.iv.d	Training	On the job accidents	Number	0	5	3	3	4	10	8	6	0	0	1	Quarterly	EU Safety Coordinator
	D.iv.e	Critical Parts	% of required number of identified critical parts are stocked	%	100	100	100	100	100	100	100	100	100	100	100	Annually	Materials Technician
Design	D.v.a&b	Construction	% of new sewer main accepted vs. inspected	%	100	100	100	100	100	100	100	100	100	100	100	Annually	WW Supervisor
			% of new sewer lateral accepted vs. inspected	%	100	100	100	100	100	100	100	100	100	100	100	Annually	WW Supervisor
OERP	D.vi.a	Notification	Average response time to SSO	Minutes	40	20	23	20	17	21	22	17	20	34	21	Quarterly	WW Superintendent
	D.vi.b	SSO Response	Average SSO duration (main)	Minutes	40	n/a	70	0	0	0	154	146	1670	140.8	289	Quarterly	WW Superintendent
			Average SSO duration (lateral)	Minutes	40	n/a	37	48	36	171	245	285	94	25.28	50	Quarterly	WW Superintendent
FOG	D.vii.a	Public Education	FOG public education outreach program events per year	Number	4	3	4	3	3	2	1	1	1	2	2	Annually	Environmental Utilities PIO
	D.vii.b	FOG Disposal	Gallons of FOG curbside pickup per year	Gallons	25	179.75	293.1	373.25	296	506	323	595	476	445	230	Annually	Refuse Division
	D.vii.d	BMPs &Devices	% of total FSE's with grease removal devices	%	90	90	97	98	98	98	98	98	94	94	94	Annually	FOG Supervisor
			% of total FSE's with a variance	%	5	4	4	4	4	4	4	4	4	4	4	Annually	FOG Supervisor
	D.vii.e	FOG Inspections	FSE FOG inspections per year	Number	294	n/a	n/a	181	231	N/A	N/A	221	756	1012	492	Annually	FOG Supervisor
			Number of new FSE permits issued per year	Number	5	n/a	n/a	40	46	N/A	N/A	36	31	35	19	Quarterly	FOG Supervisor
	D.vii.f	Hot Spots	% of hotspot pipes CCTV inspected each year	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0	Annually	WW Supervisor
			Number of SSO's caused by hot spots	Number	0	0	0	0	0	0	0	0	0	1	0	Quarterly	WW Superintendent
			SSO volume casued by hot spots	Gallons	0	0	0	0	0	0	0	0	0	33	0	Quarterly	WW Superintendent
MMM	D.ix.e	SSO Trends	Total number of SSO's mains and laterals	Number	35	42	39	24	25	31	32	51	32	30	17	Quarterly	WW Superintendent
			Total volume SSO's mains and laterals	Gallons	2000	1202	2523	1086	1565	869	517	772	77,828	13,443	381842	Quarterly	WW Superintendent
			% of total SSO volume recovered	%	100	94.5	95.42	91.25	53.86	37.63	86.8	63	50.1	63%	24.30%	Quarterly	WW Superintendent
			Total number of wet weather SSO's	Number	0	0	0	0	0	0	0	0	1	2	0	Quarterly	WW Superintendent
			Total volume of wet weather SSO's	Gallons	0	0	0	0	0	0	0	0	1357	12,920	0	Quarterly	WW Superintendent
			% of SSO's caused by FOG (main)	%	1	50	50	0	0	100%	0	0	0	40%	0.06%	Quarterly	WW Superintendent
			% of SSO's caused by roots (main)	%	70	0	0	0	0	0	0	50%	33%	0%	99.92%	Quarterly	WW Superintendent
			% of SSO's caused by debris/rags (main)	%	0	0	0	0	0	0	100%	50%	0%	60%	0	Quarterly	WW Superintendent
			Number of SSO's caused by LS failure	Number	0	0	0	0	0	0	0	0	0	0	0	Quarterly	WW Superintendent
			Number of SSO's caused by pipe/structural failures	Number	0	0	1	1	3	1	3	14	1	1	4	Quarterly	WW Superintendent
			% of SSO's caused by FOG (laterals)	%	10	0	0	0	0	0	0	0	1	12.50%	0	Quarterly	WW Superintendent
			% of SSO's casued by roots (laterals)	%	75	77.5	84	87	48	20	16	35	26	56%	46.20%	Quarterly	WW Superintendent
			% of SSO's casued by debris/rags (laterals)	%	0	12.5	10.8	9	28	9	11	2	7	24%	5.60%	Quarterly	WW Superintendent
			Repeats SSO's within two years	Number	0	2	0	0	0	4	1	1	0	1	1	Quarterly	WW Superintendent
			Number of Category 1 SSO's	Number	0	0	0	0	1	0	0	0	2	2	1	Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year- Category 2	Number	2	0	1	0	0	0	0	0	0	0	TBD	Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year - lateral	Number	15	16.26	15.04	9.35	8.81	9.56	10.24	16.38	10.13	11.5	TBD	Quarterly	WW Superintendent
			SSO's/100 miles of pipe/year -mains	Number	0.6	0.4	0.4	0	0.19	0.52	0.52	0.35	0.51	0.8	TBD	Quarterly	WW Superintendent
			Flooding claims per year	Number	0	1	0	0					1	1	1	Quarterly	WW Superintendent
			Total Cost of claims per year	$	0		0	0					430	16,620	1,431	Quarterly	Risk Management
			Flooding and Claims											Update 23JAN24			

Appendix 3 — City Spill Performance Report

The purpose of this Appendix is to provide visual data tools to showcase the City's historic spill performance compared with other collection system agencies within the Central Valley Regional Water Board area and state from the required City Audit period 5/2/2021 to 5/2/2024).

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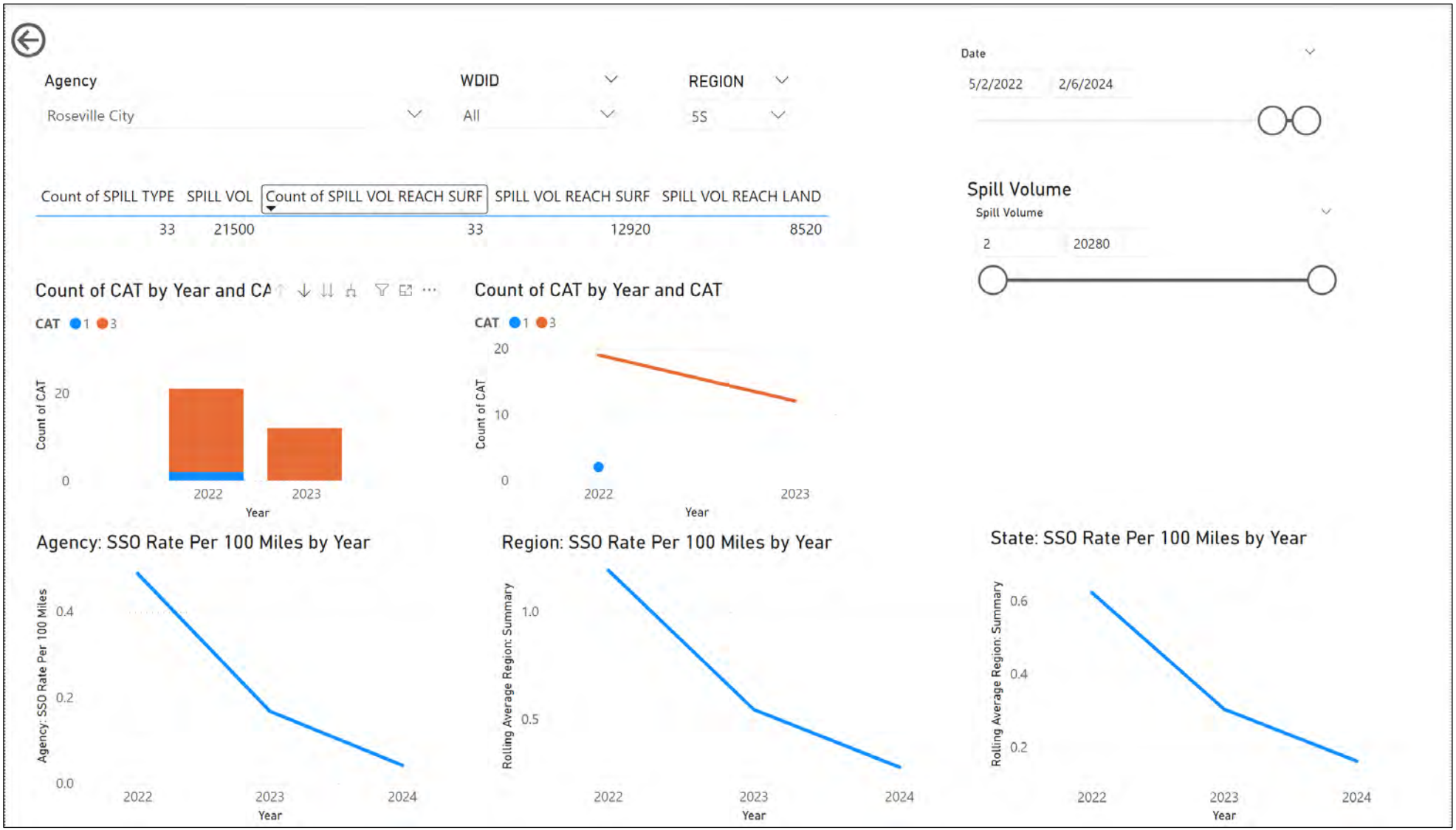


Figure 1 – City Spill Dashboard during SSMP Audit Period (May 2021-May 2024)

Observation: The City's rolling average spill rate per year during the SSMP Audit period decreased from 0.49 spills/100 miles of sewer per year to 0.04 spills/100 miles of sewer per year.

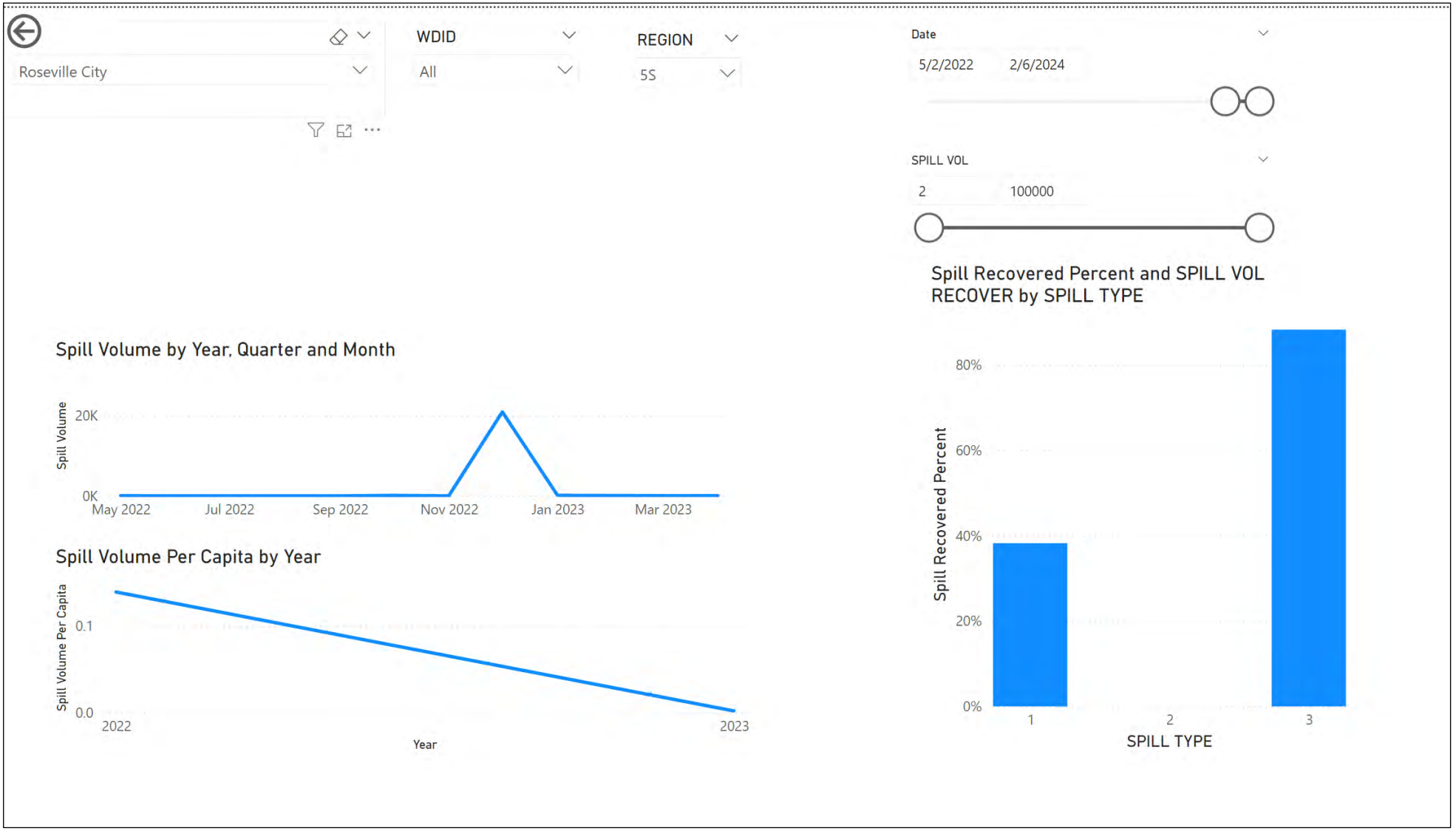


Figure 2 - City Spill Dashboard (volume of spills by year during SSMP Audit Period (May 2021-May 2024)

Observations: The City's volume of spills per capita (population) decreased during the SSMP Audit period from 0.139 gallons per capita to 0.002 gallons per capita). The City's average recovery (%) for Category 1 spills averaged 38% and 88% for Category 3 spills during the SSMP Audit period.

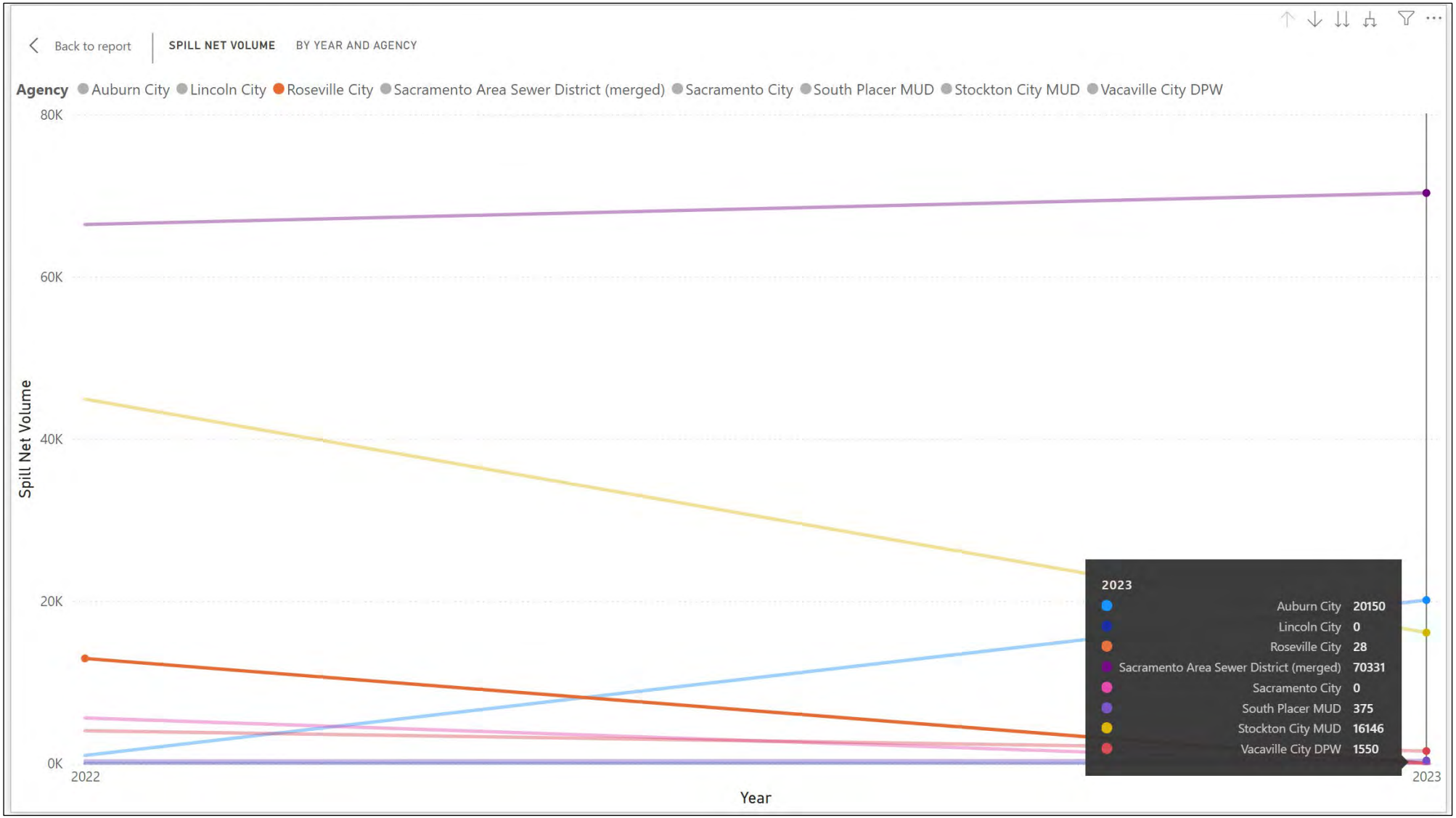


Figure 3 - City Spill Net Volume compared to agencies by year during SSMP Audit Period (May 2021-May 2024)

Observations: The City's net spill volume decreased during the SSMP Audit period from 12,960 gallons in 2022 to 28 gallons. The City's average recovery (%) for Category 1 spills averaged 38% and 88% for Category 3 spills during the SSMP Audit period.

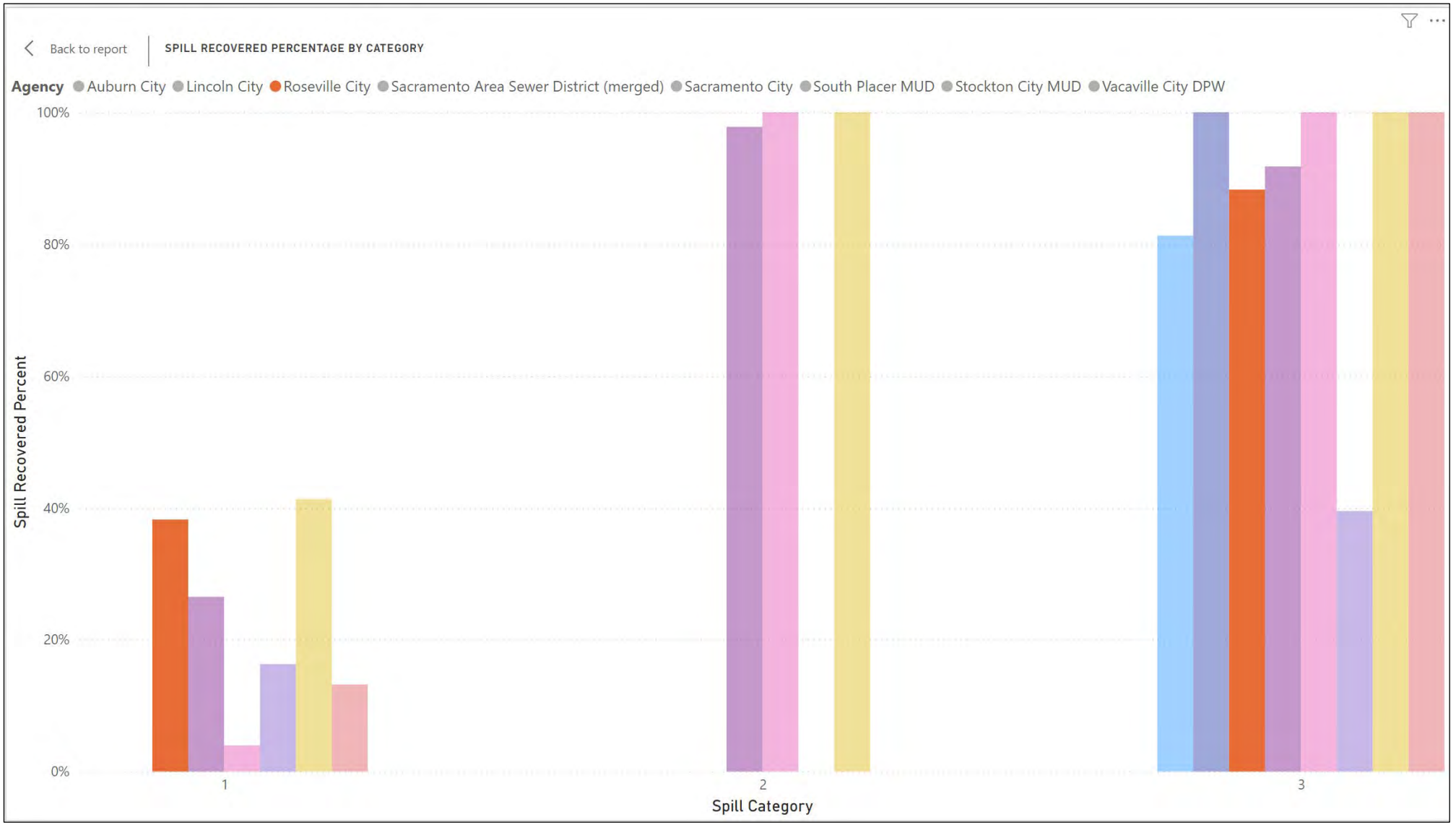


Figure 4 - City Spill Volumes Recovered compared to agencies by year during SSMP Audit Period (May 2021-May 2024)

Observations: The City's spill % of spill volume recovered for Category 1 spills (38%) and for Category 3 spills (88%) was higher than most other agencies within the region during the SSMP Audit period.

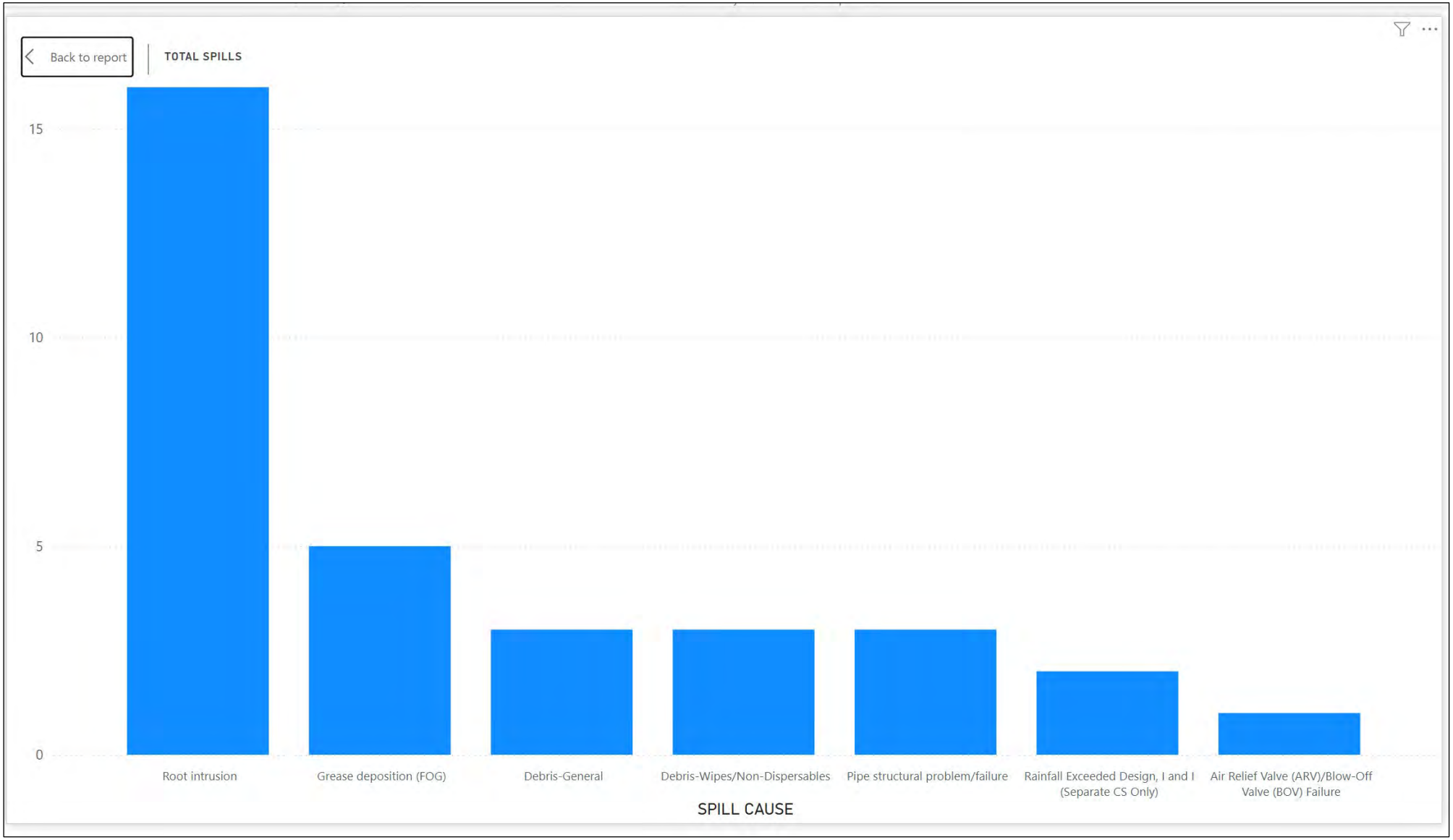


Figure 5 - City Spill Causes (by # of spill) during SSMP Audit Period (May 2021-May 2024)

Observation: The City's spill main causes (by number of spills) were root intrusion and grease during the SSMP Audit period.

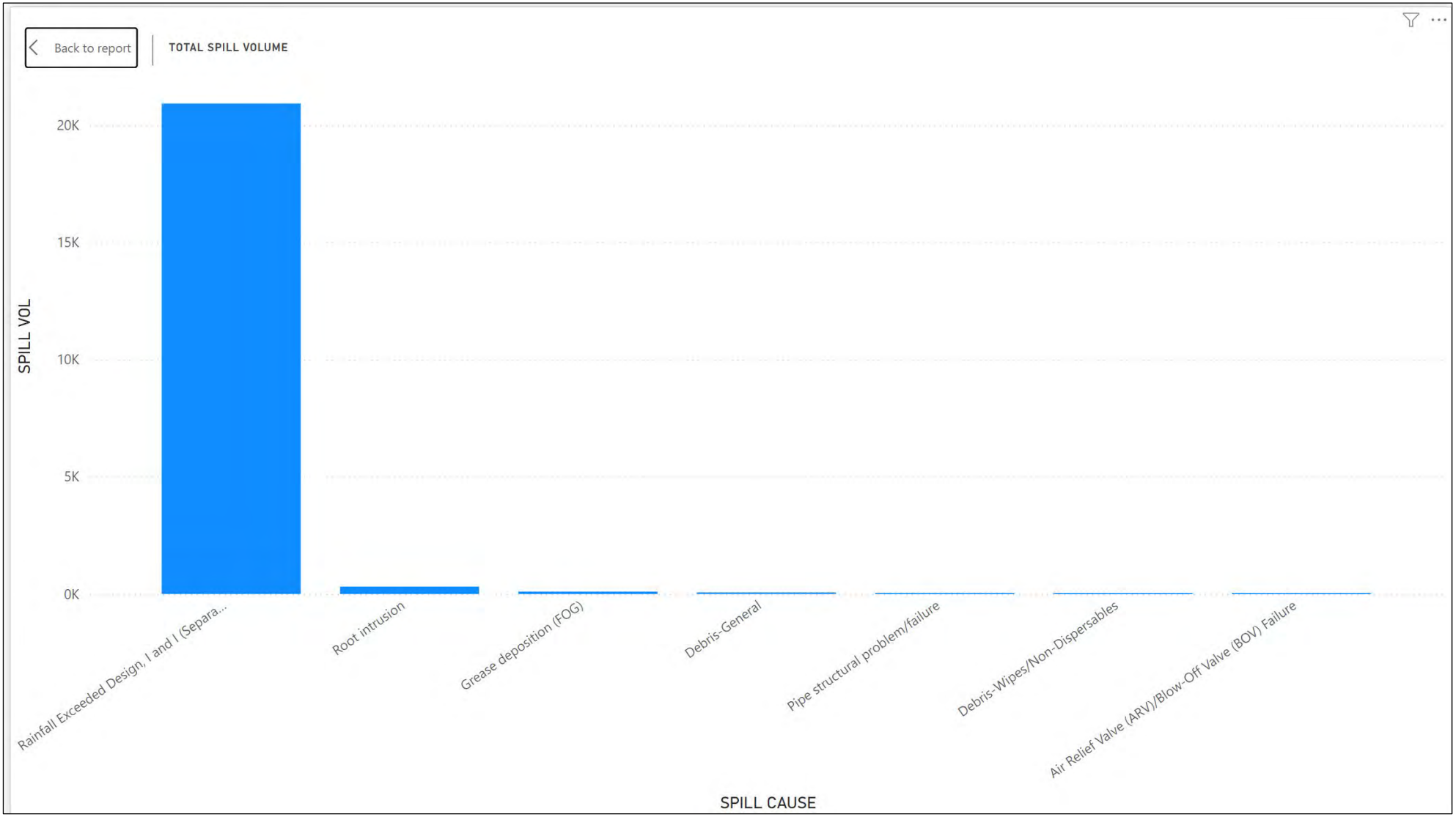


Figure 6 - City Spill Causes (by volume of spill) during SSMP Audit Period (May 2021-May 2024)

Observation: The City's spill main cause (by volume of spills) was rainfall (wet weather) during the SSMP Audit period.

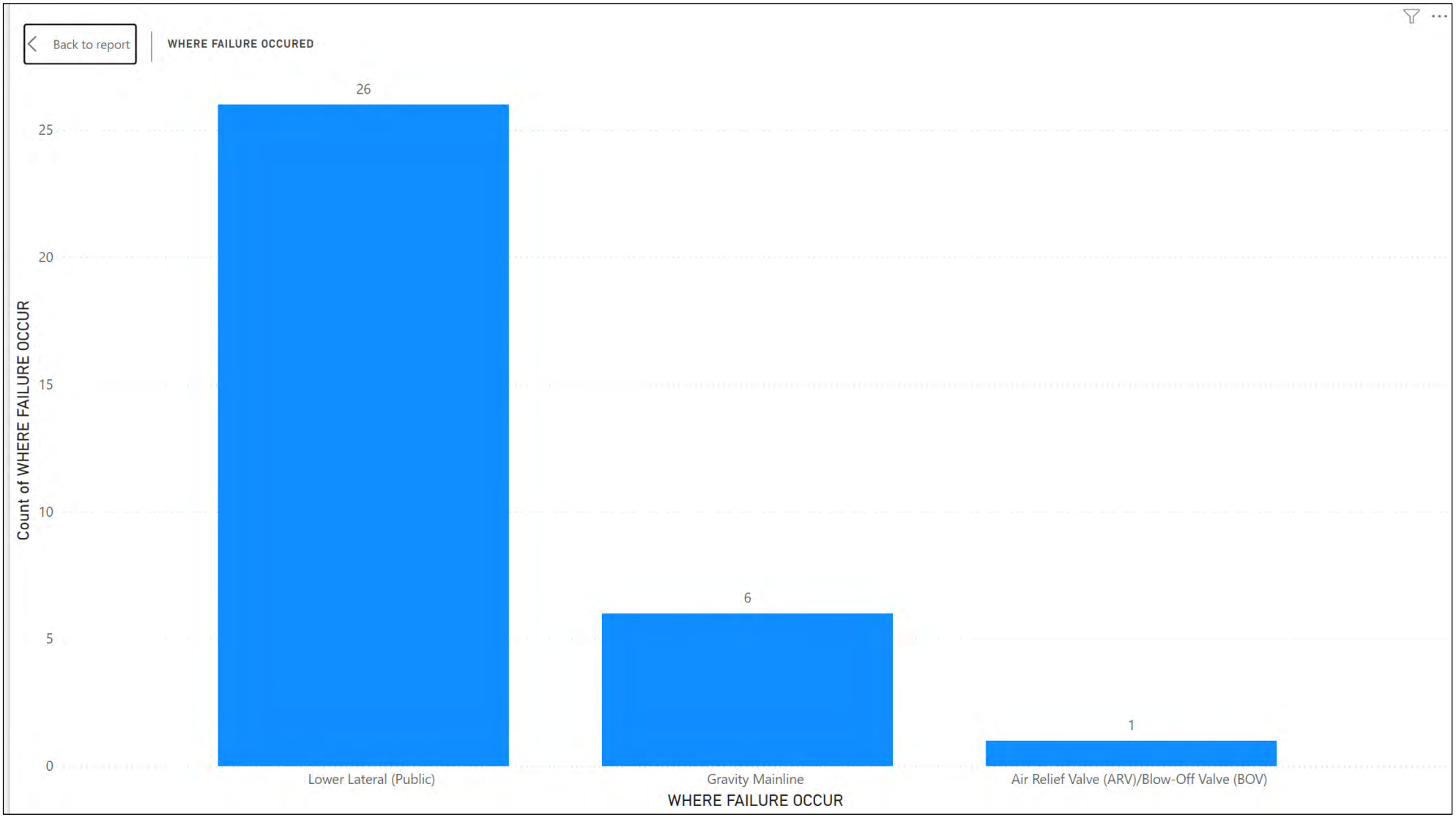


Figure 7 – City Spill Counts of Where Failures Occurred during SSMP Audit Period (May 2021-May 2024)

Observation: The City's main asset location were failures occurred was from lower sewer laterals during the SSMP Audit period.

SPILL ID	AGENCY NOTIFY DT	OPRTOR ARRVL DT	Spill CREATED DT	EST END DT	Agency Notify - Spill Created (Days)	AGENCY NOTIFY - OP ARR (Days)	AGENCY NOTIFY - OP ARR (Hours)	AGENCY NOTIFY - OP ARR (Minutes)
888126	4/8/2023 15:36	4/8/2023 16:30	5/5/2023 0:00	4/8/2023 11:00	27	0	1	54
888177	4/3/2023 10:30	4/3/2023 11:20	5/9/2023 0:00	4/3/2023 11:53	36	0	1	50
887707	3/17/2023 11:09	3/17/2023 11:24	4/17/2023 0:00	3/17/2023 11:24	31	0	0	15
887182	2/25/2023 15:39	2/25/2023 16:12	3/20/2023 0:00	2/25/2023 16:17	23	0	1	33
886996	2/18/2023 8:49	2/18/2023 9:22	3/10/2023 0:00	2/18/2023 9:22	20	0	1	33
887026	2/17/2023 14:20	2/17/2023 14:30	3/13/2023 0:00	2/17/2023 14:35	24	0	0	10
886942	2/15/2023 17:49	2/15/2023 18:36	3/8/2023 0:00	2/15/2023 18:42	21	0	1	47
887213	2/15/2023 14:21	2/15/2023 14:41	3/21/2023 0:00	2/15/2023 14:46	34	0	0	20
886923	2/14/2023 12:07	2/14/2023 12:19	3/7/2023 0:00	2/14/2023 12:19	21	0	0	12
886143	1/23/2023 10:27	1/23/2023 10:36	2/15/2023 0:00	1/23/2023 10:36	23	0	0	9
886302	1/23/2023 7:20	1/23/2023 7:34	2/21/2023 0:00	1/23/2023 7:34	29	0	0	14
886050	1/18/2023 8:52	1/18/2023 9:05	2/10/2023 0:00	1/18/2023 9:05	23	0	1	13
885184	12/31/2022 21:14	12/31/2022 7:46	1/4/2023 0:00	12/31/2022 23:22	4	0	-14	-808
885166	12/31/2022 18:40	12/31/2022 19:07	1/4/2023 0:00	1/1/2023 0:03	4	0	1	27
885444	12/22/2022 13:00	12/22/2022 13:18	1/13/2023 0:00	12/22/2022 13:18	22	0	0	18
885443	12/7/2022 10:58	12/7/2022 11:06	1/13/2023 0:00	12/7/2022 11:06	37	0	1	8
885074	12/4/2022 14:03	12/4/2022 14:35	12/30/2022 0:00	12/4/2022 14:35	26	0	0	32
885042	12/3/2022 11:42	12/3/2022 12:14	12/29/2022 0:00	12/3/2022 12:14	26	0	1	32
884664	11/15/2022 10:29	11/15/2022 10:51	12/7/2022 0:00	11/15/2022 11:00	22	0	0	22
884413	11/9/2022 16:14	11/9/2022 17:25	11/23/2022 0:00	11/9/2022 16:15	14	0	1	71
884376	11/4/2022 19:00	11/4/2022 19:00	11/22/2022 0:00	11/4/2022 19:00	18	0	0	0
884332	10/31/2022 17:22	10/31/2022 17:42	11/18/2022 0:00	10/31/2022 17:42	18	0	0	20
883827	10/14/2022 19:39	10/14/2022 20:17	10/19/2022 0:00	10/14/2022 20:17	5	0	1	38
883804	10/12/2022 15:58	10/12/2022 16:16	10/18/2022 0:00	10/12/2022 16:16	6	0	1	18
883741	9/27/2022 7:03	9/27/2022 7:30	10/12/2022 0:00	9/27/2022 7:30	15	0	0	27
882939	8/21/2022 12:42	8/21/2022 13:05	8/25/2022 0:00	8/21/2022 13:05	4	0	1	23
882862	8/11/2022 13:50	8/11/2022 13:58	8/22/2022 0:00	8/11/2022 13:58	11	0	0	8
882367	7/7/2022 16:58	7/7/2022 17:34	7/19/2022 0:00	7/7/2022 17:34	12	0	1	36
882603	7/1/2022 11:28	7/1/2022 11:37	8/3/2022 0:00	7/1/2022 11:37	33	0	0	9
882213	6/22/2022 8:19	6/22/2022 8:26	7/11/2022 0:00	6/22/2022 8:26	19	0	0	7
881796	6/4/2022 10:12	6/4/2022 10:31	6/16/2022 0:00	6/4/2022 9:30	12	0	0	19
881950	5/2/2022 20:33	5/2/2022 20:52	6/27/2022 0:00	5/2/2022 20:53	56	0	0	19
881952	5/2/2022 17:31	5/2/2022 17:53	6/27/2022 0:00	5/2/2022 17:53	56	0	0	22

Figure 8 – City Spill Benchmarks during SSMP Audit period (May 2021-May 2024)

Observations: The City averaged approximately 24 minutes between the agency spill notification time and operator arrival times (removing erroneous data logged for spill ID #885184 occurring on 12/31/2022). The City failed to notify Cal-OES within two hours (32 minutes late) for one spill occurring on 12/31/2022 (spill ID #885184. Erroneous data was also observed for two spills (ID #884376 and #881796). The City was fully compliant with providing draft and certified reports within the required timeframes for all Category 1 spills during the SSMP Audit.

Appendix 4 — City SSMP Audit Implementation Plan and Schedule

The purpose of this Appendix is to provide a plan/schedule to address SSMP Audit findings, recommendations, and corrective actions for utilization with updating the City's next required SSMP update (due on or before May 2, 2024).

FINDINGS (ATTACHMENTS)				
Requirements		Start Date	End Date	Findings/Recommendations
Att. D-1	Goal & Intro	Aug-Sept 2024	Aug-Sept 2024	✓ Improve evaluating allocation of system resources ✓ Improve prioritization of system repairs
Att. D-2	Organization	Aug-Sept 2024	Aug-Sept 2024	✓ Improve LRO and Data Submitter training ✓ Improve internal communication/training procedures
Att. D-3	Legal Authority	N/A	N/A	✓ None
Att. D-4	O/M Program	Oct-Dec 2024	Oct-Dec 2024	✓ Improve training, procedures, identification of known problem areas ✓ Improve SSMP working knowledge ✓ Improve CIWQS training on requirements. ✓ Improve easement maintenance and emergency response activities
Att. D-5	Design and Performance	N/A	N/A	✓ None
Att. D-6	SERP	Oct-Dec 2024	Oct-Dec 2024	✓ Improve training, regional partner collaboration
Att. D-7	Pipe Blockage Control Program	Jan-March 2025	Jan-March 2025	✓ Improve source control measures, schedule
Att. D-8	SECAP	Jan-March 2025	Jan-March 2025	✓ Improve assessments for priority locations ✓ Improve field data collection procedures
Att. D-9	Monitoring, Measurement	N/A	N/A	✓ None
Att. D-10	Audits	Jan-March 2025	Jan-March 2025	✓ Solicit input from field staff for future Audits
Att. D-11	Communications	N/A	N/A	✓ None

FINDINGS (SPECIFICATIONS)				
Requirements		Start Date	End Date	Findings/Recommendations
Spec. 5.1	Designation of LRO	Aug-Sept 2024	Aug-Sept 2024	✓ Improve LRO training/oversight
Spec. 5.2	SSMP Development, Implementation	N/A	N/A	✓ None
Spec. 5.3	SSMP Updates	N/A	N/A	✓ None
Spec. 5.4	SSMP Audits	Oct-Dec 2024	Oct-Dec 2024	✓ Solicit input from field staff for future Audits
Spec. 5.6	System Resilience	Oct-Dec 2024	Oct-Dec 2024	✓ Consider recommendations outlined in each element
Spec. 5.10	Resources	Oct-Dec 2024	Oct-Dec 2024	✓ Improve evaluating allocation of collection system resources
Spec. 5.11	Performance Analysis	N/A	N/A	✓ None
Spec. 5.12	SERP	Jan-March 2025	Jan-March 2025	✓ Improve training, regional partner collaboration
Spec. 5.13	Notif, Monitoring, Reporting, Records	Jan-March 2025	Jan-March 2025	✓ Improve training/field data collection procedures
Spec. 5.14	Notifications (private spills)	N/A	N/A	✓ None
Spec. 5.15	Failure to report	N/A	N/A	✓ None

RESOLUTION NO. 25-097

RECERTIFICATION OF THE CITY OF ROSEVILLE
SEWER SYSTEM MANAGEMENT PLAN

WHEREAS, in May 2006 the State Water Resources Control Board issued a state-wide General Waste Discharge Requirement (WDR) Order requiring all public entities that own or operate sanitary sewer systems greater than one mile in length that collect or convey wastewater to prepare a certified Sewer System Management Plan (SSMP); and

WHEREAS, the City Council adopted and certified the original SSMP in 2007 and recertified the City's SSMP in October 2022, which incorporated recommended changes proposed during an audit by an outside consultant; and

WHEREAS, provisions in the WDR require recertification of the SSMP every five years or if significant changes to the SSMP have been made; and

WHEREAS, the City Council has reviewed the revised Sewer System Management Plan.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that it hereby recertifies the City of Roseville Sewer System Management Plan.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 20__, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

STATE WATER RESOURCES CONTROL BOARD
1001 I Street, Sacramento, California 95814
ORDER WQ 2022-0103-DWQ

STATEWIDE WASTE DISCHARGE REQUIREMENTS

GENERAL ORDER FOR SANITARY SEWER SYSTEMS

This Order was adopted by the State Water Resources Control Board on December 6, 2022.
This Order shall become effective **180 days after the Adoption Date of this General Order,** on June 5, 2023. The Enrollee shall comply with the requirements of this Order upon the Effective Date of this General Order.

This General Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, protect the Enrollee from liability under federal, state, or local laws, nor create a vested right for the Enrollee to continue the discharge of waste.

CERTIFICATION

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the State Water Board on December 6, 2022.

AYE:	Chair E. Joaquin Esquivel Vice Chair Dorene D'Adamo Board Member Sean Maguire Board Member Laurel Firestone Board Member Nichole Morgan
NAY:	None
ABSENT:	None
ABSTAIN:	None

Courtney Tyler for
Jeanine Townsend
Clerk to the Board

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1. INTRODUCTION

This General Order regulates sanitary sewer systems designed to convey sewage. For the purpose of this Order, a sanitary sewer system includes, but is not limited to, pipes, valves, pump stations, manholes, siphons, wet wells, diversion structures and/or other pertinent infrastructure, upstream of a wastewater treatment plant headworks. A sanitary sewer system includes:

- Laterals owned and/or operated by the Enrollee;
- Satellite sewer systems; and/or
- Temporary conveyance and storage facilities, including but not limited to temporary piping, vaults, construction trenches, wet wells, impoundments, tanks and diversion structures.

Sewage is untreated or partially treated domestic, municipal, commercial and/or industrial waste (including sewage sludge), and any mixture of these wastes with inflow or infiltration of stormwater or groundwater, conveyed in a sanitary sewer system. Sewage contains high levels of suspended solids, non-digested organic waste, pathogenic bacteria, viruses, toxic pollutants, nutrients, oxygen-demanding organic compounds, oils, grease, pharmaceuticals, and other harmful pollutants.

For the purpose of this General Order, a spill is a discharge of sewage from any portion of a sanitary sewer system due to a sanitary sewer system overflow, operational failure, and/or infrastructure failure. Sewage and its associated wastewater spilled from a sanitary sewer system may threaten public health, beneficial uses of waters of the State, and the environment.

This General Order serves as statewide waste discharge requirements and supersedes the previous State Water Resources Control Board (State Water Board) Order 2006-0003-DWQ and amendments thereafter. All sections and attachments of this General Order are enforceable by the State Water Board and Regional Water Quality Control Boards (Regional Water Boards). Through this General Order, the State Water Board requires an Enrollee to:

- Comply with federal and state prohibitions of discharge of sewage to waters of the State, including federal waters of the United States;
- Comply with specifications, and notification, monitoring, reporting and recordkeeping requirements in this General Order that implement the federal Clean Water Act, the California Water Code (Water Code), water quality control plans (including Regional Water Board Basin Plans) and policies;
- Proactively operate and maintain resilient sanitary sewer systems to prevent spills;
- Eliminate discharges of sewage to waters of the State through effective implementation of a Sewer System Management Plan;
- Monitor, track, and analyze spills for ongoing system-specific performance improvements; and
- Report noncompliance with this General Order per reporting requirements.

An Enrollee is a public, private, or other non-governmental entity that has obtained approval for regulatory coverage under this General Order, including:

- A state agency, municipality, special district, or other public entity that owns and/or operates one or more sanitary sewer systems:
  - greater than one (1) mile in length (each individual sanitary sewer system);
  - one (1) mile or less in length where the State Water Board or a Regional Water Board requires regulatory coverage under this Order; or
- A federal agency, private company, or other non-governmental entity that owns and/or operates a sanitary sewer system of any size where the State Water Board or a Regional Water Board requires regulatory coverage under this Order in response to a history of spills, proximity to surface water, or other factors supporting regulatory coverage.

For the purpose of this Order, a sanitary sewer system includes only systems owned and/or operated by the Enrollee.

2. REGULATORY COVERAGE AND APPLICATION REQUIREMENTS

2.1. Requirements for Continuation of Existing Regulatory Coverage

To continue regulatory coverage from previous Order 2006-0003-DWQ under this General Order, **within the 60-days-prior-to the Effective Date of this General Order**, the Legally Responsible Official of an existing Enrollee shall electronically certify the Continuation of Existing Regulatory Coverage form in the online California Integrated Water Quality System (CIWQS) Sanitary Sewer System Database. The Legally Responsible Official will receive an automated CIWQS-issued Notice of Applicability email, confirming continuation of regulatory coverage under this General Order. All regulatory coverage under previous Order 2006-0003-DWQ will cease on the Effective Date of this Order.

An Enrollee continuing existing regulatory coverage is not required to submit a new application package or pay an application fee for enrollment under this General Order. The annual fee due date for continued regulatory coverage from previous Order 2006-0003-DWQ to this General Order remains unchanged.

A previous Enrollee of Order 2006-0003-DWQ that fails to certify the Continuation of Existing Regulatory Coverage form in the online CIWQS database by the Effective Date of this Order is considered a New Applicant, and will not have regulatory coverage for its sanitary sewer system(s) until:

- A new application package for system(s) enrollment is submitted per section 2.2 (Requirements for New Regulatory Coverage) below; and
- The new application package is approved per section 2.2.2 (Approval of Application Package (For New Applicants Only)).

2.2. Requirements for New Regulatory Coverage

No later than 60 days prior to commencing and/or assuming operation and maintenance responsibilities of a sanitary sewer system, a duly authorized representative that

maintains legal authority over the public or private sanitary sewer system is required to enroll under this General Order by submitting a complete application package as specified below and as provided in Attachment B (Application for Enrollment Form) of this General Order.

Unless required by a Regional Water Board, a public agency that owns a combined sewer system subject to the Combined Sewer Overflow Control Policy (33 U.S. Code § 1342(q)), is not required to enroll, under this Order, the portions of its sanitary sewer system(s) that collects combined sanitary wastewater and stormwater.

2.2.1. Application Package Requirements

The Application for Enrollment package for new applicants must include the following items:

- **Application for Enrollment Form**. The form in Attachment B of this General Order must be completed, signed, and certified by a Legally Responsible Official, in accordance with section 5.1 (Designation of a Legally Responsible Official) of this General Order. If an electronic Application for Enrollment form is available at the time of application, a new applicant shall submit its application form electronically; and
- **Application Fee**. A fee payable to the "State Water Resources Control Board" in accordance with the Fee Schedule in the California Code of Regulations, Title 23, section 2200, or subsequent fee regulations updates.

  The application fee for this General Order is based on the sanitary sewer system's threat to water quality and complexity designations of category 2C or 3C, which is assigned based on the population served by the system. The current Fee Schedule for sanitary sewer systems is listed under subdivision (a)(2) at the following website: Fee Schedule (https://www.waterboards.ca.gov/resources/fees/water_quality/).

2.2.2. Approval of Application Package (For New Applicants Only)

The Deputy Director of the State Water Board, Division of Water Quality (Deputy Director) will consider approval of each complete Application for Enrollment package. The Deputy Director will issue a Notice of Applicability letter which serves as approved regulatory coverage for the new Enrollee.

If the submitted application package is not complete in accordance with section 2.2.1 (Application Package Requirements) of this General Order, the Deputy Director will send a response letter to the applicant outlining the application deficiencies. The applicant will have 60 days from the date of the response letter to correct the application deficiencies and submit the identified items necessary to complete the application package to the State Water Board.

2.2.3. Electronic Reporting Account for New Enrollee

Within 30 days after the date of the Approval of Complete Application Package for System Enrollment, a duly authorized representative for the Enrollee shall obtain a CIWQS Sanitary Sewer System Database user account by clicking the "User Registration" button and following the directions on the CIWQS Login Page

(https://ciwqs.waterboards.ca.gov). If additional assistance is needed to establish an online CIWQS user account, contact State Water Board staff by email at CIWQS@waterboards.ca.gov. The online user account will provide the Enrollee secure access to the online CIWQS database for electronic reporting.

2.3. Regulatory Coverage Transfer

Regulatory coverage under this General Order is not transferable to any person or party except after an existing Enrollee submits a written request for a regulatory coverage transfer to the Deputy Director, at least 60 days in advance of any proposed system ownership transfer. The written request must include a written agreement between the existing Enrollee and the new Enrollee containing:

- Acknowledgement that the transfer of ownership is solely of an existing system with an existing waste discharge identification (WDID) number;
- The specific ownership transfer date in which the responsibility and regulatory coverage transfer between the existing Enrollee and the new Enrollee becomes effective; and
- Acknowledgement that the existing Enrollee is liable for violations occurring up to the ownership transfer date and that the new Enrollee is liable for violations occurring on and after the ownership transfer date.

The Deputy Director will consider approval of the written request. If approved, the Deputy Director will issue a Notice of Applicability letter which serves as an approved transfer of regulatory coverage to the new Enrollee.

3. FINDINGS

3.1. Legal Authorities

3.1.1. Federal and State Regulatory Authority

The objective of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the waters of the United States (33 U.S.C. 1251). The Water Code authorizes the State Water Board to implement the Clean Water Act in the State and to protect the quality of all waters of the State (Water Code sections 13000 and 13160).

3.1.2. Discharge of Sewage

A discharge of untreated or partially treated sewage is a discharge of waste as defined in Water Code section 13050(d) that could affect the quality of waters of the State and is subject to regulation by waste discharge requirements issued pursuant to Water Code section 13263 and Chapter 9, Division 3, Title 23 of the California Code of Regulations. A discharge of sewage may pollute and alter the quality of the waters of the State to a degree that unreasonably affects the beneficial uses of the receiving water body or facilities that serve those beneficial uses (Water Code section 13050(l)(1)).

3.1.3 Water Boards Authority to Require Technical Reports, Monitoring, and Reporting

Water Code sections 13267 and 13383 authorize the Regional Water Boards and the State Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. Water Code section 13267(b), authorizes the Regional Water Boards to "require any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region… or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of water within its region shall furnish, under penalty of perjury, technical or monitoring reports which the regional board requires…In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports and shall identify the evidence that supports requiring that person to provide the reports." Water Code section 13267(f) authorizes the State Water Board to require this information if it consults with the Regional Water Boards and determines that it will not duplicate the efforts of the Regional Water Boards. The State Water Board has consulted with the Regional Water Boards and made this determination.

The technical and monitoring reports required by this General Order and Attachment E (Notification, Monitoring, Reporting and Recordkeeping Requirements) are necessary to evaluate and ensure compliance with this General Order. The effort to develop required technical reports will vary depending on the system size and complexity and the needs of the specific technical report. The burden and cost of these reports are reasonable and consistent with the interest of the state in protecting water quality, which is the primary purpose of requiring the reports.

Water Code section 13383(a) authorizes the Water Boards to "establish monitoring, inspection, entry, reporting, and recordkeeping requirements… for any person who discharges, or proposes to discharge, to navigable waters, any person who introduces pollutants into a publicly owned treatment works, any person who owns or operates, or proposes to own or operate, a publicly owned treatment works or other treatment works treating domestic sewage, or any person who uses or disposes, or proposes to use or dispose, of sewage sludge." Section 13383(b) continues, "the state board or the regional boards may require any person subject to this section to establish and maintain monitoring equipment or methods, including, where appropriate, biological monitoring methods, sample effluent as prescribed, and provide other information as may be reasonably required."

Reporting of spills from privately owned sewer laterals and systems pursuant to section 5.15 (Voluntary Reporting of Spills from Privately-Owned Sewer Laterals and/or Private Sanitary Sewer Systems) of this General Order is authorized by Water Code section 13225(c) and encouraged by the State Water Board, wherein a local agency may investigate and report on any technical factors involved in water quality control provided the burden including costs of such reports bears a reasonable relationship to the need for the report and the benefits to be obtained therefrom. The burden of reporting private spills under section 5.15 (Voluntary Reporting of Spills from Privately-Owned Sewer Laterals and/or Private Sanitary Sewer Systems) is minimal and is outweighed by the benefit of providing Regional Water Boards an opportunity to respond to these spills

when an Enrollee, which in many cases has a contractual relationship with the owner of the private system, has knowledge of the spills.

3.1.4. Water Board Authority to Prescribe General Waste Discharge Requirements

Water Code section 13263(i) provides that the State Water Board may prescribe general waste discharge requirements for a category of discharges if the State Water Board finds or determines that:

- The discharges are produced by the same or similar operations;
- The discharges involve the same or similar types of waste;
- The discharges require the same or similar treatment standards; and
- The discharges are more appropriately regulated under general waste discharge requirements than individual waste discharge requirements.

Since 2006, the State Water Board has been regulating over 1,100 publicly owned sanitary sewer systems (See section 3.1.5 (Previous Statewide General Waste Discharge Requirements) of this General Order). California also has a large unknown number of unregulated privately owned sanitary sewer systems. All waste conveyed in publicly owned and privately owned sanitary sewer systems (as defined in this General Order) is comprised of untreated or partially treated domestic waste and/or industrial waste. Generally, sanitary sewer systems are designed and operated to convey waste by gravity or under pressure; system-specific design elements and system-specific operations do not change the common nature of the waste, the common threat to public health, or the common impacts on water quality. Spills of waste from a sanitary sewer system prior to reaching the ultimate downstream treatment facility are unauthorized and enforceable by the State Water Board and/or a Regional Water Board. Therefore, spills from sanitary sewer systems are more appropriately regulated under general waste discharge requirements.

As specified in Water Code sections 13263(a) and 13241, the implementation of requirements set forth in this Order is for the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each Regional Water Board and take into account the environmental characteristics of sewer service areas and hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality, costs associated with compliance with these requirements, the need for developing housing within California, and the need to protect sources of drinking water and other water supplies.

3.1.5. Previous Statewide General Waste Discharge Requirements

On May 2, 2006, the State Water Board adopted Order 2006-0003-DWQ serving as Waste Discharge Requirements pursuant to Article 4, Chapter 4, Division 7 of the Water Code (commencing with section 13260) for inadvertent discharges to waters of the State. Order 2006-0003-DWQ prohibited discharges of untreated or partially treated sewage. Order 2006-0003-DWQ also required system-specific management, operation, and maintenance of publicly owned sewer systems greater than one mile in length.

To decrease the impacts on human health and the environment caused by sewage spills, the previous Order required enrollees to develop a rehabilitation and replacement plan that identifies system deficiencies and prioritizes short-term and long-term rehabilitation actions. The previous Order also required enrollees to:

1. Maintain information that can be used to establish and prioritize appropriate Sewer System Management Plan activities; and
2. Implement a proactive approach to reduce spills.

The previous Order required Sewer System Management Plan elements for "the proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management."

On July 30, 2013, the State Water Board amended General Order 2006-0003-DWQ with Order WQ 2013-0058-EXEC, Amending Monitoring and Reporting Program for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

Many enrollees of Order 2006-0003-DWQ have already implemented proactive measures to reduce sewage spills. Other enrollees, however, still need technical assistance and funding to improve sanitary sewer system operation and maintenance for the reduction of sewage spills.

3.1.6. Existing Memorandum of Agreement with California Water Environment Association

The California Water Environment Association is a nonprofit organization dedicated to providing water industry certifications, training, and networking opportunities. The Association's Technical Certification Program provides accredited sanitary sewer system operator certification for collection system operators and maintenance workers.

On February 10, 2016, the State Water Board entered into a collaborative agreement with the Association titled *Memorandum of Agreement Between the California State Water Resources Control Board and the California Water Environment Association - Training Regarding Requirements Set Forth in Statewide General Waste Discharge Requirements for Sanitary Sewer Systems*. The Memorandum sets forth collaborative training necessary for regulated sanitary sewer system personnel to operate and maintain a well operating system and ensure full compliance with statewide sewer system regulations.

On March 15, 2018, the State Water Board and the California Water Environment Association amended the existing Memorandum of Agreement to include collaborative outreach and expand training needs associated with further updates to Water Board regulations for sanitary sewer systems. The State Water Board encourages further Agreement updates as necessary to support improved sewer system operations and the professionalism of collection system operators.

3.2. General

3.2.1. Waters of the State

Waters of the State include any surface water or groundwater, including saline waters, within the boundaries of the state as defined in Water Code section 13050(e), and are inclusive of waters of the United States.

3.2.2. Sanitary Sewer System Spill Threats to Public Health and Beneficial Uses

Sewage contains high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. Sewage spills may cause a public nuisance, particularly when sewage is discharged to areas with high public exposure such as streets and surface waters used for drinking, irrigation, fishing, recreation, or other public consumption or contact uses.

More specifically, sanitary sewer spills may:

- Adversely affect aquatic life and/or threaten water quality when reaching receiving waters;
- Inadvertently release trash, including plastics;
- Impair the recreational use and aesthetic enjoyment of surface waters by polluting surface water or groundwater;
- Threaten public health through direct public exposure to bacteria, viruses, intestinal parasites, and other microorganisms that can cause serious illness such as gastroenteritis, hepatitis, cryptosporidiosis, and giardiasis;
- Negatively impact ecological receptors and biota within surface waters; and
- Cause nuisance including odors, closure of beaches and recreational areas, and property damage.

Sanitary sewer system spills may pollute receiving waters and threaten beneficial uses of surface water and groundwater. Potentially threatened beneficial uses include, but are not limited to the following (with associated acronym representations as included in statewide water quality control plans and Regional Water Boards' Basin Plans):

- Municipal and Domestic Supply (MUN)
- Water Contact Recreation (REC-1) and Non-Contact Water Recreation (REC-2)
- Cold Freshwater Habitat (COLD)
- Warm Freshwater Habitat (WARM)
- Native American Culture (CUL)
- Wildlife Habitat (WILD)
- Rare, Threatened, or Endangered Species (RARE)
- Spawning, Reproduction, and/or Early Development (SPWN)
- Wetland Habitat (WET)
- Agricultural Supply (AGR)
- Estuarine Habitat (EST)

- Commercial and Sport Fishing (COMM)
- Subsistence Fishing (SUB)
- Tribal Tradition and Culture (CUL)
- Tribal Subsistence Fishing (T-SUB)
- Aquaculture (AQUA)
- Marine Habitat (MAR)
- Preservation of Biological Habitats of Special Significance (BIOL)
- Migration of Aquatic Organisms (MIGR)
- Shellfish Harvesting (SHELL)
- Industrial Process Supply (PROC)
- Industrial Service Supply (IND)
- Hydropower Generation (POW)
- Navigation (NAV)
- Flood Peak Attenuation/Flood Water Storage (FLD)
- Water Quality Enhancement (WQE)
- Fresh Water Replenishment (FRSH)
- Groundwater Recharge (GWR)
- Inland Saline Water Habitat (SAL)

3.2.3. Proactive Sanitary Sewer System Management to Eliminate Spill Causes

Finding 3 of the previous Order, 2006-0003-DWQ, states: “Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO [sanitary sewer overflow]. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.”

Many spills are preventable through proactive attention on sanitary sewer system management using the best practices and technologies available to address major causes of spills, including but not limited to:

- Blockages from sources including but not limited to:
  - Fats, oils and grease;
  - Tree roots;
  - Rags, wipes and other paper, cloth and plastic products; and
  - Sediment and debris.
- Sewer system damage and exceedance of sewer system hydraulic capacity from identified system-specific environmental, and climate-change impacts, including but not limited to:

- Sea level rise impacts including flooding, coastal erosion, seawater intrusion, tidal inundation and submerged lands;
- Increased surface water flows due to higher intensity rain events;
- Flooding;
- Wildfires and wildfire induced impacts;
- Earthquake induced damage;
- Landslides; and
- Subsidence.

- Infrastructure deficiencies and failures, including but not limited to:
  - Pump station mechanical failures;
  - System age;
  - Construction material failures;
  - Manhole cover failures;
  - Structural failures; and
  - Lack of proper operation and maintenance.
- Insufficient system capacity (temporary or sustained), due to factors including but not limited to:
  - Excessive and/or increased storm or groundwater inflow/infiltration;
  - Insufficient capacity due to population increase and/or new connections from industrial, commercial and other system users; and
  - Stormwater capture projects utilizing a sanitary sewer system to convey stormwater to treatment facilities for reuse.
- Community impacts, including but not limited to:
  - Power outages;
  - Vandalism; and
  - Contractor-caused or other third party-caused damages.

3.2.4. Underground Sanitary Sewer System Leakage

Portions of some sanitary sewer systems may leak, causing underground exfiltration (exiting) of sewage from the system. Exfiltrated sewage that remains in the underground infrastructure trench and/or the soil matrix, and that does not discharge into waters of the State (surface water or groundwater) may not threaten beneficial uses.

Underground exfiltrated sewage may threaten beneficial uses if discharged to waters of the State. Exfiltrated sewage that discharges to groundwater may impact beneficial uses of groundwater and pollute groundwater supply. Additionally, if in close proximity, exfiltrated sewage may enter into a compromised underground drainage conveyance system that discharges into a water of the United States, or into groundwater that is hydrologically connected to (feeds into) a water of the United States, thus potentially causing: (1) a Clean Water Act violation, (2) threat and impact to beneficial uses, and/or (3) surface water pollution.

3.2.5. Proactive Sanitary Sewer System Management to Reduce Inflow and Infiltration

Excessive inflow (stormwater entering) and infiltration (groundwater seepage entering) to sanitary sewer systems is preventable through proactive sewer system management using the best practices and technologies available. The efficiency of the downstream wastewater treatment processes is dependent on the performance of the sanitary sewer system. When the structural integrity of a sanitary sewer system deteriorates, high volumes of inflow and infiltration can enter the sewer system. High levels of inflow and infiltration increase the hydraulic load on the downstream treatment plant, which can reduce treatment efficiency, lead to bypassing a portion of the treatment process, cause illegal discharge of partially treated effluent, or in extreme situations make biological treatment facilities inoperable (e.g., wash out the biological organisms that treat the waste).

3.3. Water Quality Control Plans, Policies and Resolutions

The nine Regional Water Boards have adopted region-specific water quality control plans (commonly referred to as Basin Plans) that designate beneficial uses, establish water quality objectives, and contain implementation programs and policies to achieve those objectives. The State Water Board has adopted statewide water quality control plans, policies and resolutions establishing statewide water quality objectives, implementation programs and initiatives.

3.3.1. State Water Board Antidegradation Policy

On October 28, 1968, the State Water Board adopted Resolution 68-16, titled Statement of Policy with Respect to Maintaining High Quality of Waters in California, which incorporates the federal antidegradation policy. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings.

The continued prohibition of sewage discharges from sanitary sewer systems into waters of the State aligns with Resolution 68-16. A sewage discharge from sanitary sewers to waters of the State is prohibited by this Order. Therefore, this Order does not allow degradation of waters of the State. In addition, this Order: (1) further expands the existing prohibition of sewage discharges to include waters of the State, in addition to waters of the United States as provided in previous Order 2006-0003-DWQ, and (2) enhances the ability for Water Board enforcement of violations of the established prohibitions.

3.3.2. State Water Board Sources of Drinking Water Policy

On May 19,1988, the State Water Board adopted Resolution 88-63 (amended on February 1, 2006), titled Sources of Drinking Water, establishing state policy that all waters of the State, with certain exceptions, are suitable or potentially suitable for municipal or domestic supply.

3.3.3. State Water Board Cost of Compliance Resolution

On September 24, 2013, the State Water Board adopted Resolution 2013-0029, titled Directing Actions in Response to Efforts by Stakeholders on Reducing Costs of

Compliance While Maintaining Water Quality Protection. Through this resolution, the State Water Board committed to continued stakeholder engagement in identifying and implementing measures to reduce costs of compliance with regulatory orders while maintaining water quality protection and improving regulatory program outcomes.

3.3.4. State Water Board Human Right to Water Resolution

On February 16, 2016, the State Water Board adopted Resolution 2016-0010, titled Adopting the Human Right to Water as a Core Value and Directing its Implementation in Water Board Programs and Activities, addressing the human right to water as a core value and directing Water Board programs to implement requirements to support safe drinking water for all Californians.

On November 16, 2021, the State Water Board adopted Resolution 2021-0050 titled Condemning Racism, Xenophobia, Bigotry, and Racial Injustice, and Strengthening Commitment to Racial Equity, Diversity, Inclusion, Access, and Anti-racism. Among other actions, through Resolution 2021-0050, the State Water Board, in summary as corresponding to this General Order, reaffirms its commitment to its Human Right to Water resolution, upholding that every human being in California deserves safe, clean, affordable, and accessible water for human consumption, cooking, and sanitation purposes. Resolution 2021-0050 provides the State Water Board commitment to:

- Protect public health and beneficial uses of waterbodies in all communities, including communities disproportionately burdened by wastes discharge of waste to land and surface water;
- Restore impaired surface waterbodies and degraded aquifers; and
- Promote multi-benefit water quality projects.

Through Resolution 2021-0050, the State Water Board also commits to expanding implementation of its Climate Change Resolution to address the disproportionate effects of extreme hydrologic conditions and sea-level rise on Black, Indigenous, and people of color communities, prioritizing:

- The right to safe, clean, affordable, and accessible drinking water and sanitation;
- Sustainable management and protection of local groundwater resources;
- Healthy watersheds; and
- Access to surface waterbodies that support subsistence fishing.

On June 7, 2022, the State Water Board adopted a Resolution, titled Authorizing the Executive Director or Designee to Enter into One or More Multi-Year Contracts Up to a Combined Sum of $4,000,000 for a Statewide Wastewater Needs Assessment, supporting the equitable access to sanitation for all Californians and implementation of Resolutions 2016-0010 and 2021-0050.

This General Order supports the State Water Board priority in collecting a comprehensive set of data for California's wastewater systems, including sanitary sewer systems. Data reported per the requirements of this Order will be used with data from other Water Boards' programs, to further develop criteria and create a statewide risk

framework to prioritize critical funding and infrastructure investments for California's most vulnerable populations, including disadvantaged or severely disadvantaged communities with inadequate or failing sanitation systems and threatened access to healthy drinking water supplies.

3.3.5. State Water Board Open Data Resolution

On July 10, 2018, the State Water Board adopted Resolution 2018-0032, titled Adopting Principles of Open Data as a Core Value and Directing Programs and Activities to Implement Strategic Actions to Improve Data Accessibility and Associated Innovation, directing regulatory programs to assure all monitoring and reporting requirements support the State Water Boards' Open Data Initiative.

3.3.6. State Water Board Response to Climate Change

On March 7, 2017, the State Water Board adopted Resolution 2017-0012, titled Comprehensive Response to Climate Change, requiring a proactive response to climate change in all California Water Board actions, with the intent to embed climate change consideration into all programs and activities.

3.4. California Environmental Quality Act

The adoption of this Order is an action to reissue general waste discharge requirements that is exempt from the California Environmental Quality Act (Public Resources Code section 21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment (Cal. Code Regs., Title 14, section 15308). In addition, the action to adopt this Order is exempt from CEQA pursuant to Cal. Code Regs., Title 14, section 15301, to the extent that it applies to existing sanitary sewer collection systems that constitute "existing facilities" as that term is used in sections 15301 and 15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

3.5. State Water Board Funding Assistance for Compliance with Water Board Water Quality Orders

The State Water Board, Division of Financial Assistance administers the implementation of the State Water Board financial assistance programs, per Board-adopted funding policies. Among other funding areas, the Division administers loan and grant funding for the planning and construction of wastewater and water recycling facilities per funding program-specific policies and guidelines. Applicants may apply for Clean Water State Revolving Fund low-interest loan, Small Community Wastewater grant funding assistance, and other funding available at the time of application, for some of the costs associated with complying with this General Order.

Funding applicants may obtain further information regarding current funding opportunities, and Division of Financial Assistance staff contact information at the following website: Financial Assistance Funding - Grants and Loans | California State Water Resources Control Board.
(https://www.waterboards.ca.gov/water_issues/programs/grants_loans/)

Section 13477.6 of the Water Code authorizes the Small Community Grant Fund. The Small Community Grant Fund allows the State Water Board to provide grant funding assistance to small, disadvantaged communities and small severely disadvantaged communities that may not otherwise be able to afford a loan or similar financing for projects to comply with requirements of this General Order. The State Water Board also considers loan forgiveness on a disadvantaged community-specific basis.

For disadvantaged communities' wastewater needs, the State Water Board places priority on the funding of projects that address:

- Public health;
- Violations of waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permits;
- Providing sewer system service to existing septic tank owners; and
- High priority public health and water quality concerns identified by a Regional Water Board.

3.6. Notification to Interested Parties

On January 31, 2022, the State Water Board notified interested parties and persons of its intent to reissue Sanitary Sewer Systems General Order 2006-0003-DWQ by issuing a draft General Order for a 60-day public comment period. State Water Board staff conducted extensive stakeholder outreach and encouraged public participation in the adoption process for this General Order. On March 15, 2022, the State Water Board held a public meeting to hear and consider oral public comments. The State Water Board considered all public comments prior to adopting this General Order.

THEREFORE, IT IS HEREBY ORDERED, that pursuant to Water Code sections 13263, 13267, and 13383 this General Order supersedes Order 2006-0003-DWQ, Order WQ 2013-0058-EXEC, and any amendments made to these Orders thereafter, except for enforcement purposes and to meet the provisions contained in Division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, the Enrollee shall comply with the requirements in this Order.

4. PROHIBITIONS

4.1 Discharge of Sewage from a Sanitary Sewer System

Any discharge from a sanitary sewer system that has the potential to discharge to surface waters of the State is prohibited unless it is promptly cleaned up and reported as required in this General Order.

4.2. Discharge of Sewage to Waters of the State

Any discharge from a sanitary sewer system, discharged directly or indirectly through a drainage conveyance system or other route, to waters of the State is prohibited.

4.3. Discharge of Sewage Creating a Nuisance

Any discharge from a sanitary sewer system that creates a nuisance or condition of pollution as defined in Water Code section 13050(m) is prohibited.

5. SPECIFICATIONS

5.1. Designation of a Legally Responsible Official

The Enrollee shall designate a Legally Responsible Official that has authority to ensure the enrolled sanitary sewer system(s) complies with this Order, and is authorized to serve as a duly authorized representative. The Legally Responsible Official must have responsibility over management of the Enrollee's entire sanitary sewer system, and must be authorized to make managerial decisions that govern the operation of the sanitary sewer system, including having the explicit or implicit duty of making major capital improvement recommendations to ensure long-term environmental compliance. The Legally Responsible Official must have or have direct authority over individuals that:

- Possess a recognized degree or certificate related to operations and maintenance of sanitary sewer systems, and/or
- Have professional training and experience related to the management of sanitary sewer systems, demonstrated through extensive knowledge, training and experience.

For example, a sewer system superintendent or manager, an operations manager, a public utilities manager or director, or a district engineer may be designated as a Legally Responsible Official.

The Legally Responsible Official shall complete the electronic CIWQS "User Registration" form (https://ciwqs.waterboards.ca.gov/ciwqs/newUser.jsp). A Legally Responsible Official that represents multiple enrolled systems shall complete the electronic CIWQS "User Registration" form for each system.

The Enrollee shall submit any change to its Legally Responsible Official, and/or change in contact information, to the State Water Board within 30 calendar days of the change by emailing ciwqs@waterboards.ca.gov and copying the appropriate Regional Water Board as provided in Attachment F (Regional Water Quality Control Board Contact Information) of this General Order.

5.2. Sewer System Management Plan Development and Implementation

To facilitate adequate local funding and management of its sanitary sewer system(s), the Enrollee shall develop and implement an updated Sewer System Management Plan. The scale and complexity of the Sewer System Management Plan, and specific elements of the Plan, must match the size, scale and complexity of the Enrollee's sanitary sewer system(s). The Sewer System Management Plan must address, at minimum, the required Plan elements in Attachment D (Sewer System Management Plan – Required Elements) of this General Order. To be effective, the Sewer System Management Plan must include procedures for the management, operation, and maintenance of the sanitary sewer system(s). The procedures must: (1) incorporate the

prioritization of system repairs and maintenance to proactively prevent spills, and (2) address the implementation of current standard industry practices through available equipment, technologies, and strategies.

For an existing Enrollee under Order 2006-0003-DWQ that has certified its Continuation of Existing Regulatory Coverage, per section 2.1 (Requirements for Continuation of Existing Regulatory Coverage) of this General Order:

Within six (6) months of the Adoption Date of this General Order:

- The Legally Responsible Official shall upload the Enrollee's existing Sewer System Management Plan to the online CIWQS Sanitary Sewer System Database.

For a new Enrollee:

Within twelve (12) months of the Application for Enrollment approval date:

- The governing entity of the new Enrollee shall approve its Sewer System Management Plan; and
- The Legally Responsible Official shall certify and upload its Sewer System Management Plan to the online CIWQS Sanitary Sewer System Database.

5.3. Certification of Sewer System Management Plan and Plan Updates

The Legally Responsible Official shall certify and upload its Sewer System Management Plan and all subsequent updates to the online CIWQS Sanitary Sewer System Database.

5.4. Sewer System Management Plan Audits

The Enrollee shall conduct an internal audit of its Sewer System Management Plan, and implementation of its Plan, at a minimum frequency of once every three years. The audit must be conducted for the period after the end of the Enrollee's last required audit period. **Within six months after the end of the required 3-year audit period**, the Legally Responsible Official shall submit an audit report into the online CIWQS Sanitary Sewer System Database per the requirements in section 3.10 (Sewer System Management Plan Audit Reporting Requirements) of Attachment E1 of this General Order.

Audit reports submitted to the CIWQS Sanitary Sewer System Database will be viewable only to Water Boards staff.

The internal audit shall be appropriately scaled to the size of the system(s) and the number of spills. The Enrollee's sewer system operators must be involved in completing the audit. At minimum, the audit must:

- Evaluate the implementation and effectiveness of the Enrollee's Sewer System Management Plan in preventing spills;
- Evaluate the Enrollee's compliance with this General Order;
- Identify Sewer System Management Plan deficiencies in addressing ongoing spills and discharges to waters of the State; and

- Identify necessary modifications to the Sewer System Management Plan to correct deficiencies.

The Enrollee shall submit a complete audit report that includes:

- Audit findings and recommended corrective actions;
- A statement that sewer system operators' input on the audit findings has been considered; and
- A proposed schedule for the Enrollee to address the identified deficiencies.

A new Enrollee of this General Order (that did not have a sanitary sewer system enrolled in the previous State Water Board Order 2006-0003-DWQ) shall conduct its first internal Sewer System Management Plan audit for the time period between the date of submittal of its certified Sewer System Management Plan and the third subsequent December 31st date. The audit report must be submitted into the online CIWQS Sanitary Sewer System Database **by July 1 of the following calendar year**.

See the following tables for clarification:

Initial Audit Period and Audit Due Date for New Enrollees

	Audit Period	Audit Due Date
New Enrollee	Certified Sewer System Management Plan Submittal Date through the third subsequent December 31st date	July 1st date after audit period
Example	*Certified Sewer System Management Plan Submittal Date of August 2, 2025* *Audit Period of August 2, 2025 through December 31, 2027*	*July 1, 2028*

Initial Audit Period for Transition from 2-Year Audit Required in Previous Order 2006-0003-DWQ to 3-Year Audit Required in this General Order

	Audit Period	Audit Due Date
An Enrollee previously regulated by Order 2006-003-DWQ	A 3-year period starting from the end of last required 2-year Audit Period	Within six months after end of 3-year Audit Period
Example	*Last required Audit Period start date of August 2, 2021;* *Audit Period of August 2, 2021 through August 1, 2024*	*February 1, 2025*

Three-Year Ongoing Audit Period

	Audit Period	Audit Due Date
Each Enrollee	A 3-year period starting from the end of last required Audit Period	Within six months after end of 3-year Audit Period

5.5. Six-Year Sewer System Management Plan Update

At a minimum, the Enrollee shall update its Sewer System Management Plan every six (6) years after the date of its last Plan Update due date. (For an Enrollee previously regulated by Order 2006-0003-DWQ, the six-year period shall commence on the due date identified in section 3.11 of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of this Order. The Updated Sewer System Management Plan must include:

- Elements required in Attachment D (Sewer System Management Plan – Required Elements) of this Order;
- Summary of revisions included in the Plan update based on internal audit findings; and
- Other sewer system management-related changes.

The Enrollee's governing entity shall approve the updated Plan. The Legally Responsible Official shall upload and certify the approved updated Plan in the online CIWQS Sanitary Sewer System Database in accordance with section 3.11 (Sewer System Management Plan Reporting Requirements) of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of this General Order. During the time period in between Plan updates, the Enrollee shall continuously document changes to its Sewer System Management Plan in a change log attached to the Plan.

5.6. System Resilience

The Enrollee shall include and implement system-specific procedures in its Sewer System Management Plan to proactively prioritize: (1) operation and maintenance, (2) condition assessments, and (3) repair and rehabilitation, to address ongoing system resilience, as specified in Attachment D (Sewer System Management Plan – Required Elements) of this General Order.

5.7. Allocation of Resources

The Enrollee shall:

- Establish and maintain a means to manage all necessary revenues and expenditures related to the sanitary sewer system; and
- Allocate the necessary resources to its sewer system management program for:
  - Compliance with this General Order,
  - Full implementation of its updated Sewer System Management Plan,
  - System operation, maintenance, and repair, and
  - Spill responses.

5.8. Designation of Data Submitters

The Legally Responsible Official may designate one or more individuals as a Data Submitter for reporting of spill data. The Legally Responsible Official shall authorize the designation of Data Submitter(s) through the online CIWQS database (https://ciwqs.waterboards.ca.gov) prior to the individuals establishing a CIWQS user account (https://ciwqs.waterboards.ca.gov/ciwqs/newUser.jsp) and entering spill data into the online CIWQS Sanitary Sewer System Database.

The Legally Responsible Official shall submit any change to its Data Submitter(s), and/or change in Data Submitter contact information, to the State Water Board within 30 calendar days of the change, by emailing ciwqs@waterboards.ca.gov and copying the appropriate Regional Water Board as provided in Attachment F (Regional Water Quality Control Board Contact Information) of this General Order.

5.9. Reporting Certification

The Legally Responsible Official shall electronically certify, on the Enrollee's behalf, all applications, reports, the Sewer System Management Plan(s) and corresponding updates, and other information submitted electronically into the online CIWQS Sanitary Sewer System Database, as follows:

"I certify under penalty of perjury under the laws of the State of California that the electronically submitted information was prepared under my direction or supervision. Based on my inquiry of the person(s) directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete, and complies with the Statewide Sanitary Sewer Systems General Order. I am aware that there are significant penalties for submitting false information."

Hardcopy submittals to the State Water Board must be accompanied by the above certification statement.

5.10. System Capacity

The Enrollee shall maintain the system capacity necessary to convey: (1) base flows during dry weather conditions, and (2) wet weather peak flows consistent with designated local historic storms. Design storms must take into account system-specific stormwater contributions via inflow and infiltration, and location-specific depth of groundwater and storm frequencies. The Enrollee shall implement capital improvements to provide adequate hydraulic capacity to:

- Meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance element of its Sewer System Management Plan; and
- Prevent system capacity-related spills, and adverse impacts to the treatment efficiency of downstream wastewater treatment facilities.

5.11. System Performance Analysis

The Enrollee shall include a running 10-year system performance analysis in its Annual Report. The analysis must include two CIWQS-generated graphs presenting the following information:

Graph 1 – Total Spill Volume per Year:

X axis: A 10-year period which includes the current calendar year and the nine previous calendar years;

Y axis: The total spill volume, per Spill Category, for each calendar year.

Graph 2 – Total Number of Spills per Year:

X axis: A 10-year period which includes the current calendar year and the nine previous calendar years;

Y axis: The total number of spills, per Spill Category, for each calendar year.

The current calendar year is the calendar year covered in the Annual Report.

The Enrollee shall generate the graphs in CIWQS, using the existing data in the online CIWQS Sanitary Sewer System Database at the following graph generation link: (https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportAction=criteria&reportId=sso_operation_report).

5.12. Spill Emergency Response Plan and Remedial Actions

For Existing Enrollees (with regulatory coverage under Order 2006-0003-DWQ):

Within six (6) months of the Adoption Date of this General Order, the Enrollee shall update and implement its Spill Emergency Response Plan, per Attachment D, section 6 (Spill Emergency Response Plan) of this General Order.

For New Enrollees:

Within six (6) months of the Application for Enrollment approval date, the Enrollee shall develop and implement a Spill Emergency Response Plan, per Attachment D, section 6 (Spill Emergency Response Plan) of this General Order.

The Enrollee shall certify, in its Annual Report, that its Spill Emergency Response Plan is up to date.

The Spill Emergency Response Plan shall include measures to protect public health and the environment. The Enrollee shall respond to spills from its system(s) in a timely manner that minimizes water quality impacts and nuisance by:

- Immediately stopping the spill and preventing/minimizing a discharge to waters of the State;
- Intercepting sewage flows to prevent/minimize spill volume discharged into waters of the State;
- Thoroughly recovering, cleaning up and disposing of sewage and wash down water; and
- Cleaning publicly accessible areas while preventing toxic discharges to waters of the State.

5.13. Notification, Monitoring, Reporting and Recordkeeping Requirements

The Enrollee shall comply with notification, monitoring, reporting, and recordkeeping requirements in Attachment E1 of this General Order.

5.13.1. Spill Categories

Individual spill notification, monitoring and reporting must be in accordance with the following spill categories:

- **Category 1 Spill**

  A Category 1 spill is a spill of any volume of sewage from or caused by a sanitary sewer system regulated under this General Order that results in a discharge to:

  - A surface water, including a surface water body that contains no flow or volume of water; or
  - A drainage conveyance system that discharges to surface waters when the sewage is not fully captured and returned to the sanitary sewer system or disposed of properly.

    Any spill volume not recovered from a drainage conveyance system is considered a discharge to surface water, unless the drainage conveyance system discharges to a dedicated stormwater infiltration basin or facility.

A spill from an Enrollee-owned and/or operated lateral that discharges to a surface water is a Category 1 spill; the Enrollee shall report all Category 1 spills per section 3.1 of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of this General Order.

- **Category 2 Spill**

  A Category 2 spill is a spill of 1,000 gallons or greater, from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.

  A spill of 1,000 gallons or greater that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system, is a Category 2 spill.

- **Category 3 Spill**

  A Category 3 spill is a spill of equal to or greater than 50 gallons and less than 1,000 gallons, from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.

  A spill of equal to or greater than 50 gallons and less than 1,000 gallons, that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system is a Category 3 spill.

- **Category 4 Spill**

  A Category 4 spill is a spill of less than 50 gallons, from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.

  A spill of less than 50 gallons that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system is a Category 4 spill.

5.13.2. Annual Report

The Enrollee shall submit an Annual Report (previously termed as Collection System Questionnaire in Order 2006-0003-DWQ) as specified in section 3.9 (Annual Report) of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of this General Order.

For new Enrollees: Within 30 days of obtaining a CIWQS account, a new Enrollee shall submit its initial Annual Report, as specified in section 3.9 (Annual Report) of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of this General Order.

5.14. Electronic Sanitary Sewer System Service Area Boundary Map

For continuing enrollees, starting on July 1, 2025, and no later than December 31, 2025:

For new enrollees – no earlier than July 1, 2025, or within 12 months of the Application for Enrollment approval date, whichever date is later:

The Legally Responsible Official shall submit, to the State Water Board, geospatial data detailing the locations of the Enrollee's sanitary sewer system service area boundary, per the required content and specifications in section 3.8 (Electronic Sanitary Sewer System Service Area Boundary Map) of Attachment E1 of this General Order, for each system identified by a WDID number.

An Enrollee of a disadvantaged community that may need assistance developing an electronic map to comply with this requirement, may contact State Water Board staff for assistance at SanitarySewer@waterboards.ca.gov.

5.15. Voluntary Reporting of Spills from Privately-Owned Sewer Laterals and/or Private Sanitary Sewer Systems

Within 24 hours of becoming aware of a spill (as described below) from a private sewer lateral or private sanitary sewer system that is not owned/operated by the Enrollee, the Enrollee is encouraged to report the following observations to the online CIWQS Sanitary Sewer System Database at the following link: https://ciwqs.waterboards.ca.gov:

- A spill equal or greater than 1,000 gallons that discharges (or has a potential to discharge) to a water of the State, or a drainage conveyance system that discharges to waters of the State; **or**
- Any volume of sewage that discharges (or has a potential to discharge) to surface waters.

In the CIWQS module, the Enrollee is encouraged to identify:

- Time of observation;
- Description of general spill location (for example, street name and cross street names);
- Estimated volume of spill;
- If known, general description of spill destination (for example, flowing into drainage channel, flowing directly into a creek, etc.); and
- If known, name of private system owner/operator.

The CIWQS database will make the name and contact information of the entity voluntarily reporting a private spill, accessible to State and Regional Water Board staff only. The CIWQS database will only make information regarding the actual spill, accessible to the public.

5.16. Voluntary Notification of Spills from Privately-Owned Laterals and/or Systems to the California Office of Emergency Services

Upon observing or acquiring knowledge of any of the following from a private sewer lateral or private sanitary sewer system that is not owned/operated by the Enrollee, the Enrollee is encouraged to notify the California Office of Emergency Services (as provided by Health and Safety Code section 5410 et. seq. and Water Code section 13271), or inform the responsible party that State law requires such notification to the Office of Emergency Services by any person that causes or allows a sewage discharge to waters of the State:

- A spill equal to 1,000 gallons or more that discharges (or has a potential to discharge) to waters of the State, or a drainage conveyance system that discharges to waters of the State; or
- A spill of any volume to surface waters.

5.17. Unintended Failure to Report

If an Enrollee becomes aware that they unintentionally failed to submit relevant facts in any report required in this General Order, the Enrollee shall promptly notify Regional Water Board and State Water Board staff. Regional Water Board contact information is included in Attachment F of this Order. State Water Board staff shall be contacted by email at SanitarySewer@waterboards.ca.gov for assistance in formally amending the corresponding report(s) in the online CIWQS Sanitary Sewer System Database.

5.18. Duty to Report to Water Boards

In accordance with Water Code section 13267 and/or section 13383, upon request by the State Water Board Executive Director (or designee) or a Regional Water Board Executive Officer (or designee), the Enrollee shall provide the requested information which the State or Regional Water Board deems necessary to determine compliance with this General Order.

5.19. Operation and Maintenance

To prevent discharges to the environment, the Enrollee shall maintain in good working order, and operate as designed, any facility or treatment and control system designed to contain sewage and convey it to a treatment plant.

6. PROVISIONS

6.1. Enforcement Provisions

The following enforcement provisions are based on existing federal and state regulations, laws and policies, including the federal Clean Water Act, the state Water Code and the State Water Board Enforcement Policy.

6.1.1. Enforceability of Clean Water Act and Water Code Violations

Noncompliance with requirements of this General Order or discharging sewage without enrolling in this General Order constitutes a violation of the Water Code and a potential

violation of the Clean Water Act and is grounds for an enforcement action by the State Water Board or the applicable Regional Water Board. Failure to comply with the notification, monitoring, inspection, entry, reporting, and recordkeeping requirements may subject the Enrollee to administrative civil liabilities of up to $10,000 a day per violation pursuant to Water Code section 13385; up to $1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. Discharging waste not in compliance with the requirements of this General Order or the Clean Water Act may subject the Enrollee to administrative civil liabilities up to $10,000 a day per violation and additional liability up to $10 per gallon of discharge not cleaned up after the first 1,000 gallons of discharge; up to $5,000 a day per violation pursuant to Water Code section 13350 or up to $20 per gallon of waste discharged; or referral to the Attorney General for judicial civil enforcement.

6.1.2. Monetary Penalties

The Water Code provides the State and Regional Water Boards the authority to pursue formal enforcement actions, including imposing administrative liability and civil monetary penalties, for non-compliance with the requirements of this General Order and violations of the Clean Water Act.

6.1.3. Falsifying or Failure to Report

The Water Code provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this General Order, or falsifying any information provided in the technical or monitoring reports is subject to administrative liability and civil monetary penalties. Any person who knowingly fails or refuses to furnish technical or monitoring program reports or falsifies any information provided in reports required by this General Order is subject to criminal penalties.

6.1.4. Severability of General Order

The provisions of this General Order are severable; if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this Order shall not be affected thereby.

6.1.5. Indirect Discharges

In the event that a spill enters into a drainage conveyance system, the Enrollee shall take all feasible steps to prevent discharge of sewage into waters of the State by blocking or redirecting the flow in the drainage conveyance system, removing the sewage from the drainage conveyance system, and cleaning the system in a manner that does not inadvertently impact beneficial uses of the receiving water body.

6.1.6. Water Boards' Considerations for Discretionary Enforcement

Consistent with the State Water Board Enforcement Policy, when considering Water Code section 13327 factors, the State Water Board or a Regional Water Board may consider the Enrollee's efforts to contain, control, clean up, and mitigate spills. In assessing the factors, the State Water Board or the applicable Regional Water Board will consider:

- The Enrollee's compliance with this General Order with a focus on compliance with reporting requirements;
- The Enrollee's provision of adequate funding to implement the requirements of this General Order;
- The Enrollee's compliance with providing a complete and updated Sewer System Management Plan;
- The Enrollee's compliance with implementing its Sewer System Management Plan;
- The overall effectiveness of the Enrollee's Sewer System Management Plan with respect to:
    - System management, operation, and maintenance,
    - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent spills (e.g. adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow, etc.),
    - Preventive maintenance (including cleaning, root grinding, and fats, oils, and grease control) and source control measures,
    - Implementation of backup equipment,
    - Inflow and infiltration prevention and control,
    - Appropriate sanitary sewer system capacity to prevent spills, and
    - The Enrollee's responsiveness to stop and mitigate the impact of the discharge;
- The Enrollee's compliance with identifying the cause of the spill;
- The Enrollee's use of available information and observations to accurately estimate the spill volume and identify the affected or potentially affected receiving waters;
- The Enrollee's thoroughness of cleaning up sewage in drainage conveyance systems after the spill(s);
- The Enrollee's use of water quality and biological monitoring and assessment to determine the short-term and long-term impacts to beneficial uses and the environment;
- The Enrollee's follow up actions to improve system performance;
- The Enrollee's implementation of feasible alternatives to prevent spills, such as:
    - Use of temporary storage or waste retention,
    - Reduction of system inflow and infiltration,
    - Collection and hauling of waste to a treatment facility,
    - Prevention of and/ or containment of spills due to a design storm event identified in the Enrollee's Sewer System Management Plan,

- Implementation of available equipment, technologies, strategies, and recommended industry practices for maintaining and managing sewer systems to prevent spills, and contain and eliminate discharges to waters of the State; and

- The spill duration and factors beyond the reasonable control of the Enrollee causing the event.

6.1.7. Enforcement Discretion Based on Reporting Compliance

Consistent with the State Water Board Enforcement Policy, the State Water Board or a Regional Water Board may consider the Enrollee's efforts to comply with spill reporting requirements when determining compliance with Water Code section 13267 and section 13383. When assessing Water Code section 13227 factors, the State Water Board or the applicable Regional Water Board will consider:

- The Enrollee's diligence to comply with all reporting requirements in this General Order;
- The use of best available information for the Enrollee's reporting of spill start date and start time in which the release of sewage from the sanitary sewer system initiated;
- The Enrollee's reporting of spill end date, and end time to be the date and time in which the release of sewage from the sanitary sewer system was stopped;
- The Enrollee's diligence to accurately estimate and report spill volumes;
- The Enrollee's subsequent verification and/or updates to initial Draft Spill Reports in accordance with this General Order; and
- The Enrollee's timely certification of required spill reports.

Consistent with Water Code section 13267 and section 13383, the State Water Board or a Regional Water Board may require an Enrollee to report the results of a condition assessment of a specified portion of the Enrollee's sanitary sewer system.

6.2. Other Regional Water Board Orders

It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with federal and state regulations. This Order will not be interpreted or applied:

- In a manner inconsistent with the federal Clean Water Act;
- To authorize a spill or discharge that is illegal under either the Clean Water Act, the Water Code, and/or an applicable Basin Plan prohibition or water quality standard;
- To prohibit a Regional Water Board from issuing an individual National Pollutant Discharge Elimination System (NPDES) permit or individual waste discharge requirements superseding an Enrollee's regulatory coverage under this General Order for a sanitary sewer system authorized under the Clean Water Act or Water Code;

- To supersede any more specific or more stringent waste discharge requirements or enforcement orders issued by a Regional Water Board; or
- To supersede any more specific or more stringent state or federal requirements in existing regulation, an administrative/judicial order, or Consent Decree.

6.3. Sewer System Management Plan Availability

The Enrollee's updated Sewer System Management Plan must be maintained for public inspection at the Enrollee's offices and facilities and must be available to the public through CIWQS and/or on the Enrollee's website, in accordance with section 3.8 (Sewer System Management Plan Reporting Requirements) of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of this General Order.

6.4. Entry and Inspection

6.4.1. Entry and Availability of Information

The Enrollee shall allow State and Regional Water Board staff, upon presentation of credentials and other documents as may be required by law, to:

- Enter upon the Enrollee's premises where a regulated facility or activity is located or conducted, or where records are kept under the requirements of this General Order;
- Have access to and reproduce any records required to be maintained by this General Order;
- Inspect any facility and/or equipment (including monitoring and control equipment), practices, or operations required in this General Order; and
- Sample or monitor substances or parameters for assuring compliance with this General Order, or as otherwise authorized by the Water Code.

6.4.2. Pre-Inspection Questionnaire

The Enrollee shall provide pre-inspection information to State and Regional Water Board staff through the completion of a Pre-Inspection Questionnaire provided by Water Board staff.

ATTACHMENT A - DEFINITIONS

Annual Report

An Annual Report (previously termed as Collection System Questionnaire in Order 2006-0003-DWQ) is a mandatory report in which the Enrollee provides a calendar-year update of its efforts to prevent spills.

Basin Plan

A Basin Plan is a water quality control plan specific to a Regional Water Quality Control Board (Regional Water Board), that serves as regulations to: (1) define and designate beneficial uses of surface and groundwaters, (2) establish water quality objectives for protection of beneficial uses, and (3) provide implementation measures.

Beneficial Uses

The term “Beneficial Uses” is a Water Code term, defined as the uses of the waters of the State that may be protected against water quality degradation. Examples of beneficial uses include but are not limited to, municipal, domestic, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

California Integrated Water Quality System (CIWQS)

CIWQS is the statewide database that provides for mandatory electronic reporting as required in State and Regional Water Board-issued waste discharge requirements.

Data Submitter

A Data Submitter is an individual designated and authorized by the Enrollee’s Legally Responsible Official to enter spill data into the online CIWQS Sanitary Sewer System Database. A Data Submitter does not have the authority of a Legally Responsible Official to certify reporting entered into the online CIWQS Sanitary Sewer System Database.

Disadvantaged Community

A disadvantaged community is a community with a median household income of less than eighty percent (80%) of the statewide annual median household income.

For the purpose of this General Order, there is no differentiation between a small and large disadvantaged community.

Drainage Conveyance System

A drainage conveyance system is a publicly- or privately-owned separate storm sewer system, including but not limited to drainage canals, channels, pipelines, pump stations, detention basins, infiltration basins/facilities, or other facilities constructed to transport stormwater and non-stormwater flows.

Enrollee

An Enrollee is a public, private, or other non-governmental entity that has obtained approval for regulatory coverage under this General Order, including:

- A state agency, municipality, special district, or other public entity that owns and/or operates one or more sanitary sewer systems:
  - greater than one (1) mile in length (each individual sanitary sewer system);
  - one mile or less in length where the State Water Resources Control Board or a Regional Water Quality Control Board requires regulatory coverage under this Order, or
- A federal agency, private company, or other non-governmental entity that owns and/or operates a sanitary sewer system of any size where the State Water Resources Control Board or a Regional Water Quality Control Board requires regulatory coverage under this Order in response to a history of spills, proximity to surface water, or other factors supporting regulatory coverage.

Environmentally Sensitive Area

An environmentally sensitive area is a designated agricultural and/or wildlife area identified to need special natural landscape protection due to its wildlife or historical value.

Exfiltration

Exfiltration is the underground exiting of sewage from a sanitary sewer system through cracks, offset or separated joints, or failed infrastructure due to corrosion or other factors.

Flood Control Channel

A flood control channel is a channel used to convey stormwater and non-stormwater flows through and from areas for flood management purposes.

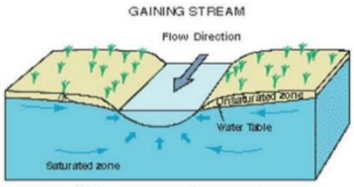
Governing Entity

A governing entity includes but is not limited to the following:

- A publicly elected governing board, council, or commission of a municipal agency;
- A Department or Division director of a federal or state agency that is not governed by a board;
- A governing board or commission of an organization or association; and
- A private system owner/manager that is not governed by a board.

Hydrologically Connected

Two waterbodies are hydrologically connected when one waterbody flows, or has the potential to flow, into the other waterbody. For the purpose of this General Order, groundwater is hydrologically connected to a surface water when the groundwater feeds into the surface water. (The surface waterbody in this example is termed a gaining stream as it gains flow from surrounding groundwater.)



Lateral (including Lower and Upper Lateral)

A lateral is an underground segment of smaller diameter pipe that transports sewage from a customer's building or property (residential, commercial, or industrial) to the Enrollee's main sewer line in a street or easement. Upper and lower lateral boundary definitions are subject to local jurisdictional codes and ordinances, or private system ownership.

A lower lateral is the portion of the lateral located between the sanitary sewer system main, and either the property line, sewer clean out, curb line, established utility easement boundary, or other jurisdictional locations.

An upper lateral is the portion of the lateral from the property line, sewer clean out, curb line, established utility easement boundary, or other jurisdictional locations, to the building or property.

Legally Responsible Official

A Legally Responsible Official is an official representative, designated by the Enrollee, with authority to sign and certify submitted information and documents required by this General Order.

Nuisance

For the purpose of this General Order, a nuisance, as defined in Water Code section 13050(m), is anything that meets all of the following requirements:

- Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property;
- Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and
- Occurs during, or as a result of, the treatment or disposal of wastes.

Private Sewer Lateral

A private sewer lateral is the privately-owned lateral that transports sewage from private property(ies) into a sanitary sewer system.

Private Sanitary Sewer System

A private sanitary sewer system is a sanitary sewer system of any size that is owned and/or operated by a private individual, company, corporation, or organization. A private sanitary sewer system may or may not connect into a publicly owned sanitary sewer system.

Potential to Discharge, Potential Discharge

Potential to Discharge, or Potential Discharge, means any exiting of sewage from a sanitary sewer system which can reasonably be expected to discharge into a water of the State based on the size of the sewage spill, proximity to a drainage conveyance system, and the nature of the surrounding environment.

Receiving Water

A receiving water is a water of the State that receives a discharge of waste.

Resilience

Resilience is the ability to recover from or adjust to adversity or change, and grow from disruptions. Resilience can be built through planning, preparing for, mitigating, and adapting to changing conditions.

Sanitary Sewer System

A sanitary sewer system is a system that is designed to convey sewage, including but not limited to, pipes, manholes, pump stations, siphons, wet wells, diversion structures and/or other pertinent infrastructure, upstream of a wastewater treatment plant headworks, including:

- Laterals owned and/or operated by the Enrollee;
- Satellite sewer systems; and/or
- Temporary conveyance and storage facilities, including but not limited to temporary piping, vaults, construction trenches, wet wells, impoundments, tanks and diversion structures.

For purpose of this Order, sanitary sewer systems include only systems owned and/or operated by the Enrollee.

Satellite Sewer System

A satellite sewer system is a portion of a sanitary sewer system owned or operated by a different owner than the owner of the downstream wastewater treatment facility ultimately treating the sewage.

Sewer System Management Plan

A sewer system management plan is a living document an Enrollee develops and implements to effectively manage its sanitary sewer system(s) in accordance with this General Order.

Sewage

Sewage, and its associated wastewater, is untreated or partially treated domestic, municipal, commercial and/or industrial waste (including sewage sludge), and any mixture of these wastes with inflow or infiltration of stormwater or groundwater, conveyed in a sanitary sewer system.

Spill

A spill is a discharge of sewage from any portion of a sanitary sewer system due to a sanitary sewer system overflow, operational failure, and/or infrastructure failure. Exfiltration of sewage is not considered to be a spill under this General Order if the exfiltrated sewage remains in the subsurface and does not reach a surface water of the State.

Training

Training is in-house or external education and guidance needed that provides the knowledge, skills, and abilities to comply with this General Order.

Wash Down Water

Wash down water is water used to clean a spill area.

Waste

Waste, as defined in Water Code section 13050(d), includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

Waste Discharge Identification Number (WDID)

A waste discharge identification number (WDID) identifies each individual sanitary sewer system enrolled under this General Order. A WDID number is assigned to each enrolled system upon an Enrollee's approved regulatory coverage.

Waters of the State

Waters of the State are surface waters or groundwater within boundaries of the state as defined in Water Code section 13050(e), in which the State and Regional Water Boards have authority to protect beneficial uses. Waters of the State include, but are not limited to, groundwater aquifers, surface waters, saline waters, natural washes and pools, wetlands, sloughs, and estuaries, regardless of flow or whether water exists during dry conditions. Waters of the State include waters of the United States.

Waters of the United States

Waters of the United States are surface waters or waterbodies that are subject to federal jurisdiction in accordance with the Clean Water Act.

Water Quality Objective

A water quality objective is the limit or maximum amount of pollutant, waste constituent or characteristic, or parameter level established in statewide water quality control plans and Regional Water Boards' Basin Plans, for the reasonable protection of beneficial uses of surface waters and groundwater and the prevention of nuisance.

ATTACHMENT B – APPLICATION FOR ENROLLMENT

1. Enrollment Status: (Mark only one item)

☐ New Enrollee

☐ New Enrollee with previous regulatory coverage under Order 2006-0003-DWQ
(that failed to certify continuation of coverage in CIWQS per Order 2022-XXXX-DWQ)
Existing WDID Number: _____

2. Applicant Information:

Legally Responsible Official Submitting Application

First and Last Name: _____

Title: _____

Phone: _____

Email: _____

System Owner/Operator Name: _____

Mailing Address:_____

City, State, Zip:_____

County:_____

Sanitary Sewer System Name: _____

Regional Water Quality Control Board(s): _____

Signature and Date: _____

3. Applicant Type (Check one):

☐ City ☐ County ☐ State ☐ Federal ☐ Special District

☐ Government Combination ☐ Private ☐ Other Non-governmental Entity

4. Wastewater Treatment Plant Receiving Sanitary Sewer System Waste:

Wastewater Treatment Plant Permittee:_____

WDID No.: _____

5. Billing Information

Billing Address: _____

City, State, Zip: _____

Billing Contact Person and Title: _____

Phone and Email Address: _____

6. Application Fee:

The application fee, as required by Water Code section 13260, is based on the daily population served by the sanitary sewer system. See updated Fee Schedule. (https://www.waterboards.ca.gov/resources/fees/water_quality/)

Check one of the following and enter fee amount:

☐ Population Served < 50,000 – Total Fee submitted: $ _____

☐ Population Served ≥ 50,000 – Total Fee submitted: $ _____

Make the fee payment payable to the State Water Resources Control Board and mail the complete application package to:

State Water Resources Control Board, Accounting Office
P. O. Box 1888
Sacramento, CA 95812-1888

Attention: Statewide Sanitary Sewer System Program

7. Application Submittal Certification

I certify under penalty of perjury under the laws of the State of California that to the best of my knowledge and belief, the information in the submitted application package is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

Print Name: _____

Title: _____

Signature: _____Date: _____

ATTACHMENT C - NOTICE OF TERMINATION

1. Enrollee Information

Enrollee Name: _____

WDID No:_____

Legally Responsible Official Requesting Termination of Coverage: _____

First and Last Name: _____

Title: _____

Phone: _____

Email: _____

Mailing Address: _____

City, State, Zip: _____

County: _____

Sanitary Sewer System Name(s) or Unique Identifier(s): _____

Regional Water Quality Control Board(s): _____

Signature and Date:_____

2. Basis of Termination

Explanation of termination, including subsequent regulatory coverage and subsequent owner/operator of enrolled sanitary sewer system, as applicable:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

3. Regulatory Coverage Termination Certification

I certify under penalty of perjury under the laws of the State of California that to the best of my knowledge: 1) the sanitary sewer system I officially represent is not required to be regulated under the Statewide Waste Discharge Requirements for Sanitary Sewer Systems Order 2022-XXXX-DWQ, and 2) the information submitted in this Notice of Termination is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. Additionally, I understand that the submittal of this Notice of Termination does not release sanitary sewer system agencies from liability for any violations of the Clean Water Act.

Print Name: _____

Title: _____

Signature: _____Date: _____

For State Water Board Use Only

☐ Approved for Termination ☐ Denied and Returned to Enrollee

Deputy Director of Water Quality Signature: _____

Date: _____Notice of Termination Effective Date: _____

ATTACHMENT D – SEWER SYSTEM MANAGEMENT PLAN – REQUIRED ELEMENTS

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ATTACHMENT D – SEWER SYSTEM MANAGEMENT PLAN – REQUIRED ELEMENTS

A Sewer System Management Plan (Plan) is a living planning document that documents ongoing local sewer system management program activities, procedures, and decision-making – at the scale necessary to address the size and complexity of the subject sanitary sewer system(s). This Plan may incorporate other programs and other plans by reference, to address short-term and long-term system resilience through:

- Proactive planning and decision-making;
- Local government ordinances;
- Updated operations and maintenance activities and procedures;
- Implementation of capital improvements;
- Sufficient local budget to support staff resources, contractors, equipment, and training; and
- Updated training of staff and contractors.

The Enrollee's development, update, and implementation of a Sewer System Management Plan addressing the requirements of this Attachment is an enforceable component of this General Order. As specified in Provision 6.1 (Enforcement Provisions) of this General Order, consistent with the Water Code and the State Water Board Enforcement Policy, the State Water Board or a Regional Water Board may consider the Enrollee's efforts in implementing an effective Sewer System Management Plan to prevent, contain, control, and mitigate spills when considering Water Code section 13327 factors to determine necessary enforcement of this General Order.

This Attachment includes the following required elements that the Enrollee shall address in its Plan and subsequent updates. The Enrollee shall identify any requirement in this Attachment that is not applicable to the Enrollee's sewer system and shall explain in its Plan why the requirement is not applicable.

1. SEWER SYSTEM MANAGEMENT PLAN GOAL AND INTRODUCTION

The goal of the Sewer System Management Plan (Plan) is to provide a plan and schedule to: (1) properly manage, operate, and maintain all parts of the Enrollee's sanitary sewer system(s), (2) reduce and prevent spills, and (3) contain and mitigate spills that do occur.

The Plan must include a narrative Introduction section that discusses the following items:

1.1. Regulatory Context

The Plan Introduction section must provide a general description of the local sewer system management program and discuss Plan implementation and updates.

1.2. Sewer System Management Plan Update Schedule

The Plan Introduction section must include a schedule for the Enrollee to update the Plan, including the schedule for conducting internal audits. The schedule must include milestones for incorporation of activities addressing prevention of sewer spills.

1.3. Sewer System Asset Overview

The Plan Introduction section must provide a description of the Enrollee-owned assets and service area, including but not limited to:

- Location, including county(ies);
- Service area boundary;
- Population and community served;
- System size, including total length in miles, length of gravity mainlines, length of pressurized (force) mains, and number of pump stations and siphons;
- Structures diverting stormwater to the sewer system;
- Data management systems;
- Sewer system ownership and operation responsibilities between Enrollee and private entities for upper and lower sewer laterals;
- Estimated number or percent of residential, commercial, and industrial service connections; and
- Unique service boundary conditions and challenge(s).

Additionally, the Plan Introduction section must provide reference to the Enrollee's up-to-date map of its sanitary sewer system, as required in section 4.1 (Updated Map of Sanitary Sewer System) of this Attachment.

2. ORGANIZATION

The Plan must identify organizational staffing responsible and integral for implementing the local Sewer System Management Plan through an organization chart or similar narrative documentation that includes:

- The name of the Legally Responsible Official as required in section 5.1 (Designation of a Legally Responsible Official) of this General Order;
- The position titles, telephone numbers, and email addresses for management, administrative, and maintenance positions responsible for implementing specific Sewer System Management Plan elements;
- Organizational lines of authority; and
- Chain of communication for reporting spills from receipt of complaint or other information, including the person responsible for reporting spills to the State and Regional Water Boards and other agencies, as applicable. (For example, county

health officer, county environmental health agency, and State Office of Emergency Services.)

3. LEGAL AUTHORITY

The Plan must include copies or an electronic link to the Enrollee's current sewer system use ordinances, service agreements and/or other legally binding procedures to demonstrate the Enrollee possesses the necessary legal authority to:

- Prevent illicit discharges into its sanitary sewer system from inflow and infiltration (I&I); unauthorized stormwater; chemical dumping; unauthorized debris; roots; fats, oils, and grease; and trash, including rags and other debris that may cause blockages;
- Collaborate with storm sewer agencies to coordinate emergency spill responses, ensure access to storm sewer systems during spill events, and prevent unintentional cross connections of sanitary sewer infrastructure to storm sewer infrastructure;
- Require that sewer system components and connections be properly designed and constructed;
- Ensure access for maintenance, inspection, and/or repairs for portions of the service lateral owned and/or operated by the Enrollee;
- Enforce any violation of its sewer ordinances, service agreements, or other legally binding procedures; and
- Obtain easement accessibility agreements for locations requiring sewer system operations and maintenance, as applicable.

4. OPERATION AND MAINTENANCE PROGRAM

The Plan must include the items listed below that are appropriate and applicable to the Enrollee's system.

4.1. Updated Map of Sanitary Sewer System

An up-to-date map(s) of the sanitary sewer system, and procedures for maintaining and providing State and Regional Water Board staff access to the map(s). The map(s) must show gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities within the sewer system service area boundaries.

4.2. Preventive Operation and Maintenance Activities

A scheduling system and a data collection system for preventive operation and maintenance activities conducted by staff and contractors.

The scheduling system must include:

- Inspection and maintenance activities;

- Higher-frequency inspections and maintenance of known problem areas, including areas with tree root problems;
- Regular visual and closed-circuit television (CCTV) inspections of manholes and sewer pipes.

The data collection system must document data from system inspection and maintenance activities, including system areas/components prone to root-intrusion potentially resulting in system backup and/or failure.

4.3. Training

In-house and external training provided on a regular basis for sanitary sewer system operations and maintenance staff and contractors. The training must cover:

- The requirements of this General Order;
- The Enrollee's Spill Emergency Response Plan procedures and practice drills;
- Skilled estimation of spill volume for field operators; and
- Electronic CIWQS reporting procedures for staff submitting data.

4.4. Equipment Inventory

An inventory of sewer system equipment, including the identification of critical replacement and spare parts.

5. DESIGN AND PERFORMANCE PROVISIONS

The Plan must include the following items as appropriate and applicable to the Enrollee's system:

5.1. Updated Design Criteria and Construction Standards and Specifications

Updated design criteria, and construction standards and specifications, for the construction, installation, repair, and rehabilitation of existing and proposed system infrastructure components, including but not limited to pipelines, pump stations, and other system appurtenances. If existing design criteria and construction standards are deficient to address the necessary component-specific hydraulic capacity as specified in section 8 (System Evaluation, Capacity Assurance and Capital Improvements) of this Attachment, the procedures must include component-specific evaluation of the design criteria.

5.2. Procedures and Standards

Procedures, and standards for the inspection and testing of newly constructed, newly installed, repaired, and rehabilitated system pipelines, pumps, and other equipment and appurtenances.

6. SPILL EMERGENCY RESPONSE PLAN

The Plan must include an up to date Spill Emergency Response Plan to ensure prompt detection and response to spills to reduce spill volumes and collect information for prevention of future spills. The Spill Emergency Response Plan must include procedures to:

- Notify primary responders, appropriate local officials, and appropriate regulatory agencies of a spill in a timely manner;
- Notify other potentially affected entities (for example, health agencies, water suppliers, etc.) of spills that potentially affect public health or reach waters of the State;
- Comply with the notification, monitoring and reporting requirements of this General Order, State law and regulations, and applicable Regional Water Board Orders;
- Ensure that appropriate staff and contractors implement the Spill Emergency Response Plan and are appropriately trained;
- Address emergency system operations, traffic control and other necessary response activities;
- Contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system;
- Minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State;
- Remove sewage from the drainage conveyance system;
- Clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters;
- Implement technologies, practices, equipment, and interagency coordination to expedite spill containment and recovery;
- Implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event;
- Conduct post-spill assessments of spill response activities;
- Document and report spill events as required in this General Order; and
- Annually, review and assess effectiveness of the Spill Emergency Response Plan, and update the Plan as needed.

7. SEWER PIPE BLOCKAGE CONTROL PROGRAM

The Sewer System Management Plan must include procedures for the evaluation of the Enrollee's service area to determine whether a sewer pipe blockage control program is needed to control fats, oils, grease, rags and debris. If the Enrollee determines that a program is not needed, the Enrollee shall provide justification in its Plan for why a program is not needed.

The procedures must include, at minimum:

- An implementation plan and schedule for a public education and outreach program that promotes proper disposal of pipe-blocking substances;
- A plan and schedule for the disposal of pipe-blocking substances generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of substances generated within a sanitary sewer system service area;
- The legal authority to prohibit discharges to the system and identify measures to prevent spills and blockages;
- Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, best management practices requirements, recordkeeping and reporting requirements;
- Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the fats, oils, and grease ordinance;
- An identification of sanitary sewer system sections subject to fats, oils, and grease blockages and establishment of a cleaning schedule for each section; and
- Implementation of source control measures for all sources of fats, oils, and grease reaching the sanitary sewer system for each section identified above.

8. SYSTEM EVALUATION, CAPACITY ASSURANCE AND CAPITAL IMPROVEMENTS

The Plan must include procedures and activities for:

- Routine evaluation and assessment of system conditions;
- Capacity assessment and design criteria;
- Prioritization of corrective actions; and
- A capital improvement plan.

8.1 System Evaluation and Condition Assessment

The Plan must include procedures to:

- Evaluate the sanitary sewer system assets utilizing the best practices and technologies available;

- Identify and justify the amount (percentage) of its system for its condition to be assessed each year;
- Prioritize the condition assessment of system areas that:
    - Hold a high level of environmental consequences if vulnerable to collapse, failure, blockage, capacity issues, or other system deficiencies;
    - Are located in or within the vicinity of surface waters, steep terrain, high groundwater elevations, and environmentally sensitive areas;
    - Are within the vicinity of a receiving water with a bacterial-related impairment on the most current Clean Water Act section 303(d) List;
- Assess the system conditions using visual observations, video surveillance and/or other comparable system inspection methods;
- Utilize observations/evidence of system conditions that may contribute to exiting of sewage from the system which can reasonably be expected to discharge into a water of the State;
- Maintain documents and recordkeeping of system evaluation and condition assessment inspections and activities; and
- Identify system assets vulnerable to direct and indirect impacts of climate change, including but not limited to: sea level rise; flooding and/or erosion due to increased storm volumes, frequency, and/or intensity; wildfires; and increased power disruptions.

8.2. Capacity Assessment and Design Criteria

The Plan must include procedures to identify system components that are experiencing or contributing to spills caused by hydraulic deficiency and/or limited capacity, including procedures to identify the appropriate hydraulic capacity of key system elements for:

- Dry-weather peak flow conditions that cause or contributes to spill events;
- The appropriate design storm(s) or wet weather events that causes or contributes to spill events;
- The capacity of key system components; and
- Identify the major sources that contribute to the peak flows associated with sewer spills.

The capacity assessment must consider:

- Data from existing system condition assessments, system inspections, system audits, spill history, and other available information;
- Capacity of flood-prone systems subject to increased infiltration and inflow, under normal local and regional storm conditions;

- Capacity of systems subject to increased infiltration and inflow due to larger and/or higher-intensity storm events as a result of climate change;
- Increases of erosive forces in canyons and streams near underground and above-ground system components due to larger and/or higher-intensity storm events;
- Capacity of major system elements to accommodate dry weather peak flow conditions, and updated design storm and wet weather events; and
- Necessary redundancy in pumping and storage capacities.

8.3. Prioritization of Corrective Action

The findings of the condition assessments and capacity assessments must be used to prioritize corrective actions. Prioritization must consider the severity of the consequences of potential spills.

8.4. Capital Improvement Plan

The capital improvement plan must include the following items:

- Project schedules including completion dates for all portions of the capital improvement program;
- Internal and external project funding sources for each project; and
- Joint coordination between operation and maintenance staff, and engineering staff/consultants during planning, design, and construction of capital improvement projects; and Interagency coordination with other impacted utility agencies.

9. MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

The Plan must include an Adaptive Management section that addresses Plan-implementation effectiveness and the steps for necessary Plan improvement, including:

- Maintaining relevant information, including audit findings, to establish and prioritize appropriate Plan activities;
- Monitoring the implementation and measuring the effectiveness of each Plan Element;
- Assessing the success of the preventive operation and maintenance activities;
- Updating Plan procedures and activities, as appropriate, based on results of monitoring and performance evaluations; and
- Identifying and illustrating spill trends, including spill frequency, locations and estimated volumes.

10. INTERNAL AUDITS

The Plan shall include internal audit procedures, appropriate to the size and performance of the system, for the Enrollee to comply with section 5.4 (Sewer System Management Plan Audits) of this General Order.

11. COMMUNICATION PROGRAM

The Plan must include procedures for the Enrollee to communicate with:

- The public for:
  - Spills and discharges resulting in closures of public areas, or that enter a source of drinking water, and
  - The development, implementation, and update of its Plan, including opportunities for public input to Plan implementation and updates.
- Owners/operators of systems that connect into the Enrollee's system, including satellite systems, for:
  - System operation, maintenance, and capital improvement-related activities.

ATTACHMENT E1 – NOTIFICATION, MONITORING, REPORTING AND RECORDKEEPING REQUIREMENTS

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ATTACHMENT E1– NOTIFICATION, MONITORING, REPORTING AND RECORDKEEPING REQUIREMENTS

The Notification Requirements (section 1), Spill-specific Monitoring Requirements (section 2), Reporting Requirements (section 3) and Recordkeeping Requirements (section 4) in this Attachment are pursuant to Water Code section 13267 and section 13383, and are an enforceable component of this General Order. For the purpose of this General Order, the term:

- Notification means the notifying of appropriate parties of a spill event or other activity.
- Spill-specific Monitoring means the gathering of information and data for a specific spill event to be reported or kept as records.
- Reporting means the reporting of information and data into the online California Integrated Water Quality System (CIWQS) Sanitary Sewer System Database.
- Recordkeeping means the maintaining of information and data in an official records storage system.

Failure to comply with the notification, monitoring, reporting and recordkeeping requirements in this General Order may subject the Enrollee to civil liabilities of up to $10,000 a day per violation pursuant to Water Code section 13385; up to $1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement.

Water Code section 13193 et seq. requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Resources Control Board (State Water Board) to collect sanitary sewer spill information for each spill event and make this information available to the public. Sanitary sewer spill information for each spill event includes but is not limited to: Enrollee contact information for each spill event, spill cause, estimated spill volume and factors used for estimation, location, date, time, duration, amount discharged to waters of the State, response and corrective action(s) taken.

1. NOTIFICATION REQUIREMENTS

1.1. Notification of Spills of 1,000 Gallons or Greater to the California Office of Emergency Services

Per Water Code section 13271, for a spill that discharges in or on any waters of the State, or discharges or is deposited where it is, or probably will be, discharged in or on any waters of the State, the Enrollee shall notify the California Office of Emergency Services and obtain a California Office of Emergency Services Control Number as soon as possible **but no later than two (2) hours** after:

- The Enrollee has knowledge of the spill; and
- Notification can be provided without substantially impeding cleanup or other emergency measures.

The notification requirements in this section apply to individual spills of 1,000 gallons or greater, from an Enrollee-owned and/or operated laterals, to a water of the State.

1.2. Spill Notification Information

The Enrollee shall provide the following spill information to the California Office of Emergency Services before receiving a Control Number, as applicable:

- Name and phone number of the person notifying the California Office of Emergency Services;
- Estimated spill volume (gallons);
- Estimated spill rate from the system (gallons per minute);
- Estimated discharge rate (gallons per minute) directly into waters of the State or indirectly into a drainage conveyance system;
- Spill incident description:
  - Brief narrative of the spill event, and
  - Spill incident location (address, city, and zip code) and closest cross streets and/or landmarks;
- Name and phone number of contact person on-scene;
- Date and time the Enrollee was informed of the spill event;
- Name of sanitary sewer system causing the spill;
- Spill cause or suspected cause (if known);
- Amount of spill contained;
- Name of receiving water body receiving or potentially receiving discharge; and
- Description of water body impact and/ or potential impact to beneficial uses.

1.3. Notification of Spill Report Updates

Following the initial notification to the California Office of Emergency Services and until such time that the Enrollee certifies the spill report in the online CIWQS Sanitary Sewer System Database, the Enrollee shall provide updates to the California Office of Emergency Services regarding substantial changes to:

- Estimated spill volume (increase or decrease in gallons initially estimated);
- Estimated discharge volume discharged directly into waters of the State or indirectly into a drainage conveyance system (increase or decrease in gallons initially estimated); and
- Additional impact(s) to the receiving water(s) and beneficial uses.

2. SPILL-SPECIFIC MONITORING REQUIREMENTS

2.1 Spill Location and Spread

The Enrollee shall visually assess the spill location(s) and spread using photography, global positioning system (GPS), and other best available tools. The Enrollee shall document the critical spill locations, including:

- Photography and GPS coordinates for:
  - The system location where spill originated.

    For multiple appearance points of a single spill event, the points closest to the spill origin.
- Photography for:
  - Drainage conveyance system entry locations,
  - The location(s) of discharge into surface waters, as applicable,
  - Extent of spill spread, and
  - The location(s) of clean up.

2.2 Spill Volume Estimation

To assess the approximate spill magnitude and spread, the Enrollee shall estimate the total spill volume using updated volume estimation techniques, calculations, and documentation for electronic reporting. The Enrollee shall update its notification and reporting of estimated spill volume (which includes spill volume recovered) as further information is gathered during and after a spill event.

2.3. Receiving Water Monitoring

2.3.1. Receiving Water Visual Observations

Through visual observations and use of best available spill volume-estimating techniques and field calculation techniques, the Enrollee shall gather and document the following information for spills discharging to surface waters:

- Estimated spill travel time to the receiving water;
- For spills entering a drainage conveyance system, estimated spill travel time from the point of entry into the drainage conveyance system to the point of discharge into the receiving water;
- Estimated spill volume entering the receiving water; and
- Photography of:
  - Waterbody bank erosion,
  - Floating matter,
  - Water surface sheen (potentially from oil and grease),

- Discoloration of receiving water, and
- Impact to the receiving water.

2.3.2. Receiving Water – Water Quality Sampling and Analysis

For sewage spills in which an estimated 50,000 gallons or greater are discharged into a surface water, the Enrollee shall conduct the following water quality sampling no later than **18 hours** after the Enrollee's knowledge of a potential discharge to a surface water:

- Collect one water sample, each day of the duration of the spill, at:
  - The DCS-001 location as described in section 2.3.4 (Receiving Water Sampling Locations) of this Attachment, if sewage discharges to a surface water via a drainage conveyance system; and/or
  - Each of the three receiving water sampling locations in section 2.3.4 (Receiving Water Sampling Locations) of this Attachment;

    If the receiving water has no flow during the duration of the spill, the Enrollee must report "No Sampling Due To No Flow" for its receiving water sampling locations.

The Enrollee shall analyze the collected receiving water samples for the following constituents per section 2.3.3 (Water Quality Analysis Specifications) of this Attachment:

- Ammonia, and
- Appropriate bacterial indicator(s) per the applicable Basin Plan water quality objectives, including one or more of the following, unless directed otherwise by the Regional Water Board:
  - Total Coliform Bacteria
  - Fecal Coliform Bacteria
  - *E-coli*
  - Enterococcus

  Dependent on the receiving water(s), sampling of bacterial indicators shall be sufficient to determine post-spill (after the spill) compliance with the water quality objectives and bacterial standards of the California Ocean Plan or the California Inland Surface Water Enclosed Bays, and Estuaries Plan, including the frequency and/or number of post-spill receiving water samples as may be specified in the applicable plans.

The Enrollee shall collect and analyze additional samples as required by the applicable Regional Water Board Executive Officer or designee.

2.3.3. Water Quality Analysis Specifications

Spill monitoring must be representative of the monitored activity (40 Code of Federal Regulations section 122.41(j)(1)).

Sufficiently Sensitive Methods

Sample analysis must be conducted according to sufficiently sensitive test methods approved under 40 Code of Federal Regulations Part 136 for the sample analysis of pollutants. For the purposes of this General Order, a method is sufficiently sensitive when the minimum level of the analytical method approved under 40 Code of Federal Regulations Part 136 is at or below the receiving water pollutant criteria.

Environmental Laboratory Accreditation Program-Accredited Laboratories

The analysis of water quality samples required per this General Order must be performed by a laboratory that has accreditation pursuant to Article 3 (commencing with section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code. (Water Code section 13176(a).) The State Water Board accredits laboratories through its Environmental Laboratory Accreditation Program (ELAP).

2.3.4. Receiving Water Sampling Locations

The Enrollee shall collect receiving water samples at the following locations.

Sampling of Flow in Drainage Conveyance System (DCS) Prior to Discharge

Sampling Location	Sampling Location Description
DCS-001	A point in a drainage conveyance system before the drainage conveyance system flow discharges into a receiving water.

Receiving Surface Water Sampling (RSW)[1]

Sampling Location	Sampling Location Description
RSW-001 Point of Discharge	A point in the receiving water where sewage initially enters the receiving water.
RSW-001U: Upstream of Point of Discharge	A point in the receiving water, upstream of the point of sewage discharge, to capture ambient conditions absent of sewage discharge impacts.

Sampling Location	Sampling Location Description
RSW-001D: Downstream of Point of Discharge	A point in the receiving water, downstream of the point of sewage discharge, where the spill material is fully mixed with the receiving water.

[1] The Enrollee must use its best professional judgment to determine the upstream and downstream distances based on receiving water flow, accessibility to upstream/downstream waterbody banks, and size of visible sewage plume.

2.4. Safety and Access Exceptions

If the Enrollee encounters access restrictions or unsafe conditions that prevents its compliance with spill response requirements or monitoring requirements in this General Order, the Enrollee shall provide documentation of access restrictions and/or safety hazards in the corresponding required report.

3. REPORTING REQUIREMENTS

All reporting required in this General Order must be submitted electronically to the online CIWQS Sanitary Sewer System Database (https://ciwqs.waterboards.ca.gov), unless specified otherwise in this General Order. Electronic reporting may solely be conducted by a Legally Responsible Official or Data Submitter(s) previously designated by the Legally Responsible Official, as required in section 5.8 (Designation of Data Submitters) of this General Order.

The Enrollee shall report any information that is protected by the Homeland Security Act, by email to SanitarySewer@waterboards.ca.gov, with a brief explanation of the protection provided by the Homeland Security Act for the subject report to be protected from unauthorized disclosure and/or public access, and for official Water Board regulatory purposes only.

3.1. Reporting Requirements for Individual Category 1 Spill Reporting

3.1.1. Draft Spill Report for Category 1 Spills

Within three (3) business days of the Enrollee's knowledge of a Category 1 spill, the Enrollee shall submit a Draft Spill Report to the online CIWQS Sanitary Sewer System Database.

The Draft Spill Report must, at minimum, include the following items:

1. Contact information: Name and telephone number of Enrollee contact person to respond to spill-specific questions;
2. Spill location name;
3. Date and time the Enrollee was notified of, or self-discovered, the spill;
4. Operator arrival time;

5. Estimated spill start date and time;
6. Date and time the Enrollee notified the California Office of Emergency Services, and the assigned control number;
7. Description, photographs, and GPS coordinates of the system location where the spill originated;
    - If a single spill event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the spill appearance point explanation field;
8. Estimated total spill volume exiting the system;
9. Description and photographs of the extent of the spill and spill boundaries;
10. Did the spill reach a drainage conveyance system? If Yes:
    - Description of the drainage conveyance system transporting the spill;
    - Photographs of the drainage conveyance system entry location(s);
    - Estimated spill volume fully recovered from the drainage conveyance system;
    - Estimated spill volume remaining within the drainage conveyance system;
11. Description and photographs of all discharge point(s) into the surface water;
12. Estimated spill volume that discharged to surface waters; and
13. Estimated total spill volume recovered.

3.1.2. Certified Spill Report for Category 1 Spills

Within 15 calendar days of the spill end date, the Enrollee shall submit a Certified Spill Report for Category 1 spills, to the online CIWQS Sanitary Sewer System Database. Upon completion of the Certified Spill Report, the online CIWQS Sanitary Sewer System Database will issue a final spill event identification number.

The Certified Spill Report must, at minimum, include the following mandatory information in addition to all information in the Draft Spill Report per section 3.1.1 (Draft Spill Report for Category 1 Spills) above:

1. Description of the spill event destination(s), including GPS coordinates if available, that represent the full spread and reach of the spill;
2. Spill end date and time;
3. Description of how the spill volume estimations were calculated, including at a minimum:
    - The methodology, assumptions and type of data relied upon, such as supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
    - The methodology(ies), assumptions and type of data relied upon for estimations of the spill start time and the spill end time;

4. Spill cause(s) (for example, root intrusion, grease deposition, etc.);
5. System failure location (for example, main, lateral, pump station, etc.);
6. Description of the pipe material, and estimated age of the pipe material, at the failure location;
7. Description of the impact of the spill;
8. Whether or not the spill was associated with a storm event;
9. Description of spill response activities including description of immediate spill containment and cleanup efforts;
10. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of major milestones for those steps;
11. Spill response completion date;
12. Detailed narrative of investigation and investigation findings of cause of spill;
13. Reasons for an ongoing investigation (as applicable) and the expected date of completion;
14. Name and type of receiving water body(s);
15. Description of the water body(s), including but not limited to:
    - Observed impacts on aquatic life,
    - Public closure, restricted public access, temporary restricted use, and/or posted health warnings due to spill,
    - Responsible entity for closing/restricting use of water body, and
    - Number of days closed/restricted as a result of the spill.
16. Whether or not the spill was located within 1,000 feet of a municipal surface water intake; and
17. If water quality samples were collected, identify sample locations and the parameters the water quality samples were analyzed for. If no samples were taken, Not Applicable shall be selected.

3.1.3. Spill Technical Report for Individual Category 1 Spill in which 50,000 Gallons or Greater Discharged into a Surface Water

For any spill in which 50,000 gallons or greater discharged into a surface water, **within 45 calendar days** of the spill end date, the Enrollee shall submit a Spill Technical Report to the online CIWQS Sanitary Sewer System Database. The Spill Technical Report, at minimum, must include the following information:

1. Spill causes and circumstances, including at minimum:
    - Complete and detailed explanation of how and when the spill was discovered;

- Photographs illustrating the spill origin, the extent and reach of the spill, drainage conveyance system entrance and exit, receiving water, and post-cleanup site conditions;
- Diagram showing the spill failure point, appearance point(s), the spill flow path, and ultimate destinations;
- Detailed description of the methodology employed, and available data used to calculate the discharge volume and, if applicable, the recovered spill volume;
- Detailed description of the spill cause(s);
- Description of the pipe material, and estimated age of the pipe material, at the failure location;
- Description of the impact of the spill;
- Copy of original field crew records used to document the spill; and
- Historical maintenance records for the failure location.

2. Enrollee's response to the spill:
   - Chronological narrative description of all actions taken by the Enrollee to terminate the spill;
   - Explanation of how the Sewer System Management Plan Spill Emergency Response Plan was implemented to respond to and mitigate the spill; and
   - Final corrective action(s) completed and a schedule for planned corrective actions, including:
     - Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable,
     - Identifiable system modifications, and operation and maintenance program modifications needed to prevent repeated spill occurrences, and
     - Necessary modifications to the Emergency Spill Response Plan to incorporate lessons learned in responding to and mitigating the spill.
3. Water Quality Monitoring, including at minimum:
   - Description of all water quality sampling activities conducted;
   - List of pollutant and parameters monitored, sampled and analyzed; as required in section 2.3 (Receiving Water Monitoring) of this Attachment;
   - Laboratory results, including laboratory reports;
   - Detailed location map illustrating all water quality sampling points; and
   - Other regulatory agencies receiving sample results (if applicable).
4. Evaluation of spill impact(s), including a description of short-term and long-term impact(s) to beneficial uses of the surface water.

3.1.4. Amended Certified Spill Reports for Individual Category 1 Spills

The Enrollee shall update or add additional information to a Certified Spill Report within **90 calendar days** of the spill end date by amending the report or by adding an attachment to the Spill Report in the online CIWQS Sanitary Sewer System Database. The Enrollee shall certify the amended report.

After **90 calendar days**, the Enrollee shall contact the State Water Board at SanitarySewer@waterboards.ca.gov to request to amend a Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the Amended Spill Report due date.

3.2. Reporting Requirements for Individual Category 2 Spill Reporting

3.2.1. Draft Spill Report for Category 2 Spills

Within three (3) business days of the Enrollee's knowledge of a Category 2 spill, the Enrollee shall submit a Draft Spill Report to the online CIWQS Sanitary Sewer System Database.

The Draft Spill Report must, at minimum, include the following items:

1. Contact information: Name and telephone number of Enrollee contact person to respond to spill-specific questions;
2. Spill location name;
3. Date and time the Enrollee was notified of, or self-discovered, the spill;
4. Operator arrival time;
5. Estimated spill start date and time;
6. Date and time the Enrollee notified the California Office of Emergency Services, and the assigned control number;
7. Description, photographs, and GPS coordinates of the system location where the spill originated;

   If a single spill event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the spill appearance point explanation field;
8. Estimated total spill volume exiting the system;
9. Description and photographs of the extent of the spill and spill boundaries;
10. Did the spill reach a drainage conveyance system? If Yes:
    - Description of the drainage conveyance system transporting the spill;
    - Photographs of the drainage conveyance system entry location(s);
    - Estimated spill volume fully recovered from the drainage conveyance system;
    - Estimated spill volume remaining within the drainage conveyance system;

- Estimated spill volume discharged to a groundwater infiltration basin or facility, if applicable; and

11. Estimated total spill volume recovered.

3.2.2. Certified Spill Report for Category 2 Spills

Within 15 calendar days of the spill end date, the Enrollee shall submit a Certified Spill Report for the Category 2 spill, to the online CIWQS Sanitary Sewer System Database (https://ciwqs.waterboards.ca.gov). Upon completion of the Certified Spill Report, the online CIWQS Sanitary Sewer System Database will issue a final spill event identification number.

The Certified Spill Report must, at minimum, include the following mandatory information in addition to all information in the Draft Spill Report per section 3.2.1 (Draft Spill Report for Category 2 Spills) above:

1. Description of the spill event destination(s), including GPS coordinates if available, that represent the full spread and reach of the spill;
2. Spill end date and time;
3. Description of how the spill volume estimations were calculated, including at a minimum:
   - The methodology, assumptions and type of data relied upon, such as supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
   - The methodology(ies), assumptions and type of data relied upon for estimations of the spill start time and the spill end time;
4. Spill cause(s) (for example, root intrusion, grease deposition, etc.);
5. System failure location (for example, main, pump station, etc.);
6. Description of the pipe/infrastructure material, and estimated age of the pipe material, at the failure location;
7. Description of the impact of the spill;
8. Whether or not the spill was associated with a storm event;
9. Description of spill response activities including description of immediate spill containment and cleanup efforts;
10. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of major milestones for those steps;
11. Spill response completion date;
12. Detailed narrative of investigation and investigation findings of cause of spill;
13. Reasons for an ongoing investigation (as applicable) and the expected date of completion; and

14. Whether or not the spill was located within 1,000 feet of a municipal surface water intake.

3.2.3. Amended Certified Spill Reports for Individual Category 2 Spills

The Enrollee shall update or add additional information to a Certified Spill Report within **90 calendar days** of the spill end date by amending the report or by adding an attachment to the Spill Report in the online CIWQS Sanitary Sewer System Database. The Enrollee shall certify the amended report.

After **90 calendar days**, the Enrollee shall contact the State Water Board at SanitarySewer@waterboards.ca.gov to request to amend a Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the Amended Spill Report due date.

3.3. Monthly Certified Spill Reporting for Category 3 Spills

The Enrollee shall report and certify all Category 3 spills to the online CIWQS Sanitary Sewer System Database within 30 calendar days after the end of the month in which the spills occurred. (For example, all Category 3 spills occurring in the month of February shall be reported and certified by March 30th). After the Legally Responsible Official certifies the spills, the online CIWQS Sanitary Sewer System Database will issue a spill event identification number for each spill.

The monthly reporting of all Category 3 spills must include the following items for each spill:

1. Contact information: Name and telephone number of Enrollee contact person to respond to spill-specific questions;
2. Spill location name;
3. Date and time the Enrollee was notified of, or self-discovered, the spill;
4. Operator arrival time;
5. Estimated spill start date and time;
6. Description, photographs, and GPS coordinates where the spill originated:
    - If a single spill event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the spill appearance point explanation field;
7. Estimated total spill volume exiting the system;
8. Description and photographs of the extent of the spill and spill boundaries;
9. Did the spill reach a drainage conveyance system? If Yes:
    - Description of the drainage conveyance system transporting the spill;
    - Photographs of the drainage conveyance system entry locations(s);
    - Estimated spill volume fully recovered from the drainage conveyance system; and

- Estimated spill volume discharged to a groundwater infiltration basis or facility, if applicable.

10. Estimated total spill volume recovered;
11. Description of the spill event destination(s), including GPS coordinates, if available, that represent the full spread and reaches of the spill;
12. Spill end date and time;
13. Description of how the spill volume estimations were calculated, including, at minimum:
    - The methodology and type of data relied upon, including supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
    - The methodology and type of data relied upon to estimate the spill start time, on-going spill rate at time of arrival (if applicable), and the spill end time;
14. Spill cause(s) (for example, root intrusion, grease deposition, etc.);
15. System failure location (for example, main, pump station, etc.);
16. Description of the pipe/infrastructure material, and estimated age of the pipe/infrastructure material, at the failure location;
17. Description of the impact of the spill;
18. Whether or not the spill was associated with a storm event;
19. Description of spill response activities including description of immediate spill containment and cleanup efforts;
20. Description of spill corrective actions, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of the major milestones for those steps; including, at minimum:
    - Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable, and
    - Identifiable system modifications, and operation and maintenance program modifications needed to prevent repeated spill occurrences at the same spill event location, including:
      - Adjusted schedule/method of preventive maintenance,
      - Planned rehabilitation or replacement of sanitary sewer asset,
      - Inspected, repaired asset(s), or replaced defective asset(s),
      - Capital improvements,
      - Documentation verifying immediately implemented system modifications and operating/maintenance modifications,
      - Description of spill response activities,

- Spill response completion date, and
- Ongoing investigation efforts, and expected completion date of investigation to determine the full cause of spill;

21. Detailed narrative of investigation and investigation findings of cause of spill.

3.4. Monthly Certified Spill Reporting for Category 4 Spills

The Enrollee shall report and certify the estimated total spill volume exiting the sanitary sewer system, and the total number of all Category 4 spills to the online CIWQS Sanitary Sewer System Database, within 30 calendar days after the end of the month in which the spills occurred.

3.5. Amended Certified Spill Reports for Category 3 Spills

Within 90 calendar days of the certified Spill Report due date, the Enrollee may update or add additional information to a certified Spill Report by amending the report or by adding an attachment to the Spill Report in the online CIWQS Sanitary Sewer System Database. The Enrollee shall certify the amended report.

After 90 calendar days, the Legally Responsible Official shall contact the State Water Board at SanitarySewer@waterboards.ca.gov to request to amend a certified Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the 90-day timeframe for amending the certified Spill Report, as provided above.

3.6. Annual Certified Spill Reporting of Category 4 and/or Lateral Spills

For all Category 4 spills and spills from its owned and/or operated laterals that are caused by a failure or blockage in the lateral and that do not discharge to a surface water, the Enrollee shall:

- Maintain records per section 4.4. of this Attachment;

  The Enrollee shall provide records upon request by State Water Board or Regional Water Board staff.

- Annually upload and certify a report, in an appropriate digital format, of all recordkeeping of spills to the online CIWQS Sanitary Sewer System Database, by February 1st after the end of the calendar year in which the spills occurred.

A spill from an Enrollee-owned and/or operated lateral that discharges to a surface water is a Category 1 spill; the Enrollee shall report all Category 1 spills per section 3.1 of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of this General Order.

3.7. Monthly Certification of "No-Spills" or "Category 4 Spills" and/or "Non-Category 1 Lateral Spills"

If either (1) no spills occur during a calendar month or (2) only Category 4, and/or Enrollee-owned and/or operated lateral spills (that do not discharge to a surface water) occur during a calendar month, the Enrollee shall certify, within 30 calendar days after

the end of each calendar month, either a “No-Spill” certification statement, or a “Category 4 Spills” and/or “Non-Category 1 Lateral Spills” certification statement, in the online CIWQS Sanitary Sewer System Database, certifying that there were either no spills, or Category 4 and/or Non-Category 1 Lateral Spills that will be reported annually (per section 3.6 of this Attachment) for the designated month.

If a spill starts in one calendar month and ends in a subsequent calendar month, and the Enrollee has no further spills of any category, in the subsequent calendar month, the Enrollee shall certify “no-spills” for the subsequent calendar month.

If the Enrollee has no spills from its systems during a calendar month, but the Enrollee voluntarily reported a spill from a private lateral or a private system, the Enrollee shall certify “no-spills” for that calendar month.

If the Enrollees has spills from its owned and/or operated laterals during a calendar month, the Enrollee shall not certify “no spills” for that calendar month.

3.8. Electronic Sanitary Sewer System Service Area Boundary Map

The Legally Responsible Official shall submit, to the State Water Board, an up-to-date electronic spatial map of its sewer system service area boundaries. The map must be in accordance with section 5.14 (Electronic Sanitary Sewer System Service Area Boundary Map) of this General Order and the specification provided on the statewide Sanitary Sewer Systems program website. The map must include the location of wastewater treatment facility(ies) that treats the sewer system waste, if in the same sewer service boundary.

By the Effective Date of this General Order, specifications for the electronic sanitary sewer service area boundary map format will be provided on the statewide Sanitary Sewer Systems Order program website.

3.9. Annual Report (Previously termed as Collection System Questionnaire in General Order 2006-0003-DWQ)

A new Enrollee shall complete and submit its first certified Annual Report into the online CIWQS Sanitary Sewer System Database, **within 30 days of obtaining a CIWQS account**; Subsequent Annual Reports are due by April 1 of each year.

All enrollees shall update their previous year’s Annual Report, **by April 1 of each year after the Effective Date of this General Order,** for each calendar year (January 1 through December 31)**.**

The Annual Report must be entered directly into the online CIWQS Sanitary Sewer System Database. The Enrollee’s Legally Responsible Official shall certify the Annual Report as instructed in CIWQS;

The Annual Report must address, and update as applicable, the following items:

- Population served;

- Updated sewer system service area boundary map, if service area boundary has changed from original map submitted per section 5.14 (Electronic Sanitary Sewer System Service Area Boundary Map) of this General Order;
- Number of system operation and maintenance staff:
  - Entry level (less than two years of experience),
  - Journey level (greater than two years of experience),
  - Supervisory level, and
  - Managerial level;
- Number of operation and maintenance staff certified as a certified collection system operator by the California Water Environmental Association (CWEA), with:
  - Corresponding number of certified collection system operator grade levels (Grade I, II, III, IV, and V);
- System information:
  - Miles of system gravity and force mains,
  - Number of upper and lower service laterals connected to system,
  - Estimated number of upper and lower laterals owned and/or operated by the Enrollee,
  - Portion of laterals that is Enrollee's responsibility,
  - Average age the major components of system infrastructure,
  - Number and age of pump stations, and
  - Estimated total miles of the system pipeline not accessible for maintenance;
- Name and location of the treatment plant(s) receiving sanitary sewer system's waste;
- Name of satellite sewer system tributaries;
- Number of system's gravity sewer above or underground crossings of water bodies throughout system;
- Number of force main (pressurized pipe) above or underground crossings of water bodies throughout system;
- Number of siphons used to convey waste throughout the sewer system;
- Miles of sewer system cleaned;
- Miles of sewer system video inspected, or comparable (i.e., video closed-circuit television or alternative inspection methods);
- System Performance Evaluation as specified in section 5.11 (System Performance Analysis) of this General Order;
- Major spill causes (for example, root intrusion, grease deposition);

- System infrastructure failure points (for example, main, pump station, lateral, etc.);
- Ongoing spill investigations; and
- Actions taken to address system deficiencies.

3.10. Sewer System Management Plan Audit Reporting Requirements

The Enrollee shall submit its Sewer System Management Plan Audit and other pertinent audit information, in accordance with section 5.4 (Sewer System Management Plan Audits) of this General Order, to the online CIWQS Sanitary Sewer System Database **by six (6) months after the end of the 3-year audit period**.

If a Sewer System Management Plan Audit is not conducted as required: the Enrollee shall:

- Update the online CIWQS Sanitary Sewer System Database and select the justification for not conducting the Audit; and
- Notify its corresponding Regional Water Board (see Attachment F (Regional Water Quality Control Board Contact Information)) of the justification for the lapsed requirements.

The Enrollee's reporting of a justification for not conducting a timely Audit does not justify non-compliance with this General Order. The Enrollee shall:

- Submit the late Audit as required in this General Order; and
- Comply with subsequent Audit requirements and due dates corresponding with the original audit cycle.

3.11. Sewer System Management Plan Reporting Requirements

For an Existing Enrollee previously regulated by Order 2006-0003-DWQ: **Within every six (6) years after the required due date of its last Plan Update**, the Legally Responsible Official shall upload and certify a local governing entity-approved Sewer System Management Plan Update to the online CIWQS Sanitary Sewer System Database. If the electronic document format or size capacity prevents the electronic upload of the Plan, the Legally Responsible Official shall report an electronic link to its updated Sewer System Management Plan posted on its own website.

Order 2006-0003-DWQ required each enrollee to develop its initial Sewer System Management Plan per the following schedule, with required Plan updates at a frequency of 5-years thereafter:

Systems serving populations: Greater than 100,000: May 2, 2009

Between 100,000 and 10,000: August 2, 2009

Between 10,000 and 2,500: May 2, 2010

Less than 2,500: August 2, 2010

This Order carries forth the previously-required Plan Update schedule per Order 2006-0003-DWQ. Per the six-year Plan Update frequency required in this Order, the Enrollee shall upload and certify its first Plan Update, to the online CIWQS Sanitary Sewer System Database by the following due dates, with subsequent Plan Updates at the frequency of six years thereafter:

Systems serving populations: Greater than 100,000: May 2, 2025

Between 100,000 and 10,000: August 2, 2025

Between 10,000 and 2,500: May 2, 2026

Less than 2,500: August 2, 2026

For a New Enrollee: **Within twelve (12) months of its Application for Enrollment Approval date**, the Legally Responsible Official of a new Enrollee shall upload and certify a local governing entity-approved Sewer System Management Plan to the online CIWQS Sanitary Sewer System Database. If electronic document format or size capacity prevents the electronic upload of the Plan, the Legally Responsible Official shall report an electronic link to its Sewer System Management Plan posted on its own website. The due date for subsequent 6-year Plan updates, is six (6) years from the submittal due date of the new Enrollee's first Sewer System Management Plan.

4. RECORDKEEPING REQUIREMENTS

The Enrollee shall maintain records to document compliance with the provisions of this General Order, and previous General Order 2006-0003-DWQ as applicable, for each sanitary sewer system owned, including any required records generated by an Enrollee's contractor(s).

4.1. Recordkeeping Time Period

The Enrollee shall maintain records of documents required in this Attachment, including records collected for compliance with this General Order, and records collected in accordance with previous General Order 2006-0003-DWQ, for five (5) years.

4.2. Availability of Documents

The Enrollee shall make the records required in this General Order readily available, either electronic or hard copies, for review by Water Board staff during onsite inspections or through an information request.

4.3. Spill Reports

The Enrollee shall maintain records for each of the following spill-related events and activities:

- Spill event complaint, including but not limited to records documenting how the Enrollee responded to notifications of spills. Each complaint record must, at a minimum, include the following information:
    - Date, time, and method of notification,

- Date and time the complainant first noticed the spill, if available,
- Narrative description of the complaint, including any information the caller provided regarding whether the spill has reached surface waters or a drainage conveyance system, if available,
- Complainant's contact information, if available, and
- Final resolution of the complaint;

- Records documenting the steps and/or remedial action(s) undertaken by the Enrollee, using all available information, to comply with this General Order, and previous General Order 2006-0003-DWQ as applicable;
- Records documenting how estimate(s) of volume(s) and, if applicable, volume(s) of spill recovered were calculated;
- All California Office of Emergency Services notification records, as applicable; and
- Records, in accordance with the Monitoring Requirements in this Attachment.

4.4. Recordkeeping of Category 4 Spills and Non-Category 1 Lateral Spills

An Enrollee must maintain the following records for each individual Category 4 spill and for each individual non-Category 1 Enrollee-owned and/or operated lateral spill, and report in accordance to section 3.6 (Annual Certified Spill Reporting of Category 4 and/or Lateral Spills) of this Attachment.

Recordkeeping of Individual Category 4 Spill Information:

1. Contact information: Name and telephone number of Enrollee contact person to respond to spill-specific questions;
2. Spill location name;
3. Description and GPS coordinates for the system location where the spill originated;
4. Did the spill reach a drainage conveyance system? If Yes:
   - Description of drainage conveyance system location,
   - Estimated spill volume fully recovered within the drainage conveyance system, and
   - Estimated spill volume remaining within the drainage conveyance system;
5. Estimated total spill volume exiting the sanitary sewer system;
6. Spill date and start time;
7. Spill cause(s) (for example, root intrusion, grease deposition, etc.);
8. System failure location (for example, main, pump station, etc.);
9. Description of spill response activities including description of immediate spill containment and cleanup efforts;
10. Description of how the volume estimation was calculated, including, at minimum:

- The methodology and type of data relied upon, including supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
- The methodology and type of data relied upon to estimate the spill start time, on-going spill rate at time of arrival (if applicable), and the spill end time;

11. Description of implemented system modifications and operating/maintenance modifications.

Recordkeeping of Individual Lateral Spill Information:

1. Date and time the Enrollee was notified of, or self-discovered, the spill;
2. Location of individual spill;
3. Estimated individual spill volume;
4. Spill cause(s) (for example, root intrusion, grease deposition, etc.); and
5. Description of how the volume estimations were calculated.

Total Annual Spill Information:

1. Estimated total annual spill volume;
2. Description of spill corrective actions, including at minimum:
   - Local regulatory enforcement action taken against the sewer lateral owner in response to a spill, as applicable, and
   - System operation, maintenance and program modifications implemented to prevent repeated spill occurrences at the same spill location.

4.5. Sewer System Telemetry Records

The Enrollee shall maintain the following sewer system telemetry records if used to document compliance with this General Order, and previous General Order 2006-0003-DWQ as applicable, including spill volume estimates:

- Supervisory control and data acquisition (SCADA) system(s);
- Alarm system(s);
- Flow monitoring device(s) or other instrument(s) used to estimate sewage flow rates, and/or volumes;
- Computerized maintenance management system records; and
- Asset management-related records.

4.6. Sewer System Management Plan Implementation Records

The Enrollee shall maintain records documenting the Enrollee's implementation of its Sewer System Management Plan, including documents supporting its Sewer System Management Plan audits, corrections, modifications, and updates to the Sewer System Management Plan.

4.7. Audit Records

The Enrollee shall maintain, at minimum, the following records pertaining to its Sewer System Management Plan audits, and other internal audits:

- Completed audit documents and findings;
- Name and contact information of staff and/or consultants that conducted or involved in the audit; and
- Follow-up actions based on audit findings.

4.8. Equipment Records

The Enrollee shall maintain a log of all owned and leased sewer system cleaning, operational, maintenance, construction, and rehabilitation equipment.

4.9. Work Orders

The Enrollee shall maintain record of work orders for operations and maintenance projects.

ATTACHMENT E2 – SUMMARY OF NOTIFICATION, MONITORING AND REPORTING REQUIREMENTS

This Attachment provides a summary of notification, monitoring and reporting requirements, by spill category, and for Enrollee-owned and/or operated laterals as required in Attachment E1 of this General Order, for quick reference purposes only.

Table E2-1

Spill Category 1: Spills to Surface Waters

Spill Requirement	Due	Method
Notification	**Within two (2) hours** of the Enrollee's knowledge of a Category 1 spill of 1,000 gallons or greater, discharging or threatening to discharge to surface waters: Notify the California Office of Emergency Services and obtain a notification control number.	California Office of Emergency Services at: (800) 852-7550 (Section 1 of Attachment E1)
Monitoring	• Conduct spill-specific monitoring; • Conduct water quality sampling of the receiving water within **18 hours** of initial knowledge of spill of 50,000 gallons or greater to surface waters.	(Section 2 of Attachment E1)
Reporting	• Submit Draft Spill Report **within three (3) business days** of the Enrollee's knowledge of the spill; • Submit Certified Spill Report **within 15 calendar days** of the spill end date; • Submit Technical Report **within 45 calendar days** after the spill end date for a Category 1 spill in which **50,000 gallons or greater** discharged to surface waters; and • Submit Amended Spill Report **within 90 calendar days** after the spill end date.	(Section 3.1 of Attachment E1)

Table E2-2
Spill Category 2: **Spills of 1,000 Gallons or Greater That Do Not Discharge to Surface Waters**

Spill Requirements	Due	Method
Notification	**Within two (2) hours** of the Enrollee's knowledge of a Category 2 spill of 1,000 gallons or greater, discharging or threatening to discharge to waters of the State: Notify California Office of Emergency Services and obtain a notification control number.	California Office of Emergency Services at: (800) 852-7550 (Section 1 of Attachment E1)
Monitoring	Conduct spill-specific monitoring.	(Section 2 of Attachment E1)
Reporting	• Submit Draft Spill Report **within three (3) business days** of the Enrollee's knowledge of the spill; • Submit Certified Spill Report **within 15 calendar days** of the spill end date; and • Submit Amended Spill Report **within 90 calendar days** after the spill end date.	(Section 3.2 of Attachment E1)

Table E2-3
Spill Category 3: Spills of Equal or Greater than 50 Gallons and Less than 1,000 Gallons That Does Not Discharge to Surface Waters

Spill Requirements	Due	Method
Notification	Not Applicable	Not Applicable
Monitoring	Conduct spill-specific monitoring.	(Section 2 of Attachment E1)
Reporting	• Submit monthly Certified Spill Report to the online CIWQS Sanitary Sewer System Database within **30 calendars days** after the end of the month in which the spills occur; and • Submit Amended Spill Reports **within 90 calendar days** after the Certified Spill Report due date.	(Section 3.3 and 3.5 of Attachment E1)

Table E2-4
Spill Category 4: Spills Less Than 50 Gallons That Do Not Discharge to Surface Waters

Spill Requirements	Due	Method
Notification	Not Applicable	Not Applicable
Monitoring	Conduct spill-specific monitoring.	(Section 2 of Attachment E1)
Reporting	• If, during any calendar month, Category 4 spills occur, certify monthly, the estimated total spill volume exiting the sanitary sewer system, and the total number of all Category 4 spills into the online CIWQS Sanitary Sewer System Database, within 30 days after the end of the calendar month in which the spills occurred. • Upload and certify a report, in an acceptable digital format, of all Category 4 spills to the online CIWQS Sanitary Sewer System Database, by February 1st after the end of the calendar year in which the spills occur.	(Section 3.4, 3.6, 3.7 and 4.4 of Attachment E1)

Table E2-5
Enrollee Owned and/or Operated Lateral Spills That Do Not Discharge to Surface Waters

Spill Requirements	Due	Method
Notification	**Within two (2) hours** of the Enrollee's knowledge of a spill of 1,000 gallons or greater, from an enrollee-owned and/or operated lateral, discharging or threatening to discharge to waters of the State: Notify California Office of Emergency Services and obtain a notification control number. Not applicable to a spill of less than 1,000 gallons.	California Office of Emergency Services at: (800) 852-7550 (Section 1 of Attachment E1)
Monitoring	Conduct visual monitoring.	(Section 2 of Attachment E1)
Reporting	• Upload and certify a report, in an acceptable digital format, of all lateral spills (that do not discharge to a surface water) to the online CIWQS Sanitary Sewer System Database, by February 1st after the end of the calendar year in which the spills occur. • Report a lateral spill of any volume that discharges to a surface water as a Category 1 spill.	(Sections 3.6, 3.7 and 4.4 of Attachment E1)

ATTACHMENT F – REGIONAL WATER QUALITY CONTROL BOARD CONTACT INFORMATION

This Attachment provides a map, list of counties, and contact information to assist the Enrollee in identifying the corresponding Regional Water Quality Control Board office, for all Regional Water Board notification requirements in this General Order.



Region 1 -- North Coast Regional Water Quality Control Board:
Del Norte, Glenn, Humboldt, Lake, Marin, Mendocino, Modoc, Siskiyou, Sonoma, and Trinity counties.

RB1SpillReporting@waterboards.ca.gov or (707) 576-2220

Region 2 -- San Francisco Bay Regional Water Quality Control Board:
Alameda, Contra Costa, San Francisco, Santa Clara (Northern most part of Morgan Hill), San Mateo, Marin, Sonoma, Napa, Solano counties.

RB2SpillReports@waterboards.ca.gov or (510) 622-2369

Region 3 -- Central Coast Regional Water Quality Control Board:
Santa Clara (most of Morgan Hill), San Mateo (Southern portion), Santa Cruz, San Benito, Monterey, Kern (small portions), San Luis Obispo, Santa Barbara, Ventura (Northern portion) counties.

CentralCoast@waterboards.ca.gov or (805) 549-3147

Region 4 -- Los Angeles Regional Water Quality Control Board:
Los Angeles, Ventura counties (small portions of Kern and Santa Barbara counties).

rb4-ssswdr@waterboards.ca.gov or (213) 576-6600

Region 5 -- Central Valley Regional Water Quality Control Board:

Rancho Cordova (Sacramento) Office: Colusa, Lake, Sutter, Yuba, Sierra, Nevada, Placer, Yolo, Napa, (North East), Solano (West), Sacramento, El Dorado, Amador, Calaveras, San Joaquin, Contra Costa (East), Stanislaus, Tuolumne counties.

RB5sSpillReporting@waterboards.ca.gov or (916) 464-3291

Fresno Office: Fresno, Kern, Kings, Madera, Mariposa, Merced, and Tulare counties, and small portions of San Benito and San Luis Obispo counties.

RB5fSpillReporting@waterboards.ca.gov or (559) 445-5116

Redding Office: Butte, Glen, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Tehama counties.

RB5rSpillReporting@waterboards.ca.gov or (530) 224-4845

Region 6 -- Lahontan Regional Water Quality Control Board:

Lake Tahoe Office: Alpine, Modoc (East), Lassen (East side and Eagle Lake), Sierra, Nevada, Placer, El Dorado counties.

RB6sSpillReporting@waterboards.ca.gov or (530) 542-5400

Victorville Office: Mono, Inyo, Kern (East), San Bernardino, Los Angeles (North East corner) counties.

RB6vSpillReporting@waterboards.ca.gov or (760) 241-6583

Region 7 -- Colorado River Basin Regional Water Quality Control Board:

Imperial county and portions of San Bernardino, Riverside, San Diego counties.

RB7SpillReporting@waterboards.ca.gov or (760) 346-7491

Region 8 -- Santa Ana Regional Water Quality Control Board:

Orange, Riverside, San Bernardino counties.

RB8SpillReporting@waterboards.ca.gov or (951) 782-4130

Region 9 -- San Diego Regional Water Quality Control Board:

San Diego county and portions of Orange and Riverside counties.

RB9Spill_Report@waterboards.ca.gov or (619) 516-1990

End of Order 2022-0103-DWQ



Sewer System Management Plan
For
City of Roseville

WDID SSO10935

Revised 20 FEB 22

CITY OF
ROSEVILLE
CALIFORNIA
Environmental
Utilities

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SSMP CHANGE LOG

Monitoring and Reporting Program (MRP) Order No. WQ 2013-0058-EXEC E.(3):
All records documenting changes to the SSMP since its last certification shall be attached to the SSMP. These records should show when a subsection(s) was changed or updated and who authorized the change.

City of Roseville-SSMP Change Log			
Date	Section	Comments	Approval
12/11/13	A complete update of SSMP, both intranet version, and city website version		Chris Bracco
1/9/14	Supporting Documents for SSMP Audit\SSMP Resoultion_14.pdf	Council resolution for SSMP adoption	Chris Bracco
4/7/14	Supporting Documents for SSMP Audit\Roseville SSMP Audit FY13 - FINAL.pdf	Final SSMP Audit- Waterworks Engineering	Chris Bracco
4/7/14	Supporting Documents for SSMP Audit\SSMP Resoultion_14.pdf	SSMP Resolution 2014	Chris Bracco
3/24/15	Appendix B\APPENDIX B-1_Contact List.doc	Updated Rich Plecker as Utility Director	Chris Bracco
3/24/15	Appendix B\APPENDIX B-2_Contact List.doc	Updated Dave Rawe as claims administrator	Chris Bracco
4/30/15	Master_Roseville_SSMP.doc	Added Goal re: design and construction standards	Chris Bracco
9/8/16	Appendix B\APPENDIX B-1_Contact List.doc	Updated City Council/PUC members per 14/15 Audit Rec.	Chris Bracco
10/31/16	Appendix B\APPENDIX B-2_Contact List.doc	Updated RWQCB Contact Information	Chris Bracco
10/31/16	Appendix C\Appendix C-7 Contract and Operations Agreement SASD_SRCSD.pdf	Contract with SASD & Sac Regional	Chris Bracco
10/31/16	Appendix G\Appendix G-4 FOG Inspection Form.pdf	Addition of FOG Inspection Form	Chris Bracco
9/22/16	Appendix I\Appendix I-4 - Key Performance Indicators Benchmarking.xlsx	Addition of Key Performance Indicator Sheet	Chris Bracco
10/31/16	Appendix J\Appendix J-1_Rsvl WWC SSMP Audit Procedure.doc	SSMP Audit procedures	Chris Bracco

9/25/19	Appendix B\APPENDIX B-1_Contact List.doc	Updated council and PUC	Chris Bracco
9/25/19	Appendix B\APPENDIX B-2_Contact List.doc	Update contact information	Chris Bracco
9/25/19	Appendix C\APPENDIX C-3 Sanitary Sewer Design.doc	Update Link	Chris Bracco
9/25/19	Appendix D\Appendix D-5 CWEA Certification.docx		Chris Bracco
9/25/19	Appendix F\Appendix F-1\4_SSO Field Report.pdf	Updated SSO overflow charts in field report	Chris Bracco
9/25/19	Appendix F\Appendix F-1\2_SSO Emergency Response Procedures.pdf	Added updated field report	Chris Bracco
9/25/19	Appendix F\Appendix F-1\1_SSO Flowchart.pdf		Chris Bracco
9/25/19	Appendix I\APPENDIX I-4 Key Performance Indicators Benchmarking.pdf		Chris Bracco
9/25/19	SSMP Audit_ Update Data\SSMP Audit Update FY 15_18\Roseville_SSMP_Audit_FY15-18 - FINAL-stamped.pdf		Chris Bracco
10/14/19	Completed Update of SSMP both intranet and City Website version		Chris Bracco
5/13/20	Appendix B\APPENDIX B-1_Contact List.pdf	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix B\APPENDIX B-2_Contact List.pdf	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix F\Appendix F-1\3_SSO Notification Guide .doc	Added Kevin Ryan Supervisor to contact list	Chris Bracco
5/13/20	Appendix I\Appendix I-4 Key Performance Indicators Benchmarking.pdf	KPI sheet with updated numbers	Chris Bracco
2/05/22	Update and re-write the entire SSMP	SSMP was re-formatted and subsequent changes to operation and maintenance have been included.	Daniel Pruden

City Council Resolution

RESOLUTION NO. 14-05

RECERTIFICATION OF THE CITY OF ROSEVILLE
SEWER SYSTEM MANAGEMENT PLAN

WHEREAS, in May 2006 the State Water Resources Control Board issued a state-wide General Waste Discharge Requirement (WDR) Order requiring all public entitles that own or operate sanitary sewer systems greater than one mile in length that collect or convey wastewater to prepare a certified Sewer System Management Plan (SSMP); and

WHEREAS, on January 21, 2009, the City Council certified the City's SSMP; and

WHEREAS, provisions in the WDR require recertification of the SSMP every five years or if significant changes to the SSMP have been made; and

WHEREAS, the City Council has reviewed the revised Sewer System Management Plan;

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that it hereby recertifies the City of Roseville Sewer System Management Plan.

PASSED AND ADOPTED by the Council of the City of Roseville this 8th day of January, 2014, by the following vote on roll call:

AYES COUNCILMEMBERS: Roccucci, Herman, Garcia, Rohan

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: Gore

Susan Rohan
MAYOR

ATTEST:

Sonia Orozco
City Clerk

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LIST OF ACRONYMS

BMP	Best Management Practice
CASA	California Association of Sanitation Agencies
CCTV	Closed-Circuit Television
CFR	Code of Federal Regulations
CDFW	California Department of Fish and Wildlife
CIP	Capital Improvement Plan or Capital Improvement Project
City	City of Roseville
CIWQS	California Integrated Water Quality System
CM	Corrective Maintenance
CMMS	Computerized Maintenance Management System
CBT	Computer Based Training
CWEA	California Water Environment Association
CVCWA	Central Valley Clean Water Association
EDU	Equivalent Dwelling Unit
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
EUD	Environmental Utilities Department
FOG	Fats, Oils, and Grease
FSE	Food Service Establishments
GIS	Geographical Information System
GPS	Global Positioning System
GRD	Grease Removal Device
GWDR	General Waste Discharge Requirements or Waste Discharge Requirements (WDR)
I/I	Inflow / Infiltration
ICS	Incident Command System
IERP	Integrated Emergency Response Plan
IWD	Industrial Waste Division
LRO	Legally Responsible Official
MGD	million gallons per day
MRP	Monitoring and Reporting Program
MSDS	Material Safety Data Sheets
NASSCO	National Association of Sewer System Companies
NPDES	National Pollution Discharge Elimination System
O&M	Operation and Maintenance
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services
Order	SWRCB Order No. 2006-0003-DWQ adopted May 2, 2006
PACP	Pipeline Assessment and Certification Program
PdM	Predictive Maintenance
PM	Preventative Maintenance
PMP	Preventative Maintenance Program
POTWs	Publicly Owned Treatment Works
R&R	Rehabilitation and Replacement
RWQCB	Regional Water Quality Control Board
SPW	Safety Plus Web
SIUs	Significant Industrial Users

SOP	Standard Operating Procedure
SPWA	South Placer Wastewater Authority
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
USA	Underground Service Alert
WDP	Waste Discharge Permit
WW	Wastewater
WWC	Wastewater Collection
WWTP	Wastewater Treatment Plant

LIST OF TERMS

Authorized Representative – The person designated, for a municipality, state, federal, or other public agency, as either a principal executive officer or ranking elected official or a duly authorized representative of that person.

Blockage – Something that partially or fully blocks the wastewater from flowing through a sewer pipeline. The blockage can be caused by debris in the sewer, grease buildup, root intrusion, or a partial or complete pipeline collapse. If not caught in time, the blockage may cause an overflow.

California Association of Sanitation Agencies (CASA) - CASA is a non-profit, statewide trade association representing public agencies that provide wastewater collection, treatment, disposal, and/or water reclamation services to about 90 percent of the sewered population in California.
Website: http://www.casaweb.org/

California Water Environment Association (CWEA) – CWEA is an association of 8,000-plus professionals in the wastewater industry. CWEA is committed to keeping California's water clean. CWEA trains and certifies wastewater professionals, disseminates technical information, and promotes sound policies to benefit society by protecting and enhancing the water environment. CWEA offers services at the state level and locally through 17 local geographical sections. In addition, through their on-line bookstore, CWEA offers technical references for sewer system operation and maintenance.
Website: http://www.cwea.org/ .

Central Valley Clean Water Association (CVCWA) – CVCWA is an association comprised of over 50 wastewater treatment and collection system agencies. CVCWA's mission is to effectively represent the interests of public wastewater agencies in the Central Valley in regulatory matters and to support the exchange of information so members can best meet their business challenges.
Website: http://www.cvcwa.org/ .

Central Valley Regional Water Quality Control Board – Also known as Regional Water Board or RWQCB. The mission of this state regulatory agency is to: preserve, enhance, and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. Website: http://www.waterboards.ca.gov/centralvalley/ .

Dynamic Model – Computer hydraulic model simulation which solves the complete dynamic flow routing equations (St. Venant's equations) for accurate simulation of backwater, looped connections, surcharging, and pressure flow in a collection system.

Enrollee – The legal public entity that owns a sanitary sewer system, as defined by the GWDR, which has submitted a complete and approved application for coverage under the GWDR. This is also called a sewer system agency or wastewater collection system agency.

Fats, Oils and Grease (FOG) - Fats, oils, and grease that are discharged into the sanitary sewer collection system by Food Service Establishments (FSE), homes, apartments, and other sources. FOG is a major cause of blockages leading to increased maintenance and sometimes SSOs.

FOG Control Program – To be implemented at the Enrollee's discretion. May include public education program; plan and schedule for the disposal of FOG; legal authority to prohibit FOG related discharges; requirement to install grease removal devices; authority to inspect grease producing facilities; identification of sanitary sewer system sections subject to FOG blockages and the establishment of a cleaning schedule for each section; development and implementation of source control measures for all sources of FOG.

Geographical Information System (GIS) – A database linked with mapping, which includes various layers of information used by government officials. Examples of information found on a GIS can include a sewer map; sewer features such as pipe location, diameter, material, condition, last date cleaned or repaired. The GIS also typically contains base information such as streets and parcels.

Governing Board – This is the governing board of the sewer entity developing the SSMP. Examples would be the Board of Directors, the City Council, or the County Board of Supervisors.

GWDR – General Waste Discharge Requirements – A GWDR is an authorization to discharge waste with certain conditions, which can be issued on an individual basis or to a group of dischargers. The Statewide General WDR for Sanitary Sewer Systems was adopted by the SWCRB and will be implemented by the Regional Water Boards and SWRCB.

Infiltration – The seepage of groundwater into a sewer system, including service connections. Seepage frequently occurs through defective or cracked pipes, pipe joints, connections or manhole walls and joints.

Inflow – Water discharged into a sewer system and service connections from such sources as, but not limited to, roof leaders, cellars, yard and area drains, foundation drains, cooling water discharges, drains from springs and swampy areas, around manhole covers or through holes in the covers, cross connections from storm and combined sewer system, catch basins, storm waters, surface runoff, street wash waters or drainage. Inflow differs from infiltration in that it is a direct discharge into the sewer rather than a leak into the sewer itself.

Lateral – The portion of sewer that connects a home or business with the main line in the street. Sometimes sewer system agencies own or maintain a portion of the lateral.

Upper Lateral: Portion of lateral from building to property line (or easement line), usually privately owned and maintained.

Lower Lateral: Portion of lateral from property line (or easement line) to sewer mainline in the street or easement. This portion of the lateral is sometimes privately owned and maintained and sometimes publicly owned and maintained.

Monitoring and Reporting Program - The Monitoring and Reporting Program established in the WDR that establishes monitoring, record keeping, reporting and public notification requirements for the GWDR.

Overflow Emergency Response Plan – Identifies measures to protect public health and the environment. A plan must include the following: notification procedure, appropriate response plan, regulatory notification procedures, employee training plan, procedures to address emergency operations, a program that ensures all reasonable steps are taken to contain and prevent discharges.

Private Lateral: That portion of the Lateral that is owned and maintained by the private property owner that it serves. Based on an individual agency's ordinance, this may just be the Upper Lateral or can include the Lower Lateral.

Preventative Maintenance (PM) – Regularly scheduled servicing of machinery, infrastructure or other equipment using appropriate tools, tests, and lubricants. This type of maintenance can prolong the useful life of equipment, infrastructure, and machinery and increase its efficiency by detecting and correcting problems before they cause a breakdown of the equipment, or failure of the infrastructure.

R-Value – Is the amount of rainfall that reaches the collection system via infiltration and inflow. This value is typically expressed as a percentage of total rainfall volume that reaches the collection system.

Regional Water Board – Is a short name for any of the nine regional boards including the San Francisco Bay Area Regional Water Quality Control Board and the Central Valley Regional Water Quality Control Board.

Rehabilitation and Replacement Plan (also referred to as a Capital Improvement Plan) – Identifies and prioritizes system deficiencies and implements short-term and long-term rehabilitation actions to address each deficiency.

Sanitary Sewer Overflow (SSO) – The Statewide GWDR defines an SSO as any overflow, spill, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system, including overflows or releases that reach waters of the United States, overflows or releases that *do not* reach water of the United States, and backups into buildings and/or private property caused by conditions within the publicly owned portion of the sewer system.

Sanitary Sewer Overflow Categories

Category 1 – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that:

- Reach surface water and/or reach a drainage channel tributary to surface water
- Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin.

Category 2 – Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Category 3- All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition

Private Lateral Sewage Discharges – Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the CIWQS Online SSO Database.

Sanitary Sewer Systems – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant head works used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities are part of the sanitary sewer system and discharges into these temporary storage facilities are not to be considered SSOs.

Satellite Collection System – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.

Sewer System Management Plan-SSMP – A series of written site-specific programs that address how a collection system owner/operator conducts their daily business as is outlined in the WDR. Each SSMP is unique for an individual discharger. The plan includes provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Also, must contain a spill response plan. Certification is offered by technically qualified and experienced persons and provides a useful cost-effective means for ensuring that SSMPs are developed and implemented appropriately.

Stakeholder - A person or organization that has a vested interest in the development and outcome of the SWRCB Order No. 2006-0003 Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

State Water Resources Control Board: Also called the State Board. This is the State agency that developed and passed the GWDR for collection systems and the agency that maintains the SSO reporting web site.

Static Model – A computer hydraulic model that uses the Manning's Equation to determine hydraulic capacity of the gravity pipelines and either the Manning's or Hazen-Williams Equations to determine the hydraulic capacity of the pressure pipeline system. The capacity is compared to the peak hydraulic flow in the system to determine potential deficiencies. The static model assumes the peak hydraulic flow occurs at all locations within the collection system at the same time.

Stoppage – Something that partially or fully blocks the wastewater from flowing through a sewer pipeline. A stoppage can be caused by debris in the sewer, grease buildup, root intrusion, or a partial or full collapse of the pipeline. If not caught in time, a stoppage may cause an overflow. This is also called a blockage.

System Evaluation and Capacity Assurance Plan – A required component of an agency's SSMP and is an important part of any agency's overall Capital Improvement Plan that provides hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event.

Wastewater Collection System: See Sanitary Sewer System.

EXECUTIVE SUMMARY

The City of Roseville (City) is a Council-Manager form of government in which responsibilities are vested in the City Council and City Manager. In this form of government, the City Council's role is that of a legislative policy-making body which determines not only local laws that regulate community life, but also determines public policy and gives direction to the City Manager. The City Manager administers the affairs of the city government in a business-like prudent manner.

The City's Public Utilities Commission studies and advises the City Council on all utility issues related to city-owned utilities (electric, water, sewer, and solid waste).

The City's Wastewater Utility is one of five utilities operated in the Environmental Utilities Department (EUD). The Wastewater Utility is responsible for operation and maintenance of all wastewater facilities owned by the City including the Publicly Owned Treatment Works (POTWs), the wastewater collection system, the water quality lab and the recycled water utility.

The City's Wastewater Collection (WWC) Division is a division of Environmental Utilities Department (EUD). The WWC Division is responsible for management, operation, maintenance, and capacity assurance of the City's sanitary sewer collection system, including inspecting, cleaning, repairing, and monitoring the gravity sewer lines, force mains, and lift station.

The City initiated a Sewer System Management Plan (SSMP) assessment in 2005 to evaluate how well the Wastewater Collection (WWC) Division would comply with the anticipated State Water Resources Control Board (SWRCB) Statewide General Waste Discharge Requirements (WDR) order No. 2006-0003 for Sanitary Sewer Systems. That SSMP assessment indicated that the City was positioned fairly well to comply with the SWRCB's SSMP requirements.
In March of 2007, the WWC division along with consultant assistance, began writing the SSMP and reviewing all remaining policies, procedures, and programs to comply with the SWRCB's WDR. The plan described how the City would address each element of the SSMP contained in the SWRCB's WDR to eliminate preventable Sanitary Sewer Overflows (SSOs). The WWC staff completed the development of the SSMP, which the City Council approved on 21 JAN 09.

The city continues to monitor, measure, and modify the existing SSMP as changes and program improvements are identified. The city has developed a Key Performance Indicator worksheet, which is used to monitor and measure the effectiveness of the various elements of the SSMP. Roseville's SSMP has been audited five times since being certified by the SWRCB.

SERVICE AREA AND RELEVANT STATISTICS

Figure-1 illustrates the boundary of Roseville's geographical service area. Statistics provided in this SSMP are from August 2021 and are gathered from the City's Economic Development website, https://www.roseville.ca.us/government/departments/economic_development/demographics.

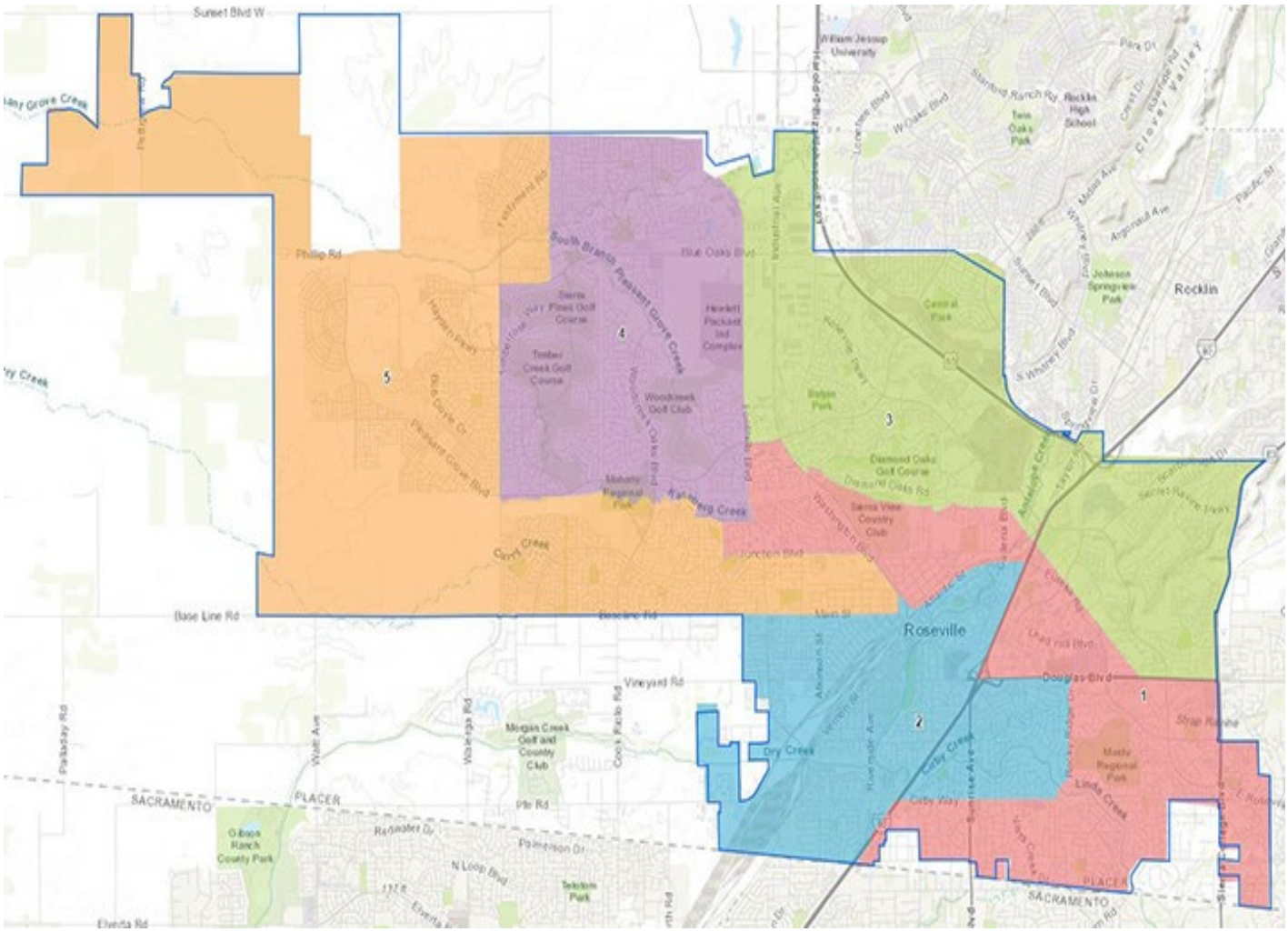


Figure 1 Roseville Service Area

The City service area is approximately 44.20 square miles, has approximately 48,734 residential, 1,932 commercial and 600 industrial sewer connections and 2 Regional Wastewater Treatment Plants.

The WWC Division provides service to approximately 146,875 sewer customers. The wastewater collection and conveyance system consist of 871 miles sewer pipe ranging from 4"to 84" in diameter, 12,538 manholes, and 17 neighborhood lift stations that convey an average dry weather flow of approximately 18.5 MGD. Sanitary sewerage is conveyed from the City's East boundaries

to the Dry Creek Wastewater Treatment Plant and from its North and West boundaries to the Pleasant Grove Wastewater treatment plant.

WWC Division statistical records indicate that prior to the creation of this SSMP it has had a moderate Sanitary Sewer Overflow (SSO) rate in comparison to other communities in California of similar size and complexity. In the years prior to adoption of the SSMP, the WWC Division had experienced approximately 168 SSOs releasing approximately 15,203 gallons of sewage from the sanitary sewer collection and conveyance system. Since adoption of the SSMP in 2007, the city has experienced a combined 431 SSOs releasing approximately 15,435 gallons of sewage from the sanitary sewer system. Of that total, 11,219 gallons or 82%, have been captured and returned to the sanitary sewer system. The majority of these SSO have occurred from blockages in service laterals. Since the adoption of the SSMP, the average volume spilled per SSO has been less than 36 gallons/event. All SSOs have been mitigated in a timely manner and have not negatively affected public health or the environment.

The purpose of this SSMP is to describe the activities the WWC Division uses to manage the City's' wastewater collection system to further eliminate preventable SSOs, minimize those SSOs that do occur and protect both public health and the environment.

0 SSMP Overview

The City of Roseville is required to comply with the State Water Resources Control Board Order No. 2006-0003-DWQ adopted May 2, 2006, entitled Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.

The purpose of the Order is to prevent Sanitary Sewer Overflows (SSO) or sewer spills by establishing a statewide Monitoring and Reporting Program (MRP) and requiring each local or regional sewer agency to create and implement their own Sewer System Management Plan (SSMP) based on the mandatory requirements of the Order. The MRP requires each local or regional sewer agency to appoint a legally responsible official and establish a monitoring and reporting organization to monitor and report all SSOs in accordance with the requirements of the MRP and to have the LRO certify the SSO report using the California Integrated Water Quality System (CIWQS) website in the timeframe required by the Order.

The City of Roseville developed a Sewer System Management Plan specific to the wastewater collection system operated and maintained by wastewater collection personnel in the City of Roseville. This SSMP documents the activities the city will utilize to manage, operate, and maintain its wastewater collection system. The city shall take all steps feasible to eliminate SSOs, but in the event an SSO does occur, will take all steps necessary to contain and mitigate the negative impacts of an SSO.

The city's SSMP is organized comparable to paragraph D. 13 of the general order. The SSMP includes eleven elements, and each of these elements forms a corresponding chapter in the SSMP. The eleven elements are listed below.

1. Goals- *The goal is to prevent and/or reduce SSOs and mitigate the effect of any SSOs that do occur. The goal requires a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer collection system.*
2. Organization- *The SSMP must identify the Legally Responsible Official or authorized representative as described in the Order. It must list and identify the organization positions responsible for operating and maintaining the sanitary sewer collection system including names and telephone numbers for management, administrative and maintenance positions, and the chain of communication for reporting SSOs*
3. Legal Authority- *Each enrollee must demonstrate through ordinances, agreements, or other legally binding procedures that they possess the legal authority to meet the requirements of the general order.*
4. Operation and Maintenance Program- *The SSMP must include those items that are appropriate and applicable to the enrollee's system, including an up to date mapping system, ability to describe the O&M activities performed on the system, have a plan to develop a rehabilitation and replacement plan, and to provide training on a regular basis for collection system personnel.*

5. Design and Performance Provisions- *The SSMP must demonstrate that the sewer agency has and appropriately uses design and construction standards and specifications for the installation of new sewer systems, rehabilitation and repair of existing sewer systems and has procedures and standards for inspecting and testing the installation of new sewers, pumps, etc. and for rehabilitation and repair projects.*
6. Overflow Emergency Response Plan- *Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment.*
7. Fog Control Program- *Each Enrollee shall evaluate its sewer system and determine if a Fats, Oils and Grease control program is needed. The FOG control plan, if needed, must meet all the requirements of the Order.*
8. System Evaluation and Capacity Assurance Plan- *The Enrollee shall prepare and implement a capital improvement plan (CIP) that provides hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design for storm or wet weather events*
9. Monitoring, Measurement and Program Modifications- *The enrollee shall maintain relevant information to establish and prioritize SSMP activities, monitor the implementation and measure the effectiveness of the SSMP activities, and provide assessment of the performance and/or modification of the SSMP activities as required by the Order.*
10. SSMP Program Audits - *The Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP*
11. Communication Program- *The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented. The program shall also include a communication plan with tributary and satellite systems to the enrollee's sanitary sewer system*

1 Goals

D.13. (i) The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help reduce and prevent SSOs, as well as mitigate any SSOs that do occur.

1.1 Roseville's Goals

The City's WWC Division has established eight goals to guide the implementation, and success of Roseville's SSMP. These goals are designed to facilitate and target the management, operation, and maintenance of the sanitary sewer collection system in a manner that will sustain the infrastructure, protect public health and the environment, and achieve compliance with State Water Resources Control Board's General Waste Discharge Requirement (GWDR) for Sanitary Sewer Systems. These goals include:

1. Properly manage, operate, and maintain all portions of the City's wastewater collection system.
2. Provide adequate capacity to convey peak wastewater flows.
3. No repeat overflows from the same location.
4. Maintain a rate of SSO/100 miles of pipe, that is lower than the state and regional average.
5. Maintain a recovery rate for SSO/100 miles of pipe, that is higher than the state and regional average.
6. Mitigate the impacts that are associated with all SSOs that may occur.
7. Comply with all applicable regulatory notification and reporting requirements.
8. Maintain high design and construction standards for new and rehabilitated infrastructure.

1.2 Element Objectives

The WWC Division provides a safe, effective, and efficient wastewater collection and conveyance system through preventative maintenance, engineering, and customer services. The Division also provides twenty-four-hour emergency services to respond to system failures, minimize sanitary sewer overflows, comply with regulatory mandates, and ensure public health and safety.

The City allocates adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures.

In addition, the City has stringent design and construction standards for new or rehabilitated infrastructure, with an inspection program that ensures city standards are adhered to.

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SSMP ELEMENT 2

2 Organization

D.13. (ii) The SSMP must identify the Legally Responsible Official or authorized representative as described in the Order. It must list and identify the organization positions responsible for operating and maintaining the sanitary sewer collection system including names and telephone numbers for management, administrative and maintenance positions, and the chain of communication for reporting SSOs.

2.1 Legally Responsible Official (LRO)

The City of Roseville has identified the Wastewater Collection Superintendent, and the Wastewater Process Engineer as the LRO or authorized representatives for the wastewater collection division. Historically, the Wastewater Collection Superintendent is responsible for the certification of SSO reports involving Roseville's wastewater collection system.

2.2 SSMP Responsibility Chart

The City of Roseville is a Council-Manager form of government in which responsibilities are vested in the City Council and City Manager. In this form of government, the City Council's role is that of a legislative policy-making body, which determines local laws that regulate community life and determines public policy and gives direction to the City Manager. The City Manager administers the affairs of the city government in a business-like and prudent manner. In addition, the position descriptions for SSMP responsibility are included in the following chart:

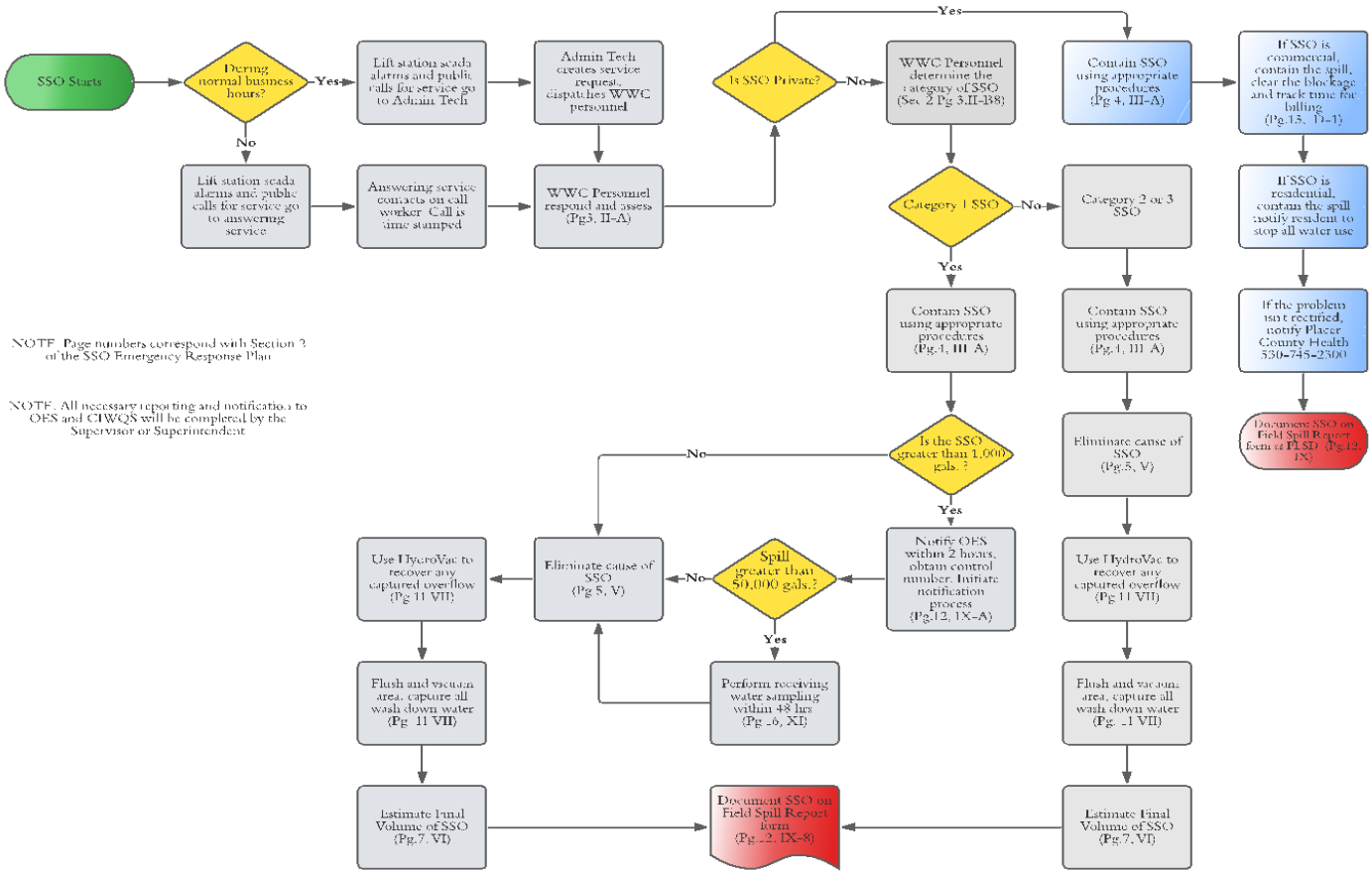
SSMP Element		Responsible Position
I.	Goals	Responsibility for the divisions goals resides with the WWC Superintendent. However, goals for the wastewater collection division are developed through collaboration between the WWC Superintendent, the WWC Supervisor and field crews.
II.	Organization	The Environmental Utilities (EU) Director recommends any updates to the City Manager for organizational structure within the Wastewater Collection Division
III.	Legal Authority	The City Manager, City Attorney and Roseville City Council ultimately uphold city ordinances within the Roseville Municipal Code.
IV.	Operations & Maintenance	The Wastewater Collection Superintendent has overall responsibility for the operation and maintenance of the collection system. The Asst. EU Director oversees, recommends,

		and administers the O&M budget. EU Engineering provides support through the GIS Division for up-to-date mapping of the system
V.	Design and Construction Standards	The Development Services Division and EU Engineering collaborate to identify and maintain the design and construction standards. Development Services Division manages the inspection of all new development, CIP and infill projects to ensure all standards are met. All projects receive EU Director approval related to Utility work.
VI.	Overflow Emergency Response Plan	The Wastewater Collection Superintendent and Supervisors maintain the SSO emergency response plan. The plan is implemented as an annual training, where revisions to the plan may be made based on field crew feedback.
VII.	FOG Control Program	The Wastewater Collection Superintendent and Supervisor identify hot spots from Food Service Establishments (FSE) and maintain an effective cleaning PM schedule to eliminate SSOs. The FOG Control Program including permitting of FSEs, inspection of facilities and monitoring pump out records is administered by the Wastewater Collection Superintendent.
VIII.	System Evaluation and Capacity Assurance Plan	EU Engineering Principal Engineer administers the SECAP program to ensure the hydraulic model is up to date, and to assure capacity for current and future development
IX.	Monitoring, Measurement and Program Modifications	The Wastewater Collection Superintendent with assistance from the Wastewater Collection Supervisors monitors the implementation and assesses the success of the overall SSMP elements. The superintendent tracks Key Performance Indicators and adjusts programs as needed.
X.	SSMP Audits	The Asst EU Director is responsible for SSMP program audits, with assistance from the Wastewater Collection Superintendent and Principal Engineer for Wastewater Division
XI.	Communication Plan	The EU Public Information Officer communicates with the EU Director, City Manager, City Council, nearby agencies, and the public on the City's SSMP monitoring and modifications

2.3 Chain of Communication Reporting Chart

Office hours for the WWC Division are Monday through Friday from 0630 to 1600, except for holidays. Either the Administration Technician or service call worker receives all service calls during regular business hours. If received in the office, a service request is created with the caller information, the problem, and contact information. This information is transferred to the service call worker, in which they respond, access the problem, and provide a solution. An answering service, contracted by WWC Division, receives all after-hours calls to gather information and dispatch to the on-call service worker via an assigned mobile phone. The on-call service worker is available 24 hours per day and is furnished with a service van and equipment to facilitate a timely response. A response time goal is 20 minutes during business hours and 40 minutes for after-hour service calls. The van is equipped with containment devices to manage lower lateral blockages and spills, and to prevent SSOs from entering a storm drain inlet or channel. Should the situation require additional resources, the on-call worker would contact crew members from the call-out sheet for assistance. ***Table 2-1***, included in the division's SSOERP, summarizes the chain of communication when receiving calls for service.

Table 2-1 SSO Chain of Communication



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SSMP ELEMENT 3

3 Legal Authority

D.13(iii) Each Enrollee must demonstrate, through sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to(1) prevent illicit discharges into its sanitary sewer system, (2)require that all sewers and connections are properly designed and constructed, (3)to ensure proper access to portions of the lateral owned by the agency,(4) to limit the discharge of FOG, and(5) to enforce any violation of its sewer ordinances.

The Roseville Municipal Code (RMC), https://qcode.us/codes/roseville/. provides specific legal authority for the WWC division to operate and manage the wastewater collection system. The City's current legal authority is established through existing codes, regulations, ordinances, and permitting procedures that allows the City to require and enforce various measures for ensuring the proper and efficient operation, management, and maintenance of the City's wastewater collection system. Table 3-1 indicates the code section for the legal authority required.

Table 3-1 RMC Codes for Legal Authority

Legal Authority	RMC Number	Description
Ability to prevent illicit discharges into the wastewater system	14.20.040	Definition of illicit discharge
	14.26.010	Purpose and policy of industrial wastewater
Ability to require all sewers and connections are properly designed and constructed	14.12.040	Building and sewer connection requirements
	14.14.030	FOG discharge permit required
	14.14.070	Prohibitions for FSE construction
Ensure proper access to portions of the lateral owned by the city	Charter Article X Sec 10.01	General powers respecting utilities
	14.14.290	Right of entry
Ability to limit the discharge of FOG	14.12.050	Use of public sewers
	14.14.010	Purpose
	14.14.030	FOG discharge permit required
	14.14.040	Fog discharge limitation
	14.14.070	Prohibitions
	14.14.120	Interceptor maintenance requirements
Ability to enforce all sewer ordinances	14.12.060	Sewer use- enforcement authority
	14.14.330	FOG – determination of non-compliance
	14.14.350	FOG- Permit suspension or revocation
	14.14.360	FOG- penalties and violations

3.1 Industrial Pretreatment Program

In addition to the RMC, the City of Roseville Industrial Waste Division (IWD) oversees and administers the Pretreatment Program Enforcement Response Plan (ERP). This plan outlines operational procedures intended to ensure that the Significant Industrial Users (SIUs), and the small Commercial/Industrial dischargers to the sanitary sewer system are appropriately permitted and monitored. To assure compliance by these dischargers, the IWD implements enforcement procedures specified by the U.S. Environmental Protection Agency (EPA) in accordance with 40CFR 403.5 (f) (5). The ERP specifies criteria by which IWD personnel determine the enforcement action most appropriate to the nature of the violation. The Pretreatment Enforcement Response Plan is attached to the SSMP as Appendix 3-1.

3.2 Design and Construction Standards

The City of Roseville's design and construction standards regulate and guide the design and preparation of plans and construction of the City of Roseville's sanitary sewer systems and related public improvements, and set guidelines for all private works, which involve related improvements. Design and construction standards are located at

https://www.roseville.ca.us/cms/One.aspx?portalId+7964922&pageId=8754129

3.3 Sewer Access Authority

The RMC section 10.01 states the City shall possess all powers granted to cities by state law to construct, condemn, purchase, acquire, add to, maintain, and operate, either within or outside its corporate limits, including, but not by way of limitation, public utilities for supplying water, light, heat, power, gas, transportation, sewage and refuse collections, treatment and disposal services, or any of them, to the municipality and the inhabitants thereof; Each city-owned utility shall be financially self-sufficient, and shall fully compensate the city general fund for all goods, services, real property and rights to use or operate on or in city-owned real property.

3.4 Fats Oils and Grease

The City of Roseville limits the discharge of Fats, Oils and Grease from Food Service Establishments through Section 14.14 of the RMC. Section 14.14 was adopted to facilitate the maximum beneficial use of the city's sewer services and facilities while preventing blockages of the sewer lines resulting from discharges of fats, oils, and grease (FOG) into the public sewer, and to specify appropriate FOG discharge requirements for food service establishments (FSEs). Section 14.14 establishes conditions for permitting, inspection, pumping and recordkeeping, and right of entry for inspection.

3.5 Regulation of Sewer Use-Enforcement

Sections 14.12.060 and 14.14.360 (FOG Ordinance) of the RMC prescribes the enforcement actions available to the city when violations of the code are discovered. Violation of the RMC may be charged as either an infraction or misdemeanor upon discretion of the City Attorney.

3.6 Inter-Agency and Satellite Agreements

The City of Roseville operates two Regional Wastewater Treatment Facilities where sewer from satellite systems flow into City wastewater mains. As such, the Environmental Utilities Department maintains the following agreements to address regional and satellite systems.

3.6.1 Joint Exercise of Powers Agreement South Placer Wastewater Authority

The purpose for this agreement is to provide for planning, acquisition, financing, ownership, construction, and operation of Regional Wastewater Facilities. The participants in the SPWA create a public entity which is separate from the City, the District, and the County. The SPWA services the areas the City of Roseville, Placer County and South Placer Municipal Utility District. The agreement is attached to the SSMP as Appendix 3-2.

3.6.2 South Placer Wastewater Facilities Operation and Use Agreement

The agreement known as the Joint Powers Agreement, supersedes all other previous agreements. The new agreement indicates the City of Roseville shall operate and maintain Regional Wastewater Facilities for the mutual benefit of and provide wastewater treatment services to the areas depicted on Exhibit A, areas which are within the jurisdictional boundaries of the City, District and County, so long as the District and County pay the City their proportionate shares. This agreement is attached to the SSMP as Appendix 3-3

3.6.3 Contract and Operating Agreement between SRCSD and SASD

This agreement between the City of Roseville, Sacramento Area Sewer District and Sacramento Regional County Sanitation District defines points where flows enter and exit each other's area of service and points of demarcation for City and County assets. In addition the agreement is to meet regulatory requirements and provide a basis for SASD, SRCSD and the City of Roseville to work together to provide service to users, establish operation and maintenance responsibilities and outline rates and fees. This agreement is attached to the SSMP as Appendix 3-4

3.7 Appendix 3- Legal Authority Documents

3-1 Pretreatment Program Enforcement Response Plan – TOC

3-2 Joint Exercise of Powers Agreement for the South Placer Wastewater Authority

3-3 Agreement Regarding the Operation and Use of the South Placer Regional WW Facilities

3-4 Wastewater Service Agreement by Contract & Operating Agreement Between SASD, SRCSD and City of Roseville.

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4 Operation and Maintenance

D.13.(iv) The SSMP must include those elements listed below that are appropriate and applicable to the enrollee's system. This chapter describes the city's activities regarding mapping systems of the sanitary sewer system, operation and preventative maintenance activities, rehabilitation and replacement program, training program, and equipment and critical part inventories.

The Operation and Maintenance (O&M) Program is essential to fulfill the city's duty to serve the residents and businesses of the City of Roseville. It is also the most significant part of the city's effort to eliminate the occurrence of SSOs and stay compliant with the general order.
The city's O&M program is comprised of these elements:

1. Collection System Mapping
2. Preventive Maintenance
3. Rehabilitation and Replacement
4. Staff Training and Certification
5. Equipment And Replacement Parts Inventories, Including Critical Replacement Parts

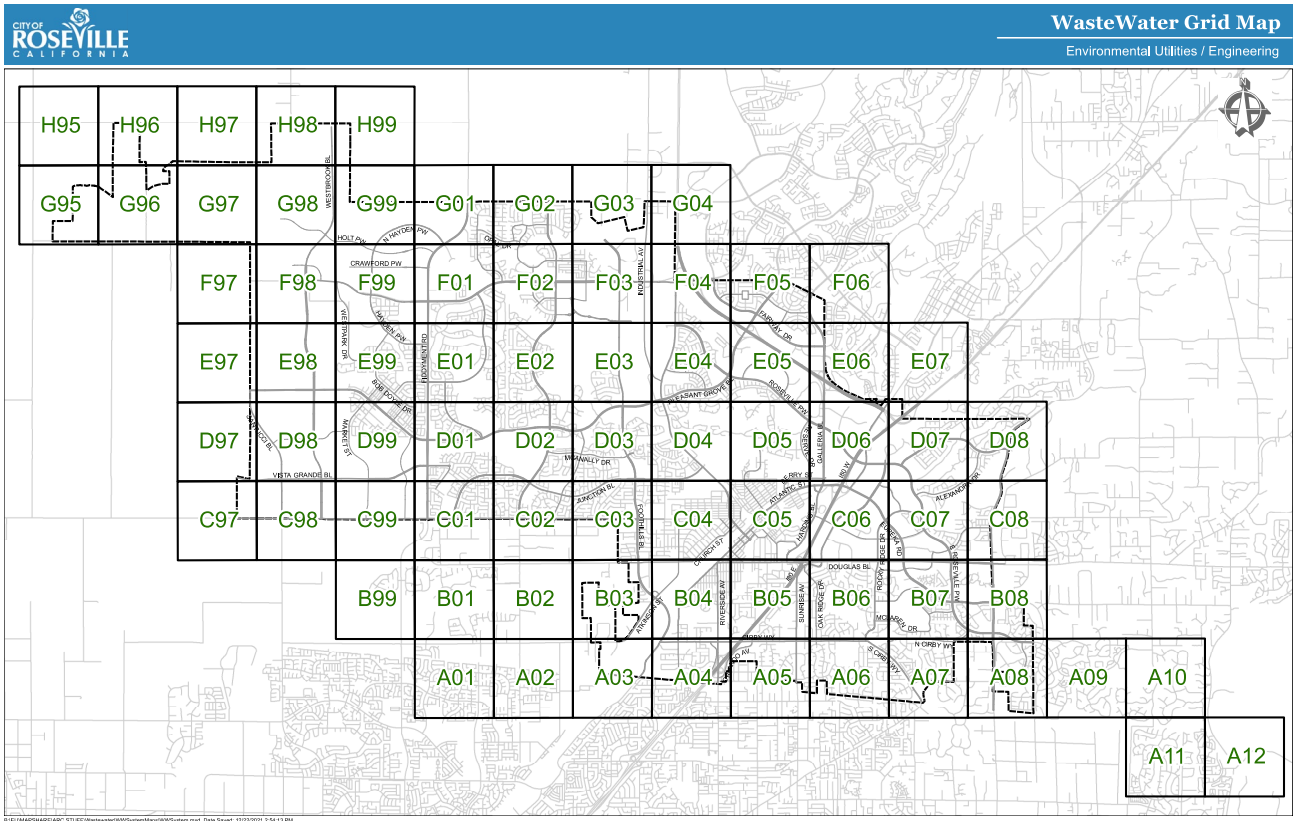
4.1 Collection System Maps and Information

The WWC Division maintains an up-to-date electronic map of the wastewater collection system as required by Section D.13(iv)(a) of the Order. The City uses ESRI GIS software to map all utility-related data. The GIS map platform, referred to as Roseville GeoViewer, shows all gravity main segments with the direction of flow, manhole information, pumping facilities, pressure pipes, and valves. In addition, the GeoViewer allows users to turn on/off different layers and base maps to display the information they need. Additional map layers available in GeoViewer include:

- Hot Spot Locations
- CIPP Lined Mainline Segments
- Food Service Establishments and Grease Removal Devices
- Waterways
- Roadways
- City Boundaries
- Stormwater System

Table 4-1 shows the GIS map system, and how it incorporates each of the sewer shed basins within the City of Roseville's jurisdictional boundaries.

Table 4-1 Wastewater Grid Map



4.1.1 Map Update Policy

This policy aims to provide uniformity in identifying, verifying, documenting, and tracking the changes to the sewer mapping system. In addition, this document will describe the process in which the mapping system shall be updated.

A significant effort is placed upon maintaining a very complete, accurate, and up-to-date wastewater collection map which is an essential component for the proper operation and maintenance of a wastewater collection system. Maps are updated as new sub-divisions are accepted or when field crews repair, rehabilitate or replace components of the system that require updating the maps. A mapping update policy has been developed to address procedures that ensure mapping updates or revisions are correct and completed in GIS.

CCTV crews identify discrepancies between existing system maps and real time field data. The operator shall note the discrepancies and submit changes to the WWC Supervisor when differences are identified.

Construction and Maintenance crews identify any new infrastructure added to the system. Information required for CMMS Map Change will be directed to the WWC Supervisor. The information required for Mains, Laterals, and SMH's are:

- Mains - Grid map area, the distance between SMH's and pipe size, pipe material
- Laterals –Grid map area, C/O location, length, depth, pipe size, material, and depth.

- SMH – Grid map area, depth, barrel diameter, access cover size and material, number of and pipe size of inlets and outlets, barrel lining/coating, drops Y/N.

The Supervisor will create a work order in Maximo listing the Classification as "Map Change." Then select "Log" and "Add Row" to add a description of the asset that needs to be added/changed. In the Log section of the work order, the Supervisor will list all the details gathered from the field and attach a map if required. Do not change the status of the work order in Maximo CMMS.

The GIS group automatically receives all map change requests. Once all map changes are updated, the Supervisor will receive an email informing them of the completed work order, at which time the GIS group closes the work order.

4.2 Operation and Maintenance

The WWC Division's O&M program focuses on eliminating sewer backups and overflows, increasing the lifespan of the infrastructure, and bringing uninterrupted service to the residents of Roseville. WWC division provides service to 146,875 customers. Within the 43.05 square miles of Roseville, the City inspects and maintains 17 lift stations, approximately 578 miles of sewer mains ranging from 6- to 84- inch diameter, and 293 miles of lower laterals. **Table 4-2** below represents a few performance indicators the WWC division tracks and measures their performance against.

Table 4-2. Operation and Maintenance Activities

	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Total Miles of Pipe Cleaned	283.12	226.1	235.9	296.14	
Total Miles of Pipe CCTV Inspected	100.24	149.64	117.11	66.45	
Number of SSOs Caused by Hot Spots	0	0	0	0	
Miles of Pipe Rehabilitated or Replaced	1.49	.5	.54	3.4	
Total Number of SSOs Main and Lateral	25	31	32	51	

4.2.1 Preventative Maintenance Program

The WWC Division of the Environmental Utilities Department is responsible for the City's sewer system and implements preventative and corrective maintenance approaches to operate and maintain the system efficiently. The division's PM program involves cleaning sewers on a recurring schedule, including regular CCTV inspection to determine the efficiency of those PM activities. The GIS system divides the city into grids, enabling targeted PM scheduling for an individual grid based on history, CCTV inspection, and infrastructure's age. The WWC division schedules cleaning as often as every three months or up to ten years, with the age and condition of the pipe being key factors. The scheduled maintenance projects that are identified in Maximo are attached as ***Appendix 4-1.***

Corrective maintenance projects and work orders are a concerted effort utilizing the PM and CCTV inspection programs. Information gathered during routine cleaning, repair work and inspection, generates the development of repair and replacement work orders. The following paragraphs describe the City's current operation and maintenance procedures for maintaining the wastewater collection system.

4.2.1.1 PM Cleaning Program

The WWC Division is equipped with three combination sewer cleaners to keep the sewer system operating efficiently and minimize line stoppages and calls for service. Sewer cleaning using hydraulic or mechanical methods performed on a routine basis helps remove accumulated debris in the pipe such as sand, silt, grease, roots, and rocks. Scheduled maintenance projects have been developed for each map grid based on historical data and field crew input.

4.2.1.2 Hot Spot Cleaning

In addition to scheduled maintenance, the WWC division aggressively cleans identified problem areas, known as hot spots. This list of hot spots has been compiled based on historical data, field crew observations, and CCTV condition assessments. These mainline segments tend to have more frequent backups due to sluggish flows, poor grade, and sags, The frequency of Hot Spot cleaning ranges from 1-6 months, depending on history and CCTV inspection data. The WWC division strives to reduce and eliminate these hot spot areas during CIP projects or rehabilitation projects performed by City crews. Currently, the WWC division has 276 segments identified as Hot Spots.

4.2.1.3 Electroscan Inspection

To identify and quantify locations of I&I entering the sewer system, the WWC division invested in Electroscan Technology, adding the equipment to a newer CCTV inspection truck. Using Electroscan, a probe is pulled through the mainline, and electricity is measured and used to identify any defect where the pipe may leak. This enables crews to pinpoint CCTV inspection of the pipe section before scheduling repair work to correct the deficiency. Electroscan has also proved valuable as a QA/QC tool for accepting Cured-In Place-Pipe rehabilitation projects. The city performed pre-post Electroscan inspections on sewer mains rehabilitated with CIPP technology. This pilot study proved the effectiveness of the Electroscan Technology in locating defects CCTV inspection didn't identify.

4.2.1.4 CCTV Inspection Program

The WWC Division operates three CCTV vans to inspect the wastewater collection system. CCTV operators utilize NASSCO's PACP coding format when inspecting sewer mains and laterals. All observations are coded and captured in the Granite Net Software system and are archived in a database for access. CCTV inspection crews also perform continual condition assessment inspections on existing infrastructure. For example, CCTV crews inspect mainline segments and lower laterals, looking for deficiencies to minimize problems within the collection system. In addition, sewer inspections identify unwanted connections and sources of I&I into the wastewater system. Finally, CCTV crews inspect new subdivisions or commercial projects before being accepted into the city and the time of warranty acceptance. These inspections are crucial to receiving infrastructure installed to City design and construction standards. **Table 4-3** includes a sample CCTV report from GraniteNet inspection software.

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Table 4-3 CCTV Inspection Report

GraniteNet
ASSET INSPECTION / DECISION SUPPORT SOFTWARE

CUES, Inc.
3600 Rio Vista Avenue
Orlando, FL 32805
Phone: 407-849-0190
Fax: 407-425-1569

Main Inspections and Map

Mainline ID:	City:	Address:	Project name:
SND-C05-389/SMH-C05-163	**ROSEVILLE**	**JEFFERSON ST.**	**Maintenance**
Upstream node:	Downstream node:	Start date/time:	End date/time:
SND-C05-389	**SMH-C05-163**	**9/22/2020 7:34 AM**	**9/22/2020 7:55 AM**
Pipe shape:	Pipe material:	Pipe height:	Pipe width:
Circular	**Clay**	**6.0 in.**	
Asset length:	Surveyed distance:	Reason:	Work order no.:
60.4 ft.	**72.9 ft.**	**Problem**	**1072619**
Operator:	Weather:	Status:	
E05488	**Dry**	**Completed**	
Comments:			

Observations

Distance	Dir.	Length	From/To	Code	Modifier/Severity	Rating
0.0 ft.	U	18.0 ft.	/	Sag	Medium	10
4.1 ft.	U		11 / 1	Broken	Soil Visible - Large	75
4.1 ft.	U		/	Vermin	Cockroach	
19.9 ft.	U		12 /	Broken	Hole	5
26.5 ft.	U		12 / 5	Root-in-Joint	Light	5
40.0 ft.	U		11 /	Lateral	Capped	
46.6 ft.	U		6 / 12	Joint Offset	Small	5
47.1 ft.	U	25.8 ft.	/	Sag	Light	5
50.8 ft.	U		7 / 1	Joint Offset	Small	5
58.1 ft.	U		12 /	Lateral Connection Problem	Connection Protruding	25
66.9 ft.	U		11 / 1	Crack	Multiple - Wider	15
68.6 ft.	U		2 /	Lateral	Capped	0
70.6 ft.	U		11 /	Lateral	Capped	0
72.8 ft.	U		12 /	Cleanout		5
72.9 ft.	U		/	End of Pipe		5

4.2.1.5 Root Control Program

The WWC Division has an effective chemical root control program, using Vaporooter products to limit or eliminate root growth in the City-owned portion of the lower lateral. In addition, the WWC division has two qualified applicators licenses (QAL) that allow the division to chemically treat laterals for a more effective root control program rather than contracting out for this service. This program has dramatically reduced the division's exposure to back injuries resulting from loading and unloading a gas-powered eel from the truck each time. It also lessens the element of crush injuries and trip and fall hazards from eel rods across the ground. In addition, chemical root control has successfully reduced the maintenance time per lateral, which is evident in the reduction of lower lateral backups and overflows.

4.2.1.6 Lift Station Inspection and Maintenance

The city currently has 17 neighborhood lift stations throughout its service area. All 17 stations are equipped with a duplex or triplex pumping system, with the lead/lag pump cycled based on pumping hours. Power outages happen very infrequently. However, all new lift stations and four of the currently active seventeen lift stations are equipped with a 4-hour emergency overflow storage basin. WWC crews inspect the stations monthly, cycle pumps through a pull-down sequence, test floats for operation, and record the condition and any deficiencies at the station. In addition, all Lift Stations are equipped with a SCADA system, which the WWTP operators monitor 24 hours per day. Besides inspections, City crews perform wet-well cleaning and de-ragging of pumps every six months to eliminate pump failures and potential odor complaints.

4.2.2 Corrective Maintenance Program

WWC construction crews perform all repair work to the existing infrastructure. Work orders and projects are developed from information found during maintenance activities, inspections based on calls for service and condition assessment inspection findings. The Corrective Maintenance programs are defined below.

4.2.3 Infrastructure Repair

The WWC Division performs routine, emergency, and complex repairs, and replacements to its existing infrastructure. This work includes sewer main installation and repair, sewer manhole installation, and lateral repair and replacements. As a result, city crews have undertaken large projects, installing new mainline segments that have eliminated hot spots, replaced aging infrastructure, and upsized mains to provide additional system capacity. In addition, the WWC Construction crew has performed contractor caliber work at the City's Regional Wastewater Treatment Plant at significant cost savings for the city.

4.2.3.1 Infill Projects

Depending on their schedule and workload, the WWC division construction crew holds the first choice for any proposed connection to existing infrastructure. If city crews are busy, contractors will be allowed to perform the work under the direction of a city inspector. However, if city crews complete the work, the contractor will schedule the work through the WWC Supervisor. City crews will complete the work on a time and material basis for the contractor.

4.2.3.2 CIPP Lateral Lining

The vast majority of the city's SSOs have occurred in the lower lateral, caused by breaks in the VCP and root intrusion. As a result, the city invested in the trenchless technology Cured in Place Pipe (CIPP), purchasing an LMK lateral lining trailer. Lateral lining through an existing cleanout makes it possible to repair and reinstate the pipe integrity without disturbing landscape, sidewalks, roadways and with minimal disruption of service to the resident. CIPP essentially creates a pipe within a pipe and eliminates further root intrusion and sewer overflows. During condition assessment, lower laterals are CCTV inspected, and work orders are created for those identified as viable for CIPP lining. These work orders are then prioritized based on history and the number of calls for service.

4.2.3.3 Cleanout Installation Program

The WWC Division invests many resources in preventing backups that potentially become SSOs. Since the City owns the lower portion of the lateral, access to the lateral through a cleanout is imperative in assessing its condition. The WWC division has identified the homes and businesses throughout the city with no cleanouts and created projects to install one at every service location. One installed, the lower lateral is inspected and if necessary, additional work orders for maintenance or repair are created. Currently, the city installs over 100 cleanouts per year on this project.

4.3 Rehabilitation and Replacement

The City began its condition assessment of the collection system in 2006. At that time, the collection system was divided into 24 groups based on the age of the sewer main installation. The first group of pipes and manholes were inspected and included in the Rehabilitation and Replacement plan developed shortly after. To date, City crews have completed inspections in 14 of those 24 groups, which has led to the development of numerous CIPP and replacement projects.

Over the past fifteen years, experience has shown that identifying and prioritizing areas and sewer segments for assessment and rehabilitation is complex. It requires the availability of tremendous amounts of data, expertise in applying PACP coding, and professional judgment. During this time, the WWC Division has significantly advanced its knowledge of the collection system and its sewer assessment and rehabilitation approach. The City has recognized that CCTV inspection is the best method for identifying and prioritizing problematic areas. As such, the City continuously inspects pipelines and utilizes NASSCO's PACP coding standard to develop a list of assets that need rehabilitation. When defects are identified, the City evaluates the risk of failure and assigns a priority ranking to each asset.

Prioritizing those assets relies on several factors, including:

- Severity and extent of the defects (PACP Score).
- Maintenance records and SSO occurrences
- Hydraulic capacity needs and projection.
- The estimated remaining useful life of the infrastructure

This detail-oriented condition assessment approach enables the division to plan and design CIP projects to rehabilitate sewer infrastructure in a planned and organized manner. The supervisor will review the maintenance history of the main, any SSO history and determine if the segment should be rehabilitated or continue established preventative maintenance. The main will be added an asset group already created in Maximo CMMS if conditions warrant rehabilitation. Based on current condition, history of calls, and field crew observations, the assets
are then prioritized for rehabilitation.
Once the asset group is established, the WWC Superintendent will meet with EU Engineering to review the data and create a CIP project for the upcoming fiscal year, based on priorities and estimated cost. This process ensures the projects will be completed timely, reducing the potential occurrence of an SSO.
In addition to condition assessment, the WWC division schedules with Public Works to inspect wastewater infrastructure ahead of residential and arterial street paving projects. This process enables the WWC division to perform necessary system improvements before completing the overlay project. The City maintains a 5-year list of planned R&R CIP projects

4.4 Training and Certification

One challenge when defining a training program is an influx of new employees. Entry-level employees with no training are a potential safety liability in the wastewater field. Training for new hires is predominantly on-the-job training, with classroom and online training finishing the remaining required training. As soon as available, new employees are scheduled for Confined Space Entry, Traffic Control &Flagging, and Excavation and Trench Shoring training, the division's most significant safety liabilities.

4.4.1 New Hires

On their first day, a new employee will be issued a task booklet, which defines the necessary skills and training for their position. The new hire and Supervisor will go through the book, discuss how the employee will receive training, and receive sign-off on the tasks. The booklet covers all areas involving the wastewater collection system and is an aid in developing qualified, knowledgeable, and capable employees. When the employee becomes proficient in a task, the SR Utility Maintenance Worker or the crew leader signs and dates the book, verifying they have observed the employee satisfactorily complete the task. The training defined in the task booklet is provided through various methods, mainly on-the-job training, and begins the first day on the job. Finally, at the end of the probationary period, new hires are put through a series of activities to demonstrate their proficiency in all skills learned.

4.4.2 Training and Tracking

Safety training constitutes a significant portion of the training received each year and tracking individual completion of training can be insurmountable. The WWC Division utilizes a computer-based software program, Safety Plus Web (SPW), to monitor and track each employee's level of completion. Supervisors can query individual employee training records, or the entire division, to see which courses need completion. In addition, SPW provides Competency-Based Training (CBT), requiring the employee to take and pass a test at the end of the presentation, demonstrating their understanding of the training material. In addition, Standard Operating Procedures (SOPs) have been developed for all equipment and procedures within the division to train new employees and provide a refresher for veteran employees. These SOPs are reviewed annually during a safety meeting and revised should there be a process change. Therefore, SOP development and training is an ongoing process.

The WWC division holds weekly safety meetings where supervisors or subject matter experts present safety topics specific to the wastewater collection field. These meetings are interactive with the crews and presenters and are great learning opportunities. In addition, the training course is added to SPW, so employees can fulfill the training online if they are absent. Finally, as new training requirements are developed, they are implemented into SPW to ensure all employees receive the required training throughout the year. **Table 4-4** lists the required training specific for the WWC division.

Table 4-4 Wastewater Collection Required Training

Training Title	Frequency	Delivery
Asbestos Cement Pipe Training Initial and Refresher	Initial- 1X Refresher-Annual	Outside Trainer
Back Safety	Annual	CBT or Tailgate
Backhoe Operator Certification	Refresher-3 Yrs.	CBT, Classroom, Hands-On
Bloodborne Pathogens Training	Annual	CBT, Classroom
Confined Space Entry-Permit Required	Annual	Outside Trainer CBT, Classroom, Hands-On
Crystalline Silica Standard	Annual	CBT, Classroom
Defensive Driving	Annual	CBT, Classroom
Dry Creek Emergency Action Plan	Annual	CBT, Classroom
Excavation, Trenching and Shoring	Initial Refresher- Annual	Outside Trainer-Initial, CBT, Classroom
Fall Protection Plan Initial and Refresher	Initial-1X Refresher-3 Yrs.	CBT, Classroom
Fire Extinguisher Training	Initial -1X Refresher- Annual	CBT, Classroom
First Aid, AED and CPR Training	Initial Renewal -Annual	Outside Trainer, Classroom

Gas Detector Training	Annual	Outside Trainer, CBT, Classroom
Hazard Communication	Initial Annual Refresher	CBT, Classroom
Hearing Conservation	Annual	CBT, Classroom
Heat Illness Prevention	Annual	CBT, Classroom
Injury and Illness Prevention Plan	Annual	CBT, Classroom
Lock Out Tag Out	Initial	CBT, Classroom
Personal Protective Equipment	Initial	CBT, Classroom
Respiratory Protection Plan	Annual	CBT, Classroom
Sanitary Sewer Overflow Emergency Response (SSOERP)	Annual	CBT, Classroom
Sewer System Management Plan	Annual	CBT, Classroom
Traffic Control and Flagging	1X Refresher- 3 Yrs.	Outside Trainer
Underground Utility Locating	Annual	CBT, Classroom, Outside Trainer
Violence in the Workplace	Annual	CBT, Classroom

4.4.3 Certification

The CWEA Technical Certification Program provides certification in various wastewater disciplines to promote the knowledge and skills of wastewater professionals. The City requires employees to take and pass the Collection System Operator Grade I test to be eligible for promotion to the Journey Level. The test for the required CWEA certification ensures that employees who hold this certification possess the knowledge, skills, and abilities to perform the collection system operator duties skillfully. In addition, to renew the certificate, the employee must complete 12 hours of continuing education training every two years.
Information on CWEA certification can be found at http://www.cwea.org/

4.5 Equipment and Critical Spare Parts Inventory

The WWC division owns an assortment of maintenance equipment and vehicles equipped both for routine maintenance and emergency response. This equipment is maintained by the Vehicle Maintenance Division of Central Services. **Table 4-5** lists the maintenance equipment the WWC division currently owns.

Table 4-5 WWC Equipment List

Qty	Equipment	Purpose
3	Mainline and Lateral CCTV Inspection Vans	Inspection
3	Combination Hydro-Jetters	PM, Emergency Response
1	Chain Flail Cutter 8″-20″ diameter cleaning	PM, Emergency Response
1	LMK Lateral Lining Trailer	Repair
2	3 Axle Dump Truck	Emergency Response, Repair
2	Caterpillar 430 Backhoe Loader	Emergency Response, Repair
1	John Deere 210 Skip Loader	PM, Emergency Response, Repair

1	Caterpillar 304 Excavator	Emergency Response, Repair
6	Ford F-550 Crew Truck w/ Service Body; Fully equipped	Emergency Response, PM, Repair
1	6-inch Trailer mounted trash pump, cam lock fittings	Emergency Response, Repair
1	4-inch Trailer mounted trash pump, cam lock fittings	Emergency Response, Repair
165′	6-inch suction hose, cam lock fittings	Emergency Response, Repair
400′	6-inch discharge hose, cam lock fittings	Emergency Response, Repair
40′	4-inch suction hose, cam lock fittings	Emergency Response, Repair
3	6′-10″ pass through air plug, cam lock fitting	Emergency Response, Repair
3	10″-16″ pass through air plug, cam lock fitting	Emergency Response, Repair
3	15″-21″ pas through air plug, cam lock fitting	Emergency Response, Repair
2	10″ pass through plug, threaded end	Emergency Response, Repair
1	10′ x 9′ aluminum shore box	Emergency Response, Repair
2	10′ x 4′ aluminum shore box	Emergency Response, Repair
2	End Shores 24″ to 42″	Emergency Response, Repair
5	22″-36″ Speed Shore 5′ length	Emergency Response, Repair
4	28″-45″ Speed Shore 7′ length	Emergency Response, Repair
6	22″-36″ Speed Shore 7′ length	Emergency Response, Repair
6	48″ x 96″ Fin-form Plywood	Emergency Response, Repair

4.6 Critical Spare Parts

Wastewater Collection is a division of the Environmental Utilities Department, which encompasses Regional Wastewater Treatment Plants, Mechanical Maintenance, Water Distribution, Technical Services Engineering, and Solid Waste Division. The WWC Division operates, inspects, and maintains the lift stations within the boundaries of the City of Roseville, however, all electrical and mechanical maintenance tasks are performed by the PM Technicians from Mechanical Maintenance Division. The Materials Technician maintains the WWC Division's inventory list and re-order levels at Dry Creek WWTP. The list of critical spare parts is in **Table 4-6**.

Table 4-6 WWC Critical Spare Parts

EU Name	PLC Model	Pumps	Fuses	Level Control	Comm Connection	HMI	Heater/Overloads
WC06	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	Fiber PA-200	Optimate OP-620	Installed/Warehouse
WC07	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	Optimate OP-620	Installed/Warehouse
WC08	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC09	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC11	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse

WC13	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC14	Modicon M340	N/A	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	SE Maguells HMISTU855	N/A
WC15	Modicon M340	N/A	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	SE Maguells HMISTU855	N/A
WC16	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC17	Koyo D2-250-1	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC19	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC22	Koyo D2-250-1	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC23	Modicon M340	2-Installed/ 1-warehouse	On Site	Transducer/ Floats - Warehouse	Proxim Radio to PG. Future Fiber PA-220r	SE Maguells HMISTU855	Installed/Warehouse
WC24	Koyo D2-250	2 + 1-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC25	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	GE MDS SD4	Optimate OP-620	Installed/Warehouse
WC26	Koyo D2-250	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse
WC28	Koyo D2-250-1	2-Installed	On Site	Transducer/ Floats - Warehouse	MDS 4710A	Optimate OP-620	Installed/Warehouse

4.7 Appendix 4- Operation and Maintenance Program Documents

Appendix 4 includes the following documents:

4-1 Maximo PM Scheduled Maintenance

4-2 Tech Memo O&M Program SSMP Audit- Rehabilitation and Replacement Plan

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5 Design and Performance Provisions

D.13.(v) Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and (b) Procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

5.1 Sanitary Sewer Design Standards

The purpose of the City Design Standards is to provide direction in the application of improvements that are to be dedicated to the public and accepted by the City for maintenance or operation and to provide for joint development of those facilities to be used by and for the protection of the public. This includes certain private works and improvements to be installed within existing City rights-of-way and easements. Whereas these Standards intend to govern all new construction, City staff shall interpret and apply the Standards in a manner that achieves their intent while encouraging and enabling the redevelopment of infill and vacant parcels, especially within the City's Redevelopment Project Area. These Standards shall apply to, regulate, and guide the preparation of traffic impact studies and the design and preparation of plans for construction of streets, highways, alleys, drainage, sewerage, traffic signals, site access, water supply facilities and related public improvements, and shall set guidelines for all private works which involve drainage, grading, trees, and related improvements. The City's sewer Design Standards are located on the City's website at https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_7964838/File/Government/Departments/Development Services/Engineering/Design and Construction Standards/2020 DS Sections/DS - SECTION 9 - Jan.2020.pdf.

5.2 Sanitary Sewer Construction Standards

The purpose of the City Construction Standards is to provide minimum standards to be applied to improvements which are to be dedicated to the public and accepted by the city for maintenance or operation and certain private works, as well as improvements to be installed within existing rights-of-way and easements. This is necessary to provide for coordinated development of required facilities to be used by and for the protection of the public. These Construction Standards shall apply to, regulate, and guide construction of streets, highways, alleys, drainage, sewerage, traffic signals, site access, water supply facilities and related public improvements, and shall set guidelines for all private works which involve drainage, grading, trees and related improvements. The City's sewer Construction Standards are located on the City's website at https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_7964838/File/Government/Departments/Development Services/Engineering/Design and Construction Standards/2020 CS Sections/CS - SECTION 91 - Jan.2020.pdf

All improvements within the City rights-of-way shall be installed in accordance with the approved improvement plans and specifications, the City of Roseville Design Standards, the City of Roseville Construction Standards, and the State of California Department of Transportation Standard Specifications.

5.3 Sewer System Construction and Performance Testing

Section 91-12 of the City's Sanitary Sewer Construction standards defines the criteria for testing of installed sewer improvements. Sewer mains, services, manholes and appurtenances shall be tested by the following procedures.

5.3.1 Testing Of Installed Improvements

A. Sewer Mains and Services – Public and private sewer mains and services shall be air-tested per ASTM C828 by the Contractor and the Environmental Utilities Department shall provide closed circuit TV inspection, after installation of the joint trench utility crossings and subgrade elevations have been met. Additionally, pipeline segments beneath road bases to be lime- treated shall be tested before and after the lime treatment process.
B. Air Pressure Test – Sewer mains and laterals shall be pressure tested in accordance with the National Clay Pipe Institute recommended guidelines with the following amendment:

1. The minimum test time shall be 60 seconds. The section of a sewer being tested must be pressurized to 3.5 psi, and during the test time must hold 2.5 psi or greater, or the section has failed.
2. For mains installed in an area where the water table is higher than the pipe, the test pressure shall be increased 0.5 PSI per foot of water over the pipe.
3. The test gauge shall be liquid-filled, capable of testing up to 15 PSI, and graduated to 1/10 PSI.

C. TV Inspection – TV inspection of sewer mains and services shall be performed by the Environmental Utilities Department, Wastewater Division. Costs for said inspection shall be borne by the Contractor. Preliminary inspections may be performed by outside contractors but shall not be accepted by the Environmental Utilities Department as an official record.

1. The sewer system shall be completely cleaned by an approved method prior to TV inspection. The sewer system shall be rejected if any of the following conditions exist:
    a. For main lines 12 inches and smaller - standing water or sags greater than 1⁄2 inch in depth at acceptance or greater than 1 inch at warranty.
    b. For main lines exceeding 12 inches - standing water or sags greater than 3⁄4 of an inch in depth at acceptance and greater than 1 1⁄2 inches at warranty.
    c. Standing water in services.
    d. Offset joints.
    e. Joint separations greater than 1⁄2 inch wide.
    f. Damaged pipe.

D. Inspection Criteria for Coated Ductile Iron Pipe – All ductile iron sewer will have the following additional inspection requirements:

1. The condition of the barrel section of pipe as well as 360◦ at each joint shall be recorded to a DVD or portable drive. Once completed, and the inspection demonstrates the pipe meets the City's construction standards, the contractor may proceed with the backfill of the trench. The Contractor shall provide the DVD and a map of the section inspected, to the Wastewater Collection Division for review prior to the City's acceptance inspection.
2. Upon finding any deficiency in the pipe which does not meet the design and construction standards of the City of Roseville, it is strongly encouraged that the contractor makes the necessary corrections at that time. If deficiencies aren't corrected City forces at time of acceptance CCTV will identify these deficiencies and require the contractor to dig and replace the pipe sections; there will be no exceptions.
3. The observation data on the DVD provided to the City shall include the following:
    a. City wide job number.
    b. Encroachment permit number.
    c. Project name.
    d. Location (street name)
    e. Manhole numbers (based on approved plan set or city asset numbers if applicable).
    f. Direction of inspection (upstream or downstream).
    g. Date of inspection.
4. The speed of travel shall be slow enough to inspect each pipe joint, wye connection, coating integrity, and potential sags. Camera speed should travel at a rate of no more than 30 feet per minute. The camera speed shall be steady and slow enough to record features and defects.

E. Manholes – Sewer manholes shall pass a vacuum test consisting of the following criteria and procedures:

1. The test shall be performed after assembly of the manhole and installation of the pipe entering or exiting the manhole, but prior to backfilling. The Contractor shall perform the test and supply all test equipment. The Development Services Inspector shall witness the test results.
2. Lift holes shall be filled with non-shrink grout prior to testing.
3. Pipe entering and exiting the manhole shall be plugged. The plug shall be places on the flex joint outside of the manhole base. Securely brace the plugs to prevent them from being drawn into the manhole. Unused channels shall be permanently plugged with a plastic or clay stopper.
4. A vacuum of 10 inches of mercury shall be drawn to start the test. The amount of time required for the vacuum to drop to 9 inches shall be measured. The manhole will pass the test if the amount of elapsed time is greater than 60 seconds for a 48-inch manhole, 75 seconds for a 60-inch manhole, 90 seconds for a 72-inch manhole and 120 seconds for an 84-inch manhole. A liquid-filled vacuum gauge shall be used for testing. All detectable leaks shall be repaired with non- shrink grout while the vacuum is drawn. No mortar shall be applied to the inside of the manhole until the vacuum test has passed.
5. If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout while the vacuum is still being drawn. Retesting shall proceed until elapsed times are satisfactory.

6. After passing the vacuum test, all joints shall then be mortared, inside and out. Outside mortared joints shall be allowed to dry 24 hours or as approved by the Development Services Inspector before backfilling.
7. If damage to the manhole is evident any time during the construction, the Development Services Inspector may require repairs to be made on the manhole which will require a new vacuum test prior to acceptance.
8. Topside Improvements – When all water, recycled water and sewer infrastructures have passed air, vacuum, pressure, and continuity test as well as CCTV inspection the Development Services Inspector will email a notification to internal departments indicating that the project is ready for road bases and top side improvements only. This does not constitute approval for use of the infrastructure.
9. Tying Into the City System – A tie-in procedure shall be submitted and approved by the Environmental Utilities Department prior to the proposed work. The contractor shall allow for up to 7 days for review of the procedures by the Environmental Utilities Department. The sewer system shall be tied into the City system within 10 working days upon completing and passing all the testing procedures. Tie-ins shall be conducted as specified in Section 91- 2 of the Construction Standards.

5.3.2 Punchlist Process

After the sewer manholes have been raised and finished to grade, the sewer system shall have a final ball and flush in the presence of the Development Services Inspector. The system shall then have a final TV inspection to ensure the entire sewer system is intact for warranty. Final ball and flush can be done by city forces on a time and material basis at the request of the contractor. When all improvements are complete, the contractor shall provide a written request for a punch list inspection of the improvements. With the assistance and presence of the Contractor, the wastewater facilities punch list shall be generated by the Development Services Inspector and Wastewater Collection Division.

5.3.3 Repairing Installed Improvements

Sewer mains, services, manholes and appurtenances shall be repaired per these Construction Standards and by the following procedures.

A. Repairing Vitrified Clay Pipe

1. Damaged pipe shall be exposed and replaced in-kind by "bridging" the new pipe into place. Coupling devices shall not be used.
2. Sagging or misaligned pipe shall be exposed and corrected in place if possible. If the pipe is defective, then a new pipe shall be bridged in place.
3. After the correction has been completed, the excavation shall be backfilled and compacted to grade as specified. The repairs shall then be retested per section 91-12 of these Construction Standards.

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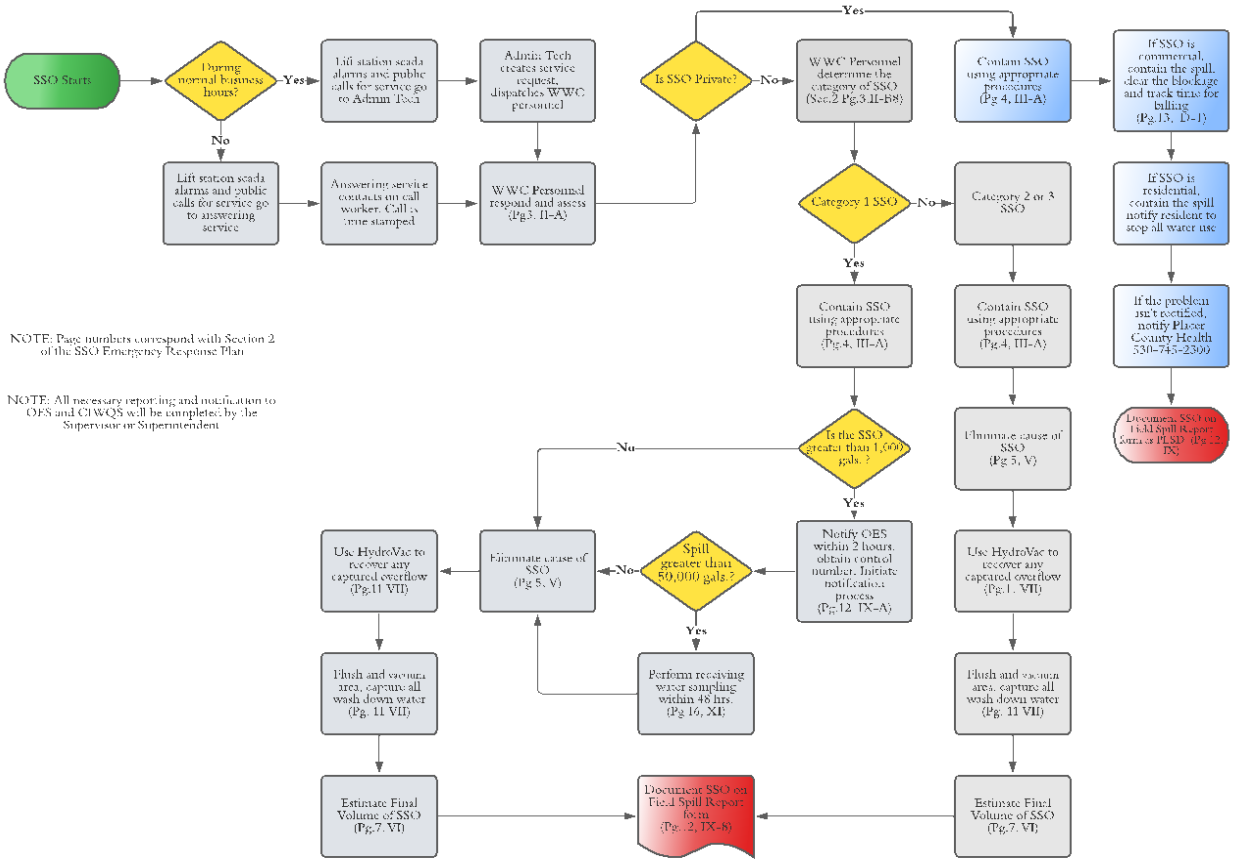
6 Overflow Emergency Response

D.13. (viii) The enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. The plan must include (a) proper notification procedures so primary responders and regulatory agencies are informed in a timely manner, (b) a program that ensures an appropriate response to all overflows, (c)procedures to ensure prompt notification to regulatory agencies or other potentially affected entities of all SSOs that potentially affect waters of the State. All SSOs shall be reported in accordance with the MRP and WDR requirements, (d)procedures to ensure appropriate staff and contractor training on the ERP,(e)procedures to address emergency operations, such as traffic and crowd control,(f) a program to ensure all reasonable steps were taken to contain and prevent discharge of sewer to waters of the United States, and to minimize and correct any adverse impact on the environment from the SSO.

6.1 Notification Procedures

The WWC division maintains an Overflow Emergency Response Plan that covers the wastewater system and Lift Station response and procedures. **Table 6-1** summarizes the response procedures.

Table 6-1 SSOERP Flowchart



The WWC division strives to operate, manage, and maintain all parts of the sanitary sewer system to prevent SSOs and mitigate the impacts quickly and efficiently should an SSO occur. The On-Call emergency vehicle contains a three-ring binder that includes the division's SSO emergency response manual, the response plan, chain of communication, and notification procedures. In addition, the truck is equipped with the necessary tools and equipment to control and contain overflows and clear lower lateral blockages. The truck is outfitted with pneumatic plugs, rubber berms, and dry sweep, all of which are effective means of containment. **Table 6-2** summarizes the division's notification procedures.

Table 6-2 Notification Guide

If SSO	And Affects	Notify
Discharges 1,000 gallons or greater to surface water or spilled in a location where it will probably be discharged to a surface water, shall, as soon as possible, but no later than two (2) hours after becoming aware of the discharge		• WWC Supervisor- Shane Rodgers Office -916-746-1894 Cell -916-223-7711 • WWC Supervisor – Kevin Ryan Office – 916-746-1895 Cell- 916-223-7537 • WWC Superintendent – Dan Pruden Office – 916-746-1891 Cell- 916-580-5600 **<u>The individuals above are responsible for notifying:</u>** • OES 1-800-852-7550 **Obtain control number, complete field spill report form** **<u>Additional Numbers for Reference</u>** • **Placer County Environmental Health** 1-530-745-2300 Main Line 1-530-745-2306 After Hours Supervisor • **California Department of Fish and Wildlife** 916-445-0045 Option #2
	Sacramento River Enters structure, requires cleanup	• **Sacramento River Water Treatment Plant** 916-808-4961 916-264-5011 • **City of Roseville- Risk Management** 916-774-5420 or 916-774-5202 After hours- Dave Rawe 209-613-9448 If no answer, authority is for cleanup only from Restoration Companies listed in SSOERP

6.2 Emergency Response Procedures

City of Roseville Wastewater Collection has developed the following procedures for responding to Sanitary Sewer Overflows (SSOs). The purpose of these procedures is to ensure that all SSO responses are conducted efficiently and effectively, meeting all regulatory requirements of the general order.

6.2.1 Goals of SSOERP

The purpose of this SSOERP is to ensure that the City of Roseville Wastewater Collection personnel follow established guidelines in cleaning up and decontaminating SSO's which have occurred within the City's collection system service area. The goals with respect to responding to SSO's are:

- ***A.*** *Respond quickly to minimize the extent of the SSO;*
- ***B.*** *Eliminate the cause of the SSO;*
- ***C.*** *Contain the spilled wastewater to the extent feasible.*
- ***D.*** *Eliminate public contact with the SSO;*
- ***E.*** *Mitigate the impact of the SSO; and*
- ***F.*** *Meet the RWQCB Monitoring and Reporting requirements*

6.2.2 Investigate and Assess Problem (WWC Personnel)

Assessment starts with the phone call from the customer. Advise customer to stop all use of water in the home or business. Obtain as much information from customer as possible. Relevant information includes:

- Description of problem
- Specific location (e.g. manhole in street, front or back of property, cleanout box)
- Time the possible SSO was noticed
- Any other observations from the caller (e.g. odor, duration of spill, currently spilling)
    - If you believe an active spill is occurring, mobilize a hydro-vac prior to arriving to access the call.

The City staff person that arrives first to the scene, is considered the ***First Responder***. Upon responding, city staff member performs a quick assessment of the overflow to determine the extent of the overflow.

The ***First Responder*** is responsible for the following:

- Requesting additional wastewater crews or other personnel as needed
- Notification of Superintendent/Supervisor in the event of Category 1 or 2 SSOs

- All field documentation including pictures of the SSO and final field spill report.
- Protection of the health and safety of the public by preventing contact with the SSO

The first responder shall:

A. Locate SSO by address, cross street and point of overflow (i.e. manhole, cleanout, pump station, broken pipe). Note time call was received, as well as time of arrival. See Appendix A for documenting start time of SSO.

B. Determine the current magnitude of the SSO

1. Flooded Structure? - *See Appendix B*
2. Storm water inlet or drainage way
3. Potential for public exposure
4. Related problems
    i. Is overflow related to a street collapse?
    ii. Is overflow related to construction work?
    iii. Is overflow causing a traffic hazard such as displaced manhole cover or street flooding?
5. Provide initial estimate of overflow rate using pictures and tables (see tab 6 for spill estimation)
6. If SSO is a category 1 or 2 spill, notify WWC Supervisor or Superintendent as soon as possible, then refer to Sec. II and start containment
7. If SSO is category 3 spill, refer to Sec II, and start containment
8. Spill categories are defined below:
    *i. Category 1 – spill is defined as **any amount** of wastewater resulting from a failure or flow condition that **reaches surface water** or a drainage tributary to surface water.*
    *ii. Category 2 –defined as discharges of wastewater of 1,000 gallons or greater, resulting from a failure or flow condition that **do not reach** surface water or a drainage channel or storm system unless the entire SSO discharged has been fully captured and disposed of properly*
    iii. Category 3 – spill is defined as all other discharges of wastewater resulting from a failure or flow condition in the enrollee's system.

NOTE: Superintendent or his designee will handle all notification to regulatory agencies regarding the reportable SSO.

C. *If SSO reaches surface water or drainage channel tributary to surface water, and is 50,000 gallons or greater, sample receiving water to obtain baseline data. Refer to Appendix C for sampling information.*

6.2.3 Contain SSO (WWC Personnel)

The overflow must be contained. Containment becomes more difficult if the overflow reaches the storm drain system or drainage way, since the overflow can rapidly contaminate receiving waters, such as creeks, streams, rivers, and other water bodies. During dry weather, the storm drain system can be used to store the overflow, if it can be plugged downstream of the overflow point.

A. Options for containing overflow

1. Containment berm at catch basin or drain inlet
2. Rubber mats and sandbags at catch basin or drain inlet
3. Sandbags in gutter
4. Dig trench in ground
5. Dry sweep
6. Vactor

B. Overflow in building

1. If necessary, evacuate affected people
2. Advise customer to keep family members and pets out of contaminated areas, and not to track contamination throughout non-affected areas.
3. Notify Risk Management at 774-5420 or 774-5202 during business hours. After hours, of if no answer, contact Dave Rawe at 209-613-9448.
4. If adjuster or Risk Management can't be reached, contact one of the approved restoration companies starting with:
    i. Restoration Management Co. 800-400-5058
    ii. Serv-Pro 916-632-2250
5. ***If Restoration Company arrives before the adjuster, authorize only emergency cleaning services only. Hand resident our camera and request them take pictures of affected area. Do not enter house***.

6. If property owner declines cleaning services, request they sign and date the Declination of Clean Up Services Form.

C. Overflow into storm drain/drainage ditch

1. Trace overflow in storm drainage system to downstream end point.
2. Plug all affected storm drain outfalls or block the creek and channels to contain spill.
3. Turn off storm water pump station if available
4. Hydro mains and vacuum all water from storm drain basin and system.

D.If SSO is a Category 1 spill, post warning signs around containment area and follow directions from RWQCB Staff (Region 5) or Fish and Wildlife Staff.

E. Example equipment for containing overflows.

1. Overflow onto ground or into building structure.
   i. Containment berm
   ii. Sand bags
   iii. Plastic sheets
   iv. Dry sweep
   v. Vactor
2. Overflow into a storm drain/drainage way
   i. Pneumatic plugs
   ii. Bypass pump
   iii. Vactor
   iv. Sandbags
3. Overflow at lift station
   i. Vactor
   ii. Bypass pump
   iii. Emergency generator
4. Warning signs to post around contaminated area.
5. Begin preliminary notifications – Refer to SSO notification guide

6.2.4 Traffic Control (WWC Personnel)

Traffic control may be needed immediately to protect the health and safety of the public and/or maintenance staff. Typically, immediate traffic control is needed if

there is a street collapse or significant depression in the pavement that is related to the sewer, if the manhole cover is ajar, or if the overflow causes flooding of the street. Traffic control may be needed to prevent wastewater from being further dispersed and to protect the maintenance crew while containing the overflow and removing the blockage.

A. Provide traffic control per Cal Trans Work Area Traffic Control Handbook (WATCH)

B. If necessary, use other departments (i.e. Police/Fire, Public Works) to ensure proper traffic control.

C. Control public contact with the SSO by isolating the area with barricades, signs or traffic cones.

6.2.5 Correct Cause (WWC Personnel)

The cause of the overflow may be located a considerable distance downstream of the SSO in areas with flat terrain. During large storms, overflows can be caused by excessive I&I in the collection system. I&I can greatly increase the flow in a collection system and cause overflows from pipes that are only partially blocked. I&I can also directly affect the hydraulic capacity of mainlines and lift stations. Under these conditions, it may not be possible to stop the overflow, until the flows recede.

A. Locate cause of overflow

1. Sewer main
    i. Check flow in manholes
    ii. Blockage should be between a manhole with sluggish flow or surcharging and a manhole with very little flow or is dry.
2. Sewer service
    i. Check flow in city cleanout. If cleanout is dry, and resident is still plugged, stoppage is located on private property, and is not the city's responsibility.
    ii. If no city cleanout exists, but the resident has a 4" private cleanout, run this private cleanout to clear the blockage. Once cleared, CCTV to determine the location of problem (***Refer to Appendix D, Sec 6***)
    iii. If no city or private cleanout can be located, check mains, both upstream and downstream. If the main is running clear, notify

the resident the problem is on their side, and explain city cleanout policy

iv. If service line is on a dead end run, regardless if the cleanout is clear, clean the mainline segment with Vactor.

3. Lift Station
    i. Check alarm status inside control panel for indication of problem.
    ii. If power is present, but pumps aren't operating, switch control to hand.
    iii. If pumps operate in hand, refer to Lift Station Failure Procedure (Tab 10).
    iv. If no power is present, contact Roseville Electric, determine remaining level in station, and contact Collection Personnel for assistance. Refer to Lift Station Failure Procedure (Tab 10)

B. Clear Blockage

1. Sewer Main
    i. Clear mainline blockage using Vactor from dry manhole.
    ii. Determine possible cause of blockage and note on Field Spill Report Form.
    iii. Refer to SOP WWC-002 For Vactor
2. Service Line
    i. Clear blockage using Gas powered EEL or Model C Electric Eel. Refer to SOPs WWC-007 and 020
    ii. Call additional personnel is assistance is needed.
3. If blockage cannot be cleared
    i. Increase containment and initiate bypass pumping
    ii. Perform CCTV inspection to determine potential problem
    iii. Dig and repair sewer line at blockage location

C. Lift Station

1. If no power is present :
    i. Contact Roseville Electric to verify outage and time estimation of power being restored.
    ii. Determine the wet well level and remaining downtime left at the station.

iii. If downtime exceeds the max allowable retention, contact collection system personnel, and request Vactor support.
iv. If power outage is extensive, contact additional personnel for 2nd Vactor support.
v. Continue vacuuming wet well until power is restored, and lift station is running in auto.

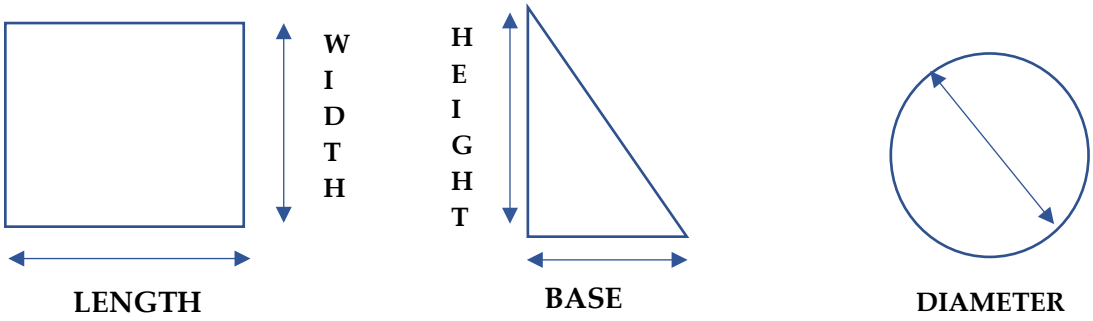
2. If power is present, but pumps aren't operating:
    i. Attempt to operate pumps in "hand" position. If pumps do operate in "hand", contact on call electrician, and continue to operate and monitor levels in the wet well.
3. If SSO is caused from force main failure, all power to lift station panel will be controlled using identified energy control procedures (ECP). Wet well levels will continue to be monitored using Vactors or by-pass pumping, until repairs can be made to force main.
4. If portable generation is needed at lift station, on call electrician needs to be present for the connection. All panels have external plugs and disconnects for portable generation connection. Each lift station location has a specific pre-made cable for generator connection.

6.2.6 Final Volume Estimate (WWC Personnel)

The final overflow volume is estimated to determine if additional reporting to regulatory agencies is required and for the City of Roseville's records when reporting to CIWQS. A minimum of five (5) pictures are required for every spill response, and locations are noted on the field spill report. Place an object in the photo for contrast. The following methods are approved for determining the gallons spilled during an overflow event.

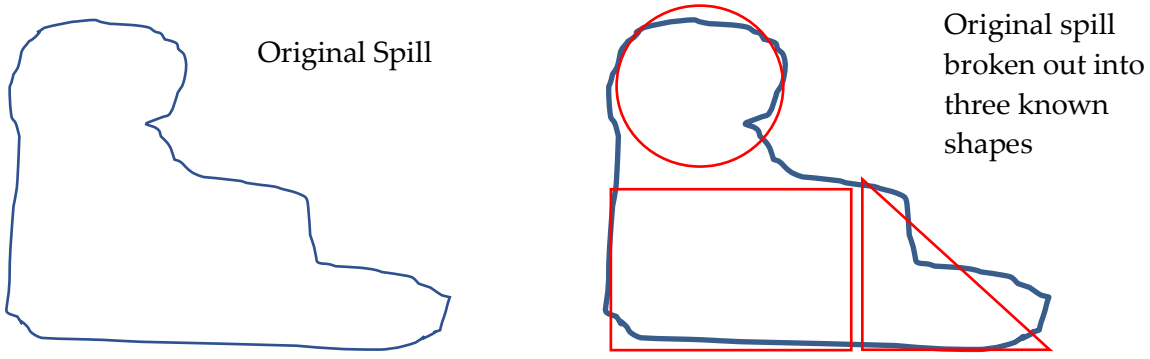
Eyeball Estimation- Estimate the overflow rate out of a clean out by estimating the time needed to fill up a known volume, such as a five-gallon bucket. Imagine the amount of water that would spill from this bucket. This method is useful on spills that occur on hard surfaces such as concrete or asphalt

Measured Volume- The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions and depth of the contained wastewater are needed. This information is used to calculate area and volume of the spills.



1. Determine the shape of the spill
2. Measure or pace off the dimensions. Measure the depth at several locations and calculate the average. Convert all dimensions to feet.
3. To calculate the area square footage, use the following:
    a. Rectangle: Length (ft.) x Width (ft.)
    b. Triangle: Height (ft.) x Base (ft.) x .5
    c. Circle: Diameter (ft.) x Diameter (ft.) x .785
    d. Multiply the area (sq. ft.) by the depth (feet), to get the volume in cubic feet. Multiply your volume by 7.48 to convert to gallons.

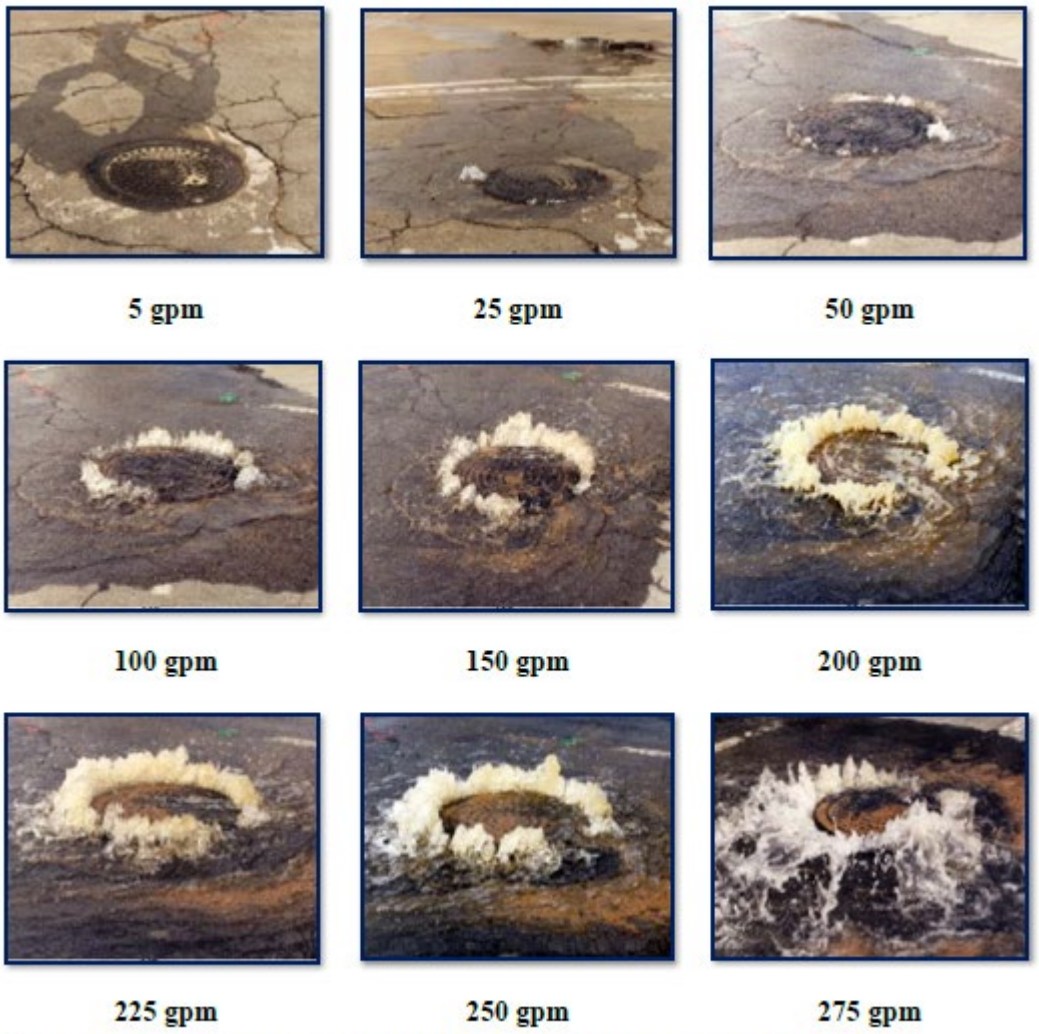
Not all SSO's will conform to the shapes above. If this occurs, break the area up as much as possible into known shapes and calculate the volume in each.



Calculating large volume spills is challenging because the area and depth are difficult to measure, and chances are these spills are not fully contained. Several methods are available to determine the volume.

Flow Estimation Chart- The table below (Section 5 of the SSOERP binder) presents pictures with varying flowrates of sewage overflowing from a manhole. Estimate the overflow rate by comparing the overflowing manhole with the pictures shown below.

Estimating Sewer Flow Rates from Overflowing Sewer Manholes[1]



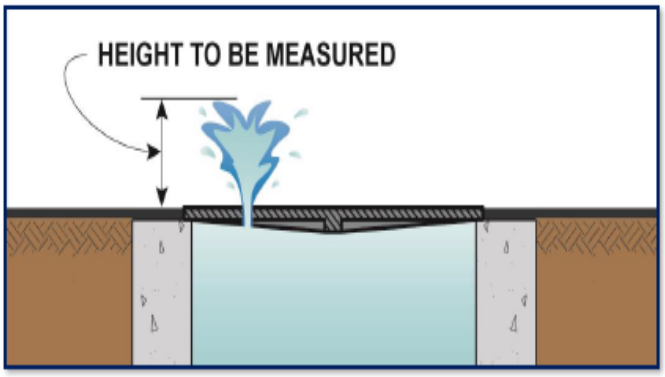
[1] Sourced from City of San Diego Metropolitan Wastewater Department "Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes" (April 1999).

Flow Rate and Duration- Overflow volume can be estimated by multiplying the overflow duration by the overflow rate. The overflow rate can be determined by pick hole or vent hole spill height (section 5, SSOERP binder), flow meter data, SCADA information and pump data from lift stations.

The overflow volume can be estimated with the following formula:

Volume (gal)= estimated flow rate (gpm) x duration of overflow (minutes)

The charts below represent measurement point and flow rates based off height of water column measured



Height of Spout Above Manhole Frame, H (inches)	SSO Flow Rate, Q (gpm)	Height of Spout Above Manhole Frame, H (inches)	SSO Flow Rate, Q (gpm)
1/8	1.0	5 1/8	6.2
1/4	1.4	5 1/4	6.3
3/8	1.7	5 3/8	6.3
1/2	1.9	5 1/2	6.4
5/8	2.2	5 5/8	6.5
3/4	2.4	5 3/4	6.6
7/8	2.6	5 7/8	6.6
1	2.7	6	6.7
1 1/8	2.9	6 1/8	6.8
1 1/4	3.1	6 1/4	6.8
1 3/8	3.2	6 3/8	6.9
1 1/2	3.4	6 1/2	7.0
1 5/8	3.5	6 5/8	7.0
1 3/4	3.6	6 3/4	7.1
1 7/8	3.7	6 7/8	7.2
2	3.9	7	7.2
2 1/8	4.0	7 1/8	7.3
2 1/4	4.1	7 1/4	7.4
2 3/8	4.2	7 3/8	7.4
2 1/2	4.3	7 1/2	7.5
2 5/8	4.4	7 5/8	7.6
2 3/4	4.5	7 3/4	7.6
2 7/8	4.6	7 7/8	7.7
3	4.7	8	7.7
3 1/8	4.8	8 1/8	7.8
3 1/4	4.9	8 1/4	7.9
3 3/8	5.0	8 3/8	7.9
3 1/2	5.1	8 1/2	8.0
3 5/8	5.2	8 5/8	8.0
3 3/4	5.3	8 3/4	8.1
3 7/8	5.4	8 7/8	8.1
4	5.5	9	8.2
4 1/8	5.6	9 1/8	8.3
4 1/4	5.6	9 1/4	8.3
4 3/8	5.7	9 3/8	8.4
4 1/2	5.8	9 1/2	8.4
4 5/8	5.9	9 5/8	8.5
4 3/4	6.0	9 3/4	8.5
4 7/8	6.0	9 7/8	8.6
5	6.1	10	8.7

Unrestrained manhole cover will start to lift

Figure 3- Flow Rate Exiting MH Pick Hole

Estimated Flow EDU Chart- This method can be used for overflows from residential properties when enough information has been gathered through interviewing the resident. Be clear with your questions and explanation for the interview. Only interview residents from the household contributing to the SSO. The table below is based off our design criteria of 190 gpd. and is included on the Field Spill report. It is a quick way to estimate volume from small overflows.

Figure 4- EDU Flow Chart

Time Period	Estimated City Flow Rate Per EDU (190 gpd)				Spill	
	A	B	C	D	E	F
	Gallons Per Period	Hours Per Period	A÷B = Gallons Per Hour	C÷60 = Gallons Per Minute	Minutes Spill Was Active	D x E= Gallons Spilled Per Period
6am -Noon	75	6	12.5	.21		
Noon – 6pm	55	6	9.16	.15		
6pm - Midnight	50	6	8.33	.14		
Midnight - 6am	10	6	1.67	.03		
					Total Estimated Spill Volume	

However, if a large spill occurs with multiple homes, commercial or mixed-use involved, and there isn't sufficient information to calculate an estimate, use the City of Roseville Design Standard 9-2, Average Dry Weather Unit Flow Factors chart below. Count the units that are affecting the overflow and multiply by the flow factors on the chart below based on the land use designation

Table 1 – Average Dry Weather Unit Flow Factors

Land Use Designation	Units	Flow Factor (gpd/unit)[1,3]
Commercial	gpd per acre	850
Heavy Industrial	gpd per acre	850
Light Industrial	gpd per acre	850
Mixed Use	gpd per acre	2,300
Public/Quasi-Public	gpd per acre	660
Schools	gpd per acre	170
Residential 1 DU	gpd per DU	190
Residential 2 DU	gpd per DU	190
Residential 3 DU	gpd per DU	190
Residential Multiple DU[2]	gpd per acre Or gpd per DU	2,040 Or 130
Open Space	gpd per acre	0
Parks> 10 Acres	gpd per acre	10
Vacant	gpd per acre	0

6.2.7 Initiate Cleanup (WWC Personnel)

Disinfection of contaminated soil or drainage ways is only performed when directed by appropriate agencies such as Placer County Environmental Health and CA Dept of Fish and Wildlife

A. Flooded building or structure

1. If building or structure is flooded due to a failure in the city's collection system, contact Risk Management or Dave Rawe after hours. Risk Management will respond and assess and notify restoration companies on contract with the city.
2. Storm Drain or Drainage Way
    i. Pump out or vacuum any ponded water present
    ii. Remove debris
    iii. Wash concrete and contain all wash water and remove
    iv. Remove contaminated soil and plants
    v. High pressure clean affected storm drains and vacuum all water
    vi. Remove all containment and finish flushing and vacuuming area
3. Street, Curb or Gutter
    i. Remove debris with Vactor
    ii. Wash pavement, curb and gutter area , and vacuum all water with Vactor
    iii. If Vactor decant pump is used, utilize decant apparatus to alleviate possibility of secondary spill and provide fall protection at open manhole.

6.2.8 Receiving Water Sampling (Industrial Waste Section)

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

I. Contain protocols for water quality monitoring
II. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions)
III. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
IV. Require instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration to ensure their continued accuracy.
V. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents
    a. Ammonia
    b. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e- coli.

6.2.9 Notification Requirements (Superintendent/Supervisor)

All overflows are required by law, to be promptly reported to regulatory agencies. The Legal Responsible Official (s) or their designee will make all notifications to regulatory agencies regarding reportable SSOs. All SSOs are tracked in the City of Roseville's CMMS.

- **A.** Prompt notification to regulatory agencies will be achieved by using the SSO Notification Guide (Tab 4)
- **B.** All information regarding the spill will be documented on the SSO Field Report Form
- **C.** Documentation and Data Tracking
    1. All SSOs are tracked with a service request module in the City of Roseville's CMMS. Completed service requests, work order requests and any overtime tags are turned into Superintendent/Supervisor for QA/QC. These are all resolved in the CMMS. Service requests for after-hours call will be generated the following business day.
    2. Follow up PM work orders are generated to CCTV inspect affected lines and recommendations from CCTV crew are reviewed by Superintendent or Supervisor. Further recommendations regarding repair, replacement, or preventative maintenance schedule adjustment are made on the System Failure Analysis Form.
    3. Field report forms are turned into Supervisor or Superintendent, who enters data into the CIWQS website. A minimum of 5 pictures is required for every SSO
- **D.** Ensure that all appropriate documentation has been completed in the CMMS.
    1. Private commercial spills, crew will provide a work order request to Supervisor documenting hours worked, equipment used and actions taken for billing purposes.
    2. Private residential spills, crew will provide a work order request to Supervisor documenting hours worked, equipment used and actions taken.

6.3 Staff and Contractor Training

To train WWC Employees on the importance of the SSOERP, Supervisors created a Powerpoint Presentation as a training resource. The interactive presentation covers the written SSOERP in a classroom setting. This setting allows employees to clarify any elements within the procedure. The annual training is followed by a competency test and classroom spill simulation. In addition, WWC employees built a spill simulator in the training yard at the DCWWTP to test employees' skills in estimating spills. If desired, supervisors can create spills from either a manhole, cleanout, or both. The water is metered and creates an accurate simulation within the confines of the WWTP.

Contractors are provided with the City's wastewater collection system policies and procedures. Per the contract, they are required to train all their employees on the City's wastewater collection system policies and procedures before performing work on the City's wastewater collection and conveyance system.

6.4 Spill Mitigation and Containment

The WWC Division has written the attached SOP for spill mitigation and containment. The plan is described throughout the SSOERP and in the Table 6-1 flowchart. Whenever a Sanitary Sewer Overflow (SSO) occurs, the highest priority is to contain the overflow and minimize the exposure to the public or the environment. This procedure will address the specific processes available to contain an SSO. Containment of an SSO becomes more difficult once the overflow reaches storm drain systems or a waterway. The quicker the source and the extent of the overflow can be identified, contained, or controlled, reduces the SSO's impact exponentially. Following the Sewer System Management Plan (SSMP) goals, quick response and containment will protect public health and safety while minimizing the environment's negative impacts.

The assessed hazards that may exist when responding to an SSO are:

- Traffic control
- Bloodborne pathogens
- Slips, trips, and falls
- Atmospheric conditions
- Pneumatic plugs
- Sprains and back injuries

Upon arrival to the location, survey the scene to determine the potential overflow location and source. There are times when called for a sewer overflow, and the source is potable water or storm drainage. Once determined, the water source is the sewer, mobilize the necessary wastewater collection personnel and equipment needed for assistance. Determine the category of the overflow, discharge points, and whether the SSO can reach Water of the State. Immediate notification to the Office of Emergency Services is required, should the overflow reach waters of the state. If the spill cannot be eliminated by controlling water flow from a residential or commercial building, more than likely, this spill is either a plugged main, structural deficiency, or an inoperable lift station. The area impacted by the spill and the potential work area shall be secured to divert vehicle traffic and pedestrians away from the area by using any combination of signs, cones, delineators, barricades, arrow boards, or caution tape. Multiple techniques are identified to contain the spill depending on the circumstances, spill category, and material available. In no order, the list below is possible containment options.

Containment Situation	Options for Containment
Curb and Gutter	• Create berm with rubber berm, dry sweep, dirt, or sandbags; Utilize natural low spots or grade deviations • Use hydro-vac to control overflow

Lift Station Failure	• Use hydro-vac to contain • Backup generator • Bypass pumping
Open Space	• Dig a trench for containment • Sandbag berm • Dirt berm
Creek	• Plug all affected storm drain inlets
Storm Drain System (Dry)	• Plug all affected storm drain inlets; plug outfall if necessary • Contain using the hydro-vac • Request additional hydro-vac support if necessary
Storm Drain System (Storm Event)	• Plug all affected storm drain inlets • Emergency bypass pumping • Turn off stormwater pump station if applicable
Building	▪ Evacuate residents if needed ▪ Pop cleanout cap off; If no city cleanout, attempt to locate ▪ Pop private cleanout if available ▪ Contain outside if overflow is relieved by locating/removing cleanout cap

Containment with Hydro-Vac

Determine a location downstream of the spill appearance point where the hydro-vac unit can be set up and capture all water, including wash down water. Ensure no storm drain inlets are between the containment point you choose and the overflow point. Continue vacuuming overflow until the blockage has been cleared. Once cleared, wash remaining spill water to the vac tube to be vacuumed up.

Containment Using Berms and Mats

Utilize dirt, rubber berm, dry sweep, or other obstructing material to block drain inlets and pond the spill to a low natural area to contain and minimize the spill's effects. If possible, divert the spill to a downstream manhole that is not affected by the blockage.

Attempt containment by covering the affected storm drain inlet with rubber mats. Secure the mat in place with sandbags, dirt, or other heavy objects to keep in place.

Containment Using Pneumatic Plugs

Plugging the affected drain inlet or multiple drain inlets with a pneumatic plug can be effective. A pneumatic plug in the storm drain outfall would prevent the overflow from reaching the waterway. However, depending on the location within the City, drain inlets will vary in size, so utilizing plugs may not be the best option.

SSOERP- Appendix A- SSO Start Time Policy

Upon receiving call, note exact time that call received from answering service or administrative staff. This time will be used as a **base** for when the SSO started. Notify resident or business to stop using all water if possible.

A. Upon arrival, note if spill location point is or is not actively spilling. If not spilling from spill location point, but there is clear evidence of spill that requires a Vactor for cleanup effort, then document occurrence as a spill.
B. Initiate SSOERP to ensure that the SSO is contained, and the cause is corrected.
C. Photograph all affected areas, during the SSO, demonstrating containment and after cleanup. Use something in picture to gauge size of area features (i.e. tape measure, 5 gal bucket, etc) Email pictures to the Superintendent after completing necessary paperwork.
D. Provide detailed description of the SSO event, including exact times of arrival, SSO stop time, containment procedures, and names of collection personnel assisting you in the overflow.
E. The following questions should be asked of the resident or the individual reporting the potential SSO:
    1. Did you notice water coming from the cleanout at the property line or manhole in the street? If so, what was the approximate time?
    2. Were your drains running slowly at any time prior to you calling? If so, what was the approximate time?
    3. If there were neighbors outside, close to the area of the SSO, did they notice water spilling? If so, what was the approximate time?
    4. Be prepared to provide a brief summary of how you determined the start time, describing the steps you took while coming to your decision.
F. If the above questions do not produce an accurate account for the SSO start time, use the time the call was received by either the office personnel or the after-hours answering service, and subtract 15 minutes. Record this time as actual start time on the SSO Field Report Form.
G. If the evidence of the spill travels a farther distance than the logic of the 15 minutes, the field crew/responders shall try to recreate the spill the following day, using clean water.
H. In the event of an SSO from a sewer lift station, the start time will be determined using information gathered from the SCADA system.
I. SSO Stop time will be determined by either:
    1. The arrival time of the service worker if the overflow had stopped prior to their arrival.
    2. Clearing the blockage.
    3. Interview of resident or witnesses

SSOERP Appendix B- Flooded Structure Procedures

In the event a failure in the City's wastewater collection system causes a Sanitary Sewer Overflow in a resident's home or business, instruct them to:

1. Keep people and pets away from the affected area(s), and do not track contamination throughout non-affected areas.
2. Don't attempt to clean up the overflow. Instruct them the city has restoration companies available and will respond.
3. Turn off all central heat and air-conditioning systems and prevent flow from reaching any floor vents with towels or blankets.
4. Leave these items in the affected areas for restoration companies to cleanup.

Contact Risk Management at 774-5420 or 774-5202 during normal business hours. After hours, of if no answer, contact Dave Rawe, Risk Manager at 209-613-9448. They will assess and notify restoration companies on contract with the city to respond. If the resident refuses the offered clean-up services, ask them to sign the declination letter, refusing the service.
If the resident chooses to file a claim for damages, instruct them they must fill out a Government Claim Form.

A claim form can be obtained in the following ways:

- In person at the Roseville Civic Center, City Clerks Department and Risk Management Division, 311 Vernon St., Roseville, CA .
- By mail, by contacting the Risk Management Division at (916) 774-5202 or e-mailing the request to riskmanagement@roseville.ca.us
- Electronically by following this link: http://www.roseville.ca.us/hr/risk_management/how_to_file_a_claim.asp
- Completed forms must be returned by mail or in person to the City Clerk's office at the Roseville Civic Center.

SSOERP Appendix C- Water Quality Sampling

This water quality sampling procedure describes the process and the sampling methodology to be used in the event of a sanitary sewer overflow exceeding 50,000 gallons. The water quality sampling results will enable the division to prioritize areas of concern regarding water quality impacts. Surface water samples will be collected using a grab sample technique. Employees are required to wear new sterile powder free surgical gloves when collecting all samples.

Trigger for Sampling -Water quality sampling is required within 48 hours of initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.

Safety and Access- Water quality sampling should only be performed if it is safe to do so, and access is not restricted or unsafe. Unsafe conditions include traffic, heavy rains, slippery or steep creek banks, visibility issues, high flowing creeks and limited access due to soil conditions or poor terrain.

Where to Sample-

1. Source of SSO - Determine the entry point (source) of the SSO into the creek, and move downstream approximately 10 feet downstream.
2. Upstream Sample – Sample at a point 100 feet upstream from the source.
3. Downstream Sample – Sample at a point 100 feet downstream from the source. Determine the water velocity present in the creek or body of water during the SSO. Dropping debris in the creek, and timing how long the debris takes to travel a known distance is a good indicator of the water velocity present. Use this information to determine the next downstream sampling point. Multiply the water velocity by the spill duration to figure the furthest point downstream to sample.

Sampling Procedure-

1. Put on required PPE (safety glasses and latex gloves)
2. ***Collect Upstream Sample*** - Move approximately 100 feet upstream of the source.
    - **a.** Label the bottle accordingly and take a picture of the location you are sampling.
    - **b.** Sample away from the bank and avoid any debris or scum layer from the surface.
    - **c.** Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.

d. Use a thermometer to measure the temperature of the upstream sample location and record the results.

3. ***Collect Source Sample-*** Move approximately 10 feet downstream of the source location.
    a. Label the bottle accordingly and take a picture of the location you are sampling.
    b. Sample away from the bank and avoid any debris or scum layer from the surface.
    c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
    d. Use a thermometer to measure the temperature of the source sample location and record the results.
4. ***Collect Downstream Sample –*** Move approximately 100 feet downstream of the source.
    a. Label this sample "Downstream 1" and take a picture of the location you are sampling.
    b. Sample away from the bank and avoid any debris or scum layer from the surface.
    c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
    d. Use a thermometer to measure the temperature of the downstream sample 1, and record the results
5. ***Collect Downstream Final Sample*** - After using the velocity and distance to determine the furthest downstream sample point, move to that location.
    a. Label this sample "Downstream Final" and take a picture of the location you are sampling.
    b. Sample away from the bank and avoid any debris or scum layer from the surface.
    c. Fill the bottle against the direction of flow, replace the cap and secure the sample to avoid contamination.
    d. Use a thermometer to measure the temperature of the sample, and record the results

Required Water Quality Analyses – As detailed in section C-5 of Monitoring and Reporting Program (MRP), Order WQ- 2013-0058, a Technical Report shall be submitted in CIWQS online database with 45 calendar days. All samples will be immediately transported to the nearest certified water quality laboratory for analysis (DCWWTP or PGWWTP labs). The sample analysis, at a minimum will include the following:

1. Ammonia
2. pH
3. Electrical Conductivity

4. Bacterial indicators, such as total and fecal coliform enterococcus and e-coli, per the regional Basin Plan or as directed by SWRCB
5. Temperature

Equipment and Supplies – The following items and PPE are required for sampling:

1. Cooler with Blue Ice
2. Sterile sampling bottles
3. Powder free latex gloves
4. Safety glasses
5. Marking pen
6. Field log forms

SSOERP -Appendix D- Sewer Call For Service

When dispatched to a home experiencing sewer problem, the following procedures should be adhered to provide the resident with the best possible customer service and quickly correct the problem causing the SSO.

Residential

1. Contact the homeowner or resident upon arrival. Explain the process you will use to determine the problem. Resident should have already been instructed to stop all water use, so if water is still spilling from cleanout, check the nearest upstream manhole on the mainline for a blockage.
2. If no cleanout is visible, look in CMMS for cleanout location, look for an "S" marked in the curb, or other information that might indicate a cleanout.
3. If a city cleanout is found, clear the lateral blockage using the eel and a root cutting head, do not use a hand tape. CCTV to ensure line is clear, and all blockages have been removed. Record all time and pertinent information you have found on a work order, service request, or for after-hours calls, your overtime tag.
4. If no cleanout is found, locate the closest downstream manhole, and call for Vactor assistance, and run the main.
5. If the residence does not have a city cleanout, and the above procedures did not alleviate the blockage, we will use our equipment to run a "Viable" cleanout that belongs to the resident. This "viable" cleanout should be a factory fitting 4" cleanout, either a wye or combo wye, that we can easily get our equipment into and service the line. Once the line has been cleared, we will CCTV through this same cleanout, and determine where the blockage was located.
6. If the blockage was located below the location a city cleanout should be installed, we will schedule a cleanout installation during normal business hours.
7. If the blockage is located within the customer's service line, notify them that the problem is in their portion of the lateral, the location and severity of the problem. Advise the resident of the City's policy for cleanout installation, and let them know this is a one-time service, and the city will not clear future blockages from the homeowner's cleanout.

   Document all information in the CMMS under activity code- SPHCC, (Sewer Plug Homeowner City Cleared) on a service request.

Private Commercial

When dispatched to a commercial property experiencing an SSO, start containment of the spill immediately. Notify the manager to stop using water and to call a plumber. Make sure the manager understands City staff will be containing the spill until their plumber responds, and they will be billed for staff and equipment. If after 60 minutes, the plumber doesn't show, notify Placer County Health Department. Notify your supervisor that the health department has been called and to discuss possibly clearing the main or service.

SSOERP Appendix E- Sewer Lift Station Failure Response

The purpose of this procedure is to define strategies necessary to prevent an SSO from a lift station, in the event of a power or component failure within a lift station. The City of Roseville operates and maintains 17 neighborhood lift stations. Each station is equipped with SCADA, monitored 24 hours per day by wastewater treatment plant personnel. Each station has the maximum allowable downtime posted inside the door of each control panel. This identifies the retention time and the storage capacity in the collection system assets, before an SSO will occur. The lowest identified manhole is also identified to assist on call personnel in determining the remaining downtime. In the event of a lift station failure, the plant operator will notify the answering service that an alarm has been activated at a station, and the on-call service worker will respond and assess the alarm.

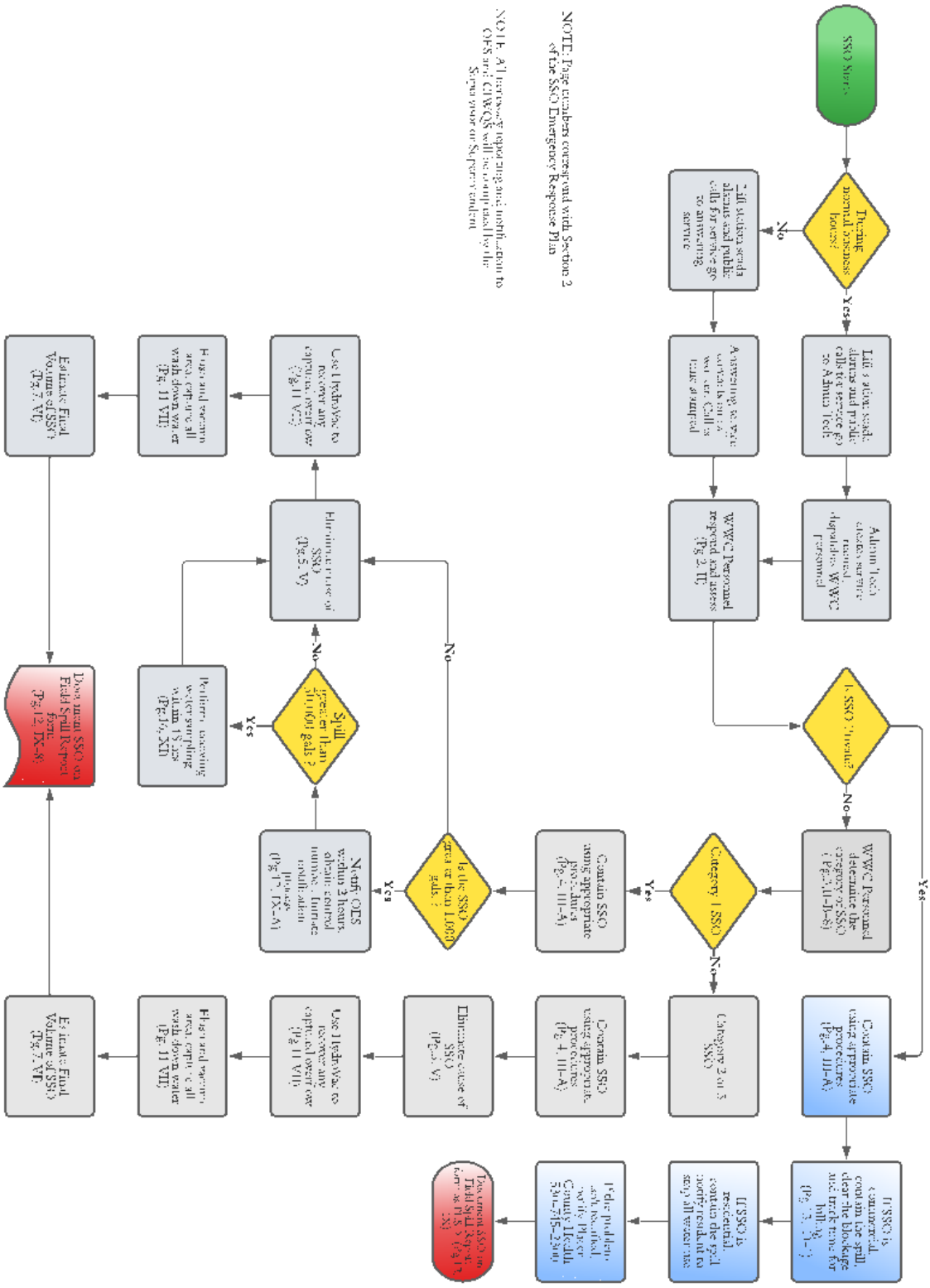
If no power is present in the panel, the service worker will:

1. Contact Roseville Electric at 774-5620, to verify they are aware of the outage.
2. Determine the level, and remaining downtime left in the station.
3. If downtime will be more than the maximum allowable retention, the on call service worker will call collection system personnel off the standby list, to get a Vactor in route. The Vactor will decant water at an identified point in the system, which won't affect the left station levels. If it appears that one Vactor won't keep up with flows, the on call service worker will call in additional personnel with Vactor to maintain levels in the station.
4. If outage appears to be a lengthy process, contact supervisor. Portable generator may be needed. In this event, an electrician will be needed.
5. Once flows are maintained, contact Supervisor to make them aware of the situation.

If Power is present in station, but pumps are not operating, the service worker will:

1. Attempt to operate the pumps in "hand" mode to eliminate the possibility of an SSO
2. If the pump operates in "hand", continue operating and monitor the levels in the wet well. Contact the On Call Electrician @916-532-0612 and continue to monitor.
3. If station will not operate in hand mode, call additional personnel in with Vactor to monitor wetwell levels. Vacuum and decant accordingly, until the problem is rectified.
4. If it appears that one Vactor won't keep up with the amount of flow into the wet well, the service worker will call in a second Vactor to maintain the levels in the station.
5. Standby and assist on call electrician, until the station is operational.

SSOERP Appendix F- SSO Chain of Communication



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7 FOG Control Program

D.13 (vii) Each enrollee shall evaluate its service area to determine whether a FOG control program is needed. If FOG is found to be a problem, the enrollee must prepare and implement a FOG source control program to reduce the amount of FOG discharged into the sanitary sewer system. The plan shall include (a) public education outreach that promotes disposal of FOG, (b) a plan for disposal of FOG generated within the sanitary sewer system, (c) the legal authority to prohibit discharges to the system and measures to prevent SSOs and blockages from FOG, (d) requirements to install GRD, design standards, maintenance and BMP requirements, and records and reporting requirements, (e) authority to inspect grease producing facilities, enforcement authorities and sufficient staff to inspect and enforce FOG ordinance,(f) identification of sewer sections subject to FOG blockages and pm schedules for each section,(g) develop and implement source control measures for all sources of FOG for each section identified in (f) above.

This chapter describes the City of Roseville's Fats Oils and Grease program, developed as Roseville Municipal Code Section 14.14, in 2008. The ordinance's purpose is to provide the maximum beneficial use of the City's sewer services and facilities while preventing blockages of caused by discharges of FOG into the sewer, specifically from food service establishments (FSEs).
The City relies on two major components to control or eliminate the amount of FOG entering the wastewater system, 1) cleaning and inspection of the collection system on a prescribed maintenance schedule and 2) inspection, enforcement, and education for FSEs. FOG ordinance can be found at: http://qcode.us/codes/roseville/view.php?topic=14-14_14&frames=on

7.1 Public Education Outreach

WWC and Industrial Waste Division personnel developed public outreach materials and handouts that are distributed to all food service facilities managers during the facility inspection. In addition, all FSEs are required by RMC Section 14.14 to apply for a FOG Discharge Permit. The permit application includes references to RMC 14.14, which provides Frequently Asked Questions, Maintenance and Pumping Requirements, and Best Management Practices (BMPs) for the managers to follow. Finally, the City's website below offers links for available public outreach: https://roseville.ca.us/government/departments/environmental_utilities/at_your_service/sewer/sewer_business_customers

7.2 FOG Disposal Plan

Food Service Establishments and FOG generators are responsible for hiring private service providers to pump and haul FOG from their grease removal device at scheduled intervals. The requirement of the permittee is to keep all records, manifests, receipts and invoices for the cleaning

and maintenance of the device, which includes final disposal location. These records shall be provided to any City of Roseville inspector or enforcement officer upon request. Although City does not endorse or recommend services provided by any one service provider, the City will provide a list of service providers that are commonly used by businesses in the area.

7.3 Legal Authority

The WWC Division of Environmental Utilities manages the FOG control program, issuance of permits and performs inspection of all FSEs within its service area. In addition, RMC Chapter 14.14 includes all legal authority necessary to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG. All FSEs are required to provide wastewater that is acceptable to the city, before discharging to the public sewer. A summary of the legal authority is included in Table 7-1.

Table 7-1 FOG Legal Authority

RMC Chapter Number	RMC Chapter Title
14.14.010 (A)	General Provisions- Purpose
14.14.030	FOG-Waste Discharge Permit Required
14.14.040	FOG-Discharge Limitation
14.14.050	Public Sewer Overflow; Nuisance abatement
14.14.070(F)	Prohibitions
14.14.190	FOG Discharge Permit Conditions
14.14.320	Harmful Discharge
14.14.360	Violation-Penalty

7.4 GRD, Design Standards, BMPs, Recordkeeping and Reporting

7.4.1 Requirement to Install GRD

Every FSE at the time of construction, remodel or change in operation is required to install and maintain an approved and adequately sized grease removal device. In addition, at the EU Directors' discretion, may require an FSE that has caused or contributed to a grease-related blockage, install a grease removal device. Depending on the type of facility, certain FSEs may require a grease interceptor, grease trap(s), or may not require a grease removal device (GRD). If during the plan review process, an FSE enrollee does not believe that their operation needs the designated GRD, they can request a variance from the ordinance. The final determination of the variance request is at the sole discretion of the EU Director.

7.4.2 Design Standards

The City Design Standard section 9-10. (G) indicates grease removal device sizing and installation shall conform to the current edition of the California Uniform Plumbing Code. Grease interceptors shall be constructed following the design approved by the director and shall have a minimum of two compartments with fittings designed for grease retention. A 24" access manhole shall be installed over each interceptor chamber. The frame and cover shall be watertight and set to finish grade, making inspection, sampling, and grease removal activities available. In addition, the grease interceptor shall be installed at a location where it shall always be easily accessible for inspection, cleaning, and removal of accumulated grease. The minimum size of a grease interceptor for a new FSE is 1,000 gallons.

7.4.3 Best Management Practices

Every FSE shall implement BMPs in its operations to minimize the discharge of FOG to the grease control device and/or the public sewer. Detailed requirements for BMPs shall be specified in the FOG WDP and all FSEs are required, at a minimum, to comply with the permit BMPs as well as any additional BMPs established by the director. BMPs may include, but are not limited to, kitchen practices and employee training procedures that are essential in minimizing FOG discharge to the public sewer. Additional BMP practices are available on the City's website.
https://roseville.ca.us/government/departments/environmental_utilities/at_your_service/sewer/sewer_business_customers

7.4.4 Records and Reporting Requirements

The permittee shall be required to keep all manifests, receipts, and invoices of all cleaning, maintenance, grease removal of/from the grease control device, disposal carrier, and disposal site location for no less than three years. In addition, the permittee shall, upon request, make the manifests, receipts, and invoices available to the director, any inspector, or an enforcement officer. These records may include an on-site logbook of grease interceptor, grease trap or grease control device cleaning and maintenance practices, a description of BMPs being implemented, including employee training, and copies of records and manifest of waste hauling interceptor contents.

7.5 Authority to Inspect

RMC section 14.14.290 grants the Director, an inspector, or an enforcement officer access to all parts of a wastewater generating and disposal facilities for purposes of inspection and sampling during all times the FSE is open and operating. No person shall interfere, resist or refuse entrance to the Director, an inspector, or enforcement officer attempting to inspect the facility. Any violation of this chapter, or the orders, rules, regulations, and permits issued under this chapter, is unlawful and shall be an infraction or misdemeanor as determined by the city attorney

7.6 Hot Spot Identification and PM Schedule

The WWC Division's CMMS maintains all records for maintenance, inspection, and construction work orders for the collection system. Sewer mains subject to blockages from FOG or mains that require higher cleaning frequency are added to the division's Hot Spot List. These mainline segments tend to have more frequent backups due to sluggish flows, poor grades, and sags, which allow solids to settle and FOG to form. The hot spot list has been compiled based on historical data, field crew observations, and CCTV condition assessments. These mainlines are also identified in a GIS layer in the Roseville GeoViewer, so field crews can access them while performing maintenance in the field. The frequency of Hot Spot cleaning ranges from 1-6 months, depending on history and CCTV inspection data. The WWC division strives to reduce and eliminate these hot spot areas during CIP projects or rehabilitation projects performed by City crews. Mainline segments get added to the Hot Spot list based on conditions noted during CCTV inspection and the current frequency of cleaning. Currently, the WWC division has scheduled maintenance projects with 276 mainline segments identified as Hot Spots.

7.7 FOG Source Control Measures

One of the more significant additions to the WWC FOG program was the requirement of a FOG Waste Discharge Permit (WDP). Ordinances in the RMC require that before discharging any wastewater from an FSE into the wastewater system, the enrollee must obtain a WDP. The WWC division performs facility inspections before the FSE can discharge. The terms and condition of the WDP are as follows.

- Grease interceptors/traps are required for food handling facilities unless the Environmental Utilities Director has issued a waiver or variance (RMC 14.14.130).
- An FSE with a waiver or variance that has caused or contributed to a grease-related Sanitary Sewer Overflow (SSO) will be required to install a grease removal device. In the event it is not practical or feasible to install a grease removal device, the FSE will be subjected to an Annual Grease Mitigation Fee
- Grease removal devices shall be designed, constructed, and installed following California Plumbing Code Title 24, Part 5 and the City of Roseville Design and Construction Standards.
- Grease removal devices shall be maintained by pumping the entire contents when grease and sludge have exceeded 25% of the capacity of the interceptor, including removal of entire contents each time the interceptor is pumped. The interceptor shall be pumped out at a minimum of 6-month intervals or more frequently, depending on grease load from FSE. The grease hauler shall be licensed with the California Department of Food and Agriculture.
- The permittee shall retain pumping and maintenance records for a minimum of 3 years. These records shall be submitted quarterly to the City of Roseville and shall be readily available to City personnel inspecting the facility. At a minimum, the following information is required for the reporting records:
    - Date of Service
    - Volume removed

- Grease Hauler Permit number
- FOG disposal destination records

Repeated failure to submit reports on time could result in revocation of the FOG discharge permit.

- The permittee shall implement Best Management Practices (BMPs) in its operation to minimize the discharge of FOG to the sewer system under RMC 14.14.060
- The permittee shall notify the City of Roseville Wastewater Collection Division at 916-746-1890 of any of the following:
  - Sale, lease, or transfer of the operation for which the permit was issued.
  - Change of facility name
  - Changes to grease removal device or remodels, additions, or alterations to FSE greater than $20,000
  - Any SSO or blockage that would contribute to an SSO

7.7.1 FOG Characterization Data Form

The WWC Division identified all the commercial and industrial FOG dischargers within their jurisdictional boundaries during the SSMP preparedness review/audit and listed them in the data collection form. The breakdown of FSEs is summarized in **Table 7-1.**

Table 7-1 FOG Characterization Data

Group	Description	Total
Bakeries	Bakery – Bread/Other	17
Catering	Catering	1
Grocery	Grocery	21
Hotels	Hotels	8
Meat Market	Meat Market	1
Restaurants	Eating – Fast Food	136
	Eating – Sit Down Dining	122
Restaurants Total		**258**
Elder Care Facilities		**12**
Schools		**27**
Hospitals		**3**
Churches		**2**
Bars		**13**
Café		**33**
Deli		**38**
Ice Cream		**15**
Juice Bars		**7**
Movie Theaters		**3**
Grand Total		**465**

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8 System Evaluation and Capacity Assurance Plan

D.13 (viii). The enrollee shall prepare and implement a capital improvement plan (CIP) that provides hydraulic capacity of key sanitary sewer system elements for dry weather peak flows, as well as the appropriate design for storm or wet weather events. The plan must include (a) evaluation of those portions of the sewer system that are experiencing or contributing to SSO discharge caused by hydraulic deficiency, (b) establish appropriate design criteria to undertake the evaluation, (c) The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, inflow, and infiltration (I/I) reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and funding source, (d) The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a) - (c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.

8.1 Capacity Evaluation Process

Two hydraulic models were developed and used by the WWC Division (Roseville Model Project and South Placer Wastewater Authority (SPWA) Wastewater Systems Evaluation Project) to identify peak flows in each collection system component (pipe and pump station). In 2007, a hydraulic model of the City's sewer collection system was developed using the H2OMap Sewer modeling platform (2007 Model Development Project), parallel with a trunk sewer model for the combined Roseville, SPMUD, and Placer County systems. However, the City's sewer model was updated in 2017 to reflect existing and future demands within the City and upgrade the modeling platform to the fully dynamic InfoWorks ICM software. In addition, for the current Systems Evaluation Update, the City's model was updated in December 2020 to reflect existing, and future projected flows from Placer County and SPMUD. The report is located at:
https://p1cdn4static.civiclive.com/UserFiles/Servers/Server_7964838/File/Government/Departments/Environmental Utilities/SPWA/Systems Evaluation Report Dec2020 Final_web.pdf
While EU Engineering staff will periodically run the hydraulic model for development, the Principal Engineer and Process Engineer will review and update the system evaluation and capacity assurance plan every ten years, looking for deficiencies and opportunities for improvement.

8.2 Design Criteria

The WWC Division established 10-year 24-hour peak wet weather storm design criteria for the evaluation of existing collection system components and sizing of new collection system in the Roseville Model Project and the SPWA Wastewater Systems Evaluation Project. This included the development of wastewater flow generation factors based on water use records and flow monitoring data in the City of Roseville.

8.3 Capacity Enhancement Measures

The SPWA Wastewater Systems Evaluation included the identification of short and long-term Capital Improvement Projects (CIP) to meet current and future build-out flow projections for trunk sewers larger than 15 inches. Several deficiencies were identified in non-regional facilities which resulted in model-predicted overflows for one or more of the scenarios. Within the regional system, seven areas have been identified that either have deficiencies or could be impacted when upstream deficiencies are relieved.

Proposed improvement projects have been developed, and verified using the hydraulic model, to alleviate surcharging. The projects are summarized in **Table 8-1**. Each proposed project was reviewed on aerial mapping to identify potential design and constructability issues. These improvement projects were developed to sequentially decrease surcharging in downstream sewers.

Table 8-1 Proposed Capacity Improvement Projects

Project	Location	Existing Sizes	Improved Sizes	Description	Estimated Capital Improvement Cost
1	PS 26	.043 mgd firm capacity	1.6 mgd PWWF at Buildout	Increased capacity of PS26 and sewers on Sierra College Blvd. directly downstream of PS26 to relieve Old Auburn Trunk Sewer	$1,606,000
	Sierra College Blvd (Area G)	500 ft of 8-inch 1,900 ft of 10-inch	500 ft of 10-inch (upsize from 8-inch) 900 ft of 12-inch (upsize from 10-inch) 1,000ft of 15-inch (upsize from 10-inch)		
2	Eureka Rd and E. Rsvl. Pkwy	800 ft of 8-inch 1,400 ft of 10-inch	2,200 ft of 15-inch (upsize from 8 or 10-inch) 1,200 ft of new 15-inch	Redirect flows from PS 26 and Sierra College Blvd. down Eureka Rd to relieve Area E	$1,831,000
3	PS 25 (pumps)	2.02 mgd firm capacity	2.6 mgd PWWF at Buildout	Increased Firm capacity of PS 25 to meet Buildout PWWF	$758,000
	PS 25 diversion structure	N/A	New diversion structure and related piping	New weir structure or adjustments to existing structure at PS25	

8.4 Capital Improvement Plan Schedule

The WWC Division Condition Assessment CIP divided the collection system manholes and pipes into 24 groups. The first group of pipes and manholes was inspected starting in 2006 and was included in the Rehabilitation and Replacement plan developed shortly after. The city continuously inspects pipelines using NASSCO's PACP coding standard to develop a list of assets that need rehabilitation. When defects are identified, the city evaluates the risk of failure and assigns a priority ranking to each asset. Prioritizing those assets relies on several factors, including:

- Severity and extent of the defects (PACP Score).
- Maintenance records and SSO occurrences
- Hydraulic capacity needs and projection.
- The estimated remaining useful life of the infrastructure

The goal of the CIP is to develop annual project bundles of approximately $1.5 million. Using the priority rank of the pipe segment, the CIP prioritization includes one additional factor, street repairs. To minimize disruption to newly paved streets, those streets that the City anticipates repairing in the upcoming fiscal year are highest priority.

Condition assessments will be continually performed, and the CIP will be adjusted after each evaluation as follows:

- Emergency repairs will be done immediately and not be included in the CIP.
- Priority will be given to those assets which lie in the street to be paved such that the repair is done before street repaving
- Pipe segments will continue to be rated on the 1 to 5 scale, with 5 being the highest priority and 1s being the lowest. So, a 5 from the previous year's assessment would be prioritized over a 4 from the current assessment.

8.5 Appendix 8 – System Evaluation and Capacity Assurance Documents

Appendix 8 includes the following documents:

8-1 SPWA Regional Wastewater Systems Evaluation Report

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9 Monitoring, Measurement and Program Modification

D.13. (ix) The Enrollee shall (a) Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities, (b) Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP, (c) Assess the success of the preventative maintenance program, (d) Update program elements, as appropriate, based on monitoring or performance evaluations, (e) Identify and illustrate SSO trends, including frequency, location, and volume.

9.1 Metrics to Prioritize SSMP Activities

The WWC Division has developed Key Performance Indicators to assess their progress in maintenance, operations, and sanitary sewer collection system management. The entire KPI worksheet is attached as Appendix 9-1. The metrics were developed to identify successes and challenges in reducing SSO frequency and impacts, improving collection system reliability, and providing capacity in the system to convey peak flows. Establishing specific KPIs for each element allows the WWC Management team to determine the degree of success of each component. Measurable performance indicators, e.g., number of SSO occurrences, length of lines cleaned, spill response times, number of capital projects completed, etc., are used. Additionally, the KPI benchmarking metrics worksheet includes the following categories of metric information:

- System Information
- Financial Information
- Sewer Maintenance
- Performance Measures

The City tracks detailed information about SSOs. While the number of SSOs has fluctuated up and down over the past four years, the average volume per SSO has decreased. This metric demonstrates the City's proactive efforts to contain and control SSOs and mitigate them efficiently. In addition, the City consistently shows a significantly lower SSO rate per 100 miles of pipe versus the State and Regional averages. These measurements indicate a successful sewer management program, employee training, emergency response, and a dedication to mitigating the effects of SSOs. **Table 9-1** summarizes a few datapoints of the City's SSO data and benchmarking. **Table 9-2** is a 10-year comparison of SSO rates for the City of Roseville, State of California and Region 5.

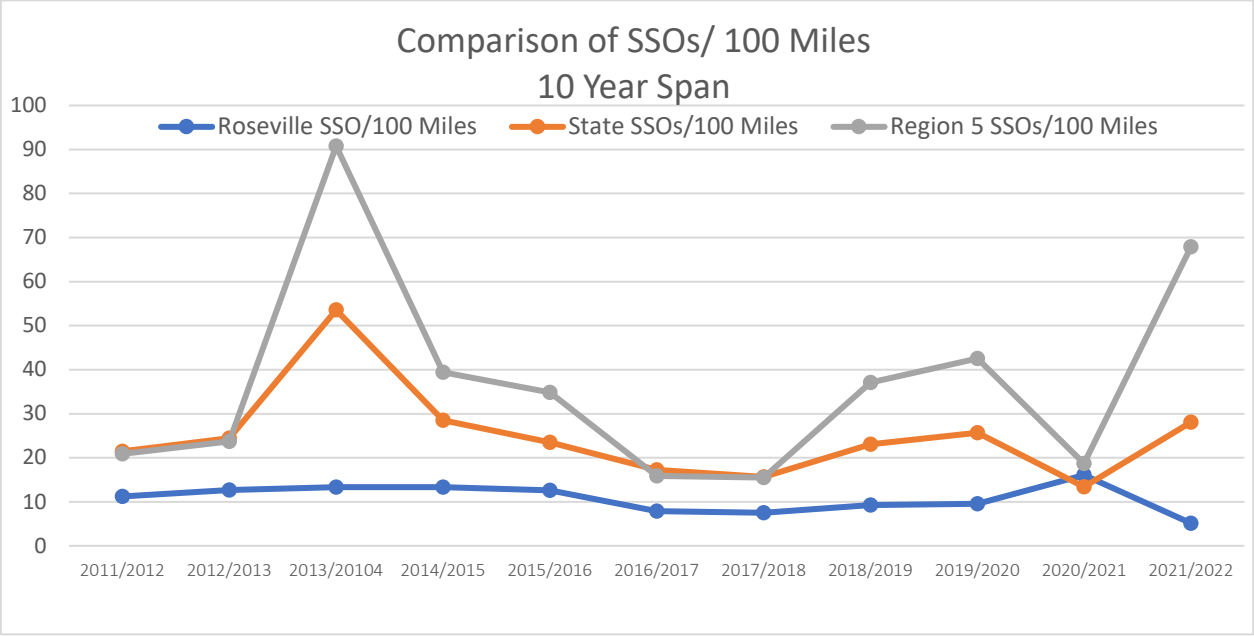
Table 9-1 Historical Summary of Sanitary Sewer Overflows

Year	*Roseville Total SSOs*	*Roseville SSOs Rate/100 Miles*	State SSOs Rate/100 Miles	Region 5 SSOs Rate/100 Miles	*Roseville Total Spill Volume, Gallons*	*Roseville Net Volume * Spill/1000 Capita*	State Net Volume* Spill/1000 Capita	Region 5 Net Volume* Spill/1000 Capita
2011/12	***35***	***11.25***	21.46	20.87	***948***	***.03***	1.89	4.53
2012/13	***42***	***12.65***	24.44	23.71	***1105***	***.05***	13.17	16.14
2013/14	***47***	***13.34***	53.55	90.77	***1136***	***.37***	12.26	12.46
2014/15	***42***	***13.34***	28.5	39.42	***1205***	***.60***	10.55	18.5
2015/16	***39***	***12.62***	23.49	34.8	***2525***	***.28***	2.61	25.54
2016/17	***23***	***7.87***	17.24	15.83	***1081***	***.65***	6.39	.43
2017/18	***25***	***7.52***	15.64	15.5	***1531***	***1.11***	3.57	1.73
2018/19	***31***	***9.23***	23.07	37.05	***869***	***.05***	3.67	1.88
2019/20	***33***	***9.55***	25.7	42.52	***580***	***.4***	2.88	.75
2020/21	***50***	***16.07***	13.39	18.7	***825***	***1.97***	.64	.64
2021/22**	***17***	***5.13***	38.06	67.93	***1570***	***.49***	.55	.25

*Net Volume = Volume Spilled minus Volume Recovered

** Through 20 FEB 22

Table 9-2, 10 Year SSO Comparison



9.2 Monitor and Measure Element Effectiveness

The WWC Division implements all elements of this SSMP and has been effective in minimizing SSOs and controlling the volume of those SSOs when they occur. The WWC Division evaluates the performance of its wastewater collection system at least annually using the developed KPIs. The City will then initiate changes to this SSMP and the related programs based on the results of the KPI evaluation. In addition, the Review of the SSMP and its elements is an assigned annual training for all WWC employees. A summary of the tracked KPIs and the relation to the SSMP elements are in Table 9-3.

Table 9-3 KPI Summarization

SSMP Element	Purpose	Performance Indicator
Goals	Sets Priorities for Division	Goals are listed in Chapter 1 of SSMP
Organization	Documentation of Chain of Command	Continually update Chain of Command Org. chart as changes occur
Legal Authority	Ensures Ordinances Are Upheld Protecting Integrity of the System	Roseville Municipal Code
Operations and Maintenance	Reduce & Eliminate SSOs through PM, CM and Emergency Response	▪ Manhole inspections performed ▪ Miles of sewer mains flushed per year ▪ Average cost of hydro cleaning ▪ Miles of sewer main and laterals CCTV per year ▪ Sewer cleanouts installed ▪ Sewer laterals rehabilitated ▪ Total miles rehabbed or replaced- mains and laterals
Design and Construction Standards	Ensures Infrastructure Is Designed, Installed and Tested Properly	▪ %Of new sewer main inspected vs. accepted ▪ % of new lateral inspected vs. accepted
Overflow Emergency Response	Provide Swift Response, Minimize Effects of an SSO, And to Meet Regulatory Requirements	▪ Average response time to SSO ▪ Average SSO duration mains and laterals
Fats, Oils and Grease	Ensure Illicit Discharges of FOG Aren't Entering the Wastewater System, Reduces FOG Blockages And Overflows	▪ Public outreach events per year ▪ Gallons of FOG curbside pickup ▪ % of FSEs with grease removal device ▪ FSE FOG inspections per year ▪ Number of SSOs & volume spilled from hot spots
System Evaluation & Capacity Assurance	Evaluate and Ensure System Capacity is Sufficient.	Hydraulic Model developed and run for new development and special projects,
Monitoring, Measurement & Program Modifications	Evaluate The Effectiveness of The SSMP and the Maintenance Activities Necessary to be Compliant	▪ Total SSOs and volume spilled (mains and laterals) ▪ % Of total volume recovered ▪ Total number of wet-weather SSOs ▪ Repeat SSOs within two years ▪ SSOs per 100 miles of pipe/year ▪ Number of Category 1 SSOs

		▪ % of SSOs caused by rags, roots, debris and FOG ▪ # of Lift station failures
Program Audits	Measures SSMP Effectiveness and Necessary Changes	Audits are performed on schedule, by an outside independent Engineering Firm
Communication Plan	Communication With the Public and Satellite Agencies on SSMP Performance	Regional partner meetings, City Website.

9.3 SSMP Performance Monitoring and Update Process

The field crews and supervisors regularly communicate regarding issues found in the field. Management uses this information to evaluate the success of the preventative maintenance program and the frequency it is performed. This strategy ensures field crews have buy-in. They continually check their effectiveness and identify potential areas for improvement in their performance. Their suggestions are essential for the City's success and meeting the SSMP goals.

9.4 SSO Trends

The KPI Benchmarking worksheet includes sixty-three data points to track preventative maintenance activities, enabling management staff to develop SSO trends. Based on these trends, Supervisors will adjust the preventative maintenance programs to address trends that aren't in alignment with the SSMP goals. The KPI worksheet is populated using data from completed work orders stored in the City's CMMS, Maximo. Assigned personnel complete data entry on a semi-annual basis minimum to keep the KPI sheet updated. Table 9-4 summarizes a few points of SSO benchmarking data for the last five years.

Table 9-4 SSO Statistics 2016-2021

Lower Lateral	**155**
Contractor Caused	1
CS Maintenance Caused Spill/Damage	2
Debris from Construction	3
Debris from Lower Lateral	2
Debris-Rags	10
Debris-Wipes/Non-Dispersables	12
Grease Deposition (FOG)	1
Non-Dispersables	2
Pipe Structural Problem/Failure	18
Pipe Structural Problem/Failure - Installation	3
Root Intrusion	101
Main	**6**
Damage by Others	1
Debris from Construction	1
Debris-Rags	1
Grease Deposition (FOG)	1
Pipe Structural Problem/Failure	2
Other Sewer System Structure	**1**
Other (Vactor Rear Door Seal Failure)	1
Grand Total	**162**

9.5 Appendix 9- Monitoring, Measurement & Modification

Appendix 9 includes the following documents:

9-1 KPI Benchmarking Metrics Sheet

9-2 SSO Historical Summary

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10 Program Audit and Annual Report

D.13. (x) As part of the SSMP, the Enrollee shall conduct periodic internal audits, appropriate to the size of the system and the number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee's compliance with the SSMP requirements identified in this subsection (D.13.), including identification of any deficiencies in the SSMP and steps to correct them.

10.1 Audit Process Summary

The City audits and updates its SSMP on a biennial basis. Updates may occur more frequently if the Superintendent discovers modifications or regulations changes between audits. The purpose of the audit is to evaluate the effectiveness of the SSMP, primarily through evaluating system metrics and performance measures. In addition, the audit evaluates the City's compliance with the SSMP requirements, particularly the amended MRP requirements that were formalized in September 2013.

The City has invested in the resources of a local engineering firm to perform the biennial audit for the last three audit cycles. WaterWorks Engineers administers the audit much like an RWQCB audit would be. The process starts with gathering information utilizing the Water Boards Pre-Inspection Questionnaire. This Audit Process has proven successful for the City, as significant changes have been made based on audit findings. The City will continue with this process for future audits.

10.2 SSMP Program Modifications

The WWC Division will monitor and review sewer performance metrics monthly and the status of each element of the SSMP on an annual basis. Formal SSMP audits will be performed every two years following the adoption of this SSMP. The SSMP is considered a "Living Document," therefore the Wastewater Superintendent or Process Engineer (LROs) will initiate or direct corrective actions when SSMP deficiencies are identified between audits.

The primary responsibility for proposing and initiating modifications to the SSMP will be that of the WWC Supervisors or from input from WWC field crews. Review and approval of any amendment to the SSMP, including whether it is a major or minor change, will be the responsibility of the WWC Superintendent.

10.3 Appendix 10 - SSMP Audit Documents

Appendix 10 includes the following audit forms and reports for the previous five audits.

10-1 SSMP Internal Audit FY 10-11
10-2 SSMP Audit FY 11/12-FY 12/13
10-3 SSMP Audit FY 13/14-FY 14/15
10-4 SSMP Audit FY 15/16-FY 17/18
10-5 SSMP Audit FY 18/19-FY 20/21

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11 Communication Program

D.13. (xi) The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the Enrollee as the program is developed and implemented. The Enrollee shall also create a plan of communication with systems that are tributary and/or satellite to the Enrollee's sanitary sewer system.

11.1 Purpose of the Communication Program

The purpose of the Communication Program is to describe how the City will inform, educate and engage with its stakeholders, regional partners, and the public on the development, implementation, and performance of the SSMP. Another aspect of this program is to increase public awareness of services provided by the City. Raising awareness of the significance of the sewer system and the impacts businesses and residents can make on the system is of utmost importance.

11.2 SSMP Development and Implementation

There were several opportunities for public comment during the development and implementation process at City Council meetings. In addition, the SSMP has been certified by the City Council on three occasions, 2009, 2014, and again in 2019. Since certification by the City Council, the division's SSMP has been audited on five occasions. This effort on re-writing the SSMP in its entirety will be on the City Council agenda for approval. Once approved, the document is available for download and review on the City's website at: https://www.roseville.ca.us/sewer

11.3 Public Outreach

The City's website is the central hub of communication for the businesses and residents of Roseville. The division's website offers many links to assist the public with any sewer issues, explain the importance of the City's wastewater collection system and summarize all the provided services. The division's motto is to "Call us First" with all sewer problems. Our emergency response service van is wrapped with the Call Us First motto. Since the City owns and maintains the lower lateral from the property line to the City main, calling us first to investigate a potential blockage may save residents from an unnecessary plumbing bill. Environmental Utilities in partnership with Roseville electric publishes a monthly print newsletter, Utility News, which goes out monthly to all customers who receive a printed bill. This newsletter includes information about all aspects of utilities and how customers can reduce impacts to infrastructure. Additionally, customers get an electronic version of similar stories sent to their emails, adding to the number of messaging opportunities the city provides. The WWC Division is expanding the use of the website

and social media to deliver proactive and deliberate messaging on WDR/SSMP requirements and program status to residential, commercial, industrial, and public stakeholders.

11.3.1 Live Sewer Smart

The City belongs to a multi-jurisdictional group named Live Sewer Smart. The Live Sewer Smart website contains information for residents of Roseville and the surrounding communities to educate and encourage proper ways to reduce impacts on the sewer system. For example, the website provides residents with timely information regarding wipes in the pipes, how to properly dispose of FOG, and contact information for all agencies belonging to the program, should they have questions. In addition, there are several links to videos presenting more details that affect residential and commercial sewer systems. Live Sewer Smart can be located at: https://livesewersmart.com/

11.4 Tributary/Satellite Communication

The WWC Division routinely communicates with their satellite partners and often supports them with mutual aid sharing in terms of equipment and resources. The City has three formal agreements with tributary and satellite systems in place and currently working on a mutual aide agreement with the County of Placer Wastewater Division. The listed agreements below are included as appendices in Chapter 3:

- The Joint Exercise of Powers Agreement for the SPWA – Appendix 3-2
- The agreement regarding the operation of and use of the South Placer Regional Wastewater Facilities – Appendix 3-3.
- The Contract and Operating Agreement with Sacramento Area Sewer District and Sacramento Regional County Sanitation District – Appendix 3-4

Notice of Exemption

To: Placer County Clerk
Recorder's Office
2954 Richardson Drive
Auburn, CA 95603

From: City of Roseville
Development Services Dept.
311 Vernon Street
Roseville, CA 95678

Project Title: Sewer System Management Plan Recertification

Project Location(s): City of Roseville, CA (Citywide)

Project Description: The California State Water Resources Control Board (SWRCB) issued a Statewide General Waste Discharge Requirement (WDR), Order No. 2006-0003-DWQ in May 2006. Under the WDR, all public entities that own or operate sanitary sewer systems greater than one mile in length that collect or convey wastewater must prepare a certified SSMP. The intent of the SSMP is to facilitate proper funding, operation and management of the sanitary sewer system in order to reduce sanitary sewer overflows, their impacts to the State's water bodies, and to protect public health.

Provisions in the WDR require periodic audits. Recertification of the SSMP must occur every five years or if significant changes have been made to the SSMP. The Roseville City Council adopted and certified the original SSMP in 2007, and the last recertification occurred in October 2022.

On June 6, 2023, the SWRCB issued an updated WDR, Order No. 2022-0103-DWQ. This order replaced the old order and provided updated guidance and regulations related to owning and operating a sanitary sewer system designed to convey sewage. This updated guidance and regulation impacted the City's SSMP. The City underwent a required periodic audit of the current SSMP by an outside consultant, which resulted in recommendations for changes that have been incorporated into the updated SSMP. The changes included terminology changes, changes to the City's sewer emergency response plan, naming and classification of spills for reporting purposes, as well as other minor edits and clean up items.

Public Agency Approving Project: Roseville City Council

Agency/Individual Carrying Out Project: City of Roseville Environmental Utilities Department

Reason why this Project is Exempt: The recertification of the SSMP qualifies for a Class 8 Categorical Exemptions as described in Section 15308 of the California Environmental Quality Act (CEQA) guidelines which states:

> "Class 8 consists of….actions taken by agencies to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment.

The project involves the recertification of the SSMP based on a periodic audit of existing sewer facilities and updating the plan based on the new Statewide General WDR issued by SWRCB. No expansion of treatment capacity is proposed; and no environmental resources will be disturbed. Consequently, the Class 8 Categorical Exemption applies.

Lead Agency Contact Person: Tracie Mueller, Roseville Environmental Utilities Department (746-1812).

Signature: _____ Date: 2/6/2025

Jessica Lynch, Environmental Coordinator
City of Roseville

COUNCIL COMMUNICATION

CC #: 3842
File #: 1002-04

Title: Solid Waste Recycling Site Lot 15 - Grant Deed
Contact: David Samuelson 916-746-1708 dsamuelson@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.14.

RECOMMENDATION TO COUNCIL

It is recommended that the City Council take the following action:

1. Adopt the attached resolution accepting the Grant Deed of Lot 15 for the purpose of a Solid Waste Recycling Site as shown on the Final Map of Sierra Vista - Federico Large Lot Subdivision, Subdivision No. PL 15-0192, recorded on February 16, 2018, in Book EE of Maps, Page 6, in the Office of the County Recorder of Placer County, as described in attached Exhibit A and depicted on Exhibit B.

2. Authorize the City Manager to execute any and all other documents as may be necessary to effect the recordation and enforcement of this acceptance.

3. Authorize the City Clerk or her designee to record the Resolution of Acceptance at the Recorder's Office of Placer County.

BACKGROUND

The Sierra Vista Specific Plan (SVSP) was adopted by the City in May 2010. As part of the development agreement, the City negotiated for a parcel to be dedicated to the City for a solid waste recycling site.

Since most of the residential homes in the SVSP are constructed, or are under construction, staff has determined that it would benefit the City to take ownership of the Sierra Vista Solid Waste Recycling property thereby providing residents within Sierra Vista a nearby location to dispose of their recyclable materials. Therefore, staff recommends that the City accept the Grant Deed of lot 15, the future site of the SVSP Solid Waste Recycling Site.

FISCAL IMPACT

There is no fiscal impact to the City's General Fund associated with this approval.

ENVIRONMENTAL REVIEW

Use of the property as a recycling center was considered in the Sierra Vista Specific Plan EIR (certified May 5, 2010, SCH No. 2008032115), and identified as Parcel FD-62 in the in the Sierra Vista Specific Plan. As discussed in the Specific Plan EIR, the EIR provides environmental analyses of community infrastructure and facilities, including the recycling center, to the extent applicable. Transfer of the property is consistent with the Sierra Vista Specific Plan EIR. Because the project is consistent with the Sierra Vista Specific Plan EIR and Specific Plan, no new effects would be expected to occur as the result of transfer of the property to City ownership, and all applicable mitigation measures from the Sierra Vista Specific Plan EIR will be implemented during the design and construction of the future recycling center. Because the proposed project meets the requirements identified in Section 15183 of the State CEQA Guidelines, no additional CEQA review is required at this time.

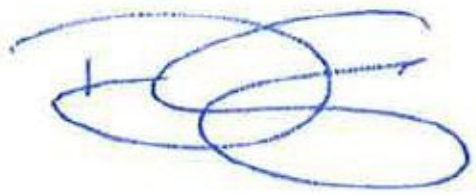
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal E - Deliver exceptional city services
Goal F – Invest in well-planned infrastructure and growth

Respectfully Submitted,

David Samuelson, Senior Engineer

Sean Bigley, Environmental Utilities Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-098

Grant Deed

Vicinity Map

RESOLUTION NO. 25-098

ACCEPTING A GRANT DEED AND AUTHORIZING THE CITY MANAGER TO EXECUTE THE DEED AND ANY OTHER DOCUMENTS REQUIRED TO EFFECTUATE THE RECORDATION AND ENFORCEMENT OF THIS ACCEPTANCE

WHEREAS, the Sierra Vista Specific Plan (SVSP) was adopted by the City in May 2010, and as part of the development agreement, the City negotiated for a parcel to be dedicated to the City for a solid waste recycling site; and

WHEREAS, since most of the residential homes in the SVSP are constructed, or are under construction, Staff has determined that it would benefit the City to take ownership of the Sierra Vista Solid Waste Recycling property thereby providing residents within Sierra Vista a nearby location to dispose of their recyclable materials; and

WHEREAS, staff recommends that the City accept the Grant Deed of lot 15 as shown on the Final Map of Sierra Vista – Federico Large Lot Subdivision, Subdivision No. PL 15-0192, recorded on February 16, 2018, in Book EE of Maps, Page 6, in the Office of the County Recorder of Placer County, as described in Exhibit A and depicted on Exhibit B of the Grant Deed.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Roseville that the Grant Deed for lot 15 as shown on the Final Map of Sierra Vista – Federico Large Lot Subdivision, Subdivision No. PL 15-0192, recorded on February 16, 2018, in Book EE of Maps, Page 6, in the Office of the County Recorder of Placer County, is hereby accepted.

BE IT FURTHER RESOLVED that the City Manager is authorized to execute the Grant Deed and any other documents required to effectuate the recordation and enforcement of this acceptance.

BE IT FURTHER RESOLVED that the City Clerk is hereby directed to record the Grant Deed at the Placer County Recorder's Office.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 20__, by the following vote on roll call:

AYES COUNCILMEMBERS:
NOES COUNCILMEMBERS:
ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

RECORDING REQUESTED BY
AND WHEN RECORDED
MAIL TO AND MAIL TAX
STATEMENTS TO:

City Clerk
CITY OF ROSEVILLE
311 Vernon Street
Roseville, CA 95678

Exempt from recording fees
Pursuant to Gov't Code § 27383

SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S USE

GRANT DEED

THE UNDERSIGNED GRANTOR DECLARES:
DOCUMENTARY TRANSFER TAX IS $0.00 CITY TRANSFER TAX IS $0.00
This conveyance is exempt from the documentary transfer tax since a governmental agency is acquiring title, R & T 11922.

FOR VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

Solaire Community Builders, LLC, a California Limited Liability Company

hereby GRANT(s) to THE CITY OF ROSEVILLE, a municipal corporation,

the following described real property in the City of Roseville, County of Placer, State of California:

See Exhibit "A" (legal description), attached hereto and incorporated herein by reference.

See Exhibit "B" (map), attached hereto and incorporated herein by reference.

Dated this 24 day of March, 2025

Solaire Community Builders, LLC,
a California Limited Liability Company

NAME Jeffery Jones
TITLE Manager
(Notarization Required)

18254.FED
01/16/2025
BWB

EXHIBIT "A"
DESCRIPTION OF PROPERTY DEDICATION
LOT 15 – EE MAPS 6

All that real property situated in the City of Roseville, County of Placer, State of California, being a portion of Section 35, Township 11 North, Range 5 East, Mount Diablo Meridian, more particularly described as follows:

Lot 15 as shown and so designated on that certain final map titled "Sierra Vista – Federico, Large Lot Subdivision, Subdivision No. PL15-0192" recorded February 16, 2018, in Book EE of Maps, at Page 6, Placer County Records.

Containing a total of 21,943 square feet of land, more or less.

See Exhibit "B", plat to accompany description, attached hereto and made a part hereof.

This legal description was prepared by me or under my supervision pursuant to Section 8729 (2) of the Professional Land Surveyors Act.

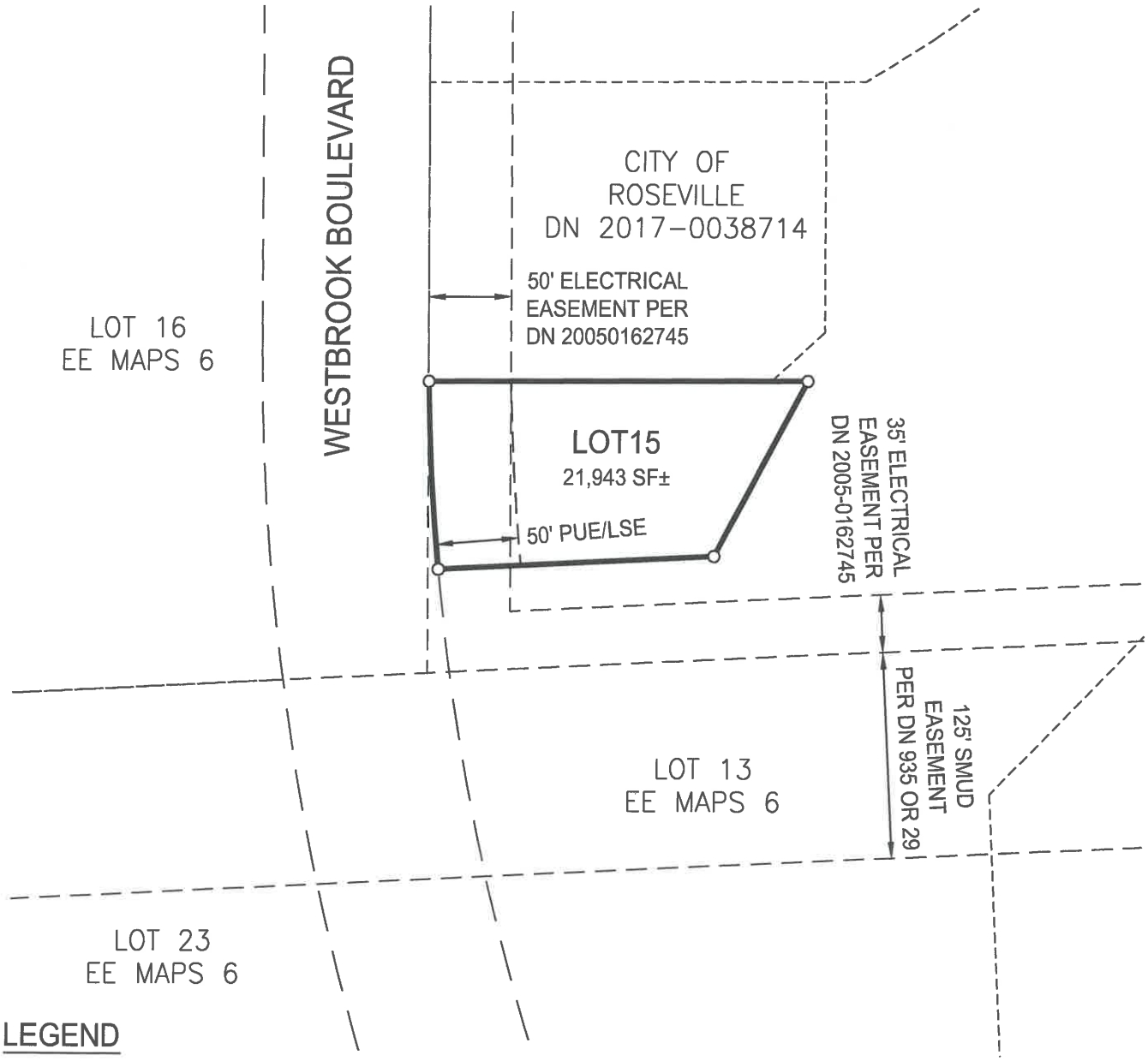
Pedro Jarquin

Pedro Jarquin PLS 8268
License Expiration Date: 12/31/2025

Date: 1/16/25



Description prepared by:
MACKAY & SOMPS CIVIL ENGINEERS, INC
1025 Creekside Ridge Dr, Suite 150, Roseville, CA. 95678
P:\18254\survey-MS\mapping\desc\SV-FD-62 AND FD-64\SV-LOT 15.docx



LEGEND

o	DIMENSION POINT
SF	SQUARE FEET
DN	DOCUMENT NUMBER
OR	OFFICAL RECORDS OF PLACER COUNTY
(1)	EE MAPS 6

LICENSED LAND SURVEYOR
PEDRO JAQUIN
No. 8268
STATE OF CALIFORNIA
1/16/25

N

IF A DISCREPANCY EXISTS BETWEEN THIS EXHIBIT AND THE ASSOCIATED DESCRIPTION, THE DESCRIPTION HOLDS. THIS EXHIBIT IS FOR GRAPHIC PURPOSES ONLY.

EXHIBIT "B"
PROPERTY DEDICATION
LOT 15 - EE MAPS 6
SECTION 35, T. 11 N., R. 5 E., M.D.M.
CITY OF ROSEVILLE
COUNTY OF PLACER STATE OF CALIFORNIA

MACKAY & SOMPS
ENGINEERS PLANNERS SURVEYORS
1025 Creekside Ridge Drive, Suite 150, Roseville, CA 95678 (916) 773-1189

BWB	1"= 100'	01/16/2025	18254.FED
DRAWN BY	SCALE	DATE	JOB NO.

CALIFORNIA CERTIFICATE OF ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)

County of Placer)

On March 24, 2025 before me, Crystal Rae Boehm, Notary Public,
(here insert name and title of the officer)

personally appeared Jeffery Jones ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

CRYSTAL RAE BOEHM
COMM. #2374078
Notary Public - California
Placer County
My Comm. Expires Sep. 6, 2025
NRO1 NRO1

(Seal)

Optional Information

Although the information in this section is not required by law, it could prevent fraudulent removal and reattachment of this acknowledgment to an unauthorized document and may prove useful to persons relying on the attached document.

Description of Attached Document

The preceding Certificate of Acknowledgment is attached to a document titled/for the purpose of Grant Deed, from Solaire Community Builders, LLC to City of Roseville containing _____ pages, and dated March 24, 2025 Lot 15 - EE Maps 6

The signer(s) capacity or authority is/are as:

- ☐ Individual(s)
- ☐ Attorney-in-Fact
- ☐ Corporate Officer(s) _____ Title(s)
- ☐ Guardian/Conservator
- ☐ Partner - Limited/General
- ☐ Trustee(s)
- ☐ Other: _____

representing: _____ Name(s) of Person(s) or Entity(ies) Signer is Representing

Additional Information

Method of Signer Identification

Proved to me on the basis of satisfactory evidence:
☒ form(s) of identification ○ credible witness(es)

Notarial event is detailed in notary journal on:
Page # _____ Entry # _____

Notary contact: _____

Other

☐ Additional Signer(s) ☐ Signer(s) Thumbprint(s)

☐ _____

© Copyright 2007-2020 Notary Rotary, PO Box 41400, Des Moines, IA 50311-0507. All Rights Reserved. Item Number 101772. Please contact your Authorized Reseller to purchase copies of this form.

EXHIBIT A

CITY OF ROSEVILLE
SIERRA VISTA SPECIFIC PLAN
PARCEL FD-62



MacKay and Somps is not responsible for the accuracy or completeness of reproductions of this document generated by others from electronic media.

4-01-2025 09:10:27 rdickey P:\18254_FED\DES\Exh-D\FD-62 Vicinity Map.dwg
[1] P:\18254\cs\S-CS-SIERRAVISTA.dwg

PRELIMINARY - Subject to Revision

COUNCIL COMMUNICATION

CC #: 3835
File #: 0704-01

Title:	On-Call Qualified Stormwater Pollution Prevention Plan Developer and Qualified Stormwater Pollution Prevention Plan Practitioner Services – Professional Services Agreement Amendment
Contact:	Heather Buck 916-774-5254 hcbuck@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.15.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution to approve the Second Amendment to the Professional Services Agreement for Qualified Stormwater Pollution Prevention Plan Developer and Qualified Stormwater Pollution Prevention Plan Practitioner (QSP/QSD) Services with HydroCompliance, authorize the City Manager to execute it on behalf of the City of Roseville, and increase the annual authorization for the final optional renewal from $75,000 to $150,000.

BACKGROUND

The Parks, Recreation & Libraries Department is projecting construction of many capital improvement projects, including new and major rehabilitation projects. QSP/QSD services are required for these projects.

In February 2023, the City issued a Request for Qualifications/Proposals seeking experienced professional firms to submit to the Parks, Recreation & Libraries Department (PRL) for on-call professional services. A contract was awarded to HydroCompliance that included a one-year base term with the option of two additional one-year extensions.

The recommended amendment is an increase in the annual authorization from $75,000 to $150,000 for the first extension of the contract with HydroCompliance which ends June 30, 2025. Additionally, staff is requesting an increase to the annual authorization from $75,000 to $150,000 for the final optional renewal with HydroCompliance. The reason for the increase in authorization is because PRL has several projects anticipated to begin construction this spring prior to the final optional year renewal.

Consistent with the original approval of this contract, the Council authorized the City Manager to approve the one-year extensions based on approved budgets. This amendment to increase the spending authority amount does not impact the contract extension approval process.

FISCAL IMPACT

Funding for services shall be provided through capital improvement projects as approved during the fiscal year budgets, an approved professional services budget, or developer reimbursements. Project specific quotes will be obtained prior to the start of any work. The base year contract was not to exceed $75,000. With the increase in authorization for the first optional year extension and the final optional year extension of $150,000 per year, the updated total contract will be not to exceed $375,000.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Approval of the professional services agreement meets the above criteria and is not subject to CEQA. No additional environmental review is required.

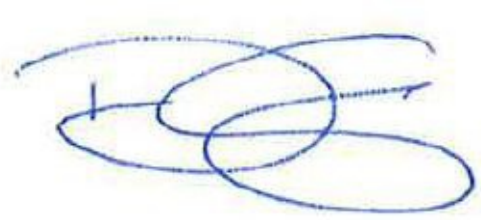
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal C - Maintain a safe and healthy community
Goal E - Deliver exceptional city services
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Heather Buck, Senior Park Development Project Manager

Jill Geller, Director, Parks, Recreation & Libraries



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-093

HydroCompliance Second Amendment

RESOLUTION NO. 25-093

APPROVING A SECOND AMENDMENT TO ON-CALL PROFESSIONAL SERVICES AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND HYDROCOMPLIANCE, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a second amendment to on-call professional services agreement to provide on-call qualified stormwater pollution prevention plan developer and qualified stormwater pollution prevention plan practitioner services, by and between the City of Roseville and HydroCompliance, has been reviewed by the City Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said second amendment to on-call agreement is hereby approved and the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 20__, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

SECOND AMENDMENT TO

ON-CALL PROFESSIONAL SERVICES AGREEMENT

On-Call Qualified SWPP Developer and Qualified SWPPP Practitioner Services

THIS SECOND AMENDMENT TO AGREEMENT is made and entered into this ___ day of _____, 20__, by and between the City of Roseville, a municipal corporation ("CITY"), and HydroCompliance, a California corporation ("CONSULTANT"); and

W I T N E S S E T H:

WHEREAS, CITY and CONSULTANT previously entered into an On-Call Professional Services Agreement dated June 7, 2023 and amended May 15, 2024 ("Agreement") regarding on-call qualified stormwater pollution prevention plan developer (QSD) and qualified stormwater pollution prevention plan practitioner (QSP) services ("Project"); and

WHEREAS, CITY wishes to increase the total compensation to the first optional renewal year of the Agreement, with a term ending June 30, 2025, in order to compensate CONSULTANT for additional services associated with the Project.

NOW, THEREFORE, the parties agree as follows:

1. CONSULTANT shall provide additional services in consideration of this Second Amendment to Agreement.

2. Section 2 of the Agreement is amended by adding an additional paragraph to read as follows:

"CITY shall pay seventy-five thousand dollars ($75,000), in consideration of the additional services to the Second Amendment to Agreement."

3. Exhibit "B" to the Agreement is hereby replaced with Exhibit "B" to this Second Amendment to Agreement, attached hereto and incorporated herein by reference, which reflects updated rates for the term of the Second Amendment to Agreement.

4. The Agreement is further amended by adding an additional paragraph regarding compliance with the Levine Act:

"25. The Levine Act Disclosure. The Levine Act (Govt. Code, Section 84308) requires a Party (and its agent(s), if any) to a Proceeding before the City of Roseville that involves any action or consideration related to their contract, license, permit, or other entitlement for use, to disclose any campaign contributions made to CITY elected or appointed officers totaling more than $250 within the twelve (12) months prior to the CITY decision and while a proceeding is pending, and includes certain prohibitions on contribution activity thereafter. If applicable campaign contributions have been made by CONSULTANT and/or its agent(s), CONSULTANT is responsible for compliance, including for its disclosure obligations, if any, as further described at https://www.roseville.ca.us/government/departments/city_clerk/transparency/levine_act."

5. All other provisions of the Agreement shall remain unchanged and in full force and effect.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this _____ Amendment to Agreement in duplicate by its City Manager

and attested to by its City Clerk under the authority of Resolution No. _____, adopted by the Council of the City of Roseville on the ___ day of _____, 20__, and CONSULTANT has caused this Second Amendment to Agreement to be executed.

CITY OF ROSEVILLE, a
municipal corporation

BY: _____
DOMINICK CASEY
City Manager

ATTEST:

BY: _____
CARMEN AVALOS
City Clerk

APPROVED AS TO FORM:

BY: _____
MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE:

BY: _____
JILL GELLER
Parks, Recreation, & Libraries Director

HYDRO COMPLIANCE, a
California corporation

BY: _____
its: PRESIDENT

and

BY: _____
its: SECRETARY

EXHIBIT "B"

Tab F: Schedule of Rates and Charges

HydroCompliance
Total Site Solutions

Schedule of Rates and Charges

Effective January 1, 2025

Classification	Hourly Rate
Civil Engineer	$210
Water Compliance Specialist	$200
Training Instructor	$200
Qualified SWPPP Developer / Inspection Auditor	$200
Qualified SWPPP Practitioner	$170
Drafting Technician	$170
Clerical	$150

Other Charges	Rate
Overtime (after 8 hours but less than 12)	1.5 x rate
Overtime (after 12 hours)	2.0 x rate
Mileage	$0.60/mile
Per Diem	$300/day

Billing Policies

- Outside and contracted services will be billed at cost plus 10%.
- Cost of normal supplies is included in the above rates.

Fixed Fee Costs (All Inclusive)

- Risk 1 and 2 SWPPP - $2,800
- Risk 1 QSP Services – All Inclusive $1,450/month (See Below)
- Risk 2 QSP Services – All Inclusive $1,650/month (See Below)

All-inclusive includes: Required QSD Inspections, Weekly Inspections, Weather Monitoring, Pre-storm Inspections, Inspections each 24 hours during Qualifying Precipitation Events, Post Storm Inspections, Sampling and Data Assembly with upload to SMARTS, Annual Reports, Notice of Termination, 5 hours per year of professional representation should the need arise (meeting with the RWQCB, contractor training, etc.), SWPPP Amendments, and Changes of Information.

9328 Elk Grove Blvd., Suite 105 #301
Elk Grove, CA 95624 – www.hydrocompliance.com

COUNCIL COMMUNICATION

CC #: 3837
File #: 0800-02

Title:	Pleasant Grove Wastewater Treatment Plant Influent Pump Station Rehabilitation Project – Notice of Completion
Contact:	Jeremy Snyder 916-413-9236 jsnyder@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.16.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council accept the Pleasant Grove Wastewater Treatment Plant Influent Pump Station Rehabilitation Project as complete and authorize the Director of Environmental Utilities to execute the Notice of Completion.

BACKGROUND

The Pleasant Grove Wastewater Treatment Plant (PGWWTP) Influent Pump Station Rehabilitation Project was initiated to replace end-of-life electrical equipment and pumps. The variable frequency drives (VFDs) that were replaced were no longer supported and spare parts are unavailable. The original equipment manufacturer that would have provided service and/or spare parts, no longer exists. The pumps were requiring more significant, and costly, repairs and had become less reliable.

On August 16, 2023, City Council approved and awarded a Design-Build agreement to Syblon Reid for the Project in the amount of $3,812,200. Due to scope changes, initiated by wastewater plant operations to add bypass piping and valves at the Influent Pump Station for operational flexibility in times of extreme wet weather, a budget adjustment was approved by City Council on June 19, 2024. The budget adjustment increased the agreement by $359,000 making the total contract amount $4,171,200. In addition, $366,000 was added to the project budget and approved by the City Council authorizing the Environmental Utilities Director or his designee to approve and pay for contract change orders for the project that could increase the contract amount by no more than 8.75%, up to $4,537,200.

Syblon Reid received Notice to Proceed on August 22, 2023. The City's Environmental Utilities Department completed final inspection of the Project on November 15, 2024, and found the work to be completed in accordance with the Contract Documents. Therefore, the Project is now ready for final acceptance and approval of the Notice of Completion.

FISCAL IMPACT

A Design-Build Engineering/Construction Contract was awarded to Syblon Reid in the amount of $3,812,200. City Council also approved a budget adjustment in the amount of $359,000 for new contract amount of $4,171,200. City Council also approved an allowance to pay contract change orders of up to 8.75% of the value of the contract ($366,000). There was a total of two (2) negotiated change orders during construction for a total cost of $32,830.17. The final contract value is $4,204,030.17.

ENVIRONMENTAL REVIEW

Implementation of the PGWWTP Influent Pump Station Rehabilitation Project was previously evaluated in the original Council Communication for the Design-Build Agreement and it was determined to involve minor alterations of an existing facility. This activity was deemed categorically exempt from the California Environmental Quality Act (CEQA), as a Class 1 Exemption (State CEQA Guidelines Section 15301) and as a Class 2 Exemption (State CEQA Guidelines Section 15302). The Exemption was prepared and no further CEQA action is required for the approval of this Notice of Completion.

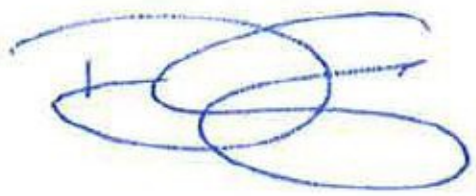
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Jeremy Snyder, Preventative Maintenance Supervisor

Sean Bigley, Environmental Utilities Director



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 24-094

Pleasant Grove Wastewater Treatment Plant Influent Pump Station Rehabilitation - Notice of Completion and Area Map

CEQA - Notice of Exemption - Class 1 and 2

RESOLUTION NO. 25-094

ACCEPTING THE PUBLIC WORK KNOWN AS THE PLEASANT GROVE WASTEWATER TREATMENT PLANT INFLUENT PUMP STATION REHABILITATION PROJECT, APPROVING THE "NOTICE OF COMPLETION", AND AUTHORIZING THE ENVIRONMENTAL UTILITIES DIRECTOR TO EXECUTE SAID NOTICE ON BEHALF OF THE CITY OF ROSEVILLE

BE IT RESOLVED by the City Council of the City of Roseville as follows:

1. The "Notice of Completion" on file in the City Clerk's Department relative to that public work known as the Pleasant Grove Wastewater Treatment Plant Influent Pump Station Rehabilitation Project, has been approved and the public work accepted.

2. The Environmental Utilities Director is hereby authorized and directed to execute said Notice on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this ____ day of _____, 20_____, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

RECORDING REQUESTED BY AND WHEN
RECORDED MAIL TO:

CITY CLERK
CITY OF ROSEVILLE
311 VERNON STREET
ROSEVILLE, CA 95678

Exempt from recording fees
Pursuant to Gov't Code §27383

NOTICE OF COMPLETION

NOTICE IS HEREBY GIVEN that the public work of improvement known as the Pleasant Grove Wastewater Treatment Plant Influent Pump Station Rehabilitation Project was completed and accepted by the City of Roseville on _____. The location is situated in the City of Roseville, County of Placer, State of California and is indicated on the attached map, marked as Exhibit "A" and incorporated herein by this reference. The real property herein described is owned by the City of Roseville, 311 Vernon Street, Roseville CA 95678.

The direct/general contractor on said project was Syblon Reid.

The surety on said project was Travelers Casualty and Surety Company of America

_____.

_____

SEAN BIGLEY

Environmental Utilities Director
City of Roseville
Owner

ATTEST:

_____
Carmen Avalos, City Clerk

State of California)
County of Placer)

I, SEAN BIGLEY, being first duly sworn, depose and say: I am the Environmental Utilities Director of the City of Roseville, a municipal corporation in the State of California, owner of the property described in the above Notice. I am duly authorized to make this verification for and on behalf of the City of Roseville. I have read the Notice of Completion and know its contents and the facts stated therein are true.

_____

SEAN BIGLEY

Environmental Utilities Director
City of Roseville

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

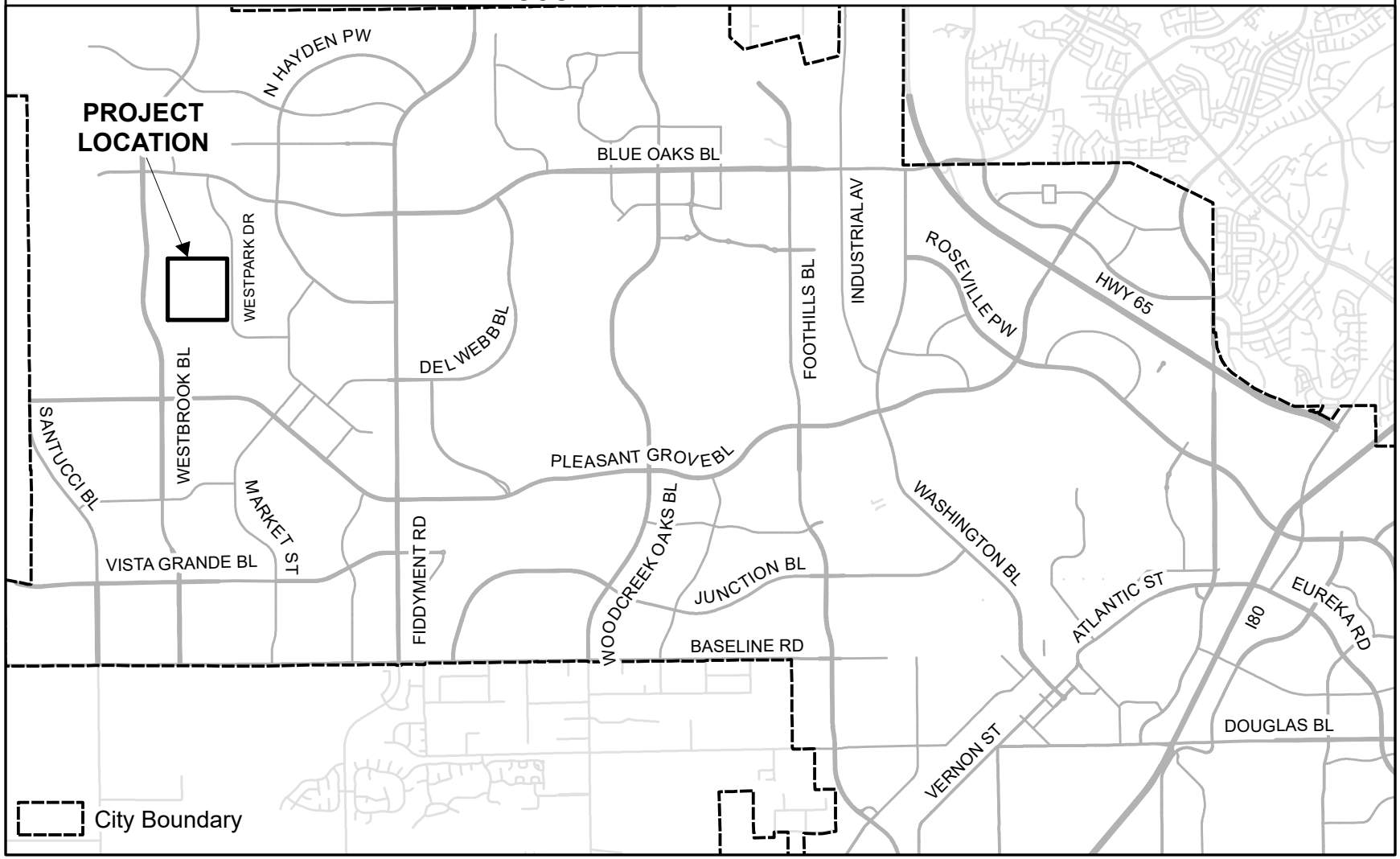
State of California)
County of Placer)

Subscribed and sworn to (or affirmed) before me on this _____ day of _____, 20___, SEAN BIGLEY proved to me on the basis of satisfactory evidence to be the person(s) who appeared before me.

_____

Place Notary Seal and/or Stamp Above *Signature of Notary Public*

Exhibit "A"
PLEASANT GROVE WASTEWATER TREATMENT PLANT
INFLUENT PUMP STATION REHABILITATION PROJECT
5051 WESTPARK DRIVE



Notice of Exemption

To: Placer County Clerk
Recorder's Office
2954 Richardson Drive
Auburn, CA 95603

From: City of Roseville
Development Services Dept.
311 Vernon Street
Roseville, CA 95678

Project Title: Pleasant Grove Wastewater Treatment Plant Influent Pump Station Rehabilitation – New Design-Build Contract and Request for Budget Adjustment

Project Location(s): 5051 Westpark Drive, Roseville, CA 95747. Assessor's Parcel Number 017-101-025-000.

Project Description: The Environmental Utilities Department (EU) seeks to execute a design-build agreement to provide Variable Frequency Drives (VFD's) and submersible influent pump replacements, testing, communications/networking, programming and SCADA integration, and engineering for Pleasant Grove Wastewater Treatment Plant influent pump station rehabilitation. The project was initiated to replace end-of-life electrical equipment and pumps. The existing VFD's are no longer supported and spare parts are unavailable. The original equipment manufacturer does not exist on this capacity presently. The pumps are needing to be rebuilt more often, have become less reliable, and the rebuild costs, due to the age of the equipment, has increased significantly. The project would increase reliability of the pumps while reducing operating costs, and it would not result in an expansion of use.

Public Agency Approving Project: Roseville City Council

Agency/Individual Carrying Out Project: City of Roseville Environmental Utilities Department

Reason why this Project is Exempt: The project qualifies for a Class 1 and Class 2 Categorical Exemption as described in Section 15301 and Section 15302 of the California Environmental Quality Act (CEQA) guidelines which states:

> "Class 1 (Existing Facilities) consists of … minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use; and
> "Class 2 consists of the…replacement or reconstruction of existing…facilities…including...replacement or reconstruction of existing utility systems involving negligible or no expansion of capacity."

The project consists of replacing the VFDs and submersible influent pumps, testing, communications/networking, programming and SCADA integration, and engineering Pleasant Grove Wastewater Treatment Plant. The project would not result in expansion of use. Consequently, the Class 1 and Class 2 Categorical Exemptions apply.

Lead Agency Contact Person: Jeremy Snyder, Roseville Department of Environmental Utilities (916-746-1936).

Signature: Jessica Lynch Date: 07-24-2023

Jessica Lynch, Environmental Coordinator
City of Roseville

COUNCIL COMMUNICATION

CC #: 3845
File #: 0800-03

Title: Assembly Bill 2227 Energy Efficiency Targets
Contact: Rachel Marmorstein 916-774-5613 rmarmorstein@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.17.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution approving Roseville Electric Utility's energy efficiency targets for the next 10-year period as required by California Assembly Bill (AB) 2227 and authorize staff to submit these energy efficiency targets to the California Energy Commission pursuant to California Public Utilities Code section 9505(c).

BACKGROUND

Since 2006, AB 2021 and AB 2227 have required publicly owned utilities, including Roseville Electric Utility, to identify all potentially achievable, cost effective, reliable, and feasible energy efficiency savings opportunities and establish 10-year targets for energy efficiency every four years. To comply with AB 2021 and AB 2227, Roseville Electric Utility, along with other members of the California Municipal Utilities Association, worked together to develop energy efficiency targets for the publicly owned utilities in California and report these targeted savings numbers to the California Energy Commission.

As required by California legislation, Roseville Electric Utility funds various voluntary customer energy efficiency programs, demand side management programs, research, development and demonstration projects, along with programs for low-income customers. These programs are an important element in helping customers reduce their electricity costs and are key to helping the utility achieve its energy efficiency targets and related regulatory requirements.

ANNUAL ENERGY EFFICIENCY GOALS 2026-2035

The recommended 10 year targets for 2026-2035 for Roseville Electric Utility are shown in the following table:

Year	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Energy (MWh)	12,743	11,897	12,128	11,978	12,001	12,428	12,764	13,191	13,592	13,876

The average energy efficiency savings projected over the next 10-year period are 12,660 megawatt hours annually. This is an approximate 28% increase over the previously approved targets developed in 2021.

Roseville Electric Utility's average program performance for the past four years was 16,713 megawatt hours, exceeding the previous average target of 9,879 megawatt hours. The results were primarily driven by the expansion of the residential home energy reports behavior program, commercial LED lighting and commercial custom programs, as well as residential electrification programs for both retrofit and new home construction.

FISCAL IMPACT

There is no financial impact from the approval of the 10-year energy efficiency targets.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Approval of the AB 2227 energy efficiency targets meets the above criteria and is not subject to CEQA. No additional environmental review is required.

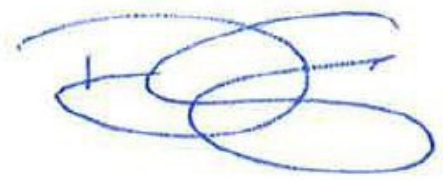
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Ensure a safe and healthy community
Goal C - Enhance Economic Vitality
Goal D - Invest in well planned infrastructure and growth
Goal E - Support Community Engagement and Advocacy

Respectfully Submitted,

Rachel Marmorstein, Associate Electric Analyst

Dan Beans, Roseville Electric Utility Chief Executive Officer



Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-101

RESOLUTION NO. 25-101

APPROVING ROSEVILLE ELECTRIC UTILITY'S ENERGY EFFICIENCY TARGETS

WHEREAS, AB 2227 requires each local publicly-owned utility to establish annual targets for energy reductions for their customers for the next ten-year period; and

WHEREAS, to comply with AB 2227, Roseville Electric Utility must adopt updated annual targets and report them to the California Energy Commission; and

WHEREAS, in compliance with Public Utilities Code Section 9505(c), Roseville Electric Utility must adopt updated annual targets and report them to the California Energy Commission before the appropriate deadline; and

WHEREAS, staff recommends the following Roseville Electric Utility's Energy Efficiency Targets for 2026 through 2035:

Year	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Energy (MWh)	**12,743**	**11,897**	**12,128**	**11,978**	**12,001**	**12,428**	**12,764**	**13,191**	**13,592**	**13,876**

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Roseville hereby approves Roseville Electric Utility's Energy Efficiency Targets for 2026 through 2035.

BE IT FURTHER RESOLVED that Roseville Electric Utility staff is authorized to submit these Energy Efficiency Targets to the California Energy Commission pursuant to California Public Utilities Code Section 9505(c).

PASSED AND ADOPTED by the Council of the City of Roseville this____day of _____, 2025, by the following vote on roll

call:AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

COUNCIL COMMUNICATION

CC #: 3844
File #: 1006-01

Title: 201 Pacific Street, Second Floor - Lease Agreement
Contact: Robert Cline 916-746-1172 racline@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.18.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution authorizing the City Manager to execute a three (3) year Lease Agreement with Ten Twenty 3D for the second floor of 201 Pacific Street.

BACKGROUND

The Roseville Train Station, owned by the City of Roseville (City), is located within the Downtown Roseville Specific Plan (DTSP) at 201 Pacific Street, in Historic Old Town. The two-story building was constructed in 1995 with a ground floor lobby space, public restroom, office and storage space. The second floor is approximately 803 square feet and includes three rooms accessed by an interior stairwell and elevator. Over the years, the space has been leased to various entities including a design firm, probation office, a training center, and a 3D printing shop.

On August 2, 2023, City Council approved a Lease Agreement (Agreement) between the City and Fathom Cellars LLC, dba YESTR Toys. Due to unforeseen circumstances, on September 9, 2024, Fathom Cellars LLC submitted a written request to the City for the Agreement to be assigned to Ten Twenty-Three LLC, dba Ten Twenty 3D. Ten Twenty 3D is a local small business that operates a 3D printing operation, consistent to the use of Fathom Cellar LLC. The terms of the Agreement allowed for the City Manager to provide written consent for the assignment of the lease under Section 14.1, Consent for Assignment and Subleases. On September 30, 2024, the City Manager approved an assignment of the Agreement to Ten Twenty 3D to be effective October 1, 2024.

The lease assignment is temporary and upon approval of the assignment, Ten Twenty 3D agreed to enter into a Lease Agreement with the City. The proposed Agreement sets forth the terms and conditions under which Ten Twenty 3D will occupy the second floor of the Train Station. The Lease Agreement contains provisions that include the following:

- Term - The initial lease term shall be for three (3) years with an option to extend for an additional three (3) years.
- Rent - Rent is payable monthly at an initial rate of $0.75 per square foot ($602 total monthly rent), with an annual increase of $0.05 per square foot, with year three rent at $0.85 ($683

total monthly rent). The rent is comparable to commercial rents in similar facilities around the area.

- Deposit - Ten Twenty 3D paid its deposit equating to two months' rent ($1,512) at the time the Agreement was assigned.
- Utilities - Tenant shall pay for electric and gas service to the second floor and any optional services such as internet and cable. Landlord shall pay for water, sewer, and refuse.
- Responsibility and liability for property -
    - Landlord is responsible for maintenance, repair and rehabilitation of the building, including heating, ventilation and air conditioning systems, exterior shell roof, exterior lighting, landscaping, parking lot, refuse service, and building alarm system.
    - Tenant is responsible for all tenant furnishings, equipment and specified utilities for the leased space. The City shall not be liable for any loss, damage, destruction or theft of any exhibits, furnishings or other personal property owned or lent to tenant. Tenant shall be liable for any damage to the building or premises resulting from the acts or omissions of tenant, its authorized representatives, sublessees or any of their invitees.
- Lease buy-out option and termination - Tenant shall give City a 60-day notice if requesting a lease buy-out option. In the event that tenant terminates this Lease prior to the end of the term, tenant (a) agrees to forfeit its security deposit and (b) shall make a payment to landlord equivalent to two (2) months of rent commensurate to the rental rate at year five (5). This agreement may be terminated without cause at any time upon giving 60 days advance written notice.
- Common Areas - Tenant shall have access to common areas including the shared restrooms and lobby on the first floor, stairwell, and elevator.
- Parking - Tenant and customers shall have access to public parking areas adjacent to the train station and at the Park-n-Ride lot at Pacific and Church Street and shall follow all posted parking limits.

Ten Twenty 3D has occupied the second floor of the train station since October 1, 2024, and has remained in good standing with the City. Approval of the proposed Lease Agreement will formalize the agreement and terms of understanding set forth in the lease assignment.

FISCAL IMPACT

Execution of the Lease Agreement would result in a positive fiscal impact of $7,224 in rent revenue for the General Fund in the first year, $7,704 in year two, and $8,196 in year three. In addition to annual rent, the tenant will pay property tax on the leased space.

ENVIRONMENTAL REVIEW

The proposed project involves the leasing of an existing facility. This activity is categorically exempt from CEQA as a Class 1 Exemption (State CEQA Guidelines Section 15301). The Exemption has been prepared and no further CEQA action is required.

CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

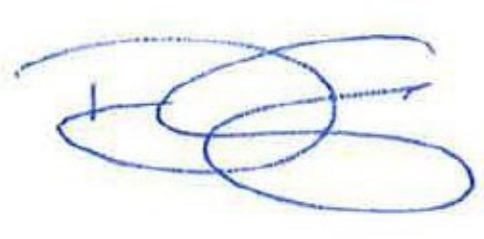
Goal A - Remain fiscally responsible in a changing world

Goal D - Enhance economic vitality

Respectfully Submitted,

Robert Cline, Economic Development Project Manager

Melissa Anguiano, Economic Development Director



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-100

Lease Agreement

CEQA Exemption

RESOLUTION NO. 25-100

APPROVING A LEASE AGREEMENT, BY AND BETWEEN THE CITY OF ROSEVILLE AND TEN TWENTY-THREE LLC DBA TEN TWENTY 3D, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a Lease Agreement regarding a portion of the property located at 201 Pacific Street in Roseville, CA, by and between the City of Roseville and Ten Twenty-Three LLC dba Ten Twenty 3D, has been reviewed by the Council; and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said Lease Agreement are hereby approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 20__, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

LEASE AGREEMENT
Location: 201 Pacific Street, Suite 200

THIS LEASE AGREEMENT ("Agreement" or "Lease") is made and entered into this _____day of_____, 2025 ("Commencement Date"), by and between the City of Roseville, a municipal corporation ("LANDLORD"), and Ten Twenty-Three LLC, dba Ten Twenty 3D, California limited liability company ("TENANT"). LANDLORD and TENANT may be referred to herein collectively as the "Parties," or each individually as a "Party."

RECITALS

WHEREAS, LANDLORD owns a building known as the Roseville Intermodal/Railroad Station, located at 201 Pacific Street, Roseville, California (APN 012-120-002) (the "Building"); and

WHEREAS, the Parties desire that TENANT lease from LANDLORD approximately 803 square feet on the second floor of the Building, commonly referred to as 201 Pacific Street, Suite 200 (the "Premises"); and

WHEREAS, the Parties intend to enter into a lease agreement for the Premises pursuant to the terms and conditions stated herein.

NOW, THEREFORE, the Parties agree as follows:

ARTICLE I: LEASE OF PREMISES

1.1. Lease. LANDLORD hereby grants to TENANT the exclusive right to utilize the Premises, subject to the terms and conditions of this Lease. In addition to TENANT's rights to use and occupy the Premises as hereinafter specified, TENANT shall have non-exclusive rights to any utility raceways or conduits of the Building contained within the Premises, and shall have limited rights to the interior building common areas or exterior walls of the Building.

1.2. Term. The initial term of this Lease shall be thirty-six (36) months and shall commence upon the Commencement Date and terminate at the end of thirty-six (36) months (the "Term"). Upon mutual agreement of the Parties and as long as TENANT is not in default or breach of any of the terms of this Lease, TENANT has the option to extend the initial term of this Lease for an additional period of up to thirty-six (36) months. To exercise this optional term, at least six (6) months prior to the end of the initial thirty-six (36) month Term, TENANT shall notify LANDLORD in writing of its desire to extend the term of this Lease for an additional period of up to thirty-six (36) months. In the event this optional extension of the term is exercised, TENANT agrees that an annual rental rate escalation of $.05/SF shall apply for each year beyond the initial Term of thirty-six (36) months.

1.3 Lease Buy-out. LANDLORD agrees to provide TENANT with an option to terminate its lease before the end of the Term, contingent upon TENANT providing a sixty (60) day written notice to LANDLORD. In the event that TENANT terminates this Lease prior to the end of the Term, TENANT (a) agrees to forfeit its security deposit noted below in Section 2.2 and (b) shall make a payment to LANDLORD in the amount of two (2) months of the current rental rate outlined in Section 2.1.

1.4 First Right of Refusal – First Floor Space. In the event that the first floor of the Building becomes available for lease during the Term of this Lease, TENANT shall have a one-time First Right of Refusal to lease such space. Upon receipt of notice to TENANT by LANDLORD that the space is available for lease, which notice shall also set forth the current market rate for such space, TENANT shall have three (3) business days to respond in writing to LANDLORD if TENANT desires to lease the additional space at that current market rate. If LANDLORD does not receive such written notice from TENANT of TENANT's acceptance to lease the entirety of the offered space at the current market rate, the First Right of Refusal will

thereafter become null and void. This First Right of Refusal shall be subordinate to any previously granted rights to others to lease the space as described herein.

ARTICLE II: RENT, SECURITY DEPOSIT, TENANT IMPROVEMENTS

2.1. Rent. TENANT shall pay rent based on the following schedule ("Rent Schedule") based upon an estimated 803 square feet, which square footage represents the second floor of the Building:

Months	Rent Amount Per Square Foot	Monthly Rent
1-12	$0.75	$602
13-24	$0.80	$642
25-36	$0.85	$683

The rent shall be payable monthly, in advance and on the first day of each calendar month thereafter to LANDLORD, at the following address: 311 Vernon Street, Roseville, CA 95678 Attn: Finance. If the Commencement Date is on a date other than the first of the month, rent shall be prorated for the number of days remaining in the month. If any rent payment is not received by CITY on or before the tenth (10th) day of the month, it shall be deemed delinquent. Delinquent amounts shall be subject to a monthly late charge at the rate of five percent (5%) of the total delinquent amount, and without limitation to LANDLORD's other rights and remedies under this Lease. Monthly rent shall be increased on the first day of the calendar month as specified in the Rent Schedule throughout the Term.

2.2. Security Deposit. LANDLORD acknowledges that TENANT has already paid to LANDLORD a security deposit in the total amount of $1,512. The security deposit shall be held by LANDLORD as security for the faithful performance by TENANT of all the terms, covenants, and conditions of this Lease to be kept and performed by TENANT during the term hereof. If TENANT defaults with respect to any provision of this Lease, including, but not limited to the provisions relating to the payment of rent, LANDLORD may (but shall not be required to) use, apply or retain all or any part of this security deposit for the payment of any rent or any other sum in default, or for the payment of any amount which LANDLORD may spend or become obligated to spend by reason of TENANT's default, or to compensate LANDLORD for any other loss or damage which LANDLORD may suffer by reason of TENANT's default. If any portion of said deposit is used or applied, TENANT shall, within five (5) calendar days after written demand therefore, deposit cash with LANDLORD in an amount sufficient to restore the security deposit to its original amount and TENANT's failure to do so shall be a default under this Lease.

LANDLORD shall not be required to keep this security deposit separate from its general funds, and TENANT shall not be entitled to interest on such deposit. If TENANT shall fully and faithfully perform every provision of this Lease to be performed by it, the security deposit or any balance thereof shall be returned to TENANT (or, at LANDLORD's option, to the last assignee of TENANT's interest hereunder) within thirty (30) calendar days following the expiration of the Lease term.

ARTICLE III: OBLIGATIONS OF PARTIES

3.1. Landlord's Obligations. LANDLORD agrees to provide TENANT the following and makes the following disclosures to TENANT:

a. LANDLORD warrants that to the best of its knowledge the improvements on the Premises comply with the applicable building codes, laws, covenants, or restrictions of record, regulations, and ordinances ("Applicable Requirements") that were in effect at the time that each improvement, or portion thereof, was constructed. LANDLORD agrees to be responsible for continuing to ensure compliance with Applicable Requirements and for remediating any health hazards in the Building, except for those conditions caused (directly or indirectly) as a result of TENANT's activities, or failure to act where TENANT had a duty to act, in which case TENANT shall be responsible for all costs associated with compliance or remediation. The Premises will be delivered in an "As Is" condition. Any warranty provided in this section does not apply to the use to which TENANT will put in the Premises, modifications which may be required by the Americans with Disabilities Act ("ADA") or any similar laws as a result of TENANT's use made or to be made by TENANT. TENANT is responsible for determining whether or not Applicable Requirements, and especially the zoning are appropriate for TENANT's intended use.

b. Nonexclusive use of available public surface lots, provided such use relates to uses approved under Article VII. TENANT shall not be granted reserved, dedicated, or exclusive rights to said public parking owned or controlled by LANDLORD.

c. LANDLORD agrees to be responsible for ensuring compliance with the ADA within the Common Areas (as defined in Article VII) of the Building.

d. LANDLORD shall be responsible for maintenance, repair and rehabilitation of the Building, including heating, ventilation and air conditioning systems, exterior shell roof, exterior lighting, landscaping, parking lot, refuse service, and building alarm system.

3.2. Tenant's Obligations. TENANT's obligations are as follows:

a. TENANT shall, at its own expense, maintain in good condition any portions of the Premises which are its responsibility to maintain under this Lease.

b. TENANT shall be liable for any damage to the Building or Premises resulting from the acts or omissions of TENANT, its authorized representatives, sublessees or any of their invitees. Any damage to LANDLORD's Building or Premises caused by TENANT, its employees, invitees, and/or agents shall be promptly repaired at the sole cost and expense of TENANT. If TENANT fails to begin to make any such required repairs to the Building or Premises within sixty (60) calendar days upon notice by LANDLORD, LANDLORD may, at its option, cause such repairs to be made and demand reimbursement from TENANT, which TENANT shall pay within thirty (30) calendar days of the statement. Any maintenance or repair work to the Building or Premises shall first be coordinated with LANDLORD prior to commencement and shall be permitted only upon written approval of LANDLORD. Maintenance

of unexposed HVAC, electrical, plumbing, and sewage systems which requires entry into bearing or exterior walls, or remodeling of the Premises which requires entry into or moving of bearing walls, shall be at TENANT's sole expense and only after receipt of LANDLORD's written consent.

c. TENANT shall be responsible for ensuring compliance with the ADA within the Premises.

d. TENANT acknowledges that the Building may contain another tenant on the first floor and that such tenant is entitled to peaceably and quietly enjoy their leased premises. Accordingly, TENANT shall not engage in any activities which may impair the other Building tenant's rights to peaceably and quietly enjoy their leased premises.

ARTICLE IV: ALTERATIONS

4.1. Alterations. TENANT shall not make any alterations or modifications to the Building or Premises without LANDLORD's written consent, which consent shall not be unreasonably withheld or delayed. Any such approved alterations made shall remain on and be surrendered with the Premises on expiration or termination of the Lease. LANDLORD shall have the right to require TENANT to remove any and all alterations that TENANT has made to the Premises other than those made with LANDLORD's written consent.

4.2. Commencement of Approved Alterations. If TENANT makes any alterations to the Premises as provided in this Article, such alterations shall not be commenced until five (5) calendar days after LANDLORD has received notice from TENANT stating the date the installation of the alterations is to commence so that LANDLORD can post and record an appropriate notice of non-responsibility.

ARTICLE V: MECHANICS' LIENS

5.1. Mechanics' Liens. TENANT shall keep the Premises free and clear of all mechanics' liens (including stop payment notices) resulting from construction done by TENANT or any person or entity authorized by TENANT.

5.2. Right to Contest. TENANT shall have the right to contest the correctness or the validity of any such lien if, immediately on demand by LANDLORD, TENANT procures and records a lien release bond issued by a corporation authorized to issue surety bonds in California in an amount equal to one and one-half times the amount of the claim of lien. The bond shall meet the requirements of Civil Code § 8424 and shall provide for the payment of any sum that the claimant may recover on the claim (together with costs of suit, if it recovers in the action).

ARTICLE VI: RELOCATION ASSISTANCE

6.1. Waiver of Relocation Assistance. TENANT hereby acknowledges that TENANT is not entitled to, and hereby waives, any relocation assistance under Government Code Section 7260, *et seq.*, 25 Cal Code Regs Section 6000, *et seq.*, 42 USC Section 4601, *et seq.*, and 49 CFR pt 24, upon expiration or termination of the Term of this Lease, including any optional extensions thereof.

ARTICLE VII: USE OF PREMISES AND COMMON AREAS

7.1. Use of Premises. TENANT shall use the Premises for the purpose of a 3D printing shop and office and other commonly associated activities and events that are customarily associated with this use.

7.2. Common Areas. TENANT shall have the right of access and egress to the Premises through the portions of the exterior Common Areas.

a. As used in this Lease, "Common Areas" shall mean all areas around the Building which are not leased or held for the exclusive use of TENANT or other tenants, including, but not limited to, parking areas, driveways, sidewalks, loading areas, access roads, corridors,

restrooms and lobby area on the first floor of the Building, stairwell, elevator, landscaping and planted areas, additional parking facilities in the Common Areas, and includes any increases or decreases to Common Area land and/or facilities. Such activities and changes to the Common Areas are permitted if they do not materially affect TENANT's use of the Premises.

b. TENANT shall have the nonexclusive right (in common with other tenants and all others to whom LANDLORD has granted or may grant such rights) to use the Common Areas for the purposes intended, subject to such reasonable rules and regulations as Landlord may establish from time to time, such rules and regulations to be provided to TENANT by commencement of the Lease, provided the same do not materially restrict or interfere with TENANT's permitted use and such rules and regulations are uniformly applied to all tenants. TENANT shall abide by such rules and regulations and shall use its commercially reasonable efforts to cause others who use the Common Areas with TENANT's express or implied permission to abide by LANDLORD's rules and regulations.

c. TENANT shall pay any and all charges associated with maintenance of the Common Areas.

7.3. Security Regulations. TENANT shall comply with all applicable LANDLORD security regulations regarding access to the Premises.

7.4. Installation within Common Areas. TENANT may not install any equipment or fixtures on the Premises or within Common Areas without the prior written consent of

LANDLORD. Any approved installation of equipment or fixtures must be removed within thirty (30) calendar days after the expiration or termination of this Lease.

7.5. Reserved.

7.6. Waste. TENANT shall not use the Premises or Common Areas in any manner that will constitute waste, nuisance, or unreasonable annoyance to the public or owners or occupants of adjacent properties.

7.7. Damage to Property. TENANT shall not do anything on the Premises and Common Areas that will cause material damage to such property. TENANT shall be liable for material damage pursuant to Section 3.2(b).

7.8. Signage. TENANT may, at its sole expense, cause to be installed wall and/or window signage, and a section of pylon signage, at LANDLORD's sole discretion. All signage, including window signs, shall be subject to review and approval by LANDLORD, and shall comply with the applicable provisions of the City of Roseville Municipal Code, as may be amended from time to time. Upon expiration/termination of the Lease, such signage shall be removed and the Building returned to original condition, excepting ordinary wear and tear.

ARTICLE VIII: LANDLORD'S ENTRY ON PREMISES

8.1. Right of Entry. LANDLORD and its authorized representatives shall have the right to enter the Premises and Common Areas at all reasonable times, and following reasonable notice to the TENANT, for any of the following purposes:

a. To determine whether the Premises is in good condition and whether TENANT is complying with its obligations under this Lease;

b. To do any necessary maintenance and to make any restoration or repair to the Premises that LANDLORD has the right or obligation to perform;

c. To serve, post, or keep posted any notices required or allowed under the provisions of this Lease.

8.2. No Liability. LANDLORD shall not be liable in any manner for any inconvenience, disturbance, loss of business, nuisance, or other damage arising out of LANDLORD's entry on the Premises as provided in this Article, except damage resulting from the acts or omissions of its authorized representatives.

8.3. No Rent Abatement. TENANT shall not be entitled to an abatement or reduction of rent if CITY exercises any rights reserved in this Article. TENANT may request rent abatement from LANDLORD in the event the Premises are inaccessible and/or unusable by TENANT for a period of time exceeding ten (10) calendar days in one month due to unforeseen or critical improvements that are required at the Premises.

ARTICLE IX: TAXES, ASSESSMENTS AND UTILITIES

9.1. Payment of Real Property Taxes. TENANT shall pay all real property taxes attributable to the Premises and business operations including, but not limited to, possessory interest tax, business personal property tax, assessments, general or special taxes levied and assessed against the Premises, that may become payable during the Term. TENANT understands that its interest created by this Lease may be subject to a possessory interest tax pursuant to California Revenue and Taxation Code Sections 107 and 107.6 that impose an ad valorem property tax on possessory interests created in tax exempt property. TENANT understands that any such tax payment shall not reduce any sum due LANDLORD hereunder, and that any such tax shall be the sole liability and responsibility of TENANT. Any taxes due shall be in amounts determined by taxing agencies and will be billed directly to TENANT.

9.2. Payment for Utilities. TENANT shall be responsible for the payment of the following utilities associated with the Premises: electricity, gas, telephone, internet connection and/or cable/satellite television service. Such charges will be billed directly to TENANT.

9.3. Interruption in Utility Services. LANDLORD shall not be liable to TENANT for any losses or damages of any kind or character that result from outages, interruptions or fluctuations in utility services provided to TENANT.

ARTICLE X: INDEMNIFICATION

10.1. Indemnification. LANDLORD shall not be liable to TENANT for any damage to third persons, TENANT or TENANT's property from any cause. TENANT waives all claims against LANDLORD for damage to persons or property arising for any reason, except that LANDLORD shall be liable to TENANT for damage to TENANT resulting from the intentional acts or active negligence of LANDLORD or its authorized representatives.

To the fullest extent allowed by law, TENANT shall defend, indemnify, and save and hold harmless LANDLORD, its officers, agents, employees and volunteers from any claims, suits or actions of every name, kind and description brought forth, or on account of, injuries to or death of any person (including but not limited to workers and the public), or damage to property, resulting from or arising out of TENANT's, including but not limited to, its contractors, agents, staff, and invitees, willful misconduct or negligent act or omission while engaged in the performance of obligations or exercise of rights created by this Lease, except those matters arising from LANDLORD's active negligence or intentional misconduct. The parties intend that this provision shall be broadly construed.

TENANT's responsibility for such defense and indemnity obligations shall survive the termination or completion of this Lease for the full period of time allowed by law. The defense and

indemnity obligations of this Lease are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained in this Lease.

ARTICLE XI: INSURANCE

11.1. Tenant's Insurance Requirements. TENANT at its cost shall maintain the following insurance policies: (a) commercial general liability insurance with limits of One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) aggregate, with such endorsements as LANDLORD may reasonably require. All general liability insurance shall insure performance by TENANT of the indemnity provisions of Article X; (b) Workers' Compensation with statutory limits.

11.2. Additional Insureds. TENANT shall also provide a separate endorsement form or section of the policy showing LANDLORD, its officers, agents, employees and volunteers as additional insureds for each type of coverage, except for Workers' Compensation. Such insurance shall specifically cover the contractual liability of TENANT. The additional insured coverage under TENANT's policy shall be primary and noncontributory, as evidenced by a separate endorsement or section of the policy, and shall not seek contribution from TENANT's insurance or self-insurance. In addition, the additional insured coverage shall be at least as broad as the Insurance Services Office ("ISO") CG 20 01 Endorsement. Any available insurance proceeds in excess of the specified minimum insurance coverage requirements and limits shall be available to the additional insureds. Furthermore, the requirements for coverage and limits shall be: (a) the minimum coverage and limits specified in this Lease; or (b) the full coverage and maximum limits of any insurance proceeds available to the named insureds, whichever is greater.

11.3. Annual Review. On an annual basis, LANDLORD shall have the right to review all insurance coverage required by this Lease. If, in the opinion of LANDLORD's Risk Manager the amount of general liability, property damage and any other applicable insurance coverage at

that time is not adequate, TENANT shall increase the insurance coverage as reasonably required by LANDLORD's Risk Manager.

11.4. Personal Property. TENANT, at its cost, shall maintain on all its personal property, TENANT's improvements installed or constructed by TENANT, and alterations made by TENANT, in, on, or about the Premises, a policy of standard fire and extended coverage insurance, to the extent of at least one hundred percent (100%) of the actual cash value of such property. The proceeds from any such policy shall be used by TENANT for the replacement of personal property and the restoration of TENANT installed or constructed improvements or alterations.

11.5. Additional Requirements. All the insurance required under this Lease shall:

a. Be issued as a primary policy.

b. Contain an endorsement requiring ten (10) calendar days' written notice from the insurance company to LANDLORD before cancellation or change in the coverage, scope, or amount of any policy.

c. Be evidenced by a certificate of insurance in a form consistent with the requirements of this Article.

d. The limits of insurance required in this Lease may be satisfied by a combination of primary and excess insurance. Any excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of LANDLORD (if agreed to in a written contract) before LANDLORD's own insurance shall be called upon to protect it as a named insured.

e. TENANT agrees to include in its contracts with all contractors the same requirements and provisions of this Lease, including the indemnity and insurance requirements, to the extent they apply to the scope of the contractor's work. Furthermore, TENANT shall require its contractors to agree to be bound to TENANT and LANDLORD in the same manner and to the same extent as TENANT is bound to LANDLORD under this Lease. Additionally, TENANT shall obligate its contractors to comply with these same provisions with respect to any tertiary subcontractor, regardless of tier. A copy of LANDLORD's indemnity and insurance provisions will be furnished to the contractor upon request. The term "contractor" additionally includes subcontractors of any tier.

f. All self-insured retentions ("SIR") must be disclosed to the City of Roseville's Risk Manager for approval and shall not reduce the limits of liability. Policies containing any SIR provision shall provide or be endorsed to provide that the SIR may be satisfied by either the named insured or LANDLORD. LANDLORD reserves the right to obtain a full certified copy of any insurance policy and endorsements. The failure to exercise this right shall not constitute a waiver of such right.

g. Insurance coverage in the minimum amounts set forth herein shall not be construed to relieve TENANT of liability in excess of such coverage, nor shall it preclude LANDLORD from taking such other actions as are available to it under any other provisions of this Lease or law.

11.6. Landlord's Insurance Requirements. LANDLORD shall maintain a policy of insurance covering the replacement cost of the Building and Premises during the term of the Lease. During the Lease Term, LANDLORD shall maintain a policy of contractual liability coverage and commercial general liability insurance (sometimes known as broad form comprehensive general

liability insurance) insuring LANDLORD against liability for bodily injury, property damage and personal injury arising out of LANDLORD's ownership, operation, use or occupancy of the Building.

ARTICLE XII: HAZARDOUS MATERIALS

12.1. Handling of Hazardous Materials. TENANT agrees that any and all handling, transportation, storage, treatment, disposal, or use of hazardous materials by TENANT in or about the Premises shall strictly comply with all applicable local, state and federal environmental laws and regulations. TENANT will not use or allow the use of the Premises in a manner that may cause hazardous materials to be released or to become present on, under, or about the Premises or other properties in the vicinity of the Premises. If the presence of hazardous materials on the Premises caused or permitted by TENANT results in the contamination or deterioration of the Premises or any water or soil beneath the Premises, TENANT shall promptly take all action necessary to investigate and remedy that contamination. However, unless an emergency situation exists that requires immediate action, LANDLORD's written approval of these actions shall first be obtained, and such approval will not be unreasonably withheld.

12.2. Environmental Indemnification. TENANT shall defend, indemnify, and save and hold harmless LANDLORD, its officers, agents, employees and volunteers and each of their respective successors and assigns (individually and collectively) from all claims, judgments, causes of action, damages, penalties, fines, taxes, costs, liabilities, loses, and expense arising (directly or indirectly) as a result of or in connection with TENANT's breach of any prohibition or provisions of this Lease, or the presence of any hazardous materials that migrate from the Premises to other properties, as a result (directly or indirectly) of TENANT's activities, or failure to act where TENANT had a duty to act, on or in connection with the Premises.

This obligation by TENANT to defend, indemnify, and save and hold harmless LANDLORD includes, without limitation, costs and expenses incurred for or in connection with any investigation, clean up, remediation, monitoring, removal, restoration, or closure work required because of any hazardous materials present on, under or about the Premises; the costs and expenses or restoring, replacing, or acquiring the equivalent of damaged natural resources if required under any local, state or federal environmental law or regulation; all foreseeable consequential damages; all reasonable damages for the loss or restriction on use of rentable or usable space of any amenity of the premises; all reasonable sums paid in settlement of claims; reasonable attorney's fees; litigation, arbitration, and administrative proceeding costs; and reasonable expert, consultant, and laboratory fees. Neither the written consent of LANDLORD to the presence of hazardous materials on or under the Premises, nor the strict compliance by TENANT of all environmental laws and regulations, will excuse TENANT from the indemnification obligation. This indemnity will survive the expiration or termination of this Lease.

12.3. Hazardous Materials Defined. As used in this Article, the term "hazardous materials" means any chemical, substance, material, controlled substance, object, condition, waste, living organism, or combination that is or may be hazardous to human health or to the safety of the environment due to its radioactivity, ignitability, corrosivity, reactivity, explosivity, toxicity, carcinogenicity, mutagenicity, phytotoxicity, infectiousness, or other harmful or potentially harmful properties or effects, including, without limitation, petroleum and petroleum products, asbestos, radon, polychlorinated biphenyls (PCBs) and all of those chemicals, substances, materials, controlled substances, objects, conditions, wastes, living organisms, or combinations that are now or become in the future listed, defined, or regulated in any manner by any local, state or federal environmental law or regulation based upon, directly or indirectly, their properties or effects.

ARTICLE XIII: CONDEMNATION

13.1. Termination due to Condemnation. If the Premises is taken in entirety by condemnation by LANDLORD, this Lease shall terminate as of the date of taking.

13.2. Condemnation of Portion of Premises. If a portion of the Premises is taken by condemnation by LANDLORD, this Lease shall remain in effect, except that TENANT may elect to terminate this Lease if twenty-five (25 %) percent or more of the total square feet in the Premises is taken. Furthermore, the amount of rent shall be reduced by the loss of the portion of the Premises resulting from condemnation.

ARTICLE XIV: ASSIGNMENT OR SUBLEASE

14.1. Consent for Assignments and Subleases. TENANT shall not assign or encumber its interest in this Lease or in the Premises, or sublease all or any part of the Premises without LANDLORD'S prior written consent, which consent shall not be unreasonably withheld or delayed. Any assignment, encumbrance, or sublease without LANDLORD's written consent shall be voidable and, at LANDLORD's election, shall constitute an event of default of this Lease. No consent to any assignment, encumbrance, or sublease shall constitute a further waiver of any provision of this Lease. Notwithstanding the provisions of the above, TENANT may assign this Lease or sublet the Premises or any portion thereof, without LANDLORD's consent, to any entity which controls, is controlled by or is under common control with TENANT, or to any entity resulting from a merger or consolidation with TENANT, or to any person or entity which acquires all the assets of TENANT's business as a going concern, provided that: (a) the assignee or sublessee assumes, in full, the obligations of TENANT under this Lease; (b) TENANT remains fully liable under this Lease; and (c) TENANT gives written notice to LANDLORD of such assignment or sublease.

14.2. No Assignments by Operation of Law. No interest of TENANT in this Lease shall be assignable by operation of law (including, without limitation, the transfer of this Lease by testacy or intestacy). Each of the following acts shall be considered an assignment unauthorized by LANDLORD:

a. If TENANT is or becomes bankrupt or insolvent, makes or attempts to make an assignment for the benefit of creditors, or institutes a proceeding under the Bankruptcy Act in which TENANT is the bankrupt party;

b. If a writ of attachment or execution is levied on this Lease;

c. If, in any proceeding or action to which TENANT is a party, a receiver is appointed with authority to take possession of the Premises.

14.3. Unauthorized Assignments. An unauthorized assignment shall constitute a default by TENANT and LANDLORD shall have the right to elect to terminate this Lease, in which case this Lease shall not be treated as an asset of TENANT.

ARTICLE XV: WAIVER

15.1. No General Waivers. No delay or omission in the exercise of any right or remedy of LANDLORD on any default by TENANT shall impair such a right or remedy or be construed as a waiver.

15.2. Acceptance of Delinquent Rent not Waiver. The receipt and acceptance by LANDLORD of delinquent rent shall not constitute a waiver of any other default; it shall constitute only a waiver of timely payment for the particular rent payment involved.

15.3. No Acceptance of Surrender of Premises. No act or conduct of LANDLORD, including, without limitation, the acceptance, of the keys to the Premises, shall constitute an acceptance of the surrender of the Premises by TENANT before the expiration of the term. Only a notice from LANDLORD to TENANT shall constitute acceptance of the surrender of the Premises

and accomplish a termination of the Lease, subject to damages for breach of contract.

15.4. Consent not Waiver. LANDLORD's consent to or approval of any act by TENANT requiring LANDLORD's consent or approval shall not be deemed to waive or render unnecessary LANDLORD's consent to or approval of any subsequent act by TENANT.

15.5. Waiver in Writing. Any waiver by LANDLORD of any default must be in writing and shall not be a waiver of any other default concerning the same or any other provision of the Lease.

ARTICLE XVI: RECORDATION

16.1. Recordation of Lease. This Lease or Memorandum of Lease, subject to the discretion of the City Clerk and City Attorney, shall be recorded against the Premises. A form Memorandum of Lease is set forth in Exhibit A, attached hereto and incorporated herein.

ARTICLE XVII: SURRENDER OF PREMISES; HOLDING OVER

17.1. Surrender at Termination. On expiration or not later than ten (10) calendar days after termination of the Term, TENANT shall return the Premises to its original condition, normal wear and tear excepted, and surrender to LANDLORD the Premises and all TENANT's improvements and alterations in good condition, except for ordinary wear and tear and except for alterations that TENANT has the right to remove or is obligated to remove under the provisions of this Lease. TENANT shall remove all its personal property within the above stated time. TENANT shall perform all restoration made necessary by the removal of any alterations or TENANT's personal property within the time periods stated in this paragraph.

All movable partitions, business and trade fixtures, machinery and equipment, communications equipment and office equipment located in the Building and acquired by or for the account of TENANT, without expense to LANDLORD, which can be removed without structural damage to the Building, and all furniture, furnishings and other articles of movable personal property owned by

TENANT and located in the Premises (collectively "TENANT's Property") shall be and shall remain the property of TENANT and may be removed by TENANT at any time during the Term; provided that if any of TENANT's Property is removed, TENANT shall promptly repair any damage to the Premises or to the Building resulting from such removal.

17.2. Disposition of Personal Property. LANDLORD can elect to retain or dispose of in any manner any alterations or TENANT's personal property that TENANT does not remove from the Premises upon expiration or termination of the Term as allowed or required by this Lease by giving at least ten (10) calendar days' notice to TENANT. Title to any such alterations or TENANT's personal property that LANDLORD elects to retain or dispose of upon expiration of the ten (10) calendar day period shall be deemed vested in LANDLORD. TENANT waives all claims against LANDLORD for any damage to TENANT resulting from LANDLORD's retention or disposition of any such alterations or TENANT's personal property. TENANT shall be liable to LANDLORD for LANDLORD's costs for storing, removing, and disposing of any alterations or TENANT's personal property.

17.3. Hold Harmless. If TENANT fails to surrender the Premises to LANDLORD on expiration or termination of the term as required by this Article, TENANT shall hold LANDLORD harmless from all damages resulting from TENANT's failure to surrender the Premises, including, without limitation, claims made by a succeeding TENANT resulting from TENANT's failure to surrender the Premises.

17.4. Holdover Rights. TENANT shall have the right to holdover for up to three (3) months after expiration of termination of the Initial Term or an Extension. Such holdover shall be upon the same terms and conditions as this Lease except that rent shall be one-hundred and twenty-five percent (125%) of the last month's rental amount at the end of the Term or Extension. In order to exercise this right, TENANT shall give LANDLORD four (4) months prior written notice

of its exercise of this right.

ARTICLE XVIII: NOTICE

18.1. Notice. Any consent, approval, or communication that either party desires or is required to give the other party shall be in writing and may be delivered personally or by deposit in the U.S. mail, first class postage prepaid, addressed as follows:

LANDLORD	TENANT
City of Roseville City Manager 311 Vernon Street Roseville, CA 95678	Ten Twenty-Three LLC Attn: Tyler Devine 201 Pacific Street Roseville, CA 95678

With a copy to:

City of Roseville
City Attorney
311 Vernon Street
Roseville, CA 95678

18.2. Change of Address. Either party may change its address by giving notice of the change of address to the other party. Notice shall be deemed received forty-eight (48) hours after the time of mailing, if mailed as provided in this section.

ARTICLE XIX: TERMINATION

19.1. Material Default. Any of the following events shall constitute a material default (or event of default) and breach of this Lease by TENANT:

a. Abandonment or vacation of the Premises or any substantial portion thereof (failure to occupy and operate the Premises for ten (10) consecutive calendar days without LANDLORD's consent shall be deemed an abandonment and vacation). The making by TENANT of any general assignment or general arrangement for the benefit of creditors; or the filing by or against TENANT of a petition to have TENANT adjudged a bankrupt or a petition or reorganization or arrangement under any law relating to bankruptcy (unless, in the case of a petition filed against TENANT, the same is dismissed within thirty (30) calendar days); or the

appointment of a trustee or a receiver to take possession of substantially all of TENANT's assets located at the Premises or of TENANT's interest in this Lease, where possession is not restored to TENANT within thirty (30) calendar days; or the attachment, execution or other judicial seizure of substantially all of TENANT's interest in this Lease, where such seizure is not discharged in thirty (30) calendar days.

b. If TENANT has not complied in good faith with the terms and conditions of this Lease, LANDLORD may declare a default of this Lease. LANDLORD shall give TENANT a written notice of the default, after which TENANT shall cure the default within thirty (30) calendar days. If TENANT does not cure the default within thirty (30) calendar days, LANDLORD may terminate this Lease immediately.

c. If TENANT fails to pay rent, and/or any other amount due and payable hereunder upon the date when such payment is due, such failure continuing for a period of ten (10) business days following written notice from LANDLORD specifying the alleged default ("Payment Cure Period"), LANDLORD may terminate the Lease. In the event that LANDLORD does not receive payment during the Payment Cure Period, this Lease shall, at the option of LANDLORD, immediately terminate.

d. If TENANT violates any applicable law, rule, statute, ordinance, order, or regulation applicable to TENANT's use of the Premises and does not cure such violation within thirty (30) calendar days of the date of the notice from the LANDLORD to TENANT, LANDLORD may immediately terminate this Lease.

19.2. Landlord's Rights and Remedies. In addition to the remedies identified herein, upon the occurrence of a default (or event of default) by TENANT to perform or observe any material obligation of this Lease (after the expiration of all applicable notice and cure periods), LANDLORD shall be entitled to the following rights and remedies in addition to all other available rights and remedies:

a. Subject to expiration of all applicable notices and cure periods, LANDLORD shall have the right to terminate this Lease, and at any time thereafter recover possession of the Premises and expel therefrom TENANT and repossess the Premises without prejudice to any other available remedies by reason of TENANT's default.

b. This Lease shall continue in effect for so long as LANDLORD does not terminate TENANT's right to possession, and LANDLORD may enforce all of its rights and remedies under this Lease, including without limitation the right to recover the rent as it becomes due without terminating this Lease.

c. Notwithstanding anything to the contrary, in the event that TENANT cannot reasonably cure the default within the cure period, but TENANT has commenced to cure the default within the cure period, then LANDLORD shall have no right to terminate the Lease, so long as the default is eventually cured within a reasonable period of time.

19.3. Landlord's Default. If LANDLORD fails to perform any covenant, condition or agreement contained in this Lease within thirty (30) calendar days after receipt of written notice from TENANT specifying such default, or if such default cannot reasonably be cured within thirty (30) calendar days and LANDLORD fails to commence to cure within that thirty (30) calendar day period, then LANDLORD shall be liable to TENANT for any actual damages sustained by TENANT as a result of LANDLORD's breach. If, after notice to LANDLORD of default, LANDLORD (or any first mortgagee or first deed of trust beneficiary of LANDLORD) fails to cure the default as provided herein, then TENANT shall have the right to cure that default at LANDLORD's expense. TENANT, at TENANT's election, shall have the right to withhold, reduce or offset any amount against any payments of rent or any other charges due and payable under this Lease.

19.4 Termination for Convenience. LANDLORD may terminate this Lease for convenience provided that sixty (60) days advance written notice of such termination is provided to

TENANT.

ARTICLE XX: MISCELLANEOUS PROVISIONS

20.1. No Partnership or Joint Venture. LANDLORD shall not become or be deemed a partner or a joint venture with TENANT by reason of any provisions of this Lease.

20.2. Access to Records. Duly authorized representatives of LANDLORD shall have right of access during normal business hours to TENANT's files and records relating to the use of the Premises, and may review the files and records at appropriate stages during TENANT's use of the Premises.

20.3. Modifications. This Lease and each provision contained herein may be waived, amended, supplemented or eliminated only by mutual written agreement of the Parties.

20.4. Compliance with Laws. TENANT will comply with all federal, state and local laws, ordinances and policies as may be applicable to TENANT's use of the Premises under this Lease.

20.5. Attorneys' Fees; Venue; Governing Law. If either Party commences any legal action against the other party arising out of this Lease or the performance hereof, the prevailing Party in such action shall be entitled to recover its reasonable litigation expenses, including but not limited to, court costs, expert witness fees, discovery expenses, and attorneys' fees. Any action arising out of this Lease shall be brought in Placer County, California, regardless of where else venue may lie. This Lease shall be governed by and construed in accordance with the laws of the State of California.

20.6. Force Majeure. If the performance under this Lease is prevented, restricted or interfered with by reason of lightning, earthquake or other act of God, embargoes, government ordinances or requirements, civil or military authorities, power outages or brownouts, or mechanical, electronic or communications failures, or other causes beyond the reasonable control

of the Party whose performance is affected (excluding financial condition, labor shortage, negligence or willful misconduct), then the Party affected, upon giving prompt notice to the other Party, shall be excused from such performance on a day-for-day basis and the other party will similarly be excused from related performance; provided that the Party so affected shall use reasonable efforts to avoid or remove such causes of non-performance and both Parties shall proceed to perform their obligations with dispatch whenever such causes or removed or cease.

20.7. Integration. This is an integrated Lease, and contains all of the terms, considerations, understanding and promises of the Parties. It shall be read as a whole.

20.8. Severability. If any of the provisions contained in this Lease are for any reason held invalid or unenforceable, such holding shall not affect the remaining provisions or the validity and enforceability of the Lease as a whole.

20.9. Quiet Enjoyment. TENANT, upon paying the rent and performing all of its obligations under this Lease, shall peaceably and quietly enjoy the Premises, subject to the terms of this Lease and to any mortgage, lease, or other agreement to which this Lease may be subordinate; provided, however, that TENANT acknowledges that the Premises is in the direct vicinity of the Union Pacific Railroad railyard, and therefore the Premises is subject to frequent noise, vibration, smoke and dust associated with railyard activity.

20.10. Governing Agreement. In the event of any conflict between this Lease and its exhibits, the provisions of this Lease shall govern.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation has authorized the execution of this Lease in duplicate by its City Manager and attested to by its City Clerk under the authority of Resolution No._____, adopted by the Council of the City of Roseville on the ___ day of_____, 2025, and TENANT has caused this Lease to be executed.

LANDLORD:

CITY OF ROSEVILLE, a municipal corporation:

BY:_____
DOMINICK CASEY
City Manager

TENANT:

Ten Twenty-Three LLC, a California limited liability company

BY:_____
Print name: TYLER DEVINE
Title: C.O.O.

ATTEST:

BY:_____

CARMEN AVALOS
City Clerk

APPROVED AS TO FORM:

BY: _____

MICHELLE SHEIDENBERGER
City Attorney

APPROVED AS TO SUBSTANCE:

BY _____

MELISSA ANGUIANO
Economic Development Director

EXHIBIT LIST:

A. Memorandum of Lease

EXHIBIT A

Memorandum of Lease

RECORDING REQUESTED BY AND

AFTER RECORDATION, MAIL TO:

City of Roseville
311 Vernon Street
Roseville, CA 95678
Attn: City Clerk

EXEMPT FROM RECORDING FEES PURSUANT TO GOV. CODE § 27383
THE UNDERSIGNED GRANTOR DECLARES:
DOCUMENTARY TRANSFER TAX IS $0.00 CITY TRANSFER TAX IS $0.00
This conveyance is exempt from the documentary transfer tax since the lease term is less than 35 years per R & T §61 and §11911.

Space Above Line For Recorder's Use

MEMORANDUM OF LEASE

This Memorandum of Lease is made and entered into this_____day of _____ 2025, by and between City of Roseville, a municipal corporation ("LANDLORD"), and Ten Twenty-Three LLC, dba Ten Twenty 3D a California limited liability company (hereinafter "TENANT"), who agree as follows:

1. LANDLORD leases to TENANT and TENANT leases from LANDLORD space within a building on real property located in the City of Roseville, County of Placer, State of California, Assessor's Parcel Number 012-120-002, as more particularly shown in **Exhibit A** attached hereto and incorporated by reference herein (the "Leased Premises").

2. This Memorandum of Lease is made upon all the terms and conditions of that certain unrecorded Lease Agreement relating to the leased premises between LANDLORD and TENANT dated_____, 2025 ("Lease Agreement") on file with the City Clerk, and all of said terms and conditions are incorporated by reference herein.

3. The term of the Lease Agreement shall continue for a period of thirty-six (36) months, unless extended or earlier terminated according to the terms of the Lease Agreement.

[SIGNATURE BLOCKS APPEAR ON FOLLOWING PAGE]

IN WITNESS WHEREOF, upon the day and year first hereinabove written, the respective Parties hereto have executed this Memorandum of Lease, personally or by officers or agents thereunto duly authorized.

LANDLORD:

CITY OF ROSEVILLE, a municipal corporation:

BY:_____
DOMINICK CASEY
City Manager

TENANT:

Ten Twenty-Three LLC , a California limited liability company

BY:_____
Print name: TYLER DEVINE
Title: C.O.O.

[NOTARIZATION OF SIGNATURES REQUIRED]

CALIFORNIA ACKNOWLEDGMENT CIVIL CODE § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of Placer }

On March 31, 2025 *Date* before me, Blair Hutchison, Notary Public *Here Insert Name and Title of the Officer*

personally appeared Tyler Devine *Name(s) of Signer(s)*

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

BLAIR HUTCHISON
Notary Public - California
Placer County
Commission # 2438460
My Comm. Expires Feb 16, 2027

Place Notary Seal and/or Stamp Above

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Blair Hutchison
Signature of Notary Public

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____
☐ Corporate Officer – Title(s): _____
☐ Partner – ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator
☐ Other: _____
Signer is Representing: _____

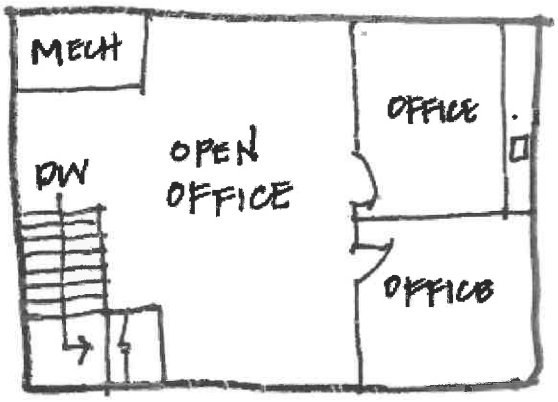
Signer's Name: _____
☐ Corporate Officer – Title(s): _____
☐ Partner – ☐ Limited ☐ General
☐ Individual ☐ Attorney in Fact
☐ Trustee ☐ Guardian or Conservator
☐ Other: _____
Signer is Representing: _____

©2019 National Notary Association

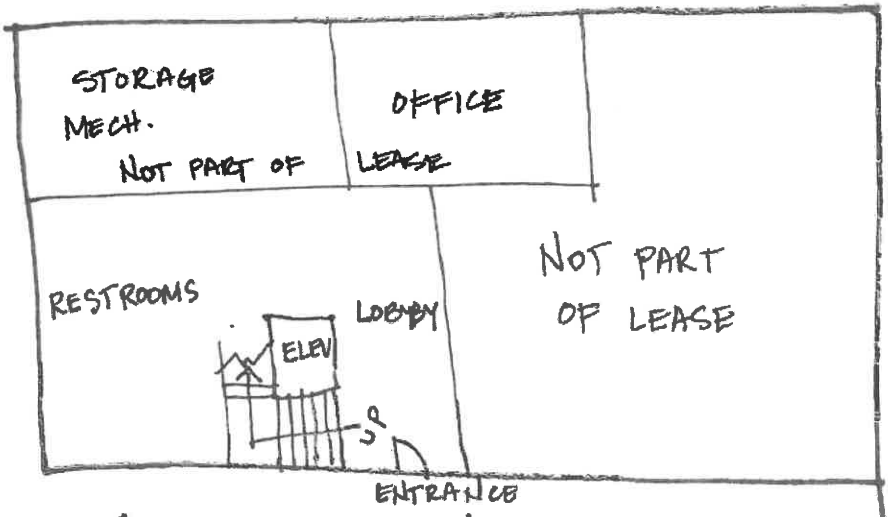
Exhibit A
to Memorandum of Lease

Legal Description

Second floor of APN 012-120-002-000, addressed 201 Pacific Street, with access to the second floor provided via the common lobby, interior stairwell and elevator. The approximately 803 square feet second floor leased space includes an open office area and two additional enclosed office spaces, one with a sink.



2ND FLOOR



1ST FLOOR – NOT PART LEASE EXCEPT ENTRANCE AND COMMON RESTROOMS, STAIRWELL AND ELEVATOR

Notice of Exemption

To: Placer County Clerk
Recorder's Office
2954 Richardson Drive
Auburn, CA 95603

From: City of Roseville
Development Services Dept.
311 Vernon Street
Roseville, CA 95678

Project Title: 201 Pacific Street – Lease Agreement

Project Location(s): 201 Pacific Street (APN 012-120-002-000), Roseville, CA

Project Description: The project is a 3-year lease agreement for the approximately 1,000-square foot vacant second floor space of the Roseville Train Station located at 201 Pacific Street.

Public Agency Approving Project: Roseville City Council

Agency/Individual Carrying Out Project: City of Roseville City Manager's Office/Economic Development

Reason why this Project is Exempt: This project qualifies for a Class 1 Exemption as described in Section 15301 of the California Environmental Quality Act (CEQA) guidelines which states:

> "Class 1 consists of the… leasing of public or private structures,…facilities… involving negligible or no expansion of existing or former use… Examples include but are not limited to: (a) Interior or exterior alterations involving such things as interior partitions, plumbing, and electrical conveyances.

The project involves the leasing of an existing public structure or facility, which will have the same purpose and capacity as the existing facilities. Therefore, the Class 1 Exemption is applicable to the proposed project.

Lead Agency Contact Person: Robert Cline, City Manager's Office/Economic Development, 311 Vernon Street, Roseville, CA 95678 (916) 746-1172.

Signature: Jessica Lynch Date: 3/31/2025

Jessica Lynch, Environmental Coordinator
City of Roseville

COUNCIL COMMUNICATION

CC #: 3849
File #: 0800-04

Title:	Pleasant Grove Boulevard Widening Project – Pacific Gas & Electric Agreement
Contact:	Nicolas Bumb 916-746-1313 nfbumb@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.19.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution approving an agreement with Pacific Gas & Electric (PG&E) in the amount of $84,440.76 and authorize the City Manager to execute the agreement and all related forms on behalf of the City.

BACKGROUND

Pleasant Grove Boulevard is a multi-lane arterial roadway providing a connection from West Roseville to Highway 65 and Rocklin. The number of lanes on the roadway vary from four to six lanes. This Pleasant Grove Boulevard Widening Project is widening the segment between Foothills Boulevard and Woodcreek Oaks Boulevard from four to six lanes. The project is currently in construction.

During design, several underground utilities were identified to be in the project area, including a gas main owned and maintained by PG&E. A portion of the Pleasant Grove Boulevard widening was expected to occur over a portion of the existing gas line. The gas line depth was verified in several locations, and relocation was deemed not necessary based on that verification.

During construction, it was discovered that a portion of the gas line unexpectedly crests, causing it to be too shallow across a distance of approximately 100 feet. Due to the gas main's shallow depth and location of adjacent utilities, relocation by lowering is the only viable solution.

The location of the gas main within an existing easement makes relocation of the main an obligation of the City's project. Upon execution of the subject agreement, PG&E will relocate the gas line and the City will reimburse their costs using available project budget.

The project is expected to be complete in June 2025.

FISCAL IMPACT

The gas main relocation is anticipated to cost $84,440.76 and be paid for by existing project budget. The project is fully funded by the Traffic Mitigation Fee fund (TMF) and there is adequate funding in the project to complete the work. No General Fund resources will be used to complete the project.

ENVIRONMENTAL REVIEW

Project level CEQA compliance for the Pleasant Grove Boulevard Widening Project was accomplished with the preparation of the Subsequent Initial Study/Mitigated Negative Declaration for the Pleasant Grove Widening Project (IS/MND-PG) (Adopted: August 16, 2023) (SCH No. 2019080418). Because the project is consistent with the project evaluated in the IS/MND-PG, no new effects would be expected to occur and all applicable mitigation measures from the IS/MND-PG will be implemented. As such, no additional CEQA action is required at this time.

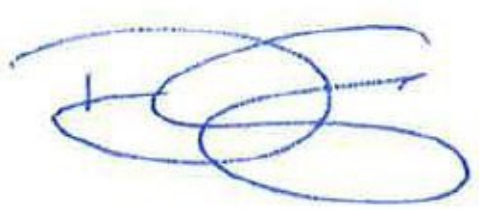
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal E - Deliver exceptional city services
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Nicolas Bumb, Associate Engineer

Jason Shykowski, Public Works Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

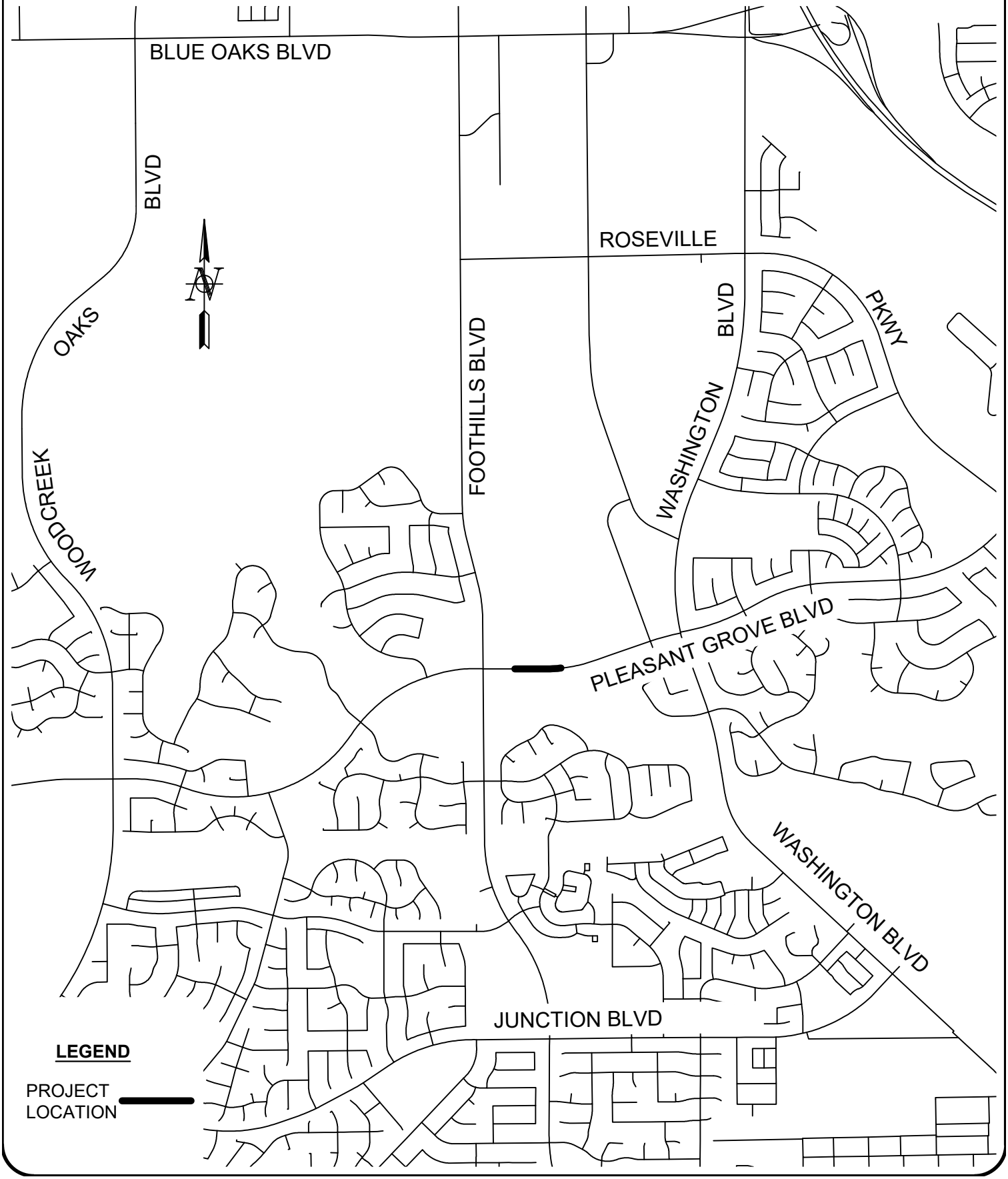
Location Map

Resolution 25-105

PG&E Agreement to Perform Work

PG&E RELOCATION AT THE PLEASANT GROVE BOULEVARD WIDENING PROJECT

VICINITY MAP



RESOLUTION NO. 25-105

APPROVING A PACIFIC GAS & ELECTRIC AGREEMENT TO PERFORM TARIFF SCHEDULE RELATED WORK, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT AND ALL RELATED FORMS ON BEHALF OF THE CITY OF ROSVILLE

WHEREAS, Pleasant Grove Boulevard is a multi-lane arterial roadway providing a connection from West Roseville to Highway 65 and Rocklin; and

WHEREAS, the Pleasant Grove Boulevard Widening Project is widening the segment between Foothills Boulevard and Woodcreek Oaks Boulevard from four to six lanes; and

WHEREAS, during design, several underground utilities were identified to be in the project area, including a gas main owned and maintained by Pacific Gas & Electric (PG&E); and

WHEREAS, PG&E will relocate the gas line and the City will reimburse their costs using available project budget; and

WHEREAS, the Agreement to Perform Tariff Schedule Related Work, by and between PG&E and the City of Roseville, has been reviewed by the City Council.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said Pacific Gas & Electric Agreement to Perform Tariff Schedule Related Work is hereby approved and the City Manager is authorized to execute it and all related forms on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this ____ day of _____, 20__, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

Customer Payment Coupon

References	
Notification #	126432894
Contract #	50117730 V2
GRR-PM#	47147217
Customer #	4240755

March 13, 2025

City of Roseville
311 Vernon Street
ROSEVILLE, CA 95678

Customer Cost Summary

PLEASANT GROVE BLVD, ROSEVILLE

Amounts Due		Total Due
Gas Reloc & Rearrangement Non-Refundable Payment	$84,440.76	
		$84,440.76

Important Payment Information

To complete your contract ONLINE

- Follow the instructions provided with your electronic contract
- Submit payment at **https://www.pge.com/contractpayments**

To complete your contract BY MAIL

- Please make check payable to: **PG&E** or **Pacific Gas and Electric**
- Complete, sign and return the enclosed agreement(s), the SACAC form and the customer payment coupon with your payment
- **Remit payment and SACAC form to**:
  PG&E CFM/PPC Department
  PO BOX 997340
  Sacramento, CA 95899-7340

IMPORTANT MESSAGE

Please review the enclosed information and total due. This document needs to be returned with the enclosed agreements.

If you complete your contract ONLINE, a copy will be saved to your Customer Connections Online (CCO) account at **pge.com/cco.**

To learn more about PG&E's gas and electric safety initiatives and resources please visit **pge.com/safety.**

Have Questions?
Please Call 1-800-422-0436

126432894

®Pacific Gas and Electric Company

Agreement to Perform Tariff Schedule Related Work

DISTRIBUTION:

- ☐ Applicant (Original)
- ☐ Division (Original)
- ☐ ACCTG. SVCS.

REFERENCES:

Notification #	126432894
Contract #	50117730 V2
RR-PM #	

March 13, 2025

City of Roseville, A GOVERNMENT AGENCY (Applicant) has requested PACIFIC GAS AND ELECTRIC COMPANY, a California corporation (PG&E), to perform the tariff schedule related work as located and described in paragragh 3 herein. PG&E agrees to perform the requested work and furnish all necessary labor, equipment, materials and related facilities required therefore, subject to the following conditions:

1. Whenever part or all of the requested work is to be furnished or performed upon property other than that of Applicant, Applicant shall first procure from such owners all necessary rights-of-way and/or permits in a form satisfactory to PG&E and without cost to it.

2. Applicant shall indemnify and hold harmless PG&E, its officers, agents and employees, against all loss, damage, expense and liability resulting from injury to or death of any person, including but not limited to, employees of PG&E, Applicant or any third party, or for the loss, destruction or damage to property, including, but not limited to property of PG&E, Applicant or any third party, arising out of or in any way connected with the performance of this agreement, however caused, except to the extent caused by the active negligence or willful misconduct of PG&E, its officers, agents and employees. Applicant will, on PG&E's request, defend any suit asserting a claim covered by this indemnity. Applicant will pay all costs that may be incurred by PG&E in enforcing this indemnity, including reasonable attorneys' fees.

3. The location and requested work are described as follows: (Describe in detail the materials and facilities to be furnished and/or work to be performed by PG&E. If more space is required, use other side and attach any necessary drawings as Exhibits A, B, C, etc):

LOCATION: **PLEASANT GROVE BLVD, ROSEVILLE**

DESCRIPTION OF WORK ELECTRIC:

DESCRIPTION OF WORK GAS: **LOWER GAS MAIN FOR AGENCY ROAD WIDENING PROEJCT**

			Electric	Gas
Engineering and Administrative Costs		(+)	$0.00	$24,611.44
Including Applicant Design Value of			$0.00	$0.00
Re-engineering/Comp Prep/Add'l AD Plan Checks		(+)	$0.00	$2,192.71
Facilities (Cable, Transformers / Gas Pipe)		**(+)**	$0.00	$0.00
Trench, Conduits & Substructures		**(+)**	$0.00	$0.00
Tie-In / Meters		**(+)**	$0.00	$51,253.66
Trench Permits & Land Rights		**(+)**	$0.00	$6,382.95
Inspection Fees		**(+)**	$0.00	$0.00
Subtotal		**(=)**	$0.00	$84,440.76
Including Net Joint Pole Credit Value of			$0.00	$0.00
plus ITCC @	0% Electric 0% Gas	(+)	$0.00	$0.00
plus Non Taxable Work		**(+)**	$0.00	$0.00
D.0405055 Line Extension Costs - Residential		**(+)**	$0.00	$0.00
D.0405055 Line Extension Costs - Non-Residential		**(+)**	$0.00	$0.00
less Value of Relocation Applicant Design Work		(-)	$0.00	$0.00
less Work Provided by Applicant		(-)	$0.00	$0.00
less Salvage		(-)	$0.00	$0.00
Total Payment		**(=)**	$0.00	$84,440.76

126432894

62-4527 (Rev 1/91)
Service Planning
Advice No. 1633-G/1342-E
Effective 4/02/91

* Automated document, Preliminary Statement, Part A

4. Applicant shall pay to PG&E, promptly upon demand by PG&E, as the complete contract price hereunder, the sum of

Eighty-four thousand four hundred forty dollars and seventy-six cents $84,440.76

Upon completion of requested work, ownership shall vest in: ☒ PG&E ☐ Applicant

Executed this _____ day of _____

City of Roseville, A GOVERNMENT AGENCY
Applicant

PACIFIC GAS & ELECTRIC COMPANY

By: _____

Dominick Casey
Print/Type/Name

By: Erica McLemore

Title: City Manager

Title: Service Planning Supervisor

Mailing Address: 311 Vernon Street
ROSEVILLE, CA 95678

126432894

* Automated document, Preliminary Statement, Part A

COUNCIL COMMUNICATION

CC #: 3854
File #: 0600-01

Title:	International Brotherhood of Electrical Workers, Local 1245 - 2025 Labor Market Wage Adjustments and Staffing Update
Contact:	Macy Dippert 916-774-5215 mdippert@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.20.

RECOMMENDATION TO COUNCIL

It is recommended that City Council take the following actions:

1. Adopt an ordinance to approve the updated International Brotherhood of Electrical Workers, Local 1245 (IBEW) A & B (Appendix J) salary schedules to reflect labor market adjustments effective May 3, 2025.
2. Adopt a resolution authorizing the City Manager to execute the side letter agreement with IBEW Local 1245 pertaining to the Labor Market Adjustments.
3. Motion to approve the attached city-wide allocation schedule, effective May 3, 2025.

BACKGROUND

IBEW Labor Market Adjustments

The City's goal has been to ensure it is competitive in the marketplace on recruitment and retention among comparable agencies while remaining fiscally responsible. As a service organization, labor is the City's most significant expense, and the City has taken steps to control costs in this area. Since the Great Recession, the City has implemented policies to slow payroll growth, reduce retirement benefits, set total compensation (salaries and benefits packages) at the 55th percentile in the labor market (except for the Electric Department positions), and control pension costs by transferring the responsibility to employees to fund 100 percent of the employee's share of pension costs. Maintaining the quality of services along with the integrity of the City's more than $4 billion worth of infrastructure requires balancing our ability to attract and retain a high-performing workforce while living within our means. Ultimately, the City's compensation philosophy seeks to compare its total compensation with jurisdictions that are similar in size, services, and geographical location to remain competitive and retain our talented City employees who have produced high service levels affirmed by the community.

The current Memorandum of Understanding (MOU) with IBEW, which expires on April 30, 2026, has provisions for a labor market study in January 2025. Based on these agreed-upon terms, the

City engaged an independent classification and compensation consultant to conduct a comprehensive total compensation study using comparator jurisdictions. The MOU provisions required the same salary, benefit elements, and methodology that was used in the 2022 Total Compensation Study, with resulting labor market adjustments implemented the first full pay period in May 2025.

Staff conducted the meet and confer process with IBEW regarding the accuracy of the market total compensation data. During the discussions, one agency authorized an agreement in March 2025. In order to remain competitive in this very challenging electric labor market, staff recommends that Council authorize the City Manager to execute the side letter agreement with IBEW Local 1245 to capture the wage update from March 2025 for one agency as a non-precedent setting one-time deviation based on the unique circumstances and economic conditions currently present and the facts specific to this 2025 labor market adjustment.

Labor market adjustments were identified where the classification benchmark total compensation is behind the labor market 55th percentile for Environmental Utilities and Public Works department classifications and behind the labor market 75th percentile for Electric department classifications. The percentage identified in the table below represents the percentage added to the classification salary range in the attached updated salary schedules. The average percent increase for IBEW is 4.55%.

The salary schedule updates for IBEW include the following labor market adjustments:

Class Title	A Salary Schedule % Change	B Salary Schedule % Change
Electric Apprentice Line Technician	4.07%	4.07%
Electric Apprentice Metering System Technician	4.30%	4.30%
Electric Apprentice Substation Technician	3.29%	3.29%
Electric Drafting Technician I	6.23%	6.23%
Electric Drafting Technician II	6.23%	6.23%
Electric Engineering Technician I	3.33%	3.33%
Electric Engineering Technician II	3.33%	3.33%
Electric Line General Foreperson	4.07%	4.07%
Electric Line Technician	4.07%	4.07%
Electric Line Troubleshooter	4.07%	4.07%
Electric Materials Technician I	4.07%	4.07%
Electric Materials Technician II	4.07%	4.07%
Electric Metering System Technician	4.30%	4.30%
Electric Operations Safety Technician	4.07%	4.07%
Electric Pre-Apprentice	4.07%	4.07%
Electric Preventive Data System Technician	4.07%	4.07%
Electric Substation Technician	3.29%	3.29%
Electric System Dispatcher	4.07%	4.07%
Electric Technology System Technician	5.97%	5.97%
Electric Utility Inspection Technician	4.07%	4.07%
Electronics Technician I	4.10%	4.10%
Electronics Technician II	4.10%	4.10%

Electronics Technician III	4.10%	4.10%
Environmental Utilities Instrument and Control Technician I	4.10%	4.10%
Environmental Utilities Instrument and Control Technician II	4.10%	4.10%
Generation Maintenance Scheduler-Coordinator	5.97%	5.97%
Instrument and Control Technician	5.97%	5.97%
Materials Technician	6.43%	6.43%
Plant and Equipment Maintenance Worker I	6.43%	6.43%
Plant and Equipment Maintenance Worker II	6.43%	6.43%
Plant and Equipment Mechanic I	6.43%	6.43%
Plant and Equipment Mechanic II	6.43%	6.43%
Power Engineer I	3.79%	3.79%
Power Engineer II	3.79%	3.79%
Power Plant Engineer I	3.79%	3.79%
Power Plant Engineer II	3.79%	3.79%
Power Plant Mechanic	5.97%	5.97%
Power Plant Operator Technician I	5.97%	5.97%
Power Plant Operator Technician II	5.97%	5.97%
Predictive Maintenance Technician I	4.10%	4.10%
Predictive Maintenance Technician II	4.10%	4.10%
Preventative Maintenance Coordinator	6.43%	6.43%
Preventative Maintenance Technician I	4.10%	4.10%
Preventative Maintenance Technician II	4.10%	4.10%
SCADA System Technician	4.10%	4.10%
Senior Electric Line Technician	4.07%	4.07%
Senior Electric Line Troubleshooter	4.07%	4.07%
Senior Electric Materials Technician	4.07%	4.07%
Senior Electric Metering Systems Technician	4.30%	4.30%
Senior Electric Substation Technician	3.29%	3.29%
Senior Electric System Dispatcher	4.07%	4.07%
Senior Electronic Technician	4.10%	4.10%
Senior Environmental Utilities Instrument and Control Technician	4.10%	4.10%
Senior Plant and Equipment Mechanic	6.43%	6.43%
Senior Power Plant Operator Technician	5.97%	5.97%
Senior Preventative Maintenance Technician	4.10%	4.10%
Senior SCADA System Technician	4.10%	4.10%
Senior Wastewater Utility Maintenance Worker	4.26%	4.26%
Senior Water Distribution Worker	4.26%	4.26%
Traffic Signal Maintenance Worker I	4.26%	4.26%
Traffic Signal Maintenance Worker II	4.26%	4.26%
Wastewater Utility Maintenance Worker I	4.26%	4.26%
Wastewater Utility Maintenance Worker II	4.26%	4.26%
Water Conservation Specialist	4.26%	4.26%
Water Conservation Worker I	4.26%	4.26%
Water Conservation Worker II	4.26%	4.26%

~~Water Distribution Worker I~~	~~4.26%~~	~~4.26%~~
Water Distribution Worker II	4.26%	4.26%

Staffing Update in Public Works Department Fleet Services

The Fleet Services Division in Public Works is requesting an additional Fleet Services Supervisor position (PWD622565002), since there are eighteen (18) employees reporting to one (1) supervisor, and to ensure management coverage at the Corporation Yard to support the mechanic team.

FISCAL IMPACT

The estimated total cost of the recommended wage adjustments and the staffing change will cost $248,852 for the remainder of FY2024-25 and $1,548,062 annually ongoing. The following table provides a summary of costs by fund.

Fund	Annual Ongoing Cost	Cost For Remainder of FY24-25
Fleet Services Fund	$177,312	$27,279
Electric	$872,087	$140,967
Water Operations	$162,999	$26,348
Wastewater Operations	$335,664	$54,258
Total	**$1,548,062**	**$248,852**

All four (4) of the funds impacted by the recommended wage adjustments have sufficient funds to cover the cost for the remainder of FY2024-25. The ongoing cost was planned and will be incorporated into the FY2025-26 budget.

Public Works

From	To	Current Salary & Benefits	Proposed Salary & Benefits	Annual Impact *	Impact for remaining FY 2024-25
	Fleet Services Supervisor	$0	$177,312	$177,312	$27,279
			Total	**$177,312**	**$27,645**

*This amount includes the estimated annual pension cost of $12,403.10.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment or is otherwise not

considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. The proposed wage adjustments and allocation schedule update meet the above criteria and are not subject to CEQA. No additional environmental review is required.

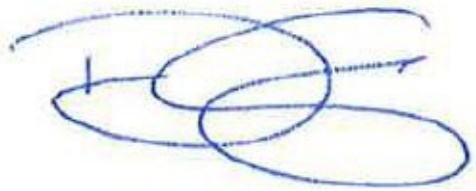
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal E - Deliver exceptional city services

Respectfully Submitted,

Macy Dippert, Human Resources Manager

Stacey Peterson, Human Resources Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

Ordinance 6932

IBEW Salary Schedule A eff 5-3-2025

IBEW Salary Schedule B eff 5-3-2025

Resolution 25-130

IBEW Side Letter LMAs

Allocation Schedule eff 5-3-25

ORDINANCE NO. 6932

ORDINANCE OF THE COUNCIL OF THE CITY OF ROSEVILLE AMENDING ORDINANCE 6872, THE SALARY ORDINANCE FOR PERSONNEL REPRESENTED BY THE INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, LOCAL 1245, AS AMENDED BY APPENDIX "J" TO BE EFFECTIVE MAY 3, 2025, AS AN URGENCY MEASURE

THE CITY OF ROSEVILLE ORDAINS:

SECTION 1. Title and Purpose.

Ordinance 6872, the Salary Ordinance for employees represented by the International Brotherhood of Electrical Workers, Local 1245, is hereby amended as shown on Appendix "J" for salary schedules A & B attached hereto, reflecting labor market adjustments.

SECTION 2. Salary Plan Effective Date.

This Ordinance shall be effective May 3, 2025 as an urgency measure.

SECTION 3. Urgency Ordinance.

This ordinance is hereby declared to be an urgency measure, immediately necessary for the public peace, health and safety and shall take effect May 3, 2025. A statement of urgency is as follows:

It is necessary to amend the Salary Ordinance to comply with recently approved changes for the orderly and necessary continuance of operations of the City.

SECTION 4. Posting.

The City Clerk is hereby authorized and directed to post a true copy of the foregoing ordinance in each of three (3) conspicuous locations in the City and she shall immediately after such posting enter in the Ordinance Book under the record of the ordinance a certificate under her hand stating the time and place of said publication by posting.

PASSED AND ADOPTED by the Council of the City of Roseville this ____ day of _____, 20___, by the following vote on roll call:
:

AYES: COUNCILMEMERS

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-A

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
0150A	Electric Apprentice Line Technician-A	Step A	62.2946	4983.57	10797.73	129572.77
		Step B	67.0866	5366.93	11628.34	139540.13
		Step C	71.8785	5750.28	12458.94	149507.28
		Step D	76.6704	6133.63	13289.54	159474.43
		Step E	81.4623	6516.98	14120.13	169441.58
		Step F	86.2542	6900.34	14950.73	179408.74
1086A	Electric Apprentice Metering System Technician-A	Step A	56.1239	4489.91	9728.14	116737.71
		Step B	60.4412	4835.30	10476.47	125717.70
		Step C	64.7584	5180.67	11224.79	134697.47
		Step D	69.0756	5526.05	11973.10	143677.25
		Step E	73.3928	5871.42	12721.42	152657.02
		Step F	77.7101	6216.81	13469.75	161637.01

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1084A	Electric Apprentice Substation Technician-A	Step A	50.2515	4020.12	8710.26	104523.12
		Step B	54.8197	4385.58	9502.08	114024.98
		Step C	59.3880	4751.04	10293.92	123527.04
		Step D	63.9563	5116.50	11085.76	133029.10
		Step E	68.5246	5481.97	11877.60	142531.17
		Step F	73.0930	5847.44	12669.45	152033.44
		Step G	77.6613	6212.90	13461.29	161535.50
		Step H	82.2296	6578.37	14253.13	171037.57
2328A	Electric Drafting Technician I-A	Step A	41.1032	3288.26	7124.55	85494.66
		Step B	43.1582	3452.66	7480.75	89769.06
		Step C	45.3162	3625.30	7854.81	94257.70
		Step D	47.5820	3806.56	8247.55	98970.56
		Step E	49.9611	3996.89	8659.92	103919.09
		Step F	52.4591	4196.73	9092.91	109114.93
		Step G	55.0821	4406.57	9547.56	114570.77
		Step H	57.8363	4626.90	10024.96	120299.50

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2330A	Electric Drafting Technician II-A	Step A	45.2135	3617.08	7837.01	94044.08
		Step B	47.4743	3797.94	8228.88	98746.54
		Step C	49.8480	3987.84	8640.32	103683.84
		Step D	52.3402	4187.22	9072.30	108867.62
		Step E	54.9573	4396.58	9525.93	114311.18
		Step F	57.7053	4616.42	10002.25	120027.02
		Step G	60.5906	4847.25	10502.37	126028.45
		Step H	63.6200	5089.60	11027.47	132329.60
2340A	Electric Engineering Technician I-A	Step A	51.1336	4090.69	8863.16	106357.89
		Step B	53.6902	4295.22	9306.30	111675.62
		Step C	56.3750	4510.00	9771.67	117260.00
		Step D	59.1937	4735.50	10260.24	123122.90
		Step E	62.1533	4972.26	10773.24	129278.86
		Step F	65.2610	5220.88	11311.91	135742.88
		Step G	68.5240	5481.92	11877.49	142529.92
		Step H	71.9501	5756.01	12471.35	149656.21

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2345A	Electric Engineering Technician II-A	Step A	56.2468	4499.74	9749.45	116993.34
		Step B	59.0592	4724.74	10236.93	122843.14
		Step C	62.0123	4960.98	10748.80	128985.58
		Step D	65.1128	5209.02	11286.22	135434.62
		Step E	68.3684	5469.47	11850.52	142206.27
		Step F	71.7869	5742.95	12443.06	149316.75
		Step G	75.3761	6030.09	13065.19	156782.29
		Step H	79.1451	6331.61	13718.48	164621.81
1152A	Electric Line General Foreperson-A	Step A	76.7943	6143.54	13311.01	159732.14
		Step B	80.6340	6450.72	13976.56	167718.72
		Step C	84.6657	6773.26	14675.39	176104.66
		Step D	88.8990	7111.92	15409.16	184909.92
		Step E	93.3440	7467.52	16179.63	194155.52
		Step F	98.0111	7840.89	16988.59	203863.09
		Step G	102.9117	8232.94	17838.03	214056.34
		Step H	108.0573	8644.58	18729.93	224759.18
2285A	Electric Line Technician-A	Step A	95.8380	7667.04	16611.92	199343.04

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2286A	Electric Line Troubleshooter-A	Step A	73.2185	5857.48	12691.21	152294.48
		Step B	76.8795	6150.36	13325.78	159909.36
		Step C	80.7234	6457.87	13992.06	167904.67
		Step D	84.7596	6780.77	14691.66	176299.97
		Step E	88.9976	7119.81	15426.25	185115.01
		Step F	93.4474	7475.79	16197.55	194370.59
		Step G	98.1198	7849.58	17007.43	204089.18
		Step H	103.0258	8242.06	17857.81	214293.66
2210A	Electric Materials Technician I-A	Step A	39.8445	3187.56	6906.38	82876.56
		Step B	41.8368	3346.94	7251.71	87020.54
		Step C	43.9286	3514.29	7614.29	91371.49
		Step D	46.1249	3689.99	7994.98	95939.79
		Step E	48.4314	3874.51	8394.78	100737.31
		Step F	50.8527	4068.22	8814.47	105773.62
		Step G	53.3955	4271.64	9255.22	111062.64
		Step H	56.0652	4485.22	9717.97	116615.62

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2212A	Electric Materials Technician II-A	Step A	43.8288	3506.30	7596.99	91163.90
		Step B	46.0204	3681.63	7976.87	95722.43
		Step C	48.3215	3865.72	8375.73	100508.72
		Step D	50.7375	4059.00	8794.50	105534.00
		Step E	53.2744	4261.95	9234.23	110810.75
		Step F	55.9380	4475.04	9695.92	116351.04
		Step G	58.7351	4698.81	10180.75	122169.01
		Step H	61.6717	4933.74	10689.76	128277.14
1085A	Electric Metering System Technician-A	Step A	86.3445	6907.56	14966.38	179596.56
1130A	Electric Operations Safety Technician-A	Step A	74.9214	5993.71	12986.38	155836.51
		Step B	78.6674	6293.39	13635.68	163628.19
		Step C	82.6008	6608.06	14317.47	171809.66
		Step D	86.7309	6938.47	15033.36	180400.27
		Step E	91.0674	7285.39	15785.02	189420.19
		Step F	95.6209	7649.67	16574.29	198891.47
		Step G	100.4018	8032.14	17402.98	208835.74
		Step H	105.4218	8433.74	18273.11	219277.34

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2421A	Electric Pre-Apprentice-A	Step A	40.4915	3239.32	7018.53	84222.32
		Step B	43.6061	3488.49	7558.39	90700.69
		Step C	46.7209	3737.67	8098.29	97179.47
		Step D	49.8358	3986.86	8638.21	103658.46
		Step E	52.9505	4236.04	9178.09	110137.04
		Step F	56.0652	4485.22	9717.97	116615.62
2254A	Electric Preventive Data System Technician-A	Step A	36.2224	2897.79	6278.55	75342.59
		Step B	38.0334	3042.67	6592.46	79109.47
		Step C	39.9350	3194.80	6922.07	83064.80
		Step D	41.9318	3354.54	7268.18	87218.14
		Step E	44.0284	3522.27	7631.59	91579.07
		Step F	46.2298	3698.38	8013.17	96157.98
		Step G	48.5414	3883.31	8413.84	100966.11
		Step H	50.9684	4077.47	8834.52	106014.27
1083A	Electric Substation Technician-A	Step A	91.3662	7309.30	15836.81	190041.70

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2350A	Electric System Dispatcher-A	Step A	74.9214	5993.71	12986.38	155836.51
		Step B	78.6674	6293.39	13635.68	163628.19
		Step C	82.6008	6608.06	14317.47	171809.66
		Step D	86.7309	6938.47	15033.36	180400.27
		Step E	91.0674	7285.39	15785.02	189420.19
		Step F	95.6209	7649.67	16574.29	198891.47
		Step G	100.4018	8032.14	17402.98	208835.74
		Step H	105.4218	8433.74	18273.11	219277.34
2359A	Electric Technology System Technician-A	Step A	57.4606	4596.85	9959.84	119518.05
		Step B	60.3336	4826.69	10457.82	125493.89
		Step C	63.3504	5068.03	10980.74	131768.83
		Step D	66.5176	5321.41	11529.72	138356.61
		Step E	69.8437	5587.50	12106.24	145274.90
		Step F	73.3359	5866.87	12711.56	152538.67
		Step G	77.0026	6160.21	13347.12	160165.41
		Step H	80.8527	6468.22	14014.47	168173.62

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9250A	Electric Utility Inspection Technician-A	Step A	61.9183	4953.46	10732.51	128790.06
		Step B	65.0141	5201.13	11269.11	135229.33
		Step C	68.2649	5461.19	11832.58	141990.99
		Step D	71.6782	5734.26	12424.22	149090.66
		Step E	75.2623	6020.98	13045.47	156545.58
		Step F	79.0252	6322.02	13697.70	164372.42
		Step G	82.9766	6638.13	14382.61	172591.33
		Step H	87.1254	6970.03	15101.74	181220.83
2380A	Electronics Technician I-A	Step A	38.7017	3096.14	6708.29	80499.54
		Step B	40.6369	3250.95	7043.73	84524.75
		Step C	42.6687	3413.50	7395.91	88750.90
		Step D	44.8021	3584.17	7765.70	93188.37
		Step E	47.0422	3763.38	8153.98	97847.78
		Step F	49.3943	3951.54	8561.68	102740.14
		Step G	51.8640	4149.12	8989.76	107877.12
		Step H	54.4573	4356.58	9439.27	113271.18

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2385A	Electronics Technician II-A	Step A	42.5719	3405.75	7379.13	88549.55
		Step B	44.7005	3576.04	7748.09	92977.04
		Step C	46.9356	3754.85	8135.50	97626.05
		Step D	49.2823	3942.58	8542.27	102507.18
		Step E	51.7464	4139.71	8969.38	107632.51
		Step F	54.3337	4346.70	9417.84	113014.10
		Step G	57.0504	4564.03	9888.74	118664.83
		Step H	59.9030	4792.24	10383.19	124598.24
1120A	Electronics Technician III-A	Step A	46.8291	3746.33	8117.04	97404.53
		Step B	49.1706	3933.65	8522.90	102274.85
		Step C	51.6291	4130.33	8949.04	107388.53
		Step D	54.2106	4336.85	9396.50	112758.05
		Step E	56.9211	4553.69	9866.32	118395.89
		Step F	59.7672	4781.38	10359.65	124315.78
		Step G	62.7555	5020.44	10877.62	130531.44
		Step H	65.8933	5271.46	11421.51	137058.06

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1037A	Environmental Utilities Instrument and Control Technician I - A	Step A	38.7017	3096.14	6708.29	80499.54
		Step B	40.6369	3250.95	7043.73	84524.75
		Step C	42.6687	3413.50	7395.91	88750.90
		Step D	44.8021	3584.17	7765.70	93188.37
		Step E	47.0422	3763.38	8153.98	97847.78
		Step F	49.3943	3951.54	8561.68	102740.14
		Step G	51.8640	4149.12	8989.76	107877.12
		Step H	54.4573	4356.58	9439.27	113271.18
1038A	Environmental Utilities Instrument and Control Technician II - A	Step A	42.5719	3405.75	7379.13	88549.55
		Step B	44.7005	3576.04	7748.09	92977.04
		Step C	46.9356	3754.85	8135.50	97626.05
		Step D	49.2823	3942.58	8542.27	102507.18
		Step E	51.7464	4139.71	8969.38	107632.51
		Step F	54.3337	4346.70	9417.84	113014.10
		Step G	57.0504	4564.03	9888.74	118664.83
		Step H	59.9030	4792.24	10383.19	124598.24

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1082A	Generation Maintenance Scheduler-Coordinator-A	Step A	66.3668	5309.34	11503.58	138042.94
		Step B	69.6852	5574.82	12078.77	144945.22
		Step C	73.1695	5853.56	12682.71	152192.56
		Step D	76.8278	6146.22	13316.82	159801.82
		Step E	80.6694	6453.55	13982.70	167792.35
		Step F	84.7028	6776.22	14681.82	176181.82
		Step G	88.9379	7115.03	15415.90	184990.83
		Step H	93.3849	7470.79	16186.72	194240.59
3608A	Instrument and Control Technician-A	Step A	60.3334	4826.67	10457.79	125493.47
		Step B	63.3501	5068.01	10980.68	131768.21
		Step C	66.5177	5321.42	11529.73	138356.82
		Step D	69.8437	5587.50	12106.24	145274.90
		Step E	73.3358	5866.86	12711.54	152538.46
		Step F	77.0026	6160.21	13347.12	160165.41
		Step G	80.8527	6468.22	14014.47	168173.62
		Step H	84.8953	6791.62	14715.19	176582.22

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4520A	Materials Technician-A	Step A	39.3816	3150.53	6826.14	81913.73
		Step B	41.3504	3308.03	7167.40	86008.83
		Step C	43.4182	3473.46	7525.82	90309.86
		Step D	45.5892	3647.14	7902.13	94825.54
		Step E	47.8684	3829.47	8297.19	99566.27
		Step F	50.2619	4020.95	8712.06	104544.75
		Step G	52.7750	4222.00	9147.67	109772.00
		Step H	55.4137	4433.10	9605.04	115260.50
5316A	Plant and Equipment Maintenance Worker I-A	Step A	26.8981	2151.85	4662.34	55948.05
		Step B	28.2431	2259.45	4895.47	58745.65
		Step C	29.6551	2372.41	5140.22	61682.61
		Step D	31.1381	2491.05	5397.27	64767.25
		Step E	32.6947	2615.58	5667.08	68004.98
		Step F	34.3295	2746.36	5950.45	71405.36
		Step G	36.0459	2883.67	6247.96	74975.47
		Step H	37.8483	3027.86	6560.37	78724.46

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5319A	Plant and Equipment Maintenance Worker II-A	Step A	29.5877	2367.02	5128.53	61542.42
		Step B	31.0673	2485.38	5385.00	64619.98
		Step C	32.6206	2609.65	5654.24	67850.85
		Step D	34.2517	2740.14	5936.96	71243.54
		Step E	35.9642	2877.14	6233.79	74805.54
		Step F	37.7624	3020.99	6545.48	78545.79
		Step G	39.6505	3172.04	6872.75	82473.04
		Step H	41.6331	3330.65	7216.40	86596.85
5327A	Plant and Equipment Mechanic I-A	Step A	32.5469	2603.75	5641.46	67697.55
		Step B	34.1741	2733.93	5923.51	71082.13
		Step C	35.8827	2870.62	6219.67	74636.02
		Step D	37.6768	3014.14	6530.65	78367.74
		Step E	39.5607	3164.86	6857.19	82286.26
		Step F	41.5386	3323.09	7200.02	86400.29
		Step G	43.6156	3489.25	7560.04	90720.45
		Step H	45.7964	3663.71	7938.04	95256.51

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5328A	Plant and Equipment Mechanic II-A	Step A	35.8013	2864.10	6205.56	74466.70
		Step B	37.5913	3007.30	6515.83	78189.90
		Step C	39.4709	3157.67	6841.62	82099.47
		Step D	41.4446	3315.57	7183.73	86204.77
		Step E	43.5167	3481.34	7542.89	90514.74
		Step F	45.6926	3655.41	7920.05	95040.61
		Step G	47.9772	3838.18	8316.05	99792.58
		Step H	50.3761	4030.09	8731.86	104782.29
5595A	Power Engineer I-A	Step A	55.5317	4442.54	9625.49	115505.94
		Step B	58.3081	4664.65	10106.74	121280.85
		Step C	61.2236	4897.89	10612.09	127345.09
		Step D	64.2847	5142.78	11142.68	133712.18
		Step E	67.4991	5399.93	11699.84	140398.13
		Step F	70.8741	5669.93	12284.84	147418.13
		Step G	74.4178	5953.42	12899.09	154789.02
		Step H	78.1388	6251.10	13544.06	162528.70

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5596A	Power Engineer II-A	Step A	61.0850	4886.80	10588.07	127056.80
		Step B	64.1393	5131.14	11117.48	133409.74
		Step C	67.3463	5387.70	11673.36	140080.30
		Step D	70.7136	5657.09	12257.02	147084.29
		Step E	74.2493	5939.94	12869.88	154438.54
		Step F	77.9618	6236.94	13513.38	162160.54
		Step G	81.8598	6548.78	14189.03	170268.38
		Step H	85.9527	6876.22	14898.47	178781.62
5590A	Power Plant Engineer I-A	Step A	55.5317	4442.54	9625.49	115505.94
		Step B	58.3081	4664.65	10106.74	121280.85
		Step C	61.2236	4897.89	10612.09	127345.09
		Step D	64.2847	5142.78	11142.68	133712.18
		Step E	67.4991	5399.93	11699.84	140398.13
		Step F	70.8741	5669.93	12284.84	147418.13
		Step G	74.4178	5953.42	12899.09	154789.02
		Step H	78.1388	6251.10	13544.06	162528.70

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5591A	Power Plant Engineer II-A	Step A	61.0850	4886.80	10588.07	127056.80
		Step B	64.1393	5131.14	11117.48	133409.74
		Step C	67.3462	5387.70	11673.34	140080.10
		Step D	70.7134	5657.07	12256.99	147083.87
		Step E	74.2491	5939.93	12869.84	154438.13
		Step F	77.9617	6236.94	13513.36	162160.34
		Step G	81.8597	6548.78	14189.01	170268.18
		Step H	85.9527	6876.22	14898.47	178781.62
5526A	Power Plant Mechanic-A	Step A	54.8486	4387.89	9507.09	114085.09
		Step B	57.5911	4607.29	9982.46	119789.49
		Step C	60.4707	4837.66	10481.59	125779.06
		Step D	63.4942	5079.54	11005.66	132067.94
		Step E	66.6688	5333.50	11555.93	138671.10
		Step F	70.0021	5600.17	12133.70	145604.37
		Step G	73.5024	5880.19	12740.42	152884.99
		Step H	77.1776	6174.21	13377.45	160529.41

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5522A	Power Plant Operator Technician I-A	Step A	52.2367	4178.94	9054.36	108652.34
		Step B	54.8487	4387.90	9507.11	114085.30
		Step C	57.5910	4607.28	9982.44	119789.28
		Step D	60.4707	4837.66	10481.59	125779.06
		Step E	63.4940	5079.52	11005.63	132067.52
		Step F	66.6689	5333.51	11555.94	138671.31
		Step G	70.0023	5600.18	12133.73	145604.78
		Step H	73.5024	5880.19	12740.42	152884.99
5523A	Power Plant Operator Technician II-A	Step A	57.4606	4596.85	9959.84	119518.05
		Step B	60.3336	4826.69	10457.82	125493.89
		Step C	63.3504	5068.03	10980.74	131768.83
		Step D	66.5176	5321.41	11529.72	138356.61
		Step E	69.8437	5587.50	12106.24	145274.90
		Step F	73.3359	5866.87	12711.56	152538.67
		Step G	77.0027	6160.22	13347.13	160165.62
		Step H	80.8527	6468.22	14014.47	168173.62

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5401A	Predictive Maintenance Technician I-A	Step A	38.7018	3096.14	6708.31	80499.74
		Step B	40.6369	3250.95	7043.73	84524.75
		Step C	42.6687	3413.50	7395.91	88750.90
		Step D	44.8021	3584.17	7765.70	93188.37
		Step E	47.0422	3763.38	8153.98	97847.78
		Step F	49.3944	3951.55	8561.70	102740.35
		Step G	51.8640	4149.12	8989.76	107877.12
		Step H	54.4573	4356.58	9439.27	113271.18
5402A	Predictive Maintenance Technician II-A	Step A	42.5719	3405.75	7379.13	88549.55
		Step B	44.7005	3576.04	7748.09	92977.04
		Step C	46.9355	3754.84	8135.49	97625.84
		Step D	49.2824	3942.59	8542.28	102507.39
		Step E	51.7464	4139.71	8969.38	107632.51
		Step F	54.3338	4346.70	9417.86	113014.30
		Step G	57.0504	4564.03	9888.74	118664.83
		Step H	59.9030	4792.24	10383.19	124598.24

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5533A	Preventative Maintenance Coordinator-A	Step A	43.3195	3465.56	7508.71	90104.56
		Step B	45.4857	3638.86	7884.19	94610.26
		Step C	47.7599	3820.79	8278.38	99340.59
		Step D	50.1479	4011.83	8692.30	104307.63
		Step E	52.6553	4212.42	9126.92	109523.02
		Step F	55.2880	4423.04	9583.25	114999.04
		Step G	58.0524	4644.19	10062.42	120748.99
		Step H	60.9551	4876.41	10565.55	126786.61
5500A	Preventative Maintenance Technician I-A	Step A	35.1834	2814.67	6098.46	73181.47
		Step B	36.9425	2955.40	6403.37	76840.40
		Step C	38.7897	3103.18	6723.55	80682.58
		Step D	40.7292	3258.34	7059.73	84716.74
		Step E	42.7656	3421.25	7412.70	88952.45
		Step F	44.9039	3592.31	7783.34	93400.11
		Step G	47.1491	3771.93	8172.51	98070.13
		Step H	49.5066	3960.53	8581.14	102973.73

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5502A	Preventative Maintenance Technician II-A	Step A	38.7018	3096.14	6708.31	80499.74
		Step B	40.6369	3250.95	7043.73	84524.75
		Step C	42.6687	3413.50	7395.91	88750.90
		Step D	44.8021	3584.17	7765.70	93188.37
		Step E	47.0422	3763.38	8153.98	97847.78
		Step F	49.3943	3951.54	8561.68	102740.14
		Step G	51.8641	4149.13	8989.78	107877.33
		Step H	54.4573	4356.58	9439.27	113271.18
7020A	SCADA System Technician-A	Step A	42.5719	3405.75	7379.13	88549.55
		Step B	44.7005	3576.04	7748.09	92977.04
		Step C	46.9356	3754.85	8135.50	97626.05
		Step D	49.2823	3942.58	8542.27	102507.18
		Step E	51.7464	4139.71	8969.38	107632.51
		Step F	54.3337	4346.70	9417.84	113014.10
		Step G	57.0504	4564.03	9888.74	118664.83
		Step H	59.9030	4792.24	10383.19	124598.24

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7118A	Senior Electric Line Technician-A	Step A	74.9214	5993.71	12986.38	155836.51
		Step B	78.6674	6293.39	13635.68	163628.19
		Step C	82.6008	6608.06	14317.47	171809.66
		Step D	86.7309	6938.47	15033.36	180400.27
		Step E	91.0674	7285.39	15785.02	189420.19
		Step F	95.6209	7649.67	16574.29	198891.47
		Step G	100.4018	8032.14	17402.98	208835.74
		Step H	105.4218	8433.74	18273.11	219277.34
1153A	Senior Electric Line Troubleshooter-A	Step A	76.8794	6150.35	13325.76	159909.15
		Step B	80.7234	6457.87	13992.06	167904.67
		Step C	84.7596	6780.77	14691.66	176299.97
		Step D	88.9975	7119.80	15426.23	185114.80
		Step E	93.4475	7475.80	16197.57	194370.80
		Step F	98.1198	7849.58	17007.43	204089.18
		Step G	103.0257	8242.06	17857.79	214293.46
		Step H	108.1771	8654.17	18750.70	225008.37

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7169A	Senior Electric Materials Technician-A	Step A	48.2120	3856.96	8356.75	100280.96
		Step B	50.6225	4049.80	8774.57	105294.80
		Step C	53.1536	4252.29	9213.29	110559.49
		Step D	55.8113	4464.90	9673.96	116087.50
		Step E	58.6020	4688.16	10157.68	121892.16
		Step F	61.5318	4922.54	10665.51	127986.14
		Step G	64.6085	5168.68	11198.81	134385.68
		Step H	67.8389	5427.11	11758.74	141104.91
1036A	Senior Electric Metering Systems Technician - A	Step A	67.4998	5399.98	11699.97	140399.58
		Step B	70.8749	5669.99	12284.98	147419.79
		Step C	74.4186	5953.49	12899.22	154790.69
		Step D	78.1395	6251.16	13544.18	162530.16
		Step E	82.0465	6563.72	14221.39	170656.72
		Step F	86.1489	6891.91	14932.48	179189.71
		Step G	90.4562	7236.50	15679.07	188148.90
		Step H	94.9790	7598.32	16463.03	197556.32

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7126A	Senior Electric Substation Technician-A	Step A	71.4254	5714.03	12380.40	148564.83
		Step B	74.9969	5999.75	12999.46	155993.55
		Step C	78.7464	6299.71	13649.38	163792.51
		Step D	82.6839	6614.71	14331.88	171982.51
		Step E	86.8182	6945.46	15048.49	180581.86
		Step F	91.1590	7292.72	15800.89	189610.72
		Step G	95.7171	7657.37	16590.96	199091.57
		Step H	100.5028	8040.22	17420.49	209045.82
7168A	Senior Electric System Dispatcher-A	Step A	82.4135	6593.08	14285.01	171420.08
		Step B	86.5342	6922.74	14999.26	179991.14
		Step C	90.8608	7268.86	15749.21	188990.46
		Step D	95.4039	7632.31	16536.68	198440.11
		Step E	100.1740	8013.92	17363.49	208361.92
		Step F	105.1827	8414.62	18231.67	218780.02
		Step G	110.4419	8835.35	19143.26	229719.15
		Step H	115.9639	9277.11	20100.41	241204.91

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7170A	Senior Electronic Technician-A	Step A	51.5120	4120.96	8928.75	107144.96
		Step B	54.0877	4327.02	9375.20	112502.42
		Step C	56.7921	4543.37	9843.96	118127.57
		Step D	59.6316	4770.53	10336.14	124033.73
		Step E	62.6132	5009.06	10852.95	130235.46
		Step F	65.7438	5259.50	11395.59	136747.10
		Step G	69.0311	5522.49	11965.39	143584.69
		Step H	72.4826	5798.61	12563.65	150763.81
1123A	Senior Environmental Utilities Instrument & Control Technician-A	Step A	46.8291	3746.33	8117.04	97404.53
		Step B	49.1706	3933.65	8522.90	102274.85
		Step C	51.6291	4130.33	8949.04	107388.53
		Step D	54.2105	4336.84	9396.49	112757.84
		Step E	56.9211	4553.69	9866.32	118395.89
		Step F	59.7672	4781.38	10359.65	124315.78
		Step G	62.7556	5020.45	10877.64	130531.65
		Step H	65.8933	5271.46	11421.51	137058.06

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7205A	Senior Plant and Equipment Mechanic-A	Step A	39.3816	3150.53	6826.14	81913.73
		Step B	41.3504	3308.03	7167.40	86008.83
		Step C	43.4182	3473.46	7525.82	90309.86
		Step D	45.5892	3647.14	7902.13	94825.54
		Step E	47.8684	3829.47	8297.19	99566.27
		Step F	50.2619	4020.95	8712.06	104544.75
		Step G	52.7750	4222.00	9147.67	109772.00
		Step H	55.4137	4433.10	9605.04	115260.50
7152A	Senior Power Plant Operator Technician-A	Step A	63.2065	5056.52	10955.79	131469.52
		Step B	66.3668	5309.34	11503.58	138042.94
		Step C	69.6851	5574.81	12078.75	144945.01
		Step D	73.1694	5853.55	12682.70	152192.35
		Step E	76.8278	6146.22	13316.82	159801.82
		Step F	80.6693	6453.54	13982.68	167792.14
		Step G	84.7029	6776.23	14681.84	176182.03
		Step H	88.9380	7115.04	15415.92	184991.04

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7284A	Senior Preventative Maintenance Technician-A	Step A	46.8291	3746.33	8117.04	97404.53
		Step B	49.1706	3933.65	8522.90	102274.85
		Step C	51.6291	4130.33	8949.04	107388.53
		Step D	54.2105	4336.84	9396.49	112757.84
		Step E	56.9211	4553.69	9866.32	118395.89
		Step F	59.7671	4781.37	10359.63	124315.57
		Step G	62.7561	5020.49	10877.72	130532.69
		Step H	65.8933	5271.46	11421.51	137058.06
9559A	Senior SCADA System Technician-A	Step A	46.8292	3746.34	8117.06	97404.74
		Step B	49.1706	3933.65	8522.90	102274.85
		Step C	51.6291	4130.33	8949.04	107388.53
		Step D	54.2106	4336.85	9396.50	112758.05
		Step E	56.9211	4553.69	9866.32	118395.89
		Step F	59.7671	4781.37	10359.63	124315.57
		Step G	62.7555	5020.44	10877.62	130531.44
		Step H	65.8933	5271.46	11421.51	137058.06

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7202A	Senior Wastewater Utility Maintenance Worker-A	Step A	33.7182	2697.46	5844.49	70133.86
		Step B	35.4043	2832.34	6136.75	73640.94
		Step C	37.1743	2973.94	6443.55	77322.54
		Step D	39.0331	3122.65	6765.74	81188.85
		Step E	40.9847	3278.78	7104.01	85248.18
		Step F	43.0338	3442.70	7459.19	89510.30
		Step G	45.1855	3614.84	7832.15	93985.84
		Step H	47.4449	3795.59	8223.78	98685.39
7204A	Senior Water Distribution Worker-A	Step A	33.7182	2697.46	5844.49	70133.86
		Step B	35.4043	2832.34	6136.75	73640.94
		Step C	37.1743	2973.94	6443.55	77322.54
		Step D	39.0331	3122.65	6765.74	81188.85
		Step E	40.9847	3278.78	7104.01	85248.18
		Step F	43.0338	3442.70	7459.19	89510.30
		Step G	45.1855	3614.84	7832.15	93985.84
		Step H	47.4449	3795.59	8223.78	98685.39

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2375A	Traffic Signal Maintenance Worker I-A	Step A	30.6530	2452.24	5313.19	63758.24
		Step B	32.1857	2574.86	5578.85	66946.26
		Step C	33.7948	2703.58	5857.77	70293.18
		Step D	35.4846	2838.77	6150.66	73807.97
		Step E	37.2589	2980.71	6458.21	77498.51
		Step F	39.1216	3129.73	6781.08	81372.93
		Step G	41.0779	3286.23	7120.17	85442.03
		Step H	43.1317	3450.54	7476.16	89713.94
2376A	Traffic Signal Maintenance Worker II-A	Step A	33.7182	2697.46	5844.49	70133.86
		Step B	35.4043	2832.34	6136.75	73640.94
		Step C	37.1744	2973.95	6443.56	77322.75
		Step D	39.0330	3122.64	6765.72	81188.64
		Step E	40.9848	3278.78	7104.03	85248.38
		Step F	43.0339	3442.71	7459.21	89510.51
		Step G	45.1855	3614.84	7832.15	93985.84
		Step H	47.4449	3795.59	8223.78	98685.39

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9027A	Wastewater Utility Maintenance Worker I-A	Step A	27.8661	2229.29	4830.12	57961.49
		Step B	29.2595	2340.76	5071.65	60859.76
		Step C	30.7225	2457.80	5325.23	63902.80
		Step D	32.2585	2580.68	5591.47	67097.68
		Step E	33.8715	2709.72	5871.06	70452.72
		Step F	35.5652	2845.22	6164.63	73975.62
		Step G	37.3433	2987.46	6472.84	77674.06
		Step H	39.2107	3136.86	6796.52	81558.26
9029A	Wastewater Utility Maintenance Worker II-A	Step A	30.6530	2452.24	5313.19	63758.24
		Step B	32.1857	2574.86	5578.85	66946.26
		Step C	33.7948	2703.58	5857.77	70293.18
		Step D	35.4845	2838.76	6150.65	73807.76
		Step E	37.2589	2980.71	6458.21	77498.51
		Step F	39.1217	3129.74	6781.09	81373.14
		Step G	41.0779	3286.23	7120.17	85442.03
		Step H	43.1317	3450.54	7476.16	89713.94

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9078A	Water Conservation Specialist-A	Step A	33.7182	2697.46	5844.49	70133.86
		Step B	35.4043	2832.34	6136.75	73640.94
		Step C	37.1743	2973.94	6443.55	77322.54
		Step D	39.0331	3122.65	6765.74	81188.85
		Step E	40.9847	3278.78	7104.01	85248.18
		Step F	43.0338	3442.70	7459.19	89510.30
		Step G	45.1855	3614.84	7832.15	93985.84
		Step H	47.4449	3795.59	8223.78	98685.39
9049A	Water Conservation Worker I-A	Step A	27.8661	2229.29	4830.12	57961.49
		Step B	29.2595	2340.76	5071.65	60859.76
		Step C	30.7225	2457.80	5325.23	63902.80
		Step D	32.2585	2580.68	5591.47	67097.68
		Step E	33.8715	2709.72	5871.06	70452.72
		Step F	35.5652	2845.22	6164.63	73975.62
		Step G	37.3433	2987.46	6472.84	77674.06
		Step H	39.2107	3136.86	6796.52	81558.26

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Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9051A	Water Conservation Worker II-A	Step A	30.6530	2452.24	5313.19	63758.24
		Step B	32.1857	2574.86	5578.85	66946.26
		Step C	33.7948	2703.58	5857.77	70293.18
		Step D	35.4845	2838.76	6150.65	73807.76
		Step E	37.2589	2980.71	6458.21	77498.51
		Step F	39.1217	3129.74	6781.09	81373.14
		Step G	41.0779	3286.23	7120.17	85442.03
		Step H	43.1317	3450.54	7476.16	89713.94
9246A	Water Distribution Worker I-A	Step A	27.8661	2229.29	4830.12	57961.49
		Step B	29.2595	2340.76	5071.65	60859.76
		Step C	30.7225	2457.80	5325.23	63902.80
		Step D	32.2585	2580.68	5591.47	67097.68
		Step E	33.8715	2709.72	5871.06	70452.72
		Step F	35.5652	2845.22	6164.63	73975.62
		Step G	37.3433	2987.46	6472.84	77674.06
		Step H	39.2107	3136.86	6796.52	81558.26

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-A

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9248A	Water Distribution Worker II-A	Step A	30.6530	2452.24	5313.19	63758.24
		Step B	32.1857	2574.86	5578.85	66946.26
		Step C	33.7948	2703.58	5857.77	70293.18
		Step D	35.4845	2838.76	6150.65	73807.76
		Step E	37.2589	2980.71	6458.21	77498.51
		Step F	39.1217	3129.74	6781.09	81373.14
		Step G	41.0779	3286.23	7120.17	85442.03
		Step H	43.1317	3450.54	7476.16	89713.94

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
0150B	Electric Apprentice Line Technician-B	Step A	62.2946	4983.57	10797.73	129572.77
		Step B	67.0866	5366.93	11628.34	139540.13
		Step C	71.8785	5750.28	12458.94	149507.28
		Step D	76.6704	6133.63	13289.54	159474.43
		Step E	81.4623	6516.98	14120.13	169441.58
		Step F	86.2542	6900.34	14950.73	179408.74
1086B	Electric Apprentice Metering System Technician-B	Step A	56.1239	4489.91	9728.14	116737.71
		Step B	60.4412	4835.30	10476.47	125717.70
		Step C	64.7584	5180.67	11224.79	134697.47
		Step D	69.0756	5526.05	11973.10	143677.25
		Step E	73.3928	5871.42	12721.42	152657.02
		Step F	77.7101	6216.81	13469.75	161637.01

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1084B	Electric Apprentice Substation Technician-B	Step A	50.2515	4020.12	8710.26	104523.12
		Step B	54.8197	4385.58	9502.08	114024.98
		Step C	59.3880	4751.04	10293.92	123527.04
		Step D	63.9563	5116.50	11085.76	133029.10
		Step E	68.5246	5481.97	11877.60	142531.17
		Step F	73.0930	5847.44	12669.45	152033.44
		Step G	77.6613	6212.90	13461.29	161535.50
		Step H	82.2296	6578.37	14253.13	171037.57

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2328B	Electric Drafting Technician I-B	Step A	41.1032	3288.26	7124.55	85494.66
		Step B	43.0356	3442.85	7459.50	89514.05
		Step C	44.3266	3546.13	7683.28	92199.33
		Step D	45.6565	3652.52	7913.79	94965.52
		Step E	47.0262	3762.10	8151.21	97814.50
		Step F	48.4370	3874.96	8395.75	100748.96
		Step G	49.8900	3991.20	8647.60	103771.20
		Step H	51.3868	4110.94	8907.05	106884.54
		Step I	52.9284	4234.27	9174.26	110091.07
		Step J	54.5162	4361.30	9449.47	113393.70
		Step K	56.1516	4492.13	9732.94	116795.33
		Step L	57.8363	4626.90	10024.96	120299.50

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2330B	Electric Drafting Technician II-B	Step A	45.2135	3617.08	7837.01	94044.08
		Step B	47.3392	3787.14	8205.46	98465.54
		Step C	48.7594	3900.75	8451.63	101419.55
		Step D	50.2221	4017.77	8705.16	104461.97
		Step E	51.7288	4138.30	8966.33	107595.90
		Step F	53.2807	4262.46	9235.32	110823.86
		Step G	54.8792	4390.34	9512.39	114148.74
		Step H	56.5255	4522.04	9797.75	117573.04
		Step I	58.2213	4657.70	10091.69	121100.30
		Step J	59.9679	4797.43	10394.44	124733.23
		Step K	61.7670	4941.36	10706.28	128475.36
		Step L	63.6200	5089.60	11027.47	132329.60

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2340B	Electric Engineering Technician I-B	Step A	51.1336	4090.69	8863.16	106357.89
		Step B	53.5377	4283.02	9279.87	111358.42
		Step C	55.1438	4411.50	9558.26	114699.10
		Step D	56.7981	4543.85	9845.00	118140.05
		Step E	58.5020	4680.16	10140.35	121684.16
		Step F	60.2570	4820.56	10444.55	125334.56
		Step G	62.0649	4965.19	10757.92	129094.99
		Step H	63.9269	5114.15	11080.66	132967.95
		Step I	65.8446	5267.57	11413.06	136956.77
		Step J	67.8199	5425.59	11755.45	141065.39
		Step K	69.8546	5588.37	12108.13	145297.57
		Step L	71.9501	5756.01	12471.35	149656.21

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2345B	Electric Engineering Technician II-B	Step A	56.2468	4499.74	9749.45	116993.34
		Step B	58.8913	4711.30	10207.83	122493.90
		Step C	60.6581	4852.65	10514.07	126168.85
		Step D	62.4779	4998.23	10829.50	129954.03
		Step E	64.3522	5148.18	11154.38	133852.58
		Step F	66.2839	5302.71	11489.21	137870.51
		Step G	68.2712	5461.70	11833.67	142004.10
		Step H	70.3194	5625.55	12188.70	146264.35
		Step I	72.4290	5794.32	12554.36	150652.32
		Step J	74.6019	5968.15	12931.00	155171.95
		Step K	76.8398	6147.18	13318.90	159826.78
		Step L	79.1451	6331.61	13718.48	164621.81

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1152B	Electric Line General Foreperson-B	Step A	76.7943	6143.54	13311.01	159732.14
		Step B	80.4048	6432.38	13936.83	167241.98
		Step C	82.8169	6625.35	14354.93	172259.15
		Step D	85.3015	6824.12	14785.59	177427.12
		Step E	87.8604	7028.83	15229.14	182749.63
		Step F	90.4962	7239.70	15686.01	188232.10
		Step G	93.2112	7456.90	16156.61	193879.30
		Step H	96.0075	7680.60	16641.30	199695.60
		Step I	98.8877	7911.02	17140.53	205686.42
		Step J	101.8543	8148.34	17654.75	211856.94
		Step K	104.9100	8392.80	18184.40	218212.80
		Step L	108.0573	8644.58	18729.93	224759.18
2285B	Electric Line Technician-B	Step A	95.8380	7667.04	16611.92	199343.04

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2286B	Electric Line Troubleshooter-B	Step A	73.2185	5857.48	12691.21	152294.48
		Step B	76.6608	6132.86	13287.87	159454.46
		Step C	78.9607	6316.86	13686.52	164238.26
		Step D	81.3295	6506.36	14097.11	169165.36
		Step E	83.7694	6701.55	14520.03	174240.35
		Step F	86.2825	6902.60	14955.63	179467.60
		Step G	88.8709	7109.67	15404.29	184851.47
		Step H	91.5371	7322.97	15866.43	190397.17
		Step I	94.2832	7542.66	16342.42	196109.06
		Step J	97.1117	7768.94	16832.69	201992.34
		Step K	100.0251	8002.01	17337.68	208052.21
		Step L	103.0258	8242.06	17857.81	214293.66

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2210B	Electric Materials Technician I-B	Step A	39.8445	3187.56	6906.38	82876.56
		Step B	41.7177	3337.42	7231.07	86772.82
		Step C	42.9694	3437.55	7448.03	89376.35
		Step D	44.2584	3540.67	7671.46	92057.47
		Step E	45.5861	3646.89	7901.59	94819.09
		Step F	46.9537	3756.30	8138.64	97663.70
		Step G	48.3624	3868.99	8382.82	100593.79
		Step H	49.8132	3985.06	8634.29	103611.46
		Step I	51.3074	4104.59	8893.28	106719.39
		Step J	52.8468	4227.74	9160.11	109921.34
		Step K	54.4321	4354.57	9434.90	113218.77
		Step L	56.0652	4485.22	9717.97	116615.62

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2212B	Electric Materials Technician II-B	Step A	43.8288	3506.30	7596.99	91163.90
		Step B	45.8895	3671.16	7954.18	95450.16
		Step C	47.2664	3781.31	8192.84	98314.11
		Step D	48.6843	3894.74	8438.61	101263.34
		Step E	50.1448	4011.58	8691.77	104301.18
		Step F	51.6491	4131.93	8952.51	107430.13
		Step G	53.1986	4255.89	9221.09	110653.09
		Step H	54.7946	4383.57	9497.73	113972.77
		Step I	56.4385	4515.08	9782.67	117392.08
		Step J	58.1315	4650.52	10076.13	120913.52
		Step K	59.8755	4790.04	10378.42	124541.04
		Step L	61.6717	4933.74	10689.76	128277.14
1085B	Electric Metering System Technician-B	Step A	86.3445	6907.56	14966.38	179596.56

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1130B	Electric Operations Safety Technician-B	Step A	74.9214	5993.71	12986.38	155836.51
		Step B	78.4437	6275.50	13596.91	163162.90
		Step C	80.7970	6463.76	14004.81	168057.76
		Step D	83.2210	6657.68	14424.97	173099.68
		Step E	85.7176	6857.41	14857.72	178292.61
		Step F	88.2891	7063.13	15303.44	183641.33
		Step G	90.9378	7275.02	15762.55	189150.62
		Step H	93.6659	7493.27	16235.42	194825.07
		Step I	96.4759	7718.07	16722.49	200669.87
		Step J	99.3701	7949.61	17224.15	206689.81
		Step K	102.3513	8188.10	17740.89	212890.70
		Step L	105.4218	8433.74	18273.11	219277.34
2421B	Electric Pre-Apprentice-B	Step A	40.4915	3239.32	7018.53	84222.32
		Step B	43.6061	3488.49	7558.39	90700.69
		Step C	46.7209	3737.67	8098.29	97179.47
		Step D	49.8358	3986.86	8638.21	103658.46
		Step E	52.9505	4236.04	9178.09	110137.04
		Step F	56.0652	4485.22	9717.97	116615.62

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2254B	Electric Preventive Data System Technician-B	Step A	36.2224	2897.79	6278.55	75342.59
		Step B	37.9253	3034.02	6573.72	78884.62
		Step C	39.0631	3125.05	6770.94	81251.25
		Step D	40.2348	3218.78	6974.03	83688.38
		Step E	41.4420	3315.36	7183.28	86199.36
		Step F	42.6852	3414.82	7398.77	88785.22
		Step G	43.9658	3517.26	7620.74	91448.86
		Step H	45.2848	3622.78	7849.37	94192.38
		Step I	46.6432	3731.46	8084.82	97017.86
		Step J	48.0425	3843.40	8327.37	99928.40
		Step K	49.4838	3958.70	8577.19	102926.30
		Step L	50.9684	4077.47	8834.52	106014.27
1083B	Electric Substation Technician-B	Step A	91.3662	7309.30	15836.81	190041.70

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2350B	Electric System Dispatcher-B	Step A	74.9214	5993.71	12986.38	155836.51
		Step B	78.4437	6275.50	13596.91	163162.90
		Step C	80.7970	6463.76	14004.81	168057.76
		Step D	83.2217	6657.74	14425.09	173101.14
		Step E	85.7176	6857.41	14857.72	178292.61
		Step F	88.2891	7063.13	15303.44	183641.33
		Step G	90.9378	7275.02	15762.55	189150.62
		Step H	93.6659	7493.27	16235.42	194825.07
		Step I	96.4759	7718.07	16722.49	200669.87
		Step J	99.3701	7949.61	17224.15	206689.81
		Step K	102.3513	8188.10	17740.89	212890.70
		Step L	105.4218	8433.74	18273.11	219277.34

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2359B	Electric Technology System Technician-B	Step A	57.4606	4596.85	9959.84	119518.05
		Step B	60.1621	4812.97	10428.10	125137.17
		Step C	61.9669	4957.35	10740.93	128891.15
		Step D	63.8260	5106.08	11063.17	132758.08
		Step E	65.7407	5259.26	11395.05	136740.66
		Step F	67.7127	5417.02	11736.87	140842.42
		Step G	69.7443	5579.54	12089.01	145068.14
		Step H	71.8366	5746.93	12451.68	149420.13
		Step I	73.9917	5919.34	12825.23	153902.74
		Step J	76.2159	6097.27	13210.76	158529.07
		Step K	78.4978	6279.82	13606.29	163275.42
		Step L	80.8527	6468.22	14014.47	168173.62

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9250B	Electric Utility Inspection Technician-B	Step A	61.9183	4953.46	10732.51	128790.06
		Step B	64.8294	5186.35	11237.10	134845.15
		Step C	66.7743	5341.94	11574.21	138890.54
		Step D	68.7775	5502.20	11921.43	143057.20
		Step E	70.8409	5667.27	12279.09	147349.07
		Step F	72.9660	5837.28	12647.44	151769.28
		Step G	75.1551	6012.41	13026.88	156322.61
		Step H	77.4097	6192.78	13417.68	161012.18
		Step I	79.7320	6378.56	13820.21	165842.56
		Step J	82.1240	6569.92	14234.83	170817.92
		Step K	84.5878	6767.02	14661.89	175942.62
		Step L	87.1254	6970.03	15101.74	181220.83

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2380B	Electronics Technician I-B	Step A	38.7017	3096.14	6708.29	80499.54
		Step B	40.5213	3241.70	7023.69	84284.30
		Step C	41.7369	3338.95	7234.40	86812.75
		Step D	42.9890	3439.12	7451.43	89417.12
		Step E	44.2787	3542.30	7674.97	92099.70
		Step F	45.6071	3648.57	7905.23	94862.77
		Step G	46.9753	3758.02	8142.39	97708.62
		Step H	48.3845	3870.76	8386.65	100639.76
		Step I	49.8361	3986.89	8638.26	103659.09
		Step J	51.3311	4106.49	8897.39	106768.69
		Step K	52.8711	4229.69	9164.32	109971.89
		Step L	54.4573	4356.58	9439.27	113271.18

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2385B	Electronics Technician II-B	Step A	42.5719	3405.75	7379.13	88549.55
		Step B	44.5734	3565.87	7726.06	92712.67
		Step C	45.9107	3672.86	7957.85	95494.26
		Step D	47.2879	3783.03	8196.57	98358.83
		Step E	48.7066	3896.53	8442.48	101309.73
		Step F	50.1678	4013.42	8695.75	104349.02
		Step G	51.6728	4133.82	8956.62	107479.42
		Step H	53.2230	4257.84	9225.32	110703.84
		Step I	54.8197	4385.58	9502.08	114024.98
		Step J	56.4644	4517.15	9787.16	117445.95
		Step K	58.1583	4652.66	10080.77	120969.26
		Step L	59.9030	4792.24	10383.19	124598.24

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1120B	Electronics Technician III-B	Step A	46.8291	3746.33	8117.04	97404.53
		Step B	49.0308	3922.46	8498.67	101984.06
		Step C	50.5017	4040.14	8753.63	105043.54
		Step D	52.0168	4161.34	9016.25	108194.94
		Step E	53.5772	4286.18	9286.71	111440.58
		Step F	55.1846	4414.77	9565.33	114783.97
		Step G	56.8402	4547.22	9852.30	118227.62
		Step H	58.5453	4683.62	10147.85	121774.22
		Step I	60.3016	4824.13	10452.28	125427.33
		Step J	62.1108	4968.86	10765.87	129190.46
		Step K	63.9740	5117.92	11088.83	133065.92
		Step L	65.8933	5271.46	11421.51	137058.06

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1037B	Environmental Utilities Instrument and Control Technician I - B	Step A	38.7017	3096.14	6708.29	80499.54
		Step B	40.5213	3241.70	7023.69	84284.30
		Step C	41.7369	3338.95	7234.40	86812.75
		Step D	42.9890	3439.12	7451.43	89417.12
		Step E	44.2787	3542.30	7674.97	92099.70
		Step F	45.6071	3648.57	7905.23	94862.77
		Step G	46.9753	3758.02	8142.39	97708.62
		Step H	48.3845	3870.76	8386.65	100639.76
		Step I	49.8361	3986.89	8638.26	103659.09
		Step J	51.3311	4106.49	8897.39	106768.69
		Step K	52.8711	4229.69	9164.32	109971.89
		Step L	54.4573	4356.58	9439.27	113271.18

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1038B	Environmental Utilities Instrument and Control Technician II - B	Step A	42.5719	3405.75	7379.13	88549.55
		Step B	44.5734	3565.87	7726.06	92712.67
		Step C	45.9107	3672.86	7957.85	95494.26
		Step D	47.2879	3783.03	8196.57	98358.83
		Step E	48.7066	3896.53	8442.48	101309.73
		Step F	50.1678	4013.42	8695.75	104349.02
		Step G	51.6728	4133.82	8956.62	107479.42
		Step H	53.2230	4257.84	9225.32	110703.84
		Step I	54.8197	4385.58	9502.08	114024.98
		Step J	56.4644	4517.15	9787.16	117445.95
		Step K	58.1583	4652.66	10080.77	120969.26
		Step L	59.9030	4792.24	10383.19	124598.24

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1082B	Generation Maintenance Scheduler-Coordinator-B	Step A	66.3668	5309.34	11503.58	138042.94
		Step B	69.4870	5558.96	12044.41	144532.96
		Step C	71.5718	5725.74	12405.78	148869.34
		Step D	73.7190	5897.52	12777.96	153335.52
		Step E	75.9304	6074.43	13161.27	157935.23
		Step F	78.2084	6256.67	13556.12	162673.47
		Step G	80.5546	6444.37	13962.80	167553.57
		Step H	82.9714	6637.71	14381.71	172580.51
		Step I	85.4603	6836.82	14813.12	177757.42
		Step J	88.0243	7041.94	15257.55	183090.54
		Step K	90.6648	7253.18	15715.23	188582.78
		Step L	93.3849	7470.79	16186.72	194240.59

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
3608B	Instrument and Control Technician-B	Step A	60.3334	4826.67	10457.79	125493.47
		Step B	63.1701	5053.61	10949.48	131393.81
		Step C	65.0652	5205.22	11277.97	135335.62
		Step D	67.0172	5361.38	11616.31	139395.78
		Step E	69.0277	5522.22	11964.80	143577.62
		Step F	71.0985	5687.88	12323.74	147884.88
		Step G	73.2314	5858.51	12693.44	152321.31
		Step H	75.4284	6034.27	13074.26	156891.07
		Step I	77.6913	6215.30	13466.49	161597.90
		Step J	80.0220	6401.76	13870.48	166445.76
		Step K	82.4225	6593.80	14286.57	171438.80
		Step L	84.8953	6791.62	14715.19	176582.22

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
4520B	Materials Technician-B	Step A	39.3816	3150.53	6826.14	81913.73
		Step B	41.2331	3298.65	7147.07	85764.85
		Step C	42.4700	3397.60	7361.47	88337.60
		Step D	43.7443	3499.54	7582.35	90988.14
		Step E	45.0564	3604.51	7809.78	93717.31
		Step F	46.4081	3712.65	8044.07	96528.85
		Step G	47.8003	3824.02	8285.39	99424.62
		Step H	49.2345	3938.76	8533.98	102407.76
		Step I	50.7115	4056.92	8789.99	105479.92
		Step J	52.2328	4178.62	9053.69	108644.22
		Step K	53.7998	4303.98	9325.30	111903.58
		Step L	55.4137	4433.10	9605.04	115260.50

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5316B	Plant and Equipment Maintenance Worker I-B	Step A	26.8981	2151.85	4662.34	55948.05
		Step B	28.1626	2253.01	4881.52	58578.21
		Step C	29.0076	2320.61	5027.98	60335.81
		Step D	29.8778	2390.22	5178.82	62145.82
		Step E	30.7741	2461.93	5334.18	64010.13
		Step F	31.6974	2535.79	5494.22	65930.59
		Step G	32.6483	2611.86	5659.04	67908.46
		Step H	33.6278	2690.22	5828.82	69945.82
		Step I	34.6366	2770.93	6003.68	72044.13
		Step J	35.6757	2854.06	6183.79	74205.46
		Step K	36.7459	2939.67	6369.29	76431.47
		Step L	37.8483	3027.86	6560.37	78724.46

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5319B	Plant and Equipment Maintenance Worker II-B	Step A	29.5877	2367.02	5128.53	61542.42
		Step B	30.9790	2478.32	5369.69	64436.32
		Step C	31.9084	2552.67	5530.79	66369.47
		Step D	32.8656	2629.25	5696.70	68360.45
		Step E	33.8516	2708.13	5867.61	70411.33
		Step F	34.8670	2789.36	6043.61	72523.36
		Step G	35.9131	2873.05	6224.94	74699.25
		Step H	36.9905	2959.24	6411.69	76940.24
		Step I	38.1002	3048.02	6604.03	79248.42
		Step J	39.2432	3139.46	6802.15	81625.86
		Step K	40.4206	3233.65	7006.24	84074.85
		Step L	41.6331	3330.65	7216.40	86596.85

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5327B	Plant and Equipment Mechanic I-B	Step A	32.5469	2603.75	5641.46	67697.55
		Step B	34.0769	2726.15	5906.66	70879.95
		Step C	35.0993	2807.94	6083.88	73006.54
		Step D	36.1522	2892.18	6266.38	75196.58
		Step E	37.2367	2978.94	6454.36	77452.34
		Step F	38.3539	3068.31	6648.01	79776.11
		Step G	39.5045	3160.36	6847.45	82169.36
		Step H	40.6896	3255.17	7052.86	84634.37
		Step I	41.9103	3352.82	7264.45	87173.42
		Step J	43.1677	3453.42	7482.40	89788.82
		Step K	44.4626	3557.01	7706.85	92482.21
		Step L	45.7964	3663.71	7938.04	95256.51

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5328B	Plant and Equipment Mechanic II-B	Step A	35.8013	2864.10	6205.56	74466.70
		Step B	37.4844	2998.75	6497.30	77967.55
		Step C	38.6091	3088.73	6692.24	80306.93
		Step D	39.7674	3181.39	6893.02	82716.19
		Step E	40.9603	3276.82	7099.79	85197.42
		Step F	42.1892	3375.14	7312.79	87753.54
		Step G	43.4547	3476.38	7532.15	90385.78
		Step H	44.7585	3580.68	7758.14	93097.68
		Step I	46.1012	3688.10	7990.87	95890.50
		Step J	47.4843	3798.74	8230.61	98767.34
		Step K	48.9087	3912.70	8477.51	101730.10
		Step L	50.3761	4030.09	8731.86	104782.29

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5595B	Power Engineer I-B	Step A	55.5317	4442.54	9625.49	115505.94
		Step B	58.1425	4651.40	10078.03	120936.40
		Step C	59.8868	4790.94	10380.38	124564.54
		Step D	61.6833	4934.66	10691.77	128301.26
		Step E	63.5339	5082.71	11012.54	132150.51
		Step F	65.4400	5235.20	11342.93	136115.20
		Step G	67.4032	5392.26	11683.22	140198.66
		Step H	69.4251	5554.01	12033.68	144404.21
		Step I	71.5079	5720.63	12394.70	148736.43
		Step J	73.6532	5892.26	12766.55	153198.66
		Step K	75.8628	6069.02	13149.55	157794.62
		Step L	78.1388	6251.10	13544.06	162528.70

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5596B	Power Engineer II-B	Step A	61.0850	4886.80	10588.07	127056.80
		Step B	63.9569	5116.55	11085.86	133030.35
		Step C	65.8757	5270.06	11418.45	137021.46
		Step D	67.8518	5428.14	11760.98	141131.74
		Step E	69.8874	5590.99	12113.82	145365.79
		Step F	71.9841	5758.73	12477.24	149726.93
		Step G	74.1435	5931.48	12851.54	154218.48
		Step H	76.3680	6109.44	13237.12	158845.44
		Step I	78.6589	6292.71	13634.21	163610.51
		Step J	81.0187	6481.50	14043.24	168518.90
		Step K	83.4493	6675.94	14464.55	173574.54
		Step L	85.9527	6876.22	14898.47	178781.62

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5590B	Power Plant Engineer I-B	Step A	55.5317	4442.54	9625.49	115505.94
		Step B	58.1425	4651.40	10078.03	120936.40
		Step C	59.8868	4790.94	10380.38	124564.54
		Step D	61.6833	4934.66	10691.77	128301.26
		Step E	63.5339	5082.71	11012.54	132150.51
		Step F	65.4400	5235.20	11342.93	136115.20
		Step G	67.4032	5392.26	11683.22	140198.66
		Step H	69.4251	5554.01	12033.68	144404.21
		Step I	71.5079	5720.63	12394.70	148736.43
		Step J	73.6532	5892.26	12766.55	153198.66
		Step K	75.8628	6069.02	13149.55	157794.62
		Step L	78.1388	6251.10	13544.06	162528.70

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5591B	Power Plant Engineer II-B	Step A	61.0850	4886.80	10588.07	127056.80
		Step B	63.9569	5116.55	11085.86	133030.35
		Step C	65.8756	5270.05	11418.44	137021.25
		Step D	67.8518	5428.14	11760.98	141131.74
		Step E	69.8874	5590.99	12113.82	145365.79
		Step F	71.9840	5758.72	12477.23	149726.72
		Step G	74.1435	5931.48	12851.54	154218.48
		Step H	76.3679	6109.43	13237.10	158845.23
		Step I	78.6589	6292.71	13634.21	163610.51
		Step J	81.0187	6481.50	14043.24	168518.90
		Step K	83.4491	6675.93	14464.51	173574.13
		Step L	85.9527	6876.22	14898.47	178781.62

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5526B	Power Plant Mechanic-B	Step A	54.8486	4387.89	9507.09	114085.09
		Step B	57.4273	4594.18	9954.07	119448.78
		Step C	59.1501	4732.01	10252.68	123032.21
		Step D	60.9246	4873.97	10560.26	126723.17
		Step E	62.7524	5020.19	10877.08	130524.99
		Step F	64.6349	5170.79	11203.38	134440.59
		Step G	66.5741	5325.93	11539.51	138474.13
		Step H	68.5712	5485.70	11885.67	142628.10
		Step I	70.6283	5650.26	12242.24	146906.86
		Step J	72.7472	5819.78	12609.51	151314.18
		Step K	74.9296	5994.37	12987.80	155853.57
		Step L	77.1776	6174.21	13377.45	160529.41

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5522B	Power Plant Operator Technician I-B	Step A	52.2367	4178.94	9054.36	108652.34
		Step B	54.6928	4375.42	9480.09	113761.02
		Step C	56.3336	4506.69	9764.49	117173.89
		Step D	58.0235	4641.88	10057.41	120688.88
		Step E	59.7642	4781.14	10359.13	124309.54
		Step F	61.5572	4924.58	10669.91	128038.98
		Step G	63.4038	5072.30	10989.99	131879.90
		Step H	65.3060	5224.48	11319.71	135836.48
		Step I	67.2652	5381.22	11659.30	139911.62
		Step J	69.2831	5542.65	12009.07	144108.85
		Step K	71.3617	5708.94	12369.36	148432.34
		Step L	73.5024	5880.19	12740.42	152884.99

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5523B	Power Plant Operator Technician II-B	Step A	57.4606	4596.85	9959.84	119518.05
		Step B	60.1621	4812.97	10428.10	125137.17
		Step C	61.9669	4957.35	10740.93	128891.15
		Step D	63.8260	5106.08	11063.17	132758.08
		Step E	65.7407	5259.26	11395.05	136740.66
		Step F	67.7127	5417.02	11736.87	140842.42
		Step G	69.7443	5579.54	12089.01	145068.14
		Step H	71.8366	5746.93	12451.68	149420.13
		Step I	73.9917	5919.34	12825.23	153902.74
		Step J	76.2115	6096.92	13209.99	158519.92
		Step K	78.4978	6279.82	13606.29	163275.42
		Step L	80.8527	6468.22	14014.47	168173.62

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5401B	Predictive Maintenance Technician I-B	Step A	38.7018	3096.14	6708.31	80499.74
		Step B	40.5213	3241.70	7023.69	84284.30
		Step C	41.7370	3338.96	7234.41	86812.96
		Step D	42.9890	3439.12	7451.43	89417.12
		Step E	44.2788	3542.30	7674.99	92099.90
		Step F	45.6072	3648.58	7905.25	94862.98
		Step G	46.9753	3758.02	8142.39	97708.62
		Step H	48.3845	3870.76	8386.65	100639.76
		Step I	49.8361	3986.89	8638.26	103659.09
		Step J	51.3312	4106.50	8897.41	106768.90
		Step K	52.8711	4229.69	9164.32	109971.89
		Step L	54.4573	4356.58	9439.27	113271.18

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5402B	Predictive Maintenance Technician II-B	Step A	42.5719	3405.75	7379.13	88549.55
		Step B	44.5734	3565.87	7726.06	92712.67
		Step C	45.9106	3672.85	7957.84	95494.05
		Step D	47.2879	3783.03	8196.57	98358.83
		Step E	48.7066	3896.53	8442.48	101309.73
		Step F	50.1678	4013.42	8695.75	104349.02
		Step G	51.6728	4133.82	8956.62	107479.42
		Step H	53.2230	4257.84	9225.32	110703.84
		Step I	54.8197	4385.58	9502.08	114024.98
		Step J	56.4643	4517.14	9787.15	117445.74
		Step K	58.1582	4652.66	10080.75	120969.06
		Step L	59.9030	4792.24	10383.19	124598.24

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5533B	Preventative Maintenance Coordinator-B	Step A	43.3195	3465.56	7508.71	90104.56
		Step B	45.3564	3628.51	7861.78	94341.31
		Step C	46.7170	3737.36	8097.61	97171.36
		Step D	48.1184	3849.47	8340.52	100086.27
		Step E	49.5622	3964.98	8590.78	103089.38
		Step F	51.0489	4083.91	8848.48	106181.71
		Step G	52.5804	4206.43	9113.94	109367.23
		Step H	54.1577	4332.62	9387.33	112648.02
		Step I	55.7826	4462.61	9668.98	116027.81
		Step J	57.4560	4596.48	9959.04	119508.48
		Step K	59.1796	4734.37	10257.80	123093.57
		Step L	60.9551	4876.41	10565.55	126786.61

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5500B	Preventative Maintenance Technician I-B	Step A	35.1834	2814.67	6098.46	73181.47
		Step B	36.8376	2947.01	6385.18	76622.21
		Step C	37.9426	3035.41	6576.72	78920.61
		Step D	39.0809	3126.47	6774.02	81288.27
		Step E	40.2534	3220.27	6977.26	83727.07
		Step F	41.4610	3316.88	7186.57	86238.88
		Step G	42.7048	3416.38	7402.17	88825.98
		Step H	43.9859	3518.87	7624.22	91490.67
		Step I	45.3055	3624.44	7852.95	94235.44
		Step J	46.6647	3733.18	8088.55	97062.58
		Step K	48.0647	3845.18	8331.21	99974.58
		Step L	49.5066	3960.53	8581.14	102973.73

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
5502B	Preventative Maintenance Technician II-B	Step A	38.7018	3096.14	6708.31	80499.74
		Step B	40.5213	3241.70	7023.69	84284.30
		Step C	41.7369	3338.95	7234.40	86812.75
		Step D	42.9891	3439.13	7451.44	89417.33
		Step E	44.2787	3542.30	7674.97	92099.70
		Step F	45.6071	3648.57	7905.23	94862.77
		Step G	46.9753	3758.02	8142.39	97708.62
		Step H	48.3846	3870.77	8386.66	100639.97
		Step I	49.8361	3986.89	8638.26	103659.09
		Step J	51.3312	4106.50	8897.41	106768.90
		Step K	52.8712	4229.70	9164.34	109972.10
		Step L	54.4573	4356.58	9439.27	113271.18

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7020B	SCADA System Technician-B	Step A	42.5719	3405.75	7379.13	88549.55
		Step B	44.5734	3565.87	7726.06	92712.67
		Step C	45.9107	3672.86	7957.85	95494.26
		Step D	47.2879	3783.03	8196.57	98358.83
		Step E	48.7066	3896.53	8442.48	101309.73
		Step F	50.1678	4013.42	8695.75	104349.02
		Step G	51.6728	4133.82	8956.62	107479.42
		Step H	53.2230	4257.84	9225.32	110703.84
		Step I	54.8197	4385.58	9502.08	114024.98
		Step J	56.4644	4517.15	9787.16	117445.95
		Step K	58.1583	4652.66	10080.77	120969.26
		Step L	59.9030	4792.24	10383.19	124598.24

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7118B	Senior Electric Line Technician-B	Step A	74.9214	5993.71	12986.38	155836.51
		Step B	78.4437	6275.50	13596.91	163162.90
		Step C	80.7970	6463.76	14004.81	168057.76
		Step D	83.2210	6657.68	14424.97	173099.68
		Step E	85.7176	6857.41	14857.72	178292.61
		Step F	88.2891	7063.13	15303.44	183641.33
		Step G	90.9378	7275.02	15762.55	189150.62
		Step H	93.6659	7493.27	16235.42	194825.07
		Step I	96.4759	7718.07	16722.49	200669.87
		Step J	99.3701	7949.61	17224.15	206689.81
		Step K	102.3513	8188.10	17740.89	212890.70
		Step L	105.4218	8433.74	18273.11	219277.34

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1153B	Senior Electric Line Troubleshooter-B	Step A	76.8794	6150.35	13325.76	159909.15
		Step B	80.4939	6439.51	13952.28	167427.31
		Step C	82.9087	6632.70	14370.84	172450.10
		Step D	85.3960	6831.68	14801.97	177623.68
		Step E	87.9579	7036.63	15246.04	182952.43
		Step F	90.5966	7247.73	15703.41	188440.93
		Step G	93.3145	7465.16	16174.51	194094.16
		Step H	96.1139	7689.11	16659.74	199916.91
		Step I	98.9974	7919.79	17159.55	205914.59
		Step J	101.9672	8157.38	17674.31	212091.78
		Step K	105.0263	8402.10	18204.56	218454.70
		Step L	108.1771	8654.17	18750.70	225008.37

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7169B	Senior Electric Materials Technician-B	Step A	48.2120	3856.96	8356.75	100280.96
		Step B	50.4786	4038.29	8749.62	104995.49
		Step C	51.9930	4159.44	9012.12	108145.44
		Step D	53.5527	4284.22	9282.47	111389.62
		Step E	55.1592	4412.74	9560.93	114731.14
		Step F	56.8139	4545.11	9847.74	118172.91
		Step G	58.5185	4681.48	10143.21	121718.48
		Step H	60.2740	4821.92	10447.49	125369.92
		Step I	62.0823	4966.58	10760.93	129131.18
		Step J	63.9448	5115.58	11083.77	133005.18
		Step K	65.8630	5269.04	11416.25	136995.04
		Step L	67.8389	5427.11	11758.74	141104.91

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1036B	Senior Electric Metering Systems Technician - B	Step A	67.4998	5399.98	11699.97	140399.58
		Step B	70.6734	5653.87	12250.06	147000.67
		Step C	72.7936	5823.49	12617.56	151410.69
		Step D	74.9774	5998.19	12996.08	155952.99
		Step E	77.2266	6178.13	13385.94	160631.33
		Step F	79.5435	6363.48	13787.54	165450.48
		Step G	81.9298	6554.38	14201.17	170413.98
		Step H	84.3877	6751.02	14627.20	175526.42
		Step I	86.9194	6953.55	15066.03	180792.35
		Step J	89.5269	7162.15	15518.00	186215.95
		Step K	92.2128	7377.02	15983.55	191802.62
		Step L	94.9790	7598.32	16463.03	197556.32

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7126B	Senior Electric Substation Technician-B	Step A	71.4254	5714.03	12380.40	148564.83
		Step B	74.7836	5982.69	12962.49	155549.89
		Step C	77.0272	6162.18	13351.38	160216.58
		Step D	79.3379	6347.03	13751.90	165022.83
		Step E	81.7180	6537.44	14164.45	169973.44
		Step F	84.1680	6733.44	14589.12	175069.44
		Step G	86.6946	6935.57	15027.06	180324.77
		Step H	89.2954	7143.63	15477.87	185734.43
		Step I	91.9744	7357.95	15942.23	191306.75
		Step J	94.7335	7578.68	16420.47	197045.68
		Step K	97.5756	7806.05	16913.10	202957.25
		Step L	100.5028	8040.22	17420.49	209045.82

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7168B	Senior Electric System Dispatcher-B	Step A	82.4135	6593.08	14285.01	171420.08
		Step B	86.2881	6903.05	14956.60	179479.25
		Step C	88.8767	7110.14	15405.29	184863.54
		Step D	91.5431	7323.45	15867.47	190409.65
		Step E	94.2895	7543.16	16343.51	196122.16
		Step F	97.1181	7769.45	16833.80	202005.65
		Step G	100.0315	8002.52	17338.79	208065.52
		Step H	103.0326	8242.61	17858.98	214307.81
		Step I	106.1235	8489.88	18394.74	220736.88
		Step J	109.3072	8744.58	18946.58	227358.98
		Step K	112.5864	9006.91	19514.98	234179.71
		Step L	115.9639	9277.11	20100.41	241204.91

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7170B	Senior Electronic Technician-B	Step A	51.5120	4120.96	8928.75	107144.96
		Step B	53.9339	4314.71	9348.54	112182.51
		Step C	55.5519	4444.15	9629.00	115547.95
		Step D	57.2185	4577.48	9917.87	119014.48
		Step E	58.9350	4714.80	10215.40	122584.80
		Step F	60.7031	4856.25	10521.87	126262.45
		Step G	62.5241	5001.93	10837.51	130050.13
		Step H	64.3999	5151.99	11162.65	133951.79
		Step I	66.3319	5306.55	11497.53	137970.35
		Step J	68.3219	5465.75	11842.46	142109.55
		Step K	70.3715	5629.72	12197.73	146372.72
		Step L	72.4826	5798.61	12563.65	150763.81

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
1123B	Senior Environmental Utilities Instrument & Control Technician-B	Step A	46.8291	3746.33	8117.04	97404.53
		Step B	49.0308	3922.46	8498.67	101984.06
		Step C	50.5017	4040.14	8753.63	105043.54
		Step D	52.0167	4161.34	9016.23	108194.74
		Step E	53.5772	4286.18	9286.71	111440.58
		Step F	55.1846	4414.77	9565.33	114783.97
		Step G	56.8402	4547.22	9852.30	118227.62
		Step H	58.5454	4683.63	10147.87	121774.43
		Step I	60.3017	4824.14	10452.29	125427.54
		Step J	62.1108	4968.86	10765.87	129190.46
		Step K	63.9740	5117.92	11088.83	133065.92
		Step L	65.8933	5271.46	11421.51	137058.06

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7205B	Senior Plant and Equipment Mechanic-B	Step A	39.3816	3150.53	6826.14	81913.73
		Step B	41.2331	3298.65	7147.07	85764.85
		Step C	42.4700	3397.60	7361.47	88337.60
		Step D	43.7443	3499.54	7582.35	90988.14
		Step E	45.0564	3604.51	7809.78	93717.31
		Step F	46.4081	3712.65	8044.07	96528.85
		Step G	47.8003	3824.02	8285.39	99424.62
		Step H	49.2345	3938.76	8533.98	102407.76
		Step I	50.7115	4056.92	8789.99	105479.92
		Step J	52.2328	4178.62	9053.69	108644.22
		Step K	53.7998	4303.98	9325.30	111903.58
		Step L	55.4137	4433.10	9605.04	115260.50

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7152B	Senior Power Plant Operator Technician-B	Step A	63.2065	5056.52	10955.79	131469.52
		Step B	66.1783	5294.26	11470.91	137650.86
		Step C	68.1636	5453.09	11815.02	141780.29
		Step D	70.2084	5616.67	12169.46	146033.47
		Step E	72.3147	5785.18	12534.55	150414.58
		Step F	74.4842	5958.74	12910.59	154927.14
		Step G	76.7187	6137.50	13297.91	159574.90
		Step H	79.0202	6321.62	13696.83	164362.02
		Step I	81.3908	6511.26	14107.74	169292.86
		Step J	83.8326	6706.61	14530.98	174371.81
		Step K	86.3476	6907.81	14966.92	179603.01
		Step L	88.9380	7115.04	15415.92	184991.04

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7284B	Senior Preventative Maintenance Technician-B	Step A	46.8291	3746.33	8117.04	97404.53
		Step B	49.0308	3922.46	8498.67	101984.06
		Step C	50.5017	4040.14	8753.63	105043.54
		Step D	52.0168	4161.34	9016.25	108194.94
		Step E	53.5773	4286.18	9286.73	111440.78
		Step F	55.1846	4414.77	9565.33	114783.97
		Step G	56.8401	4547.21	9852.28	118227.41
		Step H	58.5453	4683.62	10147.85	121774.22
		Step I	60.3017	4824.14	10452.29	125427.54
		Step J	62.1108	4968.86	10765.87	129190.46
		Step K	63.9741	5117.93	11088.84	133066.13
		Step L	65.8933	5271.46	11421.51	137058.06

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9559B	Senior SCADA System Technician-B	Step A	46.8292	3746.34	8117.06	97404.74
		Step B	49.0308	3922.46	8498.67	101984.06
		Step C	50.5017	4040.14	8753.63	105043.54
		Step D	52.0168	4161.34	9016.25	108194.94
		Step E	53.5772	4286.18	9286.71	111440.58
		Step F	55.1846	4414.77	9565.33	114783.97
		Step G	56.8401	4547.21	9852.28	118227.41
		Step H	58.5453	4683.62	10147.85	121774.22
		Step I	60.3017	4824.14	10452.29	125427.54
		Step J	62.1107	4968.86	10765.85	129190.26
		Step K	63.9741	5117.93	11088.84	133066.13
		Step L	65.8933	5271.46	11421.51	137058.06

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7202B	Senior Wastewater Utility Maintenance Worker-B	Step A	33.7182	2697.46	5844.49	70133.86
		Step B	35.3034	2824.27	6119.26	73431.07
		Step C	36.3625	2909.00	6302.83	75634.00
		Step D	37.4535	2996.28	6491.94	77903.28
		Step E	38.5770	3086.16	6686.68	80240.16
		Step F	39.7343	3178.74	6887.28	82647.34
		Step G	40.9264	3274.11	7093.91	85126.91
		Step H	42.1541	3372.33	7306.71	87680.53
		Step I	43.4188	3473.50	7525.93	90311.10
		Step J	44.7213	3577.70	7751.69	93020.30
		Step K	46.0630	3685.04	7984.25	95811.04
		Step L	47.4449	3795.59	8223.78	98685.39

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
7204B	Senior Water Distribution Worker-B	Step A	33.7182	2697.46	5844.49	70133.86
		Step B	35.3034	2824.27	6119.26	73431.07
		Step C	36.3625	2909.00	6302.83	75634.00
		Step D	37.4535	2996.28	6491.94	77903.28
		Step E	38.5770	3086.16	6686.68	80240.16
		Step F	39.7343	3178.74	6887.28	82647.34
		Step G	40.9264	3274.11	7093.91	85126.91
		Step H	42.1541	3372.33	7306.71	87680.53
		Step I	43.4188	3473.50	7525.93	90311.10
		Step J	44.7213	3577.70	7751.69	93020.30
		Step K	46.0630	3685.04	7984.25	95811.04
		Step L	47.4449	3795.59	8223.78	98685.39

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2375B	Traffic Signal Maintenance Worker I-B	Step A	30.6530	2452.24	5313.19	63758.24
		Step B	32.0939	2567.51	5562.94	66755.31
		Step C	33.0569	2644.55	5729.86	68758.35
		Step D	34.0486	2723.89	5901.76	70821.09
		Step E	35.0700	2805.60	6078.80	72945.60
		Step F	36.1222	2889.78	6261.18	75134.18
		Step G	37.2059	2976.47	6449.02	77388.27
		Step H	38.3219	3065.75	6642.46	79709.55
		Step I	39.4718	3157.74	6841.78	82101.34
		Step J	40.6558	3252.46	7047.01	84564.06
		Step K	41.8755	3350.04	7258.42	87101.04
		Step L	43.1317	3450.54	7476.16	89713.94

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
2376B	Traffic Signal Maintenance Worker II-B	Step A	33.7182	2697.46	5844.49	70133.86
		Step B	35.3034	2824.27	6119.26	73431.07
		Step C	36.3626	2909.01	6302.85	75634.21
		Step D	37.4535	2996.28	6491.94	77903.28
		Step E	38.5770	3086.16	6686.68	80240.16
		Step F	39.7344	3178.75	6887.30	82647.55
		Step G	40.9265	3274.12	7093.93	85127.12
		Step H	42.1542	3372.34	7306.73	87680.74
		Step I	43.4188	3473.50	7525.93	90311.10
		Step J	44.7214	3577.71	7751.71	93020.51
		Step K	46.0630	3685.04	7984.25	95811.04
		Step L	47.4449	3795.59	8223.78	98685.39

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9027B	Wastewater Utility Maintenance Worker I-B	Step A	27.8661	2229.29	4830.12	57961.49
		Step B	29.1763	2334.10	5057.23	60686.70
		Step C	30.0517	2404.14	5208.96	62507.54
		Step D	30.9532	2476.26	5365.22	64382.66
		Step E	31.8818	2550.54	5526.18	66314.14
		Step F	32.8382	2627.06	5691.95	68303.46
		Step G	33.8235	2705.88	5862.74	70352.88
		Step H	34.8381	2787.05	6038.60	72463.25
		Step I	35.8832	2870.66	6219.75	74637.06
		Step J	36.9597	2956.78	6406.35	76876.18
		Step K	38.0685	3045.48	6598.54	79182.48
		Step L	39.2107	3136.86	6796.52	81558.26

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9029B	Wastewater Utility Maintenance Worker II-B	Step A	30.6530	2452.24	5313.19	63758.24
		Step B	32.0940	2567.52	5562.96	66755.52
		Step C	33.0570	2644.56	5729.88	68758.56
		Step D	34.0487	2723.90	5901.77	70821.30
		Step E	35.0700	2805.60	6078.80	72945.60
		Step F	36.1222	2889.78	6261.18	75134.18
		Step G	37.2059	2976.47	6449.02	77388.27
		Step H	38.3221	3065.77	6642.50	79709.97
		Step I	39.4717	3157.74	6841.76	82101.14
		Step J	40.6559	3252.47	7047.02	84564.27
		Step K	41.8756	3350.05	7258.44	87101.25
		Step L	43.1317	3450.54	7476.16	89713.94

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9078B	Water Conservation Specialist-B	Step A	33.7182	2697.46	5844.49	70133.86
		Step B	35.3034	2824.27	6119.26	73431.07
		Step C	36.3625	2909.00	6302.83	75634.00
		Step D	37.4535	2996.28	6491.94	77903.28
		Step E	38.5770	3086.16	6686.68	80240.16
		Step F	39.7343	3178.74	6887.28	82647.34
		Step G	40.9264	3274.11	7093.91	85126.91
		Step H	42.1541	3372.33	7306.71	87680.53
		Step I	43.4188	3473.50	7525.93	90311.10
		Step J	44.7213	3577.70	7751.69	93020.30
		Step K	46.0630	3685.04	7984.25	95811.04
		Step L	47.4449	3795.59	8223.78	98685.39

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9049B	Water Conservation Worker I-B	Step A	27.8661	2229.29	4830.12	57961.49
		Step B	29.1763	2334.10	5057.23	60686.70
		Step C	30.0517	2404.14	5208.96	62507.54
		Step D	30.9532	2476.26	5365.22	64382.66
		Step E	31.8818	2550.54	5526.18	66314.14
		Step F	32.8382	2627.06	5691.95	68303.46
		Step G	33.8235	2705.88	5862.74	70352.88
		Step H	34.8381	2787.05	6038.60	72463.25
		Step I	35.8832	2870.66	6219.75	74637.06
		Step J	36.9597	2956.78	6406.35	76876.18
		Step K	38.0685	3045.48	6598.54	79182.48
		Step L	39.2107	3136.86	6796.52	81558.26

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9051B	Water Conservation Worker II-B	Step A	30.6530	2452.24	5313.19	63758.24
		Step B	32.0940	2567.52	5562.96	66755.52
		Step C	33.0570	2644.56	5729.88	68758.56
		Step D	34.0487	2723.90	5901.77	70821.30
		Step E	35.0700	2805.60	6078.80	72945.60
		Step F	36.1222	2889.78	6261.18	75134.18
		Step G	37.2059	2976.47	6449.02	77388.27
		Step H	38.3221	3065.77	6642.50	79709.97
		Step I	39.4717	3157.74	6841.76	82101.14
		Step J	40.6559	3252.47	7047.02	84564.27
		Step K	41.8756	3350.05	7258.44	87101.25
		Step L	43.1317	3450.54	7476.16	89713.94

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9246B	Water Distribution Worker I-B	Step A	27.8661	2229.29	4830.12	57961.49
		Step B	29.1763	2334.10	5057.23	60686.70
		Step C	30.0517	2404.14	5208.96	62507.54
		Step D	30.9532	2476.26	5365.22	64382.66
		Step E	31.8818	2550.54	5526.18	66314.14
		Step F	32.8382	2627.06	5691.95	68303.46
		Step G	33.8235	2705.88	5862.74	70352.88
		Step H	34.8381	2787.05	6038.60	72463.25
		Step I	35.8832	2870.66	6219.75	74637.06
		Step J	36.9597	2956.78	6406.35	76876.18
		Step K	38.0685	3045.48	6598.54	79182.48
		Step L	39.2107	3136.86	6796.52	81558.26

City of Roseville

Salary Schedule: International Brotherhood of Electrical Workers-B

Appendix:J
Effective Date:05/03/2025

IBEW International Brotherhood of Electrical Workers

Grade Code	Grade Name	Step Name	Hourly	Bi-Weekly	Monthly	Annual
9248B	Water Distribution Worker II-B	Step A	30.6530	2452.24	5313.19	63758.24
		Step B	32.0940	2567.52	5562.96	66755.52
		Step C	33.0570	2644.56	5729.88	68758.56
		Step D	34.0487	2723.90	5901.77	70821.30
		Step E	35.0700	2805.60	6078.80	72945.60
		Step F	36.1222	2889.78	6261.18	75134.18
		Step G	37.2059	2976.47	6449.02	77388.27
		Step H	38.3221	3065.77	6642.50	79709.97
		Step I	39.4717	3157.74	6841.76	82101.14
		Step J	40.6559	3252.47	7047.02	84564.27
		Step K	41.8756	3350.05	7258.44	87101.25
		Step L	43.1317	3450.54	7476.16	89713.94

RESOLUTION NO. 25-130

APPROVING A SIDE LETTER TO THE MEMORANDUM OF UNDERSTANDING FOR EMPLOYEES REPRESENTED BY THE INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, LOCAL 1245, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a side letter to the Memorandum of Understanding for Employees Represented by the International Brotherhood of Electrical Workers, Local 1245, related to labor market adjustments, has been reviewed by the City Council;

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said Side Letter Agreement to the Master Memorandum of Understanding is approved and that the City Manager is authorized to execute it on behalf of the City of Roseville; and administer, interpret, and apply its terms, intent, and spirit, and execute any other documents necessary to effectuate the purposes hereof as determined necessary by the City Manager.

PASSED AND ADOPTED by the City Council of the City of Roseville this _____ day of _____, 2025, by the following vote on roll call:

AYES COUNCIL MEMBER:

NOES COUNCIL MEMBER:

ABSENT COUNCIL MEMBER:

_____
Mayor

ATTEST:

_____
City Clerk

SIDE LETTER AGREEMENT
BETWEEN THE
CITY OF ROSEVILLE
AND
INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS,
LOCAL 1245

The City of Roseville (hereinafter referred to as "City") and International Brotherhood of Electrical Workers, Local 1245 (hereinafter referred to as "IBEW Local 1245") entered into a Memorandum of Understanding ("MOU") with a term May 1, 2022, to April 30, 2026. The City and IBEW Local 1245 are collectively referred to herein as the "Parties."

The intent of this Side Letter Agreement ("Agreement" or "SLA") is to address in writing topics discussed during the 2025 review of the labor market data. Ultimately, the Parties are interested in maintaining competitive compensation in the relevant labor market. During the discussion with IBEW Local 1245, it was identified that the applicable labor group in Palo Alto had reached an agreement approved by their City Council in March 2025. The Parties hereby agree that as part of this 2025 total compensation study implementation, the City will include the most current Palo Alto total compensation data for the applicable Electric benchmarks that became effective in March 2025, as a non-precedent setting one-time deviation based on the unique circumstances and economic conditions currently present and the facts specific to this 2025 labor market adjustment, and with a focus on remaining competitive.

The specific terms in this Agreement are intended to supersede any previous agreements, whether oral or written, regarding the matters contained in this Agreement.

Except as provided herein, all wages, hours, and other terms and conditions of employment presently in the City's MOU, including as modified by effective Side Letter Agreements, with IBEW 1245 remain in full force and effect.

The parties have satisfied their obligations to meet and confer in good faith in accordance with the Meyers-Milias-Brown Act (MMBA).

Date:

City of Roseville:	IBEW Local 1245:
_____	_____
Dominick Casey, City Manager	Charley Souders, Business Representative

Position Allocation Control Report

Report as of Date: 5/3/2025

Position Code	Position Title	Allocated FTE
CAO220245001	Assistant City Attorney	1.00
CAO221200001	City Attorney	1.00
CAO221658001	Deputy City Attorney I/II	1.00
CAO221132002	Legal Assistant I/II	1.00
CAO221132001	Legal Assistant I/II	1.00
CAO225015001	Paralegal	1.00
CAO227123005	Senior Deputy City Attorney	1.00
CAO227123003	Senior Deputy City Attorney	1.00
CAO227123002	Senior Deputy City Attorney	1.00
CAO227123001	Senior Deputy City Attorney	1.00
Total for Department:	**CAO City Attorney**	10.00

Position Code	Position Title	Allocated FTE
CCD360250001	Assistant City Clerk	1.00
CCD361220001	City Clerk	1.00
CCD361227005	City Clerk Technician I/II	1.00
CCD361227004	City Clerk Technician I/II	1.00
CCD361227003	City Clerk Technician I/II	1.00
CCD361227002	City Clerk Technician I/II	1.00
CCD361227001	City Clerk Technician I/II	1.00
CCD361665002	Deputy City Clerk I/II	1.00
CCD361665001	Deputy City Clerk I/II	1.00
CCD369548006	Passport Agent	0.50
CCD369548004	Passport Agent	0.50
CCD369548002	Passport Agent	1.00
CCD369548001	Passport Agent	1.00
Total for Department:	**CCD City Clerk Department**	12.00

Position Code	Position Title	Allocated FTE
CMO140325001	Assistant City Manager	1.00
CMO141240001	City Manager	1.00
CMO142551002	Executive Assistant	1.00
CMO142551001	Executive Assistant	1.00
CMO1414449001	Management Analyst - City Manager	1.00
CMO144457001	Management Assistant I/II	1.00
Total for Department:	**CMO City Manager**	6.00

Position Code	Position Title	Allocated FTE
DSD660071001	Administrative Assistant	1.00
DSD660084001	Administrative Technician	1.00
DSD661017001	Assistant Building Official	1.00
DSD661005006	Associate (PE)/Assistant/Junior Engineer	1.00
DSD661005005	Associate (PE)/Assistant/Junior Engineer	1.00
DSD661005004	Associate (PE)/Assistant/Junior Engineer	1.00
DSD661005003	Associate (PE)/Assistant/Junior Engineer	1.00
DSD661005002	Associate (PE)/Assistant/Junior Engineer	1.00
DSD661005001	Associate (PE)/Assistant/Junior Engineer	1.00
DSD660820001	Associate Engineer	1.00
DSD660900005	Associate/Assistant Planner	1.00
DSD660900004	Associate/Assistant Planner	1.00
DSD660900003	Associate/Assistant Planner	1.00
DSD660900002	Associate/Assistant Planner	1.00
DSD660900001	Associate/Assistant Planner	1.00
DSD661019008	Building Inspector I/II	1.00
DSD661019007	Building Inspector I/II	1.00
DSD661019006	Building Inspector I/II	1.00
DSD661019005	Building Inspector I/II	1.00
DSD661019004	Building Inspector I/II	1.00
DSD661019003	Building Inspector I/II	1.00
DSD661019002	Building Inspector I/II	1.00
DSD661043001	Building Official	1.00
DSD661047005	Building Plans Examiner I/II	1.00
DSD661047004	Building Plans Examiner I/II	1.00
DSD661047003	Building Plans Examiner I/II	1.00
DSD661047002	Building Plans Examiner I/II	1.00
DSD661047001	Building Plans Examiner I/II	1.00
DSD661141001	Building Plans Examiner Supervisor	1.00
DSD661369005	Code Enforcement Inspector I/II	1.00
DSD661369004	Code Enforcement Inspector I/II	1.00
DSD661369003	Code Enforcement Inspector I/II	1.00
DSD661369002	Code Enforcement Inspector I/II	1.00
DSD661369001	Code Enforcement Inspector I/II	1.00
DSD661368001	Code Enforcement Supervisor	1.00
DSD661027001	Construction Inspection Superintendent	1.00
DSD661248001	Construction Inspection Supervisor	1.00
DSD661434005	Construction Inspector I/II	1.00
DSD661434004	Construction Inspector I/II	1.00
DSD661434003	Construction Inspector I/II	1.00
DSD661434002	Construction Inspector I/II	1.00
DSD661434001	Construction Inspector I/II	1.00
DSD661096002	Development Services Business Analyst I/II	1.00
DSD661096001	Development Services Business Analyst I/II	1.00

DSD661280001	Development Services Business Systems Administrator	1.00
DSD661676001	Development Services Director	1.00
DSD661695001	Development Services Manager	1.00
DSD661672005	Development Technician I/II	1.00
DSD661672004	Development Technician I/II	1.00
DSD661672003	Development Technician I/II	1.00
DSD661672002	Development Technician I/II	1.00
DSD661672001	Development Technician I/II	1.00
DSD661277001	Engineering Manager	1.00
DSD662540001	Environmental Coordinator	1.00
DSD663412001	GIS Analyst I/II	1.00
DSD662214001	GIS Technician I/II	1.00
DSD660050001	Management Analyst I/II	1.00
DSD664957002	Office Assistant I/II	1.00
DSD664957001	Office Assistant I/II	1.00
DSD665279004	Permit Technician I/II	1.00
DSD665279003	Permit Technician I/II	1.00
DSD665279002	Permit Technician I/II	1.00
DSD665279001	Permit Technician I/II	1.00
DSD661501001	Permits Supervisor	1.00
DSD665309001	Planning Manager	1.00
DSD665514001	Principal Engineer	1.00
DSD667117001	Senior Building Inspector	1.00
DSD661017002	Senior Building Inspector	1.00
DSD667195002	Senior Building Plans Examiner	1.00
DSD667121002	Senior Construction Inspector	1.00
DSD667121001	Senior Construction Inspector	1.00
DSD661097001	Senior Development Services Business Analyst	1.00
DSD667142003	Senior Engineer	1.00
DSD667142002	Senior Engineer	1.00
DSD661502001	Senior Permits Technician	1.00
DSD667180002	Senior Planner	1.00
DSD667180001	Senior Planner	1.00

Total for Department:	**DSD Development Services Department**	77.00

Position Code	**Position Title**	**Allocated FTE**
EDD541675001	Economic Development Analyst I/II	1.00
EDD541710001	Economic Development Director	1.00
EDD541118001	Economic Development Manager	1.00
EDD541001002	Economic Development Project Manager	1.00
EDD543402004	Housing Analyst I/II	1.00
EDD543402003	Housing Analyst I/II	1.00
EDD543402002	Housing Analyst I/II	1.00
EDD543402001	Housing Analyst I/II	1.00
EDD543589001	Housing Manager	1.00

EDD543590001	Housing Supervisor	1.00
EDD543592004	Housing Technician I/II	1.00
EDD543592003	Housing Technician I/II	1.00
EDD543592002	Housing Technician I/II	1.00
EDD543592001	Housing Technician I/II	1.00
EDD540050001	Management Analyst I/II	1.00
EDD544957001	Office Assistant I/II	1.00
EDD547148001	Senior Housing Technician	1.00

Total for Department:	**EDD Economic Development Department**	17.00

Position Code	Position Title	Allocated FTE
ELE700071001	Administrative Assistant	1.00
ELE700084005	Administrative Technician	1.00
ELE700084003	Administrative Technician	1.00
ELE700084002	Administrative Technician	1.00
ELE700084001	Administrative Technician	1.00
ELE700395004	Assistant Electric Utility Director	1.00
ELE700395003	Assistant Electric Utility Director	1.00
ELE700395002	Assistant Electric Utility Director	1.00
ELE700395001	Assistant Electric Utility Director	1.00
ELE701067009	Associate/Assistant Electric Analyst	1.00
ELE701067008	Associate/Assistant Electric Analyst	1.00
ELE701067007	Associate/Assistant Electric Analyst	1.00
ELE701067006	Associate/Assistant Electric Analyst	1.00
ELE701067005	Associate/Assistant Electric Analyst	1.00
ELE701067004	Associate/Assistant Electric Analyst	1.00
ELE701067003	Associate/Assistant Electric Analyst	1.00
ELE701067010	Associate/Assistant Electric Analyst	1.00
ELE701067002	Associate/Assistant Electric Analyst	1.00
ELE701067001	Associate/Assistant Electric Analyst	1.00
ELE701150001	Customer Care Manager	1.00
ELE701645001	Department Public Information Officer	1.00
ELE701312006	Electric Business Analyst I/II	1.00
ELE701312005	Electric Business Analyst I/II	1.00
ELE701312004	Electric Business Analyst I/II	1.00
ELE701312003	Electric Business Analyst I/II	1.00
ELE701312002	Electric Business Analyst I/II	1.00
ELE701312001	Electric Business Analyst I/II	1.00
ELE701312007	Electric Business Analyst I/II	1.00
ELE702335002	Electric Compliance Analyst I/II	1.00
ELE702335001	Electric Compliance Analyst I/II	1.00
ELE701151001	Electric Customer Programs and Public Affairs Supervisor	1.00
ELE702330002	Electric Drafting Technician I/II	1.00
ELE701117001	Electric Economic Development and Partnership Manager	1.00
ELE702345005	Electric Engineering Technician I/II	1.00

ELE702345004	Electric Engineering Technician I/II	1.00
ELE702345003	Electric Engineering Technician I/II	1.00
ELE702345001	Electric Engineering Technician I/II	1.00
ELE702284001	Electric Engineering Technician Supervisor	1.00
ELE701152001	Electric Line General Foreperson	1.00
ELE702286004	Electric Line Troubleshooter	1.00
ELE702286003	Electric Line Troubleshooter	1.00
ELE702286002	Electric Line Troubleshooter	1.00
ELE702286001	Electric Line Troubleshooter	1.00
ELE702212004	Electric Materials Technician I/II	1.00
ELE702212003	Electric Materials Technician I/II	1.00
ELE702212002	Electric Materials Technician I/II	1.00
ELE702212001	Electric Materials Technician I/II	1.00
ELE702338001	Electric Operations Manager	1.00
ELE701130001	Electric Operations Safety Technician	1.00
ELE702339002	Electric Operations Supervisor	1.00
ELE702339001	Electric Operations Supervisor	1.00
ELE702254001	Electric Preventive Data System Technician	1.00
ELE702316005	Electric Resources Planner I/II	1.00
ELE702316003	Electric Resources Planner I/II	1.00
ELE702316002	Electric Resources Planner I/II	1.00
ELE702316001	Electric Resources Planner I/II	1.00
ELE702216001	Electric Risk and Compliance Supervisor	1.00
ELE702319001	Electric Substation Supervisor	1.00
ELE702350003	Electric System Dispatcher	1.00
ELE702350002	Electric System Dispatcher	1.00
ELE702350001	Electric System Dispatcher	1.00
ELE702359003	Electric Technology System Technician	1.00
ELE702359002	Electric Technology System Technician	1.00
ELE702359001	Electric Technology System Technician	1.00
ELE709560001	Electric Technology Systems Administrator	1.00
ELE701116001	Electric Utility Chief Operating Officer	1.00
ELE702320001	Electric Utility Director	1.00
ELE702215001	Electric Utility Financial Administrator	1.00
ELE709250003	Electric Utility Inspection Technician	1.00
ELE709250002	Electric Utility Inspection Technician	1.00
ELE709250001	Electric Utility Inspection Technician	1.00
ELE702285015	Electric/Apprentice Line Technician	1.00
ELE702285014	Electric/Apprentice Line Technician	1.00
ELE702285013	Electric/Apprentice Line Technician	1.00
ELE702285012	Electric/Apprentice Line Technician	1.00
ELE702285011	Electric/Apprentice Line Technician	1.00
ELE702285010	Electric/Apprentice Line Technician	1.00
ELE702285009	Electric/Apprentice Line Technician	1.00
ELE702285008	Electric/Apprentice Line Technician	1.00
ELE702285007	Electric/Apprentice Line Technician	1.00
ELE702285006	Electric/Apprentice Line Technician	1.00
ELE702285005	Electric/Apprentice Line Technician	1.00

ELE702285004	Electric/Apprentice Line Technician	1.00
ELE702285003	Electric/Apprentice Line Technician	1.00
ELE701085005	Electric/Apprentice Metering System Technician	1.00
ELE701085004	Electric/Apprentice Metering System Technician	1.00
ELE701085003	Electric/Apprentice Metering System Technician	1.00
ELE701085002	Electric/Apprentice Metering System Technician	1.00
ELE701085001	Electric/Apprentice Metering System Technician	1.00
ELE701083012	Electric/Apprentice Substation Technician	1.00
ELE701083011	Electric/Apprentice Substation Technician	1.00
ELE701083010	Electric/Apprentice Substation Technician	1.00
ELE701083009	Electric/Apprentice Substation Technician	1.00
ELE701083008	Electric/Apprentice Substation Technician	1.00
ELE701083007	Electric/Apprentice Substation Technician	1.00
ELE701083006	Electric/Apprentice Substation Technician	1.00
ELE701083005	Electric/Apprentice Substation Technician	1.00
ELE701083004	Electric/Apprentice Substation Technician	1.00
ELE701083003	Electric/Apprentice Substation Technician	1.00
ELE701083002	Electric/Apprentice Substation Technician	1.00
ELE701083001	Electric/Apprentice Substation Technician	1.00
ELE702466003	Energy Program Technician	1.00
ELE702466002	Energy Program Technician	1.00
ELE702501003	Energy Services Account Representative I/II	1.00
ELE702501002	Energy Services Account Representative I/II	1.00
ELE702501001	Energy Services Account Representative I/II	1.00
ELE701082001	Generation Maintenance Scheduler-Coordinator	1.00
ELE701648001	Government Relations Representative I/II	1.00
ELE703608003	Instrument and Control Technician	1.00
ELE703608002	Instrument and Control Technician	1.00
ELE703608001	Instrument and Control Technician	1.00
ELE704517002	Marketing and Communication Analyst I/II	1.00
ELE704517001	Marketing and Communication Analyst I/II	1.00
ELE704540002	Meter Reader	1.00
ELE704540001	Meter Reader	1.00
ELE704957004	Office Assistant I/II	1.00
ELE704957003	Office Assistant I/II	1.00
ELE704957002	Office Assistant I/II	1.00
ELE704957001	Office Assistant I/II	1.00
ELE705596004	Power Engineer I/II	1.00
ELE705596003	Power Engineer I/II	1.00
ELE705596001	Power Engineer I/II	1.00
ELE705600001	Power Generation Superintendent	1.00
ELE705591002	Power Plant Engineer I/II	1.00
ELE705591001	Power Plant Engineer I/II	1.00
ELE705526003	Power Plant Mechanic	1.00
ELE705526002	Power Plant Mechanic	1.00
ELE705526001	Power Plant Mechanic	1.00
ELE705530002	Power Plant Operations and Maintenance Supervisor	1.00
ELE705530001	Power Plant Operations and Maintenance Supervisor	1.00

ELE705523009	Power Plant Operator Technician I/II	1.00
ELE705523008	Power Plant Operator Technician I/II	1.00
ELE705523007	Power Plant Operator Technician I/II	1.00
ELE705523006	Power Plant Operator Technician I/II	1.00
ELE705523005	Power Plant Operator Technician I/II	1.00
ELE705523004	Power Plant Operator Technician I/II	1.00
ELE705523003	Power Plant Operator Technician I/II	1.00
ELE705523002	Power Plant Operator Technician I/II	1.00
ELE705523001	Power Plant Operator Technician I/II	1.00
ELE705535001	Power Supply and Portfolio Administrator	1.00
ELE701114001	Principal Power Engineer	1.00
ELE707128004	Senior Electric Business Analyst	1.00
ELE707128003	Senior Electric Business Analyst	1.00
ELE707128002	Senior Electric Business Analyst	1.00
ELE707128001	Senior Electric Business Analyst	1.00
ELE707118004	Senior Electric Line Technician	1.00
ELE707118003	Senior Electric Line Technician	1.00
ELE707118001	Senior Electric Line Technician	1.00
ELE701153001	Senior Electric Line Troubleshooter	1.00
ELE707169001	Senior Electric Materials Technician	1.00
ELE701036001	Senior Electric Metering Systems Technician	1.00
ELE707126003	Senior Electric Substation Technician	1.00
ELE707126002	Senior Electric Substation Technician	1.00
ELE707126001	Senior Electric Substation Technician	1.00
ELE707168001	Senior Electric System Dispatcher	1.00
ELE701023001	Senior Electric Technology Systems Analyst	1.00
ELE707163002	Senior Energy Services Account Representative	1.00
ELE707163001	Senior Energy Services Account Representative	1.00
ELE707151002	Senior Power Engineer	1.00
ELE707151001	Senior Power Engineer	1.00
ELE705555001	Senior Power Plant Engineer	1.00
ELE707152004	Senior Power Plant Operator Technician	1.00
ELE707152003	Senior Power Plant Operator Technician	1.00
ELE707152002	Senior Power Plant Operator Technician	1.00
ELE707152001	Senior Power Plant Operator Technician	1.00
ELE701029002	Senior Utility Billing Analyst	1.00
ELE701029001	Senior Utility Billing Analyst	1.00
ELE701103001	Senior Utility Customer Service Field Representative	1.00
ELE701044003	Senior Utility Customer Service Specialist	1.00
ELE701044002	Senior Utility Customer Service Specialist	1.00
ELE701044001	Senior Utility Customer Service Specialist	1.00
ELE703315005	Utility Billing Analyst I/II	1.00
ELE703315004	Utility Billing Analyst I/II	1.00
ELE703315003	Utility Billing Analyst I/II	1.00
ELE703315002	Utility Billing Analyst I/II	1.00
ELE703315001	Utility Billing Analyst I/II	1.00
ELE701041001	Utility Billing and Field Services Supervisor	1.00
ELE701154001	Utility Business Systems Administrator	1.00

ELE701104001	Utility Customer Service Field Rep I/II	1.00
ELE701049015	Utility Customer Service Representative I/II	1.00
ELE701049014	Utility Customer Service Representative I/II	1.00
ELE701049013	Utility Customer Service Representative I/II	1.00
ELE701049012	Utility Customer Service Representative I/II	1.00
ELE701049011	Utility Customer Service Representative I/II	0.75
ELE701049010	Utility Customer Service Representative I/II	0.50
ELE701049009	Utility Customer Service Representative I/II	1.00
ELE701049008	Utility Customer Service Representative I/II	0.50
ELE701049007	Utility Customer Service Representative I/II	1.00
ELE701049006	Utility Customer Service Representative I/II	1.00
ELE701049005	Utility Customer Service Representative I/II	1.00
ELE701049004	Utility Customer Service Representative I/II	1.00
ELE701049001	Utility Customer Service Representative I/II	1.00
ELE701046005	Utility Customer Service Specialist I/II	1.00
ELE701046004	Utility Customer Service Specialist I/II	1.00
ELE701046003	Utility Customer Service Specialist I/II	1.00
ELE701046002	Utility Customer Service Specialist I/II	1.00
ELE701046001	Utility Customer Service Specialist I/II	1.00
ELE701042001	Utility Customer Service Supervisor	1.00

Total for Department:	**ELE Electric Department**	196.75

Position Code	Position Title	Allocated FTE
EUD740071001	Administrative Assistant	1.00
EUD740084005	Administrative Technician	1.00
EUD740084004	Administrative Technician	1.00
EUD740084003	Administrative Technician	1.00
EUD740084002	Administrative Technician	1.00
EUD740084001	Administrative Technician	1.00
EUD740411003	Assistant Environmental Utilities Director	1.00
EUD740411001	Assistant Environmental Utilities Director	1.00
EUD741005002	Associate (PE)/Assistant/Junior Engineer	1.00
EUD741005001	Associate (PE)/Assistant/Junior Engineer	1.00
EUD740820003	Associate Engineer	1.00
EUD740820002	Associate Engineer	1.00
EUD740820001	Associate Engineer	1.00
EUD741548003	Data Management Specialist I/II	1.00
EUD741548002	Data Management Specialist I/II	1.00
EUD741548001	Data Management Specialist I/II	1.00
EUD741645001	Department Public Information Officer	1.00
EUD749550001	ERP Business Analyst I/II	1.00
EUD741277001	Engineering Manager	1.00
EUD741350001	Engineering Technician I/II	1.00
EUD742544002	Environmental Compliance Specialist I/II	1.00
EUD742544001	Environmental Compliance Specialist I/II	1.00

EUD742547005	Environmental Utilities Business Analyst I/II	1.00
EUD742547004	Environmental Utilities Business Analyst I/II	1.00
EUD742547003	Environmental Utilities Business Analyst I/II	1.00
EUD742547002	Environmental Utilities Business Analyst I/II	1.00
EUD742547001	Environmental Utilities Business Analyst I/II	1.00
EUD742548002	Environmental Utilities Business Services Manager	1.00
EUD742541004	Environmental Utilities Compliance Administrator	1.00
EUD742541003	Environmental Utilities Compliance Administrator	1.00
EUD742541002	Environmental Utilities Compliance Administrator	1.00
EUD742541001	Environmental Utilities Compliance Administrator	1.00
EUD741684001	Environmental Utilities Director	1.00
EUD741038006	Environmental Utilities Instrument and Control Technician I/II	1.00
EUD741038005	Environmental Utilities Instrument and Control Technician I/II	1.00
EUD741038004	Environmental Utilities Instrument and Control Technician I/II	1.00
EUD741038003	Environmental Utilities Instrument and Control Technician I/II	1.00
EUD741038002	Environmental Utilities Instrument and Control Technician I/II	1.00
EUD741024001	Environmental Utilities Maintenance Superintendent	1.00
EUD741147001	Environmental Utilities Operations Superintendent	1.00
EUD743412003	GIS Analyst I/II	1.00
EUD743412002	GIS Analyst I/II	1.00
EUD743412001	GIS Analyst I/II	1.00
EUD741648001	Government Relations Representative I/II	1.00
EUD741136001	Industrial Waste Analyst	1.00
EUD743610002	Industrial Waste Technician	1.00
EUD743732002	Interpretive Services Specialist I/II	1.00
EUD743732001	Interpretive Services Specialist I/II	1.00
EUD741135004	Laboratory Analyst I/II	1.00
EUD741135003	Laboratory Analyst I/II	1.00
EUD741135002	Laboratory Analyst I/II	1.00
EUD741135001	Laboratory Analyst I/II	1.00
EUD740050002	Management Analyst I/II	1.00
EUD740050001	Management Analyst I/II	1.00
EUD744517003	Marketing and Communication Analyst I/II	1.00
EUD744517002	Marketing and Communication Analyst I/II	1.00
EUD744520002	Materials Technician	1.00
EUD744520001	Materials Technician	1.00
EUD744957012	Office Assistant I/II	1.00
EUD744957011	Office Assistant I/II	1.00
EUD744957010	Office Assistant I/II	1.00
EUD744957009	Office Assistant I/II	1.00
EUD744957008	Office Assistant I/II	1.00
EUD744957006	Office Assistant I/II	1.00
EUD744957005	Office Assistant I/II	1.00
EUD744957004	Office Assistant I/II	1.00
EUD744957003	Office Assistant I/II	1.00
EUD744957002	Office Assistant I/II	1.00
EUD741028001	Organics Truck Driver	1.00
EUD745319003	Plant and Equipment Maintenance Worker I/II	1.00

EUD745319002	Plant and Equipment Maintenance Worker I/II	1.00
EUD745319001	Plant and Equipment Maintenance Worker I/II	1.00
EUD745328006	Plant and Equipment Mechanic I/II	1.00
EUD745328005	Plant and Equipment Mechanic I/II	1.00
EUD745328004	Plant and Equipment Mechanic I/II	1.00
EUD745328003	Plant and Equipment Mechanic I/II	1.00
EUD745328002	Plant and Equipment Mechanic I/II	1.00
EUD745328001	Plant and Equipment Mechanic I/II	1.00
EUD745402001	Predictive Maintenance Technician I/II	1.00
EUD745533002	Preventative Maintenance Coordinator	1.00
EUD745533001	Preventative Maintenance Coordinator	1.00
EUD745519003	Preventative Maintenance Supervisor	1.00
EUD745519002	Preventative Maintenance Supervisor	1.00
EUD745519001	Preventative Maintenance Supervisor	1.00
EUD745502005	Preventative Maintenance Technician I/II	1.00
EUD745502004	Preventative Maintenance Technician I/II	1.00
EUD745502003	Preventative Maintenance Technician I/II	1.00
EUD745502002	Preventative Maintenance Technician I/II	1.00
EUD745502001	Preventative Maintenance Technician I/II	1.00
EUD745514002	Principal Engineer	1.00
EUD745514001	Principal Engineer	1.00
EUD741004001	Process Engineer	1.00
EUD746150001	Recycling and Organics Coordinator	1.00
EUD746226005	Refuse Maintenance Worker I/II	1.00
EUD746226004	Refuse Maintenance Worker I/II	1.00
EUD746226003	Refuse Maintenance Worker I/II	1.00
EUD746226002	Refuse Maintenance Worker I/II	1.00
EUD746226001	Refuse Maintenance Worker I/II	1.00
EUD746231001	Refuse Superintendent	1.00
EUD746235004	Refuse Supervisor	1.00
EUD746235003	Refuse Supervisor	1.00
EUD746235002	Refuse Supervisor	1.00
EUD746235001	Refuse Supervisor	1.00
EUD746304042	Refuse Truck Driver I/II	1.00
EUD746304040	Refuse Truck Driver I/II	1.00
EUD746304039	Refuse Truck Driver I/II	1.00
EUD746304036	Refuse Truck Driver I/II	1.00
EUD746304035	Refuse Truck Driver I/II	1.00
EUD746304034	Refuse Truck Driver I/II	1.00
EUD746304031	Refuse Truck Driver I/II	1.00
EUD746304030	Refuse Truck Driver I/II	1.00
EUD746304028	Refuse Truck Driver I/II	1.00
EUD746304027	Refuse Truck Driver I/II	1.00
EUD746304026	Refuse Truck Driver I/II	1.00
EUD746304025	Refuse Truck Driver I/II	1.00
EUD746304024	Refuse Truck Driver I/II	1.00
EUD746304023	Refuse Truck Driver I/II	1.00
EUD746304022	Refuse Truck Driver I/II	1.00

EUD746304021	Refuse Truck Driver I/II	1.00
EUD746304020	Refuse Truck Driver I/II	1.00
EUD746304019	Refuse Truck Driver I/II	1.00
EUD746304018	Refuse Truck Driver I/II	1.00
EUD746304017	Refuse Truck Driver I/II	1.00
EUD746304016	Refuse Truck Driver I/II	1.00
EUD746304015	Refuse Truck Driver I/II	1.00
EUD746304014	Refuse Truck Driver I/II	1.00
EUD746304013	Refuse Truck Driver I/II	1.00
EUD746304012	Refuse Truck Driver I/II	1.00
EUD746304011	Refuse Truck Driver I/II	1.00
EUD746304010	Refuse Truck Driver I/II	1.00
EUD746304009	Refuse Truck Driver I/II	1.00
EUD746304008	Refuse Truck Driver I/II	1.00
EUD746304007	Refuse Truck Driver I/II	1.00
EUD746304006	Refuse Truck Driver I/II	1.00
EUD746304005	Refuse Truck Driver I/II	1.00
EUD746304004	Refuse Truck Driver I/II	1.00
EUD746304003	Refuse Truck Driver I/II	1.00
EUD746304002	Refuse Truck Driver I/II	1.00
EUD746304001	Refuse Truck Driver I/II	1.00
EUD746244001	Refuse and Stormwater Manager	1.00
EUD747020002	SCADA System Technician	1.00
EUD747020001	SCADA System Technician	1.00
EUD746500002	Safety Coordinator	1.00
EUD746500001	Safety Coordinator	1.00
EUD747142005	Senior Engineer	1.00
EUD747142004	Senior Engineer	1.00
EUD747142003	Senior Engineer	1.00
EUD747142002	Senior Engineer	1.00
EUD747142001	Senior Engineer	1.00
EUD747162001	Senior Engineering Technician	1.00
EUD741065001	Senior Environmental Utilities Business Analyst	1.00
EUD741123001	Senior Environmental Utilities Instrument & Control Technician	1.00
EUD747161001	Senior GIS Analyst	1.00
EUD743733001	Senior Interpretive Services Specialist	1.00
EUD741133002	Senior Laboratory Analyst	1.00
EUD741133001	Senior Laboratory Analyst	1.00
EUD747284003	Senior Preventative Maintenance Technician	1.00
EUD747284002	Senior Preventative Maintenance Technician	1.00
EUD747284001	Senior Preventative Maintenance Technician	1.00
EUD747129007	Senior Refuse Truck Driver	1.00
EUD747129006	Senior Refuse Truck Driver	1.00
EUD747129005	Senior Refuse Truck Driver	1.00
EUD747129004	Senior Refuse Truck Driver	1.00
EUD747129003	Senior Refuse Truck Driver	1.00
EUD747129002	Senior Refuse Truck Driver	1.00
EUD747129001	Senior Refuse Truck Driver	1.00

EUD749559001	Senior SCADA System Technician	1.00
EUD741279001	Senior Solid Waste Billing Technician	1.00
EUD747202006	Senior Wastewater Utility Maintenance Worker	1.00
EUD747202004	Senior Wastewater Utility Maintenance Worker	1.00
EUD747202003	Senior Wastewater Utility Maintenance Worker	1.00
EUD747202002	Senior Wastewater Utility Maintenance Worker	1.00
EUD747202001	Senior Wastewater Utility Maintenance Worker	1.00
EUD747202005	Senior Wastewater Utility Maintenance Worker	1.00
EUD747204008	Senior Water Distribution Worker	1.00
EUD747204007	Senior Water Distribution Worker	1.00
EUD747204006	Senior Water Distribution Worker	1.00
EUD747204005	Senior Water Distribution Worker	1.00
EUD747204004	Senior Water Distribution Worker	1.00
EUD747204003	Senior Water Distribution Worker	1.00
EUD747204002	Senior Water Distribution Worker	1.00
EUD747204001	Senior Water Distribution Worker	1.00
EUD747324001	Solid Waste Billing Technician	1.00
EUD741102001	Utility Exploration Center Supervisor	1.00
EUD741646001	Utility Government Relations Administrator	1.00
EUD741099002	Waste Services Clerk I/II	1.00
EUD741099001	Waste Services Clerk I/II	1.00
EUD741128001	Waste Services Field Enforcement Inspector	1.00
EUD748980001	Wastewater Collection Superintendent	1.00
EUD748978003	Wastewater Collection Supervisor	1.00
EUD748978002	Wastewater Collection Supervisor	1.00
EUD748978001	Wastewater Collection Supervisor	1.00
EUD749040001	Wastewater Treatment Plant Chief Operator	1.00
EUD749025009	Wastewater Treatment Plant Operator Grade I/II/III 8Hr	1.00
EUD749025006	Wastewater Treatment Plant Operator Grade I/II/III 8Hr	1.00
EUD749025005	Wastewater Treatment Plant Operator Grade I/II/III 8Hr	1.00
EUD749025004	Wastewater Treatment Plant Operator Grade I/II/III 8Hr	1.00
EUD749025003	Wastewater Treatment Plant Operator Grade I/II/III 8Hr	1.00
EUD749025002	Wastewater Treatment Plant Operator Grade I/II/III 8Hr	1.00
EUD749025001	Wastewater Treatment Plant Operator Grade I/II/III 8Hr	1.00
EUD749025010	Wastewater Treatment Plant Operator Grade III 24Hr	1.00
EUD749025007	Wastewater Treatment Plant Operator Grade III 24Hr	1.00
EUD749020004	Wastewater Treatment Plant Operator Grade III 24Hr	1.00
EUD749020003	Wastewater Treatment Plant Operator Grade III 24Hr	1.00
EUD749020002	Wastewater Treatment Plant Operator Grade III 24Hr	1.00
EUD749020001	Wastewater Treatment Plant Operator Grade III 24Hr	1.00
EUD749030002	Wastewater Treatment Plant Operator Grade IV	1.00
EUD749030001	Wastewater Treatment Plant Operator Grade IV	1.00
EUD749029027	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029026	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029025	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029024	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029022	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029021	Wastewater Utility Maintenance Worker I/II	1.00

EUD749029020	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029019	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029018	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029017	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029016	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029015	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029014	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029013	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029012	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029011	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029010	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029009	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029008	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029007	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029006	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029005	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029004	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029003	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029002	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029001	Wastewater Utility Maintenance Worker I/II	1.00
EUD749029023	Wastewater Utility Maintenance Worker I/II	1.00
EUD749045001	Wastewater Utility Manager	1.00
EUD749047001	Water Conservation Administrator	1.00
EUD749078001	Water Conservation Specialist	1.00
EUD749051005	Water Conservation Worker I/II	1.00
EUD749051004	Water Conservation Worker I/II	1.00
EUD749051003	Water Conservation Worker I/II	1.00
EUD749051002	Water Conservation Worker I/II	1.00
EUD749051001	Water Conservation Worker I/II	1.00
EUD749085001	Water Distribution Superintendent	1.00
EUD749084004	Water Distribution Supervisor	1.00
EUD749084003	Water Distribution Supervisor	1.00
EUD749084002	Water Distribution Supervisor	1.00
EUD749084001	Water Distribution Supervisor	1.00
EUD749248027	Water Distribution Worker I/II	1.00
EUD749248026	Water Distribution Worker I/II	1.00
EUD749248025	Water Distribution Worker I/II	1.00
EUD749248024	Water Distribution Worker I/II	1.00
EUD749248023	Water Distribution Worker I/II	1.00
EUD749248022	Water Distribution Worker I/II	1.00
EUD749248021	Water Distribution Worker I/II	1.00
EUD749248020	Water Distribution Worker I/II	1.00
EUD749248019	Water Distribution Worker I/II	1.00
EUD749248018	Water Distribution Worker I/II	1.00
EUD749248017	Water Distribution Worker I/II	1.00
EUD749248016	Water Distribution Worker I/II	1.00
EUD749248015	Water Distribution Worker I/II	1.00
EUD749248014	Water Distribution Worker I/II	1.00

EUD749248013	Water Distribution Worker I/II	1.00
EUD749248012	Water Distribution Worker I/II	1.00
EUD749248011	Water Distribution Worker I/II	1.00
EUD749248010	Water Distribution Worker I/II	1.00
EUD749248009	Water Distribution Worker I/II	1.00
EUD749248008	Water Distribution Worker I/II	1.00
EUD749248007	Water Distribution Worker I/II	1.00
EUD749248006	Water Distribution Worker I/II	1.00
EUD749248005	Water Distribution Worker I/II	1.00
EUD749248004	Water Distribution Worker I/II	1.00
EUD749248003	Water Distribution Worker I/II	1.00
EUD749248002	Water Distribution Worker I/II	1.00
EUD749248001	Water Distribution Worker I/II	1.00
EUD749101001	Water Quality Lab Supervisor	1.00
EUD749101002	Water Quality Lab Supervisor	1.00
EUD741053001	Water Quality Technician	1.00
EUD749175001	Water Treatment Plant Chief Operator	1.00
EUD749230006	Water Treatment Plant Operator Grade I/II/III 24Hr	1.00
EUD749230005	Water Treatment Plant Operator Grade I/II/III 24Hr	1.00
EUD749230004	Water Treatment Plant Operator Grade I/II/III 24Hr	1.00
EUD749230003	Water Treatment Plant Operator Grade I/II/III 24Hr	1.00
EUD749230002	Water Treatment Plant Operator Grade I/II/III 24Hr	1.00
EUD749230001	Water Treatment Plant Operator Grade I/II/III 24Hr	1.00
EUD749244001	Water Utility Manager	1.00

Total for Department:	**EUD Environmental Utilities Department**	286.00

Position Code	**Position Title**	**Allocated FTE**
FIN240040003	Accountant I/II	1.00
FIN240040002	Accountant I/II	1.00
FIN240040001	Accountant I/II	1.00
FIN241370001	Accounting Manager	1.00
FIN240043001	Accounting Supervisor	1.00
FIN249427001	Accounts Payable Supervisor	1.00
FIN240071001	Administrative Assistant	1.00
FIN240084002	Administrative Technician	1.00
FIN240084001	Administrative Technician	1.00
FIN241021001	Assistant City Manager/Chief Financial Officer	1.00
FIN241026001	Assistant Finance Director	1.00
FIN240915004	Budget Analyst I/II	1.00
FIN240915003	Budget Analyst I/II	1.00
FIN240915002	Budget Analyst I/II	1.00
FIN240915001	Budget Analyst I/II	1.00
FIN240930001	Budget Manager	1.00
FIN241060004	Buyer I/II	1.00
FIN241060003	Buyer I/II	1.00

FIN241060002	Buyer I/II	1.00
FIN241060001	Buyer I/II	1.00
FIN249550004	ERP Business Analyst I/II	1.00
FIN249550003	ERP Business Analyst I/II	1.00
FIN249550002	ERP Business Analyst I/II	1.00
FIN249550001	ERP Business Analyst I/II	1.00
FIN246520001	ERP Program Manager	1.00
FIN241155001	Finance Director	1.00
FIN242900001	Finance Manager	1.00
FIN243326007	Finance Technician I/II	1.00
FIN243326006	Finance Technician I/II	1.00
FIN243326005	Finance Technician I/II	1.00
FIN243326004	Finance Technician I/II	1.00
FIN243326003	Finance Technician I/II	1.00
FIN243326002	Finance Technician I/II	1.00
FIN243326001	Finance Technician I/II	1.00
FIN247203001	Inventory Control and Supply Technician	1.00
FIN248952002	Inventory Control and Supply Worker I/II	1.00
FIN248952001	Inventory Control and Supply Worker I/II	1.00
FIN240050002	Management Analyst I/II	1.00
FIN240050001	Management Analyst I/II	1.00
FIN241124002	Payroll Analyst I/II	1.00
FIN241124001	Payroll Analyst I/II	1.00
FIN249428001	Payroll Supervisor	1.00
FIN245101004	Payroll Technician I/II	0.60
FIN245101003	Payroll Technician I/II	1.00
FIN245101002	Payroll Technician I/II	1.00
FIN245101001	Payroll Technician I/II	1.00
FIN241129004	Purchasing Supervisor	1.00
FIN245652001	Purchasing and Warehouse Manager	1.00
FIN241051003	Senior Accountant	1.00
FIN241051002	Senior Accountant	1.00
FIN241051001	Senior Accountant	1.00
FIN247139001	Senior Buyer	1.00
FIN247147001	Senior Finance Technician	1.00
FIN247141001	Senior Payroll Technician	1.00
Total for Department:	**FIN Finance Department**	53.60

Position Code	Position Title	Allocated FTE
FIR480071001	Administrative Assistant	1.00
FIR480084001	Administrative Technician	1.00
FIR480480001	Assistant Fire Chief	1.00
FIR481645001	Department Public Information Officer	1.00
FIR482415001	EMS Quality Assurance Coordinator	1.00
FIR480905007	Fire Battalion Chief	1.00

FIR480905006	Fire Battalion Chief	1.00
FIR480905004	Fire Battalion Chief	1.00
FIR480905003	Fire Battalion Chief	1.00
FIR480905002	Fire Battalion Chief	1.00
FIR480905001	Fire Battalion Chief	1.00
FIR480905005	Fire Battalion Chief	1.00
FIR483320034	Fire Captain	1.00
FIR483320033	Fire Captain	1.00
FIR483320032	Fire Captain	1.00
FIR483320030	Fire Captain	1.00
FIR483320029	Fire Captain	1.00
FIR483320028	Fire Captain	1.00
FIR483320027	Fire Captain	1.00
FIR483320026	Fire Captain	1.00
FIR483320025	Fire Captain	1.00
FIR483320024	Fire Captain	1.00
FIR483320023	Fire Captain	1.00
FIR483320022	Fire Captain	1.00
FIR483320021	Fire Captain	1.00
FIR483320020	Fire Captain	1.00
FIR483320019	Fire Captain	1.00
FIR483320018	Fire Captain	1.00
FIR483320017	Fire Captain	1.00
FIR483320016	Fire Captain	1.00
FIR483320015	Fire Captain	1.00
FIR483320014	Fire Captain	1.00
FIR483320013	Fire Captain	1.00
FIR483320012	Fire Captain	1.00
FIR483320011	Fire Captain	1.00
FIR483320010	Fire Captain	1.00
FIR483320009	Fire Captain	1.00
FIR483320008	Fire Captain	1.00
FIR483320007	Fire Captain	1.00
FIR483320006	Fire Captain	1.00
FIR483320005	Fire Captain	1.00
FIR483320004	Fire Captain	1.00
FIR483320003	Fire Captain	1.00
FIR483320002	Fire Captain	1.00
FIR483320001	Fire Captain	1.00
FIR483320031	Fire Captain (8 Hr)	1.00
FIR483330001	Fire Chief	1.00
FIR483332002	Fire Division Chief	1.00
FIR483332001	Fire Division Chief	1.00
FIR483340033	Fire Engineer	1.00
FIR483340032	Fire Engineer	1.00
FIR483340031	Fire Engineer	1.00
FIR483340030	Fire Engineer	1.00
FIR483340029	Fire Engineer	1.00

FIR483340028	Fire Engineer	1.00
FIR483340027	Fire Engineer	1.00
FIR483340026	Fire Engineer	1.00
FIR483340025	Fire Engineer	1.00
FIR483340024	Fire Engineer	1.00
FIR483340023	Fire Engineer	1.00
FIR483340022	Fire Engineer	1.00
FIR483340021	Fire Engineer	1.00
FIR483340020	Fire Engineer	1.00
FIR483340019	Fire Engineer	1.00
FIR483340018	Fire Engineer	1.00
FIR483340017	Fire Engineer	1.00
FIR483340016	Fire Engineer	1.00
FIR483340015	Fire Engineer	1.00
FIR483340014	Fire Engineer	1.00
FIR483340013	Fire Engineer	1.00
FIR483340012	Fire Engineer	1.00
FIR483340011	Fire Engineer	1.00
FIR483340010	Fire Engineer	1.00
FIR483340009	Fire Engineer	1.00
FIR483340008	Fire Engineer	1.00
FIR483340007	Fire Engineer	1.00
FIR483340006	Fire Engineer	1.00
FIR483340005	Fire Engineer	1.00
FIR483340004	Fire Engineer	1.00
FIR483340003	Fire Engineer	1.00
FIR483340002	Fire Engineer	1.00
FIR483340001	Fire Engineer	1.00
FIR481022001	Fire and Environmental Inspection Supervisor	1.00
FIR483377005	Fire and Environmental Safety Inspector I/II	1.00
FIR483377004	Fire and Environmental Safety Inspector I/II	1.00
FIR483377003	Fire and Environmental Safety Inspector I/II	1.00
FIR483377002	Fire and Environmental Safety Inspector I/II	1.00
FIR483377001	Fire and Environmental Safety Inspector I/II	1.00
FIR483355039	Firefighter Paramedic I/II	1.00
FIR483355038	Firefighter Paramedic I/II	1.00
FIR483355037	Firefighter Paramedic I/II	1.00
FIR483355036	Firefighter Paramedic I/II	1.00
FIR483355035	Firefighter Paramedic I/II	1.00
FIR483355034	Firefighter Paramedic I/II	1.00
FIR483355033	Firefighter Paramedic I/II	1.00
FIR483355032	Firefighter Paramedic I/II	1.00
FIR483355031	Firefighter Paramedic I/II	1.00
FIR483355030	Firefighter Paramedic I/II	1.00
FIR483355029	Firefighter Paramedic I/II	1.00
FIR483355028	Firefighter Paramedic I/II	1.00
FIR483355027	Firefighter Paramedic I/II	1.00
FIR483355026	Firefighter Paramedic I/II	1.00

FIR483355025	Firefighter Paramedic I/II	1.00
FIR483355024	Firefighter Paramedic I/II	1.00
FIR483355023	Firefighter Paramedic I/II	1.00
FIR483355022	Firefighter Paramedic I/II	1.00
FIR483355021	Firefighter Paramedic I/II	1.00
FIR483355020	Firefighter Paramedic I/II	1.00
FIR483355019	Firefighter Paramedic I/II	1.00
FIR483355018	Firefighter Paramedic I/II	1.00
FIR483355017	Firefighter Paramedic I/II	1.00
FIR483355016	Firefighter Paramedic I/II	1.00
FIR483355015	Firefighter Paramedic I/II	1.00
FIR483355014	Firefighter Paramedic I/II	1.00
FIR483355013	Firefighter Paramedic I/II	1.00
FIR483355012	Firefighter Paramedic I/II	1.00
FIR483355011	Firefighter Paramedic I/II	1.00
FIR483355010	Firefighter Paramedic I/II	1.00
FIR483355009	Firefighter Paramedic I/II	1.00
FIR483355008	Firefighter Paramedic I/II	1.00
FIR483355007	Firefighter Paramedic I/II	1.00
FIR483355006	Firefighter Paramedic I/II	1.00
FIR483355005	Firefighter Paramedic I/II	1.00
FIR483355004	Firefighter Paramedic I/II	1.00
FIR483355003	Firefighter Paramedic I/II	1.00
FIR483355002	Firefighter Paramedic I/II	1.00
FIR483355001	Firefighter Paramedic I/II	1.00
FIR483412001	GIS Analyst I/II	1.00
FIR480050001	Management Analyst I/II	1.00
FIR484957001	Office Assistant I/II	1.00
Total for Department:	**FIR Fire Department**	130.00

Position Code	Position Title	Allocated FTE
HRD280071001	Administrative Assistant	1.00
HRD280484001	Assistant Human Resources Director	1.00
HRD283596005	Human Resources Analyst I/II	1.00
HRD283596004	Human Resources Analyst I/II	1.00
HRD283596003	Human Resources Analyst I/II	1.00
HRD283596002	Human Resources Analyst I/II	1.00
HRD283596001	Human Resources Analyst I/II	1.00
HRD283598001	Human Resources Director	1.00
HRD283599001	Human Resources Manager	1.00
HRD285235008	Human Resources Technician	1.00
HRD285235007	Human Resources Technician	1.00
HRD285235006	Human Resources Technician	1.00
HRD285235005	Human Resources Technician	1.00
HRD285235004	Human Resources Technician	1.00

HRD285235003	Human Resources Technician	1.00
HRD285235002	Human Resources Technician	1.00
HRD285235001	Human Resources Technician	1.00
HRD286450001	Risk Manager	1.00
HRD287178002	Senior Human Resources Technician	1.00
HRD287178001	Senior Human Resources Technician	1.00

Total for Department:	**HRD Human Resources Department**	20.00

Position Code	Position Title	Allocated FTE
ITD320084001	Administrative Technician	1.00
ITD329558002	Assistant Information Technology Director	1.00
ITD329558001	Assistant Information Technology Director	1.00
ITD321362013	Business Systems Analyst I/II	1.00
ITD321362012	Business Systems Analyst I/II	1.00
ITD321362011	Business Systems Analyst I/II	1.00
ITD321362010	Business Systems Analyst I/II	1.00
ITD321362009	Business Systems Analyst I/II	1.00
ITD321362007	Business Systems Analyst I/II	1.00
ITD321362005	Business Systems Analyst I/II	1.00
ITD321362004	Business Systems Analyst I/II	1.00
ITD321362003	Business Systems Analyst I/II	1.00
ITD321362002	Business Systems Analyst I/II	1.00
ITD321362001	Business Systems Analyst I/II	1.00
ITD321166003	Business Systems Supervisor	1.00
ITD321166002	Business Systems Supervisor	1.00
ITD321166001	Business Systems Supervisor	1.00
ITD321180001	Chief Information Officer	1.00
ITD321552007	Database Analyst I/II	1.00
ITD321552006	Database Analyst I/II	1.00
ITD321552004	Database Analyst I/II	1.00
ITD321552003	Database Analyst I/II	1.00
ITD321552002	Database Analyst I/II	1.00
ITD321552001	Database Analyst I/II	1.00
ITD321168001	Database Supervisor	1.00
ITD323625001	Information Security Administrator	1.00
ITD323794013	Information Technology Analyst I/II	1.00
ITD323794012	Information Technology Analyst I/II	1.00
ITD323794010	Information Technology Analyst I/II	1.00
ITD323794009	Information Technology Analyst I/II	1.00
ITD323794007	Information Technology Analyst I/II	1.00
ITD323794006	Information Technology Analyst I/II	1.00
ITD323794002	Information Technology Analyst I/II	1.00
ITD323794001	Information Technology Analyst I/II	1.00
ITD329542001	Information Technology Client Services Supervisor	1.00
ITD323602005	Information Technology Program Manager	1.00

ITD323602004	Information Technology Program Manager	1.00
ITD323602003	Information Technology Program Manager	1.00
ITD323602002	Information Technology Program Manager	1.00
ITD323602001	Information Technology Program Manager	1.00
ITD321167001	Information Technology Supervisor	1.00
ITD323618004	Information Technology Technician I/II	1.00
ITD323618003	Information Technology Technician I/II	1.00
ITD323618001	Information Technology Technician I/II	1.00
ITD320050001	Management Analyst I/II	1.00
ITD321089003	Security Analyst I/II	1.00
ITD321089002	Security Analyst I/II	1.00
ITD321090001	Security Architect	1.00
ITD327149003	Senior Information Technology Technician	1.00
ITD327149001	Senior Information Technology Technician	1.00
ITD321091008	Systems Architect	1.00
ITD321091007	Systems Architect	1.00
ITD321091006	Systems Architect	1.00
ITD321091005	Systems Architect	1.00
ITD321091004	Systems Architect	1.00
ITD321091003	Systems Architect	1.00
ITD321091002	Systems Architect	1.00
ITD321091001	Systems Architect	1.00

Total for Department:	**ITD Information Technology Department**	58.00

Position Code	Position Title	Allocated FTE
PAC181645002	Department Public Information Officer	1.00
PAC181645001	Department Public Information Officer	1.00
PAC181659001	Deputy City Manager	1.00
PAC181109001	Digital Content Analyst	1.00
CMO143451001	Government Relations Administrator	1.00
PAC184517002	Marketing and Communication Analyst I/II	1.00
PAC184517001	Marketing and Communication Analyst I/II	1.00
PAC181156001	Organizational Performance Program Administrator	1.00
PAC181108001	Public Affairs and Communication Manager	1.00
PAC188426001	Video and Multimedia Technician	1.00

Total for Department:	**PAC Public Affairs and Communications**	10.00

Position Code	Position Title	Allocated FTE
POL440071001	Administrative Assistant	1.00
POL440100003	Animal Control Officer	1.00
POL440100002	Animal Control Officer	1.00
POL440100001	Animal Control Officer	1.00

POL440110001	Animal Control Supervisor	1.00
POL441430004	Communications Supervisor	1.00
POL441430003	Communications Supervisor	1.00
POL441430002	Communications Supervisor	1.00
POL441430001	Communications Supervisor	1.00
POL441380011	Community Services Officer I/II	1.00
POL441380010	Community Services Officer I/II	1.00
POL441380009	Community Services Officer I/II	1.00
POL441380008	Community Services Officer I/II	1.00
POL441380007	Community Services Officer I/II	1.00
POL441380006	Community Services Officer I/II	1.00
POL441380005	Community Services Officer I/II	1.00
POL441380004	Community Services Officer I/II	1.00
POL441380003	Community Services Officer I/II	1.00
POL441380002	Community Services Officer I/II	1.00
POL441380001	Community Services Officer I/II	1.00
POL441146001	Crime Analysis Supervisor	1.00
POL441475002	Crime Analyst	1.00
POL441700021	Dispatcher I/II	1.00
POL441700020	Dispatcher I/II	1.00
POL441700019	Dispatcher I/II	1.00
POL441700018	Dispatcher I/II	1.00
POL441700017	Dispatcher I/II	1.00
POL441700016	Dispatcher I/II	1.00
POL441700015	Dispatcher I/II	1.00
POL441700014	Dispatcher I/II	1.00
POL441700013	Dispatcher I/II	1.00
POL441700012	Dispatcher I/II	1.00
POL441700011	Dispatcher I/II	1.00
POL441700010	Dispatcher I/II	1.00
POL441700009	Dispatcher I/II	1.00
POL441700008	Dispatcher I/II	1.00
POL441700007	Dispatcher I/II	1.00
POL441700006	Dispatcher I/II	1.00
POL441700005	Dispatcher I/II	1.00
POL441700004	Dispatcher I/II	1.00
POL441700003	Dispatcher I/II	1.00
POL441700002	Dispatcher I/II	1.00
POL441700001	Dispatcher I/II	1.00
POL440050001	Management Analyst I/II	1.00
POL445400003	Police Captain	1.00
POL445400002	Police Captain	1.00
POL445400001	Police Captain	1.00
POL445410001	Police Chief	1.00
POL441163001	Police Community Outreach Specialist	1.00
POL445420008	Police Lieutenant	1.00
POL445420007	Police Lieutenant	1.00
POL445420006	Police Lieutenant	1.00

POL445420005	Police Lieutenant	1.00
POL445420004	Police Lieutenant	1.00
POL445420003	Police Lieutenant	1.00
POL445420002	Police Lieutenant	1.00
POL445420001	Police Lieutenant	1.00
POL445430127	Police Officer/Police Trainee	1.00
POL445430126	Police Officer/Police Trainee	1.00
POL445430125	Police Officer/Police Trainee	1.00
POL445430124	Police Officer/Police Trainee	1.00
POL445430123	Police Officer/Police Trainee	1.00
POL445430122	Police Officer/Police Trainee	1.00
POL445430121	Police Officer/Police Trainee	1.00
POL445430120	Police Officer/Police Trainee	1.00
POL445430119	Police Officer/Police Trainee	1.00
POL445430118	Police Officer/Police Trainee	1.00
POL445430117	Police Officer/Police Trainee	1.00
POL445430116	Police Officer/Police Trainee	1.00
POL445430115	Police Officer/Police Trainee	1.00
POL445430114	Police Officer/Police Trainee	1.00
POL445430113	Police Officer/Police Trainee	1.00
POL445430112	Police Officer/Police Trainee	1.00
POL445430111	Police Officer/Police Trainee	1.00
POL445430110	Police Officer/Police Trainee	1.00
POL445430109	Police Officer/Police Trainee	1.00
POL445430108	Police Officer/Police Trainee	1.00
POL445430107	Police Officer/Police Trainee	1.00
POL445430106	Police Officer/Police Trainee	1.00
POL445430105	Police Officer/Police Trainee	1.00
POL445430104	Police Officer/Police Trainee	1.00
POL445430103	Police Officer/Police Trainee	1.00
POL445430102	Police Officer/Police Trainee	1.00
POL445430101	Police Officer/Police Trainee	1.00
POL445430100	Police Officer/Police Trainee	1.00
POL445430099	Police Officer/Police Trainee	1.00
POL445430098	Police Officer/Police Trainee	1.00
POL445430097	Police Officer/Police Trainee	1.00
POL445430096	Police Officer/Police Trainee	1.00
POL445430095	Police Officer/Police Trainee	1.00
POL445430094	Police Officer/Police Trainee	1.00
POL445430093	Police Officer/Police Trainee	1.00
POL445430092	Police Officer/Police Trainee	1.00
POL445430091	Police Officer/Police Trainee	1.00
POL445430090	Police Officer/Police Trainee	1.00
POL445430089	Police Officer/Police Trainee	1.00
POL445430088	Police Officer/Police Trainee	1.00
POL445430087	Police Officer/Police Trainee	1.00
POL445430086	Police Officer/Police Trainee	1.00
POL445430085	Police Officer/Police Trainee	1.00

POL445430084	Police Officer/Police Trainee	1.00
POL445430083	Police Officer/Police Trainee	1.00
POL445430082	Police Officer/Police Trainee	1.00
POL445430081	Police Officer/Police Trainee	1.00
POL445430080	Police Officer/Police Trainee	1.00
POL445430079	Police Officer/Police Trainee	1.00
POL445430078	Police Officer/Police Trainee	1.00
POL445430077	Police Officer/Police Trainee	1.00
POL445430076	Police Officer/Police Trainee	1.00
POL445430075	Police Officer/Police Trainee	1.00
POL445430074	Police Officer/Police Trainee	1.00
POL445430073	Police Officer/Police Trainee	1.00
POL445430072	Police Officer/Police Trainee	1.00
POL445430071	Police Officer/Police Trainee	1.00
POL445430070	Police Officer/Police Trainee	1.00
POL445430069	Police Officer/Police Trainee	1.00
POL445430068	Police Officer/Police Trainee	1.00
POL445430067	Police Officer/Police Trainee	1.00
POL445430066	Police Officer/Police Trainee	1.00
POL445430065	Police Officer/Police Trainee	1.00
POL445430064	Police Officer/Police Trainee	1.00
POL445430063	Police Officer/Police Trainee	1.00
POL445430062	Police Officer/Police Trainee	1.00
POL445430061	Police Officer/Police Trainee	1.00
POL445430060	Police Officer/Police Trainee	1.00
POL445430059	Police Officer/Police Trainee	1.00
POL445430058	Police Officer/Police Trainee	1.00
POL445430057	Police Officer/Police Trainee	1.00
POL445430056	Police Officer/Police Trainee	1.00
POL445430055	Police Officer/Police Trainee	1.00
POL445430054	Police Officer/Police Trainee	1.00
POL445430053	Police Officer/Police Trainee	1.00
POL445430052	Police Officer/Police Trainee	1.00
POL445430051	Police Officer/Police Trainee	1.00
POL445430050	Police Officer/Police Trainee	1.00
POL445430049	Police Officer/Police Trainee	1.00
POL445430048	Police Officer/Police Trainee	1.00
POL445430047	Police Officer/Police Trainee	1.00
POL445430046	Police Officer/Police Trainee	1.00
POL445430045	Police Officer/Police Trainee	1.00
POL445430044	Police Officer/Police Trainee	1.00
POL445430043	Police Officer/Police Trainee	1.00
POL445430042	Police Officer/Police Trainee	1.00
POL445430041	Police Officer/Police Trainee	1.00
POL445430040	Police Officer/Police Trainee	1.00
POL445430039	Police Officer/Police Trainee	1.00
POL445430038	Police Officer/Police Trainee	1.00
POL445430037	Police Officer/Police Trainee	1.00

POL445430036	Police Officer/Police Trainee	1.00
POL445430035	Police Officer/Police Trainee	1.00
POL445430034	Police Officer/Police Trainee	1.00
POL445430033	Police Officer/Police Trainee	1.00
POL445430032	Police Officer/Police Trainee	1.00
POL445430031	Police Officer/Police Trainee	1.00
POL445430030	Police Officer/Police Trainee	1.00
POL445430029	Police Officer/Police Trainee	1.00
POL445430028	Police Officer/Police Trainee	1.00
POL445430027	Police Officer/Police Trainee	1.00
POL445430026	Police Officer/Police Trainee	1.00
POL445430025	Police Officer/Police Trainee	1.00
POL445430024	Police Officer/Police Trainee	1.00
POL445430023	Police Officer/Police Trainee	1.00
POL445430022	Police Officer/Police Trainee	1.00
POL445430021	Police Officer/Police Trainee	1.00
POL445430020	Police Officer/Police Trainee	1.00
POL445430019	Police Officer/Police Trainee	1.00
POL445430018	Police Officer/Police Trainee	1.00
POL445430017	Police Officer/Police Trainee	1.00
POL445430016	Police Officer/Police Trainee	1.00
POL445430015	Police Officer/Police Trainee	1.00
POL445430014	Police Officer/Police Trainee	1.00
POL445430013	Police Officer/Police Trainee	1.00
POL445430012	Police Officer/Police Trainee	1.00
POL445430011	Police Officer/Police Trainee	1.00
POL445430010	Police Officer/Police Trainee	1.00
POL445430009	Police Officer/Police Trainee	1.00
POL445430008	Police Officer/Police Trainee	1.00
POL445430007	Police Officer/Police Trainee	1.00
POL445430006	Police Officer/Police Trainee	1.00
POL445430005	Police Officer/Police Trainee	1.00
POL445430004	Police Officer/Police Trainee	1.00
POL445430003	Police Officer/Police Trainee	1.00
POL445430002	Police Officer/Police Trainee	1.00
POL445430001	Police Officer/Police Trainee	1.00
POL445429001	Police Property and Evidence Supervisor	1.00
POL441094004	Police Property and Evidence Technician I/II	1.00
POL441094003	Police Property and Evidence Technician I/II	1.00
POL441094002	Police Property and Evidence Technician I/II	1.00
POL441094001	Police Property and Evidence Technician I/II	1.00
POL445440010	Police Records Clerk I/II	1.00
POL445440009	Police Records Clerk I/II	1.00
POL445440008	Police Records Clerk I/II	1.00
POL445440007	Police Records Clerk I/II	1.00
POL445440005	Police Records Clerk I/II	1.00
POL445440004	Police Records Clerk I/II	1.00
POL445440003	Police Records Clerk I/II	1.00

POL445440002	Police Records Clerk I/II	1.00
POL445440001	Police Records Clerk I/II	1.00
POL445494004	Police Scene Technician I/II	1.00
POL445494003	Police Scene Technician I/II	1.00
POL445494002	Police Scene Technician I/II	1.00
POL445494001	Police Scene Technician I/II	1.00
POL445470017	Police Sergeant	1.00
POL445470016	Police Sergeant	1.00
POL445470015	Police Sergeant	1.00
POL445470014	Police Sergeant	1.00
POL445470013	Police Sergeant	1.00
POL445470012	Police Sergeant	1.00
POL445470011	Police Sergeant	1.00
POL445470010	Police Sergeant	1.00
POL445470009	Police Sergeant	1.00
POL445470008	Police Sergeant	1.00
POL445470007	Police Sergeant	1.00
POL445470006	Police Sergeant	1.00
POL445470005	Police Sergeant	1.00
POL445470004	Police Sergeant	1.00
POL445470003	Police Sergeant	1.00
POL445470002	Police Sergeant	1.00
POL445470001	Police Sergeant	1.00
POL445489002	Police Services Administrator	1.00
POL445489001	Police Services Administrator	1.00
POL441139001	Police Social Services Practitioner I/II	1.00
POL441126001	Police Social Services Supervisor	1.00
POL445657001	Public Safety Program Coordinator	1.00
POL445748002	Records Supervisor	1.00
POL445748001	Records Supervisor	1.00
POL441092003	Senior Police Records Clerk	1.00
POL441092002	Senior Police Records Clerk	1.00
POL441092001	Senior Police Records Clerk	1.00

Total for Department:	**POL Police Department**	229.00

Position Code	**Position Title**	**Allocated FTE**
PRL580071001	Administrative Assistant	1.00
PRL580084008	Administrative Technician	1.00
PRL580084007	Administrative Technician	1.00
PRL580084006	Administrative Technician	1.00
PRL580084005	Administrative Technician	1.00
PRL580084004	Administrative Technician	1.00
PRL580084003	Administrative Technician	1.00
PRL580084002	Administrative Technician	1.00
PRL580084001	Administrative Technician	1.00

PRL588302002	Aquatics Maintenance Technician	1.00
PRL588302001	Aquatics Maintenance Technician	1.00
PRL588300001	Arborist Technician	1.00
PRL581225014	Child Care Site Coordinator	1.00
PRL581225013	Child Care Site Coordinator	1.00
PRL581225012	Child Care Site Coordinator	1.00
PRL581225011	Child Care Site Coordinator	1.00
PRL581225010	Child Care Site Coordinator	1.00
PRL581225009	Child Care Site Coordinator	1.00
PRL581225008	Child Care Site Coordinator	1.00
PRL581225007	Child Care Site Coordinator	1.00
PRL581225006	Child Care Site Coordinator	1.00
PRL581225005	Child Care Site Coordinator	1.00
PRL581225004	Child Care Site Coordinator	1.00
PRL581225003	Child Care Site Coordinator	1.00
PRL581225002	Child Care Site Coordinator	1.00
PRL581225001	Child Care Site Coordinator	1.00
PRL581142001	City Librarian	1.00
PRL583740001	Cultural Arts Supervisor	1.00
PRL581645002	Department Public Information Officer	1.00
PRL581101001	Graphic Designer	1.00
PRL585075002	Irrigation Technician	1.00
PRL584152007	Librarian I/II	0.50
PRL584152005	Librarian I/II	1.00
PRL584152004	Librarian I/II	1.00
PRL584152003	Librarian I/II	1.00
PRL584152002	Librarian I/II	1.00
PRL584152001	Librarian I/II	1.00
PRL584210005	Library Assistant I/II	1.00
PRL584210003	Library Assistant I/II	1.00
PRL584210002	Library Assistant I/II	1.00
PRL584210001	Library Assistant I/II	1.00
PRL589544009	Library Supervisor	1.00
PRL589544005	Library Supervisor	1.00
PRL589544001	Library Supervisor	1.00
PRL584250003	Library Technician	1.00
PRL584250002	Library Technician	1.00
PRL584250001	Library Technician	1.00
PRL580050003	Management Analyst I/II	1.00
PRL580050002	Management Analyst I/II	1.00
PRL580050001	Management Analyst I/II	1.00
PRL584517002	Marketing and Communication Analyst I/II	1.00
PRL584517001	Marketing and Communication Analyst I/II	1.00
PRL581121001	Museum Assistant	1.00
PRL589545001	Natural Resources Specialist I/II	1.00
PRL584872003	Natural Resources Worker I/II	1.00
PRL584872002	Natural Resources Worker I/II	1.00
PRL584872001	Natural Resources Worker I/II	1.00

PRL584872006	Natural Resources Worker I/II	1.00
PRL584872005	Natural Resources Worker I/II	1.00
PRL584872004	Natural Resources Worker I/II	1.00
PRL584957009	Office Assistant I/II	1.00
PRL584957006	Office Assistant I/II	1.00
PRL584957003	Office Assistant I/II	1.00
PRL584957002	Office Assistant I/II	1.00
PRL585022002	Park Development Project Manager I/II	1.00
PRL585022001	Park Development Project Manager I/II	1.00
PRL581106001	Park Planning and Development Manager	1.00
PRL581160003	Parks Contract Compliance Technician	1.00
PRL581160002	Parks Contract Compliance Technician	1.00
PRL581160001	Parks Contract Compliance Technician	1.00
PRL581162002	Parks Inspector	1.00
PRL581162001	Parks Inspector	1.00
PRL585080030	Parks Maintenance Worker I/II	1.00
PRL585080029	Parks Maintenance Worker I/II	1.00
PRL585080028	Parks Maintenance Worker I/II	1.00
PRL585080027	Parks Maintenance Worker I/II	1.00
PRL585080026	Parks Maintenance Worker I/II	1.00
PRL585080025	Parks Maintenance Worker I/II	1.00
PRL585080024	Parks Maintenance Worker I/II	1.00
PRL585080023	Parks Maintenance Worker I/II	1.00
PRL585080022	Parks Maintenance Worker I/II	1.00
PRL585080021	Parks Maintenance Worker I/II	1.00
PRL585080020	Parks Maintenance Worker I/II	1.00
PRL585080019	Parks Maintenance Worker I/II	1.00
PRL585080018	Parks Maintenance Worker I/II	1.00
PRL585080017	Parks Maintenance Worker I/II	1.00
PRL585080016	Parks Maintenance Worker I/II	1.00
PRL585080015	Parks Maintenance Worker I/II	1.00
PRL585080014	Parks Maintenance Worker I/II	1.00
PRL585080013	Parks Maintenance Worker I/II	1.00
PRL585080012	Parks Maintenance Worker I/II	1.00
PRL585080011	Parks Maintenance Worker I/II	1.00
PRL585080010	Parks Maintenance Worker I/II	1.00
PRL585080009	Parks Maintenance Worker I/II	1.00
PRL585080008	Parks Maintenance Worker I/II	1.00
PRL585080007	Parks Maintenance Worker I/II	1.00
PRL585080006	Parks Maintenance Worker I/II	1.00
PRL585080005	Parks Maintenance Worker I/II	1.00
PRL585080004	Parks Maintenance Worker I/II	1.00
PRL585080003	Parks Maintenance Worker I/II	1.00
PRL585080002	Parks Maintenance Worker I/II	1.00
PRL585080001	Parks Maintenance Worker I/II	1.00
PRL581161001	Parks Maintenance and Construction Technician	1.00
PRL585082001	Parks Recreation and Libraries Director	1.00
PRL589547004	Parks Recreation and Libraries Manager	1.00

PRL589547003	Parks Recreation and Libraries Manager	1.00
PRL589547002	Parks Recreation and Libraries Manager	1.00
PRL589546003	Parks and Open Space Superintendent	1.00
PRL589546001	Parks and Open Space Superintendent	1.00
PRL585069004	Parks and Open Space Supervisor	1.00
PRL585069003	Parks and Open Space Supervisor	1.00
PRL585069002	Parks and Open Space Supervisor	1.00
PRL585069001	Parks and Open Space Supervisor	1.00
PRL589543011	Recreation Coordinator I/II	1.00
PRL589543010	Recreation Coordinator I/II	1.00
PRL589543009	Recreation Coordinator I/II	1.00
PRL589543007	Recreation Coordinator I/II	1.00
PRL589543006	Recreation Coordinator I/II	1.00
PRL589543004	Recreation Coordinator I/II	1.00
PRL589543003	Recreation Coordinator I/II	1.00
PRL589543002	Recreation Coordinator I/II	1.00
PRL589543001	Recreation Coordinator I/II	1.00
PRL589543008	Recreation Coordinator I/II	1.00
PRL588304005	Recreation Leader	1.00
PRL588304004	Recreation Leader	1.00
PRL588304003	Recreation Leader	1.00
PRL588304002	Recreation Leader	1.00
PRL588304001	Recreation Leader	1.00
PRL581143005	Recreation Superintendent	1.00
PRL581143004	Recreation Superintendent	1.00
PRL581143002	Recreation Superintendent	1.00
PRL581144008	Recreation Supervisor	1.00
PRL581144007	Recreation Supervisor	1.00
PRL581144006	Recreation Supervisor	1.00
PRL581144004	Recreation Supervisor	1.00
PRL581144003	Recreation Supervisor	1.00
PRL581144002	Recreation Supervisor	1.00
PRL581144001	Recreation Supervisor	1.00
PRL583733001	Senior Interpretive Services Specialist	1.00
PRL587154001	Senior Natural Resources Worker	1.00
PRL581119001	Senior Park Development Project Manager	1.00
PRL587192006	Senior Parks Maintenance Worker	1.00
PRL587192005	Senior Parks Maintenance Worker	1.00
PRL587192004	Senior Parks Maintenance Worker	1.00
PRL587192003	Senior Parks Maintenance Worker	1.00
PRL587192002	Senior Parks Maintenance Worker	1.00
PRL587201001	Senior Tree Trimmer	1.00
PRL581504002	Tree Trimmer I/II	1.00
PRL581504001	Tree Trimmer I/II	1.00
PRL581107001	Turf and Sports Field Technician	1.00
PRL588762001	Urban Forester	1.00
PRL581641004	Youth Development Program Coordinator	1.00
PRL581641003	Youth Development Program Coordinator	1.00

PRL581641001	Youth Development Program Coordinator	1.00

Total for Department:	**PRL Parks Recreation and Libraries**	153.50

Position Code	Position Title	Allocated FTE
PWD620088001	Associate/Assistant Transportation Planner	1.00
PWD620071001	Administrative Assistant	1.00
PWD620084006	Administrative Technician	0.75
PWD620084005	Administrative Technician	1.00
PWD620084004	Administrative Technician	1.00
PWD620084003	Administrative Technician	1.00
PWD620084002	Administrative Technician	1.00
PWD620084001	Administrative Technician	1.00
PWD620090001	Alternative Transportation Manager	1.00
PWD621148001	Assistant Public Works Director	1.00
PWD621005012	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005011	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005010	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005009	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005008	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005007	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005006	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005005	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005004	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005003	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005002	Associate (PE)/Assistant/Junior Engineer	1.00
PWD621005001	Associate (PE)/Assistant/Junior Engineer	1.00
PWD620088003	Associate/Assistant Transportation Planner	1.00
PWD621032006	Building Maintenance Worker I/II	1.00
PWD621032005	Building Maintenance Worker I/II	1.00
PWD621032004	Building Maintenance Worker I/II	1.00
PWD621032003	Building Maintenance Worker I/II	1.00
PWD621032002	Building Maintenance Worker I/II	1.00
PWD621032001	Building Maintenance Worker I/II	1.00
PWD621401001	Community Relations Analyst	1.00
PWD621485006	Custodian	1.00
PWD621485005	Custodian	1.00
PWD621485004	Custodian	1.00
PWD621485003	Custodian	1.00
PWD621485002	Custodian	1.00
PWD621485001	Custodian	1.00
PWD621025001	Custodian Supervisor	1.00
PWD622385005	Electronics Technician I/II/III	1.00
PWD622385004	Electronics Technician I/II/III	1.00
PWD622385003	Electronics Technician I/II/III	1.00
PWD622385002	Electronics Technician I/II/III	1.00

PWD622385001	Electronics Technician I/II/III	1.00
PWD621350001	Engineering Technician I/II	1.00
PWD621300002	Engineering Technician I/II	1.00
PWD622560005	Equipment Serviceworker	1.00
PWD622560004	Equipment Serviceworker	1.00
PWD622560003	Equipment Serviceworker	1.00
PWD622560002	Equipment Serviceworker	1.00
PWD622560001	Equipment Serviceworker	1.00
PWD624321001	Facilities Supervisor	1.00
PWD623319001	Fleet Management Technician	1.00
PWD621113001	Fleet Services Parts Buyer	1.00
PWD622565001	Fleet Services Supervisor	1.00
PWD622565002	Fleet Services Supervisor	1.00
PWD622214001	GIS Technician I/II	1.00
PWD621140001	Intelligent Transportation Systems Maintenance Supervisor	1.00
PWD628952002	Inventory Control and Supply Worker I/II	1.00
PWD628952001	Inventory Control and Supply Worker I/II	1.00
PWD620050002	Management Analyst I/II	1.00
PWD620050001	Management Analyst I/II	1.00
PWD624501010	Mechanic I/II	1.00
PWD624501009	Mechanic I/II	1.00
PWD624501008	Mechanic I/II	1.00
PWD624501007	Mechanic I/II	1.00
PWD624501006	Mechanic I/II	1.00
PWD624501005	Mechanic I/II	1.00
PWD624501004	Mechanic I/II	1.00
PWD624501003	Mechanic I/II	1.00
PWD624501002	Mechanic I/II	1.00
PWD624501001	Mechanic I/II	1.00
PWD624957008	Office Assistant I/II	1.00
PWD624957007	Office Assistant I/II	0.50
PWD624957006	Office Assistant I/II	1.00
PWD624957005	Office Assistant I/II	1.00
PWD624957003	Office Assistant I/II	1.00
PWD624957002	Office Assistant I/II	1.00
PWD624957001	Office Assistant I/II	1.00
PWD625514001	Principal Engineer	1.00
PWD625560003	Project Coordinator	1.00
PWD625560002	Project Coordinator	1.00
PWD625560001	Project Coordinator	1.00
PWD621069001	Project Supervisor	1.00
PWD625635001	Public Works Director	1.00
PWD621087002	Public Works Manager	1.00
PWD621087001	Public Works Manager	1.00
PWD627119001	Senior Building Maintenance Worker	1.00
PWD627144001	Senior Custodian	1.00
PWD627170001	Senior Electronic Technician	1.00
PWD627142003	Senior Engineer	1.00

PWD627142002	Senior Engineer	1.00
PWD627142001	Senior Engineer	1.00
PWD627189002	Senior Mechanic	1.00
PWD627189001	Senior Mechanic	1.00
PWD627187006	Senior Street Maintenance Worker	1.00
PWD627187005	Senior Street Maintenance Worker	1.00
PWD627187004	Senior Street Maintenance Worker	1.00
PWD627187003	Senior Street Maintenance Worker	1.00
PWD627187002	Senior Street Maintenance Worker	1.00
PWD627187001	Senior Street Maintenance Worker	1.00
PWD621073001	Street Maintenance Manager	1.00
PWD627522003	Street Maintenance Supervisor	1.00
PWD627522002	Street Maintenance Supervisor	1.00
PWD627522001	Street Maintenance Supervisor	1.00
PWD627530020	Street Maintenance Worker I/II	1.00
PWD627530019	Street Maintenance Worker I/II	1.00
PWD627530018	Street Maintenance Worker I/II	1.00
PWD627530017	Street Maintenance Worker I/II	1.00
PWD627530016	Street Maintenance Worker I/II	1.00
PWD627530015	Street Maintenance Worker I/II	1.00
PWD627530014	Street Maintenance Worker I/II	1.00
PWD627530013	Street Maintenance Worker I/II	1.00
PWD627530012	Street Maintenance Worker I/II	1.00
PWD627530011	Street Maintenance Worker I/II	1.00
PWD627530010	Street Maintenance Worker I/II	1.00
PWD627530009	Street Maintenance Worker I/II	1.00
PWD627530008	Street Maintenance Worker I/II	1.00
PWD627530007	Street Maintenance Worker I/II	1.00
PWD627530006	Street Maintenance Worker I/II	1.00
PWD627530005	Street Maintenance Worker I/II	1.00
PWD627530004	Street Maintenance Worker I/II	1.00
PWD627530003	Street Maintenance Worker I/II	1.00
PWD627530002	Street Maintenance Worker I/II	1.00
PWD627530001	Street Maintenance Worker I/II	1.00
PWD627540005	Street Sweeper Operator	1.00
PWD627540004	Street Sweeper Operator	1.00
PWD627540003	Street Sweeper Operator	1.00
PWD627540002	Street Sweeper Operator	1.00
PWD627540001	Street Sweeper Operator	1.00
PWD622376002	Traffic Signal Maintenance Worker I/II	1.00
PWD622376001	Traffic Signal Maintenance Worker I/II	1.00
PWD621110001	Transit Operations Supervisor	1.00
PWD621052001	Transportation Grants Analyst	1.00
PWD621111001	Transportation Technician I/II	1.00
PWD628940001	Vehicle Maintenance Servicewriter	1.00
Total for Department:	**PWD Public Works**	133.25

Total for All Departments:	1392.10

Report : Position Allocation by Department , No Names

COUNCIL COMMUNICATION

CC #: 3852
File #: 0800-02 & 0201-01

Title:	West Zone Reclaimed Water Tanks Rehabilitation Project – Budget Adjustment
Contact:	Inderpreet Chaggar 916-774-5553 ikchaggar@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.21.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt an ordinance to approve a budget adjustment of $75,609 from available resources in the Wastewater Rehabilitation Fund to fully fund this project.

BACKGROUND

In 2023, the City's Environmental Utilities Department (EU) retained engineering design professionals to complete a condition assessment of the West Zone Reclaimed Water Tanks 1 and 2. Water Works Engineers (WWE) and V&A Consulting Engineers completed the condition assessment. Tanks 1 and 2 were constructed in 2006 and are welded steel tanks. The condition assessment found that structural components of the tanks, including the center support column and the roof rafters, are significantly corroded and require structural rehabilitation and/or replacement. The interior coating has also failed. In 2023, EU retained WWE to complete the rehabilitation design (construction plans and specifications) for Tanks 1 and 2.

On April 3, 2024, City Council authorized staff to advertise rehabilitation plans and specifications for the reclaimed water tanks. On August 7, 2024, the City awarded the construction contract to Euro Style Management for a not-to-exceed amount of $1,379,304.

As construction has progressed and nears completion, additional components inside the tanks have been identified that require either replacement or rehabilitation. These items include adding roof vents to help increase the ventilation in the tanks, replacing the cathodic protection system that protects the steel and the coating from corrosion damage, and other items that will assist in extending the remaining useful life of the tanks. Some of these additional scope items will be provided by the current contractor, Euro Style Management, and the associated cost will be covered with the contingency for potential change orders. Additional unforeseen rehabilitation items at the Reclaimed Water Tank site will be provided by other vendors and City staff, therefore additional funding is needed to cover the remaining cost.

FISCAL IMPACT

This budget adjustment is comprised of capital outlay for $40,000 and internal secondary labor for $35,609 for a total request of $75,609. The current budget for this project is $1,379,304. The new total project budget will be $1,454,913 from available resources in the Wastewater Rehabilitation Fund.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Approval of a budget adjustment meets the above criteria and is not subject to CEQA. No additional environmental review is required.

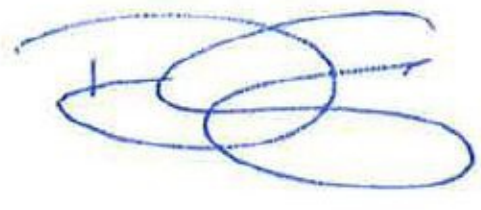
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal C - Maintain a safe and healthy community
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Inderpreet Kaur Chaggar, Senior Engineer

Sean Bigley, Environmental Utilities Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

Ordinance 6931

ORDINANCE NO. 6931

ORDINANCE OF THE COUNCIL OF THE CITY OF ROSEVILLE AUTHORIZING CERTAIN AMENDMENTS TO THE FISCAL YEAR 2024-25 BUDGET AND DECLARING THIS ORDINANCE TO BE IMMEDIATELY EFFECTIVE AS AN APPROPRIATION MEASURE

THE CITY OF ROSEVILLE ORDAINS:

SECTION 1. The City of Roseville Annual Budget, Fiscal Year 2024-25, is hereby amended as listed on the attached budget adjustment for the West Zone Recycled Water Tanks Rehabilitation project.

SECTION 2. This ordinance is hereby declared to be an appropriation measure, immediately effective pursuant to the provisions of Section 5.03 of the Charter.

SECTION 3. The City Clerk is hereby authorized and directed to post a true copy of the foregoing ordinance in each of three (3) conspicuous locations in the City and she shall immediately after such posting enter in the ordinance book, under the record of the ordinance, a certificate under her hand stating the time and place of such publication by posting.

PASSED AND ADOPTED by the Council of the City of Roseville, this _____day of_____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

REQUEST FOR BUDGET ADJUSTMENT

Updated 11/22/2024

Please complete the cells highlighted in yellow.

REQUESTER NAME & TITLE:	Inderpreet Chaggar, Senior Engineer	FISCAL YEAR:	2024-25
PREPARER NAME & TITLE:	Linda York, EU Business Analyst	ORDINANCE:	
DEPARTMENT/DIVISION:	EU Technical Services		

EXPENDITURES/EXPENSES/TRANSFERS OUT

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
6230	6587	84001	500344	40,000	Increase capital outlay budget for project #500344 West Zone Recycled Water Tank Rehabilitation
6230	5080	84001	500344	35,609	Increase internal project labor for project #500344 West Zone Recycled Water Tank Rehabilitation
EXPENDITURES/EXPENSES/TRANSFERS OUT TOTAL				75,609	

REVENUES/TRANSFERS IN

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
REVENUES/TRANSFERS IN TOTAL				-	

NET ADJUSTMENT	75,609	

FUND BALANCE

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
6230	3601	00000	000000	(75,609)	Reduce available resources in the Wastewater Rehabilitation Fund
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
FUND BALANCE TOTAL				(75,609)	

Justification for Budget Adjustment:

The West Zone Recycled Water Tank Rehabilitation (# 500344) project was established to design and perform the rehabilitation of the two West Zone recycled water tanks. As construction has progressed and nears completion, additional components inside the tanks have been identified that require either replacement or rehabilitation including adding roof vents to help increase ventilation, replacing the cathodic protection system that protects the steel and the coating from corrosion damage, and other equipment that will extend the useful life of the tanks ($40,000). Along with secondary labor of $35,609, the requested budget adjustment is for $75,609. This will bring the project's total lifetime budget to $1,454,913. There are adequate resources in the Wastewater Rehabilitation Fund (6230).

COUNCIL COMMUNICATION

CC #: 3829
File #: 0210 & 0201-01

Title:	Community Facilities Districts and Lighting and Landscape District - Budget Adjustment
Contact:	Eric Dexter 916-746-1769 edexter@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.22.

RECOMMENDATION TO COUNCIL

Staff recommends the City Council adopt an ordinance to approve a budget adjustment totaling $47,000 for the repair of soundwall damage due to vehicle accidents in Creekview Community Facilities District (CFD) No. 2 (Public Services) and Infill Lighting and Landscape District (LLD), Zone C, and to increase the sinking fund budget for a landscape project in the Longmeadow CFD No 2. (Services District).

BACKGROUND

Repair of soundwalls and landscape improvements are needed in two CFDs and one LLD. This request consists of the following projects that were not included in the adopted FY2024-25 budget:

- $2,000 for soundwall repairs in the Infill LLD, Zone C;
- $17,000 for soundwall repairs in the Creekview CFD No. 2 (Public Services); and
- $28,000 for a landscape project, as bids were higher than planned in the Longmeadow CFD No. 2 (Services District).

FISCAL IMPACT

There are sufficient fund balances in the districts to support the recommended budget adjustments. This work will be funded through the respective CFDs and LLD. There is no impact on the General Fund.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not

considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Approval of a budget adjustment meets the above criteria and is not subject to CEQA. No additional environmental review is required.

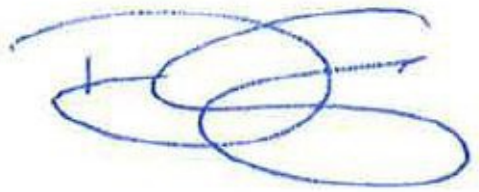
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Remain fiscally responsible in a changing world
Goal C - Maintain a safe and healthy community
Goal E - Deliver exceptional city services
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Eric Dexter, Parks & Open Space Superintendent

Jill Geller, Parks, Recreation & Libraries Director



_____
Dominick Casey, City Manager

ATTACHMENTS:

Description

Ordinance 6928

ORDINANCE NO. 6928

ORDINANCE OF THE COUNCIL OF THE CITY OF ROSEVILLE AUTHORIZING CERTAIN AMENDMENTS TO THE FISCAL YEAR 2024-25 BUDGET AND DECLARING THIS ORDINANCE TO BE IMMEDIATELY EFFECTIVE AS AN APPROPRIATION MEASURE

THE CITY OF ROSEVILLE ORDAINS:

SECTION 1. The City of Roseville Annual Budget, Fiscal Year 2024-25, is hereby amended as listed on the attached budget adjustment for the repair of soundwall damage due to vehicle accidents in Creekview Community Facilities District and Infill Zone C Lighting and Landscape Districts, as well as a landscape project in Longmeadow Community Facilities District.

SECTION 2. This ordinance is hereby declared to be an appropriation measure, immediately effective pursuant to the provisions of Section 5.03 of the Charter.

SECTION 3. The City Clerk is hereby authorized and directed to post a true copy of the foregoing ordinance in each of three (3) conspicuous locations in the City and she shall immediately after such posting enter in the ordinance book, under the record of the ordinance, a certificate under her hand stating the time and place of such publication by posting.

PASSED AND ADOPTED by the Council of the City of Roseville, this _____ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

ATTEST: _____
MAYOR

_____
City Clerk

REQUEST FOR BUDGET ADJUSTMENT

Updated 8/22/2024

Please complete the cells highlighted in yellow.

REQUESTER NAME & TITLE:	Eric Dexter, Parks Superintendent	FISCAL YEAR:	2024-25
PREPARER NAME & TITLE:	Anita Kwong, Management Analyst	ORDINANCE:	
DEPARTMENT/DIVISION:	Parks, Recreation & Libraries		

EXPENDITURES/EXPENSES/TRANSFERS OUT

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
2017	5423	80201		2,000	Increase budget for soundwall repair-Infill Zone C LLD
2121	5423	80251		17,000	Increase budget for soundwall repair-Creekview CFD
2114	5564	80201		28,000	Increase budget for landscaping-Longmeadow CFD
EXPENDITURES/EXPENSES/TRANSFERS OUT TOTAL				47,000	

REVENUES/TRANSFERS IN

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
REVENUES/TRANSFERS IN TOTAL				-	

NET ADJUSTMENT	47,000	

FUND BALANCE

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
2017	3601	00000	000000	(2,000)	Decrease Infill LLD Zone C Fund Balance
2121	3601	00000	000000	(17,000)	Decrease Creekview CFD 2 SD Fund Balance
2114	3601	00000	000000	(28,000)	Decrease Longmeadow CFD 2 SD Fund Balance
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
FUND BALANCE TOTAL				(47,000)	

Justification for Budget Adjustment:

The Parks, Recreation & Libraries department is requesting a budget adjustment of $47,000 to increase the repairs and maintenance budget to repair soundwall damage due to accidents in the Infill Zone C Lighting and Landscape District (LLD) and the Creekview Community Facilities Disrict (CFD) and to increase sinking fund budget for a landscape project in the Longmeadow Community Facilities Disrict (CFD). Funding is available in the Infill Zone C LLD fund (2017), the Creekview CFD fund (2121) and the Longmeadow CFD fund (2114). There is no impact on the General Fund.

COUNCIL COMMUNICATION

CC #: 3850
File #: 0704-01 & 0201-01

Title: Vehicle Purchase – Budget Adjustment
Contact: Rob Nakamura 916-774-5135 rnakamura@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.23.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt an ordinance to approve a budget adjustment for the purchase of two (2) motorized utility carts, one (1) trailer-mounted pressure washer, one (1) electric golf cart and one (1) electric utility cart to support the maintenance and the operations of the soccer complex.

BACKGROUND

The Parks, Recreation & Libraries Department requests a budget adjustment of $158,000 to cover the costs of four utility vehicles and a ride-on pressure washer to support maintenance and operations for the ten (10) soccer fields, a universally accessible playground, restroom buildings, concession/tournament buildings, parking lots and streetscapes at the 51-acre soccer complex facility scheduled to open in late 2025. Vehicles are needed to perform the maintenance and field prep necessary to meet the demands of hosting games, tournaments, and user agreements.

FISCAL IMPACT

Funding is available from the Soccer Complex project budget using the Citywide Park - West Roseville Specific Plan Fund.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. The Budget Adjustment meets the above criteria and is not subject to CEQA. No additional environmental review is required.

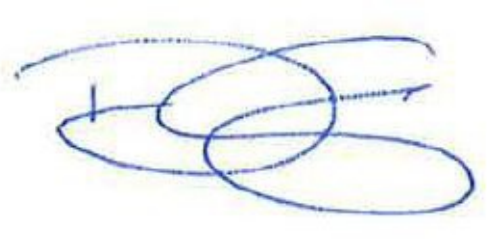
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal C - Maintain a safe and healthy community
Goal D - Enhance economic vitality
Goal E - Deliver exceptional city services
Goal F - Invest in well-planned infrastructure and growth

Respectfully Submitted,

Rob Nakamura, Recreation Superintendent

Jill Geller, Parks, Recreation & Libraries Director



Dominick Casey, City Manager

ATTACHMENTS:

Description

Ordinance 6930

ORDINANCE NO. 6930

ORDINANCE OF THE COUNCIL OF THE CITY OF ROSEVILLE AUTHORIZING CERTAIN AMENDMENTS TO THE FISCAL YEAR 2024-25 BUDGET AND DECLARING THIS ORDINANCE TO BE IMMEDIATELY EFFECTIVE AS AN APPROPRIATION MEASURE

THE CITY OF ROSEVILLE ORDAINS:

SECTION 1. The City of Roseville Annual Budget, Fiscal Year 2024-25, is hereby amended as listed on the attached budget adjustment for vehicle purchases to support the maintenance and operations of the soccer complex.

SECTION 2. This ordinance is hereby declared to be an appropriation measure, immediately effective pursuant to the provisions of Section 5.03 of the Charter.

SECTION 3. The City Clerk is hereby authorized and directed to post a true copy of the foregoing ordinance in each of three (3) conspicuous locations in the City and she shall immediately after such posting enter in the ordinance book, under the record of the ordinance, a certificate under her hand stating the time and place of such publication by posting.

PASSED AND ADOPTED by the Council of the City of Roseville, this _____ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

REQUEST FOR BUDGET ADJUSTMENT

Updated 11/22/2024

Please complete the cells highlighted in yellow.

REQUESTER NAME & TITLE:	Rob Nakamura, Recreation Superintendent	FISCAL YEAR:	2024-25
PREPARER NAME & TITLE:	Anita Kwong, Management Analyst	ORDINANCE:	
DEPARTMENT/DIVISION:	Parks, Recreation & Libraries		

EXPENDITURES/EXPENSES/TRANSFERS OUT

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
3304	6587	84001	400068	(158,000)	Reduce Capital Outlay budget to increase Fleet Expansion budget
3304	5517	84001	400068	158,000	Increase Fleet Expansion budget to purchase four utility carts and a pressure washer
4005	6552	62601		158,000	Increase Fleet Replacement Capital Outlay budget to purchase four utility carts and a pressure washer
EXPENDITURES/EXPENSES/TRANSFERS OUT TOTAL				158,000	

REVENUES/TRANSFERS IN

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
4005	4254	62601		158,000	Increase revenue in Fleet Replacement Fund for purchase of four utility carts and a pressure washer
REVENUES/TRANSFERS IN TOTAL				158,000	

NET ADJUSTMENT	-	

FUND BALANCE

ACCOUNT STRING				BUDGET ($)	DESCRIPTION
Fund	Account	Center	Project	Adjustment	
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
	3601	00000	000000		
FUND BALANCE TOTAL				-	

Justification for Budget Adjustment:

The Parks, Recreation & Libraries Department (PRL) requests a budget adjustment of $158,000 to purchase four new utility carts and a ride-on pressure washer for the Soccer Complex. Vehicles are needed for landscaping, maintenance, and to support the daily operations of ten soccer fields, a playground, concessions, and restrooms at the Soccer Complex. Funding is available from the Soccer Complex Project (400068) budget in the West Roseville Specific Plan City Wide Park fund (3304). Rent and replacement costs for these vehicles will be absorbed into PRL's FY2026 operating budget after the vehicles are received.

COUNCIL COMMUNICATION

CC #: 3856
File #: 0102-06

Title:	Proclamation - Municipal Clerk Week May 4-10, 2025
Contact:	Blair Hutchison 916-774-5266 bmhutchison@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.24.

RECOMMENDATION TO COUNCIL

Proclaim the week of May 4-10, 2025, as Professional Municipal Clerks Week, and further extend appreciation to our Professional Municipal Clerk, Carmen Avalos and to all Professional Municipal Clerks for the vital services they perform and their exemplary dedication to the communities they represent.

BACKGROUND

Not applicable.

FISCAL IMPACT

Not applicable.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Ceremonial documents meet the above criteria and are not subject to CEQA. No additional environmental review is required.

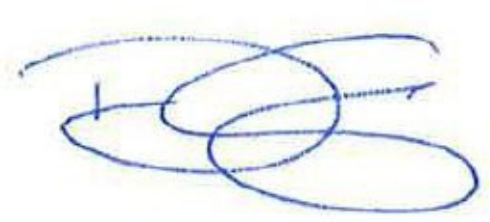
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal E - Deliver exceptional city services

Respectfully Submitted,

Blair Hutchison, City Clerk Technician

Carmen Avalos, City Clerk



Dominick Casey, City Manager

ATTACHMENTS:

Description

Proclamation - Municipal Clerk Week May 4-10, 2025

Proclamation

56th ANNUAL PROFESSIONAL MUNICIPAL CLERKS WEEK

MAY 4 - 10, 2025

WHEREAS, The Office of the Professional Municipal Clerk, a time honored and vital part of local government exists throughout the world; and

WHEREAS, The Office of the Professional Municipal Clerk is the oldest among public servants; and

WHEREAS, The Office of the Professional Municipal Clerk provides the professional link between the citizens, the local governing bodies and agencies of government at other levels; and

WHEREAS, Professional Municipal Clerks have pledged to be ever mindful of their neutrality and impartiality, rendering equal service to all; and

WHEREAS, The Professional Municipal Clerk serves as the information center on functions of local government and community; and

WHEREAS, Professional Municipal Clerks continually strive to improve the administration of the affairs of the Office of the Professional Municipal Clerk through participation in education programs, seminars, workshops and the annual meetings of their state, provincial, county and international professional organizations; and

WHEREAS, it is most appropriate that we recognize the accomplishments of the Office of the Professional Municipal Clerk.

NOW, THEREFORE, I, KRISTA BERNASCONI, MAYOR OF THE CITY OF ROSEVILLE, CALIFORNIA, do here by proclaim the week of **MAY 4-10, 2025**, as **PROFESSIONAL MUNICIPAL CLERKS WEEK**, and further extend appreciation to our Professional Municipal Clerk, **CARMEN AVALOS** and to all Professional Municipal Clerks for the vital services they perform and their exemplary dedication to the communities they represent.

SIGNED AND APPROVED this 16th day of April 2025.

CITY OF ROSEVILLE
INCORPORATED APRIL 10, 1909

KRISTA BERNASCONI, MAYOR

COUNCIL COMMUNICATION

CC #: 3857
File #:0102-06

Title:	Proclamation - Public Service Recognition Week May 4-10, 2025
Contact:	Blair Hutchison 916-774-5266 bmhutchison@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 7.25.

RECOMMENDATION TO COUNCIL

Proclaim May 4-10, 2025, as Public Service Recognition Week and encourage all citizens to recognize the accomplishments and contributions of government employees at all levels.

BACKGROUND

Not applicable.

FISCAL IMPACT

Not applicable.

ENVIRONMENTAL REVIEW

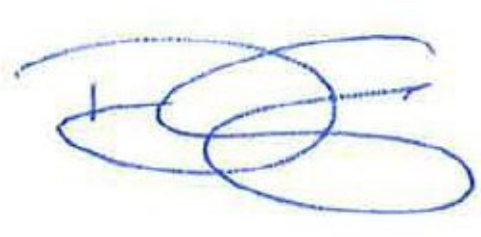
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CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Respectfully Submitted,

Blair Hutchison, City Clerk Technician

Carmen Avalos, City Clerk



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

Proclamation - Public Service Recognition Week May 4-10, 2025

Proclamation

PUBLIC SERVICE RECOGNITION WEEK
MAY 4-10, 2025

In honor of the millions of public employees at federal, state, county, and city levels:

WHEREAS, Americans are served every day by public servants at the federal, state, county, and city levels, and these unsung heroes do the work that keeps our nation functioning; and

WHEREAS, public employees take oaths to perform their jobs; and

WHEREAS, many public servants, including police officers, firefighters, military personnel, border patrol officers, embassy employees, and health care professionals, risk their lives each day in service to the people of the United States and around the world; and

WHEREAS, public servants include: utility workers, inspectors, engineers, teachers, scientists, social workers, safety inspectors, dispatchers, laborers, parks, recreation and library workers, computer technicians, and countless other occupations, and day in and day out they provide the diverse services demanded by the American people of their government with efficiency and integrity; and

WHEREAS, without these public servants at every level, continuity would be impossible in a democracy that regularly changes its leaders and elected officials.

NOW, THEREFORE, I, KRISTA BERNASOCNI, MAYOR OF THE CITY OF ROSEVILLE, CALIFORNIA, do hereby proclaim **May 4-10, 2025, as PUBLIC SERVICE RECOGNITION WEEK** and encourage all citizens to recognize the accomplishments and contributions of government employees at all levels.

SIGNED AND APPROVED this 16th day of April 2025.

KRISTA BERNASCONI, MAYOR

COUNCIL COMMUNICATION

CC #: 3833
File #: 0103-22

Title:	Local Sales Tax Citizens' Oversight Committee - Report to the City Council
Contact:	Scott Pettingell 916-746-1306 spettingell@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 8.1.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council receive an informational report and presentation from the Local Sales Tax Citizens' Oversight Committee on the fiscal year 2023-24 revenue and expenditures of the Measure B sales and use tax.

BACKGROUND

The Local Sales Tax Citizens' Oversight Committee (Committee) was created when Roseville voters passed Measure B in the November 6, 2018, election. The Committee is charged with the annual review and report to the City Council on the revenue and expenditures of the Measure B sales and use tax.

As part of the EngageRoseville effort that led to Measure B, the City asked the community about its priorities for city services to help guide the City in developing future budgets.

Those priorities, along with Council priorities, were reflected in the FY2023-24 budget as follows:

Maintained essential services
- Cost of doing business increases
- Specialized police and fire services
- Fire engine company
- Recreation and library programs
- Street maintenance levels
- Job-creation and business-recruitment initiatives
- One additional dispatcher
- Unsheltered camp cleanup
- Library, parks and events stabilization
- Maintenance at citywide parks
- Crabb Park
- Central Park
- Pistachio Park
- Street paving

Restored services that had been reduced prior to Measure B

- Library hours
- 4th of July fireworks
- Fire training and investigations
- Goat grazing for thatch management in open space
- Park maintenance standards
- Industry training and development

Examples of Services Added

- Fully staff the new police beat in West Roseville
- Increase Animal Control staffing to enhance community safety
- Increase police traffic officer staffing for improved traffic control
- Allocate resources for staff and equipment to implement a body-worn camera (BWC) program
- Establish a Real-Time Crime Center (RTCC) to enhance crime monitoring and response
- Provide maintenance support for the growing park system
- Increase staffing for tree trimming to enhance customer response and safety
- Expand programs and operating hours at Maidu Museum & Historic Site
- Extend library hours at Riley Library for increased community access
- Expanded graffiti abatement program
- Increase investment in facility rehabilitation, equipment replacement, and street maintenance
- Support increased initiatives addressing homelessness in the community

Fiscal Health Investments

- Fully fund economic stabilization reserve fund at 15% of General Fund operations budget
- Pay down CalPERS pension obligation
- Pay down retiree health liability

The Committee met on February 26, 2025, and received a presentation on the City's year-end report from staff.

The presentation was a summary of the information provided to the Committee, including the following documents:

- FY2023-24 Measure B Scorecard
- FY2023-24 Annual Comprehensive Financial Report.
- FY2023-24 Fourth Quarter Report
- General Ledger Detail
- General Fund Reserves Policy
- FY2023-24 Annual Budget
- FY2023-24 Year-end Report and Budget Adjustment Council Communication
- Roseville Citizens' Oversight Committee Memo April 10, 2024

The Committee met again on March 26, 2025, to finalize its annual review and report to the City Council on the revenue and expenditures of the Measure B sales and use tax.

FISCAL IMPACT

There is no fiscal impact related to receiving this report.

ENVIRONMENTAL REVIEW

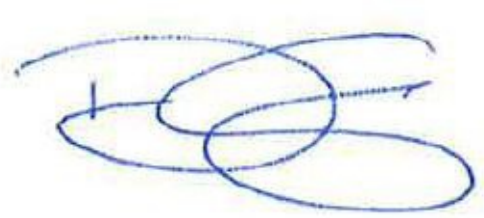
The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. The report to the City Council from the Local Sales Tax Citizens' Oversight Committee meets the above criteria and is not subject to CEQA. No additional environmental review is required.

CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Remain fiscally responsible in a changing world

Respectfully Submitted,

Scott Pettingell, Finance Director



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

LSTOC Report

Memorandum

To: Roseville City Council

From: Local Sales Tax Citizens' Oversight Committee

Date: March 20, 2025

Subject: Citizens' Oversight Committee update for April 16, 2025 Roseville City Council Meeting

History of Measure B

- Measure B is a half-cent local sales and use tax to protect Roseville's essential services and was approved by voters in the November 6, 2018 election, with the expected annual revenue of $16 to $19 million.
- On April 1, 2019, the sales and use tax rate in Roseville increased from 7.25% to 7.75%.

Role of the Citizen Oversight Committee

- The Citizens' Oversight Committee (Committee) was proposed as an independent citizen oversight on the Measure B funds.
- The Committee was created when Measure B passed in the November 6, 2018 election.
- The Committee is charged with the annual review and report to the City Council on the revenue and expenditures of the Measure B sales and use tax.

Current Members	Term End
Bob Bettencourt	6/30/2027
Jordan Bunnell	6/30/2027
Stephanie Hill	6/30/2025
Kathryn Kitchell	6/30/2027
John Speight	6/30/2025

Measure B is a General Tax and the monies collected are appropriated to the General Fund where revenues are not allocated and tracked for a specific purpose. The Measure B ballot information stated that "the City may use the funds for any municipal purpose, including but not limited to essential services such as neighborhood police patrols, fire protection, 9-1-1 emergency response; crime suppression/investigation; street and pothole repair; libraries, parks and recreation; and job creation and economic improvement programs." It is not possible for the Committee to determine the exact programs/services supported by Measure B revenues.

Review of Committee Meetings

The February 26, 2025 meeting consisted of the following:

- Appointment of Chair and Vice Chair
- Review of the Brown Act by Joe Mandell, Senior Deputy City Attorney
- Presentation by Dennis Kauffman, Assistant City Manager/Chief Financial Officer, and Scott Pettingell, Finance Director. The presentation was a summary of information provided to the Committee as exhibits:

    - Committee Overview
    - Year-end Report: Discussion of Fiscal Year July 1, 2023 to June 30, 2024 General Fund revenues and expenditures:
        - FY 23-24 Fourth Quarter Report
        - General Ledger Detail
        - General Fund Reserves Policy
        - FY 23-24 Annual Budget
    - Measure B Scorecard

- Recommendation by City staff that the Committee designate one or two Committee members to prepare the Committee's report to the City Council.

The Measure B Scorecard (Scorecard) was originally prepared by staff, in conjunction with a consultant, as an additional resource for the Committee in its review of compliance of the use of Measure B Funds with the original purpose for Measure B as stated in the ballot.

Citizens' Oversight Committee Report of the Funds from FY 23-24

- Measure B revenue in FY 23 -24 was $29.9M, $169K more than budgeted. Actual Measure B revenues exceeded budget primarily due to the conservative approach in budgeting for major tax revenues to compensate for impacts of the COVID-19 pandemic and general economic recovery.
- The Committee notes that because Measure B revenue is a general tax commingled with other General Fund revenue and pooled for General Fund expenditures, it is not possible to trace specific expenditures back to Measure B revenue.
- The General Fund concluded FY 23-24 with a $15.9M surplus ($3.2M additional revenues, $12.6M in expenditure savings).
- General Fund expenditures are $12.6M less than budgeted. A significant portion of the reduction ($4.6M) is attributed to the deferral of a discretionary payment to CalPERS. Operational budget savings were mainly in Public Works ($1.83M), Parks, Recreation and Libraries ($1.54.M), and Fire ($1.28M). The reduction in General Fund department operating expenditures is primarily attributed to vacant positions.
- The Police and Fire Departments spent virtually all of their budgets (100% and 97%, respectively).
- The Scorecard (attached) provided the Committee with additional information in determining the level of services in comparison to the base year (FY18-19 when Measure B was adopted). The Scorecard indicates that budgeted expenditures, staffing levels, and

Economic Stabilization, Emergency, and Capital Reserve balances for FY 23-24 were comparable to or increased from those in the base year

- The Scorecard indicates staffing for the Police Department decreased by 1 from FY 2022-23 to FY 2023-24. This was a temporary result caused by the timing of the budget process and the filling of a reclassified position through an internal promotional recruitment.
- An evaluation component the Committee considers of significant value is the National Community Survey, a bi-annual City-wide effort which gathers information from the community on satisfaction with City services. The survey provides feedback from the community on how the City's dollars are being used. The results of the latest survey indicate community members are pleased with the City government:
    - "Residents gave outstanding and above-average marks to almost every aspect of government performance in Roseville."
    - "About 77% of residents rated the value of services for the taxes paid to the City and the overall direction of Roseville as excellent or good."
- The Committee concludes that, based on the data provided by City staff and our analysis as described above, police, fire, public works and parks, recreation and library services were all maintained as evidenced by an increase in expenditures, and community satisfaction with the City. The Committee also concludes FY 23-24 Measure B funds were used for their intended purpose.

Citizens' Oversight Committee Report of the Surplus Funds from FY 22-23

The Council Priorities Workshop and determination of the use of the $13.9M surplus from FY 22-23 was not known by the Committee at the time of Committee report preparation for that year. Included in this year's Scorecard (see page 12) is the spending plan approved by City Council for the FY 22-23 surplus. The Committee finds these items in compliance with the intended use of Measure B revenues.

CC: Dennis Kauffman, Assistant City Manager/Chief Financial Officer
Phoebe Schueler, Recording Secretary

Attachments: Measure B Scorecard
National Community Survey 2023 Results

Measure B Scorecard

Fiscal Year 2023-24

Measure B is a half-cent local sales and use general purpose tax passed by voters during the November 6, 2018, election to protect Roseville's essential services.

The primary function of Measure B is to maintain essential services. Prior to the passage of Measure B, the City of Roseville faced significant reductions in services, under-funding of long-term obligations, and growing expenses. Revenue generated by Measure B allows the City of Roseville to provide for the continuity of services by restoring and maintaining priority service levels and building and maintaining an Economic Stabilization Reserve Fund as a safeguard for the future.

Roseville's Measure B scorecard uses a green, yellow, red scoring method to present how Measure B funds have impacted services.

- Green indicates restored or enhanced level of resources.
- Yellow indicates maintained level of resources.
- Red indicates diminished level of resources.

Below is a dashboard snapshot of ratings for Fiscal Year 2023-24 (FY 2023-24) or the fiscal year that started on July 1, 2023, and ended on June 30, 2024; additional details follow.

Category	Rating
Fiscal Investment Snapshot	
Police	
Fire	
Parks, Recreation and Libraries	
Public Works	
Development Services	
All other General Fund departments and transfers	
Investment in Reserves	

In summary, during FY 2023-24 measure B revenues continued to allow the City to maintain current service levels, restore services, and strategically invest in high-priority areas while still achieving a balanced budget.

Measure B Priorities

Measure B was passed by voters with the commitment to maintain service levels, invest in high-priority service areas, and build and maintain the City's economic stabilization reserve fund. Measure B sales tax revenue has helped stabilize General Fund services, protect Roseville's quality of life, and increase reserves to weather future economic downturns.

Measure B-related investments continued into Fiscal Year 2023-24

Maintained essential services

- Cost of doing business increases
- Specialized police and fire services
- Fire engine company
- Recreation and library programs
- Street maintenance levels
- Job-creation and business-recruitment initiatives
- One additional dispatcher
- Unsheltered camp cleanup
- Library, parks and events stabilization
- Maintenance at citywide parks
    - Crabb Park
    - Central Park
    - Pistachio Park
- Street paving

Restored services that had been reduced prior to Measure B

- Library hours
- 4th of July fireworks
- Fire training and investigations
- Goat grazing for thatch management in open space
- Park maintenance standards
- Industry training and development

Examples of Services Added

- Fully staff the new police beat in West Roseville
- Increase Animal Control staffing to enhance community safety
- Increase police traffic officer staffing for improved traffic control
- Allocate resources for staff and equipment to implement a body-worn camera (BWC) program
- Establish a Real-Time Crime Center (RTCC) to enhance crime monitoring and response
- Provide maintenance support for the growing park system
- Increase staffing for tree trimming to enhance customer response and safety
- Expand programs and operating hours at Maidu Museum & Historic Site
- Extend library hours at Riley Library for increased community access
- Expanded graffiti abatement program
- Increase investment in facility rehabilitation, equipment replacement, and street maintenance
- Support increased initiatives addressing homelessness in the community

Fiscal Health Investments

- Fully fund economic stabilization reserve fund at 15% of General Fund operations budget
- Pay down CalPERS pension obligation
- Pay down retiree health liability

General Fund Department Data

A primary objective of Measure B is to ensure the continuity of services for residents. This is demonstrated by the level of investment in General Fund operating departments. The City seeks to keep pace with growth while maintaining a high level of service and meeting the needs of the community. This scorecard uses a green, yellow, red scoring method to present how Measure B funds have impacted services.

- Green indicates restored or enhanced level of resources.
- Yellow indicates maintained level of resources.
- Red indicates diminished level of resources.

General Fund Categories	Adopted Expenditures								
	FY 2018-19 (Baseline)	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY2023-24	FY2019 to FY2024 % Change	FY2023 to FY2024 % Change	Rating
Police	$ 40,870,243	$ 44,518,481	$ 46,426,362	$ 48,983,125	$ 54,633,440	$ 58,809,842	44%	8%	
Fire	$ 32,117,397	$ 34,178,936	$ 34,649,868	$ 37,628,398	$ 41,649,320	$ 45,195,561	41%	9%	
Parks, Recreation and Library	$ 22,911,376	$ 24,677,839	$ 26,412,290	$ 27,428,050	$ 31,139,772	$ 35,000,441	53%	12%	
Public Works	$ 7,871,233	$ 7,204,894	$ 8,016,401	$ 8,438,406	$ 10,262,544	$ 10,507,798	33%	2%	
Development Services	$ 9,624,423	$ 9,371,317	$ 10,125,452	$ 10,293,117	$ 11,278,002	$ 11,935,083	24%	6%	
All other General Fund departments*	$ 9,246,986	$ 12,528,084	$ 13,623,554	$ 12,052,990	$ 13,120,449	$ 14,870,504	61%	13%	
Other expenditures/transfers/non-operating	$ 26,097,120	$ 28,249,084	$ 27,041,153	$ 37,666,775	$ 66,578,013	$ 52,942,513	103%	-20%	
Total	**$ 148,738,778**	**$ 160,728,635**	**$ 166,295,080**	**$ 182,490,861**	**$ 228,661,540**	**$ 229,261,742**	**54%**	**0.3%**	

General Fund Categories	Adopted Budget Staffing								
	FY 2018-19 (Baseline)	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY2019 to FY2024 % Change	FY2023 to FY2024 % Change	Rating
Police	197	201	204	211	224	223	13%	-0.4%	
Fire	119	119	119	119	120	130	9%	8%	
Parks, Recreation and Library	123	115	117	126	133	144	17%	8%	
Public Works	109	111	111	118	123	127	17%	3%	
Development Services	67	70	69	71	74	76	13%	3%	
All other General Fund departments*	86	97	103	107	115	125	45%	9%	
Total	**700**	**713**	**723**	**752**	**789**	**825**	**18%**	**5%**	

Notable Changes

Police

The Police Department's FY2023-24 budget totaled $58.8 million and provided funding to support 223 position allocations. The department budget increased over the prior fiscal year primarily due to increased labor costs and materials, supplies and services. In addition, the budget included funding to increase position allocations by two positions, moves one Department Public Information Officer allocation to the Public Affairs & Communications Department, and eliminates one Police Officer allocation because grant funding is no longer available.

The reduction in the number of positions within the police department, compared to the FY2022-23 adopted budget, is due to the reclassification of a Police Records Clerk position to a Senior Police Records Clerk position in a prior fiscal year. To accommodate this reclassification, the City temporarily increased the number of authorized Senior Police Records Clerk positions. Once the position was filled, the vacated Police Records Clerk position was eliminated during FY2022-23. This adjustment is administrative in nature and does not reflect a change in service levels.

The Police Department FY2023-24 budget included the following highlights:

Police Social Services Supervisor

As the Roseville Police Department's Social Services Unit continues to work with the City's unsheltered population, additional interns were added to the Social Services Unit. The interns work for the Police Department, earning hours for college classes and degree and certificate credits. These interns are supervised by an additional Police Social Services Supervisor position, which requires a license with the appropriate college degree. Additionally, the Police Social Services Supervisor collaborates with other professional staff members and regional partners to work together to obtain services for the unsheltered community in Roseville. Funding for this position was included in the budget, but the position allocation was recommended to City Council at a later date because a classification study was required.

Police Lieutenant/Department Public Information Officer

An additional Police Lieutenant was included in the budget to backfill a Department Public Information Officer that was moved to the Public Affairs & Communications Department. The Lieutenant serves as the Department's primary Public Information Officer, focusing on social media communication with the community, and oversees the Community Services Coordinator.

Community Services Officer I/II

A Community Services Officer position was added to the department Real Time Crime Center (RTCC) to expand operational hours. The RTCC is an initiative of the Police Department where it leverages technology resources in real time to assist in responding to calls for service. The RTCC is currently a one-person operation with limited technology resources, and yet it has been responsible for numerous assists in making arrests. It has become a go-to-resource for Patrol during the limited hours of operation.

Outreach Specialist

Two part-time Outreach Specialist positions were added to the department's Social Services Unit. The Outreach Specialist positions are critical to the Social Services Unit operations to offer services and therapeutic interventions according to their education and training to fulfill the vision of the Roseville Police Department. Services include de-

escalation, mental health crisis-based counseling, referral services, homeless outreach, services related to aging, threat assessment, community outreach, and family welfare. The Outreach Specialist pays particular focus to chronic offenders and non-criminal calls for services assisting individuals using solution-focused practice, thus, deflecting individuals away from the criminal justice system.

Police Property and Evidence Clerk

A part-time Police Property and Evidence Clerk was added to manage the increased workload from the department's Lenslock project. In addition to the body-worn cameras, the Roseville Police Department was approved to purchase in-car cameras for all patrol vehicles. The in-car cameras help on traffic stops and during pursuits. The Property and Evidence Clerk position reviews, processes, redacts, and releases camera footage for the department.

System Maintenance and Support for Priority Dispatch System Priority Dispatch

Priority Dispatch is the automated version of Emergency Medical Dispatch. This software system guides the Dispatcher through the pre-arrival medical assistance steps, providing more timely and accurate responses for citizens and responding Fire and Police resources. Funding for system maintenance and support was included in the budget to keep the automated Priority Dispatch emergency medical dispatch system updated and operational while providing access to portal training classes and logs.

CSI Cameras

The Roseville Police Department's CSI Unit uses specialized cameras and lenses to process scenes and capture evidence to be used in investigating crimes, testifying in court, and prosecuting criminals. CSI staff use the same type of camera for ease of training and consistency in crime scene documentation. The department purchased new cameras and specialized lenses for the CSI unit, as the current cameras were approaching the end of life.

Cell Phone Forensic Software

Advancements in cell phone technology have made it more difficult to extract information from cellular devices. Evidence stored on a cellular device is often crucial to investigations and criminal prosecution. The Police Department requires various tools to extract electronic data. Funding was included in the budget to purchase software that will provide a more robust extraction option and can bypass passcode locks, a capability not offered by any of the department's current tools.

In-Car Camera Solution

As part two of what started as the department's Body-Worn Camera (BWC) project in 2021, the budget included funding to implement an in-car camera solution. This purchase allows the department's patrol vehicles to be equipped with a front facing, windshield-mounted camera, a mobile video recorder, and a passenger camera.

Rifle/Sound Suppressors for SWAT Team

The rifles assigned to the Roseville Police Department's SWAT team had exceeded their expected lifespan and needed to be replaced. The department was authorized to purchase 17 new upper rifle platforms and 17 sound suppressors to outfit the SWAT team's current rifles. The new rifle platforms are expected to last approximately five years. The sound suppressors are also expected to last five years and will greatly reduce potential hearing loss associated with repetitive gunfire.

Police Vehicle Radios

The Police Department is the largest vehicle user in the City and has to replace vehicles continuously. During this replacement process, vehicle radios are removed and reinstalled into the new replacement vehicle. This is done by taking a vehicle out of service first; doing this strains services due to the lack of vehicles in the fleet. Purchasing two APX8500 vehicle radios allowed the department to keep up to two vehicles in service until two new replacements are built, keeping response times and service levels high.

Training

The Police Department's training budget was increased by $46,800. This increase in funding allows department personnel to develop their expertise through training and attendance at specialized conferences, meetings, and events. This increase includes $10,000 for California National Emergency Number Association training. Through research, planning, and education, this training will help Dispatchers foster a reliable and continuously improved emergency telephone number network. $6,500 is included in the budget for the POST Sherman Block Supervisory Leadership Institute Course. This course will stimulate personal growth, leadership, and ethical decision-making with frontline supervisors within our Dispatch Unit. $5,300 was included in the budget for Red Dot Sights (RDS) Instructor Course Training. As the department is transitioning from iron sights to a red dot sight-equipped duty pistol, the RDS instructor course will assist with this transition providing Police Officers with operational knowledge of the RDS optic. $10,000 was included for two staff members to attend the annual Capitol-to-Capitol Program. This event is meant to secure funding and resources for high-priority projects and raise local concerns to officials at the national level. Lastly, $15,000 was included in the budget to increase the Police Department's Defensive Tactics training budget. This training will provide the department's defensive tactics instructors with the knowledge and skills necessary to train and lead their peers to raise the standard of training concerning defensive tactics and use of force situations.

Fire

The Fire Department's FY2023-24 budget totaled $45.2 million and supported 130 position allocations. This increase is mostly due to staffing the new Fire Station 8.

Fire Captain

The budget included funding for a new Fire Captain position (non-shift). This position supports the Fire Training Division and provide additional logistical support to the department.

Staffing Engine 8

The budget included funding for nine full-time equivalent positions (three Fire Captains, three Fire Engineers and three Firefighter Paramedics) to staff a new apparatus, Engine 8. This includes both salary and benefits, academy costs and start-up items like personal protective equipment. These resources provide much needed resources to District 8 and further support the City.

Parks, Recreation and Library

The Parks, Recreation & Libraries Department's FY2023-24 budget totaled $35 million and supported 144.25 position allocations, including seven new positions. A Cultural Arts Supervisor position was funded in the PRL budget, but the allocation came to the City Council at a later date once the new classification was established. Much of the funding for these positions was the result of the reallocation of temporary staff funding. Recruitment and retention of part-time staff has become increasingly difficult, and the use of these funds towards full-time positions greatly increase the

department's efficiency and effectiveness. The PRL Department budget increase is primarily due to increased labor and materials, services, and supply costs associated with maintaining current service levels and additional funding to support the new positions and programs highlighted below.

PRL worked towards accreditation through the National Recreation and Park Association's (NRPA) Commission for Accreditation of Park and Recreation Agencies (CAPRA). This accreditation provides quality assurance and quality improvement of accredited park and recreation agencies throughout the United States by providing agencies with a management system of best practices. CAPRA is the only national accreditation of park and recreation agencies and is a valuable measure of an agency's overall quality of operation, management, and service to the community. Achieving CAPRA accreditation is the best way to demonstrate that the department provides the community with the highest level of service.

The PRL Department has developed a comprehensive strategic plan, accompanied by an action plan, to establish clear and attainable goals, objectives, and implementation strategies to guide the department for the next 10 years. In alignment with the plan, funding was included to develop a Marketing & Communications Plan and increase the library book budget.

As mentioned above, PRL is continually challenged with recruiting and retaining quality staff to conduct its many programs/events and to ensure its parks/facilities are adequately maintained. Ongoing efforts have been made to realign department staffing resources to find the right balance of full-time and part-time employees as well as contractor resources to deliver programs and services effectively and efficiently. These efforts continued in FY2023-24.

A Parks Manager was added to the largest division in the PRL Department. The safety of Roseville's parks is priority one, and their cleanliness and appearance is seen by residents on a daily basis. Portering is a core function of the maintenance of City parks for safety, cleanliness and general conditions. On a daily basis, porter staff ensure restrooms are cleaned, trash is emptied, inspect the entire park for safety issues, address vandalism/graffiti, and ensure playgrounds and sports courts are safe. The budget included the conversion of temporary salaries to support three full-time Parks Maintenance Workers to more effectively complete this core function.

Three additional natural resource workers helped maintain the additional open space acres and additional trail miles acquired by the City each year, as well as advance our efforts to control encroachment, invasive species, and homeless encampments.

PRL funding is complex, consisting of the General Fund, an enterprise fund, various special revenue and capital projects funds, including 38 CFDs/LLDs. The work to manage park development financial activity is significant. A Management Analyst was added to ensure PRL's prudent management and monitoring of expenses and revenues.

Public outreach during PRL's strategic master planning process indicated a desire from the community to expand cultural offerings. A Cultural Arts Supervisor will provide leadership at Maidu Museum & Historic Site, a valuable City asset. Additionally, this supervisor can advance efforts at the Fiddyment House property and increase the presence of public art in Roseville, adding uniqueness to our community, sharing our history, and creating a stronger sense of place. There are funds in this budget for a downtown art project, Music in the Park, and other public art that will be managed by this supervisor.

There is an investment in park amenities, vandalism and graffiti abatement to ensure safety and equity in aging facilities, including replacement of amenities such as benches, picnic tables, drinking fountains, shade structures, sports court fixtures, and restroom fixtures. Annual condition assessment and inventory tracking will assist in determining priorities each year. Additional funding was added to support new General Fund parks.

Public Works

The Public Works Department's FY2023-24 budget totaled $10.5 million. The General Fund component of Public Works' budget increased by 2 percent (from $10.3 million last year to $10.5 million this year). The Public Works FY2023-24 budget included the following adjustments:

Prioritizing Graffiti Removal

The FY2023-24 budget included $100,000 in General Fund resources for Street Maintenance to assist with allowing staff to identify and remove graffiti throughout the City's roadways quickly. To meet the community's desire for graffiti removal, staff will hire multiple on-call contractors to respond to and remove graffiti on any City assets along the City's roadways with a target period of 24 hours. This will reduce the impact of graffiti on our existing staff and their workload and allow the City to send one crew to a graffiti location and remove all markings on assets operated by various departments rather than having each asset owner send out their own crews.

Staff to Address Increasing Engineering Workload

Over the past 10 years, traffic engineering staff had decreased by 50 percent while workloads have steadily increased. The Intelligent Transportation System (ITS) Masterplan and the Institute of Transportation Engineers recommend a staff of six, as compared to four, to run a city the size of Roseville with a similar level of ITS implementation. Staff are currently unable to retime traffic signals every three years, or review and update coordination plans every three years. City goals for completing 80 percent of traffic studies within three months and 100 percent within six months are down to zero percent in three months and 71 percent in six months. An additional full-time Engineer in the Traffic Engineering Section of the Engineering Division was included in the Public Works FY2023-24 budget to meet these demands

Staffing for Street Maintenance

A new Service Worker was included in the FY2023-24 budget to assist with street maintenance. The Service Worker position was created over 20 years ago as a standalone solution to daytime calls for immediate service, inspection, cleanup tasks in the right of way (including graffiti and illegal dumping), and incident response (including potholes and emergency response assistance) all to deliver exceptional City services. Since the creation of the position, the City population has grown by 2/3 (60,000 people), the road lane miles have doubled (250 lane miles), and the area of the City has increased by 1/3 (13 square miles).

Development Services

The Development Services FY2023-24 General Fund budget totaled $11.9 million. The DSD budget included the conversion of a limited-term Development Technician to a regular position. This position assists in the Permit Center with customer service, permit coordination, website maintenance, and records requests

All Other General Fund Departments

This category includes the City Council, City Manager, Public Affairs & Communications, City Attorney, Human Resources, City Clerk, Finance and Economic Development Departments. Department budgets were adjusted for increased labor costs and materials, services, and supplies.

The Public Affairs & Communications (PAC) Department's FY2023-24 budget included the transfer of one department public information officer position from Police to PAC to support Organizational, Culture & Leadership efforts, Police communications training, and legislative advocacy. It also includes two new positions to the city: one to support Police community relations and communications outreach and the other to support video broadcast of City Council meetings and digital and video outreach for culture and recruitment branding.

The Finance Department's FY2023-24 budget included an increase to an existing Accounts Payable position from 0.625 Full Time Equivalent (FTE) position to 1.0 FTE position to handle growing workload, offset by a decrease in temporary staffing funding. The budget also allocated $60,000 in one-time funding for a citywide equipment inventory and replacement plan, and a Senior Accountant position for monitoring internal controls and assisting with internal audits, including $50,000 for two annual internal audits. An additional 1.0 FTE Analyst position was added to Payroll to address increased workload, and a new Purchasing Supervisor position was included to support the Purchasing Division. Finally, $20,000 was allocated for a consultant to help implement recommendations from a recent procurement assessment, focusing on policy development and training consolidation.

The Human Resources FY2023-24 budget includes the addition of a new 1.0 FTE Human Resources Analyst position to support the Electric and Environmental Utilities Departments with employee performance consultation, succession planning, and managing complex leave issues, with the cost offset by funding from those departments. Other key highlights include funding for a consultant to develop a citywide Succession Planning Program, a recruitment branding initiative to enhance the City's reputation as an employer of choice, and a project to scan and digitize personnel files for improved access and management.

Other Expenditures/Transfers

The other expenditures category represents expenditures that do not align directly with any department and benefit the entire organization. This category also includes transfers between funds.

The 20% decrease in this spending category is primarily due to a one-time transfer of $10 million in General Funds to the General Fund Capital Reserve that was budgeted for in FY2022-23, but not continued into FY2023-24.

Below is a summary of the significant items included in this category in the FY2023-24 budget:

- Pay down of CalPERS obligations by an Additional Discretionary Payment ($4.6 million)
- Leave payoffs for General Fund employees that retire during FY2023-24 ($750,000)
- Retiree medical benefits ($5.9 million)
- Annexation tax-sharing agreement payments to Placer County ($11.6 million)
- Contingency budgets for the General Fund ($2.9 million of which $1.37 million was estimated for negotiated labor increases during the year)
- Fees charged by the State and County for the collection and disbursement of sales and property taxes ($1.2 million)

General Fund transfers between funds:

- $1.3 million to General Fund Emergency Reserve Fund
- $2.1 million to General Fund Stabilization Reserve Fund
- $4.6 million to General Fund Pension Reserve Trust Fund

FY2023-24 Year End Results

General Fund revenues for FY2023-24 ended the year in line with expectations outlined in the third quarter report. While Measure B sales tax continued to grow, albeit at a slower pace than the years following the pandemic, Bradley Burns sales tax revenues declined in FY2023-24, resulting in a sales tax shortfall of approximately $2.4 million. This decline is attributed to a shift in consumer spending towards more service-related purchases, which are not taxable. Additionally, the ongoing effects of inflation and higher interest rates affected spending, contributing to a slight decrease in sales tax revenues compared to the previous fiscal year. On the positive side, the rise in property values and new construction led to property tax collections exceeding budget estimates through the end of the fiscal year. Development activity in the City continued with an upward trend during FY2023-24, resulting in higher-than-expected building permit, plan check, and engineering and inspection fee revenues. Despite the sales tax shortfall, year-end results show that higher-than-expected revenues in other categories offset the shortfall, leading to an overall revenue surplus of $3.26 million or approximately 1% above estimates.

Expenditure savings, including labor, materials, services, and supplies, totaled $12.6 million in the General Fund. This amount includes a $4.6 million additional discretionary payment (ADP) to CalPERS that was deferred as a precautionary measure due to the forecasted sales tax shortfall. Excluding the ADP, expenditure savings totaled approximately $8 million, representing about 4% of the operating expenditure budget. The combined surplus for FY2023-24 amounted to $15.86 million, as presented below:

General Fund FY2023-24 Year-End Results (Operating and Non-Operating)	Variance from Budget ($)
Sales and Use Tax - Bradley Burns	$ (2,565,000)
Sales and Use Tax - Measure B	169,000
Property Tax	2,231,000
Other Revenues	3,425,000
Revenue surplus	**3,260,000**
Expenditure savings	**12,600,000**
Total General Fund Year-End Surplus	**$ 15,860,000**

On February 5, 2025, the City Council appropriated the year-end surplus for the following purposes:

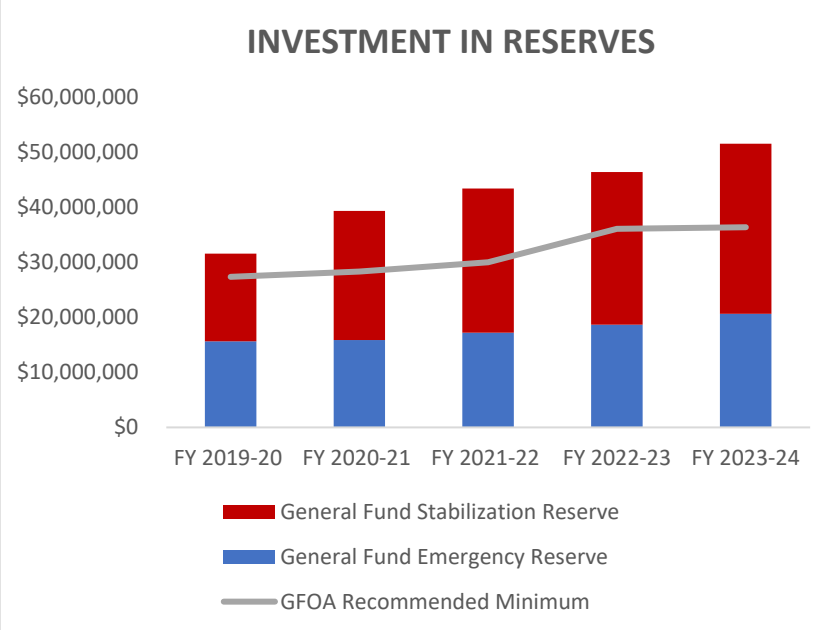
1. **Parks, Recreation, and Libraries Department (PRL) Projects: $4,030,000**
    - $3,150,000 to increase the budget for The Courts at Gibson Park Frontage project ($150,000) and establish the new West Side Maintenance Yard project ($3,000,000). The West Side Maintenance Yard project will build a satellite corporation yard on the western side of the City, including storage for equipment and materials, a shop, office space for Operations staff, and other support features to improve efficiency and service to residents.
    - $630,000 for the Youth Development Fund to increase the budgets for six existing projects: Adventure Club Flooring and Painting ($208,000), Adventure Club Interior Cabinets and Counters ($80,000), Adventure Club Exterior Paint and Siding ($140,000), Adventure Club HVAC Replacement ($85,000),

Adventure Club Ramps ($15,000), and Adventure Club Roof Repair and Replacement ($50,000), as well as to establish one new project: Adventure Club Programmable Locks ($52,000).
    - $250,000 for the Parks, Recreation and Library Capital Projects Fund to establish the Vernon Street Town Square Spray Ground Upgrades project and fund the design phase.
2. **Police Department Projects: $930,000**
    - Establishment of two new Police Department projects: (1) Police Body-Worn Camera Replacement ($480,000) and (2) Police Equipment Replacement ($450,000). City Council approved the appropriation of $930,000 from the FY2023-24 year-end General Fund surplus to the General Fund Equipment Replacement Fund for the replacement/purchase of body-worn cameras, rifle-rated ballistic vests, rifle optics, ballistic shields, unmanned aerial system drones, and a drug detection testing system.
3. **Fleet Replacement Fund Balance Augmentation: $1,531,000**
    - To address a shortfall in General Fund vehicle replacement funding for FY2025-26, City Council approved a transfer of $1,531,000 to the Fleet Replacement Fund. The shortfall by department is as follows: Police - $457,291, Fire - $691,268, PRL - $140,497, Public Works - $226,943, and Development Services - $15,001.
4. **Payment to CalPERS and Transfers to Other Funds: $9,369,000**
    - City Council approved the appropriation of $9,369,000 from the FY2023-24 General Fund year-end surplus for the following one-time expenditures: (1) make the $4,577,924 additional discretionary payment (ADP) to CalPERS, which was deferred in FY2023-24 due to concerns about reduced sales tax revenues. The City will continue to defer this payment in FY2024-25, as sales tax estimates continue to come in below projections, (2) transfer $1,500,000 to the General Fund Capital Reserve Fund for future capital projects, (3) transfer $1,750,000 to the Strategic Improvement Fund for future strategic investments, and (4) transfer $1,541,076 to the Pension Reserve Trust Fund to address long-term liabilities and their increasing costs.

Investment in Reserves

Through June 30, 2024, the Economic Stabilization Reserve, funded by Measure B, has grown to $30.9 million. These funds strengthen the City's financial position and will help maintain essential services during a future economic downturn.

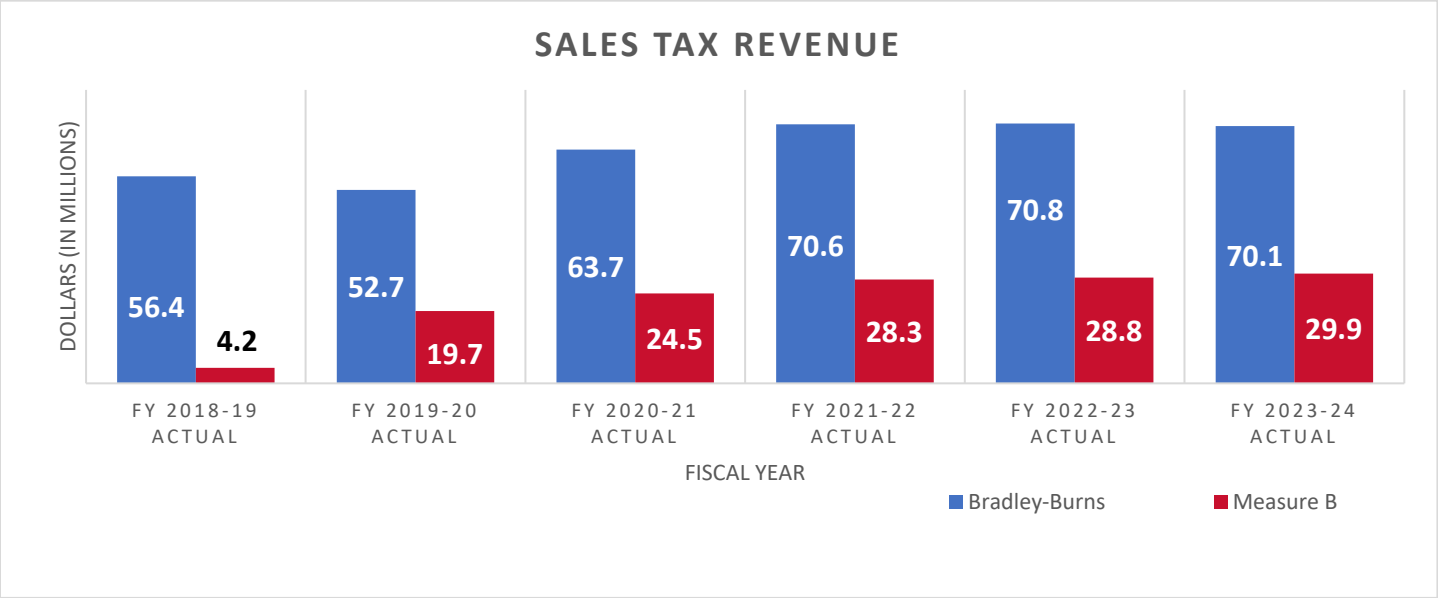
The Government Finance Officers Association (GFOA) recommends a minimum 17% reserve. As of June 30, 2024, the City of Roseville's total reserves (Economic Stabilization + Emergency) are approximately $51.5 million, meeting the Council-adopted policy target of 25% of operating expenditures.



Sales Tax Revenue

Measure B Sales and Use Tax (Red) revenues closed the year at $29.9 million, exceeding the budget by 1% ($0.2 million). Measure B revenues increased by approximately $1.1 million compared to the prior year. While Measure B sales tax continued to grow, the pace has slowed over the past two years. This slowdown is attributed to a shift in consumer

spending toward more service-related purchases, which are not taxable. Additionally, the ongoing effects of inflation and higher interest rates impacted spending, contributing to a slight decrease in sales tax revenues compared to the previous fiscal year.



FY2022-23 General Fund Year-End Surplus

The City had not determined the spending plan for the FY2022-23 General Fund year-end surplus at the time of preparing the Measure B scorecard last year. The following table outlines the spending plan approved by the City Council for this surplus.

General Fund Year-End Surplus Spending Plan	
Crimson Ridge Park	$ 450,000
Adventure Club Facility Improvements	809,000
Flood Control Pumps	500,000
IT/Fire - Very High Frequency Radio Replacement	827,500
Public Safety Regional Computer Aided Dispatch (CAD) to CAD Project	257,500
General Liability Program Assessment	1,400,000
Corridor Streetscape Landscaping	4,000,000
Transfer to Strategic Improvement Fund	2,500,000
Transfer to Pension Reserve Trust Fund	2,910,000
Increase in Litigation Reserve Fund	100,000
Fire Academy	200,000
Human Resources Personnel File Digitization	115,000
Citywide Succession Planning	40,000
Parking Garage Improvements (e.g., speed bumps)	150,000
Total	**$ 14,259,000**

National Community Survey

Roseville residents highlight City's overall quality of life in national survey

Ninety-seven percent of Roseville respondents to the National Community Survey rate Roseville as a good or excellent place to live, with 93% citing satisfaction with their overall quality of life. A similar percentage would recommend living in Roseville (92%) and most (82%) plan to remain in Roseville for the next five years.

The overall quality of Roseville's utilities infrastructure was the top-ranked among all communities surveyed at 90%. Roseville enjoyed high overall rankings in areas including:

- Image or reputation (89%)
- Customer service by Roseville employees (89%)
- Quality of parks and recreation opportunities (87%)
- Feeling of safety (86%)
- Economic health (84%)
- Design of residential and commercial areas (82%)
- Health and wellness opportunities (81%)
- Quality of natural environment (81%)

"These results reflect the accolades Roseville continues to receive as one of the best, safest, and healthiest communities in the entire country," said Roseville Mayor Krista Bernasconi. "As our city grows, we will remain focused on creating an environment that delivers a high quality of life for those who call Roseville home, and also for those that work here or visit for our shopping, dining, and other amenities."

"I know how hard City of Roseville employees work to provide a high quality of life for those who live, work, or visit Roseville," said Roseville City Manager Dominick Casey. "It is gratifying to see so many of our residents see and benefit

from the exceptional service our employees strive to deliver."

Utilities, economic health receive high marks

All of the City's utilities received good or excellent ratings for satisfaction, including garbage collection (90%), drinking water (89%), sewer services (92%), storm water management (88%), and power (89%). All of these services ranked in the top 15 out of hundreds of communities surveyed.

Economic health also factored into Roseville's high ratings, with 84% citing Roseville's economic health as good or excellent. This includes 83% noting Roseville as a good or excellent place to work. Roseville also ranked in the top 10 communities overall for its quality of business and service establishments (90%), variety (89%), and shopping opportunities (90%).

Residents generally feel safe in Roseville; emphasize its importance

Ratings for safety and safety-related services were generally positive, which is critical as safety was considered an essential or very important focus area for the city in the coming two years by roughly 9 in 10 residents. Ninety-six percent of residents reported feeling very or somewhat safe in their neighborhood during the day and 89% said the same for Roseville's downtown/commercial area during the day. About 8 in 10 also reported similar feelings of safety from property crime (81%), violent crime (87%), and fire, flood, or other natural disasters (88%).

Safety services also garnered high rankings – excellent or good – across key areas including police services (87%), crime prevention (84%), animal control (83%), emergency medical services (91%), fire services (90%), and fire prevention and education (85%).

Other City services and amenities also receive high marks

The City's parks and recreation ratings were high across the board, including for availability of paths and walking trails (82%), fitness opportunities (84%), City parks (85%), recreation programs or classes (83%), recreation centers or facilities (80%), and public library services (85%). Roseville's cleanliness was rated excellent or good by 84% of respondents. Its K-12 education (82%) was also highly ranked by residents and 93% cited it as a good or excellent place to raise children.

Community members support initiatives for addressing homelessness

In a series of questions unique to Roseville's survey, residents were asked about housing and homelessness. Residents were asked to rate how much of a problem they think homelessness is in Roseville. While just one-quarter reported that homelessness was a major or moderate problem in their neighborhood, about 6 in 10 similarly rated homelessness a problem in the city overall and 83% think it is very important or essential to address the challenges of people experiencing homelessness in Roseville. Approximately three-quarters backed providing supportive housing for those individuals, provided there was adequate state and federal funding. Most residents reported that it was important for the City of Roseville to focus on creating affordable housing opportunities (64%), providing access to social services (70%), and partnering with Placer County Social Services, non-profits, and healthcare providers (72%) to help address homelessness.

About the National Community Survey

Roseville participated in the National Community Survey in order to benchmark and track satisfaction levels and priorities over time. The results will help inform the City's strategic planning, budget and shed light about perceptions about city and community services. This is the second time Roseville has participated in this survey, after initial participation in 2021.

In October and November of 2023, 3,000 invitations to take part in the survey were mailed at random to Roseville residents. During this window, a link to an online open participation survey was also publicized by the City of Roseville. The survey results are based on a representative sample of 373 Roseville residents.

The survey provides a level of confidence of 95% and a margin of error of plus or minus 5%.

The survey asked residents for their opinion on the “livability” of Roseville in 10 core service areas:

- Economy
- Utilities
- Safety
- Natural Environment
- Parks and Recreation
- Health and Wellness
- Education, Arts, and Culture
- Mobility
- Community Design
- Inclusivity and Engagement

COUNCIL COMMUNICATION

CC #: 3838
File #: 0800-03 & 0201-01

Title: Roseville Electric Department - Budget Update
Contact: Joanna Cucchi 916-746 1609 jcucchi@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 8.2.

RECOMMENDATION TO COUNCIL

Staff recommends the City Council receive an update from Roseville Electric on its budget development.

BACKGROUND

This presentation is to provide an update to Council from Roseville Electric.

FISCAL IMPACT

This is an informational presentation that has no fiscal impact.

ENVIRONMENTAL REVIEW

Not applicable.

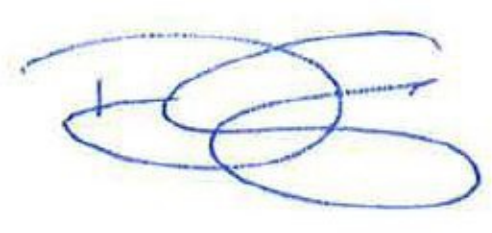
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Remain fiscally responsible in a changing world

Respectfully Submitted,

Joanna Cucchi, Assistant Electric Utility Director

Dan Beans, Electric Utility Director



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Dominick Casey, City Manager

COUNCIL COMMUNICATION

CC #: 3847
File #: 0800-02

Title:	Environmental Utilities Department - Budget Update
Contact:	Devin Whittington 916-774-5543 dwhittington@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 8.3.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council receive a budget update from the Environmental Utilities Department.

BACKGROUND

This presentation is to provide a budget update from the Environmental Utilities Department.

FISCAL IMPACT

This is an informational presentation and has no fiscal impact.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. A budget update on the Environmental Utilities Department meets the above criteria and is not subject to CEQA. No additional environmental review is required.

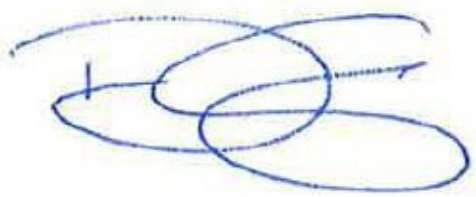
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Remain fiscally responsible in a changing world

Respectfully Submitted,

Devin Whittington, Assistant Environmental Utilities Director

Sean Bigley, Environmental Utilities Director



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Dominick Casey, City Manager

COUNCIL COMMUNICATION

CC #: 3828
File #: 0215

Title:	Adoption of a Schedule of Maintenance Costs and Charges for Community Facilities Districts
Contact:	Jeannine Thrash 916-774-5473 jthrash@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 9.1.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council adopt a resolution adopting the Schedule of Maintenance Costs and Charges for Community Facilities Districts effective July 1, 2025, through June 30, 2026.

BACKGROUND

From time to time, the City authorizes the formation of a Community Facilities District (CFD) under the Mello-Roos Community Facilities Act of 1982, as amended, (Act) to finance the maintenance and operation of certain services authorized under the Act.

Though not all used by every CFD, nor to the same level of service, the following broad categories of ongoing maintenance services are provided by the City to CFDs throughout the community:

- Park maintenance
- Preserve and open space maintenance
- Streetscape and bike trail maintenance
- Stormwater management

To support a more streamlined process for negotiating CFD conditions, improved cost recovery, and equity between districts, on March 20, 2019, the City adopted Resolution No. 19-79, Adopting a Schedule of Maintenance Costs and Charges for Community Facility Districts. The schedule was most recently updated, effective July 1, 2024, to incorporate annual inflationary adjustments to the various maintenance costs and charges identified in the schedule based on the change in the all-urban Consumer Price Index (CPI) for the San Francisco-Oakland-Hayward area from October to October of the immediately preceding year.

The City Council establishes the Schedule of Maintenance Costs and Charges for CFDs via Resolution. This item and staff's recommendations are intended to be considered upon completing a public hearing. The public hearing provides all interested parties with an opportunity to comment or request clarification regarding the proposed Schedule of Maintenance Costs and

Charges for CFDs.

DISCUSSION

Staff has recently completed an updated evaluation of the costs of providing many of the commonly required maintenance and operations services and activities provided within a CFD and recommends adopting the updated schedule of maintenance costs and charges for community facilities districts, effective July 1, 2025. Adoption of the uniform schedule of costs and charges does not preclude the City from recovering other CFD related service and maintenance costs, authorized by the Act, that are identified and established as part of the process of forming each CFD.

Implementation of this schedule of costs and charges is subject to the formation of new districts to which the schedule would apply but will not affect previously established districts or districts that have initiated proceedings, as of the date of adoption of the resolution, to form a CFD to finance services authorized by the Act.

In the absence of a uniform schedule of costs and charges for maintenance services provided to CFDs, the individual interests representing each entity in the planning stages are inadvertently given the opportunity to negotiate applied costs. This overly burdens City resources, subjects CFDs to divergent charges from one another, and potentially compromises the City's intended recovery of the full cost of service, in line with its policies and practices for other services of individual cause or benefit.

No new services are proposed. Instead, the schedule has been updated to reflect the City's cost of providing maintenance-related services for CFDs.

The requested update aligns with the City's published "Goals and Policies Concerning Use of the Mello-Roos Community Facilities Act of 1982" (effective April 3, 2024). The goals and policies state, "The purpose of the services/maintenance District is to fund the ongoing costs of parks and open space, public landscaping... and maintenance not funded by other sources; and/or to pay for any unfunded ongoing City maintenance or service costs associated with a development project in the City, all in accordance with the Mello-Roos Act and the formation documents for each particular District."

The Schedule of Maintenance Costs and Charges for CFDs is reviewed annually. Periodically, a full cost analysis is performed. In years between studies, staff recommends the City Council authorize the Finance Director to make adjustments to the schedule of costs and charges based on the CPI change for the San Francisco-Oakland-Hayward area from October to October of the immediately preceding year. If the CPI does not change or goes down, no change shall be made to the schedule for that year unless an adjustment is made to targeted cost recovery levels or cost study findings indicate that an adjustment is appropriate. This is the City's current practice and no change to this practice is recommended.

FISCAL IMPACT

Implementation of this schedule of costs and charges is subject to the formation of new districts to which the schedule would apply; therefore, no fiscal impact is estimated at this time. However, the proposed Schedule of Maintenance Costs and Charges for Maintenance CFDs targets full cost recovery in a fair and reasonable manner for all future maintenance CFDs once implemented.

The current fees are sufficient to recover approximately 90-98% of the City's service district maintenance costs, depending on the service provided. The adjusted fees are intended to recover 100% of the maintenance costs.

Fiscal impact will depend on the number of future districts formed and the array of maintenance activities required for each district. For illustrative purposes, for every ten (10) acres of parks/streetscape to be maintained for a new service district, adjusted fees would recover an additional $1,369 per acre, per year. Alternatively, this could be expressed as additional revenue of $13,683 per 10 acres per year to offset the costs of parks/streetscape maintenance. Without recovery of these costs from the service districts, maintenance costs will need to be reduced (i.e., service level reduction) or funded from other City revenue sources, typically the City's General Fund.

It is important to note that while establishing a universal schedule of costs and charges might provide a fiscal impact in the form of additional revenue, the revenue is not intended to fund new services. Instead, the revenue is intended to offset the costs of providing existing services that are recoverable from the schedule. Consequently, while charges may rise annually typically labor costs and contract service provider costs (the primary drivers of service costs) also rise annually. Recalibration of the schedule of costs and charges simply provides an offset of existing expenditures/needs rather than a source of funding for expanded service levels.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment, or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. Adoption of the resolution and schedule of maintenance costs and charges meet the above criteria and are not subject to CEQA. No additional environmental review is required.

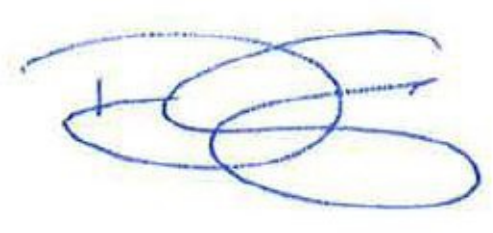
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal A - Remain fiscally responsible in a changing world
Goal E - Deliver exceptional city services

Respectfully Submitted,

Jeannine Thrash, Management Analyst

Scott Pettingell, Finance Director



Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-087

Maintenance Fee Book

Notice of Public Hearing

RESOLUTION NO. 25-087

ADOPTING A SCHEDULE OF MAINTENANCE COSTS AND CHARGES FOR COMMUNITY FACILITIES DISTRICTS

WHEREAS, from time to time the City authorizes the formation of a Community Facilities District (CFD) under the Mello-Roos Community Facilities Act of 1982 (Act) to be used to finance maintenance and operation of certain services authorized under the Act; and

WHEREAS, the City can uniformly identify the costs of providing many of the commonly required maintenance and operations services and activities provided within a CFD; and

WHEREAS, in an effort to support a more streamlined process for negotiating CFD conditions, improved cost recovery, and equity between districts, on March 20, 2019 the City adopted Resolution No. 19-79, Adopting a Schedule of Maintenance Costs and Charges for Community Facilities Districts; and

WHEREAS, the schedule was most recently updated effective July 1, 2024 to incorporate annual inflationary adjustments to the various maintenance costs and charges identified in the schedule based on the change in the all-urban Consumer Price Index (CPI) for the San Francisco-Oakland-Hayward area from October to October of the immediately preceding year; and

WHEREAS, staff has recently completed an updated evaluation of the costs of providing many of the commonly required maintenance and operations services and activities provided within a CFD; and

WHEREAS, staff recommends adopting the updated schedule of maintenance costs and charges for community facilities districts, effective July 1, 2025, attached hereto as Exhibit “A;” and

WHEREAS, adoption of the uniform schedule of costs for certain services and activities does not preclude the City from recovering other CFD related service and maintenance costs, authorized by the Act, that are identified and established as part of the process of forming each CFD; and

WHEREAS, implementation of this schedule of costs and charges is subject to formation of new districts to which the schedule would apply, but will not affect previously established districts or districts that have initiated proceedings, as of the date of adoption of the resolution, to form a CFD to finance services authorized by the Act; and

WHEREAS, staff further recommends authorizing the Finance Director to make automatic annual inflationary adjustments for the various maintenance costs and charges identified in the schedule based on all-urban Consumer Price Index (CPI) for the San Francisco-Oakland-Hayward area; and

WHEREAS, inflationary adjustments will be based on the CPI change from October to October of the immediately preceding year; and

WHEREAS, if the CPI does not change or goes down, no change shall be made to the schedule for that year unless an adjustment is made to targeted cost recovery levels or cost study findings indicate that an adjustment is appropriate; and

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said schedule of maintenance costs and charges for community facilities districts, effective July 1, 2025 is hereby adopted.

BE IT FURTHER RESOLVED, the Finance Director has authority to make automatic annual inflationary adjustments for the various costs and charges identified in the schedule based on the yearly change in the all-urban Consumer Price Index (CPI) for the San Francisco-Oakland-Hayward area.

PASSED AND ADOPTED by the Council of the City of Roseville this___day of _____, 20_, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

EXHIBIT “A”

City of Roseville

SCHEDULE OF MAINTENANCE COSTS AND CHARGES FOR COMMUNITY FACILITIES DISTRICTS

Services and Activities	Page
Park Maintenance, Landscape Corridors, Paseo and Median Maintenance	1
Preserve and Open Space Maintenance	2
Street Sweeping, Leaf Pickup, and Bike Trail Maintenance	4
Stormwater Management	5

City of Roseville

Park Maintenance, Landscape Corridors, Paseo and Median Maintenance

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
1	Landscape Corridors, Paseos, Medians	per acre	yearly	$14,129.72	$15,498.05
2	Neighborhood Park: Basic, 3 to 5 Acres	per acre	yearly	$15,699.69	$17,220.05
3	Neighborhood/School Park, up to 12 Acres	per acre	yearly	$16,746.34	$18,942.06
4	Open Space	per acre	yearly	[a]	[a]

[a] See "Preserve and Open Space Maintenance - Detailed" fee section to calculate Open Space costs.

City of Roseville
Preserve and Open Space Maintenance

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
	Biological Inspections				
1	General Biological Inspection	per acre	yearly	$56.85	$58.21
	Vernal Pool Grasslands:				
2	Wet Season Vernal Pool Hydrology and Invertebrate Survey	per vernal pool	yearly	$210.61	$215.64
3	Dry Season Vernal Pool Hydrology and Floristics	per vernal pool	yearly	$210.61	$215.64
4	Upland Grassland Monitoring	per 25 acres	yearly	$1,878.82	$1,923.70
5	Oak Woodland Understory Grassland	per 25 acres	yearly	$1,878.82	$1,923.70
6	Oak Species Composition and Recruitment	per 25 acres	yearly	$710.30	$727.27
7	Residual Dry Matter Monitoring	per 25 acres	yearly	$690.63	$707.13
8	Ground Nesting Bird Survey	per acre	yearly	$388.71	$398.00
	General Maintenance Inspections and Tasks				
	General Maintenance Inspection:				
9	Level of Service A	per acre	yearly	$74.60	$76.38
10	Level of Service B	per acre	yearly	$149.20	$152.76
11	Level of Service C	per acre	yearly	$223.81	$229.16
	General Routine Maintenance:				
12	Level of Service A	per acre	yearly	$223.81	$229.16
13	Level of Service B	per acre	yearly	$447.61	$458.30
14	Level of Service C	per acre	yearly	$895.23	$916.62
	General Non-Routine Maintenance:				
15	Level of Service A	per preserve	yearly	$335.71	$343.73
16	Level of Service B	per preserve	yearly	$671.44	$687.48
17	Level of Service C	per preserve	yearly	$1,007.15	$1,031.21
	Tree Assessment for Health and Vigor:				
18	Oak Woodland	per acre	yearly	$106.02	$108.55
19	Riparian Woodland	per acre	yearly	$282.70	$289.45
20	Tree Assessment in Target Safety Zone	per tree	yearly	$123.68	$126.63
	Public Interaction:				
21	Level of Service A	per preserve	yearly	$1,342.85	$1,374.93
22	Level of Service B	per preserve	yearly	$2,685.71	$2,749.87
23	Level of Service C	per preserve	yearly	$5,371.43	$5,499.74
	Vegetation Abatement:				
24	Grazing	per acre	yearly	$412.28	$422.13
25	Mowing	per acre	yearly	$565.41	$578.92
	Creek Corridor Inspections and Tasks				
	Winter and Spring Corridor Assessment:				
26	Level of Service A	per acre	yearly	$74.60	$76.38
27	Level of Service B	per acre	yearly	$149.20	$152.76
28	Level of Service C	per acre	yearly	$223.81	$229.16
	Creek Corridor Routine Maintenance:				

City of Roseville
Preserve and Open Space Maintenance

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
29	Level of Service A	per acre	yearly	$447.61	$458.30
30	Level of Service B	per acre	yearly	$895.24	$916.63
31	Level of Service C	per acre	yearly	$1,342.85	$1,374.93
	Creek Corridor Non-Routine Maintenance:				
32	Level of Service A	per preserve	yearly	$895.24	$916.63
33	Level of Service B	per preserve	yearly	$1,790.48	$1,833.25
34	Level of Service C	per preserve	yearly	$2,685.71	$2,749.87
	Equipment and Restoration				
35	Post and Cable Fence	per LF	yearly	$0.34	$0.35
36	Ranch Fence	per LF	yearly	$0.48	$0.49
37	Gates	each	yearly	$235.59	$241.22
38	Signs	each	yearly	$23.56	$24.12
39	Bollards	each	yearly	$39.26	$40.20
40	Vernal Pool Grassland	per acre	yearly	$26.86	$27.50
41	Oak Woodland/Savannah	per acre	yearly	$96.13	$98.43
42	Riparian Woodland/Wetland	per acre	yearly	$186.59	$191.05
	RMA Compliance				
43	Prepare and Follow-up of VRF w/Photo Documentation	per preserve	yearly	$1,577.56	$1,615.24
44	Pre-maintenance Habitat Survey	per acre	yearly	$14.21	$14.55
45	Nesting Bird Survey (other than for mowing) Level A	per acre	yearly	$171.04	$175.13
46	Nesting Bird Survey (other than for mowing) Level B	per acre	yearly	$259.15	$265.34
47	Nesting Bird Survey (other than for mowing) Level C	per acre	yearly	$518.29	$530.67
48	Annual Environmental/Invasive Species Training	per preserve	yearly	$398.26	$407.77
49	Fact Sheets/Onsite Cards	per preserve	yearly	$117.79	$120.60
50	Annual Report on Routine Maintenance	per preserve	yearly	$35.34	$36.18
51	Annual Monitoring Report for Restoration	per preserve	yearly	$11.79	$12.07
52	4-Year RMA Status Report	per preserve	yearly	$4.42	$4.53

City of Roseville

Street Sweeping, Leaf Pickup, and Bike Trail Maintenance

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
1	Street Sweeping	per curb mile	yearly	$50.72	$51.88
2	Leaf Pickup	per mile	yearly	$81.60	$96.06
3	Bike Trail Maintenance	per LF	yearly	$1.36	$1.83

City of Roseville
Stormwater Management

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
1	Stormwater Management	residential unit	yearly	$31.68	$32.44

[a] Cost per unit may vary depending on total development area and number of units proposed for development.

INFLATIONARY ADJUSTMENT CALCULATION

Source: CPI All items in San Francisco-Oakland-Hayward, CA, all urban consumers, not seasonally adjusted (Series: CUURS49BSA0)

Month	Year	Value	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26
October	2018	289.673						
October	2019	298.443	3.03%					
October	2020	301.736		1.10%				
October	2021	313.265			3.82%			
October	2022	332.062				6.00%		
October	2023	341.219					2.76%	
October	2024	349.370						2.39%

CITY OF ROSEVILLE

ANNUAL MAINTENANCE COSTS FOR CFDS

MARCH 2025

clearsource
FINANCIAL CONSULTING
7960 B Soquel Drive, Suite 363, Aptos, California 95003
CLEARSOURCEFINANCIAL.COM

REPORTING

1 TRANSMITTAL
2 EXECUTIVE SUMMARY
4 PROJECT ORIENTATION
6 COST OF SERVICE
10 DATA SOURCES

APPENDICE

I CURRENT AND PROPOSED MAINTENANCE COSTS AND CHARGES
II COST OF SERVICE DATA SOURCES
A. PARK MAINTENANCE, LANDSCAPE CORRIDORS, PASEOS AND MEDIAN MAINTENANCE, PRESERVE AND OPEN SPACE MAINTENANCE
B. BIKE TRAIL MAINTENANCE
C. STREET SWEEPING AND LEAF PICKUP
D. REGIONAL COST INFLATION
E. EXPENDITURE DETAILS

March 2025

CITY OF ROSEVILLE
Attn: Scott Pettingell, Finance Director
311 Vernon Street
Roseville, CA 95678

ANNUAL MAINTENANCE COSTS FOR MAINTENANCE CFDS

Dear Mr. Pettingell:

ClearSource Financial Consulting submits the following report to the City of Roseville describing the findings of our assistance to the City in developing an updated schedule of annual maintenance costs for services provided to Community Facilities Districts (CFDs) throughout the community.

Please refer to the Executive Summary for the key findings that will support your process in seeking approval from the City Council on this topic, while the balance of the report and its appendices provide the necessary documentation for the implementation of those outcomes.

Thank you for the opportunity to once again serve the City on cost of service and cost recovery topics. We are happy to continue discussion on this CFD maintenance cost and fee schedule as the need arises or consult with you on additional topics.

Sincerely,

TERRY MADSEN, PRESIDENT | CLEARSOURCE FINANCIAL CONSULTING

PHONE NUMBER: 831.288.0608
EMAIL ADDRESS: TMADSEN@CLEARSOURCEFINANCIAL.COM

PROJECT

The City of Roseville maintains a schedule identifying annual maintenance costs for services provided to Community Facilities Districts (CFDs) throughout the community. The purpose of this schedule is to provide a **uniform set of costs** to adequately and proportionately recover the cost of operations, maintenance, and administration of services within maintenance CFDs in a transparent, efficient, and consistently applied manner.

The uniform schedule of costs supports a more streamlined process for negotiating CFD conditions, improved cost recovery, and equity between districts. The schedule of costs is intended to minimize negotiation of cost recovery on district by district basis. Prior to establishment of this uniform schedule for services provided to CFDs, costs were heavily negotiated as new CFDs were developed, yielding divergent outcomes inconsistent with preferred practices and policies of the City at large.

FINDINGS

During the course of study, information was generated in detail and is discussed substantively throughout this report and appendices. However, outcomes of particular interest to City leadership and policymakers are highlighted below:

1 | A COMPREHENSIVE ARRAY OF SERVICES ARE PROVIDED BY THE CITY WHICH ARE OF BENEFIT TO DISTRICTS

Though not all used by every CFD, nor to the same level of service, the following broad categories of ongoing maintenance services are provided by the City to CFDs throughout the community:

- Park maintenance
- Preserve and open space maintenance
- Streetscape maintenance
- Stormwater management

2 | HISTORICAL PRACTICES RESULTED IN DIVERGENT UNIT COSTS AMONG DISTRICTS FOR LIKE SERVICES

Despite similarities in the source and provision of maintenance services in special financing districts, historically the City's CFDs have been subject to divergent charges (or unit cost bases) for the City to recover the costs it incurs to serve. Without further explanation, this yields the appearance, if not the actual effect, of disparate cost recovery to the City and treatment of individual districts.

3 | HISTORICAL PRACTICES CREATED EXCESSIVE NEGOTIATION OVER COST RECOVERY FOR NEW DISTRICTS

In absence of a uniform schedule of costs for services provided to CFDs, the individual interests representing each entity – particularly those in the planning stages – are inadvertently given opportunity to negotiate applied costs. This overly burdens City resources and further exacerbates the divergent outcomes cited above.

Furthermore, negotiation of applied costs risks a level of cost recovery less than adopted City policy, which targets full cost recovery for services of individual use or benefit, except where indicated by other established policy.

4 | CITY DATA MANAGEMENT ENABLES MORE CONSISTENT UNIT COST DERIVATION

The City of Roseville deploys ample means for tracking workload and cost data in the services related to, if not directly provided, to these districts. In a data-driven organization, justifying, maintaining, and applying formal uniform schedules of cost recovery is reasonably enabled. Use of such data in valuable ways, such as cost recovery and workload management, also increases the quality of these data management practices over time.

5 | UNIFORM SCHEDULE OF COSTS RESULTS IN A MORE EFFICIENT, PREDICTABLE, AND FAIR COST RECOVERY SYSTEM

In an effort to correct existing inefficiencies in cost recovery practices related to maintenance CFDs, a **Schedule of Maintenance Costs and Charges** applicable to all future CFDs was established in March 2019. The schedule has been annually updated by the City since 2019.

Refer to **Appendix I** to view the service array, costs of service, and proposed maintenance charges for CFDs.

FINANCIAL IMPACTS

At this time, no financial impacts associated with implementation are estimated. Overall, it can be stated that this Schedule of Costs is intended to **target full cost recovery in a fair and reasonable manner for all future maintenance CFDs** once implemented.

ACTION

This report and the proposed Schedule of Costs and Charges for Maintenance CFDs is presented to City leadership and the City Council for review, scheduling of public hearing, and consideration of approval.

SCOPE OF STUDY

The City of Roseville completed a project to develop a schedule identifying annual maintenance costs for services provided to maintenance Community Facilities Districts (CFDs) throughout the community. ClearSource Financial Consulting, as an incumbent provider of other user/regulatory fee and cost recovery consulting for the City, assisted the City with this effort. Key outcomes expected of the uniform schedule of maintenance costs for CFDs include the following:

- A comprehensive array of maintenance services provided by the City to maintenance CFDs throughout the community.
- Consistent unit costs applied for like services.
- Reduction of negotiation over unit costs of services and cost recovery from individual districts.
- Congruence of CFD cost recovery with broader City policy on recovery of costs for services of individual use or benefit.
- A uniform schedule of costs and consistently applied cost recovery.

APPLICATION OF STUDY OUTCOMES

The outcome of this project – a uniform schedule of costs as a cost recovery system for maintenance CFDs citywide – is intended for application for all new CFDs planned and formed by the City.

Values expressed in this report are appropriate for Fiscal Year 2025-2026. Future use will require inflationary adjustments, comparable to City practices for other user and regulatory fees, and periodic analysis of underlying costs of service, in order to ensure costs and charges are appropriately quantified and structured.

CONSIDERATIONS FOR IMPLEMENTATION

If the City decides to adopt or otherwise utilize outcomes generated through this study, it should:

- Update Systems for Fees, Charges and Cost Recovery Outcomes – Ensure that City staff begin using updated annual cost and charge information for maintenance CFDs, once the Schedule of Maintenance Costs and Charges becomes effective. This will include efforts in two areas:
    - Administration: Applying unit costs of service in the schedule to the individual attributes of each district, to the degree feasible.
    - Workload Management: Preparing the array of attributes and statistics by district that related to the services provides, such as various measurements of different maintained areas.
- Actively Encourage and Monitor the Use of Data Tracking Systems that Support Cost of Service-Based Charges – In order to portray accurate and eligible costs of service, the City should be diligent about tracking time to tasks and recording statistics describing scale of tasks. This will ensure costs and charges continue to be developed following actual activity levels as intended.
- Periodically Review and Adjust Charge Methodologies – To ensure continued cost recovery targeted, costs and charges should be updated annually, following industry cost inflation metrics. Periodically, the City should perform a comprehensive study of costs and charges.

SCHEDULE OF MAINTENANCE COSTS AND CHARGES FOR MAINTENANCE CFDS

PURPOSE

The purpose of a schedule of maintenance cost and charges for maintenance CFDs is to provide a uniform set of costs and charges to adequately and proportionately recover the cost of maintenance services within CFDs in a transparent, efficient, and consistently applied manner.

Once implemented, the schedule of costs and charges is intended to be applicable to all future maintenance CFDs: When applied to the individual attributes of each district, charges are intended to recover the annual costs of service for the maintenance service provided.

SERVICES PROVIDED

This schedule of maintenance costs and charges identifies uniform cost recovery for various direct services provided to maintenance CFDs throughout the community. It is important to note that not all maintenance CFDs demand each service, or even the same level of service. Actual application of costs and charges will be based on the services necessitated by the formation documents of each individual district.

A description of each direct service listed in the schedule of costs and charges is as follows:

Preserve and Open Space Maintenance – The City maintains open space/preserves within maintenance CFDs. Activities include, but are not limited to:

- General Biological Inspection
- Vernal Pool Grasslands
- Upland Grassland Monitoring
- Understory Grassland Monitoring
- Oak Species Composition and Recruitment
- Residual Dry Matter Monitoring
- Ground Nesting Bird Survey
- California Department of Fish and Wildlife Routine Maintenance Agreement
- General Maintenance Inspection (three levels of service)
- Tree Assessment for Health and Vigor
- Tree Assessment in Target Safety Zone
- Winter and Spring Corridor Assessment (three levels of service)
- General Routine Maintenance (three levels of service)
- General Non-Routine Maintenance (three levels of service)
- Public Interaction (three levels of service
- Vegetation Abatement
- Creek Corridor Routine Maintenance (three levels of service)
- Creek Corridor Non-Routine Maintenance (three levels of service)

Park Maintenance – The City maintains recreational parks and facilities within maintenance CFDs. Activities include:

- Maintenance of Basic Neighborhood Park up to Five Acres
- Maintenance of Neighborhood/School Park up to 12 Acres +/-, including the following typical amenities. These features may vary due to size and funding.
    - Organized sports fields
    - Hard sports courts
    - Two game courts
    - One standard, two-room restroom
    - One specialty park feature
    - Maintained turf
    - Large group shaded picnic area, six tables or more
    - Off-street parking lot, 15 stalls or more
    - Dog Park
    - Asphalt trail

Streetscape Maintenance – The City maintains space and facilities as part of the streetscape within maintenance CFDs. Activities include:

- Landscape Corridor / Paseo / Median Maintenance
- Leaf Pickup
- Street Sweeping
- Bike Trail Maintenance
- Masonry Wall Maintenance and Repair and Graffiti Removal

Stormwater Management – Maintenance CFDs participate in the City's stormwater management program, including maintaining water quality structural controls such as drainage swales constructed between storm drain facilities and receiving waters.

- Future Consideration – In subsequent updates of the schedule of maintenance costs and charges for maintenance CFDs, the City should continue to review the array of services listed in the schedule to ensure it is a complete inventory of all activities occurring to serve these districts and portrayed at an adequate level of detail for effective, proportional application.

COST OF SERVICE BASIS FOR FEES

Refer to the next section and the appendices of this report for a comprehensive list of data sources used as the cost of service justification for costs and charges presented. In summary, the following types of information were used to determine the basis for values in the schedule:

- Adopted City budget and actual performance, reflecting revenues, expenditures, organizational structure, and accounting structures, such as types of expenses recorded and fund configuration
- Workload management databases utilized by operational departments which track statistics such as:
    - Staff time to tasks and/or projects and programs
    - Work order activity, such as time and materials needed for individual tasks
- Specialized studies that analyze aspects of the costs of services, such as:
    - Unit cost analysis of maintenance activities
    - Fully burdened hourly rates, labor multipliers, and other outcomes related to user and regulatory fees
    - Indirect cost allocation plan
    - Annual Comprehensive Financial Report
- Hearing reports and other formal documentation associated with existing maintenance CFDs
- Future Consideration – To support subsequent updates of the schedule of costs and charges for maintenance CFDs, the City should actively monitor workload management databases, particularly staff time-tracking, to ensure all personnel are recording time as completely as possible at a level of detail that can support cost recovery practices linked to a “cost of service” basis. Active use and periodic monitoring ensure more accurate databases compiled over time.

CHARGE METHODS

Refer to Costs and charges are based on certain attributes of each maintenance CFD, which would indicate amount of service provided and create proportionality in outcomes between districts. Charge methods reflected in the schedule are as follows:

- Amenity Size – This reflects measurements of maintained areas related to the services provided. This includes acres, square feet, miles, and lineal feet of different types of space and facilities maintained.
- Service Base – This would describe the population served. For example, each residential unit may be used as an applicable service base.
- Service Cost – This method uses other costs as a metric, such as a percentage of other direct costs of service or total expenditures recorded to the district.
- Actual Cost – This method creates a pass-through: actual costs billed, such as metered utilities to the physical location (e.g., electricity, water) or specialized, contracted services necessitated.
- Frequency – A frequency for each fee amount is indicated in the fee schedule, such as yearly.

COST RECOVERY POLICY

The City maintains published Goals and Policies Concerning the Use of Mello-Roos Community Facilities Act of 1982. An outlined purpose of the services/maintenance district is to fund the ongoing costs of parks and open space, public landscaping, police and fire protection services and library services and maintenance not funded by other sources; and to pay for any unfunded ongoing City maintenance or service costs associated with the development project.

The policies and goals described in that document provide a structure that among other objectives, seeks:

- Fairness to current and future property owners
- Protection of the City's financial position
- Reimbursement to the City of incurred expenses

It is expected that a schedule of maintenance costs and charges for CFDs will enable consistency of cost recovery in line with City policies such as these, whereas negotiation-based practices not only create an inefficient process overly burdensome to City resources, but also, divergent outcomes between districts utilizing similar services and the actual recovery level of costs incurred.

Fairly allocating costs to the services provided creates value and predictability for customers and reimburses the City for expenses utilized by a single party, as compared to the public at large. Fees in general ensure equity; those who benefit the most should pay the most, and pricing ensures that users pay appropriate fees.

COST AND CHARGE AMOUNTS

The annual cost and charge amounts proposed for the maintenance services described in this report are listed in the Schedule of Maintenance Costs and Charges for Maintenance CFDs attached as Appendix I. Values shown reflect applicability in Fiscal Year 2025-2026.

To ensure continued cost recovery targeted, costs and charges should be updated annually, following industry cost inflation metrics. Periodically, the City should perform a comprehensive study of costs and charges.

COST OF SERVICE BASIS FOR FEES

This project served as a means for accumulating individual cost of service analysis and information developed by the City across its organization that can support a uniform schedule of maintenance costs and charges for special financing districts. The following section describes the documentation associated with each service category and/or activity in the schedule. The Appendix II series shows each data source.

The City's Parks, Recreation & Libraries Department analyzed annual parks maintenance time to service basic and full-service neighborhood parks. This maintenance time was used to inform the final acreage-based maintenance costs reflected in the schedule of costs and charges.

The City recently developed a study of preserve and open space maintenance costs at the activity level. The report is titled Preserve and Open Space – Summary of Estimated Cost Analysis. Unit costs derived in this report are reflected in the schedule of costs and charges. The original schedule developed has been updated to reflect regional cost inflation over-time.

The City tracks labor and materials to street sweeping and leaf removal activities. This reporting information was used to develop the time and labor cost estimates detailed in Appendix B.

REGIONAL COST INFLATION INFORMATION

Regional cost inflation for the San Francisco-Oakland-Hayward area is used to inform interim year updates to various costs. Regional cost information is provided in Appendix B.

EXPENDITURE DETAILS

Detailed accounting of park maintenance, open space maintenance, service district, street sweeping, street drainage, and bike trail maintenance expenditures are included in Appendix B.

APPENDIX I

CURRENT AND PROPOSED MAINTENANCE COSTS AND CHARGES

clearsource
FINANCIAL CONSULTING
7960 B Soquel Drive, Suite 363, Aptos, California 95003
CLEARSOURCEFINANCIAL.COM

City of Roseville

SCHEDULE OF MAINTENANCE COSTS AND CHARGES FOR COMMUNITY FACILITIES DISTRICTS

Services and Activities	Page
Park Maintenance, Landscape Corridors, Paseo and Median Maintenance	1
Preserve and Open Space Maintenance	2
Street Sweeping, Leaf Pickup, and Bike Trail Maintenance	4
Stormwater Management	5

City of Roseville

Park Maintenance, Landscape Corridors, Paseo and Median Maintenance

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
1	Landscape Corridors, Paseos, Medians	per acre	yearly	$14,129.72	$15,498.05
2	Neighborhood Park: Basic, 3 to 5 Acres	per acre	yearly	$15,699.69	$17,220.05
3	Neighborhood/School Park, up to 12 Acres	per acre	yearly	$16,746.34	$18,942.06
4	Open Space	per acre	yearly	[a]	[a]

[a] See "Preserve and Open Space Maintenance - Detailed" fee section to calculate Open Space costs.

City of Roseville

Preserve and Open Space Maintenance

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
	Biological Inspections				
1	General Biological Inspection	per acre	yearly	$56.85	$58.21
	Vernal Pool Grasslands:				
2	Wet Season Vernal Pool Hydrology and Invertebrate Survey	per vernal pool	yearly	$210.61	$215.64
3	Dry Season Vernal Pool Hydrology and Floristics	per vernal pool	yearly	$210.61	$215.64
4	Upland Grassland Monitoring	per 25 acres	yearly	$1,878.82	$1,923.70
5	Oak Woodland Understory Grassland	per 25 acres	yearly	$1,878.82	$1,923.70
6	Oak Species Composition and Recruitment	per 25 acres	yearly	$710.30	$727.27
7	Residual Dry Matter Monitoring	per 25 acres	yearly	$690.63	$707.13
8	Ground Nesting Bird Survey	per acre	yearly	$388.71	$398.00
	General Maintenance Inspections and Tasks				
	General Maintenance Inspection:				
9	Level of Service A	per acre	yearly	$74.60	$76.38
10	Level of Service B	per acre	yearly	$149.20	$152.76
11	Level of Service C	per acre	yearly	$223.81	$229.16
	General Routine Maintenance:				
12	Level of Service A	per acre	yearly	$223.81	$229.16
13	Level of Service B	per acre	yearly	$447.61	$458.30
14	Level of Service C	per acre	yearly	$895.23	$916.62
	General Non-Routine Maintenance:				
15	Level of Service A	per preserve	yearly	$335.71	$343.73
16	Level of Service B	per preserve	yearly	$671.44	$687.48
17	Level of Service C	per preserve	yearly	$1,007.15	$1,031.21
	Tree Assessment for Health and Vigor:				
18	Oak Woodland	per acre	yearly	$106.02	$108.55
19	Riparian Woodland	per acre	yearly	$282.70	$289.45
20	Tree Assessment in Target Safety Zone	per tree	yearly	$123.68	$126.63
	Public Interaction:				
21	Level of Service A	per preserve	yearly	$1,342.85	$1,374.93
22	Level of Service B	per preserve	yearly	$2,685.71	$2,749.87
23	Level of Service C	per preserve	yearly	$5,371.43	$5,499.74
	Vegetation Abatement:				
24	Grazing	per acre	yearly	$412.28	$422.13
25	Mowing	per acre	yearly	$565.41	$578.92
	Creek Corridor Inspections and Tasks				
	Winter and Spring Corridor Assessment:				
26	Level of Service A	per acre	yearly	$74.60	$76.38
27	Level of Service B	per acre	yearly	$149.20	$152.76
28	Level of Service C	per acre	yearly	$223.81	$229.16
	Creek Corridor Routine Maintenance:				

City of Roseville

Preserve and Open Space Maintenance

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
29	Level of Service A	per acre	yearly	$447.61	$458.30
30	Level of Service B	per acre	yearly	$895.24	$916.63
31	Level of Service C	per acre	yearly	$1,342.85	$1,374.93
	Creek Corridor Non-Routine Maintenance:				
32	Level of Service A	per preserve	yearly	$895.24	$916.63
33	Level of Service B	per preserve	yearly	$1,790.48	$1,833.25
34	Level of Service C	per preserve	yearly	$2,685.71	$2,749.87
	Equipment and Restoration				
35	Post and Cable Fence	per LF	yearly	$0.34	$0.35
36	Ranch Fence	per LF	yearly	$0.48	$0.49
37	Gates	each	yearly	$235.59	$241.22
38	Signs	each	yearly	$23.56	$24.12
39	Bollards	each	yearly	$39.26	$40.20
40	Vernal Pool Grassland	per acre	yearly	$26.86	$27.50
41	Oak Woodland/Savannah	per acre	yearly	$96.13	$98.43
42	Riparian Woodland/Wetland	per acre	yearly	$186.59	$191.05
	RMA Compliance				
43	Prepare and Follow-up of VRF w/Photo Documentation	per preserve	yearly	$1,577.56	$1,615.24
44	Pre-maintenance Habitat Survey	per acre	yearly	$14.21	$14.55
45	Nesting Bird Survey (other than for mowing) Level A	per acre	yearly	$171.04	$175.13
46	Nesting Bird Survey (other than for mowing) Level B	per acre	yearly	$259.15	$265.34
47	Nesting Bird Survey (other than for mowing) Level C	per acre	yearly	$518.29	$530.67
48	Annual Environmental/Invasive Species Training	per preserve	yearly	$398.26	$407.77
49	Fact Sheets/Onsite Cards	per preserve	yearly	$117.79	$120.60
50	Annual Report on Routine Maintenance	per preserve	yearly	$35.34	$36.18
51	Annual Monitoring Report for Restoration	per preserve	yearly	$11.79	$12.07
52	4-Year RMA Status Report	per preserve	yearly	$4.42	$4.53

City of Roseville

Street Sweeping, Leaf Pickup, and Bike Trail Maintenance

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
1	Street Sweeping	per curb mile	yearly	$50.72	$51.88
2	Leaf Pickup	per mile	yearly	$81.60	$96.06
3	Bike Trail Maintenance	per LF	yearly	$1.36	$1.83

City of Roseville

Stormwater Management

#	Activity Cost Description	Calculation Unit	Frequency	Effective July 1, 2024	Effective July 1, 2025
1	Stormwater Management	residential unit	yearly	$31.68	$32.44

[a] Cost per unit may vary depending on total development area and number of units proposed for development.

APPENDIX II

COST OF SERVICE DATA SOURCES

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APPENDIX II – A: PARK MAINTENANCE, LANDSCAPE CORRIDORS, PASEOS AND MEDIAN MAINTENANCE, PRESERVE AND OPEN SPACE MAINTENANCE

City of Roseville
Calculation of Annual Costs for Landscape Maintenance (Parks, Paseos, Medians, etc.)

Operating Statistics

Description	Total	Note
Number of Park Acres	967	[a]
Number of Streetscape Acres	360	[a]
Number of Open Space Acres	4,262	[a]
Total	5,589	

Annual Expenditures - Parks Maintenance and Open Space Maintenance

Description	Total	Note
Parks - Maintenance (58110)	$11,562,951	[b]
Parks - Maintenance (58110) - Allocation of C'wide OH	$2,032,731	[c]
Parks - Open Space (58120)	$3,758,136	[b]
Parks - Open Space (58120) - Allocation of C'wide OH	$739,881	[c]
Total	$18,093,699	

Annual Expenditures - Service Districts

Description	Total	Note
Administration	$1,414,815	[b]
Sinking Fund, Capital, Transfers, etc.	$1,506,740	[b]
Maintenance (All Other)	$6,052,442	[b]
Total	$8,973,997	

Annual Expenditures - For Calculating Park Maintenance and Open Space Maintenance Costs

Description	Total	Note
Parks - Maintenance (58110)	$13,595,682	
Parks - Open Space (58120)	$4,498,017	
Maintenance (All Other)	$6,052,442	
Total	$24,146,141	

Share of Costs Per Acre

Description	Total	Note
Parks & Streetscapes	75%	[d]
Open Space	25%	[d]
Total	100%	

Allocation of Annual Maintenance Costs with Break-out of "Maintenance - All Other" Cost Pool

Description	Total	Note
Parks - Maintenance (58110)	$13,595,682	
Maintenance (All Other) - Share to Parks & Streetscapes	$4,547,831	[d]
Parks - Open Space (58120)	$4,498,017	
Maintenance (All Other) - Share to Open Space	$1,504,611	[d]
Total	$24,146,141	

Annual Depreciation for Parks and Landscaping

Description	Total	Note
Parks	$3,498,271	[e]
Landscaping	$2,766,659	[e]
Total	$6,264,930	

Total Costs

Description	Total	Note
Parks and Streetscapes Maintenance	$22,851,007	[d]
Open Space	$7,560,064	[d]
Total	$30,411,071	

Cost Per Acre

Description	Total	Note
Parks & Streetscapes	$17,220	
Open Space	$1,774	

City of Roseville
Calculation of Annual Costs for Landscape Maintenance (Parks, Paseos, Medians, etc.)

Share of Parks and Streetscapes Maintenance Effort Per Year

Description	Hours Per Acre	Average for Weighted Factor	Factor	Note
Paseos, Medians, Landscape Corridors	108	120	0.90	[f]
Neighborhood Park: Basic, 3 to 5 Acres	120	120	1.00	[f]
Neighborhood/School Park, up to 12 Acres +/- *	132	120	1.10	[f]

Cost Per Acre Parks and Streetscape Maintenance

Description	Average Cost Per Acre	Weighted Factor	Total Cost Per Acre
Paseos, Medians, Landscape Corridors	$17,220	0.90	$15,498
Neighborhood Park: Basic, 3 to 5 Acres	$17,220	1.00	$17,220
Neighborhood/School Park, up to 12 Acres +/- *	$17,220	1.10	$18,942

Cost Per Acre Open Space Maintenance

Description	Average Cost Per Acre	Note
Open Space	$1,774	[g]

[a] Source: City of Roseville FY 24/25 Adopted Budget p. D-78 (Key Workload Measures).
[b] Source: FY 23/24 actual expenditures.
[c] Source: FY 23/24 citywide overhead cost allocation plan.
[d] Approximation, based on budget units 58110 and 58120.
[e] Source: City of Roseville Annual Comprehensive Financial Report (ACFR) for period ending June 30, 2024 p. 71.
[f] Source: Hours per acre based on estimated workflow analysis prepared by Parks staff. See accompanying worksheet.
[g] For informational purposes only. The City uses a detailed breakdown of open space factors to calculate costs by district.

City of Roseville
Calculation of Annual Per Acre Maintenance Costs for Landscape Maintenance (Parks, Paseos, Medians, etc.)

Landscape Corridors, Paseos, Medians

Description	Annual Hours	Unit	Note
All Maintenance	108	per acre	[a]

Neighborhood Park: Basic, 3 to 5 Acres

Description	Annual Hours	Unit	Note
All Maintenance	120	per acre	[a]

Neighborhood/School Park, up to 12 Acres +/- *

Description	Annual Hours	Est. Acres	Annual Hours Per Acre	Unit	Note
(1) full sized basketball court	4	12	0.33	per acre	[b]
(2) Tennis courts/Pickleball	4	12	0.33	per acre	[b]
(1) Youth (unlit) baseball field	24	12	2.00	per acre	[b]
(1) Youth (unlit) softball field	24	12	2.00	per acre	[b]
Regulation sized soccer (2)	32	12	2.67	per acre	[b]
(1) Standard (2 room) restroom	80	12	6.67	per acre	[b]
(1) non-recirculating water feature (mists)	2	12	0.17	per acre	[b]
Large group shaded picnic area (6 tables +)	32	12	2.67	per acre	[b]
Off-street parking lot (+15)/stall	32	12	2.67	per acre	[b]
Asphalt trail/mile	2	12	0.17	per acre	[b]
Dog Park	48	12	4.00	per acre	[c]
Turf Maintenance	108	1	108.00	per acre	[a];[d]
Total			131.67	per acre	

Notes:
[a] Includes weekly mowing, edging, and trimming; periodic fertilization, aerification, chemical application, irrigation system check, spot system check, and as-needed repairs.
[b] Non-turf analysis assumes 12-acre park to provide a conservative estimate. Assumes economy of scale for turf maintenance of larger areas.
[c] Daily inspection, trash removal; periodic - infrastructure repair, weed abatement, surface material maintenance, irrigation repair.
[d] Assumes economy of scale for turf maintenance of larger park areas.
* This list is an example of typical school/park amenities. Actual amenities will vary.

City of Roseville
Open Space Maintenance Costs

Description		FY 24/25 Annual Cost Per Unit	FY 25/26 Annual Cost Per Unit	Unit
Biological Inspections	General Biological Inspection	$ 56.85	$ 58.21	Acre
	Wet Season VP Hydrology and Invertebrates	$ 210.61	$ 215.64	Pool
	Dry Season VP Hydrology and Floristics	$ 210.61	$ 215.64	Pool
	VP Upland Grassland	$ 1,878.82	$ 1,923.70	OS
	Oak Woodland Understory Grassland	$ 1,878.82	$ 1,923.70	OS
	Oak Species Composition and Recruitment	$ 710.30	$ 727.27	OS
	Residual Dry Matter	$ 690.63	$ 707.13	OS
	Ground Nesting Bird Surveys	$ 388.71	$ 398.00	Acre
General Maintenance Inspections and Tasks	General Maintenance Inspection Level A	$ 74.60	$ 76.38	Acre
	General Maintenance Inspection Level B	$ 149.20	$ 152.76	Acre
	General Maintenance Inspection Level C	$ 223.81	$ 229.16	Acre
	General Maintenance Routine Level A	$ 223.81	$ 229.16	Acre
	General Maintenance Routine Level B	$ 447.61	$ 458.30	Acre
	General Maintenance Routine Level C	$ 895.23	$ 916.62	Acre
	General Maintenance Non-routine Level A	$ 335.71	$ 343.73	Preserve
	General Maintenance Non-routine Level B	$ 671.44	$ 687.48	Preserve
	General Maintenance Non-routine Level C	$ 1,007.15	$ 1,031.21	Preserve
	Tree Assessment - Health and Vigor - Oak Woodland	$ 106.02	$ 108.55	Acre
	Tree Assessment - Health and Vigor - Riparian Woodland	$ 282.70	$ 289.45	Acre
	Tree Assessment - Target Zone Safety	$ 123.68	$ 126.63	Tree
	Public Interaction - Level A	$ 1,342.85	$ 1,374.93	OS
	Public Interaction - Level B	$ 2,685.71	$ 2,749.87	OS
	Public Interaction - Level C	$ 5,371.43	$ 5,499.74	OS
	Vegetation Abatement - Grazing Sheep/Goats	$ 412.28	$ 422.13	Acre
	Vegetation Abatement - Mowing	$ 565.41	$ 578.92	Acre
Creek Corridor Insp./Tasks	Creek Corridor Inspection - Level A	$ 74.60	$ 76.38	Acre
	Creek Corridor Inspection - Level B	$ 149.20	$ 152.76	Acre
	Creek Corridor Inspection - Level C	$ 223.81	$ 229.16	Acre
	Creek Corridor Maintenance Routine - Level A	$ 447.61	$ 458.30	Acre
	Creek Corridor Maintenance Routine - Level B	$ 895.24	$ 916.63	Acre
	Creek Corridor Maintenance Routine - Level C	$ 1,342.85	$ 1,374.93	Acre
	Creek Corridor Maintenance Non-routine - Level A	$ 895.24	$ 916.63	Preserve
	Creek Corridor Maintenance Non-routine - Level B	$ 1,790.48	$ 1,833.25	Preserve
	Creek Corridor Maintenance Non-routine - Level C	$ 2,685.71	$ 2,749.87	Preserve
Equipment & Rest'rtn	Post and Cable Fence	$ 0.34	$ 0.35	LF/Yr
	Ranch Fence	$ 0.48	$ 0.49	LF/Yr
	Gates	$ 235.59	$ 241.22	Each/Yr
	Signs	$ 23.56	$ 24.12	Each/Yr
	Bollards	$ 39.26	$ 40.20	Each/Yr
	Vernal Pool Grassland	$ 26.86	$ 27.50	Acre/Yr
	Oak Woodland/Savannah	$ 96.13	$ 98.43	Acre/Yr
	Riparian Woodland/Wetland	$ 186.59	$ 191.05	Acre/Yr
RMA Compliance	Prepare and Follow-up of VRF w/Photo Documentation	$ 1,577.56	$ 1,615.24	Preserve
	Pre-maintenance Habitat Survey	$ 14.21	$ 14.55	Acre/Yr
	Nesting Bird Survey (other than for mowing) Level A	$ 171.04	$ 175.13	Acre/Yr
	Nesting Bird Survey (other than for mowing) Level B	$ 259.15	$ 265.34	Acre/Yr
	Nesting Bird Survey (other than for mowing) Level C	$ 518.29	$ 530.67	Acre/Yr
	Annual Environmental/Invasive Species Training	$ 398.26	$ 407.77	Preserve
	Fact Sheets/Onsite Cards	$ 117.79	$ 120.60	Preserve
	Annual Report on Routine Maintenance	$ 35.34	$ 36.18	Preserve
	Annual Monitoring Report for Restoration	$ 11.79	$ 12.07	Preserve
	4-Year RMA Status Report	$ 4.42	$ 4.53	Preserve

APPENDIX II – B: BIKE TRAIL MAINTENANCE

City of Roseville
Calculation of Bike Trail Per Lineal Foot Maintenance Costs

Operating Statistics

Description	Total	Note
Miles of Bike Paths	44	[a]
Linear Feet Per Mile	5,280	

Annual Expenditures - Bike Paths

Description	Total	Note
Bike Trail - Maintenance (62460)	$159,985	[b]

Annual Depreciation for Bike Paths

Description	Total	Note
Bike Paths	$283,269	[c]

Total Costs

Description	Total	Note
Bike Trail	$425,470	

Breakdown of Costs

Description	Total	Note
Cost Per Mile	$9,670	
Cost Per Linear Foot	$1.83	

Notes:
[a] Source: City website (roseville.ca.us/bikeways). Bicycle friendly community page.
https://www.roseville.ca.us/cms/One.aspx?portalId=7964922&pageId=8967189.
[b] Source: FY 23/24 actual expenditures.
[c] Source: City of Roseville Annual Comprehensive Financial Report (ACFR) for period ending June 30, 2024 p. 71.

APPENDIX II – C: STREET SWEEPING AND LEAF PICKUP

City of Roseville
Calculation of Hourly Rate for Street Sweeping and Leaf Pickup

Expense Information

Description	62345 - Street Sweeping Total	Adjustment	Total	Notes
Salaries: Full-Time Employees	$701,381		$701,381	[a]
Benefits: Full-Time Employees	$421,193		$421,193	[a]
Recurring Services and Supplies	$899,827	($125,000)	$774,827	[a],[b]
Total	$2,022,401	($125,000)	$1,897,401	

FTE Information

Description	Total	Notes
Full-Time Employee Count	8.00	[c]

Direct Hours: Full-Time Employees

Description	Paid Hours Per FTE	Adjustment for Leave	Productive Hours	Total Productive Hours	Notes
Full-Time Employees	2,080	(216)	1,864	14,912	[d]

Fully-Burdened Hourly Rate for use in FY 25/26

Description	Total	Notes
Expenses	$1,897,401	
Hours	14,912	
Hourly Rate	$127	[e]

Notes:
[a] Source: FY 24/25 adopted budget.
[b] Adjustment to exclude professional services expense.
[c] Source: Adopted labor allocation for FY 24/25.
[d] Leave includes adjustments for holiday, sick, vacation.
[e] Hourly rate estimated by ClearSource for purposes of this analysis.

City of Roseville
Calculation of Per Curb Mile Street Sweeping Costs

Street Sweeping Cost Per Curb Mile

Description	Curb Miles	Hours	Hours Per Curb Mile	Hourly Rate	Total	Unit	Notes
Calendar Year 2021	16,691	6,818	0.41	$127	$51.88	per curb mile	[a]
Calendar Year 2022	16,106	6,649	0.41	$127	$52.43	per curb mile	[a]
Calendar Year 2023	15,263	6,696	0.44	$127	$55.72	per curb mile	[a]

Description	Curb Miles	Hours	Hours Per Curb Mile	Hourly Rate	Total	Unit	Notes
Street Sweeping	16,691	6,818	0.41	$127	$51.88	per curb mile	[c]

Notes:
[a] Logged hours and curb miles provided by City via email on February 4, 2025.

City of Roseville
Calculation of Per Curb Mile Leaf Pickup Costs

Leaf Pickup Cost Per Curb Mile

Description	Curb Miles	Hours	Hours Per Curb Mile	Hourly Rate	Total	Unit	Notes
Calendar Year 2021	2,496	1,888	0.76	$127	$96.06	per curb mile	[a]
Calendar Year 2022	2,852	2,206	0.77	$127	$98.23	per curb mile	[a]
Calendar Year 2023	2,989	2,451	0.82	$127	$104.14	per curb mile	[b]

Description	Curb Miles	Hours	Hours Per Curb Mile	Hourly Rate	Total	Unit	Notes
Leaf Pickup	2,496	1,888	0.76	$127	$96.06	per curb mile	[c]

Notes:
[a] Logged hours and curb miles provided by City via email on February 4, 2025.

APPENDIX II – D: REGIONAL COST INFLATION

INFLATIONARY ADJUSTMENT CALCULATION

Source: CPI All items in San Francisco-Oakland-Hayward, CA, all urban consumers, not seasonally adjusted (Series: CUURS49BSA0)

Month	Year	Value	FY 20/21	FY 21/22	FY 22/23	FY 23/24	FY 24/25	FY 25/26
October	2018	289.673						
October	2019	298.443	3.03%					
October	2020	301.736		1.10%				
October	2021	313.265			3.82%			
October	2022	332.062				6.00%		
October	2023	341.219					2.76%	
October	2024	349.37						2.39%

APPENDIX II – E: EXPENDITURE DETAILS

CITY OF ROSEVILLE
Budget Item Detail

Center	Fund	Account	FY2023-24 Actual	FY2024-25 Budget
58110 - Parks Maintenance	1001 - General	5001 - Salaries	$2,679,521	$3,286,916
58110 - Parks Maintenance	1001 - General	5005 - Overtime	$57,405	$665
58110 - Parks Maintenance	1001 - General	5025 - Standby Pay	$21,579	$12,504
58110 - Parks Maintenance	1001 - General	5030 - Longevity and Service Term Bonus	$59,832	$59,851
58110 - Parks Maintenance	1001 - General	5035 - Certificate Pay	$13,311	$14,229
58110 - Parks Maintenance	1001 - General	5040 - Education Incentive Pay	$1,200	$1,200
58110 - Parks Maintenance	1001 - General	5045 - Leave Payoffs	$72,933	$74,252
58110 - Parks Maintenance	1001 - General	5050 - Temporary - 1000 Hr Salaries	$87,173	$131,424
58110 - Parks Maintenance	1001 - General	5053 - Temporary - 1500 Hr Salaries	$468,435	$592,294
58110 - Parks Maintenance	1001 - General	5070 - Vacancy Factor	$0	($232,161)
58110 - Parks Maintenance	1001 - General	5071 - Budget only - Labor Adjustments	$0	$46,004
58110 - Parks Maintenance	1001 - General	5090 - Accrued Salaries	$40,500	$0
58110 - Parks Maintenance	1001 - General	5101 - Benefit - Medical Insurance	$645,022	$920,118
58110 - Parks Maintenance	1001 - General	5102 - Benefit - Health Insurance Buyout	$7,650	$0
58110 - Parks Maintenance	1001 - General	5108 - Benefit - Long Term Disability - City Paid	$4,338	$4,535
58110 - Parks Maintenance	1001 - General	5112 - Benefit - Life Insurance	$5,685	$5,935
58110 - Parks Maintenance	1001 - General	5116 - Uniform Allowance	$33,054	$21,000
58110 - Parks Maintenance	1001 - General	5120 - Pers - City	$385,219	$466,040
58110 - Parks Maintenance	1001 - General	5128 - PERS - UAL	$693,572	$826,155
58110 - Parks Maintenance	1001 - General	5129 - RHS - City	$12,700	$13,200
58110 - Parks Maintenance	1001 - General	5138 - Deferred Compensation	$48,436	$65,874
58110 - Parks Maintenance	1001 - General	5150 - Medicare	$49,521	$75,056
58110 - Parks Maintenance	1001 - General	5154 - State Unemployment Insurance	$8,616	$12,941
58110 - Parks Maintenance	1001 - General	5201 - Fuel	$140,206	$217,678
58110 - Parks Maintenance	1001 - General	5301 - Professional Services	$2,062,237	$2,426,224
58110 - Parks Maintenance	1001 - General	5351 - Office Supplies	$4,785	$7,500
58110 - Parks Maintenance	1001 - General	5385 - Subscriptions	$0	$200
58110 - Parks Maintenance	1001 - General	5389 - Printing	$10,735	$7,300
58110 - Parks Maintenance	1001 - General	5395 - Equipment - Under 5000	$30,775	$44,500
58110 - Parks Maintenance	1001 - General	5397 - Equipment - Sports Under 5000	$6,760	$0
58110 - Parks Maintenance	1001 - General	5399 - Equipment - Technology Under 5000	$10,525	$5,000
58110 - Parks Maintenance	1001 - General	5401 - Building And Equipment Rental	$13,543	$10,000
58110 - Parks Maintenance	1001 - General	5403 - Safety And Protective Gear	$9,573	$10,000
58110 - Parks Maintenance	1001 - General	5411 - Repairs And Maintenance - General	$9,930	$0
58110 - Parks Maintenance	1001 - General	5415 - Repairs And Maintenance - Special Vehicle	$2,337	$3,000
58110 - Parks Maintenance	1001 - General	5417 - Repairs And Maintenance - Equipment	$4,178	$14,400
58110 - Parks Maintenance	1001 - General	5419 - Repairs And Maintenance - Radio Equipment	$837	$4,000
58110 - Parks Maintenance	1001 - General	5421 - Repairs And Maintenance - System	$1,115,824	$1,289,598
58110 - Parks Maintenance	1001 - General	5429 - Repairs And Maintenance - Accident	$5,309	$0
58110 - Parks Maintenance	1001 - General	5451 - Utility Charges - Telecommunication	$14,975	$21,570
58110 - Parks Maintenance	1001 - General	5453 - Utility Charges - City Bills	$1,278,529	$1,517,438
58110 - Parks Maintenance	1001 - General	5455 - Utility Charges - Other	$28,374	$49,386
58110 - Parks Maintenance	1001 - General	5461 - Training And Development	$20,092	$32,909
58110 - Parks Maintenance	1001 - General	5471 - Membership	$210	$750
58110 - Parks Maintenance	1001 - General	5510 - Automotive - vehicle usage	$300,329	$326,136
58110 - Parks Maintenance	1001 - General	5512 - Automotive - replacement	$346,332	$396,297
58110 - Parks Maintenance	1001 - General	5514 - Automotive - pooled vehicle usage	$4,810	$9,251
58110 - Parks Maintenance	1001 - General	5516 - Automotive - Replacement Vehicle Shortage	$753,614	$0
58110 - Parks Maintenance	1001 - General	5517 - Automotive - Additional Vehicles	$0	$530,598

CITY OF ROSEVILLE
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Center	Fund	Account	FY2023-24 Actual	FY2024-25 Budget
58110 - Parks Maintenance	1001 - General	5520 - Facility - services - fixed	$79,347	$84,646
58110 - Parks Maintenance	1001 - General	5524 - Facility - demand services	$35,951	$4,400
58110 - Parks Maintenance	1001 - General	5526 - Facility - shared utility - fixed	$57,204	$61,993
58110 - Parks Maintenance	1001 - General	5528 - Facility - rehab - fixed	$106,670	$117,118
58110 - Parks Maintenance	1001 - General	5530 - Equipment replacement	$11,543	$22,862
58110 - Parks Maintenance	1001 - General	5566 - Special Assessments	$10,108	$10,141
58110 - Parks Maintenance	1001 - General	5581 - Credit Card Fees	$6,210	$5,962
58110 - Parks Maintenance	1001 - General	5582 - Other Fees	$48,702	$50,979
58110 - Parks Maintenance	1001 - General	5585 - Miscellaneous	$3,763	$0
58110 - Parks Maintenance	1001 - General	5911 - Reimbursed Cost - Charged	$4,272	$0
58110 - Parks Maintenance	1001 - General	5912 - Reimbursed Cost - Received	($371,340)	($743,099)
58110 - Parks Maintenance	1001 - General	6550 - Capital Outlay - Equipment	$0	$0
58110 - Parks Maintenance	1201 - Roseville Youth Sports Coalition	5433 - Repairs And Maintenance - Facility	$0	$50,000
58110 - Parks Maintenance	4031 - Equipment Replacement	5417 - Repairs And Maintenance - Equipment	$0	$83,500
58120 - Open Space	1001 - General	5001 - Salaries	$957,912	$1,094,282
58120 - Open Space	1001 - General	5005 - Overtime	$18,452	$0
58120 - Open Space	1001 - General	5025 - Standby Pay	$3,619	$0
58120 - Open Space	1001 - General	5030 - Longevity and Service Term Bonus	$8,549	$9,930
58120 - Open Space	1001 - General	5035 - Certificate Pay	$0	$0
58120 - Open Space	1001 - General	5045 - Leave Payoffs	$11,796	$23,910
58120 - Open Space	1001 - General	5050 - Temporary - 1000 Hr Salaries	$43,064	$16,687
58120 - Open Space	1001 - General	5053 - Temporary - 1500 Hr Salaries	$133,683	$272,724
58120 - Open Space	1001 - General	5070 - Vacancy Factor	$0	($79,501)
58120 - Open Space	1001 - General	5071 - Budget only - Labor Adjustments	$0	$15,252
58120 - Open Space	1001 - General	5090 - Accrued Salaries	$24,105	$0
58120 - Open Space	1001 - General	5101 - Benefit - Medical Insurance	$244,146	$338,462
58120 - Open Space	1001 - General	5108 - Benefit - Long Term Disability - City Paid	$644	$602
58120 - Open Space	1001 - General	5112 - Benefit - Life Insurance	$1,979	$1,897
58120 - Open Space	1001 - General	5116 - Uniform Allowance	$9,849	$5,500
58120 - Open Space	1001 - General	5120 - Pers - City	$131,410	$161,038
58120 - Open Space	1001 - General	5128 - PERS - UAL	$256,516	$287,287
58120 - Open Space	1001 - General	5129 - RHS - City	$1,300	$1,200
58120 - Open Space	1001 - General	5138 - Deferred Compensation	$9,538	$16,031
58120 - Open Space	1001 - General	5150 - Medicare	$16,363	$25,587
58120 - Open Space	1001 - General	5154 - State Unemployment Insurance	$2,823	$4,412
58120 - Open Space	1001 - General	5201 - Fuel	$39,580	$54,215
58120 - Open Space	1001 - General	5301 - Professional Services	$705,993	$900,263
58120 - Open Space	1001 - General	5389 - Printing	$940	$0
58120 - Open Space	1001 - General	5391 - Postage	$0	$300
58120 - Open Space	1001 - General	5395 - Equipment - Under 5000	$14,251	$11,000
58120 - Open Space	1001 - General	5399 - Equipment - Technology Under 5000	$3,693	$2,000
58120 - Open Space	1001 - General	5401 - Building And Equipment Rental	$4,436	$6,000
58120 - Open Space	1001 - General	5403 - Safety And Protective Gear	$9,857	$13,000
58120 - Open Space	1001 - General	5411 - Repairs And Maintenance - General	$0	$0
58120 - Open Space	1001 - General	5415 - Repairs And Maintenance - Special Vehicle	$6,959	$3,000
58120 - Open Space	1001 - General	5417 - Repairs And Maintenance - Equipment	$8,101	$5,000
58120 - Open Space	1001 - General	5421 - Repairs And Maintenance - System	$30,876	$28,400
58120 - Open Space	1001 - General	5429 - Repairs And Maintenance - Accident	$75	$0
58120 - Open Space	1001 - General	5451 - Utility Charges - Telecommunication	$11,073	$9,640

CITY OF ROSEVILLE
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Center	Fund	Account	FY2023-24 Actual	FY2024-25 Budget
58120 - Open Space	1001 - General	5455 - Utility Charges - Other	$32,289	$19,000
58120 - Open Space	1001 - General	5461 - Training And Development	$21,859	$14,957
58120 - Open Space	1001 - General	5465 - Mileage	$95	$0
58120 - Open Space	1001 - General	5471 - Membership	$568	$1,300
58120 - Open Space	1001 - General	5510 - Automotive - vehicle usage	$109,307	$119,549
58120 - Open Space	1001 - General	5512 - Automotive - replacement	$143,360	$169,079
58120 - Open Space	1001 - General	5514 - Automotive - pooled vehicle usage	$1,045	$2,289
58120 - Open Space	1001 - General	5516 - Automotive - Replacement Vehicle Shortage	$82,426	$0
58120 - Open Space	1001 - General	5580 - Permit Fees	$0	$6,500
58120 - Open Space	1001 - General	5582 - Other Fees	$42,945	$44,485
58120 - Open Space	1001 - General	5585 - Miscellaneous	$233	$1,000
58120 - Open Space	1001 - General	5912 - Reimbursed Cost - Received	($605,291)	($539,925)
58120 - Open Space	2521 - Open Space	5201 - Fuel	$1,723	$1,500
58120 - Open Space	2521 - Open Space	5301 - Professional Services	$414,007	$509,399
58120 - Open Space	2521 - Open Space	5395 - Equipment - Under 5000	$2,576	$2,000
58120 - Open Space	2521 - Open Space	5403 - Safety And Protective Gear	$889	$3,000
58120 - Open Space	2521 - Open Space	5417 - Repairs And Maintenance - Equipment	$665	$2,500
58120 - Open Space	2521 - Open Space	5421 - Repairs And Maintenance - System	$33,830	$20,000
58120 - Open Space	2521 - Open Space	5453 - Utility Charges - City Bills	$2,275	$5,000
58120 - Open Space	2521 - Open Space	5461 - Training And Development	$6,304	$12,350
58120 - Open Space	2521 - Open Space	5510 - Automotive - vehicle usage	$3,000	$12,361
58120 - Open Space	2521 - Open Space	5512 - Automotive - replacement	$2,526	$5,000
58120 - Open Space	2521 - Open Space	5516 - Automotive - Replacement Vehicle Shortage	$133,200	$0
58120 - Open Space	2521 - Open Space	5517 - Automotive - Additional Vehicles	$0	$270,880
58120 - Open Space	2521 - Open Space	5582 - Other Fees	$52	$0
58120 - Open Space	2521 - Open Space	5911 - Reimbursed Cost - Charged	$193,852	$208,623
58120 - Open Space	2541 - Native Oak Tree Propagation	5301 - Professional Services	$101,597	$90,000
58120 - Open Space	2541 - Native Oak Tree Propagation	5389 - Printing	$0	$8,000
58120 - Open Space	2541 - Native Oak Tree Propagation	5395 - Equipment - Under 5000	$25,362	$42,000
58120 - Open Space	2541 - Native Oak Tree Propagation	5401 - Building And Equipment Rental	$1,064	$5,000
58120 - Open Space	2541 - Native Oak Tree Propagation	5403 - Safety And Protective Gear	$0	$4,000
58120 - Open Space	2541 - Native Oak Tree Propagation	5411 - Repairs And Maintenance - General	$0	$0
58120 - Open Space	2541 - Native Oak Tree Propagation	5417 - Repairs And Maintenance - Equipment	$0	$2,000
58120 - Open Space	2541 - Native Oak Tree Propagation	5421 - Repairs And Maintenance - System	$13,182	$31,500
58120 - Open Space	2541 - Native Oak Tree Propagation	5461 - Training And Development	$3,560	$3,500
58120 - Open Space	2541 - Native Oak Tree Propagation	5471 - Membership	$0	$0
58120 - Open Space	2541 - Native Oak Tree Propagation	5514 - Automotive - pooled vehicle usage	$0	$1,000
58120 - Open Space	2541 - Native Oak Tree Propagation	5516 - Automotive - Replacement Vehicle Shortage	$0	$0
58120 - Open Space	2541 - Native Oak Tree Propagation	5911 - Reimbursed Cost - Charged	$114,282	$56,157
58120 - Open Space	2545 - Non-Native Tree Propagation	5301 - Professional Services	$48,885	$30,000
58120 - Open Space	2545 - Non-Native Tree Propagation	5389 - Printing	$0	$2,500
58120 - Open Space	2545 - Non-Native Tree Propagation	5395 - Equipment - Under 5000	$0	$8,000
58120 - Open Space	2545 - Non-Native Tree Propagation	5401 - Building And Equipment Rental	$0	$3,000
58120 - Open Space	2545 - Non-Native Tree Propagation	5403 - Safety And Protective Gear	$0	$2,500
58120 - Open Space	2545 - Non-Native Tree Propagation	5411 - Repairs And Maintenance - General	$0	$0
58120 - Open Space	2545 - Non-Native Tree Propagation	5421 - Repairs And Maintenance - System	$0	$31,500
58120 - Open Space	2545 - Non-Native Tree Propagation	5461 - Training And Development	$0	$2,500
58120 - Open Space	2545 - Non-Native Tree Propagation	5465 - Mileage	$0	$0
58120 - Open Space	2545 - Non-Native Tree Propagation	5471 - Membership	$605	$600

CITY OF ROSEVILLE
Budget Item Detail

Center	Fund	Account	FY2023-24 Actual	FY2024-25 Budget
58120 - Open Space	2545 - Non-Native Tree Propagation	5516 - Automotive - Replacement Vehicle Shortage	$0	$0
58120 - Open Space	2545 - Non-Native Tree Propagation	5585 - Miscellaneous	$0	$0
58120 - Open Space	2545 - Non-Native Tree Propagation	5911 - Reimbursed Cost - Charged	$114,282	$56,157
58120 - Open Space	3380 - Bike Trail	5510 - Automotive - vehicle usage	$0	$0
58120 - Open Space	3380 - Bike Trail	5512 - Automotive - replacement	$0	$0
58120 - Open Space	3380 - Bike Trail	5516 - Automotive - Replacement Vehicle Shortage	$0	$0
58120 - Open Space	3410 - Al Johnson Wildlife Area	6550 - Capital Outlay - Equipment	$0	$70,000
62345 - Street Sweeping	6301 - Waste Services Operations	5001 - Salaries	$531,016	$619,458
62345 - Street Sweeping	6301 - Waste Services Operations	5005 - Overtime	$34,139	$22,300
62345 - Street Sweeping	6301 - Waste Services Operations	5025 - Standby Pay	$7,703	$3,908
62345 - Street Sweeping	6301 - Waste Services Operations	5030 - Longevity and Service Term Bonus	$13,052	$12,212
62345 - Street Sweeping	6301 - Waste Services Operations	5035 - Certificate Pay	$272	$240
62345 - Street Sweeping	6301 - Waste Services Operations	5040 - Education Incentive Pay	$692	$1,200
62345 - Street Sweeping	6301 - Waste Services Operations	5045 - Leave Payoffs	$18,485	$13,339
62345 - Street Sweeping	6301 - Waste Services Operations	5071 - Budget only - Labor Adjustments	$0	$28,724
62345 - Street Sweeping	6301 - Waste Services Operations	5090 - Accrued Salaries	$10,526	$0
62345 - Street Sweeping	6301 - Waste Services Operations	5101 - Benefit - Medical Insurance	$112,965	$153,072
62345 - Street Sweeping	6301 - Waste Services Operations	5102 - Benefit - Health Insurance Buyout	$1,725	$0
62345 - Street Sweeping	6301 - Waste Services Operations	5108 - Benefit - Long Term Disability - City Paid	$1,370	$1,456
62345 - Street Sweeping	6301 - Waste Services Operations	5112 - Benefit - Life Insurance	$1,150	$1,125
62345 - Street Sweeping	6301 - Waste Services Operations	5116 - Uniform Allowance	$7,262	$7,800
62345 - Street Sweeping	6301 - Waste Services Operations	5120 - Pers - City	$65,788	$75,439
62345 - Street Sweeping	6301 - Waste Services Operations	5124 - OPEB Contribution Benefit	$11,321	$12,975
62345 - Street Sweeping	6301 - Waste Services Operations	5128 - PERS - UAL	$93,798	$133,189
62345 - Street Sweeping	6301 - Waste Services Operations	5129 - RHS - City	$4,143	$4,800
62345 - Street Sweeping	6301 - Waste Services Operations	5138 - Deferred Compensation	$12,633	$17,039
62345 - Street Sweeping	6301 - Waste Services Operations	5150 - Medicare	$8,718	$12,195
62345 - Street Sweeping	6301 - Waste Services Operations	5154 - State Unemployment Insurance	$1,401	$2,103
62345 - Street Sweeping	6301 - Waste Services Operations	5201 - Fuel	$85,271	$102,775
62345 - Street Sweeping	6301 - Waste Services Operations	5301 - Professional Services	$122,563	$125,000
62345 - Street Sweeping	6301 - Waste Services Operations	5351 - Office Supplies	$0	$300
62345 - Street Sweeping	6301 - Waste Services Operations	5389 - Printing	$0	$300
62345 - Street Sweeping	6301 - Waste Services Operations	5395 - Equipment - Under 5000	$1,722	$2,000
62345 - Street Sweeping	6301 - Waste Services Operations	5403 - Safety And Protective Gear	$2,075	$4,500
62345 - Street Sweeping	6301 - Waste Services Operations	5415 - Repairs And Maintenance - Special Vehicle	$20,838	$20,000
62345 - Street Sweeping	6301 - Waste Services Operations	5417 - Repairs And Maintenance - Equipment	$987	$1,000
62345 - Street Sweeping	6301 - Waste Services Operations	5421 - Repairs And Maintenance - System	$0	$500
62345 - Street Sweeping	6301 - Waste Services Operations	5453 - Utility Charges - City Bills	$12,886	$16,720
62345 - Street Sweeping	6301 - Waste Services Operations	5461 - Training And Development	$1,100	$1,500
62345 - Street Sweeping	6301 - Waste Services Operations	5491 - General Liability Insurance (fixed)	$38,501	$36,726
62345 - Street Sweeping	6301 - Waste Services Operations	5495 - Workers Compensation Insurance (fixed)	$27,749	$20,950
62345 - Street Sweeping	6301 - Waste Services Operations	5510 - Automotive - vehicle usage	$212,316	$224,220
62345 - Street Sweeping	6301 - Waste Services Operations	5512 - Automotive - replacement	$274,925	$281,561
62345 - Street Sweeping	6301 - Waste Services Operations	5514 - Automotive - pooled vehicle usage	$0	$500
62345 - Street Sweeping	6301 - Waste Services Operations	5524 - Facility - demand services	$194	$0
62345 - Street Sweeping	6301 - Waste Services Operations	5532 - IT - services - fixed	$68,082	$61,275
62345 - Street Sweeping	6301 - Waste Services Operations	5912 - Reimbursed Cost - Received	($3,884)	$0
62460 - Bike Trail Maintenance	3380 - Bike Trail	5201 - Fuel	$3,749	$4,554
62460 - Bike Trail Maintenance	3380 - Bike Trail	5395 - Equipment - Under 5000	$705	$500

CITY OF ROSEVILLE
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Center	Fund	Account	FY2023-24 Actual	FY2024-25 Budget
62460 - Bike Trail Maintenance	3380 - Bike Trail	5403 - Safety And Protective Gear	$2,352	$700
62460 - Bike Trail Maintenance	3380 - Bike Trail	5415 - Repairs And Maintenance - Special Vehicle	$0	$0
62460 - Bike Trail Maintenance	3380 - Bike Trail	5417 - Repairs And Maintenance - Equipment	$1,545	$500
62460 - Bike Trail Maintenance	3380 - Bike Trail	5421 - Repairs And Maintenance - System	$41,881	$55,000
62460 - Bike Trail Maintenance	3380 - Bike Trail	5429 - Repairs And Maintenance - Accident	$248	$0
62460 - Bike Trail Maintenance	3380 - Bike Trail	5510 - Automotive - vehicle usage	$6,001	$5,976
62460 - Bike Trail Maintenance	3380 - Bike Trail	5512 - Automotive - replacement	$4,673	$7,212
62460 - Bike Trail Maintenance	3380 - Bike Trail	5516 - Automotive - Replacement Vehicle Shortage	$0	$0
62460 - Bike Trail Maintenance	3380 - Bike Trail	5911 - Reimbursed Cost - Charged	$98,831	$113,695
80201 - Landscape and Lighting Districts	2001 - Johnson Ranch LLD Zone A	5453 - Utility Charges - City Bills	$528	$598
80201 - Landscape and Lighting Districts	2001 - Johnson Ranch LLD Zone A	5550 - CFD LLD Admin Fees - Other	$2,180	$2,281
80201 - Landscape and Lighting Districts	2001 - Johnson Ranch LLD Zone A	5552 - CFD LLD Admin Fees - City	$354	$357
80201 - Landscape and Lighting Districts	2001 - Johnson Ranch LLD Zone A	5558 - CFD LLD Admin Fees - County	$117	$168
80201 - Landscape and Lighting Districts	2001 - Johnson Ranch LLD Zone A	5560 - CFD LLD Admin Fees - Parks	$150	$150
80201 - Landscape and Lighting Districts	2001 - Johnson Ranch LLD Zone A	5562 - CFD LLD Admin Fees - Open Space	$1,350	$1,350
80201 - Landscape and Lighting Districts	2001 - Johnson Ranch LLD Zone A	5564 - Sinking Fund Expenses	$0	$0
80201 - Landscape and Lighting Districts	2001 - Johnson Ranch LLD Zone A	5585 - Miscellaneous	$134	$0
80201 - Landscape and Lighting Districts	2002 - Johnson Ranch LLD Zone B	5550 - CFD LLD Admin Fees - Other	$1,501	$1,570
80201 - Landscape and Lighting Districts	2002 - Johnson Ranch LLD Zone B	5552 - CFD LLD Admin Fees - City	$244	$246
80201 - Landscape and Lighting Districts	2002 - Johnson Ranch LLD Zone B	5558 - CFD LLD Admin Fees - County	$80	$116
80201 - Landscape and Lighting Districts	2002 - Johnson Ranch LLD Zone B	5560 - CFD LLD Admin Fees - Parks	$36	$36
80201 - Landscape and Lighting Districts	2002 - Johnson Ranch LLD Zone B	5562 - CFD LLD Admin Fees - Open Space	$36	$36
80201 - Landscape and Lighting Districts	2002 - Johnson Ranch LLD Zone B	5585 - Miscellaneous	$93	$0
80201 - Landscape and Lighting Districts	2003 - Johnson Ranch LLD Zone C	5550 - CFD LLD Admin Fees - Other	$1,173	$1,227
80201 - Landscape and Lighting Districts	2003 - Johnson Ranch LLD Zone C	5552 - CFD LLD Admin Fees - City	$191	$192
80201 - Landscape and Lighting Districts	2003 - Johnson Ranch LLD Zone C	5558 - CFD LLD Admin Fees - County	$90	$91
80201 - Landscape and Lighting Districts	2003 - Johnson Ranch LLD Zone C	5560 - CFD LLD Admin Fees - Parks	$100	$100
80201 - Landscape and Lighting Districts	2003 - Johnson Ranch LLD Zone C	5562 - CFD LLD Admin Fees - Open Space	$780	$780
80201 - Landscape and Lighting Districts	2003 - Johnson Ranch LLD Zone C	5585 - Miscellaneous	$72	$0
80201 - Landscape and Lighting Districts	2004 - Johnson Ranch LLD Zone D	5550 - CFD LLD Admin Fees - Other	$43	$45
80201 - Landscape and Lighting Districts	2004 - Johnson Ranch LLD Zone D	5552 - CFD LLD Admin Fees - City	$7	$7
80201 - Landscape and Lighting Districts	2004 - Johnson Ranch LLD Zone D	5558 - CFD LLD Admin Fees - County	$2	$3
80201 - Landscape and Lighting Districts	2004 - Johnson Ranch LLD Zone D	5560 - CFD LLD Admin Fees - Parks	$36	$36
80201 - Landscape and Lighting Districts	2004 - Johnson Ranch LLD Zone D	5562 - CFD LLD Admin Fees - Open Space	$36	$36
80201 - Landscape and Lighting Districts	2004 - Johnson Ranch LLD Zone D	5564 - Sinking Fund Expenses	$0	$0
80201 - Landscape and Lighting Districts	2004 - Johnson Ranch LLD Zone D	5585 - Miscellaneous	$3	$0
80201 - Landscape and Lighting Districts	2005 - Johnson Ranch LLD Zone E	5550 - CFD LLD Admin Fees - Other	$1,096	$1,141
80201 - Landscape and Lighting Districts	2005 - Johnson Ranch LLD Zone E	5552 - CFD LLD Admin Fees - City	$177	$179
80201 - Landscape and Lighting Districts	2005 - Johnson Ranch LLD Zone E	5558 - CFD LLD Admin Fees - County	$114	$115
80201 - Landscape and Lighting Districts	2005 - Johnson Ranch LLD Zone E	5560 - CFD LLD Admin Fees - Parks	$116	$116
80201 - Landscape and Lighting Districts	2005 - Johnson Ranch LLD Zone E	5562 - CFD LLD Admin Fees - Open Space	$906	$906
80201 - Landscape and Lighting Districts	2005 - Johnson Ranch LLD Zone E	5564 - Sinking Fund Expenses	$0	$0
80201 - Landscape and Lighting Districts	2005 - Johnson Ranch LLD Zone E	5585 - Miscellaneous	$67	$0
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5312 - Contract Services - Landscapes	$23,777	$26,595
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5314 - Contract Services - Parks	$5,088	$5,419
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5423 - Repairs And Maintenance - Landscape	$4,396	$24,635
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5425 - Repairs And Maintenance - Lighting	$968	$0
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5434 - Repairs and Maintenance - Tree Work	$0	$3,405
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$4,000

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80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5453 - Utility Charges - City Bills	$31,841	$41,580
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5550 - CFD LLD Admin Fees - Other	$4,609	$4,878
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5552 - CFD LLD Admin Fees - City	$3,714	$4,819
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5558 - CFD LLD Admin Fees - County	$1,885	$1,399
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5560 - CFD LLD Admin Fees - Parks	$13,000	$13,000
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5564 - Sinking Fund Expenses	$0	$30,000
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5585 - Miscellaneous	$330	$0
80201 - Landscape and Lighting Districts	2006 - Olympus Pointe LLD Zone A Commerci	5911 - Reimbursed Cost - Charged	$7,790	$15,174
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5312 - Contract Services - Landscapes	$33,120	$35,273
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5423 - Repairs And Maintenance - Landscape	$5,125	$11,000
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5434 - Repairs and Maintenance - Tree Work	$6,104	$5,080
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5453 - Utility Charges - City Bills	$19,456	$23,100
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5550 - CFD LLD Admin Fees - Other	$561	$594
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5552 - CFD LLD Admin Fees - City	$452	$587
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5558 - CFD LLD Admin Fees - County	$795	$794
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5560 - CFD LLD Admin Fees - Parks	$3,000	$3,000
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5564 - Sinking Fund Expenses	$1,692	$22,000
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5585 - Miscellaneous	$40	$0
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	5911 - Reimbursed Cost - Charged	$517	$0
80201 - Landscape and Lighting Districts	2007 - Olympus Pointe LLD Zone D Residentia	6550 - Capital Outlay - Equipment	$0	$0
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5312 - Contract Services - Landscapes	$184,242	$205,300
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5423 - Repairs And Maintenance - Landscape	$34,924	$34,700
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5434 - Repairs and Maintenance - Tree Work	$21,733	$25,960
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5453 - Utility Charges - City Bills	$178,339	$160,000
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5550 - CFD LLD Admin Fees - Other	$9,834	$9,996
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5552 - CFD LLD Admin Fees - City	$9,244	$9,244
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5558 - CFD LLD Admin Fees - County	$4,622	$4,622
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5560 - CFD LLD Admin Fees - Parks	$33,000	$33,000
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5564 - Sinking Fund Expenses	$18,612	$35,000
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5585 - Miscellaneous	$355	$0
80201 - Landscape and Lighting Districts	2008 - North West Roseville LLD Zone A	5911 - Reimbursed Cost - Charged	$2,444	$0
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5312 - Contract Services - Landscapes	$10,080	$10,584
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5423 - Repairs And Maintenance - Landscape	$1,767	$2,900
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5434 - Repairs and Maintenance - Tree Work	$1,742	$1,250
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5453 - Utility Charges - City Bills	$4,267	$3,765
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5550 - CFD LLD Admin Fees - Other	$407	$414
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5552 - CFD LLD Admin Fees - City	$383	$383
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5558 - CFD LLD Admin Fees - County	$191	$192
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5560 - CFD LLD Admin Fees - Parks	$1,500	$1,500
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5564 - Sinking Fund Expenses	$0	$0
80201 - Landscape and Lighting Districts	2009 - North West Roseville LLD Zone B	5585 - Miscellaneous	$15	$0
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5312 - Contract Services - Landscapes	$180,117	$200,339
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5423 - Repairs And Maintenance - Landscape	$48,202	$84,460
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5434 - Repairs and Maintenance - Tree Work	$35,400	$35,400
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5453 - Utility Charges - City Bills	$126,427	$170,000
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5550 - CFD LLD Admin Fees - Other	$7,100	$7,211
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5552 - CFD LLD Admin Fees - City	$10,921	$10,916
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5558 - CFD LLD Admin Fees - County	$5,276	$5,388
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5560 - CFD LLD Admin Fees - Parks	$32,500	$32,500

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80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5564 - Sinking Fund Expenses	$34,090	$72,000
80201 - Landscape and Lighting Districts	2010 - North Central Roseville LLD Zone A Dis	5585 - Miscellaneous	$269	$0
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5312 - Contract Services - Landscapes	$69,504	$74,202
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5423 - Repairs And Maintenance - Landscape	$17,807	$42,000
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5434 - Repairs and Maintenance - Tree Work	$16,640	$15,589
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5453 - Utility Charges - City Bills	$13,400	$14,700
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5550 - CFD LLD Admin Fees - Other	$2,162	$2,197
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5552 - CFD LLD Admin Fees - City	$3,326	$3,325
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5558 - CFD LLD Admin Fees - County	$1,627	$1,677
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5560 - CFD LLD Admin Fees - Parks	$9,500	$9,500
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5564 - Sinking Fund Expenses	$80,351	$57,500
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5585 - Miscellaneous	$82	$0
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	5911 - Reimbursed Cost - Charged	$1,551	$0
80201 - Landscape and Lighting Districts	2011 - North Central Roseville LLD Zone B Lo	6550 - Capital Outlay - Equipment	$0	$0
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5312 - Contract Services - Landscapes	$15,696	$16,716
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5423 - Repairs And Maintenance - Landscape	$1,329	$2,700
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5434 - Repairs and Maintenance - Tree Work	$545	$829
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5453 - Utility Charges - City Bills	$3,862	$4,597
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5550 - CFD LLD Admin Fees - Other	$345	$350
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5552 - CFD LLD Admin Fees - City	$530	$530
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5558 - CFD LLD Admin Fees - County	$339	$346
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5560 - CFD LLD Admin Fees - Parks	$1,708	$1,708
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5564 - Sinking Fund Expenses	$0	$10,000
80201 - Landscape and Lighting Districts	2012 - North Central Roseville LLD Zone F Dia	5585 - Miscellaneous	$13	$0
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5312 - Contract Services - Landscapes	$4,044	$4,307
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5423 - Repairs And Maintenance - Landscape	$408	$1,065
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5434 - Repairs and Maintenance - Tree Work	$0	$792
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5453 - Utility Charges - City Bills	$4,084	$4,500
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5550 - CFD LLD Admin Fees - Other	$139	$141
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5552 - CFD LLD Admin Fees - City	$213	$213
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5558 - CFD LLD Admin Fees - County	$149	$180
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5560 - CFD LLD Admin Fees - Parks	$1,606	$1,606
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5564 - Sinking Fund Expenses	$25,435	$7,300
80201 - Landscape and Lighting Districts	2013 - North Central Roseville LLD Zone G Dis	5585 - Miscellaneous	$6	$0
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5312 - Contract Services - Landscapes	$1,416	$1,508
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5423 - Repairs And Maintenance - Landscape	$1,804	$2,332
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5434 - Repairs and Maintenance - Tree Work	$0	$495
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5453 - Utility Charges - City Bills	$2,260	$2,419
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5550 - CFD LLD Admin Fees - Other	$2,214	$2,290
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5552 - CFD LLD Admin Fees - City	$291	$256
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5558 - CFD LLD Admin Fees - County	$47	$78
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5560 - CFD LLD Admin Fees - Parks	$1,150	$1,150
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5564 - Sinking Fund Expenses	$0	$1,400
80201 - Landscape and Lighting Districts	2014 - Infill LLD Zone A	5585 - Miscellaneous	$173	$0
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5312 - Contract Services - Landscapes	$2,064	$2,198
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5423 - Repairs And Maintenance - Landscape	$596	$3,000
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5434 - Repairs and Maintenance - Tree Work	$717	$715
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5453 - Utility Charges - City Bills	$1,183	$1,340
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5550 - CFD LLD Admin Fees - Other	$20	$153

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80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5552 - CFD LLD Admin Fees - City	$3	$3
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5558 - CFD LLD Admin Fees - County	$123	$42
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5560 - CFD LLD Admin Fees - Parks	$1,213	$1,213
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5564 - Sinking Fund Expenses	$858	$5,675
80201 - Landscape and Lighting Districts	2015 - Infill LLD Zone B	5585 - Miscellaneous	$2	$0
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5312 - Contract Services - Landscapes	$4,116	$4,384
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5423 - Repairs And Maintenance - Landscape	$912	$2,000
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5434 - Repairs and Maintenance - Tree Work	$2,000	$1,376
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5453 - Utility Charges - City Bills	$2,546	$3,166
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5550 - CFD LLD Admin Fees - Other	$2,251	$2,328
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5552 - CFD LLD Admin Fees - City	$296	$261
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5558 - CFD LLD Admin Fees - County	$125	$129
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5560 - CFD LLD Admin Fees - Parks	$1,954	$1,954
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5564 - Sinking Fund Expenses	$1,026	$4,500
80201 - Landscape and Lighting Districts	2017 - Infill LLD Zone C	5585 - Miscellaneous	$175	$0
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5312 - Contract Services - Landscapes	$5,172	$5,508
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5421 - Repairs And Maintenance - System	$0	$0
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5423 - Repairs And Maintenance - Landscape	$2,503	$8,400
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5425 - Repairs And Maintenance - Lighting	$5,687	$6,250
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5427 - Repairs And Maintenance - Streetscape And Sigr	$0	$0
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5434 - Repairs and Maintenance - Tree Work	$2,751	$3,500
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5453 - Utility Charges - City Bills	$12,584	$14,400
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5550 - CFD LLD Admin Fees - Other	$3,970	$4,230
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5552 - CFD LLD Admin Fees - City	$846	$887
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5558 - CFD LLD Admin Fees - County	$320	$456
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5560 - CFD LLD Admin Fees - Parks	$2,434	$2,434
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5564 - Sinking Fund Expenses	$50,341	$10,500
80201 - Landscape and Lighting Districts	2019 - Vernon Street LLD	5585 - Miscellaneous	$370	$0
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5312 - Contract Services - Landscapes	$13,452	$14,326
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5423 - Repairs And Maintenance - Landscape	$7,091	$7,000
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5425 - Repairs And Maintenance - Lighting	$1,134	$1,500
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5427 - Repairs And Maintenance - Streetscape And Sigr	$0	$500
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5434 - Repairs and Maintenance - Tree Work	$5,685	$2,017
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5453 - Utility Charges - City Bills	$10,699	$12,600
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5550 - CFD LLD Admin Fees - Other	$3,968	$4,274
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5552 - CFD LLD Admin Fees - City	$874	$820
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5558 - CFD LLD Admin Fees - County	$405	$422
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5560 - CFD LLD Admin Fees - Parks	$2,200	$2,200
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5564 - Sinking Fund Expenses	$9,331	$12,120
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5585 - Miscellaneous	$350	$0
80201 - Landscape and Lighting Districts	2021 - Historic District LLD	5911 - Reimbursed Cost - Charged	$442	$0
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5312 - Contract Services - Landscapes	$7,872	$8,384
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5423 - Repairs And Maintenance - Landscape	$3,742	$9,000
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5425 - Repairs And Maintenance - Lighting	$1,047	$1,500
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5427 - Repairs And Maintenance - Streetscape And Sigr	$2,600	$3,200
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5434 - Repairs and Maintenance - Tree Work	$1,729	$1,729
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5453 - Utility Charges - City Bills	$9,090	$11,814
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5550 - CFD LLD Admin Fees - Other	$3,972	$4,240
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5552 - CFD LLD Admin Fees - City	$766	$953

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80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5558 - CFD LLD Admin Fees - County	$476	$489
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5560 - CFD LLD Admin Fees - Parks	$1,738	$1,738
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5564 - Sinking Fund Expenses	$6,733	$25,000
80201 - Landscape and Lighting Districts	2023 - Riverside Avenue LLD	5585 - Miscellaneous	$370	$0
80201 - Landscape and Lighting Districts	2025 - NWSP LLD	5423 - Repairs And Maintenance - Landscape	$41,752	$50,000
80201 - Landscape and Lighting Districts	2025 - NWSP LLD	6545 - Capital Outlay - Improvements	$0	$0
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5312 - Contract Services - Landscapes	$8,846	$18,843
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5423 - Repairs And Maintenance - Landscape	$3,128	$5,339
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5434 - Repairs and Maintenance - Tree Work	$0	$2,322
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5453 - Utility Charges - City Bills	$10,669	$13,199
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5550 - CFD LLD Admin Fees - Other	$965	$967
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5552 - CFD LLD Admin Fees - City	$1,178	$1,357
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5558 - CFD LLD Admin Fees - County	$1,137	$1,160
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5560 - CFD LLD Admin Fees - Parks	$6,296	$6,296
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5562 - CFD LLD Admin Fees - Open Space	$1,574	$1,574
80251 - Services Districts	2101 - North Roseville CFD 2 SD Zone A	5564 - Sinking Fund Expenses	$0	$40,000
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5312 - Contract Services - Landscapes	$23,892	$34,147
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5423 - Repairs And Maintenance - Landscape	$9,603	$9,932
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5434 - Repairs and Maintenance - Tree Work	$5,502	$7,945
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5453 - Utility Charges - City Bills	$23,783	$28,601
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5550 - CFD LLD Admin Fees - Other	$1,834	$1,837
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5552 - CFD LLD Admin Fees - City	$2,239	$2,579
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5558 - CFD LLD Admin Fees - County	$1,263	$1,289
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5560 - CFD LLD Admin Fees - Parks	$5,815	$5,815
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5562 - CFD LLD Admin Fees - Open Space	$1,454	$1,454
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5564 - Sinking Fund Expenses	$36,687	$22,000
80251 - Services Districts	2102 - North Roseville CFD 2 SD Zone B	5911 - Reimbursed Cost - Charged	$227	$0
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5301 - Professional Services	$3,464	$0
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5312 - Contract Services - Landscapes	$84,223	$70,957
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5423 - Repairs And Maintenance - Landscape	$61,798	$44,379
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5425 - Repairs And Maintenance - Lighting	$438	$0
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5434 - Repairs and Maintenance - Tree Work	$12,838	$15,882
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5453 - Utility Charges - City Bills	$55,839	$56,101
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5550 - CFD LLD Admin Fees - Other	$4,984	$4,997
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5552 - CFD LLD Admin Fees - City	$6,087	$7,013
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5558 - CFD LLD Admin Fees - County	$3,146	$3,210
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5560 - CFD LLD Admin Fees - Parks	$17,508	$17,508
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5562 - CFD LLD Admin Fees - Open Space	$4,377	$4,377
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5564 - Sinking Fund Expenses	$14,949	$118,500
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	5911 - Reimbursed Cost - Charged	$69	$0
80251 - Services Districts	2103 - North Roseville CFD 2 SD Zone C	6550 - Capital Outlay - Equipment	$0	$0
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5312 - Contract Services - Landscapes	$207,412	$229,848
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5423 - Repairs And Maintenance - Landscape	$31,582	$65,757
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5434 - Repairs and Maintenance - Tree Work	$43,404	$45,483
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5453 - Utility Charges - City Bills	$57,826	$77,000
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5455 - Utility Charges - Other	$106,367	$115,000
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5510 - Automotive - vehicle usage	$1,500	$1,906
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5512 - Automotive - replacement	$1,527	$2,202
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5550 - CFD LLD Admin Fees - Other	$8,550	$9,570

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80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5552 - CFD LLD Admin Fees - City	$15,763	$16,868
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5558 - CFD LLD Admin Fees - County	$8,434	$11,207
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5560 - CFD LLD Admin Fees - Parks	$58,782	$58,782
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5562 - CFD LLD Admin Fees - Open Space	$14,695	$14,696
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5564 - Sinking Fund Expenses	$56,671	$112,700
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	5911 - Reimbursed Cost - Charged	$2,328	$0
80251 - Services Districts	2104 - Stoneridge CFD 1 SD	6550 - Capital Outlay - Equipment	$0	$0
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5312 - Contract Services - Landscapes	$9,648	$10,275
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$3,255	$12,817
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$0	$2,500
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5453 - Utility Charges - City Bills	$13,689	$17,325
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$2,605	$2,712
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5552 - CFD LLD Admin Fees - City	$1,114	$1,129
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5558 - CFD LLD Admin Fees - County	$564	$681
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$2,349	$2,350
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$587	$588
80251 - Services Districts	2105 - Stoneridge Parcel 1 CFD 2 SD	5564 - Sinking Fund Expenses	$0	$5,000
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5312 - Contract Services - Landscapes	$166,380	$177,195
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$35,679	$40,000
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$34,505	$37,767
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5453 - Utility Charges - City Bills	$97,304	$106,260
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$6,912	$7,928
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5552 - CFD LLD Admin Fees - City	$11,410	$11,869
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5558 - CFD LLD Admin Fees - County	$5,934	$6,510
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$34,376	$34,376
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$8,594	$8,594
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5564 - Sinking Fund Expenses	$148,176	$168,000
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	5911 - Reimbursed Cost - Charged	$39	$0
80251 - Services Districts	2106 - Woodcreek West CFD 2 SD	6550 - Capital Outlay - Equipment	$0	$0
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5312 - Contract Services - Landscapes	$88,628	$98,559
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5314 - Contract Services - Parks	$47,748	$50,852
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5417 - Repairs And Maintenance - Equipment	$70	$0
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$64,254	$53,751
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$41,915	$39,339
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$18,000
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5453 - Utility Charges - City Bills	$123,913	$152,460
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$7,173	$8,190
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5552 - CFD LLD Admin Fees - City	$12,194	$17,130
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5558 - CFD LLD Admin Fees - County	$8,565	$11,374
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$59,113	$59,114
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$14,778	$14,779
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5564 - Sinking Fund Expenses	$22,127	$124,035
80251 - Services Districts	2107 - Highland Reserve North CFD 2 SD	5911 - Reimbursed Cost - Charged	$30,446	$59,167
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5312 - Contract Services - Landscapes	$61,236	$65,216
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5314 - Contract Services - Parks	$23,520	$25,049
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$33,942	$30,000
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$9,757	$10,087
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$13,000
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5453 - Utility Charges - City Bills	$47,237	$58,300

CITY OF ROSEVILLE
Budget Item Detail

Center	Fund	Account	FY2023-24 Actual	FY2024-25 Budget
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$6,794	$7,810
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5552 - CFD LLD Admin Fees - City	$8,139	$8,402
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5558 - CFD LLD Admin Fees - County	$4,201	$5,636
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$27,208	$27,208
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$6,802	$6,803
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5564 - Sinking Fund Expenses	$37,806	$92,000
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	5911 - Reimbursed Cost - Charged	$13,977	$24,921
80251 - Services Districts	2108 - Crocker Ranch CFD 2 SD	6550 - Capital Outlay - Equipment	$0	$0
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5312 - Contract Services - Landscapes	$49,440	$52,654
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5314 - Contract Services - Parks	$13,248	$14,109
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$18,188	$17,500
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$3,668	$3,540
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$5,000
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5453 - Utility Charges - City Bills	$27,367	$38,500
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$3,735	$4,744
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5552 - CFD LLD Admin Fees - City	$4,763	$5,060
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5558 - CFD LLD Admin Fees - County	$2,530	$2,631
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$16,067	$16,068
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$4,017	$4,017
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5564 - Sinking Fund Expenses	$93,018	$49,800
80251 - Services Districts	2109 - Woodcreek East CFD 2 SD	5911 - Reimbursed Cost - Charged	$10,952	$21,022
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5312 - Contract Services - Landscapes	$2,808	$2,991
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5314 - Contract Services - Parks	$9,060	$9,649
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$2,533	$6,000
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$2,762	$1,431
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$2,500
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5453 - Utility Charges - City Bills	$3,875	$4,840
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$3,465	$4,474
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5552 - CFD LLD Admin Fees - City	$2,068	$2,150
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5558 - CFD LLD Admin Fees - County	$1,075	$1,388
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$7,298	$7,299
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$1,825	$1,825
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5564 - Sinking Fund Expenses	$1,240	$11,750
80251 - Services Districts	2110 - Stone Point CFD 2 SD	5911 - Reimbursed Cost - Charged	$10,793	$21,022
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5312 - Contract Services - Landscapes	$469,512	$500,030
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5314 - Contract Services - Parks	$161,856	$234,954
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5411 - Repairs And Maintenance - General	$0	$0
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5423 - Repairs And Maintenance - Landscape	$143,194	$100,000
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5434 - Repairs and Maintenance - Tree Work	$23,796	$106,372
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$82,000
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5453 - Utility Charges - City Bills	$264,685	$305,800
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5510 - Automotive - vehicle usage	$1,500	$3,003
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5512 - Automotive - replacement	$1,527	$4,666
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5516 - Automotive - Replacement Vehicle Shortage	$0	$0
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5550 - CFD LLD Admin Fees - Other	$9,889	$10,913
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5552 - CFD LLD Admin Fees - City	$42,631	$42,676
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5558 - CFD LLD Admin Fees - County	$21,338	$29,011
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5560 - CFD LLD Admin Fees - Parks	$78,176	$78,176
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5562 - CFD LLD Admin Fees - Open Space	$19,544	$19,544

CITY OF ROSEVILLE
Budget Item Detail

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80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5564 - Sinking Fund Expenses	$193,131	$272,000
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	5911 - Reimbursed Cost - Charged	$177,050	$322,471
80251 - Services Districts	2111 - Fiddyment Ranch CFD 2 SD Public Ser	6550 - Capital Outlay - Equipment	$36,935	$0
80251 - Services Districts	2112 - Municipal Services District CFD 3 SD	5550 - CFD LLD Admin Fees - Other	$17,165	$18,197
80251 - Services Districts	2112 - Municipal Services District CFD 3 SD	5552 - CFD LLD Admin Fees - City	$133,790	$159,035
80251 - Services Districts	2112 - Municipal Services District CFD 3 SD	5558 - CFD LLD Admin Fees - County	$79,514	$85,453
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5201 - Fuel	$121	$0
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5312 - Contract Services - Landscapes	$391,536	$416,986
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5314 - Contract Services - Parks	$173,316	$184,582
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5411 - Repairs And Maintenance - General	$13	$0
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5423 - Repairs And Maintenance - Landscape	$115,263	$126,000
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5425 - Repairs And Maintenance - Lighting	$0	$0
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5434 - Repairs and Maintenance - Tree Work	$41,448	$77,945
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$54,000
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5453 - Utility Charges - City Bills	$206,251	$253,000
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5510 - Automotive - vehicle usage	$3,717	$5,320
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5512 - Automotive - replacement	$3,254	$1,800
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5516 - Automotive - Replacement Vehicle Shortage	$47	$0
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5550 - CFD LLD Admin Fees - Other	$10,086	$11,110
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5552 - CFD LLD Admin Fees - City	$36,446	$37,903
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5558 - CFD LLD Admin Fees - County	$18,951	$28,109
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5560 - CFD LLD Admin Fees - Parks	$80,601	$80,602
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5562 - CFD LLD Admin Fees - Open Space	$20,150	$20,151
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5564 - Sinking Fund Expenses	$66,577	$165,000
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	5911 - Reimbursed Cost - Charged	$126,250	$219,932
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	6545 - Capital Outlay - Improvements	$34,677	$0
80251 - Services Districts	2113 - Westpark CFD 2 SD Public Services	6550 - Capital Outlay - Equipment	$27,356	$0
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5312 - Contract Services - Landscapes	$27,276	$29,049
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5314 - Contract Services - Parks	$17,796	$18,953
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$10,586	$10,000
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$9,517	$9,170
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$5,000
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5453 - Utility Charges - City Bills	$17,036	$24,200
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$3,777	$4,787
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5552 - CFD LLD Admin Fees - City	$3,202	$3,377
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5558 - CFD LLD Admin Fees - County	$1,688	$1,801
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$8,610	$8,611
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$2,153	$2,153
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5564 - Sinking Fund Expenses	$14,637	$63,000
80251 - Services Districts	2114 - Longmeadow CFD 2 SD	5911 - Reimbursed Cost - Charged	$10,793	$21,022
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5312 - Contract Services - Landscapes	$19,308	$42,481
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5423 - Repairs And Maintenance - Landscape	$1,715	$10,501
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5434 - Repairs and Maintenance - Tree Work	$8,821	$5,649
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5453 - Utility Charges - City Bills	$11,865	$16,748
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5550 - CFD LLD Admin Fees - Other	$5,028	$5,036
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5552 - CFD LLD Admin Fees - City	$2,552	$2,653
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5558 - CFD LLD Admin Fees - County	$1,326	$2,730
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5560 - CFD LLD Admin Fees - Parks	$8,566	$8,567
80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5562 - CFD LLD Admin Fees - Open Space	$4,613	$4,613

CITY OF ROSEVILLE
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80251 - Services Districts	2115 - Infill Services District CFD 4 SD	5564 - Sinking Fund Expenses	$4,085	$21,700
80251 - Services Districts	2116 - Infill Services District CFD 4 Annex 4 SI	5423 - Repairs And Maintenance - Landscape	$204	$0
80251 - Services Districts	2116 - Infill Services District CFD 4 Annex 4 SI	5550 - CFD LLD Admin Fees - Other	$2,985	$2,996
80251 - Services Districts	2116 - Infill Services District CFD 4 Annex 4 SI	5552 - CFD LLD Admin Fees - City	$1,291	$1,343
80251 - Services Districts	2116 - Infill Services District CFD 4 Annex 4 SI	5558 - CFD LLD Admin Fees - County	$671	$997
80251 - Services Districts	2116 - Infill Services District CFD 4 Annex 4 SI	5562 - CFD LLD Admin Fees - Open Space	$3,295	$3,295
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5312 - Contract Services - Landscapes	$7,092	$7,553
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5314 - Contract Services - Parks	$12,192	$12,984
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5423 - Repairs And Maintenance - Landscape	$1,743	$10,000
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5434 - Repairs and Maintenance - Tree Work	$2,201	$5,564
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$5,000
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5453 - Utility Charges - City Bills	$6,075	$7,700
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5550 - CFD LLD Admin Fees - Other	$3,462	$4,471
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5552 - CFD LLD Admin Fees - City	$1,866	$2,056
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5558 - CFD LLD Admin Fees - County	$1,028	$1,072
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5560 - CFD LLD Admin Fees - Parks	$2,521	$2,522
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5562 - CFD LLD Admin Fees - Open Space	$630	$631
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5564 - Sinking Fund Expenses	$5,108	$19,500
80251 - Services Districts	2117 - Stone Point CFD 4 SD	5911 - Reimbursed Cost - Charged	$11,899	$22,128
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5312 - Contract Services - Landscapes	$7,923	$9,055
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5423 - Repairs And Maintenance - Landscape	$1,380	$1,322
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5434 - Repairs and Maintenance - Tree Work	$0	$1,502
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5453 - Utility Charges - City Bills	$4,250	$5,060
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5550 - CFD LLD Admin Fees - Other	$428	$429
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5552 - CFD LLD Admin Fees - City	$523	$602
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5558 - CFD LLD Admin Fees - County	$229	$234
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5560 - CFD LLD Admin Fees - Parks	$412	$412
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5562 - CFD LLD Admin Fees - Open Space	$103	$103
80251 - Services Districts	2118 - North Roseville CFD 2 SD Zone E	5564 - Sinking Fund Expenses	$360	$750
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5312 - Contract Services - Landscapes	$191,780	$213,716
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5314 - Contract Services - Parks	$34,776	$72,261
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$34,831	$50,000
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$9,117	$3,668
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$8,000
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5453 - Utility Charges - City Bills	$36,488	$55,000
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5510 - Automotive - vehicle usage	$1,500	$1,906
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5512 - Automotive - replacement	$1,527	$2,863
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$8,197	$8,866
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5552 - CFD LLD Admin Fees - City	$16,772	$17,368
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5558 - CFD LLD Admin Fees - County	$8,679	$9,169
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$11,315	$11,315
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$114	$115
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5564 - Sinking Fund Expenses	$17,649	$31,500
80251 - Services Districts	2119 - Westbrook Services District CFD 2 SD	5911 - Reimbursed Cost - Charged	$26,489	$48,857
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5312 - Contract Services - Landscapes	$59,268	$63,120
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5314 - Contract Services - Parks	$13,945	$27,150
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$4,327	$24,950
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$893	$2,403
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$2,500

CITY OF ROSEVILLE
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Center	Fund	Account	FY2023-24 Actual	FY2024-25 Budget
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5453 - Utility Charges - City Bills	$12,107	$24,200
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$6,923	$7,440
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5552 - CFD LLD Admin Fees - City	$3,055	$5,888
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5558 - CFD LLD Admin Fees - County	$2,944	$4,016
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$4,255	$4,256
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$1,064	$0
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5564 - Sinking Fund Expenses	$19,314	$7,500
80251 - Services Districts	2120 - HP Campus Oaks CFD 2 SD	5911 - Reimbursed Cost - Charged	$10,793	$21,022
80251 - Services Districts	2121 - Creekview CFD 2 SD	5312 - Contract Services - Landscapes	$78,948	$106,180
80251 - Services Districts	2121 - Creekview CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$8,121	$17,000
80251 - Services Districts	2121 - Creekview CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$945	$7,336
80251 - Services Districts	2121 - Creekview CFD 2 SD	5453 - Utility Charges - City Bills	$15,928	$24,200
80251 - Services Districts	2121 - Creekview CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$3,913	$4,423
80251 - Services Districts	2121 - Creekview CFD 2 SD	5552 - CFD LLD Admin Fees - City	$4,356	$5,462
80251 - Services Districts	2121 - Creekview CFD 2 SD	5558 - CFD LLD Admin Fees - County	$2,731	$3,807
80251 - Services Districts	2121 - Creekview CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$5,483	$5,483
80251 - Services Districts	2121 - Creekview CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$1,371	$1,371
80251 - Services Districts	2121 - Creekview CFD 2 SD	5564 - Sinking Fund Expenses	$0	$16,200
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5312 - Contract Services - Landscapes	$258,151	$378,210
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5314 - Contract Services - Parks	$0	$15,914
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$18,582	$50,000
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5434 - Repairs and Maintenance - Tree Work	$5,379	$28,445
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5435 - Repairs and Maintenance - CFD-LLD Parks	$0	$3,000
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5453 - Utility Charges - City Bills	$49,377	$81,043
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$7,213	$8,230
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5552 - CFD LLD Admin Fees - City	$13,822	$19,189
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5558 - CFD LLD Admin Fees - County	$9,594	$9,978
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$9,776	$9,777
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5562 - CFD LLD Admin Fees - Open Space	$2,444	$2,445
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5564 - Sinking Fund Expenses	$0	$23,000
80251 - Services Districts	2122 - Sierra Vista Services District CFD 2 SD	5911 - Reimbursed Cost - Charged	$0	$5,654
80251 - Services Districts	2124 - Amoruso Ranch CFD 2 SD	5312 - Contract Services - Landscapes	$0	$36,000
80251 - Services Districts	2124 - Amoruso Ranch CFD 2 SD	5423 - Repairs And Maintenance - Landscape	$0	$5,000
80251 - Services Districts	2124 - Amoruso Ranch CFD 2 SD	5453 - Utility Charges - City Bills	$0	$2,200
80251 - Services Districts	2124 - Amoruso Ranch CFD 2 SD	5550 - CFD LLD Admin Fees - Other	$6,631	$6,605
80251 - Services Districts	2124 - Amoruso Ranch CFD 2 SD	5552 - CFD LLD Admin Fees - City	$2,500	$757
80251 - Services Districts	2124 - Amoruso Ranch CFD 2 SD	5558 - CFD LLD Admin Fees - County	$378	$829
80251 - Services Districts	2124 - Amoruso Ranch CFD 2 SD	5560 - CFD LLD Admin Fees - Parks	$2,500	$2,500

NOTICE OF PUBLIC HEARING

Notice is hereby given that on **April 16, 2025** at 6 pm, or as soon thereafter as the matter may be heard, the **City Council** of the City of Roseville will hold a Public Hearing at **the City Council Chambers located at 311 Vernon Street, Roseville, CA** to consider adoption of a schedule of maintenance costs and charges for community facilities districts.

If adopted, the schedule of costs and charges will apply for formation of new Community Facilities Districts or annexation into an existing one, but will not affect previously established districts or districts that have initiated proceedings, as of the date of adoption of the resolution, to form a Community Facilities District to finance services.

If adopted, the schedule of costs and charges will be effective upon adoption through June 30, 2026.

For further information contact the City's Assistant City Manager/Chief Financial Officer, Dennis Kauffman at (916) 774-5200. Written communications may be directed to: City Council, 311 Vernon Street, Roseville, CA 95678.

If you challenge the decision in court, you may be limited to raising only those issues you or someone else raised at the Public Hearing described in this notice, or in written correspondence delivered to the City Clerk at, or prior to the Public Hearing.

ROSEVILLE CITY COUNCIL
Carmen Avalos, City Clerk
Dated: March 25, 2025
Publish: April 4, 2025

COUNCIL COMMUNICATION

CC #: 3831
File #: 0600-01

Title:	Compliance with Assembly Bill 2561/Government Code Section 3502.3 regarding Vacancies and Recruitment and Retention Efforts
Contact:	Macy Dippert 916-774-5215 mdippert@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 9.2.

RECOMMENDATION TO COUNCIL

Staff recommends that the City Council receive a presentation, for information purposes only, during a public hearing at which time the City will report on workforce vacancies and recruitment and retention efforts. The City's recognized employee organizations will be provided an opportunity to make a presentation on these subjects.

BACKGROUND

AB 2561 was introduced to address the issue of job vacancies in local government, which adversely affects the delivery of public services and employee workload. Among other requirements, the bill mandates that public agencies conduct a public hearing to present the status of vacancies and recruitment and retention efforts, before the agency's governing body at least once per fiscal year, prior to the adoption of the next fiscal year's budget and identify any necessary changes to policies, procedures, and recruitment activities that may lead to obstacles in the hiring process. The bill was enacted into law and is codified as Government Code section 3502.3, effective January 1, 2025.

In compliance with the new legal obligations, the City is required to do the following:

1. Public Hearing – Report on Vacancies: For the calendar year 2024, the City's annual average percentage of vacancies (i.e., regular, full-time equivalent) is 7%. The table below shows a breakdown of the percentage of vacancies at the end of each month:

2024	Jan	Feb	Mar	Apr	May	June
# of Vacancies Beginning of the Month	106	105	100	97	91	89

# of Separations	6	5	6	6	14	11
# of New Hires	8	6	7	7	5	7
# of Promotions	6	5	15	4	4	9
# of Budgeted FTEs	1366.85	1366.85	1366.85	1366.85	1365.85	1367.85
% of Vacancies	8%	8%	7%	7%	7%	7%

2024	July	Aug	Sep	Oct	Nov	Dec
# of Vacancies Beginning of the Month	111	84.5	84.5	88.5	93.5	96.5
# of Separations	4	4	5	11	10	14
# of New Hires	5	8	14	5	3	8
# of Promotions	6	5	3	7	22	10
# of Budgeted FTEs	1388.10	1387.10	1388.10	1388.10	1388.10	1390.10
% of Vacancies	8%	6%	6%	6%	7%	7%

2 . Employee Organization Participation: Allow the recognized employee organization for each bargaining unit at the City to make presentations during the public hearing concerning vacancies and recruitment and retention efforts. The Human Resources Department notified the five (5) represented bargaining units at the City of the opportunity to present. (Gov. Code § 3502.3(b).)

3. Additional Reporting for High Vacancy Rates: If vacancies within a single bargaining unit meet or exceed 20% of authorized full-time positions in that bargaining unit, upon request of the recognized employee organization for that bargaining unit, the City must provide additional information during the public hearing, including the following: (1) the total number of vacancies within the bargaining unit; (2) the number of applicants; (3) the average number of days to fill positions; and (4) opportunities to improve compensation and working conditions for employees in the bargaining unit. (Gov. Code § 3502.3(c).)

For the calendar year 2024, within the City's bargaining units with recognized employee organizations, the annual average vacancy rates were all under the 20% threshold, as summarized below:

2024 Annual Average Vacancy Rate	
Represented Bargaining Unit	**Percentage**
International Brotherhood of Electrical Workers, Local 1245 (IBEW)	6%

International Union of Operating Engineers Stationary Engineers, Local 39	8%
Roseville Fire Firefighters (RFF)	0%
Roseville Police Association (RPA)	10%
Roseville Police Officers Association (ROPA)	6%
Unrepresented Employee Group	**Percentage**
Confidential	4%
Management	8%

FISCAL IMPACT

There is no direct fiscal impact associated with conducting the public hearing required under Government Code section 3502.3.

ENVIRONMENTAL REVIEW

The California Environmental Quality Act (CEQA) does not apply to activities that will not result in a direct or reasonably foreseeable indirect physical change in the environment or is otherwise not considered a project as defined by CEQA Statute §21065 and CEQA State Guidelines §15060(c)(3) and §15378. The public hearing and reporting on vacancy rates and recruitment and retention efforts meets the above criteria and is not subject to CEQA. No additional environmental review is required.

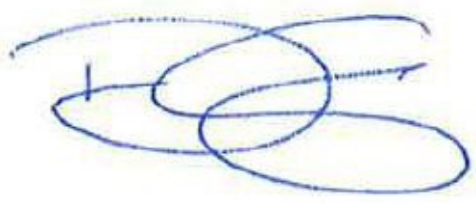
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal E - Deliver exceptional city services

Respectfully Submitted,

Macy Dippert, Human Resources Manager

Stacey Peterson, Human Resources Director



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Dominick Casey, City Manager

COUNCIL COMMUNICATION

CC #: 3827
File #: 0324-01

Title: 2025 Weed Abatement - Public Hearing
Contact: Michael Bradley 916-774-5806 mbradley@roseville.ca.us

Meeting Date: 4/16/2025
Item #: 9.3.

RECOMMENDATION TO COUNCIL

To initiate the 2025 Weed Abatement Program, staff recommends that the City Council adopt a resolution overruling all objections to the proposed abatement of all weeds, rubbish, dirt and/or rank growth, as well as ordering the Fire Chief to abate, or cause to be abated, the subject nuisances within the City of Roseville in accordance with the law.

BACKGROUND

On March 5, 2025, the City Council approved Resolution No. 25-054 declaring all weeds, rubbish, dirt and/or rank growths a public nuisance. It also set the date, time and place for the required public hearing. The attached resolution is the second and final step necessary to initiate the 2025 Weed Abatement Program.

FISCAL IMPACT

Owners of private parcels that are abated by the City are responsible for the costs associated with providing abatement services. A bill is sent to each property owner detailing the abatement costs, as well as an administrative fee. If the property owner fails to pay the bill, the City places a lien on the subject property and the monies owed are reimbursed through the property tax collection process.

ENVIRONMENTAL REVIEW

The Weed Abatement Program involves minor alteration in the condition of the land, water, and or vegetation which will not remove healthy, mature scenic trees. This activity is categorically exempt from CEQA as a Class 4 Exemption (State CEQA Guidelines Section 15304). The Exemption has been prepared and no further CEQA action is required.

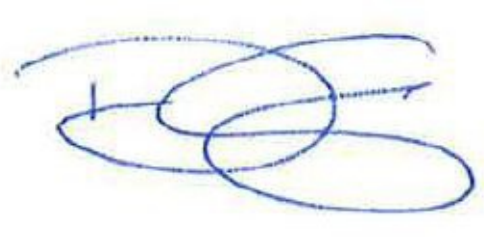
CITY COUNCIL STRATEGIC PLAN/OVERARCHING GOALS

Goal C - Maintain a safe and healthy community.

Respectfully Submitted,

Fire Division Chief, Michael Bradley

Fire Chief, Ryan Harrigan



_____

Dominick Casey, City Manager

ATTACHMENTS:

Description

Resolution 25-086

Weed Abatement Alpha Numeric by Street

Weed Abatement Numeric by APN

Weed Abatement power point

Sample Weed Abatement Letter

Public Notice

CEQA Exemption

RESOLUTION NO. 25-086

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROSEVILLE ORDERING THE DESTRUCTION OR REMOVAL OF ALL WEEDS, DIRT, RUBBISH, AND/OR RANK GROWTHS WITHIN THE CITY OF ROSEVILLE AND OVERRULING ANY AND ALL OBJECTIONS THERETO

WHEREAS, on March 5, 2025, the City Council of the City of Roseville adopted Resolution No. 25-054 declaring all weeds, dirt, rubbish and/or rank growths within the City of Roseville to be a public nuisance and setting a time and place for hearing any objections to the proposed destruction or removal of such weeds, dirt, rubbish and/or rank growths; and

WHEREAS, said public hearing was held on April 16, 2025, at which time all property owners having objections to the proposed abatement of the nuisance were given an opportunity to be heard;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Roseville as follows:

1. Any and all objections to the proposed abatement of the nuisance in Resolution No. 25-054 adopted March 5, 2025, are hereby overruled.

2. The Fire Chief is hereby ordered to abate, or cause to be abated, the nuisance by having all weeds, dirt, rubbish and/or rank growths within the City of Roseville removed in accordance with the law.

PASSED AND ADOPTED by the Council of the City of Roseville this ___ day of _____, 2025, by the following vote on roll call:

AYES COUNCILMEMBERS:

NOES COUNCILMEMBERS:

ABSENT COUNCILMEMBERS:

_____
MAYOR

ATTEST:

_____
City Clerk

Weed Abatement 2025 – List of Parcels

Address	APN	Address	APN
900 ACADIA CT	498-280-041-000	4016 AMORUSO RANCH RD	496-690-059-000
901 ACADIA CT	498-280-032-000	4024 AMORUSO RANCH RD	496-690-058-000
908 ACADIA CT	498-280-040-000	4032 AMORUSO RANCH RD	496-690-057-000
909 ACADIA CT	498-280-033-000	4040 AMORUSO RANCH RD	496-690-056-000
916 ACADIA CT	498-280-039-000	4048 AMORUSO RANCH RD	496-690-055-000
917 ACADIA CT	498-280-034-000	4200 AMORUSO RANCH RD	017-480-027-000
924 ACADIA CT	498-280-038-000	4304 AMORUSO RANCH RD	496-740-001-000
925 ACADIA CT	498-280-035-000	4312 AMORUSO RANCH RD	496-740-002-000
932 ACADIA CT	498-280-037-000	4320 AMORUSO RANCH RD	496-740-003-000
933 ACADIA CT	498-280-036-000	4328 AMORUSO RANCH RD	496-740-004-000
532 ALOLA ST	013-053-015-000	4336 AMORUSO RANCH RD	496-740-005-000
335 ALTA VISTA AV	011-172-007-000	4344 AMORUSO RANCH RD	496-740-006-000
625 ALTA VISTA AV	011-181-006-000	1271 ANTELOPE CREEK DR	015-166-014-000
4001 ALUMROOT DR	498-430-078-000	5073 ASTEROID WY	498-360-061-000
4009 ALUMROOT DR	498-430-077-000	5113 ASTEROID WY	498-360-066-000
4025 ALUMROOT DR	498-430-075-000	5121 ASTEROID WY	498-360-067-000
4025 ALUMROOT DR	498-430-076-000	5129 ASTEROID WY	498-360-068-000
4041 ALUMROOT DR	498-430-074-000	5137 ASTEROID WY	498-360-069-000
4048 ALUMROOT DR	498-430-042-000	5145 ASTEROID WY	498-360-070-000
4049 ALUMROOT DR	498-440-075-000	5152 ASTEROID WY	498-360-099-000
4056 ALUMROOT DR	498-430-043-000	5153 ASTEROID WY	498-360-071-000
4064 ALUMROOT DR	498-430-044-000	5160 ASTEROID WY	498-360-098-000
4072 ALUMROOT DR	498-430-045-000	5161 ASTEROID WY	498-360-072-000
4073 ALUMROOT DR	498-430-073-000	5168 ASTEROID WY	498-360-097-000
4080 ALUMROOT DR	498-430-046-000	5169 ASTEROID WY	498-360-073-000
4081 ALUMROOT DR	498-430-072-000	5176 ASTEROID WY	498-360-096-000
4088 ALUMROOT DR	498-430-047-000	5184 ASTEROID WY	498-360-095-000
4089 ALUMROOT DR	498-430-071-000	5192 ASTEROID WY	498-360-094-000
4096 ALUMROOT DR	498-430-048-000	5200 ASTEROID WY	498-360-093-000
4097 ALUMROOT DR	498-430-070-000	5208 ASTEROID WY	498-360-092-000
4104 ALUMROOT DR	498-430-049-000	8000 ATKINSON ST	473-180-011-000
4105 ALUMROOT DR	498-430-069-000	904 ATLANTIC ST	013-012-002-000
4112 ALUMROOT DR	498-430-050-000	8650 AUBURN BL	471-080-003-000
4113 ALUMROOT DR	498-430-068-000	4000 AZURE SPRING WY	496-790-008-000
4120 ALUMROOT DR	498-430-051-000	4001 AZURE SPRING WY	496-790-023-000
4121 ALUMROOT DR	498-430-067-000	4009 AZURE SPRING WY	496-790-022-000
4128 ALUMROOT DR	498-430-052-000	4016 AZURE SPRING WY	496-790-009-000
4129 ALUMROOT DR	498-430-066-000	4017 AZURE SPRING WY	496-790-021-000
4136 ALUMROOT DR	498-430-053-000	4024 AZURE SPRING WY	496-790-010-000
4137 ALUMROOT DR	498-430-065-000	4025 AZURE SPRING WY	496-790-020-000
4144 ALUMROOT DR	498-430-054-000	4032 AZURE SPRING WY	496-790-011-000
4145 ALUMROOT DR	498-430-064-000	4033 AZURE SPRING WY	496-790-019-000
4152 ALUMROOT DR	498-430-055-000	4040 AZURE SPRING WY	496-790-012-000
4153 ALUMROOT DR	498-430-063-000	4041 AZURE SPRING WY	496-790-018-000
4160 ALUMROOT DR	498-430-056-000	4048 AZURE SPRING WY	496-790-013-000
1055 AMINGTON DR	490-360-003-000	4049 AZURE SPRING WY	496-790-017-000
4000 AMORUSO RANCH RD	496-690-061-000	4057 AZURE SPRING WY	496-780-003-000
4008 AMORUSO RANCH RD	496-690-060-000	4065 AZURE SPRING WY	496-780-002-000

Address	APN	Address	APN
4073 AZURE SPRING WY	496-780-001-000	5190 BASELINE RD	498-410-001-000
329½ B ST	014-033-024-000	5200 BASELINE RD	498-410-018-000
1887 BALBOA DR	469-100-046-000	5208 BASELINE RD	498-410-014-000
500 BANDON DUNES CT	015-920-003-000	5240 BASELINE RD	498-410-015-000
508 BANDON DUNES CT	015-920-004-000	5250 BASELINE RD	498-410-016-000
516 BANDON DUNES CT	015-920-005-000	5260 BASELINE RD	498-410-017-000
517 BANDON DUNES CT	015-920-011-000	5270 BASELINE RD	498-410-020-000
524 BANDON DUNES CT	015-920-006-000	5280 BASELINE RD	498-410-019-000
525 BANDON DUNES CT	015-920-010-000	5300 BASELINE RD	498-410-024-000
532 BANDON DUNES CT	015-920-007-000	5320 BASELINE RD	498-410-025-000
533 BANDON DUNES CT	015-920-009-000	5340 BASELINE RD	498-410-026-000
540 BANDON DUNES CT	015-920-008-000	5380 BASELINE RD	498-410-027-000
2009 BANDON DUNES DR	015-910-030-000	5410 BASELINE RD	498-410-028-000
2017 BANDON DUNES DR	015-910-029-000	5750 BASELINE RD	499-010-100-000
2025 BANDON DUNES DR	015-910-028-000	5850 BASELINE RD	499-010-099-000
2033 BANDON DUNES DR	015-910-027-000	5900 BASELINE RD	499-010-081-000
2041 BANDON DUNES DR	015-910-026-000	6000 BASELINE RD	499-010-075-000
2048 BANDON DUNES DR	015-910-010-000	6200 BASELINE RD	499-010-074-000
2049 BANDON DUNES DR	015-910-025-000	101 BAY HILL CT	015-910-005-000
2057 BANDON DUNES DR	015-910-024-000	109 BAY HILL CT	015-910-004-000
2065 BANDON DUNES DR	015-910-023-000	117 BAY HILL CT	015-910-003-000
2073 BANDON DUNES DR	015-910-022-000	125 BAY HILL CT	015-910-002-000
2081 BANDON DUNES DR	015-910-021-000	133 BAY HILL CT	015-910-001-000
2096 BANDON DUNES DR	015-920-001-000	5000 BEEPLANT ST	498-440-074-000
2104 BANDON DUNES DR	015-920-002-000	5008 BEEPLANT ST	498-440-073-000
5009 BASALTO WY	498-380-011-000	5009 BEEPLANT ST	498-440-076-000
5017 BASALTO WY	498-380-010-000	5016 BEEPLANT ST	498-440-072-000
5025 BASALTO WY	498-380-009-000	5017 BEEPLANT ST	498-440-077-000
5032 BASALTO WY	498-380-014-000	5025 BEEPLANT ST	498-440-078-000
5033 BASALTO WY	498-380-008-000	5032 BEEPLANT ST	498-440-071-000
5040 BASALTO WY	498-380-015-000	5040 BEEPLANT ST	498-440-070-000
5041 BASALTO WY	498-380-007-000	5048 BEEPLANT ST	498-440-069-000
5048 BASALTO WY	498-380-016-000	5056 BEEPLANT ST	498-440-068-000
5049 BASALTO WY	498-380-006-000	5064 BEEPLANT ST	498-440-067-000
5056 BASALTO WY	498-380-017-000	5072 BEEPLANT ST	498-440-066-000
5057 BASALTO WY	498-380-005-000	5080 BEEPLANT ST	498-440-065-000
5064 BASALTO WY	498-380-018-000	5088 BEEPLANT ST	498-440-064-000
5065 BASALTO WY	498-380-004-000	5096 BEEPLANT ST	498-440-063-000
5008 BASELINE RD	498-410-005-000	6292 BENCHMARK DR	496-610-002-000
5040 BASELINE RD	498-410-004-000	6339 BENCHMARK DR	496-610-004-000
5050 BASELINE RD	498-410-006-000	6456 BENCHMARK DR	496-610-001-000
5060 BASELINE RD	498-410-007-000	6457 BENCHMARK DR	496-610-003-000
5070 BASELINE RD	498-410-003-000	505 BERRY ST	015-100-031-000
5080 BASELINE RD	498-410-009-000	601 BERRY ST	015-100-066-000
5088 BASELINE RD	498-410-008-000	400 BETHPAGE CT	015-910-011-000
5108 BASELINE RD	498-410-002-000	401 BETHPAGE CT	015-910-020-000
5120 BASELINE RD	498-410-010-000	409 BETHPAGE CT	015-910-019-000
5160 BASELINE RD	498-410-011-000	417 BETHPAGE CT	015-910-018-000
5170 BASELINE RD	498-410-012-000	424 BETHPAGE CT	015-910-012-000
5180 BASELINE RD	498-410-013-000	425 BETHPAGE CT	015-910-017-000

Address	APN	Address	APN
432 BETHPAGE CT	015-910-013-000	2880 BLUE OAKS BL	017-490-026-000
433 BETHPAGE CT	015-910-016-000	3040 BLUE OAKS BL	017-490-008-000
440 BETHPAGE CT	015-910-014-000	3000 BLUE OPAL CI	496-690-046-000
441 BETHPAGE CT	015-910-015-000	3001 BLUE OPAL CI	496-690-037-000
9000 BLACK OPAL CI	496-710-016-000	3008 BLUE OPAL CI	496-690-045-000
9001 BLACK OPAL CI	496-710-001-000	3009 BLUE OPAL CI	496-690-038-000
9008 BLACK OPAL CI	496-710-015-000	3016 BLUE OPAL CI	496-690-044-000
9009 BLACK OPAL CI	496-710-002-000	3017 BLUE OPAL CI	496-690-039-000
9089 BLACK OPAL CI	496-790-038-000	3024 BLUE OPAL CI	496-690-043-000
9097 BLACK OPAL CI	496-790-039-000	3025 BLUE OPAL CI	496-690-040-000
9105 BLACK OPAL CI	496-790-040-000	3033 BLUE OPAL CI	496-690-041-000
9113 BLACK OPAL CI	496-790-041-000	3041 BLUE OPAL CI	496-690-042-000
9121 BLACK OPAL CI	496-790-042-000	3049 BLUE OPAL CI	496-700-001-000
9129 BLACK OPAL CI	496-790-043-000	3057 BLUE OPAL CI	496-700-002-000
2001 BLUE COPPICE WY	498-300-061-000	3065 BLUE OPAL CI	496-700-003-000
2008 BLUE COPPICE WY	498-300-095-000	3073 BLUE OPAL CI	496-700-004-000
2009 BLUE COPPICE WY	498-300-062-000	3080 BLUE OPAL CI	496-700-008-000
2017 BLUE COPPICE WY	498-300-063-000	3088 BLUE OPAL CI	496-700-007-000
2025 BLUE COPPICE WY	498-300-064-000	3096 BLUE OPAL CI	496-700-006-000
2033 BLUE COPPICE WY	498-300-065-000	3104 BLUE OPAL CI	496-700-005-000
2040 BLUE COPPICE WY	498-300-101-000	2000 BLUE SPUR DR	496-690-036-000
2041 BLUE COPPICE WY	498-300-066-000	2001 BLUE SPUR DR	496-690-047-000
2048 BLUE COPPICE WY	498-300-090-000	2008 BLUE SPUR DR	496-690-035-000
2049 BLUE COPPICE WY	498-300-067-000	2009 BLUE SPUR DR	496-690-048-000
2056 BLUE COPPICE WY	498-300-089-000	2016 BLUE SPUR DR	496-690-034-000
2057 BLUE COPPICE WY	498-300-068-000	2017 BLUE SPUR DR	496-690-049-000
2064 BLUE COPPICE WY	498-300-088-000	2024 BLUE SPUR DR	496-690-033-000
2065 BLUE COPPICE WY	498-300-069-000	2025 BLUE SPUR DR	496-690-050-000
2072 BLUE COPPICE WY	498-300-087-000	2032 BLUE SPUR DR	496-690-032-000
2080 BLUE COPPICE WY	498-300-086-000	2033 BLUE SPUR DR	496-690-051-000
2081 BLUE COPPICE WY	498-300-070-000	2040 BLUE SPUR DR	496-690-031-000
2088 BLUE COPPICE WY	498-300-085-000	2041 BLUE SPUR DR	496-690-052-000
2089 BLUE COPPICE WY	498-300-071-000	2048 BLUE SPUR DR	496-690-030-000
2096 BLUE COPPICE WY	498-300-084-000	2049 BLUE SPUR DR	496-690-053-000
2097 BLUE COPPICE WY	498-300-072-000	2064 BLUE SPUR DR	496-690-054-000
2104 BLUE COPPICE WY	498-300-083-000	2001 BLUE STAR DR	496-740-058-000
2105 BLUE COPPICE WY	498-300-073-000	2009 BLUE STAR DR	496-740-057-000
2112 BLUE COPPICE WY	498-300-082-000	2017 BLUE STAR DR	496-740-056-000
2120 BLUE COPPICE WY	498-300-081-000	2033 BLUE STAR DR	496-740-062-000
2128 BLUE COPPICE WY	498-300-080-000	2041 BLUE STAR DR	496-740-063-000
1431 BLUE OAKS BL	481-260-014-000	2049 BLUE STAR DR	496-740-064-000
1451 BLUE OAKS BL	481-260-013-000	2057 BLUE STAR DR	496-740-065-000
1474 BLUE OAKS BL	482-340-018-000	2065 BLUE STAR DR	496-740-066-000
1475 BLUE OAKS BL	481-260-005-000	2073 BLUE STAR DR	496-740-067-000
1484 BLUE OAKS BL	482-340-015-000	2081 BLUE STAR DR	496-740-068-000
1485 BLUE OAKS BL	481-260-052-000	2161 BLUE STAR DR	496-760-012-000
1488 BLUE OAKS BL	482-340-017-000	2185 BLUE STAR DR	496-760-009-000
2151 BLUE OAKS BL	017-101-038-000	2201 BLUE STAR DR	496-770-020-000
2451 BLUE OAKS BL	492-012-097-000	2209 BLUE STAR DR	496-770-019-000
2860 BLUE OAKS BL	017-490-027-000	2217 BLUE STAR DR	496-770-018-000

Address	APN	Address	APN
2225 BLUE STAR DR	496-770-017-000	6049 BUTTERFLY SPRING WY	496-790-061-000
2233 BLUE STAR DR	496-770-016-000	6057 BUTTERFLY SPRING WY	496-790-062-000
2241 BLUE STAR DR	496-770-015-000	6065 BUTTERFLY SPRING WY	496-790-063-000
200 BONNY KNOLL RD	014-120-010-000	6073 BUTTERFLY SPRING WY	496-790-064-000
200 BRASS SPUR CT	496-730-061-000	300 CABOT CANYON CT	498-300-079-000
201 BRASS SPUR CT	496-730-056-000	308 CABOT CANYON CT	498-300-078-000
208 BRASS SPUR CT	496-730-060-000	309 CABOT CANYON CT	498-300-103-000
209 BRASS SPUR CT	496-730-057-000	316 CABOT CANYON CT	498-300-077-000
216 BRASS SPUR CT	496-730-059-000	317 CABOT CANYON CT	498-300-104-000
217 BRASS SPUR CT	496-730-058-000	325 CABOT CANYON CT	498-300-105-000
2000 BRASS SPUR WY	496-720-067-000	305 CAMPO ST	011-182-010-000
2008 BRASS SPUR WY	496-730-066-000	800 CANOE CT	496-820-011-000
2016 BRASS SPUR WY	496-730-065-000	801 CANOE CT	496-820-001-000
2024 BRASS SPUR WY	496-730-064-000	808 CANOE CT	496-820-010-000
2032 BRASS SPUR WY	496-730-063-000	809 CANOE CT	496-820-002-000
2033 BRASS SPUR WY	496-730-047-000	816 CANOE CT	496-820-009-000
2040 BRASS SPUR WY	496-730-062-000	817 CANOE CT	496-820-003-000
2041 BRASS SPUR WY	496-730-046-000	824 CANOE CT	496-820-008-000
916 BREA CT	492-490-018-000	825 CANOE CT	496-820-004-000
9048 BREA WY	492-490-009-000	832 CANOE CT	496-820-007-000
9056 BREA WY	492-490-010-000	833 CANOE CT	496-820-005-000
900 BROCK CT	496-780-035-000	840 CANOE CT	496-820-006-000
901 BROCK CT	496-780-027-000	200 CANOPY CT	496-810-032-000
908 BROCK CT	496-780-034-000	201 CANOPY CT	496-810-037-000
909 BROCK CT	496-780-028-000	208 CANOPY CT	496-810-033-000
916 BROCK CT	496-780-033-000	209 CANOPY CT	496-810-036-000
917 BROCK CT	496-780-029-000	216 CANOPY CT	496-810-034-000
925 BROCK CT	496-780-030-000	217 CANOPY CT	496-810-035-000
932 BROCK CT	496-780-032-000	5000 CANTEEN DR	496-830-038-000
933 BROCK CT	496-780-031-000	5001 CANTEEN DR	496-830-055-000
700 BUFFALO CT	496-780-023-000	5008 CANTEEN DR	496-830-039-000
708 BUFFALO CT	496-780-024-000	5009 CANTEEN DR	496-830-054-000
716 BUFFALO CT	496-780-025-000	5016 CANTEEN DR	496-830-040-000
724 BUFFALO CT	496-780-026-000	5017 CANTEEN DR	496-830-053-000
201 BUTTERFLY SPRING CT	496-790-065-000	5024 CANTEEN DR	496-830-041-000
209 BUTTERFLY SPRING CT	496-790-066-000	5025 CANTEEN DR	496-830-052-000
216 BUTTERFLY SPRING CT	496-790-075-000	5032 CANTEEN DR	496-830-042-000
217 BUTTERFLY SPRING CT	496-790-067-000	5033 CANTEEN DR	496-830-051-000
224 BUTTERFLY SPRING CT	496-790-074-000	5040 CANTEEN DR	496-830-043-000
225 BUTTERFLY SPRING CT	496-790-068-000	5041 CANTEEN DR	496-830-050-000
232 BUTTERFLY SPRING CT	496-790-073-000	5048 CANTEEN DR	496-830-044-000
233 BUTTERFLY SPRING CT	496-790-069-000	5049 CANTEEN DR	496-830-049-000
240 BUTTERFLY SPRING CT	496-790-072-000	5056 CANTEEN DR	496-830-045-000
241 BUTTERFLY SPRING CT	496-790-070-000	5057 CANTEEN DR	496-830-048-000
249 BUTTERFLY SPRING CT	496-790-071-000	5064 CANTEEN DR	496-830-046-000
6009 BUTTERFLY SPRING WY	496-800-041-000	5065 CANTEEN DR	496-830-047-000
6017 BUTTERFLY SPRING WY	496-800-042-000	800 CANYONLAND CT	498-280-031-000
6025 BUTTERFLY SPRING WY	496-790-058-000	808 CANYONLAND CT	498-280-030-000
6033 BUTTERFLY SPRING WY	496-790-059-000	816 CANYONLAND CT	498-280-029-000
6041 BUTTERFLY SPRING WY	496-790-060-000	824 CANYONLAND CT	498-280-028-000

Address	APN	Address	APN
832 CANYONLAND CT	498-280-027-000	708 CHIPMUNK CT	496-820-023-000
1128 CARABALLO DR	499-180-006-000	709 CHIPMUNK CT	496-820-013-000
1136 CARABALLO DR	499-180-007-000	716 CHIPMUNK CT	496-820-022-000
1144 CARABALLO DR	499-180-008-000	717 CHIPMUNK CT	496-820-014-000
1152 CARABALLO DR	499-180-009-000	724 CHIPMUNK CT	496-820-021-000
1160 CARABALLO DR	499-180-010-000	725 CHIPMUNK CT	496-820-015-000
1176 CARABALLO DR	499-180-012-000	732 CHIPMUNK CT	496-820-020-000
1184 CARABALLO DR	499-180-013-000	733 CHIPMUNK CT	496-820-016-000
1192 CARABALLO DR	499-180-014-000	740 CHIPMUNK CT	496-820-019-000
1193 CARABALLO DR	499-180-099-000	741 CHIPMUNK CT	496-820-017-000
1200 CARABALLO DR	499-180-015-000	748 CHIPMUNK CT	496-820-018-000
1201 CARABALLO DR	499-180-098-000	405 CHURCH ST	012-152-011-000
1208 CARABALLO DR	499-180-016-000	600 CHURCH ST	012-144-010-000
1209 CARABALLO DR	499-180-097-000	1000 CHURCH ST	012-171-031-000
1216 CARABALLO DR	499-180-017-000	1004 CHURCH ST	012-171-030-000
1217 CARABALLO DR	499-180-096-000	1008 CHURCH ST	012-171-029-000
7032 CARBONE DR	498-390-052-000	1012 CHURCH ST	012-171-013-000
7033 CARBONE DR	498-390-044-000	1110 CHURCH ST	012-185-024-000
7040 CARBONE DR	498-390-053-000	1118 CHURCH ST	012-185-012-000
7041 CARBONE DR	498-390-043-000	823 CIRBY WY	471-010-009-000
7048 CARBONE DR	498-390-054-000	823 CIRBY WY	471-010-006-000
7049 CARBONE DR	498-390-042-000	823 CIRBY WY	471-010-003-000
7056 CARBONE DR	498-390-055-000	823 CIRBY WY	471-010-005-000
7057 CARBONE DR	498-390-041-000	1021 CIRBY WY	471-190-046-000
7064 CARBONE DR	498-390-056-000	301 CLIFTON CT	496-730-048-000
7065 CARBONE DR	498-390-040-000	309 CLIFTON CT	496-730-049-000
7072 CARBONE DR	498-390-057-000	316 CLIFTON CT	496-730-053-000
7073 CARBONE DR	498-390-039-000	317 CLIFTON CT	496-730-050-000
1135 CELEBRATE DR	496-620-012-000	324 CLIFTON CT	496-730-052-000
1135 CELEBRATE DR	496-620-016-000	325 CLIFTON CT	496-730-051-000
1200 CELEBRATE DR	496-650-050-000	3000 COMET DR	496-770-010-000
1201 CELEBRATE DR	496-820-025-000	3009 COMET DR	496-800-002-000
1208 CELEBRATE DR	496-650-051-000	3017 COMET DR	496-800-001-000
1209 CELEBRATE DR	496-820-026-000	251 CONFERENCE CENTER DR	363-011-097-000
1216 CELEBRATE DR	496-650-052-000	300 CONFERENCE CENTER DR	363-480-007-000
1217 CELEBRATE DR	496-820-027-000	310 CONFERENCE CENTER DR	363-480-002-000
1224 CELEBRATE DR	496-650-053-000	320 CONFERENCE CENTER DR	363-480-004-000
1225 CELEBRATE DR	496-820-028-000	330 CONFERENCE CENTER DR	363-480-003-000
1233 CELEBRATE DR	496-820-029-000	350 CONFERENCE CENTER DR	363-480-008-000
1241 CELEBRATE DR	496-820-030-000	2544 CONSTELLATION CI	498-330-008-000
1249 CELEBRATE DR	496-820-031-000	2552 CONSTELLATION CI	498-330-007-000
1257 CELEBRATE DR	496-820-032-000	2553 CONSTELLATION CI	498-330-069-000
501 CENTER CT	013-030-016-000	2560 CONSTELLATION CI	498-330-006-000
508 CENTER CT	013-030-012-000	2561 CONSTELLATION CI	498-330-070-000
509 CENTER CT	013-030-015-000	2568 CONSTELLATION CI	498-330-005-000
516 CENTER CT	013-030-013-000	2569 CONSTELLATION CI	498-330-071-000
517 CENTER CT	013-030-014-000	2576 CONSTELLATION CI	498-330-004-000
124 CENTER ST	013-022-047-000	2577 CONSTELLATION CI	498-330-072-000
700 CHIPMUNK CT	496-820-024-000	2585 CONSTELLATION CI	498-330-073-000
701 CHIPMUNK CT	496-820-012-000	2593 CONSTELLATION CI	498-330-074-000

Address	APN	Address	APN
2601 CONSTELLATION CI	498-330-075-000	417 DIAMOND SPRINGS CT	496-800-011-000
600 CORDUROY CT	496-650-044-000	424 DIAMOND SPRINGS CT	496-800-017-000
601 CORDUROY CT	496-650-049-000	425 DIAMOND SPRINGS CT	496-800-010-000
609 CORDUROY CT	496-650-048-000	432 DIAMOND SPRINGS CT	496-800-018-000
617 CORDUROY CT	496-650-047-000	433 DIAMOND SPRINGS CT	496-800-009-000
1100 COTTONWOOD DR	469-110-031-000	440 DIAMOND SPRINGS CT	496-800-019-000
3801 COUNTRY CLUB DR	017-380-013-000	441 DIAMOND SPRINGS CT	496-800-008-000
4684 CRAWFORD PW	492-500-086-000	4000 DIVERGE DR	496-650-028-000
3000 CREEKVIEW DR	496-660-028-000	4001 DIVERGE DR	496-650-043-000
3008 CREEKVIEW DR	496-660-029-000	4008 DIVERGE DR	496-650-029-000
3016 CREEKVIEW DR	496-660-030-000	4016 DIVERGE DR	496-650-030-000
3024 CREEKVIEW DR	496-660-031-000	4017 DIVERGE DR	496-650-042-000
401 CRESCENT MOON CT	496-660-037-000	4024 DIVERGE DR	496-650-031-000
408 CRESCENT MOON CT	496-660-032-000	4032 DIVERGE DR	496-650-032-000
409 CRESCENT MOON CT	496-660-036-000	4033 DIVERGE DR	496-650-041-000
416 CRESCENT MOON CT	496-660-033-000	4040 DIVERGE DR	496-650-033-000
417 CRESCENT MOON CT	496-660-035-000	4041 DIVERGE DR	496-650-040-000
424 CRESCENT MOON CT	496-660-034-000	4048 DIVERGE DR	496-650-034-000
425 CRESCENT MOON CT	496-650-023-000	4049 DIVERGE DR	496-650-039-000
432 CRESCENT MOON CT	496-650-019-000	4056 DIVERGE DR	496-650-035-000
433 CRESCENT MOON CT	496-650-022-000	4057 DIVERGE DR	496-650-038-000
440 CRESCENT MOON CT	496-650-020-000	300 DOG HOBBLE CT	498-440-039-000
441 CRESCENT MOON CT	496-650-021-000	301 DOG HOBBLE CT	498-430-030-000
500 DEREK PL	015-350-005-000	308 DOG HOBBLE CT	498-440-040-000
405 DESERT ELFIN CT	498-300-004-000	309 DOG HOBBLE CT	498-440-053-000
409 DESERT ELFIN CT	498-300-005-000	316 DOG HOBBLE CT	498-440-041-000
413 DESERT ELFIN CT	498-300-006-000	317 DOG HOBBLE CT	498-440-052-000
417 DESERT ELFIN CT	498-300-007-000	324 DOG HOBBLE CT	498-440-042-000
421 DESERT ELFIN CT	498-300-008-000	325 DOG HOBBLE CT	498-440-051-000
425 DESERT ELFIN CT	498-300-009-000	332 DOG HOBBLE CT	498-440-043-000
429 DESERT ELFIN CT	498-300-010-000	333 DOG HOBBLE CT	498-440-050-000
433 DESERT ELFIN CT	498-300-011-000	340 DOG HOBBLE CT	498-440-044-000
437 DESERT ELFIN CT	498-300-012-000	341 DOG HOBBLE CT	498-440-049-000
440 DESERT ELFIN CT	498-300-021-000	348 DOG HOBBLE CT	498-440-045-000
441 DESERT ELFIN CT	498-300-013-000	356 DOG HOBBLE CT	498-440-046-000
444 DESERT ELFIN CT	498-300-020-000	357 DOG HOBBLE CT	498-440-047-000
445 DESERT ELFIN CT	498-300-014-000	3009 DOG HOBBLE WY	498-430-037-000
448 DESERT ELFIN CT	498-300-019-000	3016 DOG HOBBLE WY	498-430-025-000
449 DESERT ELFIN CT	498-300-015-000	3017 DOG HOBBLE WY	498-430-036-000
452 DESERT ELFIN CT	498-300-018-000	3024 DOG HOBBLE WY	498-430-026-000
453 DESERT ELFIN CT	498-300-016-000	3025 DOG HOBBLE WY	498-430-035-000
457 DESERT ELFIN CT	498-300-017-000	3032 DOG HOBBLE WY	498-430-027-000
120 DIAMOND CREEK PL	482-420-002-000	3033 DOG HOBBLE WY	498-430-034-000
550 DIAMOND OAKS RD	363-011-054-000	3040 DOG HOBBLE WY	498-430-028-000
551 DIAMOND OAKS RD	363-011-058-000	3041 DOG HOBBLE WY	498-430-033-000
400 DIAMOND SPRINGS CT	496-800-014-000	3048 DOG HOBBLE WY	498-430-029-000
401 DIAMOND SPRINGS CT	496-800-013-000	3049 DOG HOBBLE WY	498-430-032-000
408 DIAMOND SPRINGS CT	496-800-015-000	3057 DOG HOBBLE WY	498-430-031-000
409 DIAMOND SPRINGS CT	496-800-012-000	906 DOUGLAS BL	014-113-049-000
416 DIAMOND SPRINGS CT	496-800-016-000	1017 DOUGLAS BL	013-194-027-000

Address	APN	Address	APN
1600 DOUGLAS BL	014-450-041-000	426 FIFTH ST	014-041-016-000
1600 DOUGLAS BL	014-450-053-000	435 FIFTH ST	014-061-039-000
1905 DOUGLAS BL	048-011-005-000	115 FIG ST	012-171-022-000
2130 DOUGLAS BL	048-420-013-000	213 FIG ST	012-162-009-000
3000 DUBLIN PL	013-300-001-000	246 FIG ST	012-134-031-000
3008 DUBLIN PL	013-300-002-000	500 FLANNEL CT	496-660-038-000
3016 DUBLIN PL	013-300-003-000	501 FLANNEL CT	496-650-027-000
3024 DUBLIN PL	013-300-004-000	508 FLANNEL CT	496-660-039-000
3032 DUBLIN PL	013-300-005-000	509 FLANNEL CT	496-650-026-000
3040 DUBLIN PL	013-300-006-000	516 FLANNEL CT	496-650-024-000
3048 DUBLIN PL	013-300-007-000	517 FLANNEL CT	496-650-025-000
3056 DUBLIN PL	013-300-008-000	216 FLAT PLAINS CT	496-690-002-000
3064 DUBLIN PL	013-300-015-000	4113 FLATHEAD DR	499-180-026-000
3072 DUBLIN PL	013-300-014-000	4121 FLATHEAD DR	499-180-025-000
3080 DUBLIN PL	013-300-013-000	4129 FLATHEAD DR	499-180-024-000
3088 DUBLIN PL	013-300-012-000	4137 FLATHEAD DR	499-180-023-000
3096 DUBLIN PL	013-300-011-000	4145 FLATHEAD DR	499-180-022-000
3104 DUBLIN PL	013-300-010-000	4152 FLATHEAD DR	499-180-091-000
3112 DUBLIN PL	013-300-009-000	4153 FLATHEAD DR	499-180-021-000
3120 DUBLIN PL	013-300-022-000	4160 FLATHEAD DR	499-180-092-000
3128 DUBLIN PL	013-300-021-000	4161 FLATHEAD DR	499-180-020-000
3136 DUBLIN PL	013-300-020-000	4168 FLATHEAD DR	499-180-093-000
3144 DUBLIN PL	013-300-019-000	4169 FLATHEAD DR	499-180-019-000
3152 DUBLIN PL	013-300-018-000	4176 FLATHEAD DR	499-180-094-000
3160 DUBLIN PL	013-300-017-000	4177 FLATHEAD DR	499-180-018-000
3168 DUBLIN PL	013-300-016-000	4184 FLATHEAD DR	499-180-095-000
408 EARL AV	014-252-003-000	7631 FOOTHILLS BL	017-232-033-000
220 EAST ST	013-024-023-000	7731 FOOTHILLS BL	017-232-042-000
405 EAST ST	013-030-019-000	7751 FOOTHILLS BL	017-232-043-000
300 ELEFA ST	011-092-010-000	7801 FOOTHILLS BL	017-232-040-000
300 ELEFA ST	011-092-011-000	7851 FOOTHILLS BL	017-232-041-000
113 ELM ST	012-172-020-000	8701 FOOTHILLS BL	017-232-005-000
116 ELM ST	012-142-018-000	8810 FOOTHILLS BL	481-260-049-000
262 ELM ST	012-132-047-000	8901 FOOTHILLS BL	017-232-006-000
5057 ENVY ST	481-380-006-000	9070 FOOTHILLS BL	481-260-048-000
1513 EUREKA RD	048-013-013-000	10019 FOOTHILLS BL	017-250-010-000
10435 FAIRWAY DR	017-123-020-000	10021 FOOTHILLS BL	017-250-019-000
10521 FAIRWAY DR	357-150-005-000	10191 FOOTHILLS BL	485-080-005-000
10537 FAIRWAY DR	357-150-012-000	10198 FOOTHILLS BL	017-250-076-000
10553 FAIRWAY DR	357-150-011-000	700 FOUNTAIN CT	496-740-007-000
10577 FAIRWAY DR	357-150-009-000	708 FOUNTAIN CT	496-740-008-000
4851 FIDDYMENT RD	492-013-002-000	709 FOUNTAIN CT	496-740-017-000
4951 FIDDYMENT RD	492-013-006-000	716 FOUNTAIN CT	496-740-009-000
6802 FIDDYMENT RD	498-370-007-000	717 FOUNTAIN CT	496-740-016-000
6808 FIDDYMENT RD	498-370-008-000	724 FOUNTAIN CT	496-740-010-000
6816 FIDDYMENT RD	498-370-010-000	725 FOUNTAIN CT	496-740-015-000
6820 FIDDYMENT RD	498-370-009-000	732 FOUNTAIN CT	496-740-011-000
6824 FIDDYMENT RD	498-370-011-000	733 FOUNTAIN CT	496-740-014-000
6828 FIDDYMENT RD	498-370-012-000	740 FOUNTAIN CT	496-740-012-000
6872 FIDDYMENT RD	498-010-021-000	741 FOUNTAIN CT	496-740-013-000

Address	APN	Address	APN
501 FOXTAIL CT	496-740-047-000	4072 GOLD BEAM WY	498-420-112-000
509 FOXTAIL CT	496-740-046-000	4080 GOLD BEAM WY	498-420-111-000
516 FOXTAIL CT	496-740-036-000	4088 GOLD BEAM WY	498-420-110-000
517 FOXTAIL CT	496-740-045-000	4096 GOLD BEAM WY	498-420-109-000
524 FOXTAIL CT	496-740-037-000	4104 GOLD BEAM WY	498-420-108-000
525 FOXTAIL CT	496-740-044-000	4112 GOLD BEAM WY	498-420-107-000
532 FOXTAIL CT	496-740-038-000	4120 GOLD BEAM WY	498-420-106-000
533 FOXTAIL CT	496-740-043-000	1001 GRANITO WY	498-400-027-000
540 FOXTAIL CT	496-740-039-000	1009 GRANITO WY	498-400-028-000
541 FOXTAIL CT	496-740-042-000	1017 GRANITO WY	498-400-029-000
548 FOXTAIL CT	496-740-040-000	1025 GRANITO WY	498-400-030-000
556 FOXTAIL CT	496-740-041-000	1033 GRANITO WY	498-400-031-000
3000 FOXTAIL WY	496-740-072-000	125 GRAPE ST	012-185-029-000
3008 FOXTAIL WY	496-740-071-000	500 GRAZING RANCH CT	496-700-033-000
3016 FOXTAIL WY	496-740-070-000	508 GRAZING RANCH CT	496-700-032-000
3017 FOXTAIL WY	496-740-092-000	516 GRAZING RANCH CT	496-700-031-000
3024 FOXTAIL WY	496-740-069-000	517 GRAZING RANCH CT	496-700-030-000
3025 FOXTAIL WY	496-740-091-000	6040 GRAZING RANCH RD	496-720-057-000
1698 FREEDOM WY	363-022-025-000	6048 GRAZING RANCH RD	496-720-058-000
1720 FREEDOM WY	363-022-030-000	6056 GRAZING RANCH RD	496-720-059-000
1741 FREEDOM WY	363-022-018-000	6064 GRAZING RANCH RD	496-720-060-000
2000 FREEDOM WY	017-123-080-000	6072 GRAZING RANCH RD	496-720-061-000
2100 FREEDOM WY	017-123-081-000	6080 GRAZING RANCH RD	496-720-062-000
7001 GALILEE RD	017-410-043-000	6088 GRAZING RANCH RD	496-720-063-000
6101 GARLAND WY	496-020-020-000	6096 GRAZING RANCH RD	496-720-064-000
2001 GENTLE RAIN DR	496-770-014-000	6104 GRAZING RANCH RD	496-720-065-000
2009 GENTLE RAIN DR	496-770-013-000	6112 GRAZING RANCH RD	496-720-066-000
2017 GENTLE RAIN DR	496-770-012-000	6280 GRAZING RANCH RD	496-700-037-000
2025 GENTLE RAIN DR	496-770-011-000	6288 GRAZING RANCH RD	496-700-036-000
2090 GENTLE RAIN DR	017-470-037-000	6296 GRAZING RANCH RD	496-700-035-000
2120 GENTLE RAIN DR	496-780-037-000	6304 GRAZING RANCH RD	496-700-034-000
2140 GENTLE RAIN DR	496-780-036-000	7000 GREAT COPPER ST	498-310-105-000
2161 GENTLE RAIN DR	496-780-008-000	7008 GREAT COPPER ST	498-310-104-000
2169 GENTLE RAIN DR	496-780-009-000	7016 GREAT COPPER ST	498-310-103-000
2177 GENTLE RAIN DR	496-780-010-000	7024 GREAT COPPER ST	498-310-102-000
2185 GENTLE RAIN DR	496-780-011-000	7040 GREAT COPPER ST	498-310-101-000
201 GIBSON DR	363-011-042-000	7048 GREAT COPPER ST	498-310-100-000
246 GIBSON DR	361-230-024-000	7049 GREAT COPPER ST	498-310-057-000
960 GIBSON DR	363-030-091-000	7056 GREAT COPPER ST	498-310-099-000
4001 GOLD BEAM WY	498-420-018-000	7057 GREAT COPPER ST	498-310-058-000
4008 GOLD BEAM WY	498-420-120-000	7064 GREAT COPPER ST	498-310-098-000
4009 GOLD BEAM WY	498-420-019-000	7065 GREAT COPPER ST	498-310-059-000
4017 GOLD BEAM WY	498-420-020-000	7072 GREAT COPPER ST	498-310-097-000
4025 GOLD BEAM WY	498-420-021-000	7073 GREAT COPPER ST	498-310-060-000
4033 GOLD BEAM WY	498-420-022-000	7080 GREAT COPPER ST	498-310-096-000
4040 GOLD BEAM WY	498-420-116-000	7081 GREAT COPPER ST	498-310-061-000
4041 GOLD BEAM WY	498-420-023-000	7088 GREAT COPPER ST	498-310-095-000
4048 GOLD BEAM WY	498-420-115-000	7089 GREAT COPPER ST	498-310-062-000
4056 GOLD BEAM WY	498-420-114-000	7096 GREAT COPPER ST	498-310-094-000
4064 GOLD BEAM WY	498-420-113-000	7097 GREAT COPPER ST	498-310-063-000

Address	APN	Address	APN
7104 GREAT COPPER ST	498-310-093-000	228 HARDING BL	013-212-049-000
7105 GREAT COPPER ST	498-310-064-000	1130 HARVEY WY	017-117-097-000
7112 GREAT COPPER ST	498-310-092-000	2551 HAYDEN PW	492-012-003-000
7113 GREAT COPPER ST	498-310-065-000	1000 HEARTLEAF WY	498-440-001-000
7120 GREAT COPPER ST	498-310-091-000	1001 HEARTLEAF WY	498-440-038-000
7121 GREAT COPPER ST	498-310-066-000	1008 HEARTLEAF WY	498-440-002-000
7128 GREAT COPPER ST	498-310-090-000	1009 HEARTLEAF WY	498-440-037-000
7129 GREAT COPPER ST	498-310-067-000	1016 HEARTLEAF WY	498-440-003-000
7136 GREAT COPPER ST	498-310-089-000	1017 HEARTLEAF WY	498-440-036-000
7137 GREAT COPPER ST	498-310-068-000	1024 HEARTLEAF WY	498-440-004-000
7144 GREAT COPPER ST	498-310-088-000	1025 HEARTLEAF WY	498-440-035-000
7145 GREAT COPPER ST	498-310-069-000	1032 HEARTLEAF WY	498-440-005-000
7152 GREAT COPPER ST	498-310-087-000	1033 HEARTLEAF WY	498-440-034-000
7153 GREAT COPPER ST	498-310-070-000	1040 HEARTLEAF WY	498-440-006-000
7160 GREAT COPPER ST	498-310-086-000	1041 HEARTLEAF WY	498-440-033-000
7161 GREAT COPPER ST	498-310-071-000	1048 HEARTLEAF WY	498-440-007-000
7168 GREAT COPPER ST	498-310-085-000	1049 HEARTLEAF WY	498-440-032-000
7169 GREAT COPPER ST	498-310-072-000	1056 HEARTLEAF WY	498-440-008-000
7176 GREAT COPPER ST	498-310-084-000	1057 HEARTLEAF WY	498-440-031-000
7177 GREAT COPPER ST	498-310-073-000	1064 HEARTLEAF WY	498-440-009-000
7184 GREAT COPPER ST	498-310-083-000	1065 HEARTLEAF WY	498-440-030-000
7185 GREAT COPPER ST	498-310-074-000	1072 HEARTLEAF WY	498-440-010-000
7192 GREAT COPPER ST	498-310-082-000	1073 HEARTLEAF WY	498-440-029-000
7193 GREAT COPPER ST	498-310-075-000	1080 HEARTLEAF WY	498-440-011-000
7200 GREAT COPPER ST	498-310-081-000	1088 HEARTLEAF WY	498-440-012-000
7201 GREAT COPPER ST	498-310-076-000	1096 HEARTLEAF WY	498-440-013-000
7208 GREAT COPPER ST	498-310-080-000	1104 HEARTLEAF WY	498-440-014-000
7209 GREAT COPPER ST	498-310-077-000	1112 HEARTLEAF WY	498-440-015-000
7216 GREAT COPPER ST	498-310-079-000	1113 HEARTLEAF WY	498-440-028-000
7232 GREAT COPPER ST	498-310-078-000	1120 HEARTLEAF WY	498-440-016-000
7233 GREAT COPPER ST	498-320-013-000	1121 HEARTLEAF WY	498-440-027-000
7240 GREAT COPPER ST	498-320-012-000	1128 HEARTLEAF WY	498-440-017-000
7241 GREAT COPPER ST	498-320-014-000	1129 HEARTLEAF WY	498-440-026-000
7248 GREAT COPPER ST	498-320-011-000	1136 HEARTLEAF WY	498-440-018-000
7249 GREAT COPPER ST	498-320-015-000	1137 HEARTLEAF WY	498-440-025-000
7256 GREAT COPPER ST	498-320-010-000	1144 HEARTLEAF WY	498-440-019-000
7257 GREAT COPPER ST	498-320-016-000	1145 HEARTLEAF WY	498-440-024-000
7264 GREAT COPPER ST	498-320-009-000	1152 HEARTLEAF WY	498-440-020-000
7265 GREAT COPPER ST	498-320-017-000	1153 HEARTLEAF WY	498-440-023-000
7272 GREAT COPPER ST	498-320-008-000	1160 HEARTLEAF WY	498-440-021-000
5057 GREEN FEATHER WY	496-700-021-000	1161 HEARTLEAF WY	498-430-057-000
5065 GREEN FEATHER WY	496-700-022-000	1168 HEARTLEAF WY	498-440-022-000
5073 GREEN FEATHER WY	496-700-023-000	1176 HEARTLEAF WY	498-430-058-000
600 GREEN SPUR CT	496-700-029-000	1184 HEARTLEAF WY	498-430-059-000
601 GREEN SPUR CT	496-700-024-000	1185 HEARTLEAF WY	498-430-062-000
608 GREEN SPUR CT	496-700-028-000	1192 HEARTLEAF WY	498-430-060-000
609 GREEN SPUR CT	496-700-025-000	1193 HEARTLEAF WY	498-430-061-000
616 GREEN SPUR CT	496-700-027-000	1200 HEARTLEAF WY	498-440-054-000
617 GREEN SPUR CT	496-700-026-000	1201 HEARTLEAF WY	498-440-062-000
219 HARDING BL	013-270-017-000	1208 HEARTLEAF WY	498-440-055-000

Address	APN	Address	APN
1209 HEARTLEAF WY	498-440-061-000	124 IRON GATE CT	496-750-022-000
2088 HERITAGE DR	363-120-021-000	125 IRON GATE CT	496-750-037-000
935 HIGHLAND POINTE DR	363-021-011-000	132 IRON GATE CT	496-750-023-000
9049 HIMALAYA WY	499-070-069-000	133 IRON GATE CT	496-750-036-000
9097 HIMALAYA WY	499-070-074-000	140 IRON GATE CT	496-750-024-000
4000 HORSE TRAIL RD	498-310-004-000	141 IRON GATE CT	496-750-035-000
4001 HORSE TRAIL RD	498-310-053-000	148 IRON GATE CT	496-750-025-000
4009 HORSE TRAIL RD	498-310-054-000	149 IRON GATE CT	496-750-034-000
4017 HORSE TRAIL RD	498-310-055-000	156 IRON GATE CT	496-750-026-000
4024 HORSE TRAIL RD	498-310-001-000	157 IRON GATE CT	496-750-033-000
4025 HORSE TRAIL RD	498-310-056-000	164 IRON GATE CT	496-750-027-000
601 IMPERIAL CT	496-740-031-000	165 IRON GATE CT	496-750-032-000
608 IMPERIAL CT	496-740-021-000	172 IRON GATE CT	496-750-028-000
609 IMPERIAL CT	496-740-030-000	173 IRON GATE CT	496-750-031-000
616 IMPERIAL CT	496-740-022-000	180 IRON GATE CT	496-750-029-000
617 IMPERIAL CT	496-740-029-000	181 IRON GATE CT	496-750-030-000
624 IMPERIAL CT	496-740-023-000	117 IVY ST	012-183-008-000
625 IMPERIAL CT	496-740-028-000	100 JACOBS LADDER CT	498-440-056-000
632 IMPERIAL CT	496-740-024-000	108 JACOBS LADDER CT	498-440-057-000
633 IMPERIAL CT	496-740-027-000	116 JACOBS LADDER CT	498-440-058-000
640 IMPERIAL CT	496-740-025-000	124 JACOBS LADDER CT	498-440-059-000
641 IMPERIAL CT	496-740-026-000	132 JACOBS LADDER CT	498-440-060-000
8300 INDUSTRIAL AV	360-070-002-000	300 JAVELIN CT	498-300-031-000
8450 INDUSTRIAL AV	017-113-008-000	301 JAVELIN CT	498-300-022-000
10568 INDUSTRIAL AV	485-030-007-000	308 JAVELIN CT	498-300-030-000
10616 INDUSTRIAL AV	017-123-004-000	309 JAVELIN CT	498-300-023-000
10651 INDUSTRIAL AV	017-117-012-000	316 JAVELIN CT	498-300-029-000
201 IRON CANYON CT	496-750-018-000	317 JAVELIN CT	498-300-024-000
208 IRON CANYON CT	496-750-001-000	324 JAVELIN CT	498-300-028-000
209 IRON CANYON CT	496-750-017-000	325 JAVELIN CT	498-300-025-000
216 IRON CANYON CT	496-750-002-000	332 JAVELIN CT	498-300-027-000
217 IRON CANYON CT	496-750-016-000	333 JAVELIN CT	498-300-026-000
224 IRON CANYON CT	496-750-003-000	104 KEEHNER AV	014-113-047-000
225 IRON CANYON CT	496-750-015-000	212 KEEHNER AV	014-113-060-000
232 IRON CANYON CT	496-750-004-000	214 KENROY LN	472-170-004-000
233 IRON CANYON CT	496-750-014-000	600 KINDRED LN	014-263-042-000
240 IRON CANYON CT	496-750-005-000	600 KINDRED LN	014-263-045-000
241 IRON CANYON CT	496-750-013-000	1612 KIT CARSON WY	048-350-021-000
248 IRON CANYON CT	496-750-006-000	1614 KIT CARSON WY	048-350-015-000
249 IRON CANYON CT	496-750-012-000	1616 KIT CARSON WY	048-350-016-000
256 IRON CANYON CT	496-750-007-000	1618 KIT CARSON WY	048-350-018-000
257 IRON CANYON CT	496-750-011-000	233 LA RUE AL	014-052-016-000
264 IRON CANYON CT	496-750-008-000	923 LAWTON AV	015-080-045-000
265 IRON CANYON CT	496-750-010-000	941 LAWTON AV	015-080-001-000
273 IRON CANYON CT	496-750-009-000	2016 LAZY DAY LN	496-650-054-000
100 IRON GATE CT	496-750-019-000	2024 LAZY DAY LN	496-650-055-000
108 IRON GATE CT	496-750-020-000	2032 LAZY DAY LN	496-650-056-000
109 IRON GATE CT	496-750-039-000	2040 LAZY DAY LN	496-650-057-000
116 IRON GATE CT	496-750-021-000	2048 LAZY DAY LN	496-650-058-000
117 IRON GATE CT	496-750-038-000	3016 LEAP FROG LP	496-810-038-000

Address	APN	Address	APN
3024 LEAP FROG LP	496-810-039-000	5016 LONE STAR WY	496-790-026-000
3032 LEAP FROG LP	496-810-040-000	5017 LONE STAR WY	496-790-078-000
3040 LEAP FROG LP	496-810-041-000	5024 LONE STAR WY	496-790-027-000
3048 LEAP FROG LP	496-810-042-000	5025 LONE STAR WY	496-790-079-000
3056 LEAP FROG LP	496-810-043-000	5032 LONE STAR WY	496-790-028-000
3064 LEAP FROG LP	496-810-044-000	5040 LONE STAR WY	496-790-029-000
3072 LEAP FROG LP	496-810-045-000	5048 LONE STAR WY	496-790-030-000
3080 LEAP FROG LP	496-810-046-000	5056 LONE STAR WY	496-780-004-000
3088 LEAP FROG LP	496-810-047-000	5064 LONE STAR WY	496-780-005-000
3096 LEAP FROG LP	496-810-048-000	5072 LONE STAR WY	496-780-006-000
3105 LEAP FROG LP	496-810-031-000	5080 LONE STAR WY	496-780-007-000
3113 LEAP FROG LP	496-810-030-000	2440 LONGMIRE LP	498-290-099-000
3121 LEAP FROG LP	496-810-029-000	116 LOST OAK CT	456-160-023-000
3128 LEAP FROG LP	496-810-001-000	173 LOST OAK CT	456-160-014-000
3129 LEAP FROG LP	496-810-028-000	812 MACHADO LN	472-210-033-000
3136 LEAP FROG LP	496-810-002-000	2033 MALIBU PL	475-100-010-000
3137 LEAP FROG LP	496-810-027-000	1001 MALLORY RIDGE ST	498-300-001-000
3144 LEAP FROG LP	496-810-003-000	1009 MALLORY RIDGE ST	498-300-002-000
3145 LEAP FROG LP	496-810-026-000	1017 MALLORY RIDGE ST	498-300-003-000
3152 LEAP FROG LP	496-810-004-000	1024 MALLORY RIDGE ST	498-300-060-000
3153 LEAP FROG LP	496-810-025-000	1032 MALLORY RIDGE ST	498-300-059-000
3160 LEAP FROG LP	496-810-005-000	1033 MALLORY RIDGE ST	498-300-032-000
3168 LEAP FROG LP	496-810-006-000	1040 MALLORY RIDGE ST	498-300-058-000
3176 LEAP FROG LP	496-810-007-000	1041 MALLORY RIDGE ST	498-300-033-000
3184 LEAP FROG LP	496-810-008-000	1049 MALLORY RIDGE ST	498-300-034-000
3185 LEAP FROG LP	496-810-024-000	1057 MALLORY RIDGE ST	498-300-035-000
3192 LEAP FROG LP	496-810-009-000	1065 MALLORY RIDGE ST	498-300-036-000
3200 LEAP FROG LP	496-810-010-000	1073 MALLORY RIDGE ST	498-300-037-000
3201 LEAP FROG LP	496-810-023-000	1080 MALLORY RIDGE ST	498-300-057-000
3208 LEAP FROG LP	496-810-011-000	1081 MALLORY RIDGE ST	498-300-038-000
3209 LEAP FROG LP	496-810-022-000	1088 MALLORY RIDGE ST	498-300-056-000
3216 LEAP FROG LP	496-810-012-000	1089 MALLORY RIDGE ST	498-300-039-000
3217 LEAP FROG LP	496-810-021-000	1096 MALLORY RIDGE ST	498-300-055-000
3224 LEAP FROG LP	496-810-013-000	1097 MALLORY RIDGE ST	498-300-040-000
3225 LEAP FROG LP	496-810-020-000	1104 MALLORY RIDGE ST	498-300-054-000
3232 LEAP FROG LP	496-810-014-000	1105 MALLORY RIDGE ST	498-300-041-000
3233 LEAP FROG LP	496-810-019-000	1112 MALLORY RIDGE ST	498-300-053-000
3240 LEAP FROG LP	496-810-015-000	1113 MALLORY RIDGE ST	498-300-042-000
3241 LEAP FROG LP	496-810-018-000	1120 MALLORY RIDGE ST	498-300-052-000
3248 LEAP FROG LP	496-810-016-000	1121 MALLORY RIDGE ST	498-300-043-000
3256 LEAP FROG LP	496-810-017-000	1128 MALLORY RIDGE ST	498-300-051-000
2021 LENDELL LN	473-100-045-000	1129 MALLORY RIDGE ST	498-300-044-000
510 LINCOLN ST	011-147-034-000	1136 MALLORY RIDGE ST	498-300-050-000
801 LINCOLN ST	011-063-004-000	1137 MALLORY RIDGE ST	498-300-045-000
825 LINCOLN ST	011-063-002-000	1145 MALLORY RIDGE ST	498-300-046-000
845 LINCOLN ST	011-063-005-000	1153 MALLORY RIDGE ST	498-300-047-000
5000 LONE STAR WY	496-790-024-000	1161 MALLORY RIDGE ST	498-300-048-000
5001 LONE STAR WY	496-790-076-000	1169 MALLORY RIDGE ST	498-300-049-000
5008 LONE STAR WY	496-790-025-000	2111 MARCH RD	473-100-014-000
5009 LONE STAR WY	496-790-077-000	2140 MARCH RD	473-100-044-000

Address	APN	Address	APN
2141 MARCH RD	473-100-032-000	6080 MOON RIVER WY	498-360-017-000
2151 MARCH RD	473-100-033-000	6081 MOON RIVER WY	498-360-038-000
2161 MARCH RD	473-100-034-000	6088 MOON RIVER WY	498-360-016-000
2170 MARCH RD	473-100-051-000	6089 MOON RIVER WY	498-360-039-000
2171 MARCH RD	473-100-035-000	6096 MOON RIVER WY	498-360-015-000
2181 MARCH RD	473-100-036-000	2000 MOONBROOK CI	498-340-026-000
2191 MARCH RD	473-100-037-000	2001 MOONBROOK CI	498-340-038-000
2201 MARCH RD	473-100-038-000	2008 MOONBROOK CI	498-340-027-000
2210 MARCH RD	473-100-040-000	2009 MOONBROOK CI	498-340-037-000
2211 MARCH RD	473-100-039-000	2017 MOONBROOK CI	498-340-036-000
3700 MARKET ST	498-020-060-000	2024 MOONBROOK CI	498-340-028-000
3750 MARKET ST	498-020-061-000	2032 MOONBROOK CI	498-340-029-000
1000 MARMO CI	498-380-031-000	2040 MOONBROOK CI	498-340-030-000
1001 MARMO CI	498-380-051-000	2048 MOONBROOK CI	498-340-031-000
1008 MARMO CI	498-380-032-000	2056 MOONBROOK CI	498-340-032-000
1009 MARMO CI	498-380-050-000	2064 MOONBROOK CI	498-340-033-000
1016 MARMO CI	498-380-033-000	2072 MOONBROOK CI	498-340-034-000
1017 MARMO CI	498-380-049-000	2080 MOONBROOK CI	498-340-035-000
1025 MARMO CI	498-380-048-000	2088 MOONBROOK CI	498-350-011-000
1057 MARMO CI	498-380-044-000	2112 MOONBROOK CI	498-350-010-000
1064 MARMO CI	498-380-034-000	2891 N HAYDEN PW	492-490-002-000
1072 MARMO CI	498-380-035-000	121 N SUNRISE AV	013-213-024-000
1080 MARMO CI	498-380-036-000	2100 NICOLE GEE DR	498-010-026-000
1081 MARMO CI	498-380-041-000	2200 NICOLE GEE DR	498-020-043-000
1088 MARMO CI	498-380-037-000	2741 NICOLE GEE DR	498-360-001-000
1089 MARMO CI	498-380-040-000	2749 NICOLE GEE DR	498-360-002-000
1097 MARMO CI	498-380-039-000	2757 NICOLE GEE DR	498-360-003-000
1105 MARMO CI	498-380-038-000	2765 NICOLE GEE DR	498-360-004-000
1128 MARMO CI	498-380-027-000	2773 NICOLE GEE DR	498-360-005-000
1160 MARMO CI	498-380-013-000	2781 NICOLE GEE DR	498-360-006-000
1184 MARMO CI	498-380-012-000	2789 NICOLE GEE DR	498-360-007-000
1400 MARMO CI	498-380-001-000	2797 NICOLE GEE DR	498-360-008-000
1401 MARMO CI	498-380-058-000	2805 NICOLE GEE DR	498-360-009-000
1408 MARMO CI	498-380-002-000	2813 NICOLE GEE DR	498-360-010-000
1409 MARMO CI	498-380-057-000	2821 NICOLE GEE DR	498-360-011-000
1416 MARMO CI	498-380-003-000	2829 NICOLE GEE DR	498-360-012-000
1417 MARMO CI	498-380-056-000	2837 NICOLE GEE DR	498-360-013-000
1425 MARMO CI	498-380-055-000	2845 NICOLE GEE DR	498-360-014-000
1432 MARMO CI	498-380-019-000	500 NORTHWIND CT	496-800-026-000
1433 MARMO CI	498-380-054-000	501 NORTHWIND CT	496-800-025-000
1440 MARMO CI	498-380-020-000	508 NORTHWIND CT	496-800-027-000
1441 MARMO CI	498-380-053-000	509 NORTHWIND CT	496-800-024-000
1448 MARMO CI	498-380-021-000	516 NORTHWIND CT	496-800-028-000
1449 MARMO CI	498-380-052-000	517 NORTHWIND CT	496-800-023-000
1230 MELODY LN	472-330-052-000	524 NORTHWIND CT	496-800-029-000
1599 MISTY WOOD DR	477-130-010-000	525 NORTHWIND CT	496-800-022-000
6057 MOON RIVER WY	498-360-035-000	533 NORTHWIND CT	496-800-021-000
6065 MOON RIVER WY	498-360-036-000	540 NORTHWIND CT	496-800-030-000
6072 MOON RIVER WY	498-360-018-000	541 NORTHWIND CT	496-800-020-000
6073 MOON RIVER WY	498-360-037-000	7048 NYSTROM WY	499-180-079-000

Address	APN	Address	APN
7049 NYSTROM WY	499-180-084-000	2000 POGONIA ST	498-430-017-000
7056 NYSTROM WY	499-180-080-000	2001 POGONIA ST	498-430-016-000
7057 NYSTROM WY	499-180-083-000	2008 POGONIA ST	498-430-018-000
7064 NYSTROM WY	499-180-081-000	2009 POGONIA ST	498-430-015-000
7065 NYSTROM WY	499-180-082-000	2016 POGONIA ST	498-430-019-000
919 OAK RIDGE DR	470-050-008-000	2017 POGONIA ST	498-430-014-000
401 OAK ST	013-290-002-000	2024 POGONIA ST	498-430-020-000
620 OAK ST	013-152-019-000	2025 POGONIA ST	498-430-013-000
705 OAK ST	013-163-004-000	2032 POGONIA ST	498-430-021-000
711 OAK ST	013-163-003-000	2033 POGONIA ST	498-430-012-000
125 ORANGE SPRINGS CT	496-690-026-000	2041 POGONIA ST	498-430-011-000
132 ORANGE SPRINGS CT	496-690-005-000	2049 POGONIA ST	498-430-010-000
133 ORANGE SPRINGS CT	496-690-027-000	2057 POGONIA ST	498-430-009-000
140 ORANGE SPRINGS CT	496-690-004-000	2064 POGONIA ST	498-430-022-000
141 ORANGE SPRINGS CT	496-690-028-000	2065 POGONIA ST	498-430-008-000
149 ORANGE SPRINGS CT	496-690-029-000	2072 POGONIA ST	498-430-023-000
1005 ORLANDO AV	471-020-017-000	2073 POGONIA ST	498-430-007-000
7621 PAINTED DESERT DR	481-260-012-000	2080 POGONIA ST	498-430-024-000
7890 PAINTED DESERT DR	481-360-003-000	2081 POGONIA ST	498-430-006-000
7930 PAINTED DESERT DR	481-360-002-000	2089 POGONIA ST	498-430-005-000
7970 PAINTED DESERT DR	481-360-001-000	2096 POGONIA ST	498-430-038-000
1741 PARK OAK DR	456-160-025-000	2097 POGONIA ST	498-430-004-000
87 PARRY ST	013-022-033-000	2104 POGONIA ST	498-430-039-000
204 PAUL CT	015-360-026-000	2105 POGONIA ST	498-430-003-000
3070 PAVILION DR	498-410-023-000	2112 POGONIA ST	498-430-040-000
3080 PAVILION DR	498-410-022-000	2113 POGONIA ST	498-430-002-000
3090 PAVILION DR	498-410-021-000	2120 POGONIA ST	498-430-041-000
1751 PFE RD	473-100-022-000	2121 POGONIA ST	498-430-001-000
1961 PFE RD	473-100-030-000	4041 RAVENROCK WY	496-680-061-000
5300 PHILLIP RD	017-101-018-000	3113 RED FEATHER WY	496-800-038-000
5480 PHILLIP RD	017-101-016-000	3121 RED FEATHER WY	496-800-039-000
6382 PHILLIP RD	017-101-008-000	3129 RED FEATHER WY	496-800-040-000
983 PLEASANT GROVE BL	363-030-095-000	3145 RED FEATHER WY	496-790-007-000
989 PLEASANT GROVE BL	363-030-094-000	3152 RED FEATHER WY	496-800-031-000
1207 PLEASANT GROVE BL	017-232-015-000	3153 RED FEATHER WY	496-790-006-000
1701 PLEASANT GROVE BL	478-440-006-000	3160 RED FEATHER WY	496-800-032-000
1715 PLEASANT GROVE BL	478-440-016-000	3161 RED FEATHER WY	496-790-005-000
1760 PLEASANT GROVE BL	478-440-019-000	3176 RED FEATHER WY	496-800-033-000
1770 PLEASANT GROVE BL	478-440-018-000	3184 RED FEATHER WY	496-800-034-000
1780 PLEASANT GROVE BL	478-440-021-000	3192 RED FEATHER WY	496-800-035-000
1790 PLEASANT GROVE BL	478-440-020-000	3193 RED FEATHER WY	496-790-001-000
1825 PLEASANT GROVE BL	498-370-005-000	5001 RIALTO DR	492-490-060-000
1835 PLEASANT GROVE BL	498-370-006-000	5009 RIALTO DR	492-490-059-000
1845 PLEASANT GROVE BL	498-370-003-000	5017 RIALTO DR	492-490-058-000
1855 PLEASANT GROVE BL	498-370-004-000	5025 RIALTO DR	492-490-057-000
1865 PLEASANT GROVE BL	498-370-002-000	5033 RIALTO DR	492-490-056-000
1875 PLEASANT GROVE BL	017-152-018-000	5041 RIALTO DR	492-490-055-000
2931 PLEASANT GROVE BL	496-100-098-000	5049 RIALTO DR	492-490-054-000
3250 PLEASANT GROVE BL	496-100-029-000	5057 RIALTO DR	492-490-053-000
3380 PLEASANT GROVE BL	496-100-027-000	6153 RIDING PATH DR	498-080-047-000

Address	APN	Address	APN
6168 RIDING PATH DR	498-080-005-000	486 ROSEVILLE RD	472-050-008-000
6176 RIDING PATH DR	498-080-004-000	486 ROSEVILLE RD	472-050-007-000
1411 ROCKY RIDGE DR	048-013-014-000	486 ROSEVILLE RD	472-050-014-000
1640 ROCKY RIDGE DR	048-520-031-000	490 ROSEVILLE RD	472-050-013-000
1995 ROCKY RIDGE DR	469-100-013-000	490 ROSEVILLE RD	472-050-036-000
800 ROSETTE CT	496-780-012-000	1828 S CIRBY WY	469-280-009-000
801 ROSETTE CT	496-780-022-000	260 S HARDING BL	014-183-031-000
808 ROSETTE CT	496-780-013-000	214 S LINCOLN ST	013-182-037-000
809 ROSETTE CT	496-780-021-000	4000 SALAMANDER CI	496-830-015-000
816 ROSETTE CT	496-780-014-000	4008 SALAMANDER CI	496-830-016-000
817 ROSETTE CT	496-780-020-000	4016 SALAMANDER CI	496-830-017-000
824 ROSETTE CT	496-780-015-000	4024 SALAMANDER CI	496-830-018-000
832 ROSETTE CT	496-780-016-000	4025 SALAMANDER CI	496-830-037-000
833 ROSETTE CT	496-780-019-000	4032 SALAMANDER CI	496-830-019-000
840 ROSETTE CT	496-780-017-000	4033 SALAMANDER CI	496-830-036-000
841 ROSETTE CT	496-780-018-000	4040 SALAMANDER CI	496-830-020-000
185 ROSEVILLE PW	481-260-053-000	4041 SALAMANDER CI	496-830-035-000
290 ROSEVILLE PW	481-320-009-000	4048 SALAMANDER CI	496-830-021-000
401 ROSEVILLE PW	481-260-036-000	4049 SALAMANDER CI	496-830-034-000
603 ROSEVILLE PW	481-270-054-000	4056 SALAMANDER CI	496-830-022-000
605 ROSEVILLE PW	481-260-044-000	4064 SALAMANDER CI	496-830-023-000
615 ROSEVILLE PW	481-260-043-000	4065 SALAMANDER CI	496-830-032-000
621 ROSEVILLE PW	481-270-053-000	4072 SALAMANDER CI	496-830-024-000
625 ROSEVILLE PW	481-260-046-000	4073 SALAMANDER CI	496-830-031-000
635 ROSEVILLE PW	481-260-045-000	4080 SALAMANDER CI	496-830-025-000
1007 ROSEVILLE PW	363-030-093-000	4081 SALAMANDER CI	496-830-030-000
1019 ROSEVILLE PW	363-030-092-000	4088 SALAMANDER CI	496-830-026-000
1091 ROSEVILLE PW	363-011-044-000	4089 SALAMANDER CI	496-830-029-000
1095 ROSEVILLE PW	363-011-043-000	4096 SALAMANDER CI	496-830-027-000
400 ROSEVILLE RD	472-060-011-000	4104 SALAMANDER CI	496-830-028-000
400 ROSEVILLE RD	472-060-012-000	4160 SALAMANDER CI	496-830-065-000
400 ROSEVILLE RD	472-070-009-000	4168 SALAMANDER CI	496-830-066-000
400 ROSEVILLE RD	472-070-036-000	4169 SALAMANDER CI	496-830-064-000
400 ROSEVILLE RD	472-080-019-000	4176 SALAMANDER CI	496-830-067-000
400 ROSEVILLE RD	472-080-017-000	4177 SALAMANDER CI	496-830-063-000
400 ROSEVILLE RD	472-070-008-000	4184 SALAMANDER CI	496-830-068-000
420 ROSEVILLE RD	472-080-022-000	4185 SALAMANDER CI	496-830-062-000
442 ROSEVILLE RD	472-070-043-000	4192 SALAMANDER CI	496-830-069-000
444 ROSEVILLE RD	472-070-015-000	4193 SALAMANDER CI	496-830-061-000
444 ROSEVILLE RD	472-070-041-000	4200 SALAMANDER CI	496-830-070-000
446 ROSEVILLE RD	472-070-017-000	4201 SALAMANDER CI	496-830-060-000
446 ROSEVILLE RD	472-070-039-000	4208 SALAMANDER CI	496-830-071-000
450 ROSEVILLE RD	472-060-013-000	4209 SALAMANDER CI	496-830-059-000
450 ROSEVILLE RD	472-060-010-000	4216 SALAMANDER CI	496-830-072-000
470 ROSEVILLE RD	472-060-032-000	4217 SALAMANDER CI	496-830-058-000
480 ROSEVILLE RD	472-050-022-000	4224 SALAMANDER CI	496-830-073-000
480 ROSEVILLE RD	472-050-045-000	4225 SALAMANDER CI	496-830-057-000
484 ROSEVILLE RD	472-050-035-000	4232 SALAMANDER CI	496-830-074-000
484 ROSEVILLE RD	472-050-034-000	4233 SALAMANDER CI	496-830-056-000
485 ROSEVILLE RD	472-050-010-000	3101 SANTUCCI BL	499-010-091-000

Address	APN	Address	APN
3700 SANTUCCI BL	498-020-018-000	1080 SILVER FEATHER WY	496-740-079-000
3750 SANTUCCI BL	499-170-007-000	1081 SILVER FEATHER WY	496-740-019-000
3800 SANTUCCI BL	499-170-003-000	1088 SILVER FEATHER WY	496-740-080-000
3801 SANTUCCI BL	499-170-006-000	1089 SILVER FEATHER WY	496-740-018-000
3850 SANTUCCI BL	499-170-002-000	1096 SILVER FEATHER WY	496-740-081-000
3871 SANTUCCI BL	499-170-004-000	1104 SILVER FEATHER WY	496-740-082-000
3900 SANTUCCI BL	499-170-001-000	1128 SILVER FEATHER WY	496-760-001-000
3900 SANTUCCI BL	499-170-011-000	1136 SILVER FEATHER WY	496-760-002-000
4201 SANTUCCI BL	496-100-034-000	1144 SILVER FEATHER WY	496-760-003-000
300 SAWGRASS PL	015-910-006-000	1145 SILVER FEATHER WY	496-720-068-000
301 SAWGRASS PL	015-910-009-000	1152 SILVER FEATHER WY	496-760-004-000
308 SAWGRASS PL	015-910-007-000	1153 SILVER FEATHER WY	496-730-067-000
309 SAWGRASS PL	015-910-008-000	1160 SILVER FEATHER WY	496-760-005-000
1001 SECRET RAVINE PW	456-010-073-000	1161 SILVER FEATHER WY	496-730-068-000
1008 SHADOWGATE DR	498-340-001-000	1168 SILVER FEATHER WY	496-760-006-000
1009 SHADOWGATE DR	498-340-040-000	1169 SILVER FEATHER WY	496-730-069-000
1016 SHADOWGATE DR	498-340-002-000	1176 SILVER FEATHER WY	496-760-007-000
1017 SHADOWGATE DR	498-340-039-000	1177 SILVER FEATHER WY	496-730-070-000
1056 SHADOWGATE DR	498-340-007-000	1184 SILVER FEATHER WY	496-760-008-000
8160 SIERRA COLLEGE BL	048-021-056-000	1185 SILVER FEATHER WY	496-730-071-000
8170 SIERRA COLLEGE BL	048-021-057-000	1193 SILVER FEATHER WY	496-730-072-000
9237 SIERRA COLLEGE BL	466-190-042-000	1201 SILVER FEATHER WY	496-730-073-000
9277 SIERRA COLLEGE BL	466-190-055-000	1208 SILVER FEATHER WY	496-770-001-000
9713 SIERRA COLLEGE BL	466-030-046-000	1209 SILVER FEATHER WY	496-800-007-000
601 SILVER CANOE CT	496-790-031-000	1216 SILVER FEATHER WY	496-770-002-000
609 SILVER CANOE CT	496-790-032-000	1217 SILVER FEATHER WY	496-800-006-000
617 SILVER CANOE CT	496-790-033-000	1224 SILVER FEATHER WY	496-770-003-000
625 SILVER CANOE CT	496-790-034-000	1225 SILVER FEATHER WY	496-800-005-000
633 SILVER CANOE CT	496-790-035-000	1232 SILVER FEATHER WY	496-770-004-000
641 SILVER CANOE CT	496-790-036-000	1233 SILVER FEATHER WY	496-800-004-000
649 SILVER CANOE CT	496-790-037-000	1241 SILVER FEATHER WY	496-800-003-000
100 SILVER FEATHER CT	496-770-005-000	2401 SILVER SPRUCE DR	498-020-019-000
108 SILVER FEATHER CT	496-770-006-000	350 SIXTH ST	014-051-017-000
116 SILVER FEATHER CT	496-770-007-000	412 SIXTH ST	014-062-018-000
124 SILVER FEATHER CT	496-770-008-000	201 SNOWY EGRET CT	456-180-006-000
125 SILVER FEATHER CT	496-770-009-000	4030 SOLAIRE DR	496-100-003-000
1000 SILVER FEATHER WY	496-740-061-000	2 SOMER RIDGE DR	471-020-036-000
1008 SILVER FEATHER WY	496-740-060-000	701 SOUTHERN HILLS CT	015-920-033-000
1016 SILVER FEATHER WY	496-740-059-000	709 SOUTHERN HILLS CT	015-920-032-000
1032 SILVER FEATHER WY	496-740-073-000	717 SOUTHERN HILLS CT	015-920-031-000
1033 SILVER FEATHER WY	496-740-035-000	725 SOUTHERN HILLS CT	015-920-030-000
1040 SILVER FEATHER WY	496-740-074-000	733 SOUTHERN HILLS CT	015-920-029-000
1041 SILVER FEATHER WY	496-740-034-000	600 SPARKLING COVE CT	498-320-026-000
1048 SILVER FEATHER WY	496-740-075-000	601 SPARKLING COVE CT	498-320-027-000
1049 SILVER FEATHER WY	496-740-033-000	608 SPARKLING COVE CT	498-320-025-000
1056 SILVER FEATHER WY	496-740-076-000	609 SPARKLING COVE CT	498-320-028-000
1057 SILVER FEATHER WY	496-740-032-000	616 SPARKLING COVE CT	498-320-024-000
1064 SILVER FEATHER WY	496-740-077-000	617 SPARKLING COVE CT	498-320-029-000
1072 SILVER FEATHER WY	496-740-078-000	624 SPARKLING COVE CT	498-320-023-000
1073 SILVER FEATHER WY	496-740-020-000	625 SPARKLING COVE CT	498-320-030-000

Address	APN	Address	APN
632 SPARKLING COVE CT	498-320-036-000	7017 STAR MIST WY	498-360-102-000
640 SPARKLING COVE CT	498-320-035-000	7025 STAR MIST WY	498-360-103-000
6001 SPARKLING COVE ST	498-310-005-000	7033 STAR MIST WY	498-360-104-000
6009 SPARKLING COVE ST	498-310-006-000	7041 STAR MIST WY	498-360-105-000
6017 SPARKLING COVE ST	498-310-007-000	7049 STAR MIST WY	498-360-106-000
6025 SPARKLING COVE ST	498-310-008-000	7057 STAR MIST WY	498-360-107-000
6033 SPARKLING COVE ST	498-310-009-000	7056 STAR RISE WY	498-420-064-000
6040 SPARKLING COVE ST	498-310-052-000	7057 STAR RISE WY	498-420-049-000
6041 SPARKLING COVE ST	498-310-010-000	7064 STAR RISE WY	498-420-065-000
6048 SPARKLING COVE ST	498-310-051-000	7065 STAR RISE WY	498-420-048-000
6049 SPARKLING COVE ST	498-310-011-000	7072 STAR RISE WY	498-420-066-000
6056 SPARKLING COVE ST	498-310-050-000	7073 STAR RISE WY	498-420-047-000
6057 SPARKLING COVE ST	498-310-012-000	7080 STAR RISE WY	498-420-067-000
6064 SPARKLING COVE ST	498-310-049-000	7081 STAR RISE WY	498-420-046-000
6065 SPARKLING COVE ST	498-310-013-000	5000 STARSHINE WY	498-420-017-000
6072 SPARKLING COVE ST	498-310-048-000	5001 STARSHINE WY	498-420-001-000
6073 SPARKLING COVE ST	498-310-014-000	5008 STARSHINE WY	498-420-016-000
6080 SPARKLING COVE ST	498-310-047-000	5009 STARSHINE WY	498-420-002-000
6081 SPARKLING COVE ST	498-310-015-000	5016 STARSHINE WY	498-420-015-000
6088 SPARKLING COVE ST	498-310-046-000	5017 STARSHINE WY	498-420-003-000
6089 SPARKLING COVE ST	498-310-016-000	5024 STARSHINE WY	498-420-014-000
6096 SPARKLING COVE ST	498-310-045-000	5025 STARSHINE WY	498-420-004-000
6097 SPARKLING COVE ST	498-310-017-000	5032 STARSHINE WY	498-420-013-000
6104 SPARKLING COVE ST	498-310-044-000	5033 STARSHINE WY	498-420-005-000
6105 SPARKLING COVE ST	498-310-018-000	5041 STARSHINE WY	498-420-006-000
6112 SPARKLING COVE ST	498-310-043-000	5049 STARSHINE WY	498-420-007-000
6113 SPARKLING COVE ST	498-310-019-000	5057 STARSHINE WY	498-420-008-000
6120 SPARKLING COVE ST	498-310-042-000	5065 STARSHINE WY	498-420-009-000
6121 SPARKLING COVE ST	498-310-020-000	5073 STARSHINE WY	498-420-010-000
6128 SPARKLING COVE ST	498-310-041-000	5081 STARSHINE WY	498-420-011-000
6129 SPARKLING COVE ST	498-310-021-000	5089 STARSHINE WY	498-420-012-000
6136 SPARKLING COVE ST	498-310-040-000	1470 STONE POINT DR	048-460-030-000
6137 SPARKLING COVE ST	498-310-022-000	1486 STONE POINT DR	048-460-039-000
6144 SPARKLING COVE ST	498-310-039-000	800 SUN PILLAR CT	498-360-091-000
6145 SPARKLING COVE ST	498-310-023-000	801 SUN PILLAR CT	498-360-074-000
6152 SPARKLING COVE ST	498-310-038-000	808 SUN PILLAR CT	498-360-090-000
6153 SPARKLING COVE ST	498-310-024-000	809 SUN PILLAR CT	498-360-075-000
6160 SPARKLING COVE ST	498-310-037-000	816 SUN PILLAR CT	498-360-089-000
6161 SPARKLING COVE ST	498-310-025-000	817 SUN PILLAR CT	498-360-076-000
6168 SPARKLING COVE ST	498-310-036-000	824 SUN PILLAR CT	498-360-088-000
6169 SPARKLING COVE ST	498-310-026-000	832 SUN PILLAR CT	498-360-087-000
6176 SPARKLING COVE ST	498-310-035-000	840 SUN PILLAR CT	498-360-086-000
6177 SPARKLING COVE ST	498-310-027-000	841 SUN PILLAR CT	498-360-078-000
6184 SPARKLING COVE ST	498-310-034-000	848 SUN PILLAR CT	498-360-085-000
6185 SPARKLING COVE ST	498-310-028-000	849 SUN PILLAR CT	498-360-079-000
6192 SPARKLING COVE ST	498-310-033-000	856 SUN PILLAR CT	498-360-084-000
6193 SPARKLING COVE ST	498-310-029-000	864 SUN PILLAR CT	498-360-083-000
6200 SPARKLING COVE ST	498-310-032-000	872 SUN PILLAR CT	498-360-082-000
6201 SPARKLING COVE ST	498-310-030-000	880 SUN PILLAR CT	498-360-081-000
6209 SPARKLING COVE ST	498-310-031-000	888 SUN PILLAR CT	498-360-080-000

Address	APN	Address	APN
620 SUNRISE AV	014-270-044-000	3145 TORRENTE DR	498-400-009-000
718 SUNRISE AV	471-220-021-000	3152 TORRENTE DR	498-400-025-000
6000 SUNSCAPE WY	498-420-035-000	3153 TORRENTE DR	498-400-010-000
6001 SUNSCAPE WY	498-420-024-000	3160 TORRENTE DR	498-400-024-000
6008 SUNSCAPE WY	498-420-036-000	3161 TORRENTE DR	498-400-011-000
6009 SUNSCAPE WY	498-420-025-000	3168 TORRENTE DR	498-400-023-000
6016 SUNSCAPE WY	498-420-037-000	3169 TORRENTE DR	498-400-012-000
6017 SUNSCAPE WY	498-420-026-000	3176 TORRENTE DR	498-400-022-000
6024 SUNSCAPE WY	498-420-038-000	3177 TORRENTE DR	498-400-013-000
6025 SUNSCAPE WY	498-420-027-000	3184 TORRENTE DR	498-400-021-000
6032 SUNSCAPE WY	498-420-039-000	3185 TORRENTE DR	498-400-014-000
6033 SUNSCAPE WY	498-420-028-000	3192 TORRENTE DR	498-400-020-000
6040 SUNSCAPE WY	498-420-040-000	3193 TORRENTE DR	498-400-015-000
6041 SUNSCAPE WY	498-420-029-000	3200 TORRENTE DR	498-400-019-000
6048 SUNSCAPE WY	498-420-041-000	3201 TORRENTE DR	498-400-016-000
6049 SUNSCAPE WY	498-420-030-000	3208 TORRENTE DR	498-400-018-000
6056 SUNSCAPE WY	498-420-042-000	3209 TORRENTE DR	498-400-017-000
6057 SUNSCAPE WY	498-420-031-000	600 TORREY PINES CT	015-920-020-000
6064 SUNSCAPE WY	498-420-043-000	601 TORREY PINES CT	015-920-028-000
6065 SUNSCAPE WY	498-420-032-000	608 TORREY PINES CT	015-920-021-000
6072 SUNSCAPE WY	498-420-044-000	609 TORREY PINES CT	015-920-027-000
6073 SUNSCAPE WY	498-420-033-000	616 TORREY PINES CT	015-920-022-000
6080 SUNSCAPE WY	498-420-045-000	624 TORREY PINES CT	015-920-023-000
6081 SUNSCAPE WY	498-420-034-000	625 TORREY PINES CT	015-920-026-000
5000 SUPERNOVA LN	498-330-088-000	632 TORREY PINES CT	015-920-024-000
5008 SUPERNOVA LN	498-330-087-000	633 TORREY PINES CT	015-920-025-000
5016 SUPERNOVA LN	498-330-086-000	3000 TORREY PINES DR	015-920-012-000
5024 SUPERNOVA LN	498-330-085-000	3001 TORREY PINES DR	015-920-045-000
5032 SUPERNOVA LN	498-330-084-000	3009 TORREY PINES DR	015-920-044-000
5040 SUPERNOVA LN	498-330-083-000	3017 TORREY PINES DR	015-920-043-000
5048 SUPERNOVA LN	498-330-082-000	3024 TORREY PINES DR	015-920-013-000
5056 SUPERNOVA LN	498-330-081-000	3025 TORREY PINES DR	015-920-042-000
5064 SUPERNOVA LN	498-330-080-000	3032 TORREY PINES DR	015-920-014-000
1820 TAYLOR RD	015-450-025-000	3033 TORREY PINES DR	015-920-041-000
1850 TAYLOR RD	015-450-024-000	3040 TORREY PINES DR	015-920-015-000
3001 TORRENTE DR	498-380-026-000	3041 TORREY PINES DR	015-920-040-000
3009 TORRENTE DR	498-380-025-000	3048 TORREY PINES DR	015-920-016-000
3016 TORRENTE DR	498-380-028-000	3049 TORREY PINES DR	015-920-039-000
3017 TORRENTE DR	498-380-024-000	3057 TORREY PINES DR	015-920-038-000
3024 TORRENTE DR	498-380-029-000	3064 TORREY PINES DR	015-920-017-000
3025 TORRENTE DR	498-380-023-000	3065 TORREY PINES DR	015-920-037-000
3032 TORRENTE DR	498-380-030-000	3073 TORREY PINES DR	015-920-036-000
3033 TORRENTE DR	498-380-022-000	3080 TORREY PINES DR	015-920-018-000
3097 TORRENTE DR	498-400-003-000	3081 TORREY PINES DR	015-920-035-000
3105 TORRENTE DR	498-400-004-000	3088 TORREY PINES DR	015-920-019-000
3113 TORRENTE DR	498-400-005-000	3089 TORREY PINES DR	015-920-034-000
3121 TORRENTE DR	498-400-006-000	2503 TRADEWINDS DR	482-480-002-000
3129 TORRENTE DR	498-400-007-000	2517 TRADEWINDS DR	482-480-003-000
3137 TORRENTE DR	498-400-008-000	2545 TRADEWINDS DR	482-480-004-000
3144 TORRENTE DR	498-400-026-000	8008 TRAPPER RANCH RD	496-730-055-000

Address	APN	Address	APN
8009 TRAPPER RANCH RD	496-730-045-000	7120 VAIL RANCH RD	496-730-014-000
8016 TRAPPER RANCH RD	496-730-054-000	7121 VAIL RANCH RD	496-730-019-000
8017 TRAPPER RANCH RD	496-730-044-000	7128 VAIL RANCH RD	496-730-015-000
8025 TRAPPER RANCH RD	496-730-043-000	7129 VAIL RANCH RD	496-730-018-000
8033 TRAPPER RANCH RD	496-730-042-000	7136 VAIL RANCH RD	496-730-016-000
8041 TRAPPER RANCH RD	496-730-041-000	7137 VAIL RANCH RD	496-730-017-000
8057 TRAPPER RANCH RD	496-730-008-000	309 VALLEJO AV	015-080-019-000
8064 TRAPPER RANCH RD	496-800-037-000	531 VALLEJO AV	011-250-007-000
8065 TRAPPER RANCH RD	496-730-007-000	86 VALLEY OAK DR	472-370-013-000
8072 TRAPPER RANCH RD	496-800-036-000	88 VALLEY OAK DR	472-370-014-000
8073 TRAPPER RANCH RD	496-730-006-000	90 VALLEY OAK DR	472-370-015-000
8080 TRAPPER RANCH RD	496-790-057-000	92 VALLEY OAK DR	472-370-016-000
8081 TRAPPER RANCH RD	496-730-005-000	94 VALLEY OAK DR	472-370-017-000
8088 TRAPPER RANCH RD	496-790-056-000	96 VALLEY OAK DR	472-370-018-000
8089 TRAPPER RANCH RD	496-730-004-000	98 VALLEY OAK DR	472-370-019-000
8096 TRAPPER RANCH RD	496-790-055-000	99 VALLEY OAK DR	472-370-035-000
8097 TRAPPER RANCH RD	496-730-003-000	100 VALLEY OAK DR	472-370-020-000
8104 TRAPPER RANCH RD	496-790-054-000	101 VALLEY OAK DR	472-370-034-000
8105 TRAPPER RANCH RD	496-730-002-000	102 VALLEY OAK DR	472-370-021-000
8112 TRAPPER RANCH RD	496-790-053-000	103 VALLEY OAK DR	472-370-033-000
8113 TRAPPER RANCH RD	496-730-001-000	104 VALLEY OAK DR	472-370-022-000
8120 TRAPPER RANCH RD	496-790-052-000	105 VALLEY OAK DR	472-370-032-000
8128 TRAPPER RANCH RD	496-790-051-000	106 VALLEY OAK DR	472-370-023-000
8136 TRAPPER RANCH RD	496-790-050-000	107 VALLEY OAK DR	472-370-031-000
8144 TRAPPER RANCH RD	496-790-049-000	108 VALLEY OAK DR	472-370-024-000
8152 TRAPPER RANCH RD	496-790-048-000	109 VALLEY OAK DR	472-370-030-000
8160 TRAPPER RANCH RD	496-790-047-000	110 VALLEY OAK DR	472-370-025-000
8168 TRAPPER RANCH RD	496-790-046-000	111 VALLEY OAK DR	472-370-029-000
8176 TRAPPER RANCH RD	496-790-045-000	112 VALLEY OAK DR	472-370-026-000
8184 TRAPPER RANCH RD	496-790-044-000	113 VALLEY OAK DR	472-370-028-000
4701 UPLAND DR	498-010-022-000	114 VALLEY OAK DR	472-370-027-000
7001 VAIL RANCH RD	496-730-033-000	431 VERNON ST	013-123-021-000
7009 VAIL RANCH RD	496-730-032-000	1710 VISTA GRANDE BL	498-020-062-000
7016 VAIL RANCH RD	496-730-034-000	1721 VISTA GRANDE BL	498-010-060-000
7017 VAIL RANCH RD	496-730-031-000	1750 VISTA GRANDE BL	498-020-035-000
7024 VAIL RANCH RD	496-730-035-000	1801 VISTA GRANDE BL	498-010-059-000
7025 VAIL RANCH RD	496-730-030-000	1850 VISTA GRANDE BL	498-020-034-000
7032 VAIL RANCH RD	496-730-036-000	1867 VISTA GRANDE BL	499-110-038-000
7033 VAIL RANCH RD	496-730-029-000	2401 VISTA GRANDE BL	499-010-095-000
7040 VAIL RANCH RD	496-730-037-000	2520 VISTA GRANDE BL	498-020-021-000
7041 VAIL RANCH RD	496-730-028-000	2700 VISTA GRANDE BL	499-170-010-000
7048 VAIL RANCH RD	496-730-038-000	3051 VISTA GRANDE BL	499-010-086-000
7049 VAIL RANCH RD	496-730-027-000	5833 VISTA PARK DR	499-110-039-000
7056 VAIL RANCH RD	496-730-039-000	5889 VISTA PARK DR	499-120-046-000
7057 VAIL RANCH RD	496-730-026-000	5905 VISTA PARK DR	499-120-047-000
7064 VAIL RANCH RD	496-730-040-000	5977 VISTA PARK DR	499-120-048-000
7065 VAIL RANCH RD	496-730-025-000	205 W IVY ST	012-183-006-000
7104 VAIL RANCH RD	496-730-012-000	1424 WADSWORTH CI	492-440-041-000
7112 VAIL RANCH RD	496-730-013-000	1432 WADSWORTH CI	492-440-040-000
7113 VAIL RANCH RD	496-730-020-000	1440 WADSWORTH CI	492-440-039-000

Address	APN	Address	APN
1472 WADSWORTH CI	492-440-035-000	8048 WHIPPERSNAPPER WY	000-001-063-635
725 WASHINGTON BL	011-101-011-000	8049 WHIPPERSNAPPER WY	000-001-063-650
751 WASHINGTON BL	011-101-012-000	8056 WHIPPERSNAPPER WY	000-001-063-638
8101 WASHINGTON BL	017-410-025-000	8057 WHIPPERSNAPPER WY	000-001-063-654
8425 WASHINGTON BL	360-070-025-000	8064 WHIPPERSNAPPER WY	000-001-063-643
8441 WASHINGTON BL	360-070-026-000	8065 WHIPPERSNAPPER WY	000-001-063-659
8457 WASHINGTON BL	360-070-008-000	8072 WHIPPERSNAPPER WY	000-001-063-647
8465 WASHINGTON BL	360-070-007-000	8073 WHIPPERSNAPPER WY	000-001-063-664
8469 WASHINGTON BL	360-070-006-000	8080 WHIPPERSNAPPER WY	000-001-063-652
8473 WASHINGTON BL	360-070-005-000	8088 WHIPPERSNAPPER WY	000-001-063-655
8477 WASHINGTON BL	360-070-004-000	8096 WHIPPERSNAPPER WY	000-001-063-658
1123 WAYNE DR	014-130-008-000	8104 WHIPPERSNAPPER WY	000-001-063-663
1400 WESTBROOK BL	498-020-028-000	8112 WHIPPERSNAPPER WY	000-001-063-673
1500 WESTBROOK BL	498-020-015-000	8120 WHIPPERSNAPPER WY	000-001-063-683
1501 WESTBROOK BL	498-020-016-000	8128 WHIPPERSNAPPER WY	000-001-063-686
1550 WESTBROOK BL	499-010-063-000	8136 WHIPPERSNAPPER WY	000-001-063-689
1600 WESTBROOK BL	498-020-014-000	8137 WHIPPERSNAPPER WY	000-001-063-670
1961 WESTBROOK BL	496-100-099-000	8144 WHIPPERSNAPPER WY	000-001-063-691
2275 WESTBROOK BL	496-030-008-000	8145 WHIPPERSNAPPER WY	000-001-063-674
2400 WESTBROOK BL	496-020-037-000	8152 WHIPPERSNAPPER WY	000-001-063-694
2801 WESTBROOK BL	496-020-014-000	8153 WHIPPERSNAPPER WY	000-001-063-676
2900 WESTBROOK BL	496-020-031-000	8160 WHIPPERSNAPPER WY	000-001-063-695
3440 WESTBROOK BL	496-620-006-000	8161 WHIPPERSNAPPER WY	000-001-063-679
3683 WESTBROOK BL	496-610-009-000	8168 WHIPPERSNAPPER WY	000-001-063-696
3883 WESTBROOK BL	017-101-010-000	8169 WHIPPERSNAPPER WY	000-001-063-681
4080 WESTBROOK BL	017-480-041-000	8176 WHIPPERSNAPPER WY	000-001-063-697
4081 WESTBROOK BL	017-480-126-000	8177 WHIPPERSNAPPER WY	000-001-063-682
4180 WESTBROOK BL	017-480-040-000	8184 WHIPPERSNAPPER WY	000-001-063-698
4251 WESTBROOK BL	017-480-043-000	8192 WHIPPERSNAPPER WY	000-001-063-702
4300 WESTBROOK BL	017-480-037-000	8200 WHIPPERSNAPPER WY	000-001-063-703
4315 WESTBROOK BL	017-480-091-000	8208 WHIPPERSNAPPER WY	000-001-063-701
4410 WESTBROOK BL	017-470-025-000	8216 WHIPPERSNAPPER WY	000-001-063-687
4411 WESTBROOK BL	017-470-027-000	8224 WHIPPERSNAPPER WY	000-001-063-680
4500 WESTBROOK BL	017-470-022-000	8232 WHIPPERSNAPPER WY	000-001-063-675
4501 WESTBROOK BL	017-470-028-000	8233 WHIPPERSNAPPER WY	000-001-063-668
4401 WESTPARK DR	496-030-013-000	8240 WHIPPERSNAPPER WY	000-001-063-669
4601 WESTPARK DR	017-101-026-000	8241 WHIPPERSNAPPER WY	000-001-063-662
2101 WHARTON LN	490-360-002-000	8249 WHIPPERSNAPPER WY	000-001-063-657
8000 WHIPPERSNAPPER WY	000-001-063-626	8257 WHIPPERSNAPPER WY	000-001-063-653
8001 WHIPPERSNAPPER WY	000-001-063-630	8265 WHIPPERSNAPPER WY	000-001-063-649
8008 WHIPPERSNAPPER WY	000-001-063-627	8273 WHIPPERSNAPPER WY	000-001-063-644
8009 WHIPPERSNAPPER WY	000-001-063-632	8281 WHIPPERSNAPPER WY	000-001-063-641
8016 WHIPPERSNAPPER WY	000-001-063-628	8289 WHIPPERSNAPPER WY	000-001-063-639
8017 WHIPPERSNAPPER WY	000-001-063-634	300 WHISTLE CT	496-740-093-000
8024 WHIPPERSNAPPER WY	000-001-063-629	301 WHISTLE CT	496-740-104-000
8025 WHIPPERSNAPPER WY	000-001-063-636	324 WHISTLE CT	496-740-096-000
8032 WHIPPERSNAPPER WY	000-001-063-631	325 WHISTLE CT	496-740-101-000
8033 WHIPPERSNAPPER WY	000-001-063-640	332 WHISTLE CT	496-740-097-000
8040 WHIPPERSNAPPER WY	000-001-063-633	333 WHISTLE CT	496-740-100-000
8041 WHIPPERSNAPPER WY	000-001-063-645	340 WHISTLE CT	496-740-098-000

Address	APN	Address	APN
341 WHISTLE CT	496-740-099-000		
6001 WHISTLING PINE WY	496-830-014-000		
6009 WHISTLING PINE WY	496-830-013-000		
6017 WHISTLING PINE WY	496-830-012-000		
6025 WHISTLING PINE WY	496-830-011-000		
6033 WHISTLING PINE WY	496-830-010-000		
6041 WHISTLING PINE WY	496-830-009-000		
6049 WHISTLING PINE WY	496-830-008-000		
6057 WHISTLING PINE WY	496-830-007-000		
6065 WHISTLING PINE WY	496-830-006-000		
6073 WHISTLING PINE WY	496-830-005-000		
6081 WHISTLING PINE WY	496-830-004-000		
6105 WHISTLING PINE WY	496-830-001-000		
11 WHYTE AV	471-050-007-000		
1001 WINDING CREEK RD	017-250-058-000		
1101 WINDING CREEK RD	485-090-003-000		
1200 WINDING CREEK RD	485-090-001-000		
1201 WINDING CREEK RD	485-090-004-000		
1300 WINDING CREEK RD	485-080-004-000		
1400 WINDING CREEK RD	485-080-003-000		
1500 WINDING CREEK RD	485-080-002-000		
1601 WINDING CREEK RD	485-090-005-000		
6560 WOODCREEK OAKS BL	481-270-069-000		
10060 WOODCREEK OAKS BL	482-340-013-000		
400 YUKON CT	496-740-048-000		
401 YUKON CT	496-740-055-000		
408 YUKON CT	496-740-049-000		
409 YUKON CT	496-740-054-000		
416 YUKON CT	496-740-050-000		
417 YUKON CT	496-740-053-000		
424 YUKON CT	496-740-051-000		
432 YUKON CT	496-740-052-000		

Weed Abatement 2025 – List of Parcels

APN	Address	APN	Address
000-001-063-626	8000 WHIPPERSNAPPER WY	000-001-063-686	8128 WHIPPERSNAPPER WY
000-001-063-627	8008 WHIPPERSNAPPER WY	000-001-063-687	8216 WHIPPERSNAPPER WY
000-001-063-628	8016 WHIPPERSNAPPER WY	000-001-063-689	8136 WHIPPERSNAPPER WY
000-001-063-629	8024 WHIPPERSNAPPER WY	000-001-063-691	8144 WHIPPERSNAPPER WY
000-001-063-630	8001 WHIPPERSNAPPER WY	000-001-063-694	8152 WHIPPERSNAPPER WY
000-001-063-631	8032 WHIPPERSNAPPER WY	000-001-063-695	8160 WHIPPERSNAPPER WY
000-001-063-632	8009 WHIPPERSNAPPER WY	000-001-063-696	8168 WHIPPERSNAPPER WY
000-001-063-633	8040 WHIPPERSNAPPER WY	000-001-063-697	8176 WHIPPERSNAPPER WY
000-001-063-634	8017 WHIPPERSNAPPER WY	000-001-063-698	8184 WHIPPERSNAPPER WY
000-001-063-635	8048 WHIPPERSNAPPER WY	000-001-063-701	8208 WHIPPERSNAPPER WY
000-001-063-636	8025 WHIPPERSNAPPER WY	000-001-063-702	8192 WHIPPERSNAPPER WY
000-001-063-638	8056 WHIPPERSNAPPER WY	000-001-063-703	8200 WHIPPERSNAPPER WY
000-001-063-639	8289 WHIPPERSNAPPER WY	011-063-002-000	825 LINCOLN ST
000-001-063-640	8033 WHIPPERSNAPPER WY	011-063-004-000	801 LINCOLN ST
000-001-063-641	8281 WHIPPERSNAPPER WY	011-063-005-000	845 LINCOLN ST
000-001-063-643	8064 WHIPPERSNAPPER WY	011-092-010-000	300 ELEFA ST
000-001-063-644	8273 WHIPPERSNAPPER WY	011-092-011-000	300 ELEFA ST
000-001-063-645	8041 WHIPPERSNAPPER WY	011-101-011-000	725 WASHINGTON BL
000-001-063-647	8072 WHIPPERSNAPPER WY	011-101-012-000	751 WASHINGTON BL
000-001-063-649	8265 WHIPPERSNAPPER WY	011-147-034-000	510 LINCOLN ST
000-001-063-650	8049 WHIPPERSNAPPER WY	011-172-007-000	335 ALTA VISTA AV
000-001-063-652	8080 WHIPPERSNAPPER WY	011-181-006-000	625 ALTA VISTA AV
000-001-063-653	8257 WHIPPERSNAPPER WY	011-182-010-000	305 CAMPO ST
000-001-063-654	8057 WHIPPERSNAPPER WY	011-250-007-000	531 VALLEJO AV
000-001-063-655	8088 WHIPPERSNAPPER WY	012-132-047-000	262 ELM ST
000-001-063-657	8249 WHIPPERSNAPPER WY	012-134-031-000	246 FIG ST
000-001-063-658	8096 WHIPPERSNAPPER WY	012-142-018-000	116 ELM ST
000-001-063-659	8065 WHIPPERSNAPPER WY	012-144-010-000	600 CHURCH ST
000-001-063-662	8241 WHIPPERSNAPPER WY	012-152-011-000	405 CHURCH ST
000-001-063-663	8104 WHIPPERSNAPPER WY	012-162-009-000	213 FIG ST
000-001-063-664	8073 WHIPPERSNAPPER WY	012-171-013-000	1012 CHURCH ST
000-001-063-668	8233 WHIPPERSNAPPER WY	012-171-022-000	115 FIG ST
000-001-063-669	8240 WHIPPERSNAPPER WY	012-171-029-000	1008 CHURCH ST
000-001-063-670	8137 WHIPPERSNAPPER WY	012-171-030-000	1004 CHURCH ST
000-001-063-673	8112 WHIPPERSNAPPER WY	012-171-031-000	1000 CHURCH ST
000-001-063-674	8145 WHIPPERSNAPPER WY	012-172-020-000	113 ELM ST
000-001-063-675	8232 WHIPPERSNAPPER WY	012-183-006-000	205 W IVY ST
000-001-063-676	8153 WHIPPERSNAPPER WY	012-183-008-000	117 IVY ST
000-001-063-679	8161 WHIPPERSNAPPER WY	012-185-012-000	1118 CHURCH ST
000-001-063-680	8224 WHIPPERSNAPPER WY	012-185-024-000	1110 CHURCH ST
000-001-063-681	8169 WHIPPERSNAPPER WY	012-185-029-000	125 GRAPE ST
000-001-063-682	8177 WHIPPERSNAPPER WY	013-012-002-000	904 ATLANTIC ST
000-001-063-683	8120 WHIPPERSNAPPER WY	013-022-033-000	87 PARRY ST

APN	Address	APN	Address
013-022-047-000	124 CENTER ST	014-062-018-000	412 SIXTH ST
013-024-023-000	220 EAST ST	014-113-047-000	104 KEEHNER AV
013-030-012-000	508 CENTER CT	014-113-049-000	906 DOUGLAS BL
013-030-013-000	516 CENTER CT	014-113-060-000	212 KEEHNER AV
013-030-014-000	517 CENTER CT	014-120-010-000	200 BONNY KNOLL RD
013-030-015-000	509 CENTER CT	014-130-008-000	1123 WAYNE DR
013-030-016-000	501 CENTER CT	014-183-031-000	260 S HARDING BL
013-030-019-000	405 EAST ST	014-252-003-000	408 EARL AV
013-053-015-000	532 ALOLA ST	014-263-042-000	600 KINDRED LN
013-123-021-000	431 VERNON ST	014-263-045-000	600 KINDRED LN
013-152-019-000	620 OAK ST	014-270-044-000	620 SUNRISE AV
013-163-003-000	711 OAK ST	014-450-041-000	1600 DOUGLAS BL
013-163-004-000	705 OAK ST	014-450-053-000	1600 DOUGLAS BL
013-182-037-000	214 S LINCOLN ST	015-080-001-000	941 LAWTON AV
013-194-027-000	1017 DOUGLAS BL	015-080-019-000	309 VALLEJO AV
013-212-049-000	228 HARDING BL	015-080-045-000	923 LAWTON AV
013-213-024-000	121 N SUNRISE AV	015-100-031-000	505 BERRY ST
013-270-017-000	219 HARDING BL	015-100-066-000	601 BERRY ST
013-290-002-000	401 OAK ST	015-166-014-000	1271 ANTELOPE CREEK DR
013-300-001-000	3000 DUBLIN PL	015-350-005-000	500 DEREK PL
013-300-002-000	3008 DUBLIN PL	015-360-026-000	204 PAUL CT
013-300-003-000	3016 DUBLIN PL	015-450-024-000	1850 TAYLOR RD
013-300-004-000	3024 DUBLIN PL	015-450-025-000	1820 TAYLOR RD
013-300-005-000	3032 DUBLIN PL	015-910-001-000	133 BAY HILL CT
013-300-006-000	3040 DUBLIN PL	015-910-002-000	125 BAY HILL CT
013-300-007-000	3048 DUBLIN PL	015-910-003-000	117 BAY HILL CT
013-300-008-000	3056 DUBLIN PL	015-910-004-000	109 BAY HILL CT
013-300-009-000	3112 DUBLIN PL	015-910-005-000	101 BAY HILL CT
013-300-010-000	3104 DUBLIN PL	015-910-006-000	300 SAWGRASS PL
013-300-011-000	3096 DUBLIN PL	015-910-007-000	308 SAWGRASS PL
013-300-012-000	3088 DUBLIN PL	015-910-008-000	309 SAWGRASS PL
013-300-013-000	3080 DUBLIN PL	015-910-009-000	301 SAWGRASS PL
013-300-014-000	3072 DUBLIN PL	015-910-010-000	2048 BANDON DUNES DR
013-300-015-000	3064 DUBLIN PL	015-910-011-000	400 BETHPAGE CT
013-300-016-000	3168 DUBLIN PL	015-910-012-000	424 BETHPAGE CT
013-300-017-000	3160 DUBLIN PL	015-910-013-000	432 BETHPAGE CT
013-300-018-000	3152 DUBLIN PL	015-910-014-000	440 BETHPAGE CT
013-300-019-000	3144 DUBLIN PL	015-910-015-000	441 BETHPAGE CT
013-300-020-000	3136 DUBLIN PL	015-910-016-000	433 BETHPAGE CT
013-300-021-000	3128 DUBLIN PL	015-910-017-000	425 BETHPAGE CT
013-300-022-000	3120 DUBLIN PL	015-910-018-000	417 BETHPAGE CT
014-033-024-000	329½ B ST	015-910-019-000	409 BETHPAGE CT
014-041-016-000	426 FIFTH ST	015-910-020-000	401 BETHPAGE CT
014-051-017-000	350 SIXTH ST	015-910-021-000	2081 BANDON DUNES DR
014-052-016-000	233 LA RUE AL	015-910-022-000	2073 BANDON DUNES DR
014-061-039-000	435 FIFTH ST	015-910-023-000	2065 BANDON DUNES DR

APN	Address	APN	Address
015-910-024-000	2057 BANDON DUNES DR	015-920-040-000	3041 TORREY PINES DR
015-910-025-000	2049 BANDON DUNES DR	015-920-041-000	3033 TORREY PINES DR
015-910-026-000	2041 BANDON DUNES DR	015-920-042-000	3025 TORREY PINES DR
015-910-027-000	2033 BANDON DUNES DR	015-920-043-000	3017 TORREY PINES DR
015-910-028-000	2025 BANDON DUNES DR	015-920-044-000	3009 TORREY PINES DR
015-910-029-000	2017 BANDON DUNES DR	015-920-045-000	3001 TORREY PINES DR
015-910-030-000	2009 BANDON DUNES DR	017-101-008-000	6382 PHILLIP RD
015-920-001-000	2096 BANDON DUNES DR	017-101-010-000	3883 WESTBROOK BL
015-920-002-000	2104 BANDON DUNES DR	017-101-016-000	5480 PHILLIP RD
015-920-003-000	500 BANDON DUNES CT	017-101-018-000	5300 PHILLIP RD
015-920-004-000	508 BANDON DUNES CT	017-101-026-000	4601 WESTPARK DR
015-920-005-000	516 BANDON DUNES CT	017-101-038-000	2151 BLUE OAKS BL
015-920-006-000	524 BANDON DUNES CT	017-113-008-000	8450 INDUSTRIAL AV
015-920-007-000	532 BANDON DUNES CT	017-117-012-000	10651 INDUSTRIAL AV
015-920-008-000	540 BANDON DUNES CT	017-117-097-000	1130 HARVEY WY
015-920-009-000	533 BANDON DUNES CT	017-123-004-000	10616 INDUSTRIAL AV
015-920-010-000	525 BANDON DUNES CT	017-123-020-000	10435 FAIRWAY DR
015-920-011-000	517 BANDON DUNES CT	017-123-080-000	2000 FREEDOM WY
015-920-012-000	3000 TORREY PINES DR	017-123-081-000	2100 FREEDOM WY
015-920-013-000	3024 TORREY PINES DR	017-152-018-000	1875 PLEASANT GROVE BL
015-920-014-000	3032 TORREY PINES DR	017-232-005-000	8701 FOOTHILLS BL
015-920-015-000	3040 TORREY PINES DR	017-232-006-000	8901 FOOTHILLS BL
015-920-016-000	3048 TORREY PINES DR	017-232-015-000	1207 PLEASANT GROVE BL
015-920-017-000	3064 TORREY PINES DR	017-232-033-000	7631 FOOTHILLS BL
015-920-018-000	3080 TORREY PINES DR	017-232-040-000	7801 FOOTHILLS BL
015-920-019-000	3088 TORREY PINES DR	017-232-041-000	7851 FOOTHILLS BL
015-920-020-000	600 TORREY PINES CT	017-232-042-000	7731 FOOTHILLS BL
015-920-021-000	608 TORREY PINES CT	017-232-043-000	7751 FOOTHILLS BL
015-920-022-000	616 TORREY PINES CT	017-250-010-000	10019 FOOTHILLS BL
015-920-023-000	624 TORREY PINES CT	017-250-019-000	10021 FOOTHILLS BL
015-920-024-000	632 TORREY PINES CT	017-250-058-000	1001 WINDING CREEK RD
015-920-025-000	633 TORREY PINES CT	017-250-076-000	10198 FOOTHILLS BL
015-920-026-000	625 TORREY PINES CT	017-380-013-000	3801 COUNTRY CLUB DR
015-920-027-000	609 TORREY PINES CT	017-410-025-000	8101 WASHINGTON BL
015-920-028-000	601 TORREY PINES CT	017-410-043-000	7001 GALILEE RD
015-920-029-000	733 SOUTHERN HILLS CT	017-470-022-000	4500 WESTBROOK BL
015-920-030-000	725 SOUTHERN HILLS CT	017-470-025-000	4410 WESTBROOK BL
015-920-031-000	717 SOUTHERN HILLS CT	017-470-027-000	4411 WESTBROOK BL
015-920-032-000	709 SOUTHERN HILLS CT	017-470-028-000	4501 WESTBROOK BL
015-920-033-000	701 SOUTHERN HILLS CT	017-470-037-000	2090 GENTLE RAIN DR
015-920-034-000	3089 TORREY PINES DR	017-480-027-000	4200 AMORUSO RANCH RD
015-920-035-000	3081 TORREY PINES DR	017-480-037-000	4300 WESTBROOK BL
015-920-036-000	3073 TORREY PINES DR	017-480-040-000	4180 WESTBROOK BL
015-920-037-000	3065 TORREY PINES DR	017-480-041-000	4080 WESTBROOK BL
015-920-038-000	3057 TORREY PINES DR	017-480-043-000	4251 WESTBROOK BL
015-920-039-000	3049 TORREY PINES DR	017-480-091-000	4315 WESTBROOK BL

APN	Address	APN	Address
017-480-126-000	4081 WESTBROOK BL	363-480-002-000	310 CONFERENCE CENTER DR
017-490-008-000	3040 BLUE OAKS BL	363-480-003-000	330 CONFERENCE CENTER DR
017-490-026-000	2880 BLUE OAKS BL	363-480-004-000	320 CONFERENCE CENTER DR
017-490-027-000	2860 BLUE OAKS BL	363-480-007-000	300 CONFERENCE CENTER DR
048-011-005-000	1905 DOUGLAS BL	363-480-008-000	350 CONFERENCE CENTER DR
048-013-013-000	1513 EUREKA RD	456-010-073-000	1001 SECRET RAVINE PW
048-013-014-000	1411 ROCKY RIDGE DR	456-160-014-000	173 LOST OAK CT
048-021-056-000	8160 SIERRA COLLEGE BL	456-160-023-000	116 LOST OAK CT
048-021-057-000	8170 SIERRA COLLEGE BL	456-160-025-000	1741 PARK OAK DR
048-350-015-000	1614 KIT CARSON WY	456-180-006-000	201 SNOWY EGRET CT
048-350-016-000	1616 KIT CARSON WY	466-030-046-000	9713 SIERRA COLLEGE BL
048-350-018-000	1618 KIT CARSON WY	466-190-042-000	9237 SIERRA COLLEGE BL
048-350-021-000	1612 KIT CARSON WY	466-190-055-000	9277 SIERRA COLLEGE BL
048-420-013-000	2130 DOUGLAS BL	469-100-013-000	1995 ROCKY RIDGE DR
048-460-030-000	1470 STONE POINT DR	469-100-046-000	1887 BALBOA DR
048-460-039-000	1486 STONE POINT DR	469-110-031-000	1100 COTTONWOOD DR
048-520-031-000	1640 ROCKY RIDGE DR	469-280-009-000	1828 S CIRBY WY
357-150-005-000	10521 FAIRWAY DR	470-050-008-000	919 OAK RIDGE DR
357-150-009-000	10577 FAIRWAY DR	471-010-003-000	823 CIRBY WY
357-150-011-000	10553 FAIRWAY DR	471-010-005-000	823 CIRBY WY
357-150-012-000	10537 FAIRWAY DR	471-010-006-000	823 CIRBY WY
360-070-002-000	8300 INDUSTRIAL AV	471-010-009-000	823 CIRBY WY
360-070-004-000	8477 WASHINGTON BL	471-020-017-000	1005 ORLANDO AV
360-070-005-000	8473 WASHINGTON BL	471-020-036-000	2 SOMER RIDGE DR
360-070-006-000	8469 WASHINGTON BL	471-050-007-000	11 WHYTE AV
360-070-007-000	8465 WASHINGTON BL	471-080-003-000	8650 AUBURN BL
360-070-008-000	8457 WASHINGTON BL	471-190-046-000	1021 CIRBY WY
360-070-025-000	8425 WASHINGTON BL	471-220-021-000	718 SUNRISE AV
360-070-026-000	8441 WASHINGTON BL	472-050-007-000	486 ROSEVILLE RD
361-230-024-000	246 GIBSON DR	472-050-008-000	486 ROSEVILLE RD
363-011-042-000	201 GIBSON DR	472-050-010-000	485 ROSEVILLE RD
363-011-043-000	1095 ROSEVILLE PW	472-050-013-000	490 ROSEVILLE RD
363-011-044-000	1091 ROSEVILLE PW	472-050-014-000	486 ROSEVILLE RD
363-011-054-000	550 DIAMOND OAKS RD	472-050-022-000	480 ROSEVILLE RD
363-011-058-000	551 DIAMOND OAKS RD	472-050-034-000	484 ROSEVILLE RD
363-011-097-000	251 CONFERENCE CENTER DR	472-050-035-000	484 ROSEVILLE RD
363-021-011-000	935 HIGHLAND POINTE DR	472-050-036-000	490 ROSEVILLE RD
363-022-018-000	1741 FREEDOM WY	472-050-045-000	480 ROSEVILLE RD
363-022-025-000	1698 FREEDOM WY	472-060-010-000	450 ROSEVILLE RD
363-022-030-000	1720 FREEDOM WY	472-060-011-000	400 ROSEVILLE RD
363-030-091-000	960 GIBSON DR	472-060-012-000	400 ROSEVILLE RD
363-030-092-000	1019 ROSEVILLE PW	472-060-013-000	450 ROSEVILLE RD
363-030-093-000	1007 ROSEVILLE PW	472-060-032-000	470 ROSEVILLE RD
363-030-094-000	989 PLEASANT GROVE BL	472-070-008-000	400 ROSEVILLE RD
363-030-095-000	983 PLEASANT GROVE BL	472-070-009-000	400 ROSEVILLE RD
363-120-021-000	2088 HERITAGE DR	472-070-015-000	444 ROSEVILLE RD

APN	Address	APN	Address
472-070-017-000	446 ROSEVILLE RD	473-100-044-000	2140 MARCH RD
472-070-036-000	400 ROSEVILLE RD	473-100-045-000	2021 LENDELL LN
472-070-039-000	446 ROSEVILLE RD	473-100-051-000	2170 MARCH RD
472-070-041-000	444 ROSEVILLE RD	473-180-011-000	8000 ATKINSON ST
472-070-043-000	442 ROSEVILLE RD	475-100-010-000	2033 MALIBU PL
472-080-017-000	400 ROSEVILLE RD	477-130-010-000	1599 MISTY WOOD DR
472-080-019-000	400 ROSEVILLE RD	478-440-006-000	1701 PLEASANT GROVE BL
472-080-022-000	420 ROSEVILLE RD	478-440-016-000	1715 PLEASANT GROVE BL
472-170-004-000	214 KENROY LN	478-440-018-000	1770 PLEASANT GROVE BL
472-210-033-000	812 MACHADO LN	478-440-019-000	1760 PLEASANT GROVE BL
472-330-052-000	1230 MELODY LN	478-440-020-000	1790 PLEASANT GROVE BL
472-370-013-000	86 VALLEY OAK DR	478-440-021-000	1780 PLEASANT GROVE BL
472-370-014-000	88 VALLEY OAK DR	481-260-005-000	1475 BLUE OAKS BL
472-370-015-000	90 VALLEY OAK DR	481-260-012-000	7621 PAINTED DESERT DR
472-370-016-000	92 VALLEY OAK DR	481-260-013-000	1451 BLUE OAKS BL
472-370-017-000	94 VALLEY OAK DR	481-260-014-000	1431 BLUE OAKS BL
472-370-018-000	96 VALLEY OAK DR	481-260-036-000	401 ROSEVILLE PW
472-370-019-000	98 VALLEY OAK DR	481-260-043-000	615 ROSEVILLE PW
472-370-020-000	100 VALLEY OAK DR	481-260-044-000	605 ROSEVILLE PW
472-370-021-000	102 VALLEY OAK DR	481-260-045-000	635 ROSEVILLE PW
472-370-022-000	104 VALLEY OAK DR	481-260-046-000	625 ROSEVILLE PW
472-370-023-000	106 VALLEY OAK DR	481-260-048-000	9070 FOOTHILLS BL
472-370-024-000	108 VALLEY OAK DR	481-260-049-000	8810 FOOTHILLS BL
472-370-025-000	110 VALLEY OAK DR	481-260-052-000	1485 BLUE OAKS BL
472-370-026-000	112 VALLEY OAK DR	481-260-053-000	185 ROSEVILLE PW
472-370-027-000	114 VALLEY OAK DR	481-270-053-000	621 ROSEVILLE PW
472-370-028-000	113 VALLEY OAK DR	481-270-054-000	603 ROSEVILLE PW
472-370-029-000	111 VALLEY OAK DR	481-270-069-000	6560 WOODCREEK OAKS BL
472-370-030-000	109 VALLEY OAK DR	481-320-009-000	290 ROSEVILLE PW
472-370-031-000	107 VALLEY OAK DR	481-360-001-000	7970 PAINTED DESERT DR
472-370-032-000	105 VALLEY OAK DR	481-360-002-000	7930 PAINTED DESERT DR
472-370-033-000	103 VALLEY OAK DR	481-360-003-000	7890 PAINTED DESERT DR
472-370-034-000	101 VALLEY OAK DR	481-380-006-000	5057 ENVY ST
472-370-035-000	99 VALLEY OAK DR	482-340-013-000	10060 WOODCREEK OAKS BL
473-100-014-000	2111 MARCH RD	482-340-015-000	1484 BLUE OAKS BL
473-100-022-000	1751 PFE RD	482-340-017-000	1488 BLUE OAKS BL
473-100-030-000	1961 PFE RD	482-340-018-000	1474 BLUE OAKS BL
473-100-032-000	2141 MARCH RD	482-420-002-000	120 DIAMOND CREEK PL
473-100-033-000	2151 MARCH RD	482-480-002-000	2503 TRADEWINDS DR
473-100-034-000	2161 MARCH RD	482-480-003-000	2517 TRADEWINDS DR
473-100-035-000	2171 MARCH RD	482-480-004-000	2545 TRADEWINDS DR
473-100-036-000	2181 MARCH RD	485-030-007-000	10568 INDUSTRIAL AV
473-100-037-000	2191 MARCH RD	485-080-002-000	1500 WINDING CREEK RD
473-100-038-000	2201 MARCH RD	485-080-003-000	1400 WINDING CREEK RD
473-100-039-000	2211 MARCH RD	485-080-004-000	1300 WINDING CREEK RD
473-100-040-000	2210 MARCH RD	485-080-005-000	10191 FOOTHILLS BL

APN	Address	APN	Address
485-090-001-000	1200 WINDING CREEK RD	496-620-016-000	1135 CELEBRATE DR
485-090-003-000	1101 WINDING CREEK RD	496-650-019-000	432 CRESCENT MOON CT
485-090-004-000	1201 WINDING CREEK RD	496-650-020-000	440 CRESCENT MOON CT
485-090-005-000	1601 WINDING CREEK RD	496-650-021-000	441 CRESCENT MOON CT
490-360-002-000	2101 WHARTON LN	496-650-022-000	433 CRESCENT MOON CT
490-360-003-000	1055 AMINGTON DR	496-650-023-000	425 CRESCENT MOON CT
492-012-003-000	2551 HAYDEN PW	496-650-024-000	516 FLANNEL CT
492-012-097-000	2451 BLUE OAKS BL	496-650-025-000	517 FLANNEL CT
492-013-002-000	4851 FIDDYMENT RD	496-650-026-000	509 FLANNEL CT
492-013-006-000	4951 FIDDYMENT RD	496-650-027-000	501 FLANNEL CT
492-440-035-000	1472 WADSWORTH CI	496-650-028-000	4000 DIVERGE DR
492-440-039-000	1440 WADSWORTH CI	496-650-029-000	4008 DIVERGE DR
492-440-040-000	1432 WADSWORTH CI	496-650-030-000	4016 DIVERGE DR
492-440-041-000	1424 WADSWORTH CI	496-650-031-000	4024 DIVERGE DR
492-490-002-000	2891 N HAYDEN PW	496-650-032-000	4032 DIVERGE DR
492-490-009-000	9048 BREA WY	496-650-033-000	4040 DIVERGE DR
492-490-010-000	9056 BREA WY	496-650-034-000	4048 DIVERGE DR
492-490-018-000	916 BREA CT	496-650-035-000	4056 DIVERGE DR
492-490-053-000	5057 RIALTO DR	496-650-038-000	4057 DIVERGE DR
492-490-054-000	5049 RIALTO DR	496-650-039-000	4049 DIVERGE DR
492-490-055-000	5041 RIALTO DR	496-650-040-000	4041 DIVERGE DR
492-490-056-000	5033 RIALTO DR	496-650-041-000	4033 DIVERGE DR
492-490-057-000	5025 RIALTO DR	496-650-042-000	4017 DIVERGE DR
492-490-058-000	5017 RIALTO DR	496-650-043-000	4001 DIVERGE DR
492-490-059-000	5009 RIALTO DR	496-650-044-000	600 CORDUROY CT
492-490-060-000	5001 RIALTO DR	496-650-047-000	617 CORDUROY CT
492-500-086-000	4684 CRAWFORD PW	496-650-048-000	609 CORDUROY CT
496-020-014-000	2801 WESTBROOK BL	496-650-049-000	601 CORDUROY CT
496-020-020-000	6101 GARLAND WY	496-650-050-000	1200 CELEBRATE DR
496-020-031-000	2900 WESTBROOK BL	496-650-051-000	1208 CELEBRATE DR
496-020-037-000	2400 WESTBROOK BL	496-650-052-000	1216 CELEBRATE DR
496-030-008-000	2275 WESTBROOK BL	496-650-053-000	1224 CELEBRATE DR
496-030-013-000	4401 WESTPARK DR	496-650-054-000	2016 LAZY DAY LN
496-100-003-000	4030 SOLAIRE DR	496-650-055-000	2024 LAZY DAY LN
496-100-027-000	3380 PLEASANT GROVE BL	496-650-056-000	2032 LAZY DAY LN
496-100-029-000	3250 PLEASANT GROVE BL	496-650-057-000	2040 LAZY DAY LN
496-100-034-000	4201 SANTUCCI BL	496-650-058-000	2048 LAZY DAY LN
496-100-098-000	2931 PLEASANT GROVE BL	496-660-028-000	3000 CREEKVIEW DR
496-100-099-000	1961 WESTBROOK BL	496-660-029-000	3008 CREEKVIEW DR
496-610-001-000	6456 BENCHMARK DR	496-660-030-000	3016 CREEKVIEW DR
496-610-002-000	6292 BENCHMARK DR	496-660-031-000	3024 CREEKVIEW DR
496-610-003-000	6457 BENCHMARK DR	496-660-032-000	408 CRESCENT MOON CT
496-610-004-000	6339 BENCHMARK DR	496-660-033-000	416 CRESCENT MOON CT
496-610-009-000	3683 WESTBROOK BL	496-660-034-000	424 CRESCENT MOON CT
496-620-006-000	3440 WESTBROOK BL	496-660-035-000	417 CRESCENT MOON CT
496-620-012-000	1135 CELEBRATE DR	496-660-036-000	409 CRESCENT MOON CT

APN	Address	APN	Address
496-660-037-000	401 CRESCENT MOON CT	496-700-004-000	3073 BLUE OPAL CI
496-660-038-000	500 FLANNEL CT	496-700-005-000	3104 BLUE OPAL CI
496-660-039-000	508 FLANNEL CT	496-700-006-000	3096 BLUE OPAL CI
496-680-061-000	4041 RAVENROCK WY	496-700-007-000	3088 BLUE OPAL CI
496-690-002-000	216 FLAT PLAINS CT	496-700-008-000	3080 BLUE OPAL CI
496-690-004-000	140 ORANGE SPRINGS CT	496-700-021-000	5057 GREEN FEATHER WY
496-690-005-000	132 ORANGE SPRINGS CT	496-700-022-000	5065 GREEN FEATHER WY
496-690-026-000	125 ORANGE SPRINGS CT	496-700-023-000	5073 GREEN FEATHER WY
496-690-027-000	133 ORANGE SPRINGS CT	496-700-024-000	601 GREEN SPUR CT
496-690-028-000	141 ORANGE SPRINGS CT	496-700-025-000	609 GREEN SPUR CT
496-690-029-000	149 ORANGE SPRINGS CT	496-700-026-000	617 GREEN SPUR CT
496-690-030-000	2048 BLUE SPUR DR	496-700-027-000	616 GREEN SPUR CT
496-690-031-000	2040 BLUE SPUR DR	496-700-028-000	608 GREEN SPUR CT
496-690-032-000	2032 BLUE SPUR DR	496-700-029-000	600 GREEN SPUR CT
496-690-033-000	2024 BLUE SPUR DR	496-700-030-000	517 GRAZING RANCH CT
496-690-034-000	2016 BLUE SPUR DR	496-700-031-000	516 GRAZING RANCH CT
496-690-035-000	2008 BLUE SPUR DR	496-700-032-000	508 GRAZING RANCH CT
496-690-036-000	2000 BLUE SPUR DR	496-700-033-000	500 GRAZING RANCH CT
496-690-037-000	3001 BLUE OPAL CI	496-700-034-000	6304 GRAZING RANCH RD
496-690-038-000	3009 BLUE OPAL CI	496-700-035-000	6296 GRAZING RANCH RD
496-690-039-000	3017 BLUE OPAL CI	496-700-036-000	6288 GRAZING RANCH RD
496-690-040-000	3025 BLUE OPAL CI	496-700-037-000	6280 GRAZING RANCH RD
496-690-041-000	3033 BLUE OPAL CI	496-710-001-000	9001 BLACK OPAL CI
496-690-042-000	3041 BLUE OPAL CI	496-710-002-000	9009 BLACK OPAL CI
496-690-043-000	3024 BLUE OPAL CI	496-710-015-000	9008 BLACK OPAL CI
496-690-044-000	3016 BLUE OPAL CI	496-710-016-000	9000 BLACK OPAL CI
496-690-045-000	3008 BLUE OPAL CI	496-720-057-000	6040 GRAZING RANCH RD
496-690-046-000	3000 BLUE OPAL CI	496-720-058-000	6048 GRAZING RANCH RD
496-690-047-000	2001 BLUE SPUR DR	496-720-059-000	6056 GRAZING RANCH RD
496-690-048-000	2009 BLUE SPUR DR	496-720-060-000	6064 GRAZING RANCH RD
496-690-049-000	2017 BLUE SPUR DR	496-720-061-000	6072 GRAZING RANCH RD
496-690-050-000	2025 BLUE SPUR DR	496-720-062-000	6080 GRAZING RANCH RD
496-690-051-000	2033 BLUE SPUR DR	496-720-063-000	6088 GRAZING RANCH RD
496-690-052-000	2041 BLUE SPUR DR	496-720-064-000	6096 GRAZING RANCH RD
496-690-053-000	2049 BLUE SPUR DR	496-720-065-000	6104 GRAZING RANCH RD
496-690-054-000	2064 BLUE SPUR DR	496-720-066-000	6112 GRAZING RANCH RD
496-690-055-000	4048 AMORUSO RANCH RD	496-720-067-000	2000 BRASS SPUR WY
496-690-056-000	4040 AMORUSO RANCH RD	496-720-068-000	1145 SILVER FEATHER WY
496-690-057-000	4032 AMORUSO RANCH RD	496-730-001-000	8113 TRAPPER RANCH RD
496-690-058-000	4024 AMORUSO RANCH RD	496-730-002-000	8105 TRAPPER RANCH RD
496-690-059-000	4016 AMORUSO RANCH RD	496-730-003-000	8097 TRAPPER RANCH RD
496-690-060-000	4008 AMORUSO RANCH RD	496-730-004-000	8089 TRAPPER RANCH RD
496-690-061-000	4000 AMORUSO RANCH RD	496-730-005-000	8081 TRAPPER RANCH RD
496-700-001-000	3049 BLUE OPAL CI	496-730-006-000	8073 TRAPPER RANCH RD
496-700-002-000	3057 BLUE OPAL CI	496-730-007-000	8065 TRAPPER RANCH RD
496-700-003-000	3065 BLUE OPAL CI	496-730-008-000	8057 TRAPPER RANCH RD

APN	Address	APN	Address
496-730-012-000	7104 VAIL RANCH RD	496-730-062-000	2040 BRASS SPUR WY
496-730-013-000	7112 VAIL RANCH RD	496-730-063-000	2032 BRASS SPUR WY
496-730-014-000	7120 VAIL RANCH RD	496-730-064-000	2024 BRASS SPUR WY
496-730-015-000	7128 VAIL RANCH RD	496-730-065-000	2016 BRASS SPUR WY
496-730-016-000	7136 VAIL RANCH RD	496-730-066-000	2008 BRASS SPUR WY
496-730-017-000	7137 VAIL RANCH RD	496-730-067-000	1153 SILVER FEATHER WY
496-730-018-000	7129 VAIL RANCH RD	496-730-068-000	1161 SILVER FEATHER WY
496-730-019-000	7121 VAIL RANCH RD	496-730-069-000	1169 SILVER FEATHER WY
496-730-020-000	7113 VAIL RANCH RD	496-730-070-000	1177 SILVER FEATHER WY
496-730-025-000	7065 VAIL RANCH RD	496-730-071-000	1185 SILVER FEATHER WY
496-730-026-000	7057 VAIL RANCH RD	496-730-072-000	1193 SILVER FEATHER WY
496-730-027-000	7049 VAIL RANCH RD	496-730-073-000	1201 SILVER FEATHER WY
496-730-028-000	7041 VAIL RANCH RD	496-740-001-000	4304 AMORUSO RANCH RD
496-730-029-000	7033 VAIL RANCH RD	496-740-002-000	4312 AMORUSO RANCH RD
496-730-030-000	7025 VAIL RANCH RD	496-740-003-000	4320 AMORUSO RANCH RD
496-730-031-000	7017 VAIL RANCH RD	496-740-004-000	4328 AMORUSO RANCH RD
496-730-032-000	7009 VAIL RANCH RD	496-740-005-000	4336 AMORUSO RANCH RD
496-730-033-000	7001 VAIL RANCH RD	496-740-006-000	4344 AMORUSO RANCH RD
496-730-034-000	7016 VAIL RANCH RD	496-740-007-000	700 FOUNTAIN CT
496-730-035-000	7024 VAIL RANCH RD	496-740-008-000	708 FOUNTAIN CT
496-730-036-000	7032 VAIL RANCH RD	496-740-009-000	716 FOUNTAIN CT
496-730-037-000	7040 VAIL RANCH RD	496-740-010-000	724 FOUNTAIN CT
496-730-038-000	7048 VAIL RANCH RD	496-740-011-000	732 FOUNTAIN CT
496-730-039-000	7056 VAIL RANCH RD	496-740-012-000	740 FOUNTAIN CT
496-730-040-000	7064 VAIL RANCH RD	496-740-013-000	741 FOUNTAIN CT
496-730-041-000	8041 TRAPPER RANCH RD	496-740-014-000	733 FOUNTAIN CT
496-730-042-000	8033 TRAPPER RANCH RD	496-740-015-000	725 FOUNTAIN CT
496-730-043-000	8025 TRAPPER RANCH RD	496-740-016-000	717 FOUNTAIN CT
496-730-044-000	8017 TRAPPER RANCH RD	496-740-017-000	709 FOUNTAIN CT
496-730-045-000	8009 TRAPPER RANCH RD	496-740-018-000	1089 SILVER FEATHER WY
496-730-046-000	2041 BRASS SPUR WY	496-740-019-000	1081 SILVER FEATHER WY
496-730-047-000	2033 BRASS SPUR WY	496-740-020-000	1073 SILVER FEATHER WY
496-730-048-000	301 CLIFTON CT	496-740-021-000	608 IMPERIAL CT
496-730-049-000	309 CLIFTON CT	496-740-022-000	616 IMPERIAL CT
496-730-050-000	317 CLIFTON CT	496-740-023-000	624 IMPERIAL CT
496-730-051-000	325 CLIFTON CT	496-740-024-000	632 IMPERIAL CT
496-730-052-000	324 CLIFTON CT	496-740-025-000	640 IMPERIAL CT
496-730-053-000	316 CLIFTON CT	496-740-026-000	641 IMPERIAL CT
496-730-054-000	8016 TRAPPER RANCH RD	496-740-027-000	633 IMPERIAL CT
496-730-055-000	8008 TRAPPER RANCH RD	496-740-028-000	625 IMPERIAL CT
496-730-056-000	201 BRASS SPUR CT	496-740-029-000	617 IMPERIAL CT
496-730-057-000	209 BRASS SPUR CT	496-740-030-000	609 IMPERIAL CT
496-730-058-000	217 BRASS SPUR CT	496-740-031-000	601 IMPERIAL CT
496-730-059-000	216 BRASS SPUR CT	496-740-032-000	1057 SILVER FEATHER WY
496-730-060-000	208 BRASS SPUR CT	496-740-033-000	1049 SILVER FEATHER WY
496-730-061-000	200 BRASS SPUR CT	496-740-034-000	1041 SILVER FEATHER WY

APN	Address	APN	Address
496-740-035-000	1033 SILVER FEATHER WY	496-740-081-000	1096 SILVER FEATHER WY
496-740-036-000	516 FOXTAIL CT	496-740-082-000	1104 SILVER FEATHER WY
496-740-037-000	524 FOXTAIL CT	496-740-091-000	3025 FOXTAIL WY
496-740-038-000	532 FOXTAIL CT	496-740-092-000	3017 FOXTAIL WY
496-740-039-000	540 FOXTAIL CT	496-740-093-000	300 WHISTLE CT
496-740-040-000	548 FOXTAIL CT	496-740-096-000	324 WHISTLE CT
496-740-041-000	556 FOXTAIL CT	496-740-097-000	332 WHISTLE CT
496-740-042-000	541 FOXTAIL CT	496-740-098-000	340 WHISTLE CT
496-740-043-000	533 FOXTAIL CT	496-740-099-000	341 WHISTLE CT
496-740-044-000	525 FOXTAIL CT	496-740-100-000	333 WHISTLE CT
496-740-045-000	517 FOXTAIL CT	496-740-101-000	325 WHISTLE CT
496-740-046-000	509 FOXTAIL CT	496-740-104-000	301 WHISTLE CT
496-740-047-000	501 FOXTAIL CT	496-750-001-000	208 IRON CANYON CT
496-740-048-000	400 YUKON CT	496-750-002-000	216 IRON CANYON CT
496-740-049-000	408 YUKON CT	496-750-003-000	224 IRON CANYON CT
496-740-050-000	416 YUKON CT	496-750-004-000	232 IRON CANYON CT
496-740-051-000	424 YUKON CT	496-750-005-000	240 IRON CANYON CT
496-740-052-000	432 YUKON CT	496-750-006-000	248 IRON CANYON CT
496-740-053-000	417 YUKON CT	496-750-007-000	256 IRON CANYON CT
496-740-054-000	409 YUKON CT	496-750-008-000	264 IRON CANYON CT
496-740-055-000	401 YUKON CT	496-750-009-000	273 IRON CANYON CT
496-740-056-000	2017 BLUE STAR DR	496-750-010-000	265 IRON CANYON CT
496-740-057-000	2009 BLUE STAR DR	496-750-011-000	257 IRON CANYON CT
496-740-058-000	2001 BLUE STAR DR	496-750-012-000	249 IRON CANYON CT
496-740-059-000	1016 SILVER FEATHER WY	496-750-013-000	241 IRON CANYON CT
496-740-060-000	1008 SILVER FEATHER WY	496-750-014-000	233 IRON CANYON CT
496-740-061-000	1000 SILVER FEATHER WY	496-750-015-000	225 IRON CANYON CT
496-740-062-000	2033 BLUE STAR DR	496-750-016-000	217 IRON CANYON CT
496-740-063-000	2041 BLUE STAR DR	496-750-017-000	209 IRON CANYON CT
496-740-064-000	2049 BLUE STAR DR	496-750-018-000	201 IRON CANYON CT
496-740-065-000	2057 BLUE STAR DR	496-750-019-000	100 IRON GATE CT
496-740-066-000	2065 BLUE STAR DR	496-750-020-000	108 IRON GATE CT
496-740-067-000	2073 BLUE STAR DR	496-750-021-000	116 IRON GATE CT
496-740-068-000	2081 BLUE STAR DR	496-750-022-000	124 IRON GATE CT
496-740-069-000	3024 FOXTAIL WY	496-750-023-000	132 IRON GATE CT
496-740-070-000	3016 FOXTAIL WY	496-750-024-000	140 IRON GATE CT
496-740-071-000	3008 FOXTAIL WY	496-750-025-000	148 IRON GATE CT
496-740-072-000	3000 FOXTAIL WY	496-750-026-000	156 IRON GATE CT
496-740-073-000	1032 SILVER FEATHER WY	496-750-027-000	164 IRON GATE CT
496-740-074-000	1040 SILVER FEATHER WY	496-750-028-000	172 IRON GATE CT
496-740-075-000	1048 SILVER FEATHER WY	496-750-029-000	180 IRON GATE CT
496-740-076-000	1056 SILVER FEATHER WY	496-750-030-000	181 IRON GATE CT
496-740-077-000	1064 SILVER FEATHER WY	496-750-031-000	173 IRON GATE CT
496-740-078-000	1072 SILVER FEATHER WY	496-750-032-000	165 IRON GATE CT
496-740-079-000	1080 SILVER FEATHER WY	496-750-033-000	157 IRON GATE CT
496-740-080-000	1088 SILVER FEATHER WY	496-750-034-000	149 IRON GATE CT

APN	Address	APN	Address
496-750-035-000	141 IRON GATE CT	496-780-012-000	800 ROSETTE CT
496-750-036-000	133 IRON GATE CT	496-780-013-000	808 ROSETTE CT
496-750-037-000	125 IRON GATE CT	496-780-014-000	816 ROSETTE CT
496-750-038-000	117 IRON GATE CT	496-780-015-000	824 ROSETTE CT
496-750-039-000	109 IRON GATE CT	496-780-016-000	832 ROSETTE CT
496-760-001-000	1128 SILVER FEATHER WY	496-780-017-000	840 ROSETTE CT
496-760-002-000	1136 SILVER FEATHER WY	496-780-018-000	841 ROSETTE CT
496-760-003-000	1144 SILVER FEATHER WY	496-780-019-000	833 ROSETTE CT
496-760-004-000	1152 SILVER FEATHER WY	496-780-020-000	817 ROSETTE CT
496-760-005-000	1160 SILVER FEATHER WY	496-780-021-000	809 ROSETTE CT
496-760-006-000	1168 SILVER FEATHER WY	496-780-022-000	801 ROSETTE CT
496-760-007-000	1176 SILVER FEATHER WY	496-780-023-000	700 BUFFALO CT
496-760-008-000	1184 SILVER FEATHER WY	496-780-024-000	708 BUFFALO CT
496-760-009-000	2185 BLUE STAR DR	496-780-025-000	716 BUFFALO CT
496-760-012-000	2161 BLUE STAR DR	496-780-026-000	724 BUFFALO CT
496-770-001-000	1208 SILVER FEATHER WY	496-780-027-000	901 BROCK CT
496-770-002-000	1216 SILVER FEATHER WY	496-780-028-000	909 BROCK CT
496-770-003-000	1224 SILVER FEATHER WY	496-780-029-000	917 BROCK CT
496-770-004-000	1232 SILVER FEATHER WY	496-780-030-000	925 BROCK CT
496-770-005-000	100 SILVER FEATHER CT	496-780-031-000	933 BROCK CT
496-770-006-000	108 SILVER FEATHER CT	496-780-032-000	932 BROCK CT
496-770-007-000	116 SILVER FEATHER CT	496-780-033-000	916 BROCK CT
496-770-008-000	124 SILVER FEATHER CT	496-780-034-000	908 BROCK CT
496-770-009-000	125 SILVER FEATHER CT	496-780-035-000	900 BROCK CT
496-770-010-000	3000 COMET DR	496-780-036-000	2140 GENTLE RAIN DR
496-770-011-000	2025 GENTLE RAIN DR	496-780-037-000	2120 GENTLE RAIN DR
496-770-012-000	2017 GENTLE RAIN DR	496-790-001-000	3193 RED FEATHER WY
496-770-013-000	2009 GENTLE RAIN DR	496-790-005-000	3161 RED FEATHER WY
496-770-014-000	2001 GENTLE RAIN DR	496-790-006-000	3153 RED FEATHER WY
496-770-015-000	2241 BLUE STAR DR	496-790-007-000	3145 RED FEATHER WY
496-770-016-000	2233 BLUE STAR DR	496-790-008-000	4000 AZURE SPRING WY
496-770-017-000	2225 BLUE STAR DR	496-790-009-000	4016 AZURE SPRING WY
496-770-018-000	2217 BLUE STAR DR	496-790-010-000	4024 AZURE SPRING WY
496-770-019-000	2209 BLUE STAR DR	496-790-011-000	4032 AZURE SPRING WY
496-770-020-000	2201 BLUE STAR DR	496-790-012-000	4040 AZURE SPRING WY
496-780-001-000	4073 AZURE SPRING WY	496-790-013-000	4048 AZURE SPRING WY
496-780-002-000	4065 AZURE SPRING WY	496-790-017-000	4049 AZURE SPRING WY
496-780-003-000	4057 AZURE SPRING WY	496-790-018-000	4041 AZURE SPRING WY
496-780-004-000	5056 LONE STAR WY	496-790-019-000	4033 AZURE SPRING WY
496-780-005-000	5064 LONE STAR WY	496-790-020-000	4025 AZURE SPRING WY
496-780-006-000	5072 LONE STAR WY	496-790-021-000	4017 AZURE SPRING WY
496-780-007-000	5080 LONE STAR WY	496-790-022-000	4009 AZURE SPRING WY
496-780-008-000	2161 GENTLE RAIN DR	496-790-023-000	4001 AZURE SPRING WY
496-780-009-000	2169 GENTLE RAIN DR	496-790-024-000	5000 LONE STAR WY
496-780-010-000	2177 GENTLE RAIN DR	496-790-025-000	5008 LONE STAR WY
496-780-011-000	2185 GENTLE RAIN DR	496-790-026-000	5016 LONE STAR WY

APN	Address	APN	Address
496-790-027-000	5024 LONE STAR WY	496-790-073-000	232 BUTTERFLY SPRING CT
496-790-028-000	5032 LONE STAR WY	496-790-074-000	224 BUTTERFLY SPRING CT
496-790-029-000	5040 LONE STAR WY	496-790-075-000	216 BUTTERFLY SPRING CT
496-790-030-000	5048 LONE STAR WY	496-790-076-000	5001 LONE STAR WY
496-790-031-000	601 SILVER CANOE CT	496-790-077-000	5009 LONE STAR WY
496-790-032-000	609 SILVER CANOE CT	496-790-078-000	5017 LONE STAR WY
496-790-033-000	617 SILVER CANOE CT	496-790-079-000	5025 LONE STAR WY
496-790-034-000	625 SILVER CANOE CT	496-800-001-000	3017 COMET DR
496-790-035-000	633 SILVER CANOE CT	496-800-002-000	3009 COMET DR
496-790-036-000	641 SILVER CANOE CT	496-800-003-000	1241 SILVER FEATHER WY
496-790-037-000	649 SILVER CANOE CT	496-800-004-000	1233 SILVER FEATHER WY
496-790-038-000	9089 BLACK OPAL CI	496-800-005-000	1225 SILVER FEATHER WY
496-790-039-000	9097 BLACK OPAL CI	496-800-006-000	1217 SILVER FEATHER WY
496-790-040-000	9105 BLACK OPAL CI	496-800-007-000	1209 SILVER FEATHER WY
496-790-041-000	9113 BLACK OPAL CI	496-800-008-000	441 DIAMOND SPRINGS CT
496-790-042-000	9121 BLACK OPAL CI	496-800-009-000	433 DIAMOND SPRINGS CT
496-790-043-000	9129 BLACK OPAL CI	496-800-010-000	425 DIAMOND SPRINGS CT
496-790-044-000	8184 TRAPPER RANCH RD	496-800-011-000	417 DIAMOND SPRINGS CT
496-790-045-000	8176 TRAPPER RANCH RD	496-800-012-000	409 DIAMOND SPRINGS CT
496-790-046-000	8168 TRAPPER RANCH RD	496-800-013-000	401 DIAMOND SPRINGS CT
496-790-047-000	8160 TRAPPER RANCH RD	496-800-014-000	400 DIAMOND SPRINGS CT
496-790-048-000	8152 TRAPPER RANCH RD	496-800-015-000	408 DIAMOND SPRINGS CT
496-790-049-000	8144 TRAPPER RANCH RD	496-800-016-000	416 DIAMOND SPRINGS CT
496-790-050-000	8136 TRAPPER RANCH RD	496-800-017-000	424 DIAMOND SPRINGS CT
496-790-051-000	8128 TRAPPER RANCH RD	496-800-018-000	432 DIAMOND SPRINGS CT
496-790-052-000	8120 TRAPPER RANCH RD	496-800-019-000	440 DIAMOND SPRINGS CT
496-790-053-000	8112 TRAPPER RANCH RD	496-800-020-000	541 NORTHWIND CT
496-790-054-000	8104 TRAPPER RANCH RD	496-800-021-000	533 NORTHWIND CT
496-790-055-000	8096 TRAPPER RANCH RD	496-800-022-000	525 NORTHWIND CT
496-790-056-000	8088 TRAPPER RANCH RD	496-800-023-000	517 NORTHWIND CT
496-790-057-000	8080 TRAPPER RANCH RD	496-800-024-000	509 NORTHWIND CT
496-790-058-000	6025 BUTTERFLY SPRING WY	496-800-025-000	501 NORTHWIND CT
496-790-059-000	6033 BUTTERFLY SPRING WY	496-800-026-000	500 NORTHWIND CT
496-790-060-000	6041 BUTTERFLY SPRING WY	496-800-027-000	508 NORTHWIND CT
496-790-061-000	6049 BUTTERFLY SPRING WY	496-800-028-000	516 NORTHWIND CT
496-790-062-000	6057 BUTTERFLY SPRING WY	496-800-029-000	524 NORTHWIND CT
496-790-063-000	6065 BUTTERFLY SPRING WY	496-800-030-000	540 NORTHWIND CT
496-790-064-000	6073 BUTTERFLY SPRING WY	496-800-031-000	3152 RED FEATHER WY
496-790-065-000	201 BUTTERFLY SPRING CT	496-800-032-000	3160 RED FEATHER WY
496-790-066-000	209 BUTTERFLY SPRING CT	496-800-033-000	3176 RED FEATHER WY
496-790-067-000	217 BUTTERFLY SPRING CT	496-800-034-000	3184 RED FEATHER WY
496-790-068-000	225 BUTTERFLY SPRING CT	496-800-035-000	3192 RED FEATHER WY
496-790-069-000	233 BUTTERFLY SPRING CT	496-800-036-000	8072 TRAPPER RANCH RD
496-790-070-000	241 BUTTERFLY SPRING CT	496-800-037-000	8064 TRAPPER RANCH RD
496-790-071-000	249 BUTTERFLY SPRING CT	496-800-038-000	3113 RED FEATHER WY
496-790-072-000	240 BUTTERFLY SPRING CT	496-800-039-000	3121 RED FEATHER WY

APN	Address	APN	Address
496-800-040-000	3129 RED FEATHER WY	496-810-044-000	3064 LEAP FROG LP
496-800-041-000	6009 BUTTERFLY SPRING WY	496-810-045-000	3072 LEAP FROG LP
496-800-042-000	6017 BUTTERFLY SPRING WY	496-810-046-000	3080 LEAP FROG LP
496-810-001-000	3128 LEAP FROG LP	496-810-047-000	3088 LEAP FROG LP
496-810-002-000	3136 LEAP FROG LP	496-810-048-000	3096 LEAP FROG LP
496-810-003-000	3144 LEAP FROG LP	496-820-001-000	801 CANOE CT
496-810-004-000	3152 LEAP FROG LP	496-820-002-000	809 CANOE CT
496-810-005-000	3160 LEAP FROG LP	496-820-003-000	817 CANOE CT
496-810-006-000	3168 LEAP FROG LP	496-820-004-000	825 CANOE CT
496-810-007-000	3176 LEAP FROG LP	496-820-005-000	833 CANOE CT
496-810-008-000	3184 LEAP FROG LP	496-820-006-000	840 CANOE CT
496-810-009-000	3192 LEAP FROG LP	496-820-007-000	832 CANOE CT
496-810-010-000	3200 LEAP FROG LP	496-820-008-000	824 CANOE CT
496-810-011-000	3208 LEAP FROG LP	496-820-009-000	816 CANOE CT
496-810-012-000	3216 LEAP FROG LP	496-820-010-000	808 CANOE CT
496-810-013-000	3224 LEAP FROG LP	496-820-011-000	800 CANOE CT
496-810-014-000	3232 LEAP FROG LP	496-820-012-000	701 CHIPMUNK CT
496-810-015-000	3240 LEAP FROG LP	496-820-013-000	709 CHIPMUNK CT
496-810-016-000	3248 LEAP FROG LP	496-820-014-000	717 CHIPMUNK CT
496-810-017-000	3256 LEAP FROG LP	496-820-015-000	725 CHIPMUNK CT
496-810-018-000	3241 LEAP FROG LP	496-820-016-000	733 CHIPMUNK CT
496-810-019-000	3233 LEAP FROG LP	496-820-017-000	741 CHIPMUNK CT
496-810-020-000	3225 LEAP FROG LP	496-820-018-000	748 CHIPMUNK CT
496-810-021-000	3217 LEAP FROG LP	496-820-019-000	740 CHIPMUNK CT
496-810-022-000	3209 LEAP FROG LP	496-820-020-000	732 CHIPMUNK CT
496-810-023-000	3201 LEAP FROG LP	496-820-021-000	724 CHIPMUNK CT
496-810-024-000	3185 LEAP FROG LP	496-820-022-000	716 CHIPMUNK CT
496-810-025-000	3153 LEAP FROG LP	496-820-023-000	708 CHIPMUNK CT
496-810-026-000	3145 LEAP FROG LP	496-820-024-000	700 CHIPMUNK CT
496-810-027-000	3137 LEAP FROG LP	496-820-025-000	1201 CELEBRATE DR
496-810-028-000	3129 LEAP FROG LP	496-820-026-000	1209 CELEBRATE DR
496-810-029-000	3121 LEAP FROG LP	496-820-027-000	1217 CELEBRATE DR
496-810-030-000	3113 LEAP FROG LP	496-820-028-000	1225 CELEBRATE DR
496-810-031-000	3105 LEAP FROG LP	496-820-029-000	1233 CELEBRATE DR
496-810-032-000	200 CANOPY CT	496-820-030-000	1241 CELEBRATE DR
496-810-033-000	208 CANOPY CT	496-820-031-000	1249 CELEBRATE DR
496-810-034-000	216 CANOPY CT	496-820-032-000	1257 CELEBRATE DR
496-810-035-000	217 CANOPY CT	496-830-001-000	6105 WHISTLING PINE WY
496-810-036-000	209 CANOPY CT	496-830-004-000	6081 WHISTLING PINE WY
496-810-037-000	201 CANOPY CT	496-830-005-000	6073 WHISTLING PINE WY
496-810-038-000	3016 LEAP FROG LP	496-830-006-000	6065 WHISTLING PINE WY
496-810-039-000	3024 LEAP FROG LP	496-830-007-000	6057 WHISTLING PINE WY
496-810-040-000	3032 LEAP FROG LP	496-830-008-000	6049 WHISTLING PINE WY
496-810-041-000	3040 LEAP FROG LP	496-830-009-000	6041 WHISTLING PINE WY
496-810-042-000	3048 LEAP FROG LP	496-830-010-000	6033 WHISTLING PINE WY
496-810-043-000	3056 LEAP FROG LP	496-830-011-000	6025 WHISTLING PINE WY

APN	Address	APN	Address
496-830-012-000	6017 WHISTLING PINE WY	496-830-059-000	4209 SALAMANDER CI
496-830-013-000	6009 WHISTLING PINE WY	496-830-060-000	4201 SALAMANDER CI
496-830-014-000	6001 WHISTLING PINE WY	496-830-061-000	4193 SALAMANDER CI
496-830-015-000	4000 SALAMANDER CI	496-830-062-000	4185 SALAMANDER CI
496-830-016-000	4008 SALAMANDER CI	496-830-063-000	4177 SALAMANDER CI
496-830-017-000	4016 SALAMANDER CI	496-830-064-000	4169 SALAMANDER CI
496-830-018-000	4024 SALAMANDER CI	496-830-065-000	4160 SALAMANDER CI
496-830-019-000	4032 SALAMANDER CI	496-830-066-000	4168 SALAMANDER CI
496-830-020-000	4040 SALAMANDER CI	496-830-067-000	4176 SALAMANDER CI
496-830-021-000	4048 SALAMANDER CI	496-830-068-000	4184 SALAMANDER CI
496-830-022-000	4056 SALAMANDER CI	496-830-069-000	4192 SALAMANDER CI
496-830-023-000	4064 SALAMANDER CI	496-830-070-000	4200 SALAMANDER CI
496-830-024-000	4072 SALAMANDER CI	496-830-071-000	4208 SALAMANDER CI
496-830-025-000	4080 SALAMANDER CI	496-830-072-000	4216 SALAMANDER CI
496-830-026-000	4088 SALAMANDER CI	496-830-073-000	4224 SALAMANDER CI
496-830-027-000	4096 SALAMANDER CI	496-830-074-000	4232 SALAMANDER CI
496-830-028-000	4104 SALAMANDER CI	498-010-021-000	6872 FIDDYMENT RD
496-830-029-000	4089 SALAMANDER CI	498-010-022-000	4701 UPLAND DR
496-830-030-000	4081 SALAMANDER CI	498-010-026-000	2100 NICOLE GEE DR
496-830-031-000	4073 SALAMANDER CI	498-010-059-000	1801 VISTA GRANDE BL
496-830-032-000	4065 SALAMANDER CI	498-010-060-000	1721 VISTA GRANDE BL
496-830-034-000	4049 SALAMANDER CI	498-020-014-000	1600 WESTBROOK BL
496-830-035-000	4041 SALAMANDER CI	498-020-015-000	1500 WESTBROOK BL
496-830-036-000	4033 SALAMANDER CI	498-020-016-000	1501 WESTBROOK BL
496-830-037-000	4025 SALAMANDER CI	498-020-018-000	3700 SANTUCCI BL
496-830-038-000	5000 CANTEEN DR	498-020-019-000	2401 SILVER SPRUCE DR
496-830-039-000	5008 CANTEEN DR	498-020-021-000	2520 VISTA GRANDE BL
496-830-040-000	5016 CANTEEN DR	498-020-028-000	1400 WESTBROOK BL
496-830-041-000	5024 CANTEEN DR	498-020-034-000	1850 VISTA GRANDE BL
496-830-042-000	5032 CANTEEN DR	498-020-035-000	1750 VISTA GRANDE BL
496-830-043-000	5040 CANTEEN DR	498-020-043-000	2200 NICOLE GEE DR
496-830-044-000	5048 CANTEEN DR	498-020-060-000	3700 MARKET ST
496-830-045-000	5056 CANTEEN DR	498-020-061-000	3750 MARKET ST
496-830-046-000	5064 CANTEEN DR	498-020-062-000	1710 VISTA GRANDE BL
496-830-047-000	5065 CANTEEN DR	498-080-004-000	6176 RIDING PATH DR
496-830-048-000	5057 CANTEEN DR	498-080-005-000	6168 RIDING PATH DR
496-830-049-000	5049 CANTEEN DR	498-080-047-000	6153 RIDING PATH DR
496-830-050-000	5041 CANTEEN DR	498-280-027-000	832 CANYONLAND CT
496-830-051-000	5033 CANTEEN DR	498-280-028-000	824 CANYONLAND CT
496-830-052-000	5025 CANTEEN DR	498-280-029-000	816 CANYONLAND CT
496-830-053-000	5017 CANTEEN DR	498-280-030-000	808 CANYONLAND CT
496-830-054-000	5009 CANTEEN DR	498-280-031-000	800 CANYONLAND CT
496-830-055-000	5001 CANTEEN DR	498-280-032-000	901 ACADIA CT
496-830-056-000	4233 SALAMANDER CI	498-280-033-000	909 ACADIA CT
496-830-057-000	4225 SALAMANDER CI	498-280-034-000	917 ACADIA CT
496-830-058-000	4217 SALAMANDER CI	498-280-035-000	925 ACADIA CT

APN	Address	APN	Address
498-280-036-000	933 ACADIA CT	498-300-040-000	1097 MALLORY RIDGE ST
498-280-037-000	932 ACADIA CT	498-300-041-000	1105 MALLORY RIDGE ST
498-280-038-000	924 ACADIA CT	498-300-042-000	1113 MALLORY RIDGE ST
498-280-039-000	916 ACADIA CT	498-300-043-000	1121 MALLORY RIDGE ST
498-280-040-000	908 ACADIA CT	498-300-044-000	1129 MALLORY RIDGE ST
498-280-041-000	900 ACADIA CT	498-300-045-000	1137 MALLORY RIDGE ST
498-290-099-000	2440 LONGMIRE LP	498-300-046-000	1145 MALLORY RIDGE ST
498-300-001-000	1001 MALLORY RIDGE ST	498-300-047-000	1153 MALLORY RIDGE ST
498-300-002-000	1009 MALLORY RIDGE ST	498-300-048-000	1161 MALLORY RIDGE ST
498-300-003-000	1017 MALLORY RIDGE ST	498-300-049-000	1169 MALLORY RIDGE ST
498-300-004-000	405 DESERT ELFIN CT	498-300-050-000	1136 MALLORY RIDGE ST
498-300-005-000	409 DESERT ELFIN CT	498-300-051-000	1128 MALLORY RIDGE ST
498-300-006-000	413 DESERT ELFIN CT	498-300-052-000	1120 MALLORY RIDGE ST
498-300-007-000	417 DESERT ELFIN CT	498-300-053-000	1112 MALLORY RIDGE ST
498-300-008-000	421 DESERT ELFIN CT	498-300-054-000	1104 MALLORY RIDGE ST
498-300-009-000	425 DESERT ELFIN CT	498-300-055-000	1096 MALLORY RIDGE ST
498-300-010-000	429 DESERT ELFIN CT	498-300-056-000	1088 MALLORY RIDGE ST
498-300-011-000	433 DESERT ELFIN CT	498-300-057-000	1080 MALLORY RIDGE ST
498-300-012-000	437 DESERT ELFIN CT	498-300-058-000	1040 MALLORY RIDGE ST
498-300-013-000	441 DESERT ELFIN CT	498-300-059-000	1032 MALLORY RIDGE ST
498-300-014-000	445 DESERT ELFIN CT	498-300-060-000	1024 MALLORY RIDGE ST
498-300-015-000	449 DESERT ELFIN CT	498-300-061-000	2001 BLUE COPPICE WY
498-300-016-000	453 DESERT ELFIN CT	498-300-062-000	2009 BLUE COPPICE WY
498-300-017-000	457 DESERT ELFIN CT	498-300-063-000	2017 BLUE COPPICE WY
498-300-018-000	452 DESERT ELFIN CT	498-300-064-000	2025 BLUE COPPICE WY
498-300-019-000	448 DESERT ELFIN CT	498-300-065-000	2033 BLUE COPPICE WY
498-300-020-000	444 DESERT ELFIN CT	498-300-066-000	2041 BLUE COPPICE WY
498-300-021-000	440 DESERT ELFIN CT	498-300-067-000	2049 BLUE COPPICE WY
498-300-022-000	301 JAVELIN CT	498-300-068-000	2057 BLUE COPPICE WY
498-300-023-000	309 JAVELIN CT	498-300-069-000	2065 BLUE COPPICE WY
498-300-024-000	317 JAVELIN CT	498-300-070-000	2081 BLUE COPPICE WY
498-300-025-000	325 JAVELIN CT	498-300-071-000	2089 BLUE COPPICE WY
498-300-026-000	333 JAVELIN CT	498-300-072-000	2097 BLUE COPPICE WY
498-300-027-000	332 JAVELIN CT	498-300-073-000	2105 BLUE COPPICE WY
498-300-028-000	324 JAVELIN CT	498-300-077-000	316 CABOT CANYON CT
498-300-029-000	316 JAVELIN CT	498-300-078-000	308 CABOT CANYON CT
498-300-030-000	308 JAVELIN CT	498-300-079-000	300 CABOT CANYON CT
498-300-031-000	300 JAVELIN CT	498-300-080-000	2128 BLUE COPPICE WY
498-300-032-000	1033 MALLORY RIDGE ST	498-300-081-000	2120 BLUE COPPICE WY
498-300-033-000	1041 MALLORY RIDGE ST	498-300-082-000	2112 BLUE COPPICE WY
498-300-034-000	1049 MALLORY RIDGE ST	498-300-083-000	2104 BLUE COPPICE WY
498-300-035-000	1057 MALLORY RIDGE ST	498-300-084-000	2096 BLUE COPPICE WY
498-300-036-000	1065 MALLORY RIDGE ST	498-300-085-000	2088 BLUE COPPICE WY
498-300-037-000	1073 MALLORY RIDGE ST	498-300-086-000	2080 BLUE COPPICE WY
498-300-038-000	1081 MALLORY RIDGE ST	498-300-087-000	2072 BLUE COPPICE WY
498-300-039-000	1089 MALLORY RIDGE ST	498-300-088-000	2064 BLUE COPPICE WY

APN	Address	APN	Address
498-300-089-000	2056 BLUE COPPICE WY	498-310-042-000	6120 SPARKLING COVE ST
498-300-090-000	2048 BLUE COPPICE WY	498-310-043-000	6112 SPARKLING COVE ST
498-300-095-000	2008 BLUE COPPICE WY	498-310-044-000	6104 SPARKLING COVE ST
498-300-101-000	2040 BLUE COPPICE WY	498-310-045-000	6096 SPARKLING COVE ST
498-300-103-000	309 CABOT CANYON CT	498-310-046-000	6088 SPARKLING COVE ST
498-300-104-000	317 CABOT CANYON CT	498-310-047-000	6080 SPARKLING COVE ST
498-300-105-000	325 CABOT CANYON CT	498-310-048-000	6072 SPARKLING COVE ST
498-310-001-000	4024 HORSE TRAIL RD	498-310-049-000	6064 SPARKLING COVE ST
498-310-004-000	4000 HORSE TRAIL RD	498-310-050-000	6056 SPARKLING COVE ST
498-310-005-000	6001 SPARKLING COVE ST	498-310-051-000	6048 SPARKLING COVE ST
498-310-006-000	6009 SPARKLING COVE ST	498-310-052-000	6040 SPARKLING COVE ST
498-310-007-000	6017 SPARKLING COVE ST	498-310-053-000	4001 HORSE TRAIL RD
498-310-008-000	6025 SPARKLING COVE ST	498-310-054-000	4009 HORSE TRAIL RD
498-310-009-000	6033 SPARKLING COVE ST	498-310-055-000	4017 HORSE TRAIL RD
498-310-010-000	6041 SPARKLING COVE ST	498-310-056-000	4025 HORSE TRAIL RD
498-310-011-000	6049 SPARKLING COVE ST	498-310-057-000	7049 GREAT COPPER ST
498-310-012-000	6057 SPARKLING COVE ST	498-310-058-000	7057 GREAT COPPER ST
498-310-013-000	6065 SPARKLING COVE ST	498-310-059-000	7065 GREAT COPPER ST
498-310-014-000	6073 SPARKLING COVE ST	498-310-060-000	7073 GREAT COPPER ST
498-310-015-000	6081 SPARKLING COVE ST	498-310-061-000	7081 GREAT COPPER ST
498-310-016-000	6089 SPARKLING COVE ST	498-310-062-000	7089 GREAT COPPER ST
498-310-017-000	6097 SPARKLING COVE ST	498-310-063-000	7097 GREAT COPPER ST
498-310-018-000	6105 SPARKLING COVE ST	498-310-064-000	7105 GREAT COPPER ST
498-310-019-000	6113 SPARKLING COVE ST	498-310-065-000	7113 GREAT COPPER ST
498-310-020-000	6121 SPARKLING COVE ST	498-310-066-000	7121 GREAT COPPER ST
498-310-021-000	6129 SPARKLING COVE ST	498-310-067-000	7129 GREAT COPPER ST
498-310-022-000	6137 SPARKLING COVE ST	498-310-068-000	7137 GREAT COPPER ST
498-310-023-000	6145 SPARKLING COVE ST	498-310-069-000	7145 GREAT COPPER ST
498-310-024-000	6153 SPARKLING COVE ST	498-310-070-000	7153 GREAT COPPER ST
498-310-025-000	6161 SPARKLING COVE ST	498-310-071-000	7161 GREAT COPPER ST
498-310-026-000	6169 SPARKLING COVE ST	498-310-072-000	7169 GREAT COPPER ST
498-310-027-000	6177 SPARKLING COVE ST	498-310-073-000	7177 GREAT COPPER ST
498-310-028-000	6185 SPARKLING COVE ST	498-310-074-000	7185 GREAT COPPER ST
498-310-029-000	6193 SPARKLING COVE ST	498-310-075-000	7193 GREAT COPPER ST
498-310-030-000	6201 SPARKLING COVE ST	498-310-076-000	7201 GREAT COPPER ST
498-310-031-000	6209 SPARKLING COVE ST	498-310-077-000	7209 GREAT COPPER ST
498-310-032-000	6200 SPARKLING COVE ST	498-310-078-000	7232 GREAT COPPER ST
498-310-033-000	6192 SPARKLING COVE ST	498-310-079-000	7216 GREAT COPPER ST
498-310-034-000	6184 SPARKLING COVE ST	498-310-080-000	7208 GREAT COPPER ST
498-310-035-000	6176 SPARKLING COVE ST	498-310-081-000	7200 GREAT COPPER ST
498-310-036-000	6168 SPARKLING COVE ST	498-310-082-000	7192 GREAT COPPER ST
498-310-037-000	6160 SPARKLING COVE ST	498-310-083-000	7184 GREAT COPPER ST
498-310-038-000	6152 SPARKLING COVE ST	498-310-084-000	7176 GREAT COPPER ST
498-310-039-000	6144 SPARKLING COVE ST	498-310-085-000	7168 GREAT COPPER ST
498-310-040-000	6136 SPARKLING COVE ST	498-310-086-000	7160 GREAT COPPER ST
498-310-041-000	6128 SPARKLING COVE ST	498-310-087-000	7152 GREAT COPPER ST

APN	Address	APN	Address
498-310-088-000	7144 GREAT COPPER ST	498-330-072-000	2577 CONSTELLATION CI
498-310-089-000	7136 GREAT COPPER ST	498-330-073-000	2585 CONSTELLATION CI
498-310-090-000	7128 GREAT COPPER ST	498-330-074-000	2593 CONSTELLATION CI
498-310-091-000	7120 GREAT COPPER ST	498-330-075-000	2601 CONSTELLATION CI
498-310-092-000	7112 GREAT COPPER ST	498-330-080-000	5064 SUPERNOVA LN
498-310-093-000	7104 GREAT COPPER ST	498-330-081-000	5056 SUPERNOVA LN
498-310-094-000	7096 GREAT COPPER ST	498-330-082-000	5048 SUPERNOVA LN
498-310-095-000	7088 GREAT COPPER ST	498-330-083-000	5040 SUPERNOVA LN
498-310-096-000	7080 GREAT COPPER ST	498-330-084-000	5032 SUPERNOVA LN
498-310-097-000	7072 GREAT COPPER ST	498-330-085-000	5024 SUPERNOVA LN
498-310-098-000	7064 GREAT COPPER ST	498-330-086-000	5016 SUPERNOVA LN
498-310-099-000	7056 GREAT COPPER ST	498-330-087-000	5008 SUPERNOVA LN
498-310-100-000	7048 GREAT COPPER ST	498-330-088-000	5000 SUPERNOVA LN
498-310-101-000	7040 GREAT COPPER ST	498-340-001-000	1008 SHADOWGATE DR
498-310-102-000	7024 GREAT COPPER ST	498-340-002-000	1016 SHADOWGATE DR
498-310-103-000	7016 GREAT COPPER ST	498-340-007-000	1056 SHADOWGATE DR
498-310-104-000	7008 GREAT COPPER ST	498-340-026-000	2000 MOONBROOK CI
498-310-105-000	7000 GREAT COPPER ST	498-340-027-000	2008 MOONBROOK CI
498-320-008-000	7272 GREAT COPPER ST	498-340-028-000	2024 MOONBROOK CI
498-320-009-000	7264 GREAT COPPER ST	498-340-029-000	2032 MOONBROOK CI
498-320-010-000	7256 GREAT COPPER ST	498-340-030-000	2040 MOONBROOK CI
498-320-011-000	7248 GREAT COPPER ST	498-340-031-000	2048 MOONBROOK CI
498-320-012-000	7240 GREAT COPPER ST	498-340-032-000	2056 MOONBROOK CI
498-320-013-000	7233 GREAT COPPER ST	498-340-033-000	2064 MOONBROOK CI
498-320-014-000	7241 GREAT COPPER ST	498-340-034-000	2072 MOONBROOK CI
498-320-015-000	7249 GREAT COPPER ST	498-340-035-000	2080 MOONBROOK CI
498-320-016-000	7257 GREAT COPPER ST	498-340-036-000	2017 MOONBROOK CI
498-320-017-000	7265 GREAT COPPER ST	498-340-037-000	2009 MOONBROOK CI
498-320-023-000	624 SPARKLING COVE CT	498-340-038-000	2001 MOONBROOK CI
498-320-024-000	616 SPARKLING COVE CT	498-340-039-000	1017 SHADOWGATE DR
498-320-025-000	608 SPARKLING COVE CT	498-340-040-000	1009 SHADOWGATE DR
498-320-026-000	600 SPARKLING COVE CT	498-350-010-000	2112 MOONBROOK CI
498-320-027-000	601 SPARKLING COVE CT	498-350-011-000	2088 MOONBROOK CI
498-320-028-000	609 SPARKLING COVE CT	498-360-001-000	2741 NICOLE GEE DR
498-320-029-000	617 SPARKLING COVE CT	498-360-002-000	2749 NICOLE GEE DR
498-320-030-000	625 SPARKLING COVE CT	498-360-003-000	2757 NICOLE GEE DR
498-320-035-000	640 SPARKLING COVE CT	498-360-004-000	2765 NICOLE GEE DR
498-320-036-000	632 SPARKLING COVE CT	498-360-005-000	2773 NICOLE GEE DR
498-330-004-000	2576 CONSTELLATION CI	498-360-006-000	2781 NICOLE GEE DR
498-330-005-000	2568 CONSTELLATION CI	498-360-007-000	2789 NICOLE GEE DR
498-330-006-000	2560 CONSTELLATION CI	498-360-008-000	2797 NICOLE GEE DR
498-330-007-000	2552 CONSTELLATION CI	498-360-009-000	2805 NICOLE GEE DR
498-330-008-000	2544 CONSTELLATION CI	498-360-010-000	2813 NICOLE GEE DR
498-330-069-000	2553 CONSTELLATION CI	498-360-011-000	2821 NICOLE GEE DR
498-330-070-000	2561 CONSTELLATION CI	498-360-012-000	2829 NICOLE GEE DR
498-330-071-000	2569 CONSTELLATION CI	498-360-013-000	2837 NICOLE GEE DR

APN	Address	APN	Address
498-360-014-000	2845 NICOLE GEE DR	498-360-104-000	7033 STAR MIST WY
498-360-015-000	6096 MOON RIVER WY	498-360-105-000	7041 STAR MIST WY
498-360-016-000	6088 MOON RIVER WY	498-360-106-000	7049 STAR MIST WY
498-360-017-000	6080 MOON RIVER WY	498-360-107-000	7057 STAR MIST WY
498-360-018-000	6072 MOON RIVER WY	498-370-002-000	1865 PLEASANT GROVE BL
498-360-035-000	6057 MOON RIVER WY	498-370-003-000	1845 PLEASANT GROVE BL
498-360-036-000	6065 MOON RIVER WY	498-370-004-000	1855 PLEASANT GROVE BL
498-360-037-000	6073 MOON RIVER WY	498-370-005-000	1825 PLEASANT GROVE BL
498-360-038-000	6081 MOON RIVER WY	498-370-006-000	1835 PLEASANT GROVE BL
498-360-039-000	6089 MOON RIVER WY	498-370-007-000	6802 FIDDYMENT RD
498-360-061-000	5073 ASTEROID WY	498-370-008-000	6808 FIDDYMENT RD
498-360-066-000	5113 ASTEROID WY	498-370-009-000	6820 FIDDYMENT RD
498-360-067-000	5121 ASTEROID WY	498-370-010-000	6816 FIDDYMENT RD
498-360-068-000	5129 ASTEROID WY	498-370-011-000	6824 FIDDYMENT RD
498-360-069-000	5137 ASTEROID WY	498-370-012-000	6828 FIDDYMENT RD
498-360-070-000	5145 ASTEROID WY	498-380-001-000	1400 MARMO CI
498-360-071-000	5153 ASTEROID WY	498-380-002-000	1408 MARMO CI
498-360-072-000	5161 ASTEROID WY	498-380-003-000	1416 MARMO CI
498-360-073-000	5169 ASTEROID WY	498-380-004-000	5065 BASALTO WY
498-360-074-000	801 SUN PILLAR CT	498-380-005-000	5057 BASALTO WY
498-360-075-000	809 SUN PILLAR CT	498-380-006-000	5049 BASALTO WY
498-360-076-000	817 SUN PILLAR CT	498-380-007-000	5041 BASALTO WY
498-360-078-000	841 SUN PILLAR CT	498-380-008-000	5033 BASALTO WY
498-360-079-000	849 SUN PILLAR CT	498-380-009-000	5025 BASALTO WY
498-360-080-000	888 SUN PILLAR CT	498-380-010-000	5017 BASALTO WY
498-360-081-000	880 SUN PILLAR CT	498-380-011-000	5009 BASALTO WY
498-360-082-000	872 SUN PILLAR CT	498-380-012-000	1184 MARMO CI
498-360-083-000	864 SUN PILLAR CT	498-380-013-000	1160 MARMO CI
498-360-084-000	856 SUN PILLAR CT	498-380-014-000	5032 BASALTO WY
498-360-085-000	848 SUN PILLAR CT	498-380-015-000	5040 BASALTO WY
498-360-086-000	840 SUN PILLAR CT	498-380-016-000	5048 BASALTO WY
498-360-087-000	832 SUN PILLAR CT	498-380-017-000	5056 BASALTO WY
498-360-088-000	824 SUN PILLAR CT	498-380-018-000	5064 BASALTO WY
498-360-089-000	816 SUN PILLAR CT	498-380-019-000	1432 MARMO CI
498-360-090-000	808 SUN PILLAR CT	498-380-020-000	1440 MARMO CI
498-360-091-000	800 SUN PILLAR CT	498-380-021-000	1448 MARMO CI
498-360-092-000	5208 ASTEROID WY	498-380-022-000	3033 TORRENTE DR
498-360-093-000	5200 ASTEROID WY	498-380-023-000	3025 TORRENTE DR
498-360-094-000	5192 ASTEROID WY	498-380-024-000	3017 TORRENTE DR
498-360-095-000	5184 ASTEROID WY	498-380-025-000	3009 TORRENTE DR
498-360-096-000	5176 ASTEROID WY	498-380-026-000	3001 TORRENTE DR
498-360-097-000	5168 ASTEROID WY	498-380-027-000	1128 MARMO CI
498-360-098-000	5160 ASTEROID WY	498-380-028-000	3016 TORRENTE DR
498-360-099-000	5152 ASTEROID WY	498-380-029-000	3024 TORRENTE DR
498-360-102-000	7017 STAR MIST WY	498-380-030-000	3032 TORRENTE DR
498-360-103-000	7025 STAR MIST WY	498-380-031-000	1000 MARMO CI

APN	Address	APN	Address
498-380-032-000	1008 MARMO CI	498-400-015-000	3193 TORRENTE DR
498-380-033-000	1016 MARMO CI	498-400-016-000	3201 TORRENTE DR
498-380-034-000	1064 MARMO CI	498-400-017-000	3209 TORRENTE DR
498-380-035-000	1072 MARMO CI	498-400-018-000	3208 TORRENTE DR
498-380-036-000	1080 MARMO CI	498-400-019-000	3200 TORRENTE DR
498-380-037-000	1088 MARMO CI	498-400-020-000	3192 TORRENTE DR
498-380-038-000	1105 MARMO CI	498-400-021-000	3184 TORRENTE DR
498-380-039-000	1097 MARMO CI	498-400-022-000	3176 TORRENTE DR
498-380-040-000	1089 MARMO CI	498-400-023-000	3168 TORRENTE DR
498-380-041-000	1081 MARMO CI	498-400-024-000	3160 TORRENTE DR
498-380-044-000	1057 MARMO CI	498-400-025-000	3152 TORRENTE DR
498-380-048-000	1025 MARMO CI	498-400-026-000	3144 TORRENTE DR
498-380-049-000	1017 MARMO CI	498-400-027-000	1001 GRANITO WY
498-380-050-000	1009 MARMO CI	498-400-028-000	1009 GRANITO WY
498-380-051-000	1001 MARMO CI	498-400-029-000	1017 GRANITO WY
498-380-052-000	1449 MARMO CI	498-400-030-000	1025 GRANITO WY
498-380-053-000	1441 MARMO CI	498-400-031-000	1033 GRANITO WY
498-380-054-000	1433 MARMO CI	498-410-001-000	5190 BASELINE RD
498-380-055-000	1425 MARMO CI	498-410-002-000	5108 BASELINE RD
498-380-056-000	1417 MARMO CI	498-410-003-000	5070 BASELINE RD
498-380-057-000	1409 MARMO CI	498-410-004-000	5040 BASELINE RD
498-380-058-000	1401 MARMO CI	498-410-005-000	5008 BASELINE RD
498-390-039-000	7073 CARBONE DR	498-410-006-000	5050 BASELINE RD
498-390-040-000	7065 CARBONE DR	498-410-007-000	5060 BASELINE RD
498-390-041-000	7057 CARBONE DR	498-410-008-000	5088 BASELINE RD
498-390-042-000	7049 CARBONE DR	498-410-009-000	5080 BASELINE RD
498-390-043-000	7041 CARBONE DR	498-410-010-000	5120 BASELINE RD
498-390-044-000	7033 CARBONE DR	498-410-011-000	5160 BASELINE RD
498-390-052-000	7032 CARBONE DR	498-410-012-000	5170 BASELINE RD
498-390-053-000	7040 CARBONE DR	498-410-013-000	5180 BASELINE RD
498-390-054-000	7048 CARBONE DR	498-410-014-000	5208 BASELINE RD
498-390-055-000	7056 CARBONE DR	498-410-015-000	5240 BASELINE RD
498-390-056-000	7064 CARBONE DR	498-410-016-000	5250 BASELINE RD
498-390-057-000	7072 CARBONE DR	498-410-017-000	5260 BASELINE RD
498-400-003-000	3097 TORRENTE DR	498-410-018-000	5200 BASELINE RD
498-400-004-000	3105 TORRENTE DR	498-410-019-000	5280 BASELINE RD
498-400-005-000	3113 TORRENTE DR	498-410-020-000	5270 BASELINE RD
498-400-006-000	3121 TORRENTE DR	498-410-021-000	3090 PAVILION DR
498-400-007-000	3129 TORRENTE DR	498-410-022-000	3080 PAVILION DR
498-400-008-000	3137 TORRENTE DR	498-410-023-000	3070 PAVILION DR
498-400-009-000	3145 TORRENTE DR	498-410-024-000	5300 BASELINE RD
498-400-010-000	3153 TORRENTE DR	498-410-025-000	5320 BASELINE RD
498-400-011-000	3161 TORRENTE DR	498-410-026-000	5340 BASELINE RD
498-400-012-000	3169 TORRENTE DR	498-410-027-000	5380 BASELINE RD
498-400-013-000	3177 TORRENTE DR	498-410-028-000	5410 BASELINE RD
498-400-014-000	3185 TORRENTE DR	498-420-001-000	5001 STARSHINE WY

APN	Address	APN	Address
498-420-002-000	5009 STARSHINE WY	498-420-048-000	7065 STAR RISE WY
498-420-003-000	5017 STARSHINE WY	498-420-049-000	7057 STAR RISE WY
498-420-004-000	5025 STARSHINE WY	498-420-064-000	7056 STAR RISE WY
498-420-005-000	5033 STARSHINE WY	498-420-065-000	7064 STAR RISE WY
498-420-006-000	5041 STARSHINE WY	498-420-066-000	7072 STAR RISE WY
498-420-007-000	5049 STARSHINE WY	498-420-067-000	7080 STAR RISE WY
498-420-008-000	5057 STARSHINE WY	498-420-106-000	4120 GOLD BEAM WY
498-420-009-000	5065 STARSHINE WY	498-420-107-000	4112 GOLD BEAM WY
498-420-010-000	5073 STARSHINE WY	498-420-108-000	4104 GOLD BEAM WY
498-420-011-000	5081 STARSHINE WY	498-420-109-000	4096 GOLD BEAM WY
498-420-012-000	5089 STARSHINE WY	498-420-110-000	4088 GOLD BEAM WY
498-420-013-000	5032 STARSHINE WY	498-420-111-000	4080 GOLD BEAM WY
498-420-014-000	5024 STARSHINE WY	498-420-112-000	4072 GOLD BEAM WY
498-420-015-000	5016 STARSHINE WY	498-420-113-000	4064 GOLD BEAM WY
498-420-016-000	5008 STARSHINE WY	498-420-114-000	4056 GOLD BEAM WY
498-420-017-000	5000 STARSHINE WY	498-420-115-000	4048 GOLD BEAM WY
498-420-018-000	4001 GOLD BEAM WY	498-420-116-000	4040 GOLD BEAM WY
498-420-019-000	4009 GOLD BEAM WY	498-420-120-000	4008 GOLD BEAM WY
498-420-020-000	4017 GOLD BEAM WY	498-430-001-000	2121 POGONIA ST
498-420-021-000	4025 GOLD BEAM WY	498-430-002-000	2113 POGONIA ST
498-420-022-000	4033 GOLD BEAM WY	498-430-003-000	2105 POGONIA ST
498-420-023-000	4041 GOLD BEAM WY	498-430-004-000	2097 POGONIA ST
498-420-024-000	6001 SUNSCAPE WY	498-430-005-000	2089 POGONIA ST
498-420-025-000	6009 SUNSCAPE WY	498-430-006-000	2081 POGONIA ST
498-420-026-000	6017 SUNSCAPE WY	498-430-007-000	2073 POGONIA ST
498-420-027-000	6025 SUNSCAPE WY	498-430-008-000	2065 POGONIA ST
498-420-028-000	6033 SUNSCAPE WY	498-430-009-000	2057 POGONIA ST
498-420-029-000	6041 SUNSCAPE WY	498-430-010-000	2049 POGONIA ST
498-420-030-000	6049 SUNSCAPE WY	498-430-011-000	2041 POGONIA ST
498-420-031-000	6057 SUNSCAPE WY	498-430-012-000	2033 POGONIA ST
498-420-032-000	6065 SUNSCAPE WY	498-430-013-000	2025 POGONIA ST
498-420-033-000	6073 SUNSCAPE WY	498-430-014-000	2017 POGONIA ST
498-420-034-000	6081 SUNSCAPE WY	498-430-015-000	2009 POGONIA ST
498-420-035-000	6000 SUNSCAPE WY	498-430-016-000	2001 POGONIA ST
498-420-036-000	6008 SUNSCAPE WY	498-430-017-000	2000 POGONIA ST
498-420-037-000	6016 SUNSCAPE WY	498-430-018-000	2008 POGONIA ST
498-420-038-000	6024 SUNSCAPE WY	498-430-019-000	2016 POGONIA ST
498-420-039-000	6032 SUNSCAPE WY	498-430-020-000	2024 POGONIA ST
498-420-040-000	6040 SUNSCAPE WY	498-430-021-000	2032 POGONIA ST
498-420-041-000	6048 SUNSCAPE WY	498-430-022-000	2064 POGONIA ST
498-420-042-000	6056 SUNSCAPE WY	498-430-023-000	2072 POGONIA ST
498-420-043-000	6064 SUNSCAPE WY	498-430-024-000	2080 POGONIA ST
498-420-044-000	6072 SUNSCAPE WY	498-430-025-000	3016 DOG HOBBLE WY
498-420-045-000	6080 SUNSCAPE WY	498-430-026-000	3024 DOG HOBBLE WY
498-420-046-000	7081 STAR RISE WY	498-430-027-000	3032 DOG HOBBLE WY
498-420-047-000	7073 STAR RISE WY	498-430-028-000	3040 DOG HOBBLE WY

APN	Address	APN	Address
498-430-029-000	3048 DOG HOBBLE WY	498-430-075-000	4025 ALUMROOT DR
498-430-030-000	301 DOG HOBBLE CT	498-430-076-000	4025 ALUMROOT DR
498-430-031-000	3057 DOG HOBBLE WY	498-430-077-000	4009 ALUMROOT DR
498-430-032-000	3049 DOG HOBBLE WY	498-430-078-000	4001 ALUMROOT DR
498-430-033-000	3041 DOG HOBBLE WY	498-440-001-000	1000 HEARTLEAF WY
498-430-034-000	3033 DOG HOBBLE WY	498-440-002-000	1008 HEARTLEAF WY
498-430-035-000	3025 DOG HOBBLE WY	498-440-003-000	1016 HEARTLEAF WY
498-430-036-000	3017 DOG HOBBLE WY	498-440-004-000	1024 HEARTLEAF WY
498-430-037-000	3009 DOG HOBBLE WY	498-440-005-000	1032 HEARTLEAF WY
498-430-038-000	2096 POGONIA ST	498-440-006-000	1040 HEARTLEAF WY
498-430-039-000	2104 POGONIA ST	498-440-007-000	1048 HEARTLEAF WY
498-430-040-000	2112 POGONIA ST	498-440-008-000	1056 HEARTLEAF WY
498-430-041-000	2120 POGONIA ST	498-440-009-000	1064 HEARTLEAF WY
498-430-042-000	4048 ALUMROOT DR	498-440-010-000	1072 HEARTLEAF WY
498-430-043-000	4056 ALUMROOT DR	498-440-011-000	1080 HEARTLEAF WY
498-430-044-000	4064 ALUMROOT DR	498-440-012-000	1088 HEARTLEAF WY
498-430-045-000	4072 ALUMROOT DR	498-440-013-000	1096 HEARTLEAF WY
498-430-046-000	4080 ALUMROOT DR	498-440-014-000	1104 HEARTLEAF WY
498-430-047-000	4088 ALUMROOT DR	498-440-015-000	1112 HEARTLEAF WY
498-430-048-000	4096 ALUMROOT DR	498-440-016-000	1120 HEARTLEAF WY
498-430-049-000	4104 ALUMROOT DR	498-440-017-000	1128 HEARTLEAF WY
498-430-050-000	4112 ALUMROOT DR	498-440-018-000	1136 HEARTLEAF WY
498-430-051-000	4120 ALUMROOT DR	498-440-019-000	1144 HEARTLEAF WY
498-430-052-000	4128 ALUMROOT DR	498-440-020-000	1152 HEARTLEAF WY
498-430-053-000	4136 ALUMROOT DR	498-440-021-000	1160 HEARTLEAF WY
498-430-054-000	4144 ALUMROOT DR	498-440-022-000	1168 HEARTLEAF WY
498-430-055-000	4152 ALUMROOT DR	498-440-023-000	1153 HEARTLEAF WY
498-430-056-000	4160 ALUMROOT DR	498-440-024-000	1145 HEARTLEAF WY
498-430-057-000	1161 HEARTLEAF WY	498-440-025-000	1137 HEARTLEAF WY
498-430-058-000	1176 HEARTLEAF WY	498-440-026-000	1129 HEARTLEAF WY
498-430-059-000	1184 HEARTLEAF WY	498-440-027-000	1121 HEARTLEAF WY
498-430-060-000	1192 HEARTLEAF WY	498-440-028-000	1113 HEARTLEAF WY
498-430-061-000	1193 HEARTLEAF WY	498-440-029-000	1073 HEARTLEAF WY
498-430-062-000	1185 HEARTLEAF WY	498-440-030-000	1065 HEARTLEAF WY
498-430-063-000	4153 ALUMROOT DR	498-440-031-000	1057 HEARTLEAF WY
498-430-064-000	4145 ALUMROOT DR	498-440-032-000	1049 HEARTLEAF WY
498-430-065-000	4137 ALUMROOT DR	498-440-033-000	1041 HEARTLEAF WY
498-430-066-000	4129 ALUMROOT DR	498-440-034-000	1033 HEARTLEAF WY
498-430-067-000	4121 ALUMROOT DR	498-440-035-000	1025 HEARTLEAF WY
498-430-068-000	4113 ALUMROOT DR	498-440-036-000	1017 HEARTLEAF WY
498-430-069-000	4105 ALUMROOT DR	498-440-037-000	1009 HEARTLEAF WY
498-430-070-000	4097 ALUMROOT DR	498-440-038-000	1001 HEARTLEAF WY
498-430-071-000	4089 ALUMROOT DR	498-440-039-000	300 DOG HOBBLE CT
498-430-072-000	4081 ALUMROOT DR	498-440-040-000	308 DOG HOBBLE CT
498-430-073-000	4073 ALUMROOT DR	498-440-041-000	316 DOG HOBBLE CT
498-430-074-000	4041 ALUMROOT DR	498-440-042-000	324 DOG HOBBLE CT

APN	Address	APN	Address
498-440-043-000	332 DOG HOBBLE CT	499-110-038-000	1867 VISTA GRANDE BL
498-440-044-000	340 DOG HOBBLE CT	499-110-039-000	5833 VISTA PARK DR
498-440-045-000	348 DOG HOBBLE CT	499-120-046-000	5889 VISTA PARK DR
498-440-046-000	356 DOG HOBBLE CT	499-120-047-000	5905 VISTA PARK DR
498-440-047-000	357 DOG HOBBLE CT	499-120-048-000	5977 VISTA PARK DR
498-440-049-000	341 DOG HOBBLE CT	499-170-001-000	3900 SANTUCCI BL
498-440-050-000	333 DOG HOBBLE CT	499-170-002-000	3850 SANTUCCI BL
498-440-051-000	325 DOG HOBBLE CT	499-170-003-000	3800 SANTUCCI BL
498-440-052-000	317 DOG HOBBLE CT	499-170-004-000	3871 SANTUCCI BL
498-440-053-000	309 DOG HOBBLE CT	499-170-006-000	3801 SANTUCCI BL
498-440-054-000	1200 HEARTLEAF WY	499-170-007-000	3750 SANTUCCI BL
498-440-055-000	1208 HEARTLEAF WY	499-170-010-000	2700 VISTA GRANDE BL
498-440-056-000	100 JACOBS LADDER CT	499-170-011-000	3900 SANTUCCI BL
498-440-057-000	108 JACOBS LADDER CT	499-180-006-000	1128 CARABALLO DR
498-440-058-000	116 JACOBS LADDER CT	499-180-007-000	1136 CARABALLO DR
498-440-059-000	124 JACOBS LADDER CT	499-180-008-000	1144 CARABALLO DR
498-440-060-000	132 JACOBS LADDER CT	499-180-009-000	1152 CARABALLO DR
498-440-061-000	1209 HEARTLEAF WY	499-180-010-000	1160 CARABALLO DR
498-440-062-000	1201 HEARTLEAF WY	499-180-012-000	1176 CARABALLO DR
498-440-063-000	5096 BEEPLANT ST	499-180-013-000	1184 CARABALLO DR
498-440-064-000	5088 BEEPLANT ST	499-180-014-000	1192 CARABALLO DR
498-440-065-000	5080 BEEPLANT ST	499-180-015-000	1200 CARABALLO DR
498-440-066-000	5072 BEEPLANT ST	499-180-016-000	1208 CARABALLO DR
498-440-067-000	5064 BEEPLANT ST	499-180-017-000	1216 CARABALLO DR
498-440-068-000	5056 BEEPLANT ST	499-180-018-000	4177 FLATHEAD DR
498-440-069-000	5048 BEEPLANT ST	499-180-019-000	4169 FLATHEAD DR
498-440-070-000	5040 BEEPLANT ST	499-180-020-000	4161 FLATHEAD DR
498-440-071-000	5032 BEEPLANT ST	499-180-021-000	4153 FLATHEAD DR
498-440-072-000	5016 BEEPLANT ST	499-180-022-000	4145 FLATHEAD DR
498-440-073-000	5008 BEEPLANT ST	499-180-023-000	4137 FLATHEAD DR
498-440-074-000	5000 BEEPLANT ST	499-180-024-000	4129 FLATHEAD DR
498-440-075-000	4049 ALUMROOT DR	499-180-025-000	4121 FLATHEAD DR
498-440-076-000	5009 BEEPLANT ST	499-180-026-000	4113 FLATHEAD DR
498-440-077-000	5017 BEEPLANT ST	499-180-079-000	7048 NYSTROM WY
498-440-078-000	5025 BEEPLANT ST	499-180-080-000	7056 NYSTROM WY
499-010-063-000	1550 WESTBROOK BL	499-180-081-000	7064 NYSTROM WY
499-010-074-000	6200 BASELINE RD	499-180-082-000	7065 NYSTROM WY
499-010-075-000	6000 BASELINE RD	499-180-083-000	7057 NYSTROM WY
499-010-081-000	5900 BASELINE RD	499-180-084-000	7049 NYSTROM WY
499-010-086-000	3051 VISTA GRANDE BL	499-180-091-000	4152 FLATHEAD DR
499-010-091-000	3101 SANTUCCI BL	499-180-092-000	4160 FLATHEAD DR
499-010-095-000	2401 VISTA GRANDE BL	499-180-093-000	4168 FLATHEAD DR
499-010-099-000	5850 BASELINE RD	499-180-094-000	4176 FLATHEAD DR
499-010-100-000	5750 BASELINE RD	499-180-095-000	4184 FLATHEAD DR
499-070-069-000	9049 HIMALAYA WY	499-180-096-000	1217 CARABALLO DR
499-070-074-000	9097 HIMALAYA WY	499-180-097-000	1209 CARABALLO DR

APN	Address	APN	Address
499-180-098-000	1201 CARABALLO DR		
499-180-099-000	1193 CARABALLO DR		



Weed Abatement 2025

Michael Bradley Fire Marshal & **Colleen Rhoades** Natural Resource Specialist PRL

CITY OF ROSEVILLE CALIFORNIA

- **Each year the Fire department in partnership with the Park, Recreation and Library department performs annual weed abatement in an effort to manage the annual growth of weeds to reduce the risk of wildfire in the City.**

Weed Abatement 2025

- Annually the Fire department identifies vacant undeveloped parcels and notify the property owners to abate the weeds on their property.
- The Fire department and Parks & Natural Resources division of PRL prioritize and plan the abatement process throughout the city.
- The goal this year is to have all weeds abated by July 1st.
- We take into account rainfall and make every attempt to time the abatement with the dying of seasonal grasses.
- The priority is the 30 foot fire breaks on City owned and private vacant parcels.



Weed Abatement 2025

- Parks, Recreation, and Libraries utilize city staff, contractors, and our four-legged friends—the goats—to manage vegetation and thatch. The goats usually begin in May and continue through October. They can be followed through the “Goat Tracker” on the City website.

CITY OF ROSEVILLE CALIFORNIA

Questions?



CITY OF ROSEVILLE CALIFORNIA

City of Roseville Fire Department • 316 Vernon St., #480 • Roseville, California 95678-2618
(916) 774-5800 • (916) 774-5810 *FAX* • (916) 774-5220 *TDD* • www.roseville.ca.us

April 3, 2025

NOTICE TO ABATE FIRE HAZARD

This letter is intended for parcels that are undeveloped.

If the property has been developed or sold, please disregard the following and complete the information on the following page(s) and return it to the Roseville Fire Department, 316 Vernon Street, Suite 480, Roseville, CA 95678.

This letter is to notify you that a fire hazard may exist on the undeveloped parcel(s) listed on the following page(s). The law requires that all cut or uncut weeds, grass, vines, vegetation, or other combustible materials be removed when determined to be a fire hazard. Roseville Fire Code (RFC) 304.1.3; H&S Code, Division 12, Part 5.

*If applicable, all necessary work shall be completed no later than **July 1, 2025**. If the property owner does not comply with this notice, the required firebreaks will be made by the City of Roseville. All costs incurred by the City, including a $**356.00** per parcel administration fee, shall be billed directly to the property owner.*

WEED ABATEMENT GUIDELINES

A clear firebreak of a minimum 30-foot width shall be created and maintained in all areas designated by the City of Roseville. Clear firebreaks shall be provided around all combustible buildings, fences, vehicles, structures, or storage on this parcel or on adjacent properties. We ask that you adhere to the following abatement requirements:

1. *The preferred method of weed abatement shall be accomplished by discing and completed so that all weeds, grass, other vegetation or organic material which can be expected to burn are completely removed or turned under so there is insufficient fuel to sustain or allow the spread of fire.*
    - *Discing does not negate the requirement for weed removal up to the structure.*
2. *Where discing is not practical, mowing is permitted where the material is mulched and the remaining weeds do not exceed two inches in height.*
3. *Spark arrestors shall be installed on all outdoor equipment with internal combustion engines.*
4. *Parcels that are one acre or less shall be completely abated.*

Prior to abating weeds, seasonal rains should be considered. Late rains will produce late growing weeds. Weeds once mowed, may require additional mowing. The weed abatement program's intent is to reduce the fire hazard during fire season.

SAMPLE

Notice to Abate Fire Hazard

Owner Name: Sample
Owner Address: 333 Sample Way
SACRAMENTO, CA 956XX

Assessor Parcel Number: 000-000-000-000
Site Address: 203 SAMPLE ST
Roseville, CA 956XX

Please check the box below depicting the current status of the property listed above.

☐ This property has been developed.
☐ This property has been sold.

If the property listed above has been sold, please provide the date of sale and contact information of the new owner below.

Date Sold: _____

New Owner Name and Address: _____
_____
_____

Return to: Roseville Fire Department
316 Vernon St, Suite 480
Roseville, CA 95678

Please remember: If applicable, all necessary work shall be completed by July 1, 2025

SAMPLE

PUBLIC NOTICE

Public Notice is hereby given that a public hearing will be held before the City Council of the City of Roseville for the purpose of considering the following:

WEED ABATEMENT HEARING

On March 5, 2025 pursuant to the provisions of Chapter 9.20 of the Roseville Municipal Code, the City Council of the City of Roseville adopted Resolution No.25-XXX declaring that all weeds as defined in Section 9.20.010 (C) (1) of said chapter and all dirt, rubbish and/or rank growth, as defined in Section 9.20.010 (C) (2,3,4) of said chapter, of any kind on private property, or in any street or alley abutting any property, constitute a public nuisance which must be abated by the destruction or removal thereof.

All property owners, lessees or occupants of buildings, grounds or lots shall, without delay, destroy or remove all such weeds, dirt, rubbish and/or rank growths from their property and half of the abutting street and alley, if any, between the lot lines, as extended, or such weeds, dirt, rubbish and/or rank growths will be destroyed or removed and such nuisance abated by the city authorities, in which case the cost of destruction or removal will be assessed upon the lots and lands from or on which, or abutting the streets and alleys from or on which, such nuisance was abated, and such costs will constitute a lien upon the lots or parcels until paid and will be collected on the next tax roll upon which municipal taxes are collected.

All property owners having objections to the proposed abatement of the nuisances are hereby notified to attend a meeting of the Council of the City of Roseville to be held on April 16, 2025 at 6:00 o'clock p.m., or as soon thereafter as may be heard, in the Civic Center Council Chambers, 311 Vernon Street, Roseville, CA, where and when all objections will be heard and given due consideration.

FIRE CHIEF OF THE CITY OF ROSEVILLE
RYAN HARRIGAN

ROSEVILLE CITY COUNCIL
CARMEN AVALOS, CITY CLERK

DATED: March 5, 2025

PUBLISH: FRIDAY, April 4, 2025

Notice of Exemption

To: Placer County Clerk
Recorder's Office
3091 County Center Dr.
Auburn, CA 95603

From: City of Roseville
Community Development Dept.
311 Vernon Street
Roseville, CA 95678

Project Title: 2024 Weed Abatement Project
(Resolution Declaring Weeds and Rubbish a Public Nuisance)

Project Location(s): City-wide throughout Roseville

Project Description: The City of Roseville Fire Department proposes to notify property owners of vacant parcels, within the City, that a potential fire hazard exists on these parcels. If corrective action is not taken by the property owner the City's Fire Department will proceed with weed abatement activities including, mechanical mowing, trimming, and other methods of weed removal.

Public Agency Approving Project: Roseville City Council

Agency/Individual Carrying Out Project: City of Roseville Fire Department

Reason why this Project is Exempt: This project is applicable to Class 4 Categorical Exemption as described in Section 15304 (i) of the California Environmental Quality Act (CEQA) guidelines which states:

> "Class 4 consists of…minor public...alterations in the conditions of land which do not involve removal of healthy, mature, scenic trees…including but not limited to…fuel management activities…"

Lead Agency Contact Person: Michael Bradley, Fire Marshal, Fire Department (916-774-5806) 311 Vernon Street, Roseville, CA 95678.

Signature: _____ Date: 3/12/2024

Jessica Lynch, Environmental Coordinator
City of Roseville